

Flood Risk Tools and Resources: Review and Update

Behrang Bidadian
Kurt Donaldson

June 17, 2026



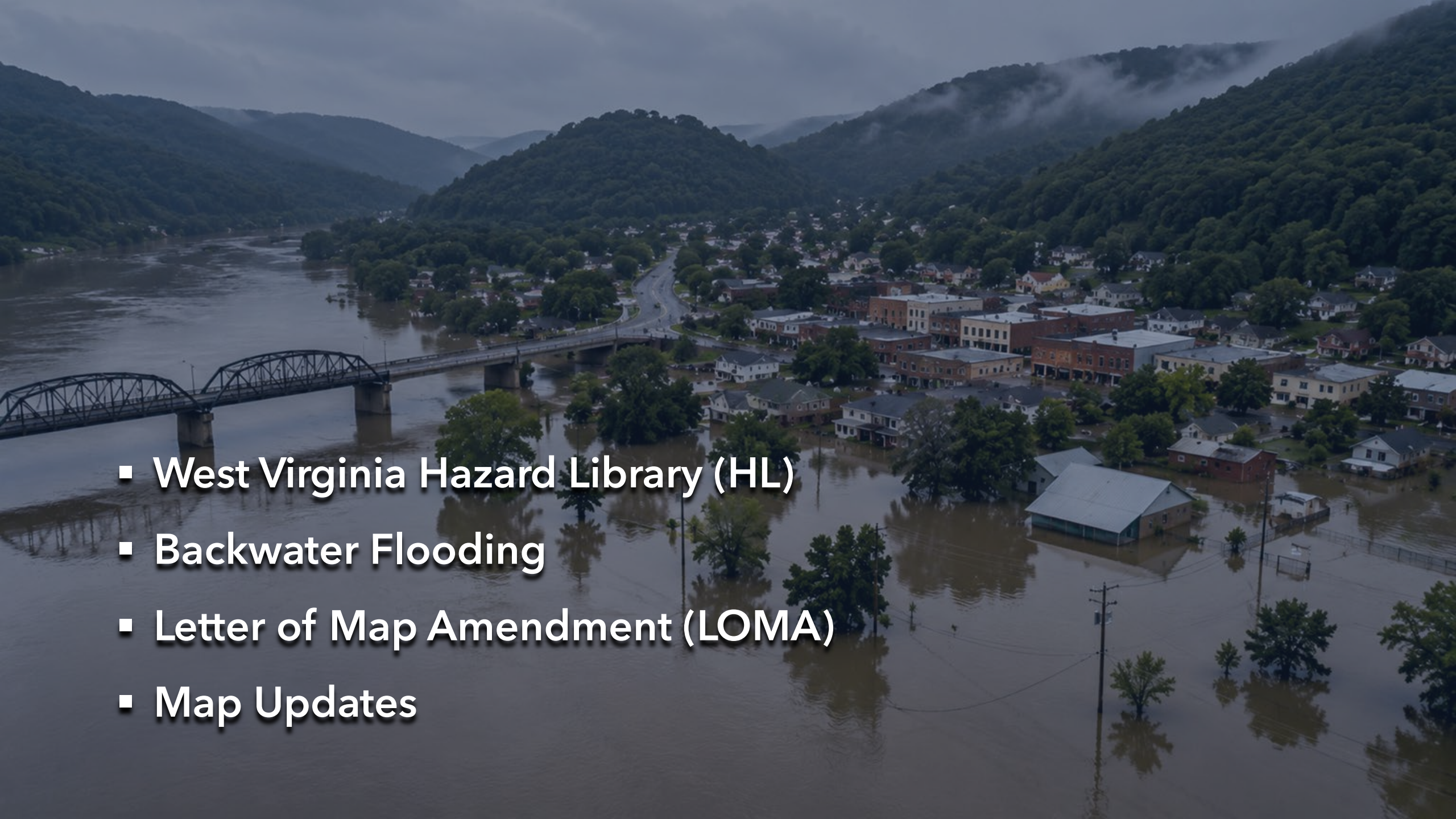
WV GIS Technical Center
West Virginia University

WEST VIRGINIA FLOODPLAIN MANAGEMENT
ASSOCIATION 2026 ANNUAL CONFERENCE

JUNE 16, 17, 18

PIPESTEM RESORT
STATE PARK





- **West Virginia Hazard Library (HL)**
- **Backwater Flooding**
- **Letter of Map Amendment (LOMA)**
- **Map Updates**

West Virginia Hazard Library (HL)



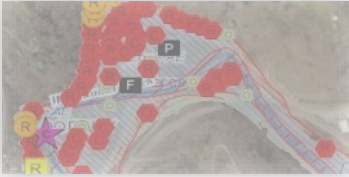
A comprehensive source of data, documents, and media related to flood risk that we collect or generate.

WV Flood Resiliency Framework (WVFRF)

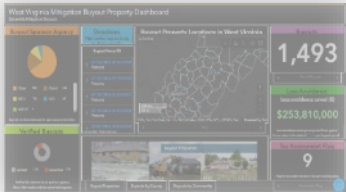
Flood Visualizations



WV Flood Tool



Flood Dashboards



WV Risk Explorer



Example Tools

RISK TOOLS

- WV Risk Explorer
- WV Flood Tool
- Visualizations
- Dashboards

9 Geographic Scales

COMMUNITY ENGAGEMENT

- Focused Outreach Meetings
- Flood Symposium
- Resiliency Tools & Products
- Learning Resources & Reports

HAZARD LIBRARY

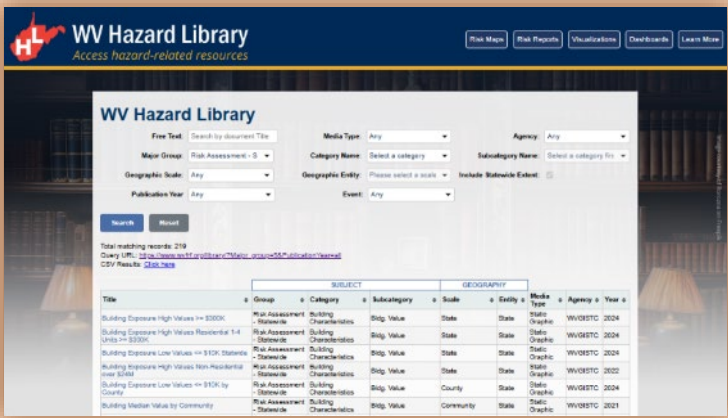
Search online hazard resources by title, subject, media, event, geography, data, etc.

STAKEHOLDERS

- Risk Reduction Associates
- Emergency Responders
- Floodplain Managers
- Local Officials
- Volunteers
- Public



Community Engagement Meeting



Hazard Library



Flood Symposium Stakeholders



Content of Hazard Library

TOPICS

- **Flood Disaster Events**
 - Flood Event
 - Flood Research

- **Mitigation**
 - Flood Insurance
 - Floodplain Management
 - Floodplain Mapping
 - Other Mitigation Measures

- **Risk Assessment & Planning**
 - State Risk Assessments
 - Local Risk Assessments
 - Planning Resources
 - Web Tools

MEDIA TYPES

SEARCH TYPES

WV Hazard Library

Search Options: Standard Advanced

Free Text:

Major Group:

Cross Index:

Geographic Scale:

Publication Year:

Author:

Organizational Level:

Total matching records: 912

Query Tags:

Disaster Events

Mitigation

Risk Assessment

- Flood Disaster
- Flood Insurance
- Floodplain Management
- Floodplain Mapping
- Other Mitigation Measures
- Risk Assessment - Local
- Risk Assessment - Statewide
- Risk Assessment - Web Tools
- Risk Planning Resources



Content of Hazard Library

TOPICS	MEDIA TYPES	SEARCH TYPES
<ul style="list-style-type: none"> Flood Disaster Events <ul style="list-style-type: none"> Flood Event Flood Research Mitigation <ul style="list-style-type: none"> Flood Insurance Floodplain Management Floodplain Mapping Other Mitigation Measures 	<ul style="list-style-type: none"> 3D Movie Bldg. Profile Dashboard Data-GIS Data-Metadata Data-Table Flyer Graphic Guide Journal Article Letter News Article Picture Plan Poster Report Slides Social Media Static Map Story Map Video Viewshed Web Info Web Tool 	<ul style="list-style-type: none"> Agency Downloadable Data Event Disaster Event Meeting Geographic Scale <ul style="list-style-type: none"> Entity Media Type Publication Date Subject <ul style="list-style-type: none"> Major Group Category Subcategory cross-indexing

WV Hazard Library

Search Options: Standard Advanced

[HL Overview](#)

Free Text:

Media Type:

Major Group:

Cross Index:

Category Name:

SELECT ALL

Subcategory Name:

Geographic Scale:

Publication Year:

Author:

Include Statewide Extent:

Total matching records: 912 of 912

Query Tags:

- 3D Movie
- Bldg. Profile
- Dashboard
- Data-GIS
- Data-Metadata
- Data-Table
- Flyer
- Graphic
- Guide



Content of Hazard Library

TOPICS

MEDIA TYPES

SEARCH TYPES

Author:

Diaster Event:

Meeting Event:

Geographic Scale:

Geographic Entity:

Media Type:

Publication Year:

Major Group: Cross Index:

Category Name:

Subcategory Name:

Cross Index:

Stakeholder:

Free Text:

Flood Visualization: Key Materials for Floodplain Management:

- Agency
- Downloadable Data
- Event Disaster
- Event Meeting
- Geographic Scale
 - Entity
- Media Type
- Publication Date
- Subject
 - Major Group
 - Category
 - Subcategory
 - *cross-indexing*
- Stakeholder Type
- Title (free text search)
- Predefined Searches
 - Visualizations
 - Floodplain Management Key Materials





Key Materials for Floodplain Management

WV Hazard Library

Search Options: Standard Advanced

HL Overview

Free Text:

Media Type:

Major Group: Cross Index:

Category Name:

Subcategory Name:

Geographic Scale:

Geographic Entity:

Include Statewide Extent:

Publication Year:

Disaster Event:

Meeting Event:

Author:

Project:

Stakeholder:

Organizational Level:

Risk Findings:

Flood Visualization: **Key Materials for Floodplain Management:**

Search

Reset

Total matching records: 15 of 912

Query Tags:

CSV Results: [Click here](#)

Query URL: <https://wvfrf.org/library/?includeKeyMaterials=true&sort=Title&sorttype=asc&view=advanced>



Title	More Info	SUBJECT			Scale	Media Type	Author	Pub Year
		Group	Category	Subcategory				
Building Permit Training Guides & Resources	?	Floodplain Management	Permits	Building Permit	State	Guide	WV EMD	None
Flood Elevations (BFE / AFH / Elevation Certificates)	?	Floodplain Management	Flood Elevation	BFE / AFH / Elevation Certificates	State	Guide	FEMA, Multiple Authors	None
Floodplain Management Training & Community Support Workshop (Based on FEMA Course: 273)	?	Floodplain Management	Requirements & Guidance	Supplemental Floodplain Mgmt. Resources	State	Slides	FEMA, WV EMD	2026
Past WVFMA Conference Presentations	?	Floodplain Management	Requirements & Guidance	WV Floodplain Managers Conference	State	Slides	WV FMA	None



Flood Visualization

WV Hazard Library

Search Options: Standard Advanced

HL Overview

Free Text:

Media Type:

Major Group: Cross Index:

Category Name:

Subcategory Name:

Geographic Scale:

Geographic Entity:

Include Statewide Extent:

Publication Year:

Disaster Event:

Meeting Event:

Author:

Project:

Stakeholder:

Organizational Level:

Risk Findings:

Flood Visualization:

Key Materials for Floodplain Management:

Search

Reset

Total matching records: 15 of 912

Query Tags:

Key Materials for Floodplain Management: Yes

CSV Results: [Click here](#)

Query URL: <https://wvfrf.org/library/?includeKeyMaterials=true&sort=Title&sorttype=asc&view=advanced>



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Past WVFMA Conference Presentations	?	Floodplain Management	Requirements & Guidance	WV Floodplain Managers Conference	State	Slides	WV FMA	None



WV Hazard Library

HL Overview

Search Options: Standard Advanced

Free Text:

Major Group: Cross Index:

Geographic Scale:

Publication Year:

Author:

Organizational Level:

Media Type:

Category Name:

Geographic Entity:

Disaster Event:

Project:

Risk Findings:

Subcategory Name:

Include Statewide Extent:

Meeting Event:

Stakeholder:

Flood Visualization: Key Materials for Floodplain Management:

Organizational Level:

SELECT ALL

- Federal
- State
- National
- Local
- Regional
- Other

Disaster Event:

Project: SELECT ALL

Risk Findings:

- 1950 June Flood
- 1961 July Flood
- 1972 February Flood
- 1977 April Flood
- 1985 November Flood
- 2001 July Flood
- 2016 June Flood
- 2021 July Flood
- 2021 March Flood

Stakeholder:

Flood Visualization: SELECT ALL

- Emergency Responders
- Floodplain Managers
- Local Officials
- Public
- Risk Reduction Associates
- Volunteer Groups

Geographic Scale:

Publication Year:

Author:

Organizational Level:

- County
- Incorporated Place
- Unincorporated Area
- Watershed
- River/Stream Floodplain

Incorporated & Unincorporated

Parcel Level

Building Level

Disaster Event:

Project: SELECT ALL

Risk Findings:

- 1950 June Flood
- 1961 July Flood
- 1972 February Flood
- 1977 April Flood
- 1985 November Flood
- 2001 July Flood
- 2016 June Flood
- 2021 July Flood
- 2021 March Flood

Meeting Event:

Stakeholder: SELECT ALL

Flood Visualization:

- AAG Conference
- CIVIC Greenbrier Focus Group Meeting
- FEMA CCO Meeting (2024)
- FEMA CCO Meeting (All)
- FEMA Discovery Meeting
- FEMA FRR Meeting
- FEMA HMGF Meeting
- FEMA R3 Coffee Break Meeting
- Geological Society of America (GSA) Conference (2019)

Geographic Entity:

Disaster Event: SELECT ALL

Project: PDC Region 1

Risk Findings:

- PDC Region 10
- PDC Region 11
- PDC Region 2
- PDC Region 3
- PDC Region 4
- PDC Region 5
- PDC Region 6
- PDC Region 7

Category Name:

Geographic Entity:

Disaster Event:

Project:

Risk Findings:



<https://wvfrf.org/library>

<https://wvfrf.org/wvre>

<https://wvfrf.org>

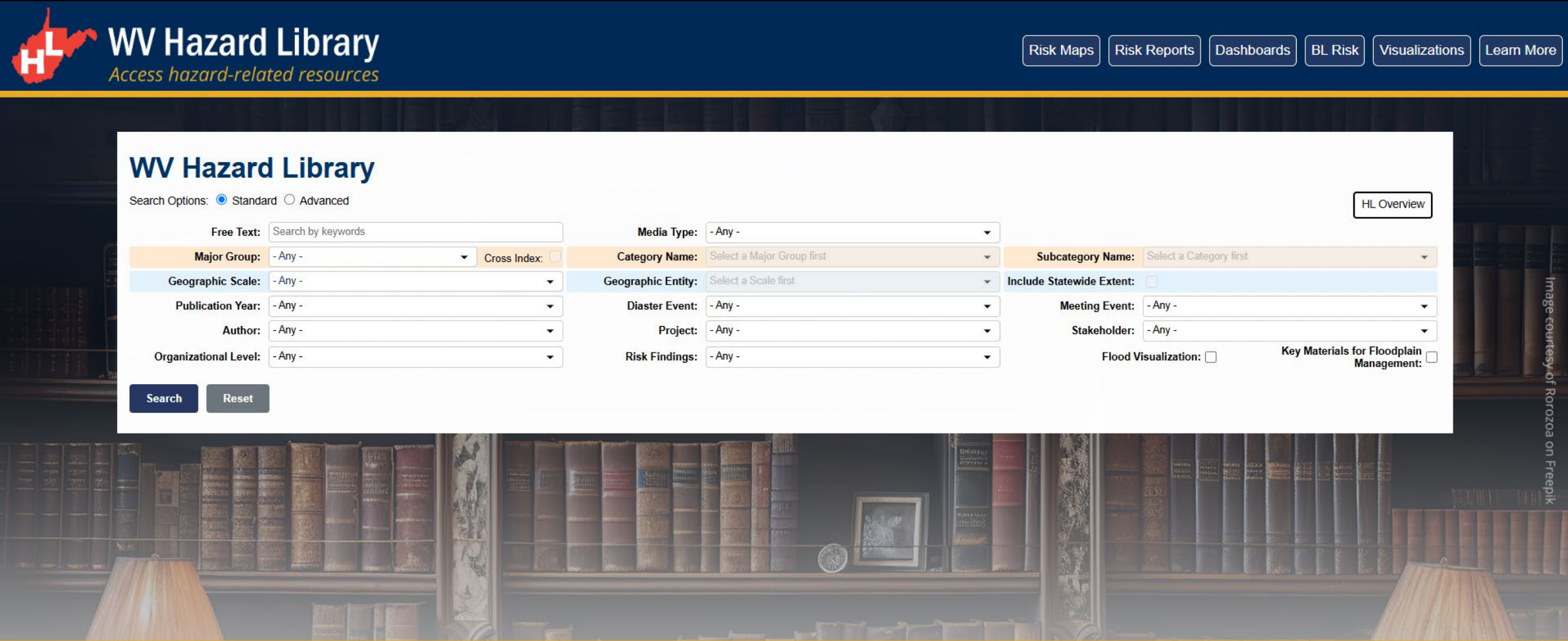


Image courtesy of Roroza on Freepik



An aerial photograph showing a wide river valley. The river is brown and turbulent, flowing from the top right towards the bottom left. The surrounding hills are covered in dense green forest. In the foreground and middle ground, a residential area is visible, with houses and streets partially submerged in floodwater. The water has reached the backwaters of the river, inundating the land. The text "Backwater Flooding" is overlaid in the center of the image.

