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Illinois State Water Survey

PRAIRIE RESEARCH INSTITUTE

Kishwaukee Watershed Flood Risk Review Meeting – Boone, Ogle & Winnebago

Thursday, July 16, 2026

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FEMA

Pre-Meeting Survey

Agenda

- Rollcall
- Introduction
- Project Goals and Objectives
- Hydrologic and Hydraulic Study Methods
- Draft Floodplain Results
- Webmap
- Communication and Next Steps
- Hazard Mitigation and NFIP
- Community Participation
- Discussion

Roll Call

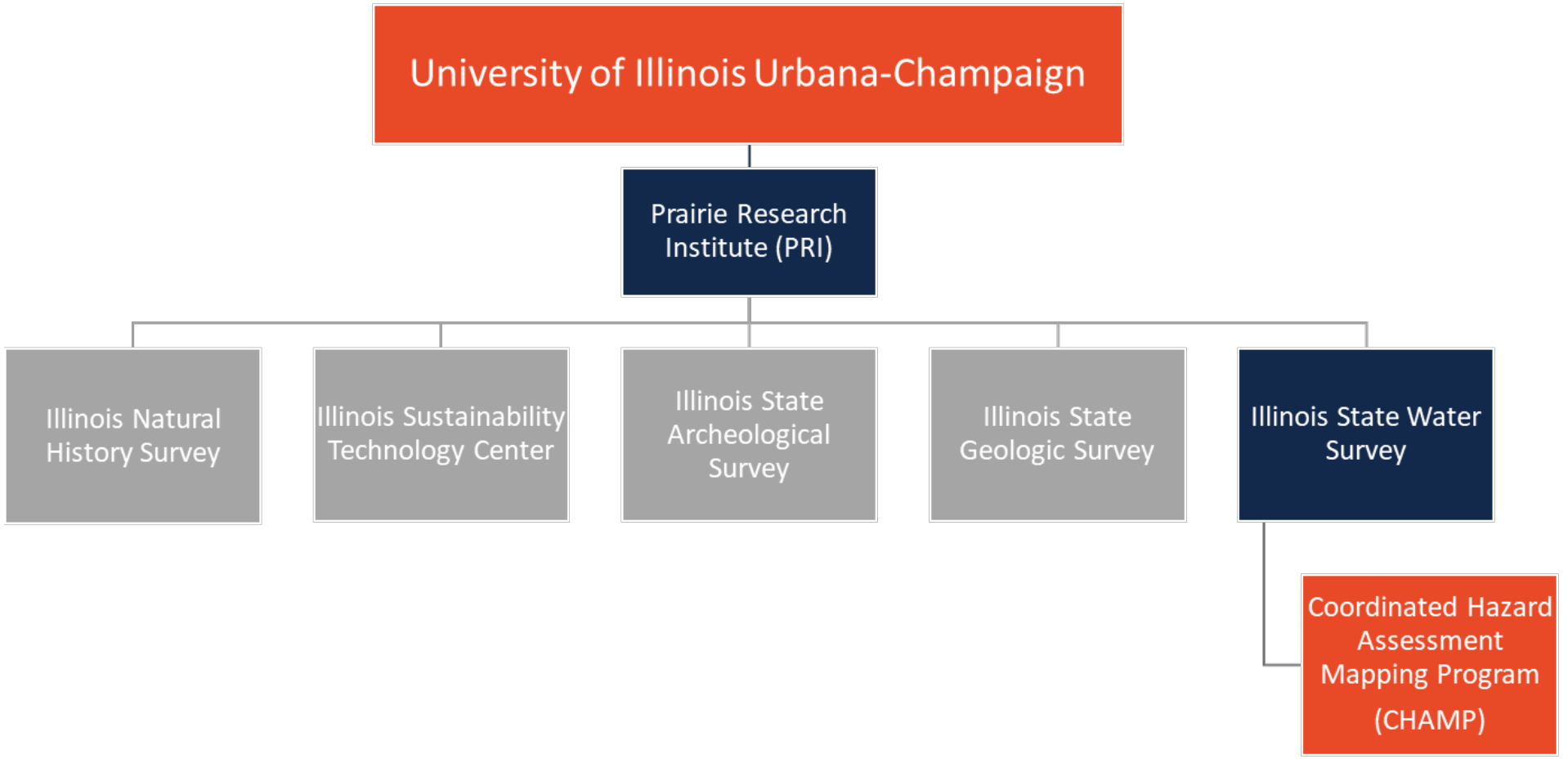
- Boone County
- City of Belvidere
- Village of Caledonia
- Village of Capron
- Village of Poplar Grove
- Village of Timberlane

- Ogle County
- Village of Creston
- Village of Davis Junction
- Village of Hillcrest
- Village of Monroe Center

- Winnebago County
- City of Rockford
- Village of Cherry Valley
- Village of New Milford

- FEMA
- IDNR-OWR
- IEMA
- Other Agencies?

About Us



www.illinoisfloodmaps.org

Our Partners

FEMA

ISWS is a Cooperating Technical Partner (CTP)
with the
Federal Emergency Management Agency. (FEMA)

IDNR-OWR

ISWS partners with The Illinois Department of Natural Resources-Office of Water Resources (IDNR-OWR).

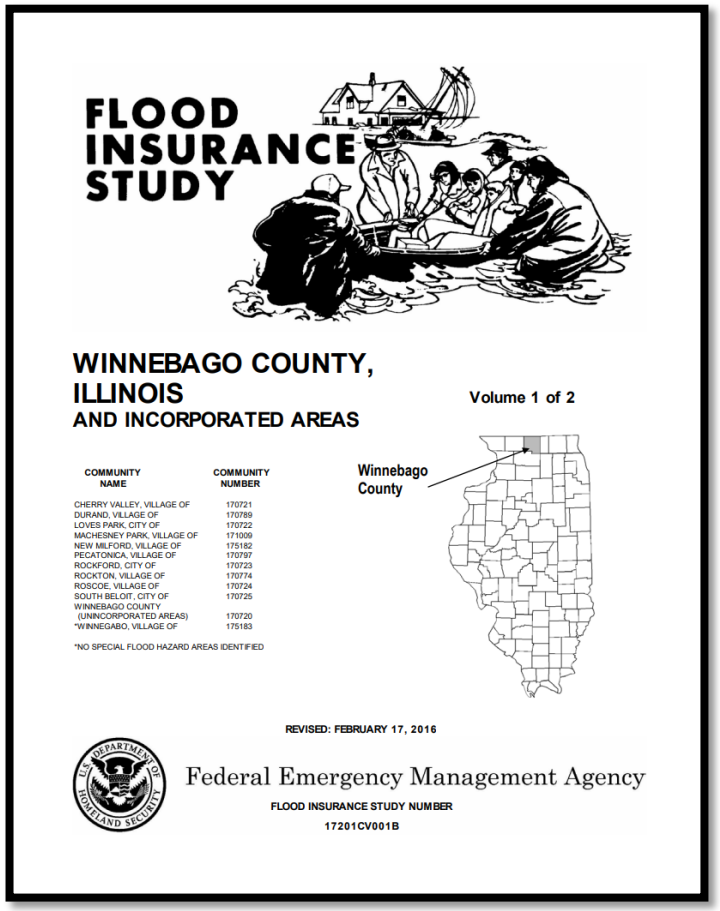
Together we prioritize Illinois floodplain studies and mapping projects.

Your Community

ISWS provides ongoing engagement with state and local officials and watershed stakeholders to reduce flood risk.

What We Do

PRODUCE FLOOD STUDIES



FLOOD INSURANCE STUDY

WINNEBAGO COUNTY, ILLINOIS
AND INCORPORATED AREAS

Volume 1 of 2

COMMUNITY NAME	COMMUNITY NUMBER
CHERRY VALLEY, VILLAGE OF	170721
DURAND, VILLAGE OF	170789
LOVES PARK, CITY OF	170722
MACHESNEY PARK, VILLAGE OF	171009
NEW MILFORD, VILLAGE OF	175182
PECATONICA, VILLAGE OF	170797
ROCKFORD, CITY OF	170723
ROCKTON, VILLAGE OF	170774
ROSCOE, VILLAGE OF	170724
SOUTH BELOIT, CITY OF	170725
WINNEBAGO COUNTY (UNINCORPORATED AREAS)	170720
*WINNEGABO, VILLAGE OF	175183

