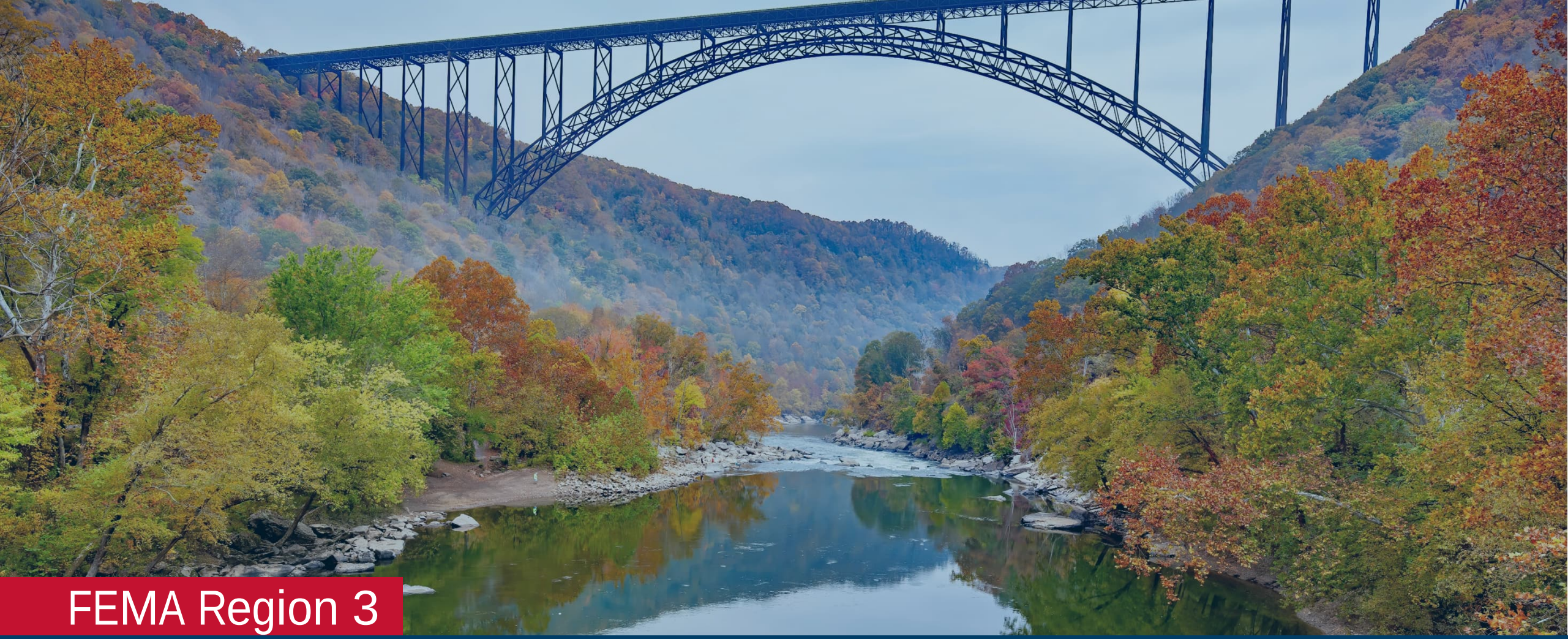


FEMA Region 3

Flood Risk Review Meeting

McDowell, Mingo, and Wayne Counties

June 2, 2025

FEMA

Agenda

1. Welcome and Introductions
2. Where We Are - Draft Maps
3. Flood Study Update
4. Using Flood Risk Data to Reduce Risk
5. Floodplain Management
6. Discussion

FEMA

Introductions

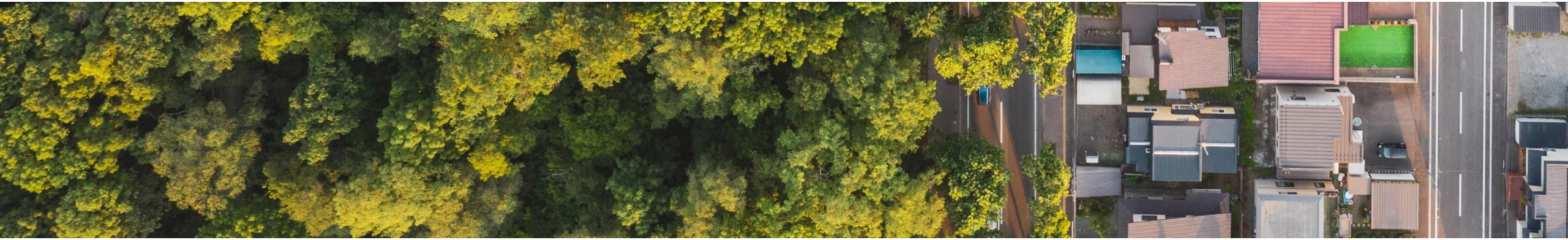
Please Introduce Yourself

- Name
- Position
- Organization

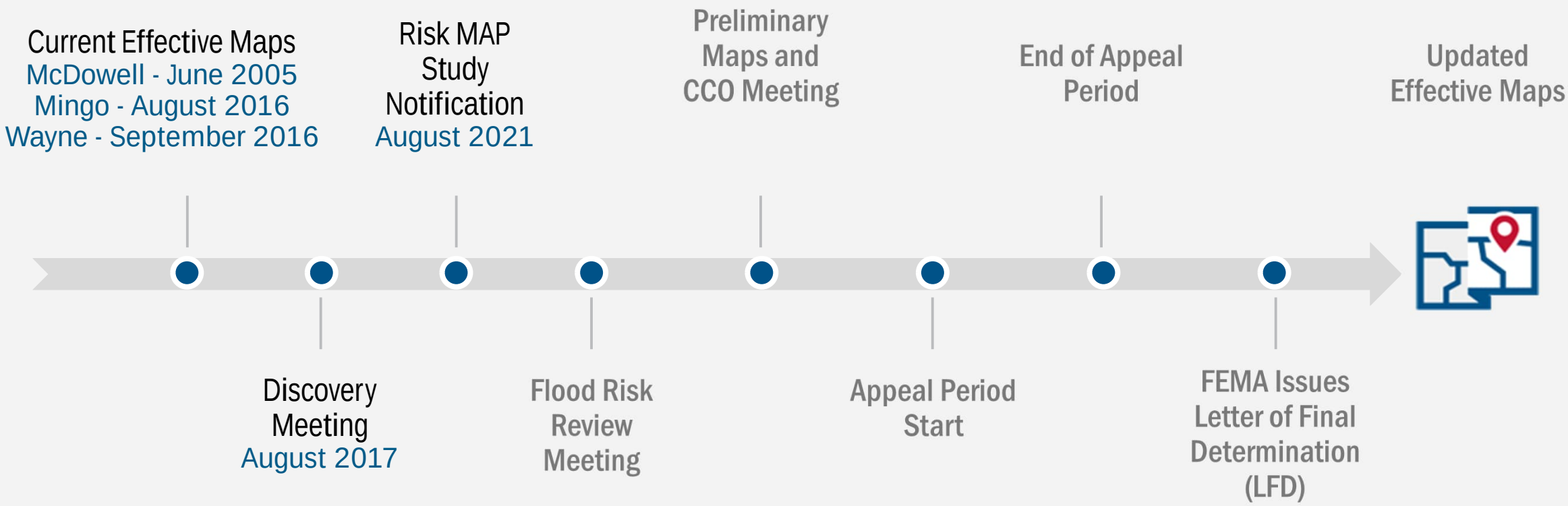
Where We Are – Draft Maps

3 Reasons We Are Here Today

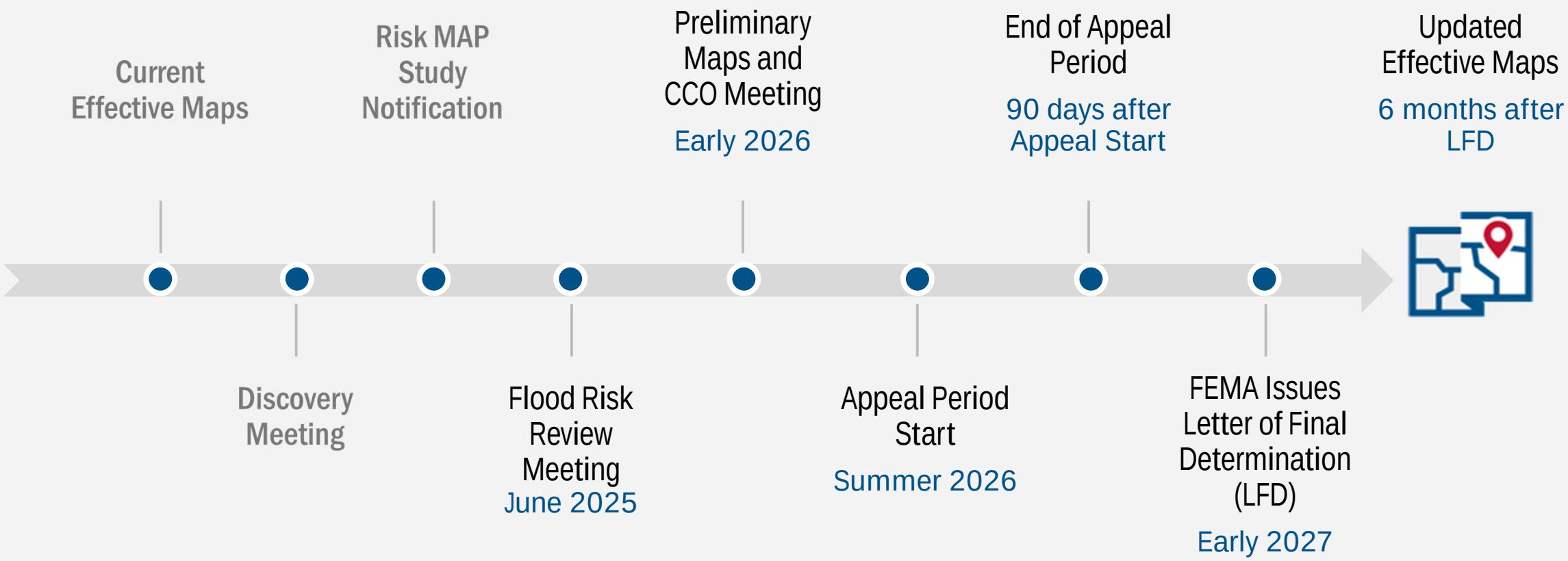
- To preview and discuss the draft floodplain mapping that will update the Flood Insurance Study (FIS) report and Flood Insurance Rate Map (FIRM) for McDowell, Mingo, and Wayne Counties, West Virginia
- To examine the new study areas, discuss how the analysis and mapping have changed since the previous FIRM, and discuss current and future implications for these changes
- To present a timeline of next steps