Backwater Flooding



River Confluences

High flows in a main river prevent tributaries from discharging efficiently.
Common in large river systems



Bridges and Culverts

Undersized openings and bridge structural elements create hydraulic constrictions.
Water surface elevations increase upstream.



Sediments and Debris Accumulation

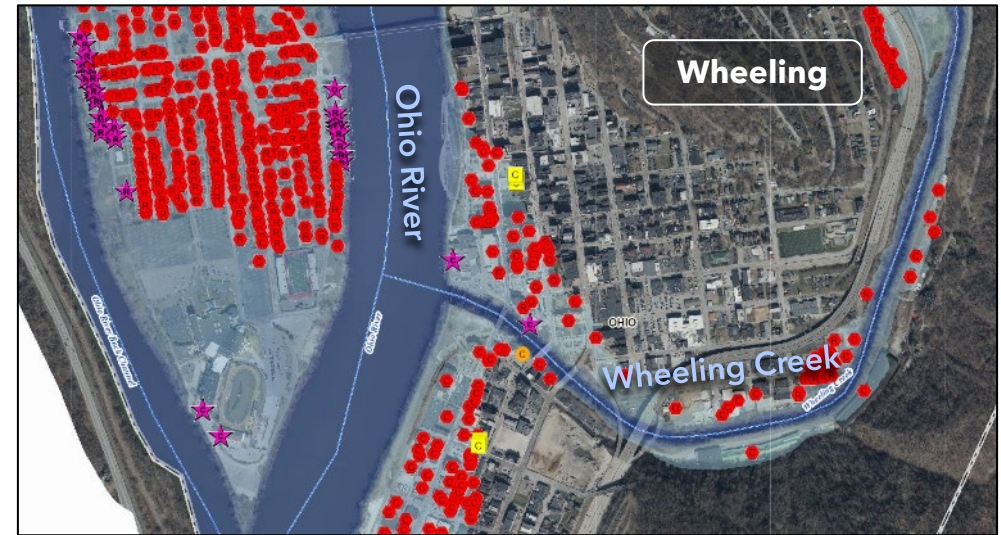
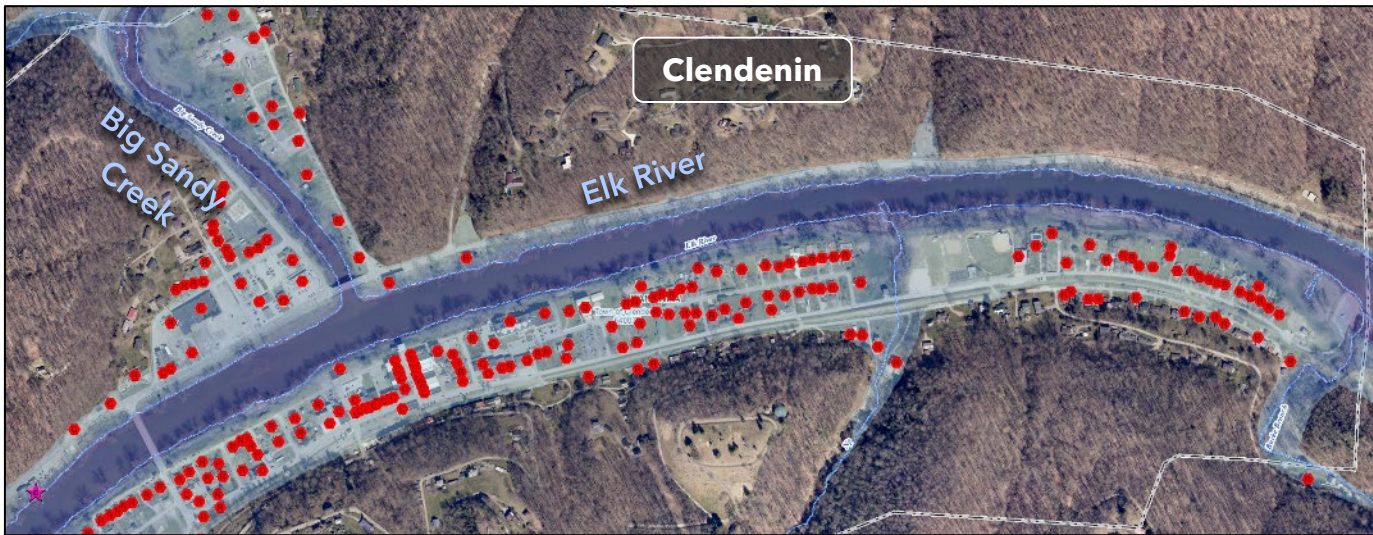
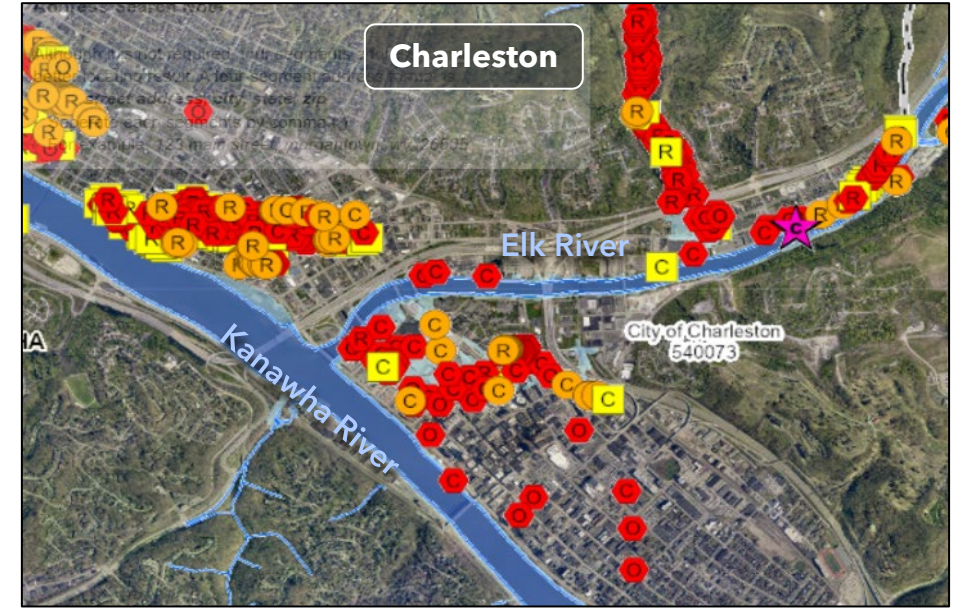
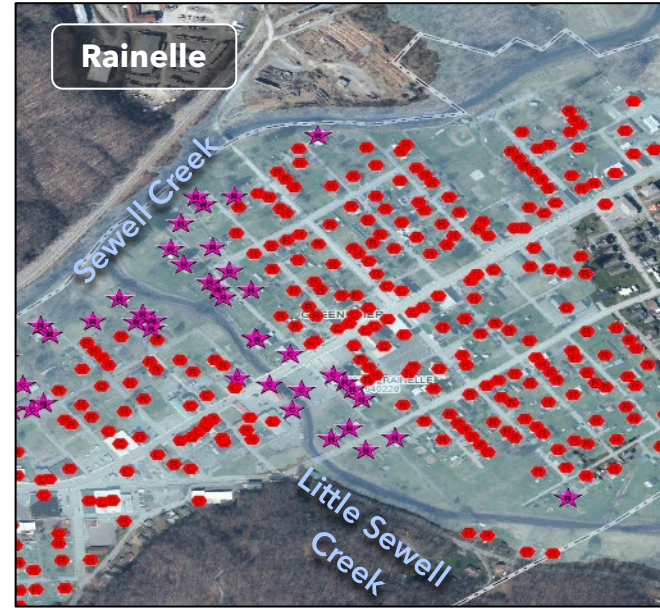
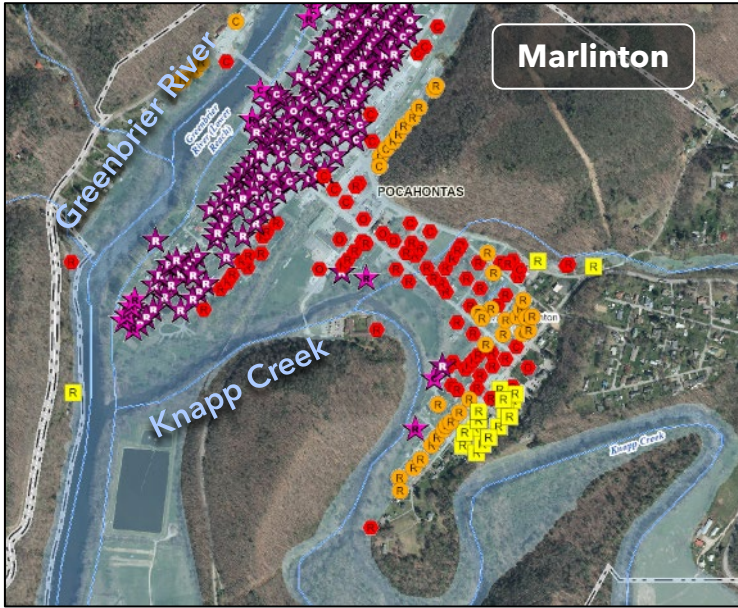
Temporary obstructions can create sudden backwater flooding effect.



River Confluences



Most major cities in West Virginia were established at river confluences.



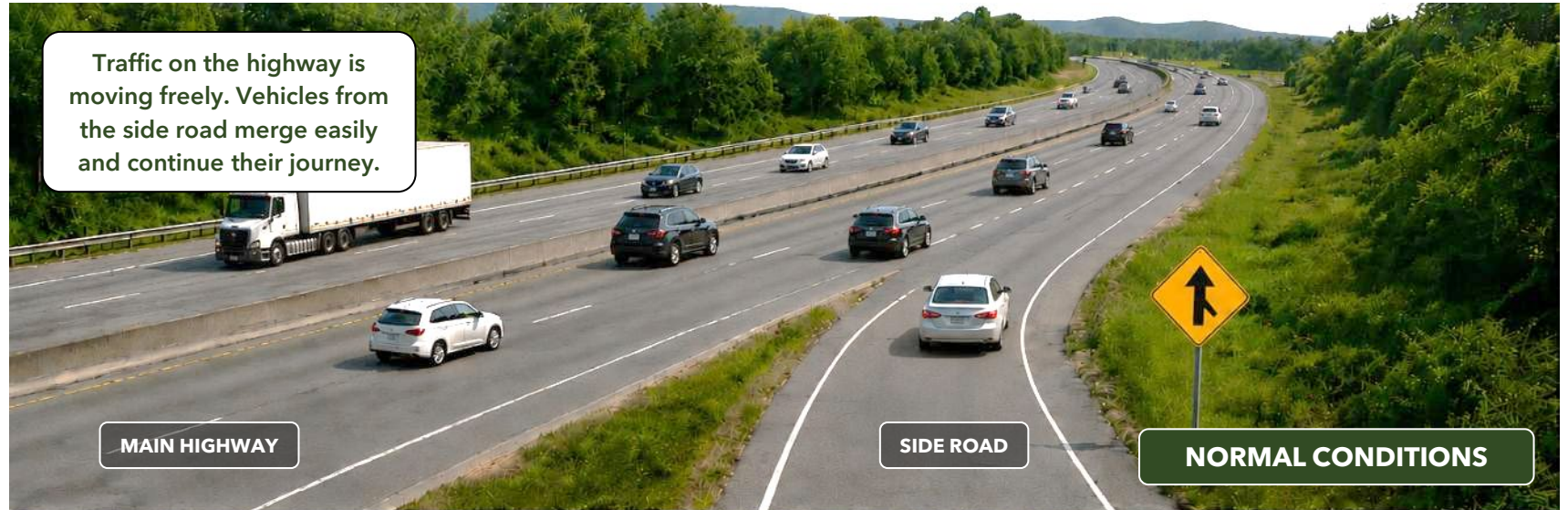


Why Does a Backup Occur?

A Traffic Analogy



When conditions worsen ahead, the backup propagates backward through the system.





River Confluences...

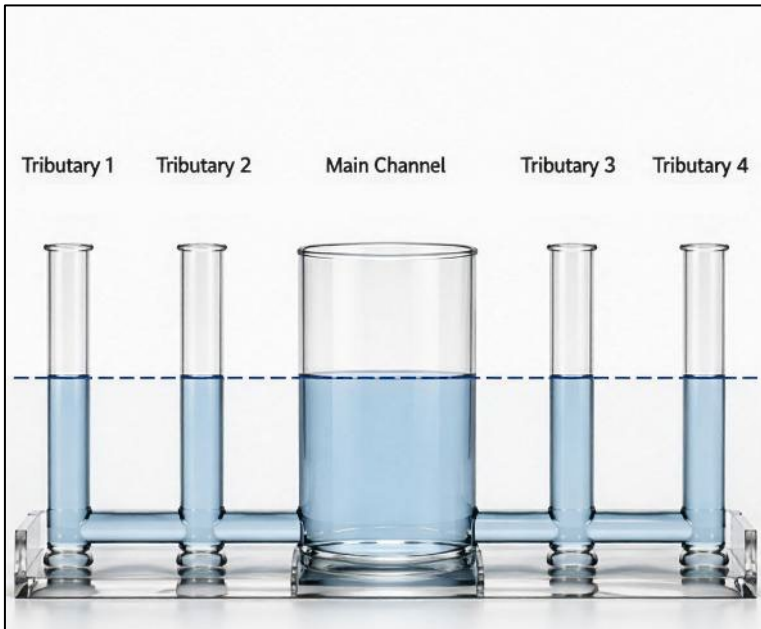


Conceptual Analogy

Simplified conceptual representation; actual river systems involve flowing water and changing hydraulic conditions.

