

WV Flood Tool Reference Layers

Reference Layers

Elevation (FEMA-purchased QL2 statewide)

Aerial Imagery (HMGP 30 counties)

E-911 Addresses (HMGP 8 communities)

Parcels / Assessment Records (HMGP 7 counties)

Building Footprints

Boundaries

6/14/2022 Update

Kurt Donaldson | Eric Hopkins | Maneesh Sharma
WVU GIS Technical Center (kdonalds@wvu.edu)

State GIS Data Contracts

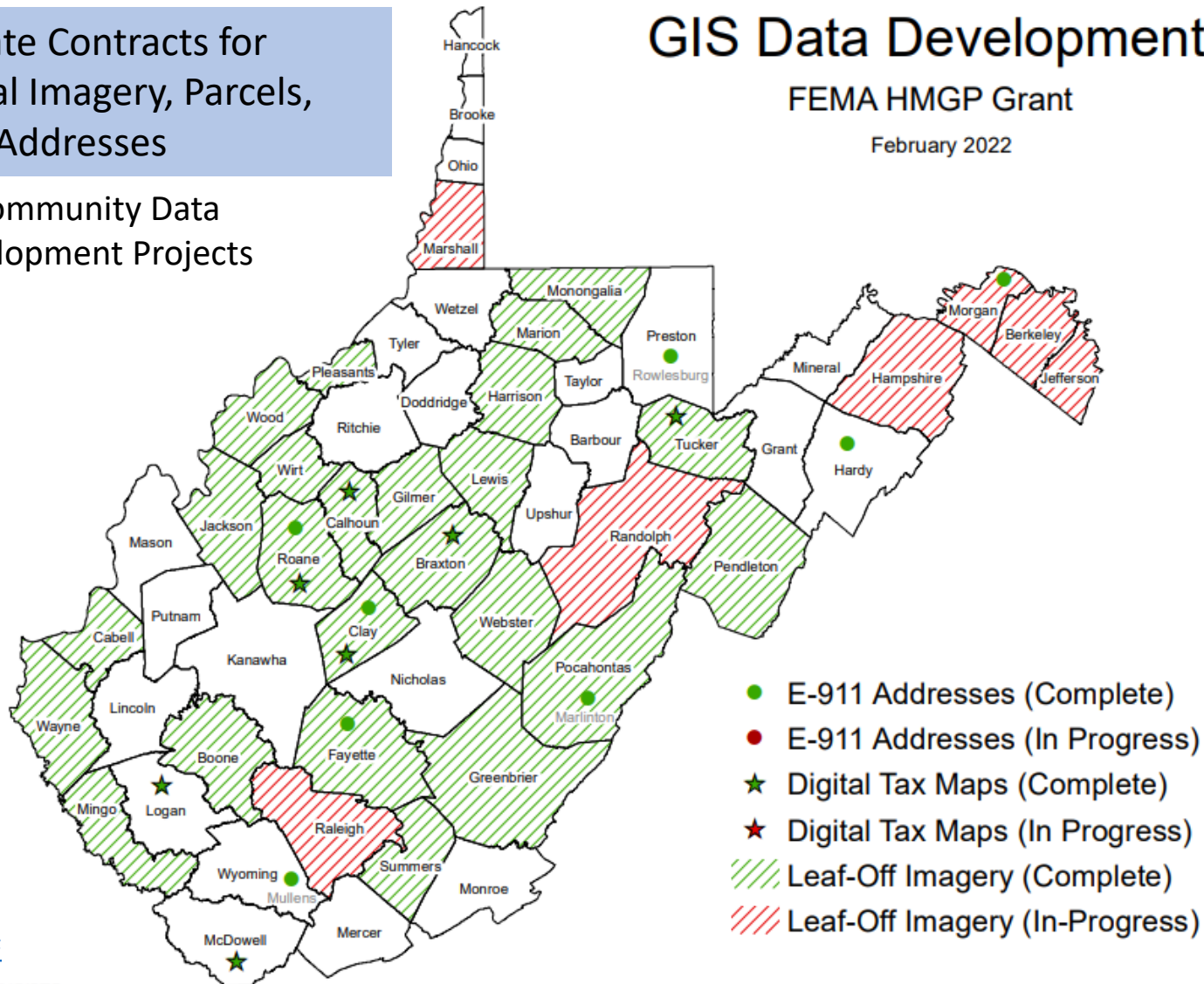
2 State Contracts for
Aerial Imagery, Parcels,
and Addresses

45 Community Data
Development Projects

GIS Data Development

FEMA HMGP Grant

February 2022



[Map PDF](#)

Created By: WVGISTC

Date: 2/4/2022

Flood Tool Reference Layers

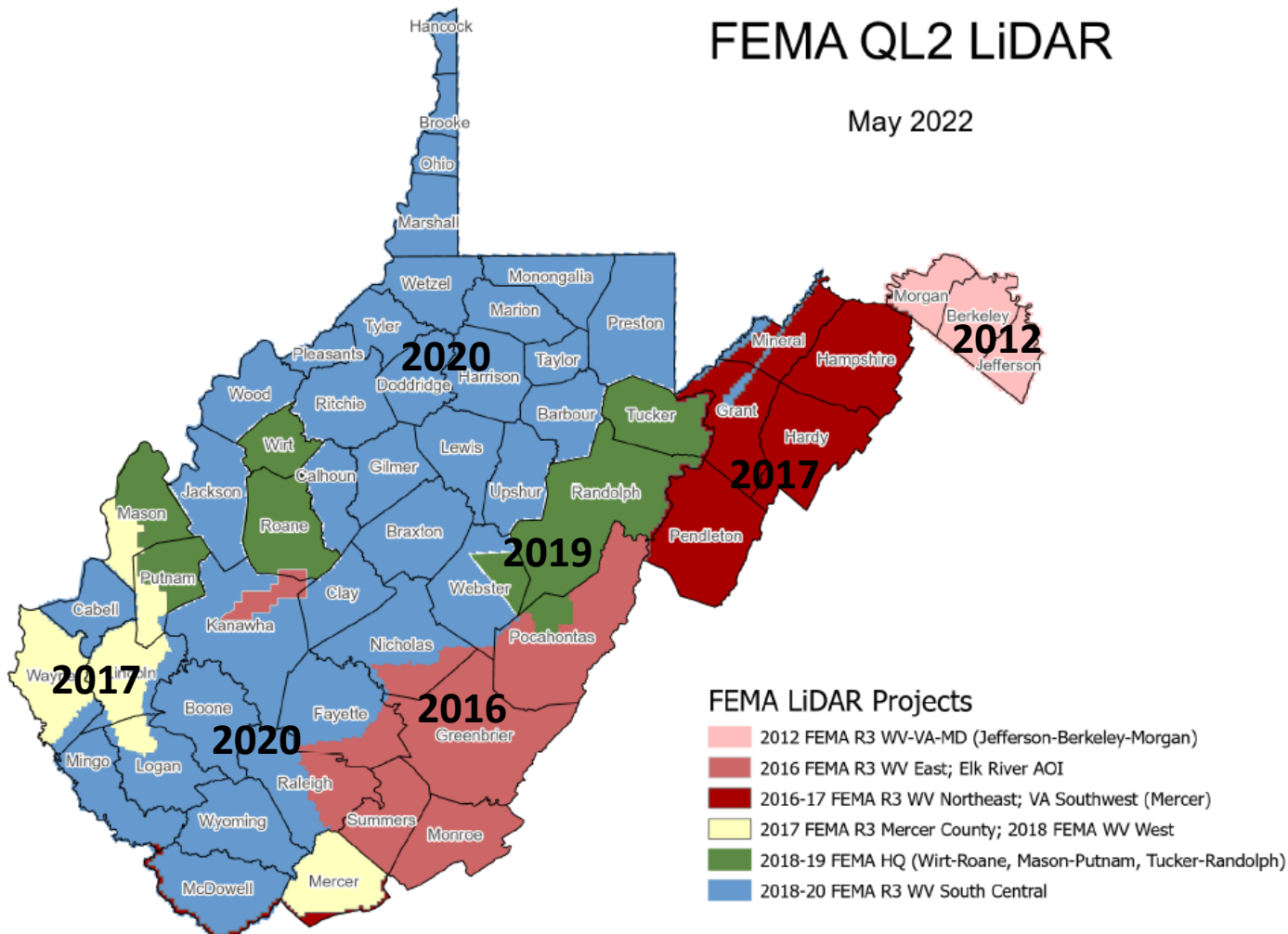
Elevation

Hi-resolution elevation data is needed for flood studies and risk assessments

FEMA Purchased LiDAR Coverage

FEMA QL2 LiDAR

May 2022



This past decade FEMA purchased **\$10 million** QL2 LiDAR (2012-2020) consisting of six major project acquisitions

Quality 2 (QL2) LiDAR support 1-foot contours

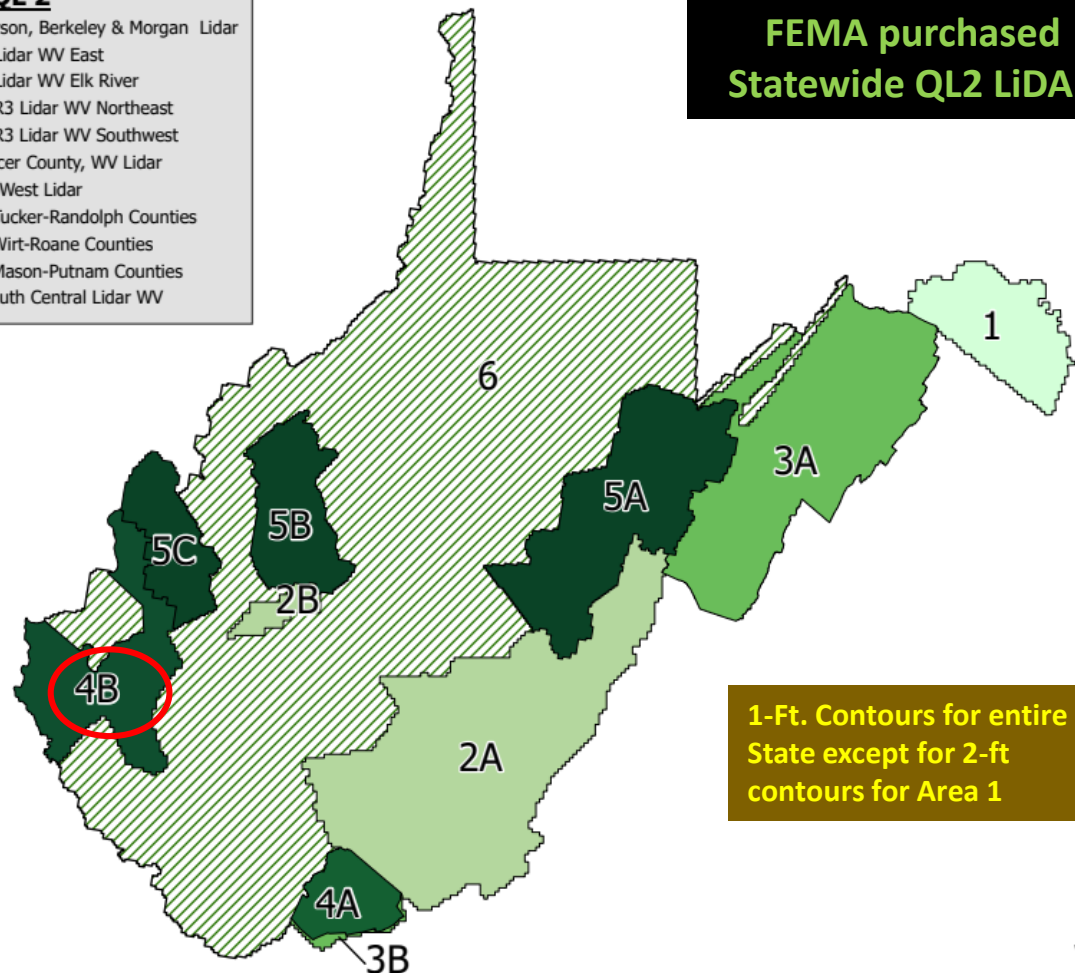
Elevation Data Sources (metadata)

#	4B
WV Project Name	2017 NRCS FEMA South Central VA-WV West
Source	FEMA 2018
Year	2018
Quality Level	2
Grid Resolution	1m
Horizontal Accuracy	Not Provided
Vertical Accuracy	12.9 cm
Coordinate Sytem	UTM Zone 17

Elevation Metadata

LiDAR-Derived DEM	
QL 2	
(1)	2012 FEMA Jefferson, Berkeley & Morgan Lidar
(2A)	2016 FEMA R3 Lidar WV East
(2B)	2016 FEMA R3 Lidar WV Elk River
(3A)	2016-17 FEMA R3 Lidar WV Northeast
(3B)	2016-17 FEMA R3 Lidar WV Southwest
(4A)	2017 FEMA Mercer County, WV Lidar
(4B)	2018 FEMA WV West Lidar
(5A)	2018-19 FEMA Tucker-Randolph Counties
(5B)	2018-19 FEMA Wirt-Roane Counties
(5C)	2018-19 FEMA Mason-Putnam Counties
(6)	2018-20 FEMA South Central Lidar WV

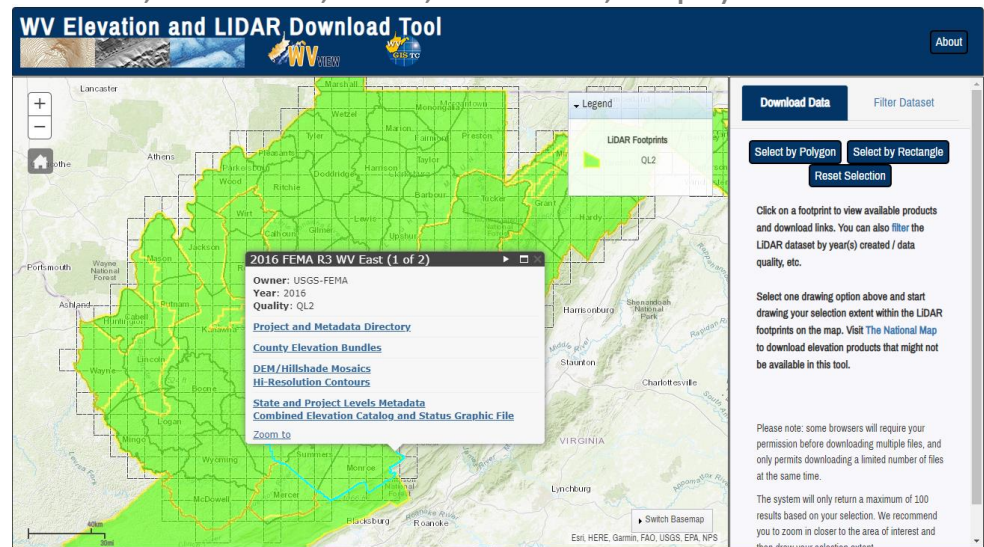
Elevation Sources for WV LiDAR



WVGISTC, 9/28/21

Elevation (High Resolution)

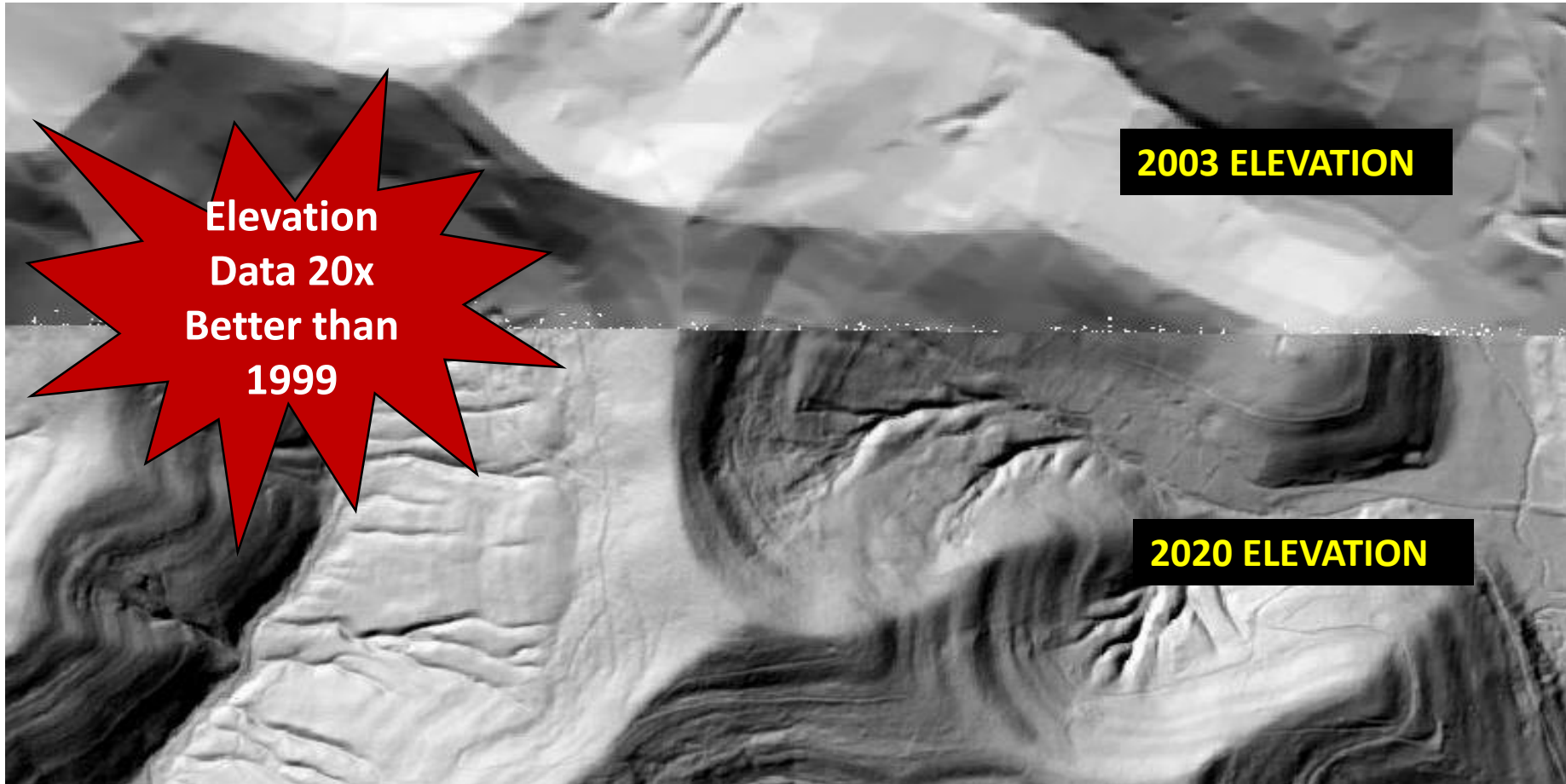
- **Statewide Elevation Products on WV Property Viewer and WV Flood Tool**
 - Classified Lidar point cloud files
 - 1-ft Contours cached to 1:282 Map Scale (2-ft. contours for Morgan-Berkeley-Jefferson)
 - 1-meter Digital Elevation Model (created from LiDAR and breaklines)
 - Hillshade (grayscale 3D representation of the surface) and Slope
 - View products on WV Flood Tool and Property Viewer
- **Source Elevation Metadata:** <https://www.mapwv.gov/lidar-metadata>
- **WV Elevation Download Tool:** <https://www.mapwv.gov/elevation>
 - County Elevation Bundles (Lidar Point Cloud, Contours, DEM, Hillshade, Slope)
 - DEM Hillshade Mosaics
 - Hi-Resolution Contours
 - Compressed LiDAR LAS Files
 - State and Project Levels Metadata
- **USGS Elevation Download:**
 - DEMs and Lidar point cloud files can be downloaded from the [USGS National Map Download](#) site as well



Statewide Topographic Layers (new)

