

# Turtle Creek

## Winnebago County, Illinois & Rock County, Wisconsin

FEMA Risk MAP

Project Initiation Community Coordination Call

March 22, 2021

**I ILLINOIS**  
Illinois State Water Survey  
PRAIRIE RESEARCH INSTITUTE



**FEMA**



# Regulatory Agency Introductions

## **FEMA** (Federal Emergency Management Agency)

- Ken Hinterlong, P.E.  
FEMA R5 Senior Engineer
- John Wethington, P.E.  
FEMA R5 Engineer

## **WDNR** (Wisconsin Department of Natural Resources)

- Chris Olds, P.E., CFM  
Water Regulation/Zoning Engineer  
Statewide Floodplain Engineering and Mapping

## **IDNR (Illinois** Department of Natural Resources)

- Steve Altman, P.E., CFM  
Division of Water Resources Management, Division Manager  
OWR Permitting, NFIP and Flood Mitigation Buyouts
- Liana Winsauer P.E., CFM  
IDNR-OWR Floodplain Studies Engineer



# Turtle Creek Floodplain Mapping Project Initiation Meeting

## Agenda

- Rollcall
- Project Objectives and Goals
- Project Scope
- Communication
- Schedule
- Community Participation



# Rollcall

- City of South Beloit, IL
- Winnebago County, IL
- City of Beloit, WI
- Rock County, WI
- Beloit College
- IDNR/OWR
- WDNR
- FEMA
- IEMA
- Anyone else?

# Introduction

- The Illinois State Water Survey (**ISWS**) is a division of the Prairie Research Institute (**PRI**) at the University of Illinois.
- The Coordinated Hazard Assessment and Mapping Program (**CHAMP**) is a section within ISWS.



The staff of the Coordinated Hazard Assessment and Mapping Program which includes 18 Certified Floodplain Managers (CFM), seven Professional Engineers (PE), and seven Geographic Information Systems Professionals (GISP)

<https://www.isws.illinois.edu/champ>



# Introduction

- ISWS, Illinois Department of Natural Resources (**IDNR**) & Wisconsin Department of Natural Resources (**WDNR**) are Cooperating Technical Partners (**CTP**) with the Federal Emergency Management Agency (**FEMA**). CHAMP staff perform floodplain studies, mapping, mitigation planning, and related activities for Illinois communities through this partnership.
- ISWS also partners with the Illinois Department of Natural Resources-Office of Water Resources (**IDNR-OWR**) to help prioritize Illinois floodplain studies and mapping projects.
- Risk Mapping, Assessment, and Planning (**Risk MAP**) is the FEMA process used to implement National Flood Insurance Program (**NFIP**) floodplain studies and mapping projects.