Timeline – Looking Back



Timeline – Looking Ahead

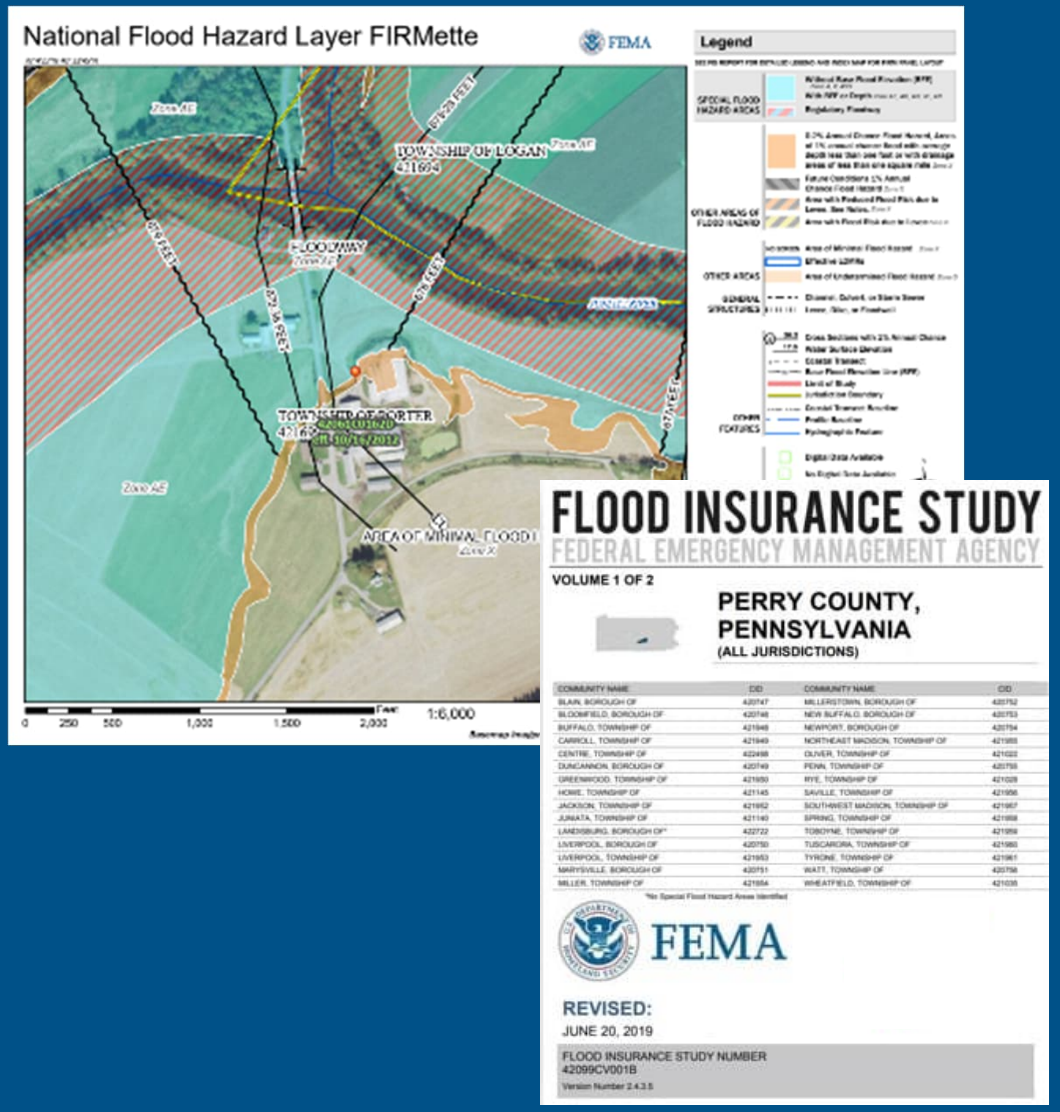


Flood Study Update

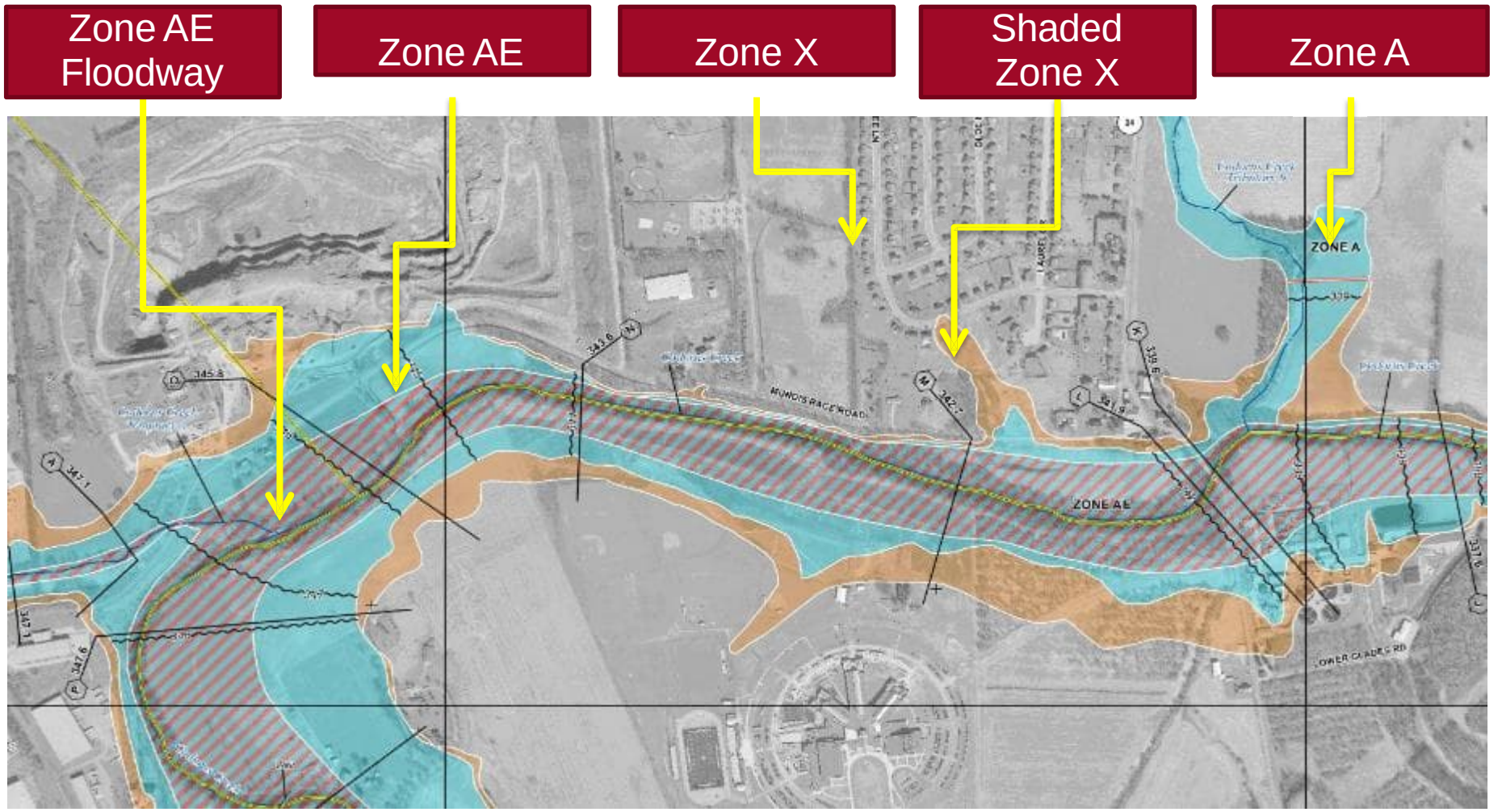
Flood Insurance Rate Maps and Studies

Key Terms:

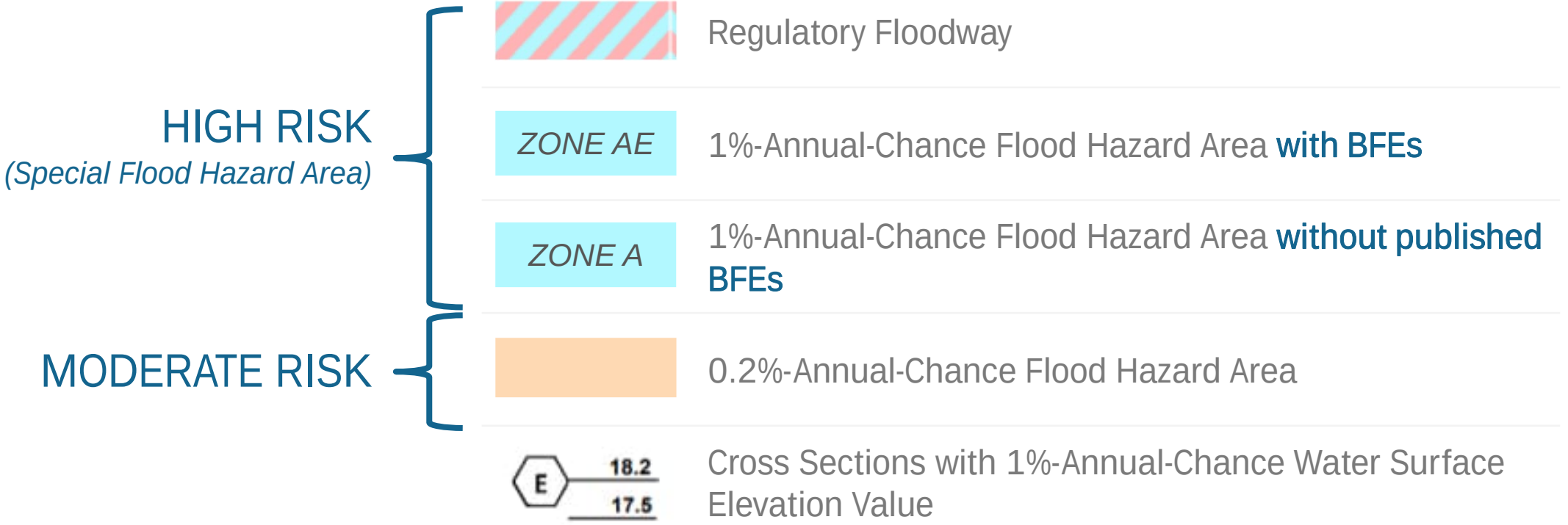
- Flood Insurance Rate Map (FIRM)
- Flood Insurance Study (FIS) Report
- Special Flood Hazard Area (SFHA)
- Flood Zone
- Base Flood Elevation (BFE)
- Regulatory Floodway
- Cross Section



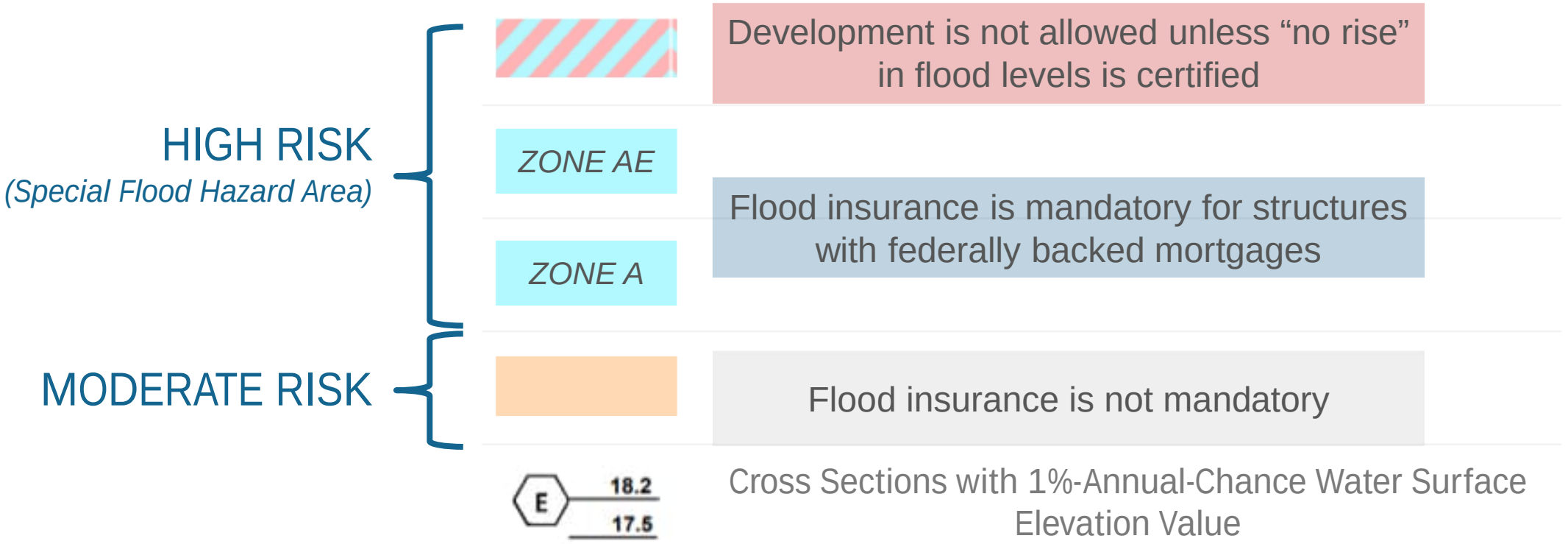
Typical FIRM Panel and Flood Zones



Floodplain Map Overview



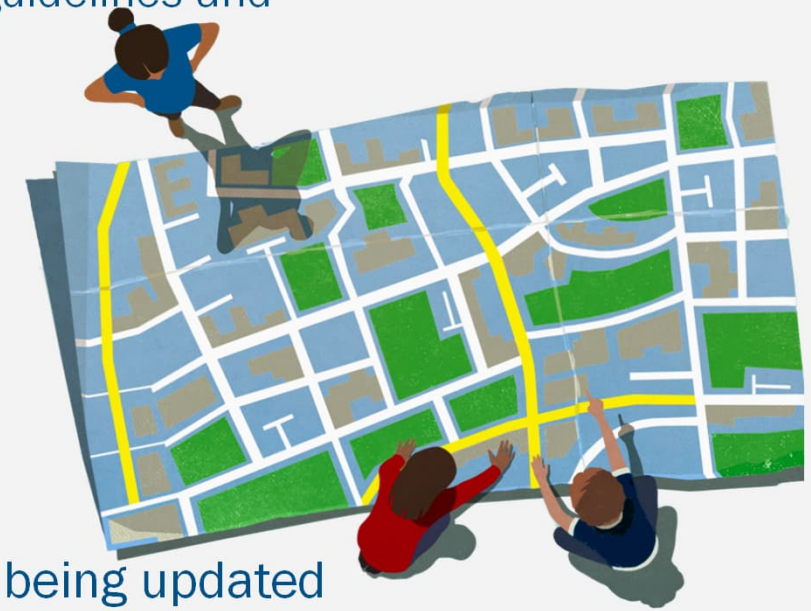
Floodplain Map Overview



Study Overview

Revised Modeling and Mapping, including:

- Updated GIS-based regulatory products, including:
  - Updated FIRMs / GIS database / FIS report formats based on new FEMA guidelines and specifications
- Used high-resolution topographic data (for modeling and mapping)
- Detailed “Zone AE” studies
- Approximate model-backed “Zone A” studies
- 2D analysis for Krouts Creek (City of Huntington & Wayne County)
- Floodplains on the Ohio River and Tug Fork (Mingo & Wayne) are **NOT** being updated as part of this study. However, Tug Fork (McDowell) was updated.
- McDowell County – vertical datum updated from NGVD29 to NAVD88 (-0.4’-0.7’)



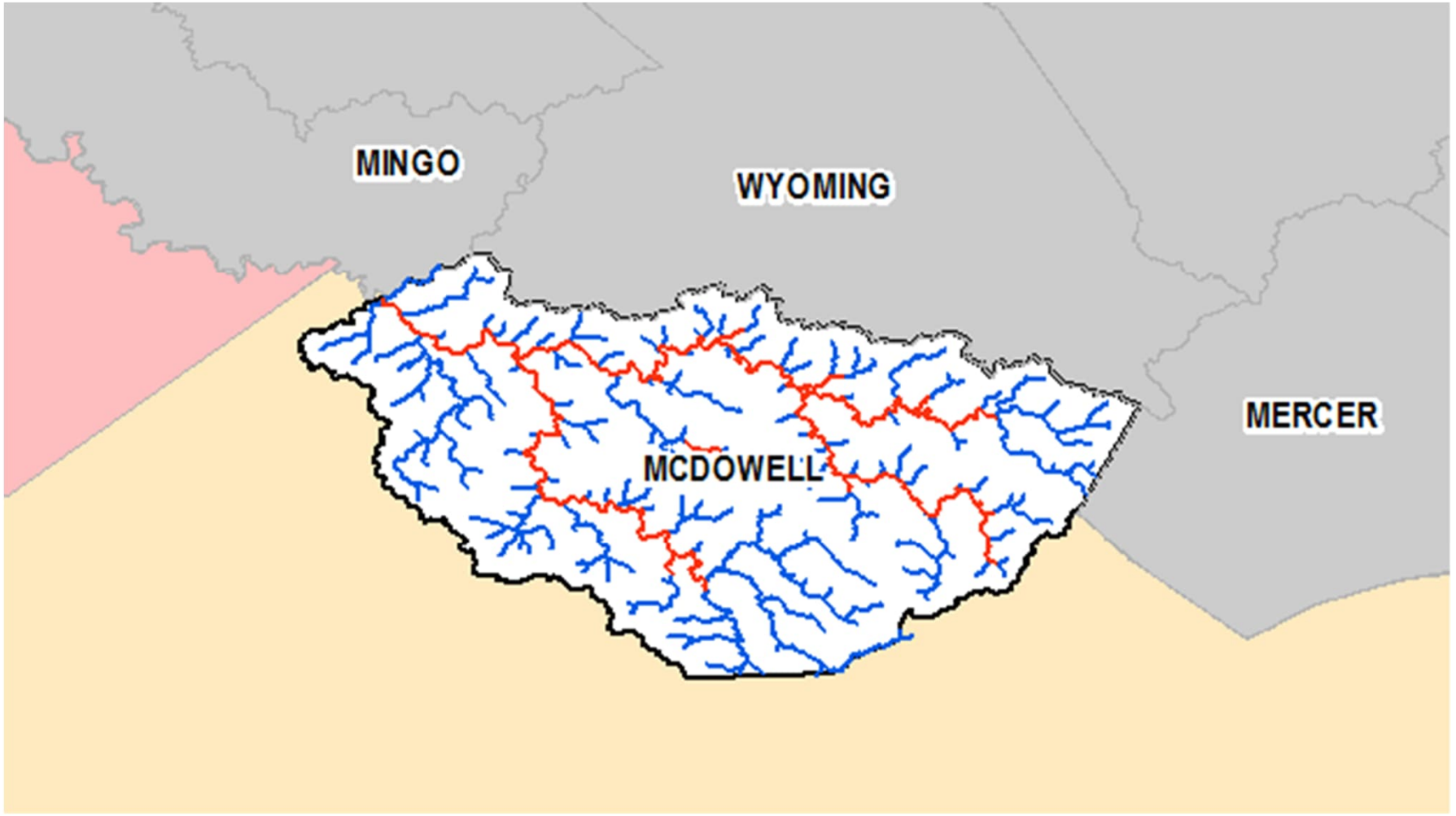
Study Overview (continued)

Revised Modeling and Mapping, including:

- ❑ Evaluation of Letters of Map Change (LOMCs)
  - – Case-by-case results shown in a Summary of Map Actions (SOMA) that is sent to applicable communities with Preliminary Maps and Letters of Final Determination (LFDs)
  - – Letters of Map Revision (LOMRs)
  - – Letters of Map Amendment (LOMAs) – including rectified LOMA locations on the WV Flood Tool
- ❑ Production of associated non-regulatory flood risk