*NO SPECIAL FLOOD HAZARD AREAS IDENTIFIED

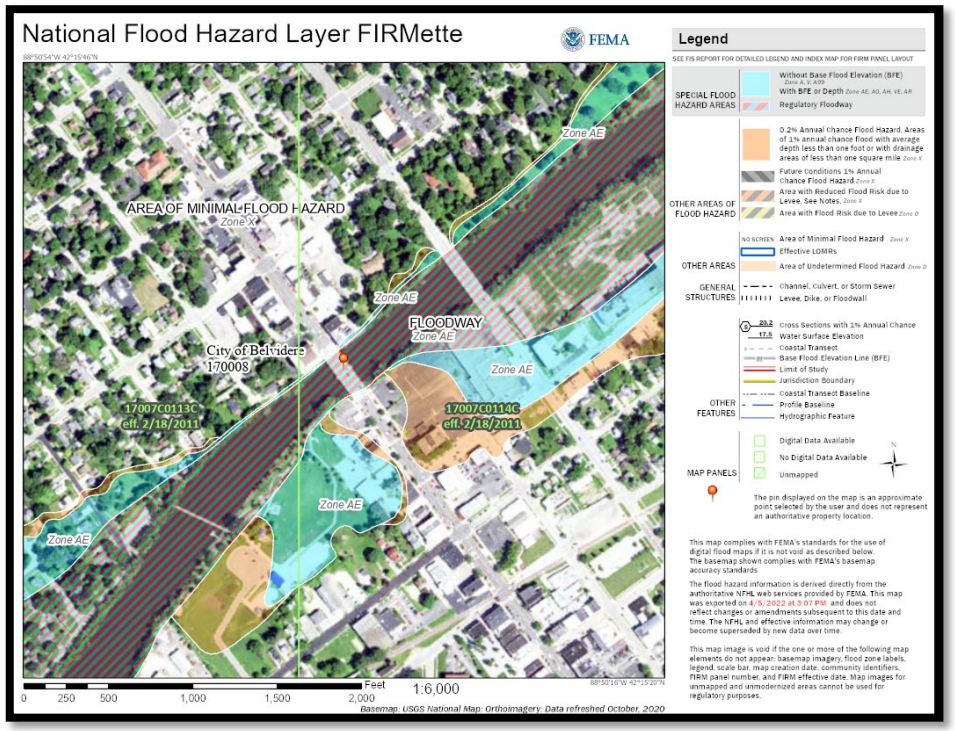
Winnebago County

REVISED: FEBRUARY 17, 2016

Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER
17201CV001B

GENERATE FLOODPLAIN MAPS

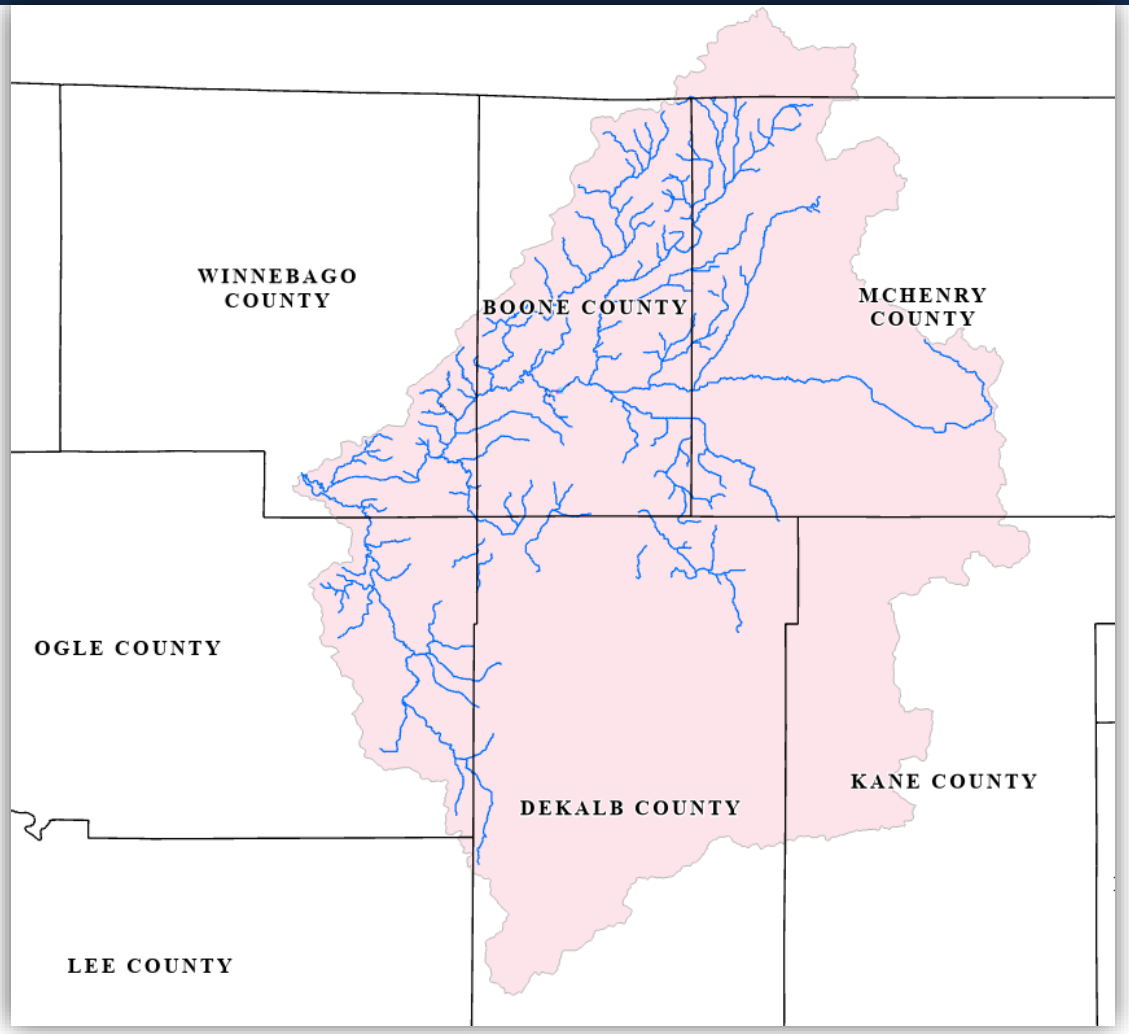


Project Goals and Objectives

Objectives and Goals

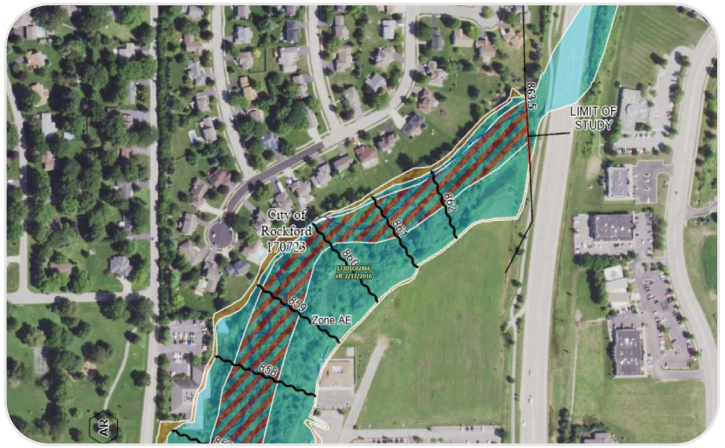
First Objective: Update Flood Hazard information with hydrologic and hydraulic analyses for select streams

Second Objective: Update the Digital Flood Insurance Rate Maps



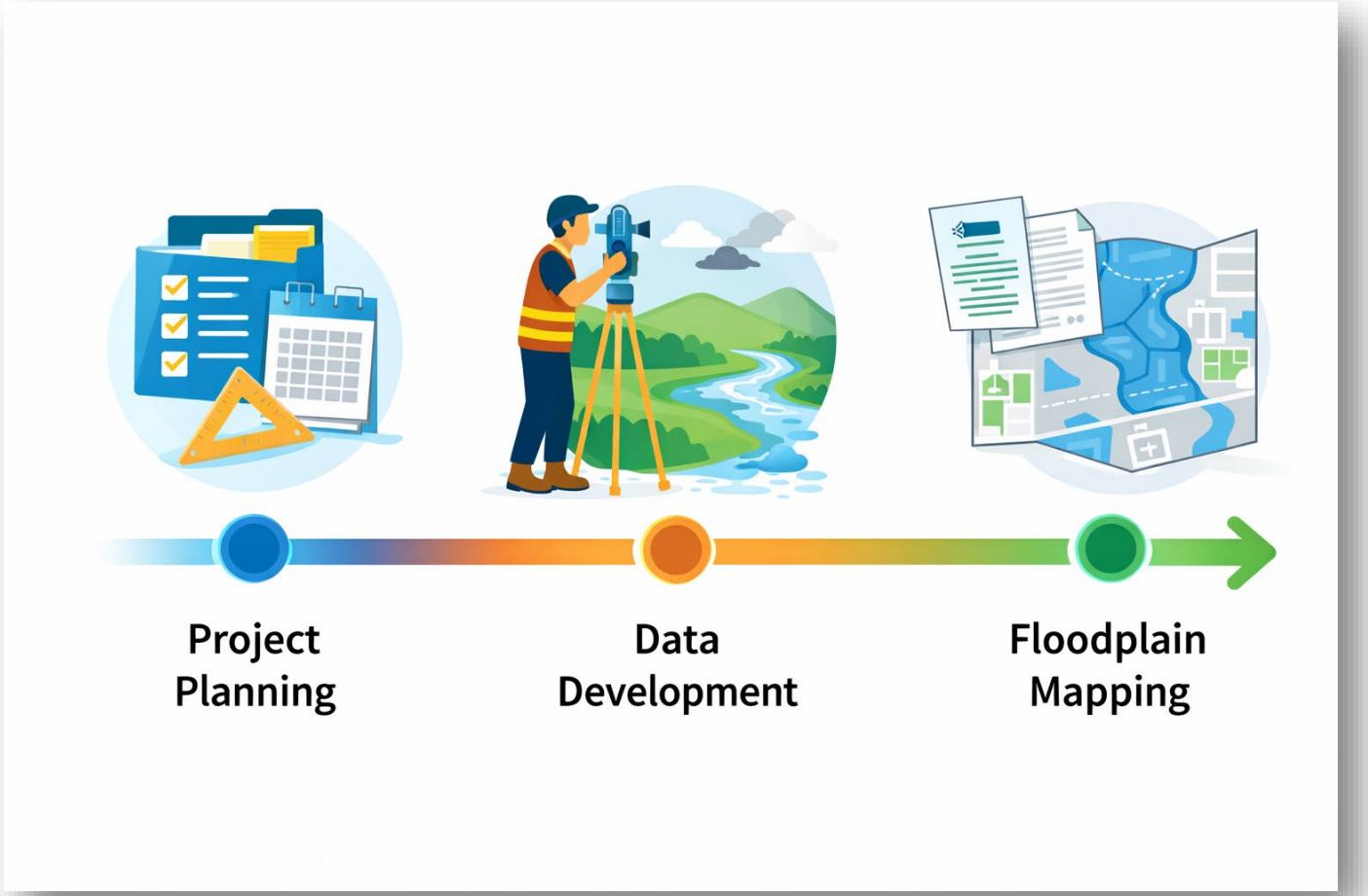
Update Study Data for Produce New FIRMs

- Boone County:
  - Effective FIRMs published 2/18/2011
  - Studies performed from 1980s to early 2000s
- Ogle County:
  - Effective FIRMs published 12/17/2010
  - Studies performed from 1980s to early 2000s
- Winnebago County:
  - Effective FIRMs published 9/6/2006 and 2/27/2016
  - Studies performed from 1980s to early 2000s



Project History

- Project Planning – 2018 Watershed Discovery
- Data Development - Field Survey, New Hydrology and Hydraulic Analysis 2020-present
- New FIRM and FIS schedule pending completion and outcome of data development and funding – Timeframe TBD



Important Definitions

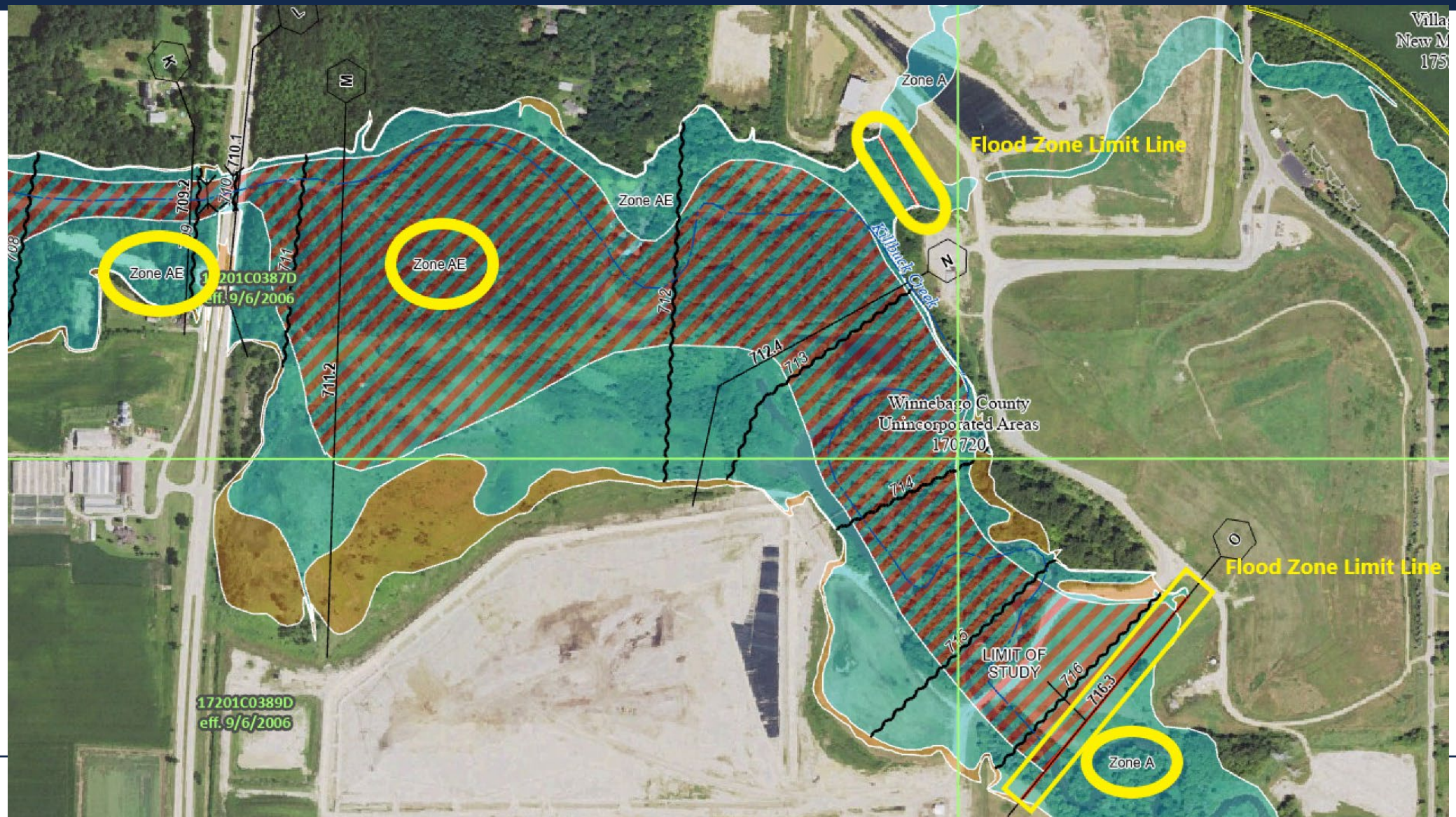
Special Flood Hazard Area (SFHA) – is the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year.

Base Flood Elevation (BFE) – elevation of surface water resulting from a flood that has a 1% chance of equaling or exceeding that level in any given year.

Zone A - Areas subject to inundation by the 1-percent-annual-chance flood event. Zone A is SFHA with no BFEs shown.

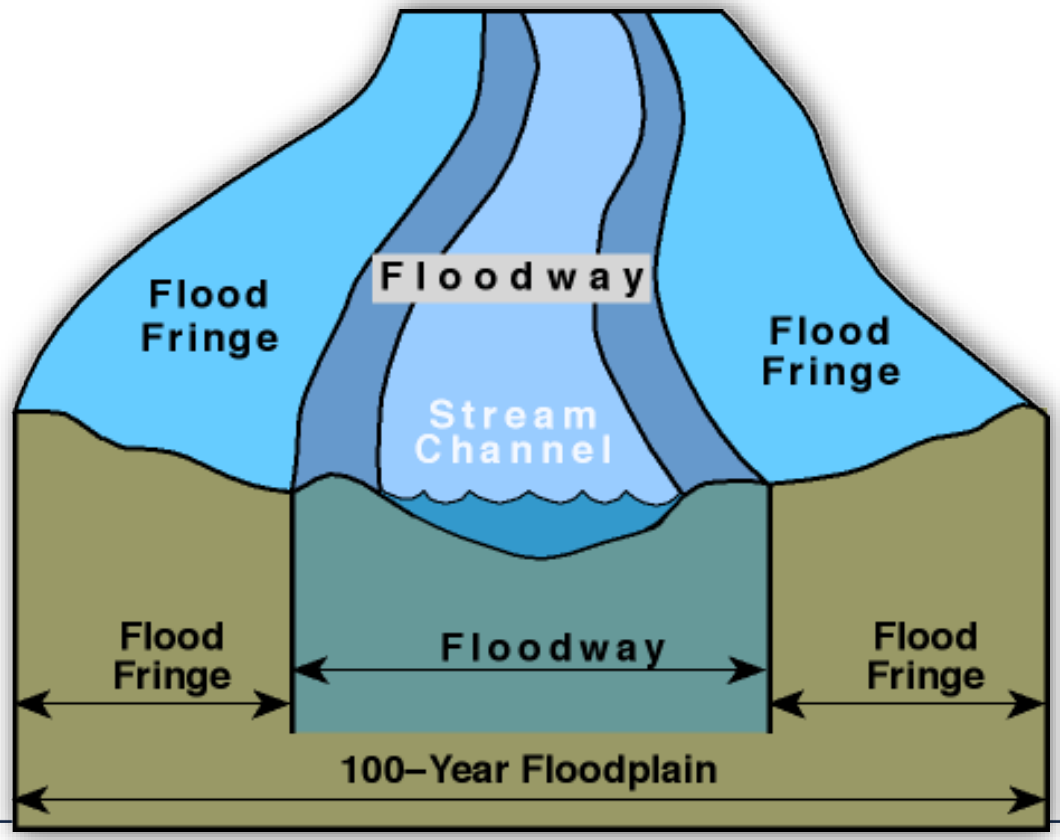
Zone AE - Areas subject to inundation by the 1-percent-annual-chance flood event. Zone AE is SFHA with BFEs shown.

