

# Stevens Creek Watershed Floodplain Analyses in Macon County, Illinois

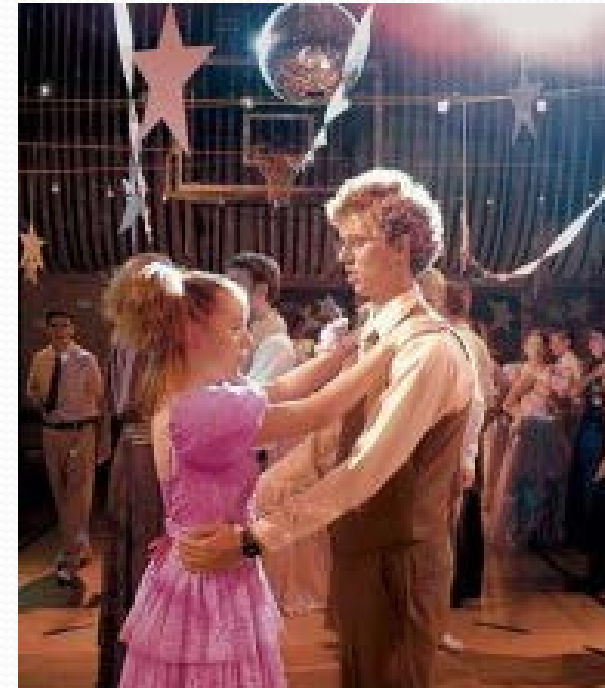
FEMA funded project by  
Illinois State Water Survey  
In Cooperation with Illinois  
Department of Natural Resources

# Meeting Goals

Community input throughout the process is essential to flood risk management. You are getting the first possible look at the analysis and DRAFT results so that you can provide your feedback early on.

- Provide an overview of the Hydrologic and Hydraulic Analysis
- Present the DRAFT Results
- Answer questions about the analysis
- Collect your concerns /feedback/technical data

Welcome to the First Dance!



It's not the Last Dance!

# Meeting Goals

Provide information on RiskMAP products as well as additional resources that are useful during map update.

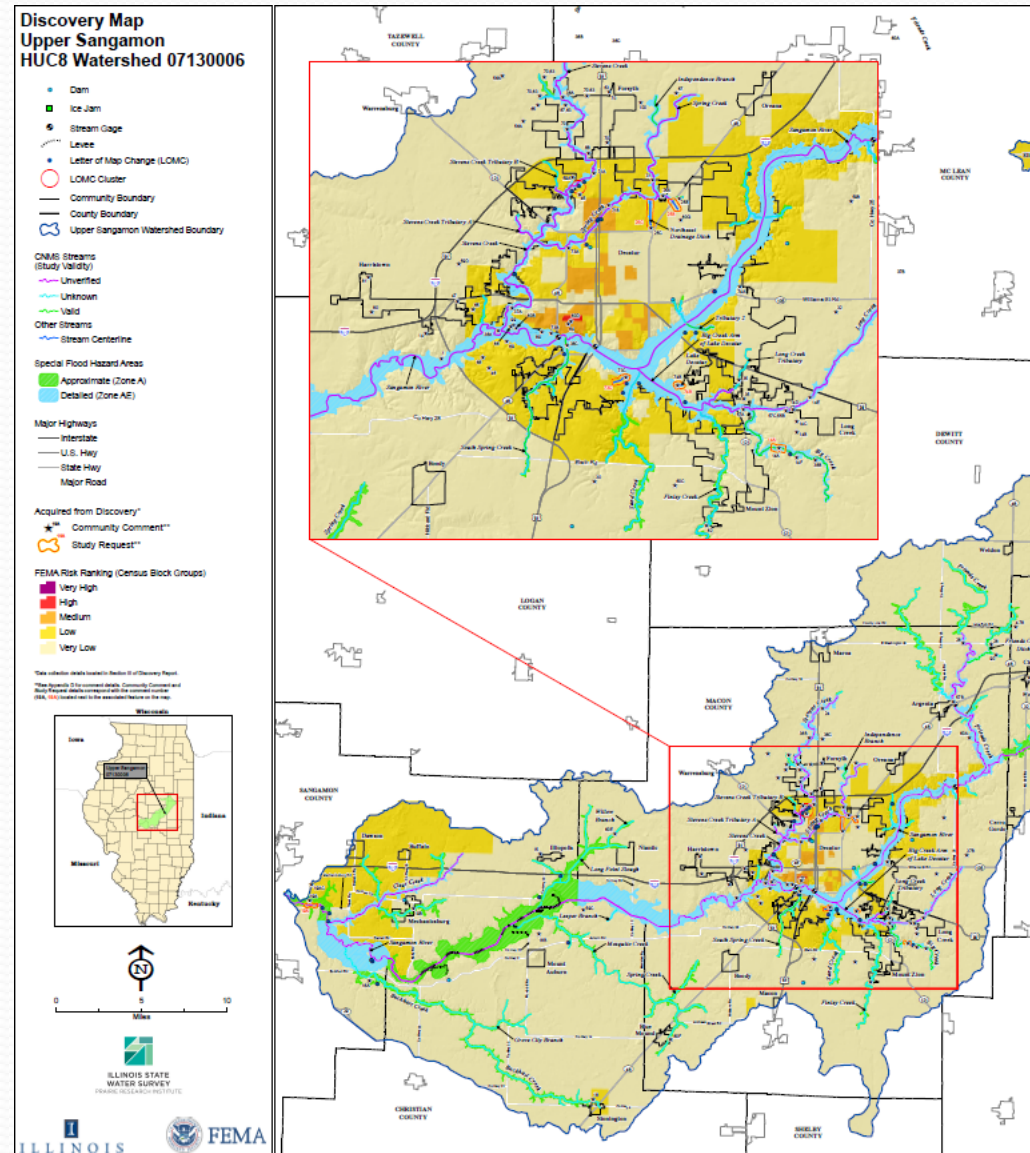
- Introduce additional non-regulatory products
- Present resources for your consideration

We will provide information that we hope will be useful to communicate flood risk and consider flood risk reduction.



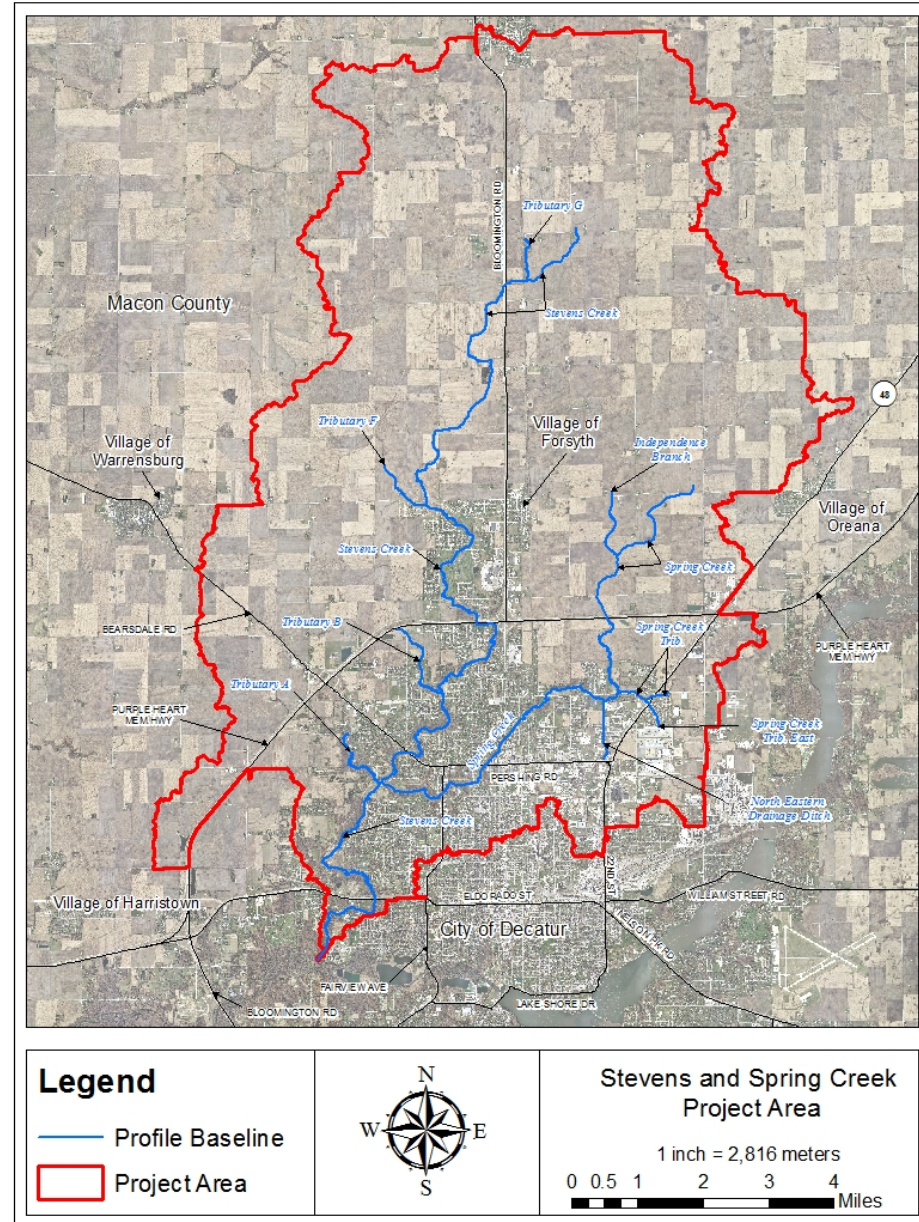
# Project History

- Map Modernization
  - Unresolved Discrepancies City of Decatur and Macon Co. differ +/- 3 ft.
- Discovery Meeting: **March 28, 2011**
  - Documenting Community Knowledge
  - Mitigation
  - CRS
- Discovery Map and database
  - Risk ranking
  - Community input



