

# WV Flood Tool Reference Layers

## Reference Layers

Elevation

Aerial Imagery

E-911 Addresses

Parcels / Assessment Records

Building Footprints

10/11/2020 Update

# Flood Tool Reference Layers

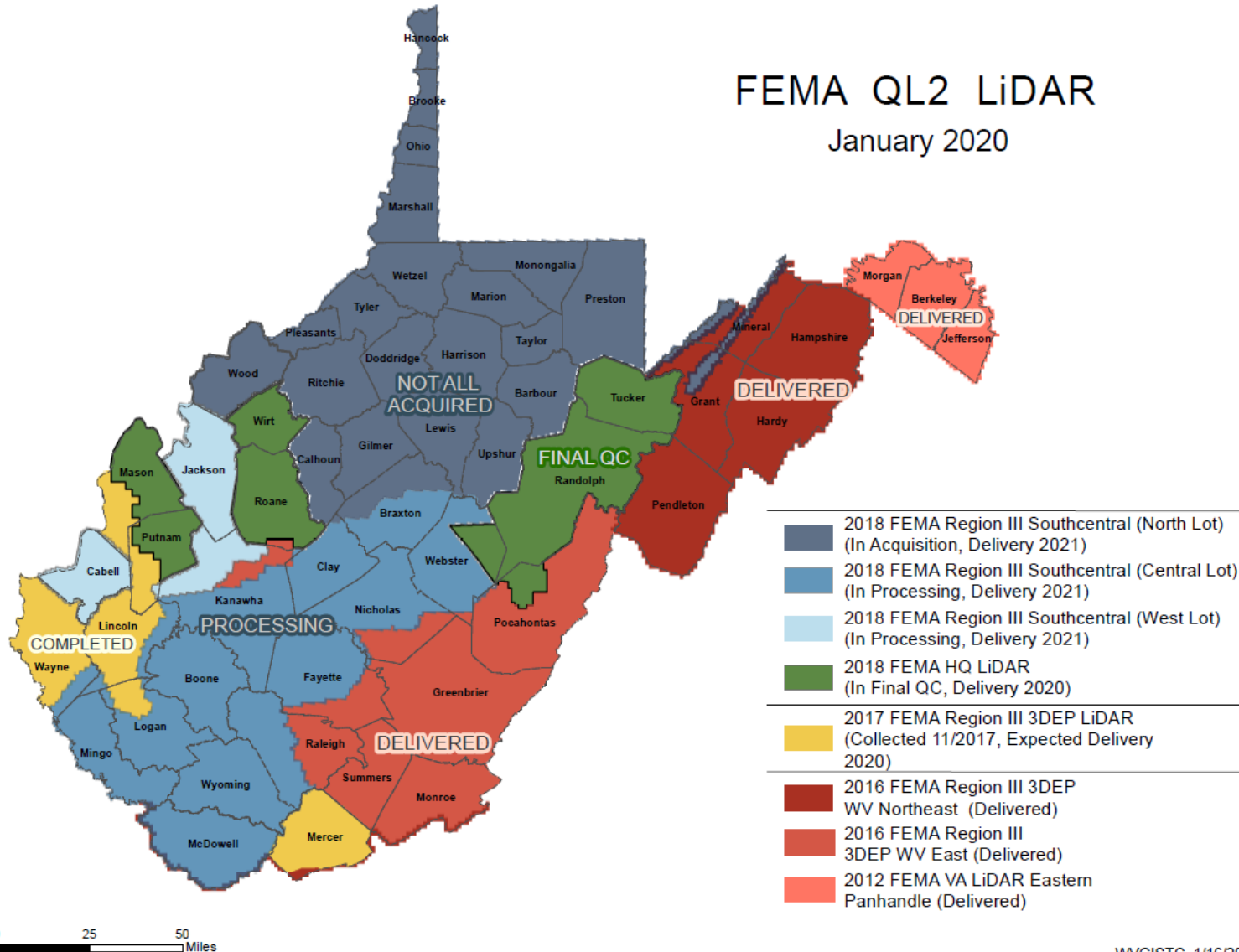
**Elevation**

# Elevation (High Resolution)

- **New FEMA Elevation LiDAR: Grant, Hampshire, Hardy, Mineral, Pendleton, Mercer; partial coverage Lincoln, Mason, Putnam, Wayne Counties**
  - 2017-18 FEMA-Purchased LiDAR
  - 1-foot contours; 1-meter resolution Digital Elevation Model (DEM)
- **Berkeley and Morgan Counties**
  - Created 2-foot contours from 2012 FEMA-Purchased LiDAR DEM and published to WV Flood Tool
- **Logan County**
  - 2018 County-Purchased LiDAR
  - Published 1-foot resolution DEM to WV Flood Tool
- **Elevation Products on WV Flood tool**
  - Statewide 1 to 3-meter Digital Elevation Model
  - Statewide Hillshade (grayscale 3D representation of the surface)
  - 1-ft and 2-ft Contours cached to 1:282 Map Scale (computer caching ongoing)
- **Updated Source Elevation Metadata**  
[https://www.mapwv.gov/floodtest/docs/WV\\_FloodTool\\_ElevationSource\\_Metadata.pdf](https://www.mapwv.gov/floodtest/docs/WV_FloodTool_ElevationSource_Metadata.pdf)

# FEMA Purchased LiDAR Coverage

## FEMA QL2 LiDAR January 2020



FEMA has purchased **\$10 million** in QL2 LiDAR and entire State should be processed and delivered by 2022

**Quality 2 (QL2) LiDAR** support 1-foot contours

# Ground Elevation: 1-ft. Contours

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

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

Make **Contour Lines** visible under **REFERENCE LAYERS**

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

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

**Tools:** [Icons for various map tools]

**Layers Panel:**

- Address Label
- Parcels
- Building Footprint
- Community Boundaries
- SAMS E-911 Roads
- DOT Highway Routes\*
- Streams / Place Names
- Contour Lines** info
- Public Lands
- Watersheds
- Wetlands\*
- Soil\*

\* indicates that data is external web service

**1-FOOT CONTOUR ELEVATION VALUE OF 600 FEET MATCHES 1-METER GRID SURFACE ELEVATION OF 600 FEET DISPLAYED IN QUERY RESULTS PANEL**

**600 ft.**

**Elevation: 600 ft. Source: FEMA 2018**

**1-ft Contours Display at two Highest Zoom Levels (1:564 and 1:282 Map Scales)**

**1-foot contours published for 10 counties**

**Flood Hazard Area:** Location is WITHIN the FEMA 100-year floodplain.  
**Flood Zone:** AE  
**Stream:** Twelvepole Creek  
**Watershed (HUC8):** Twelvepole (5090102)

**FEMA's Flood Map:** 54099C0180C | NFHL  
**Map Effective Date:** 1/2/2013  
**Contacts:** Wayne

**Flood Height:** Refer to FIS report for BFE  
**Water Depth:** N/A  
**HEC-RAS Model:** N/A

**Flood Profile:** 54099\_025

**Community:** Town of Wayne  
**CID:** 540231 | **CRS Class:** 10

**Location (lat, long):** (38.226674, -82.444695)  
**Location (UTM 17N):** (4231951, 373548)

**External Viewers:** [Icons for social media]

**Elevation:** About 600 ft (Source: FEMA 2018)

**Address:** [Input field] multiple addresses  
**Parcel:** [Input field]

**Flood Risk:** [Input field]  
**Flood Risk Assessment:** N/A  
**3D Flood Visualization:** No Depth Grid Available

# Ground Elevation: 1-ft. Contours

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

High-resolution aerial imagery and elevation contours cached at 15 map level scales from 1: 4,622,324 to 1:282

The screenshot displays the FEMA Flood Map web application interface. The map shows a residential area with a red hatched flood hazard area and yellow 1-foot elevation contours. A specific contour is circled in red and labeled with an elevation of 2390 feet. The query results panel on the right provides detailed information about the location, including the flood hazard area, flood zone, stream, watershed, and elevation data. A black box highlights the elevation value of 2390.0 feet from the query results.

**1:282 Map Scale**

**Contour Elevation: 2390 ft.**

**1-FT CONTOUR ELEVATION VALUE OF 2390 FEET MATCHES 1-METER GRID SURFACE ELEVATION OF 2390 FEET DISPLAYED IN QUERY RESULTS PANEL**

**Elevation: 2390.0 ft. Source: FEMA 2016**

**Elevation: 2390.0 ft (Source: FEMA 2016)**

**1-ft Contours Display at two Highest Zoom Levels (1:564 and 1:282 Map Scales)**

**Query Results Panel:**

- Flood Hazard Area: Location is WITHIN the FEMA 100-year floodplain and floodway.
- Flood Zone: AE (Floodway)
- Stream: Sewell Creek
- Watershed (HUC8): Gauley (5050005)
- FEMA's Flood Map: 54025C0357E
- Map Effective Date: 10/16/2012
- Contacts: Greenbrier
- Flood Height: Refer to FIS report for BFE
- Water Depth: About 2.9 ft (Source: HEC-RAS)
- HEC-RAS Model: N/A
- Flood Profile: 54025\_021
- Community: Town of Rainelle
- CID: 5402
- Location (lat, long):
- Location (UTM 17N):
- External Viewers:
- Elevation: 2390.0 ft (Source: FEMA 2016)
- Address: multiple addresses
- Parcel: 13-13-0005-0231-0000 | Assessment
- Flood Risk Information: Related Resources
- Flood Risk Assessment
- 3D Flood Visualization

# Elevation: 2-ft. Contour Creation

2-foot contours created by WVU for Berkeley and Morgan Counties

The screenshot displays the WV Flood Tool interface. The map shows a residential area with yellow 2-foot elevation contours. A specific contour is labeled '390'. The 'Layers' panel on the left has 'Contour Lines' checked. The 'Query Results' panel on the right shows the following information:

<b>Flood Hazard Area:</b> Location is WITHIN an updated detailed floodplain boundary but NOT a FEMA 100-year effective floodplain. <a href="#">More Info</a>	
<b>Flood Zone:</b> Updated AE Floodplain Boundary	
<b>Stream:</b> N/A	
<b>Watershed (HUC8):</b> Conococheague-Opequon (2070004)	
<b>FEMA's Flood Map:</b>	N/A
<b>Map Effective Date:</b>	7/7/2009
<b>Contacts:</b>	Berkeley
<b>Community:</b> City of Martinsburg	
<b>CID:</b> 540006	<b>CRS Class:</b> 8
<b>Location (lat, long):</b>	(39.452208, -77.958170)
<b>Location (UTM 17N):</b>	(4371377, 761737)
<b>External Viewers:</b>	
<b>Elevation:</b>	About 390 ft (Source: FEMA 2012)
<b>Address:</b>	301 CHESTNUT ST, Martinsburg, WV, 25401
<b>Parcel:</b>	02-06-0019-0111-0000   Assessment
<b>Flood Risk Information</b> <a href="#">Related Resources</a>	
<b>Flood Risk Assessment:</b> N/A	
<a href="#">3D Flood Visualization</a>	

Scale: 1:564  
x: -77.958288, y: 39.451884  
@WVGISTC Leaf-Off Mixed-Resolution Imagery

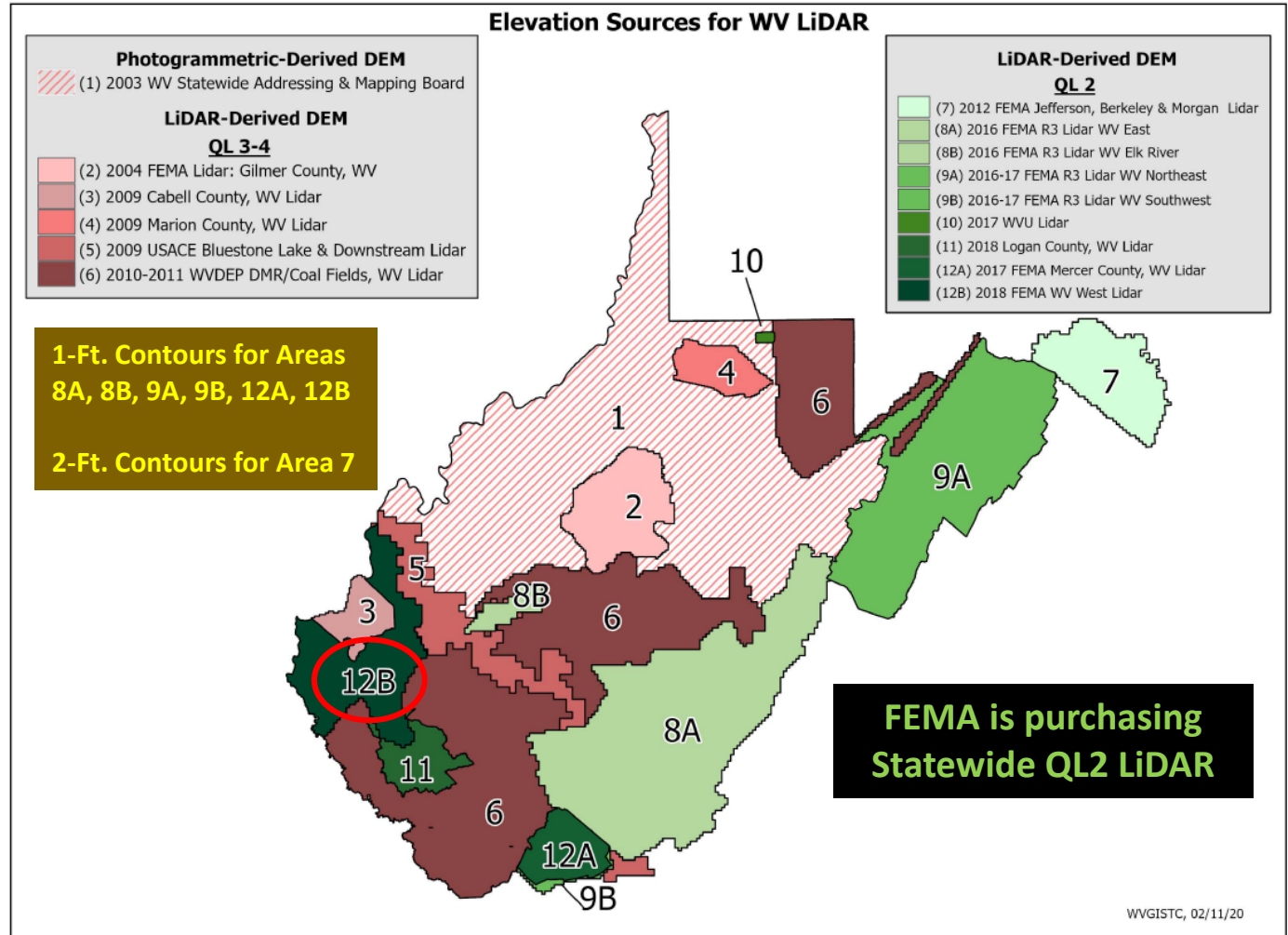
2-ft Contours Display at Highest Zoom Levels (1:564 and 1:282 Map Scales)

2-FOOT CONTOUR ELEVATION VALUE OF 390 FEET MATCHES 1-METER GRID SURFACE ELEVATION OF 390 FEET DISPLAYED IN QUERY RESULTS PANEL

