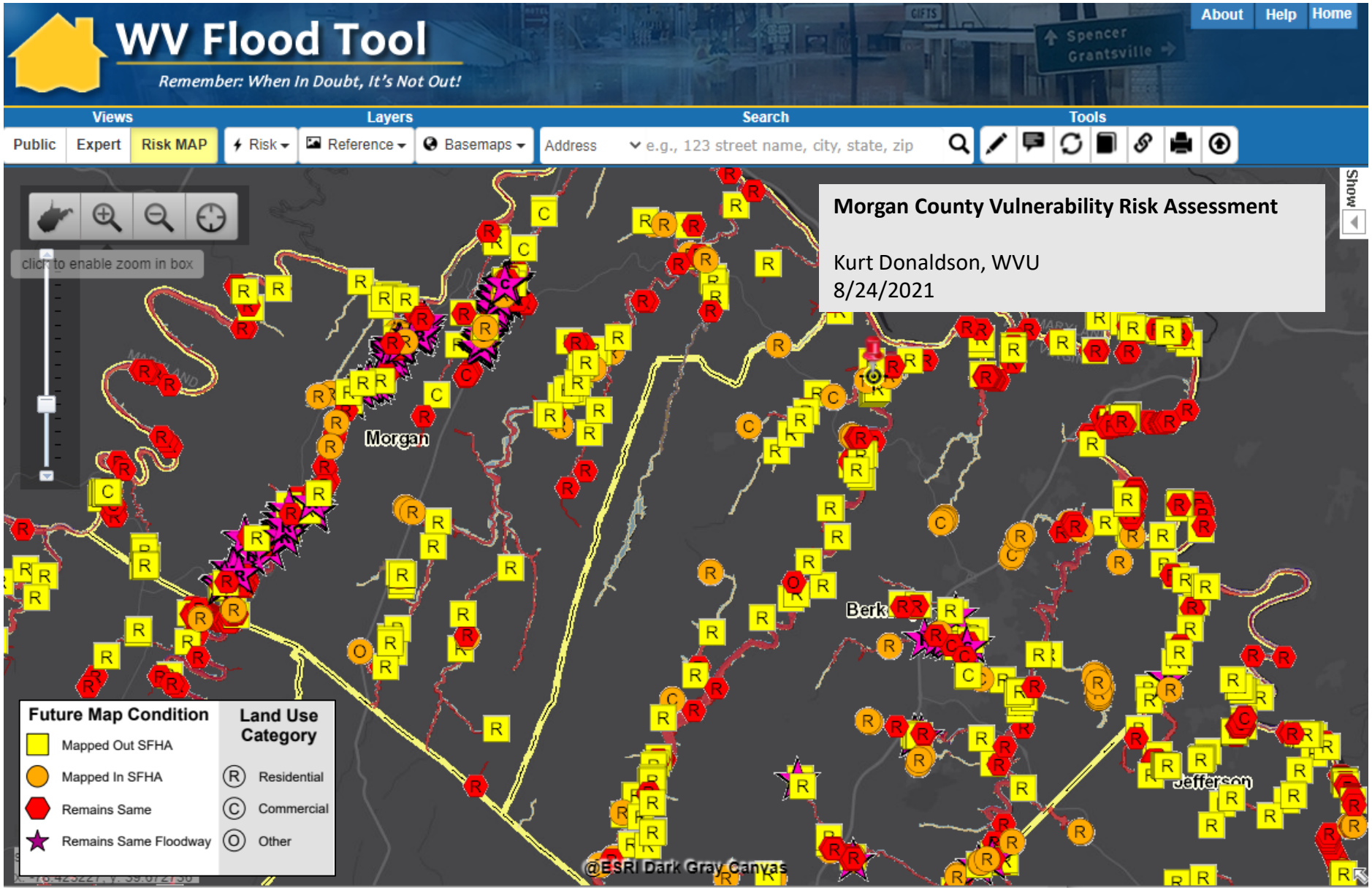
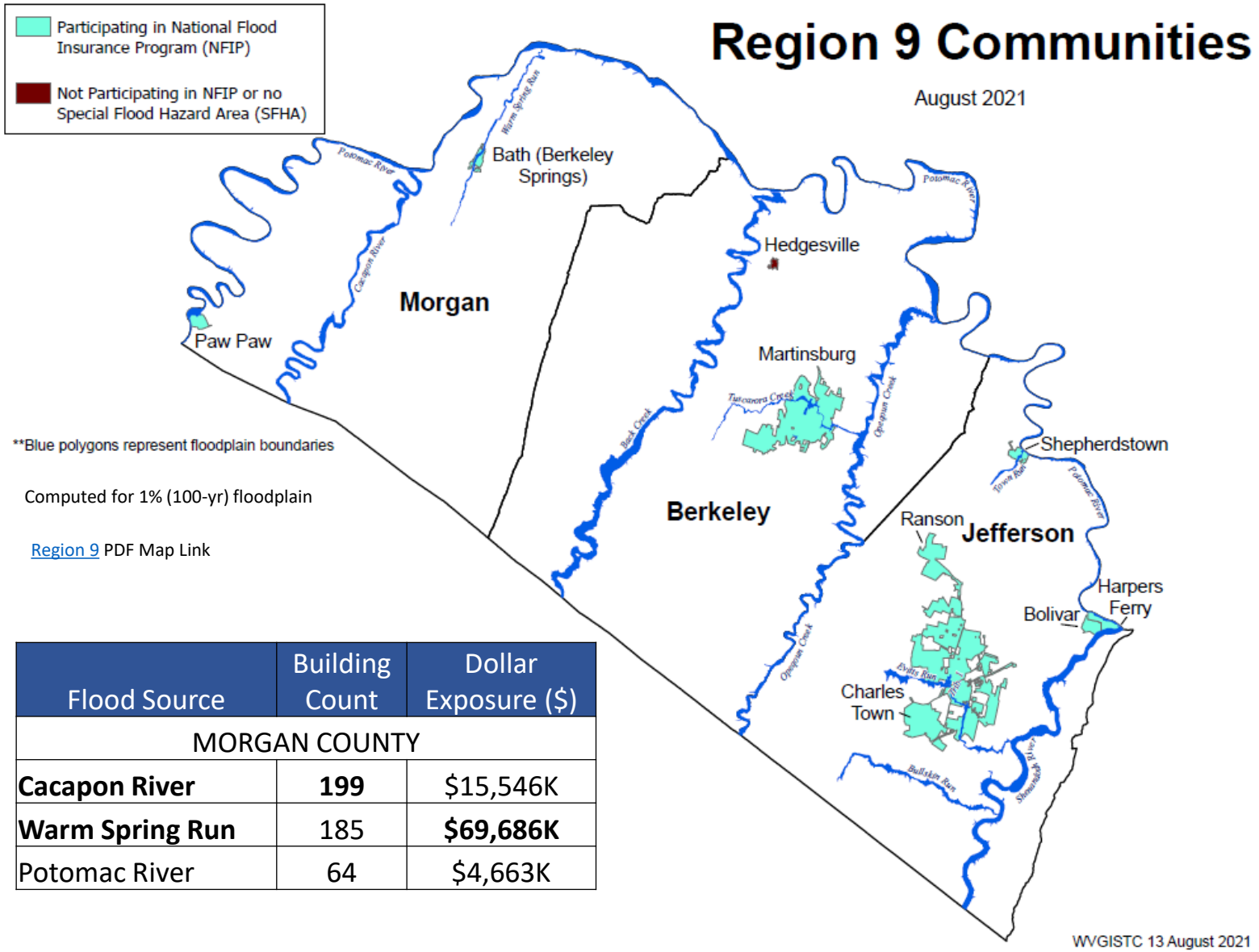
Region 9 Flood Risk Assessment

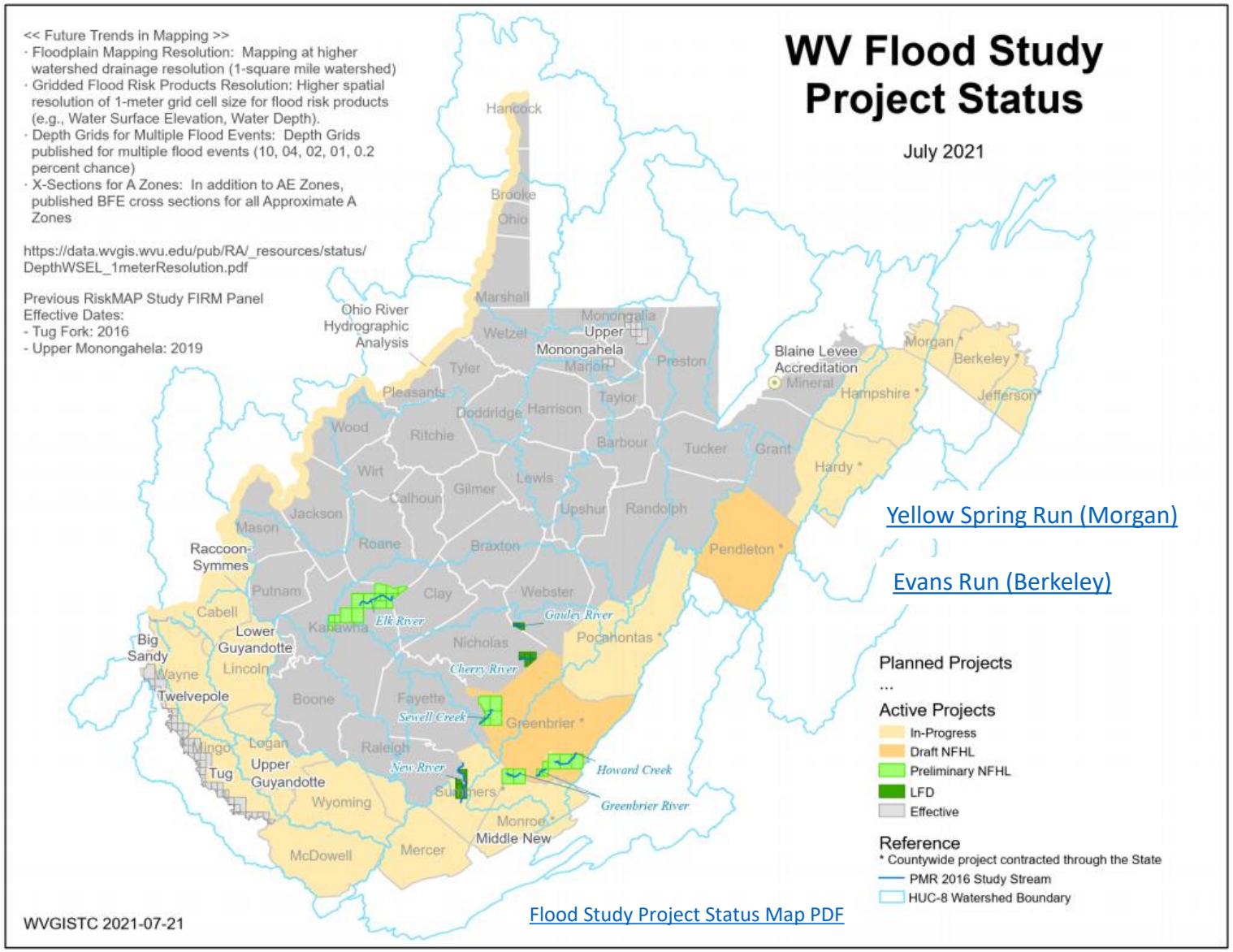


Primary Flood Sources (Morgan)



Flood Source	Building Count	Dollar Exposure ($)
MORGAN COUNTY		
Cacapon River	**199**	$15,546K
Warm Spring Run	185	**$69,686K**
Potomac River	64	$4,663K

Active Flood Studies



Floodplain Measurements

Floodplain Area (acres)

Community Name	County	Total Community Area (acres)	Total SFHA Area (acres)	**Modified Total SFHA Area (acres)[1]**	Ratio of aSFHA to Community Area
BERKELEY COUNTY *	BERKELEY COUNTY	201,588	8,837	**8,820**	4.4%
MARTINSBURG	BERKELEY COUNTY	4,259	139	128	3.0%
HEDGESVILLE, TOWN OF	BERKELEY COUNTY	85	0	0	0.0%
MORGAN COUNTY*	MORGAN COUNTY	146,585	7,231	**7,210**	4.9%
BATH	MORGAN COUNTY	215	20	20	**9.3%**
PAW PAW	MORGAN COUNTY	340	119	119	**35.0%**

[1] Areas excluded from Total aSFHA: Open water lakes > 10 acres; Large river bank-to-bank > 500 ft.; Federal lands > 10 acres