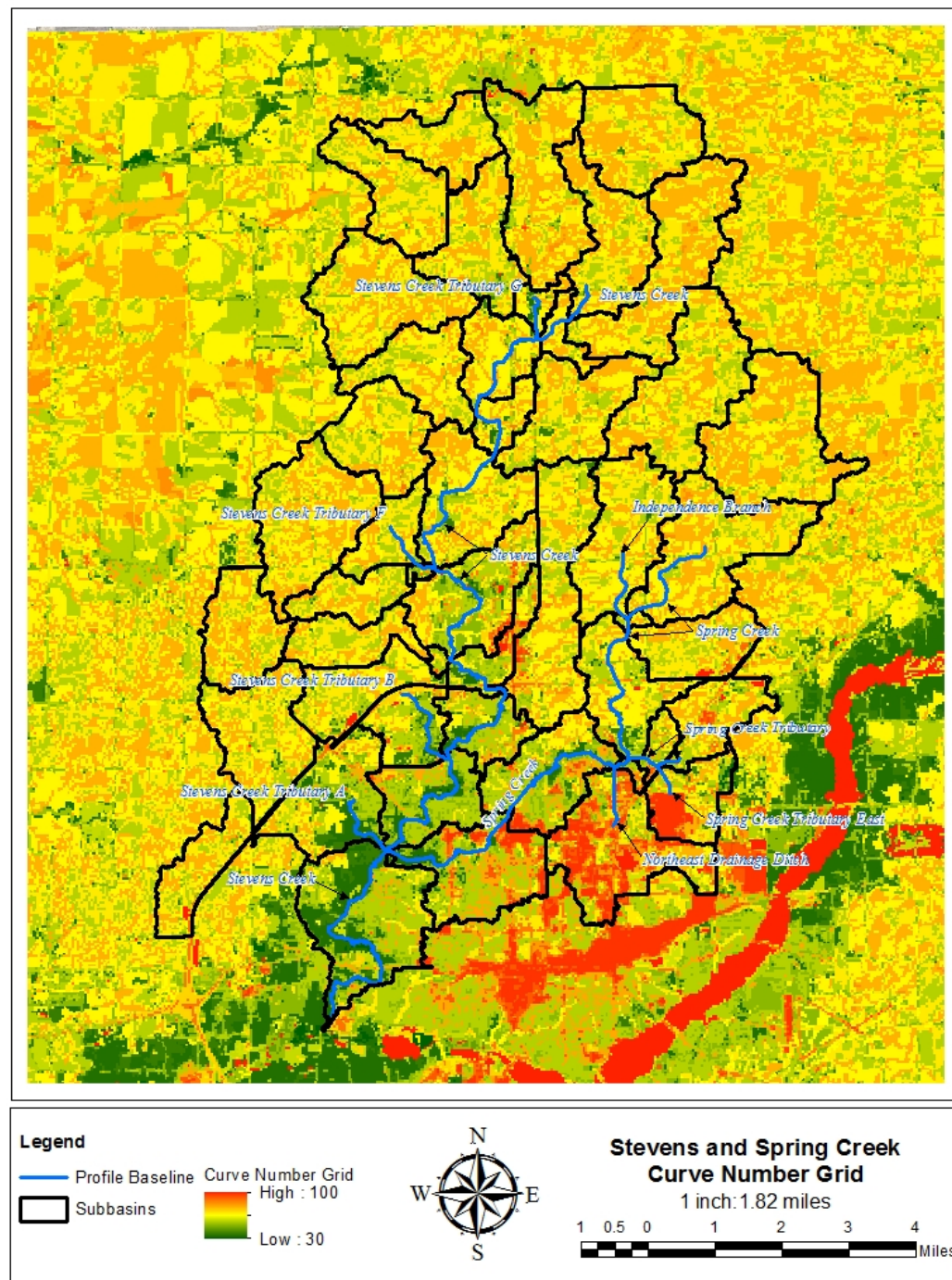
# Project History

- Discussion on Scope
  - Stevens Creek Watershed is nearly 88 square miles
  - Stevens Creek (18 miles) Spring Creek (9 miles) and 8 tributaries.
  - Total Stream Length 38.2 miles
  - Survey performed by IDNR-OWR
  - Supplemented with the Macon Co. 2010 Digital Elevation Model (lidar)



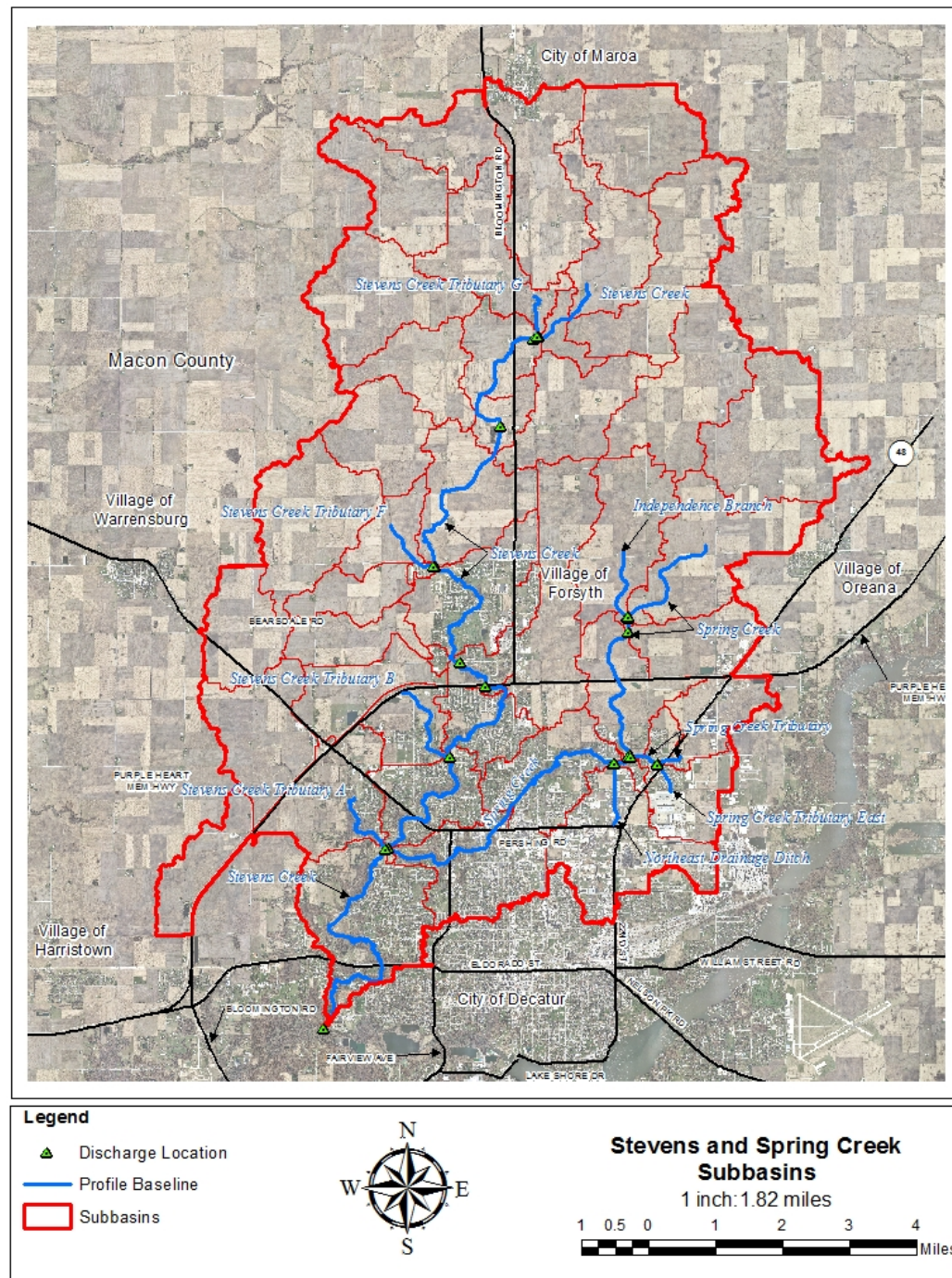
## Hydrology

- HEC-HMS Version 3.5.0
- HEC-geoHMS v10 toolkit for ArcGIS 10.0
- Soil Conservation Service (SCS) curve number (CN) loss method
- Parameters produced through HEC-geoHMS from geographic information systems (GIS) data
- land use: 2007 United State Department of Agriculture, National Agricultural Statistics Service (USDA-NASS) Cropland Data Layer (CDL)
- soil data: The 2007 U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) Soil Survey Geographic (SSURGO)
- Combined to produce Curve Numbers.



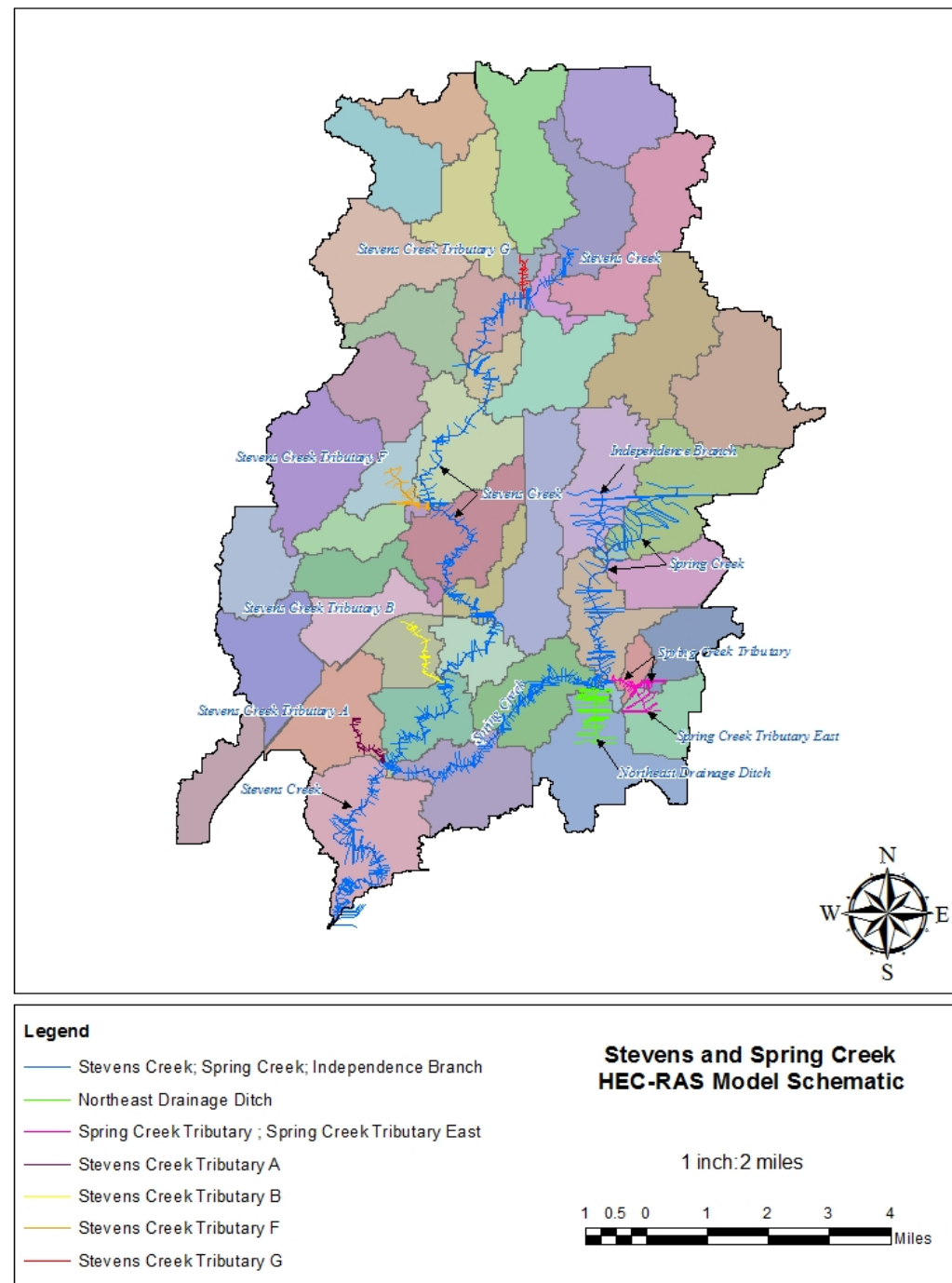
# Hydrology

- Rainfall: Bulletin 70 – Huff
- Clark Unit hydrograph methodology
- Muskingum-Cunge routing with Modified Puls channel routing for Stevens downstream of Tributary F and Spring Creek downstream of Northeast Drainage Ditch
- 24 Hour Critical Duration