# Elevation Data Sources

## Source Graphic

#	12B
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 System	UTM Zone 17

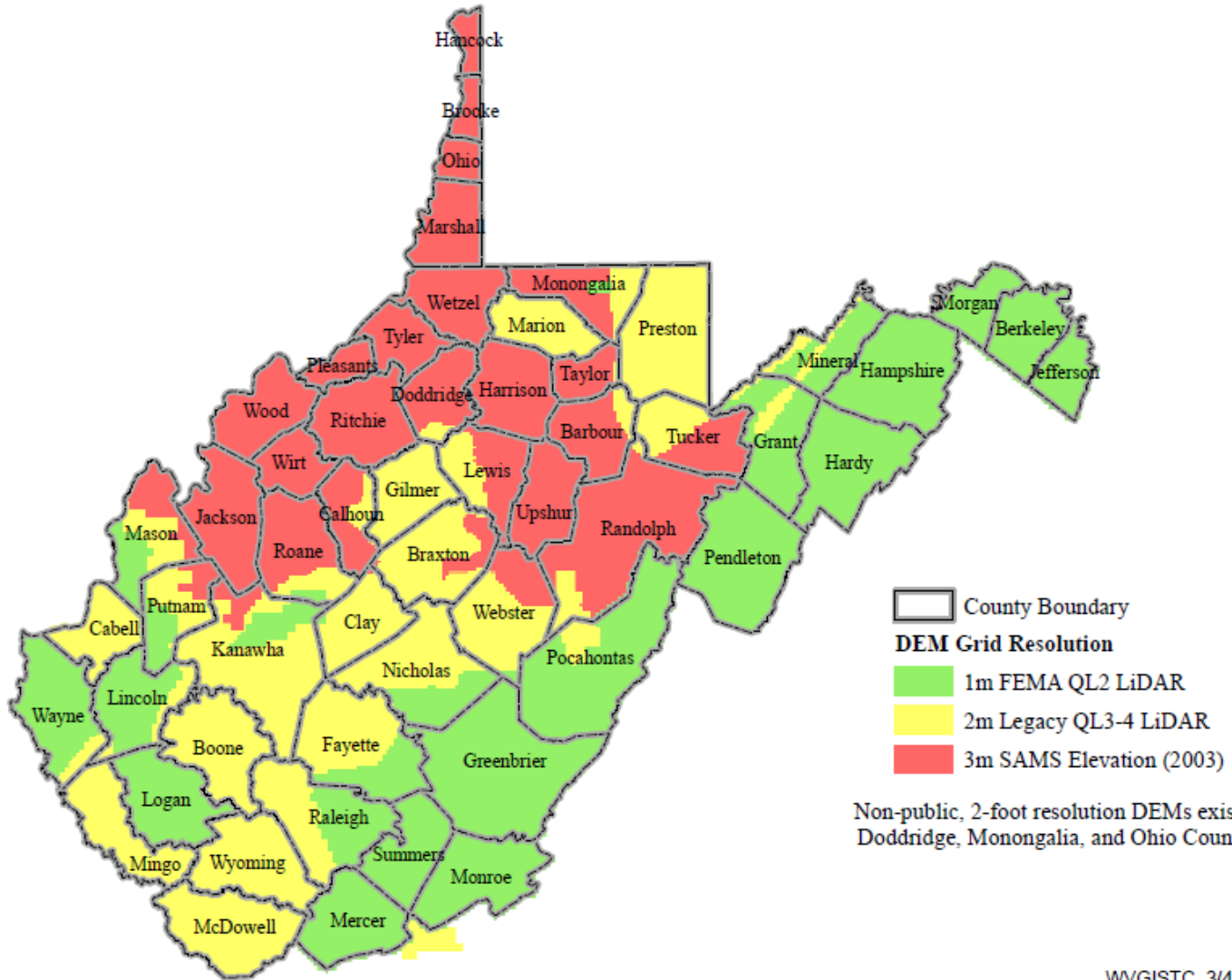


Elevation Metadata



# DEM Grid Resolution

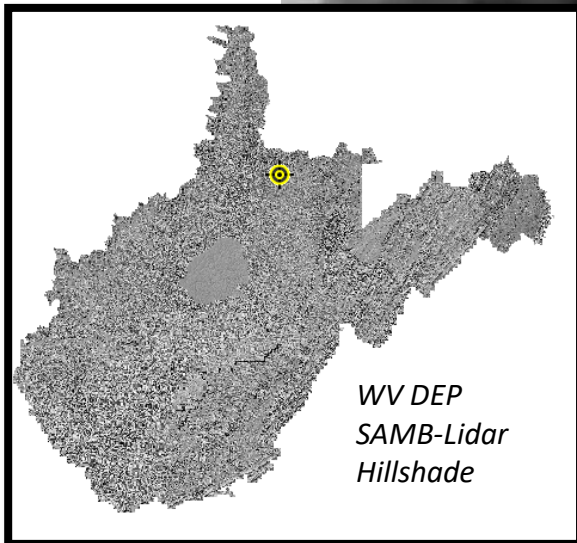
DEM Grid Resolution



# Statewide Elevation Layers

*Elevation Grids, Hillshade Grids, Contours, used for Flood Depths, Imagery Orthorectification*

Layer	Source	Coverage
SAMB	2003 SAMB, 3-meter, 10-foot contours	Statewide
Lidar	Lidar, 2-foot or 1-foot contours	Select Areas



**SAMB ELEVATION**

**LIDAR ELEVATION**

# Statewide Hillshade Basemap Product

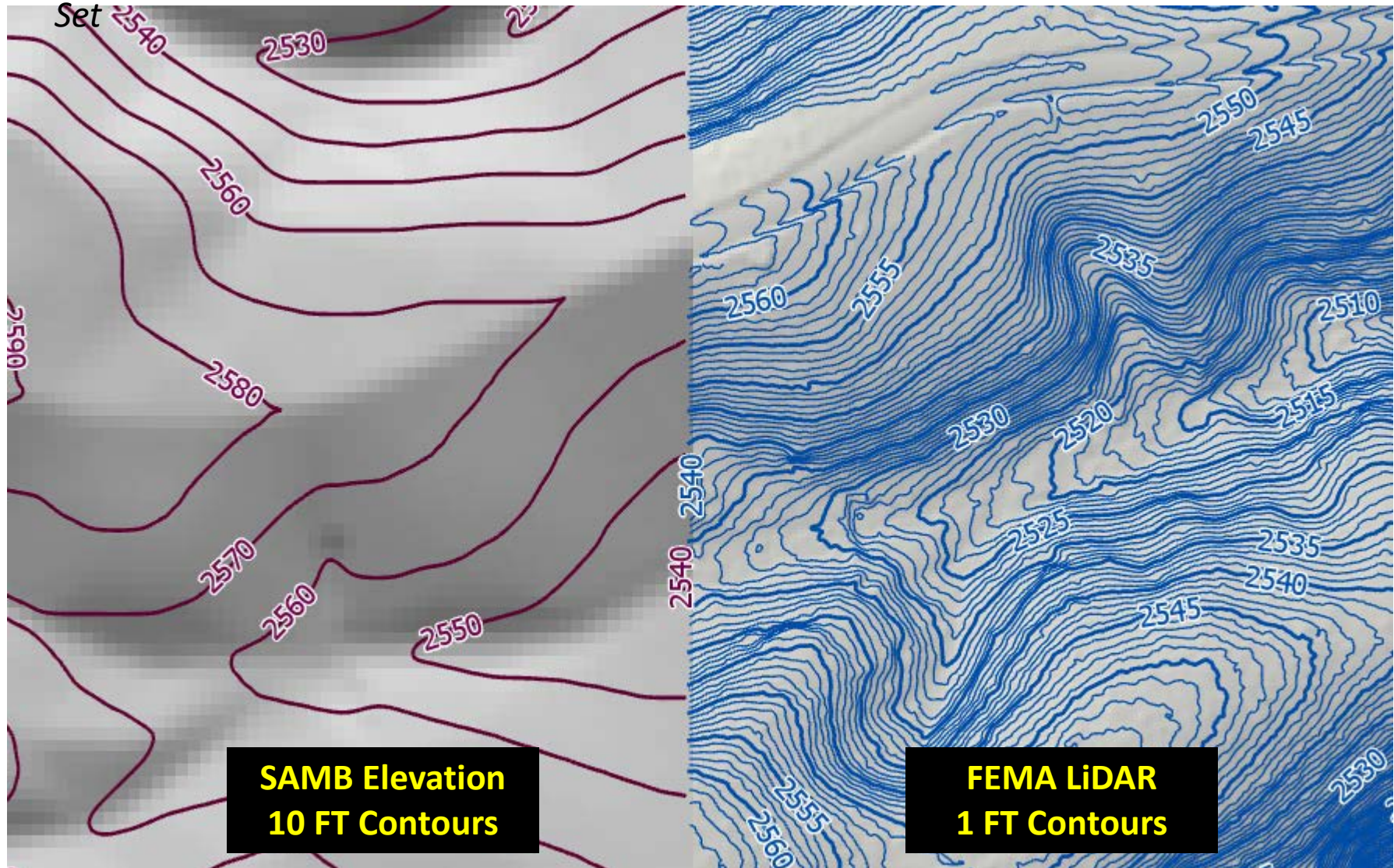
*A hillshade is a grayscale 3D representation of the surface*

The screenshot displays the WV Flood Tool interface. At the top left is a yellow house icon and the text "WV Flood Tool" with the tagline "Remember: When In Doubt, It's Not Out!". On the top right are links for "About", "Help", and "Home". Below this is a navigation bar with "Views" (Public, Expert, Risk MAP, Flood, Reference) and "Layers" (Basemaps, highlighted with a black circle). A search bar is also present. The main map area shows a grayscale hillshade basemap with a red flood zone labeled "Zone A5". A scale bar at the bottom left indicates 200m. On the right side, a menu of map styles is visible, 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\*.

**Hillshade Basemap**

# High Resolution Contours

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



# Flood Tool Reference Layers

**Aerial Imagery**

# Mount Hope – 2010 Imagery

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

Views: Public | Expert | Risk MAP | Layers: Flood | Reference | Basemaps | Search: Address: mount hope, wv

**Flood Hazard Area:** Location is **WITHIN** the FEMA 100-year floodplain.  
**Flood Zone:** A  
**Stream:** Dunloup Creek  
**Watershed (HUC8):** Lower New (5050004)

**FEMA Issued Flood Map:** 54019C0320D | NFHL  
**Map Effective Date:** 9/3/2010  
**Contacts:** Fayette

**Community:** City of Mount Hope  
CID: 540280 | CRS Class: 10

**Location (long, lat):** (-81.161149, 37.896065)  
**Location (UTM 17N):** (485832, 4194295)

**External Viewers:** [Icons for various sharing options]

**Elevation:** About 1692 ft (Source: FEMA 2016)

**Address:** 170 MOUND ST, MOUNT HOPE, WV, 25880

**Parcel ID:** 10-08-0006-0160-0000 | Disclaimer

**Flood Risk Information** | Related Resources  
Flood Risk Assessment: N/A  
3D Flood Visualization: No Depth Grid Available

scale - 1: 1,128  
x: -81.160532, y: 37.896791  
@WVGISTC. WV Sheriffs Association Imagery

# Mount Hope – 2015 Imagery

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

Views: Public | Expert | Risk MAP | Flood | Reference | Basemaps | Search: Address | mount hope, wv | Tools: [Icons]

**Flood Hazard Area:** Location is WITHIN the FEMA 100-year floodplain.  
**Flood Zone:** A  
**Stream:** Dunloup Creek  
**Watershed (HUC8):** Lower New (5050004)

**FEMA Issued Flood Map:** 54019C0320D | NFHL  
**Map Effective Date:** 9/3/2010  
**Contacts:** Fayette

**Community:** City of Mount Hope  
**CID:** 540280 | **CRS Class:** 10

**Location (long, lat):** (-81.161149, 37.896065)  
**Location (UTM 17N):** (485832, 4194295)

**External Viewers:** [Icons]

**Elevation:** About 1692 ft (Source: FEMA 2016)

**Address:** 170 MOUND ST, MOUNT HOPE, WV, 25880

**Parcel ID:** 10-08-0006-0160-0000 | Disclaimer

**Flood Risk Information** | Related Resources  
Flood Risk Assessment: N/A  
3D Flood Visualization: No Depth Grid Available

scale - 1:1,128  
x: -81.159809, y: 37.895998  
@WVGISTC Leaf-Off Mixed-Resolution Imagery

The 2015 aerial imagery shows structures have been removed but E-911 addresses are still indicated

# Mount Hope – 2020 Imagery

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

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

Search: Address 170 Mound Street, Mount Hope, WV

Tools: [Icons for various map functions]

**Mitigated Buyout Parcels (Deed Restricted)**

Parcel ID	10-08-0006-0160-0000
Community	City of Mount Hope
Source Agency	Unverified
Project ID	WVGISTC Unverified
Date Executed	-
Hazard Type	Flood
Current Owner	CITY OF MT HOPE
Current Deed	Book: 715   Page: 66   0.1125-ac
Parcel Report	<a href="#">Assessment Link</a>
LAT, LON	(37.896081, -81.161149)
Comments	-

[Zoom to](#)

**Flood Hazard Area:** Location is WITHIN the FEMA 100-year floodplain.  
**Flood Zone:** A  
**Stream:** Dunloup Creek  
**Watershed (HUC8):** Lower New (5050004)

FEMA's Flood Map: [54019C0320D](#) | [NFHL](#)  
Map Effective Date: 9/3/2010  
Contacts: [Fayette](#)

Flood Height: None  
Water Depth: N/A  
HEC-RAS Model: [dunloupcrk](#) | [All Models](#)

Flood Profile: N/A

Community: City of Mount Hope  
CID: 540280 | CRS Class: 10

Location (lat, long): (37.896081, -81.161148) | WGS84  
Location (UTM 17N): (4194297, 485832) | WGS84

External Viewers: [Icons for social media]

Elevation: 1691.9 ft (Source: FEMA 2016) | NAVD88

Address:  N/A

Parcel:  [10-08-0006-0160-0000](#) | [Assessment](#)

**Flood Risk Information** | [Related Resources](#)  
Flood Risk Assessment: N/A  
3D Flood Visualization: No Depth Grid Available

Scale: 1:1,128  
X: -81.160249, Y: 37.895590

The 2020 aerial imagery showing buyout properties (green polygons) and updated E-911 addresses



# WV Statewide Aerial Imagery Contract

- **Statewide Contract:** A statewide contract was awarded to Blue Mountain / Thrasher Group in February 2019 for the acquisition of updated digital orthoimagery in West Virginia for the four-year time period 2019-2022. Spring flying season is from late February to Mid-April during leaf-out and no snow conditions.
- **Non-Exclusive Contract:** County offices still have the option to contract with other companies for the same services.
- **Unit Costs:** Aerial imagery can be purchased at four different pixel resolutions. Imagery is unit priced so that participants can budget for projects years in advance. It is recommended that counties acquire leaf-off imagery a minimum of once every five years. Counties with limited funding and resources may qualify for funding assistance.