Special Flood Hazard Areas (SFHAs)



Floodway

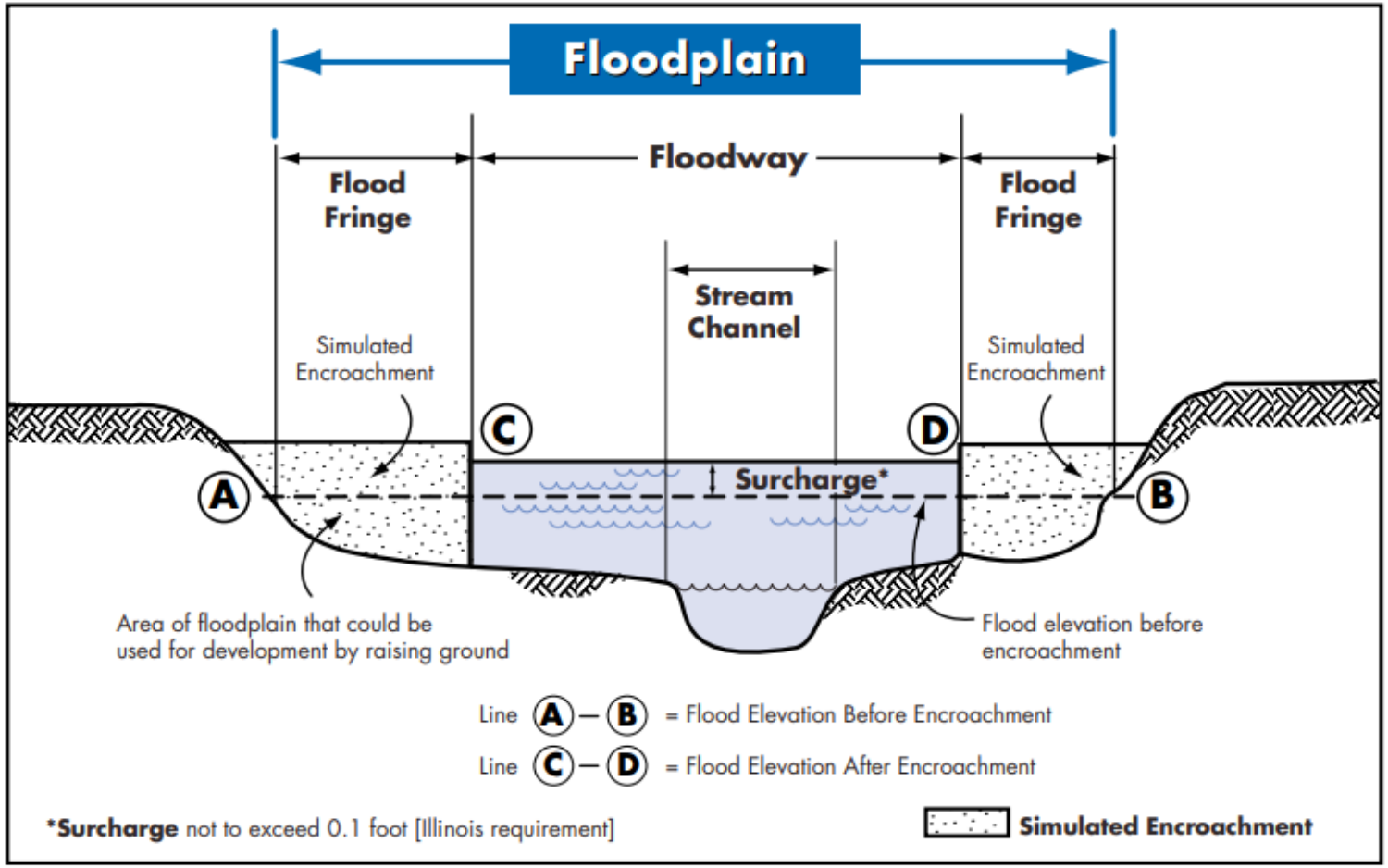
The **Floodway** is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.



Illinois Floodway Criteria

1. 0.1-foot maximum surcharge
2. 10% maximum reduction in storage volume
3. 10% maximum increase in flow velocity

Credit: https://www2.illinois.gov/dnr/WaterResources/Documents/Resman_ILFPMQuickGuide.pdf



Kishwaukee Watershed Studies

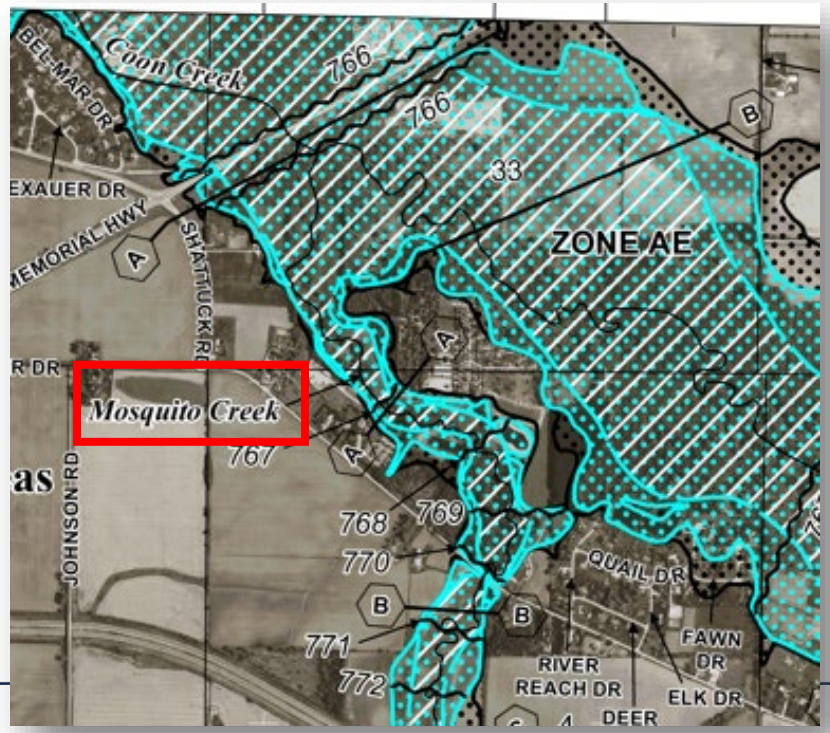
- Funding for new floodplain studies provided in phases
- The red and green lines are the Kishwaukee River mainstem in Winnebago and Boone Counties respectively. These were funded in 2020 and 2021 respectively
- The orange lines are tributaries to the Kishwaukee River in Boone, Ogle , and Winnebago Counties that were funded in 2023.

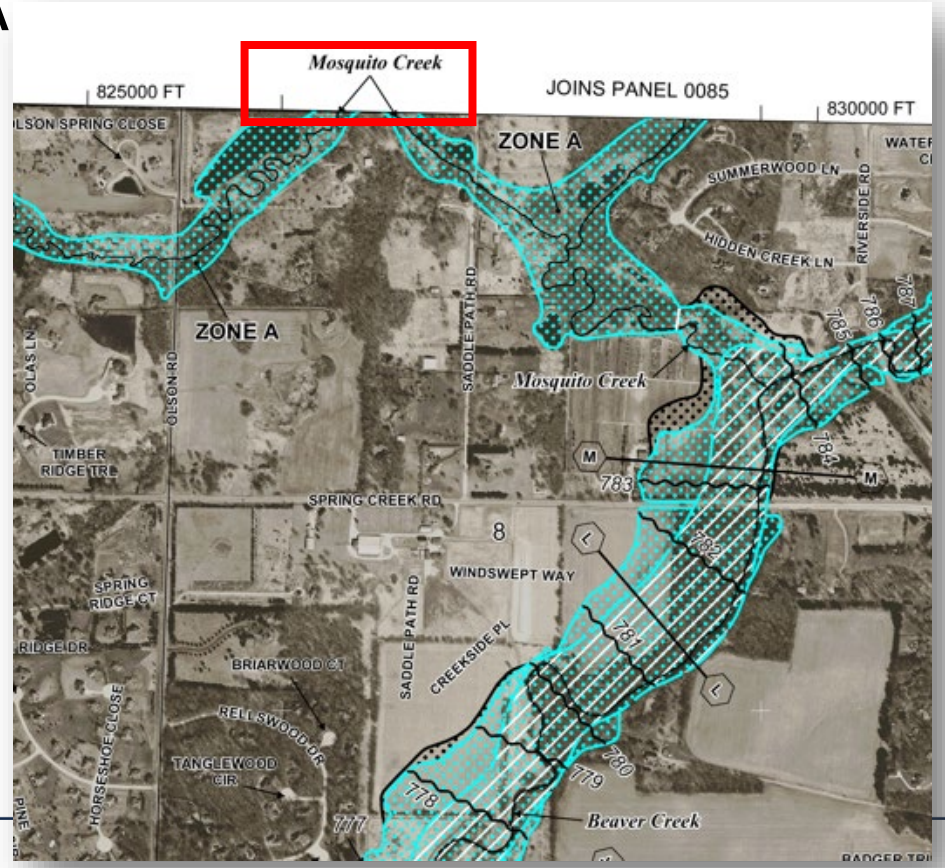
Meeting/Communication History

- Project Initiation Community Coordination Meeting – June 14, 2022 – Focus on Kishwaukee Mainstem in Boone and Winnebago Counties and detailed hydrology scope
- Proposed Engineering Methods Letter – July 28, 2022
- Project Initiation Community Coordination Meeting – September 4, 2024 – Focus on Kishwaukee Tributary streams in Boone, Ogle, and Winnebago Counties.
- Proposed Engineering Methods Letter – November 8, 2024

Stream Name Changes

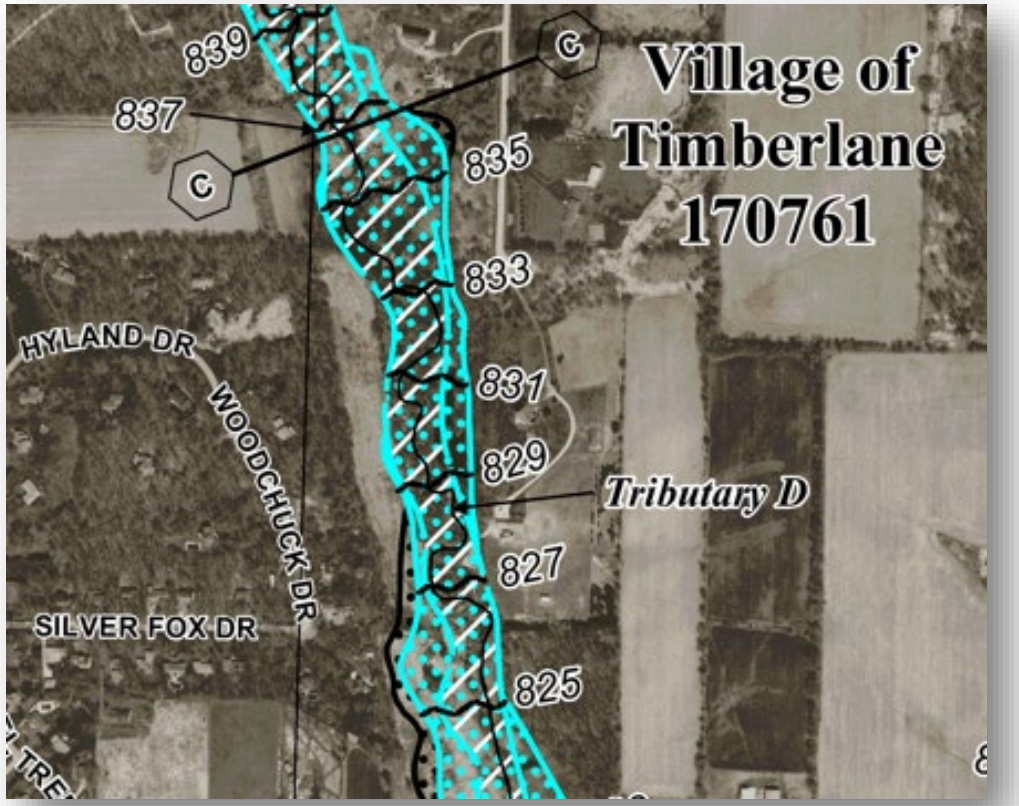
- **Multiple Effective FIRM Names**: Mosquito Creek
- **Proposed Names:** Mosquito Creek (Coon), Mosquito Creek (Beaver), Mosquito Creek (Beaver) Tributary A





