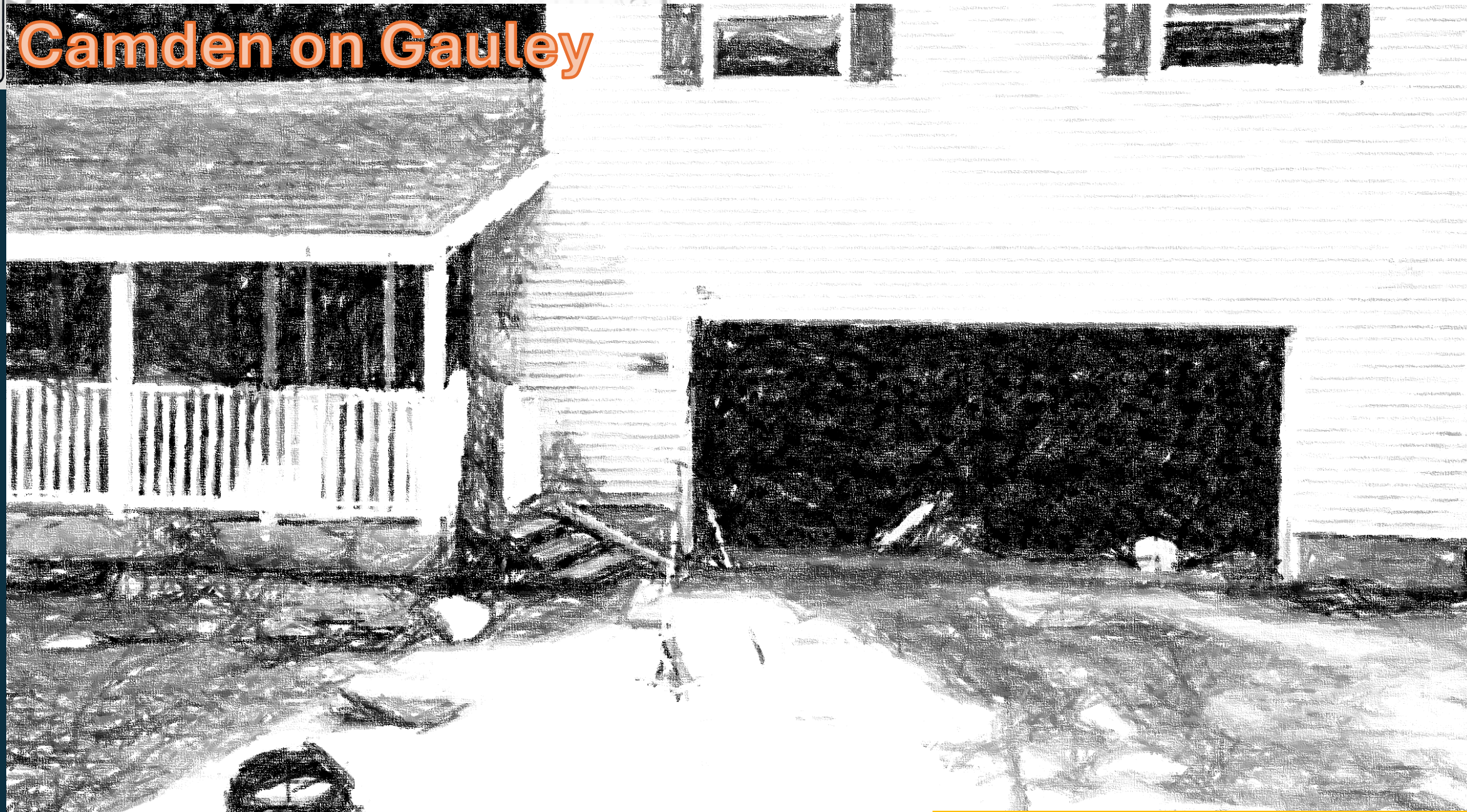




# Camden on Gauley

## Building Flood Profile



Building: 51-04-0003-0006-0000\_81

91 RIVERSIDE DR, Camden On Gauley, WV, 26208



	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	4
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	1.9
FEMA 4% (25-Yr)	
FEMA 2% (50-Yr)	
<b>2016 Flood HWM</b>	
FEMA 1% (100-Yr)	
FEMA 100-Yr + FBD	
FEMA 1%+ (84% CL)	
FEMA 0.2% (500-Yr)	
FSF 0.2% (500-Yr)	

1.9' (FEMA 10% / 10-Yr)

Building: [51-04-0003-0006-0000\\_81](#)

FLOOD DEPTHS:

 FEMA, Effective 2022

 First Street Foundation (FSF, 2022)

 USGS 2016 Flood High Water Mark



	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	4
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	1.9
FEMA 4% (25-Yr)	4.4
FEMA 2% (50-Yr)	
2016 Flood HWM	
FEMA 1% (100-Yr)	
FEMA 100-Yr + FBD	
FEMA 1%+ (84% CL)	
FEMA 0.2% (500-Yr)	
FSF 0.2% (500-Yr)	

4.4' (FEMA 4% / 25-Yr)

1.9' (FEMA 10% / 10-Yr)

Building: 51-04-0003-0006-0000\_81

FLOOD DEPTHS:

FEMA, Effective 2022

First Street Foundation (FSF, 2022)

USGS 2016 Flood High Water Mark



	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	4
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	1.9
FEMA 4% (25-Yr)	4.4
FEMA 2% (50-Yr)	6.7
2016 Flood HWM	
FEMA 1% (100-Yr)	
FEMA 100-Yr + FBD	
FEMA 1%+ (84% CL)	
FEMA 0.2% (500-Yr)	
FSF 0.2% (500-Yr)	

6.7' (FEMA 2% / 50-Yr)

4.4' (FEMA 4% / 25-Yr)

1.9' (FEMA 10% / 10-Yr)

Building: [51-04-0003-0006-0000\\_81](#)



	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	4
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	1.9
FEMA 4% (25-Yr)	4.4
FEMA 2% (50-Yr)	6.7
<b>2016 Flood HWM</b>	
FEMA 1% (100-Yr)	8.3
FEMA 100-Yr + FBD	10.3
FEMA 1%+ (84% CL)	
FEMA 0.2% (500-Yr)	
FSF 0.2% (500-Yr)	

8.3' (FEMA 1% / 100-Yr)

6.7' (FEMA 2% / 50-Yr)

4.4' (FEMA 4% / 25-Yr)

1.9' (FEMA 10% / 10-Yr)

Building: [51-04-0003-0006-0000\\_81](#)

FLOOD DEPTHS:

 FEMA, Effective 2022

 First Street Foundation (FSF, 2022)

 USGS 2016 Flood High Water Mark



10.7' FEMA 1%+ (84% CL)

8.3' (FEMA 1% / 100-Yr)

6.7' (FEMA 2% / 50-Yr)

4.4' (FEMA 4% / 25-Yr)

1.9' (FEMA 10% / 10-Yr)

	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	4
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	1.9
FEMA 4% (25-Yr)	4.4
FEMA 2% (50-Yr)	6.7
<b>2016 Flood HWM</b>	
FEMA 1% (100-Yr)	8.3
FEMA 100-Yr + FBD	10.3
FEMA 1%+ (84% CL)	10.7
FEMA 0.2% (500-Yr)	
FSF 0.2% (500-Yr)	

Building: 51-04-0003-0006-0000\_81

FLOOD DEPTHS:

FEMA, Effective 2022

First Street Foundation (FSF, 2022)

USGS 2016 Flood High Water Mark



10.7' FEMA 1%+ (84% CL)

9.1' (2016 High Water)

8.3' (FEMA 1% / 100-Yr)

6.7' (FEMA 2% / 50-Yr)

4.4' (FEMA 4% / 25-Yr)

1.9' (FEMA 10% / 10-Yr)

	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	4
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	1.9
FEMA 4% (25-Yr)	4.4
FEMA 2% (50-Yr)	6.7
2016 Flood HWM	9.1
FEMA 1% (100-Yr)	8.3
FEMA 100-Yr + FBD	10.3
FEMA 1%+ (84% CL)	10.7
FEMA 0.2% (500-Yr)	
FSF 0.2% (500-Yr)	

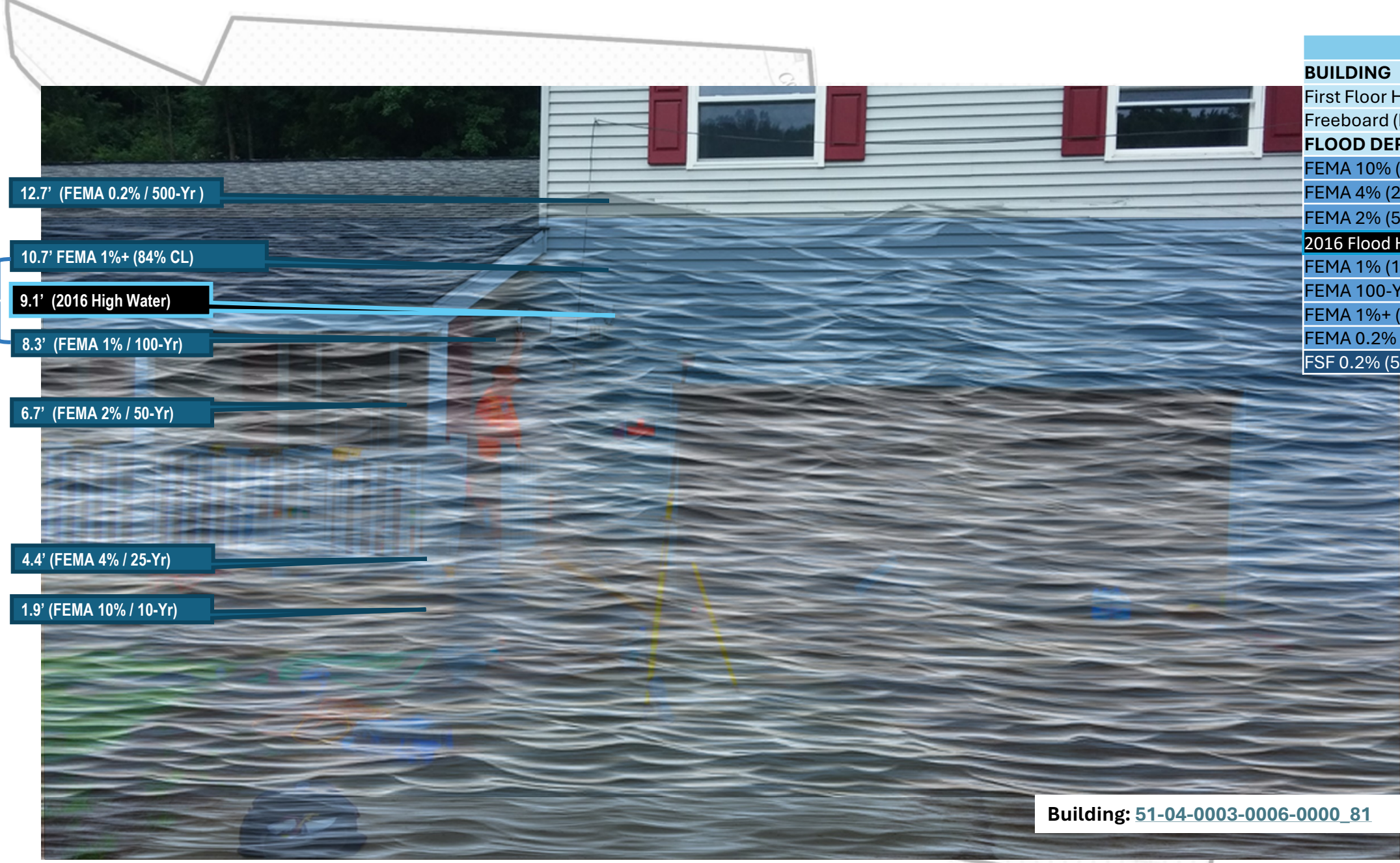
Building: 51-04-0003-0006-0000\_81

FLOOD DEPTHS:

 FEMA, Effective 2022

 First Street Foundation (FSF, 2022)

 USGS 2016 Flood High Water Mark



12.7' (FEMA 0.2% / 500-Yr)

10.7' FEMA 1%+ (84% CL)

9.1' (2016 High Water)

8.3' (FEMA 1% / 100-Yr)

6.7' (FEMA 2% / 50-Yr)

4.4' (FEMA 4% / 25-Yr)

1.9' (FEMA 10% / 10-Yr)

	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	4
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	1.9
FEMA 4% (25-Yr)	4.4
FEMA 2% (50-Yr)	6.7
<b>2016 Flood HWM</b>	<b>9.1</b>
FEMA 1% (100-Yr)	8.3
FEMA 100-Yr + FBD	10.3
FEMA 1%+ (84% CL)	10.7
FEMA 0.2% (500-Yr)	12.7
FSF 0.2% (500-Yr)	

Building: 51-04-0003-0006-0000\_81



FLOOD DEPTHS:  FEMA, Effective 2022  First Street Foundation (FSF, 2022)  USGS 2016 Flood High Water Mark



14.8' (FSF 0.2% / 500-Yr)

12.7' (FEMA 0.2% / 500-Yr)

10.7' FEMA 1%+ (84% CL)

9.1' (2016 High Water)

8.3' (FEMA 1% / 100-Yr)

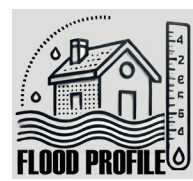
6.7' (FEMA 2% / 50-Yr)

4.4' (FEMA 4% / 25-Yr)

1.9' (FEMA 10% / 10-Yr)

	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	4
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	1.9
FEMA 4% (25-Yr)	4.4
FEMA 2% (50-Yr)	6.7
2016 Flood HWM	9.1
FEMA 1% (100-Yr)	8.3
FEMA 100-Yr + FBD	10.3
FEMA 1%+ (84% CL)	10.7
FEMA 0.2% (500-Yr)	12.7
FSF 0.2% (500-Yr)	14.8

Building: 51-04-0003-0006-0000\_81



FLOOD DEPTHS:



FEMA, Effective 2022



First Street Foundation (FSF, 2022)



USGS 2016 Flood High Water Mark



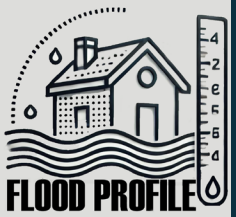
# Clendenin

20-02-0006-0044-0000\_306

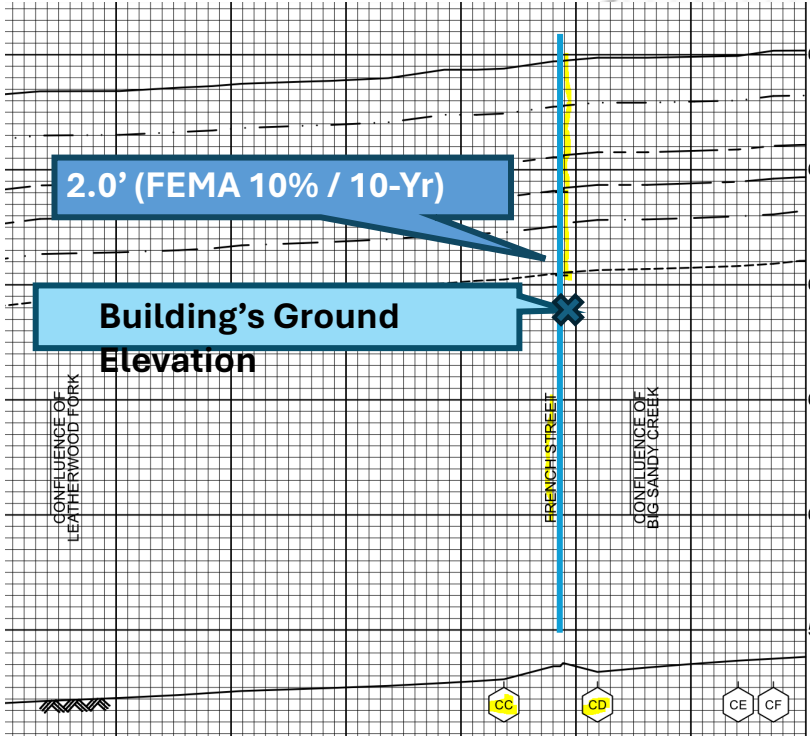
306 Maywood Ave., Clendenin, WV, 25045



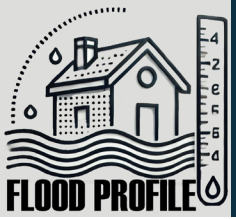
Building-scale flood visualizations of different flood frequencies and magnitudes



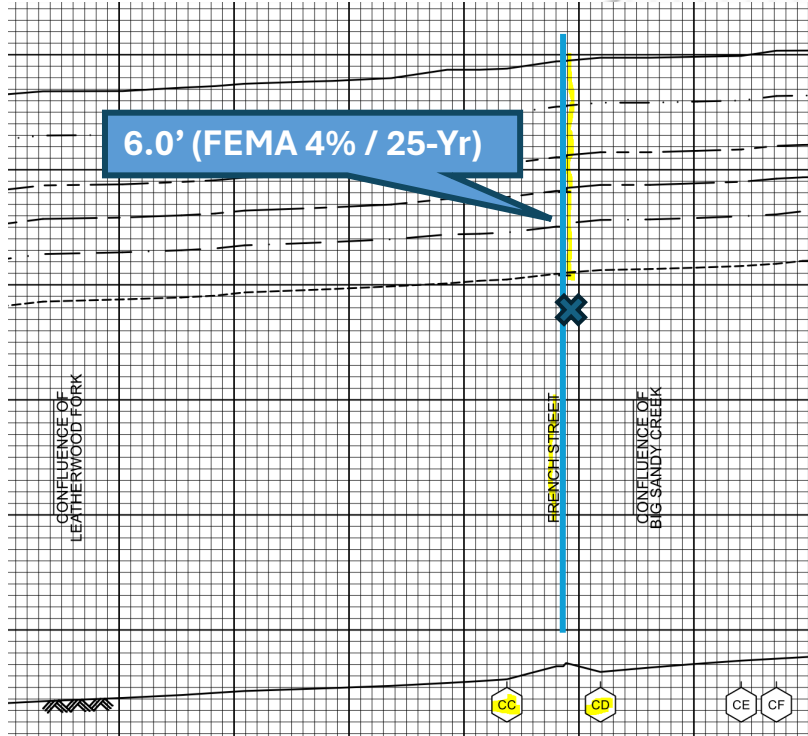
# 10% Probability of Flood in a year (10-year flood)