## Hydraulics

- HEC-RAS Version 4.1.0
- HEC-GeoRAS Version 10.0
- A total of 7 HEC-RAS models
- Channel and Bridge data based on IDNR-OWR Survey (December 2011 through October 2012)
- Overbank data based on Macon County 2010 DEM
- NAVD 1988
- 261 Channel Cross Sections Surveyed out of 523 Total
- All Overbank Cross Sections use 2010 Macon County DEM
- Ineffective flow: contraction ratio 1:1; expansion ratio 2:1
- Mannings “n values”:  
Channel 0.035 – 0.055;  
Overbanks 0.04 – 0.13
- 78 Bridges, 26 Culverts,
- 545 Cross Sections

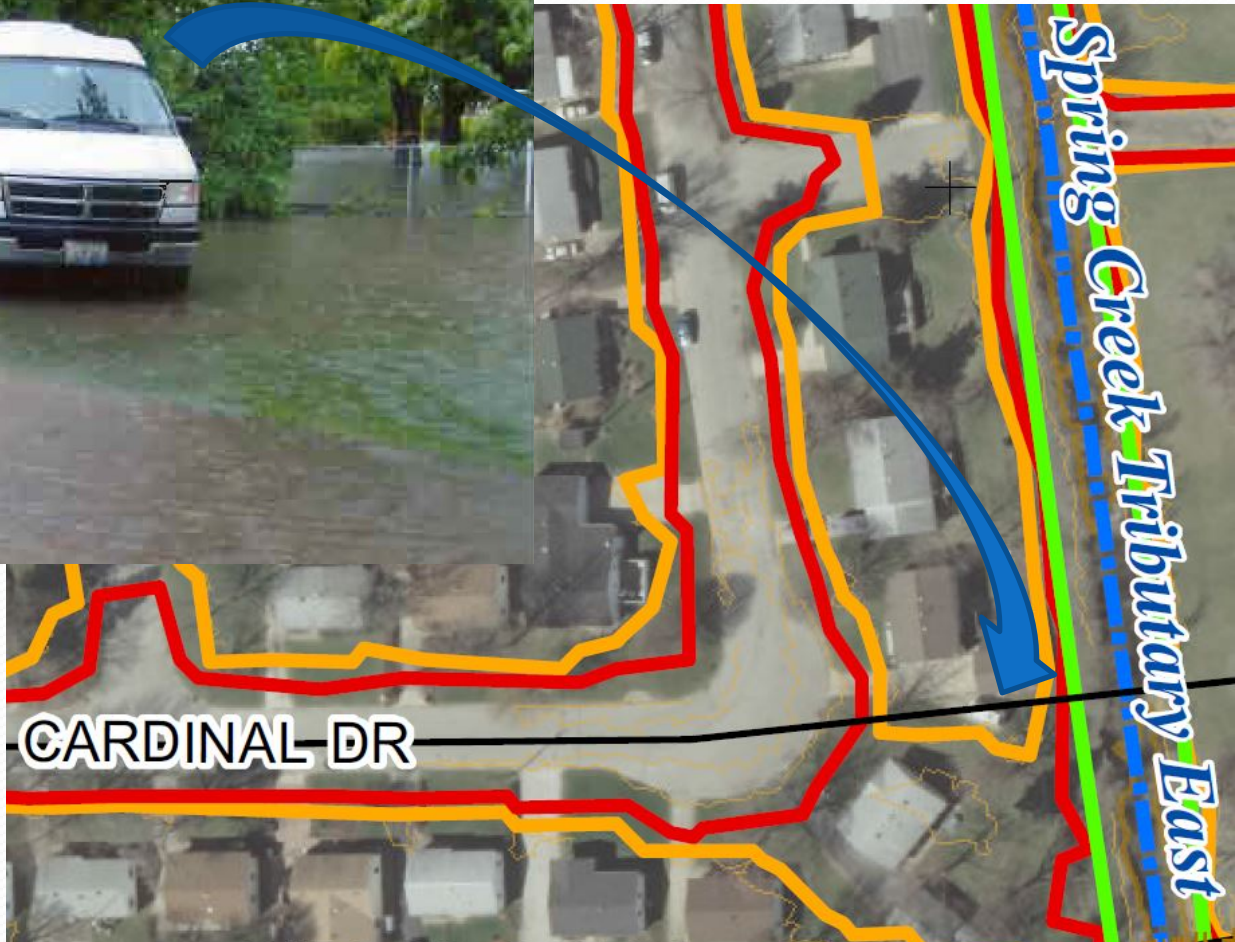




# Validation

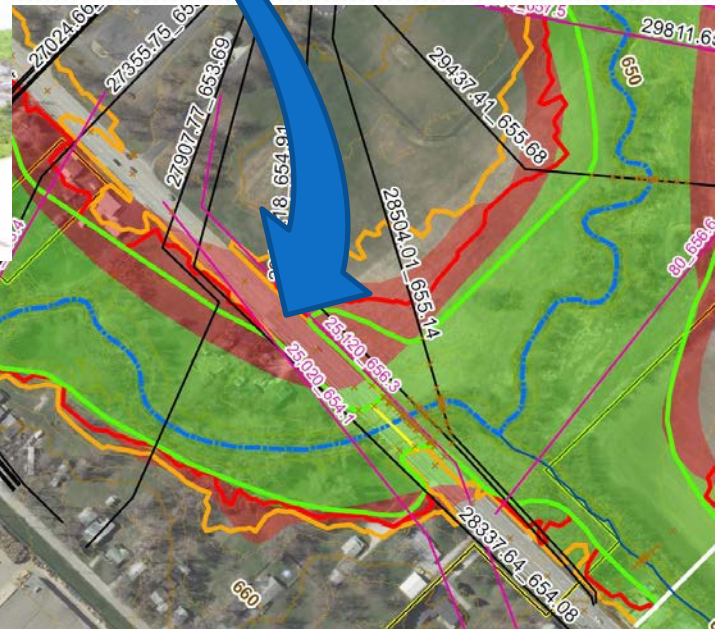


SSD gage 5.19 in; Clinton 4.8 in



September 14-15, 2008 Flood;  
Meadowlark Subdivision  
110% of the Base Flood

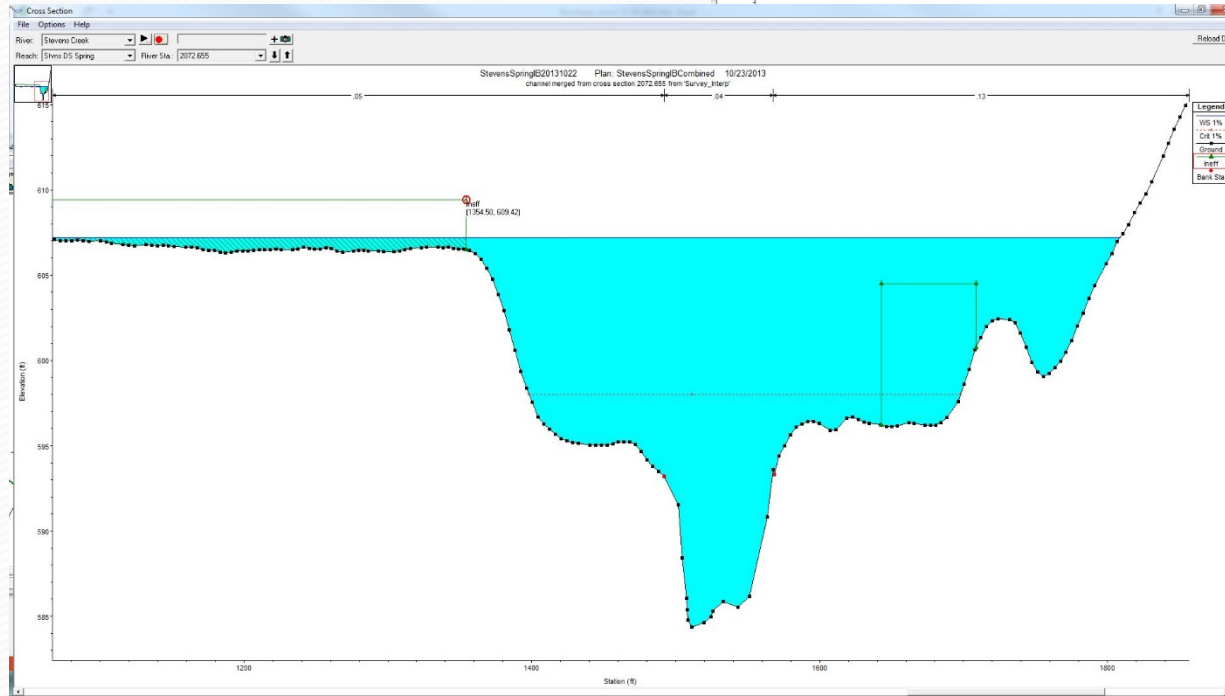
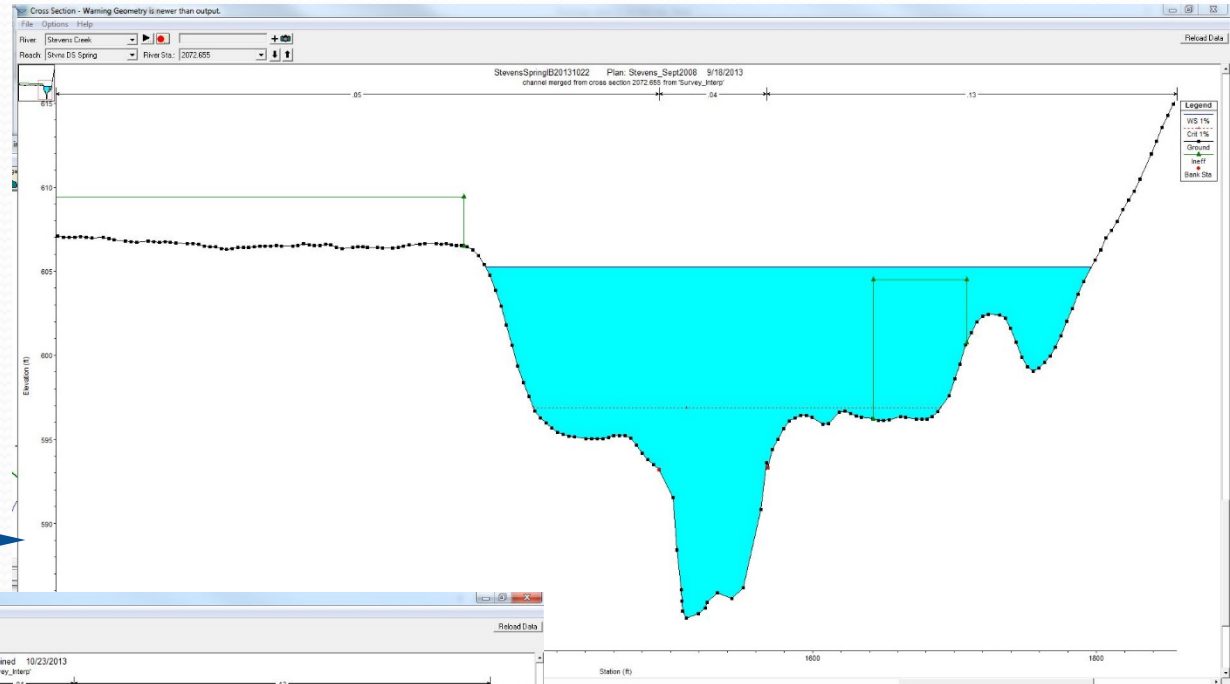
# Validation



September 14-15, 2008 Flood;  
2323 East Mound Road  
80% of the Base Flood

# Validation

September 14-15, 2008 Flood;  
SDD 80% of the Base Flood  
Reported +/- 2ft.  
below the earth levee top  
At Cross-section 2072.7  
(upstream end)



Base Flood  
2 ft.-3 in. below top of levee  
wall at this point.