Pixel Resolution (Detail Level)	3-inch	4-inch	6-inch	12-inch
Cost per square mile	\$62	\$45	\$36	\$25
Map Scale	1" = 50'	1" = 67'	1" = 100'	1" = 200'
Horizontal Accuracy (ASPRS 1)	0.5 feet	0.66 feet	1.0 feet	2.0 feet

Note: 4-band stacked imagery that includes color infrared can be added at 25% of the acquisition cost

# Imagery Resolution

3 inch GSD  
Engineering/Public Works

Clear Road Markings  
Manhole  
Parking Meter  
Pole, Post



6 inch GSD  
Municiple Mapping (Urban)

Individual Trees  
Vehicle Types  
Trails  
Infrastructure



12 inch GSD  
Municiple Mapping (Rural)

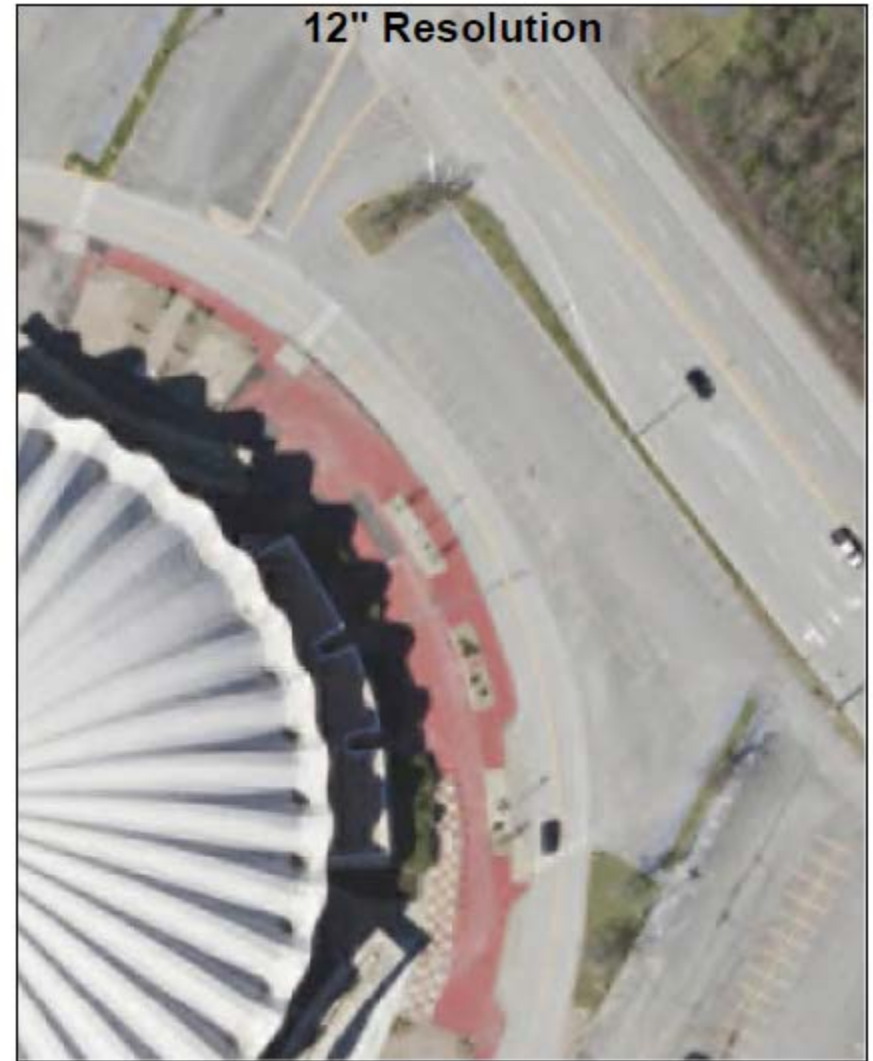
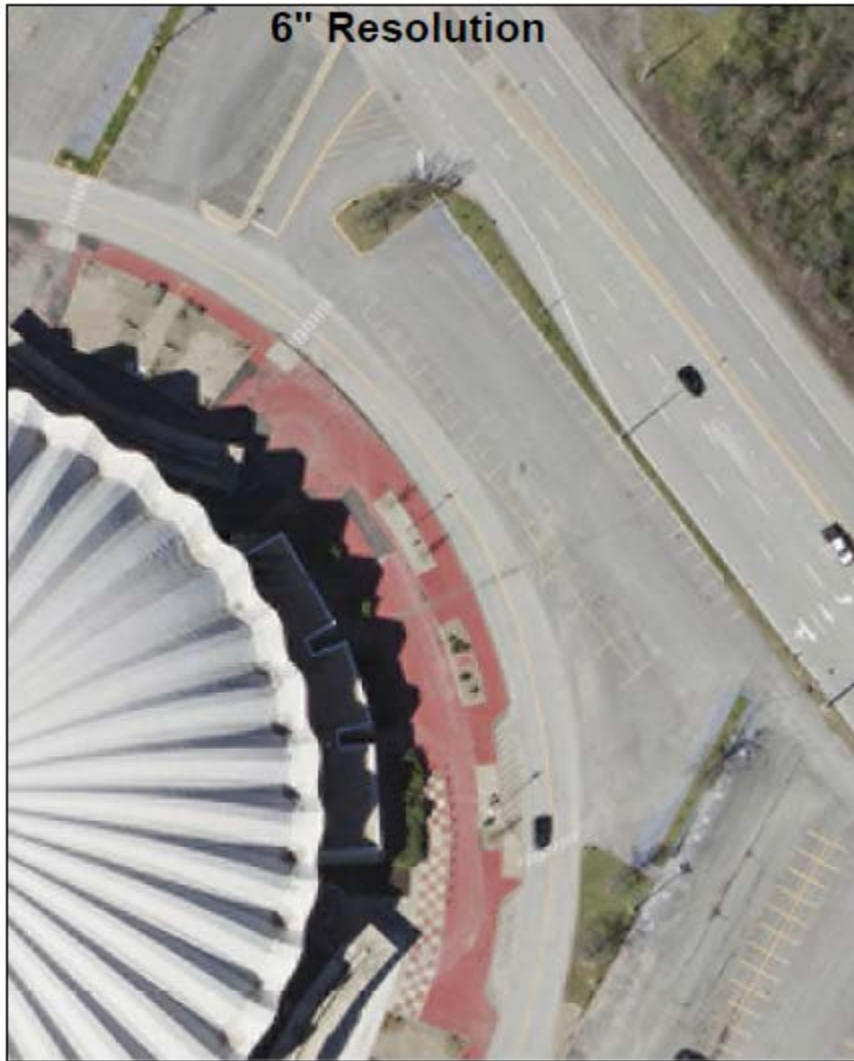
Roads  
Large Infrastructure  
Stock Pile  
Tree/Shrub Line



# Resolution Comparison

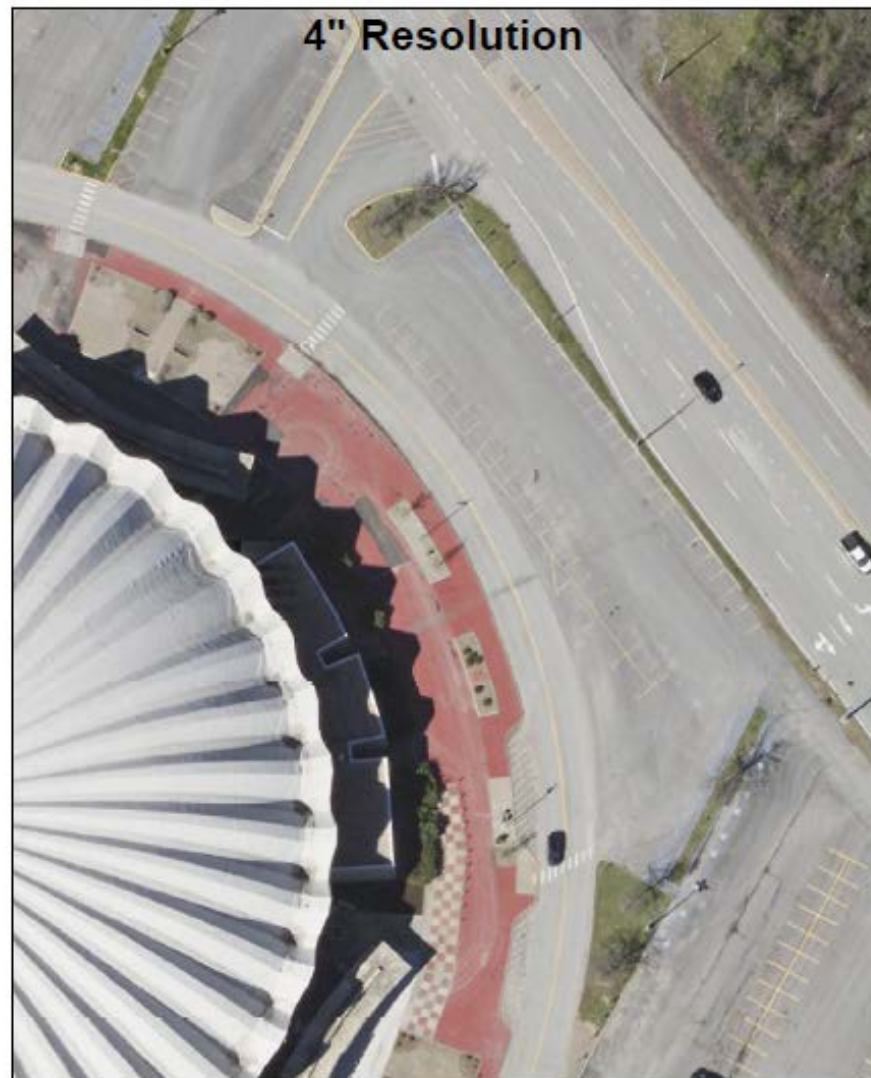
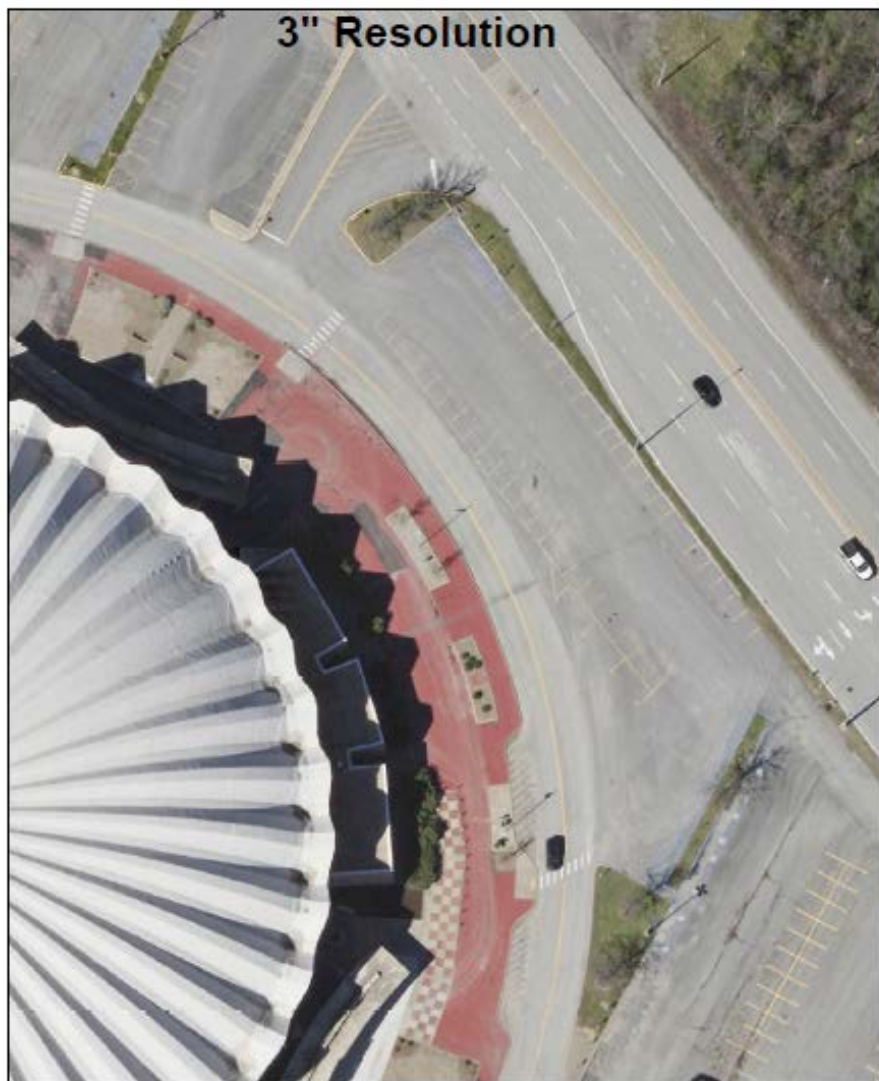
Resolution	3-inch	4-inch	6-inch	12-inch
Cost per square mile	\$62	\$45	\$36	\$25
Mapping of:	Utilities and public works	Utilities and public works	Urban and more developed areas	Rural and less developed areas
Mapping Scale	1:600 Map Scale 1" = 50'	1:800 Map Scale 1" = 67'	1:1200 Map Scale 1" = 100'	1:2400 Map Scale 1" = 200' or 1" = 400'
Positional Accuracy	Very High	Higher than 6" Lower than 3"	Higher than 12" Lower than 4"	Lowest
Key Features Visible	<p><i>Very Small Infrastructure</i></p> <ul style="list-style-type: none"> <li>Fire Hydrants</li> <li>Manhole Covers</li> <li>Individual people and animals</li> <li>Finer details on roads including markings and skid marks</li> </ul>	<p><i>Smaller Infrastructure</i></p> <ul style="list-style-type: none"> <li>Clearer Road Markings</li> <li>Power Lines</li> </ul>	<p><i>Infrastructure</i></p> <ul style="list-style-type: none"> <li>Property line fences</li> <li>Utility Poles</li> <li>Individual Trees</li> <li>Vehicle Types</li> <li>Road markings</li> </ul>	<p><i>Large Infrastructure</i></p> <ul style="list-style-type: none"> <li>Buildings</li> <li>Paved Roads</li> <li>Railroads</li> <li>Vehicles</li> <li>Tree/shrub line</li> </ul>
Tax Parcel Conversion Projects or Re-mapping	Identifiability of small features somewhat improved over 4". Lower cost-to-benefit ratio	Ideal for mapping fences and other survey features at a higher positional accuracy than 6"	Ideal for mapping fences, survey features, and land divisions (e.g., fences, walls, tree lines, roads)	Satisfactory for conversion projects
Other Notes	More building lean may be noticeable at 3" resolution for taller structures	2-foot contours for engineering grade maps generated at this resolution		