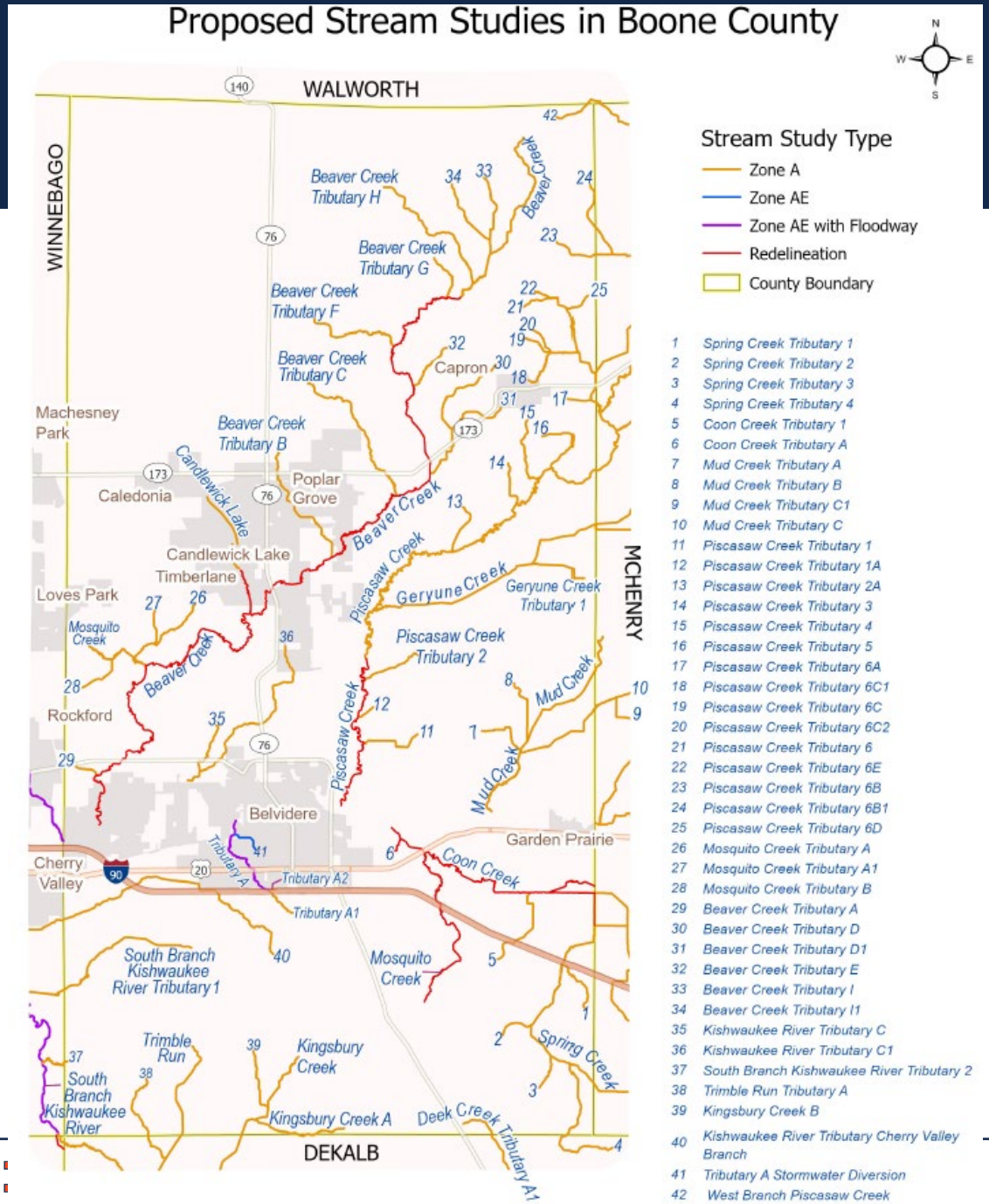
Stream Name Changes – Continued

- **Effective FIRM Name**: Tributary D
- **Proposed Name**: Candlewick Lake Drain



Boone County Studies

- **Zone A** – less detailed modeling relative to Zone AE
- **Zone AE** – includes detailed hydrology, field survey data, and includes bridges and culverts
- **Zone AE with Floodway** – include floodway analysis and mapping
- **Redelineation** – No new hydrology/hydraulic study; effective BFEs using to redelineation floodplain based on current topography



Ogle County Studies

- **Zone A** – less detailed modeling relative to Zone AE
- **Zone AE** – includes detailed hydrology, field survey data, and includes bridges and culverts
- **Redelineation** – No new hydrology/hydraulic study; effective BFEs using to redelineation floodplain based on current topography

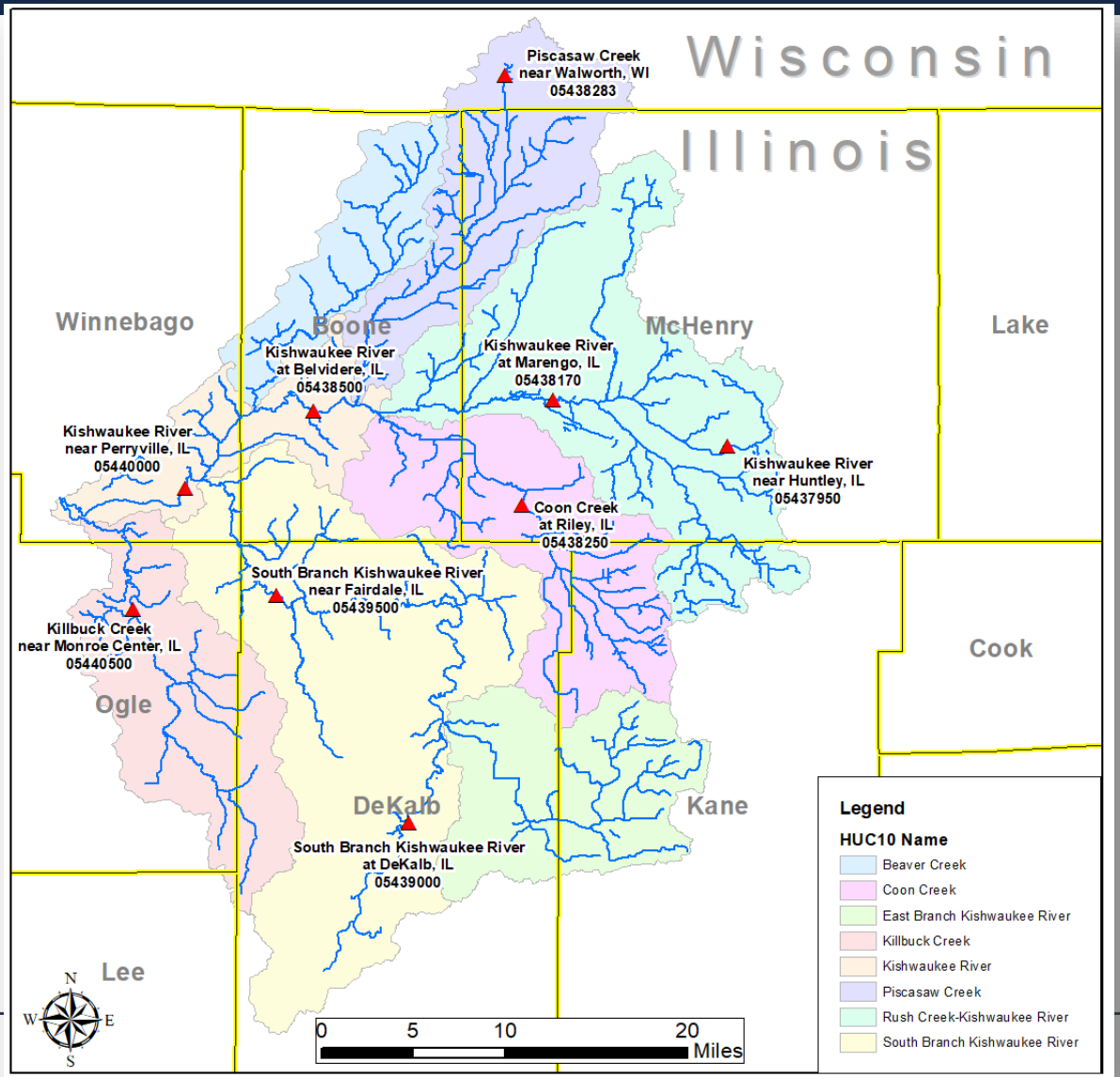
Winnebago County Studies

- **Zone A** – less detailed modeling relative to Zone AE
- **Zone AE** – includes detailed hydrology, field survey data, and includes bridges and culverts
- **Zone AE with Floodway** – include floodway analysis and mapping

Hydrologic and Hydraulic Study Methods

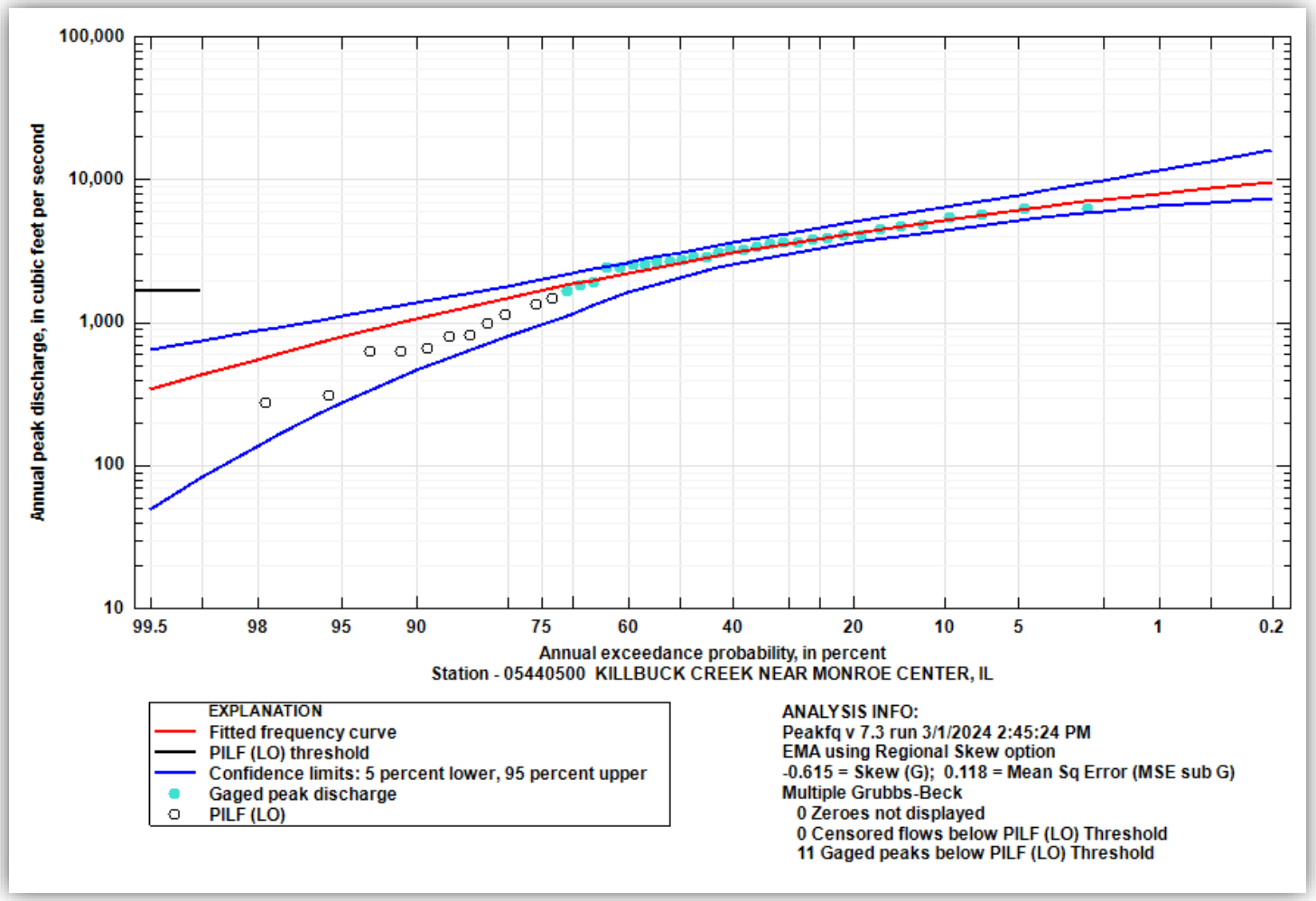
Hydrology Methods – Stream Gage Analysis