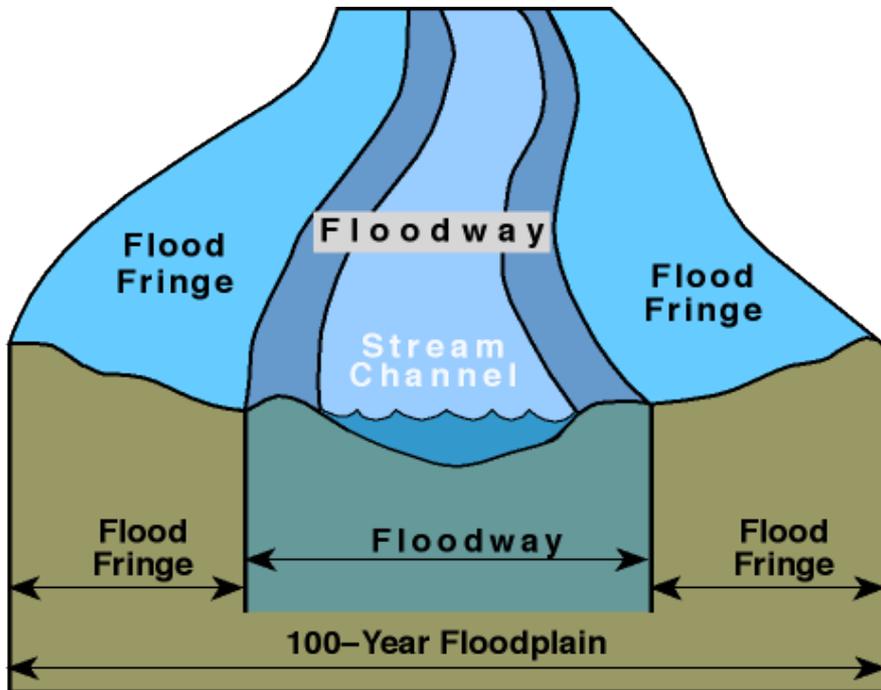


# Special Flood Hazard Area

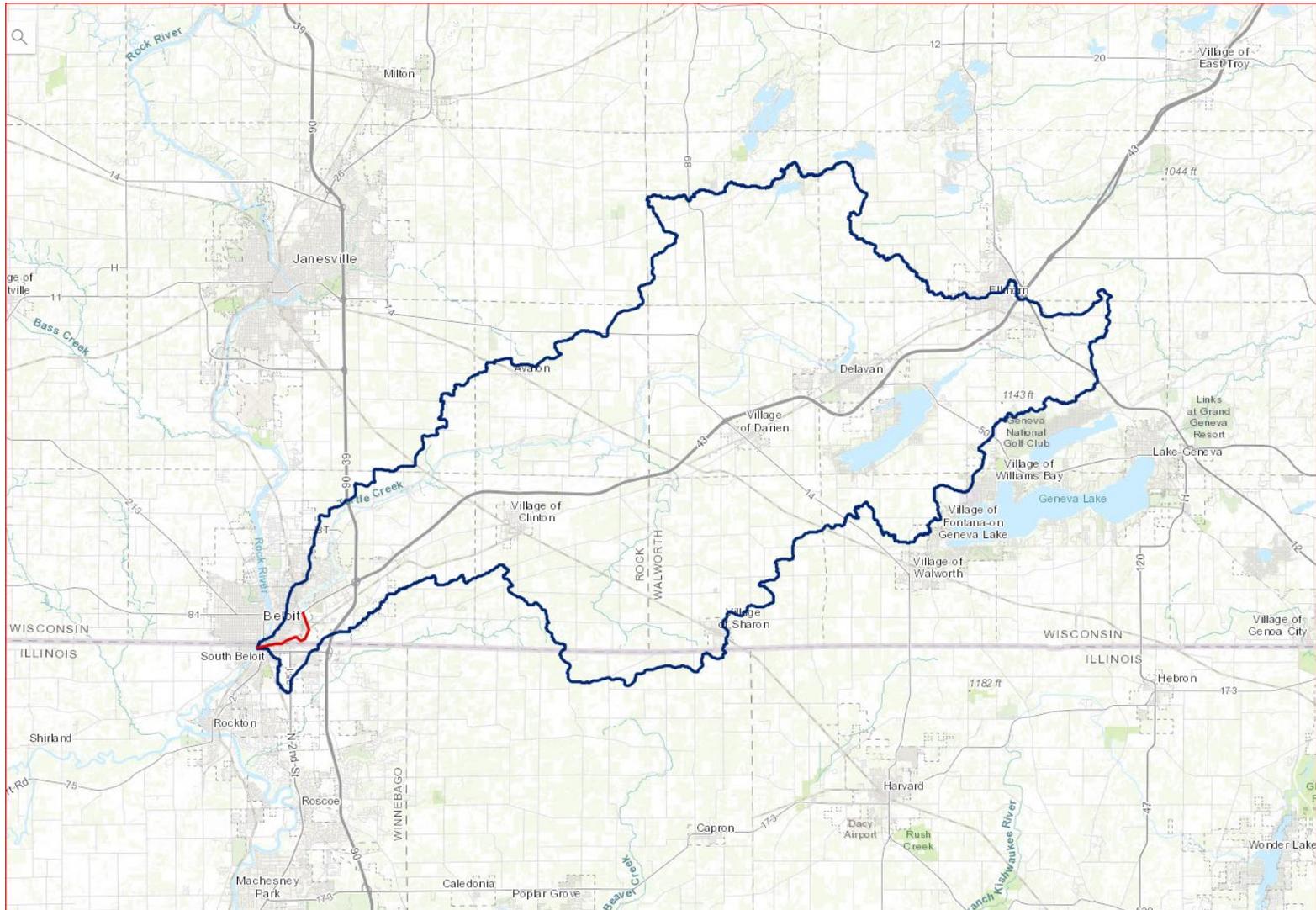
- Special Flood Hazard Area (**SFHA**) zone type designation is related to the method and level of hydraulic analysis performed. Riverine hydraulic analysis typically results in SFHA designated as **Zone A** or **Zone AE** based on the analysis level deemed appropriate for the study area.
- The Base Flood Elevation (**BFE**) is the elevation of surface water resulting from a flood that has a 1% chance of equaling or exceeding that level in any given year. The BFE is shown on the Flood Insurance Rate Map (FIRM) for zones AE, AH, A1–A30, AR, AR/A, AR/AE, AR/A1–A30, AR/AH, AR/AO, V1–V30 and VE.
- The difference on a map in a Zone A and AE:  
**Zone AE's** have been studied in much more detail, as they are generally located in areas of population and **show BFE's**  
**Zone A do not.**

# Floodway Zone AE

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.