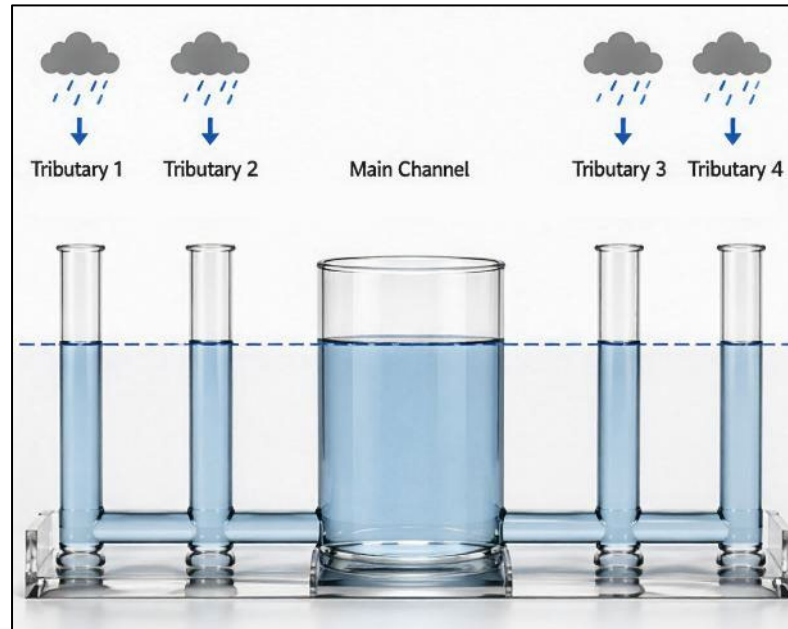
INITIAL CONDITION

Water levels are in balance.



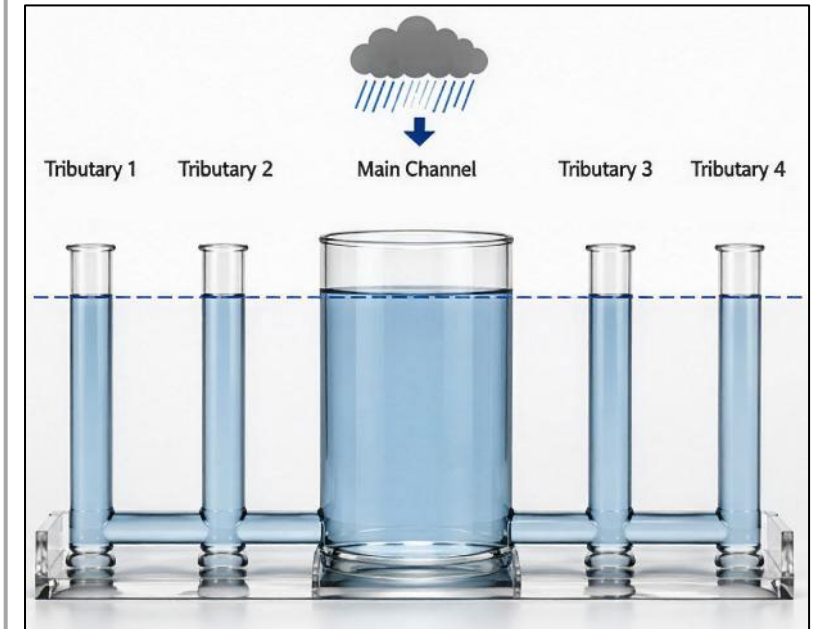
TRIBUTARY FLOW INCREASE

Water added to the tributaries.
Water levels rise throughout the system and stabilize at a higher elevation.



MAIN CHANNEL FLOW INCREASE

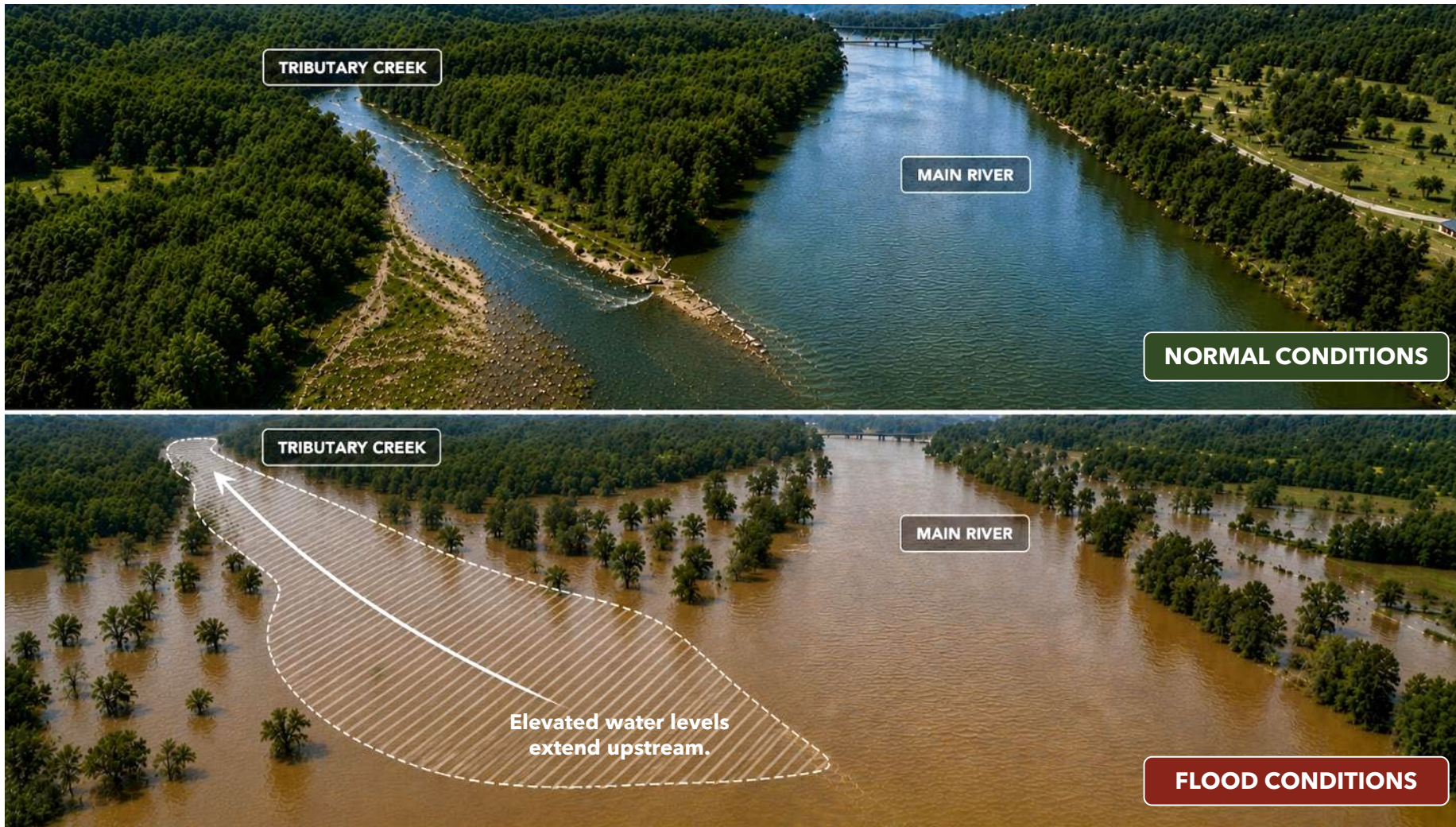
Much more water added to the main channel.
Water levels rise throughout the system and stabilize at a much higher elevation.



A large increase in the main channel raises water levels throughout the connected system. Tributaries experience higher water-surface elevations because the elevated downstream stage reduces their ability to drain efficiently.



Backwater effect



When flood levels rise in the main river, the tributary cannot drain efficiently. Water levels increase upstream in the tributary, creating a backwater effect.

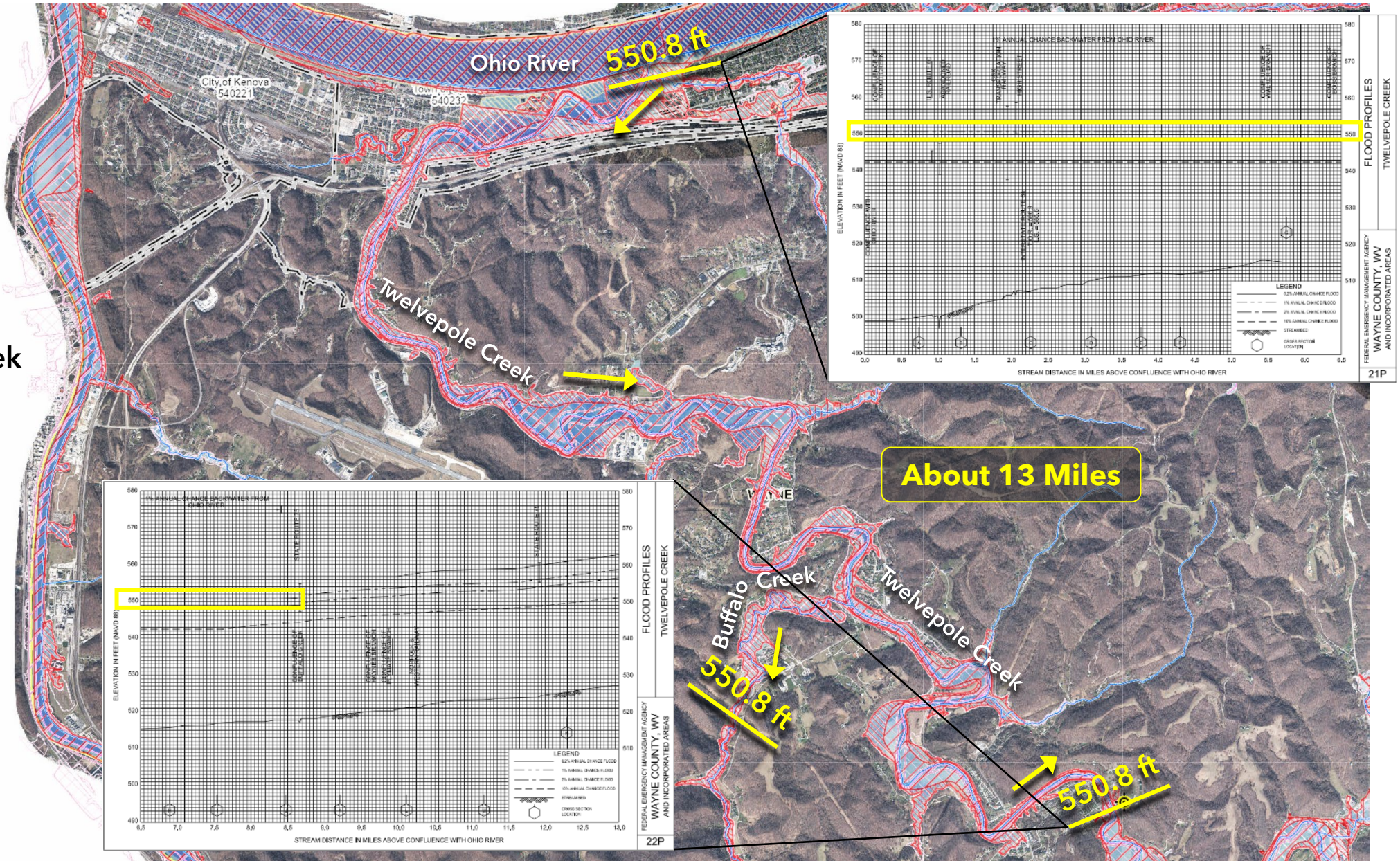


River Confluences...



Example

Backwater effect of the Ohio River into the Twelvepole Creek and Buffalo Creek, Wayne County

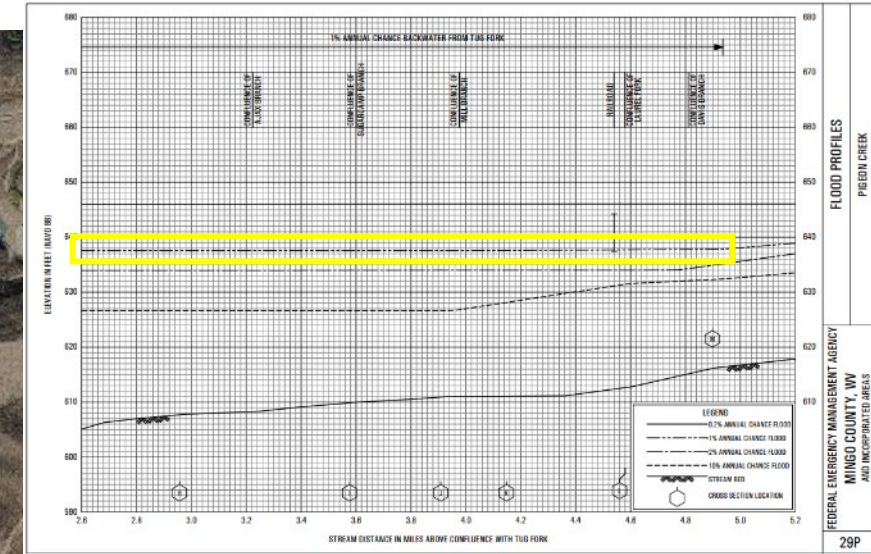
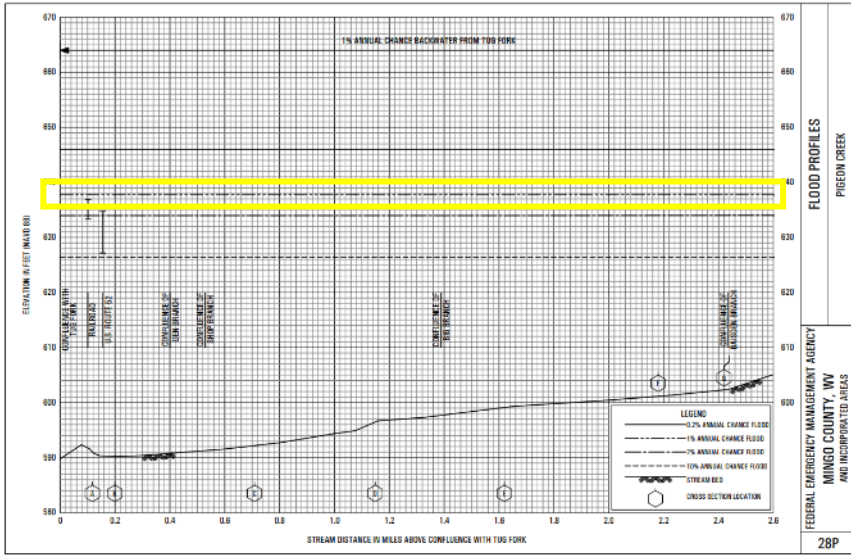
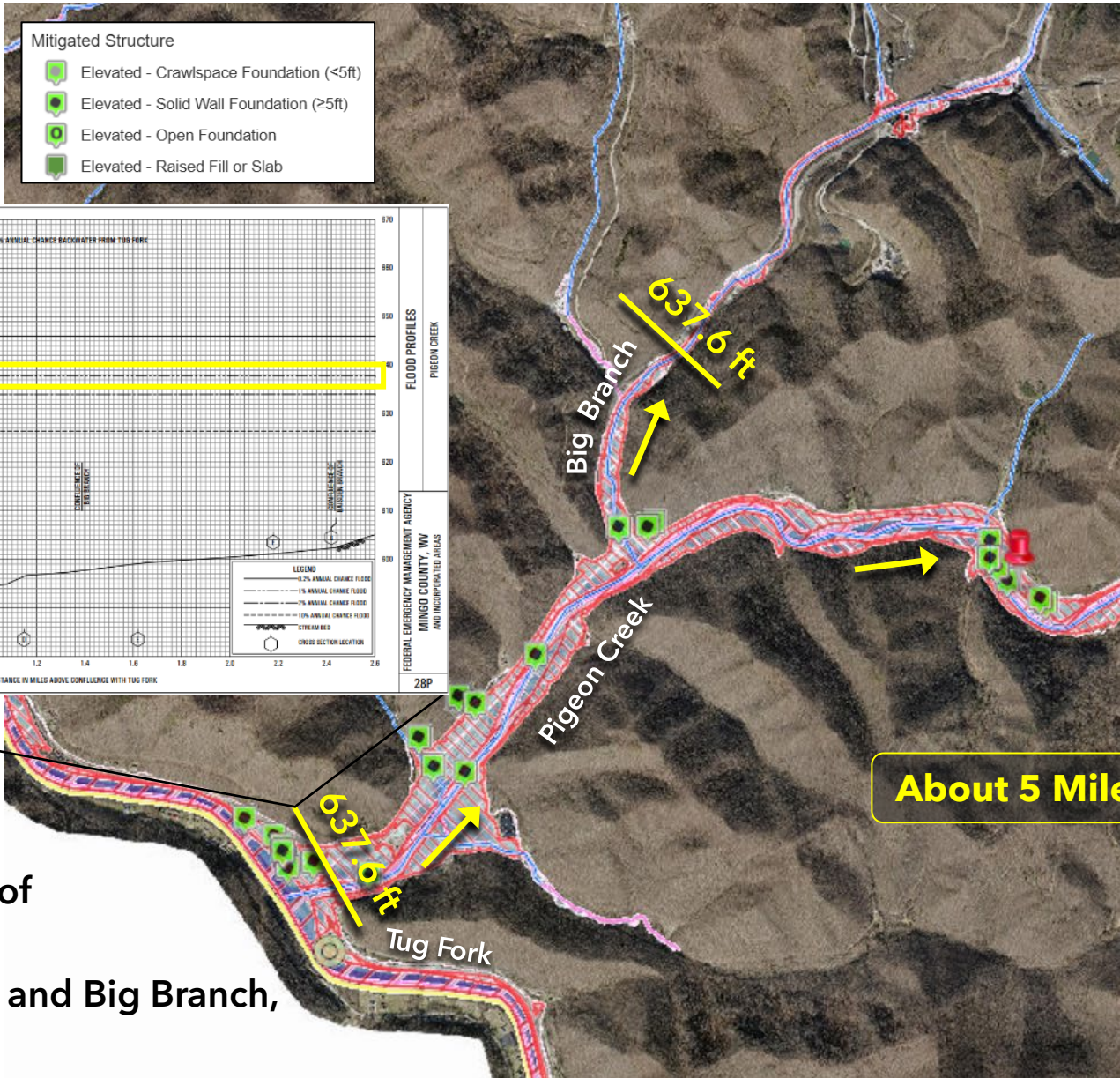




River Confluences...