- USGS stream gages with sufficiently long periods of record of annual peak flows were analyzed according to Bulletin 17C.
- Gages records ranged from 14 to 84 years



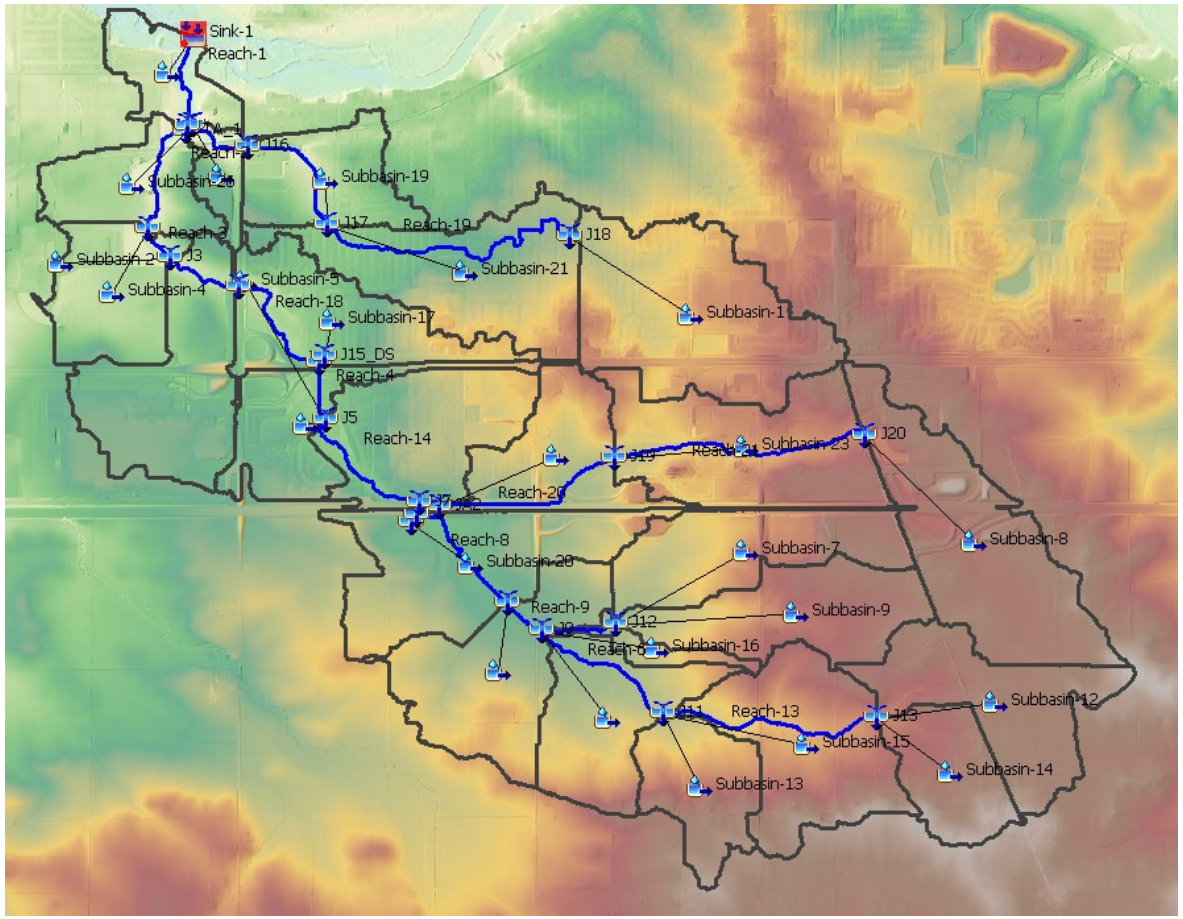
Hydrology Methods – Stream Gage Analysis

- Annual peak flows recorded at each gage were fitted to a statistical distribution to extract the flood flow frequencies.
- Peak flows determined for the 10-, 4-, 2-, 1-, 0.2-, and 1-percent plus flow frequencies



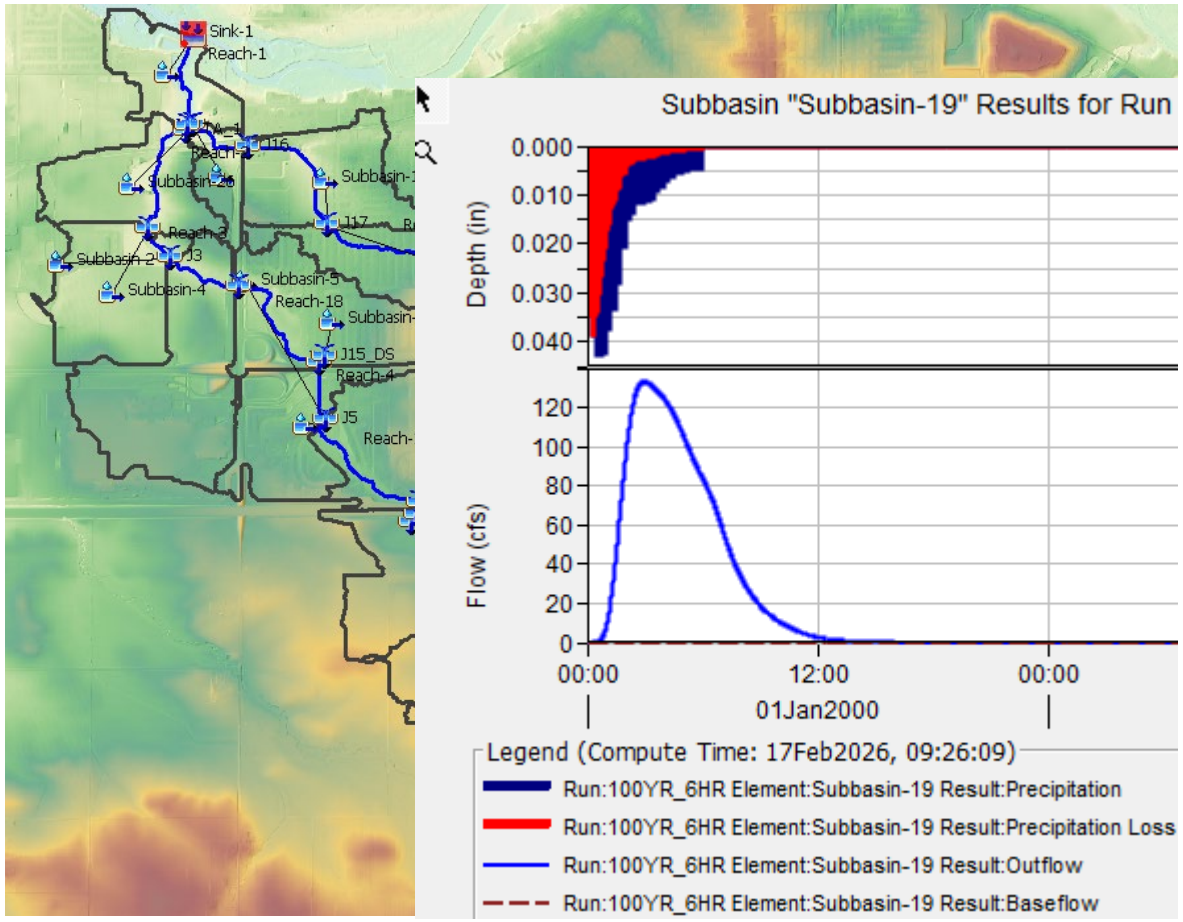
Hydrology Methods – Rainfall Runoff Modeling

- Modeling performed using U.S. Army Corps of Engineers software HEC-HMS
- Simulates design storms to compute runoff and flow hydrographs



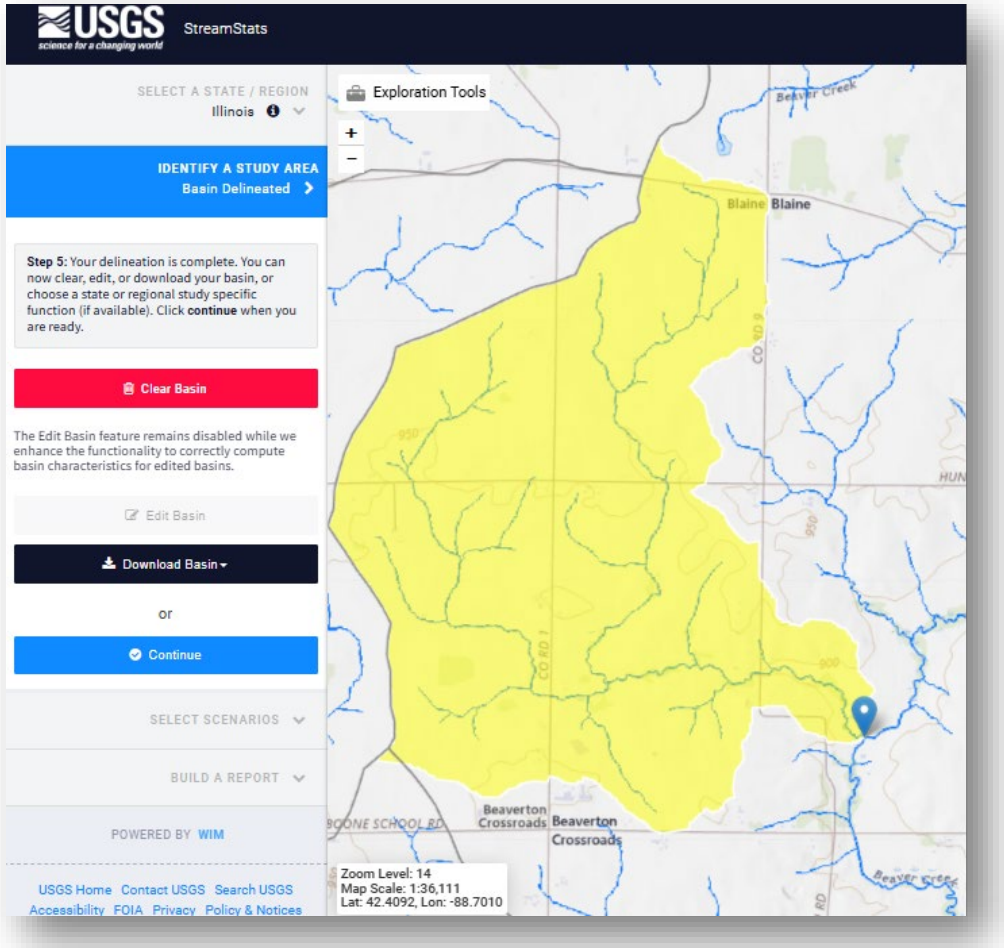
Hydrology Methods – Rainfall Runoff Modeling

- Peak flow rates determined at key locations within the watershed
- Peak flows determined for the 10-, 4-, 2-, 1-, 0.2-, and 1-percent plus flow frequencies



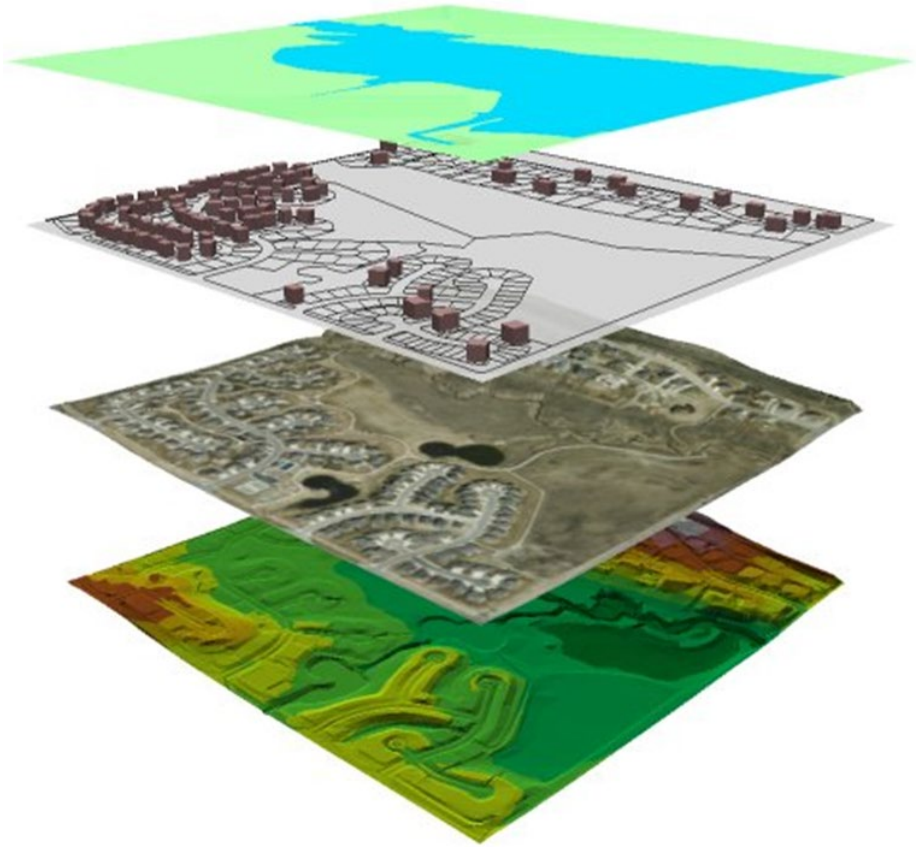
Hydrology Methods – Regional Regression

- Regional Regression (ICT-23-014) equations developed by USGS estimate peak flow rates for specific frequencies based on watershed basin characteristics
- Characteristics include:
  - Drainage area
  - Developed land fraction
  - Poorly drained soil fraction
  - Relative relief
- Used for Zone A studies only