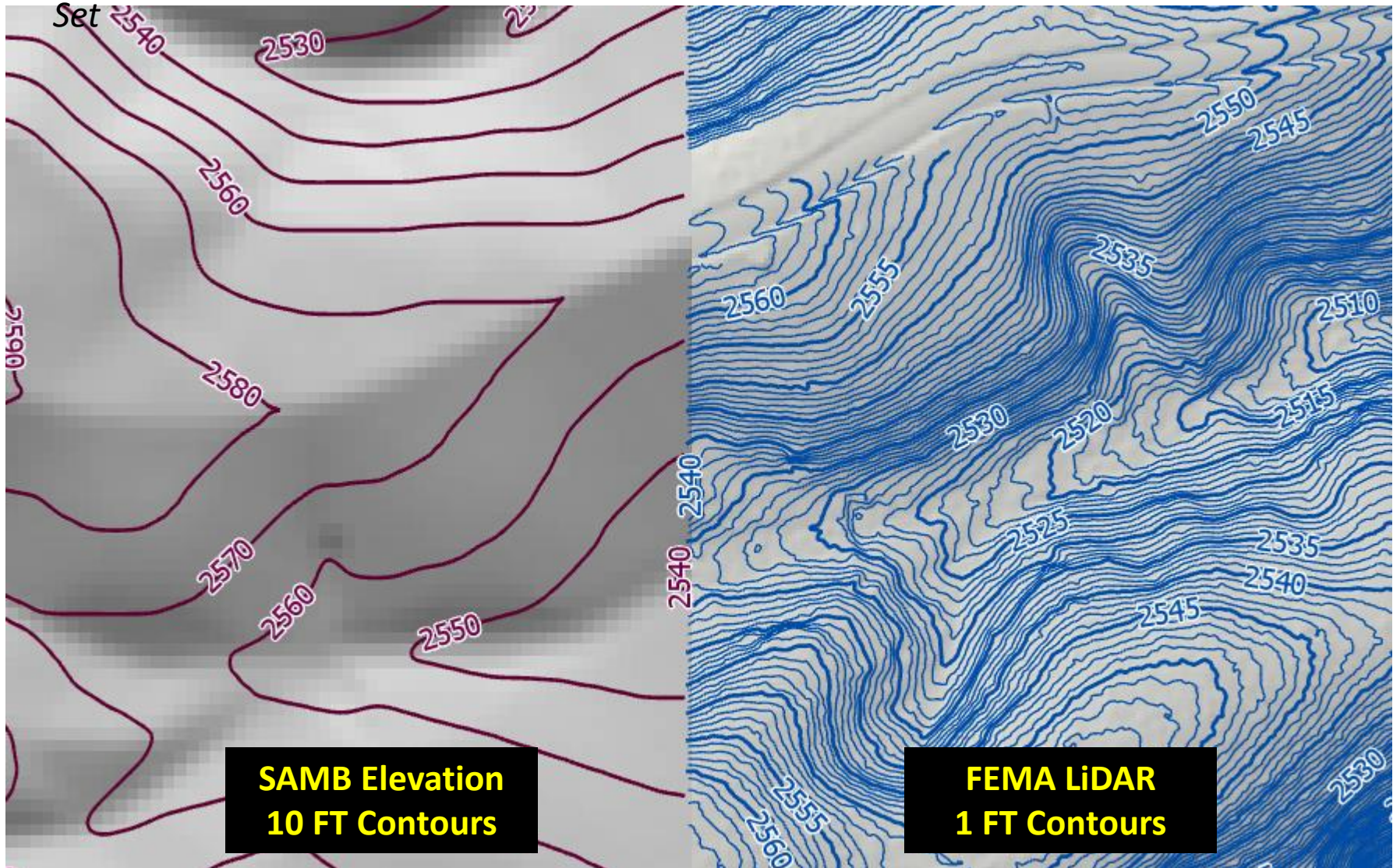
Elevation layers important for flood mapping and risk assessment products

Product	Contour Interval	DEM Resolution
1999 DLG	20 feet	30 meters
2003 SAMB	10 feet	3 meters
2020 Lidar	1 foot	1 meter



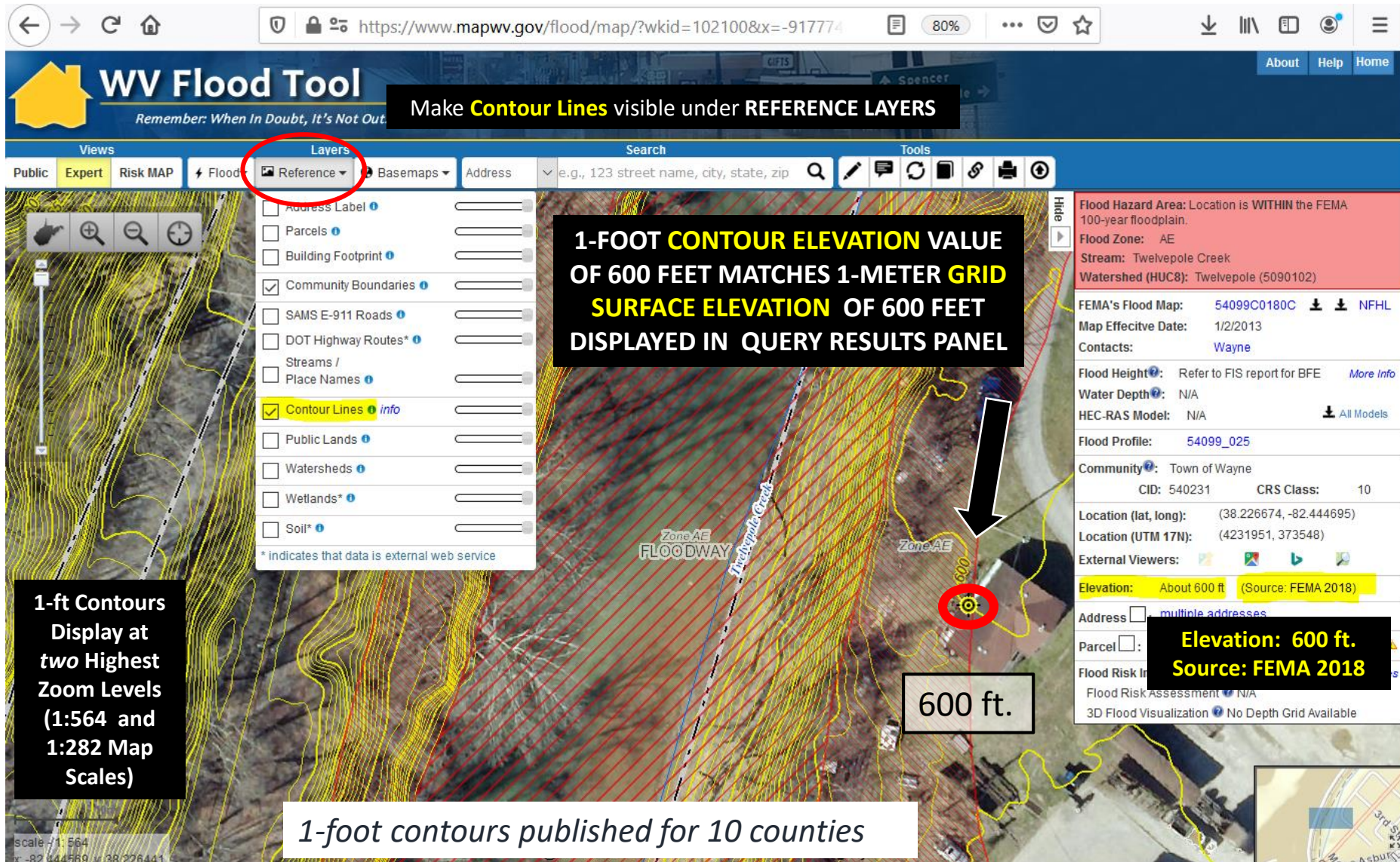
High Resolution Contours

*New FEMA LiDAR-Derived Contours are **10x** better than 2003 Statewide Elevation Data Set*



Ground Elevation: 1-ft. Contours

<https://www.mapwv.gov/flood/map/?wkid=102100&x=-9177701&y=4611497&l=13&v=1>



FEMA LiDAR-Derived Products: 1-Meter DEM and 1-Foot Contours

Statewide Hillshade Basemap Product

A hillshade is a grayscale 3D representation of the surface

The screenshot displays the WV Flood Tool web application. The interface includes a top navigation bar with 'About', 'Help', and 'Home' links. Below this is a 'Views' section with 'Public', 'Expert', and 'Risk MAP' tabs. The 'Layers' section is active, showing a dropdown menu with 'Basemaps' selected and circled in yellow. The main map area shows a grayscale hillshade basemap with a red flood zone labeled 'Zone AE'. A search bar is located above the map, and a scale bar (200m) is in the bottom left. A panel on the right side of the map displays various map styles, including ESRI Street, OpenStreetMap, Bing Road, Bing Hybrid, WV Best Leaves Off, Bing Imagery, ESRI Imagery, WV GISTC Hillshade (highlighted in yellow), and WV DEP Topography*.

WV Flood Tool
Remember: When In Doubt, It's Not Out!

Views: Public | Expert | Risk MAP | Flood | Reference | **Basemaps**

Search: Address: e.g., 123 street name, city, state, zip

Tools: [Icons for various map functions]

Map Styles:

- ESRI Street
- OpenStreetMap
- Bing Road
- Bing Hybrid
- WV Best Leaves Off
- Bing Imagery
- ESRI Imagery
- WV GISTC Hillshade**
- WV DEP Topography*

Hillshade Basemap

Elevation Reference Layers

LiDAR LOMAs

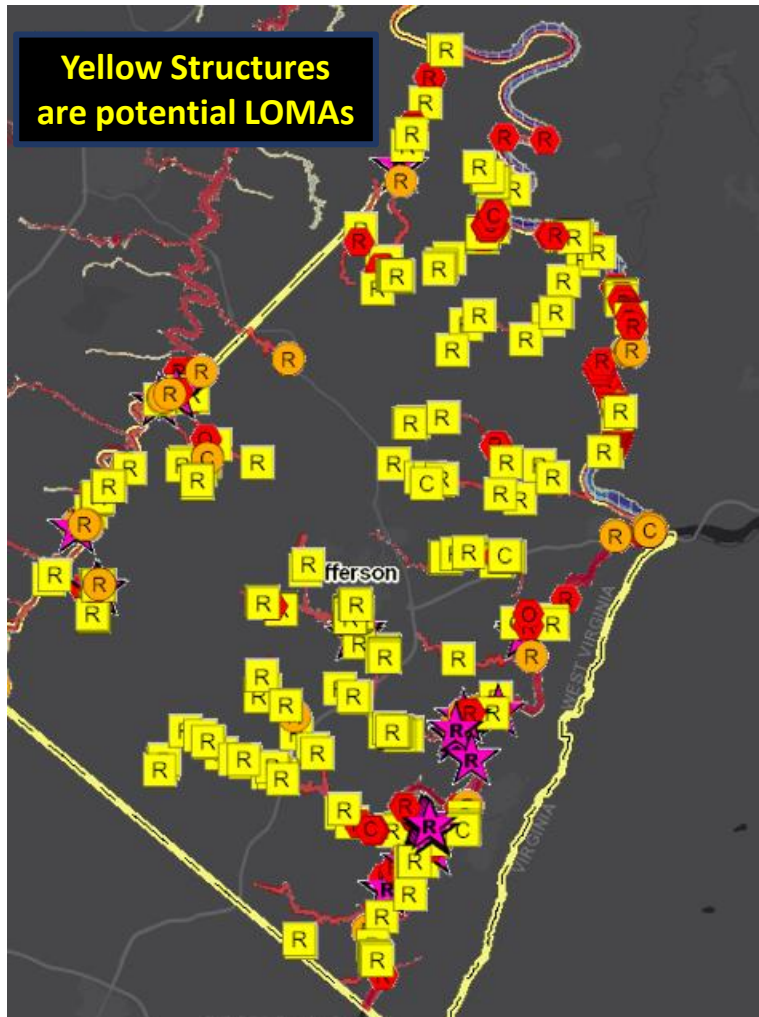
LiDAR FOR MAP AMENDMENTS

- LiDAR data can replace the requirement to submit elevation information certified by a licensed land surveyor or professional engineer, which can create a cost savings for property owners.
- However, when the LAG is close to the BFE, LiDAR data may not be accurate enough and require certified elevations to capture the full risk of the building.
- Generally, if there is **two feet** or more difference between the BFE and LAG, then the homeowner or community should investigate using the WV Flood Tool's Print LOMA Map function to generate a LOMA for submission to FEMA at **no charge**.

[LiDAR LOMA Map Overlay Examples](#)

LiDAR for Map Amendments

11/29/2020



Jefferson County Flood Risk Study – Future SFHA Map Conditions for Buildings

LiDAR for Letter of Map Amendment (LOMA)

LiDAR data can replace the requirement to submit elevation information certified by a licensed land surveyor or professional engineer, which can create a cost savings for property owners.

The WV Flood Tool (www.mapwv.gov/flood) can be used for the map requirement of LOMAs for properties located in A or AE Flood Zones.

High-Risk advisory flood zones identify potential structures that could be removed from the SFHA

LiDAR LOMA Submission – 4 Steps

1) Determine if your community has QL2 or QL3 LiDAR

2) Print **LOMA Map** using [WV Flood Tool](#)

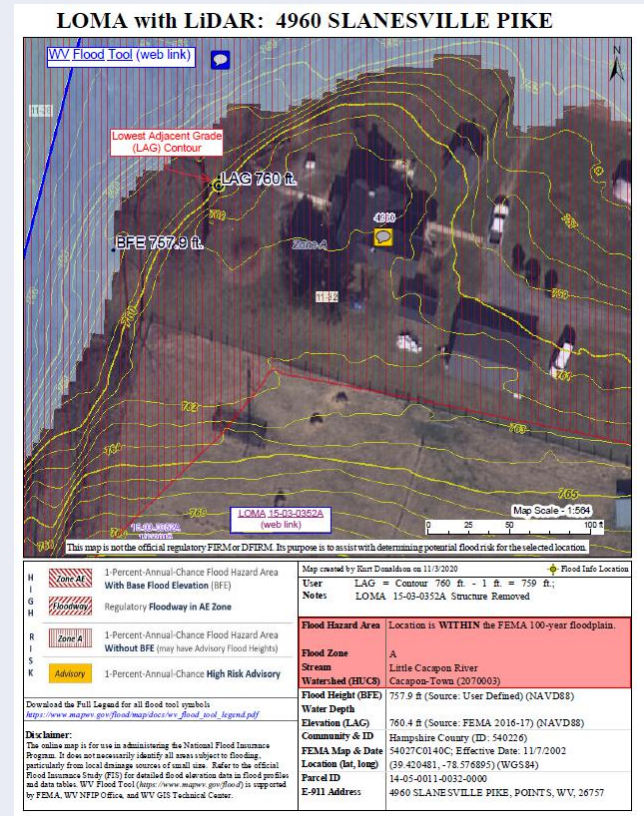
Supporting document for Online LOMC application

- Identify published building-level risk assessments for potential Mapped Out structures
- Determine LOMA Type: Existing Structure or Lot
- Determine BFE
- Determine LAG/LLE
- Add Annotation
- Print and Download LOMA Map
- Save to PDF File

3) Further Edit/Annotate Print LOMA (optional)

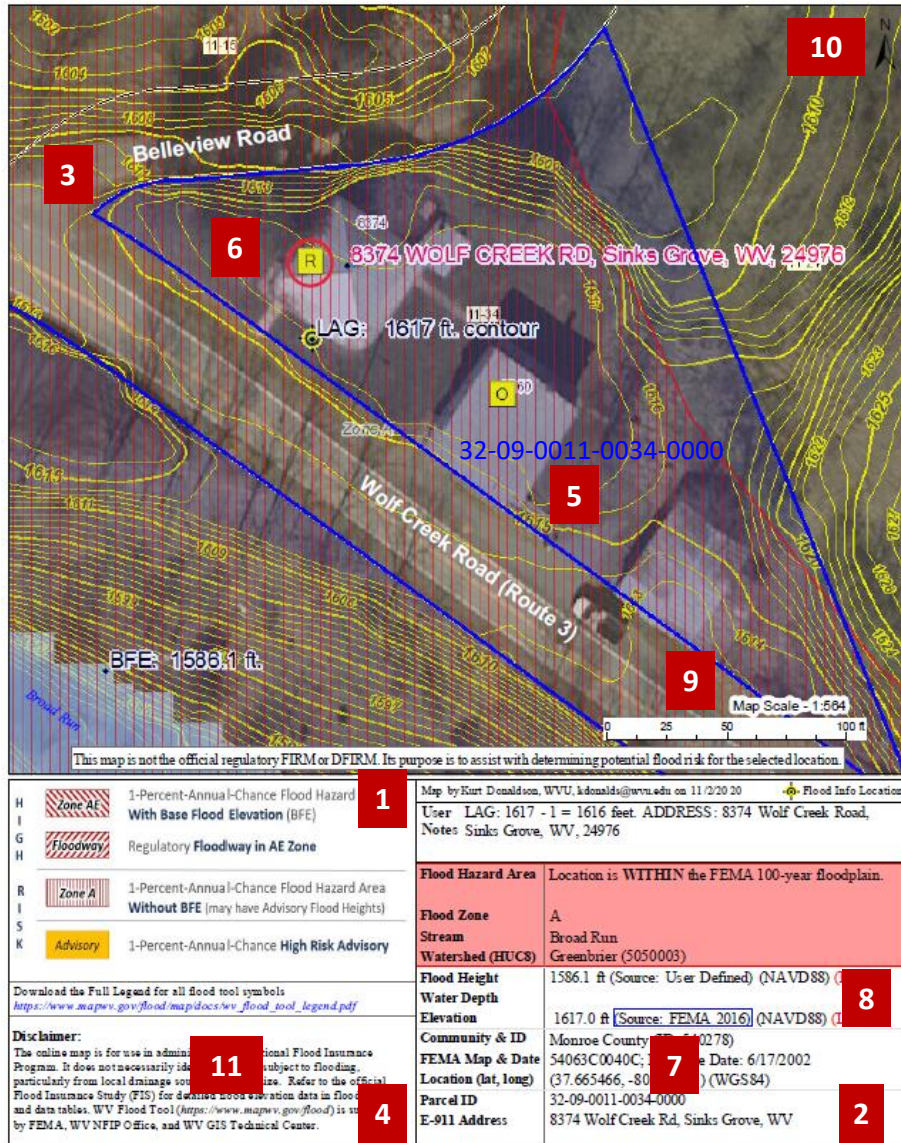
4) Submit LiDAR LOMA Map Exhibit using FEMA's [Online LOMC](#) Portal (no fee charged)

Click [here](#) for more detailed instructions



What needs to be submitted?

FEMA LOMA Map: 8374 Wolf Creek Rd, Sinks Grove, WV



#	Map Elements Required
1	Name, organization, and contact information for the map creator
2	E-911 Address of property
3	Road or street intersection reference
4	Assessor's full Parcel ID Number (APN) for the building/lot
5	Clearly identified building and/or lot boundaries
6	Aerial imagery that shows building footprint
7	Date, Source, and Accuracy of the LiDAR collected (must meet Quality Level 3 standards)
8	Vertical Datum of elevation data (e.g., NAVD 88, NGVD 29)
9	Scale Bar
10	North Arrow
11	WV Flood Tool Location web link

More than one map can be made to present all elements

LOMA Map – Identify LAG

WV Flood Tool
Remember: WV Flood Tool is a public tool. Do not use for official flood mapping.

Views: Public Expert **Risk MAP** Risk

Layers: **Reference** Basemaps

Search: Address 144 APPALOOSA WAY, Charles Town, WV

Tools: **Text Markup** **Print Map**

Print Map
Click for a normal Flood map
Print LOMA
Flood LOMA Map Print
Print Map, Download, open map in new browser tab, right click on map and Save to PDF File
BFE Value: 433.4 (ft)
BFE Datum: NAVD88
Prepared by: Kurt Donaldson, WV
Map, created at 22:46:24. You have 1 minutes to download it. Click [legend link](#) to download the full legend.
Print the map

Text Markup
Text: ELEV. 436.0 ft.
Arial 19 #000000
B I T
Add Text Halo: 2 #FFFFFF
Edit Markup Points
Style: Circle 0000
Tip: Right-click on an existing markup to delete it.

Elevation Value and Metadata
Flood Hazard Area: Location is WITHIN the FEMA 100-year floodplain.
Flood Zone: AE
Stream: Flowing Springs Run
Watershed (HUC8): Shenandoah (2070007)
FEMA's Flood Map: 54037C0130E NFHL
Map Effective Date: 12/18/2009
Contacts: Jefferson
Flood Height: Refer to FIS report for BFE NAVD88
Water Depth: N/A
HEC-RAS Model: N/A All Models
Community: CID: 56
Location (lat, long): 39.144, -77.824168 WGS84
Location (UTM 17N): 63337, 773813 WGS84
External Viewers:
Elevation: 436.1 ft (Source: FEMA 2012) NAVD88
Add
Parcel: 19-02-004F-0202-0000 | Assessment
Flood Risk Information
Flood Risk Assessment
3D Flood Visualization No Depth Grid Available

Flood Query Results Panel

Flood Depth Grid
<https://www.mapwv.gov/flood/map/?wkid=102100&x=8663344&y=4766601&l=13&v=2>

For AE Zones make BFE and X-Section Layers visible in RISK Layers

Turn on Contours Layer in REFERENCE Layers of WV Flood Tool to view two- or one-foot contours at 1:564 and 1:282 zoom scales. Identify the Closest Lower Contour 436 ft. and verify elevation in Flood Query Results Panel. Annotate contour value 436 ft. on the map frame using Text Markup tool.