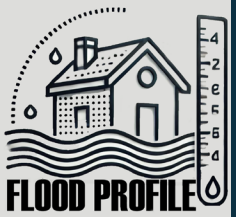
Reamer Rd



# 4% Probability of Flood in a year (25-year flood)



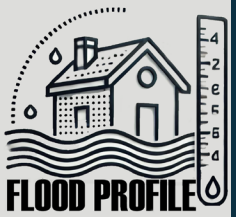
Reamer Rd



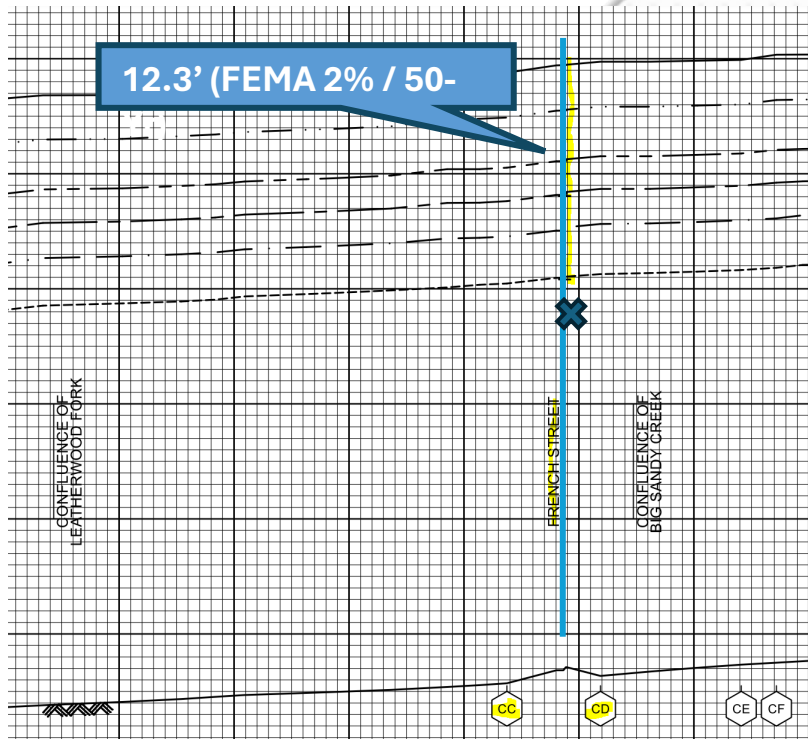
# 2% Probability of Flood in a year (50-year flood)



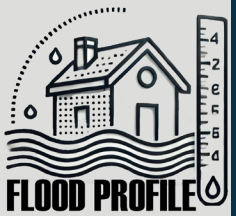
Reamer Rd



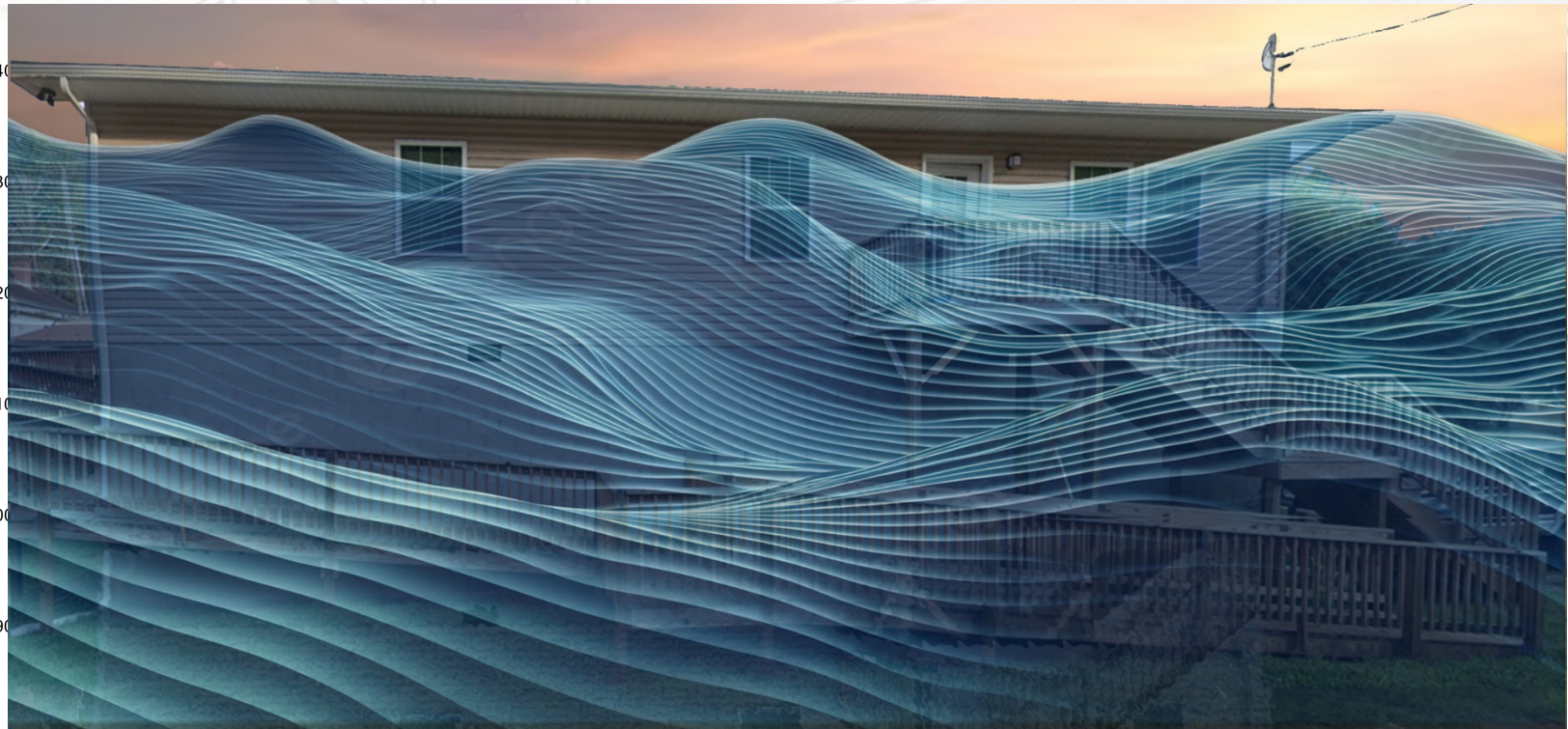
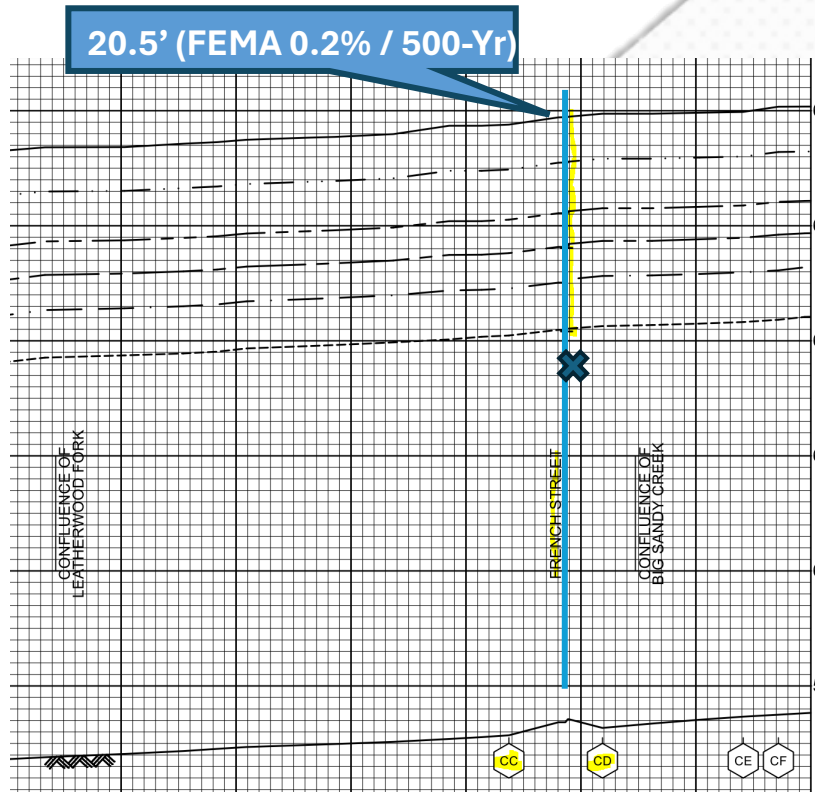
# 1% Probability of Flood in a year (100-year flood)



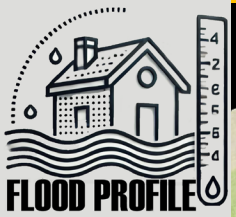
Reamer Rd



# 0.2% Probability of Flood in a year (500-year flood)

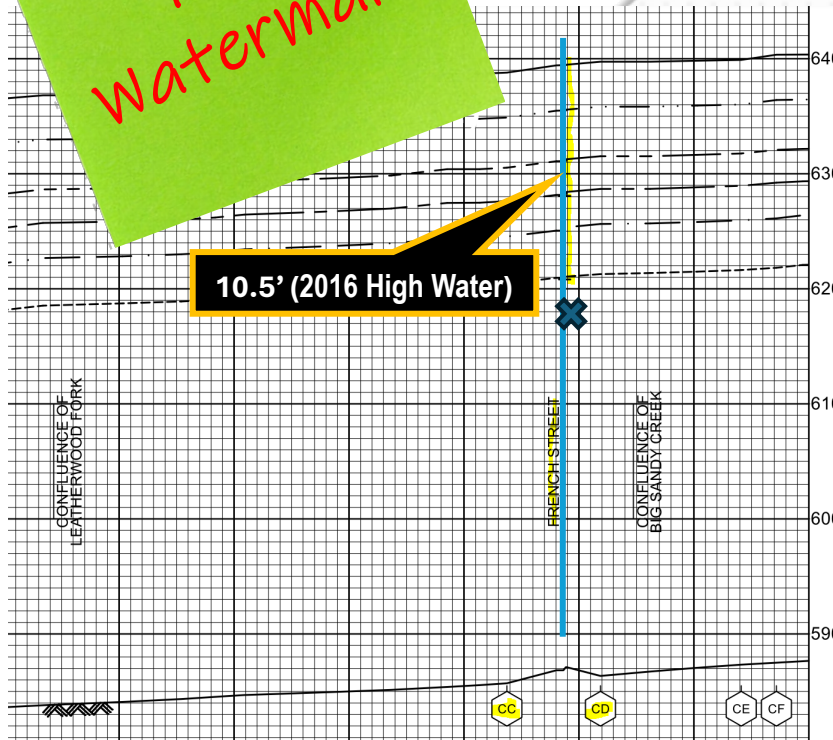


Reamer Rd



# 2016 High Watermark

High Watermark



Reamer Rd



The Design Flood Elevation (DFE) should be the BFE plus 2 feet of freeboard. The DFE should also be above the high-water marks of the 2016 flood plus freeboard.

306 Maywood Ave., Clendenin, WV, 25045



	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	12.0
Freeboard (FBD)	2.0
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	2.0
FEMA 4% (25-Yr)	
FEMA 2% (50-Yr)	
<b>2016 Flood HWM</b>	
FEMA 1% (100-Yr)	
FEMA 100-Yr + FBD	
FEMA 1%+ (84% CL)	
FEMA 0.2% (500-Yr)	
FSF 0.2% (500-Yr)	

2.0' (FEMA 10% / 10-Yr)

Building 20-02-0006-0044-0000 306



The Design Flood Elevation (DFE) should be the BFE plus 2 feet of freeboard. The DFE should also be above the high-water marks of the 2016 flood plus freeboard.

306 Maywood Ave., Clendenin, WV, 25045



	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	12.0
Freeboard (FBD)	2.0
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	2.0
FEMA 4% (25-Yr)	6.0
FEMA 2% (50-Yr)	
<b>2016 Flood HWM</b>	
FEMA 1% (100-Yr)	
FEMA 100-Yr + FBD	
FEMA 1%+ (84% CL)	
FEMA 0.2% (500-Yr)	
FSF 0.2% (500-Yr)	

6.0' (FEMA 4% / 25-Yr)

2.0' (FEMA 10% / 10-Yr)

Building 20-02-0006-0044-0000 306



FLOOD DEPTHS:

FEMA, Effective 2023

First Street Foundation (FSF, 2022)

USGS 2016 Flood High Water Mark

The Design Flood Elevation (DFE) should be the BFE plus 2 feet of freeboard. The DFE should also be above the high-water marks of the 2016 flood plus freeboard.

306 Maywood Ave., Clendenin, WV, 25045



	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	12.0
Freeboard (FBD)	2.0
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	2.0
FEMA 4% (25-Yr)	6.0
FEMA 2% (50-Yr)	9.5
<b>2016 Flood HWM</b>	
FEMA 1% (100-Yr)	
FEMA 100-Yr + FBD	
FEMA 1%+ (84% CL)	
FEMA 0.2% (500-Yr)	
FSF 0.2% (500-Yr)	

9.5' (FEMA 2% / 50-Yr)

6.0' (FEMA 4% / 25-Yr)

2.0' (FEMA 10% / 10-Yr)

Building 20-02-0006-0044-0000 306



FLOOD DEPTHS:

FEMA

First Street Foundation (FSF)

USGS 2016 Flood High Water Mark

The Design Flood Elevation (DFE) should be the BFE plus 2 feet of freeboard. The DFE should also be above the high-water marks of the 2016 flood plus freeboard.

306 Maywood Ave., Clendenin, WV, 25045



	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	12.0
Freeboard (FBD)	2.0
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	2.0
FEMA 4% (25-Yr)	6.0
FEMA 2% (50-Yr)	9.5
2016 Flood HWM	10.5
FEMA 1% (100-Yr)	
FEMA 100-Yr + FBD	
FEMA 1%+ (84% CL)	
FEMA 0.2% (500-Yr)	
FSF 0.2% (500-Yr)	

10.5' (2016 High Water)

9.5' (FEMA 2% / 50-Yr)

6.0' (FEMA 4% / 25-Yr)

2.0' (FEMA 10% / 10-Yr)

Building 20-02-0006-0044-0000 306



FLOOD DEPTHS:



FEMA, Effective 2023



First Street Foundation (FSF, 2022)



USGS 2016 Flood High Water Mark

The Design Flood Elevation (DFE) should be the BFE plus 2 feet of freeboard. The DFE should also be above the high-water marks of the 2016 flood plus freeboard.

306 Maywood Ave., Clendenin, WV, 25045



	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	12.0
Freeboard (FBD)	2.0
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	2.0
FEMA 4% (25-Yr)	6.0
FEMA 2% (50-Yr)	9.5
<b>2016 Flood HWM</b>	<b>10.5</b>
FEMA 1% (100-Yr)	12.3
FEMA 100-Yr + FBD	14.3
FEMA 1%+ (84% CL)	16.5
FEMA 0.2% (500-Yr)	
FSF 0.2% (500-Yr)	

16.5' FEMA1%+ (84% CL)

12.3' (FEMA 1% / 100-Yr)

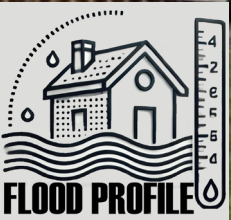
10.5' (2016 High Water)

9.5' (FEMA 2% / 50-Yr)

6.0' (FEMA 4% / 25-Yr)

2.0' (FEMA 10% / 10-Yr)

Building 20-02-0006-0044-0000 306



FLOOD DEPTHS:

FEMA, Effective 2023

First Street Foundation (FSF, 2022)

USGS 2016 Flood High Water Mark

The Design Flood Elevation (DFE) should be the BFE plus 2 feet of freeboard. The DFE should also be above the high-water marks of the 2016 flood plus freeboard.

306 Maywood Ave., Clendenin, WV, 25045



20.5' (FEMA 0.2% / 500-Yr)

16.5' FEMA1%+ (84% CL)

12.3' (FEMA 1% / 100-Yr)

10.5' (2016 High Water)

9.5' (FEMA 2% / 50-Yr)

6.0' (FEMA 4% / 25-Yr)

2.0' (FEMA 10% / 10-Yr)

Building 20-02-0006-0044-0000 306



The Design Flood Elevation (DFE) should be the BFE plus 2 feet of freeboard. The DFE should also be above the high-water marks of the 2016 flood plus freeboard.