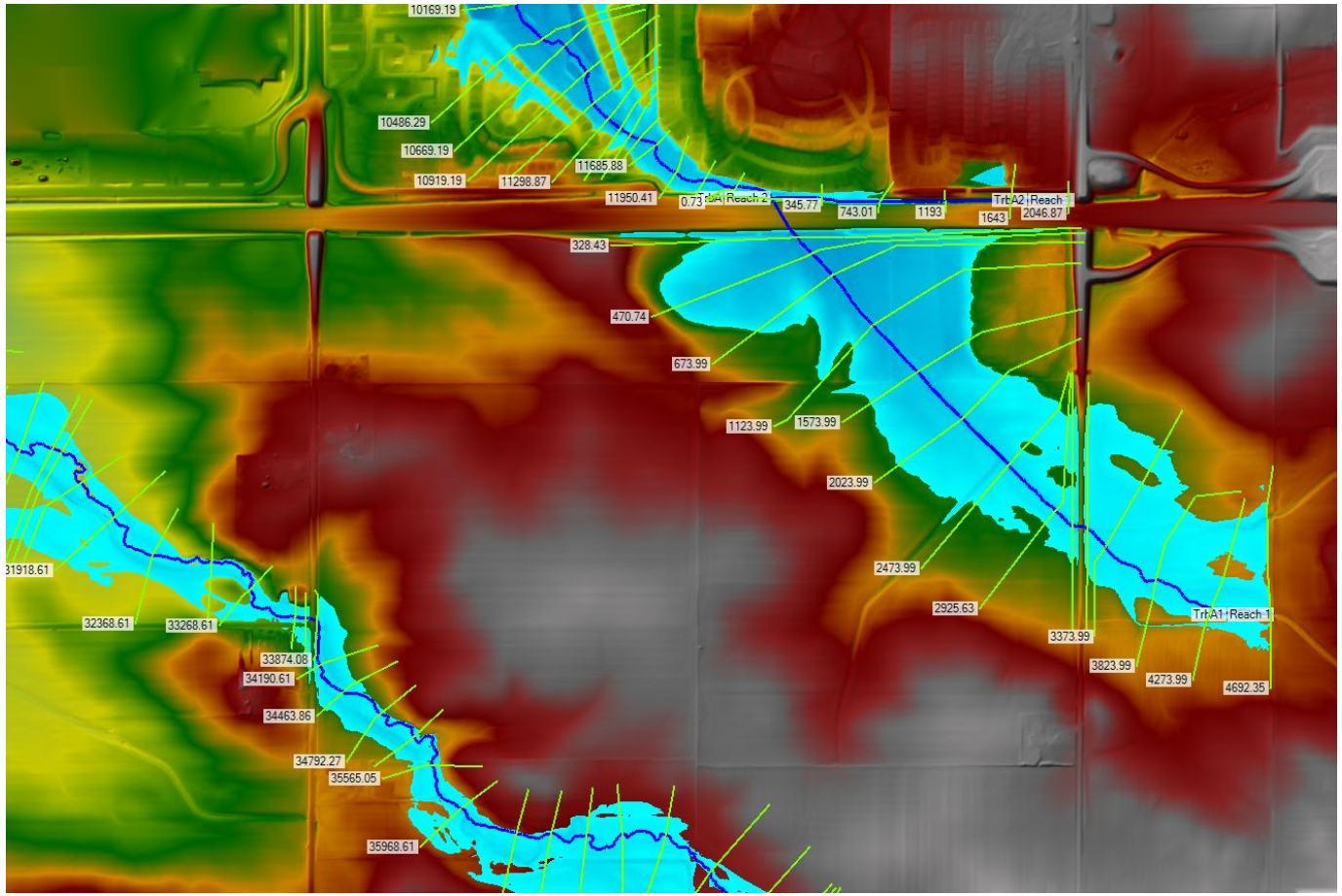
Hydrology Data Sources

- High resolution terrain data derived from LiDAR acquired between 2018 and 2020
- National Land Cover Database (2021)
- Soil Survey Geographic Database
- ISWS Bulletin 75 Precipitation
- USGS StreamStats



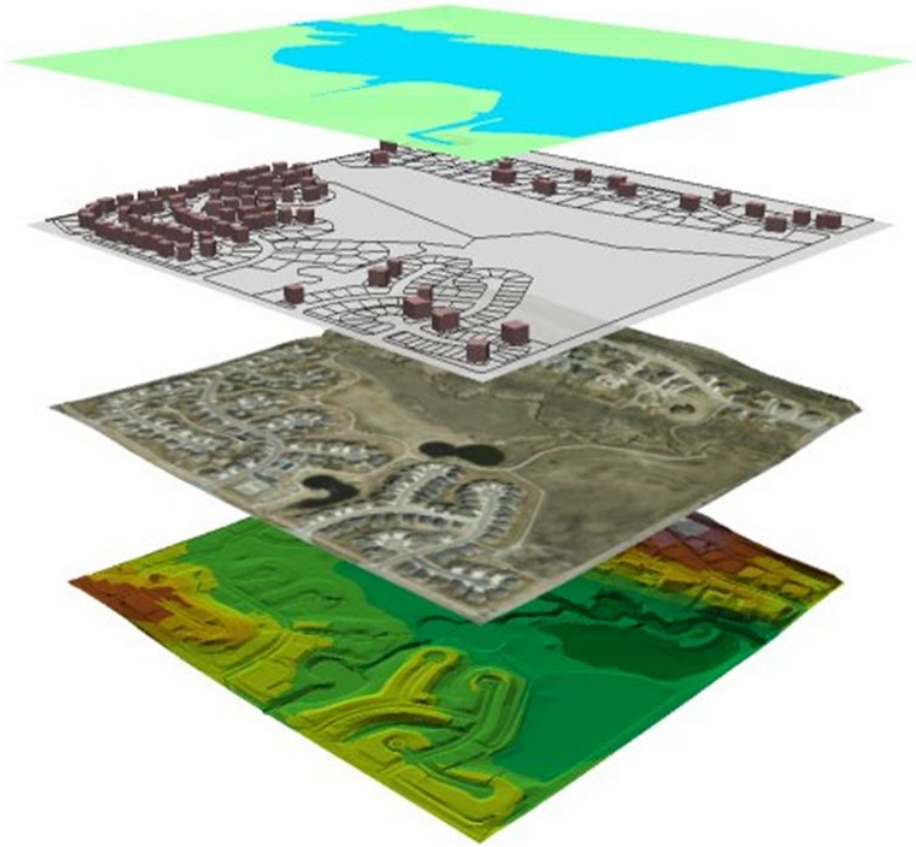
Hydraulic Methods – 1-Dimensional Hydraulic Modeling

- Modeling performed using U.S. Army Corps of Engineers software HEC-RAS
- Models use peak flow rates from hydrology analysis to compute water surface elevations
- Water surface elevations used to generate floodplain delineations
- Perform floodway encroachment analysis as needed.



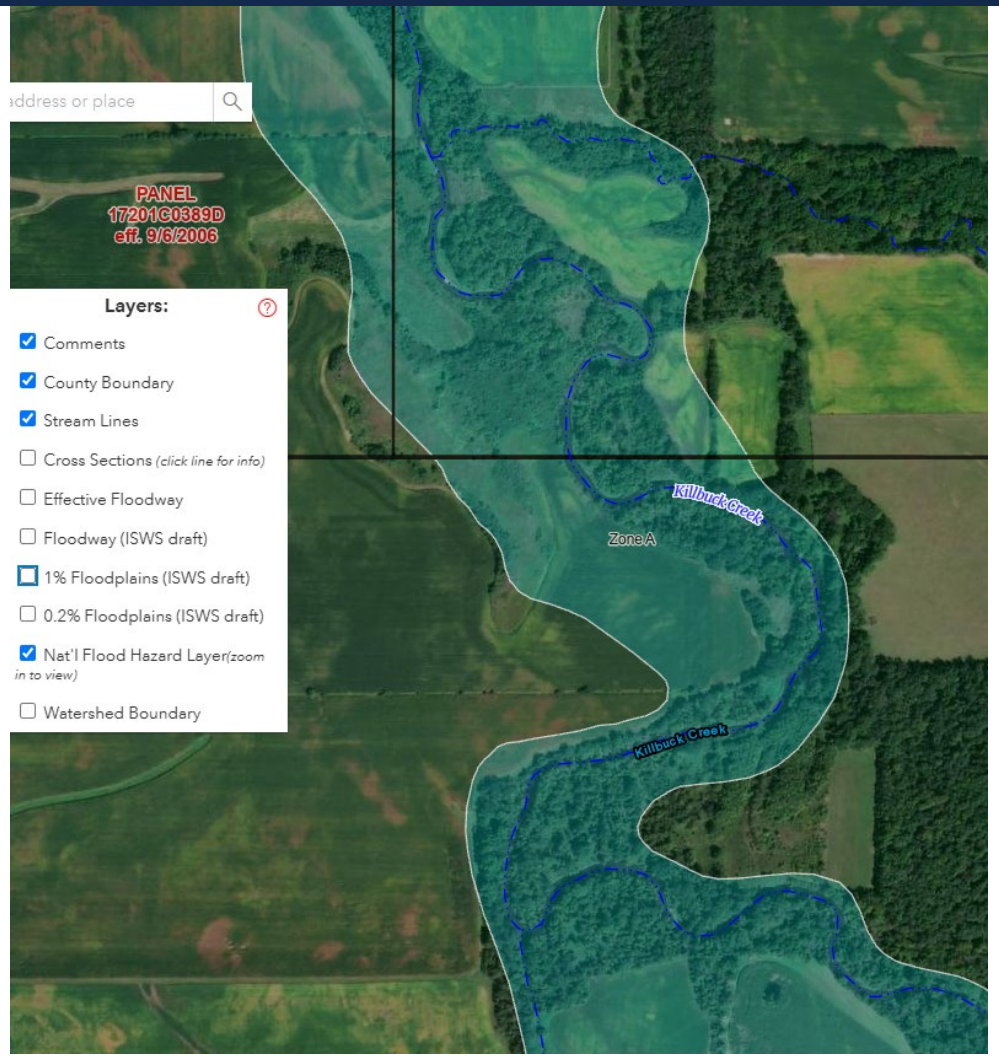
Hydraulic Data Sources

- High resolution terrain data derived from LiDAR acquired between 2018 and 2020
- National Land Cover Database (2021)
- Aerial Imagery
- Field survey data (Zone AE studies only)
- As-built bridge plan (Zone AE studies only)