Study Area – McDowell County

The Project Area



Zone AE = 113 miles
Zone A = 325 miles

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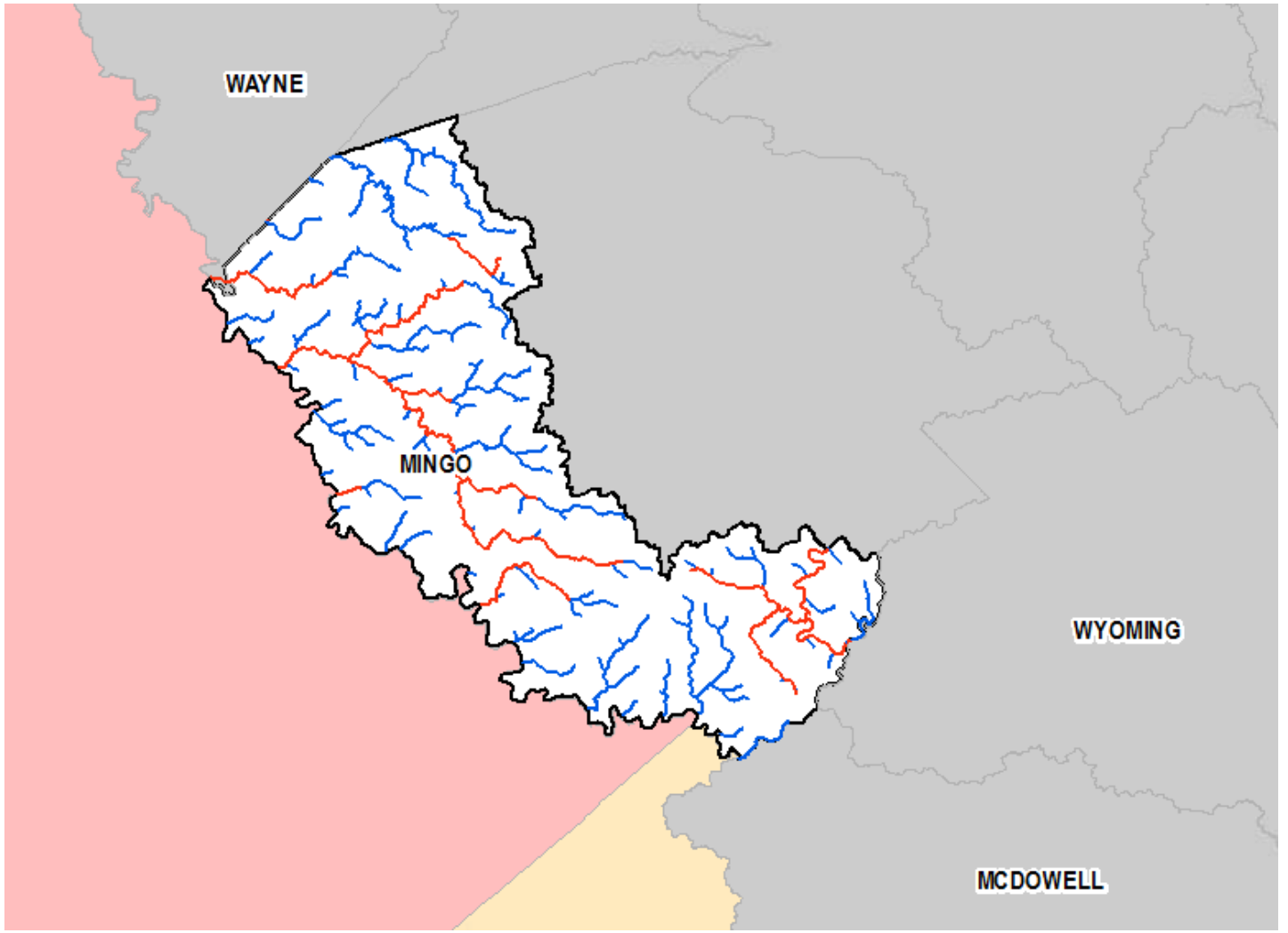
Study Area – Mingo County

The Project Area



Zone AE = 123 miles
Zone A = 228 miles

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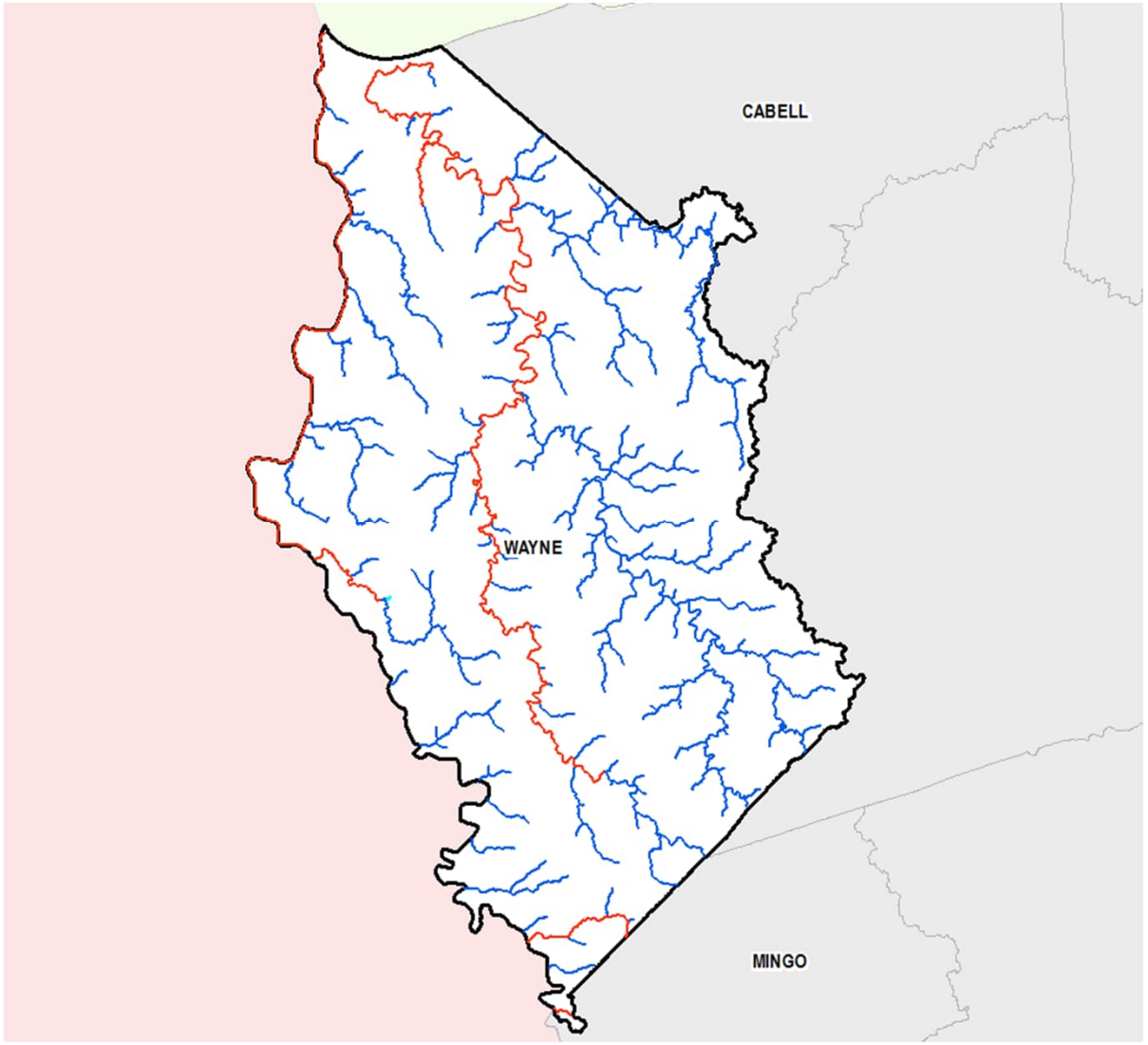
Study Area – Wayne County

The Project Area

Legend

- Zone AE
- Zone A
- WV County Boundaries
- Wayne County
- Kentucky
- West Virginia
- Virginia
- Ohio

Zone AE = 108 miles
Zone A = 337 miles



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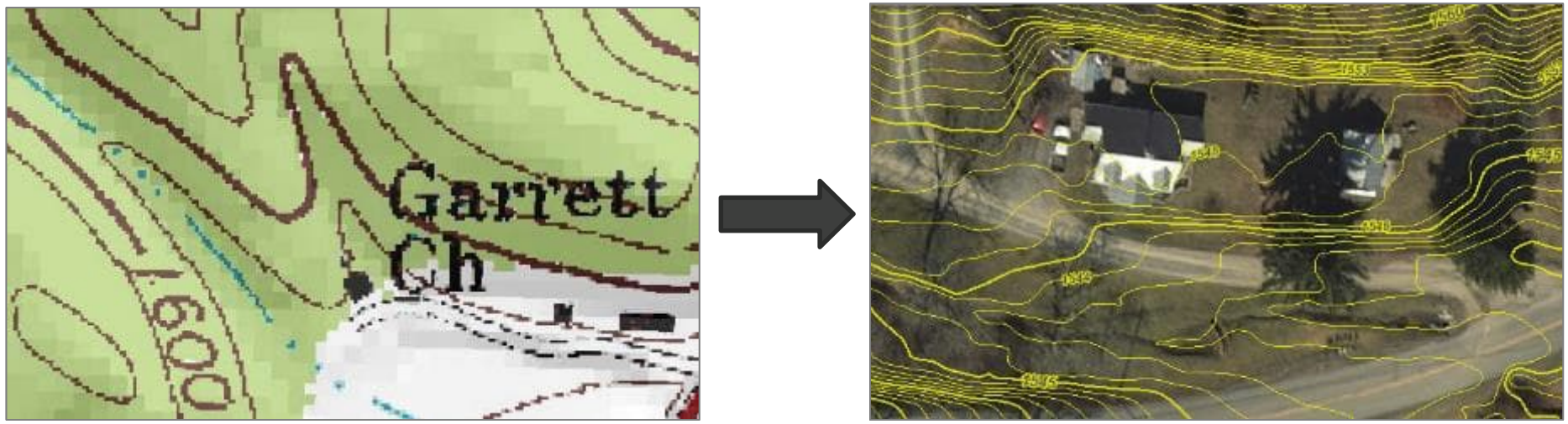
Topographic Data

2018 LiDAR-Based Digital Elevation Model

LiDAR = Light Detection and Ranging

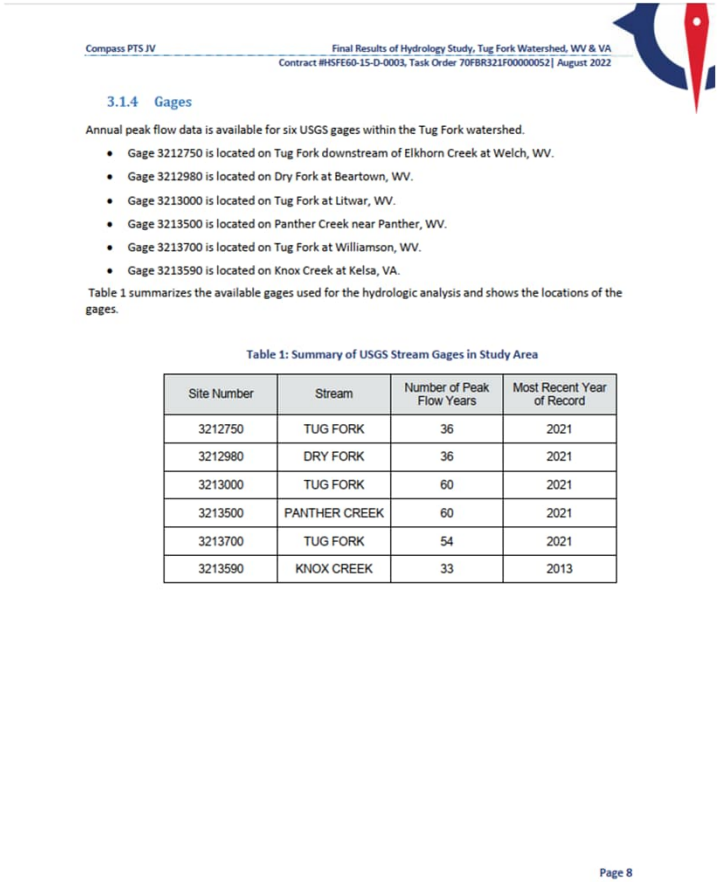
- *Uses light pulses and GPS to survey elevation data*
- *Improves the level of detail for hydraulic modeling and floodplain delineation*



Hydrologic Analyses

- Hydrologic study methods included:
  - USGS Regression Equations
  - Regression Equations Supplemented with USGS Gage Analysis (Bulletin 17C)
  - Regulated Flow Analyses (R.D. Bailey Lake Dam, Beech Fork Dam, East Lynn Dam)
  - Rain-on-grid for 2D analyses (Krouts Creek)
- A comprehensive **Hydrology Report** details the study methods for each reach and compares the effective and proposed discharges.
- The hydrologic study methods will also be published in the FIS Report.

Sample page from the Risk MAP Hydrology Report



Compass PTS JV — Final Results of Hydrology Study, Tug Fork Watershed, WV & VA
Contract #HSFE60-15-D-0003, Task Order 70FBR321F00000052| August 2022

3.1.4 Gages

Annual peak flow data is available for six USGS gages within the Tug Fork watershed.

- Gage 3212750 is located on Tug Fork downstream of Elkhorn Creek at Welch, WV.
- Gage 3212980 is located on Dry Fork at Beartown, WV.
- Gage 3213000 is located on Tug Fork at Litwar, WV.
- Gage 3213500 is located on Panther Creek near Panther, WV.
- Gage 3213700 is located on Tug Fork at Williamson, WV.
- Gage 3213590 is located on Knox Creek at Kelsa, VA.

Table 1 summarizes the available gages used for the hydrologic analysis and shows the locations of the gages.