306 Maywood Ave., Clendenin, WV, 25045

24.6' (FSF 0.2% / 500-Yr)

20.5' (FEMA 0.2% / 500-Yr)

16.5' FEMA1%+ (84% CL)

12.3' (FEMA 1% / 100-Yr)

10.5' (2016 High Water)

9.5' (FEMA 2% / 50-Yr)

6.0' (FEMA 4% / 25-Yr)

2.0' (FEMA 10% / 10-Yr)

Building 20-02-0006-0044-0000 306

	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	12.0
Freeboard (FBD)	2.0
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	2.0
FEMA 4% (25-Yr)	6.0
FEMA 2% (50-Yr)	9.5
<b>2016 Flood HWM</b>	<b>10.5</b>
FEMA 1% (100-Yr)	12.3
FEMA 100-Yr + FBD	14.3
FEMA 1%+ (84% CL)	16.5
FEMA 0.2% (500-Yr)	20.5
FSF 0.2% (500-Yr)	24.6



FLOOD DEPTHS:

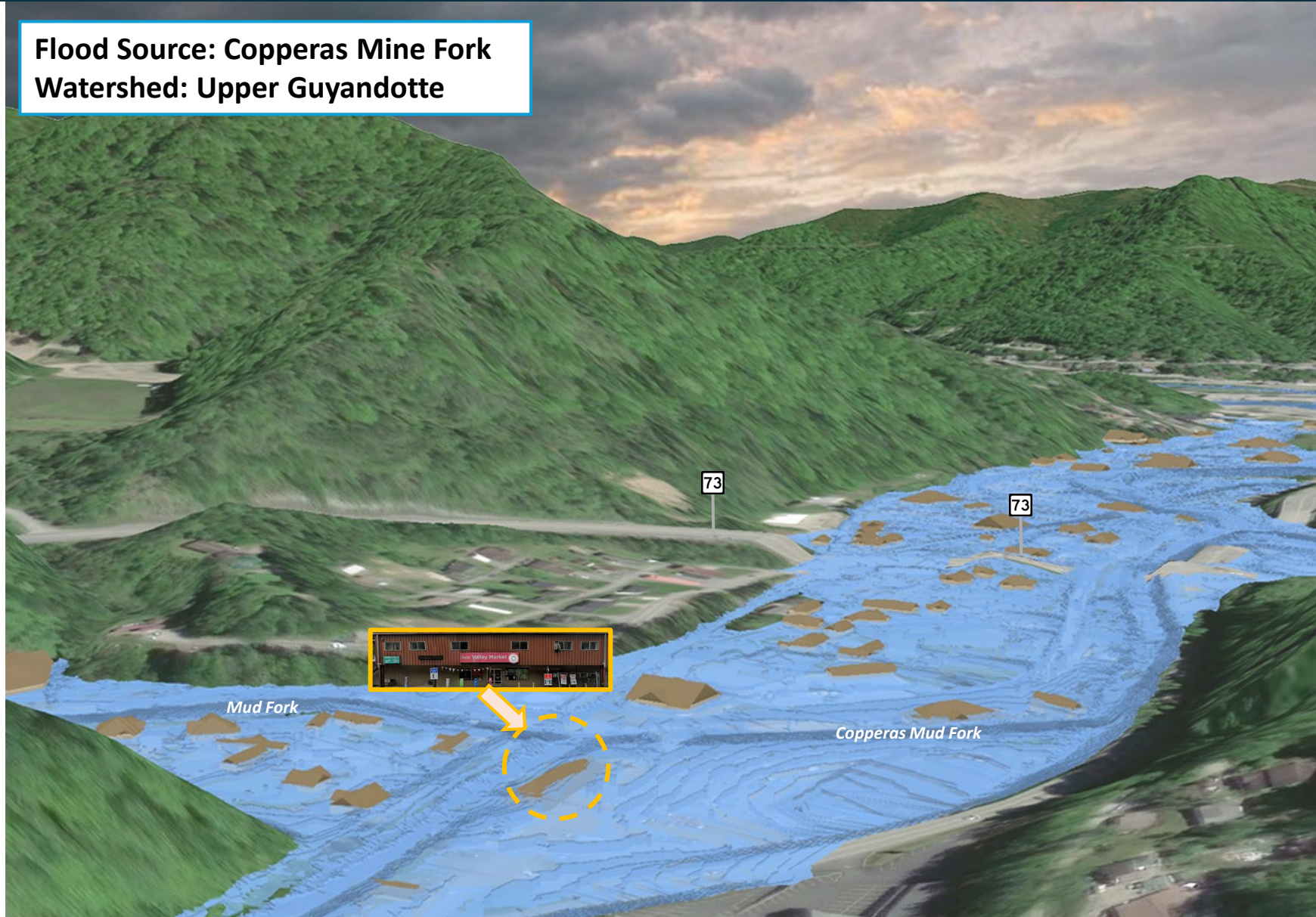
FEMA, Effective 2023

First Street Foundation (FSF, 2022)

USGS 2016 Flood High Water Mark

# Inundated Area in one-hundred-year flood

Flood Source: Copperas Mine Fork  
Watershed: Upper Guyandotte

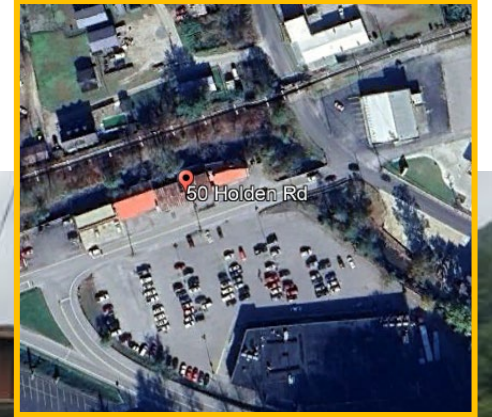




# Building General Identification

23-03-0066-0074-0000 50

50 HOLDEN RD, MOUNT GAY, WV, 25637



## ▼ BUILDING INFORMATION

Property Class Type C - Commercial

Land Use 347 - Supermarket

Year Built 1950 **Pre-FIRM**

Story Height 2



# Flood Profile

## Flood Profile

	HEIGHT (ft.)
<b>BUILDING</b>	
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
<b>FEMA 1% (100-Yr)</b>	12.6
<b>FEMA 100-Yr + FBD</b>	14.6
<b>FEMA 0.2% (500-Yr)</b>	

A photograph of a long, low-profile building with brown vertical siding, partially submerged in dark, turbulent floodwaters. A yellow callout box with a black border points to the water level, which is approximately 12.6 feet above the ground. A banner for "Valley Market" is visible in the water. The background shows a forested hillside under a cloudy sky.

12.6' (FEMA 1% / 100-Yr)

FLOOD DEPTHS:



FEMA, Effective 2008



# Flood Profile

## Flood Profile

	HEIGHT (ft.)
<b>BUILDING</b>	
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
<b>FEMA 1% (100-Yr)</b>	12.6
<b>FEMA 100-Yr + FBD</b>	14.6
<b>FEMA 0.2% (500-Yr)</b>	15.6

15.6' (FEMA 0.2% / 500-Yr)

12.6' (FEMA 1% / 100-Yr)

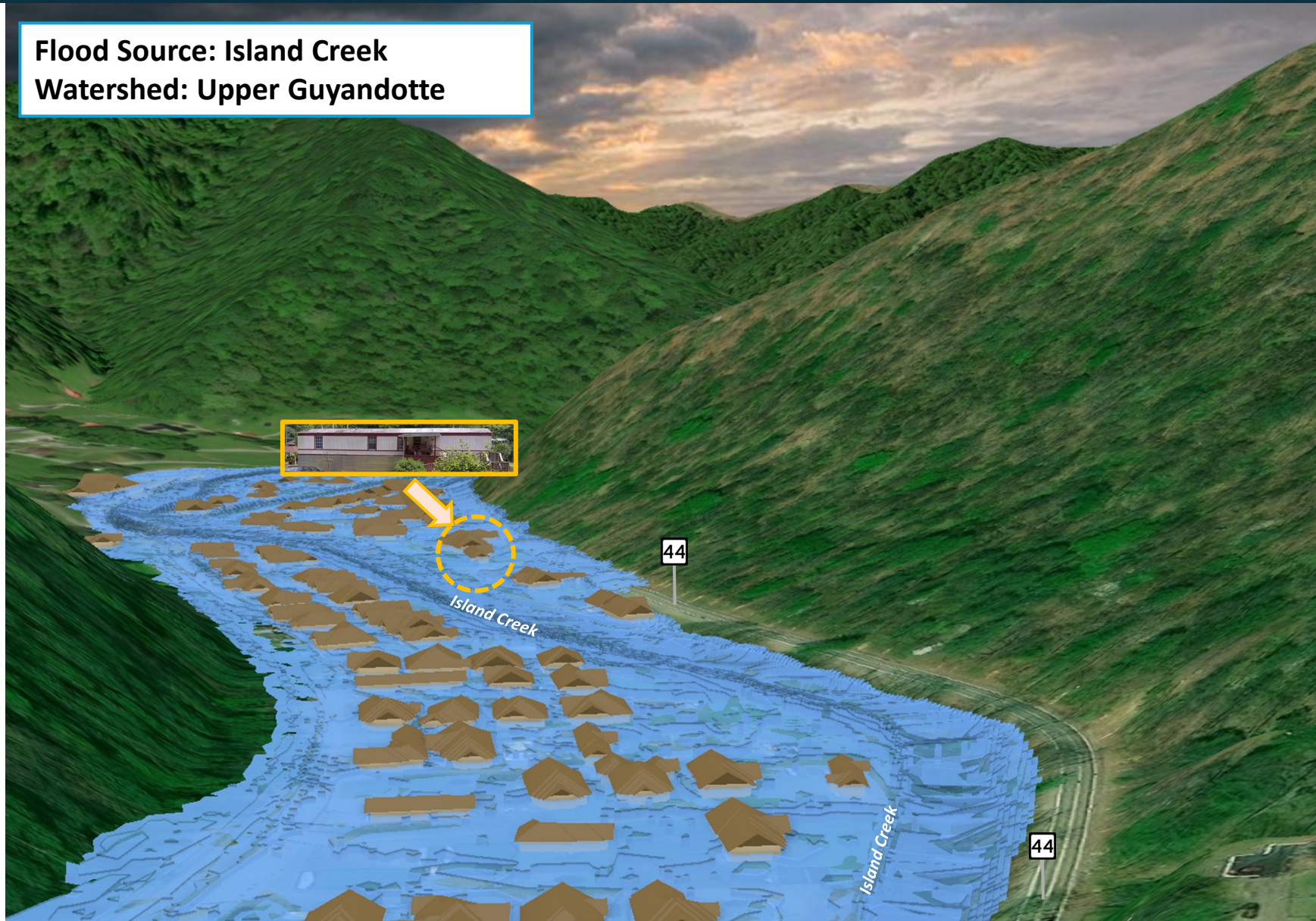
FLOOD DEPTHS:



FEMA, Effective 2008

# Inundated Area in one-hundred-year flood

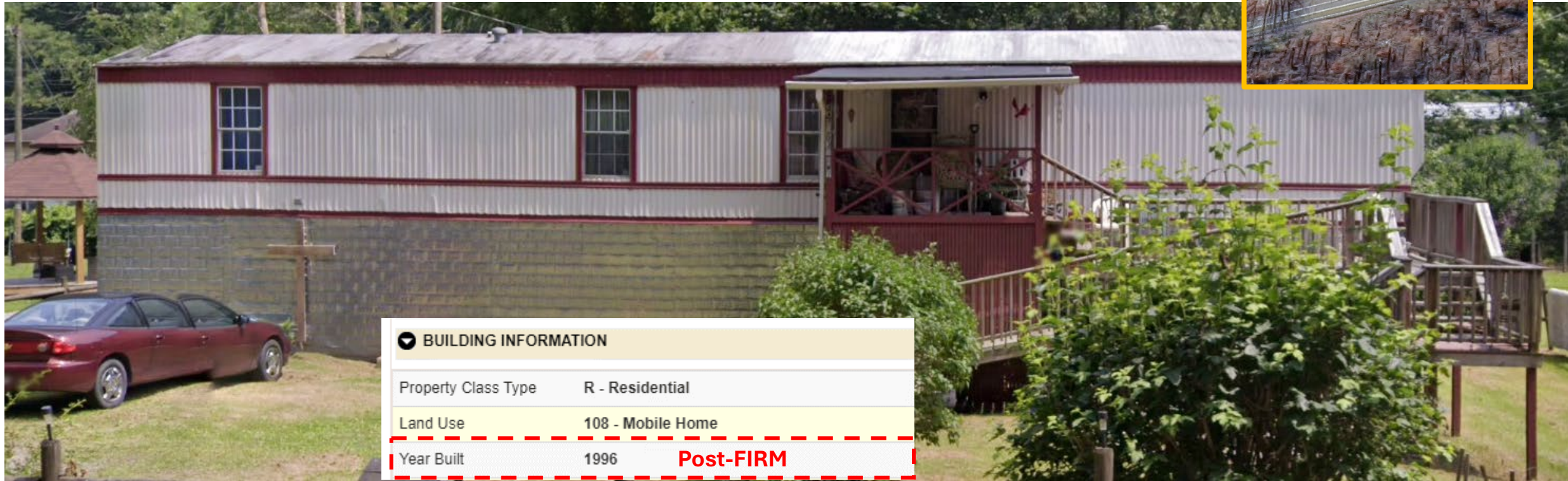
Flood Source: Island Creek  
Watershed: Upper Guyandotte



# Building General Identification

23-03-0029-0029-0000 3456

3456 JERRY WEST HWY TRLR, ROSSMORE, WV, 25636



BUILDING INFORMATION		
Property Class Type	R - Residential	
Land Use	108 - Mobile Home	
Year Built	1996	<b>Post-FIRM</b>



# Flood Profile

## Flood Profile

	HEIGHT (ft.)
<b>BUILDING</b>	
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
<b>FEMA 1% (100-Yr)</b>	7.2
<b>FEMA 100-Yr + FBD</b>	9.2
<b>FEMA 0.2% (500-Yr)</b>	



FLOOD DEPTHS:



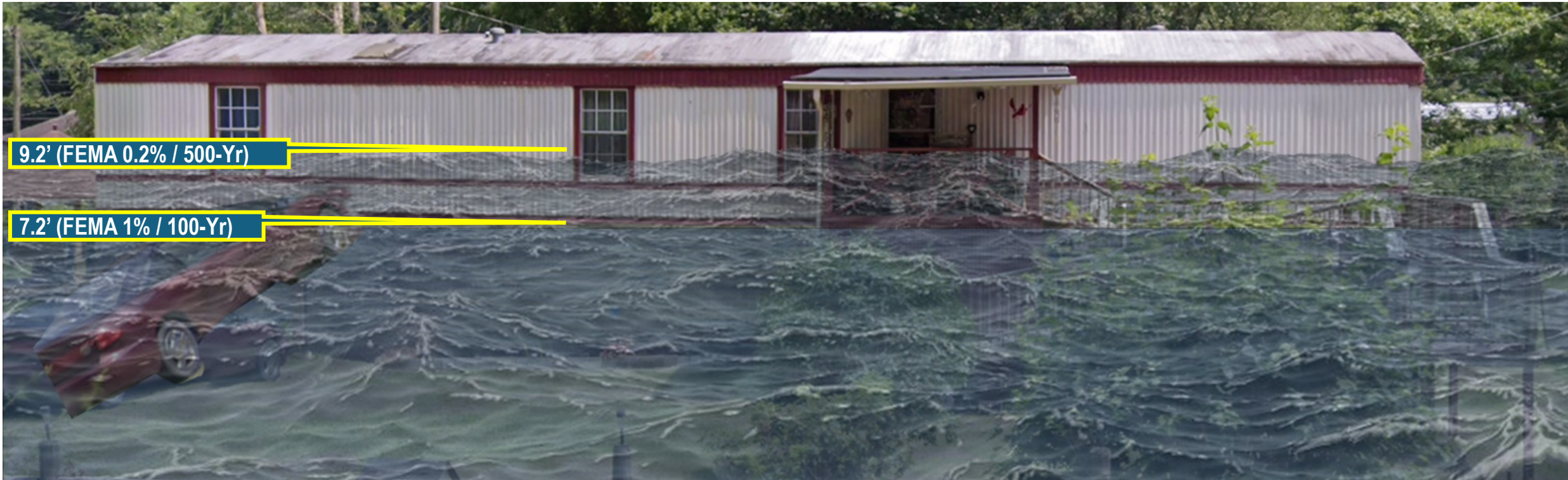
FEMA, Effective 2008



# Flood Profile

## Flood Profile

	HEIGHT (ft.)
<b>BUILDING</b>	
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
<b>FEMA 1% (100-Yr)</b>	7.2
<b>FEMA 100-Yr + FBD</b>	9.2
<b>FEMA 0.2% (500-Yr)</b>	9.2



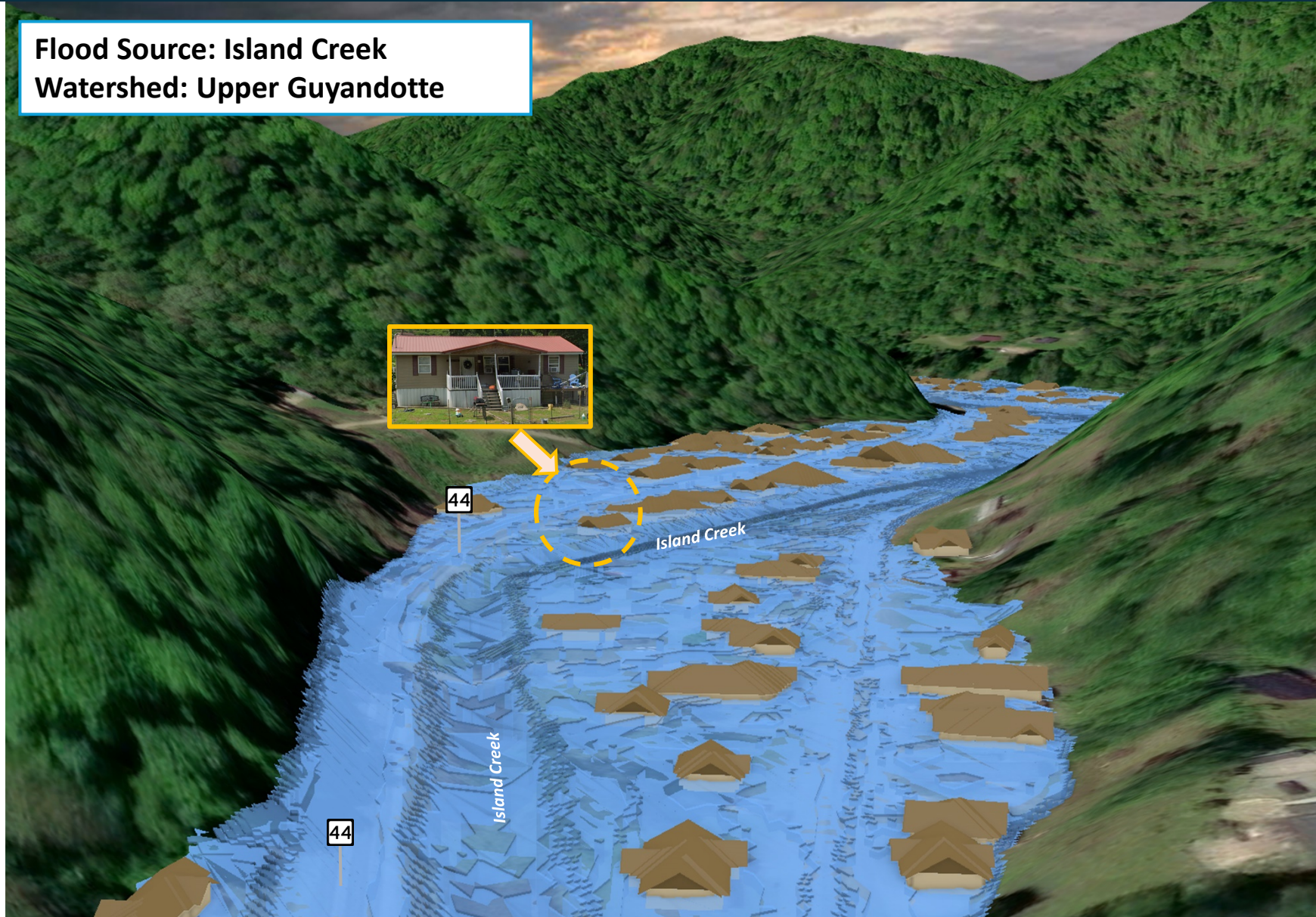
FLOOD DEPTHS:



FEMA, Effective 2008

# Inundated Area in one-hundred-year flood

Flood Source: Island Creek  
Watershed: Upper Guyandotte





# Building General Identification

23-03-0048-0113-0000 5312

5312 JERRY WEST HWY, SWITZER, WV, 25647



BUILDING INFORMATION	
Property Class Type	R - Residential
Land Use	101 - Residential 1 Family
Year Built	2013 <b>Post-FIRM</b>
Architectural Style	Conventional
Story Height	1



# Flood Profile

## Flood Profile



9.4' (FEMA 1% / 100-Yr)

FLOOD DEPTHS:



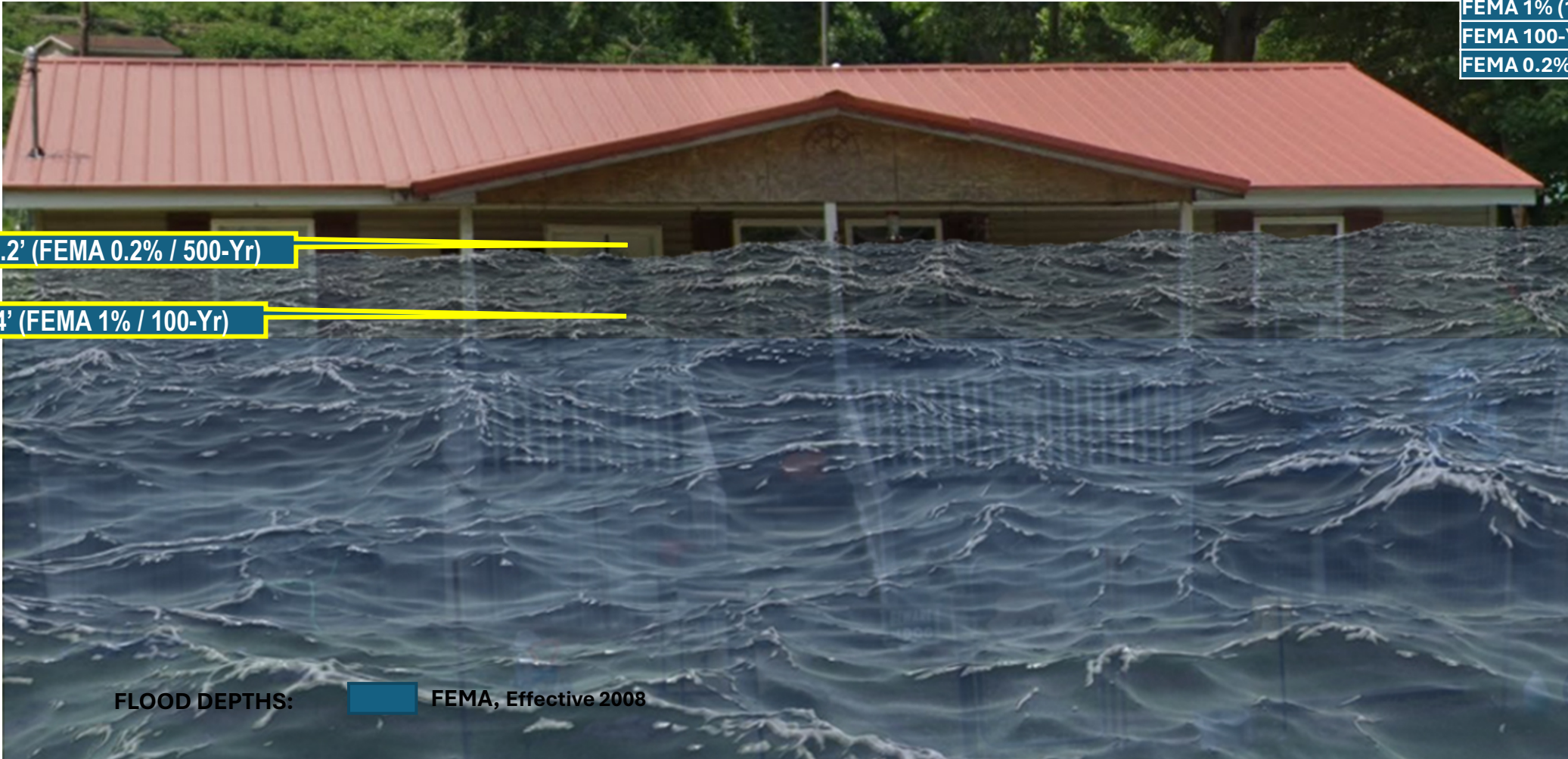
FEMA, Effective 2008

	HEIGHT (ft.)
<b>BUILDING</b>	
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
FEMA 1% (100-Yr)	9.4
FEMA 100-Yr + FBD	11.4
FEMA 0.2% (500-Yr)	



# Flood Profile

## Flood Profile



12.2' (FEMA 0.2% / 500-Yr)

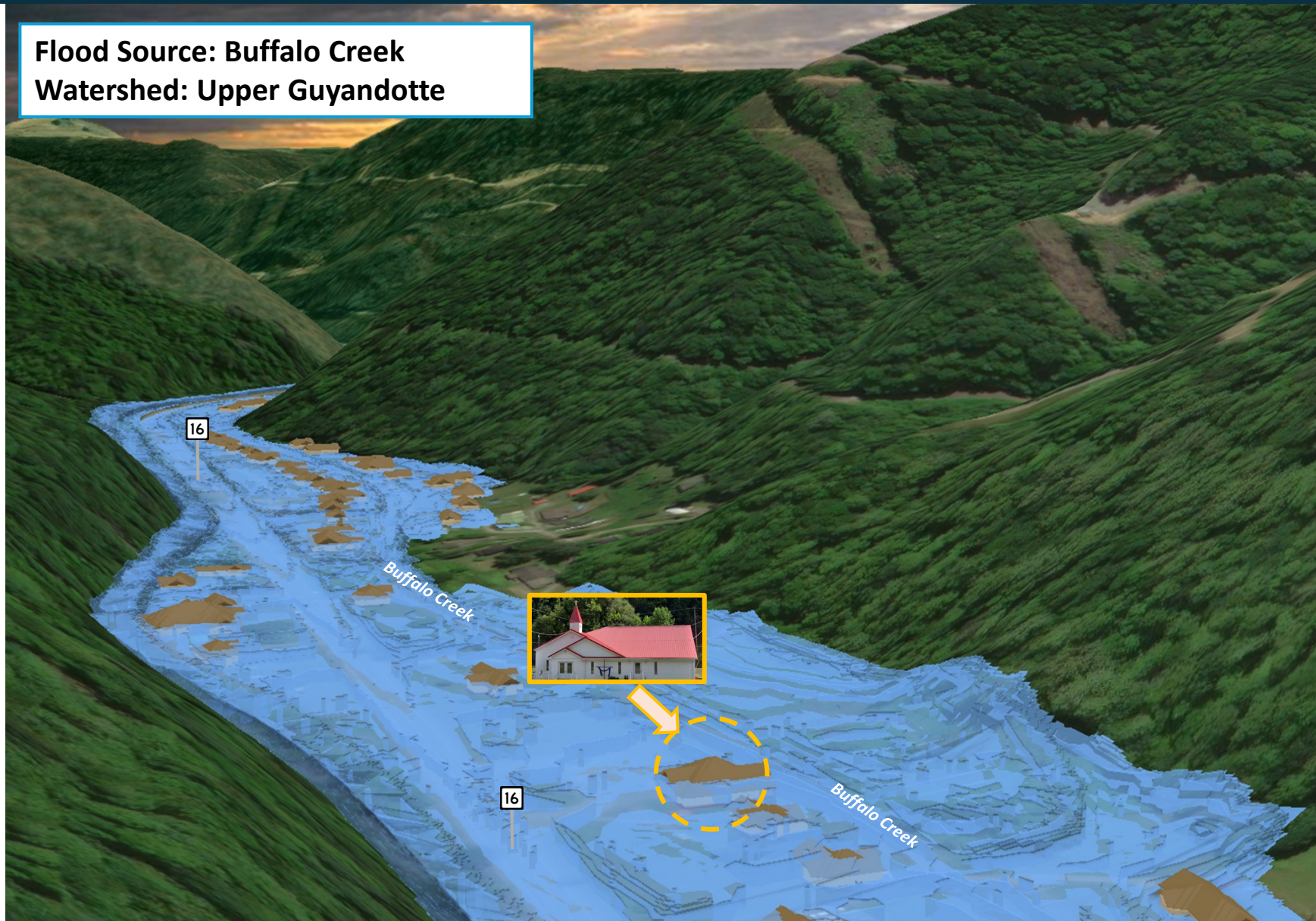
9.4' (FEMA 1% / 100-Yr)

FLOOD DEPTHS:  FEMA, Effective 2008

	HEIGHT (ft.)
<b>BUILDING</b>	
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
FEMA 1% (100-Yr)	9.4
FEMA 100-Yr + FBD	11.4
FEMA 0.2% (500-Yr)	12.7

# Inundated Area in one-hundred-year flood

Flood Source: Buffalo Creek  
Watershed: Upper Guyandotte



# Building General Identification

Building: 23-08-0009-0051-0000 8968

8968 BUFFALO CREEK RD, LORADO, WV, 25630





# Flood Profile



	HEIGHT (ft.)
<b>BUILDING</b>	
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
FEMA 1% (100-Yr)	13.1
FEMA 100-Yr + FBD	15.1
FEMA 0.2% (500-Yr)	

13.1' (FEMA 1% / 100-Yr)

FLOOD DEPTHS:



FEMA, Effective 2008



# Flood Profile



	HEIGHT (ft.)
<b>BUILDING</b>	
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
FEMA 1% (100-Yr)	13.1
FEMA 100-Yr + FBD	15.1
FEMA 0.2% (500-Yr)	16.1

16.1' (FEMA 0.2% / 500-Yr)

13.1' (FEMA 1% / 100-Yr)

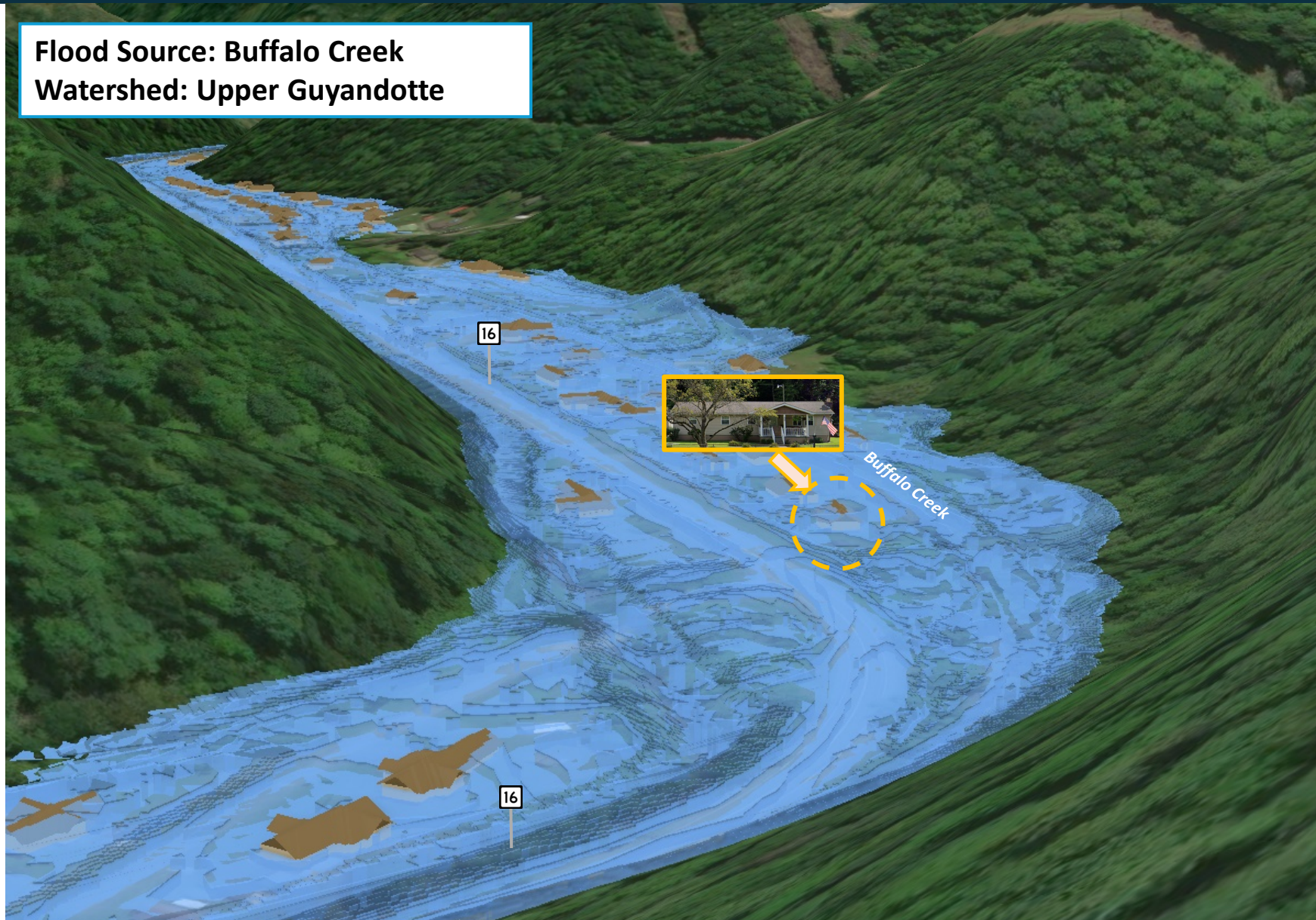
FLOOD DEPTHS:



FEMA, Effective 2008

# Inundated Area in one-hundred-year flood

Flood Source: Buffalo Creek  
Watershed: Upper Guyandotte





# Building General Identification

Building: 23-08-0009-0028-0000\_8758

8758 BUFFALO CREEK RD, LORADO, WV, 25630



## ☑ BUILDING INFORMATION

Property Class Type R - Residential

Land Use 101 - Residential 1 Family

Year Built 1973 **Pre-FIRM**

Architectural Style Conventional

Story Height 1

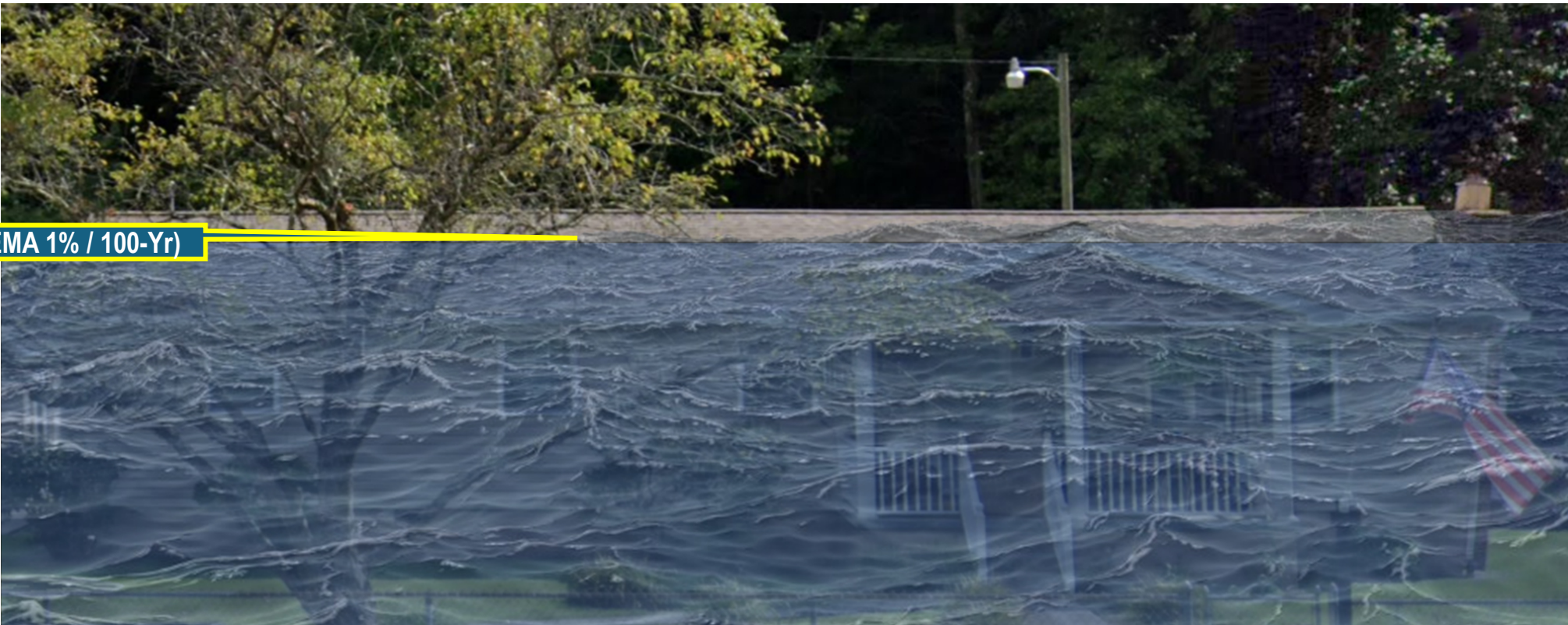


# Flood Profile

## Flood Profile

	HEIGHT (ft.)
<b>BUILDING</b>	
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
<b>FEMA 1% (100-Yr)</b>	<b>13.9</b>
<b>FEMA 100-Yr + FBD</b>	<b>15.9</b>
<b>FEMA 0.2% (500-Yr)</b>	

13.9' (FEMA 1% / 100-Yr)



FLOOD DEPTHS:



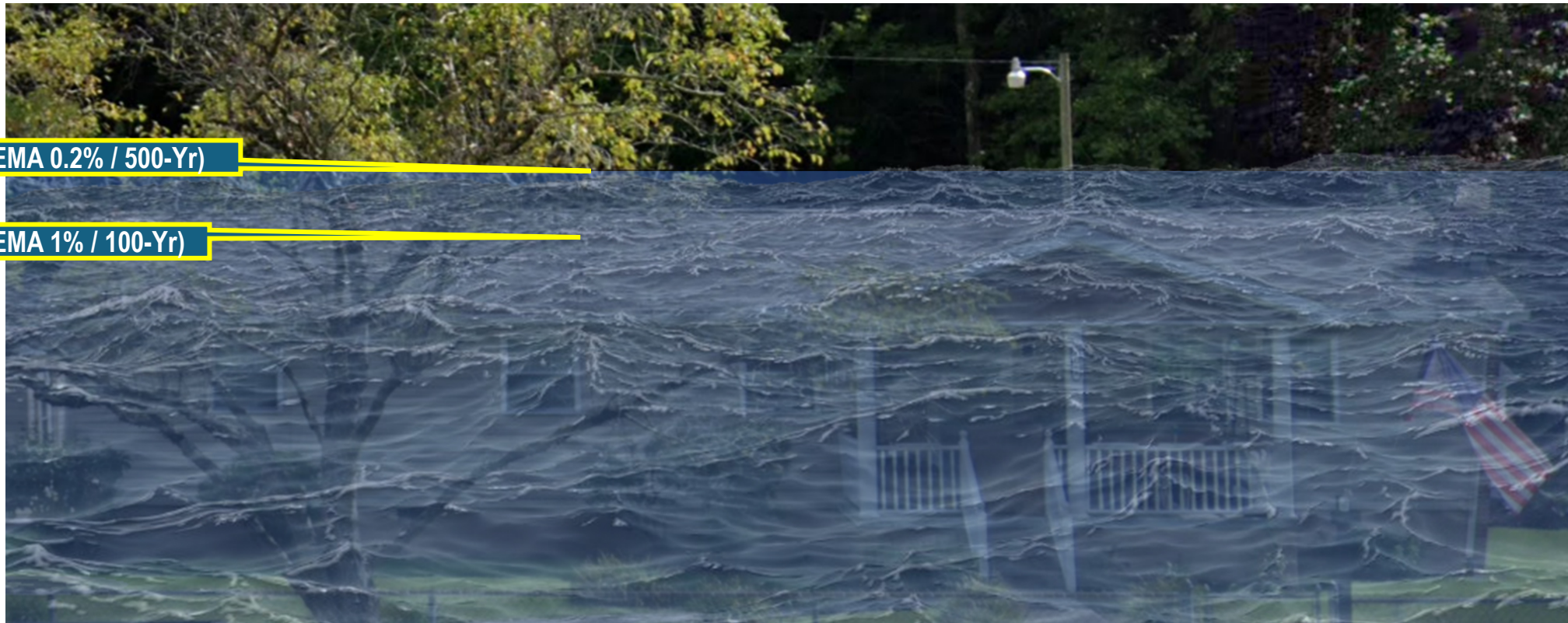
FEMA, Effective 2008



# Flood Profile

## Flood Profile

	HEIGHT (ft.)
<b>BUILDING</b>	
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
<b>FEMA 1% (100-Yr)</b>	<b>13.9</b>
<b>FEMA 100-Yr + FBD</b>	<b>15.9</b>
<b>FEMA 0.2% (500-Yr)</b>	<b>16.7</b>



16.7' (FEMA 0.2% / 500-Yr)

13.9' (FEMA 1% / 100-Yr)

FLOOD DEPTHS:



FEMA, Effective 2008

# Marlinton



**Building:** [38-08-0003-0023-0000](#)

**1900 Commercial Structure**



**309 8th St, Marlinton, WV, 24954**



- 9.4' (FSF 0.2% / 500-Yr)
- 8.8' (FEMA DRAFT NFHL 0.2% / 500-Yr)
- 7' (1985 High Water Mark)
- 4.8' (FEMA DRAFT NFHL 1% / 100-Yr)
- 3.6' (FEMA 1% / 100-Yr)
- 2.7' (FEMA 2% / 50-Yr)
- 0.4' (FEMA 10% / 10-Yr)

Ideally, the Design Flood Elevation (DFE) should be the BFE plus 2 feet of freeboard. The DFE should also be above the high-water marks of the 1985 flood plus freeboard.