Example



Backwater effect of the Tug Fork into the Pigeon Creek and Big Branch, Mingo County

About 5 Miles



Mitigation Approach

- Use floodplain mapping that accounts for confluence backwater effects.
- Elevate or relocate structures.
- Limit development in backwater-prone areas.
- Restore natural floodplain storage by open space preservation near the confluences.
- Protect tributary floodways from encroachment.

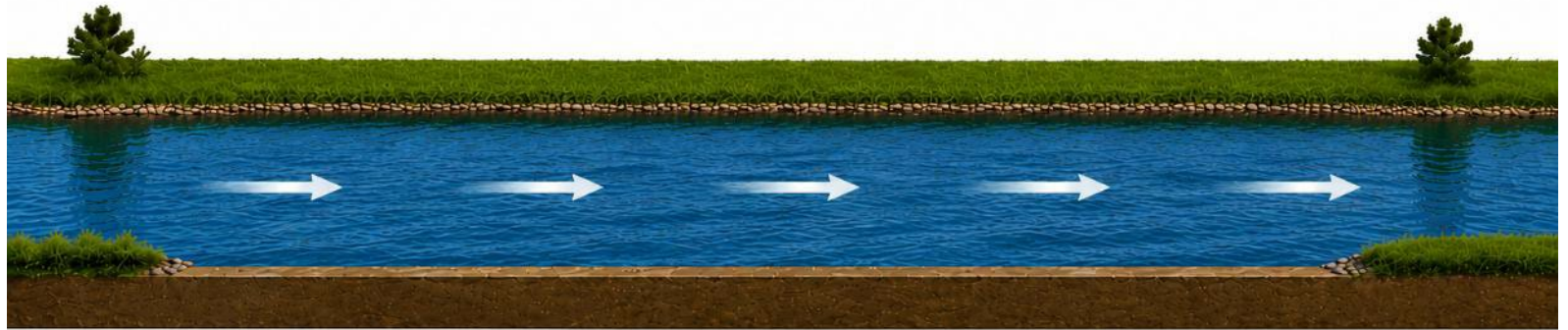




Hydraulic Constrictions

UNRESTRICTED CHANNEL

Flow passes through the channel without significant upstream ponding.



CONSTRICTED CHANNEL

The available flow area is reduced, but the opening may remain sufficient under normal conditions.



FLOOD CONDITIONS

During high flows, the constriction limits conveyance capacity, causing water levels to rise upstream and creating a backwater effect.



A hydraulic constriction reduces the available flow area. During flood conditions, water cannot pass through the opening as efficiently, causing water levels to rise upstream.



Bridges and Culverts...



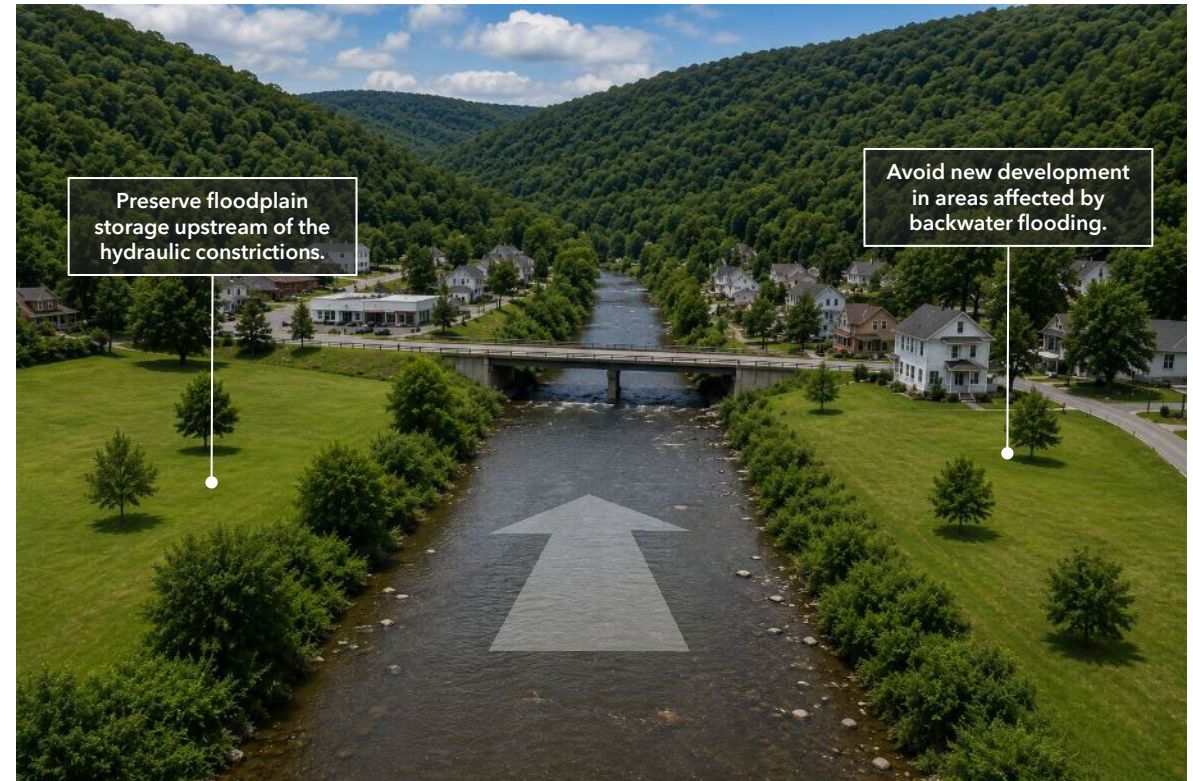
Backwater effect





Mitigation Approach

- Identify crossings that contribute to flooding.
- Incorporate crossing constraints into flood risk assessments.
- Limit new development in areas affected by crossing-related backwater flooding.
- Coordinate with transportation agencies on problem crossings.
- Preserve floodplain storage upstream of constricted crossings.





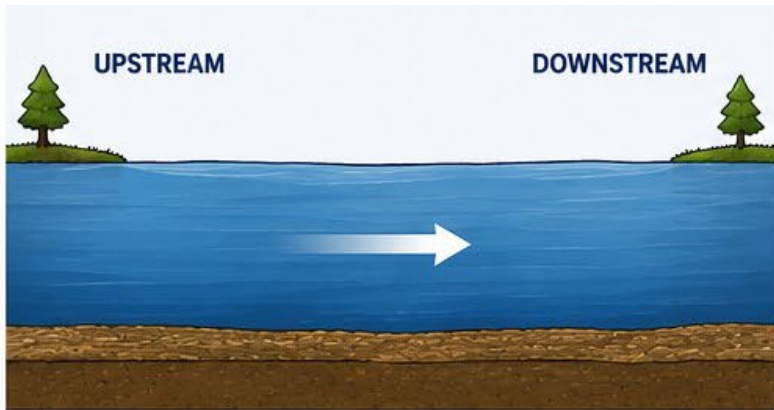
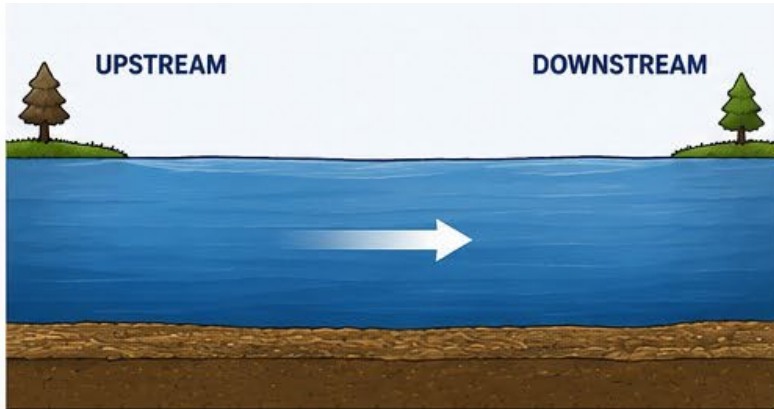
Sediments and Debris Accumulation



Flow Obstructions

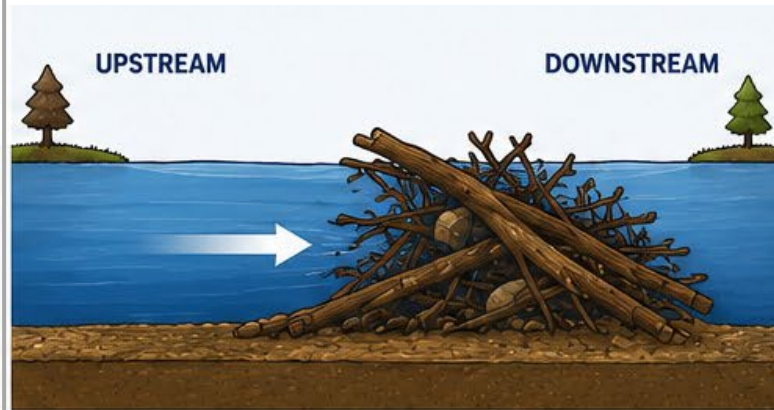
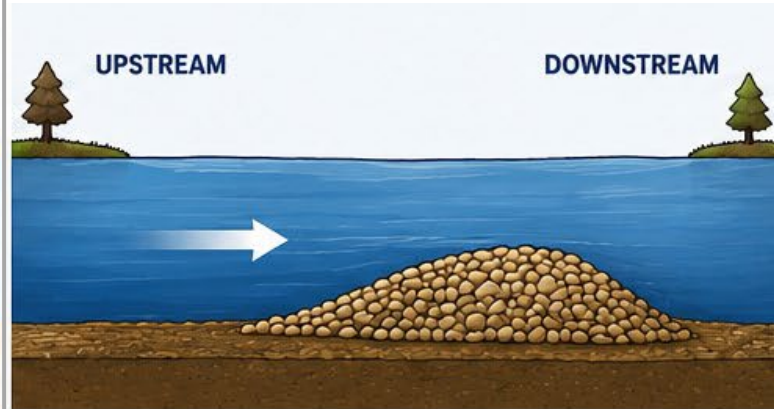
NORMAL CONDITIONS

Unobstructed flow.
Water surface is nearly uniform.



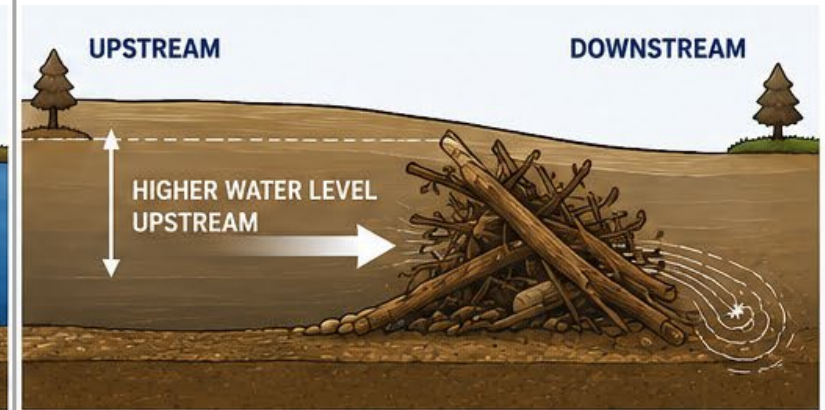
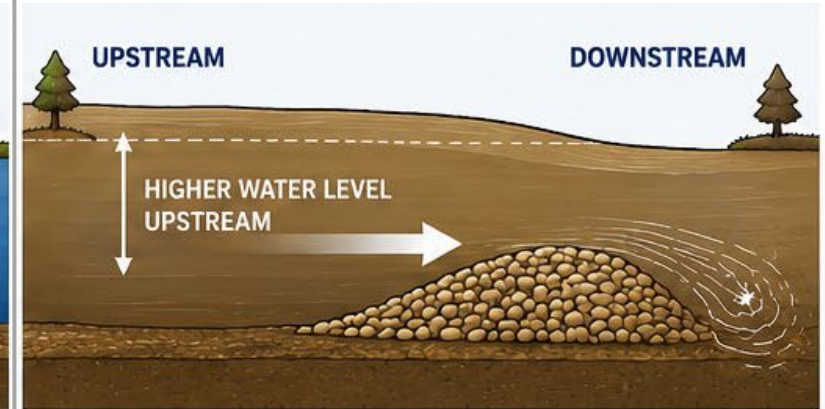
PARTIAL OBSTRUCTION

Sediments / debris accumulate in the channel, reducing the effective flow area.



FLOOD CONDITIONS

Water backs up upstream, causing higher water levels. Flow accelerates through the remaining opening.





Sediments and Debris Accumulation...



Backwater effect / Higher Flood Heights



Sediment deposits and debris accumulations reduce the effective flow area of a channel. During flood conditions, water backs up upstream of the obstruction, increasing water levels and flood risk.