Table 1: Summary of USGS Stream Gages in Study Area

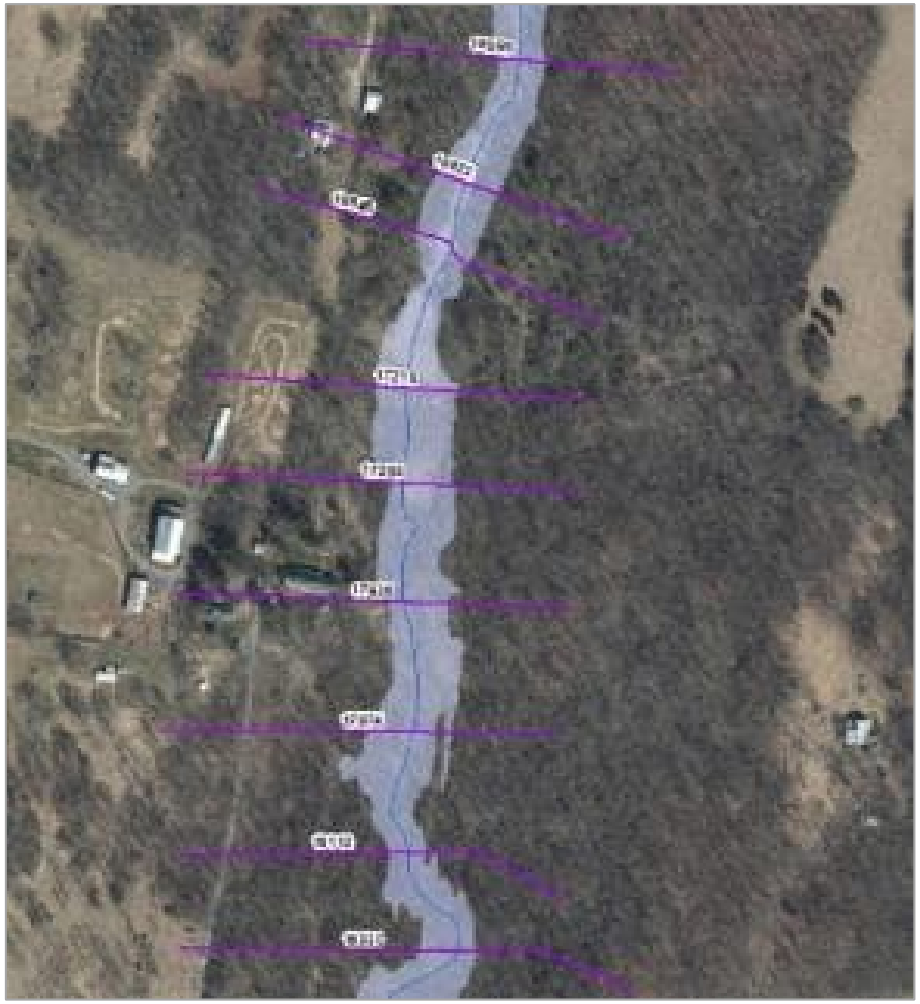
Site Number	Stream	Number of Peak Flow Years	Most Recent Year of Record
3212750	TUG FORK	36	2021
3212980	DRY FORK	36	2021
3213000	TUG FORK	60	2021
3213500	PANTHER CREEK	60	2021
3213700	TUG FORK	54	2021
3213590	KNOX CREEK	33	2013

Page 8

Hydraulic Analyses – Zone A

Approximate "Zone A" Base Level Study

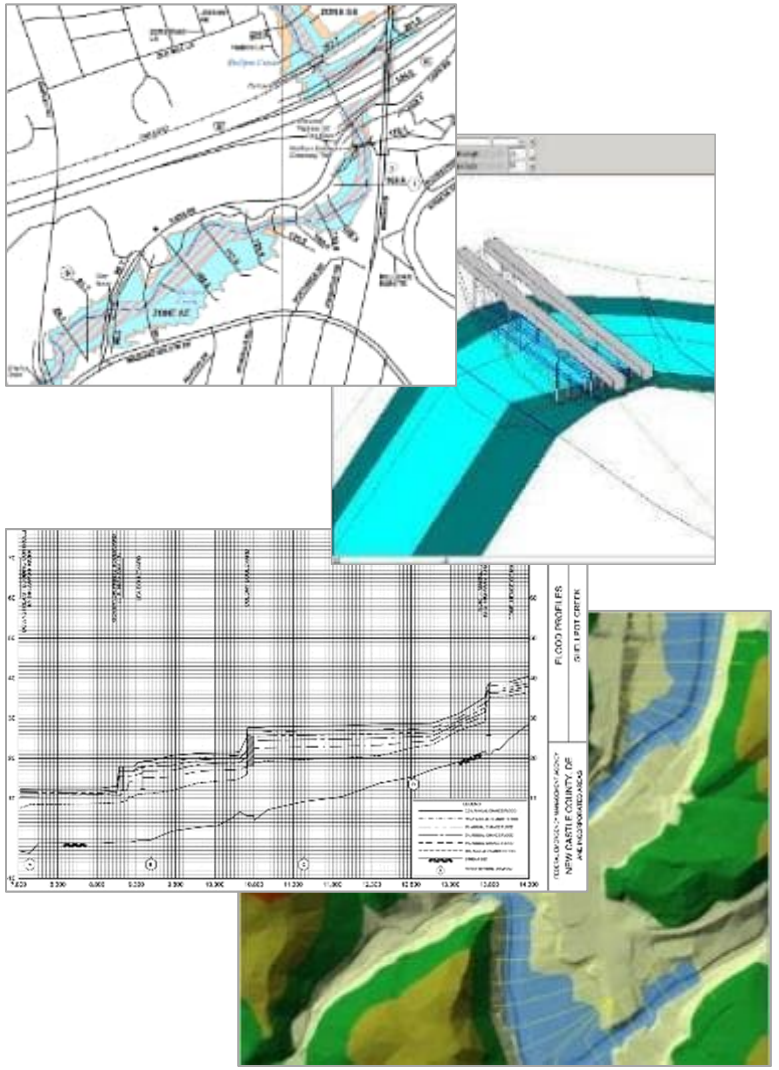
- Generally used in areas with lower development or lower development potential
- Cross sections generated from LiDAR (automated processes)
  - No bathymetric survey (approximated trapezoidal channel)
  - No hydraulic structures are surveyed or modeled (some exceptions for 2D Zone A)
- FIRM **will not** show Floodway or BFEs (**but** FIRM database will include cross sections and their associated water surface elevations in the FIRM GIS Database, **which will be viewable on the WV Flood Tool!**)
- FIS Report **will not** show flood profiles for Zone A reaches



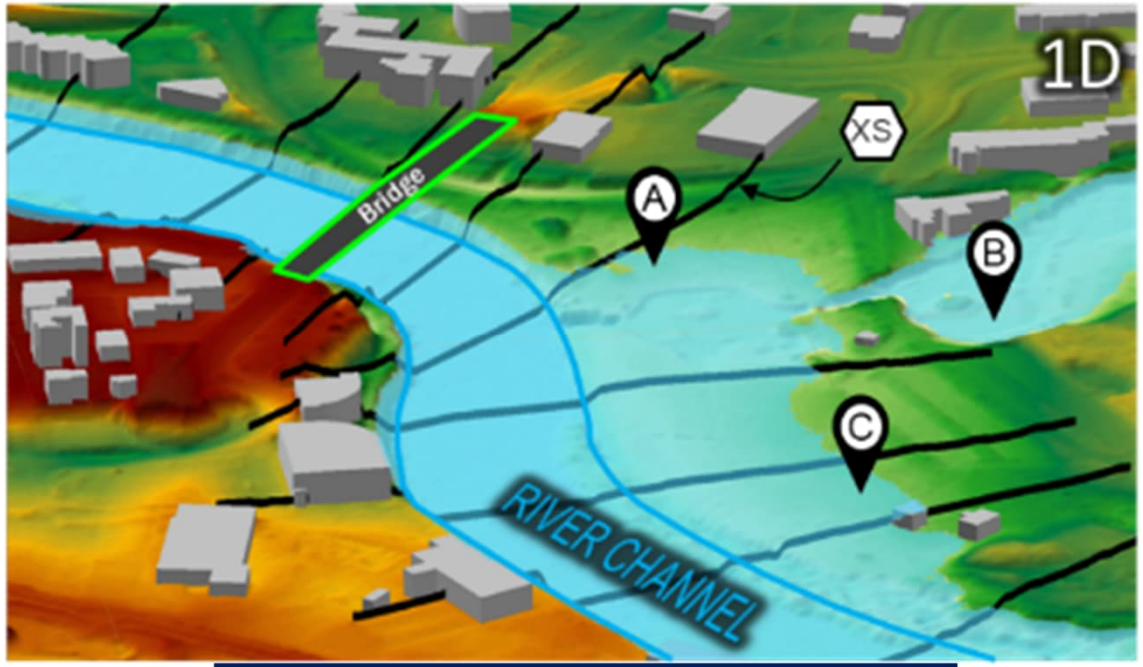
Hydraulic Analyses – Zone AE

Detailed "Zone AE" Study

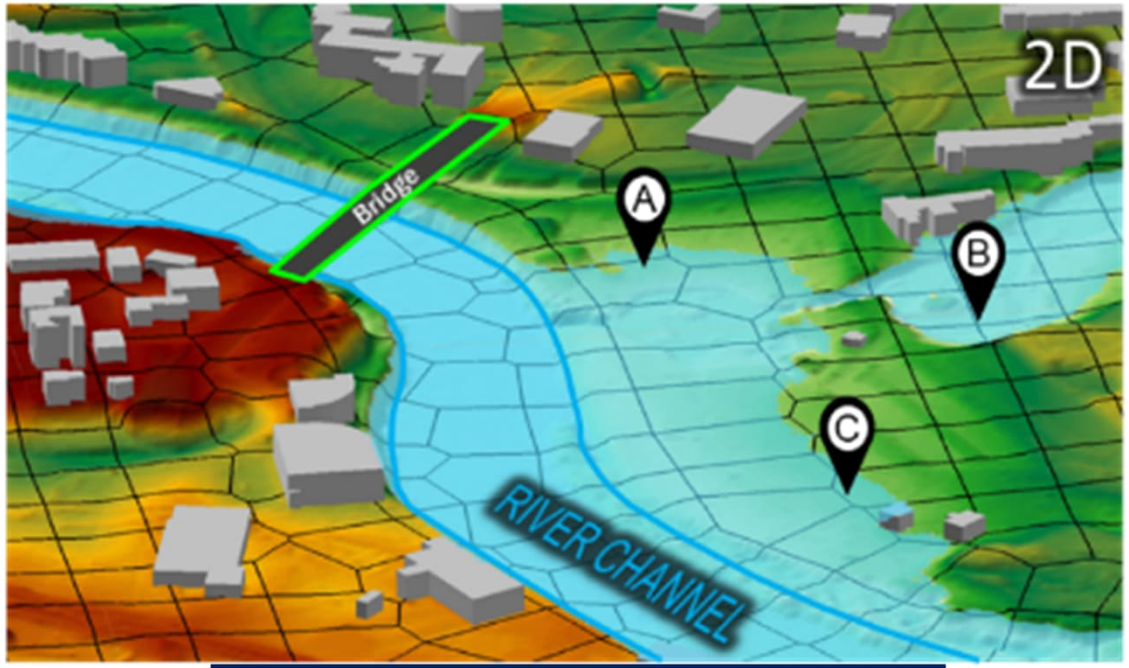
- Generally used in areas with higher development or higher development potential
- Cross sections use information from survey and field reconnaissance
  - Include channel bathymetry
  - Structures are modeled (e.g., culverts, bridges)
- Detailed hydraulic parameter refinement (coefficients, obstructions, Manning's ‘n’ values)
- FIRM **will** show Floodway, BFEs, 1% and 0.2%-annual-chance event floodplains
- FIS Report **will** show flood profiles for 10-, 4-, 2-, 1-, 0.2-, and 1% Plus flood frequencies (1D only)



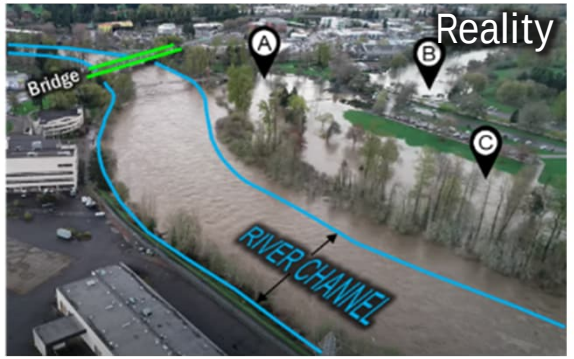
Hydraulic Analyses – 1D vs 2D



1D: most existing NFIP studies; confined flow; flow generally in one direction



2D: unconfined, split/diverted flows; flow in multiple directions; wide/flat floodplains; shallow



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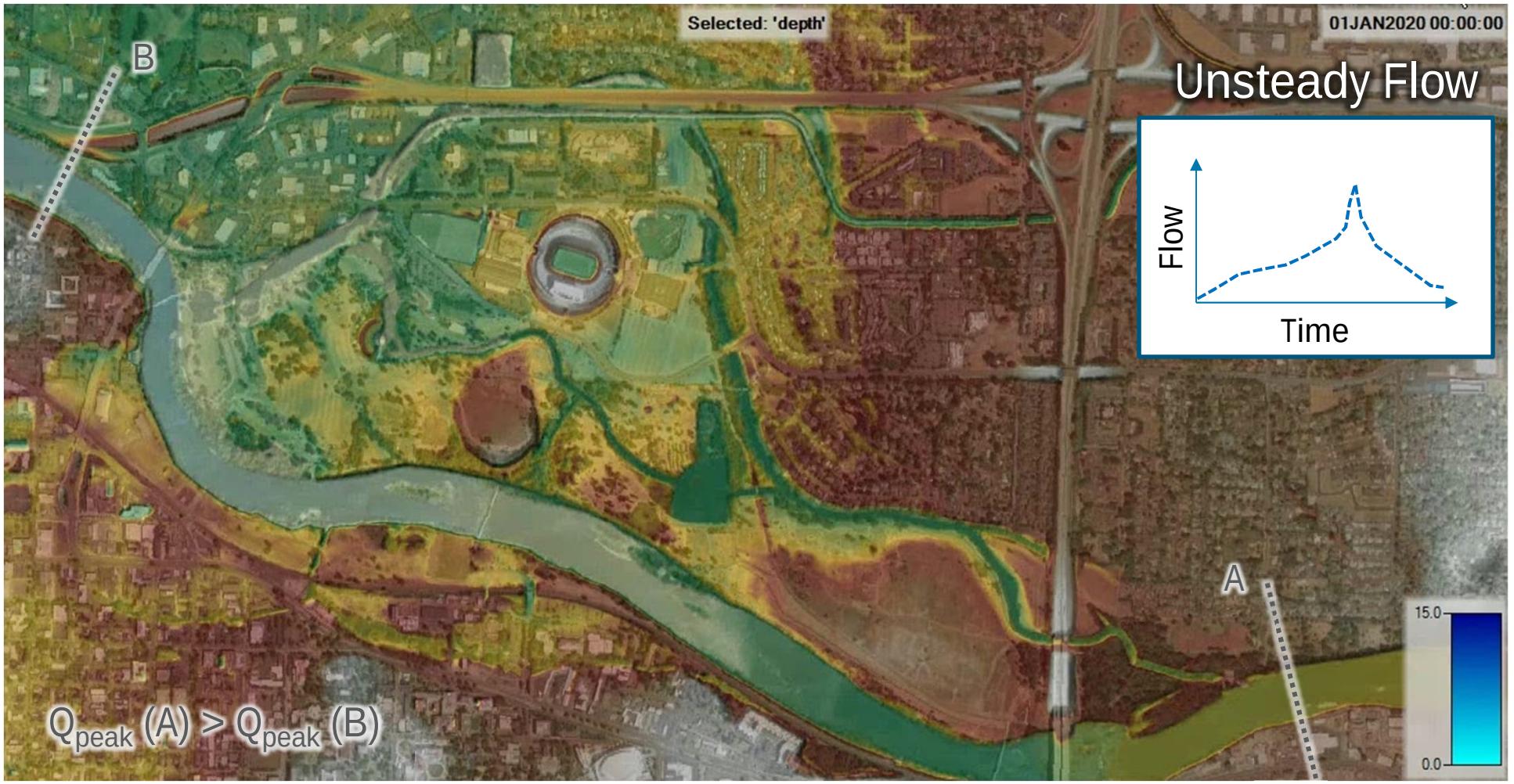
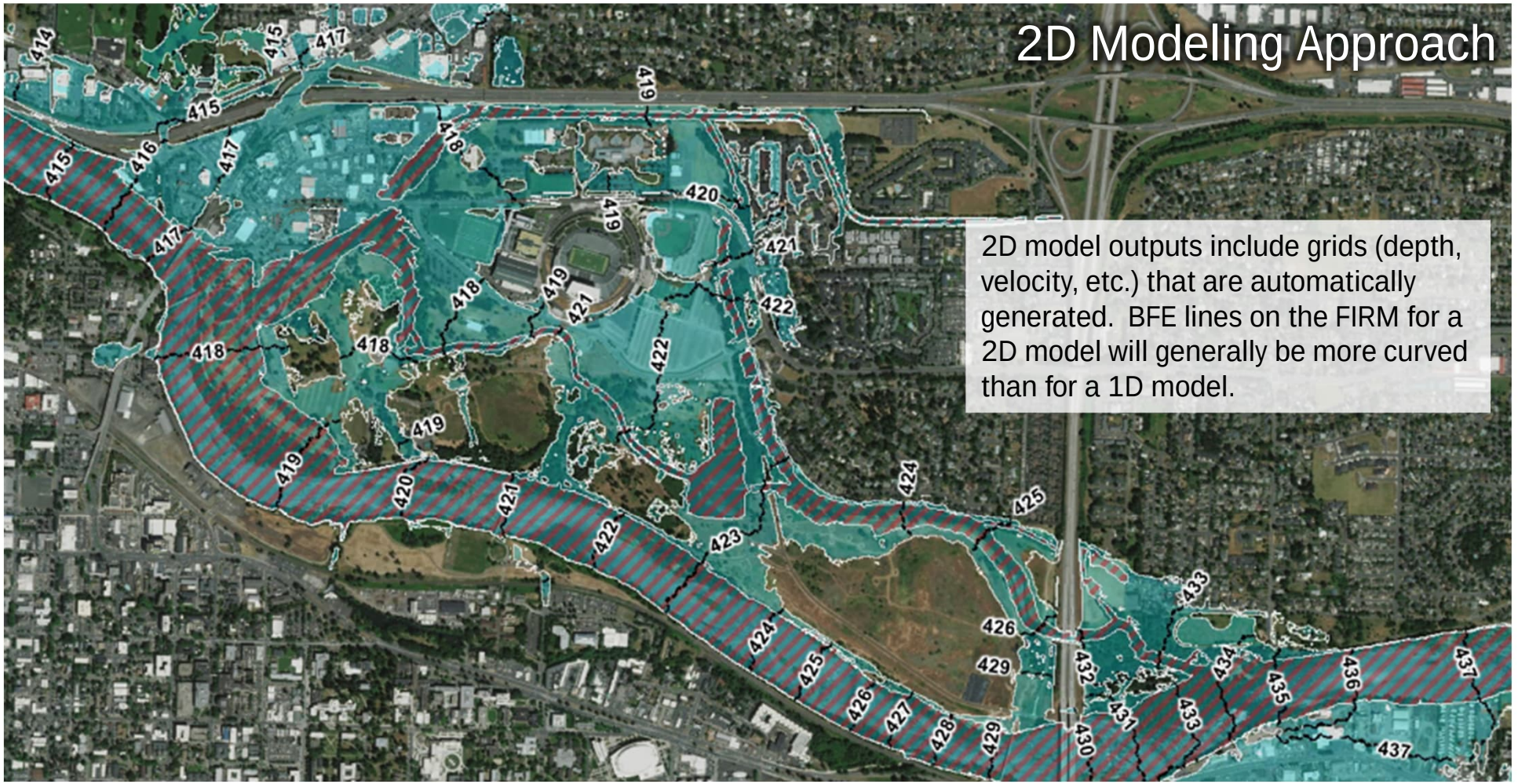
Example 2D Modeling – Unsteady Flow