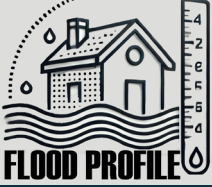
Flood Intervals	Height (ft.)	Source
FEMA 10% / 10-Yr	0.4	Flood Profile (Effective 2010)
FEMA 2% / 50-yr	2.7	Flood Profile (Effective 2010)
FEMA 1% / 100-yr	3.6	Flood Profile (Effective 2010)
FEMA 100-yr + 2.0 Ft. Freeboard (DFE)	5.6	Design flood elevation (DFE)
High Water Mark (1985 Flood)	7.0	Picture
FEMA Draft NFHL 100-yr	4.8	WV Flood Tool (Draft 2023)
FEMA 500-yr	8.8	WV Flood Tool (Draft 2023)
FSF 500-yr	9.4	FSF Flood Depth (2022)



**1985 Flood High Water Mark**

**FLOOD DEPTHS:**

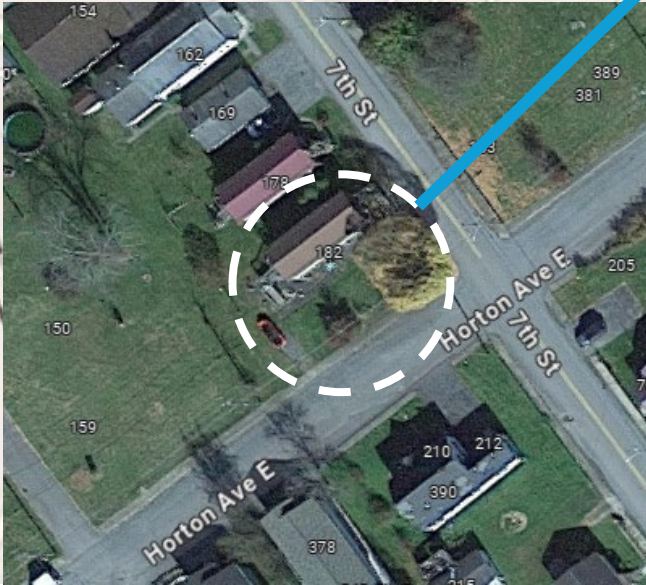
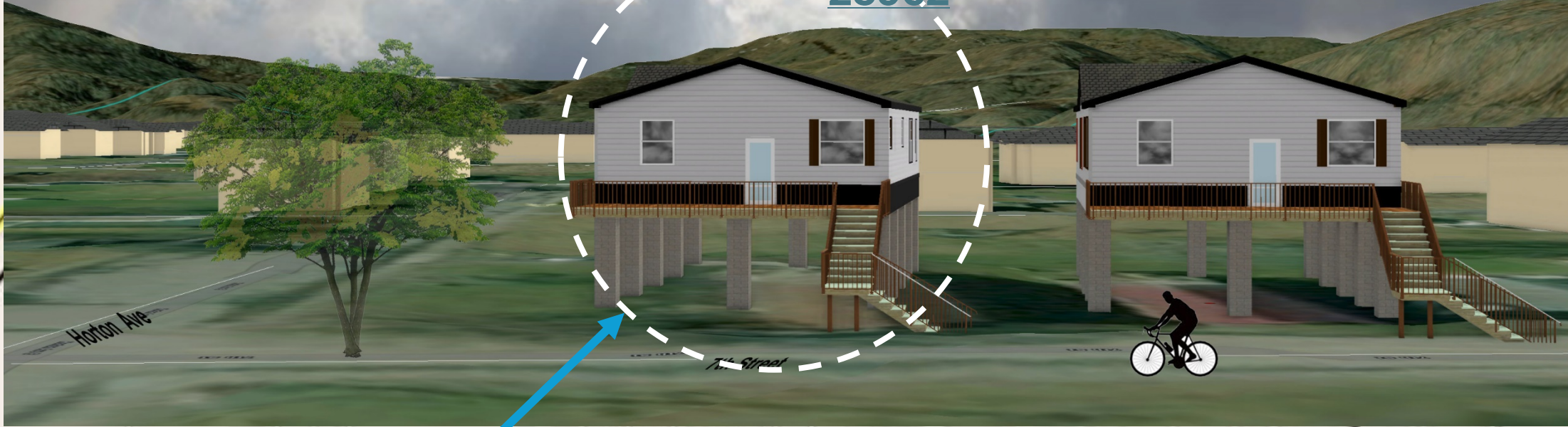
- FEMA Effective (2010)
- FEMA Draft NFHL (2023)
- First Street Foundation (FSF, 2022)
- 1985 Flood High Water Mark

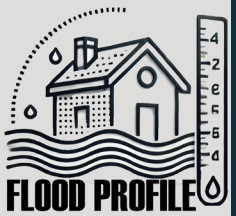


# Building Flood Profile

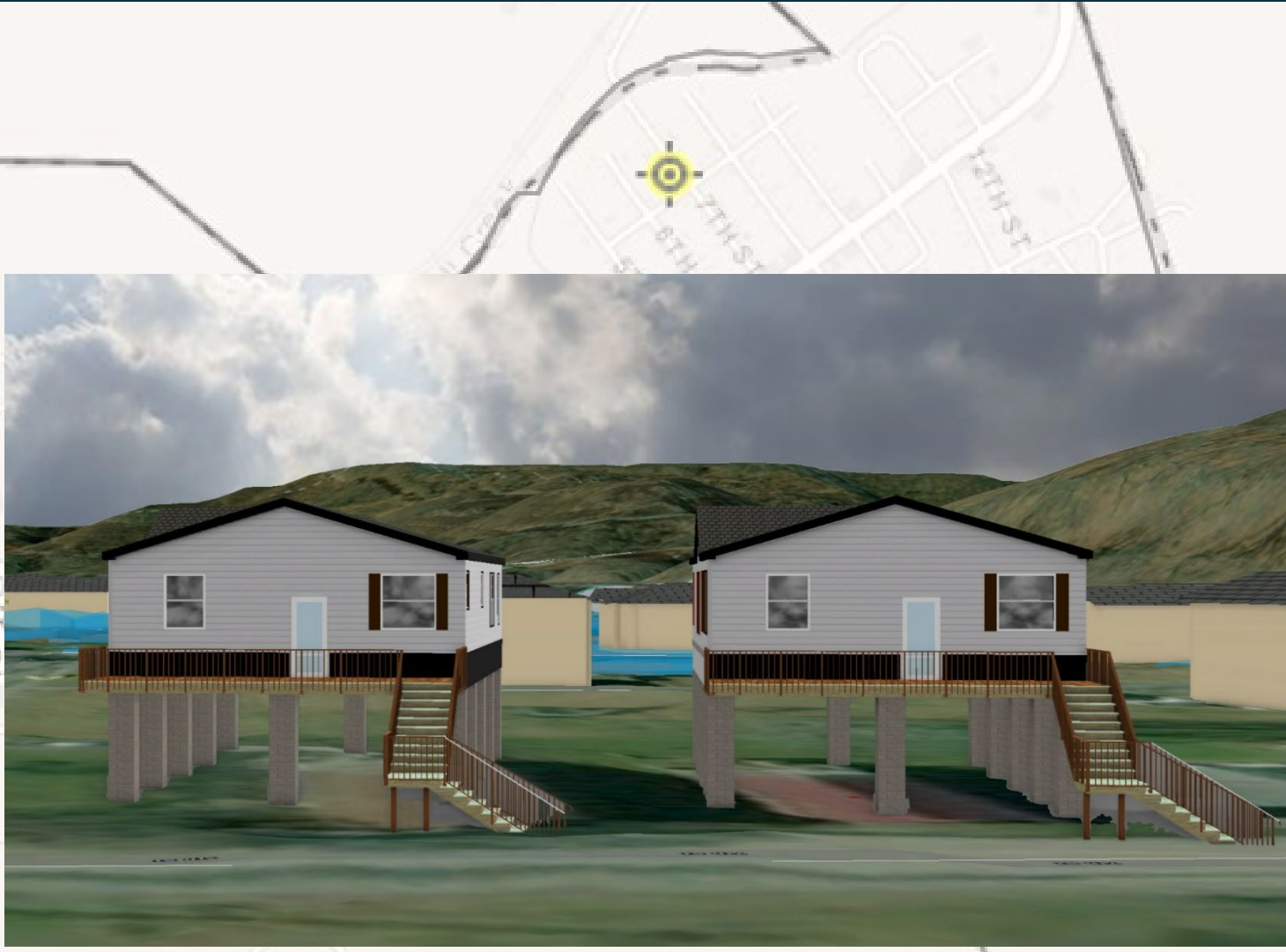
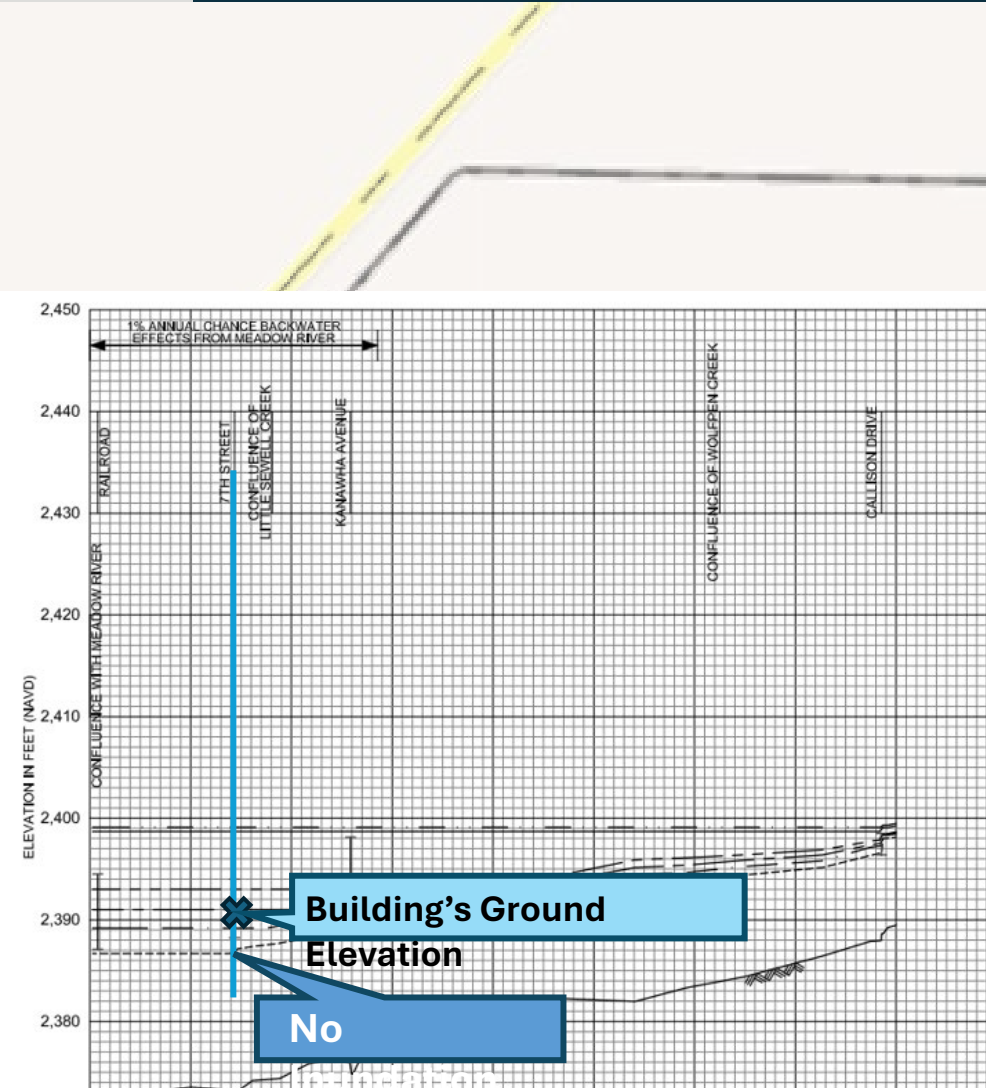
Rainelle

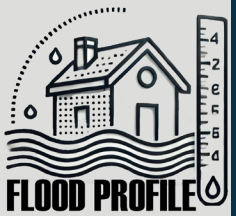
182 SEVENTH ST, Rainelle, WV,  
25962



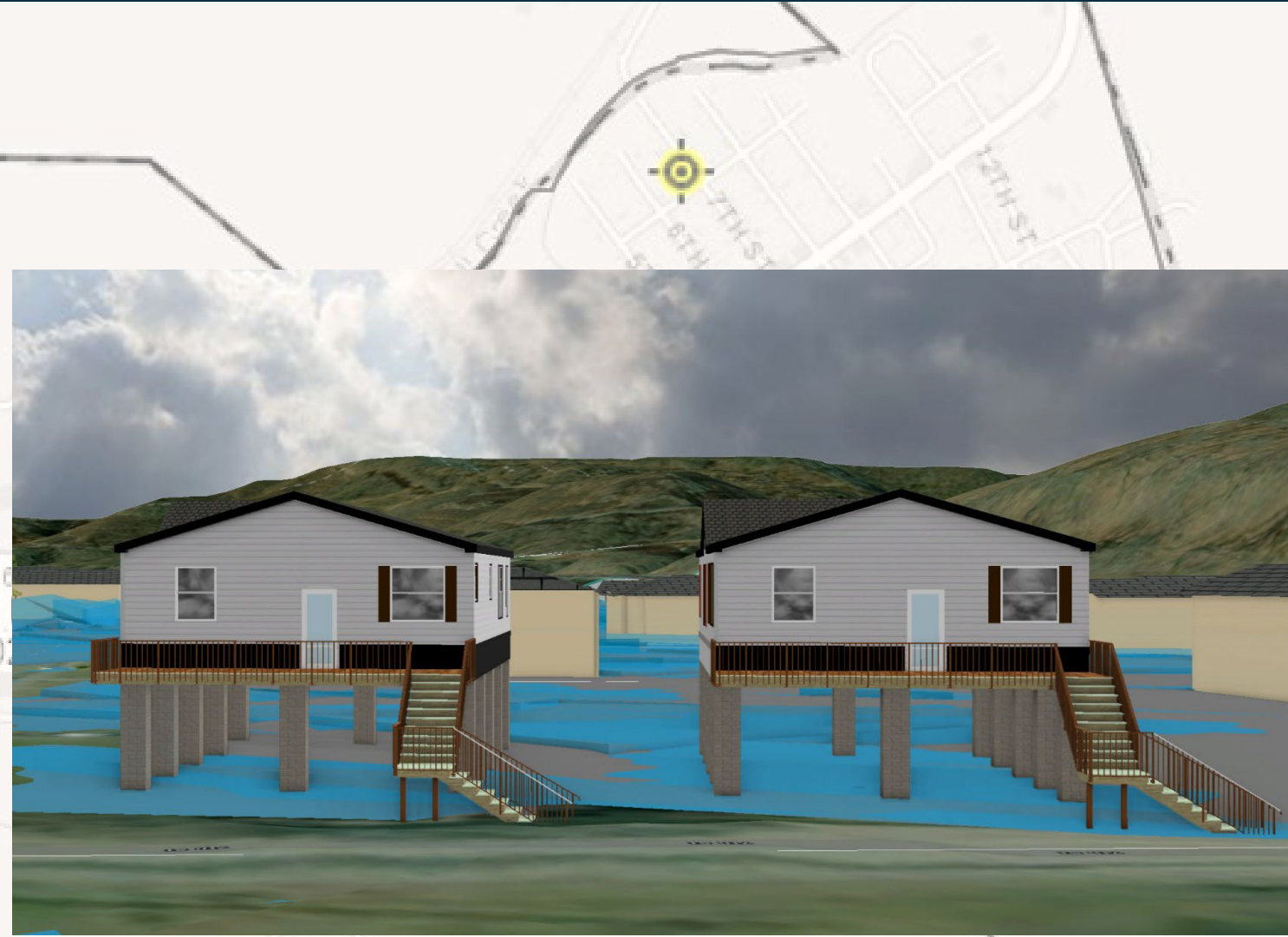
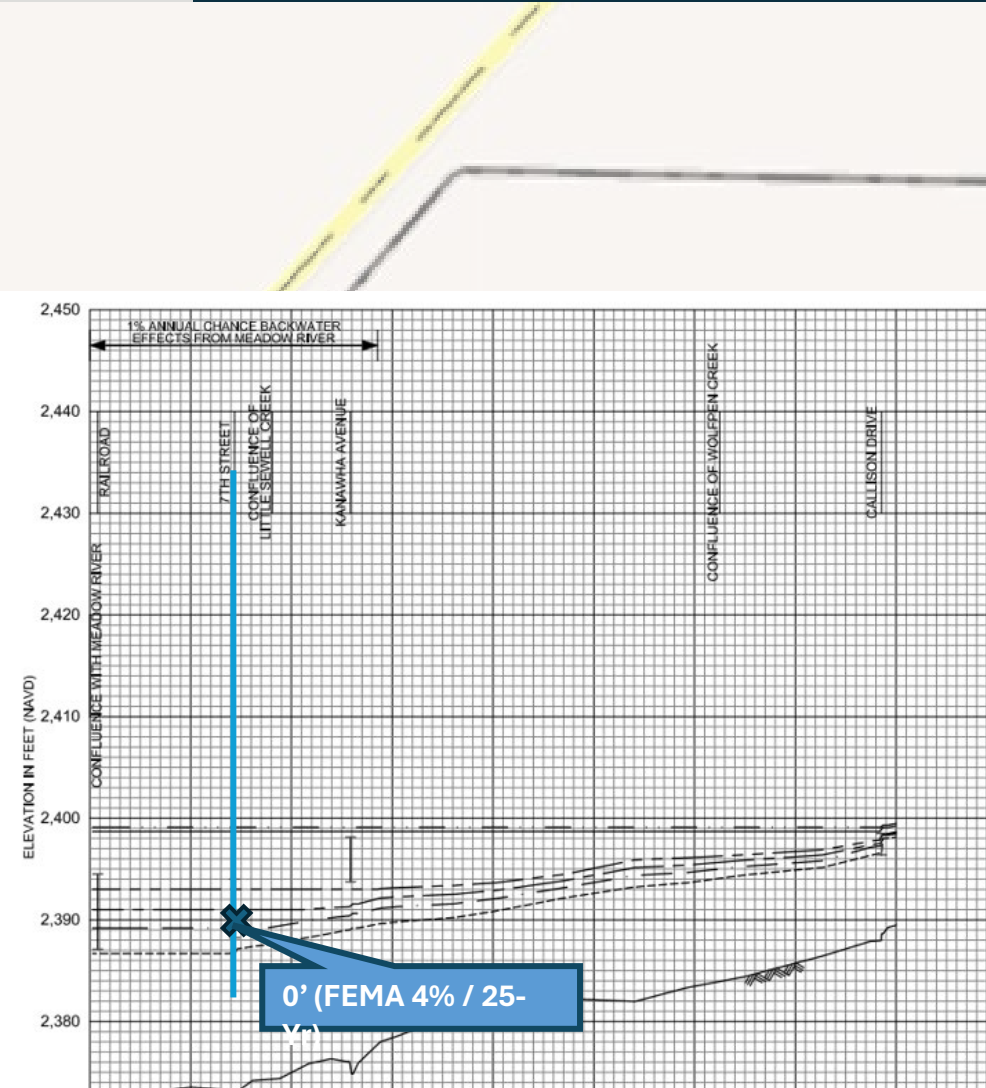