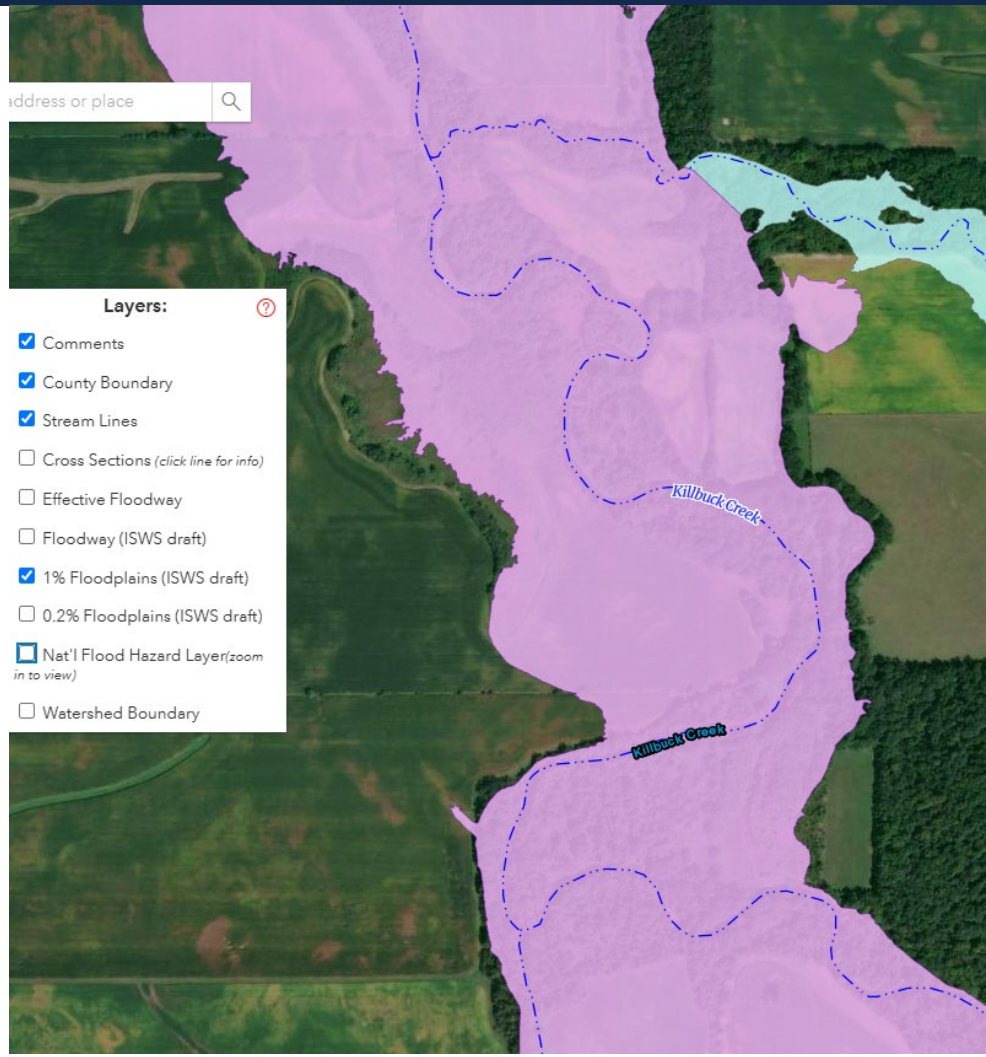


Draft Floodplain Results

Draft Floodplain Comparison

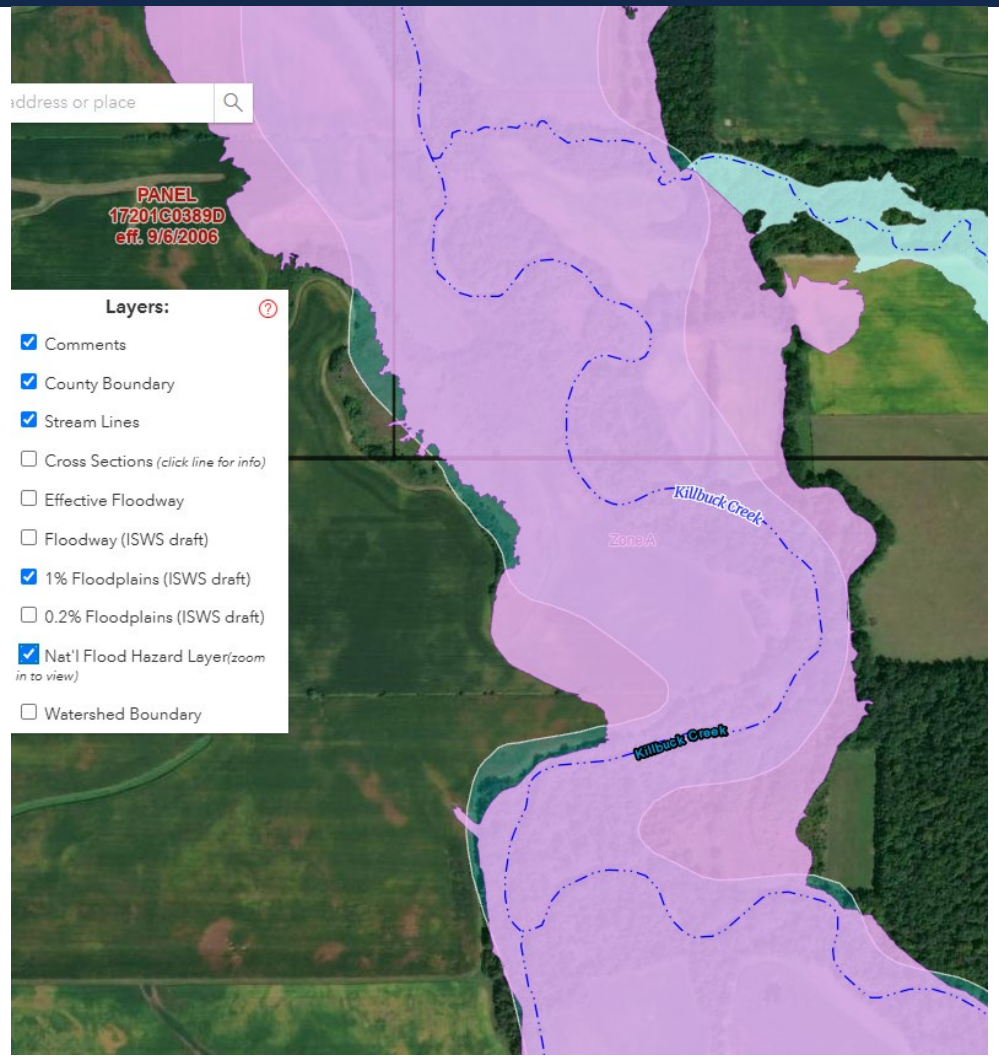


Toggle between NFHL and ISWS draft 1% Floodplains



Draft Floodplain Comparison (2)

- Compare NFHL and ISWS 1% Draft floodplain simultaneously

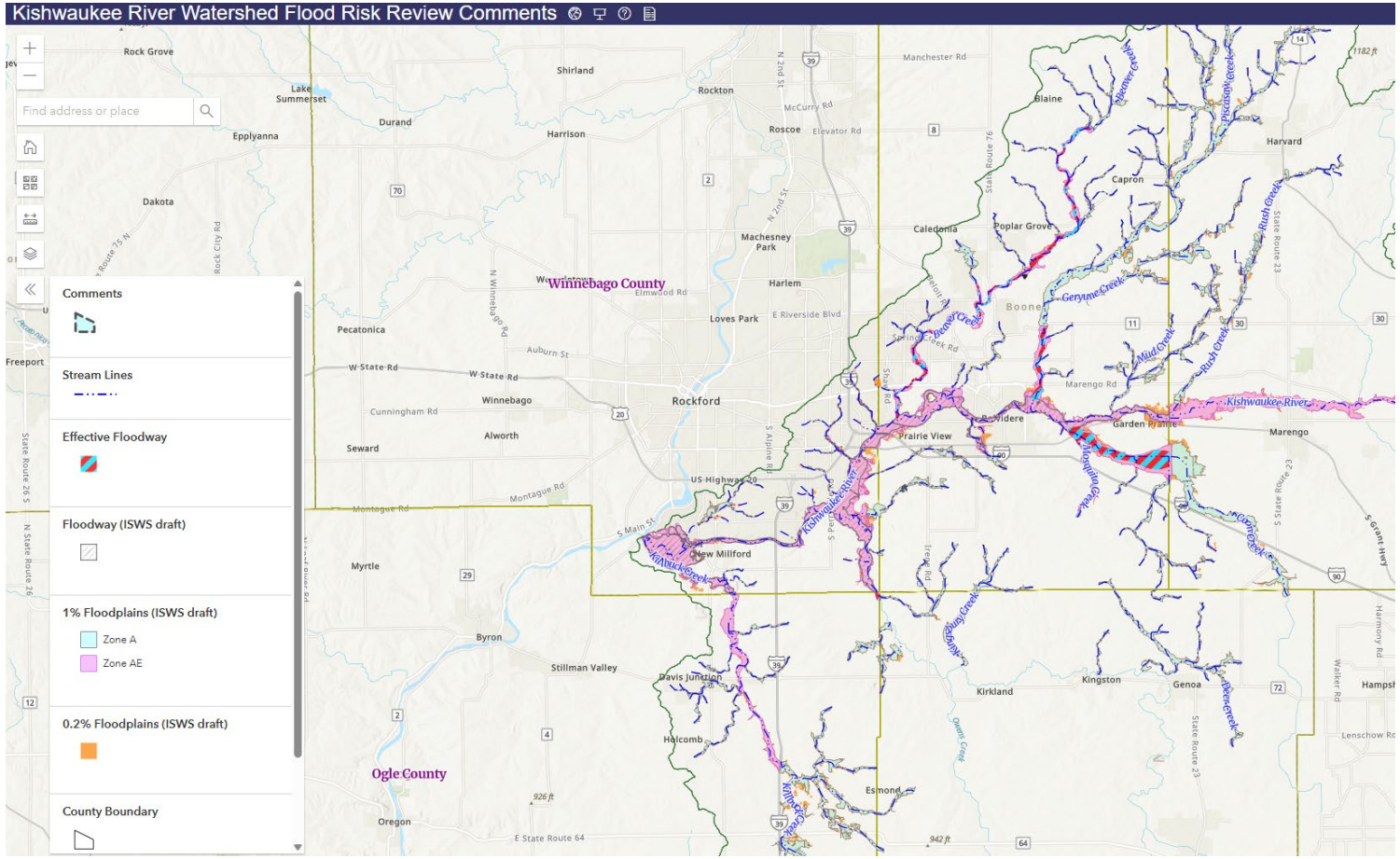


Areas to Review

- Recommend reviewing developed areas
- Review areas where new development has taken place adjacent to new study areas
- Tributary A in Belvidere
- Kishwaukee River in Cherry Valley
- Kishwaukee River Airport Tributaries in Rockford

Webmap

Webmap



https://go.isws.illinois.edu/KishwaukeeWatershed
username: watershed
password: illinoisfloods!123

Communication & Next Steps

Communication Plan

Project Initiation Community Coordination meeting – Mainstem – June 14, 2022

Proposed Engineering Methods Notification (FEMA SID 620) letters- July 28, 2022

Project Initiation Community Coordination meeting – Tributaries – September 4, 2024

Proposed Engineering Methods Notification (FEMA SID 620) letters- November 8, 2024

Flood Risk Review Meeting (today)

30-Day Comment Period starts today and ends August 17, 2026

Data Submission Notification (FEMA SID621) Letter

Data Submission Notification Letter FEMA SID 621

Mailed to community CEO's

Informs the communities that the data collection and analysis (Data Development) phase of the project is concluding, and the FIRM database is being validated by FEMA

Gives communities 30 days to comment on the data in the FIRM database

Schedule

~~Project Initiation Community Coordination meeting – 6/14/2022 & 9/4/2024~~

Flood Risk Review Meeting (today); Comment period ending 8/17/2026

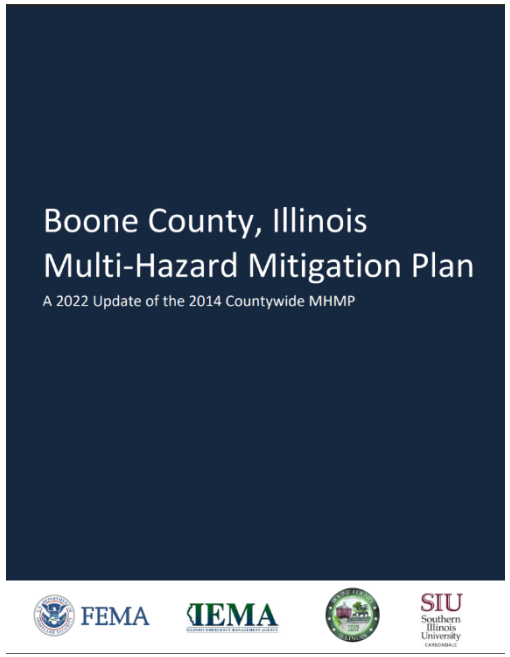
Submit Flood Studies to IDNR

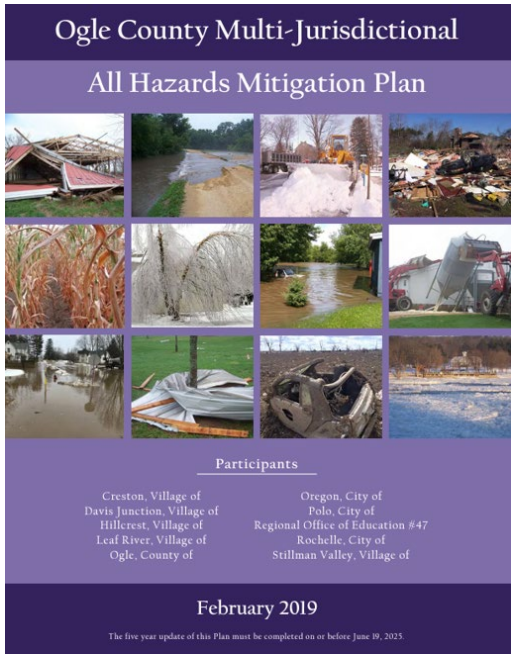
Complete draft FIRM database to conclude data development phase of project

Digital Flood Insurance Rate Map Project to follow pending conclusion of data development

Hazard Mitigation & NFIP

Hazard Mitigation Plans





Boone County	Ogle County	Winnebago County
2022-2027	2020-2025	2025-2030

National Flood Insurance Program (NFIP)

The NFIP is a voluntary program based on a mutual agreement between the Federal government and a community.