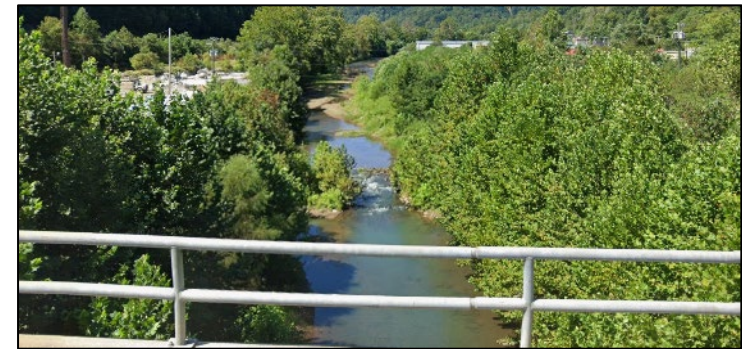
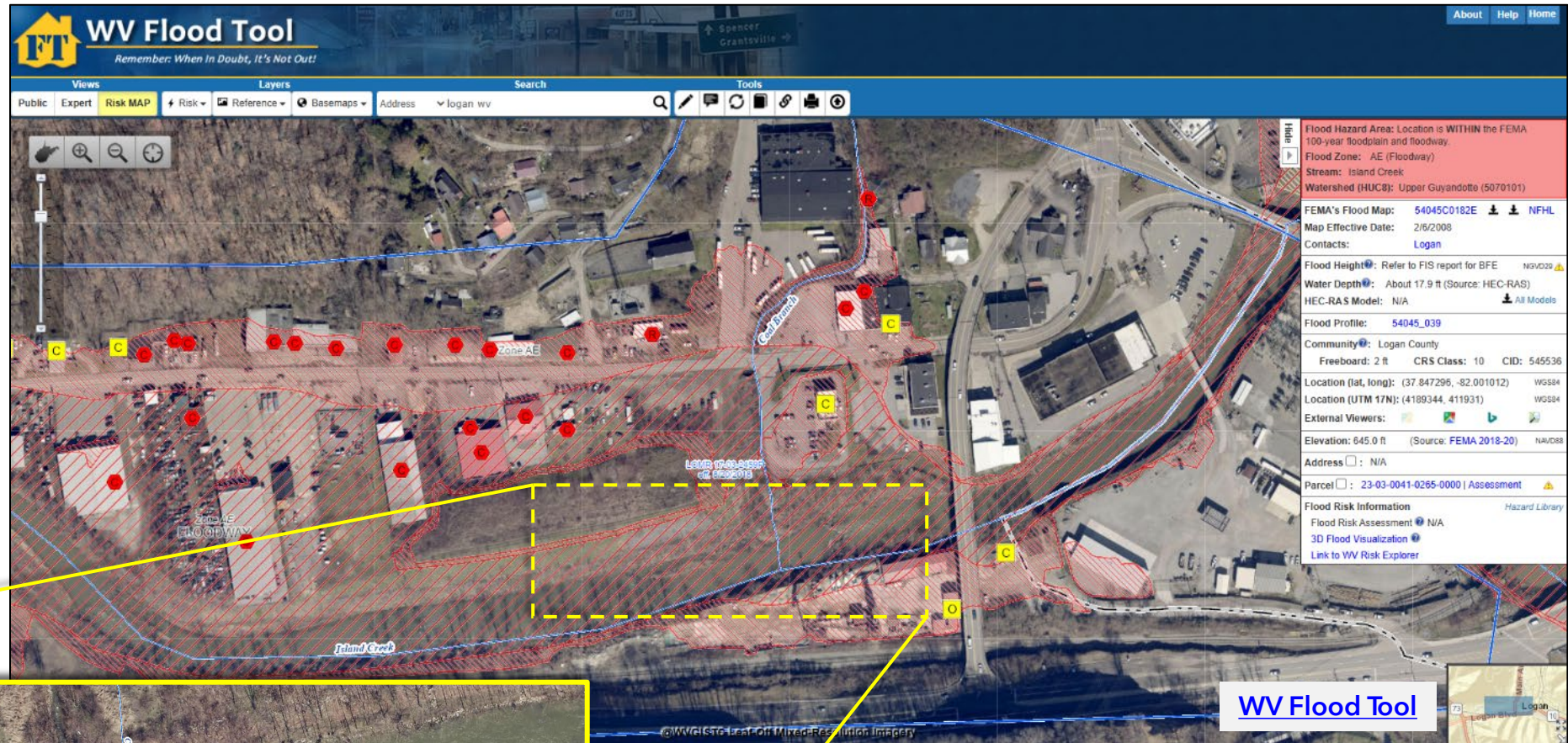
Sediments and Debris Accumulation...



Example

Accumulated sediments and woody debris in Island Creek, Logan County

Channel obstructions may increase flood elevations.





Mitigation Approach

- Inspect channels and stream crossings regularly.
- Identify locations prone to frequent sediment and debris accumulation.
- Limit new development in areas vulnerable to sediment accumulation.
- Remove excessive sediment and debris where appropriate.
- Stabilize streambanks and reduce upstream erosion sources.



LEGEND

- FLOODWAY
- 1% ANNUAL CHANCE FLOOD HAZARD
- 0.2% ANNUAL CHANCE FLOOD HAZARD
- OTHER FLOOD AREAS
- STREAM CENTERLINE
- CROSS SECTIONS
- COMMUNITY BOUNDARY

IMPORTANT: MUST FOLLOW THE INSTRUCTIONS ON PAGES 9-19

SECTION A - PROPERTY INFORMATION

A1. Building Owner's Name

A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.
City State ZIP Code

A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.)

FOR INSURANCE COMPANY USE

Policy Number
Company NAIC Number

SECTION B - FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

B1. NFIP Community Name & Community Number B2. County Name B3. State

B4. Map/Panel Number B5. Suffix B6. FIRM Index Date B7. FIRM Panel Effective / Revised Date B8. Flood Zone
B9. Base Flood Elevation(s) (Zone AO, use base flood depth)

SECTION C - BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on:
 Construction Drawings* Building Under Construction* Finished Construction

Elevations—Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, AR/A, AR/AO

Benchmark Utilized: _____ Benchmark Utilized: _____
Date used for BFE: _____

Letter of Map Amendment (LOMA)



- Letter of Map Amendment (LOMA)

- Letter of Map Revision (LOMR)

- Letter of Map Revision Based on Fill (LOMR-F)

- Conditional Letter of Map Revision (CLOMR)

- Conditional Letter of Map Revision Based on Fill (CLOMR-F)

Letter of Map Amendment (LOMA)

- Official determination of a property's location and elevation, relative to the boundary of SFHA and the Base Flood Elevation (BFE)
- For an individual structure or property
- Letter amends the Flood Insurance Rate Map (FIRM) for the specific property; no new map is published

LAG > BFE

LAG: Lowest Adjacent Grade
(LLE: Lowest Lot Elevation)
BFE: Base Flood Elevation



Verified LOMAs on WV Flood Tool



The screenshot displays the WV Flood Tool interface. The top navigation bar includes 'Public', 'Expert', 'Risk MA', and 'Flood' (highlighted with a yellow circle). The 'Layers' panel on the left shows 'PRIMARY FLOOD HAZARD LAYERS' with 'LOMA' and 'LOMA Verified' checked and highlighted with yellow boxes. The map shows Randolph, WV, with various flood hazard areas and LOMA markers. The right-hand metadata panel provides details for a specific location: 'Flood Hazard Area: Location is WITHIN the FEMA 100-year floodplain', 'Flood Zone: AE', 'Stream: Tygart Valley River', 'Watershed (HUC8): Tygart Valley (5020001)', 'FEMA's Flood Map: 54083C0161C', 'Map Effective Date: 9/29/2010', 'Contacts: Randolph', 'Flood Height: 1911.0 ft (BFE - Non-Restudy)', 'Water Depth: About 1.6 ft (Source: HEC-RAS)', 'HEC-RAS Model: N/A', 'Flood Profile: 54083_009', 'Community: City of Elkins', 'Freeboard: 2 ft', 'CRS Class: 10', 'CID: 540177', 'Location (lat, long): (38.921106, -79.861938)', 'Location (UTM 17N): (4308636, 598658)', 'Elevation: 1909.3 ft (Source: FEMA 2018-19)', 'Address: N/A', 'Parcel: 42-05-0015-0012-0000 | Assessment', and 'Flood Risk Information' including 'Flood Risk Assessment: N/A', '3D Flood Visualization', and 'Link to WV Risk Explorer'.

Verified LOMA SFHA Determination

Verified LOMAs

- Non-Removal
- Out as Shown
- Removal
- Superseded

FEMA Letter of Map Amendment LOMAs

- Incorporated
- Superseded
- Not incorporated
- No Revalidation Status
- Contact Community for Revalidation Status

Original LOMAs from FEMA (LOMA) and their copies with the locations verified (LOMA Verified)

Verified LOMAs on WV Flood Tool...



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

[About](#) [Help](#) [Home](#)

Views

Public Expert Risk MAP Flood Reference Basemaps

Layers

Address mineral wv

Search

mineral wv

Tools

Verified LOMA SFHA Determination

Verified LOMAs

- Non-Removal
- Out as Shown
- Removal
- Superseded

FEMA Letter of Map Amendment

LOMAs

- Incorporated
- Superseded
- Not incorporated
- No Revalidation Status
- Contact Community for Revalidation Status

Flood Hazard Area: Location is NOT WITHIN any identified flood hazard area. Unmapped flood hazard areas may be present.

Flood Zone: Out of Flood Zone

Stream:

Watershed (HUC8): Twelvepole (5090102)

FEMA's Flood Map: 54099C0290C [Download](#) [NFHL](#)

Map Effective Date: 1/2/2013

Contacts: Wayne

Flood Height: N/A

Water Depth: N/A

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

Flood Profile: N/A

Community: Wayne County

Freeboard: 2 ft **CRS Class:** 10 **CID:** 540200

Location (lat, long): (38.008220, -82.326563) [WGS84](#)

Location (UTM 17N): (4207556, 383542) [WGS84](#)

Federal Emergency Management Agency

Washington, D.C. 20472

LETTER OF MAP AMENDMENT

DETERMINATION DOCUMENT (OUT AS SHOWN)

CITY AND MAP PANEL INFORMATION	LEGAL PROPERTY DESCRIPTION
WAYNE COUNTY, WEST VIRGINIA (Unincorporated Areas)	A parcel of land, as recorded in the Deed, as Instrument No. 49389, in Book 579, Pages 855 and 856, in the Office of the Clerk of the County Commission, Wayne County, West Virginia (TL: 17.4)
COMMUNITY NO.: 540200	<div style="border: 2px solid yellow; padding: 5px; display: inline-block;"> <p>Only to three decimal digits!</p> </div>
NUMBER: 5402000075B	
DATE: 9/18/1987	
RCE: MCCOMAS BRANCH; MCCOMAS BRANCH	APPROXIMATE LATITUDE & LONGITUDE OF PROPERTY: 37.955, -82.388 SOURCE OF LAT & LONG: PRECISION MAPPING STREETS 7.0 DATUM: NAD 83

Verified LOMAs on WV Flood Tool...



Verified LOMA SFHA Determination

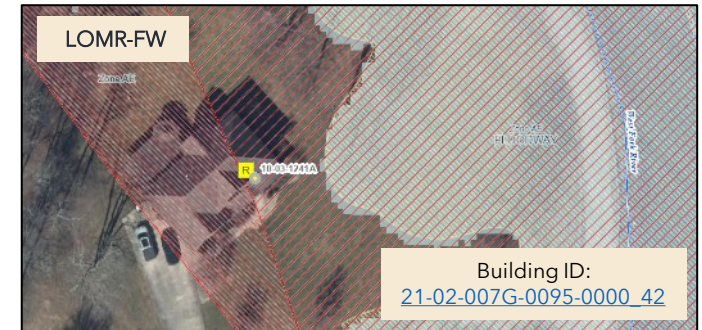
Verified LOMAs

- Non-Removal
- Out as Shown
- Removal
- Superseded

FEMA Letter of Map Amendment LOMAs

- Incorporated
- Superseded
- Not incorporated
- No Revalidation Status
- Contact Community for Revalidation Status

Total FEMA LOMAs (1997 to 2025)	4,432	100%
Project Category		
LOMA	4,115	92.8%
Fill (LOMR-F)	245	5.5%
Floodway (LOMR-FW)	72	1.6%
Outcome		
Mapped Out (Removal) *	3,305	74.6%
Mapped In (Non-Removal) **	531	12.0%
Outside SFHA (Out as Shown) ***	438	9.9%
Other ****	158	3.6%
Reval Status		
Superseded	59	



* Mapped Out includes: 'Portion of property removed', 'Property removed', 'Structure removed-Property partially inundated'

** Mapped In includes: 'Denied', 'Portion of property denied', 'Portion of property denied and in floodway', 'Property denied', 'Structure denied', 'Structure denied and in floodway'

*** Outside SFHA includes: 'Portion of property out as shown', 'Property out as shown', 'Structure out as shown-Property partially inundated'

**** Other includes: Null values, 'Multiple', 'No outcome (Other response or violation)', UNKNOWN

Page 1 of 6 | Date: May 28, 2019 | Case No.: 19-03-1009A | LOMA

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP AMENDMENT DETERMINATION DOCUMENT (REMOVAL)

COMMUNITY AND MAP PANEL INFORMATION: MINERAL COUNTY, WEST VIRGINIA (Unincorporated Areas)

LEGAL PROPERTY DESCRIPTION: A parcel of land, as described in the Deed recorded as Instrument No. 89447 in Book 341, Pages 79, 80, and 81, in the Office of the Clerk of the County Commission, Mineral County, West Virginia.

COMMUNITY NO.: 549129
AFFECTED MAP PANEL NUMBER: 54857C31760
DATE: 3/19/2013

FLOODING SOURCE: NEW CREEK

LOT	BLOCK SECTION	SUBDIVISION	STREET	OUTCOME WHAT IS REMOVED FROM THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NAVD 88)	LOWEST ADJACENT GRADE ELEVATION (NAVD 88)	LOWEST LOT ELEVATION (NAVD 25)
			116 Pine Swamp Road	Structure	X (shaded)		867.8 feet	

LAG > BFE

● Removal

Page 1 of 2 | Date: August 17, 2018 | Case No.: 10-03-1239A | LOMA-DEN

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP AMENDMENT DETERMINATION DOCUMENT (NON-REMOVAL)

COMMUNITY AND MAP PANEL INFORMATION: CITY OF WHITE SULPHUR SPRINGS, GREENBRIER COUNTY, WEST VIRGINIA

LEGAL PROPERTY DESCRIPTION: Portions of Lots 408 and 409, Villa Park Addition, as described in the Deed, recorded in Book 530, Page 893, in the Office of the Clerk of the County Court, Greenbrier County, West Virginia (TM: 8-547, 547.1, 548).

COMMUNITY NO.: 540045
AFFECTED MAP PANEL NUMBER: 54004501160
DATE: 1/29/2004

FLOODING SOURCE: HOWARD CREEK

LOT	BLOCK SECTION	SUBDIVISION	STREET	OUTCOME WHAT IS NOT REMOVED FROM THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NAVD 25)	LOWEST ADJACENT GRADE ELEVATION (NAVD 25)	LOWEST LOT ELEVATION (NAVD 25)
408 & 409		Villa Park Addition	408 Woodland Avenue	Structure (Residence)	AC	1062.3 feet	1056.0 feet	

LAG < BFE

● Non-Removal

Page 1 of 2 | Date: March 26, 2013 | Case No.: 13-03-1316A | LOMA-GAS

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP AMENDMENT DETERMINATION DOCUMENT (OUT AS SHOWN)

COMMUNITY AND MAP PANEL INFORMATION: MINERAL COUNTY, WEST VIRGINIA (Unincorporated Areas)

LEGAL PROPERTY DESCRIPTION: A portion of a parcel of land, as described in the Deed, recorded as Instrument No. 112356, in Book 351, Pages 726 through 728, in the Office of the Clerk of the County Commission, Mineral County, West Virginia.