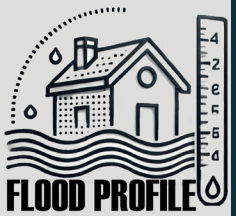
# 10% Probability of Flood in a year (10-year flood)



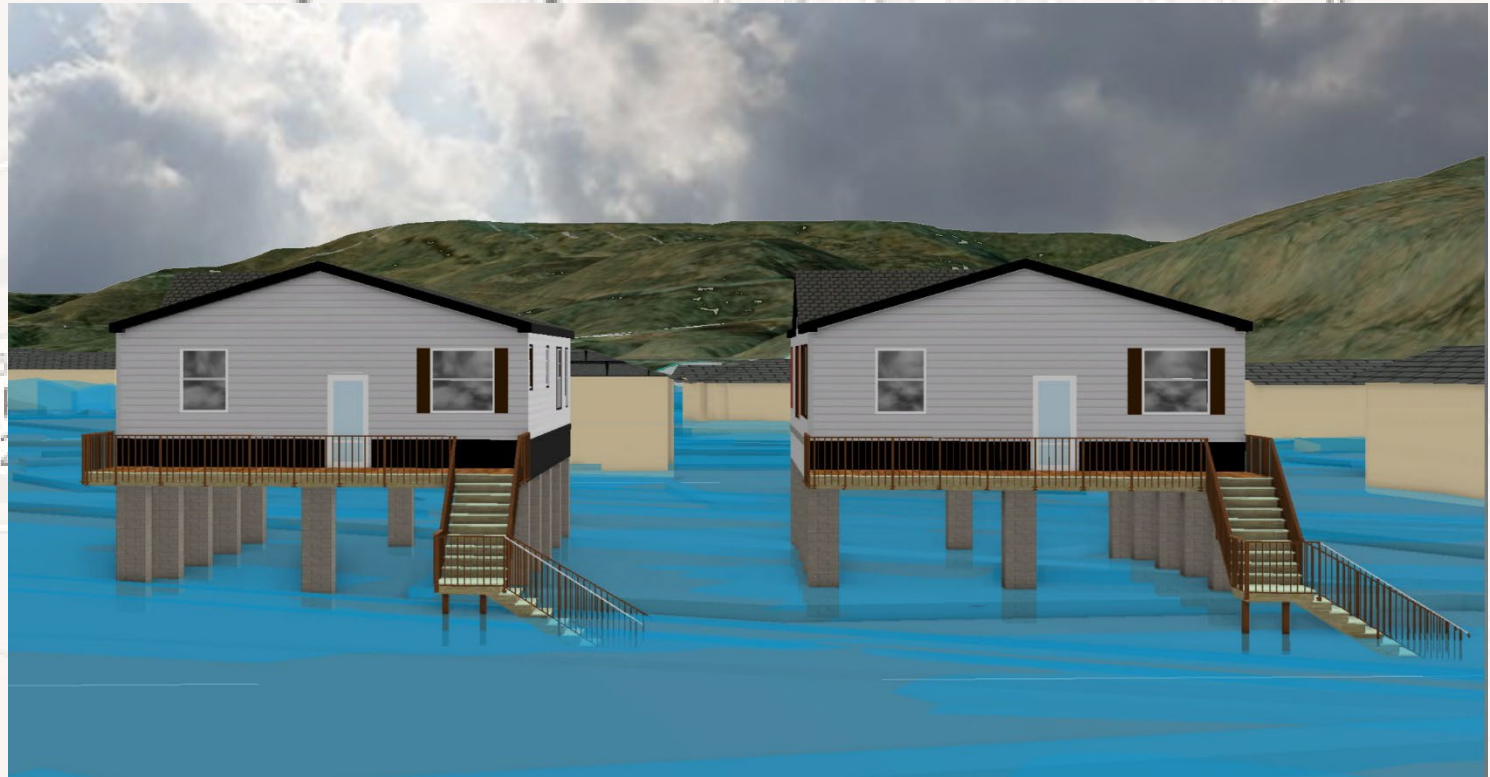
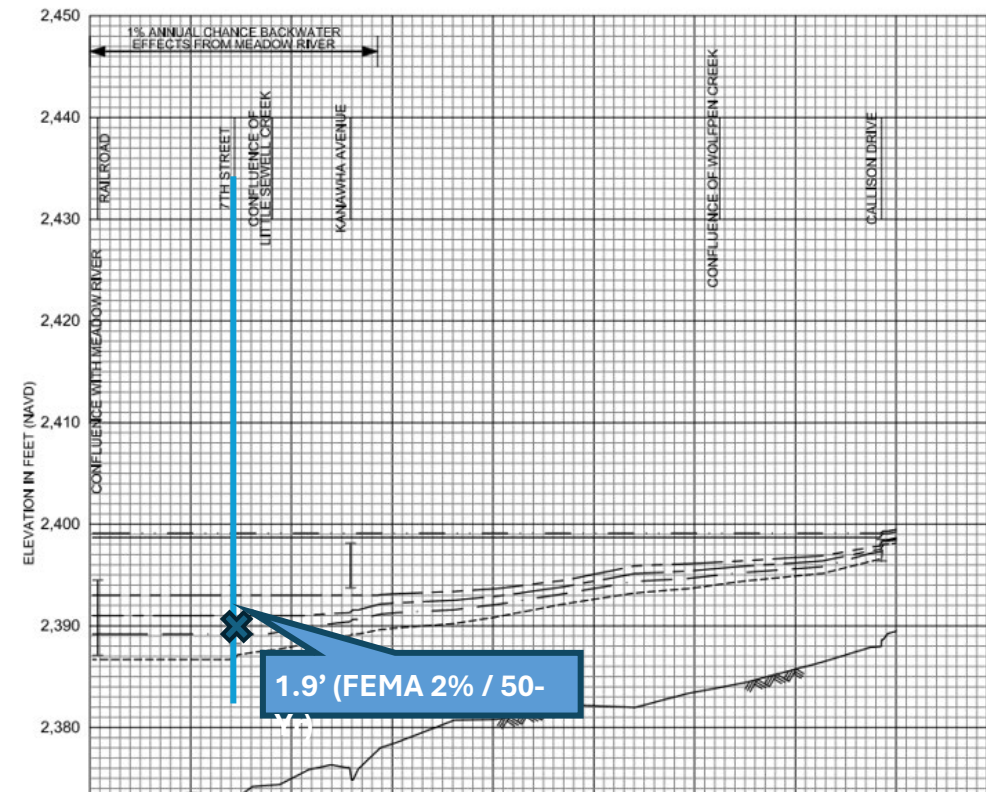


# 4% Probability of Flood in a year (25-year flood)

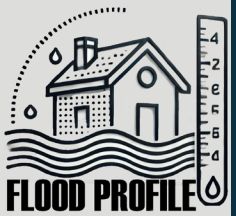




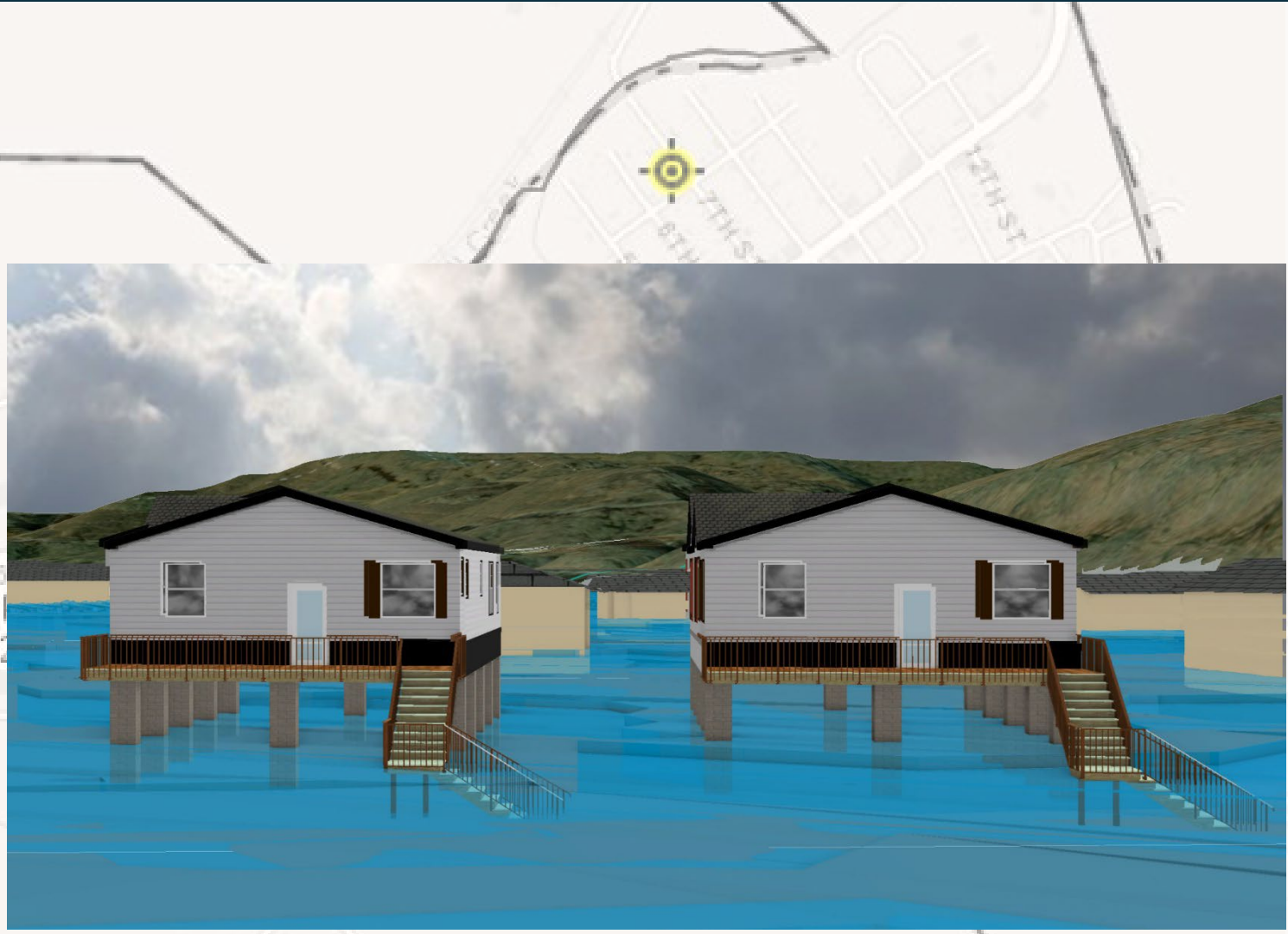
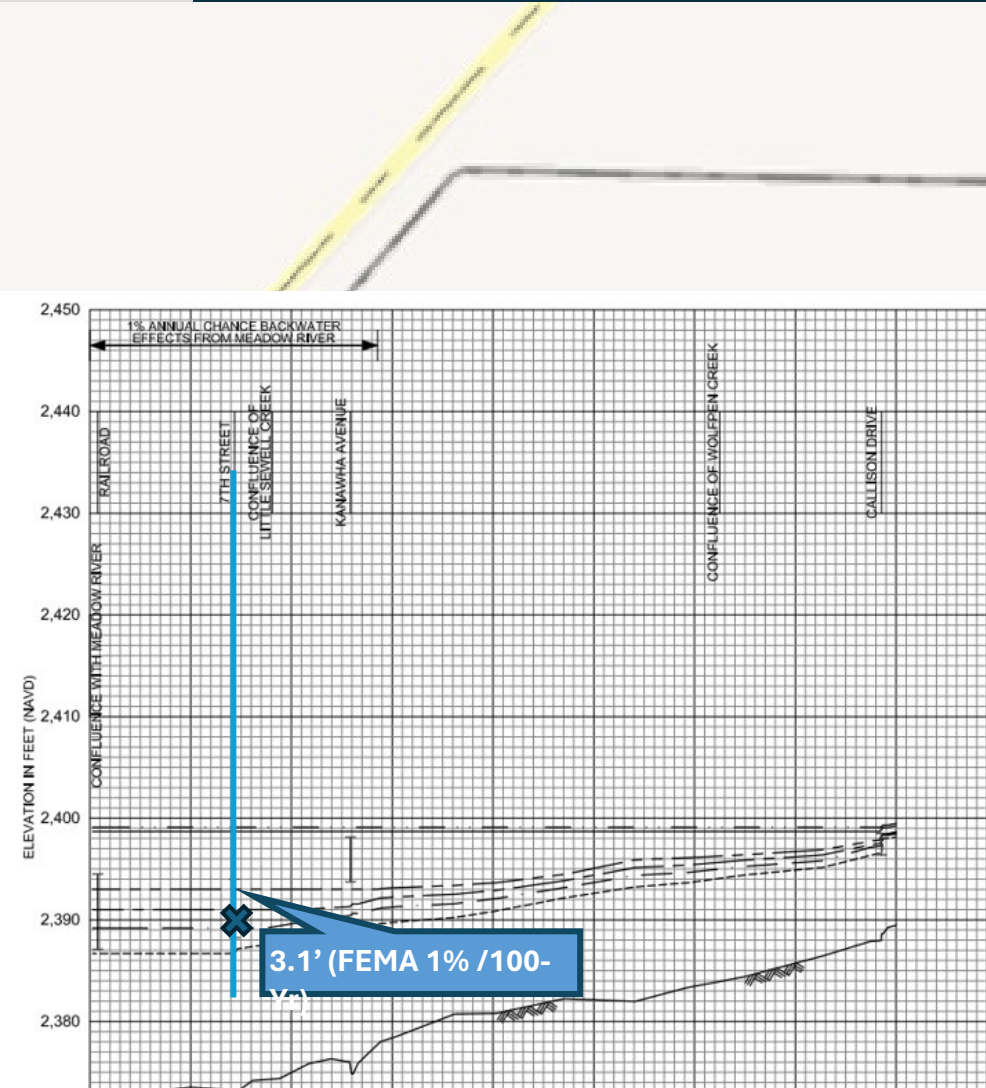
# 2% Probability of Flood in a year (50-year flood)