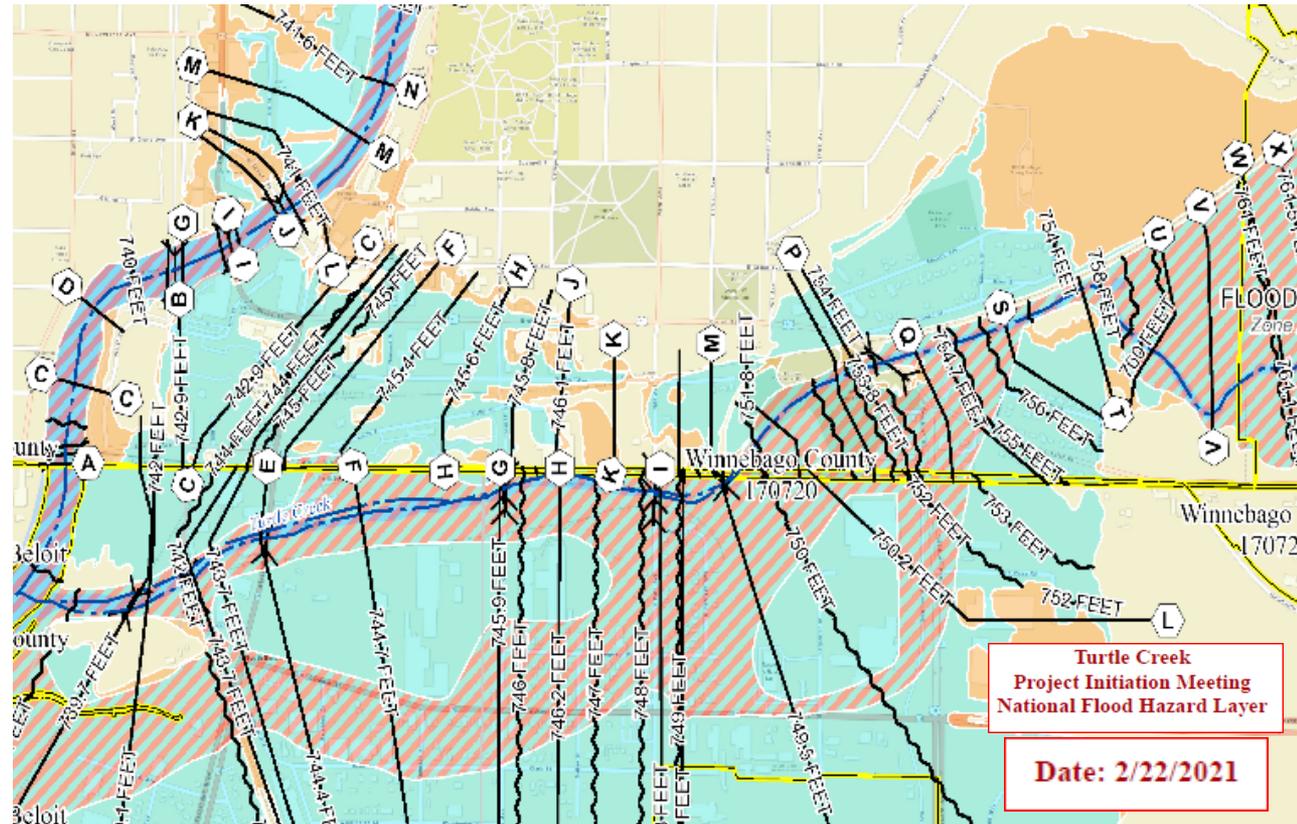
# Floodplain Studies Overview- Proposed Study





# Project Re-engagement – cont'd

6. Requesting community input through the methodology notification letter and later, from the Draft Risk Map products presented at a FRR Meeting
7. FEMA has a published procedure for mapping non-levee embankments, including railroad embankments
8. Do you have any questions?