Example 2D Modeling – FIRM Depiction



Study Impacts

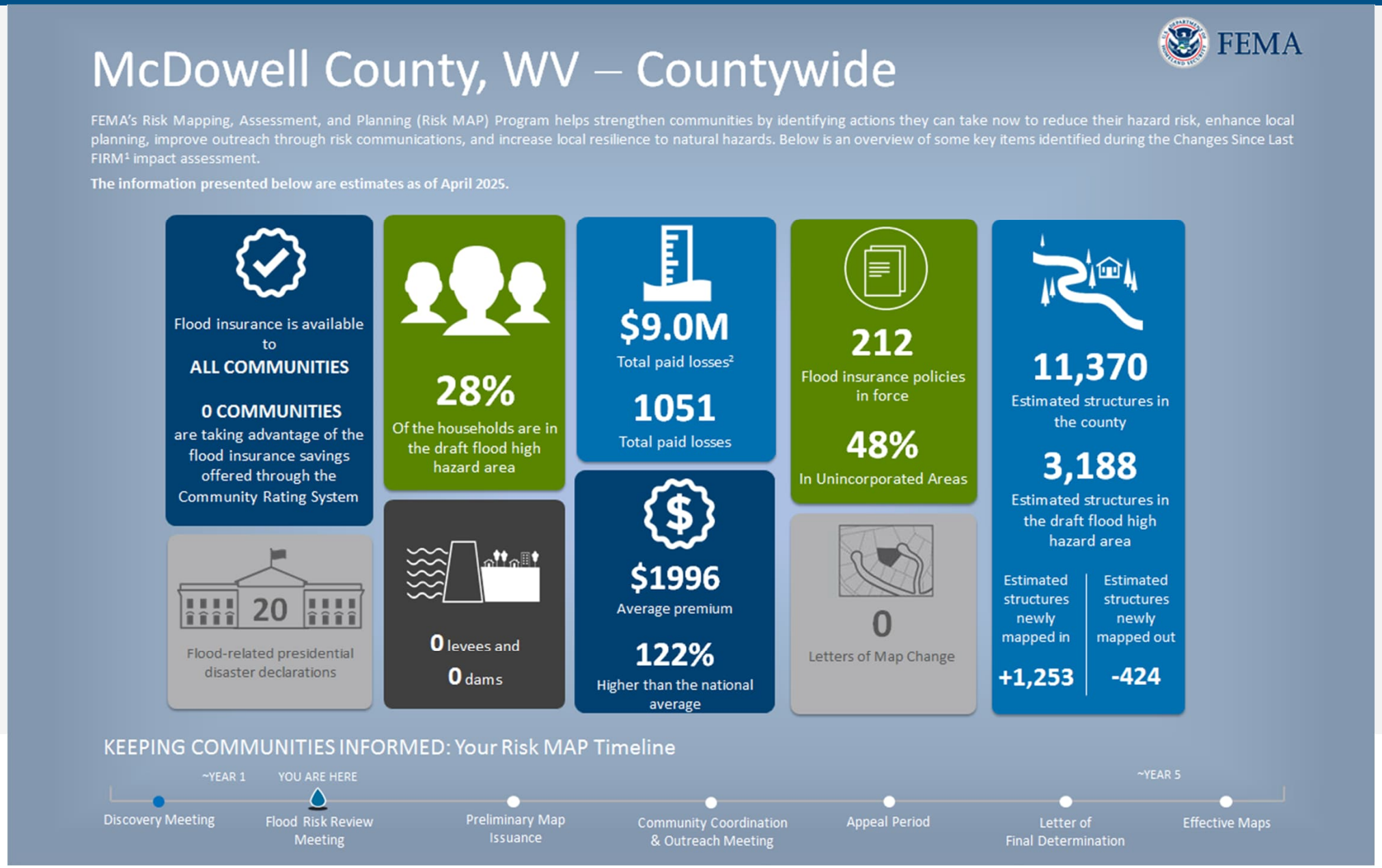
Significant Impacts Overview

- Compared to the effective NFHL, widening and narrowing of the 1%-annual-chance floodplain (SFHA) extent was observed throughout the county.
- Extended study reaches (with drainage areas of 1 square miles and greater, and not on current effective FIRM) result in new properties within the SFHA.
- Most streams experienced both increases and decreases when comparing the computed model WSELs to the current regulatory BFEs.
- There are significant areas of decrease in Mingo County along Trace Fork.

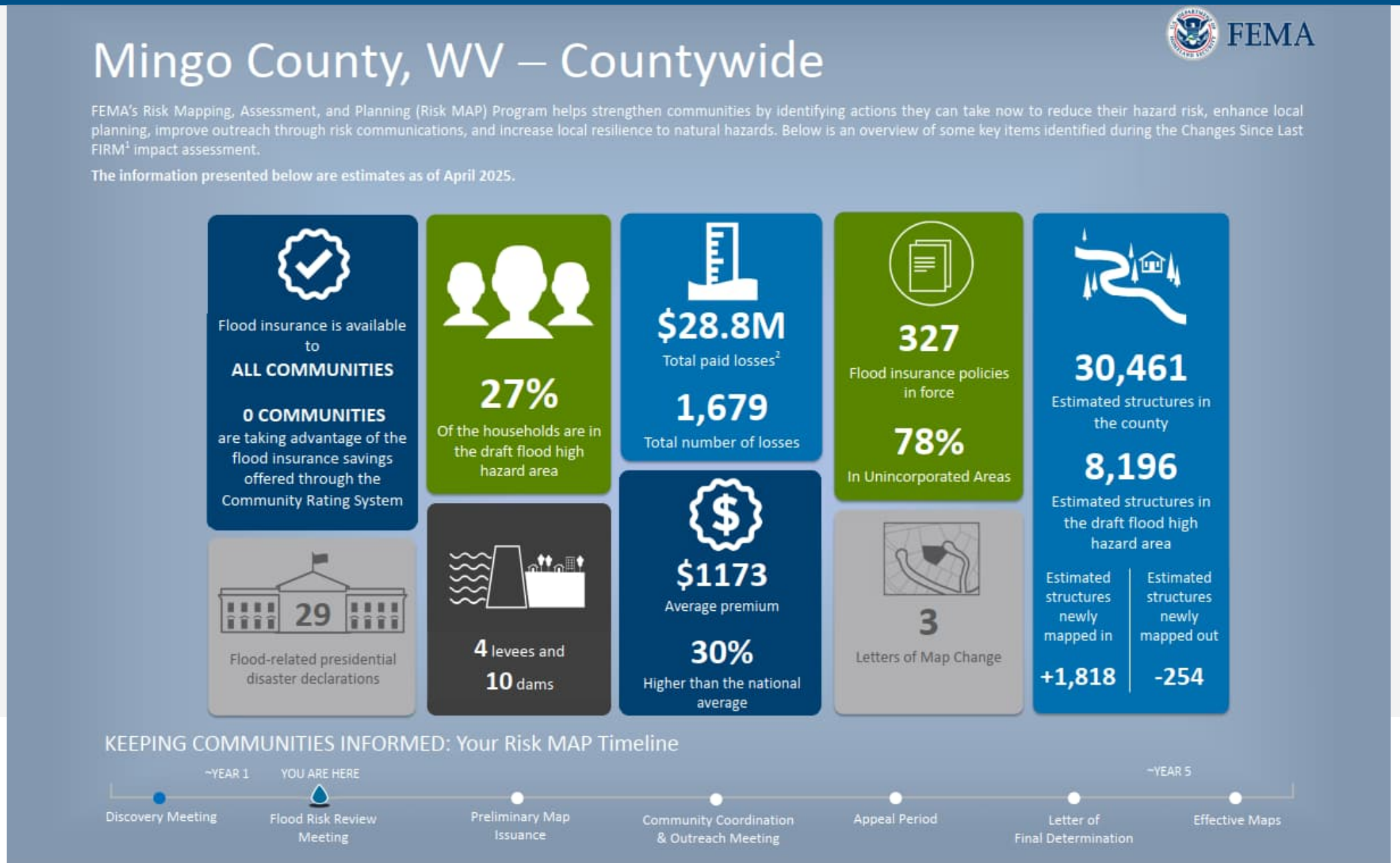
SFHA Updated Map Conditions

County	Remaining in SFHA	Newly Mapped In SFHA	Newly Mapped Out SFHA	Total Structures in New SFHA
McDowell	1,935	1,253	424	3,188
Mingo	6,378	1,818	254	8,196
Wayne	3,559	1,172	2,156	4,731

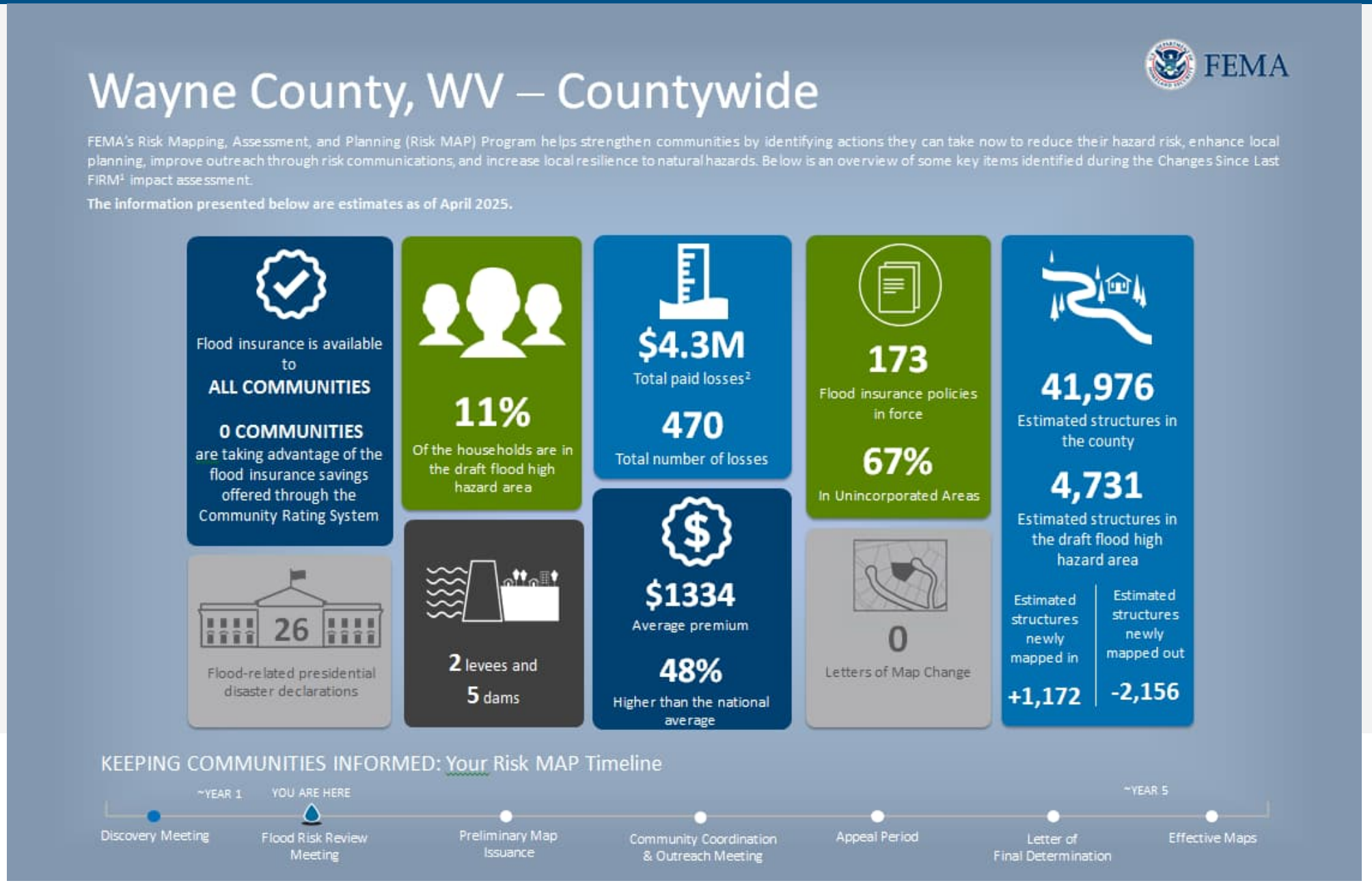
Flood Risk Dashboard



Flood Risk Dashboard



Flood Risk Dashboard



Flood Risk Dashboard (page 2)

TAKE ACTION: Next Steps

Your Hazard Mitigation Plan was approved **October 2023,** and now may be the time to update and review. Some projects you identified to reduce flood risk were:

- Reduce or eliminate the impact of hazards on infrastructure throughout the State
- Provide consistent, continual education of the whole community on reducing long-term vulnerability throughout the State of West Virginia.