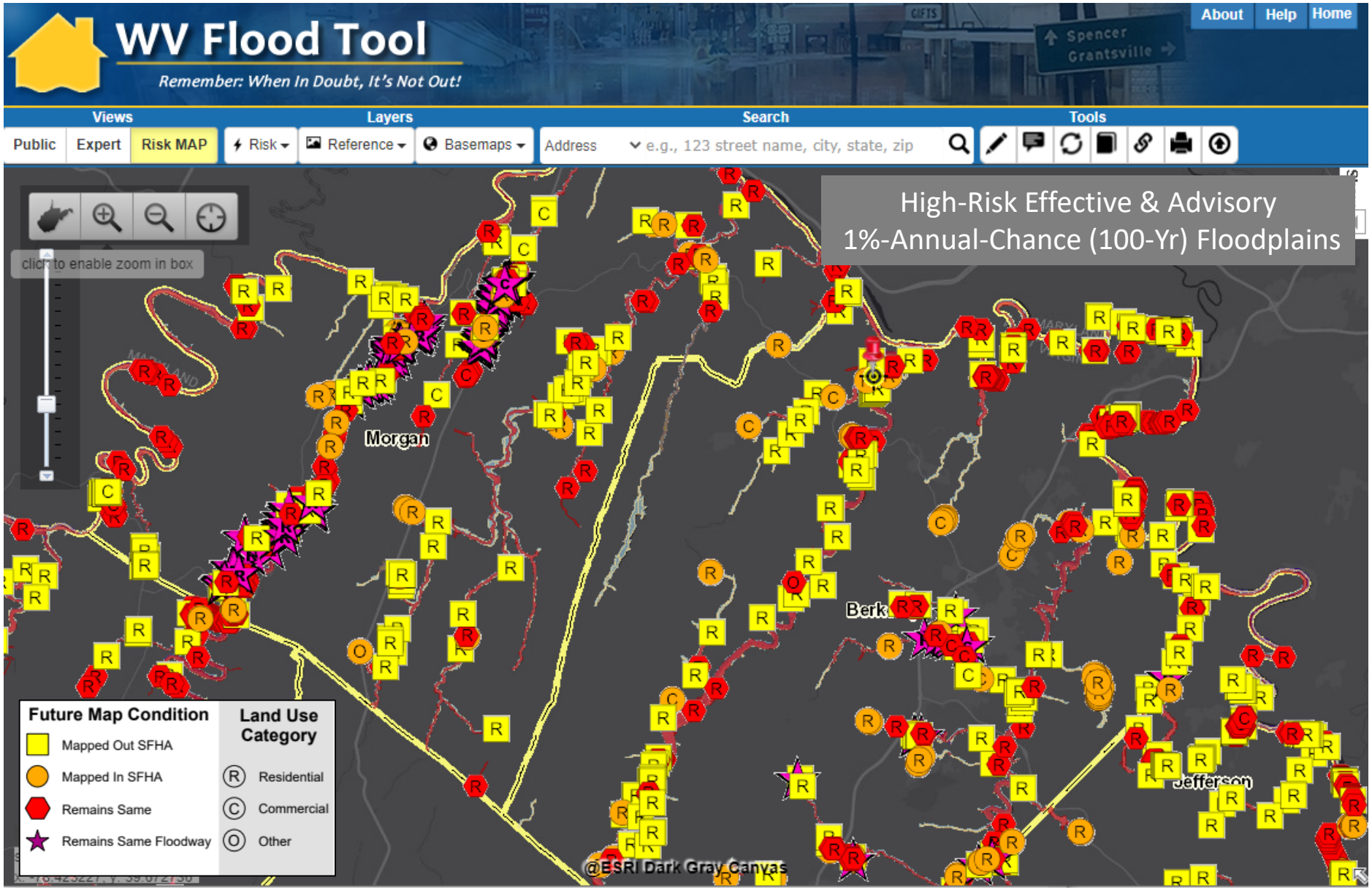
Floodplain Length (miles)

Community Name	County	Stream Length(mi) - Zones: **AE,AH,AO**	Stream Length (mi) - **Effective A**	Stream Length (mi) – **Advisory A**	**Total Length (mi)**	**Detailed Zone %**	**Approx. A Zone %**	**Advisory Zone %**
BERKELEY COUNTY *	BERKELEY COUNTY	67.9	90.2	55.6	213.7	32%	42%	26%
MARTINSBURG	BERKELEY COUNTY	4.1	0.5	0.5	5.1	81%	10%	9%
	BERKELEY COUNTY	**72.1**	**90.7**	**56.0**	**218.8**	**33%**	**41%**	**26%**
BATH	MORGAN COUNTY	1.4	0.0	0.0	1.4	97%	1%	1%
MORGAN COUNTY*	MORGAN COUNTY	36.3	121.4	14.8	172.5	21%	70%	9%
PAW PAW, TOWN OF	MORGAN COUNTY	0.2	0.7	0.0	0.9	23%	77%	0%
	MORGAN COUNTY	**37.8**	**122.1**	**14.8**	**174.8**	**22%**	**70%**	**8%**

Building Counts by Flood Zone

Community Name	County	SFHA - FUTURE MAP CONDITIONS				HIGH-RISK FLOOD ZONES		
		Floodway	No Change SFHA	Mapped in SFHA	Mapped Out SFHA	Effective	Advisory	Total
Berkeley County*	BERKELEY	6	325	88	216	547	88	635
Martinsburg	BERKELEY	7	39	8	21	67	8	75
	BERKELEY	**13**	**364**	**96**	**237**	**614**	**96**	**710**
Bolivar	JEFFERSON	0	0	3	0	0	3	3
Charles Town	JEFFERSON	5	12	1	9	26	1	27
Harpers Ferry	JEFFERSON	0	1	30	0	1	30	31
Jefferson County*	JEFFERSON	37	233	39	217	487	39	526
Ranson	JEFFERSON	3	49	0	28	80	0	80
Shepherdstown	JEFFERSON	0	62	1	3	65	1	66
	JEFFERSON	**45**	**357**	**74**	**257**	**659**	**74**	**733**
Bath	MORGAN	56	34	16	23	113	16	129
Morgan County*	MORGAN	102	209	38	135	446	38	484
Paw Paw	MORGAN	0	13	0	17	30	0	30
	MORGAN	**158**	**256**	**54**	**175**	**589**	**54**	**643**

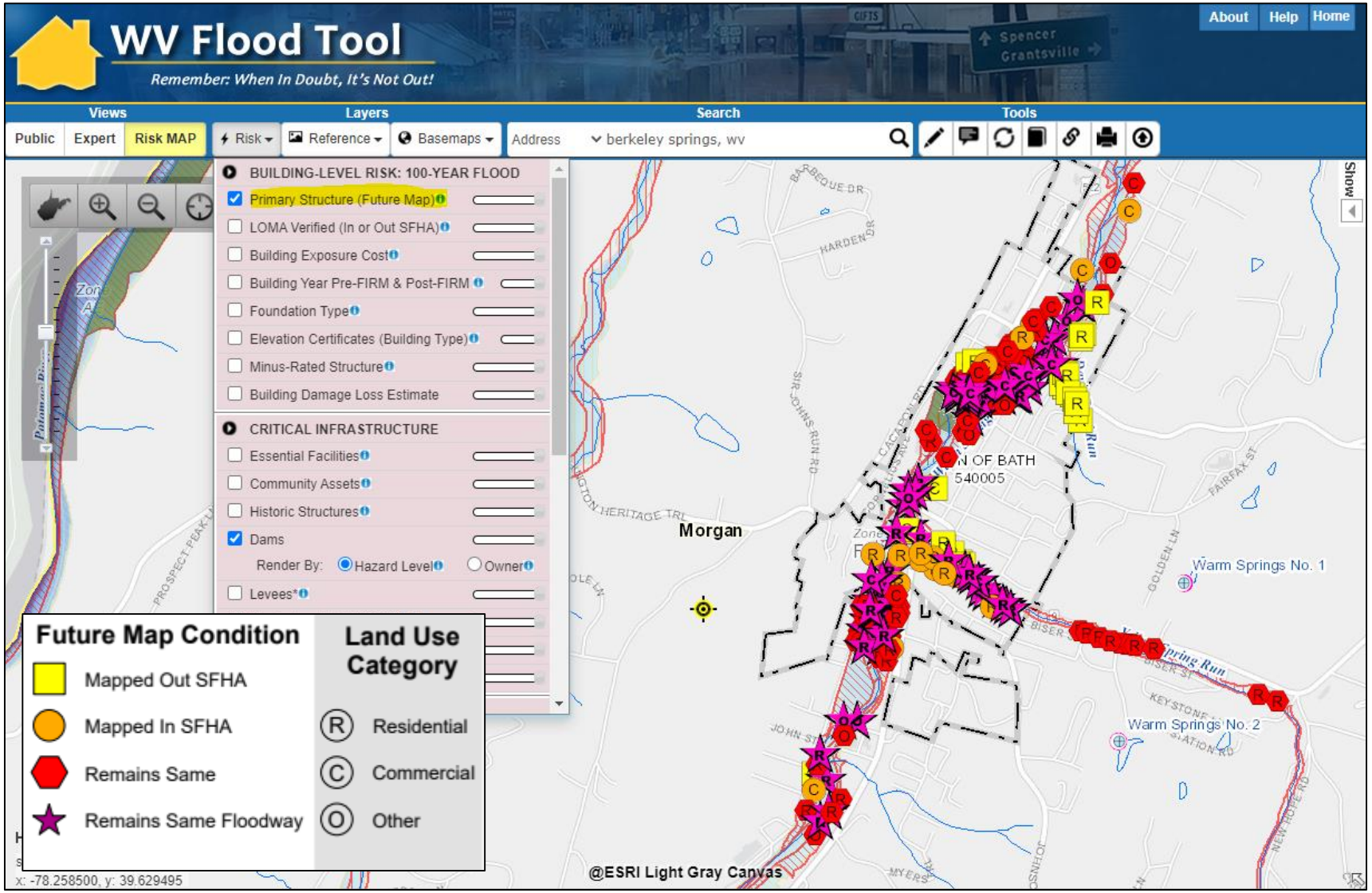
Buildings Inventories



Future Building Map Conditions

SFHA AND FUTURE MAP CONDITIONS	Select counties have non-regulatory, advisory flood zones (orange zones on WV Flood Tool) that indicate future map conditions of the Special Flood Hazard Area (SFHA).
Floodway	**Floodways** cans be dangerous because water may flow very fast. Development is not allowed unless there is "no rise" in flood elevations, floodway elevations, and floodway widths are certified. Structures in floodways may require special consideration for mitigation measures.
No Change SFHA	**No Change in SFHA** designation where High-Risk Effective and Advisory Floodplains overlap. When future map restudies are completed and new FIRMs become effective, it is predicted that structures with this designation are neither "mapped in" nor "mapped out" of the SFHA.
Mapped In SFHA	Structures potentially **"mapped-in" the SFHA** according to mapped High-Risk Advisory Floodplains based on more accurate topography and model-backed A Zones. The "mapped-in" structures most likely will be included in the SFHA when future FEMA Restudies are done and new FIRMS become effective. Communities should review all "mapped-in" structures. Homeowners are at higher risk to flooding and should be contacted about Flood Insurance Preferred Risk Policies and other potential mitigation measures.
Mapped Out SFHA	Structures potentially **"mapped-out" the SFHA** according to mapped Advisory Floodplains and most likely will NOT be included in the SFHA when the new FIRMs become effective from future Restudies. Communities should review all "mapped-out" structures for LiDAR LOMAs. Although these structures may be mapped to a lesser flood risk designation, property owners should be encouraged to purchase Flood Insurance Preferred Risk Policies at lower premiums. Morgan County example | Berkeley County example

Primary Structures (Bath)



Martinsburg's *primary structures* viewable on the Risk MAP View of the WV Flood Tool. Symbol letters indicate general occupancy (**R**esidential, **C**ommercial, **O**ther Non-Residential).

Essential Facilities (Morgan County)

Police Station


Fire Station


E-911 Dispatch


School


Hospital


Nursing Home

Community Name	County	Facility Name	Facility Type	Flood Tool Link	Flood Depth	Building Damage Percent
Morgan County*	MORGAN	Berkeley Springs High School	School	FT	1.4	1.9
Morgan County*	MORGAN	WV State Police Troop 2	Police Department	FT	0.2	0
Bath	MORGAN	Berkeley Springs Volunteer Fire Department	Fire Department	FT	0	0
Bath	MORGAN	Morgan County 911 Center	911 Center	FT	0	0

Community Engagement and Verification:

Review the accuracy and completeness of all *active* **essential facilities**. Report any facilities that are missing. Verify the facilities and location using the Table and RiskMAP View of the WV Flood Tool.