# Project Objectives

# FEMA National Objectives





# Turtle Creek Project Objectives

## Develop Coordinated Floodplain Study Between Illinois and Wisconsin

- Approximately 1 mile in Illinois and 2 miles in Wisconsin of revised Zone AE (with floodway) streams will be re-studied using detailed methods
- Draft model and workmap.

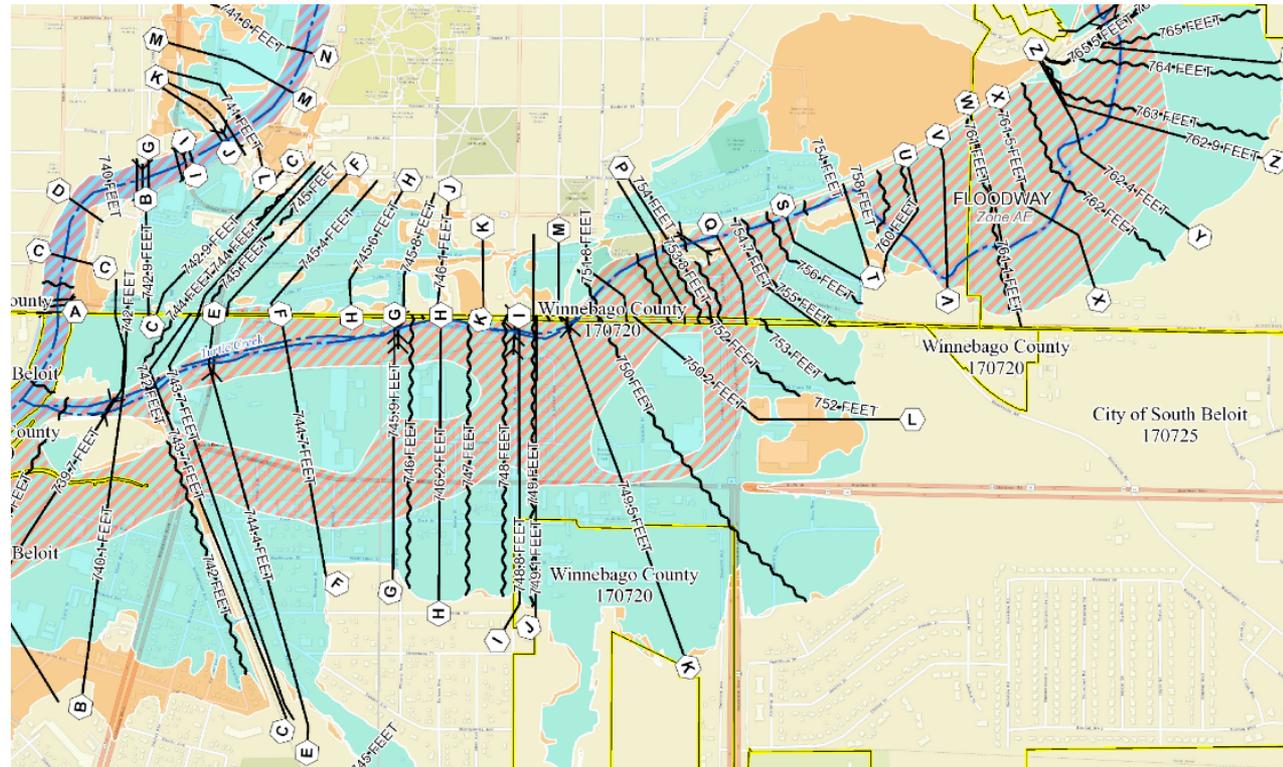
In the next phase, the resulting floodplain delineations will be incorporated into a countywide digital Flood Insurance Rate Map (FIRM).



# Project Scope Data Development Phase

# Project Scope

1. Develop Coordinated Floodplain Study
  - a) 1 mile in Illinois; and
  - b) 2 miles in Wisconsin.
2. Develop Draft Floodplain Mapping
3. Community Outreach and Engagement
4. Preliminary Flood Insurance Rate Maps
  - This project data will be incorporated thru future funding.