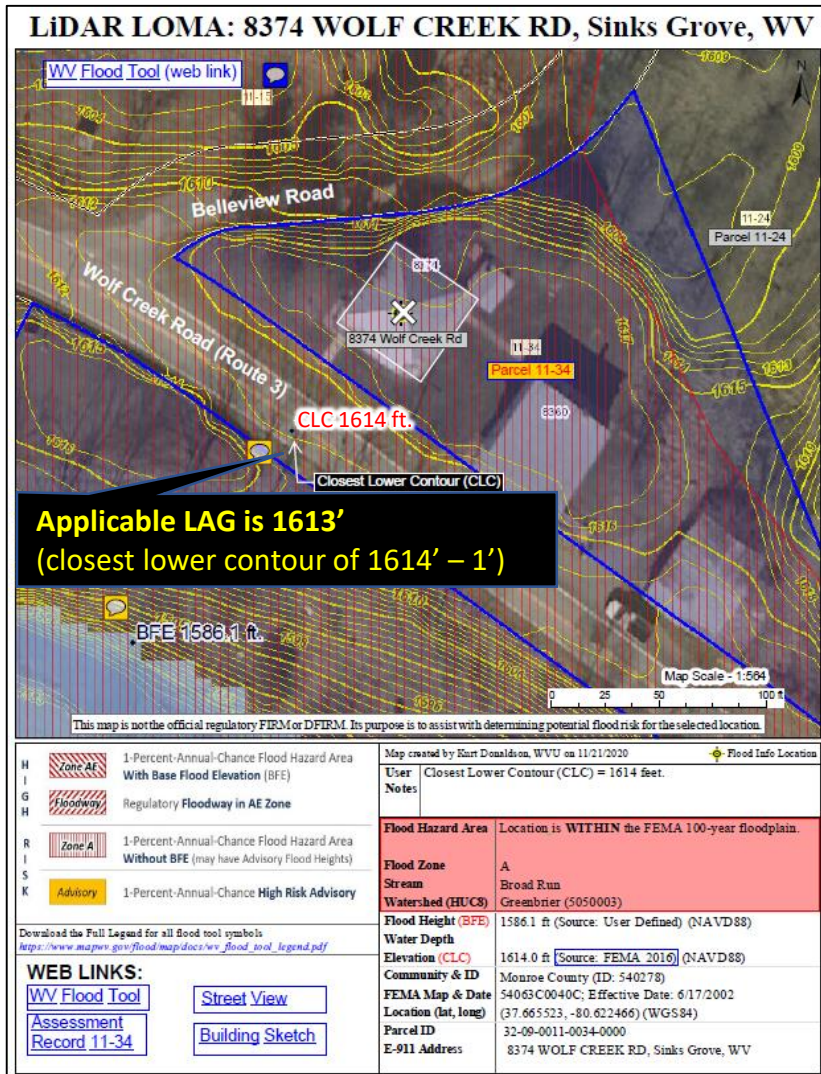
ELEV. 436.0 ft.
BFE 433.4 ft.

@WVGISTC Leaf-Off Mixed-Resolution Imagery

WV Flood Tool (LAG Methods)

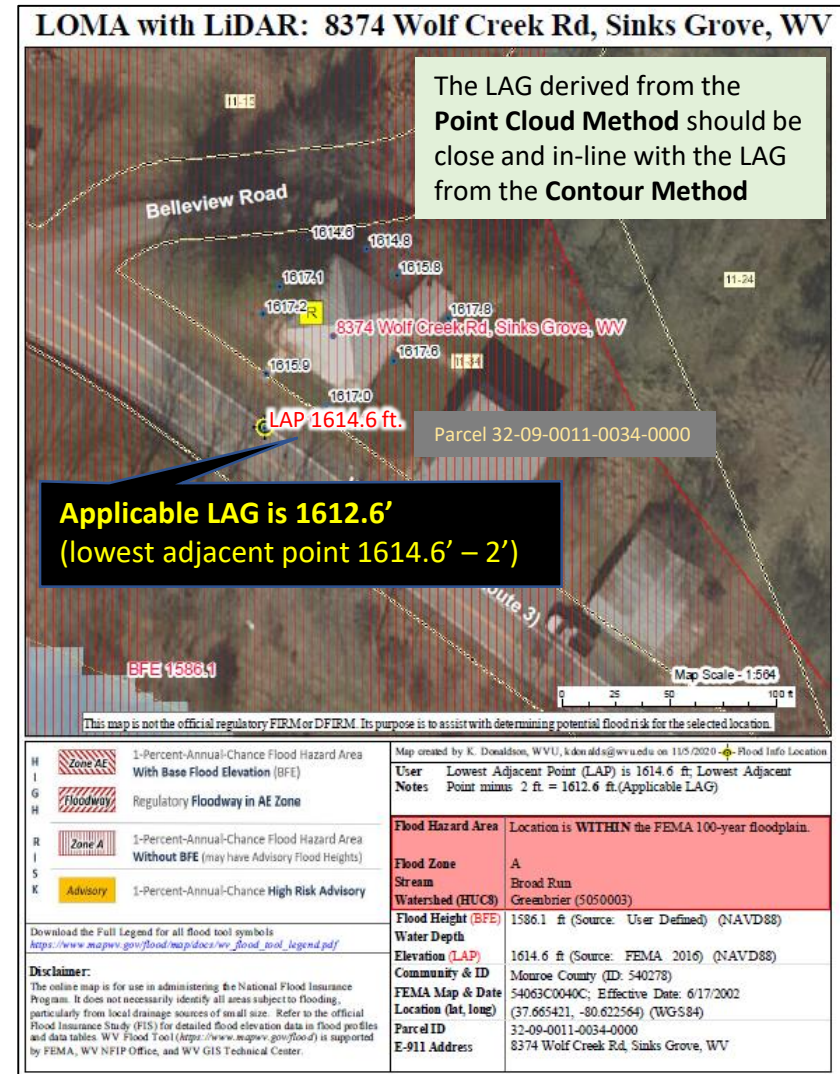
Contours

(Elevation Contours Reference Layer)

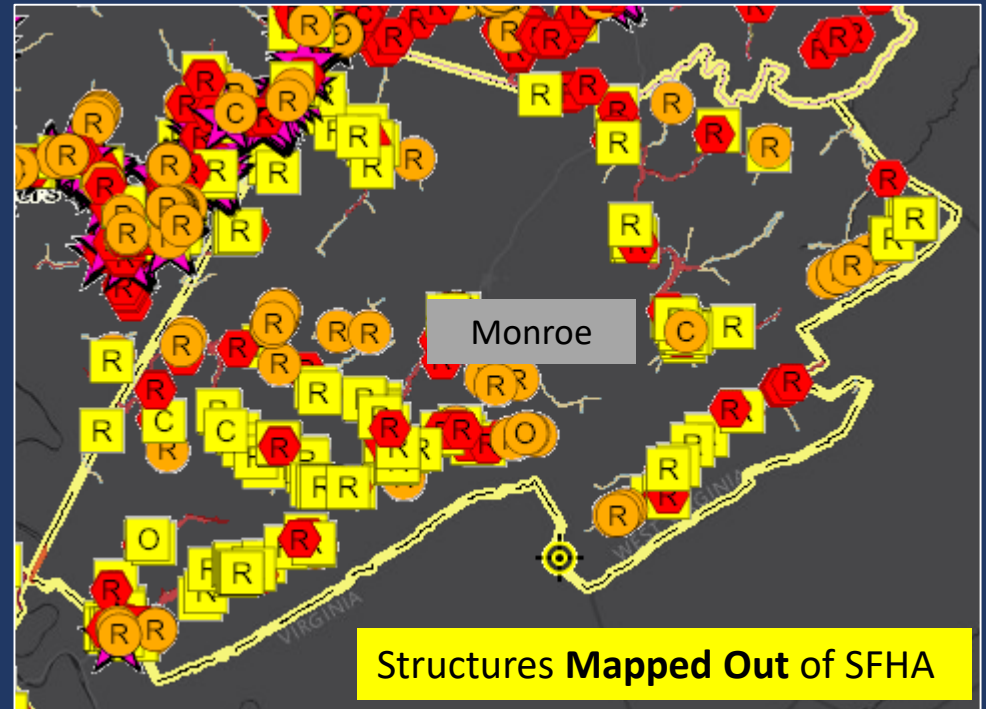
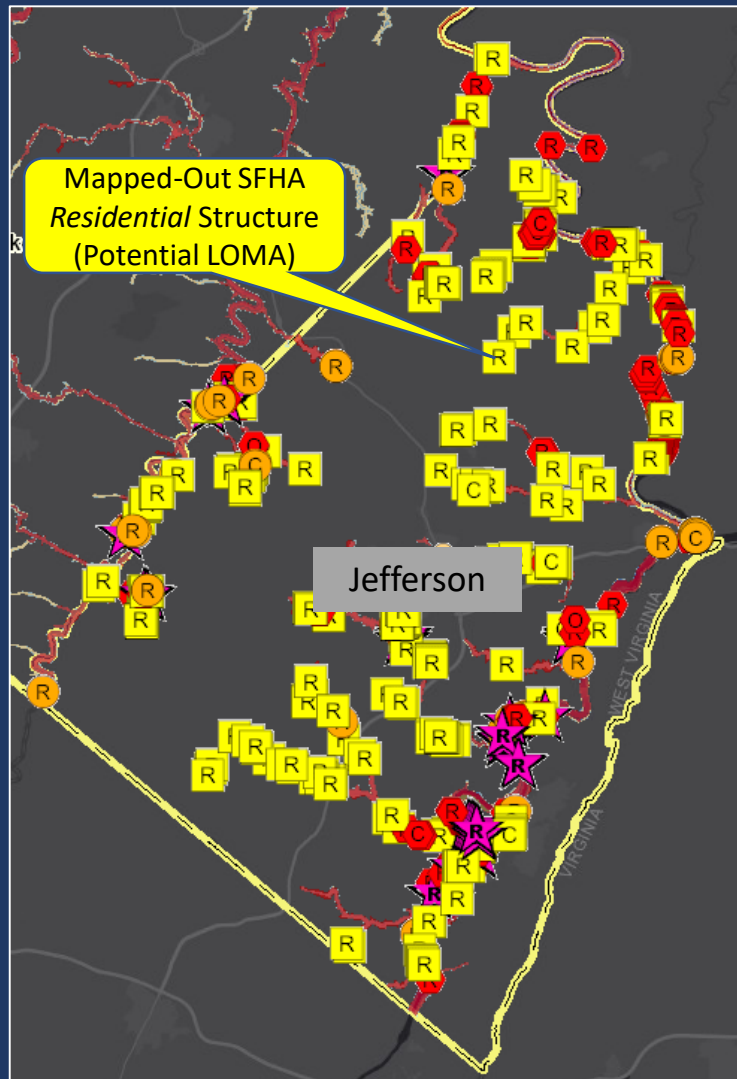


Point Data

(Flood Query Results Panel)



Identify LOMA Structures (Risk MAP View)



Search on Building Risk “Mapped Out” SFHA structures (yellow square symbol) in Risk MAP View for potential LOMAs. It is estimated that Jefferson County, for example, has 250 structures that could be considered for LOMA Removal Status from the Special Flood Hazard Area (SFHA).

R Residential

C Commercial

O Other

New Topo – Driver for Flood Studies

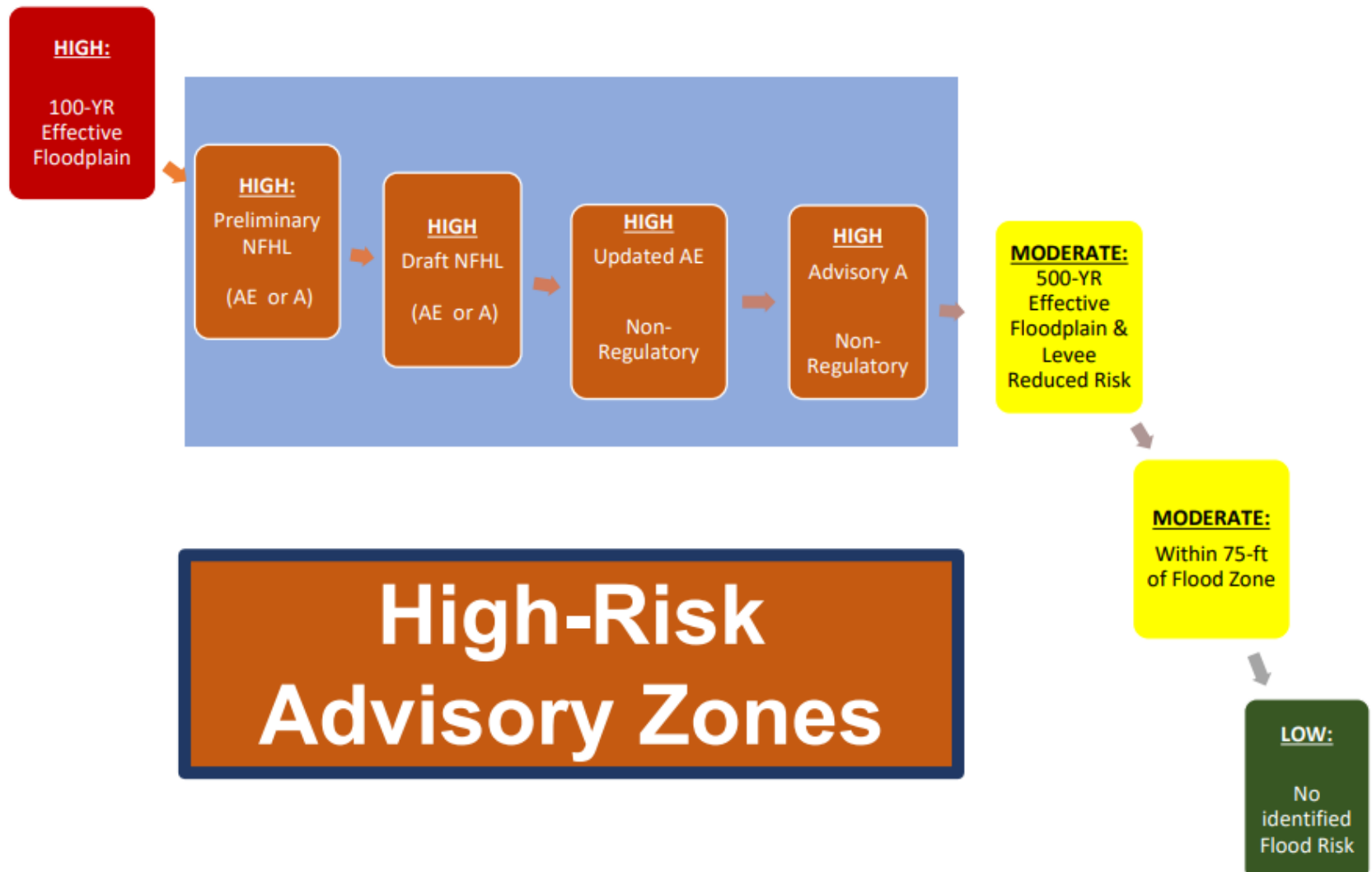
Advisory Flood Zone*	Map Revision Type	Initiated	Applicable Zones
Preliminary NFHL or DFIRM	Risk MAP Restudy or Study	FEMA	A and AE Zones
Draft NFHL or DFIRM	Risk MAP Restudy or Study	FEMA	A and AE Zones
Advisory A	AFH Model-Backed Studies	State CTP	Approximate A Zone
Updated AE	Non-Restudy Redelineation	State CTP	AE Zone

* Note: Advisory Floodplains may be mapped outside of the official FIRM

High-Risk Advisory Zone Flood Products:

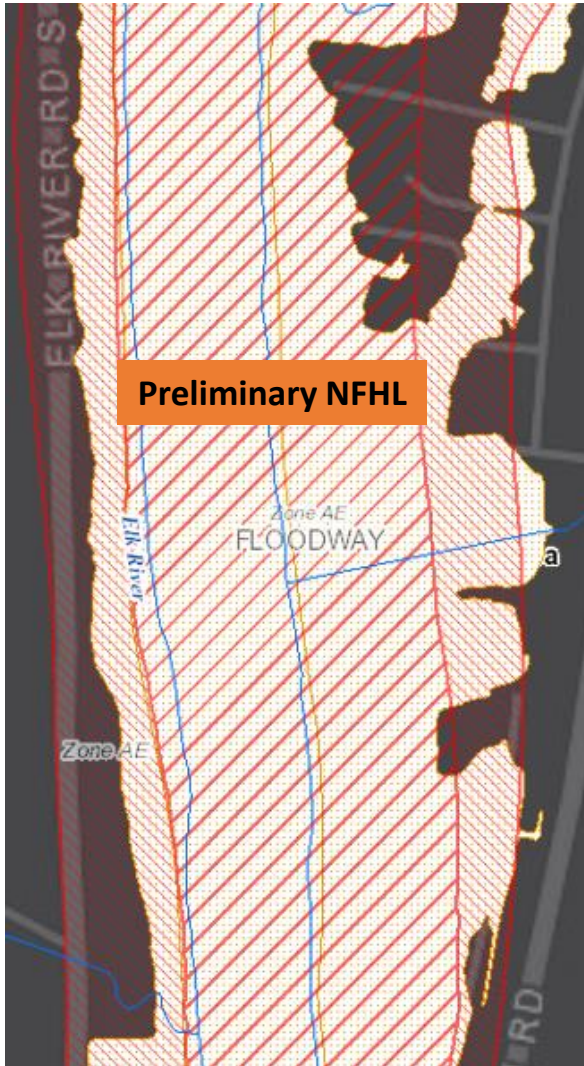
(1) Advisory Floodplain Boundary, (2) Flood Height Grid, (3) Flood Depth Grid

Flood Zone Determination Sequence



High Risk Advisory Zones

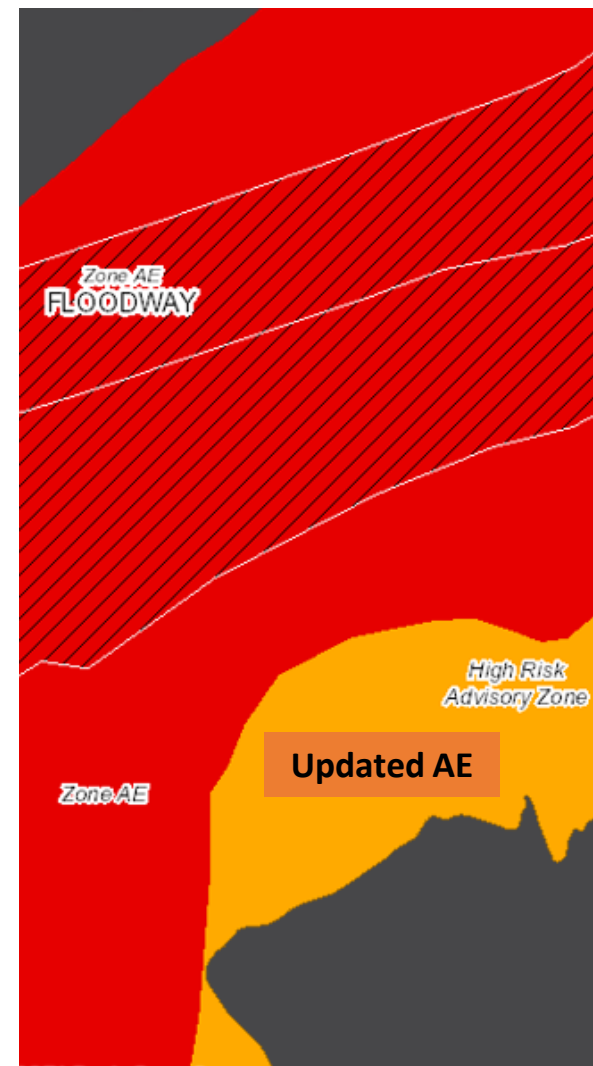
[More info on High-Risk Advisory Zones](#)