# Imagery Resolution: 6- and 12-inch

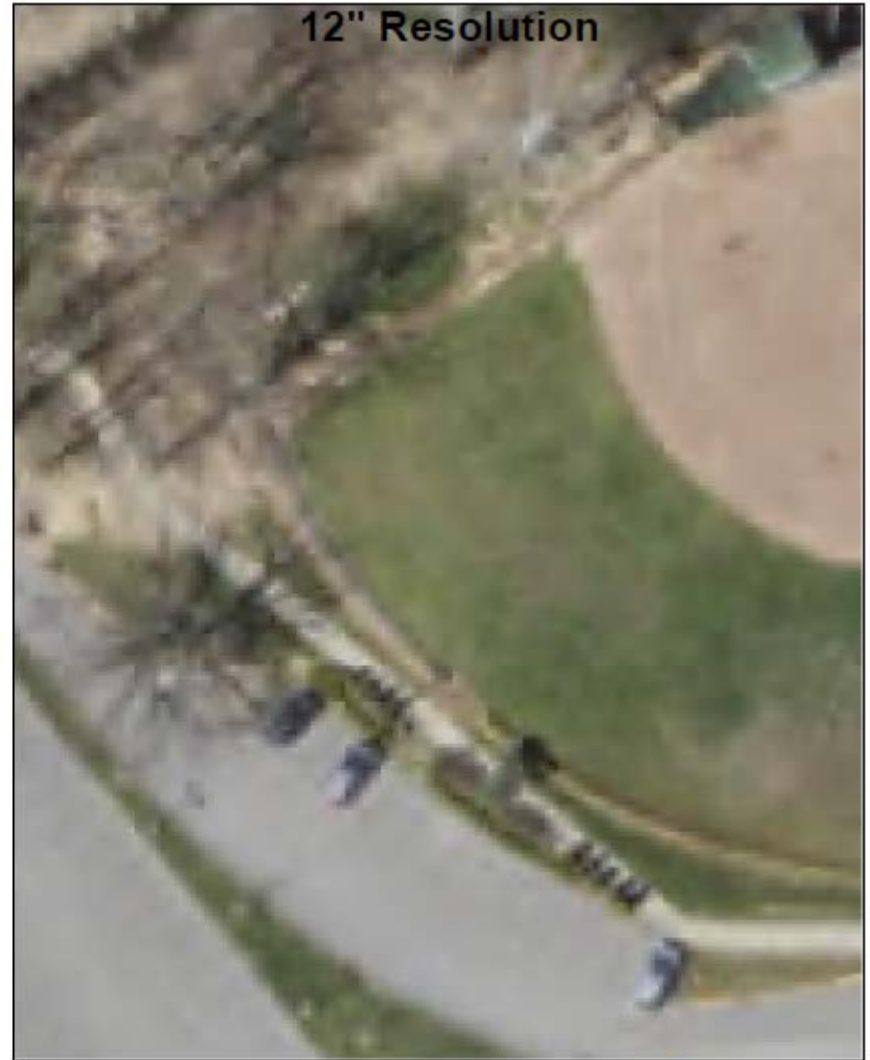
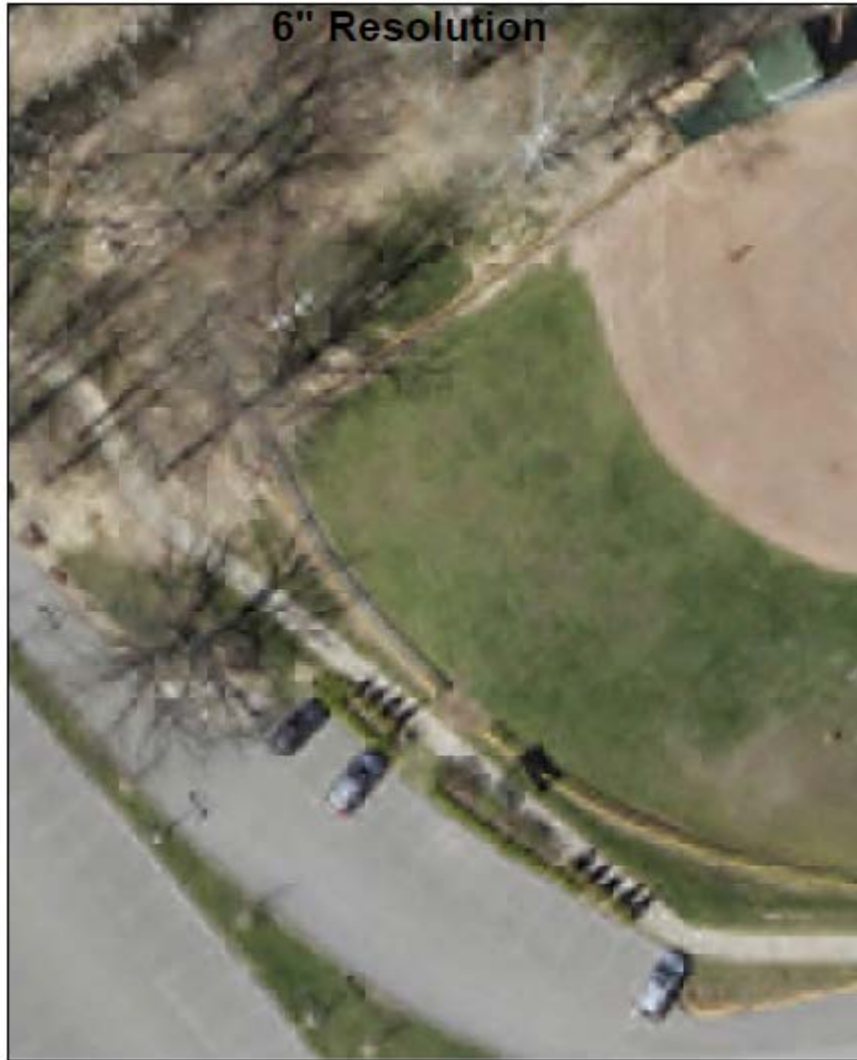


0 50 100 200 Feet

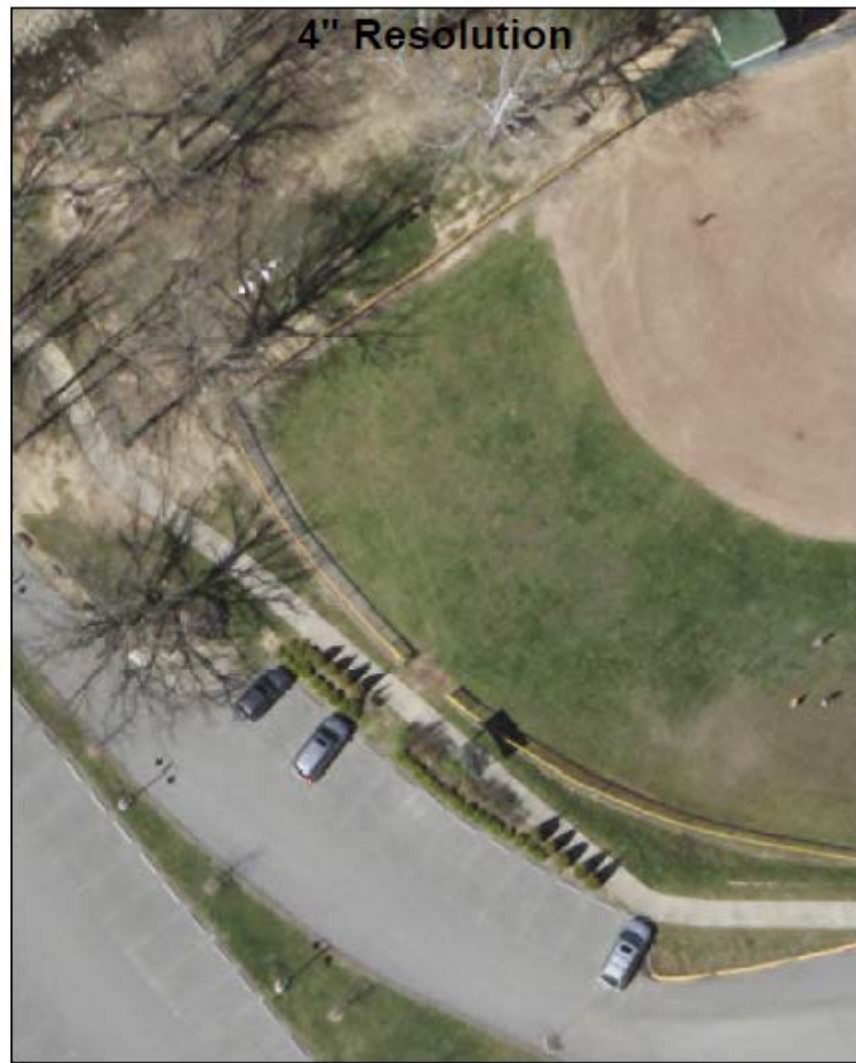
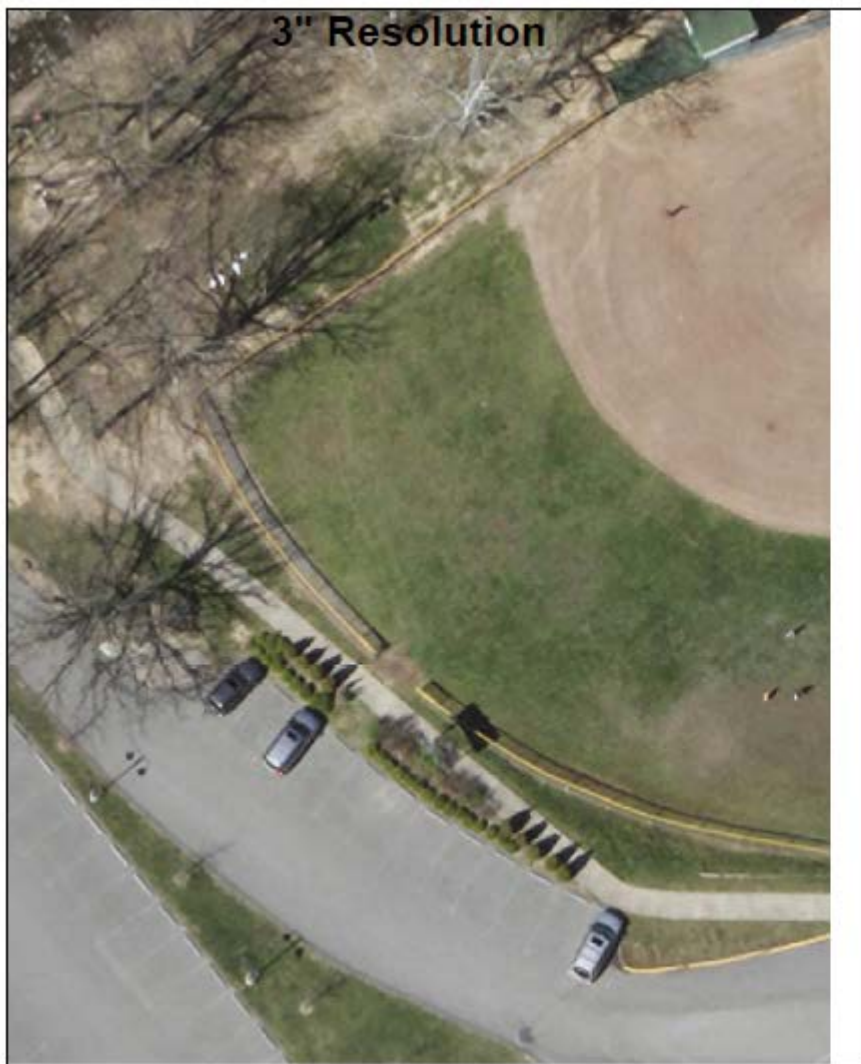
# Imagery Resolution: 3- and 4-inch



# Imagery Resolution: 6- and 12-inch



# Imagery Resolution: 3- and 4-inch



# New Aerial Imagery

- **2020 County Leaf-Of Aerial Imagery** (14 Counties)
- **2019 County Leaf-Of Aerial Imagery** (20 Counties)
- **2018 USDA National Agriculture Imagery Program (NAIP)**  
2-ft pixel resolution. Statewide Coverage.

24 Counties have tapped into the **State Aerial Imagery Contract** supported by the Hazard Mitigation Grant for the acquisition of 2019-21 leaf-off imagery. Most counties were captured at 4-inch resolution. Imagery resides in the public domain.

*Imagery can vary greatly in resolution. Pixel resolution refers to the actual distance on the ground that each pixel represents in the orthophotography. For example, four-inch pixel resolution means that each pixel in the image covers four inches on the ground.*

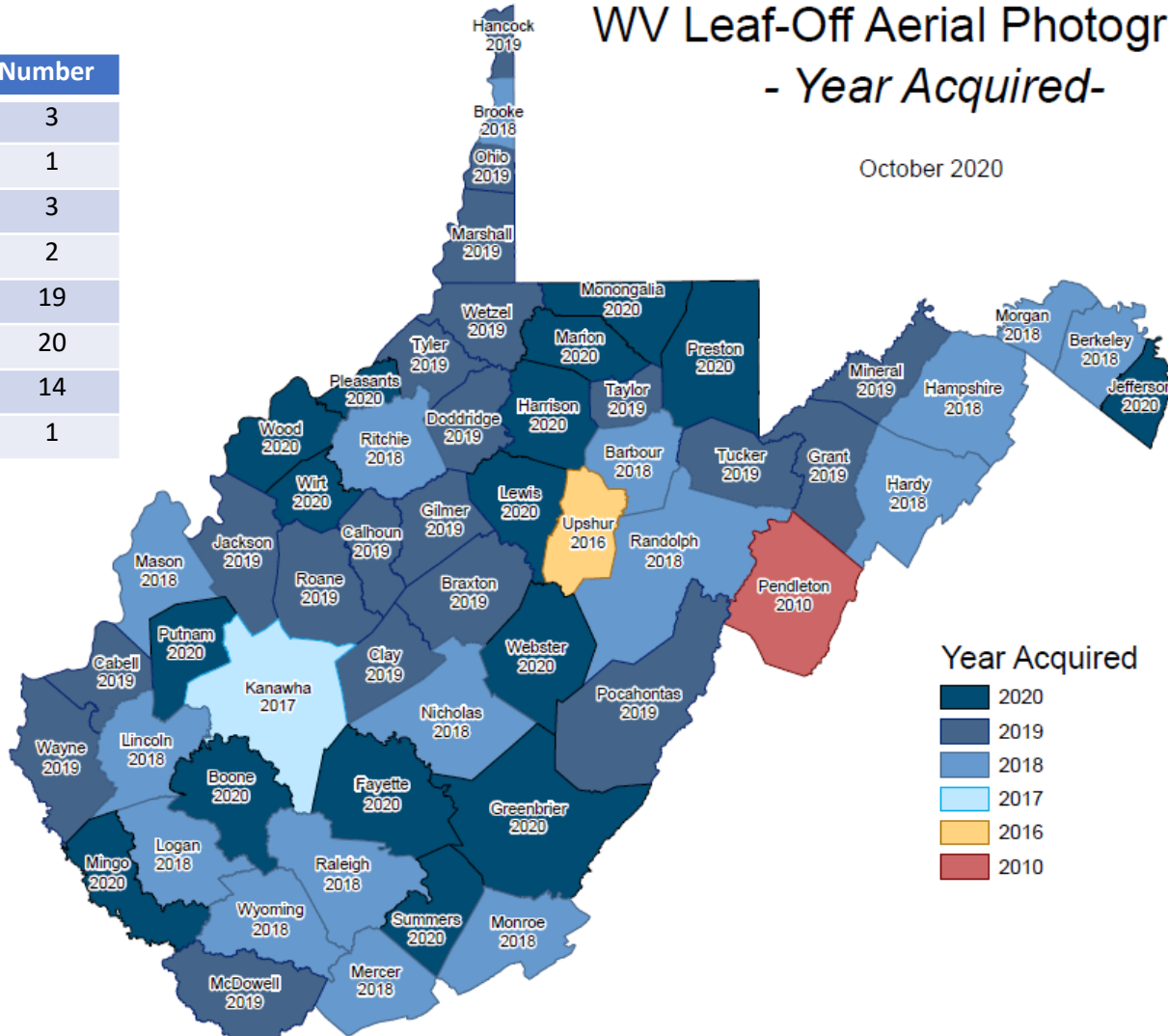


# County Aerial Imagery (2020)

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

## WV Leaf-Off Aerial Photography - Year Acquired -

October 2020



- New 2020 Imagery**
- ✓ Boone County
  - ✓ Fayette County
  - ✓ Greenbrier County
  - ✓ Harrison County
  - ✓ Jefferson County
  - ✓ Lewis County
  - ✓ Marion County
  - ✓ Mingo County
  - ✓ Pleasants County
  - ✓ Putnam County
  - ✓ Summers County
  - ✓ Webster County
  - ✓ Wood County
  - ✓ Wirt County