COMMUNITY NO.: 549129
AFFECTED MAP PANEL NUMBER: 54857C31150
DATE: 3/19/2013

FLOODING SOURCE: PATTERSON CREEK

LOT	BLOCK SECTION	SUBDIVISION	STREET	OUTCOME WHAT IS OUTSIDE OF THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NAVD 88)	LOWEST ADJACENT GRADE ELEVATION (NAVD 88)	LOWEST LOT ELEVATION (NAVD 88)
			3775 Patterson Creek Road	Portion of Property	X (unshaded)			

● Out as Shown

Page 1 of 2 | Date: May 08, 2008 | Case No.: 08-03-0971A | LOMA

Federal Emergency Management Agency
Washington, D.C. 20472

LETTER OF MAP AMENDMENT DETERMINATION DOCUMENT (REMOVAL)

COMMUNITY AND MAP PANEL INFORMATION: CITY OF WHITE SULPHUR SPRINGS, GREENBRIER COUNTY, WEST VIRGINIA

LEGAL PROPERTY DESCRIPTION: Lots 386 and 387, Villa Park Addition, as described in the Deed, in Book 330, Page 330, in the Office of the County Clerk, Greenbrier County, West Virginia (TL:395 & 397; TP:528; TM:5)

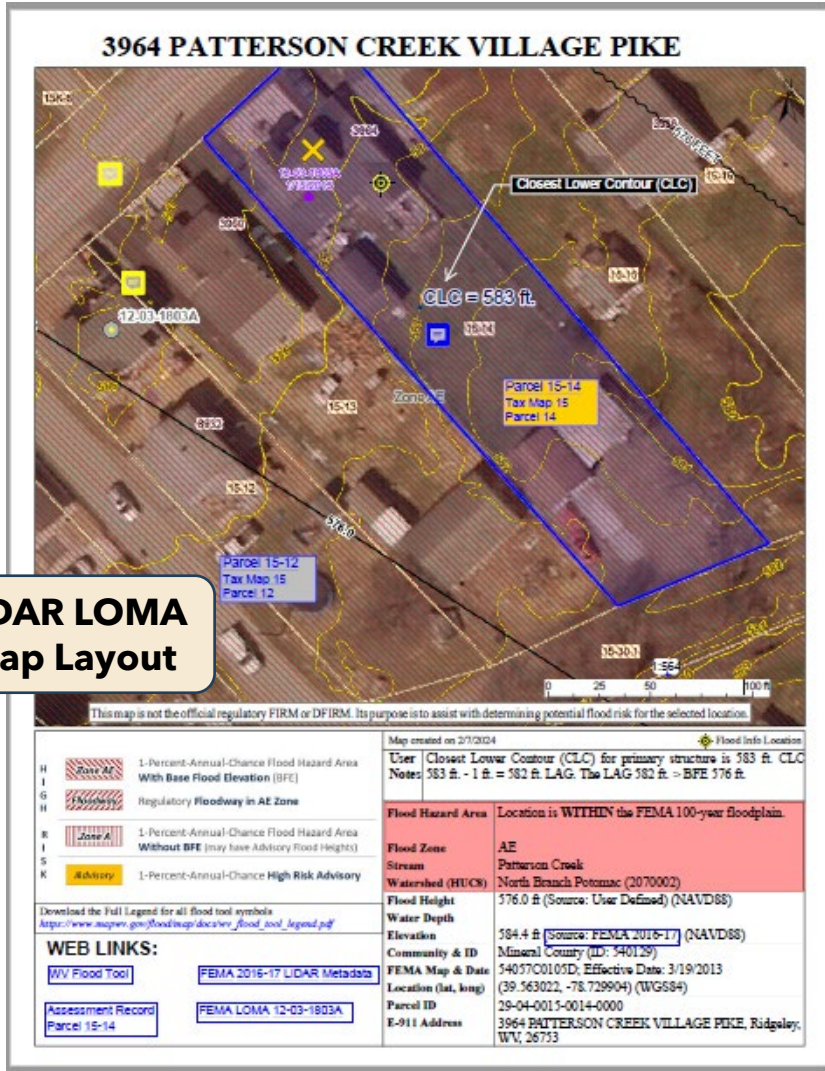
COMMUNITY NO.: 540045
AFFECTED MAP PANEL NUMBER: 54915661610
DATE: 1/22/2004

FLOODING SOURCE: HOWARD CREEK

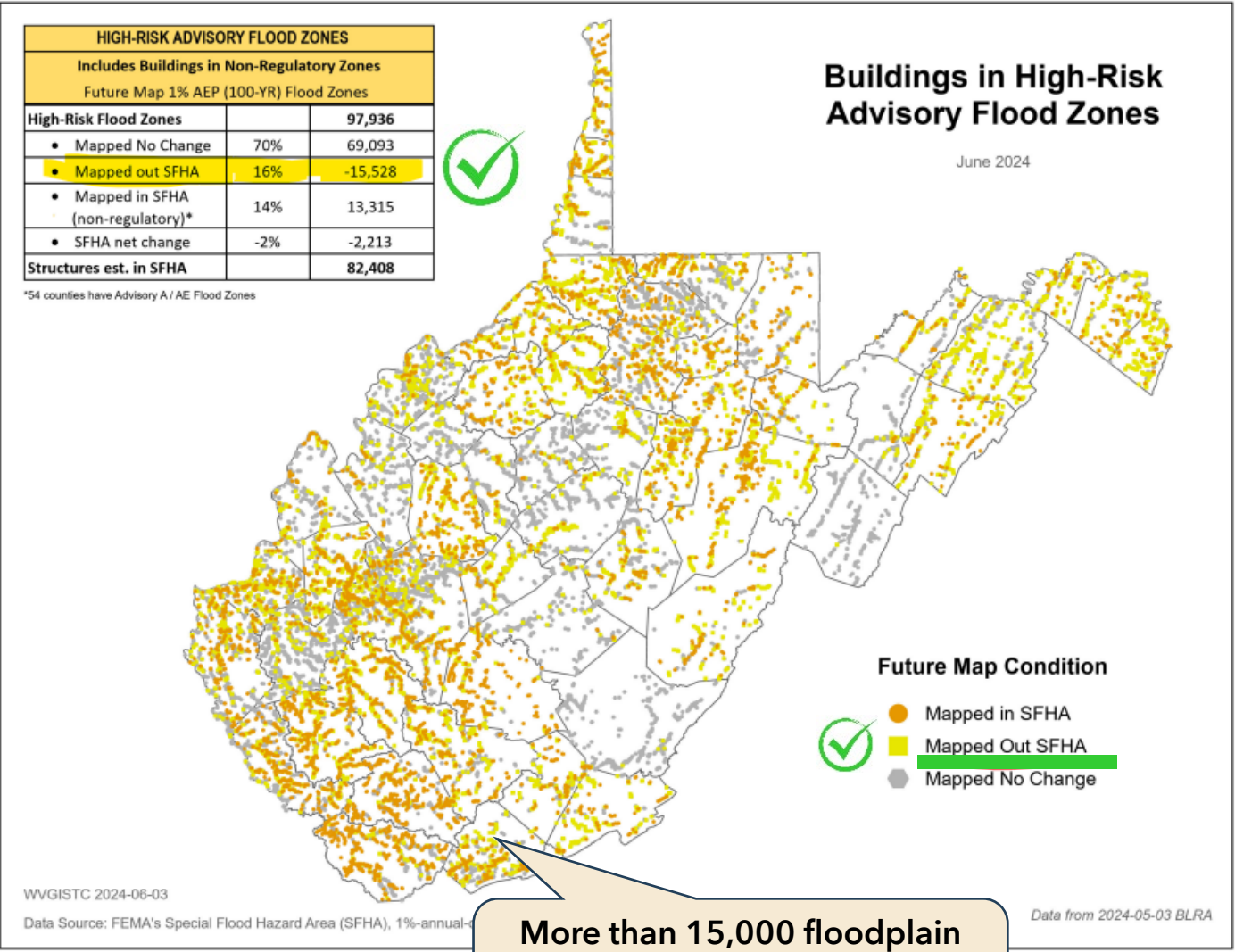
LOT	BLOCK SECTION	SUBDIVISION	STREET	OUTCOME WHAT IS REMOVED FROM THE SFHA	FLOOD ZONE	1% ANNUAL CHANCE FLOOD ELEVATION (NAVD 25)	LOWEST ADJACENT GRADE ELEVATION (NAVD 25)	LOWEST LOT ELEVATION (NAVD 25)
386 & 387		Villa Park Addition	409 Woodland Avenue	Structure	X (shaded)	1059.3 feet	1059.3 feet	

● Superseded

SFHA Buildings Changes: LOMAs for Mapped Out

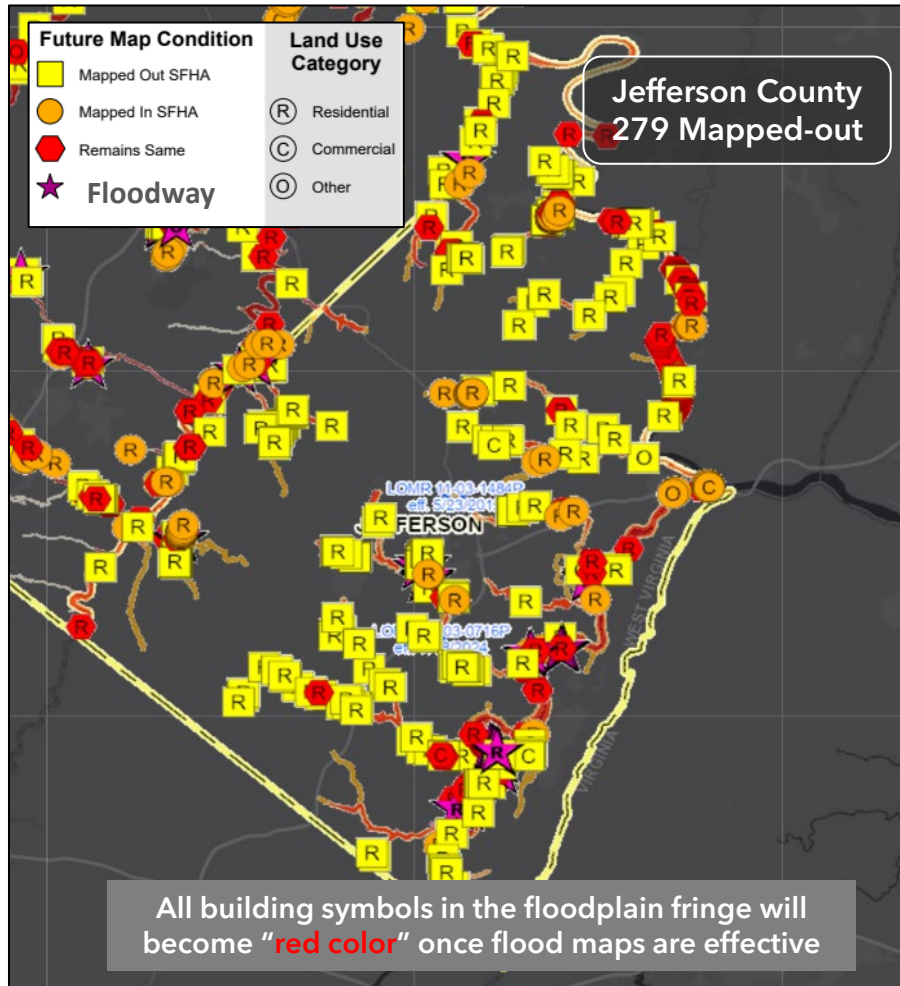


LiDAR LOMA Map Layout

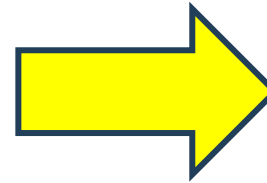


More than 15,000 floodplain structures (yellow symbol) may be eligible for LiDAR LOMAs

SFHA Buildings Changes: LOMAs for Mapped Out...

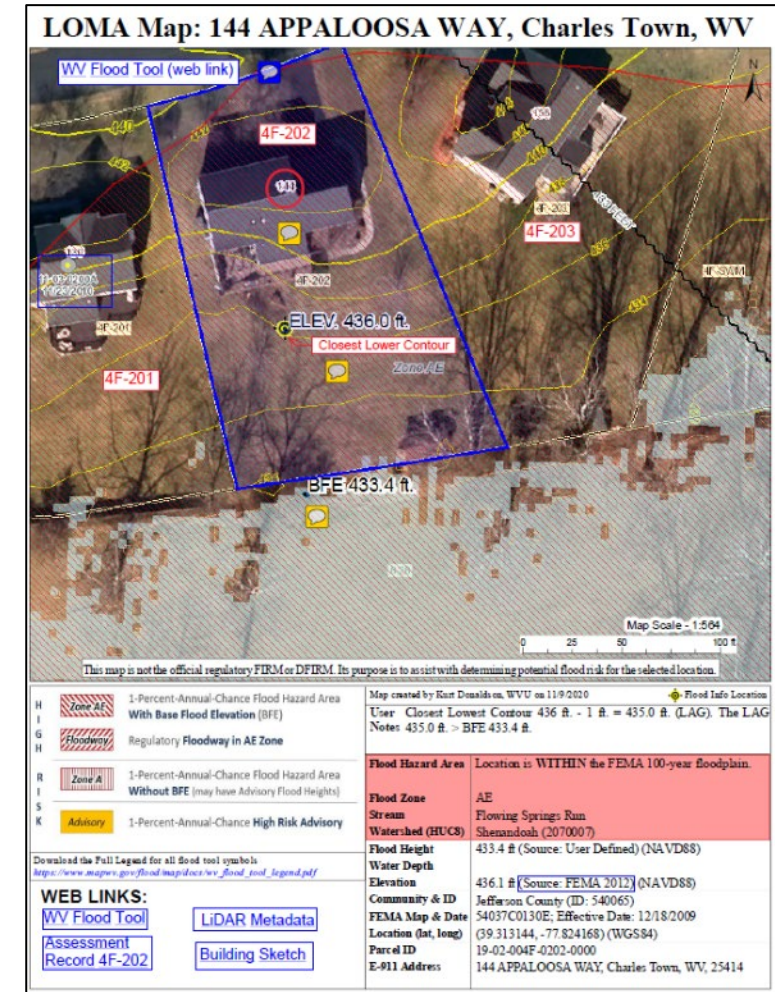


Mapped-out structures of the SFHA may qualify for LOMAs



WV Flood Tool
LiDAR LOMA:

[Instructions](#) | [Guide](#)



No need to wait until the maps become effective
May reduce flood insurance costs
Can be presented for selling properties

Mapped-out List from WV Risk Explorer (BL Tool)



<https://wvfrf.org/wvre/buildings>

WV Building-Level (BL) Risk
Analyze flood risk at the level of individual structures in detail.

Building-Level Risk Assessment (BLRA)

Primary Structures

Detailed building inventory developed by pinpointing all primary structures in the high-risk 1% annual chance (100-year) effective and advisory floodplains.

West Virginia Risk Explorer
Localized risk assessment tools for analysis and visualization

Select Geographic Scale: County | Select Geographic: Jefferson

Columns: | Advanced Search

Report Date: January 2026

SQL Filter: County = Jefferson | SQL Filter: Symbol_FloodRiskZone IN (MAPPED OUT-Commercial,MAPPED OUT-Other,MAPPED OUT-Residential) | Clear all Filters