Preliminary NFHL

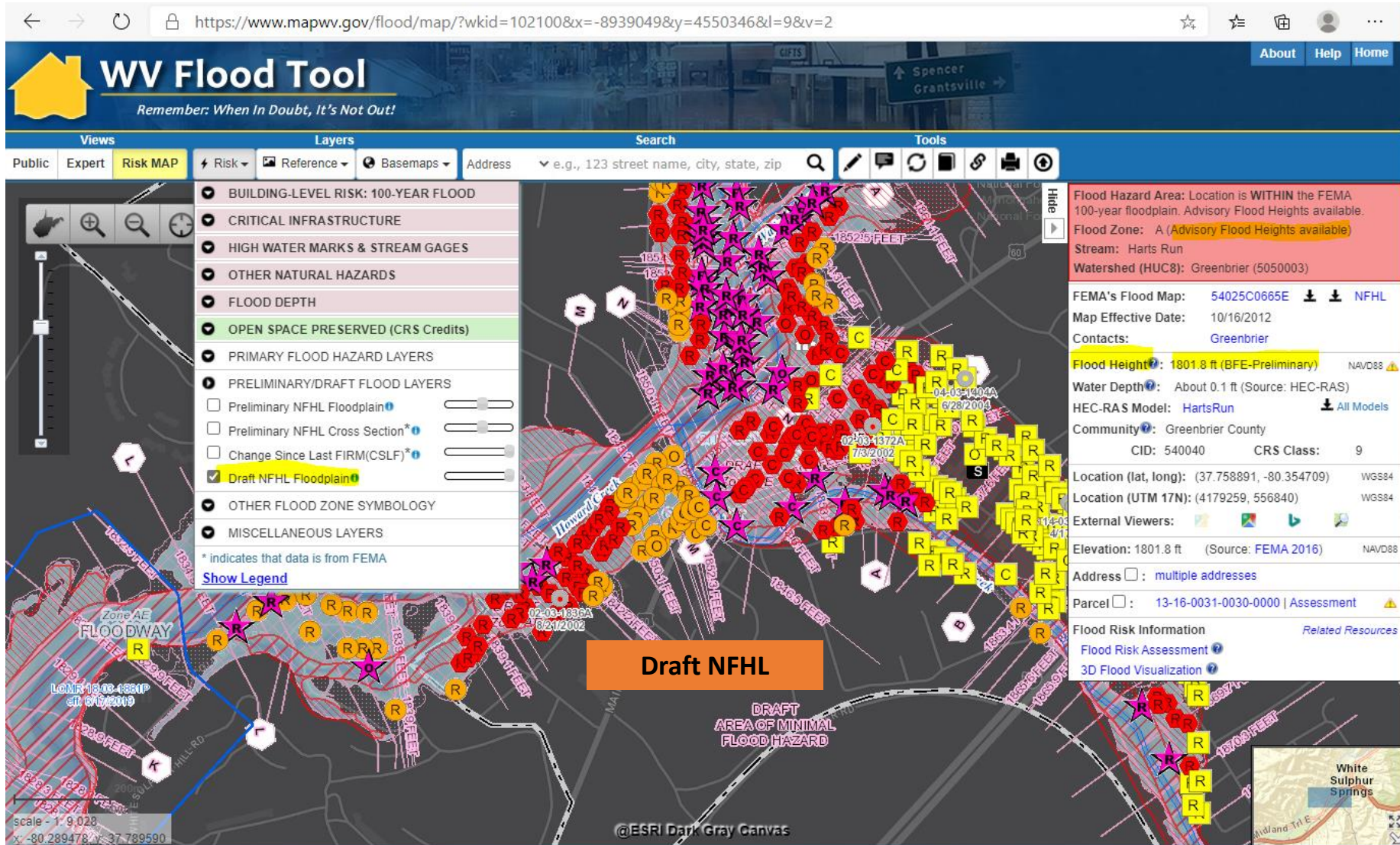


Advisory A



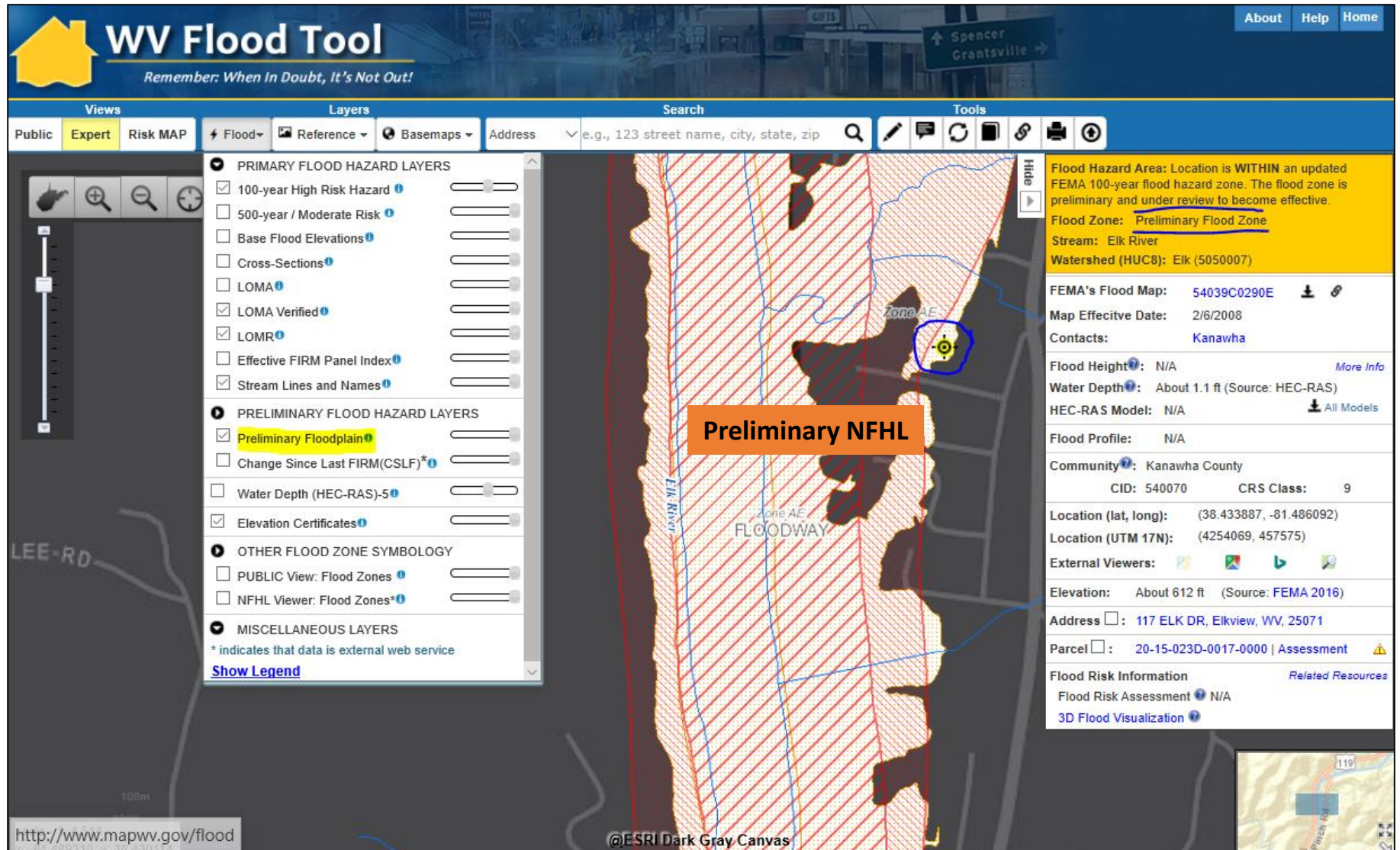
Updated AE

Draft NFHL



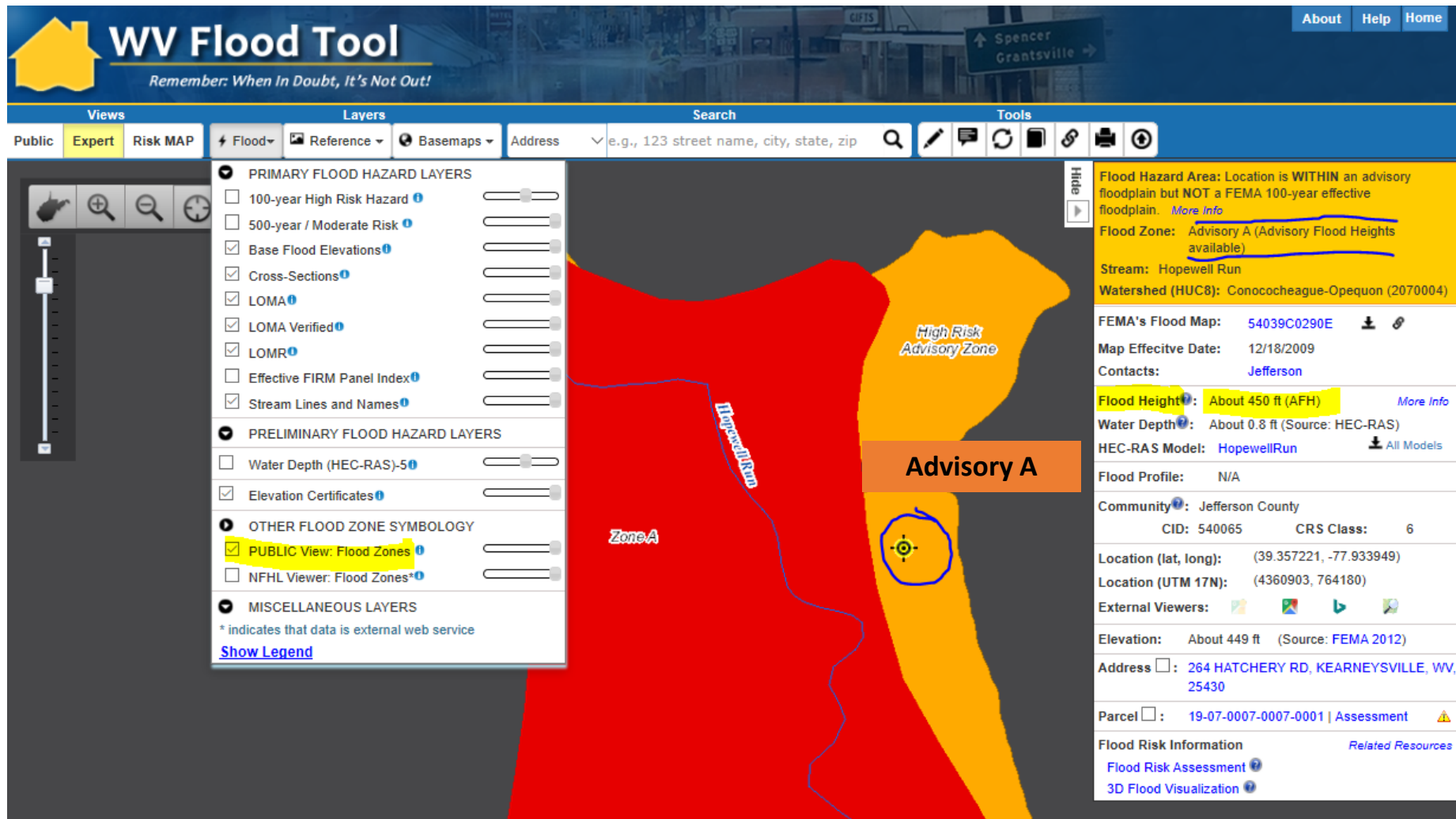
Draft NFHL Flood Zone: Pre-Preliminary FEMA National Flood Hazard Layers (NFHL) pending to become effective on updated Flood Insurance Rate Maps (FIRMs)

Preliminary NFHL



Preliminary NFHL Flood Zone: Preliminary FEMA National Flood Hazard Layers (NFHL) pending to become effective on updated Flood Insurance Rate Maps (FIRMs)

Advisory A



Advisory A Flood Zone: A model-backed Approximate A Zone is determined by using hydrology and hydraulics (H&H) analysis and the best available elevation data. Water Depth and Water Surface Elevation Grids are also companion products of Advisory A Zones.

WV Flood Tool
Remember: When In Doubt, It's Not Out!

Views: Public | **Expert** | Risk MAP

Layers: **Flood** | Reference | Basemaps

Search: Address: e.g., 123 street name, city, state, zip

Tools: [Icons for various tools]

PRIMARY FLOOD HAZARD LAYERS

- ☒ 100-year High Risk Hazard
- ☐ 500-year / Moderate Risk
- ☒ Base Flood Elevations
- ☒ Cross-Sections
- ☒ LOMA
- ☒ LOMA Verified
- ☒ LOMR
- ☐ Effective FIRM Panel Index
- ☒ Stream Lines and Names

PRELIMINARY FLOOD HAZARD LAYERS

- ☐ Water Depth (HEC-RAS)-5
- ☒ Elevation Certificates

OTHER FLOOD ZONE SYMBOLOGY

- ☒ PUBLIC View: Flood Zones
- ☐ NFHL Viewer: Flood Zones

MISCELLANEOUS LAYERS

* indicates that data is external web service
[Show Legend](#)

Updated AE

Flood Hazard Area: Location is **WITHIN** an updated detailed floodplain boundary but **NOT** a FEMA 100-year effective floodplain. [More Info](#)

Flood Zone: Updated AE Floodplain Boundary

Stream: Opequon Creek

Watershed (HUC8): Conococheague-Opequon (2070004)

FEMA's Flood Map: [54039C0290E](#) [Download] [Share]

Map Effective Date: 7/7/2009

Contacts: [Berkeley](#)

Flood Height: [410 ft \(BFE - Non-Restudy\)](#) [More Info](#)

Water Depth: [About 4.8 ft \(Source: HEC-RAS\)](#)

HEC-RAS Model: N/A [All Models](#)

Flood Profile: N/A

Community: Berkeley County

CID: 540282 **CRS Class:** 7

Location (lat, long): (39.367681, -77.960522)

Location (UTM 17N): (4361987, 761851)

External Viewers: [Icons for various viewers]

Elevation: About 405 ft (Source: FEMA 2012)

Address: [] N/A

Parcel: [] [02-01-0020-0009-0000](#) | [Assessment](#) [Warning Icon]

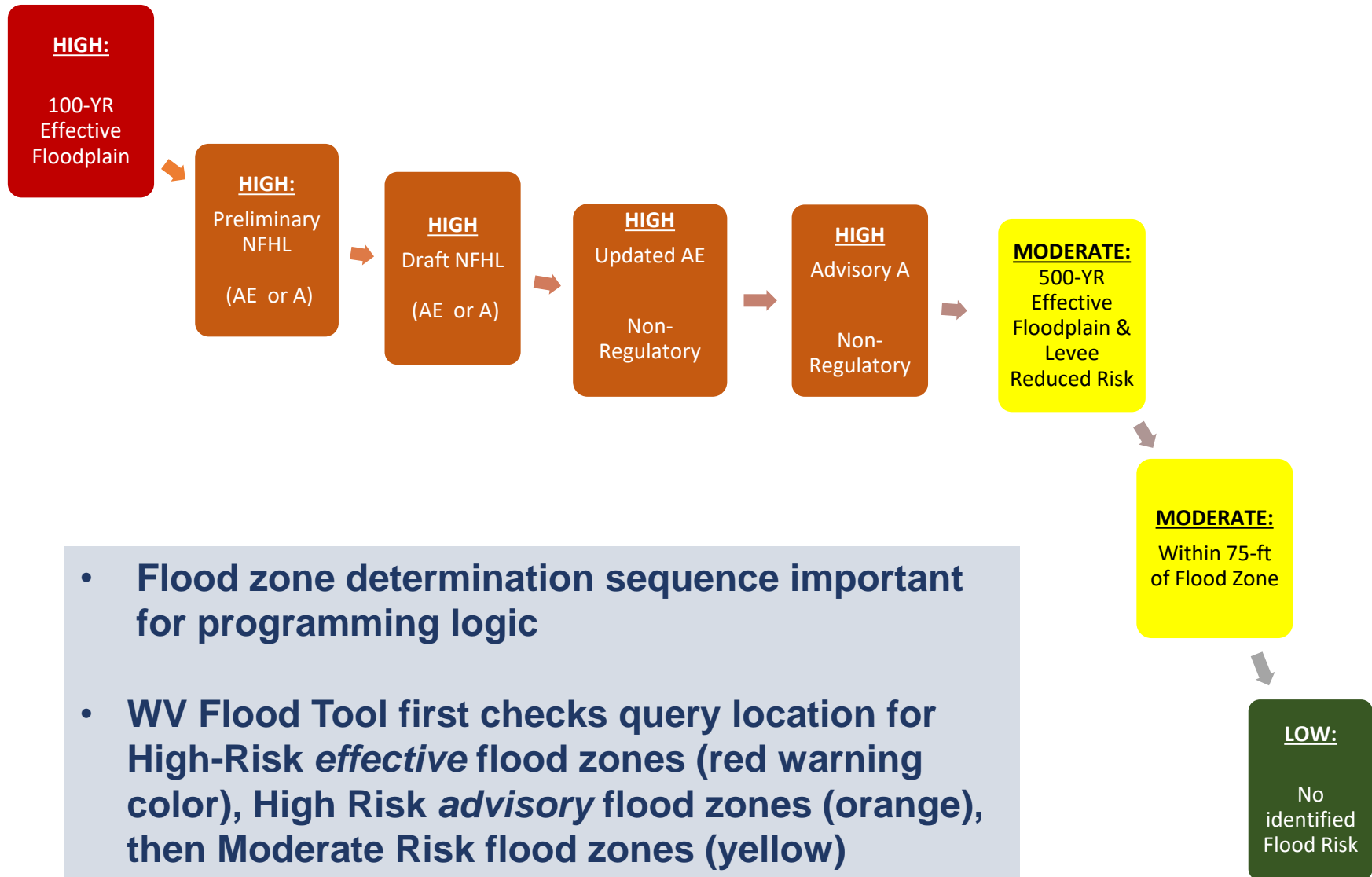
Flood Risk Information [Related Resources](#)

Flood Risk Assessment: N/A

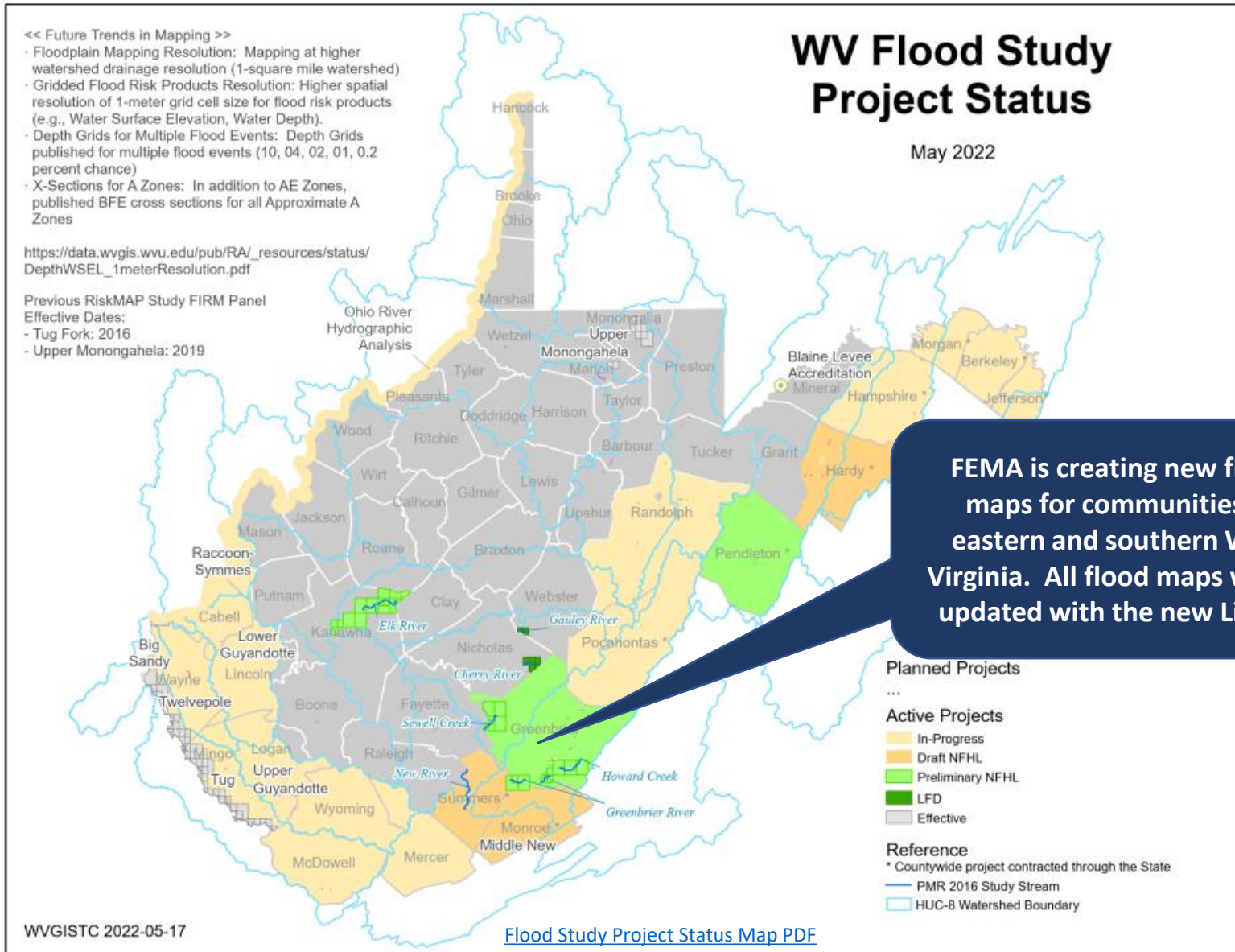
3D Flood Visualization: [Icon]

Updated AE Floodplain Boundary: A Non-Restudy where AE Zones undergo redelineation, a method of updating effective flood hazard boundaries to match updated topographic data based on the computed water surface elevations from effective models. Advisory AE Zones outside the SFHA are high-risk, non-regulatory flood zones.