Community Assets

Religious Organization

Educational Building

Emergency Medical Services

Government Building

Utility

Community Name	County	Historical Place	**Facility Type**	Flood Tool Link	**Flood Depth**	Building Damage Percent
Berkeley County*	BERKELEY	Little Falls Chapel	**Religious**	FT	6.4	11%
Martinsburg	BERKELEY	Holy Grace Church of God	**Religious**	FT	3.4	11%
Martinsburg	BERKELEY	Martinsburg Sewage Treatment Plant	**Utilities**	FT	4.8	9%
Bath	MORGAN	Morgan County Courthouse	**Government**	FT	2.6	7%
Bath	MORGAN	Morgan County Public Library	**Government**	FT	2.9	7%

Community Engagement and Verification:

Review the accuracy and completeness of all *active* **community assets**. Report any structures that are missing. Verify the buildings and location using the Table and Risk MAP View of the WV Flood Tool. Review and identify mitigation strategies for the community assets vulnerable to flooding.

Historical Community Assets

Community Name	**County**	Facility Name	**Facility Type**	Flood Tool Link	**Flood Depth**	Building Damage Percent
Berkeley County*	**BERKELEY**	Darkesville Historic District	National Register	FT	5.2	22%
Berkeley County*	**BERKELEY**	Darkesville Historic District	National Register	FT	4.7	13%
Martinsburg	**BERKELEY**	Tuscarora Creek Historic District	National Register	FT	2.5	11%
Martinsburg	**BERKELEY**	Tuscarora Creek Historic District	National Register	FT	2.1	14%
Berkeley County*	**BERKELEY**	Darkesville Historic District	National Register	FT	2.1	8%
Berkeley County*	**BERKELEY**	Mill Creek Historic District	National Register	FT	1.1	4%

Town Name	**County**	**Building ID**	Historical Name	**Facility Type**	Flood Tool Link	**Flood Depth**	Building Damage Percent
Bath	**MORGAN**	33-03-001A-0015-0000_129	Town of Bath Historic District	**National Register**	FT	8.3	27%
Bath	**MORGAN**	33-03-002A-0040-0000_33	Town of Bath Historic District	**National Register**	FT	7.8	40%
Bath	**MORGAN**	33-03-002A-0041-0000_33A	Town of Bath Historic District	**National Register**	FT	6.6	37%

National Register Historical Structure

The town of **Bath** (Berkeley Springs) in Morgan County is ranked 10th in the State for an incorporated area with the most historical buildings (47). For the most National Register Areas in the State that intersect the 1% floodplain, **Morgan County** ranks second (20 NR Areas) and **Morgan County** (2) nineteenth.

Mitigation: A designated historic structure can obtain the benefit of subsidized flood insurance through the NFIP even if it has been substantially improved or substantially damaged so long as the building maintains its historic designation.

Residential versus Non-Residential

Residential
Home

Residential
Manufactured Home

Residential
Apartment

Non-Residential
Commercial

Non-Residential
Industrial

Non-Residential
Other

Community	RESIDENTIAL				COMMERCIAL NON-RESIDENTIAL		OTHER NON-RESIDENTIAL		TOTAL BUILDING VALUE		
Community Name	#	% Count	Value ($)	% Value	#	Value ($)	#	Value ($)	#	Value ($)	Rank[1]
Berkeley County*	619	97%	$50,593K	96%	12	$1,965K	4	$373K	635	$52,931K	3
Martinsburg	51	68%	$6,124K	10%	21	$55,166K	3	$1,035K	75	$62,324K	1
BERKELEY	**670**	**94%**	**$56,717K**	**49%**	**33**	**$57,131K**	**7**	**$1,408K**	**710**	**$115,255K**	**1**
Bolivar	3	100%	$251K	100%	0	$0K	0	$0K	3	$251K	8
Charles Town	23	85%	$2,073K	65%	4	$1,107K	0	$0K	27	$3,180K	6
Harpers Ferry	6	19%	$722K	10%	25	$6,243K	0	$0K	31	$6,965K	4
Jefferson County*	505	96%	$60,022K	85%	14	$4,889K	7	$5,349K	526	$70,260K	1
Ranson	79	99%	$5,206K	98%	0	$0K	1	$100K	80	$5,305K	5
Shepherdstown	38	58%	$7,873K	42%	24	$6,057K	4	$4,794K	66	$18,724K	3
JEFFERSON	**654**	**89%**	**$76,146K**	**73%**	**67**	**$18,295K**	**12**	**$10,243K**	**733**	**$104,685K**	**3**
Bath	64	50%	$7,226K	21%	52	$11,499K	13	$16,499K	129	$35,224K	2
Morgan County*	439	91%	$35,347K	51%	38	$11,135K	7	$23,386K	484	$69,867K	2
Paw Paw	16	53%	$1,133K	41%	13	$1,507K	1	$130K	30	$2,770K	7
MORGAN	**519**	**81%**	**$43,705K**	**41%**	**103**	**$24,141K**	**21**	**$40,015K**	**643**	**$107,862K**	**2**
SUMMARY	**1843**	**3**	**$176,569K**	**54%**	**203**	**$99,567K**	**40**	**$51,666K**	**2086**	**$327,802K**	

* Unincorporated

[1] Group Rank on Community Type: County, Unincorporated, Incorporated

Region 9 Tabular Community-Level Report: https://data.wvgis.wvu.edu/pub/RA/State/CL/ (Building Exposure)

Single Family Dwellings

Residential Home

Residential Manufactured Home

Community		SINGLE FAMILY HOME		MANUFACTURED (MOBILE) HOME			SINGLE FAMILY TOTAL		
Community Name	County	Count	Value ($)	Count	% Count	Value ($)	Count	Value ($)	Group Rank[1]
Berkeley County*	BERKELEY	404	$45,448K	206	34%	$3,947K	610	$49,396K	2
Martinsburg	BERKELEY	41	$4,507K	0	0%	$0K	41	$4,507K	4
	BERKELEY	**445**	**$49,956K**	**206**	**32%**	**$3,947K**	**651**	**$53,903K**	**2**
Bolivar	JEFFERSON	3	$251K	0	0%	$0K	3	$251K	8
Charles Town	JEFFERSON	21	$1,991K	0	0%	$0K	21	$1,991K	5
Harpers Ferry	JEFFERSON	6	$722K	0	0%	$0K	6	$722K	7
Jefferson County*	JEFFERSON	421	$56,946K	77	15%	$2,311K	498	$59,257K	1
Ranson	JEFFERSON	65	$4,494K	10	13%	$351K	75	$4,845K	3
Shepherdstown	JEFFERSON	35	$7,191K	0	0%	$0K	35	$7,191K	1
	JEFFERSON	**551**	**$71,595K**	**87**	**14%**	**$2,663K**	**638**	**$74,257K**	**1**
Bath	MORGAN	52	$5,542K	3	5%	$53K	55	$5,595K	2
Morgan County*	MORGAN	367	$33,782K	66	15%	$1,211K	433	$34,993K	3
Paw Paw	MORGAN	12	$806K	0	0%	$0K	12	$806K	6
	MORGAN	**431**	**$40,130K**	**69**	**14%**	**$1,265K**	**500**	**$41,394K**	**3**
SUMMARY		**1,427**	**$161,680K**	**362**	**20%**	**$7,875K**	**1,789**	**$169,555K**	

* Unincorporated

[1] Group Rank on Community Type: County, Unincorporated, Incorporated

Region 9 Tabular Community-Level Report: https://data.wvgis.wvu.edu/pub/RA/State/CL/ (Building Exposure)

Highly Valued ($) Buildings

Highly valued buildings in 1% Floodplain for **Morgan County**. Which high-valued-structures are vulnerable to riverine flooding?

Community Name	WV Flood Tool Link	Owner Name or Building ID	Hazard Occupancy Code	**General Occupancy**	**Building Appraisal**
Morgan County*	FT	BOARD OF EDUCATION	EDU1	Other	$ 15,000,000
Bath	FT	MORGAN CO BLDG COMM	GOV1	Other	$ 10,591,500
Morgan County*	FT	BOARD OF EDUCATION	EDU1	Other	$ 6,210,000
Morgan County*	FT	U S SILICA	IND4	Commercial	$ 3,304,600
Morgan County*	FT	BOARD OF EDUCATION	EDU1	Other	$ 1,650,000
Bath	FT	CATHOLIC CHURCH	REL1	Other	$ 1,565,700
Bath	FT	MORGAN ARTS COUNCIL INC	COM8	Commercial	$ 1,482,300
Bath	FT	CITIZENS NATIONAL BANK OF BERKELEY SPRINGS	COM5	Commercial	$ 1,448,900

* Unincorporated
Region 9 Tabular Building-Level Report Link: https://data.wvgis.wvu.edu/pub/RA/Region9/BLRA/4_BldgDollarExposure

Community Engagement and Verification:

Building-Level Verification: Verify the highly valued buildings using the building-level table and Risk MAP View of the WV Flood Tool. For buildings inventoried in the 1% floodplains, review the most expensive residential and non-residential buildings located in the high-risk flood zones sorted on building appraisal value from largest to smallest value. Identify building-level mitigation and outreach strategies.

Risk Assessment – Building $ & Type

Morgan County ranks second in the State for its countywide *median building replacement value* of $79,000 and much higher than the statewide median building replacement value of $37,000. It ranks fourth for *median single-family dwelling* replacement value of $88,000 and above the statewide median value of $44,000.

Morgan County – 81% of the primary buildings are *residential* whereas 59% of the countywide building stock dollar value is *non-residential*.

Morgan County – Manufactured homes comprise 14% of the *single family dwelling* building stock.

Morgan County ranks 11th in the State for the highest percentage of *Post-FIRM structures* or new development.

The town of **Bath** (Berkeley Springs) in Morgan County is ranked 10th in the State for an incorporated area with the most historical buildings (47).

Substantial Damage Estimates




Community Name	County	Count Total	Value Total	TEIF Loss Total	TEIF Loss Ratio Total	Median Percent Damage	Median Dollar Damage	Debris Damage Total	High Damage Count (BldgDmgPct >= 50% OR BldgLossUSD > $10k)
Berkeley County*	BERKELEY	635	$52,931K	$5,729K	11%	65%	$15K	6,172	188
Martinsburg	BERKELEY	75	$62,324K	$14,105K	23%	9%	$4K	136	8
	BERKELEY	**710**	**$115,255K**	**$19,834K**	**17%**	**54%**	**$13K**	**6,308**	**196**
Jefferson County*	JEFFERSON	526	$70,260K	$6,047K	9%	39%	$21K	4,434	183
Bolivar	JEFFERSON	3	$251K	$118K	47%	48%	$37K	135	3
Charles Town	JEFFERSON	27	$3,180K	$27K	1%	4%	$3K	12	0
Harpers Ferry	JEFFERSON	31	$6,965K	$4,785K	69%	74%	$131K	4,683	30
Ranson	JEFFERSON	80	$5,305K	$16K	0.3%	4%	$2K	4	0
Shepherdstown	JEFFERSON	66	$18,724K	$1,058K	6%	8%	$14K	427	38
	JEFFERSON	**733**	**$104,685K**	**$12,052K**	**12%**	**30%**	**$21K**	**9,695**	**254**
Morgan County*	MORGAN	484	$69,867K	$7,057K	10%	41%	$16K	4,368	166
Bath	MORGAN	129	$35,224K	$2,621K	7%	10%	$11K	698	44
Paw Paw	MORGAN	30	$2,770K	$16K	1%	6%	$3K	19	0
	MORGAN	**643**	**$107,862K**	**$9,695K**	**9%**	**22%**	**$14K**	**5,085**	**210**
					Statewide	*17%*	*$6K*		