In exchange for adopting and enforcing a floodplain management ordinance, Federally-backed flood insurance is made available to property owners throughout the community.

Erin Conley, NFIP State Coordinator erin.c.conley@Illinois.gov

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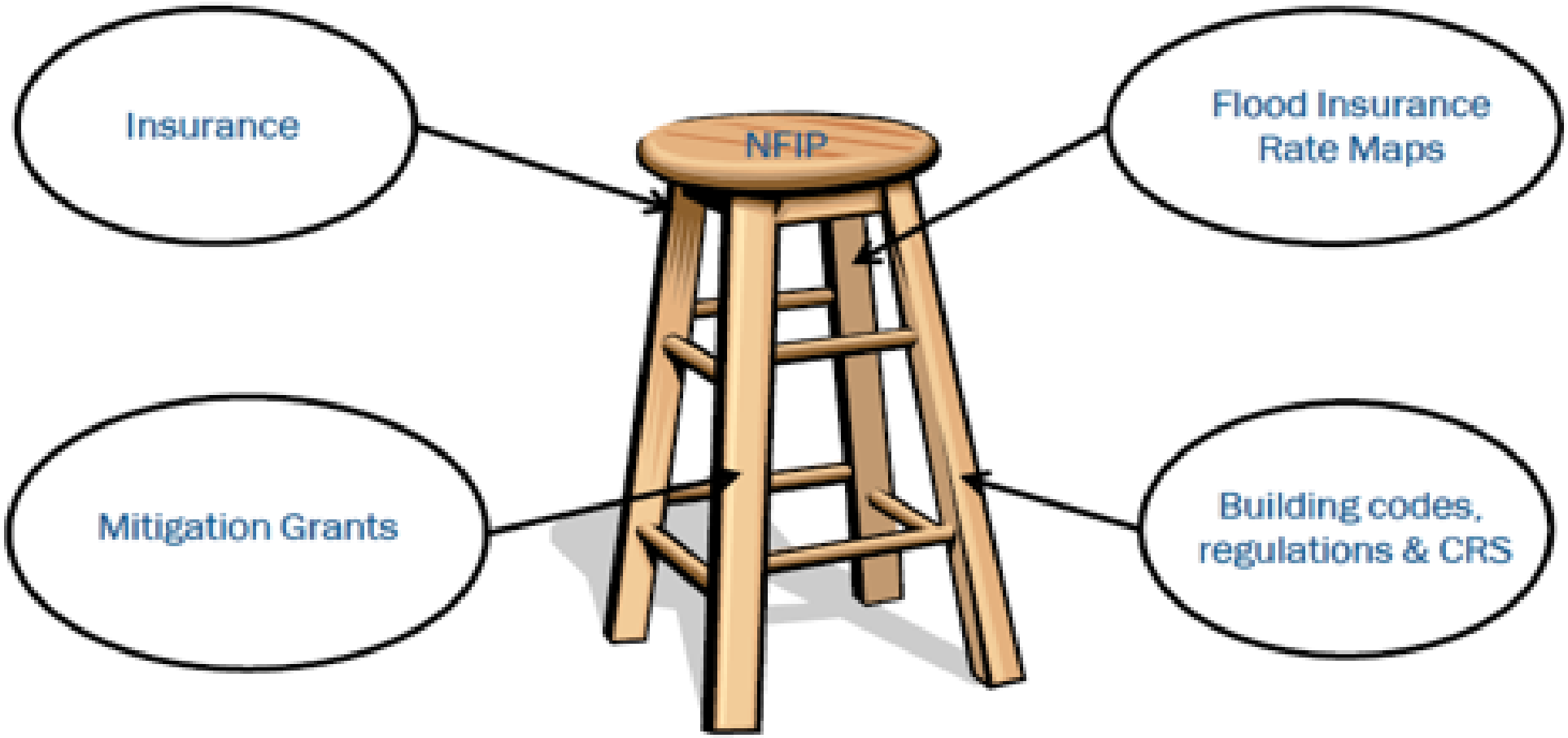
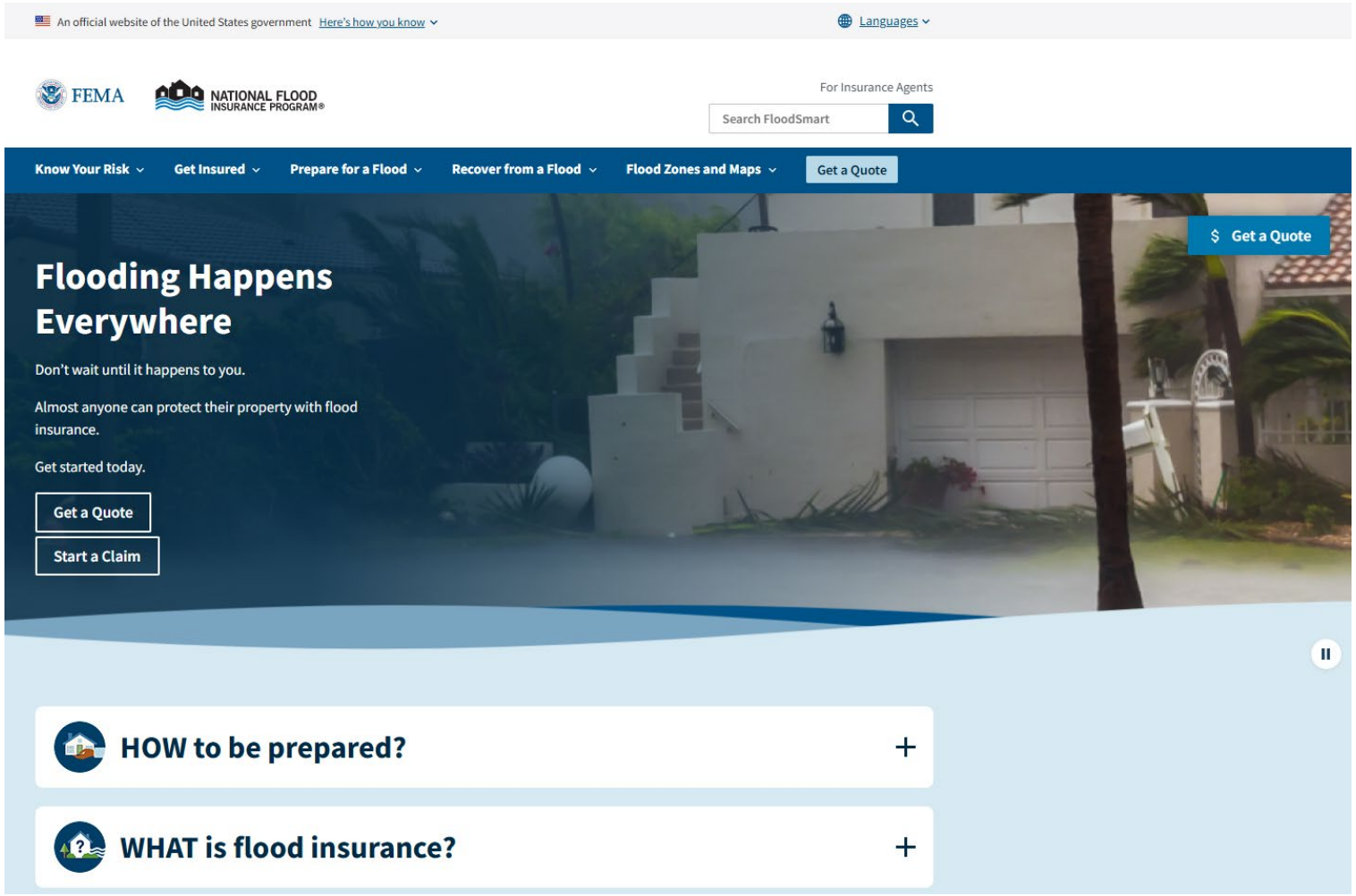
Michelle Staff, NE FP Coordinator michelle.staff@illinois.gov

National Flood Insurance Program (NFIP)



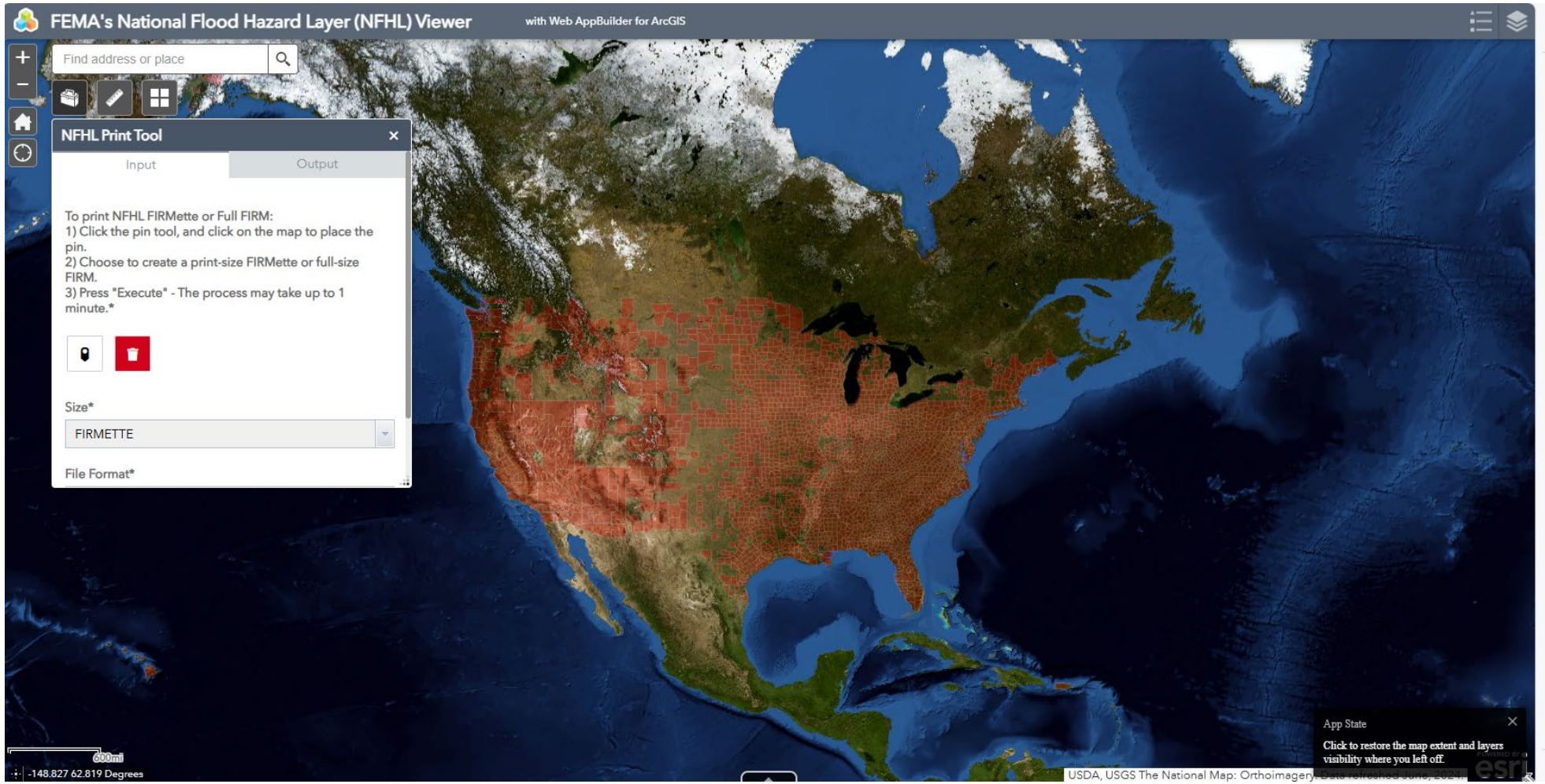
National Flood Insurance Program (NFIP)

HTTP://WWW.FLOODSMART.GOV



National Flood Insurance Program (NFIP)

HTTP://MSC.FEMA.GOV



National Flood Insurance Program (NFIP)

IDNR-OWR Floodplain Management Program

- **State Coordination**: Acting as the liaison between FEMA and local communities.
- **Technical Support:** Providing expertise on flood hazard mapping, engineering, and building codes to local officials.
- **Regulatory Oversight:** Ensuring communities adopt and enforce necessary floodplain management regulations, such as elevating structures and restricting development in floodways.
- **Training & Education:** Educating local officials and the public on flood risks, insurance requirements, and proper construction techniques.
- **Policy Implementation:** Assisting in the adoption of higher, more resilient standards than the minimum NFIP requirements.

Community Participation

Community Impact

Ways a new Flood Insurance Rate Map (FIRM) can impact a community:

- Can affect which residents are required to carry flood insurance
- Depicts areas of communities which are subject to floodplain management regulations
- Can affect community planning and flood mitigation

Community Participation

- Now is the time to review the draft floodplain mapping for your community
- Who is affected?
- Is the mapping reasonable and/or consistent with your community's experience with flooding?
- Make comments if something does not look right or make sense.
- Provide data or information if it could support a change in the draft mapping
- Ask questions.

Post-Meeting Survey

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Questions?

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