Flood Zone Determination Sequence



Active FEMA Flood Studies



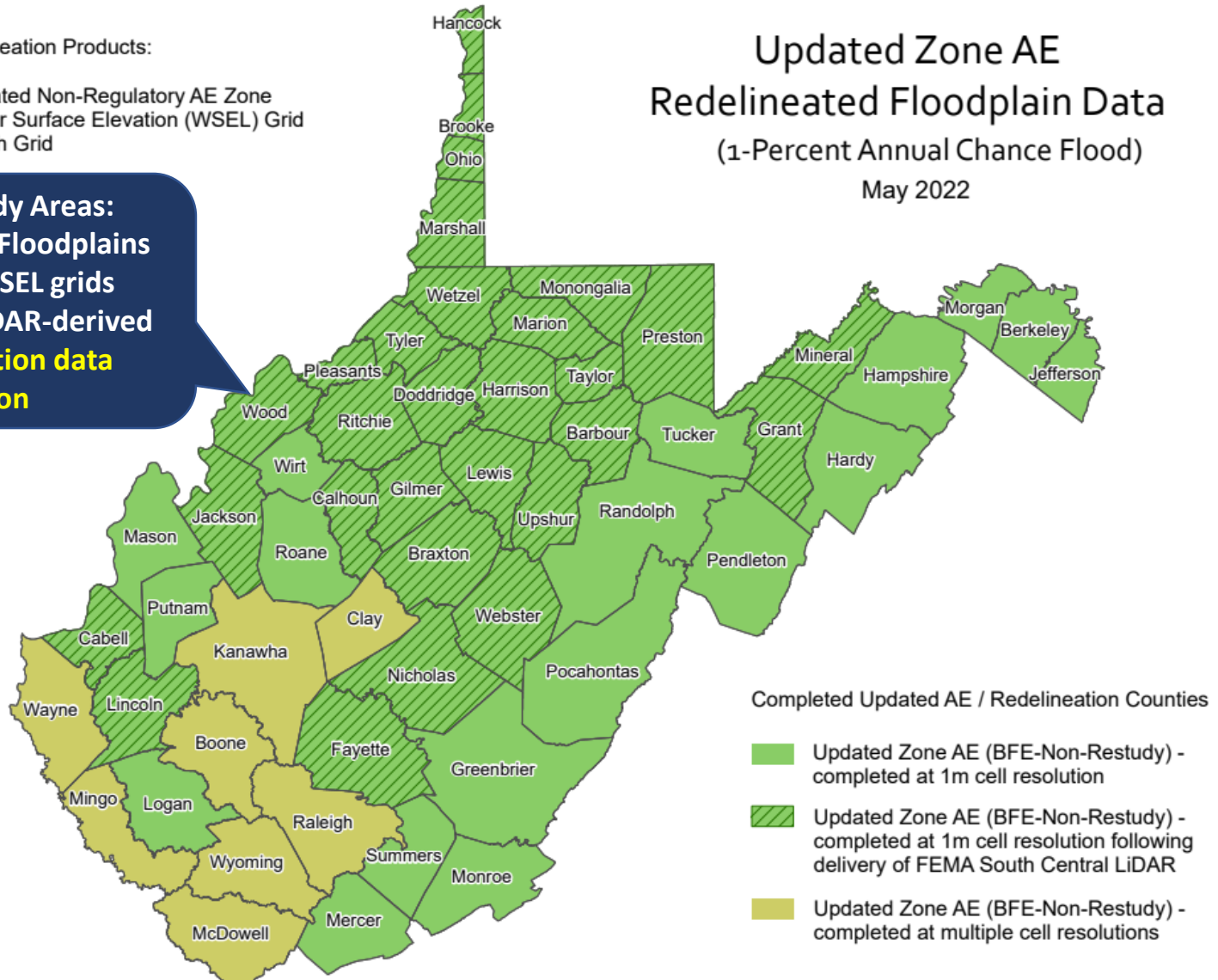
AE Redelineation (Advisory)

Redelineation Products:

1. Updated Non-Regulatory AE Zone
2. Water Surface Elevation (WSEL) Grid
3. Depth Grid

**All Non-Restudy Areas:
Redelineated AE Floodplains
with Depth/WSEL grids
mapped using LiDAR-derived
1-meter elevation data
resolution**

Updated Zone AE Redelineated Floodplain Data (1-Percent Annual Chance Flood) May 2022



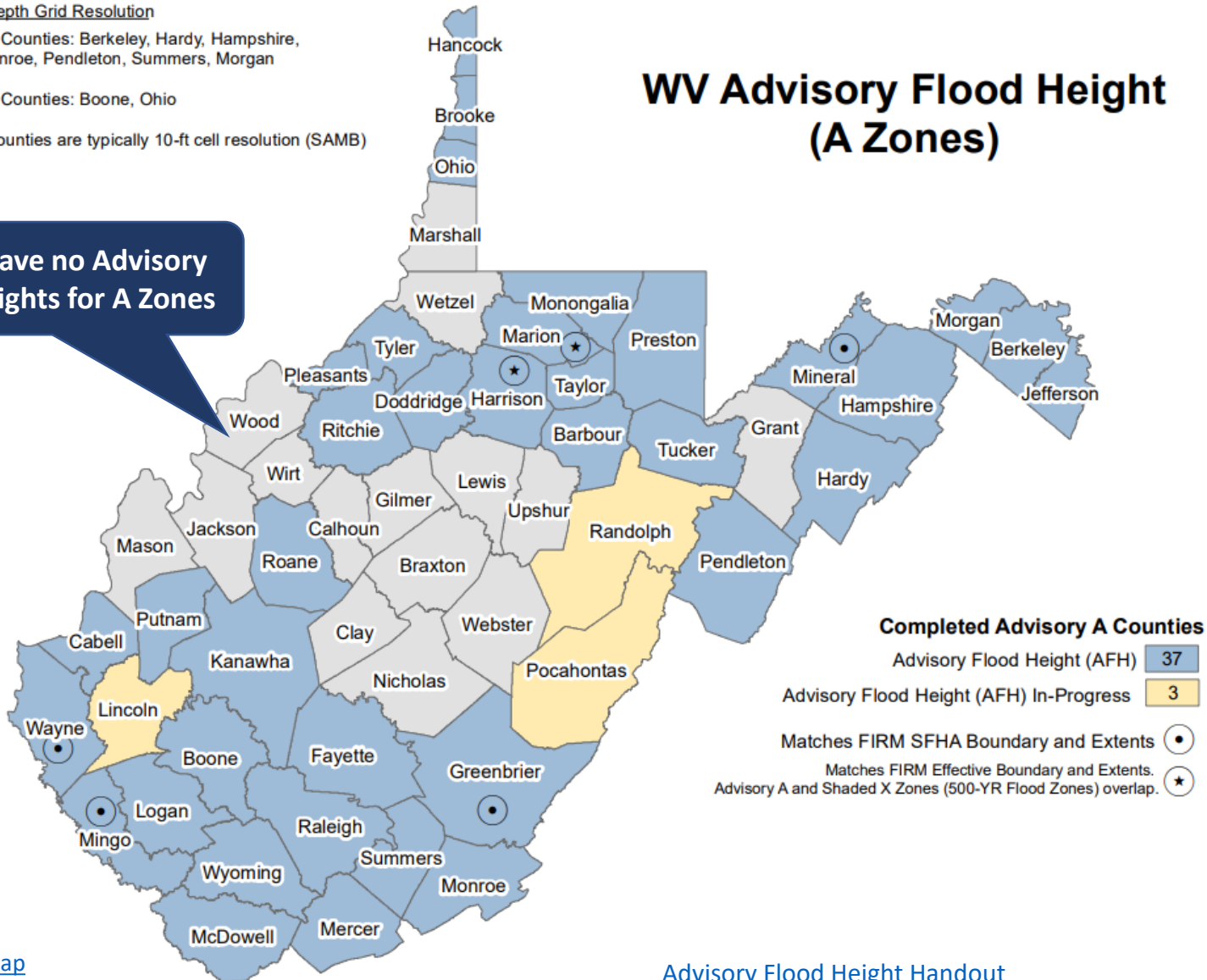
Zone A Mapping (Advisory)

WSEL and Depth Grid Resolution

- (1) QL2 Lidar Counties: Berkeley, Hardy, Hampshire, Jefferson, Monroe, Pendleton, Summers, Morgan
- (2) QL3 Lidar Counties: Boone, Ohio
- (3) All other counties are typically 10-ft cell resolution (SAMB)

15 Counties have no Advisory Base Flood Heights for A Zones

WV Advisory Flood Height (A Zones)



[PDF Map](#)

[Advisory Flood Height Handout](#)

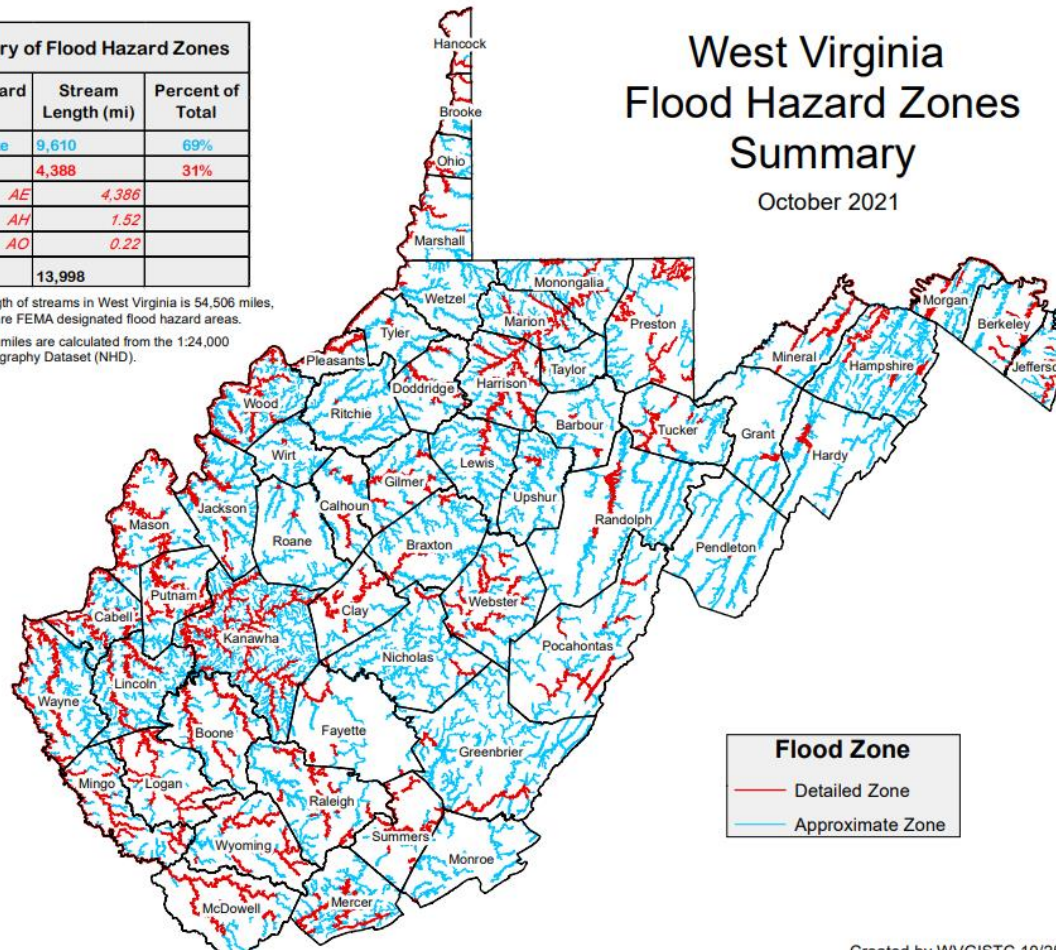
Building Stock in Flood Zones

Although only 31% of the State has mapped **Detailed Flood Zones** (AE / AO / AH), the **Detailed Flood Zones** contain 65% of the Building Stock Located in SFHA. Most of the buildings are in mapped **Detailed Flood Zones**.

Summary of Flood Hazard Zones		
Flood Hazard Zone	Stream Length (mi)	Percent of Total
Approximate	9,610	69%
Detailed	4,388	31%
AE	4,386	
AH	1.52	
AO	0.22	
Total	13,998	

† The total length of streams in West Virginia is 54,506 miles, of which 38% are FEMA designated flood hazard areas.

†† The stream miles are calculated from the 1:24,000 National Hydrography Dataset (NHD).



[PDF Map](#)

Created by WVGISTC 10/25/2021

FLOOD HAZARD ZONES

- Stream Miles Length
- 69% Approximate A
- 31% Detailed Zones

Special Flood Hazard Area


- 84,351 buildings
- 35% in Approximate Zone A
- 65% in Detailed Zone AE (9% in Regulatory Floodway)

BUILDINGS IN NON-REGULATORY ZONES

- 13,966 Structures (14%) mapped in High-Risk Zone Advisory A / AE
- 98,347 Total High-Risk

BUILDINGS IN SHADED X

- Moderate Risk
- 44,415 structures in 500-YR floodplains
- 9,718 structures in Levee Protected Zones



WV Flood Tool

Remember: When In Doubt, It's Not Out!

Views: Public Expert **Risk MAP**

Layers: Risk Reference Basemaps

Flood Elev (ft): 2033.7
Height above ground (ft): 9

2034 FEET

2028.4 FEET

3-5

3-6

3-7

Tools

Search, Draw, Measure, Undo, Redo, Print, Share

Flood Hazard Area: Location is **WITHIN** the FEMA 100-year floodplain and floodway.

Flood Zone: AE (Floodway)

Stream: Gauley River

Watershed (HUC02): Gauley (5000005)

FEMA's Flood Map: 54101C0377D **NFHL**

Map Effective Date: 1/6/2012

Contacts: Webster

Flood Height: Refer to FIS report for BFE **NAVD88**

Water Depth: About 8.0 ft (Source: HEC-RAS)

HEC-RAS Model: N/A **All Models**


Flood Profile: 54101_048

Community: Webster County

Freeboard: 2 ft **CRS Class:** 10 **CID:** 540203

Location (lat, long): (38.363738, -80.592949) **WGS84**

Location (UTM 17N): (4246251, 535561) **WGS84**

External Viewers: 

Elevation: 2025.5 ft (Source: FEMA 2018-20) **NAVD88**

Address: N/A

Parcel: ☒ 51-04-0003-0007-0000 | **Assessment**

Flood Risk Information **Related Resources**

[Flood Risk Assessment](#)

FEMA is creating new flood maps for select communities in Region 4 which will alter the floodplain boundaries and base flood elevations. The new flood maps will affect the at-risk building inventories as well. The BFE is increasing 6 feet at this location.

The June 2016 Flood High-Water Mark was 9.1 feet for Building [51-04-0003-0007-0000 91](#) located near the town Camden-On-Gauley (Webster County) on the Gauley River. The Base Flood Elevation is increasing by 6 feet on the new FEMA flood maps for this location.

The June 2016 Flood High-Water Mark was 9.1 feet for Building [51-04-0003-0007-0000](#) [91](#) located near the town Camden-On-Gauley (Webster County) on the Gauley River. The Base Flood Elevation is increasing by 6 feet on the new FEMA flood maps for this location.

Flood Tool Reference Layers

Aerial Imagery

Accessibility to quality, up-to-date aerial photography is one of the most important overall indicators of the suitability of the State's Spatial Data Infrastructure

Statewide Imagery Contract (2019-22)

STATEWIDE AERIAL IMAGERY CONTRACT: In February 2019, a 4-year statewide contract (2019-22) through WVU Procurement was executed to provide bulk discounts for government agencies acquiring aerial imagery in West Virginia. Thrasher Group was awarded the contract. The spring flying season is from late February to mid-April during leaf-out and no snow conditions.

- **County Participation:** 30 unique counties tapped into the contract and multiple counties took advantage of the contract more than once for a total of 41 county aerial imagery contracts (18,987 square miles).
- **Cost Share:** The total cost share by counties was 85% (\$713K) while grant share was \$124K. The entire aerial imagery cost with no county cost share contributions only had to be paid for two disadvantaged counties (Clay and Pendleton counties).
- **Resolution:** All counties were collected at 4-inch resolution except for Cabell (3"), Pendleton (6"), and Randolph (6") counties.
- **Flyover Coverage:** A total of 18,987 square miles were flown from this state contract.
- **Best Leaf-Off:** Replaced the legacy WV Sheriffs Association (2010-12) as the best available leaf-off imagery
- **Non-Exclusive Contract:** County offices still had the option to contract with other companies for the same services.
- **Unit Costs:** Aerial imagery could be purchased at four different pixel resolutions and over multiple budget cycles. Counties with limited funding qualified for grant cost-share.

New Aerial Imagery

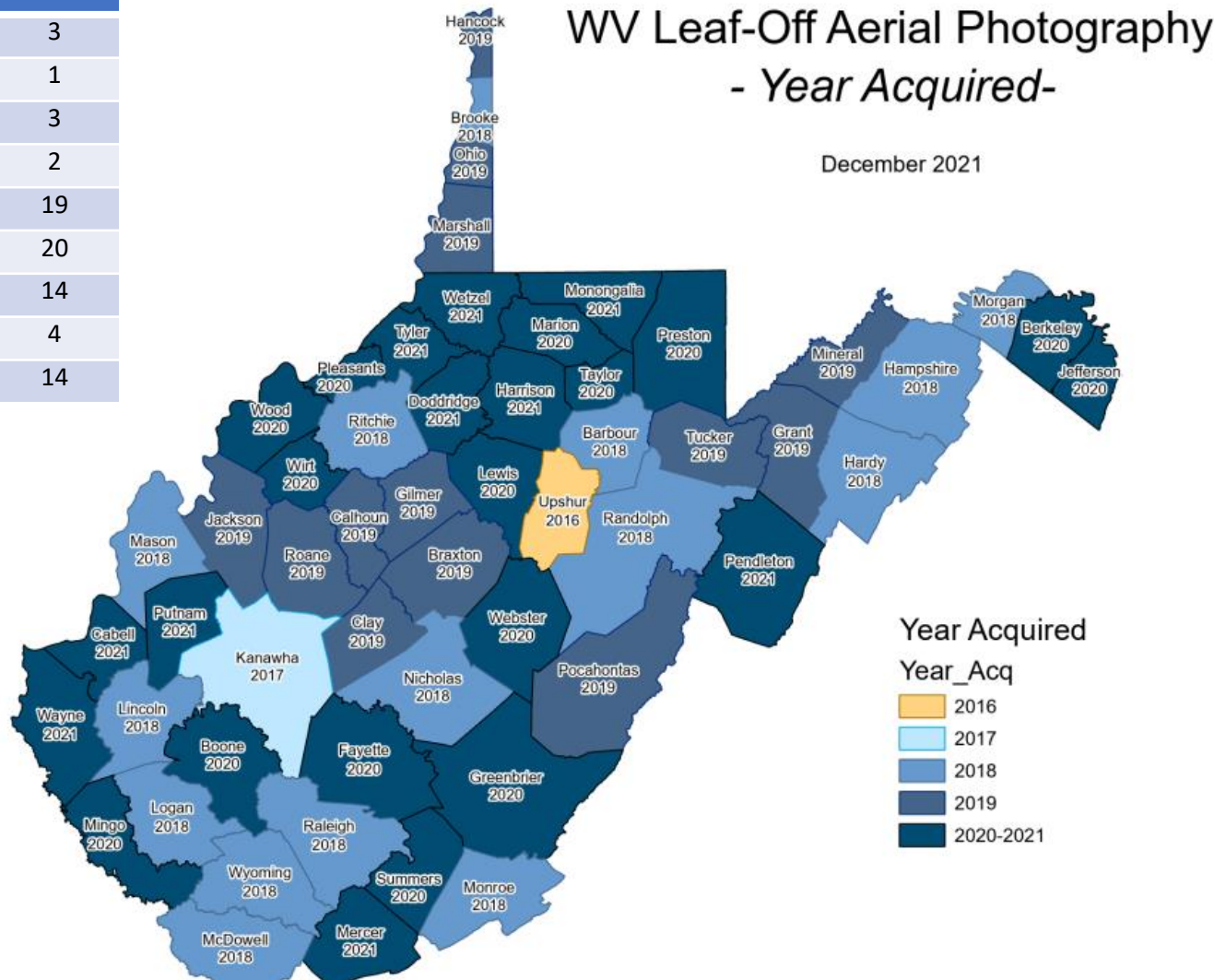


- **2022 USDA NAIP Leaf-On (Statewide)**
- **2022 County Leaf-Of Aerial Imagery (14 Counties)**
- **2021 County Leaf-Of Aerial Imagery (4 Counties)**
- **2020 County Leaf-Of Aerial Imagery (14 Counties)**
- **2020 USDA National Agriculture Imagery Program (NAIP)**
2-ft pixel resolution. Statewide Coverage.

30 unique counties (41 total) tapped into the **State Aerial Imagery Contract** supported by the Hazard Mitigation Grant for the acquisition of 2019-22 leaf-off imagery. Most counties were captured at 4-inch resolution. Imagery resides in the [public domain](#)

County Aerial Imagery (2021)

Year	Number
2010	3
2014	1
2016	3
2017	2
2018	19
2019	20
2020	14
2021	4
2022	14



New 2021-22 Imagery

- ✓ Berkeley County
- ✓ Cabell County
- ✓ Calhoun County
- ✓ Hampshire County
- ✓ Harrison County
- ✓ Jackson County
- ✓ Jefferson County
- ✓ Lewis County
- ✓ Marshall County
- ✓ Morgan County
- ✓ Pendleton County
- ✓ Pocahontas County
- ✓ Raleigh County
- ✓ Randolph County
- ✓ Roane County
- ✓ Wayne County
- ✓ Wirt County

Ideally, leaf-off imagery should not be older than 5 years. Imagery is important for identifying at-risk structures and accurate disaster mapping.