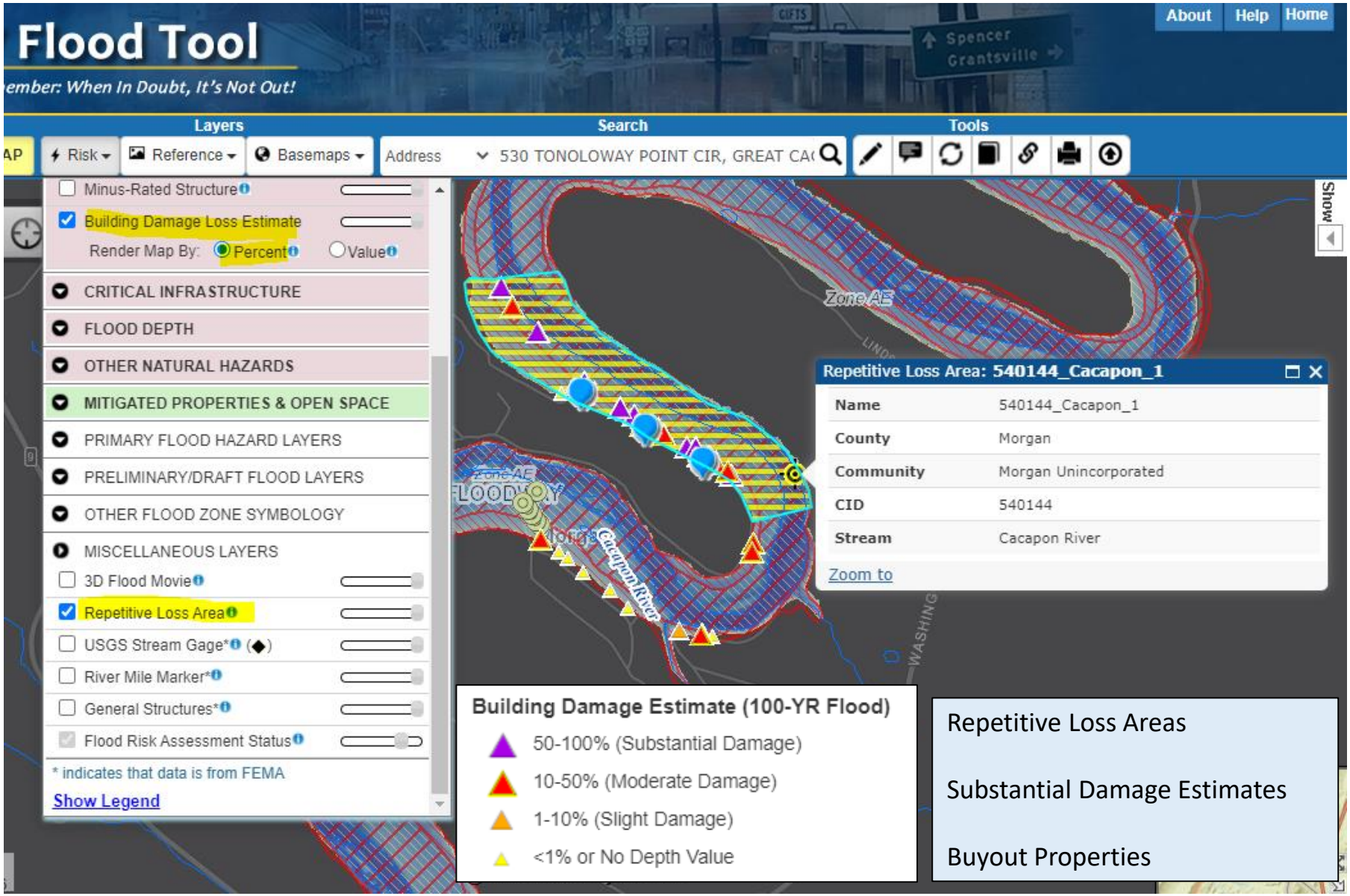
Generated using FEMA's Hazus flood loss software program for a 1%-annual-chance (100-yr) flood event

RA Verification Tables

MINUS RATED (POST-FIRM)					MAP LINK					FILTER OR SORT				FILTER OR SORT					FILTER OR SORT			PRIMARY
8/18/2021 *Table Extract from BLRA*										*Post-FIRM*				*Residential*					*> $50,000*			*>= 1 foot*
Top percentage of minus-rated Post-FIRM structures										Lookup			Lookup				Lookup					
BERKELEY																						
Building ID	Community Name	Stream Name	GIS Parcel I	Full E-911 Address	WV Flood Tool Li	Flood Zone Designation	Floodway	Owner Names	**FIRM Status**	Year Bu	Grade	Hazard Occupancy Cod	**General Occupancy**	Stories	Structure Area	Foundation Type	First Floor Height	**Building Appraisal**	Building Value Source	Depth Grid	**Depth In Structu**
02-02-0188	Berkeley (	Potomac F	02-02-0188	358 POPS	FT	AE	No	GREEN STERLI	Post-FIRM	1990	D	RES1	Residenti	2	1568	Slab-on-G	1	$ 68,300	Assessme	18.8	17.8
02-02-0018	Berkeley (	Potomac F	02-02-0018	427 POPS	FT	AE	No	CABLE DANET	Post-FIRM	2000	C-	RES1	Residenti	1	784	Slab-on-G	1	$ 65,600	Assessme	18.0	17.0
02-08-0005	Berkeley (	Potomac F	02-08-0005	9999 WHIT	FT	AE	No	SCOTT MICHA	Post-FIRM	2012	C	RES2	Residenti	1	504	Crawlspac	4	$ 99,200	Assessme	18.3	14.3
02-02-0118	Berkeley (	Potomac F	02-02-0118	162 MALLA	FT	AE	No	CRAMPTON JI	Post-FIRM	1997	C	RES1	Residenti	1	1089	Slab-on-G	1	$ 77,200	Assessme	14.6	13.6
02-02-0108	Berkeley (	Potomac F	02-02-0108	18 MALLA	FT	AE	No	WEINER SETH	Post-FIRM	2008	C+	RES1	Residenti	1	2570	Slab-on-G	1	$ 302,800	Assessme	13.5	12.5
02-02-0118	Berkeley (	Potomac F	02-02-0118	336 MALLA	FT	AE	No	BOWERS TIM	Post-FIRM	1998	C+	RES1	Residenti	2	2240	Basement	4	$ 140,300	Assessme	15.9	11.9
02-02-0011	Berkeley (	Potomac F	02-02-0011	442 SLIM L	FT	AE	No	BURANICH DE	Post-FIRM	1993	C+	RES3B	Residenti	2	3616	Basement	4	$ 260,800	Assessme	15.7	11.7
02-02-0108	Berkeley (	Potomac F	02-02-0108	80 MALLA	FT	AE	No	FRAZER LARR	Post-FIRM	2000	C	RES1	Residenti	1	752	Basement	4	$ 62,100	Assessme	15.3	11.3
02-02-0108	Berkeley (	Potomac F	02-02-0108	8 MALLAR	FT	AE	No	PAYNE DWIGI	Post-FIRM	1990	D+	RES1	Residenti	1	756	Basement	4	$ 51,000	Assessme	14.7	10.7
02-04-0003	Berkeley (	Potomac F	02-04-0003	413 DARW	FT	AE	No	KLIPPENSTEIN	Post-FIRM	2010	B	RES1	Residenti	1	2672	Basement	4	$ 399,500	Assessme	13.2	9.2
02-02-0118	Berkeley (	Potomac F	02-02-0118	424 MALLA	FT	AE	No	STRUNK ALLE	Post-FIRM	1989	C	RES2	Residenti	1	960	Crawlspac	4	$ 51,900	Assessme	11.8	7.8
02-02-0108	Berkeley (	Potomac F	02-02-0108	136 SARAH	FT	AE	No	PIERCE MIRIA	Post-FIRM	2001	C	RES2	Residenti	1	720	Crawlspac	4	$ 59,400	Assessme	11.4	7.4
02-08-0003	Berkeley (	Potomac F	02-08-0003	175 MISTY	FT	AE	No	ALTER WAYNE	Post-FIRM	1990	C+	RES1	Residenti	1	1428	Basement	4	$ 112,000	Assessme	10.2	6.2
02-07-0148	Berkeley (	Mill Creek	02-07-0148	64 COUNT	FT	A	No	RICKETTS JAM	Post-FIRM	1993	D+	RES1	Residenti	1	3523	Slab-on-G	1	$ 161,100	Assessme	6.6	5.6
02-02-0118	Berkeley (	Potomac F	02-02-0118	444 MALLA	FT	AE	No	STRUNK ALLE	Post-FIRM	2010	C	RES1	Residenti	1	544	Crawlspac	4	$ 57,300	Assessme	8.6	4.6
02-02-0108	Berkeley (	Potomac F	02-02-0108	86 SARAH	FT	AE	No	HOFFMAN DA	Post-FIRM	1998	C	RES1	Residenti	1	960	Basement	4	$ 75,200	Assessme	8.2	4.2
02-06-0019	Martinsbu	Tuscarora	02-06-0019	500 E JOHI	FT	Updated A	No	CITY OF MART	Post-FIRM	2016	D+	COM4	Commerci	2	29013	Slab-on-G	1	$ 51,776,300	Assessme	4.8	3.8
02-04-0036	Berkeley (	Back Cree	02-04-0036	64A BOY S	FT	A	No	SALVATION A	Post-FIRM	1990	D+	REL1	Other	1	4677	Slab-on-G	1	$ 233,600	Assessme	4.7	3.7
02-08-0003	Berkeley (	Potomac F	02-08-0003	195 MISTY	FT	AE	No	HAINES JACK	Post-FIRM	1995	B	RES1	Residenti	1	2761	Basement	4	$ 199,100	Assessme	7.6	3.6
02-08-0001	Berkeley (	Potomac F	02-08-0001	3382 WHIT	FT	AE	No	CATROW JEAI	Post-FIRM	1999	C+	RES1	Residenti	2	2592	Crawlspac	4	$ 216,800	Assessme	5.3	1.3
02-02-0188	Berkeley (	Potomac F	02-02-0188	201 VIENN	FT	AE	No	CLIPP WILLIAI	Post-FIRM	1989	D+	RES1	Residenti	2	2180	Slab-on-G	1	$ 72,000	Assessme	2.0	1.0

https://data.wvgis.wvu.edu/pub/RA/Region9/BLRA/4-6_BLRA_Extract

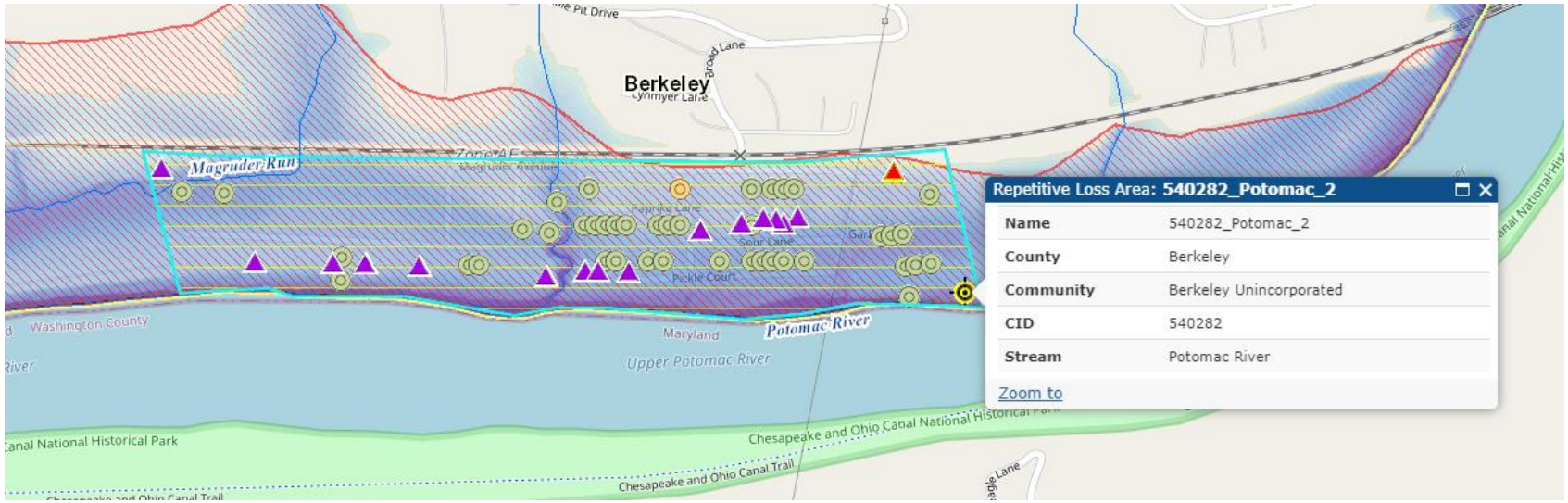
Repetitive Loss Area (Morgan)



https://www.mapwv.gov/flood/map/?wkid=102100&x=-8724660&y=4793095&l=8&v=2

Repetitive Loss Areas

Area of Mitigation Interest	County	Community	Steam Name	RL_Area	FT
540144_Cacapon_1	Morgan	Morgan Unincorporated	Cacapon River	Yes	FT
540144_Cacapon_2	Morgan	Morgan Unincorporated	Cacapon River	Yes	FT
540144_Cacapon_3	Morgan	Morgan Unincorporated	Cacapon River	Yes	FT
540144_Cacapon_4	Morgan	Morgan Unincorporated	Cacapon River	Yes	FT
540144_WarmSpringRun_1	Morgan	Morgan Unincorporated	Warm Spring Run	Yes	FT
540144_Cacapon_5	Morgan	Morgan Unincorporated	Cacapon River	Yes	FT
540144_Cacapon_6	Morgan	Morgan Unincorporated	Cacapon River	Yes	FT
540144_Potomac_1	Morgan	Morgan Unincorporated	Potomac River	No	FT



Permanent Structures

Flood Exposure for Building: 02-08-0001-0030-0000_3458	
Building Replacement Cost	$42,400
Content Cost	$21,200
Building Info	Area: 840 sq ft | Stories: 1
Occupancy Class	RES2 (Mobile Home)
Year Built	2006 (Post-FIRM)
Foundation Type	Crawlspace
First Floor Height	4.0 ft above ground
Water Depth-in-Structure	11.8 ft (minus rated -12 ft)
Flood Damage Estimates for Building: 02-08-0001-0030-0000_3458	
Building Damage Pct	88% (Substantial Damage)
Building Loss USD	$37,168

https://www.mapwv.gov/flood/map/?wkid=102100&x=-8663702&y=4797889&l=11&v=2

Recreational Vehicles

Recreational Vehicles

In a Special Flood Hazard Area, a Recreational Vehicle (RV) must:

- Remain on site for fewer than 180 consecutive days, **or**
- Be fully licensed and ready for highway use; **or**
- Meet the permitting, elevation, and anchoring requirements for manufactured homes of the community's Flood Damage Prevention Ordinance.

A recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick-disconnect type utilities and security devices, and has no permanently attached additions.

Important

Information

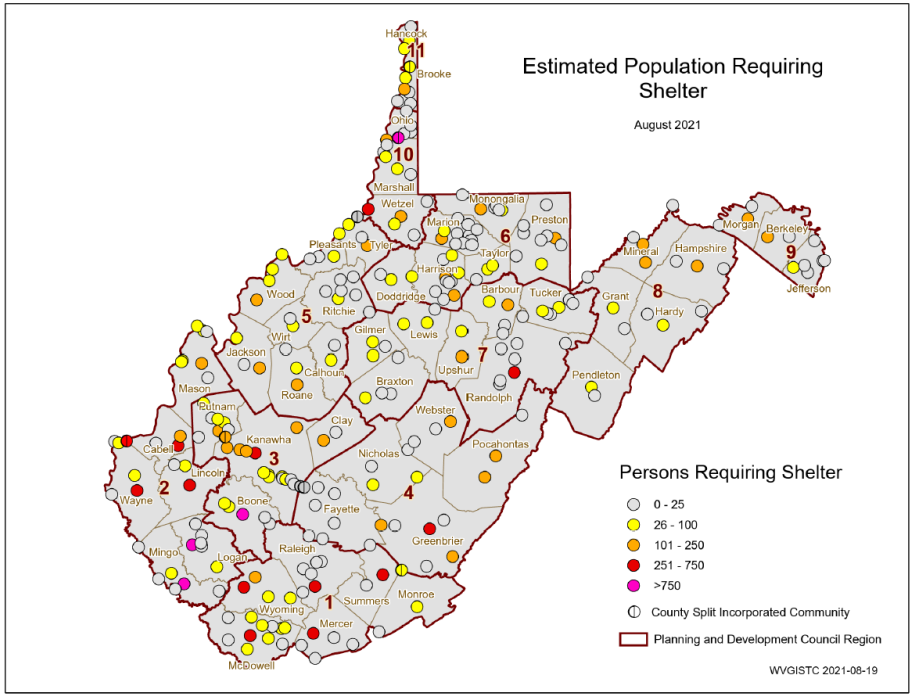
Camping near the water? Ask the campground or RV Park operator about flood warnings and plans for safe evacuations.

RVs that do not meet these conditions must be installed and elevated like a manufactured home, including a permanent foundation and tie-down (See pages 55 and 56).

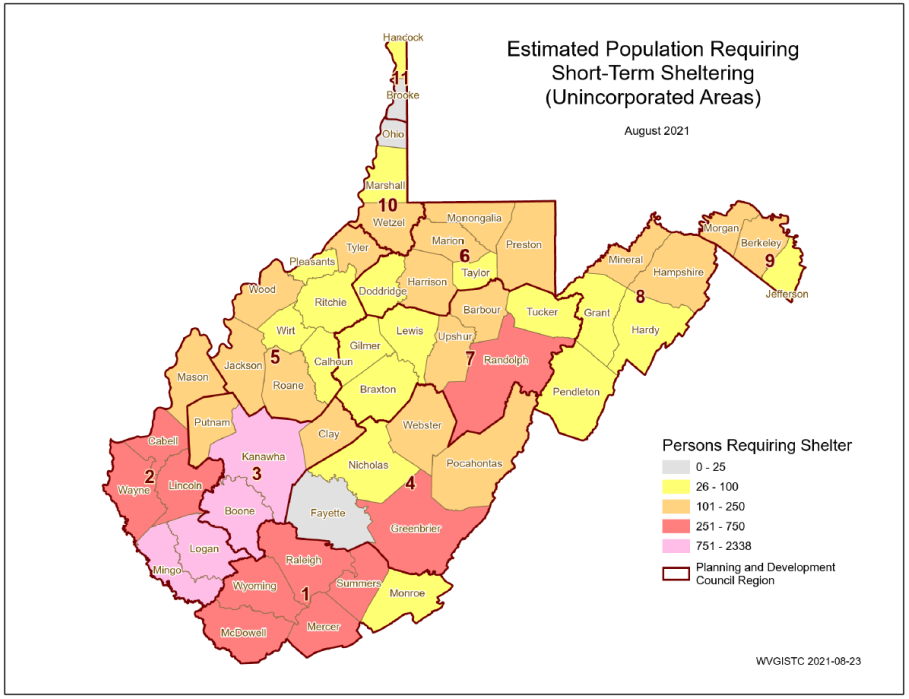
<< WV Quick Guide resource >>
https://emd.wv.gov/MitigationRecovery/Documents/Floodplain%20Management%20in%20WV%20Quick%20Guide.pdf

Short-Term Shelter Needs

Incorporated Areas



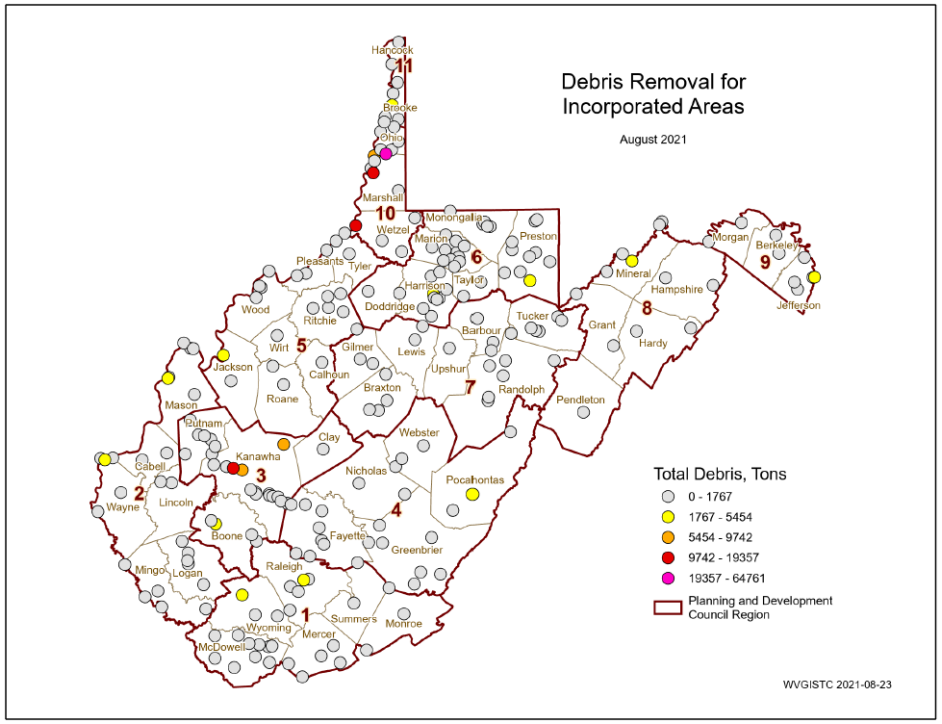
Unincorporated Areas



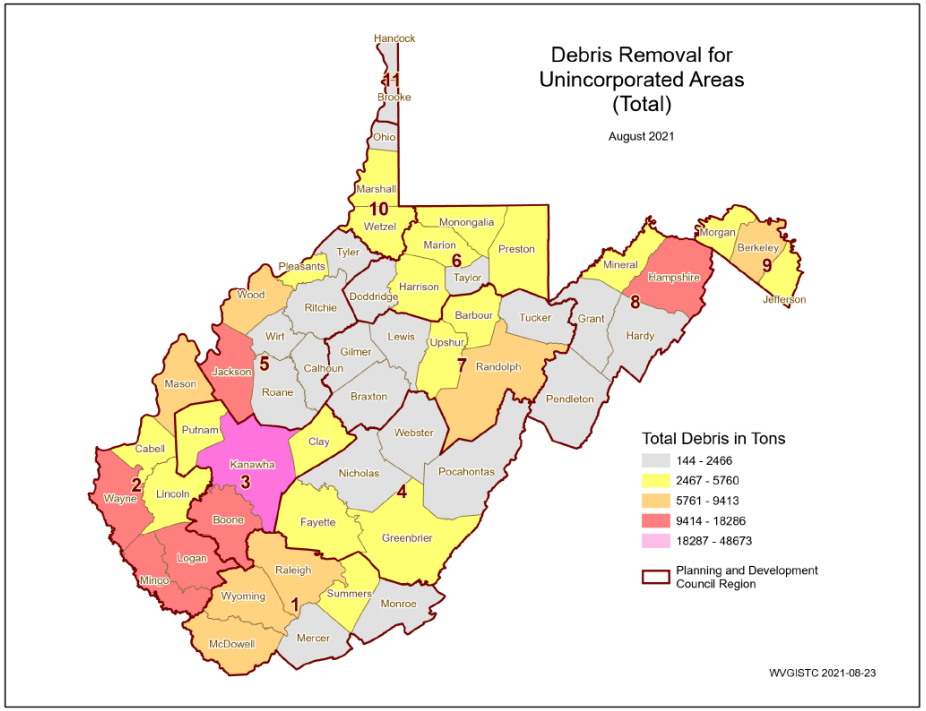
Generated using FEMA's Hazus flood loss guidelines for a 1%-annual-chance (100-yr) flood event

Debris Removal

Incorporated Areas



Unincorporated Areas



Generated using FEMA's Hazus flood loss software program for a 1%-annual-chance (100-yr) flood event

Road Inundation Models

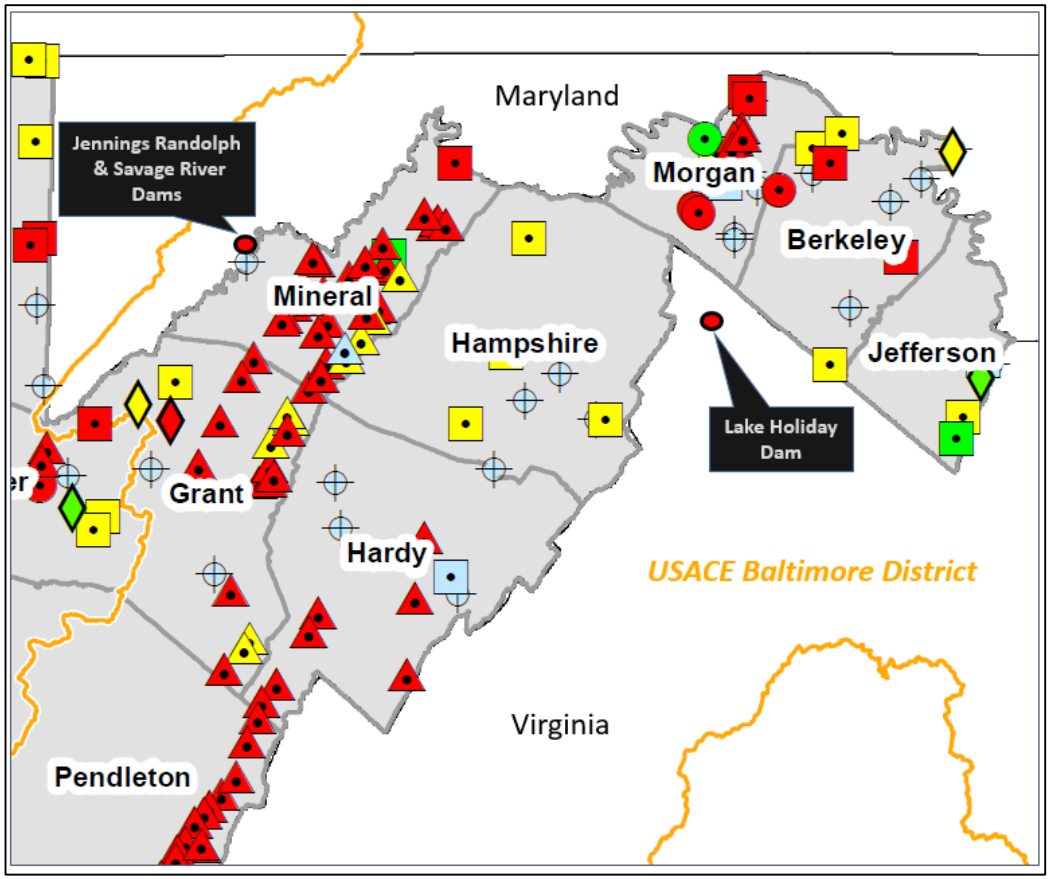
Community Name	County	Roads in Flood Plain (miles)	Roads Flooded (miles)	Roads Below 1ft (Ratio)	Roads 1 to 3ft (Ratio)	Roads Above 3ft (Ratio)
Berkeley County*	BERKELEY	25.7	17.0	21%	22%	57%
Martinsburg	BERKELEY	0.8	0.5	60%	20%	20%
	BERKELEY	**26.5**	**17.5**	**22%**	**22%**	**55%**
Bath	MORGAN	1.7	1.5	7%	47%	47%
Morgan County*	MORGAN	35.7	22.0	13%	17%	70%
Paw Paw	MORGAN	0.7	0.1	0%	0%	100%
	MORGAN	**38.1**	**23.6**	**13%**	**19%**	**69%**