279 Records Selected. Export to CSV (2000 record limit)

SPATIAL IDENTIFIERS			GEOGRAPHIC UNITS				FLOOD ZONE		BUILDING CHARACTERISTICS									
Building ID	E-911 Address	Flood Tool	Community	County	Stream	Watershed	Flood Zone	In Floodway	General Occupancy	Area	Stories	Bldg. Year	FIRM Status	Grade	Bldg. Appraisal	Foundation	1st Floor Height	Flood Depth
19-08-0008-0221-0000_105	105 VALLEY BRANCH DR, RANSON, WV, 25438	🚒	Ranson - Incorporated	Jefferson	Evitts Run	Shenandoah	Preliminary AE	No	Residential	1,180 Sq Ft	1	1977	Pre-FIRM	C-	\$91,800	Crawlspace	3.0 Ft	5.4 Ft
19-08-0006-0222-0000_103	103 VALLEY BRANCH DR, RANSON, WV, 25438	🚒	Ranson - Incorporated	Jefferson	Evitts Run Tributary 2	Shenandoah	AE	No	Residential	968 Sq Ft	1	1977	Pre-FIRM	C-	\$72,800	Crawlspace	3.0 Ft	4.2 Ft
19-02-010C-0015-0004_035	935 S SAMUEL ST, CHARLES TOWN, WV, 25414	🚒	Jefferson County* - Unincorporated	Jefferson	Evitts Run	Shenandoah	AE	No	Residential	1,704 Sq Ft	1	1989	Post-FIRM	C+	\$168,400	Crawlspace	4.0 Ft	2.1 Ft
19-09-011A-0073-0007_552	552 MOSHANS LANDING LN, SHEPHERDSTOWN, WV, 25443	🚒	Jefferson County* - Unincorporated	Jefferson	Potomac River	Conococheague-Opequon	A	No	Residential	3,136 Sq Ft	1	2009	Post-FIRM	B	\$329,200	Basement	4.0 Ft	1.5 Ft
19-08-0006-0223-0000_101	101 VALLEY BRANCH DR, RANSON, WV, 25438	🚒	Ranson - Incorporated	Jefferson	Evitts Run Tributary 2	Shenandoah	AE	No	Residential	988 Sq Ft	1	1977	Pre-FIRM	C-	\$64,400	Crawlspace	3.0 Ft	1.2 Ft
19-03-0009-0010-0000_941	941 S SAMUEL ST, CHARLES TOWN, WV, 25414	🚒	Charles Town - Incorporated	Jefferson	Evitts Run	Shenandoah	AE	No	Residential	2,104 Sq Ft	1	1969	Pre-FIRM	C	\$178,100	Crawlspace	3.0 Ft	1.1 Ft
19-04-0010-0006-0002_796	796 OLD COUNTRY CLUB RD, CHARLES TOWN, WV, 25414	🚒	Jefferson County* - Unincorporated	Jefferson	Flowing Springs Run	Shenandoah	AE	No	Residential	2,374 Sq Ft	1	1945	Pre-FIRM	D+	\$99,900	Crawlspace	3.0 Ft	0.7 Ft
19-03-0009-0009-0000_937	937 S SAMUEL ST, CHARLES TOWN, WV, 25414	🚒	Charles Town - Incorporated	Jefferson	Evitts Run	Shenandoah	AE	No	Residential	2,616 Sq Ft	1	1971	Pre-FIRM	B	\$295,900	Basement	4.0 Ft	0.1 Ft
19-06-009F-0004-0000_1259	1259 AVON BEND RD, CHARLES TOWN, WV, 25414	🚒	Jefferson County* - Unincorporated	Jefferson	Shenandoah River	Shenandoah	AE	No	Residential	811 Sq Ft	1	1974	Pre-FIRM	D	\$47,400	Crawlspace	3.0 Ft	
19-02-004F-0201-0000_139	130 APPALOOSA WAY, CHARLES TOWN, WV, 25414	🚒	Jefferson County* - Unincorporated	Jefferson	Flowing Springs Run	Shenandoah	AE	No	Residential	2,828 Sq Ft	2	2004	Post-FIRM	A-	\$318,100	Basement	4.0 Ft	
19-06-009F-0003-0000_1245	1245 AVON BEND RD, CHARLES TOWN, WV, 25414	🚒	Jefferson County* - Unincorporated	Jefferson	Shenandoah River	Shenandoah	AE	No	Residential	1,680 Sq Ft	1	1989	Post-FIRM	C+	\$133,800	Basement	4.0 Ft	
19-02-0020-0035-0000_878	878 WILT RD, CHARLES TOWN, WV, 25414	🚒	Jefferson County* - Unincorporated	Jefferson	Shenandoah River	Shenandoah	AE	No	Residential	1,080 Sq Ft	1	2021	Post-FIRM	B	\$161,500	Crawlspace	4.0 Ft	
19-06-009A-0003-0000_3915	3916 KABLETOWN RD, CHARLES TOWN, WV, 25414	🚒	Jefferson County* - Unincorporated	Jefferson	Bullskin Run	Shenandoah	A	No	Residential	2,816 Sq Ft	2	1920	Pre-FIRM	D+	\$107,300	Basement	4.0 Ft	
19-02-0070-0063-0000_1127	1127 BLOOMERY RD, CHARLES TOWN, WV, 25414	🚒	Jefferson County* - Unincorporated	Jefferson	Shenandoah River	Shenandoah	AE	No	Residential	810 Sq Ft	1	1900	Pre-FIRM	D-	\$70,600	Basement	4.0 Ft	
19-06-009A-0007-0000_3922	3929 KABLETOWN RD, CHARLES TOWN, WV, 25414	🚒	Jefferson County* - Unincorporated	Jefferson	Bullskin Run	Shenandoah	A	No	Residential	1,540 Sq Ft	1	1916	Pre-FIRM	D	\$29,700	Slab-on-Grade	1.0 Ft	
19-02-0019-0035-0000_46	46 CHILDRENS HAVEN DR, CHARLES TOWN, WV, 25414	🚒	Jefferson County* - Unincorporated	Jefferson	Shenandoah River	Shenandoah	AE	Yes	Residential	408 Sq Ft	1	1975	Pre-FIRM	E	\$4,900	Crawlspace	3.0 Ft	
19-06-005B-0044-0000_188	168 SUMAC LN, HARPERS FERRY, WV, 25425	🚒	Jefferson County* - Unincorporated	Jefferson	Shenandoah River	Shenandoah	AE	No	Residential	1,608 Sq Ft	1	1978	Pre-FIRM	C+	\$163,800	Basement	4.0 Ft	
19-02-0019-0008-0003_6383	6383 KABLETOWN RD, Charles Town, WV, 25414	🚒	Jefferson County* - Unincorporated	Jefferson	Evitts Run	Shenandoah	A	No	Residential	3,096 Sq Ft	2	1998	Post-FIRM	B+	\$369,100	Basement	4.0 Ft	
19-06-008A-0094-0000_44	44 RIVER HAVEN DR, HARPERS FERRY, WV, 25425	🚒	Jefferson County* - Unincorporated	Jefferson	Shenandoah River	Shenandoah	AE	Yes	Residential	1,844 Sq Ft	1	2012	Post-FIRM	C+	\$183,600	Basement	4.0 Ft	
19-02-0019-0007-0001_6463	6463 KABLETOWN RD, CHARLES TOWN, WV, 25414	🚒	Jefferson County* - Unincorporated	Jefferson	Evitts Run	Shenandoah	A	No	Residential	1,797 Sq Ft	1	1967	Pre-FIRM	C+	\$156,500	Basement	4.0 Ft	
19-06-008A-0093-0000_110	110 RIVER HAVEN DR, HARPERS FERRY, WV, 25425	🚒	Jefferson County* - Unincorporated	Jefferson	Shenandoah River	Shenandoah	AE	No	Residential	1,380 Sq Ft	1	1979	Pre-FIRM	C+	\$128,900	Basement	4.0 Ft	

Advanced Search Conditions

Columns: SFHA Status

Operators: =

Value: (Show Top 2500 options)

- MAPPED IN-Commercial
- MAPPED IN-Other
- MAPPED IN-Residential
- MAPPED OUT-Commercial
- MAPPED OUT-Other
- MAPPED OUT-Residential

Apply Cancel

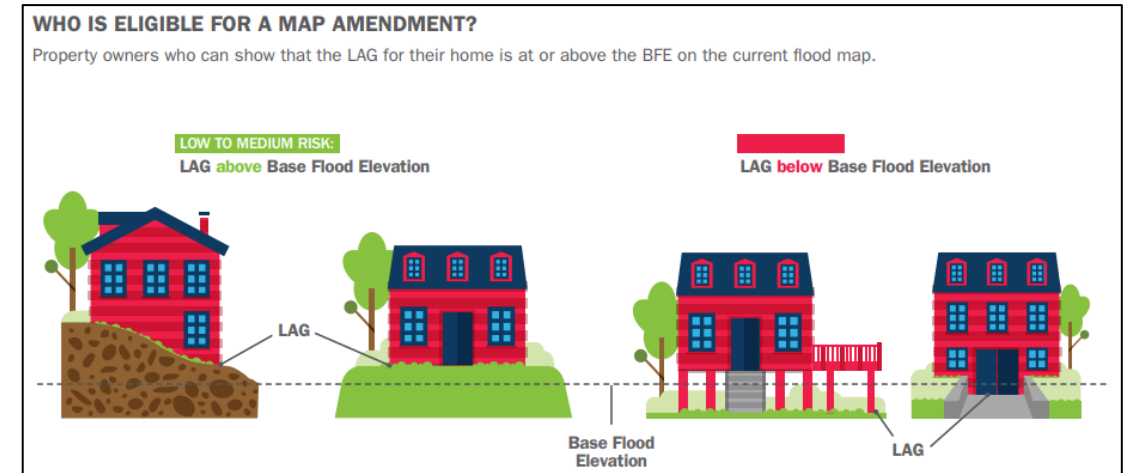
LiDAR for Map Amendments



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.

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.



Source: [How to Request a Map Amendment \(2021\)](#)

LAG: Closest lower contour value minus half of the contour interval or 1 ft, whichever is greater

When LiDAR Cannot Be Used for LOMA



There are situations when LiDAR **cannot be used** in a LOMA request. These include applications involving the following:

- Buildings or lots elevated using **fill**
- Buildings or lots in the regulatory **floodway** or Zone AO
- Buildings **under construction**
- **Conditional** determinations
- Requests to **supersede** previously issued LOMAs based on certified elevation data
- If the entire lot is **to be reviewed**, an Elevation Form is required to complete the case with the Lowest Lot Elevation certified by a licensed land surveyor or registered professional engineer.

Example of LOMA Qualification



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

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

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

Tools: [Navigation icons]

**LAG 579 ft. > 576 ft. BFE
(Should qualify for LiDAR LOMA - Removal)**

**Applicable LAG is 579 ft.
(closest lower contour of 580' - 1')**

Elev. 580.0 ft

Zone AE

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40.0

39.0

38.0

37.0

36.0

35.0

34.0

33.0

32.0

31.0

30.0

29.0

28.0

27.0

26.0

25.0

24.0

23.0

22.0

21.0

20.0

19.0

18.0

17.0

16.0

15.0

14.0

13.0

12.0

11.0

10.0

9.0

8.0

7.0

6.0

5.0

4.0

3.0

2.0

1.0

0.0

Scale: 1:564
x: -78.736363, y: 39.559756

©WVGISTC Leaf-Off Mixed-Resolution Imagery

Spencer Grantsville

Hide

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

Flood Zone: AE

Stream: Patterson Creek

Watershed (HUC8): North Branch Potomac (2070002)

FEMA's Flood Map: 54057C0115D | NFHL

Map Effective Date: 3/19/2013

Contacts: Mineral

Flood Height: Refer to FIS report for BFE NAVD88

Water Depth: N/A

HEC-RAS Model: N/A | All Models

Flood Profile: 54057_044

Community: Mineral County

Freeboard: 2 ft CRS Class: 10 CID: 540129

Location (lat, long): (39.559490, -78.735420) WGS84

Location (UTM 17N): (4381315, 694550) WGS84

External Viewers:

Elevation: 580.1 ft (Source: FEMA 2016-17) NAVD88

Address: 507 PATTERSON CREEK VILLAGE PIKE, Ridgeley, WV, 26753

Parcel: 29-04-015J-0008-0000 | Assessment

Flood Risk Information Hazard Library

Flood Risk Assessment

3D Flood Visualization No Depth Grid Available

Link to WV Risk Explorer

Link to BL Risk Table

Patterson Creek Village

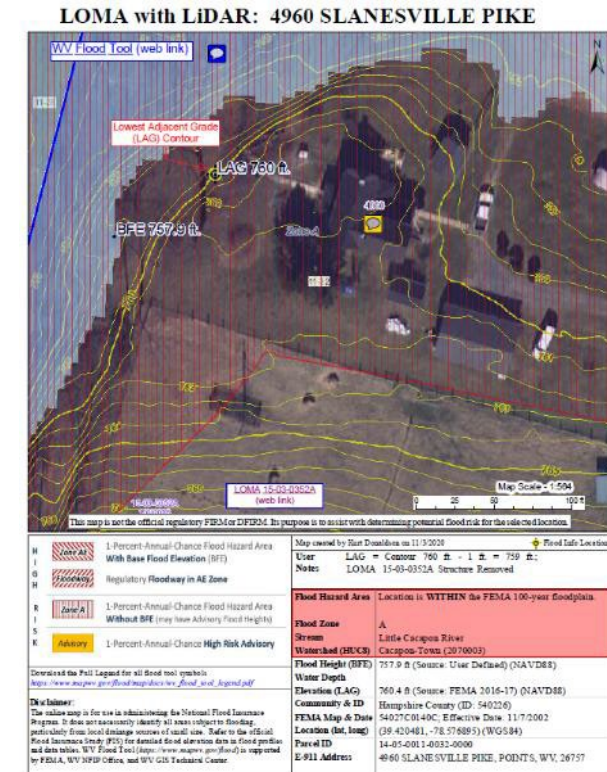
LiDAR LOMA Submission - 4 Steps



1) Determine LiDAR coverage. West Virginia has statewide Quality Level 2 (QL2) LiDAR coverage and derivative elevation products (statewide 1-meter DEM and 1- or 2-foot contours) published to the WV Flood Tool.

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

- 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

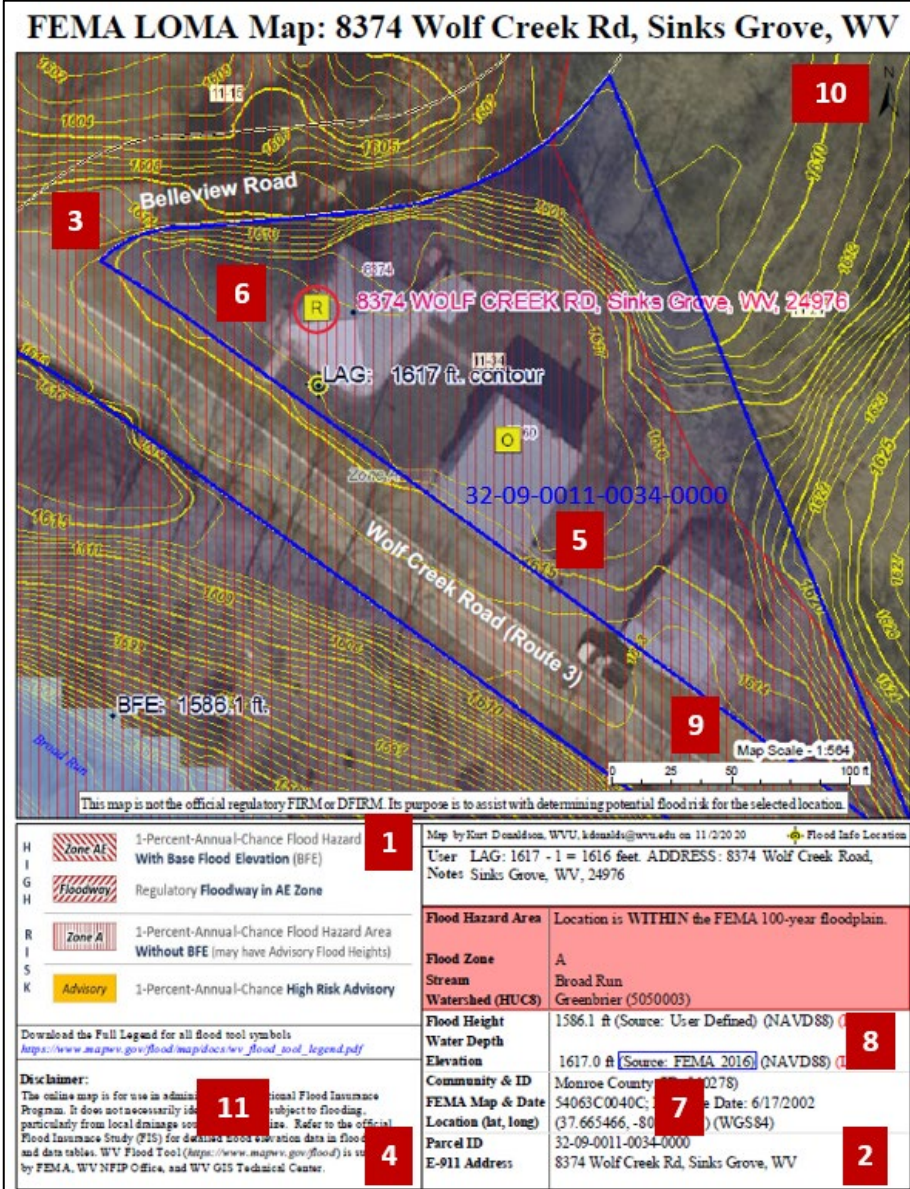


3) Further Edit/Annotate Print LOMA (optional)

Click [here](#) for more detailed instructions

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

What needs to be submitted?



#	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
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 resource. For more information, visit [www.mapwv.gov/flood](#)

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

Search: 144 APPALOOSA WAY, Charles Town, WV

Tools: [Markup] [Print] [Download] [Share]

Ensure Contours Layer visible

Text Markup tool

Open Print Map tool and select FEMA LOMA Map link

Print LOMA

Click for a normal Flood map

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 15 minutes to download it. Click [legend link](#) to download the full legend.

Print the map

Elevation Value and Metadata

Flood Query Results Panel

Flood Depth Grid

Text Markup

Text: ELEV. 436.0 ft.

Style: Circle

Tip: Right-click on an existing markup to delete it.

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.