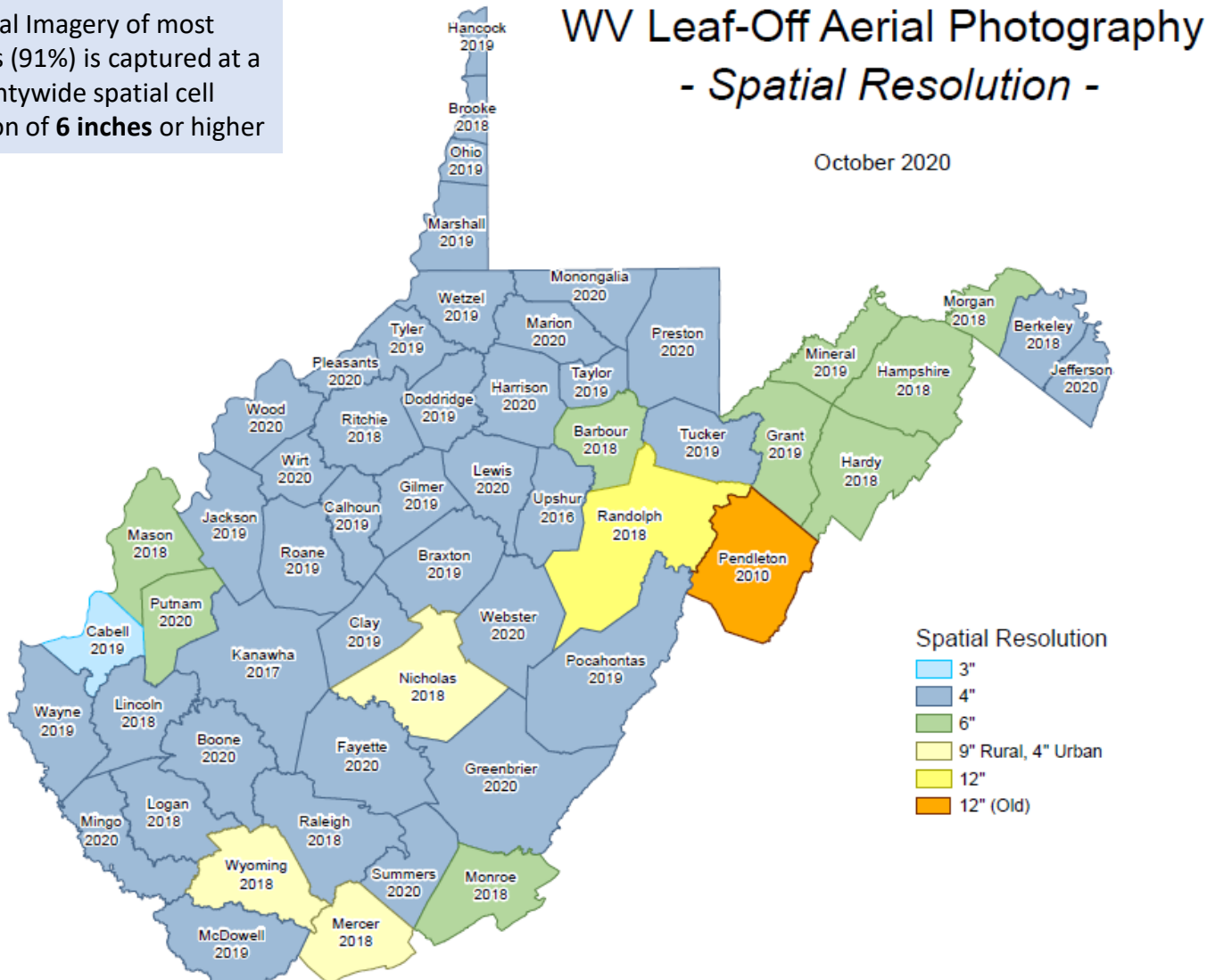
*Ideally, leaf-off imagery should not be older than 5 years. Imagery is important for identifying at-risk structures and accurate disaster mapping.*

Select counties for 2019-21 received funding support through HMGP grant

WVGISTC 2020-10-08

# County Imagery Resolution(2020)

Aerial Imagery of most counties (91%) is captured at a countywide spatial cell resolution of **6 inches** or higher



Select counties for 2019-21 received funding support through HMGP grant

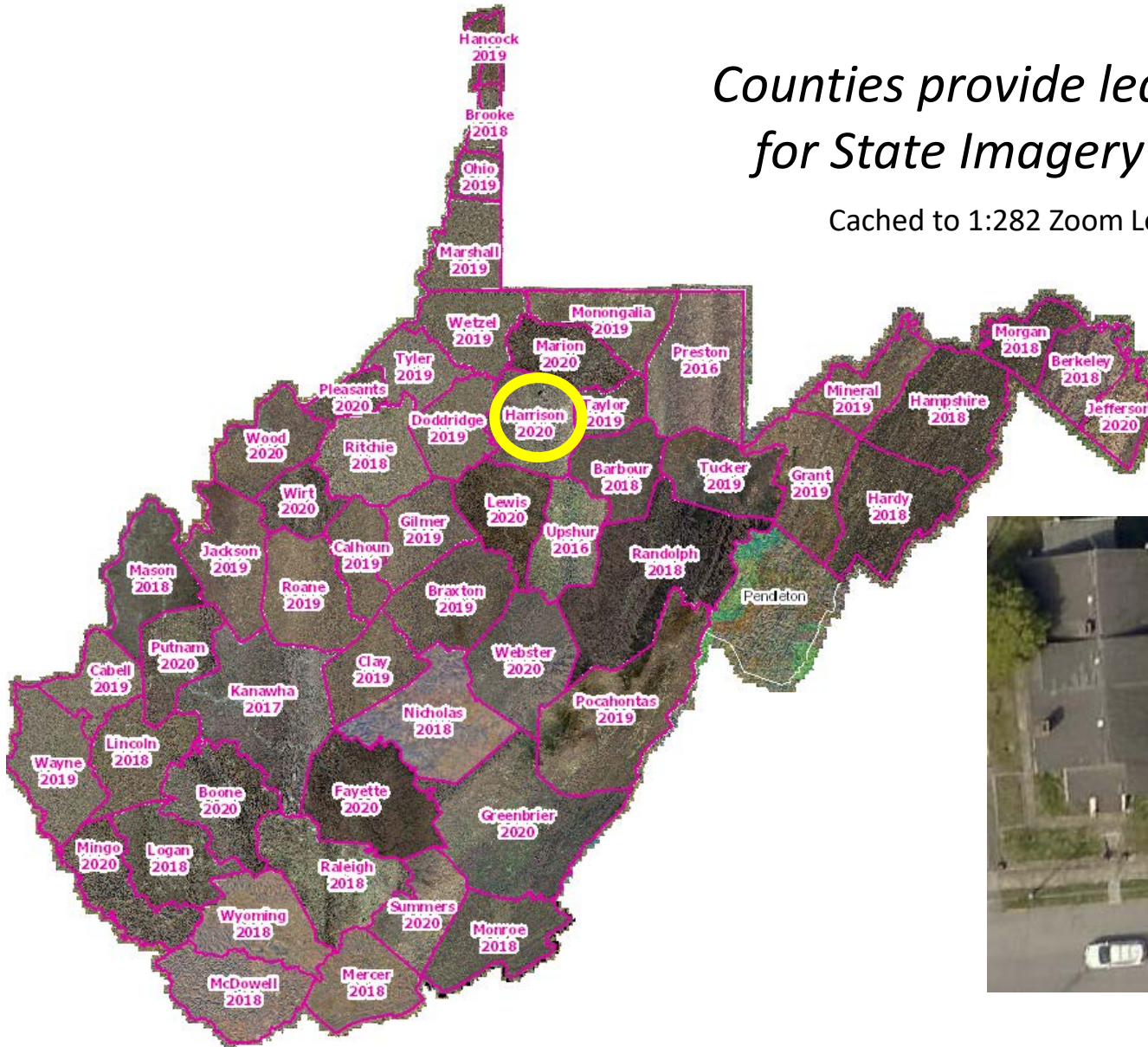
WVGISTC 2020-10-05

# Leaf-Off Aerial Imagery Web Service

[https://services.wvgis.wvu.edu/arcgis/rest/services/Imagery\\_BaseMaps\\_EarthCover/wv\\_imagery\\_WVGISTC\\_leaf\\_off\\_mosaic/MapServer](https://services.wvgis.wvu.edu/arcgis/rest/services/Imagery_BaseMaps_EarthCover/wv_imagery_WVGISTC_leaf_off_mosaic/MapServer)

*Counties provide leaf-off imagery  
for State Imagery Web Service*

Cached to 1:282 Zoom Level or Map Scale

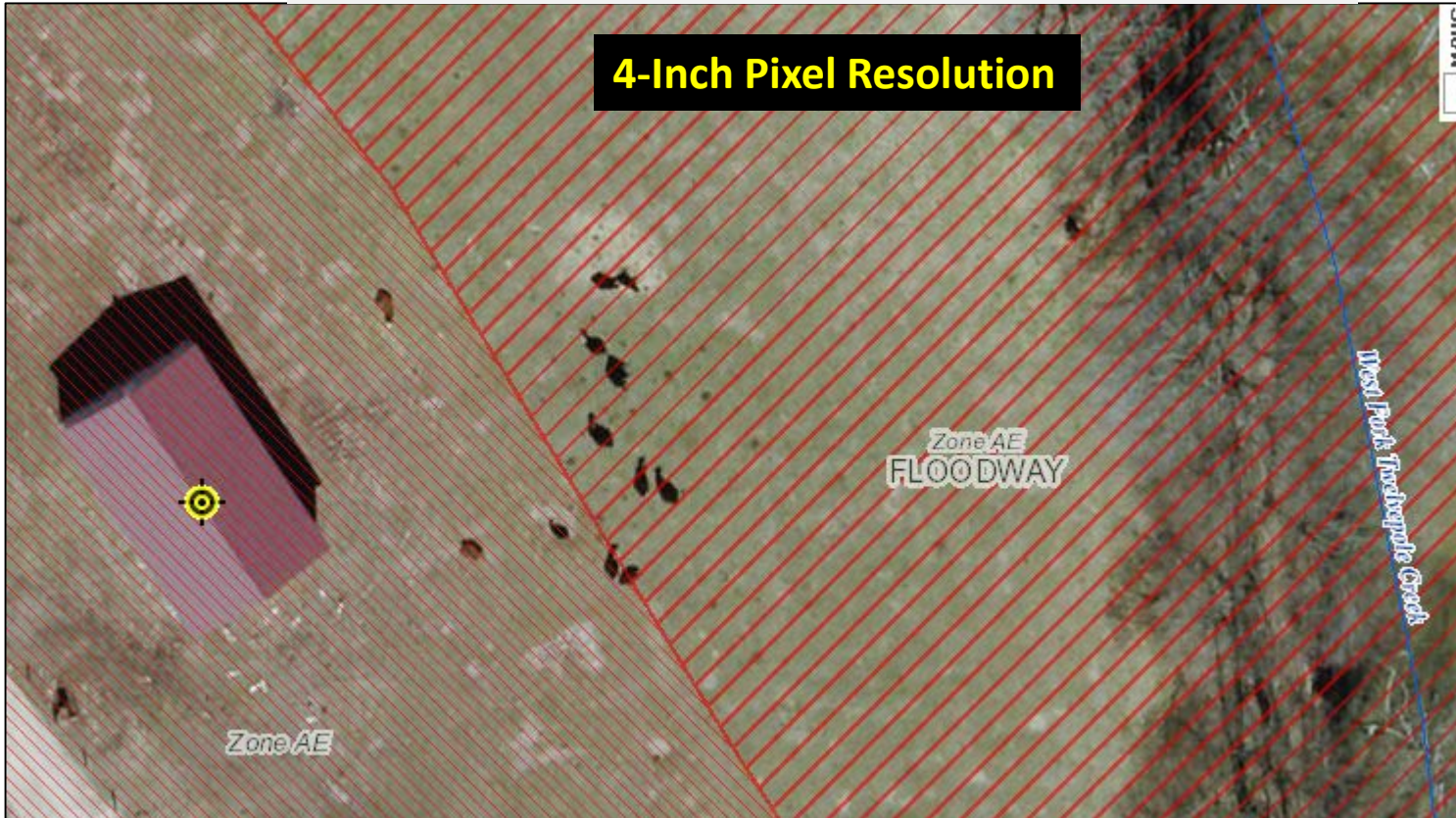


2020 Harrison County  
Aerial Imagery



# New 2019 Leaf-Off Aerial Imagery

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



## New 2019 Imagery on Flood Tool

- Braxton
- Cabell
- Calhoun
- Clay
- Doddridge
- Gilmer
- Harrison
- Jackson
- Marshall
- Monongalia
- Ohio
- Pocahontas
- Putnam
- Roane
- Taylor
- Tucker
- Tyler
- Wayne
- Wetzel
- Wirt