1%-annual-chance (100-yr) flood event

US 522 *Warm Spring Run*

I-81 *Middle Creek*

High Hazard Potential Dams



Legend

USACE Districts

Owner Type:

- Federal
- State
- Local Government
- Public Utility
- Private
- Not Listed

Hazard Level:

- High
- Significant
- Low
- Undetermined

County	Total Count	High Hazard	Significant Hazard	Low Hazard	Undetermined Hazard
BERKELEY COUNTY	11	3	3	0	5
JEFFERSON COUNTY	6	0	1	2	3
MORGAN COUNTY	24	12	3	1	8

Source: National Inventory of Dams 2020 Database

Community-Level Risk Assessment Tables: https://data.wvgis.wvu.edu/pub/RA/State/CL/

Downstream Communities

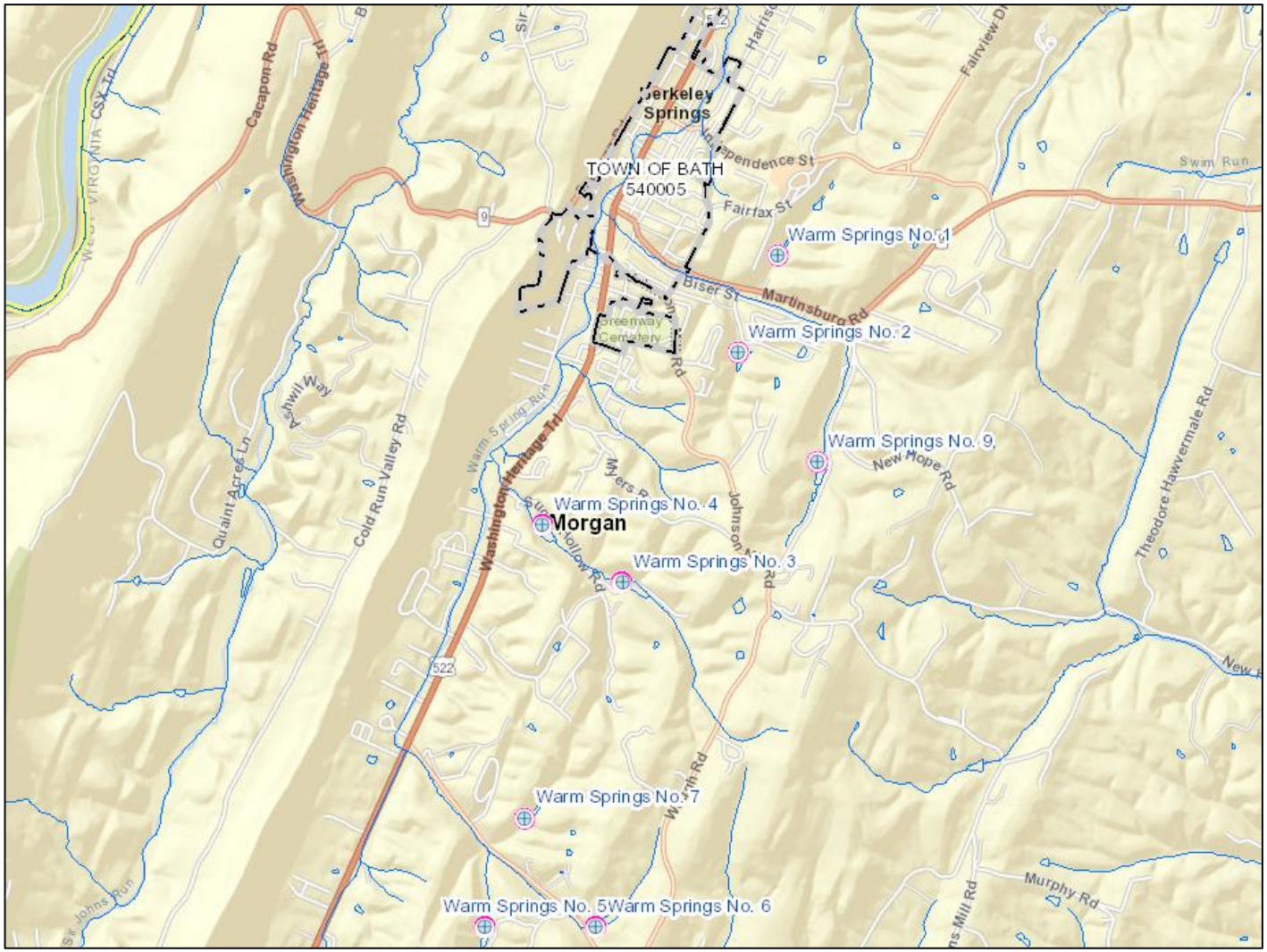
DAM NAME	DAM HEIGHT (Feet)	MAX. STORAGE (Acre-Feet)	HAZARD CLASS	EAP	LINK	DAM JURISDICTION	IN-BETWEEN JURISDICTIONS	FARTHEST[1] IMPACTED JURISDICTION
JENNINGS RANDOLPH DAM	296	130,900	High	Y	FT	**Mineral**	**Mineral,** Piedmont, Keyser, Carpendale, Ridgeley, **Hampshire**, **Morgan**, Paw Paw, **Berkley**, **Jefferson**, Shepherdstown	Harpers Ferry
SAVAGE RIVER DAM	184	31,800	High	Y	FT	**Garrett**	Mineral, Piedmont, Keyser, (?)	(?)
LAKE HOLIDAY DAM	129	1,260	High	Y	FT	**Frederick**	(?)	(?)
SLEEPY CREEK DAM	38	4,890	High	Y	FT	**Berkeley**	**Morgan**	(?)
GRASSHOPPER HOLLOW TAILINGS DAM	129	1,260	High	Y	FT	**Morgan**	Berkeley Springs	(?)

Community Engagement and Verification:

Refer to the WV Flood Tool map and tables to evaluate high-hazard potential dams in which failure is expected to result in loss of life. Review the **Emergency Action Plans (EAP)** and **dam failure inundation maps** of all **high hazard dams** and identify the farthest downstream community impacted.

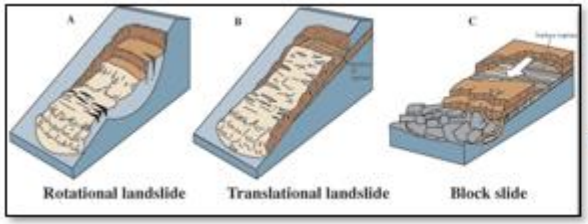
Warm Spring Run Dams (Morgan)

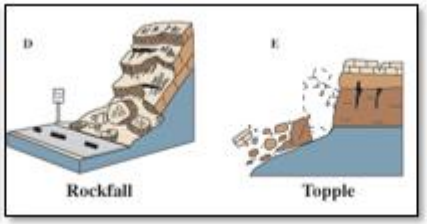
Eight high hazard flood-control dams upstream of Berkeley Springs

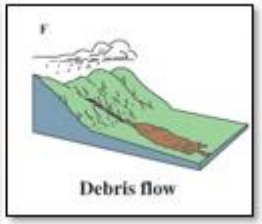


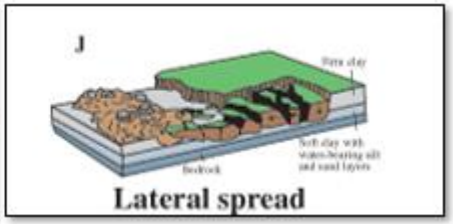
Map Link: https://www.mapwv.gov/flood/map/?wkid=102100&x=-8708803&y=4809463&l=7&v=2

Landslide Susceptibility



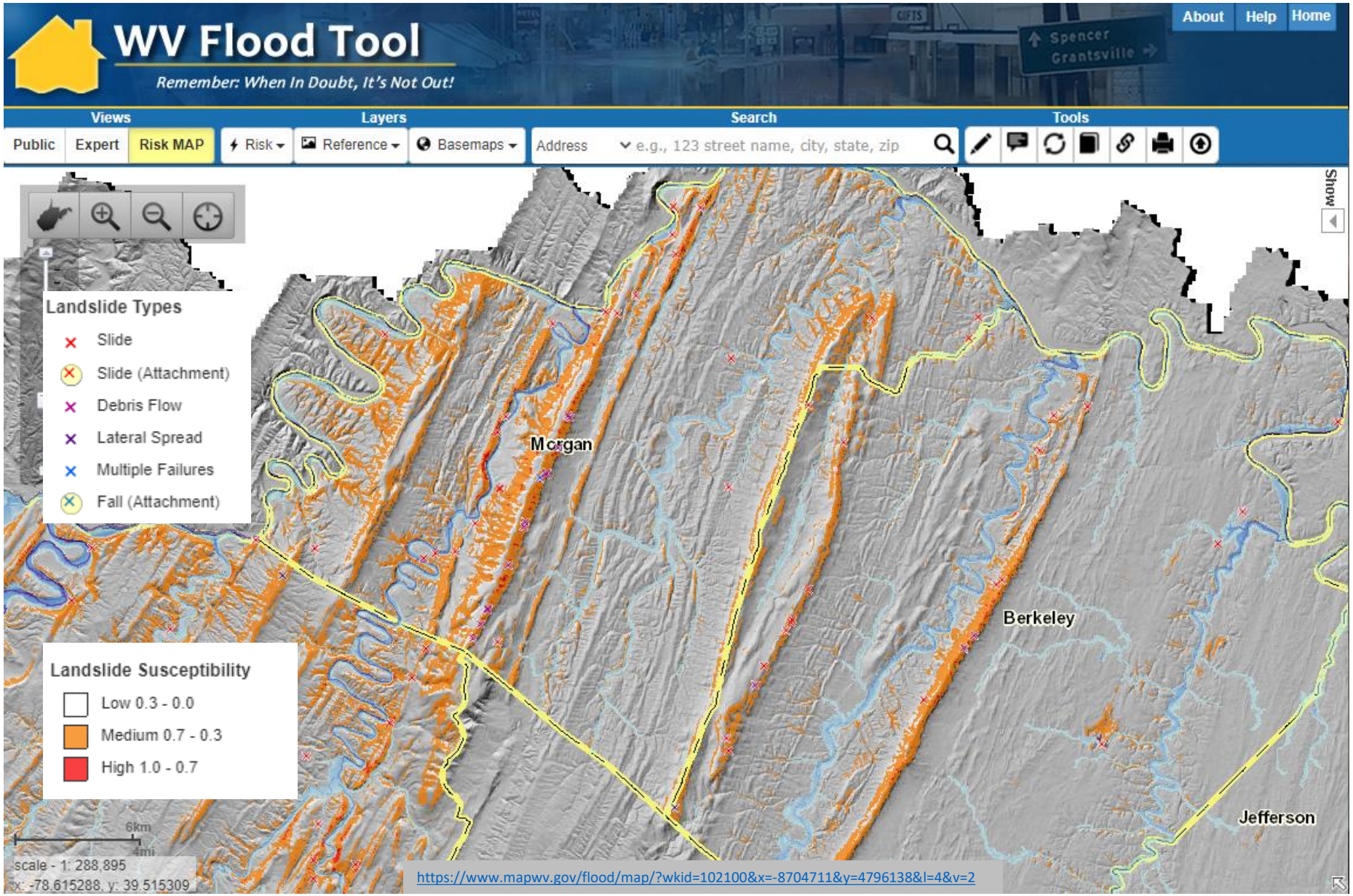






COMMUNITY IDENTIFICATION		LANDSLIDE SUSCEPTIBILITY									TOTALS Med-High	
		High Susceptibility			Medium Susceptibility			Low Susceptibility			Bldg. Count	Bldg. Value
Community Name	County	Total - H Count	Total-H Value	Total-H Percent	Total - M Count	Total-M Value	Total-M Percent	Total - L Count	Total-L Value	Total-L Percent	Total Count	Total Value
Berkeley County*	BERKELEY	6	$1,277K	0.01%	490	$53,165K	1.0%	48086	$6,630,364K	99%	496	$54,442K
Hedgesville	BERKELEY	0	$0K	0.00%	2	$114K	1.1%	177	$15,352K	99%	2	$114K
Martinsburg	BERKELEY	1	$111K	0.01%	17	$2,694K	0.2%	9273	$1,073,817K	100%	18	$2,805K
	BERKELEY	**7**	**$1,388K**	**0.01%**	**509**	**$55,973K**	**0.9%**	**57536**	**$7,719,533K**	**99%**	**516**	**$57,361K**
Bath	MORGAN	0	$0K	0.00%	19	$1,733K	3.5%	523	$65,979K	96%	19	$1,733K
Morgan County*	MORGAN	9	$503K	0.07%	328	$29,704K	2.6%	12073	$1,136,331K	97%	337	$30,207K
Paw Paw	MORGAN	0	$0K	0.00%	0	$0K	0.0%	345	$16,166K	100%	0	$0K
	MORGAN	**9**	**$503K**	**0.07%**	**347**	**$31,437K**	**2.6%**	**12941**	**$1,218,475K**	**97%**	**356**	**$31,940K**