Find ideas to mitigate flood risk here: ***https://www.fema.gov/sites/default/files/2020-06/fema-mitigation-ideas_02-13-2013.pdf***

Immediate Next Steps:

1. **Attend the Flood Risk Review Meeting**

FRR Meeting is on **June 2, 2025** at **1:00pm** (Digital/Online Meeting)

2. **Review your preliminary FIRM/FIS**[1]

The preliminary FIRMs are scheduled to be issued in **Early 2026**

What's on the Horizon:

1. **Community Coordination and Outreach Meeting**

2. 90-day regulatory **Appeal Period** following the Community Coordination and Outreach Meeting

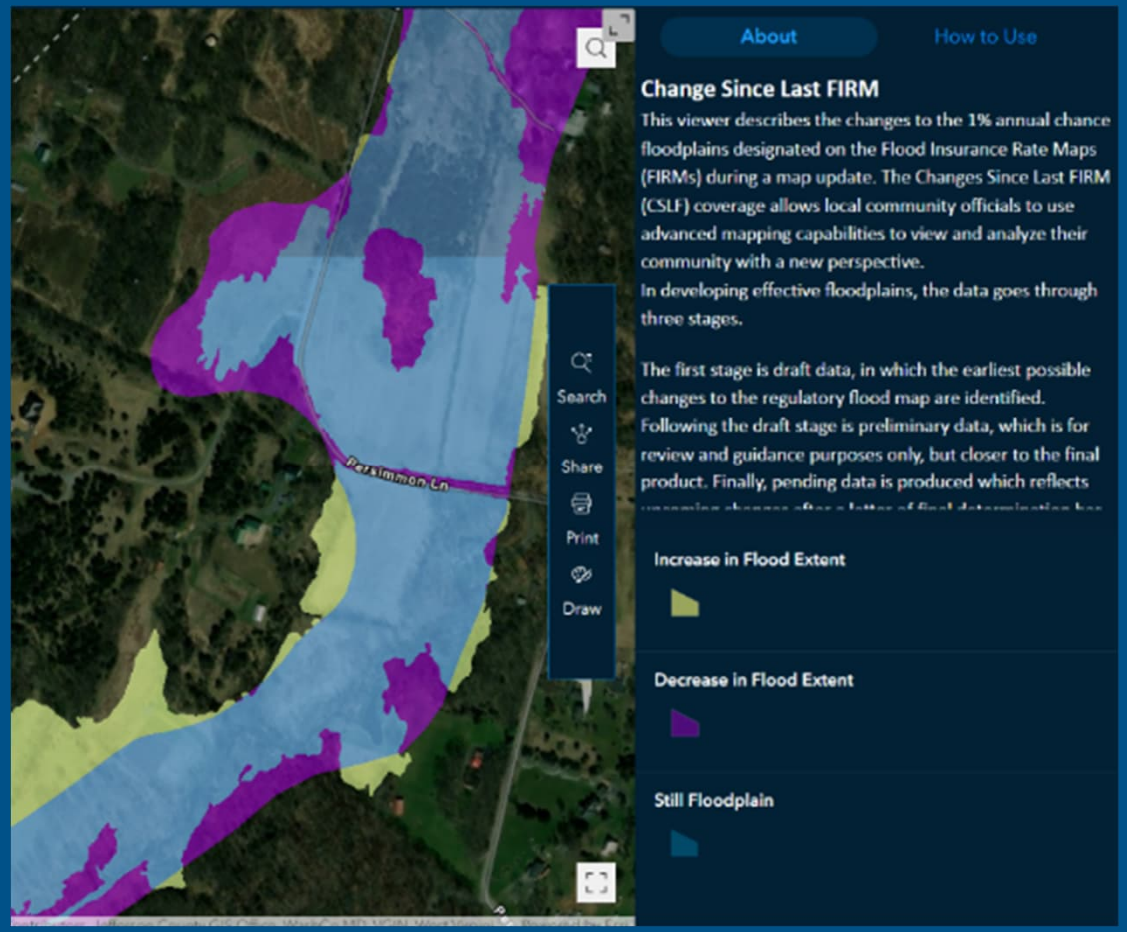
3. Letter of Final Determination issued following Appeal Period

[1] Flood Insurance Rate Map / Flood Insurance Study (FIRM/FIS)

How Did the Floodplain Maps Change?

- FEMA Region 3
  Changes Since Last FIRM (CSLF) Viewer:
  https://arcg.is/1GS0T80
- Change in Floodplain Extents:
  - Purple – Decrease
  - Blue – Still Floodplain
  - Yellow – Increase

*Map view has scale-dependent layers



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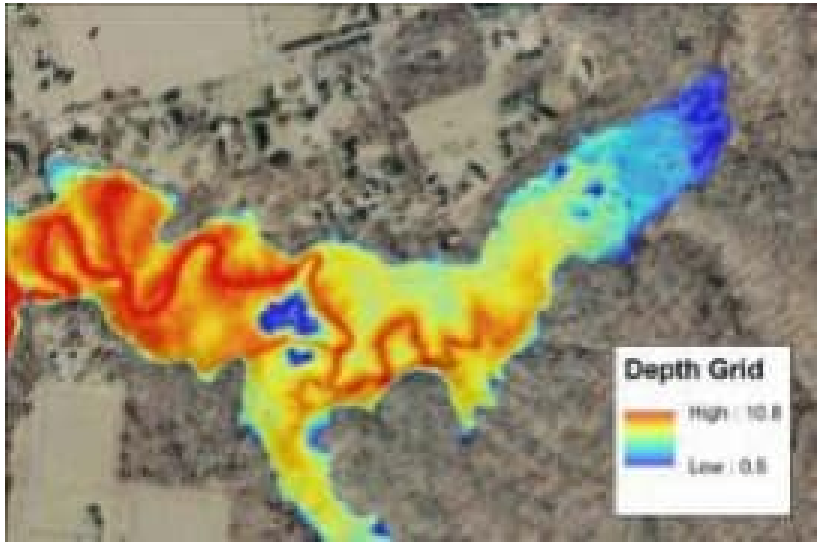
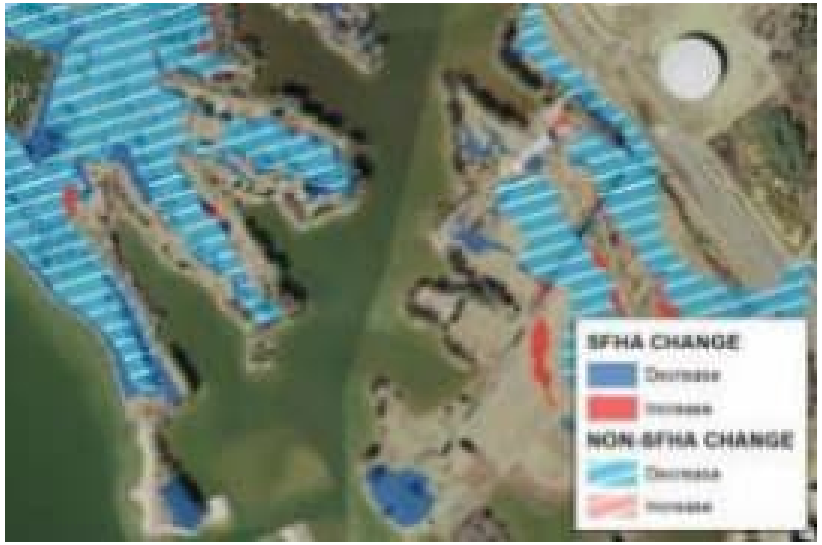
Using Flood Risk Data to Identify and Reduce Risk

FEMA Flood Risk GIS Datasets

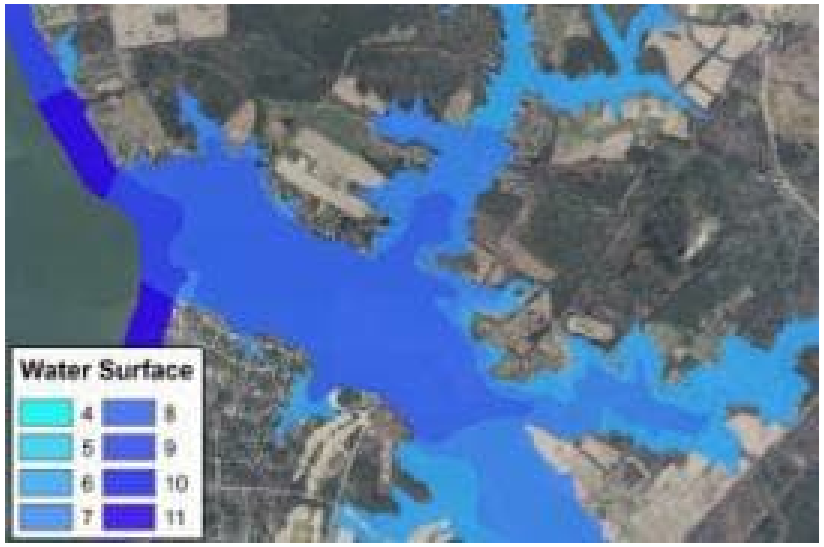
Flood Depth and Analysis Grids





Changes Since Last FIRM

Water Surface Elevation Grids



Where to Find Flood Risk Data

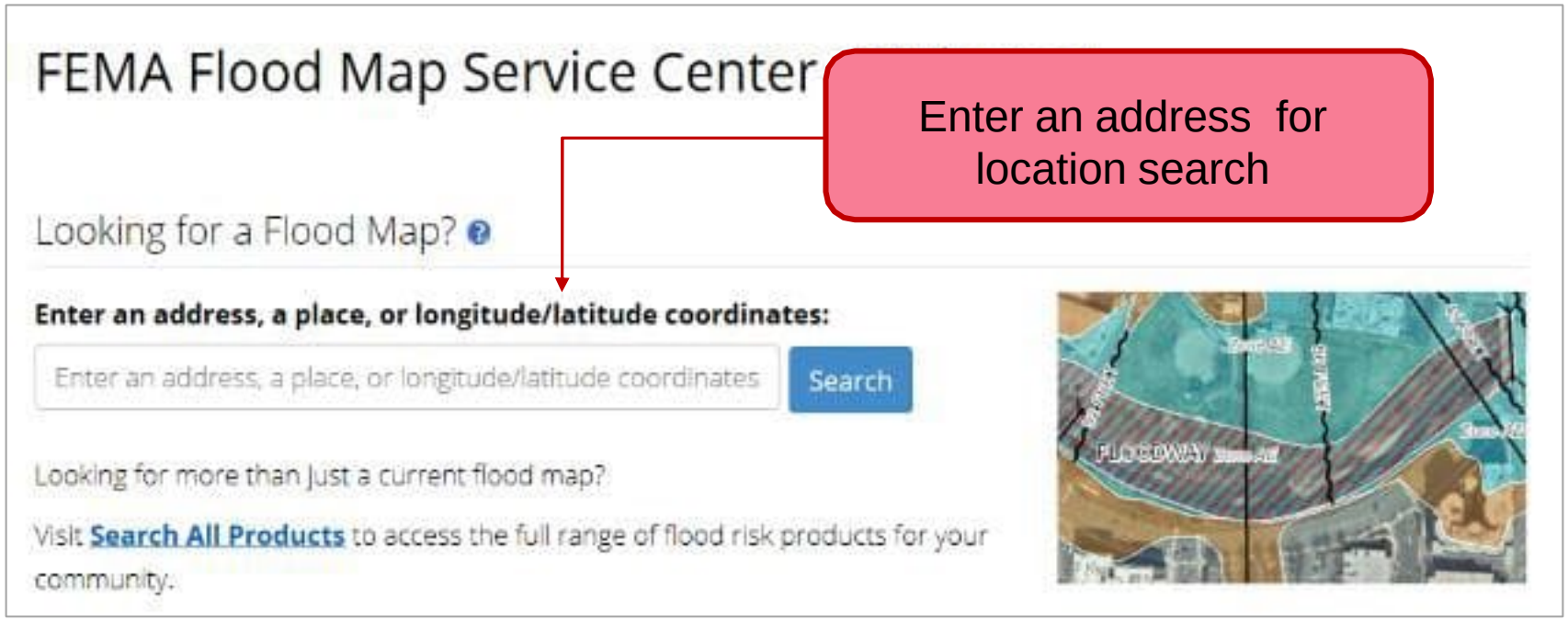
- FEMA's Flood Map Service Center (MSC)
  - Here, you can view effective maps online. You can also download current effective flood hazard data and additional hazard and risk data.
  - https://msc.fema.gov/portal/home

- National Flood Hazard Layer (NFHL)
  - This geospatial data viewer contains current effective flood hazard data.
  - https://www.fema.gov/flood-maps/national-flood-hazard-layer

- State Flood Tool
  - This geospatial data viewer contains current effective flood hazard data and additional hazard and risk data.
  - https://www.mapwv.gov/flood

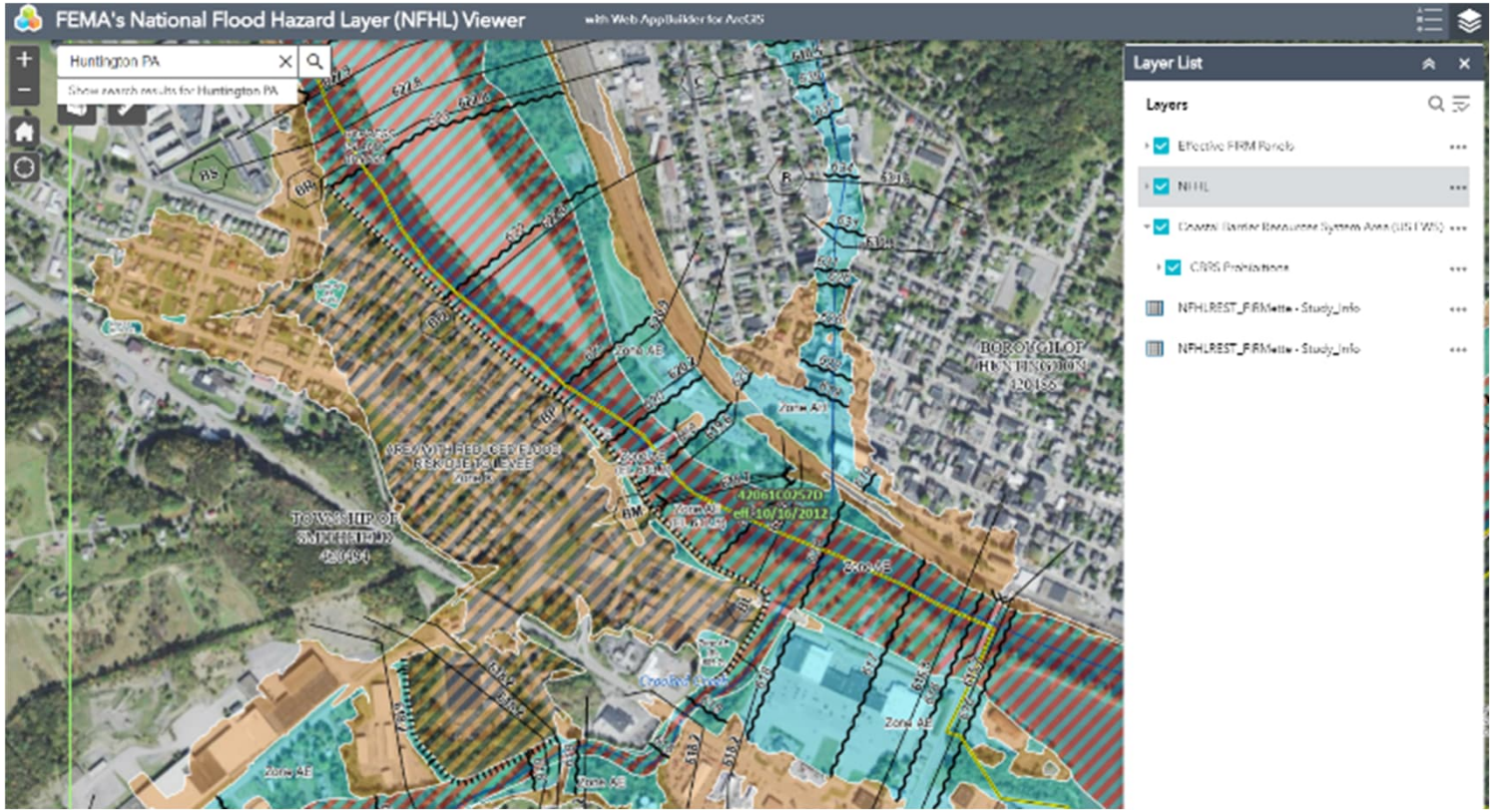
Where Can I Find My Flood Maps?