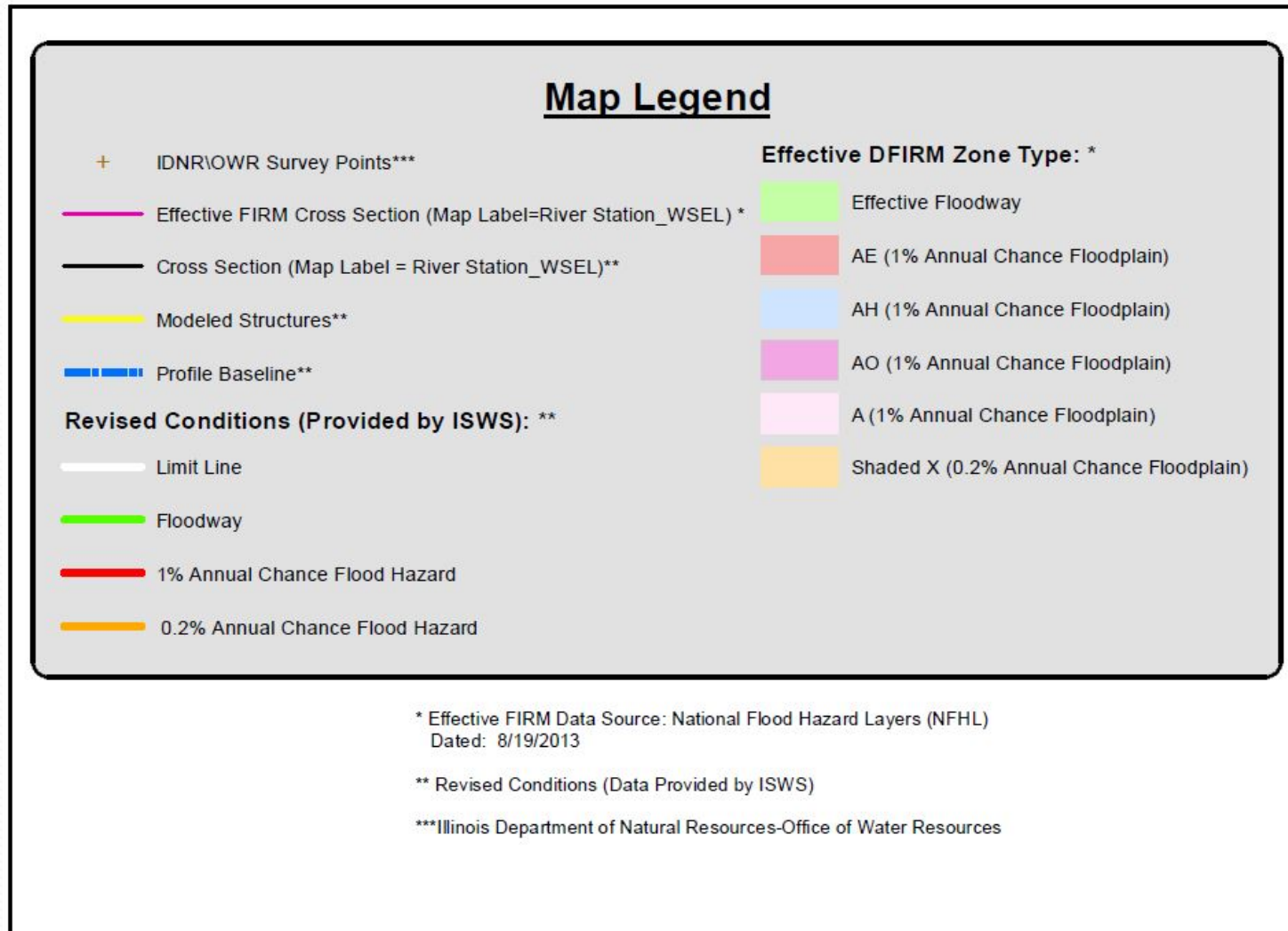
# Overview of DRAFT results

- Base Flood Elevations (BFE's)
  - Independence Branch: -1.3 to -3.6'
  - Spring Creek: -3.2 to +2.1'
  - Spring Creek Tributary: -2.7 to -3.6'
  - Tributary A: - 1.7 to -3.3'
  - Stevens Creek (Upstream of I-72): -3.4 to +2.3'
  - Stevens Creek (Downstream of I-72): +0.5 to +6.3'
  - Tributary B, F and G, Spring Creek Tributary East and Northeast Drainage Ditch all effective Zone A, so no BFE comparison.

# Comparison Map Legend

- Shading-effective SFHA

- Line-proposed DRAFT results





# SFHA Change Examples

- 0.5 foot BFE increase feet upstream of I-72 on Stevens Creek
- Significant increase in SFHA



# Risk MAP

## new look, new products

- FIRMs will have a new layout and legend
- Non- regulatory products will be provided



# FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR ZONE DESCRIPTIONS AND INDEX MAP  
 THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING  
 DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT  
[HTTP://MSC.FEMA.GOV](http://MSC.FEMA.GOV)






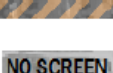
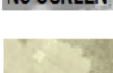

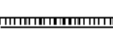
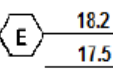
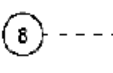



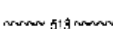
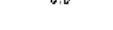

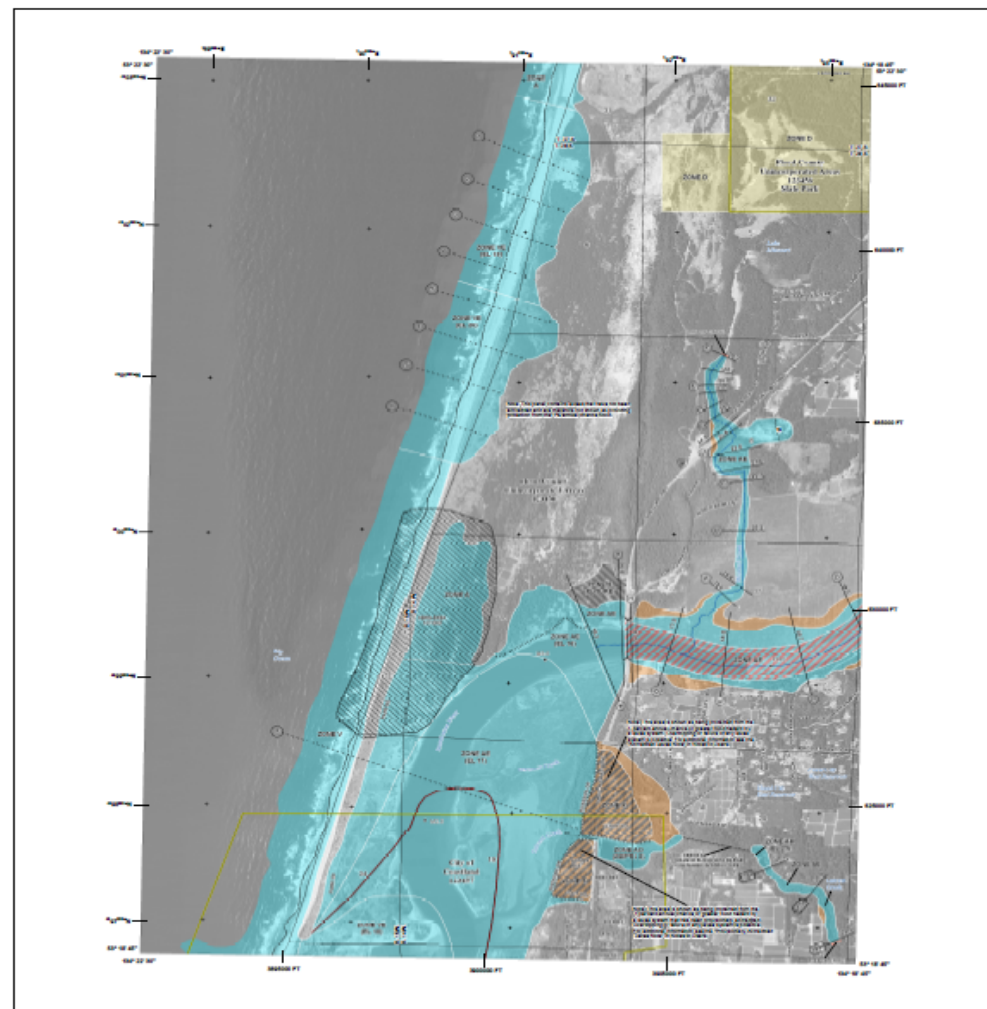
SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee See Notes. Zone X
		Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X
OTHER AREAS		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall
		Non-accredited Levee, Dike, or Floodwall
OTHER FEATURES		Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)
		Coastal Transect
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary

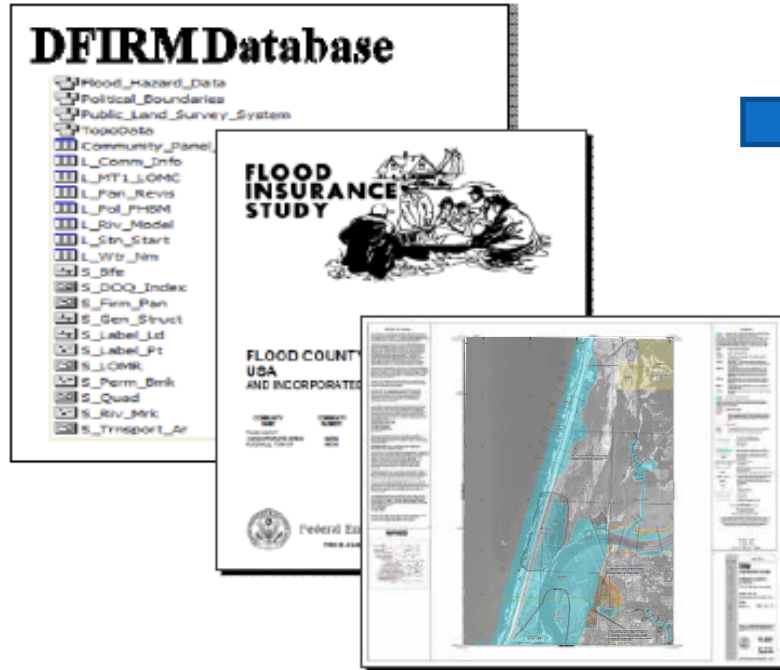
Figure K-11. FIRM Orthophoto Base Map Legend



<p><b>FLOOD HAZARD INFORMATION</b></p> <p>SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP              THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING              DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT  <a href="http://MSC.FEMA.GOV">HTTP://MSC.FEMA.GOV</a></p> <p><b>SPECIAL FLOOD HAZARD AREAS</b></p> <ul style="list-style-type: none"> <li>Without Base Flood Elevation (BFE) Zone A, V, A99</li> <li>With BFE or Depth Zone AE, AO, AH, VE, AR</li> <li>Regulatory Floodway</li> </ul> <p><b>OTHER AREAS OF FLOOD HAZARD</b></p> <ul style="list-style-type: none"> <li>0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X</li> <li>Future Conditions 1% Annual Chance Flood Hazard Zone X</li> <li>Area with Reduced Flood Risk due to Levee See Notes. Zone X</li> <li>Areas Determined to be Outside the 0.2% Annual Chance Floodplain Zone X</li> <li>Area of Undetermined Flood Hazard Zone D</li> </ul> <p><b>GENERAL STRUCTURES</b></p> <ul style="list-style-type: none"> <li>Channel, Culvert, or Storm Sewer Accredited or Provisionally Accredited Levee, Dike, or Floodwall</li> <li>Non-accredited Levee, Dike, or Floodwall</li> </ul> <p><b>OTHER FEATURES</b></p> <ul style="list-style-type: none"> <li>Cross Sections with 1% Annual Chance Water Surface Elevation (BFE)</li> <li>Coastal Transect</li> <li>Coastal Transect Baseline</li> <li>Profile Baseline</li> <li>Hydrographic Feature</li> <li>Base Flood Elevation Line (BFE)</li> <li>Limit of Study</li> <li>Jurisdiction Boundary</li> </ul>	<p><b>NOTES TO USERS</b></p> <p>This information was derived from the FIS report, which was prepared by the contractor under the supervision of the project manager. The project manager is responsible for the accuracy and completeness of the information presented in this report. The project manager is not responsible for the accuracy or completeness of the information presented in this report if the information is used for purposes other than those intended by the project manager.</p> <p><b>GENERAL WARNING REGULATIONS BY STATE NOTICE</b></p> <p>Alabama: Flood Hazard Insurance Program (FHIP) is a state-mandated program that provides flood hazard insurance to policyholders in Alabama. The program is administered by the Alabama Department of Insurance. For more information, visit <a href="http://www.adoinf.com">www.adoinf.com</a>.</p>	<p><b>SCALE</b></p> <p>Graphic scale: 0 to 4,000 feet</p> <p>Graphic scale: 0 to 1,000 meters</p> <p><b>PANEL LOCATOR</b></p> <p>Map grid showing panel location: 800, 800, 800, 800</p>	<p><b>FEMA</b>          National Flood Insurance Program</p> <p><b>NATIONAL FLOOD INSURANCE PROGRAM</b>          FLOOD INSURANCE RATE MAP          FLOOD COUNTY, USA          MAP NUMBER: 420 of 750          DATE: 12/15/2015</p> <p><b>VERSION HISTORY</b></p> <table border="1"> <tr> <th>DATE</th> <th>DESCRIPTION</th> </tr> <tr> <td>12/15/2015</td> <td>MAP NUMBER 420 OF 750</td> </tr> <tr> <td>12/15/2015</td> <td>DATE OF ISSUE</td> </tr> </table>	DATE	DESCRIPTION	12/15/2015	MAP NUMBER 420 OF 750	12/15/2015	DATE OF ISSUE
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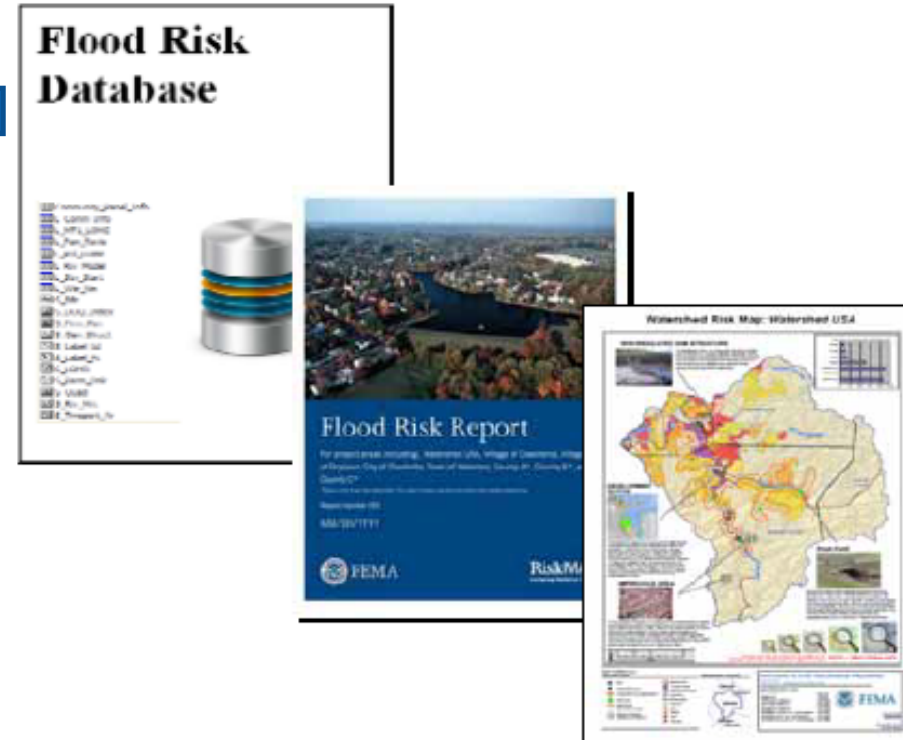
# RiskMAP Datasets/Products

## Traditional Regulatory Products



Traditional products are regulatory and subject to statutory due-process requirements

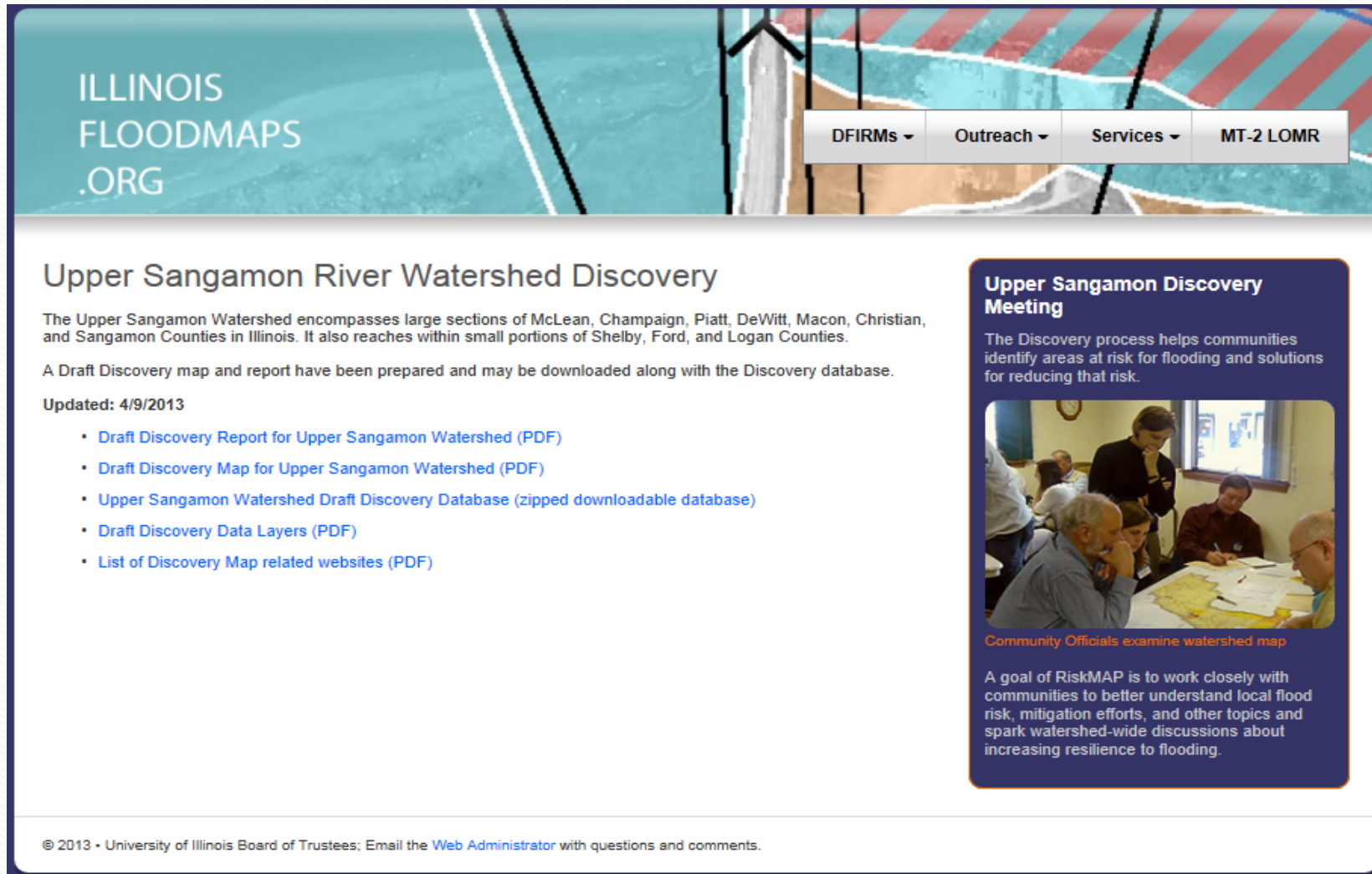
## Non-Regulatory Products



Risk MAP products are non-regulatory and are not subject to statutory due-process requirements

<http://www.illinoisfloodmaps.org>

click on *Outreach* tab



The screenshot shows the website's header with the logo "ILLINOIS FLOODMAPS .ORG" on the left and a navigation menu on the right containing "DFIRMs", "Outreach", "Services", and "MT-2 LOMR". The "Outreach" tab is highlighted. Below the header, the main content area features a section titled "Upper Sangamon River Watershed Discovery". This section includes a paragraph describing the watershed, a note about a draft discovery map and report, and a list of links to various documents. On the right side of the content area, there is a dark blue sidebar with a white-bordered box titled "Upper Sangamon Discovery Meeting". This box contains a photograph of several people gathered around a table looking at a map, a caption "Community Officials examine watershed map", and a paragraph explaining the goal of RiskMAP.