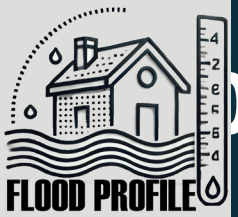




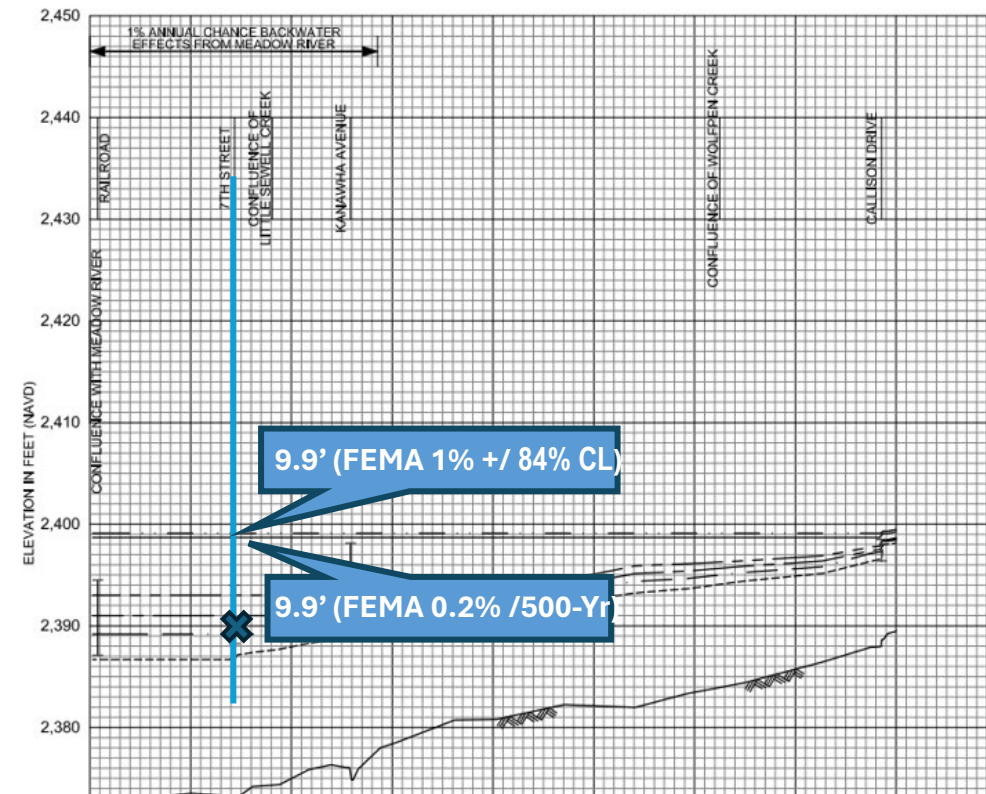


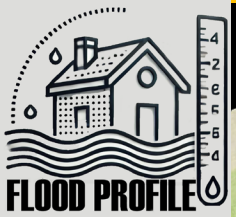
# 1% Probability of Flood in a year (100-year flood)





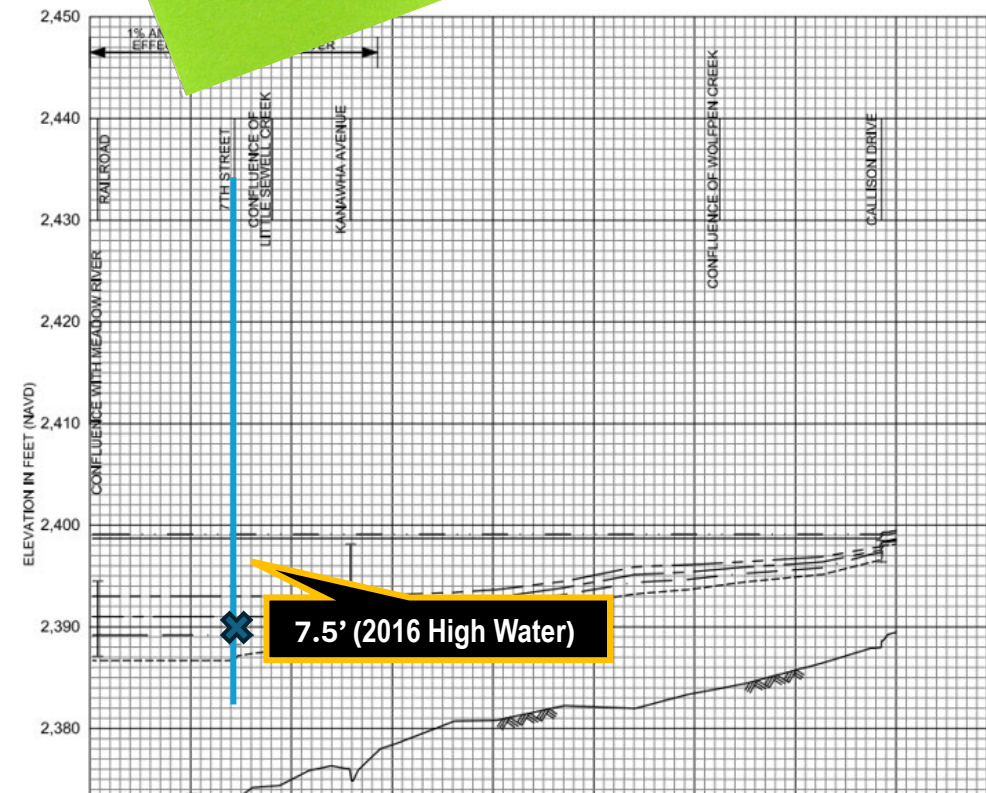
# 0.2% Probability of Flood in a year (500-year flood)





# 2016 High Watermark

High Watermark





	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	9
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	NA
FEMA 4% (25-Yr)	NA
FEMA 2% (50-Yr)	1.9
<b>2016 Flood HWM</b>	
FEMA 1% (100-Yr)	
FEMA 100-Yr + FBD	
FEMA 1%+ (84% CL)	
FEMA 0.2% (500-Yr)	
FSF 0.2% (500-Yr)	

1.9' (FEMA 10% / 10-Yr)

Building: 13-13-0001-0054-0000\_182

182 Seventh Street, Rainelle, WV, 25962



FLOOD DEPTHS:



FEMA, Effective 2023



First Street Foundation (FSF, 2022)



USGS 2016 Flood High Water Mark



	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	9
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	NA
FEMA 4% (25-Yr)	NA
FEMA 2% (50-Yr)	1.9
<b>2016 Flood HWM</b>	
FEMA 1% (100-Yr)	3.1
FEMA 100-Yr + FBD	
FEMA 1%+ (84% CL)	
FEMA 0.2% (500-Yr)	
FSF 0.2% (500-Yr)	
Climate	

3.1' (FEMA 1% / 100-Yr)

1.9' (FEMA 10% / 10-Yr)

Building: [13-13-0001-0054-0000\\_182](#)

182 Seventh Street, Rainelle, WV, 25962



FLOOD DEPTHS:



FEMA, Effective 2023



First Street Foundation (FSF, 2022)



USGS 2016 Flood High Water Mark



	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	9
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	NA
FEMA 4% (25-Yr)	NA
FEMA 2% (50-Yr)	1.9
<b>2016 Flood HWM</b>	
FEMA 1% (100-Yr)	3.1
FEMA 100-Yr + FBD	5.1
FEMA 1%+ (84% CL)	9.9
FEMA 0.2% (500-Yr)	
FSF 0.2% (500-Yr) Climate	

9.9' FEMA 1%+ (84% CL)

3.1' (FEMA 1% / 100-Yr)

1.9' (FEMA 10% / 10-Yr)

Building: 13-13-0001-0054-0000\_182

182 Seventh Street, Rainelle, WV, 25962



FLOOD DEPTHS:



FEMA, Effective 2023



First Street Foundation (FSF, 2022)



USGS 2016 Flood High Water Mark



	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	9
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	NA
FEMA 4% (25-Yr)	NA
FEMA 2% (50-Yr)	1.9
<b>2016 Flood HWM</b>	<b>7.5</b>
FEMA 1% (100-Yr)	3.1
FEMA 100-Yr + FBD	5.1
FEMA 1%+ (84% CL)	9.9
FEMA 0.2% (500-Yr)	
FSF 0.2% (500-Yr) Climate	

9.9' FEMA 1%+ (84% CL)

7.5' (2016 High Water)

3.1' (FEMA 1% / 100-Yr)

1.9' (FEMA 10% / 10-Yr)

Building: 13-13-0001-0054-0000\_182

182 Seventh Street, Rainelle, WV, 25962



FLOOD DEPTHS:



FEMA, Effective 2023



First Street Foundation (FSF, 2022)



USGS 2016 Flood High Water Mark



	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	9
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	NA
FEMA 4% (25-Yr)	NA
FEMA 2% (50-Yr)	1.9
<b>2016 Flood HWM</b>	<b>7.5</b>
FEMA 1% (100-Yr)	3.1
FEMA 100-Yr + FBD	5.1
FEMA 1%+ (84% CL)	9.9
FEMA 0.2% (500-Yr)	9.9
FSF 0.2% (500-Yr) Climate	

9.9' (FEMA 0.2% / 500-Yr)

9.9' FEMA 1%+ (84% CL)

7.5' (2016 High Water)

3.1' (FEMA 1% / 100-Yr)

1.9' (FEMA 10% / 10-Yr)

Building: 13-13-0001-0054-0000\_182

182 Seventh Street, Rainelle, WV, 25962



FLOOD DEPTHS:



FEMA, Effective 2023



First Street Foundation (FSF, 2022)



USGS 2016 Flood High Water Mark





	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	9
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	NA
FEMA 4% (25-Yr)	NA
FEMA 2% (50-Yr)	1.9
<b>2016 Flood HWM</b>	<b>7.5</b>
FEMA 1% (100-Yr)	3.1
FEMA 100-Yr + FBD	5.1
FEMA 1%+ (84% CL)	9.9
FEMA 0.2% (500-Yr)	9.9
FSF 0.2% (500-Yr)	
Climate	12.2

12.2' (FSF 0.2% / 500-Yr)

9.9' (FEMA 0.2% / 500-Yr)

9.9' FEMA 1%+ (84% CL)

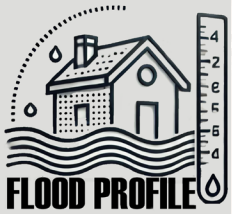
7.5' (2016 High Water)

3.1' (FEMA 1% / 100-Yr)

1.9' (FEMA 10% / 10-Yr)

Building: 13-13-0001-0054-0000\_182

182 Seventh Street, Rainelle, WV, 25962

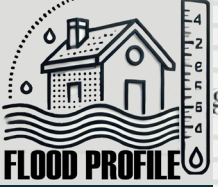


FLOOD DEPTHS:

  FEMA, Effective 2023

  First Street Foundation (FSF, 2022)

  USGS 2016 Flood High Water Mark

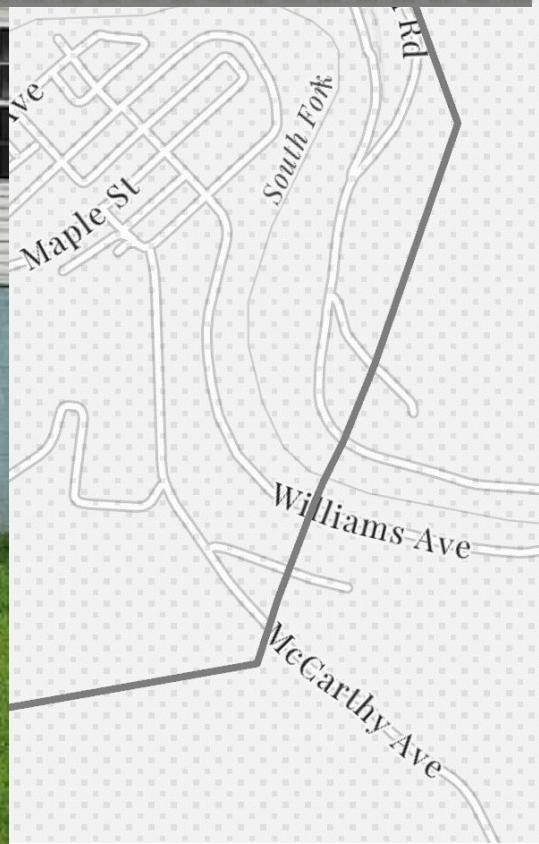


**Building Flood Profile**

# Richwood

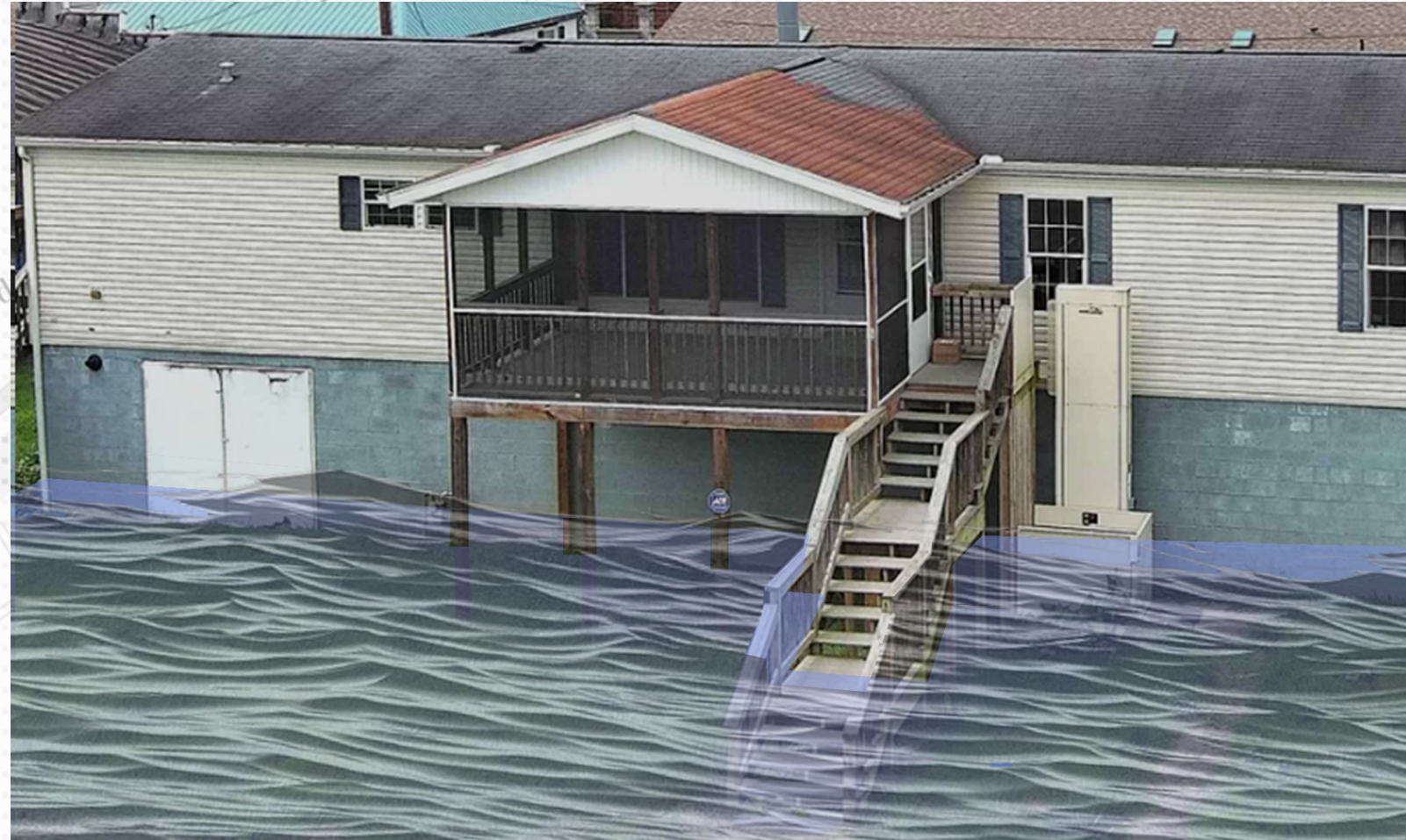
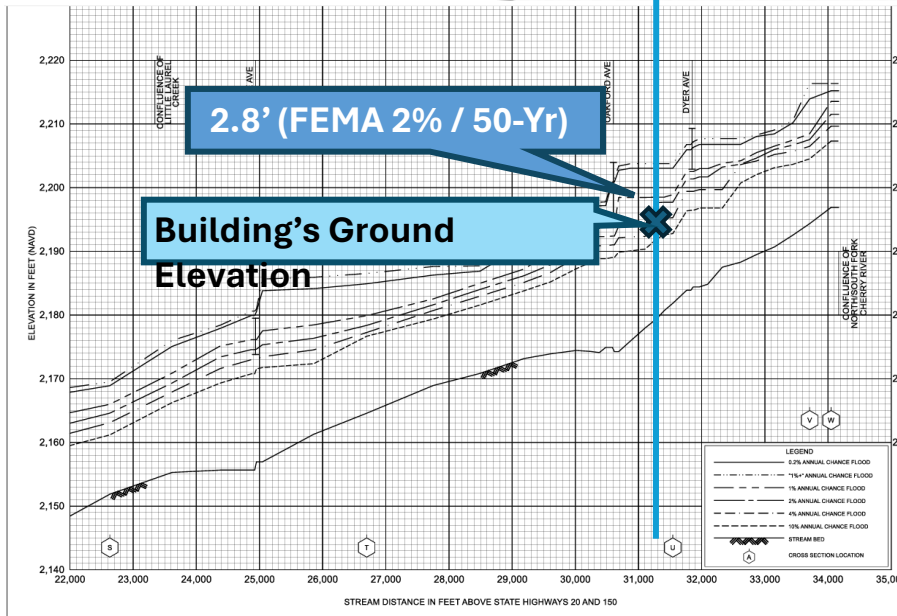
34-06-0011-0090-0000\_113