The FEMA Map Service Center (MSC) is the official public source for flood hazard information: https://msc.fema.gov/portal/home.



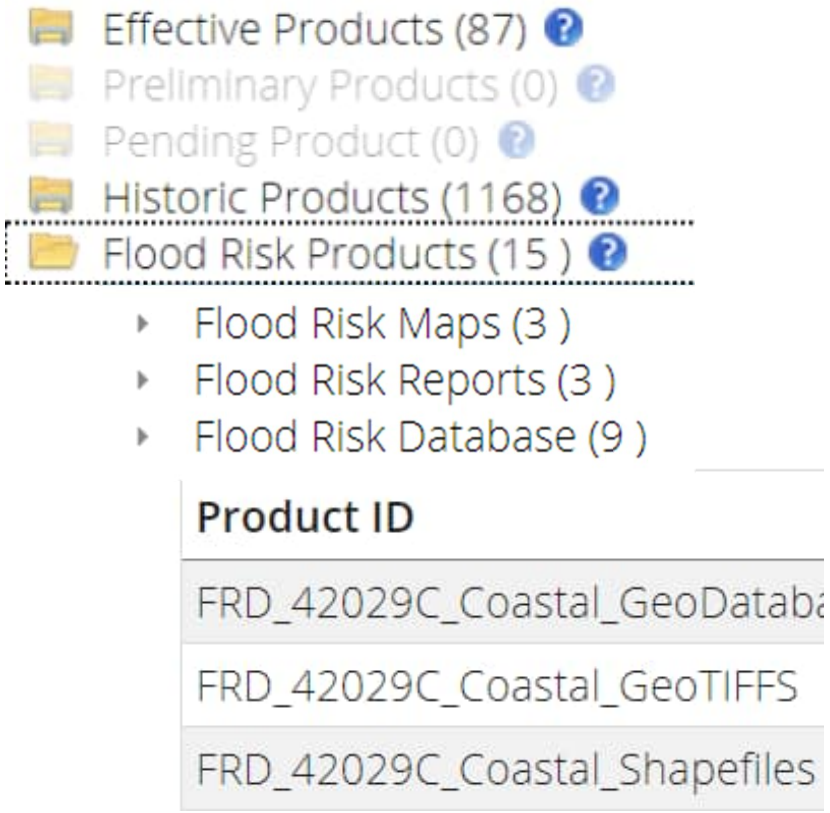
National Flood Hazard Layer

The NFHL shows the effective FEMA flood map data, including Letters of Map Revision (LOMRs).Visit https://www.fema.gov/national-flood-hazard-layer-nfhl for multiple options to view and download NFHL data.



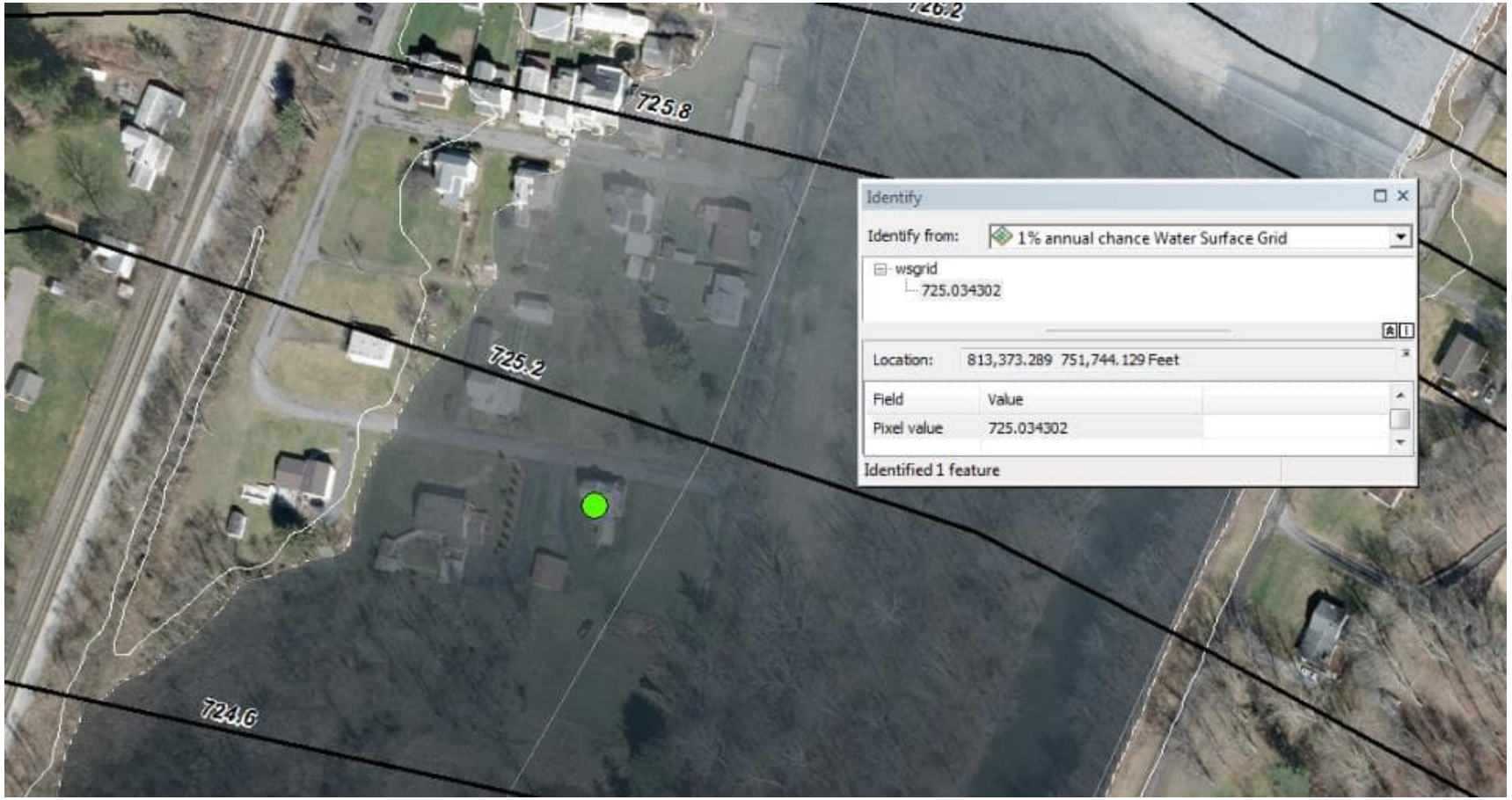
Additional Hazard and Risk Data

If additional hazard and risk data are available for your community, the MSC Search Results will allow you to expand the Flood Risk Products folder.



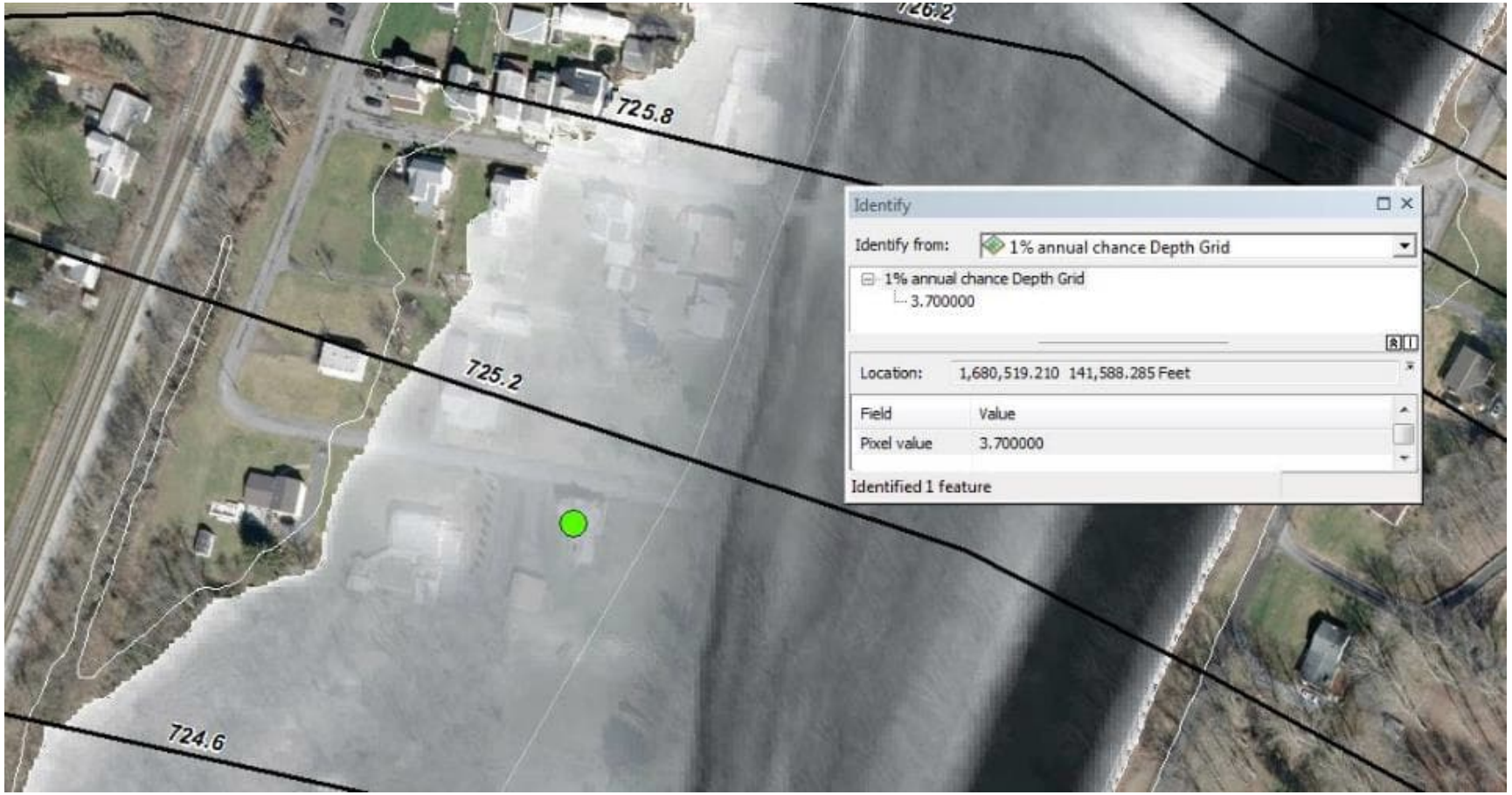
Water Surface Elevation Grids

Represents the continuous water surface elevations (as determined at modeled cross sections and interpolated between cross sections) for each of the modeled flood frequencies.

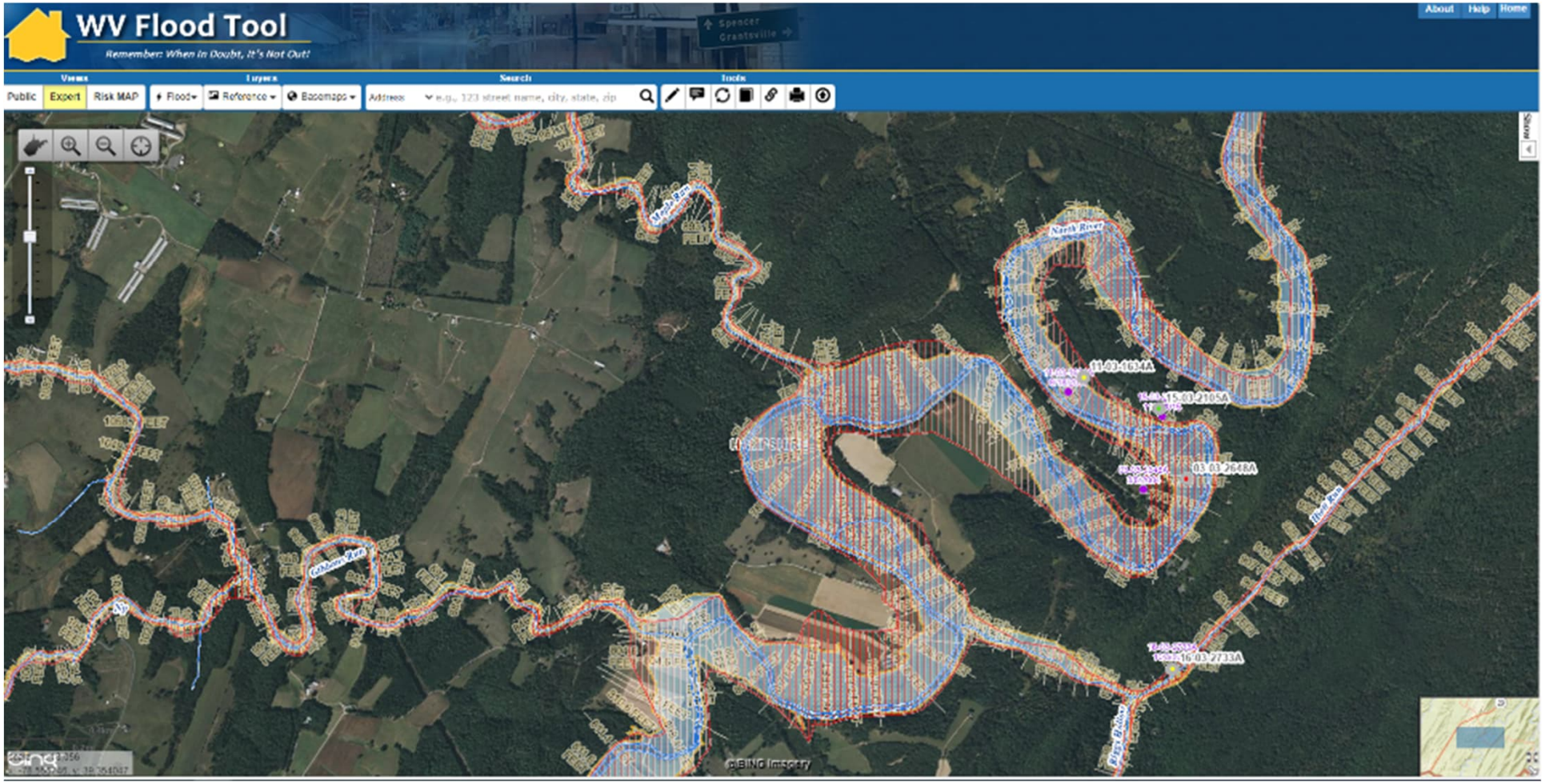


Depth Grids

Represents the difference between the ground surface elevation and the water surface elevations in feet for each of the modeled flood frequencies.