Select counties for 2019-22 received funding support through HMGP grant

[PDF Map](#)

WVGISTC 2021-12-06

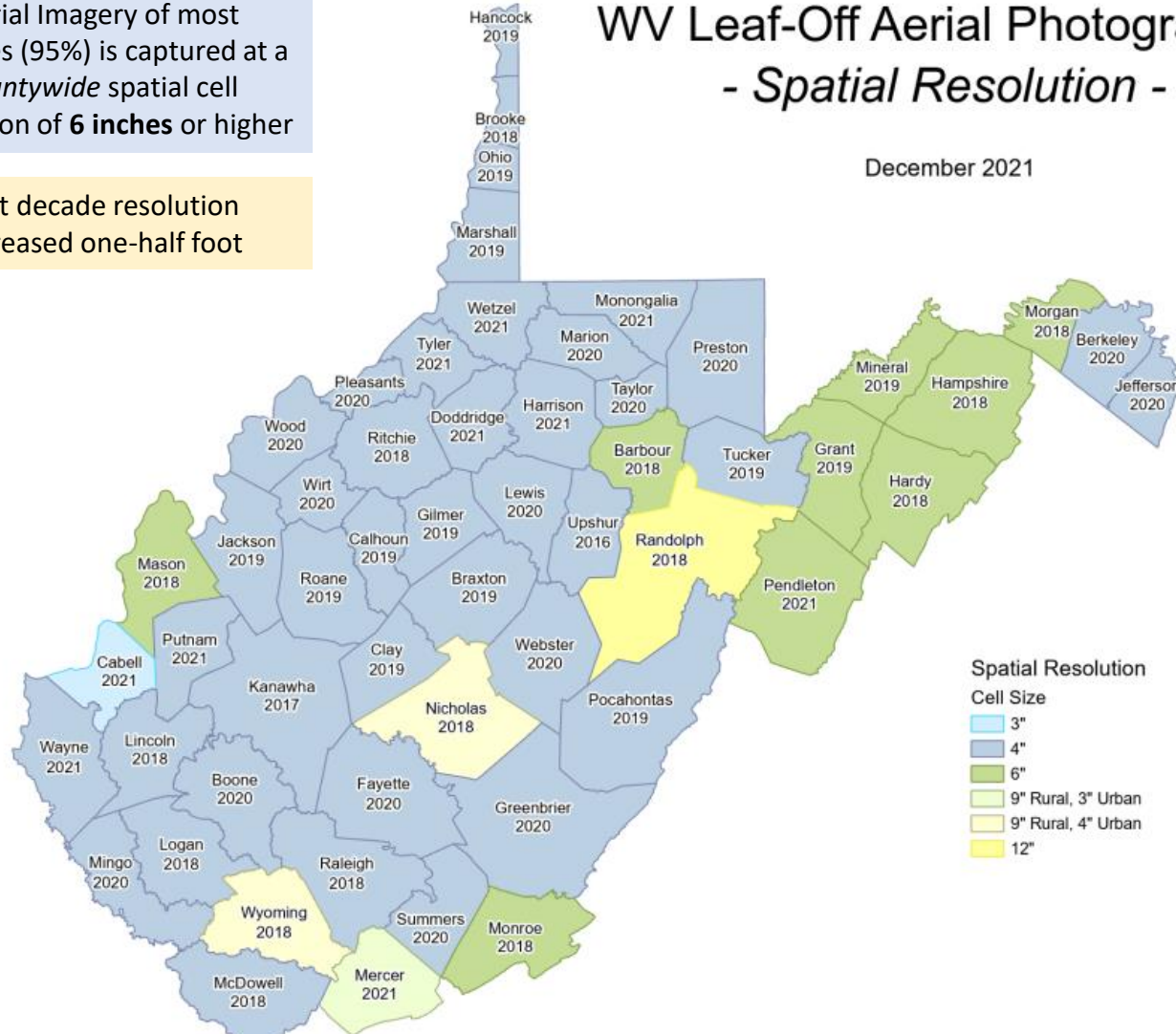
County Imagery Resolution(2021)

Aerial Imagery of most counties (95%) is captured at a *countywide* spatial cell resolution of **6 inches** or higher

Past decade resolution increased one-half foot

WV Leaf-Off Aerial Photography - Spatial Resolution -

December 2021

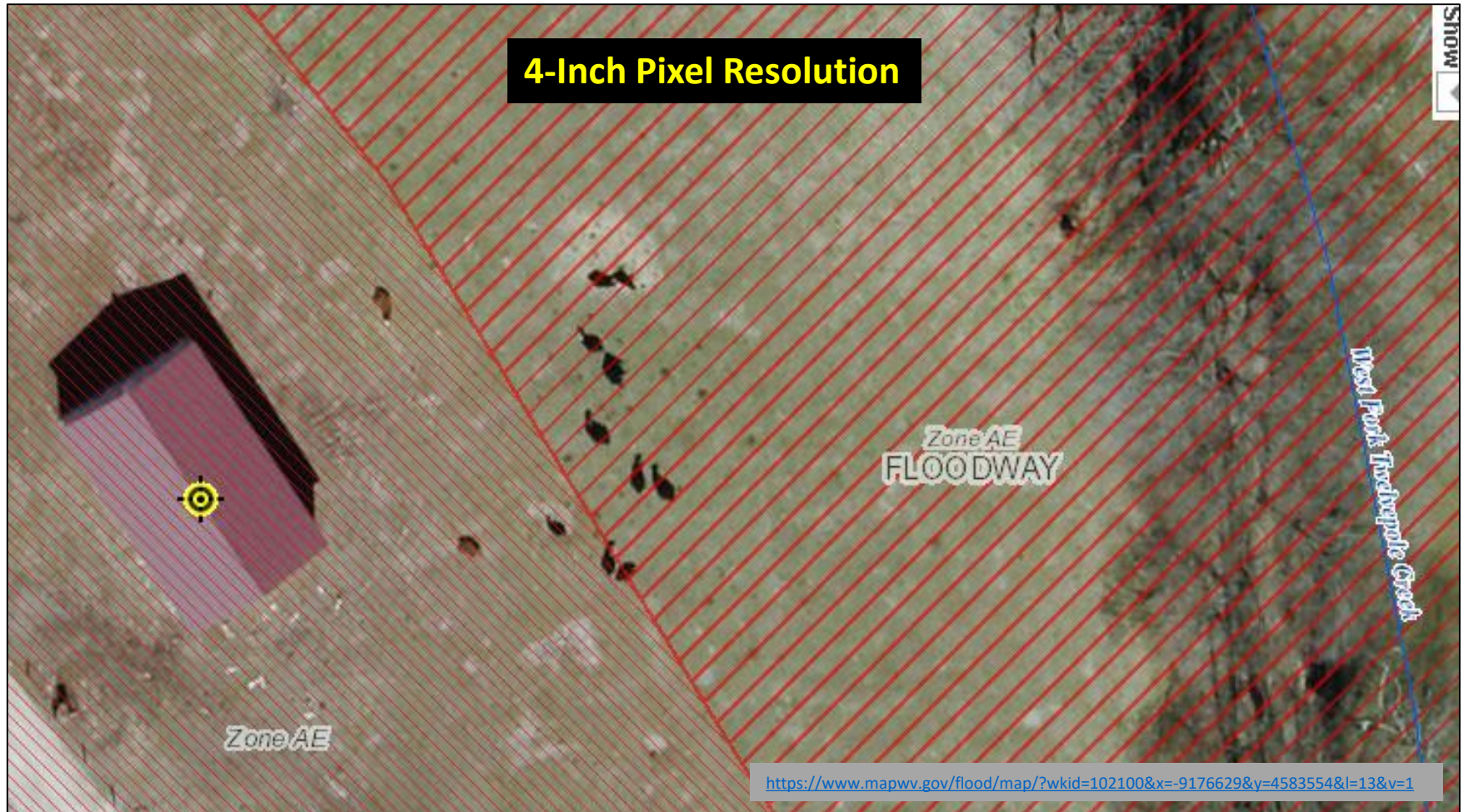


Select counties for 2019-22 received funding support through HMGP grant

[PDF Map](#)

WVGISTC 2021-12-06

Resolution (Cows in Wayne Co.)



Choose **WV Best Leaves Off** Base Map



Bing Hybrid



WV Best Leaves
Off



Bing Imagery

Cows in the Floodway
West Fork Twelvepole Creek,
Wayne County

Resolution (Eagle in Pendleton Co.)

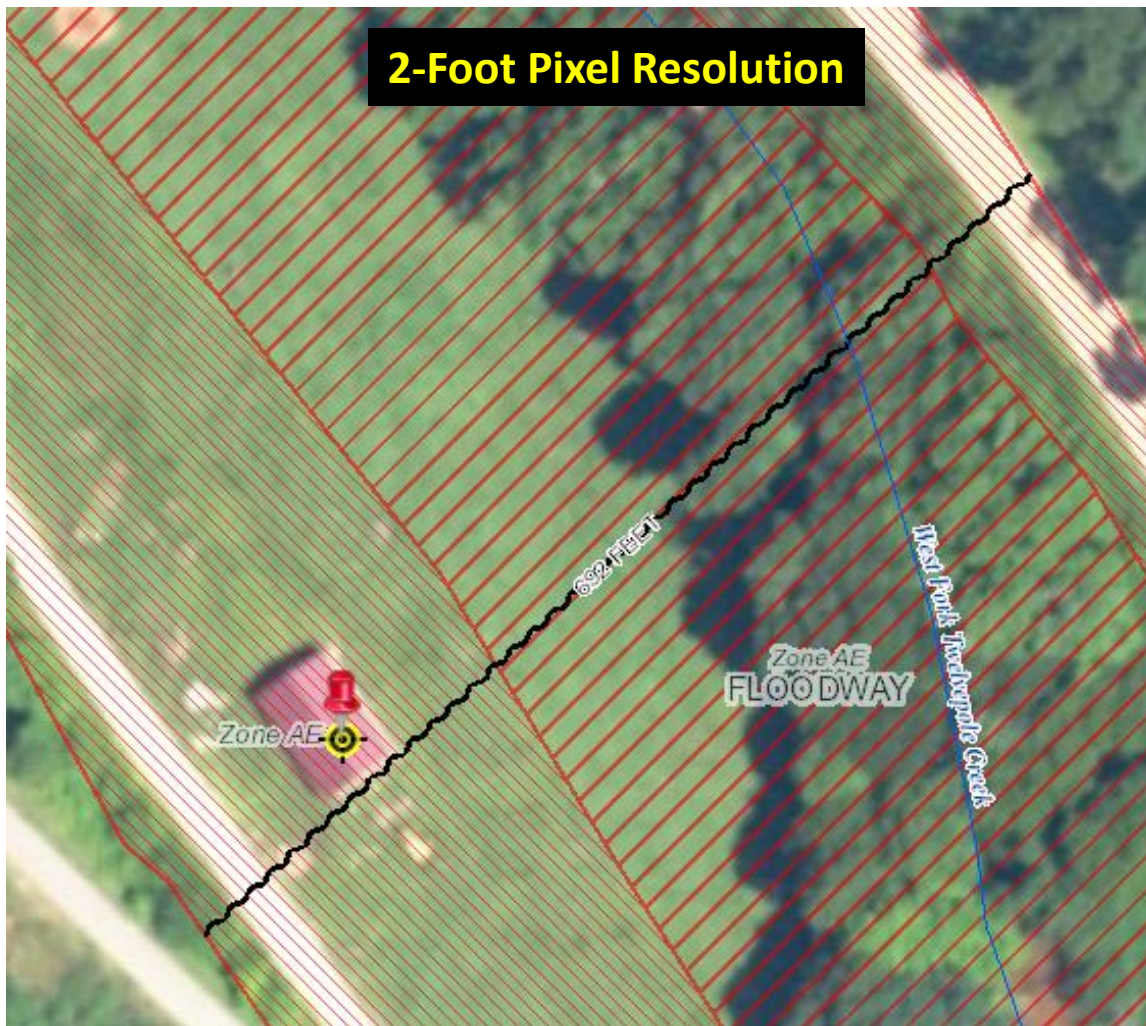


6-Inch Pixel Resolution

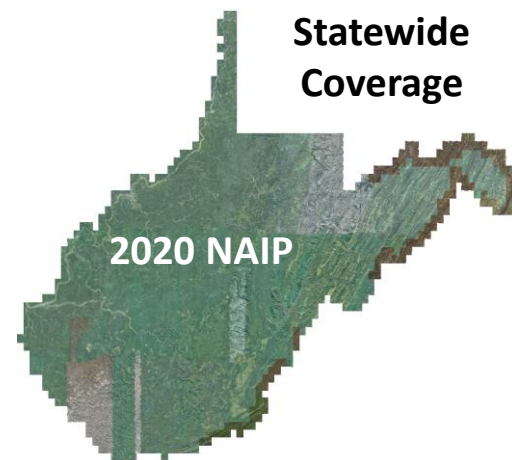
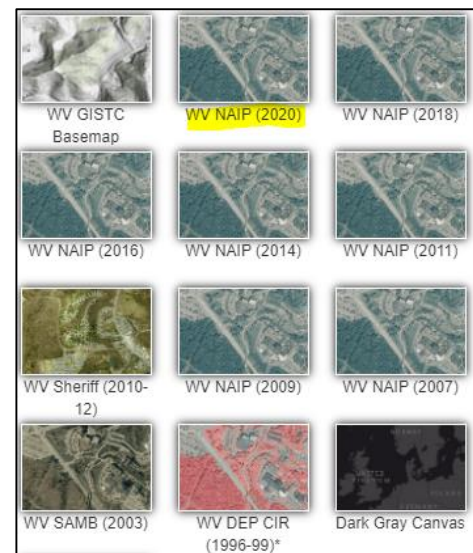
Bald Eagle in Pendleton County

2020 NAIP Aerial Imagery

<http://www.mapwv.gov/flood/map/?wkid=102100&x=-9176629&y=4583554&l=13&v=1>



Choose **WV NAIP (2020)** from Base Map Layers Pulldown Menu

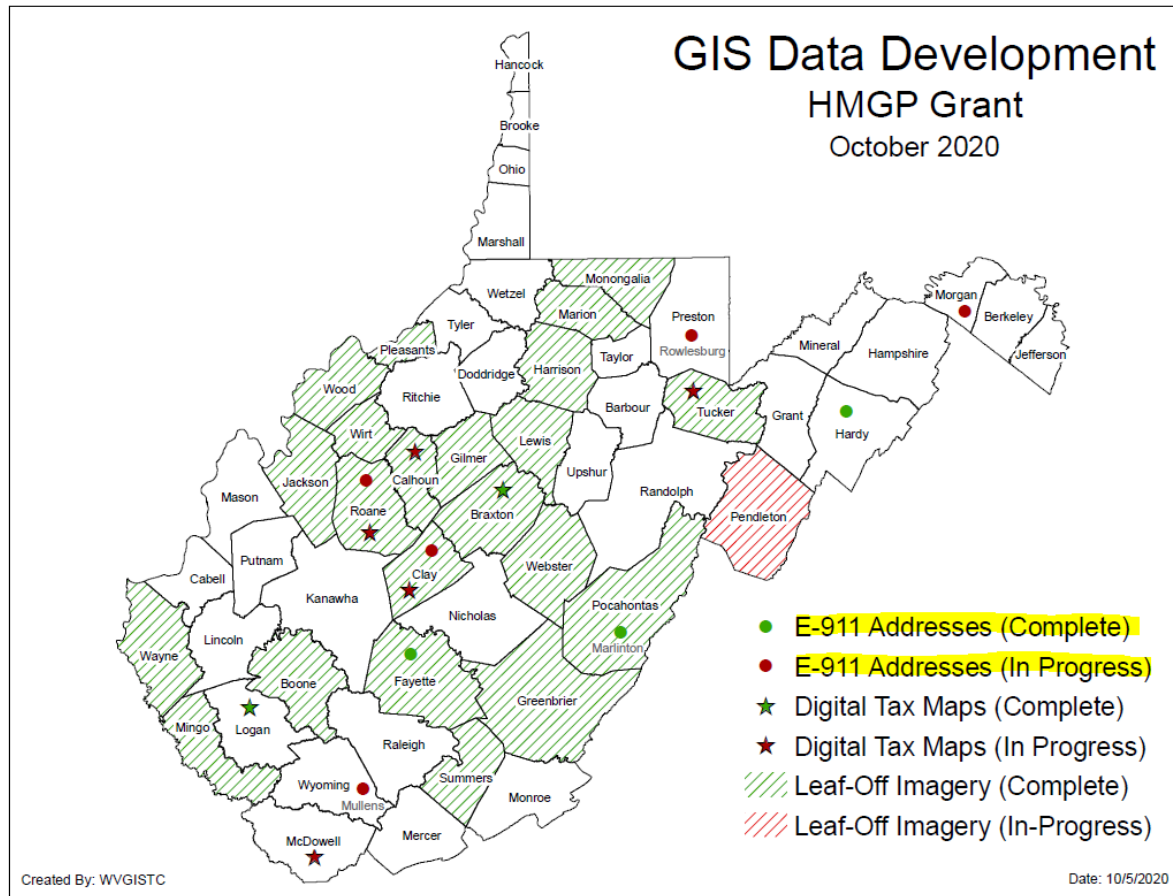


Flood Tool Reference Layers

E-911 Addresses

E-911 Addresses

Improved Addresses Uploaded to WV Flood Tool



HMGP Addressing Improvement Projects



Marlinton, WV

Statewide E-911 Addresses

Missing Address Site Numbers



E-911 Addresses

Address Match Locators Updated on WV Flood Tool

mapwv.gov/flood/map/?wkid=102100&x=-8654399&y=4779890&l=12&v=2

WV Flood Tool
Remember: When In Doubt, It's Not Out!

Views: Public Expert **Risk MAP** Layers: Risk Reference Basemaps Search: Address 1455 KNOTT RD, SHEPHERDSTOWN, WV Tools: [Icons]

Address Search

(1) Address Format: street address, city, state, zip.
(2) Separate each segments by comma (.).

Locator: **WV Site Locator**
[Disclaimer](#)

Standard Input Address: **1455 KNOTT RD, SHEPHERDSTOWN, WV, 25443**

Warning: Verify the building address on the map. If the map location is incorrect, then navigate to the correct location.