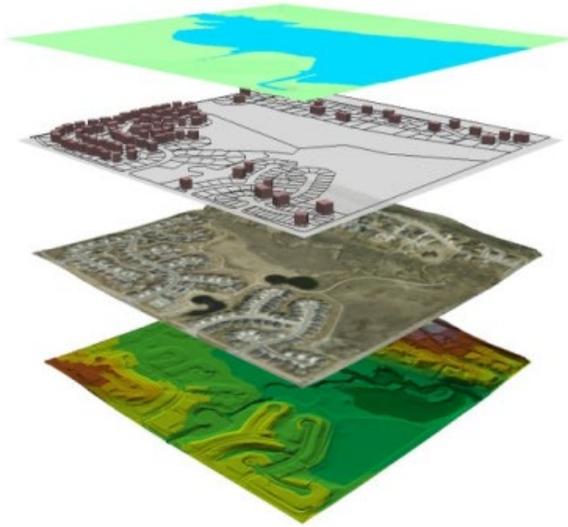




# Digital Maps



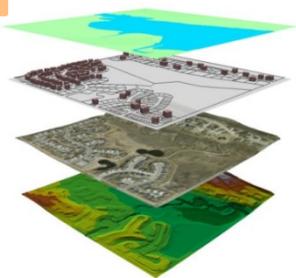
# Digital Maps



- 1. Floodplain delineation**
- 2. Roads**
- 3. Orthophotos (aerials)**
- 4. Topography**

## Advantages

- Cartographically accurate
- Easier and faster to update
- Can be used with local digital data (parcel layer, zoning layer)
- Serve as a tool for floodplain management



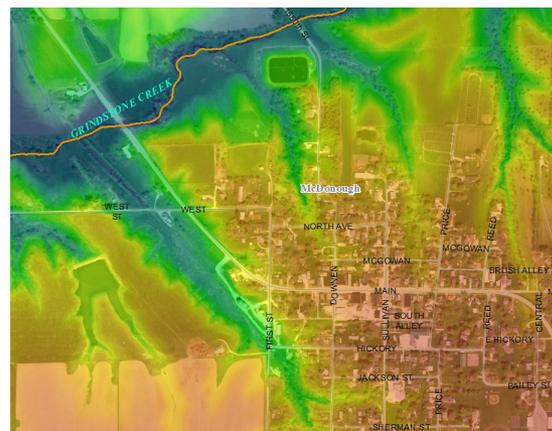
# Proposed Data Sources For Mapping

**Orthophoto:**  
2014 IDOT imagery



**Proposed Topographic Sources:**

2018 Winnebago Co. LiDAR  
& 2020 Rock County LiDAR





# Project Communication Data Development Phase



# Communication Plan

- Project Initiation Community Coordination Call (today)
- Proposed Engineering Methods Notification Letter (SID 620)
  - 30-Day Comment Period
- Flood Risk Review Meeting
  - 30-Day Comment Period
- Draft Data Submission Notification Letter (SID 621)
  - 30-Day Comment Period

Please reach out to Mary Richardson at [mjr@Illinois.edu](mailto:mjr@Illinois.edu)



# Proposed Engineering Methods Letter FEMA Standard ID 620

- Mailed to community CEOs, Floodplain Administrator, Community Engineer
- Details the streams to be studied in community and proposed engineering methods used to study each stream
- Informs community about 30-day period to provide comments on the proposed engineering methods for the study stream



# Proposed Engineering Methods

Hydrology – Determine 1%-Annual-Chance (100-Year) stream **flows**

- USGS Regression Equations
- HEC-HMS Rainfall Runoff Modeling

Hydraulics – Determines 1%-Annual-Chance (100-Year) flood **elevations**

- Zone AE: HEC-RAS Hydraulic Models
- Zone A: HEC-RAS Hydraulic Models



# Flood Risk Review Meeting

- A technical meeting to review *draft* workmaps with community officials, engineers, and floodplain managers. Public meetings will be held later in the project.
- The meeting initiates a 30-day comment period for communities to provide feedback on the *draft* floodplain mapping.



# Data Submission Notification

## FEMA Standard ID 621

- Mailed to community CEOs, Floodplain Administrator, Community Engineer
- Makes community aware the data collection and analysis phase of the project is concluding, and Flood Insurance Rate Map (FIRM) database is being validated by FEMA
- Gives communities 30 days to comment on the data in the FIRM database



# Project Schedule

## Data Development Phase



# Estimated Schedule

- Engineering Notification Letters to communities likely by
  - **May/2021**
- Field survey
  - **Not anticipated**
- ISWS to finish Zone AE floodplain studies by
  - **Fall 2021**
- Flood Risk Review Meeting likely
  - **Spring 2022**
- Submit Flood Studies to IDNR & WDNR for State concurrence
  - **Fall 2022**
- End of Data Development Phase
  - **2024 or sooner**