Choose **WV Best Leaves Off** Base Map



Bing Hybrid



WV Best Leaves Off

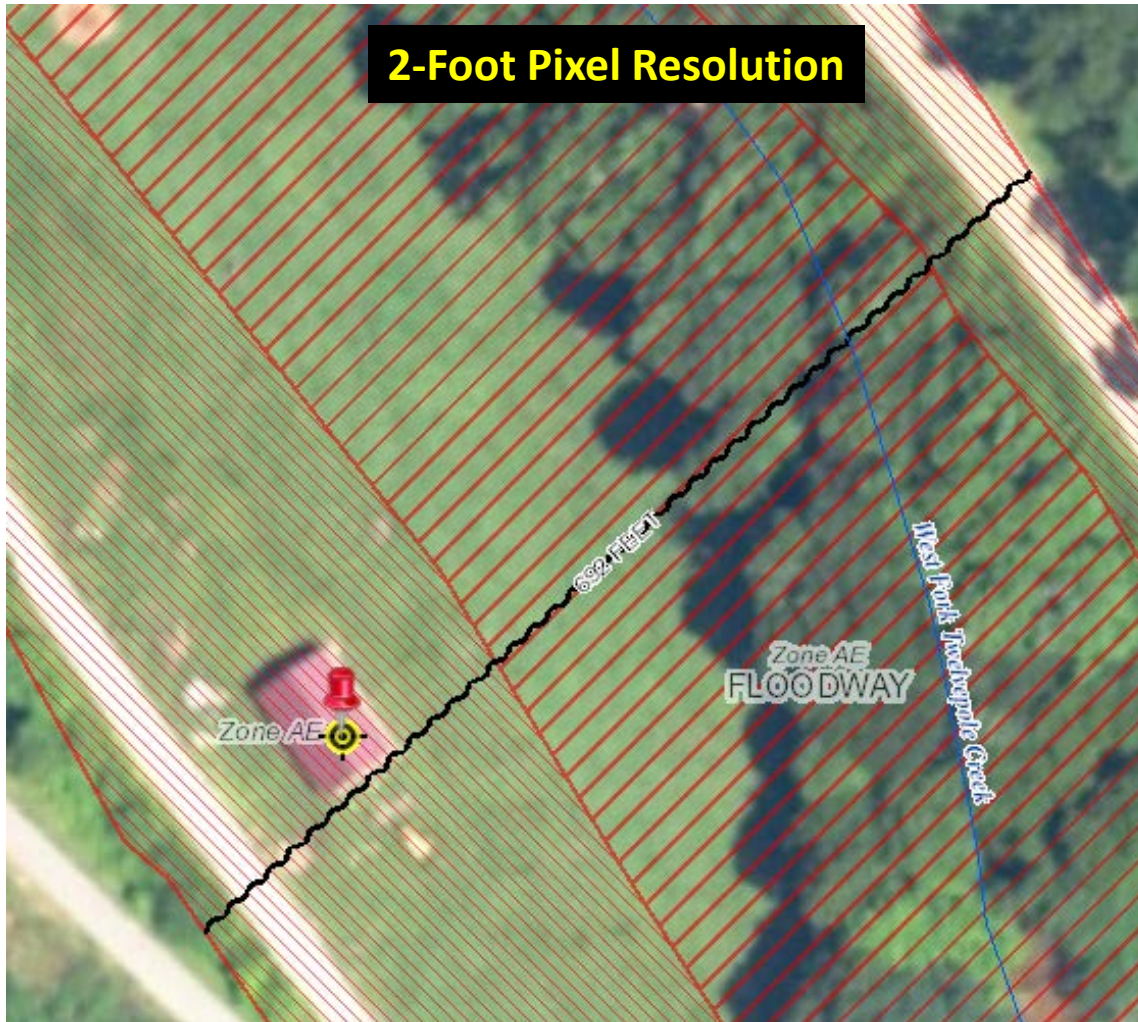


Bing Imagery

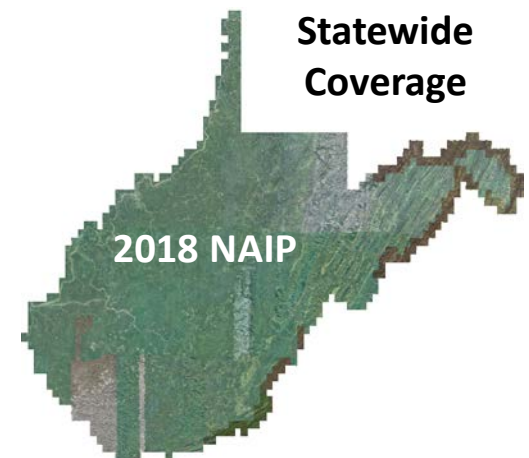
**Cows in the Floodway**  
West Fork Twelvepole  
Creek, Wayne County

# New 2018 NAIP Aerial Imagery

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



Choose **WV NAIP (2018)** from Base Map Layers Pulldown Menu



# Flood Tool Reference Layers

**E-911 Addresses**

# E-911 Addresses

- **Addressable:** Currently the WV Flood Tool accesses **1 million** addressable structures in the Statewide Addressing and Mapping System (SAMS). It is estimated that **100,000** addressable structures are in a high-risk flood zone.
- **Address Matching Geocoding Services:** Updated geocoding services of WV Flood Tool from new Statewide Addressing and Mapping Files
- **Community Addressing Projects:** Incorporated new addresses from Hazard Mitigation Grant Addressing Projects
- **Building Identifier:** The E-911 Address Number, combined with the Parcel Identifier, forms the Building Identifier for identifying structures for flood risk assessments, building pictures, LOMAs, Elevation Certificates, etc.

# E-911 Structures in Floodplain (2018)

	# of Structures	Percent (%)
Addressable Structures	1,010,819	91%
Non-Addressable Structures	101,928	9%
<i>total</i>	1,112,747	100%
<b>Buildings in Effective 100-YR floodplains</b>	99,520	9%
<b>Buildings in 100-YR floodplains</b> (Effective and Advisory A/Updated AE)	106,967	10%
<b>Buildings in 100-YR and 500-YR floodplains</b>	159,804	14%

- An estimated **100,000** buildings or 9% of all statewide 1.1 million buildings are within the effective 100-YR floodplain.
- An estimated **160,000** buildings or 14% of all statewide 1.1 million buildings are within the 100-YR and 500-YR floodplains.

*2018 Data Source: Statewide Addressing and Mapping System (SAMS). Some counties track non-addressable structures in the floodplain while other counties do not.*

*A more detailed site-specific building analysis is needed statewide*



# 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 segment 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

**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 | 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](#)

Scale - 1  
x: -77.743472, y: 39.404871  
©WVGISTC Leaf-Off Mixed-Resolution Imagery

# Statewide E-911 Address & Mapping File

- Forms a unique **Building Identifier** for Floodplain Management and Risk Reduction Activities
- Address Match Locators – Geocoding
- Parcel Address Verification
- Emergency Service Zone Boundaries
- Other uses:
  - Fire insurance rates
  - Flood insurance discounts
  - Broadband, emergency, hazard reduction, and transportation planning

# Statewide E-911 Addresses

## Address Issues

### Missing Address Site Numbers



*Fairmont, WV*

### Wrong Addresses

(98 Graham St. should be 315 Graham St.)



*Elkins, WV*

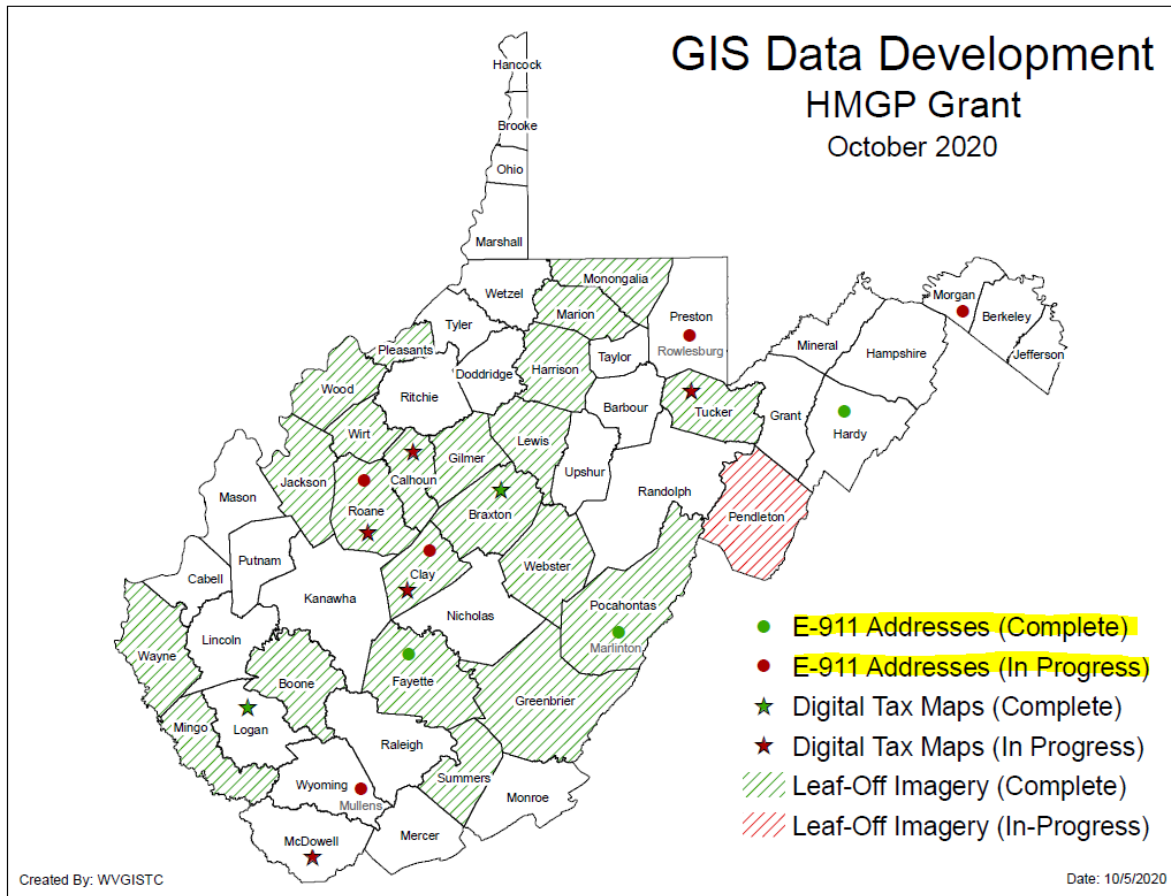
# Statewide E-911 Addresses

## Missing Address Site Numbers



# E-911 Addresses

## Improved Addresses Uploaded to WV Flood Tool



**HMGP Addressing Improvement Projects**

**Marlinton, WV**

# Flood Tool Reference Layers

**Parcels / Assessment Records**

# Parcels / Assessment Records

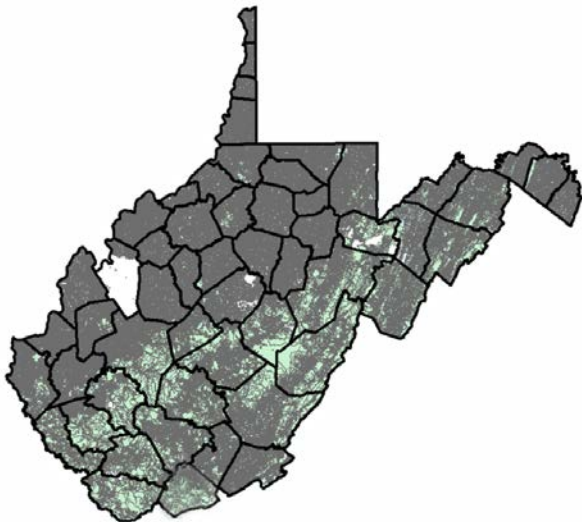
- **Tax Year 2020 Parcels and Assessment Records:** Updated Flood Tool with 1.4 million tax parcel and assessment records for Tax Year 2020.
- **Parcel Assessment Reports:** Updated Parcel Web Reports including building sketch diagrams.
- **Building Identifier:** The Parcel Identifier, combined with 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



2013 WEST VIRGINIA STATEWIDE STANDARD  
HAZARD MITIGATION PLAN UPDATE

ID	Description	Priority (H, M, L)	Responsible Agency	Potential Funding Sources	Interim Measure of Success	Target Comple- tion Date	Hazard Mitigated
2013-16	Creation of a statewide tax parcel for use in the HIRA/THIRA.	H	DHSEM, WVGISTC	Agency budget	Develop a prototype map that would consist of a pilot study to determine what would be possible if/when data was available or created.	2014 for pilot	All, except Dam & Levee



**High Priority  
of  
2013 State Hazard Mitigation Plan**



# 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 use: 101 - Residential 1 Family

Year built: 1911

Search: 629 PENNSYLVANIA AVE, Morgantown, WV, : [Map Icon] [Edit Icon] [Share Icon] [Refresh Icon] [Print Icon]

Hide [Play Icon]

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 [Download Icon] [Share Icon]

Map Effective Date: 1/20/2010

Contacts: Monongalia

Advisory Flood Height: N/A [Disclaimer Icon]

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 [Disclaimer Icon]

Flood Risk Information

Flood Risk Assessment: N/A

3D Flood Visualization [Info Icon]

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 Icon]

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.

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>



<b>DESCRIPTION</b>	
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
<b>PROPERTY OWNER(S)</b>	
Property Owner(s)	Smith John
<b>BUILDING INFORMATION</b>	
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
<b>APPRAISED VALUES</b>	
Land Appraisal	\$33,200
Building Appraisal	\$29,000
Total Appraisal	\$62,200

# Parcels link to Owner/Building Info

## Commercial or Industrial Property

1501 DECKERS CREEK BLVD, Morgantown, West Virginia, 26505  
<https://www.mapwv.gov/flood/map/?v=0&pid=31-14-0031-0101-0000>

Depth

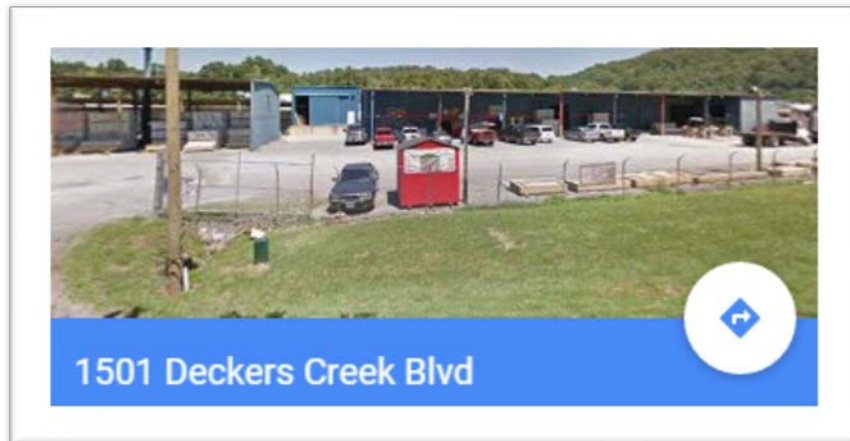
- 0 Foot
- 1 Foot
- 2 Foot
- 3 Foot
- 4 Foot
- 5 Foot
- 6 Foot
- 7 Foot
- 8 Foot
- 9 Foot
- 10 Foot
- 11 Foot
- 12 Foot
- 13 Foot
- 14 Foot

1501 DECKERS CREEK BLVD, Morgantown, West Virginia, 26505

Parcel ID: 31-14-0031-0101-0000      Water Depth: ~ 2.0 ft (HAZUS)      Google Map

**12 Feet** General Damage - Woodwork, doors, and most appliances damaged. When 2 feet of water is in the living space and the walls are wet it is classified as a Major Emergency by the WV Division of Homeland Security and Emergency Management (WV DHSEM).

**14 Foot** Appliances - Most appliances (refrigerator, stove, dishwasher, washer, dryer) are a total loss between 1 ft and 2 ft feet of water.