Landslide Risk

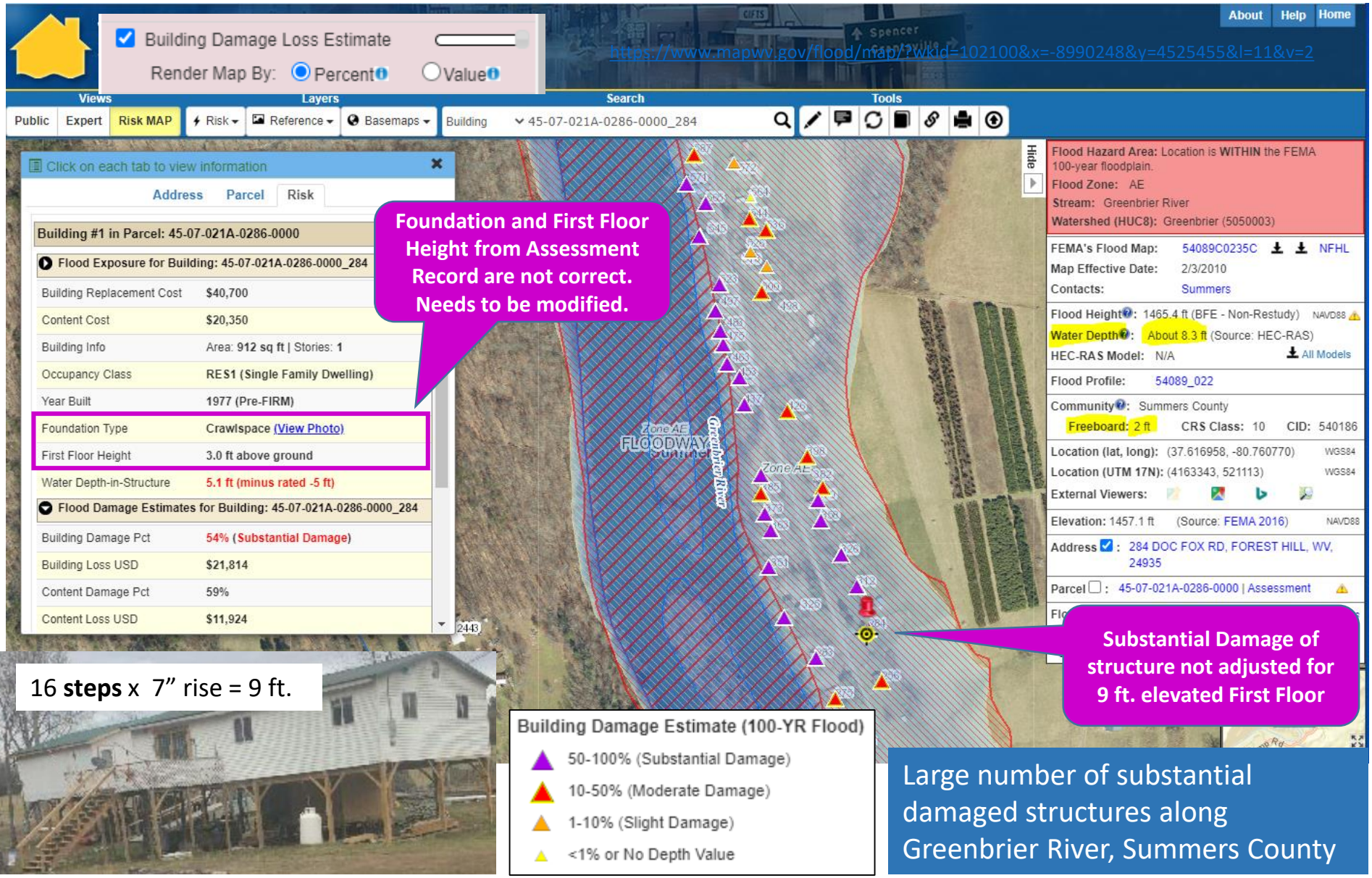


Risk Assessment Verification

Field Verification

Community Engagement

Building Substantial Damaged

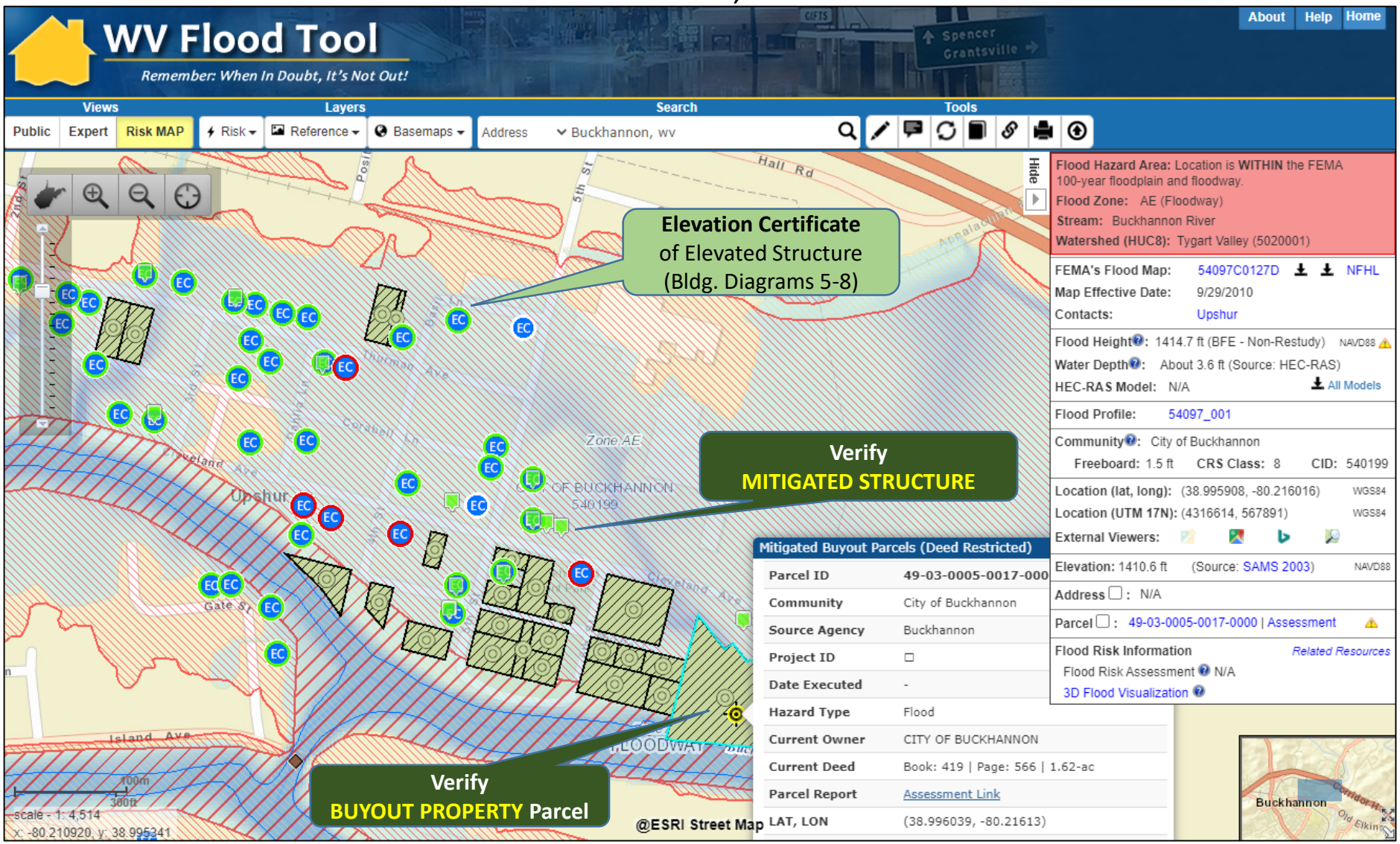


16 **steps** x 7” rise = 9 ft.

Large number of substantial damaged structures along Greenbrier River, Summers County

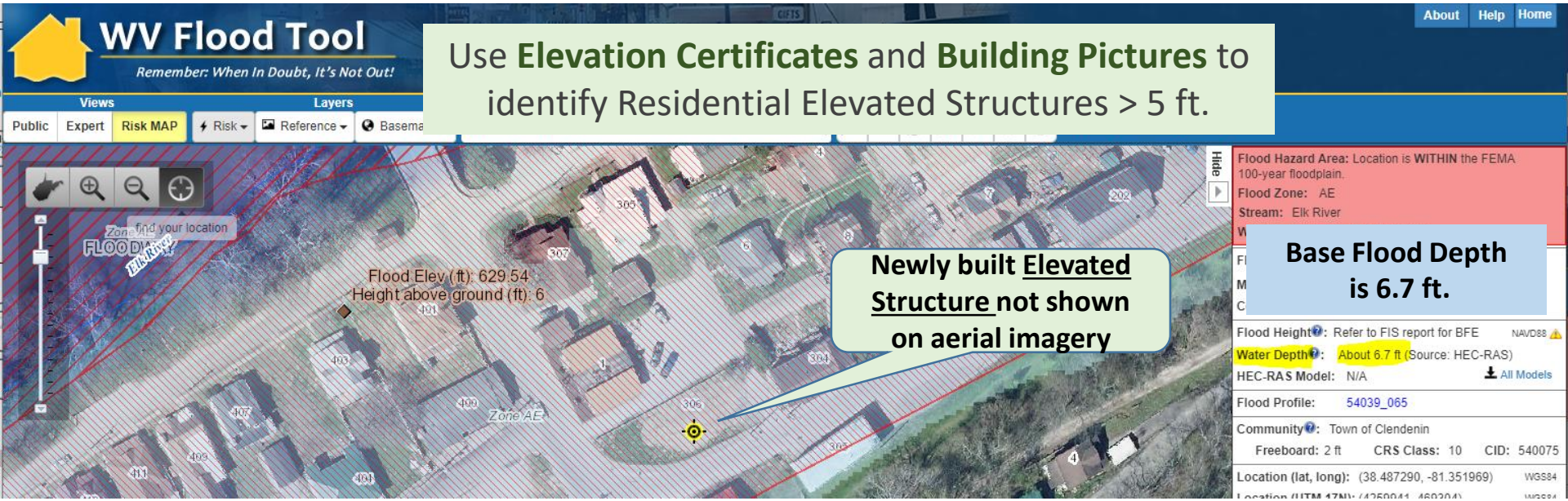
Mitigated Properties - Verification

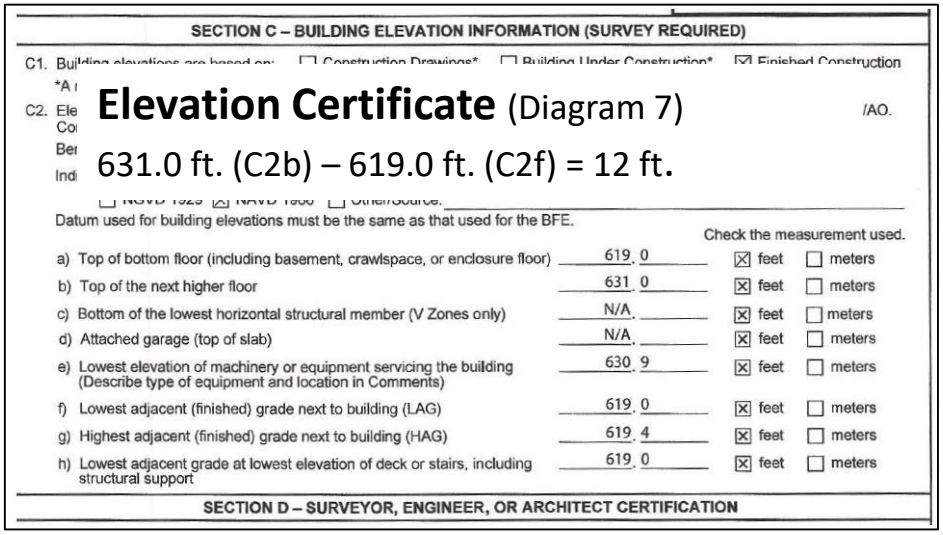
Buckhannon, WV



https://mapwv.gov/flood/map/?wkid=102100&x=-8929946&y=4721378&l=10&v=2

Mitigated Structure – First Floor Height





Elevation Certificate (Diagram 7)

631.0 ft. (C2b) – 619.0 ft. (C2f) = 12 ft.