Geographic Coordinate: (-77.743385, 39.405103)

Address Site Match Locator

Geocoding is the process of converting street addresses into geographic coordinates (latitude and longitude) to identify the position on the map

Scale: 1: [Scale Bar]
x: -77.743472, y: 39.404871

Map Imagery: @WVGISTC Leaf-Off Mixed-Resolution Imagery

Flood Hazard Area: Location is **WITHIN** the FEMA 100-year floodplain. Advisory Flood Heights available.
Flood Zone: A (Advisory Flood Heights available)
Stream: Potomac River
Watershed (HUC8): Conococheague-Opequon (2070004)

FEMA's Flood Map: 54037C0075E [Download] [Share] NFHL
Map Effective Date: 12/18/2009
Contacts: Jefferson

Flood Height: About 313 ft (AFH) [More Info](#)
Water Depth: About 3.9 ft (Source: HEC-RAS)
HEC-RAS Model: PotomacRiver [All Models](#)
Community: Jefferson County
CID: 540065 **CRS Class:** 6

Location (lat, long): (39.405140, -77.743402)
Location (UTM 17N): (4366798, 780409)
External Viewers: [Icons]

Elevation: About 309 ft (Source: FEMA 2012)
Address: **1455 Knott Road, Shepherdstown, WV**
Parcel: 19-09-0011-0009-0016 | [Assessment](#)
Flood Risk Information [Related Resources](#)
[Flood Risk Assessment](#)

Flood Tool Reference Layers

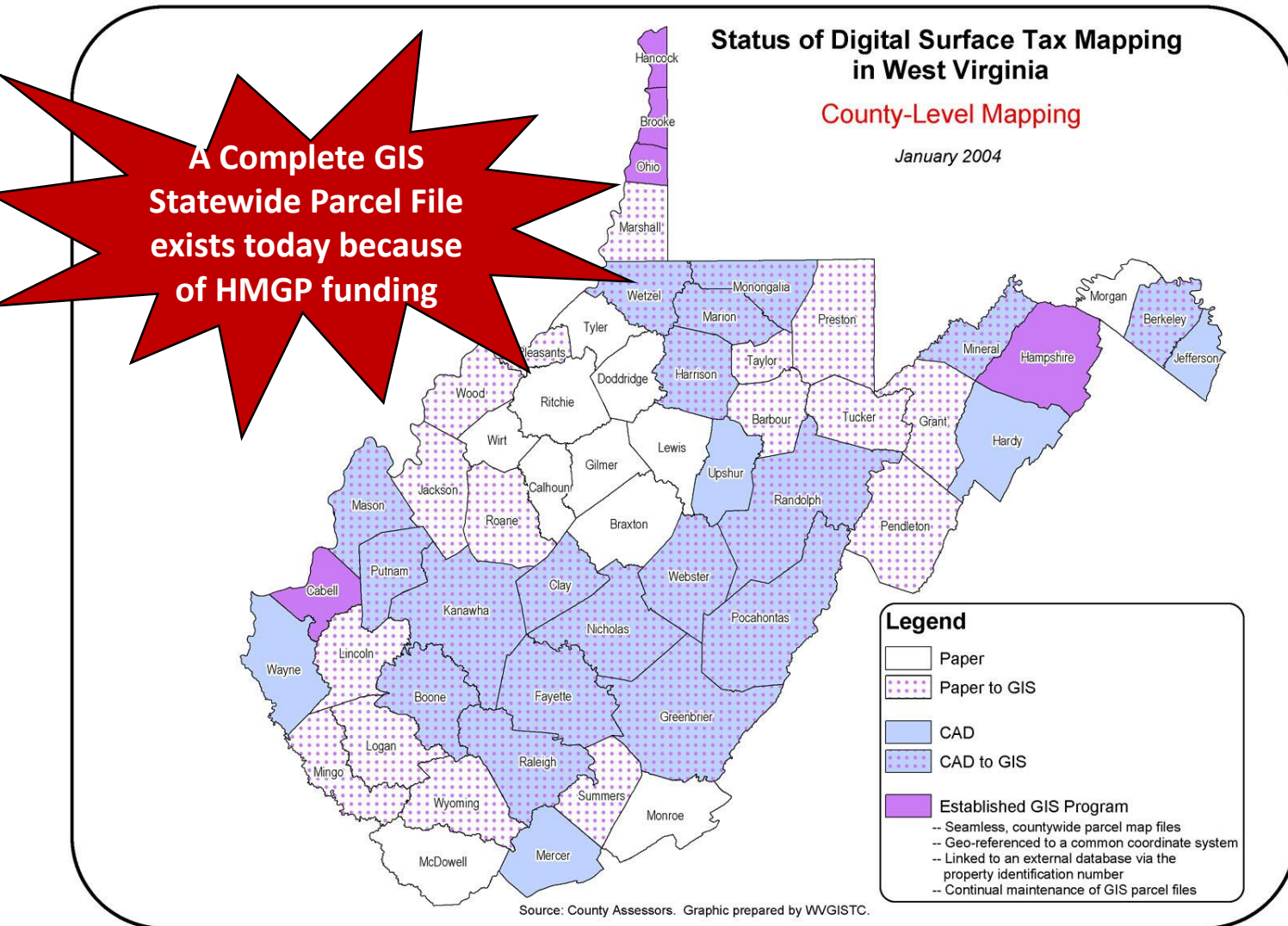
Parcels / Assessment Records

Parcels / Assessment Records

- **Tax Year 2022 Parcels and Assessment Records:** Currently updating Flood Tool with 1.4 million tax parcel and assessment records for Tax Year 2022.
- **Parcel Assessment Reports:** Parcel Web Reports include links to building sketch diagrams for residential properties.
- **Building Identifier:** The Parcel Identifier, combined with the E-911 Address Number, forms the Building Identifier for identifying structures for flood risk assessments, building pictures, LOMAs, Elevation Certificates, etc.

Statewide Digital Parcel File (new)

After two decades, Digital Surface Tax Parcels available statewide



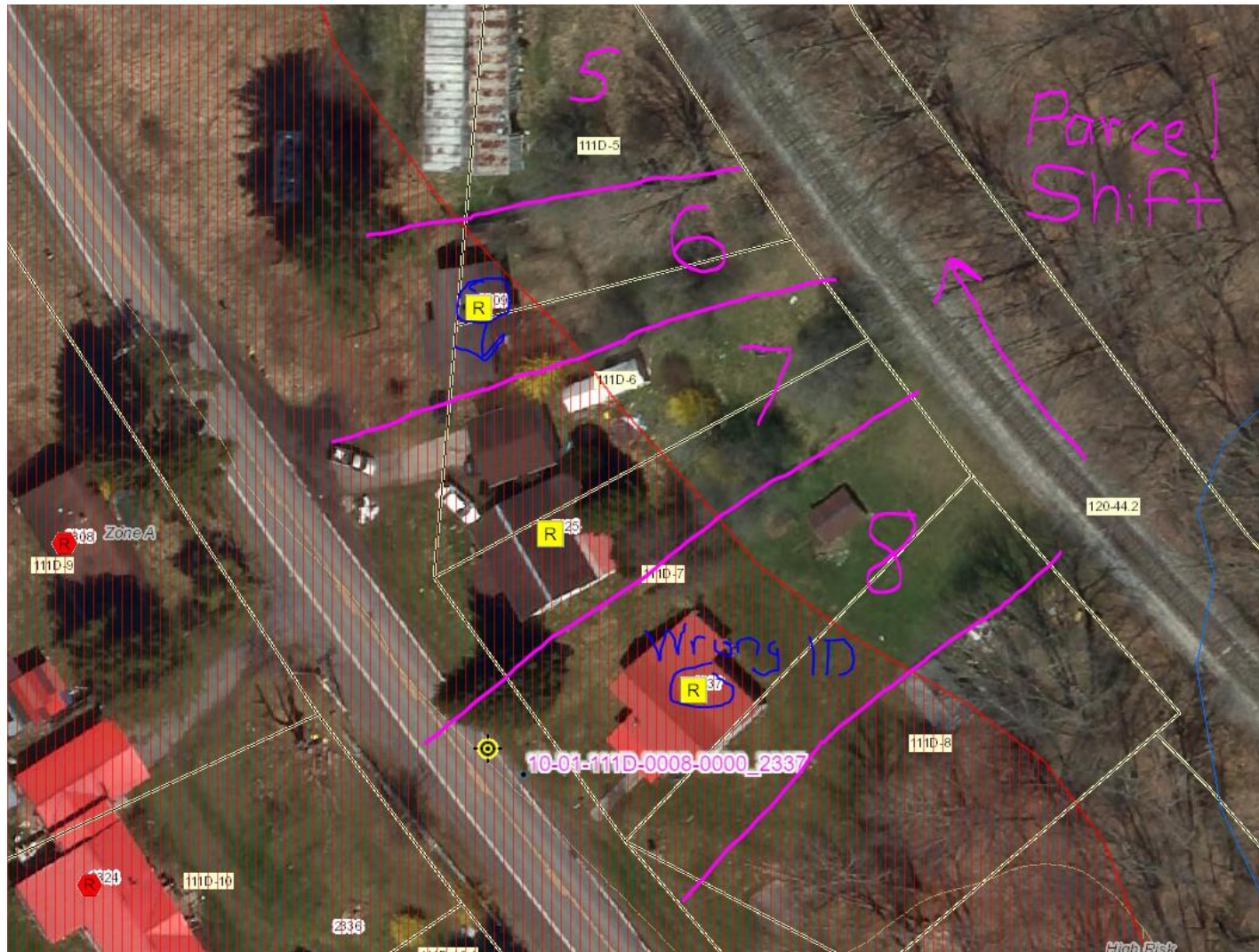
In 2004 only **five counties** had GIS parcels.

In 2021 all **55 counties** had converted their tax maps from paper to digital.

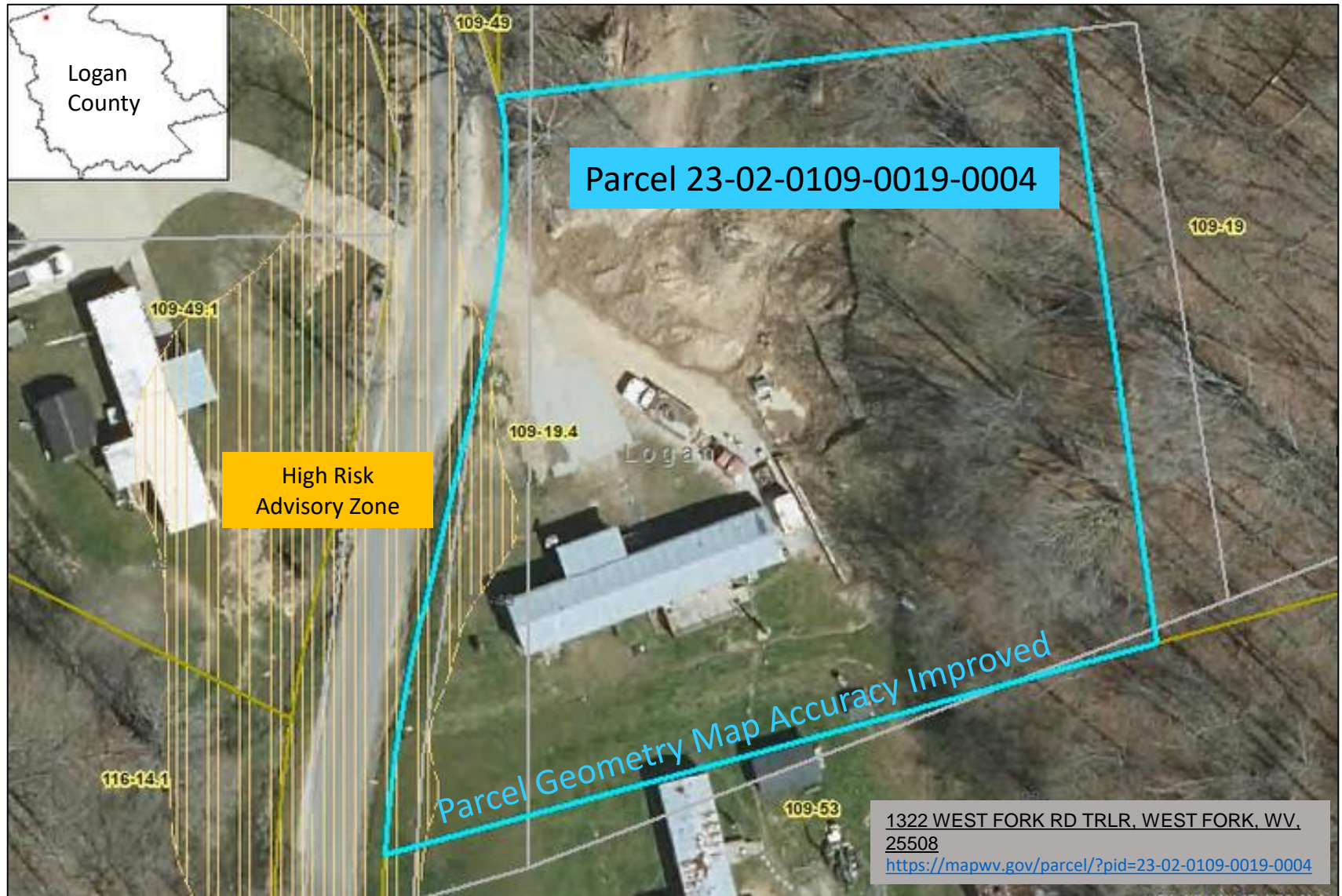
Parcel Misalignment

Parcel Shift and Building Identification Errors – Fayette County

<https://www.mapwv.gov/flood/map/?wkid=102100&x=-8997850&y=4568144&l=13&v=2>



Improved Property Parcel Mapping



Parcels link to Owner/Building Info

629 PENNSYLVANIA AVE, Morgantown, WV, 26501

<https://www.mapwv.gov/flood/map/?wkid=102100&x=-8899684&y=4811867&l=13&v=0>

Click on each tab to view information

Address Parcel Risk

DESCRIPTION

PROPERTY OWNER

PHYSICAL ADDRESS

BUILDING INFORMATION

Land use101 - Residential 1 Family

Year built1911

3D Flood Model

3D Visualization Cost Tool Related Resources

Depth

0 Foot

1 Foot

2 Feet

3 Feet

4 Feet

5 Feet

6 Feet

7 Feet

8 Feet

9 Feet

10 Feet


11 Feet

12 Feet

13 Feet

14 Feet

629 PENNSYLVANIA AVE, Morgantown, West Virginia, 26501



Parcel ID: 31-10-0029-0130-0000

Water Depth: ~ 1.0 ft (HAZUS)

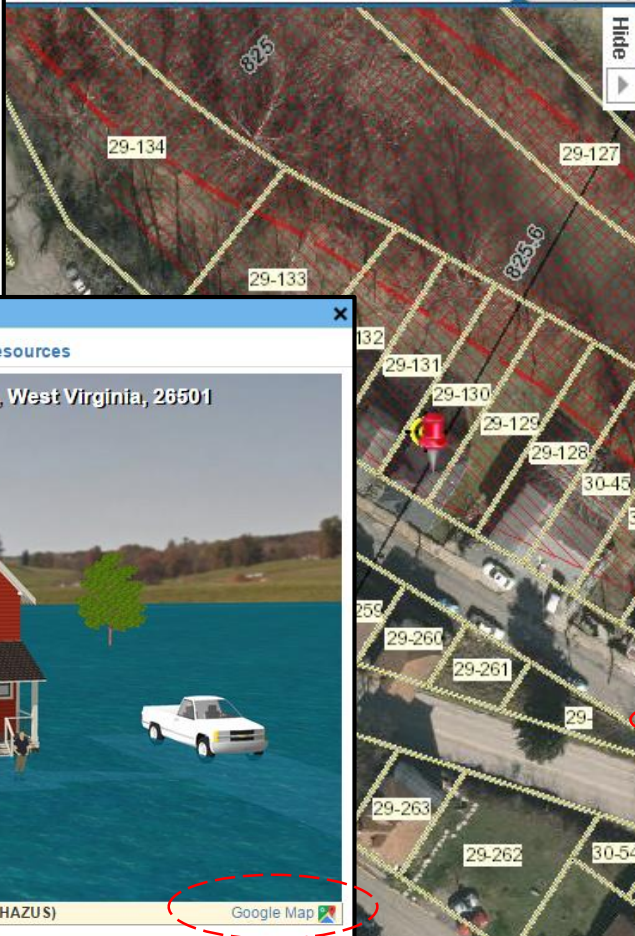
Google Map

General Damage - Furniture, insulation, walls, electrical outlets damaged.

Exterior Wall/Facade - Painted exterior walls will have to be painted at 0.5 foot to 1.0 foot of water as a result of staining. Walls will have to be painted completely because of the inability to match weather-worn paint. Modern stucco facade materials are destroyed when water gets behind the stucco material, which can occur at 0.5 foot of floodwater. Brick veneer will require cleaning.

Windows - Includes window frames and panes, as well as structural window frames. These items can sustain some water around them, but by 0.5 feet of floodwater they will need to be completely restored or replaced.

Search629 PENNSYLVANIA AVE, Morgantown, WV, : Tools



Flood Hazard Area: Location is **WITHIN** the FEMA 100-year floodplain.

Flood Zone: AE

Stream: Deckers Creek

Watershed (HUC8): Upper Monongahela (5020003)

FEMA Issued Flood Map: 54061C0114E

Map Effective Date: 1/20/2010

Contacts: Monongalia

Advisory Flood Height: N/A

Water Depth: About 1.0 ft (Source: HAZUS)

HEC-RAS Model: N/A

Flood Profile: 54061_005

CRS Information: N/A

Location (long, lat): (79.947234 W, 39.626885 N)

Location (UTM 17N): (590352, 4386875)

Elevation: About 823 ft

Address: 629 PENNSYLVANIA AVE, Morgantown, West Virginia, 26501

Parcel ID: 31-10-0029-0130-0000

Flood Risk Information

Flood Risk Assessment: N/A

3D Flood Visualization

Residential or Farm Property

Parcels link to Owner/Building Info

Residential or Farm Property

629 PENNSYLVANIA AVE, Morgantown, WV, 26501

<https://www.mapwv.gov/flood/map/?wkid=102100&x=-8899684&y=4811867&l=13&v=0>



DESCRIPTION

GIS Parcel ID	31-10-0029-0130-0000
Legal Description	BL 12-1/2 LOT 10
Acreage (deed)	0.0373
Tax Year	2015
Tax Class	4
Deed Book / Page	1259 / 45

PROPERTY OWNER(S)

Property Owner(s)	Smith John
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BUILDING INFORMATION

Property Class Type	R- Residential
Land Use	101 - Residential 1 Family
Year Built	1911
Architectural style	Conventional
Exterior Wall	Aluminum
Stories	2
Total Rooms	8
Building Grade	C
Basement Type	Full
Structure Area	1,320
Building (card) Number	1
# of main BLDGs (cards)	1

APPRAISED VALUES

Land Appraisal	\$33,200
Building Appraisal	\$29,000
Total Appraisal	\$62,200

Total Property Parcels

West Virginia Parcel Property Class Breakdown for Tax Year 2020 (Computed from statewide master parcel file)

Code*	Property Class	# of Parcels	Percent (%)	Total Assessment Value (Land & Bldgs.)
R	Residential	1,089,781	80.7%	\$76,250,249,392
F	Farm	118,810	8.8%	\$7,661,387,950
A	Apartment	2,979	0.2%	\$1,659,626,296
C	Commercial	64,172	4.8%	\$17,104,957,324
I	Industrial	2,690	0.2%	\$1,747,474,255
X	Exempt	67,549	5.0%	\$21,850,729,693
U	Utility	4,124	0.3%	\$671,794,393
Other	Not classified	5	0.0%	\$53,100
		1,350,110	100%	\$126,946,272,403
	Property Parcels intersecting 100-YR floodplain	275,567	20% (of count)	\$27,611,984,170

*Assessment records are important for **building inventories** and are used to estimate the total building exposure (\$) and building loss (\$) for multi-hazards. Often building inventories and corresponding loss estimates are organized by **property class**.*

Building Unique Identifier

[Click here for more info on Building Identification](#)

Parcel ID

01-08-0011-0069-0000

01	-	08	-	0011	-	0069	-	0000
County		District		Map		Parcel		Suffix

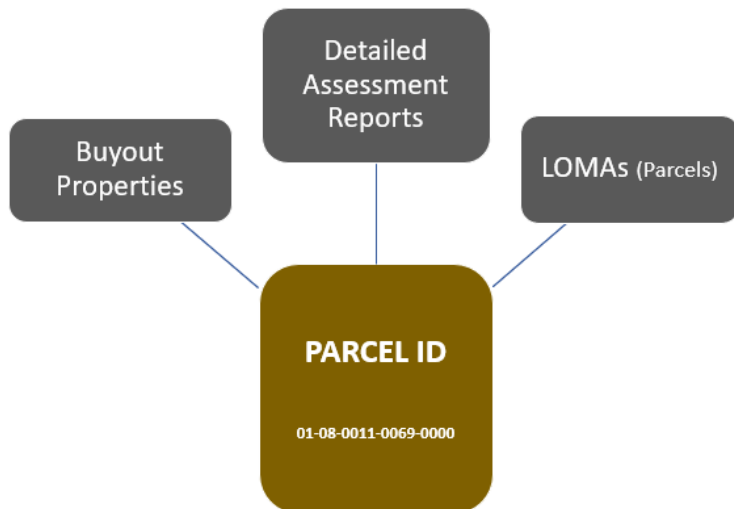
Address

604 S Main St, Philippi, West Virginia, 26416

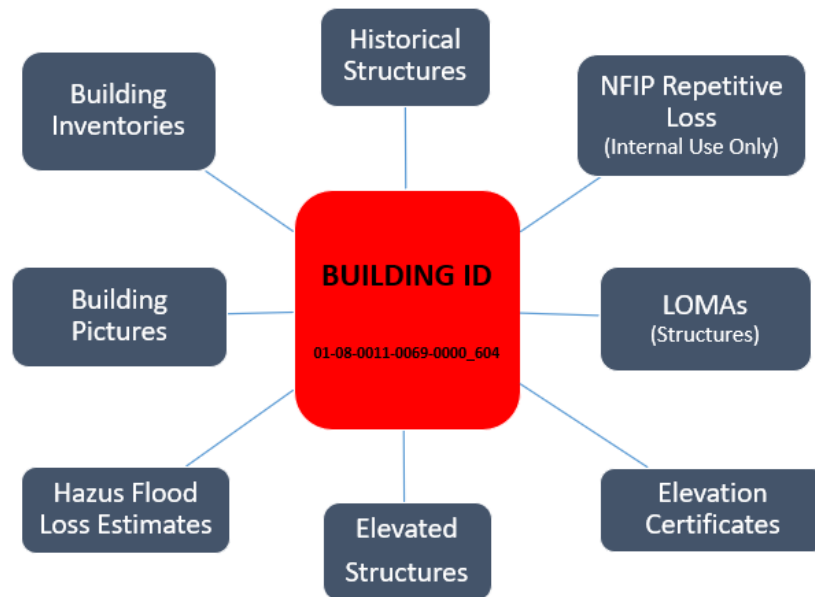


Building Identifier
(Parcel ID + Address No.)