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

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
Water Depth: N/A
HEC-RAS Model: N/A
Community: Jefferson
CID: 5166

Location (lat, long): 39.144, -77.824168 | WGS84
Location (UTM 17N): 66337, 773813 | WGS84

External Viewers:

Elevation: 436.1 ft (Source: FEMA 2012) | NAVD88

Parcel: 19-02-004F-0202-0000 | Assessment

Flood Risk Information | Related Resources
Flood Risk Assessment
3D Flood Visualization | No Depth Grid Available

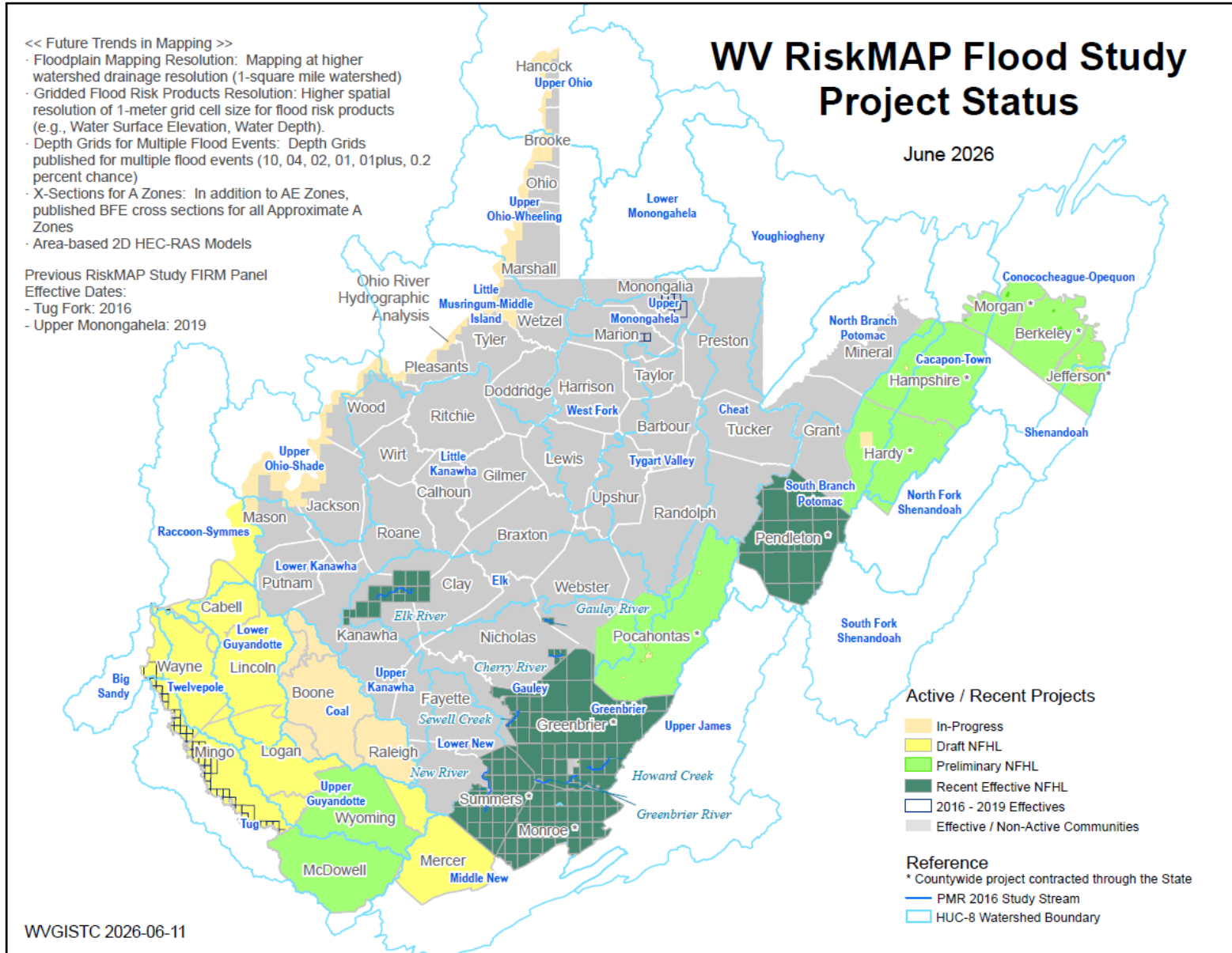
Appaloosa Way
Quail Hollow Rd
CSX, Town

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

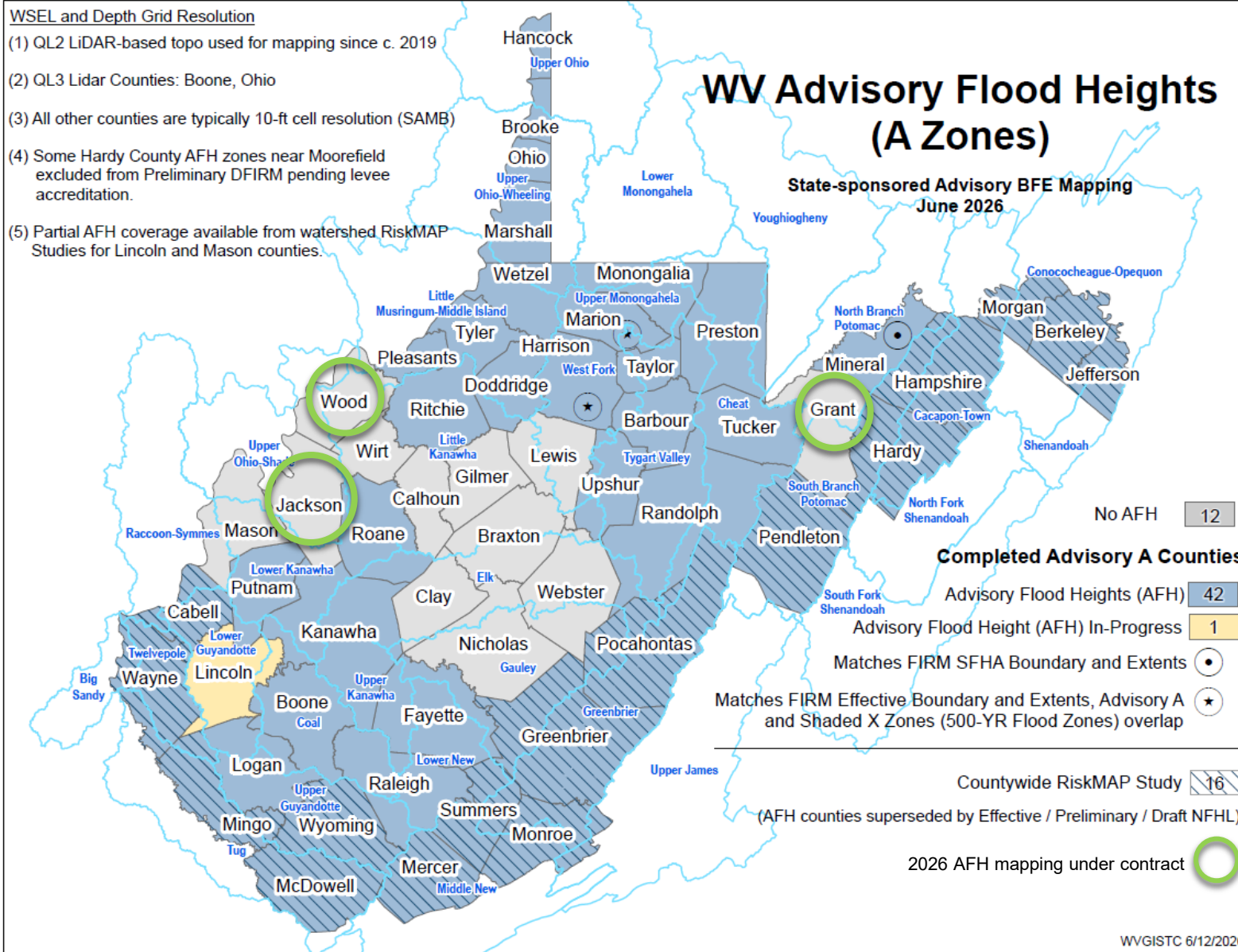
@WVGISTC Leaf-Off Mixed-Resolution Imagery

The background of the slide is a semi-transparent aerial photograph of a landscape. A prominent feature is a winding river that flows from the upper right towards the lower center. The surrounding terrain is covered in dense green vegetation, with a network of roads and paths visible. In the lower-left corner, there are faint, light-colored topographic contour lines. The overall color palette is dominated by various shades of blue and green, with a dark blue gradient on the left side of the image.

Map Updates



Advisory Flood Heights



Local Floodplain Information requested for WV Flood Tool



- Significant Facilities in floodplain verified on Risk MAP View



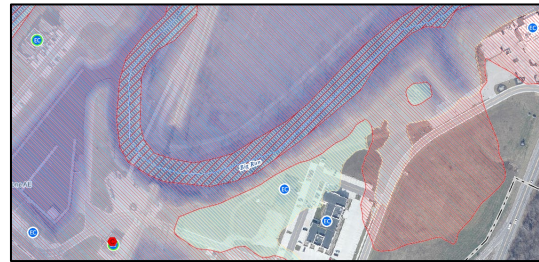
Police Station Fire Station E-911 Dispatch School Hospital Nursing Home

- Elevation Certificates (finished construction only)

Pictures

Accurate Latitude/Longitude

Location (lat, long): (39.384569, -81.479326) ✓



- Pictures of Elevated Buildings in SFHA where FFH > 5 feet

<https://wvfrf.org/wvre/buildings>

- Pictures of High-Water Marks of past major floods



County Reference Layers



Verify accurate and current on WV Flood Tool:

- Municipal Legal Boundaries
(www.mapwv.gov/BAS)
- Leaf-Off Aerial Imagery
([county imagery status](#))
- E-911 Site Addresses
(www.mapwv.gov/address)
- Tax Parcels
(www.mapwv.gov/Parcel)

The image displays two screenshots of the WV Flood Tool web application. The top screenshot shows the 'Layers' panel with the following layers selected: Address Label, Parcels, and Community Boundaries. The bottom screenshot shows the 'Basemaps' panel with 'WV Best Leaves Or' selected. Both screenshots show a map of a river area with various data layers overlaid and a right-hand information panel. The information panel includes details such as Flood Hazard Area, Flood Zone, Stream, Watershed, FEMA's Flood Map, Water Depth, HEC-RAS Model, Flood Profile, Community, Freeboard, CRS Class, CID, Location (lat, long), Location (UTM 17N), Elevation, and Address. The bottom screenshot also includes links for 'Flood Risk Information', 'Flood Risk Assessment', '3D Flood Visualization', 'Link to WV Risk Explorer', and 'Link to BL Risk Table'.

Links to Tools / Data



→ WV Flood Tool: <https://www.mapwv.gov/flood/>

▪ WV Floodplain Managers Directory:
<https://www.mapwv.gov/flood/content/wvCountyFloodplainManagersList.htm>



→ West Virginia Flood Resiliency Framework (WVFRF): <https://wvfrf.org/>



→ West Virginia Risk Explorer (WVRE) (Landing Page): <https://www.wvfrf.org/wvre/>



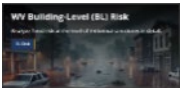
→ WV Risk Explorer Maps: https://wvfrf.org/wvre/map/?scaleid=3&gslid=&index=CUM_INDEX&type=pct



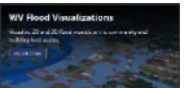
→ WV Risk Explorer Reports: <https://wvfrf.org/wvre/report/?entityid=68&scaleid=1&type=all>



→ WV Flood Dashboards: <https://wvfrf.org/wvre/dashboard/home/>



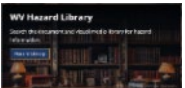
→ WV Building-Level (BL) Risk: <https://wvfrf.org/wvre/buildings/>



→ WV Flood Visualizations: <https://wvfrf.org/wvre/visualization/home/>



→ Access Data: <https://wvfrf.org/wvre/data/home/>



→ WV Hazard Library: <https://wvfrf.org/library/>



→ Landslide Tools: <https://wvfrf.org/wvre/landslides/>



→ Legal Boundaries: <https://www.mapwv.gov/BAS>

Future Direction

- Maintenance and Data Updates
- Training and Technical Support
- Sustainable Funding for Ongoing Operations of the Tools



Thank you!

Questions?

Email:

kurt.donaldson@mail.wvu.edu

behrang.bidadian@mail.wvu.edu



WV GIS Technical Center
West Virginia University

Supplemental



Content of Hazard Library

TOPICS	MEDIA TYPES	SEARCH TYPES
<ul style="list-style-type: none"> • Flood Disaster Events <ul style="list-style-type: none"> ○ Flood Event ○ Flood Research • Mitigation <ul style="list-style-type: none"> ○ Flood Insurance ○ Floodplain Management ○ Floodplain Mapping ○ Other Mitigation Measures • Risk Assessment & Planning <ul style="list-style-type: none"> ○ State Risk Assessments ○ Local Risk Assessments ○ Planning Resources ○ Web Tools 	<ul style="list-style-type: none"> • 3D Movie • Bldg. Profile • Dashboard • Data-GIS • Data-Metadata • Data-Table • Flyer • Graphic • Guide • Journal Article • Letter • News Article • Picture • Plan • Poster • Report • Slides • Social Media • Static Map • Story Map • Video • Viewshed • Web Info • Web Tool 	<ul style="list-style-type: none"> • Agency • Downloadable Data • Event Disaster • Event Meeting • Geographic Scale <ul style="list-style-type: none"> ○ Entity • Media Type • Publication Date • Subject <ul style="list-style-type: none"> ○ Major Group ○ Category ○ Subcategory ○ <i>cross-indexing</i> • Stakeholder Type • Title (free text search) • Predefined Searches <ul style="list-style-type: none"> ○ Visualizations ○ Floodplain Management Key Materials

Critical Infrastructure: Essential Facilities



- Essential Facilities provide emergency services during a flood.
- Communities need to establish emergency protocols to maintain critical services amidst a flood.



Police Station



Fire Station



E-911 Dispatch



School



Hospital



Nursing Home

- Schools with children in vulnerable age groups often also serve as shelters during floods.
- Nursing homes and hospitals with immobile patients are particularly more susceptible to flooding.



Clendenin Volunteer Fire Department
Kanawha County
Inundated, Jun. 2016
Building ID: [20-02-0007-0040-0000_109](#)



Marlinton Volunteer Fire Department
Pocahontas County
Inundated, Nov. 1985
Building ID: [38-08-0001-0095-0000_709B](#)



Nicholas County Nursing & Rehabilitation Center
Richwood
Inundated, June. 2016 (Not active anymore)
Building ID: [34-06-0010-0072-0000_18](#)



Spanishburg Elementary School
Mercer County
Inundated, Feb. 2025
Building ID: [28-11-0026-0075-0000_8544](#)



Clendenin Elementary School
Kanawha County
Inundated, Jun. 2016
(Demolished)



Bridge Elementary School
Kanawha County
Inundated, Jun. 2016
Building ID: [20-15-0023-0077-0000_5120](#)

Community Assets: Non-Historical

- Non-Historical community assets such as churches often serve as emergency shelters during floods.
- Flooding can disrupt critical community lifelines including safety, health, shelter, water, and energy.



Religious Organization



Educational Building



Emergency Medical Services



Government Building



Utility



National Register Historical Structure



In Historic District Older than 1930



Other Assets



Jan-Care of Guardian Angel (EMS)
Welch, McDowell County
Inundated, Feb. 2025
Building ID: [27-15-0002-0247-0000_58](#)



Williamson Water Plant (Veolia Water)
Williamson, Mingo County
Inundated, Feb. 2025
Building ID: [30-11-0007-0233-0000_317](#)



Aug. 2023



Jun. 2025

Valley Grove Assembly of God
Valley Grove, Ohio County
Inundated, Jun. 2025
Building ID: [35-08-0VG9-0083-0000_8580](#)



Borderland Baptist Church
Mingo County
Inundated, Feb. 2025
Building ID: [30-10-362K-0010-0000_46](#)



Cornerstone Church
Matewan, Mingo County
Inundated, Feb. 2025
Building ID: [30-08-0009-0071-0000_1028](#)