<b>DESCRIPTION</b>	84 Lumber
GIS Parcel ID	31-14-0031-0101-0000
Legal Description	5.0922 AC;SABRATON
Acreage (deed)	5.09
Deed Book / Page	1376 / 234
<b>PROPERTY OWNER(S)</b>	
Property Owner(s)	SPIRIT SPE PORTFOLIO

<b>BUILDING INFORMATION</b>	
<b>Property Class Type</b>	<b>C- Commercial</b>
Land Use	373 - Retail-Single Occupancy
Year Built	1994
Stories	2
Exterior Wall	Brick or Stone
Construction Type	Pre-Engineered Steel
Building Grade	D+
Basement Type	None
Business Living Area	15,255
Cubic Feet	292,380
Use Type	34-Retail Store, 82- Multi-Use Office

<b>COST VALUES</b>	
Other Bldg/Yard Values	\$67,020
Commercial Value	\$227,700
<b>APPRAISED VALUES</b>	
Land Appraisal	\$378,800
Building Appraisal	\$294,700
Total Appraisal	\$673,500

# Total Property Parcels

## West Virginia Parcel Property Class Breakdown for Tax Year 2020

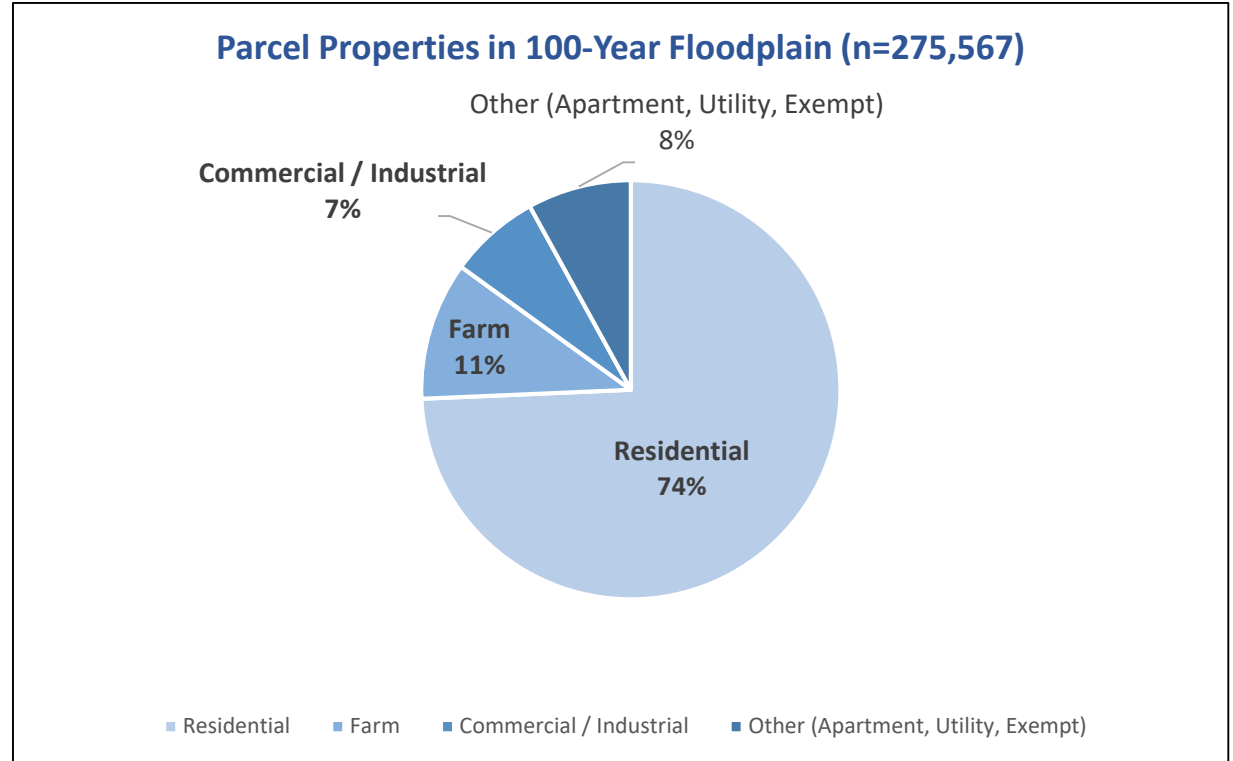
(Computed from statewide master parcel file)

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
		<b>1,350,110</b>	<b>100%</b>	<b>\$126,946,272,403</b>
	<b>Property Parcels intersecting 100-YR floodplain</b>	<b>275,567</b>	<b>20% (of count)</b>	<b>\$27,611,984,170</b>

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**.

# Parcels in 100-YR Floodplain

Property Class	Count	%
Residential	204,787	74%
Farm	29,382	11%
Commercial	19,231	7%
Other	22,077	8%
<i>total (20% of all 1.35 million parcels)</i>	275,567	100%



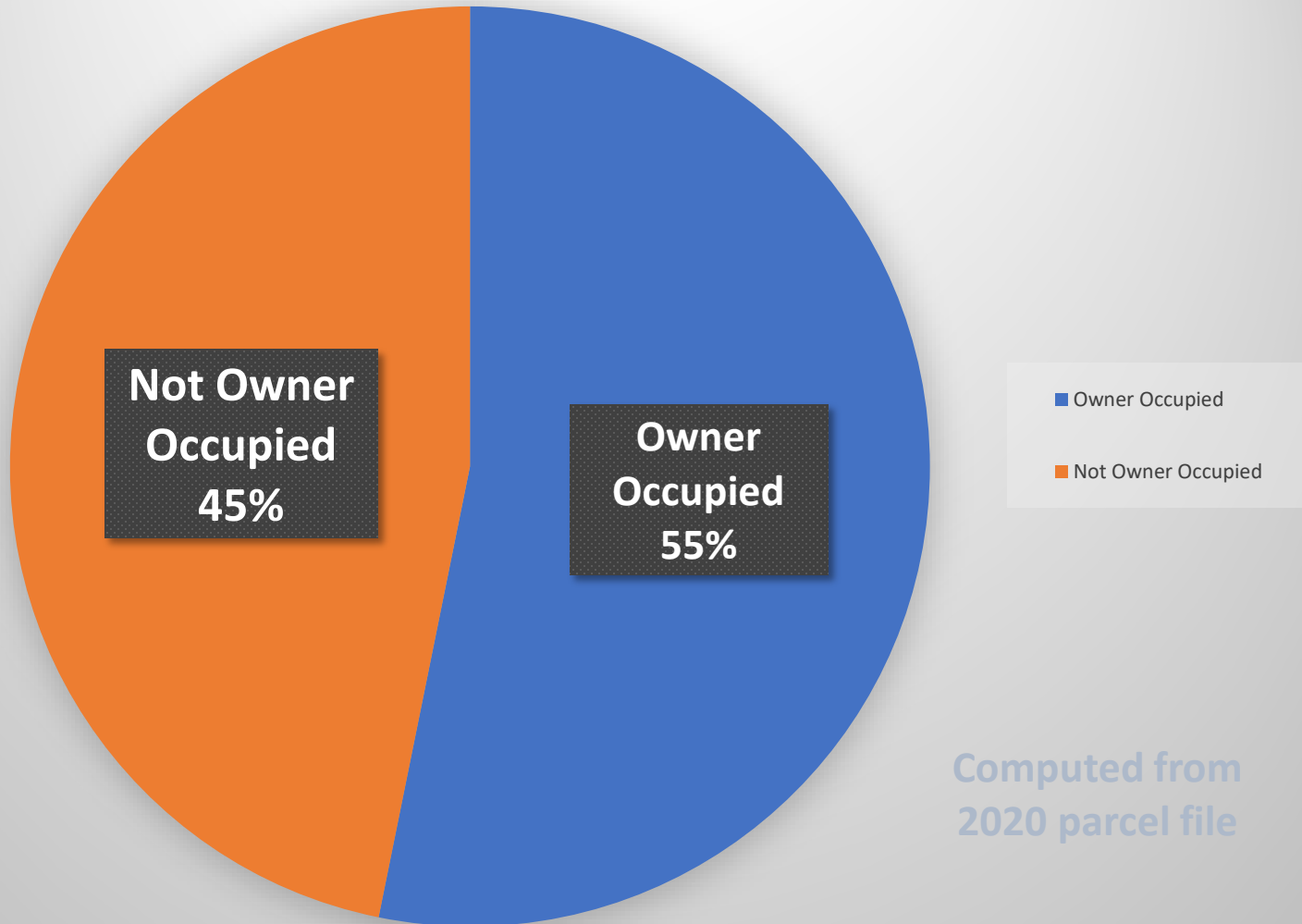
Computed from  
statewide parcel file  
100% complete

*An estimated **275,567 property parcels** or 20% of total 1.35 million statewide parcels intersect the 100-YR floodplain (Tax Year 2020)*

*A more detailed site-specific building analysis is needed statewide*

# Parcels in 100-YR/500-YR Floodplains

Parcels in High or Moderate Risk Floodplains (n= 315,442)



Computed from  
2020 parcel file

# Property Identification – Bldg. ID

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

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

Layers: Flood | Reference | Basemaps

Search: 604 S. Main St., Philippi, WV 26416

Tools: [Share Link Icon]

Address: 604 Main St, Philippi, WV 26416

Parcel ID: 01-08-0011-0069-0000

**Building ID:  
(Parcel ID + Address No.)  
01-08-0011-0069-0000\_604**

**X,Y COORD.**

**ADDRESS**

**PARCEL**

**SHARE LINK**

Flood Hazard Area: Location is WITHIN the FEMA 100-year floodplain.  
Flood Zone: AE  
Stream: Anglins Run  
Watershed (HUC8): Tygart Valley (5020001)

FEMA Issued Flood Map: 54001C0118C  
Map Effective Date: 5/3/2011  
Contacts: Barbour

Flood Height: Refer to FIS report for BFE  
Water Depth: N/A  
HEC-RAS Model: N/A  
Flood Profile: 54001\_001  
Community: City of Philippi  
CID: 540004 CRS Class: 8

Location (long, lat): (-80.033529, 39.144752)  
Location (UTM 17N): (583519, 4333284)

External Viewers: [Icons]

Elevation: About 1315 ft. (Source: SAMS 2003)

Address: 604 S MAIN ST, PHILIPPI, West Virginia, 26416

Parcel ID: 01-08-0011-0069-0000

Flood Risk Information: Flood Risk Assessment N/A, 3D Flood Visualization No Depth Grid Available

Share Link: <https://www.mapwv.gov/flood/map/?wkid=102100&x=-8909292&y=4742427&l=12&v=1>

# Property Parcels and Assessment Reports

## E-911 and County Assessor report location at 604 S Main Street

### WV Real Estate Assessment Data

Parcel ID: 01-08-0011-0069-0000    Tax Year: 2019    County: Barbour    Date: 3/25/2020  
 Root PID: 01080011006900000000

#### Property Owner and Mailing Address

Owner(s):  
 Mailing Address: 645 MAPLE AVE, PHILIPPI, WV 26416

#### Property Location

Physical Address: 604 S MAIN ST  
 E-911 Address: 604 S MAIN ST PHILIPPI WV 26416  
 Parcel ID: 01-08-0011-0069-0000  
 County: 1 - Barbour  
 District: 8 - Philippi Corp  
 Map: 0011 (Click for PDF tax map)  
 Parcel No.: 0069  
 Parcel Suffix: 0000  
 Map View Link: <https://mapwv.gov/parcel/?pid=01-08-0011-0069-0000>

## Property Assessment Report

#### General Information

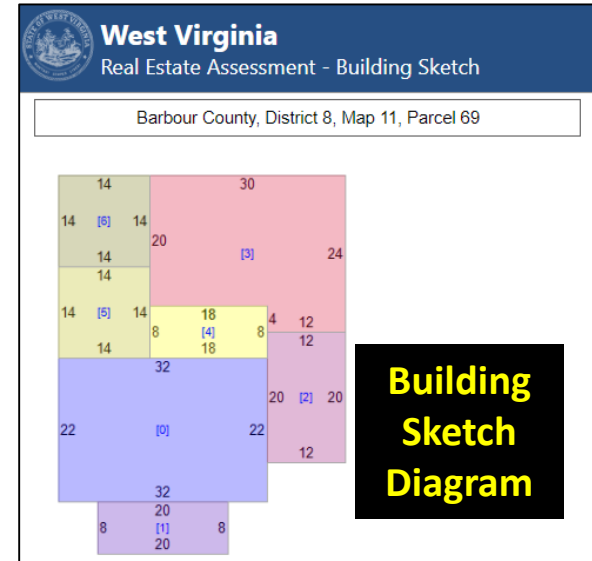
Tax Class	Book / Page	Deeded Acres	Calculated Acres	Legal Description
4	460 / 231	0.405	0.42	PT OF LOT 6, PARCEL, STRICKLER

Cost Value		Appraisal Value	
Dwelling Value	\$65,700	Land Appraisal	\$8,300
Other Bldg/Yard Values	\$0	Building Appraisal	\$65,700
Commercial Value	---	Total Appraisal	\$74,000

#### Building Information

Property Class: R - Residential  
 Land Use: 101 - Residential 1 Family  
 Sum of Structure Areas: 1,752  
 # of Buildings (Cards): 1

Card	Year Built	Stories	CG	Architectural Style	Exterior Wall	Basement Type	Square Footage (SFLA)	Building Value
1	1946	2	2P	Conventional	Brick	Part	1,752	\$65,700
							1,752	\$65,700



**Flood Hazard Area:** Location is WITHIN the FEMA 100-year floodplain.  
**Flood Zone:** AE  
**Stream:** Anglins Run  
**Watershed (HUC8):** Tygart Valley (5020001)

**FEMA's Flood Map:** 54001C0118C    [NFHL](#)  
**Map Effective Date:** 5/3/2011  
**Contacts:** Barbour

**Flood Height:** Refer to FIS report for BFE    [More Info](#)  
**Water Depth:** N/A  
**HEC-RAS Model:** N/A    [All Models](#)

**Flood Profile:** 54001\_001  
**Community:** City of Philippi  
**CID:** 540004    **CRS Class:** 8

**Location (lat, long):** (39.144750, -80.033532)  
**Location (UTM 17N):** (4333284, 583518)

**External Viewers:** [Map](#) [Image](#) [Print](#) [Share](#)

**Elevation:** About 1315 ft (Source: SAMS 2003)  
**Address:** 604 S MAIN ST, PHILIPPI, WV, 26416  
**Parcel:** 01-08-0011-0069-0000 | [Assessment](#)

**Flood Risk Information**    [Related Resources](#)  
**Flood Risk Assessment:** N/A  
**3D Flood Visualization:** No Depth Grid Available

## Parcel Map

Share Link: <https://mapwv.gov/Assessment/Detail/?PID=01080011006900000000>



# Property Parcels

## Web Assessment Reports

- Ownership
- Building Identification
- Building Characteristics
- Building Sketch Diagrams
- Outbuildings
- Cost Values
- Land Use
- Tax Class (Owner Occupied)
- Parcel History (15 years)

# Flood Tool Reference Layers

**Building Footprints**

# Building Footprints

The screenshot displays the WV Flood Tool interface. At the top left is a yellow house icon and the text "WV Flood Tool" with the slogan "Remember: When In Doubt, It's Not Out!". Navigation links for "About", "Help", and "Home" are in the top right. The interface is divided into "Views" (Public, Expert, Risk MAP, Flood, Reference, Basemaps), "Search" (with a search bar), and "Tools" (with various utility icons). A "Layers" panel on the left lists various map layers, with "Building Footprint" checked and highlighted in yellow. The main map area shows a street grid in Shepherdstown, West Virginia, with a red shaded area labeled "Zone A0" and a yellow shaded area labeled "Zone A". The map includes street names like E German St, E Washington St, and E High St. A scale bar and coordinates are visible in the bottom left corner.