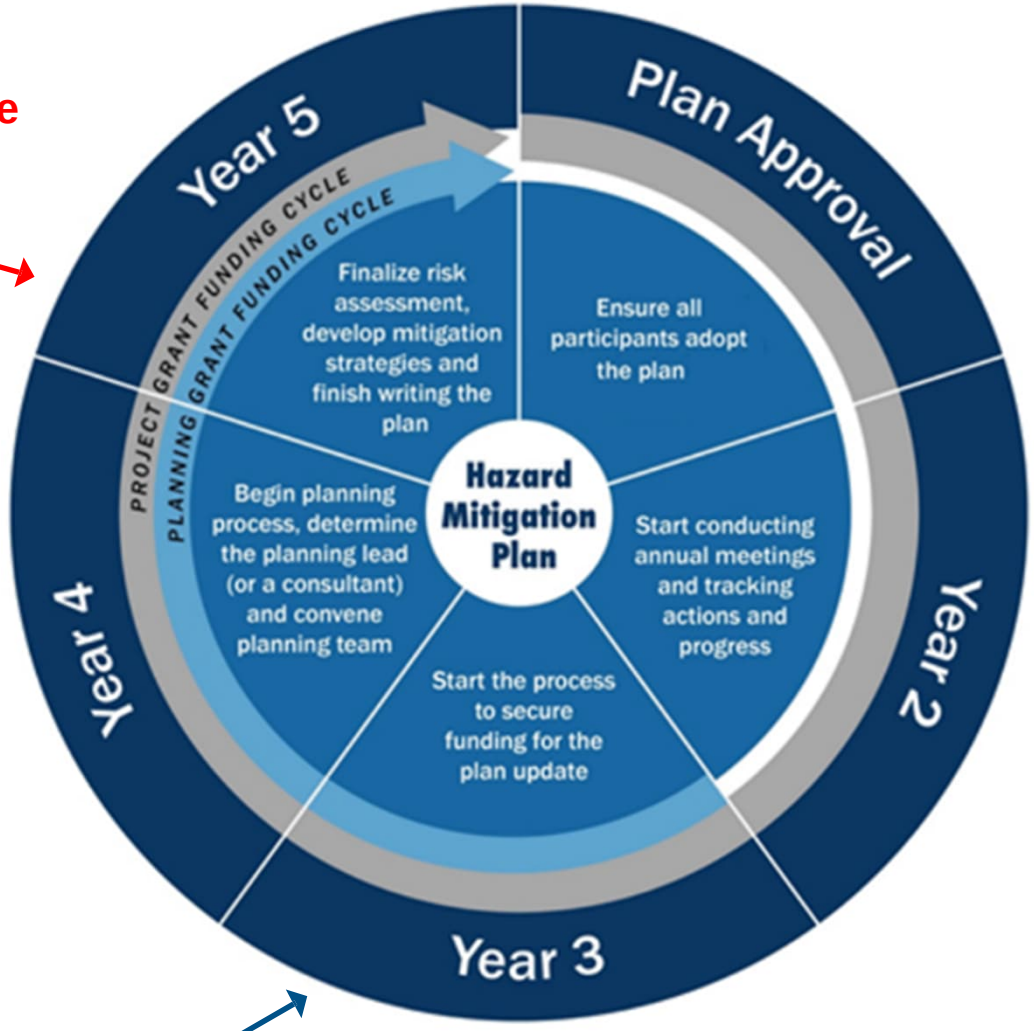
West Virginia Flood Risk Tool



[WV Flood Tool (mapwv.gov)]

Flood Hazard Mitigation Planning

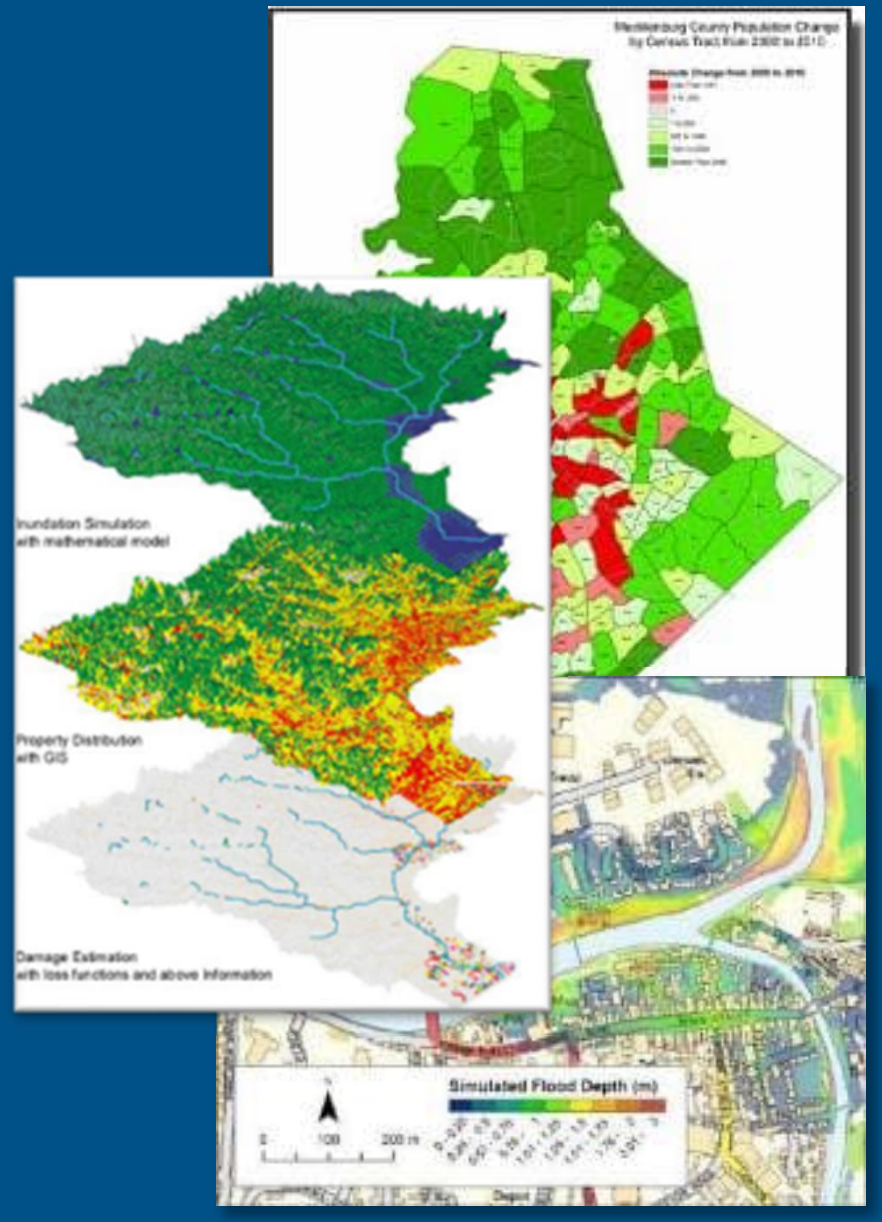
It's time to update the risk assessment in your hazard mitigation plan



The West Virginia State HMP is here

Using Flood Risk Data to Manage Development

- Structure-based depth of flooding analyses
- Prioritization of mitigation action
- Residential/commercial density in the floodplain
- Location/inundation area of historic events
- Properties with insurance policies and as a percentage of the population
- Areas of population growth
- Areas requiring protection



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Floodplain Management

Flood Risk Doesn't Stop at a Line

- 40% of all flood insurance claims come from outside high-risk areas.
- Your community can regulate to standards higher than the NFIP minimum standards. Consider strengthening regulations using:
  - 0.2%-annual-chance flood zone
  - "Freeboard" – require additional feet above a BFE
  - Buffer around SFHA
  - Flood depth grids

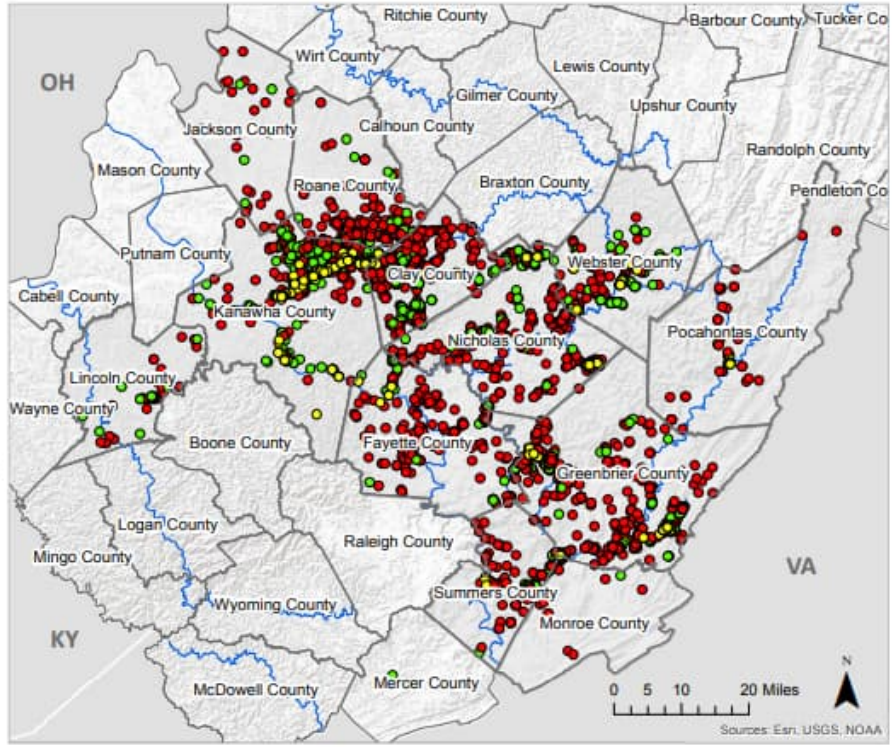


FIGURE 8: Location of NFIP Claims and Individual Assistance Applications. (green = inside 1% annual chance floodplain; yellow = inside 0.2% annual chance floodplain; red = outside mapped floodplain)

June 2016 –West Virginia

- Many homes outside the SFHA also flooded. Some of these households had flood insurance, but many did not. Homeowners with flood insurance recover more quickly than those without.
- The flood in June 2016 was not a rare, "1 in 1,000 year event." Although the amount of rain that fell was unusual; rainfall and flooding are different.
- The latest data shows that the level of flooding that occurred in 2016 could happen more frequently than previously thought. In many areas, the event has at least a 1% chance of happening each year in the future.

Source: https://www.fema.gov/sites/default/files/documents/Region_III_WV_FloodReport.pdf

Floodplain Management at FRR

Look at where there are changes to the SFHA in your community

Share with permitting, planning, and other colleagues to direct development outside of the SFHA today and in future

Consider higher standards or joining the Community Rating System to support your community

FRR: Flood Risk Review
SFHA: Special Flood Hazard Area

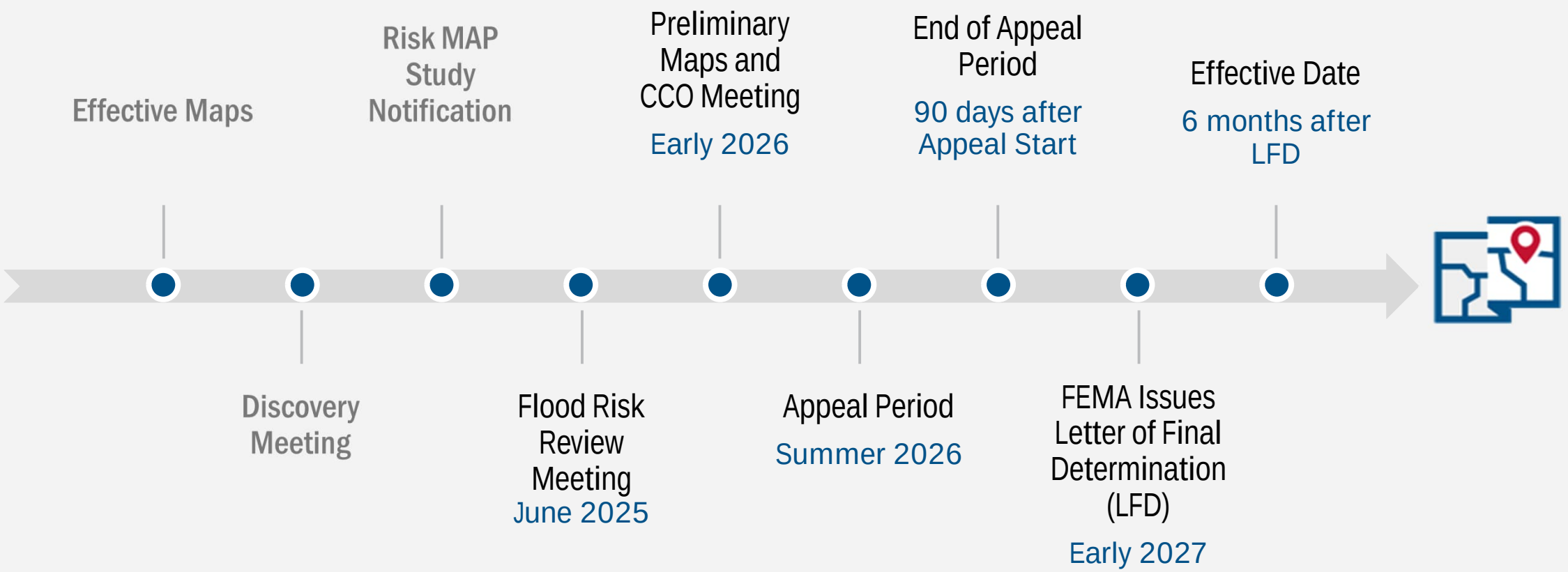
Floodplain Management Big Picture

Build it right and lower the impact of future flood losses while improving resiliency

Build it wrong and the result could be increased flood losses and higher flood insurance premiums

Discussion

Timeline – Looking Ahead



We want to hear from you!

- 30-day review and comment period
- WV Flood Tool: https://www.mapwv.gov/flood
- Review the materials we will be sending you
- We are available to answer questions
- Talk about mitigation actions in your community
- *Thank you for your participation!*

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