ILLINOIS  
FLOODMAPS  
.ORG

DFIRMs ▾ Outreach ▾ Services ▾ MT-2 LOMR

### Upper Sangamon River Watershed Discovery

The Upper Sangamon Watershed encompasses large sections of McLean, Champaign, Piatt, DeWitt, Macon, Christian, and Sangamon Counties in Illinois. It also reaches within small portions of Shelby, Ford, and Logan Counties.


A Draft Discovery map and report have been prepared and may be downloaded along with the Discovery database.

Updated: 4/9/2013

- [Draft Discovery Report for Upper Sangamon Watershed \(PDF\)](#)
- [Draft Discovery Map for Upper Sangamon Watershed \(PDF\)](#)
- [Upper Sangamon Watershed Draft Discovery Database \(zipped downloadable database\)](#)
- [Draft Discovery Data Layers \(PDF\)](#)
- [List of Discovery Map related websites \(PDF\)](#)

#### Upper Sangamon Discovery Meeting

The Discovery process helps communities identify areas at risk for flooding and solutions for reducing that risk.

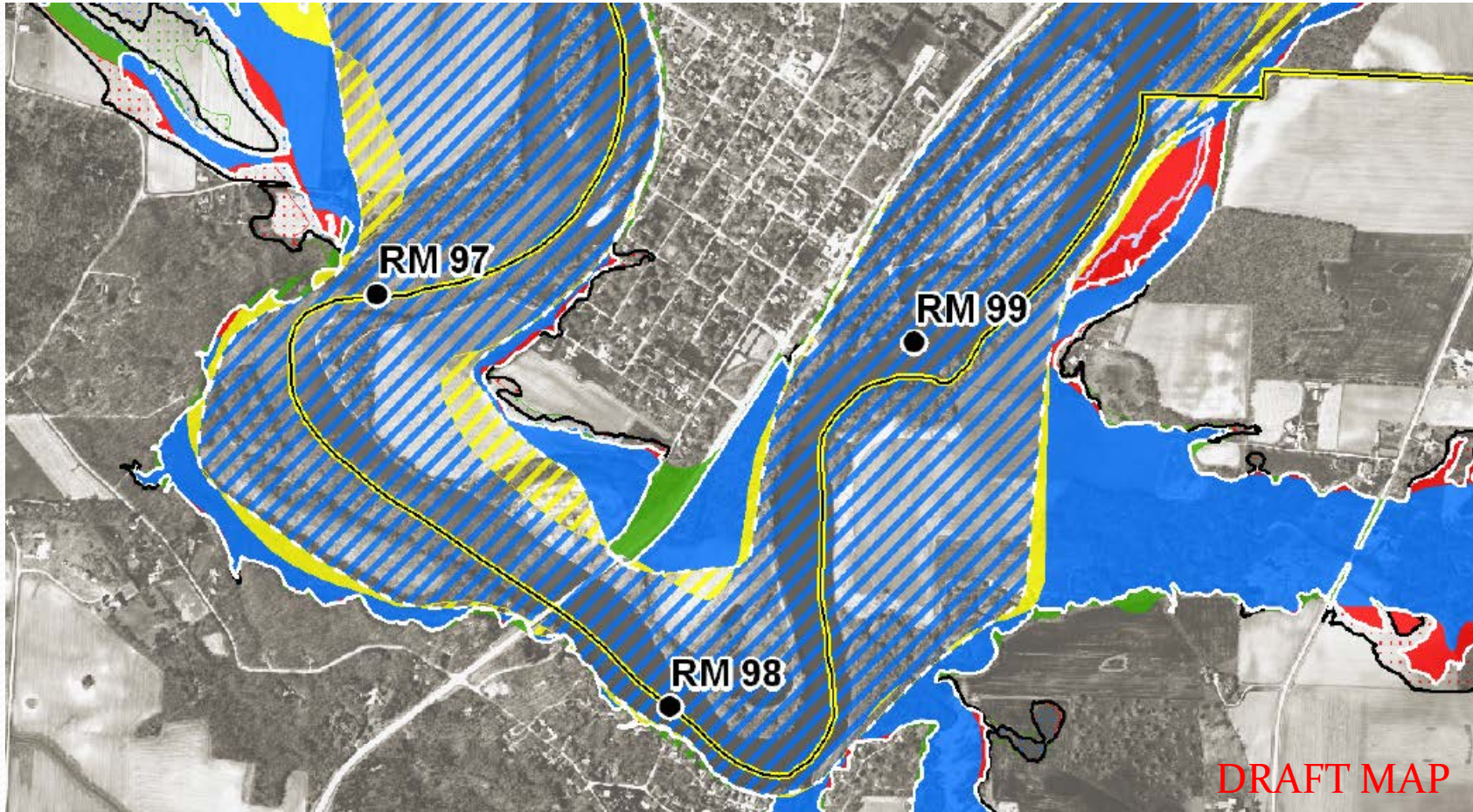


Community Officials examine watershed map

A goal of RiskMAP is to work closely with communities to better understand local flood risk, mitigation efforts, and other topics and spark watershed-wide discussions about increasing resilience to flooding.

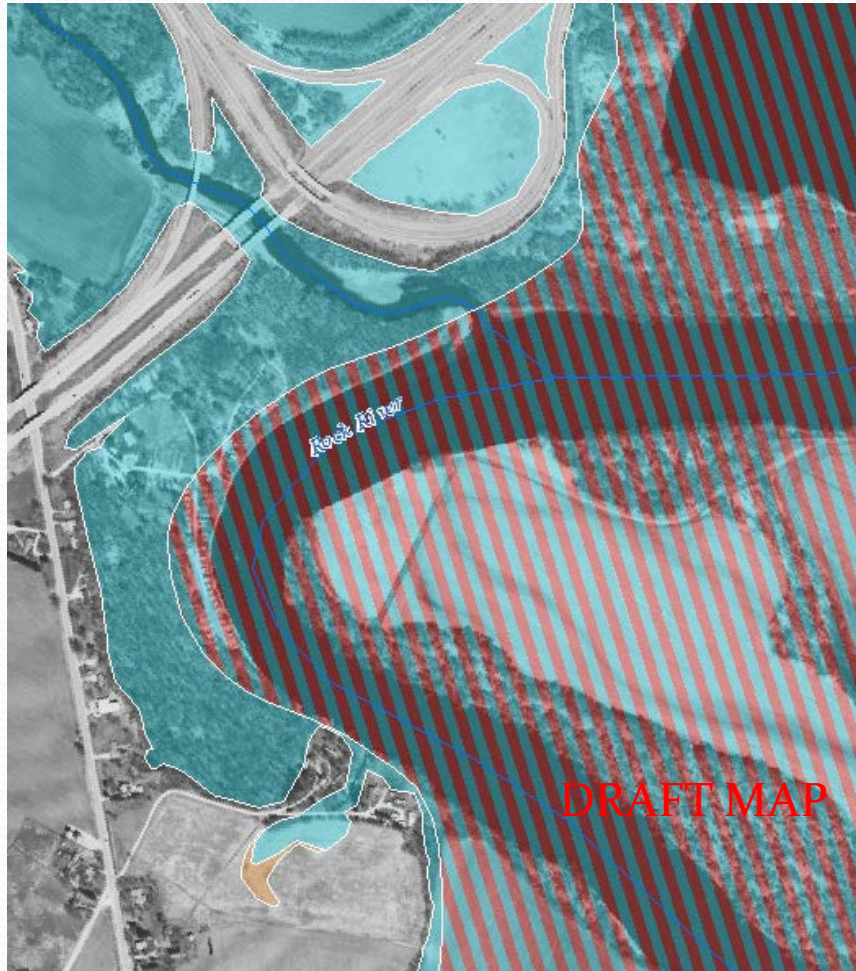
© 2013 • University of Illinois Board of Trustees; Email the [Web Administrator](#) with questions and comments.

# Changes Since Last FIRM



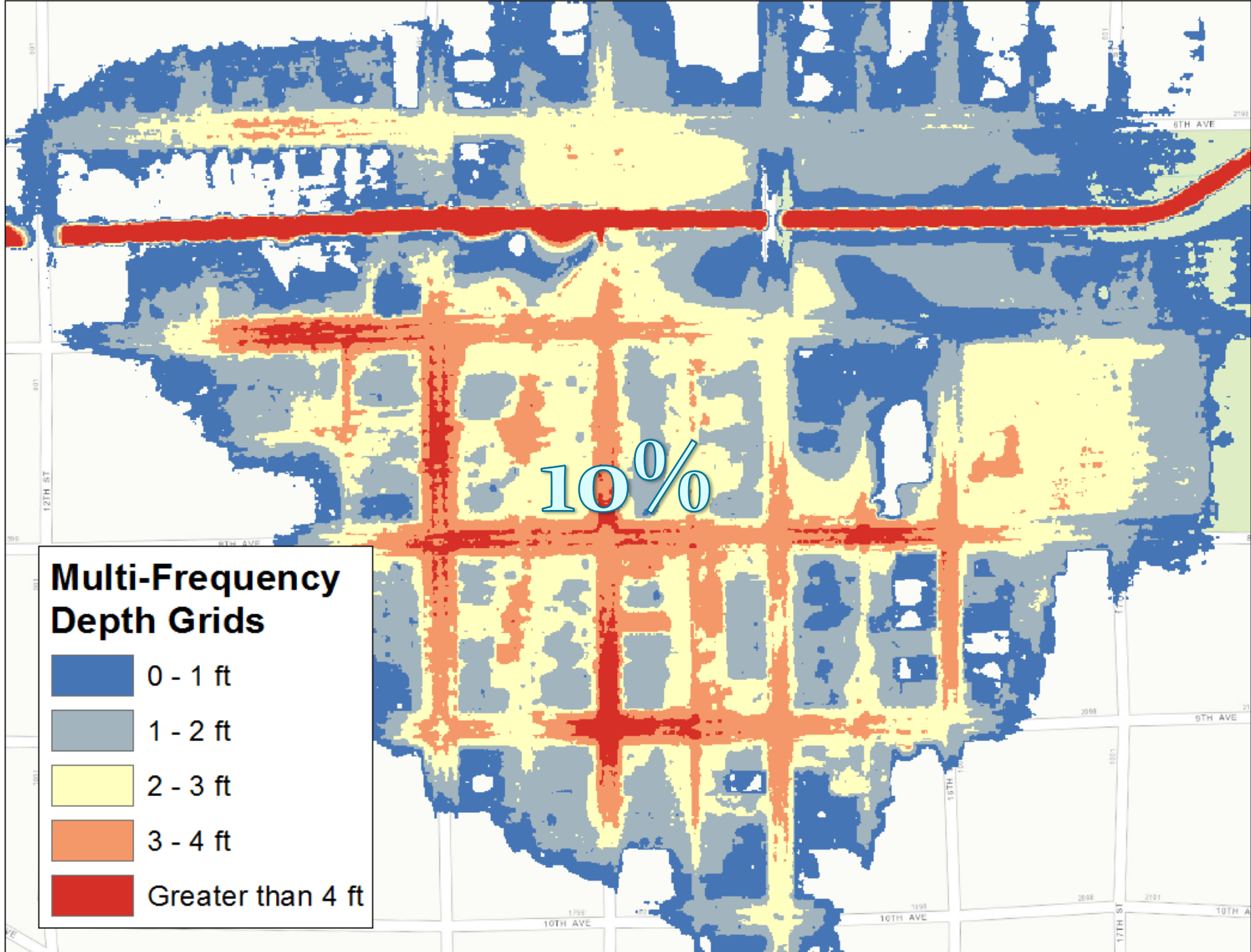
# Depth Grids

In or Out?