01-08-0011-0069-0000_604



Link to **Property** Record



Link to **Structure** Record

Flood Tool Reference Layers

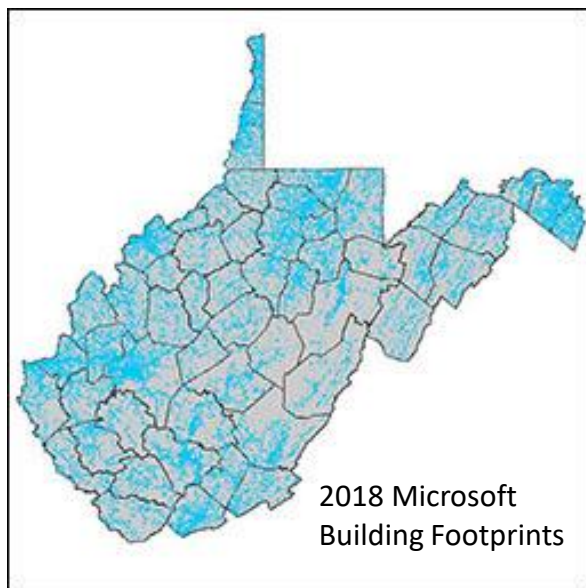
Building Footprints

Building Footprints are important for identifying flood-risk structures and flood visualizations

Building Footprints

Statewide building footprint reference layer created from best available sources

Layer	Source	Coverage
2003 SAMB	2003 2-ft. resolution leaf-off imagery, Statewide Addressing & Mapping Board (large buildings only)	Statewide partial (12,671)
Counties 2010-2018	6" or better leaf-off imagery	Select Counties
2018 Microsoft Building Footprints	Statewide dataset contains 1,020,048 building footprints generated by Microsoft in 2018.	Statewide (1 million)
2022 WVGISTC	ESRI's Deep Learning Package	Ongoing. 13 counties completed



How are BUILDING FOOTPRINTS beneficial?

- Improves the locational pin-pointing of structures for multi-hazard assessments
- Enhances visual representation of structures on 2D flood risk maps
- Necessary for 3D flood visualization models
 - Building footprints extruded to known heights
 - Beneficial to communicating flood risk to communities

Building Footprints

Building footprints created from Best Leaf Off by WVU

A comparison of building footprints on Wheeling Island in Ohio County. The WVGISTC building footprints were created from 4" resolution, 2019 imagery using ESRI's Deep Learning Package for U.S. structures.

As of May 2022, the WVGISTC has completed Building Footprint extractions for 13 West Virginia Counties. An assessment for overlap of building footprints with existing Primary Structure centroids has averaged 90% overlap for WVGISTC Footprints. This is in comparison to 75% and 66% overlap for Microsoft and Oak Ridge (US Structures) footprints, respectively.

On top of these percentages, the quality of the WVGISTC Footprints in orientation, positioning, and boundary matching is also improved.



WVGISTC – 2019 imagery



Microsoft



Oak Ridge

Building Footprints



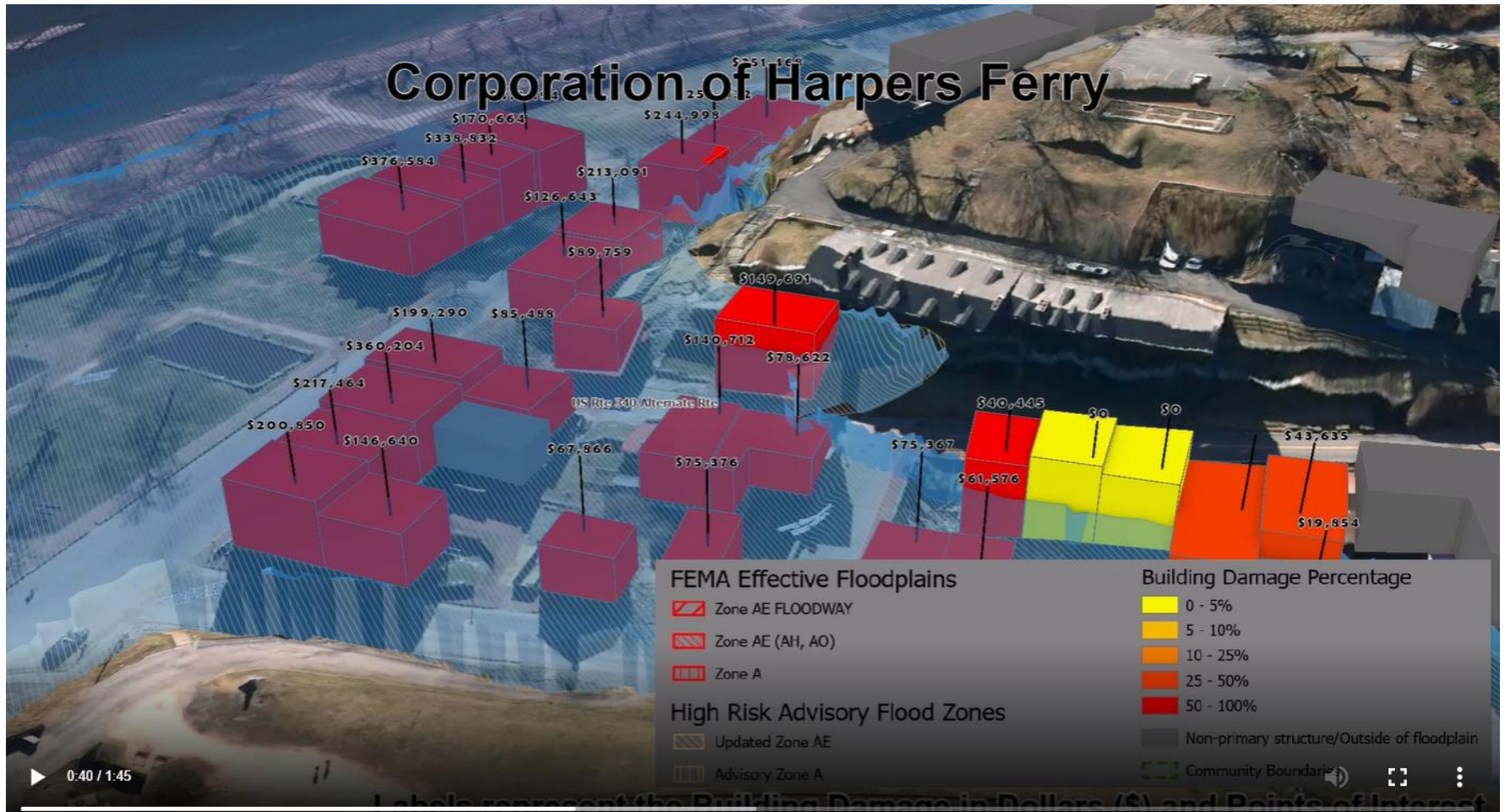
- 2018 **Microsoft Building Footprints** (for WV): 1,020,048 structure footprints
- 2021 **FEMA's USA Structures** (for WV): 1,085,876 structure footprints
- 2022 **WVU Building Footprints** (in progress)

Verification Layer: WV Building-Level Risk Assessment (BLRA): 98,467 points of primary structures located in the 1%-annual-chance floodplain

Flood Damage Visualizations

<< Harpers Ferry Flood Risk 3D Visualization Movie >>

https://data.wvgis.wvu.edu/pub/RA/resources/3Dflood/HarpersFerry_Jefferson_3D_Flood_2020_mp4.mp4



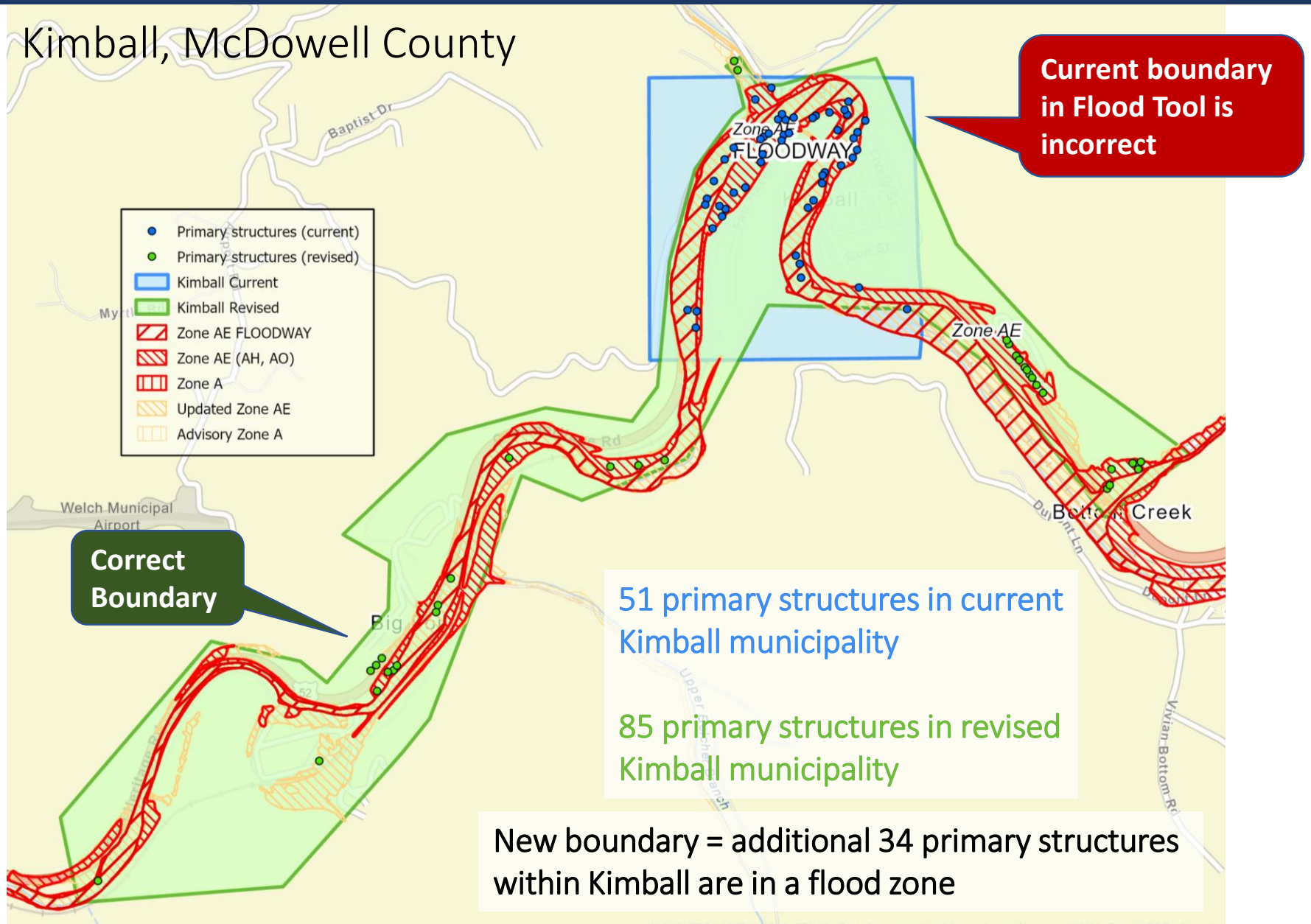
Flood Tool Reference Layers

Boundaries

Up-to-date boundary files are important for distinguishing flood zone areas of incorporated and unincorporated areas

Kimball Municipal Boundary

Kimball, McDowell County



Risk Assessment Layers on Flood Tool

The screenshot displays the WV Flood Tool RiskMAP interface. The top navigation bar includes 'Views' (Public, Expert, Risk MAP), 'Layers' (Risk, Reference, Basemaps), 'Search' (Address: e.g., 123 street name, city, state, zip), and 'Tools' (Navigation, Measurement, Print, etc.). The 'Risk MAP' view is active, showing a map of Hardy County, West Virginia, with various risk layers overlaid. The 'Layers' panel on the left lists several categories: 'BUILDING-LEVEL RISK: 100-YEAR FLOOD', 'CRITICAL INFRASTRUCTURE' (with checkboxes for Essential Facilities, Community Assets, Historic Structures, Dams, and Levees), 'HIGH WATER MARKS & STREAM GAGES', 'OTHER NATURAL HAZARDS' (with a checkbox for Landslides), 'FLOOD DEPTH', 'OPEN SPACE PRESERVED (CRS Credits)', 'PRIMARY FLOOD HAZARD LAYERS', 'PRELIMINARY FLOOD HAZARD LAYERS', 'OTHER FLOOD ZONE SYMBOLOGY', and 'MISCELLANEOUS LAYERS'. The 'Dams' and 'Landslides' layers are highlighted. The map shows the Lost River and the Lost River #4 Dam. A 'Flood Zone' is indicated by a red hatched area, a 'Dam' is labeled on the river, and a 'Landslide' is labeled on a hillside. A 'Layer Name: Landslides' pop-up window is open, displaying details: Movement Type (SLD), Creation Date (3/15/2019), Identify Date (3/15/2019), DEM Source (1M - 2016-17 FEMA R3 Lidar WV Northeast), Comments (-), Web Link (West Virginia Landslide Tool), and a Zoom to button. The map also shows the town of Hardy and the Lost River.

WV Flood Tool
Remember: When In Doubt, It's Not Out!

Views: Public, Expert, Risk MAP | Layers: Risk, Reference, Basemaps | Search: Address: e.g., 123 street name, city, state, zip | Tools: Navigation, Measurement, Print, etc.

Layers Panel:

- BUILDING-LEVEL RISK: 100-YEAR FLOOD**
- CRITICAL INFRASTRUCTURE**
 - ☒ Essential Facilities
 - ☒ Community Assets
 - ☐ Historic Structures
 - ☒ Dams
 - ☒ Levees
- HIGH WATER MARKS & STREAM GAGES**
- OTHER NATURAL HAZARDS**
 - ☒ Landslides
- FLOOD DEPTH**
- OPEN SPACE PRESERVED (CRS Credits)**
- PRIMARY FLOOD HAZARD LAYERS**
- PRELIMINARY FLOOD HAZARD LAYERS**
- OTHER FLOOD ZONE SYMBOLOGY**
- MISCELLANEOUS LAYERS**

* indicates that data is from FEMA
[Show Legend](#)

Layer Name: Landslides

Movement Type	SLD
Creation Date	3/15/2019
Identify Date	3/15/2019
DEM Source	1M - 2016-17 FEMA R3 Lidar WV Northeast
Comments	-
Web Link	West Virginia Landslide Tool
Zoom to	

Map Labels: Dam, Landslide, Flood Zone, Hardy, Lost River, Lost River #4 Dam, Zone A, Spencer, Grantsville.

<https://www.mapwv.gov/flood/map/?wkid=102100&x=-8771562&y=4715438&l=7&v=2>

<https://www.google.com/maps/@38.9409315,-78.805837,1690a,35y,44.59t/data=!3m1!1e3>

Potential Flood, Dam Failure and Landslide Vulnerabilities on WV Flood Tool's RiskMAP View
Hardy County, West Virginia

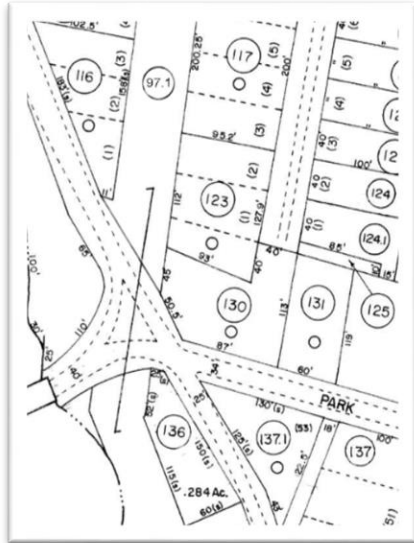
Flood Tool Reference Layers

Data Development and Integration

- **Local-Level Data Development**
- **State-Level Integration**

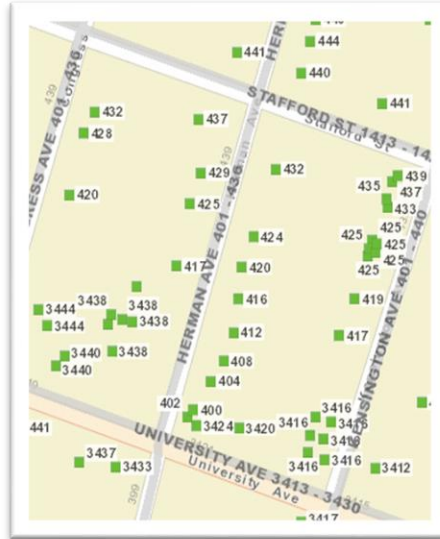
GIS Data Development

Parcels



Migrate six counties from paper to digital parcels

Site Addresses



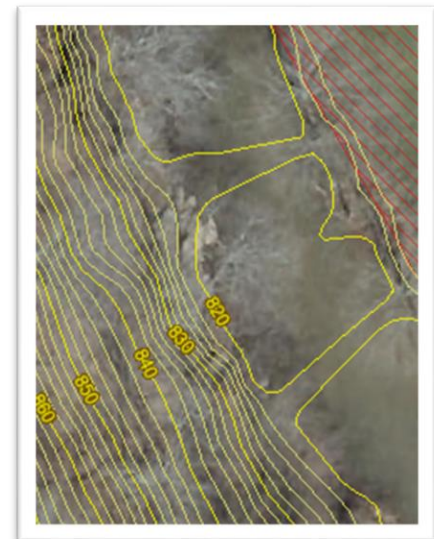
Flood-risk communities with missing or incorrect E-911 addresses

Aerial Imagery



County Leaf-off imagery no older than 5 years

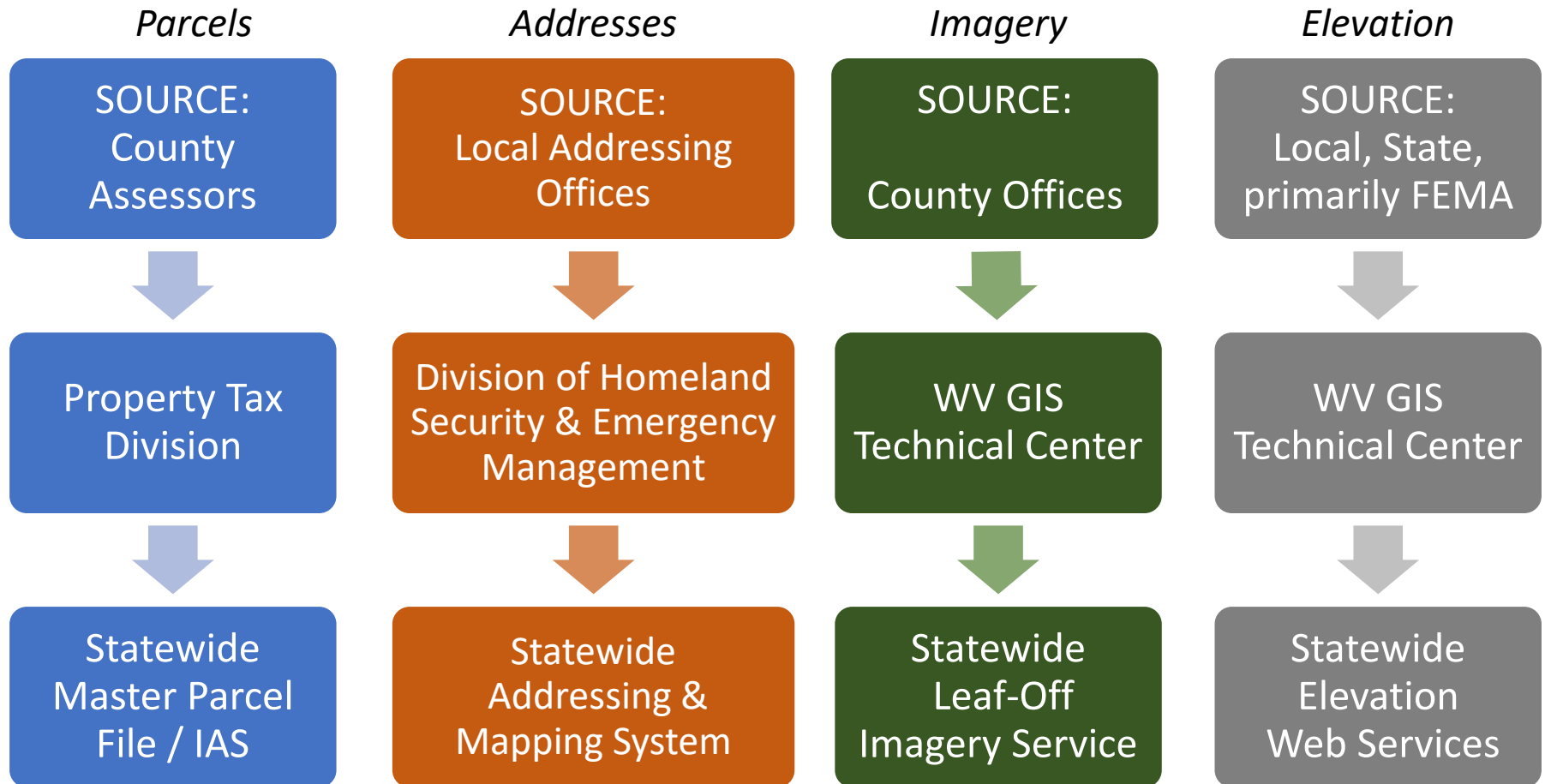
Elevation



Statewide 1-meter DEM and 1-ft. contours. Flood Studies, Depth & WSEL Grids

Improving State's Spatial Data Infrastructure

State-Level Integration



*State-level integration allows for statewide mapping products and services.
WVGISTC creates and hosts these framework spatial data layers.*