SECTION C – BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

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

*A

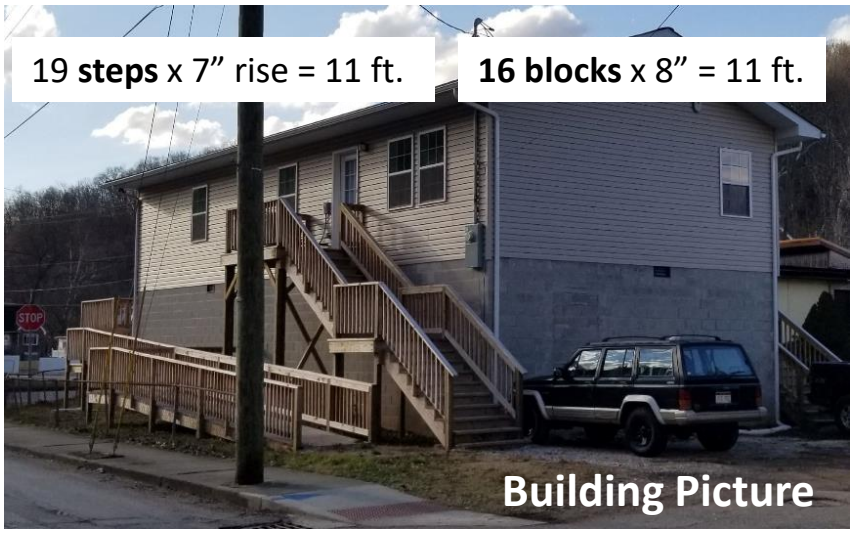
C2. Ele
Co
Ber
Ind
/AO.

☐ NGVD 1929 ☒ NAVD 1988 ☐ Other/Source:

Datum used for building elevations must be the same as that used for the BFE.

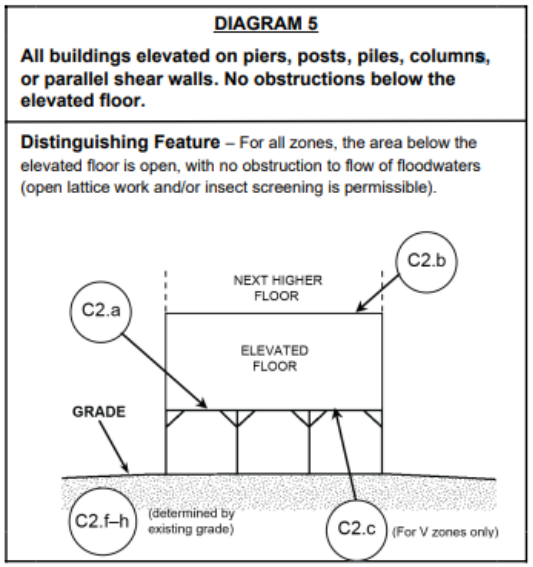
		Check the measurement used.	
a) Top of bottom floor (including basement, crawlspace, or enclosure floor)	619.0	☒ feet	☐ meters
b) Top of the next higher floor	631.0	☒ feet	☐ meters
c) Bottom of the lowest horizontal structural member (V Zones only)	N/A	☒ feet	☐ meters
d) Attached garage (top of slab)	N/A	☒ feet	☐ meters
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments)	630.9	☒ feet	☐ meters
f) Lowest adjacent (finished) grade next to building (LAG)	619.0	☒ feet	☐ meters
g) Highest adjacent (finished) grade next to building (HAG)	619.4	☒ feet	☐ meters
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support	619.0	☒ feet	☐ meters

SECTION D – SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION



https://www.mapwv.gov/flood/map/?wkid=102100&x=-9056061&y=4648497&l=12&v=1

(7) Mitigated Structure – EC Bldg. #5



Building Diagram 5: Elevated Building with no Enclosure

Mitigated Structure – EC Bldg. #6

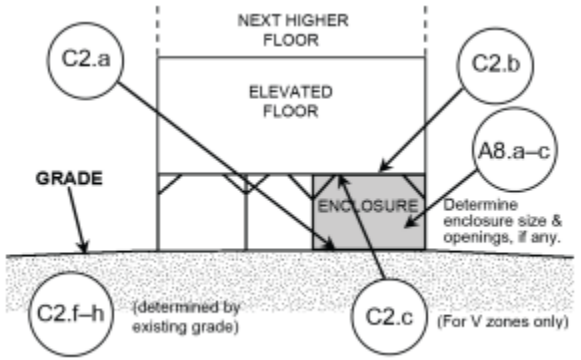
Building Diagram 6: Elevated Building with Enclosure (using piers, piles, posts)

Partial Enclosure

DIAGRAM 6

All buildings elevated on piers, posts, piles, columns, or parallel shear walls with full or partial enclosure below the elevated floor.

Distinguishing Feature – For all zones, the area below the elevated floor is enclosed, either partially or fully. In A Zones, the partially or fully enclosed area below the elevated floor is with or without openings** present in the walls of the enclosure. Indicate information about enclosure size and openings in Section A – Property Information.



Mitigated Structure – EC Bldg. #7

Building Diagram 7: Elevated Building on Solid Foundation Walls (Full-Story)

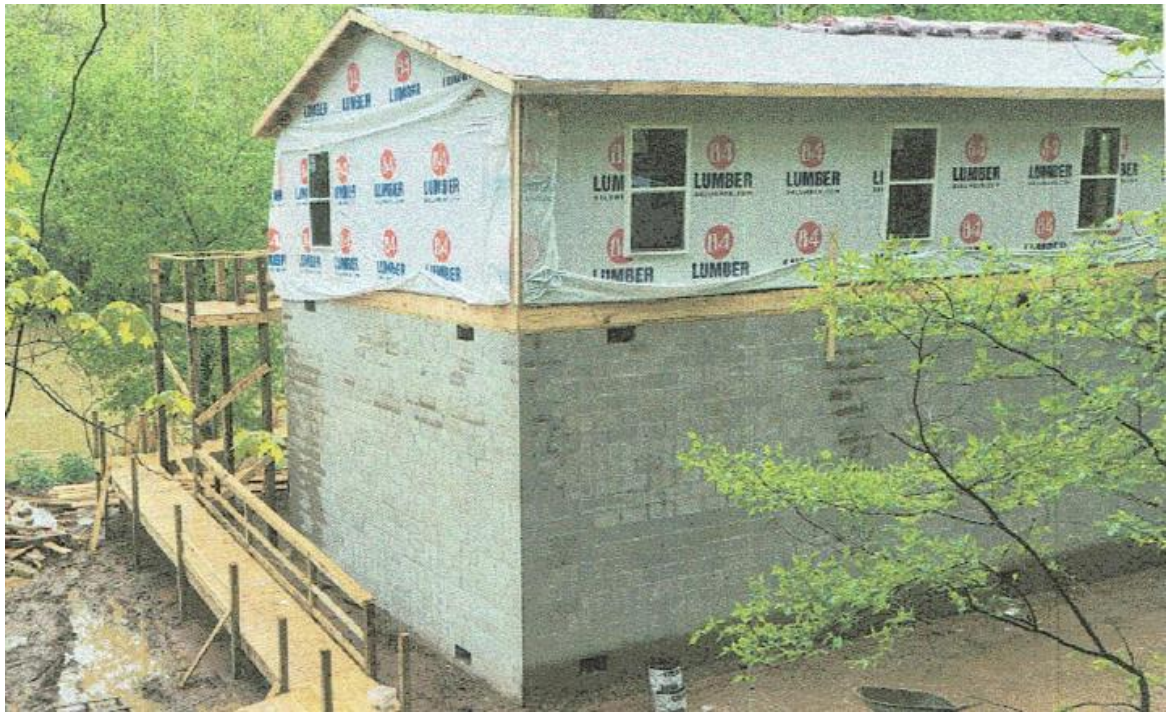
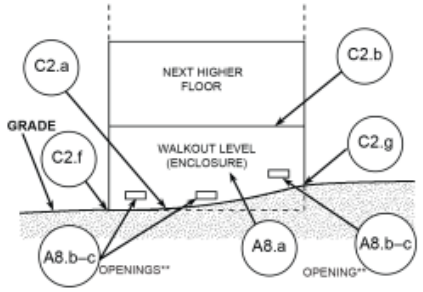


DIAGRAM 7

All buildings elevated on full-story foundation walls with a partially or fully enclosed area below the elevated floor. This includes walkout levels, where at least 1 side is at or above grade. The principal use of this building is located in the elevated floors of the building.

Distinguishing Feature – For all zones, the area below the elevated floor is enclosed, either partially or fully. In A Zones, the partially or fully enclosed area below the elevated floor is with or without openings** present in the walls of the enclosure. Indicate information about enclosure size and openings in Section A – Property Information.



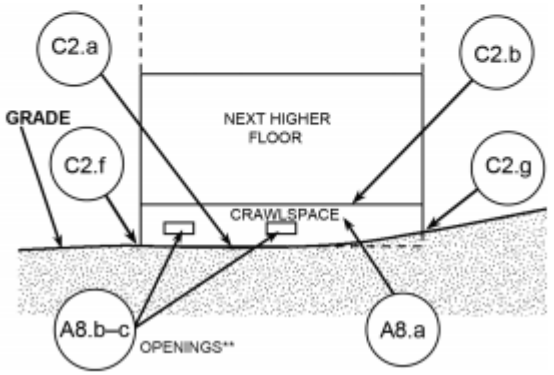
Mitigated Structure – EC Bldg. #8

Building Diagram 8: Elevated Building with Crawlspace (Enclosure)

DIAGRAM 8

All buildings elevated on a crawlspace with the floor of the crawlspace at or above grade on at least 1 side, with or without an attached garage.

Distinguishing Feature – For all zones, the area below the first floor is enclosed by solid or partial perimeter walls. In all A zones, the crawlspace is with or without openings** present in the walls of the crawlspace. Indicate information about crawlspace size and openings in Section A – Property Information.



Quick Verification Guide and Survey

7. Validate Building-Level Flood Risk Assessments

	Yes	No	Need Assistance
HAZARD IDENTIFICATION: Provide shared map links of any flood map errors or unmapped landslides.	○	○	○
ESSENTIAL FACILITIES: Confirm essential facilities in high and moderate risk floodplains. Table 2.	○	○	○
MISSING STRUCTURES: Submit map links of missing noteworthy structures in the high-risk floodplain, especially those of significant importance to the community. Table 3 lists all structures inventoried.	○	○	○
HIGH-VALUE STRUCTURES: Confirm high-value residential and non-residential buildings for correctness. Table 4.	○	○	○
HIGH-RISK STRUCTURES: Review structures at greatest flood risk: high damage dollar costs (> $10,000), substantial damaged estimates (> 50%), and Post-FIRM minus-rated structures (lowest floor 1 ft. or more below Base Flood Elevation). Tables 5 & 6.	○	○	○
MITIGATED PROPERTIES: Provide Elevation Certificates (Building Diagrams 5-8) and Building Pictures of residential (elevated > 5 ft.) and non-residential structures, especially those buildings identified at high risk. Verify all deed-restricted buyout properties are shown on WV Flood Tool. Tables 7 & 8.	○	○	○

Provide data edits (e.g., Building ID, Shared Map Link.) in box below. Send edited tables, screen shots, elevation certificates, building pictures, and other supporting documents by email.

Complete Online Survey Form when Finished