How Deep?

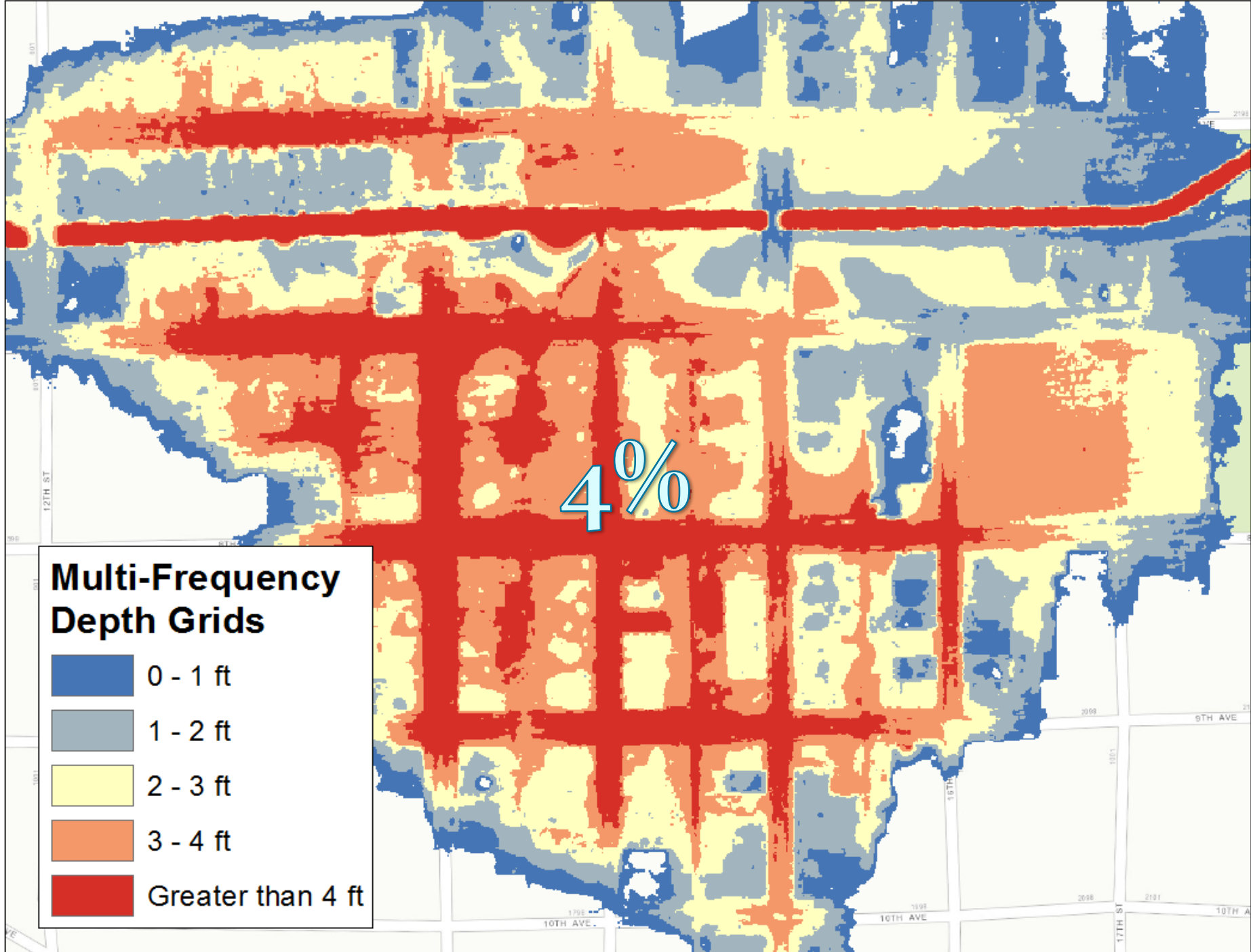




### Multi-Frequency Depth Grids

- 0 - 1 ft
- 1 - 2 ft
- 2 - 3 ft
- 3 - 4 ft
- Greater than 4 ft

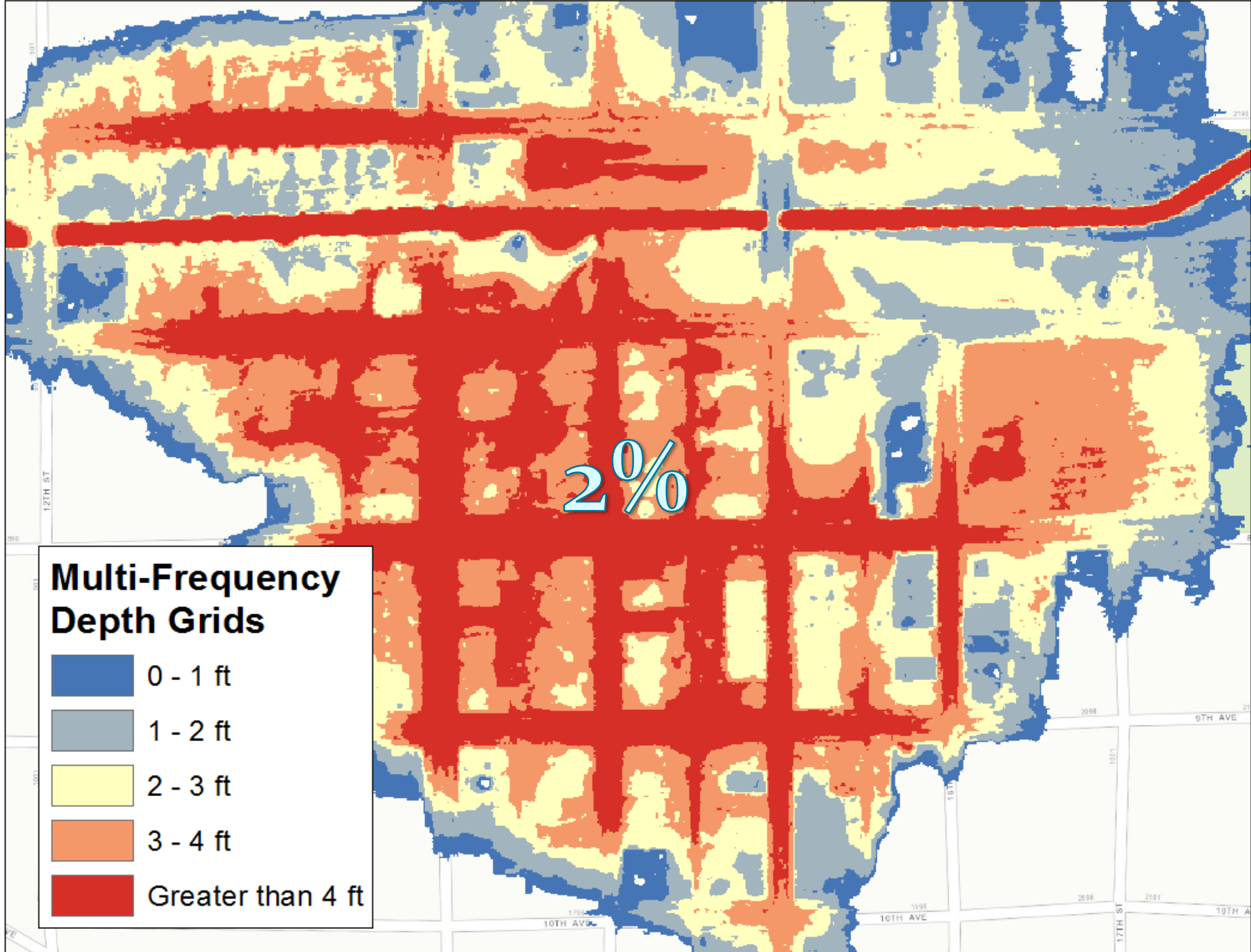
10%



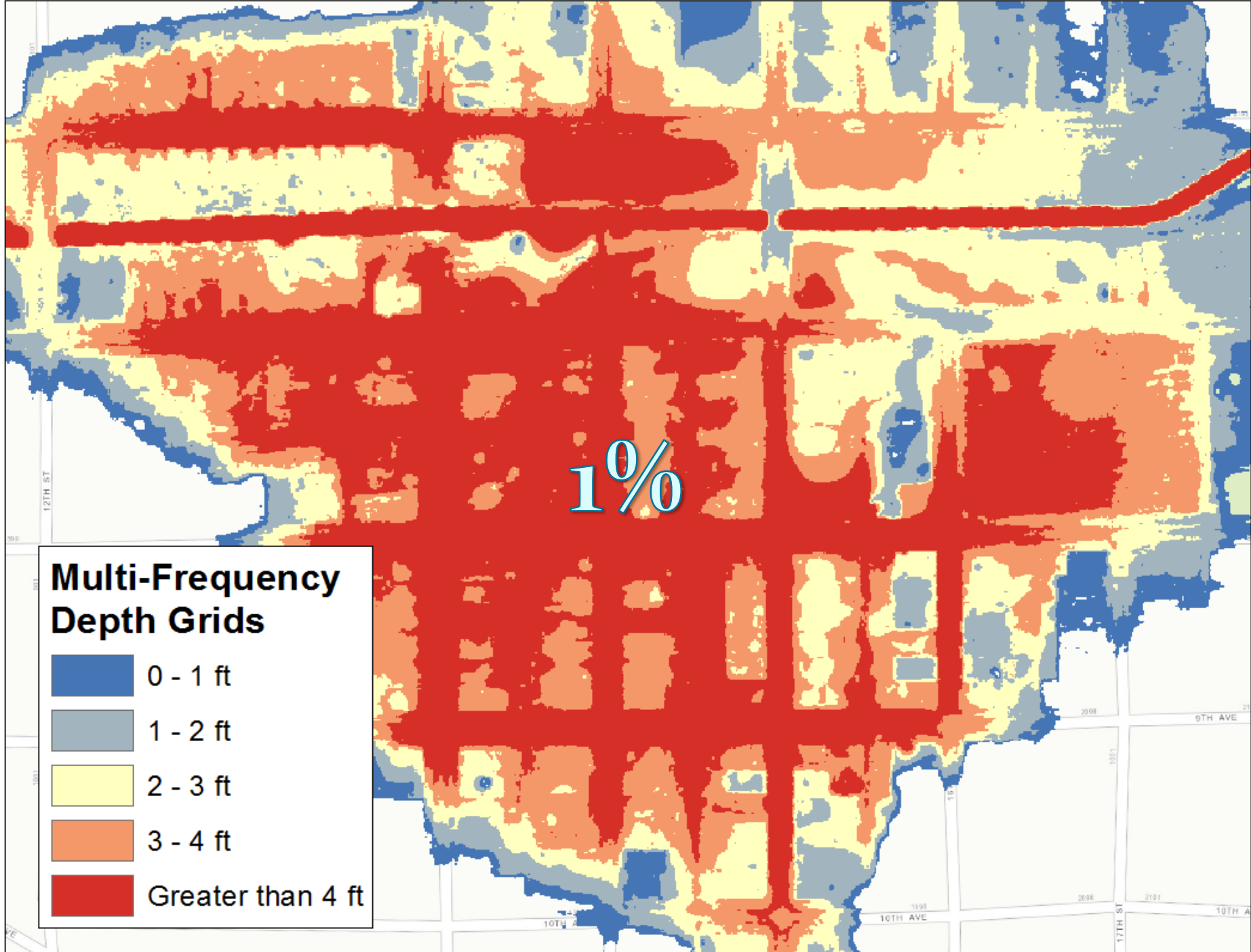
### Multi-Frequency Depth Grids

- 0 - 1 ft
- 1 - 2 ft
- 2 - 3 ft
- 3 - 4 ft
- Greater than 4 ft

4%



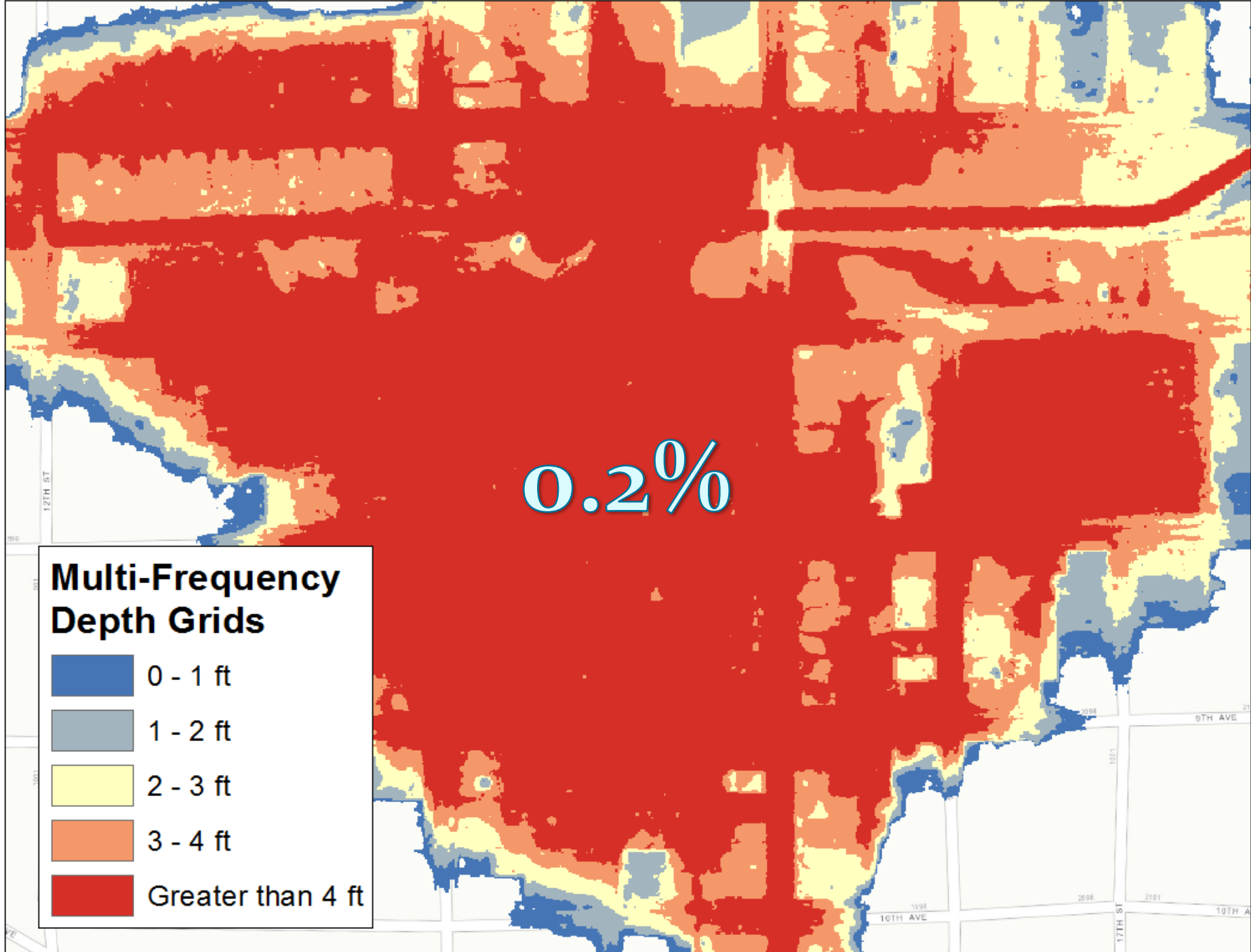




**Multi-Frequency  
Depth Grids**

- 0 - 1 ft
- 1 - 2 ft
- 2 - 3 ft
- 3 - 4 ft
- Greater than 4 ft

1%





# Community Outreach, Risk Communication, Mitigation Actions

# Risk Communication

## floodsmart.gov

Includes information on:

- Biggert Waters Insurance Reform
- Community resources-
  - Map Change Toolkit
  - Template forms

### GOING INTO SFHA

[Date]

[Name]  
[Street Address]  
[City, State, Zip Code]

RE: [Parcel Number]

Dear Property Owner:

Flooding is the most frequent and costly disaster in [community name]. The risk for flooding changes over time due to erosion, land use, weather events and other factors. The likelihood of inland, riverine [and coastal flooding] has changed along with these factors. The risk for flooding can vary within the same neighborhood and even property to property. But it exists throughout the area. *[include flood fact that supports the need to re-map, for example: As the county's flooding last spring illustrated, flooding occurs not only in high-risk areas, but in moderate- to low-risk areas as well. In fact, more than XX% of properties flooded were in areas designated as having a moderate or low flood risk].* Knowing your flood risk is the first step to flood protection.

A multi-year project to re-examine [community name's] flood zones and develop detailed, digital flood hazard maps has been completed. Just released for public review, the new maps – also known as Flood Insurance Rate Maps (FIRMs) – reflect current flood risks. As a result, you and other property owners throughout the [county/community] will have up-to-date, reliable, Internet-accessible information about your flood risk.

#### How will these changes affect you?

The purpose of this letter is to inform you that the parcel identified at the top of this letter has been mapped into a higher risk zone, known as a Special Flood Hazard Area (SFHA), and shown as [enter appropriate zones; e.g., "A", "AE", "V", "VE"] on the FIRM. If you have a mortgage from a federally regulated or insured lender and the building(s)

# Community Rating System

Reduce premiums for your community

FEMA administered, voluntary incentive program with 5% decrease in premium rates for community policies for each “class”

Resources/ Contacts:

- Scott Coffoid-CRS Representative  
815-220-1002
  - [scofoid@iso.com](mailto:scofoid@iso.com)
- IAFSM CRS Group