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

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

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

Tools: [Map Tools]

**Layers:**

- Address Label
- Parcels
- Building Footprint**
- Community Boundaries
- SAMS E-911 Roads
- DOT Highway Routes\*
- Streams / Place Names
- Contour Lines [info](#)
- Public Lands
- Watersheds
- Wetlands\*
- Soil\*

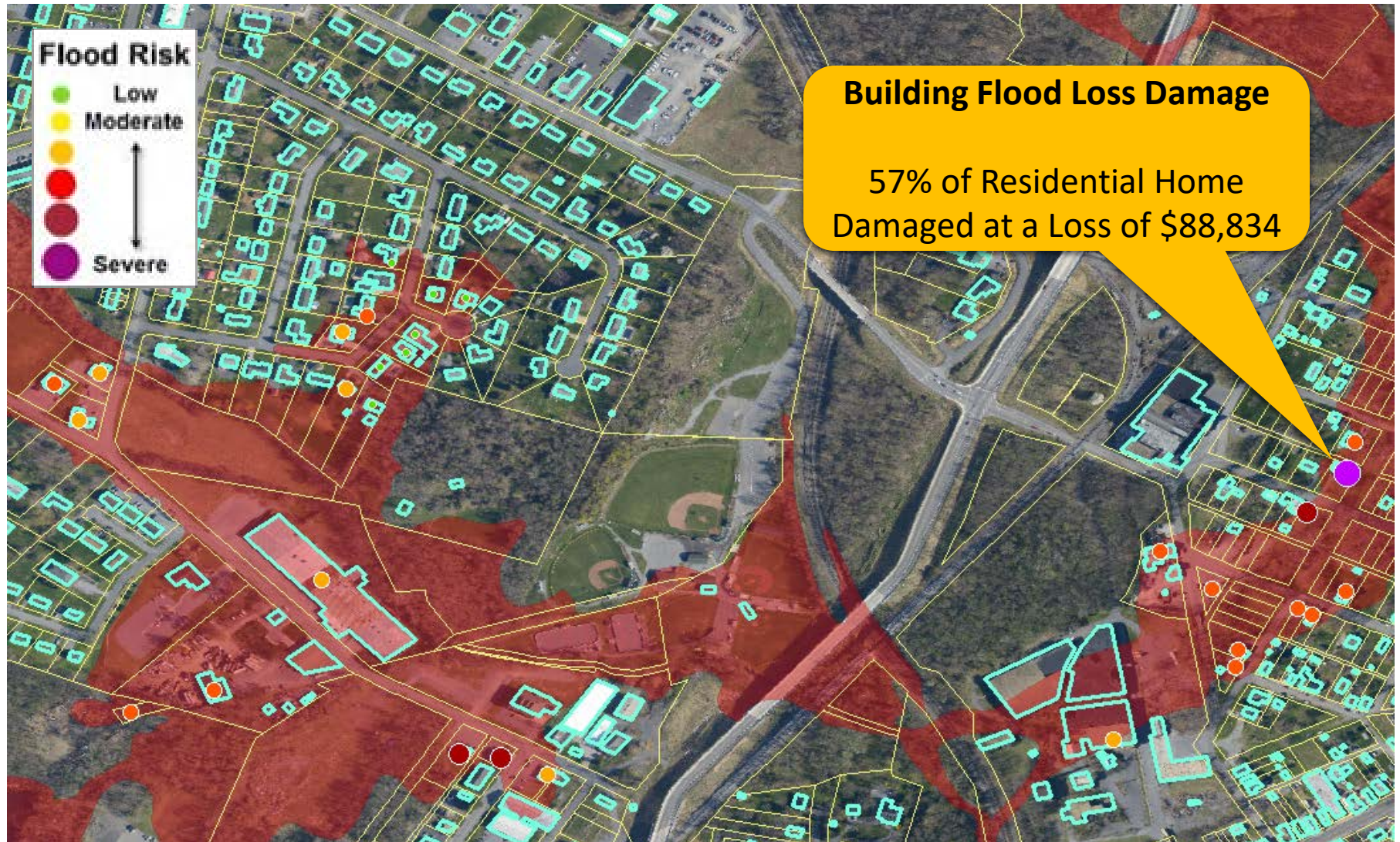
\* indicates that data is external web service

Map Labels: Shepherdstown, Zone A0, Zone A, Jefferson, TOWN OF SHEPHERDSTOWN 2540069, E German St, E Washington St, E High St, N Mill St, S Mill St, King St, W Back Aly, S Church St, Prospect Ave, Fairmont Ave, Minden St, Kearneysville Pike, Elmwood Cemetery, @ESRI Street Map

Scale: 1:4,514  
x: -77.808867, y: 39.428904

# Building Footprints

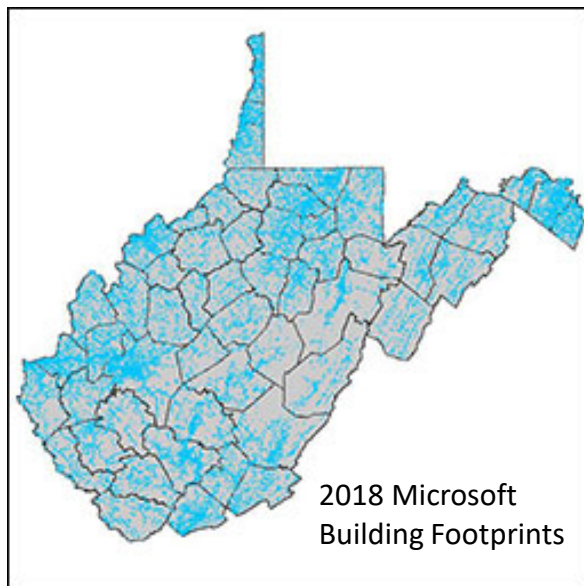
*Building footprints can enhance flood risk assessment maps*



# 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
Counties	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. The building footprint extraction was done in two stages: semantic segmentation, recognition of building pixels on aerial images, and polygonization, converting of building pixels to polygons.	Statewide



## 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

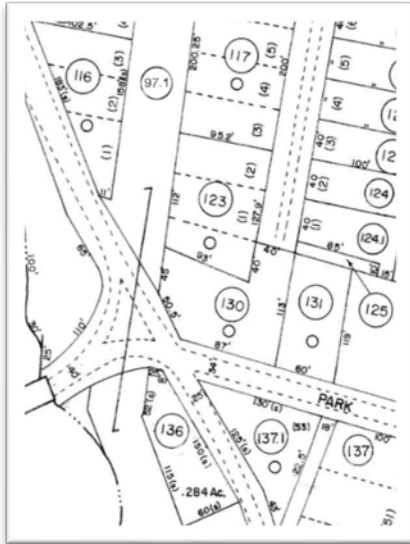
# Flood Tool Reference Layers

## **Data Development and Integration**

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

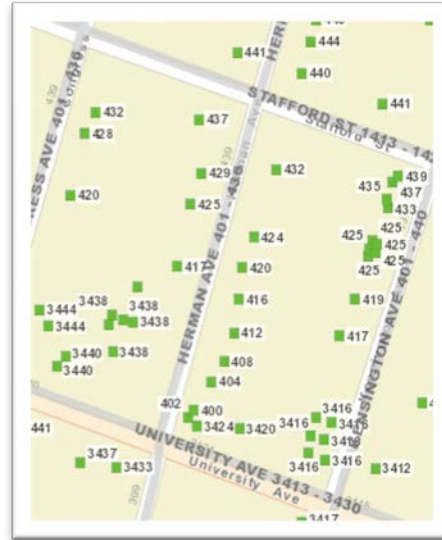
# GIS Data Development

Parcels



*Migrate six counties from paper to digital parcels*

Site Addresses



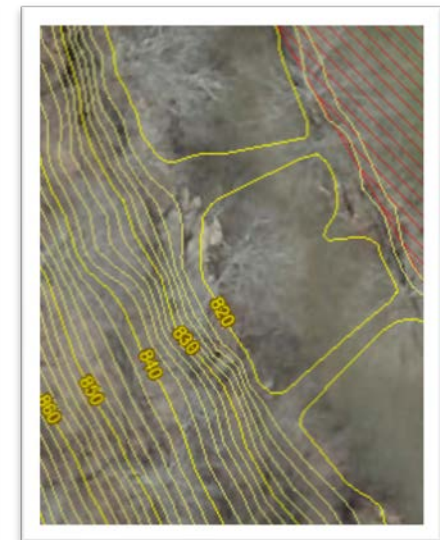
*Flood-risk communities with missing or incorrect E-911 addresses*

Aerial Imagery



*County Leaf-off imagery no older than 5 years*

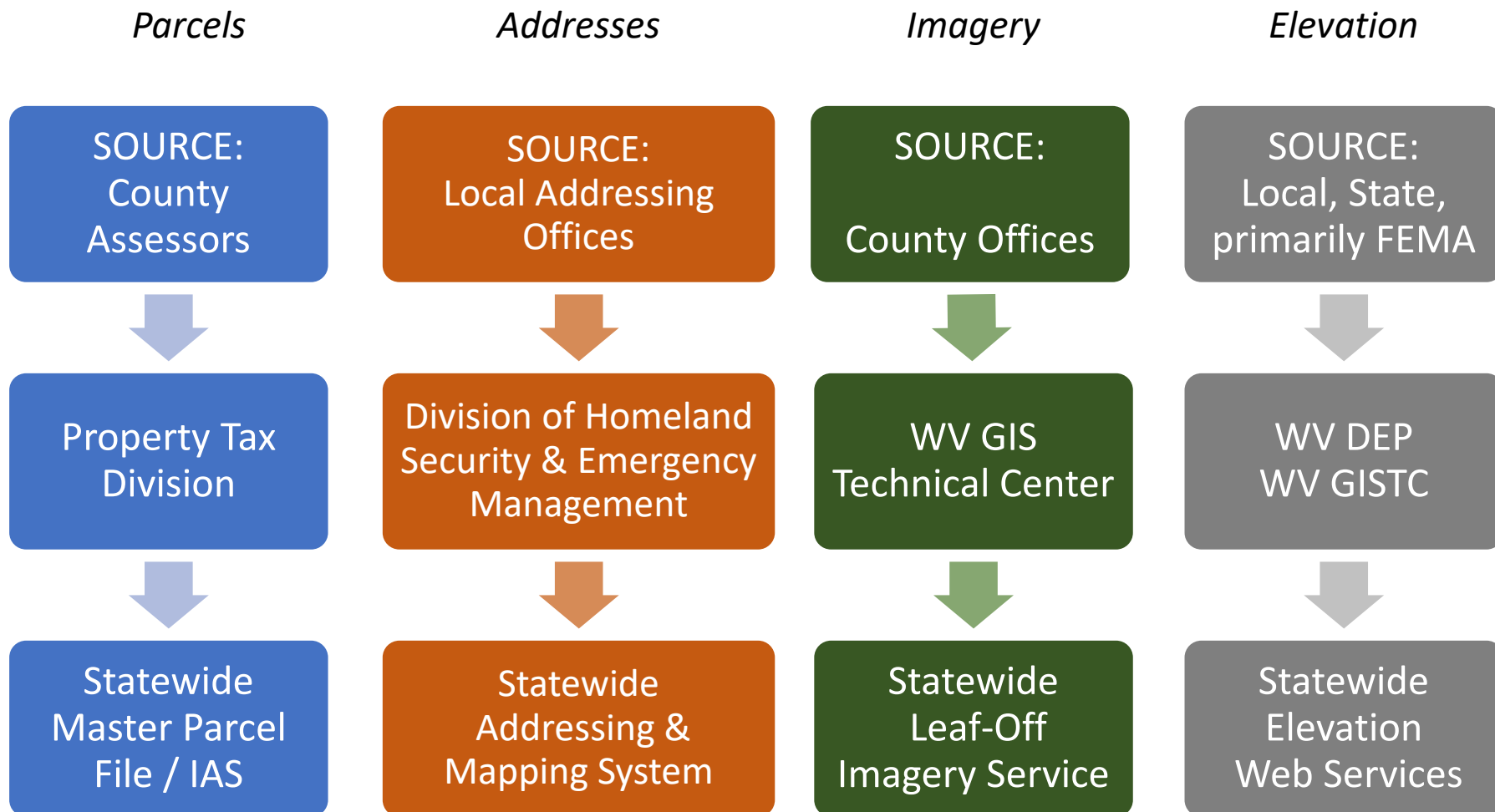
Elevation



*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*



# Unique Spatial Identifiers

## **Building and Parcel Identifiers**

# Building Spatial Identifiers

Collect multiple spatial identifiers to verify location

Parcel

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

01-08-0011-0069-0000\_604

 X,Y Coordinate

39.144752, -80.033529

 Google Plus Code (11-digit)

86FX4XV8+VHF

 Share MAP URL Link

<https://www.mapwv.gov/flood/map/?wkid=102100&x=-8909292&y=4742427&l=12&v=1>

 Share Parcel Assessment URL Link

<http://www.mapwv.gov/Assessment/Detail/?PID=01080011006900000000>

Notes: Owner Name from assessment records and Building Pictures (elevation certificates) can be helpful for property identification purposes

 = Unique Identifiers

Proper Building and Property Identifiers are important for exchanging building-level data efficiently among local, state, and federal partners (including UDFs, LOMAs, Mitigated Buyout Properties, Elevation Certificates, Repetitive Loss Structures, etc.)

# Building Unique Identifier

Parcel ID

01-08-0011-0069-0000

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

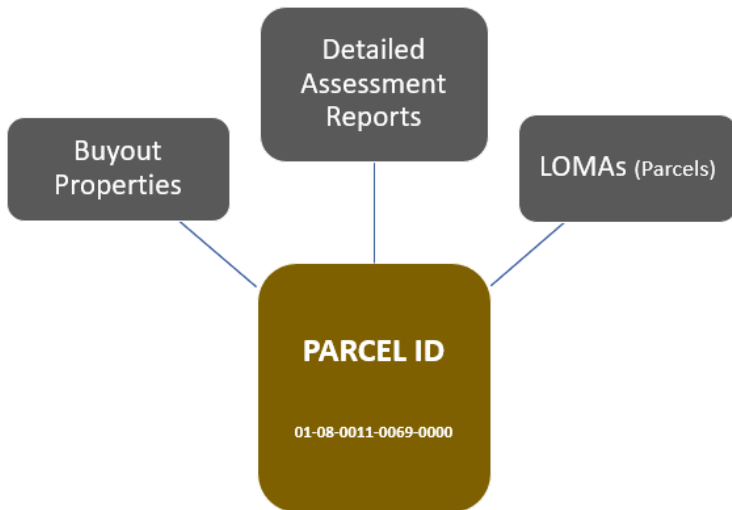
Address

604 S Main St, Philippi, West Virginia, 26416

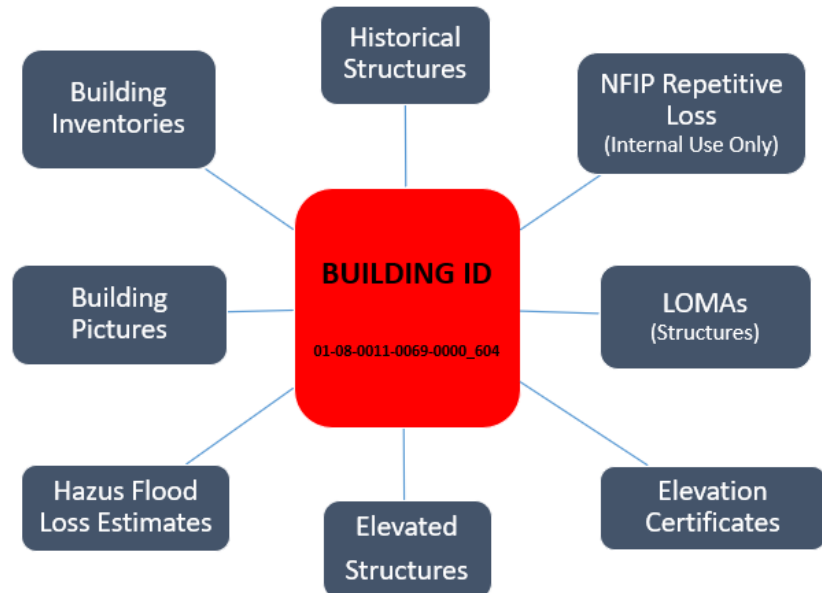


**Building Identifier**  
(Parcel ID + Address No.)

01-08-0011-0069-0000\_604



Link to **Property** Record



Link to **Structure** Record