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



# Data Development Phase



# Project Modeling & Mapping

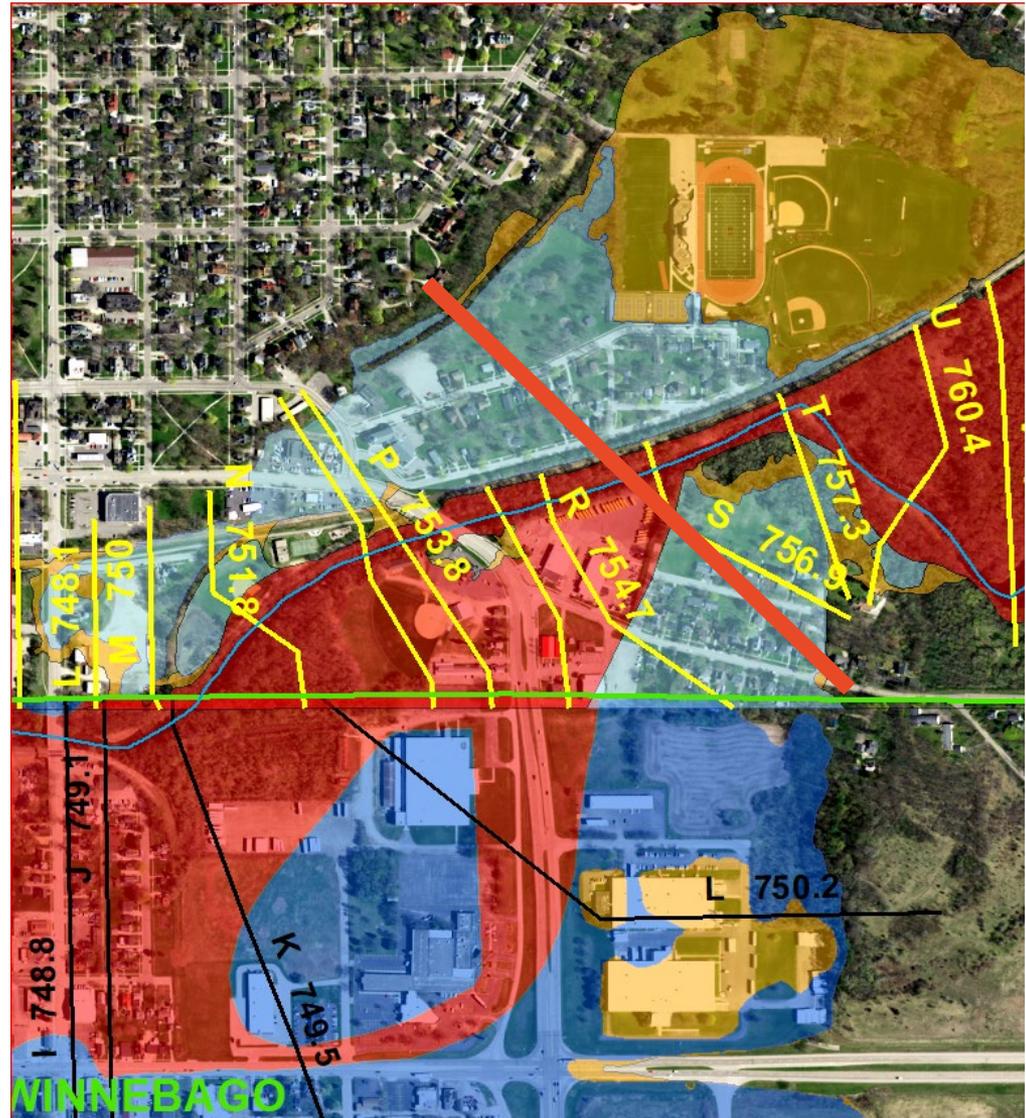
## New Model

1. ISWS funded by FEMA to combine models and develop one cohesive analysis. The idea being to have consistent BFEs and a coordinated floodway across state line.
  - a) 2012 WDNR model
  - b) FG model (1-mile Illinois reach)
  - c) Use 2012 Wisconsin rainfall-runoff model for peak discharges

# Modeling & Mapping Issues:

**Objective #1: Consistent Base Flood Elevations (BFEs) across the State line.**

1. Issue: Railroad embankment
2. Proposed Modeling & Mapping:  
**“Constricted”** &  
**“without embankment”** will result in different Base Flood Elevations on each side of the railroad.









# ILLINOIS

## Illinois State Water Survey

### PRAIRIE RESEARCH INSTITUTE

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