  - IAFSM website, LinkedIn, Mary Lou Kalsted  
[mkalsted@villageoflisle.org](mailto:mkalsted@villageoflisle.org)



# Premium Discounts

<i>Class</i>	<i>Points</i>	<i>SFHA</i>	<i>Non-SFHA</i>
1	4,500	45%	10%
2	4,000	40%	10%
3	3,500	35%	10%
4	3,000	30%	10%
5	2,500	25%	10%
6	2,000	20%	10%
7	1,500	15%	5%
8	1,000	10%	5%
9	500	5%	5%
10		0	0

# Macon County Communities

	<u># Policies</u>	<u>Class 8 Savings</u>	<u>Annual Premiums</u>	<u>Avg. SFHA Policy Savings as a Class 8</u>
Macon County	36	\$1,788	\$25,649	\$95
Decatur	156	\$10,970	\$127,353	\$96
Forsyth	20	\$1,688	\$21,358	\$183

# Flood Study update

## Sequence of events

- ISWS review of concerns and input from this meeting
- IDNR OWR state review and approval
- ISWS to prepare FIRM and RiskMAP products
- FIRM Regulatory mapping process- Physical Map Revision (PMR)
  - Distribute Preliminary FIRMs/FIS
  - Open House
  - 30-day Comment Period
  - Appeal period – minimum 90 day period
  - Letter of Final Determination
  - 6 months for communities to adopt



# We are asking for your input!

- Review the maps.
- ASK questions!
- Provide technical data and feedback.
- **Fill out the comment sheets.**
- **Mark up the maps.**
- Get our contact information.
- For full consideration before OWR submittal, please submit issues or concerns by **December 31<sup>st</sup>**

**Comment Number**

Provide data  
in electronic  
format when  
available!

**Map Marked**

Macon County Flood Risk Review Meeting Form **10**

Please, provide the following information:		Date:
Name:	Title:	
Community/County:		
E-mail:	Phone:	

Explain your comment below and attach any supporting documents/materials. Mark the location of your comment on the map by circling the area and writing the comment form number near the circle. If you have more than one comment, please use multiple forms or add letters (e.g. 1A, 1B, 1C....) for additional comments. Mark the type of map and number.

Check Comment Subject:	
<input type="checkbox"/> *Technical Data for Consideration	<input type="checkbox"/> *Planned or Recent Project Area/LOMR
<input type="checkbox"/> *General Comment on DRAFT Results	<input type="checkbox"/> *Historical Flood Information
<input type="checkbox"/> *Mitigation Action In-Progress	<input type="checkbox"/> *Areas of Mitigation Success
<input type="checkbox"/> *At-Risk Essential Facilities	<input type="checkbox"/> *Interest in Beginning Mitigation Action
<input type="checkbox"/> *Other	

Comment Marked on:

DRAFT Work Map # \_\_\_\_\_ Other \_\_\_\_\_

Can you provide the information in electronic format (GIS, AutoCAD, Word, Excel, etc.)? yes or no

# Contact information

- Brian Chaille, Illinois State Water Survey  
bchaille@illinois.edu
- Pat Hubbartt, Illinois State Water Survey  
(217) 649-9049  
hubbartt@illinois.edu