113 Valley Ave, Richwood, WV





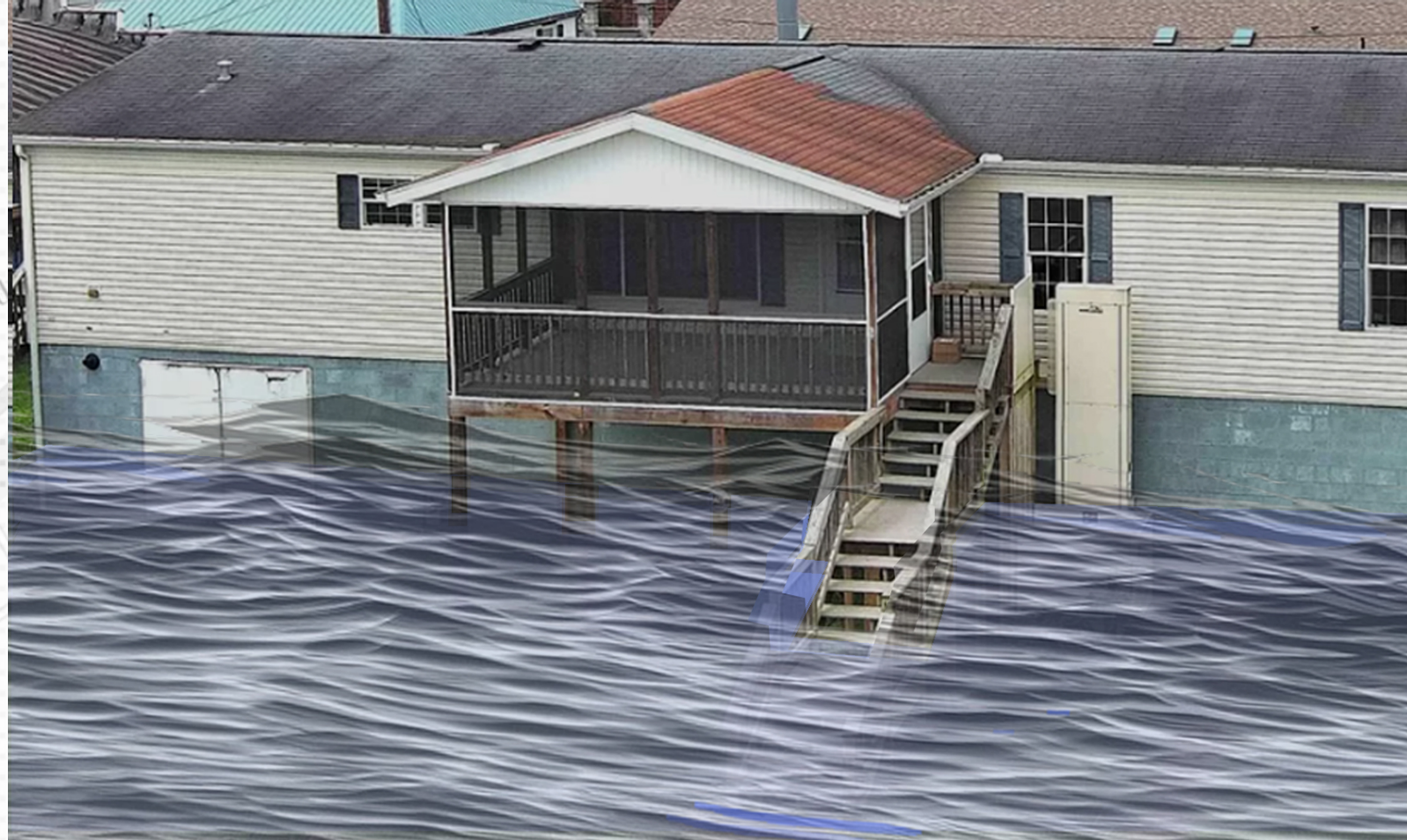
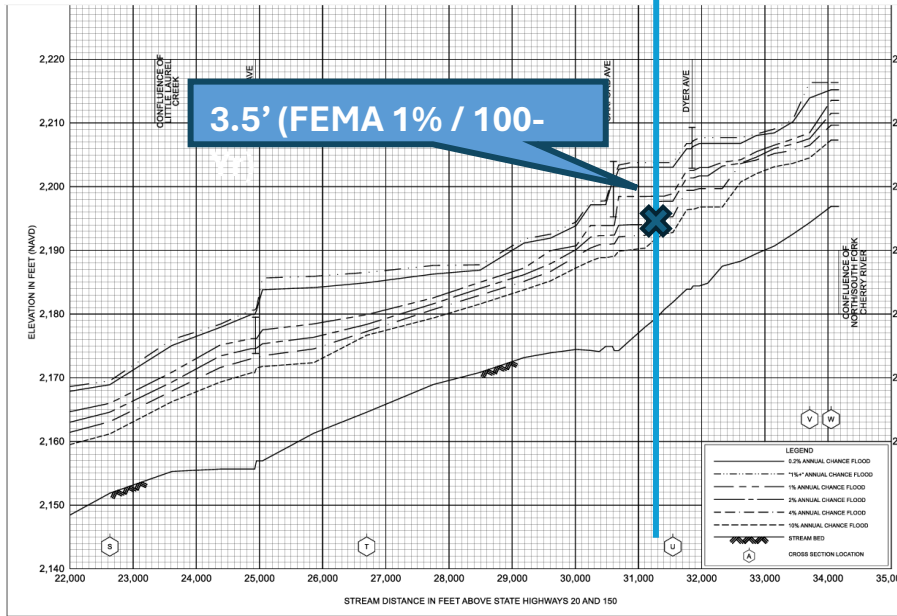
# 2% Probability of Flood in a year (50-year flood)



Reamer Rd



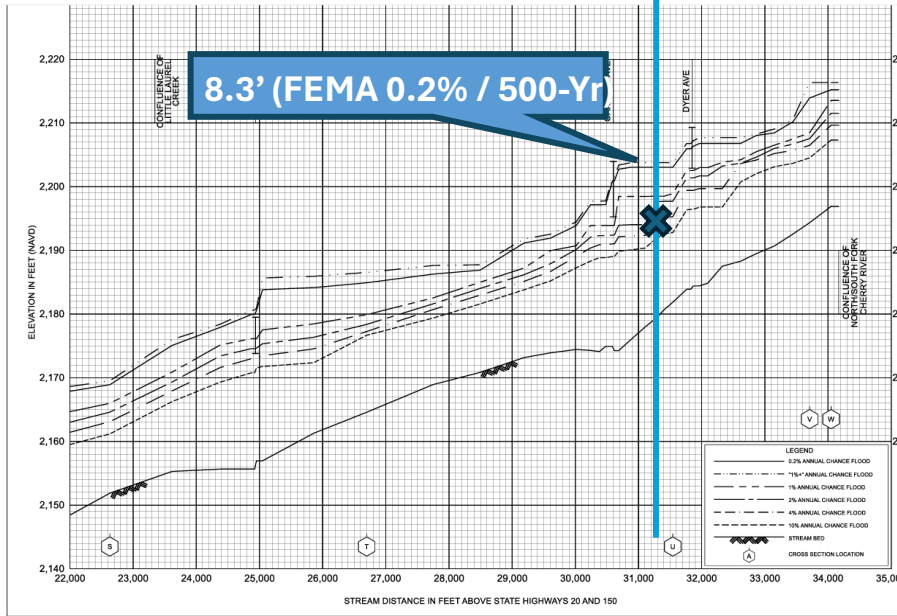
# 1% Probability of Flood in a year (100-year flood)



Reamer Rd



# 0.2% Probability of Flood in a year (500-year flood)

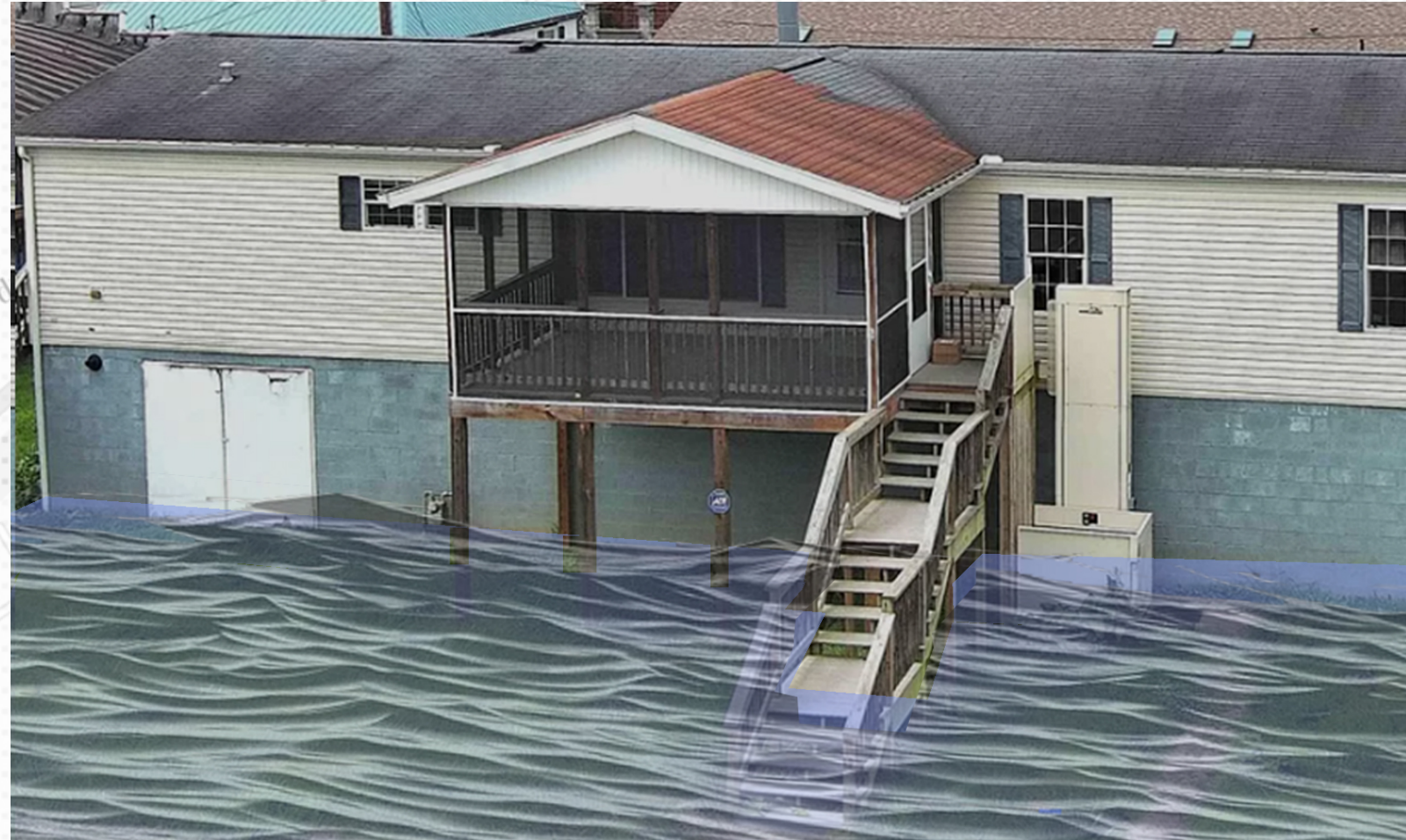
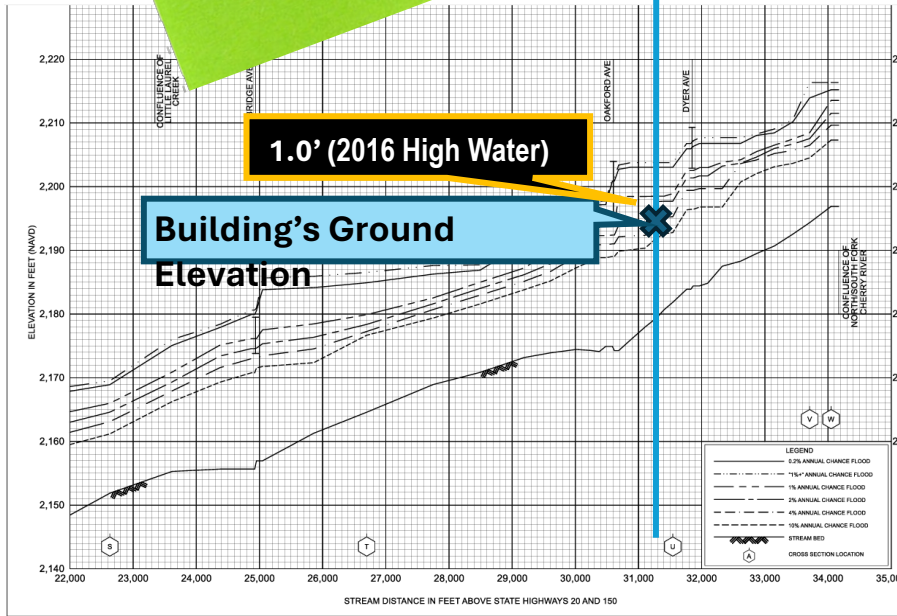


Reamer Rd



# 2016 High Watermark

High Watermark



Reamer Rd

The Design Flood Elevation (DFE) should be the BFE plus 2 feet of freeboard. The DFE should also be above the high-water marks of the 2016 flood plus freeboard.

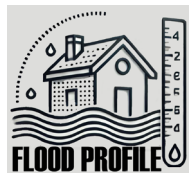
113 Valley Ave, Richwood, WV



	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	8
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	NA
FEMA 4% (25-Yr)	NA
FEMA 2% (50-Yr)	
<b>2016 Flood HWM</b>	<b>1.0</b>
FEMA 1% (100-Yr)	
FEMA 100-Yr + FBD	
FEMA 1%+ (84% CL)	
FEMA 0.2% (500-Yr)	
FSF 0.2% (500-Yr)	

1.0' (2016 High Water)

Building 34-06-0011-0090-0000\_113



FLOOD DEPTHS:



FEMA, Effective 2021



First Street Foundation (FSF, 2022)



USGS 2016 Flood High Water Mark

The Design Flood Elevation (DFE) should be the BFE plus 2 feet of freeboard. The DFE should also be above the high-water marks of the 2016 flood plus freeboard.

113 Valley Ave, Richwood, WV

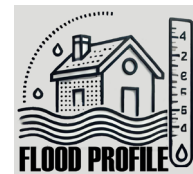


2.8' (FEMA 2% / 50-Yr)

1.0' (2016 High Water)

Building 34-06-0011-0090-0000\_113

	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	8
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	NA
FEMA 4% (25-Yr)	NA
FEMA 2% (50-Yr)	2.8
2016 Flood HWM	1.0
FEMA 1% (100-Yr)	
FEMA 100-Yr + FBD	
FEMA 1%+ (84% CL)	
FEMA 0.2% (500-Yr)	
FSF 0.2% (500-Yr)	



FLOOD DEPTHS:  FEMA, Effective 2021  First Street Foundation (FSF, 2022)  USGS 2016 Flood High Water Mark



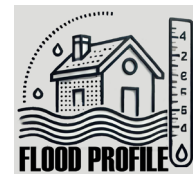
The Design Flood Elevation (DFE) should be the BFE plus 2 feet of freeboard. The DFE should also be above the high-water marks of the 2016 flood plus freeboard.

113 Valley Ave, Richwood, WV



Building 34-06-0011-0090-0000\_113

	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	8
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	NA
FEMA 4% (25-Yr)	NA
FEMA 2% (50-Yr)	2.8
2016 Flood HWM	1.0
FEMA 1% (100-Yr)	3.5
FEMA 100-Yr + FBD	5.5
FEMA 1%+ (84% CL)	9.0
FEMA 0.2% (500-Yr)	
FSF 0.2% (500-Yr)	



FLOOD DEPTHS:  FEMA, Effective 2021  First Street Foundation (FSF, 2022)  USGS 2016 Flood High Water Mark

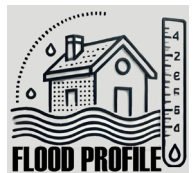
The Design Flood Elevation (DFE) should be the BFE plus 2 feet of freeboard. The DFE should also be above the high-water marks of the 2016 flood plus freeboard.

113 Valley Ave, Richwood, WV



	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	8
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	NA
FEMA 4% (25-Yr)	NA
FEMA 2% (50-Yr)	2.8
<b>2016 Flood HWM</b>	<b>1.0</b>
FEMA 1% (100-Yr)	3.5
FEMA 100-Yr + FBD	5.5
FEMA 1%+ (84% CL)	9.0
FEMA 0.2% (500-Yr)	8.3
FSF 0.2% (500-Yr)	

Building 34-06-0011-0090-0000\_113



FLOOD DEPTHS:



FEMA, Effective 2021



First Street Foundation (FSF, 2022)



USGS 2016 Flood High Water Mark

The Design Flood Elevation (DFE) should be the BFE plus 2 feet of freeboard. The DFE should also be above the high-water marks of the 2016 flood plus freeboard.

113 Valley Ave, Richwood, WV



	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	8
Freeboard (FBD)	2
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	NA
FEMA 4% (25-Yr)	NA
FEMA 2% (50-Yr)	2.8
<b>2016 Flood HWM</b>	<b>1.0</b>
FEMA 1% (100-Yr)	3.5
FEMA 100-Yr + FBD	5.5
FEMA 1%+ (84% CL)	9.0
FEMA 0.2% (500-Yr)	8.3
FSF 0.2% (500-Yr)	6.7

Building 34-06-0011-0090-0000\_113



FLOOD DEPTHS:



FEMA, Effective 2021



First Street Foundation (FSF, 2022)



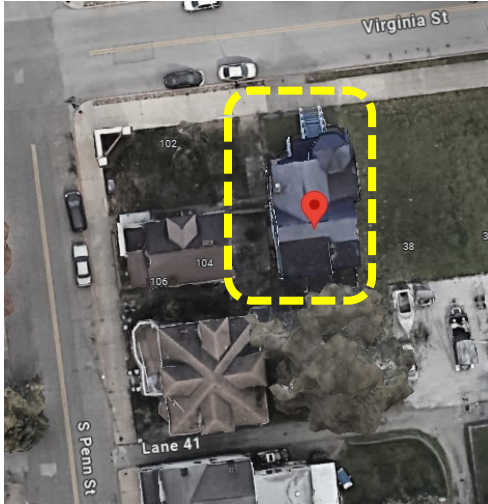
USGS 2016 Flood High Water Mark



# Wheeling

40 VIRGINIA ST, Wheeling, WV, 26003

Building: 35-10-0W43-0134-0000 40



Flood Intervals	HEIGHT (ft.)	Source
FEMA 10% / 10-Yr	NA	Not in by FEMA 10yr flood boundary
FEMA 4% / 25 yr	NA	Not in by FEMA 25yr flood boundary
FEMA 2% / 50 yr	4.1	Flood Profile
FEMA 1% / 100 yr (2023 BFE)	7.1	Flood Profile
FEMA 100 yr + 2.0 Ft. Freeboard (DFE)	9.1	Design flood elevation (DFE)
FEMA 0.2% / 500 yr	10.1	Flood Profile
FSF 500 yr	35.7	

35.7' (FSF 2% / 500 yr)



10.1' (FEMA 0.2% / 500 yr)

7.1' (FEMA 1% / 100 yr)

4.1' (FEMA 2% / 50 yr)

Flood Depth (ft)									
FEMA								FSF	
Flood Depth in Ft (Current Study)				Flood Depth in Ft (Previous Study)					
Draft/Effective Date	50 year (2%)	100 year (1%)	100 year Plus(1%+)	500 year (0.2%)	Effective Date	100 year (1%)	500 year (0.2%)	100 year (1%)	500 year (0.2%)
2006	4.1	7.1	-	10.1	1992	BFE: 659 (5.9 ft)		22.3	35.7

FLOOD DEPTHS:

  FEMA, Effective 2006

  First Street Foundation (FSF, 2022)

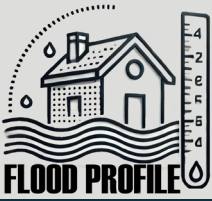


# Wheeling




High Water Mark from 1936 Flood

- **Lowest Adjacent Grade (LAG)** = 649.5 feet (estimate from WV Flood Tool). Estimate first floor height to be about 9 feet based on steps and blocks.
- **1936 HWM** = 607.3 ft (gauge height = 0) + 55.2 ft = 662.5 ft.
- **1936 Flood Depth** = LAG 662.5 feet – 649.5 = 13 feet. Estimate four feet of water in structure for 1936 flood.



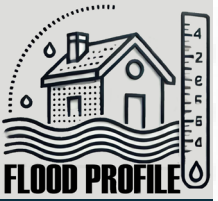
# Building Flood Profile

 **Elevated Structures**

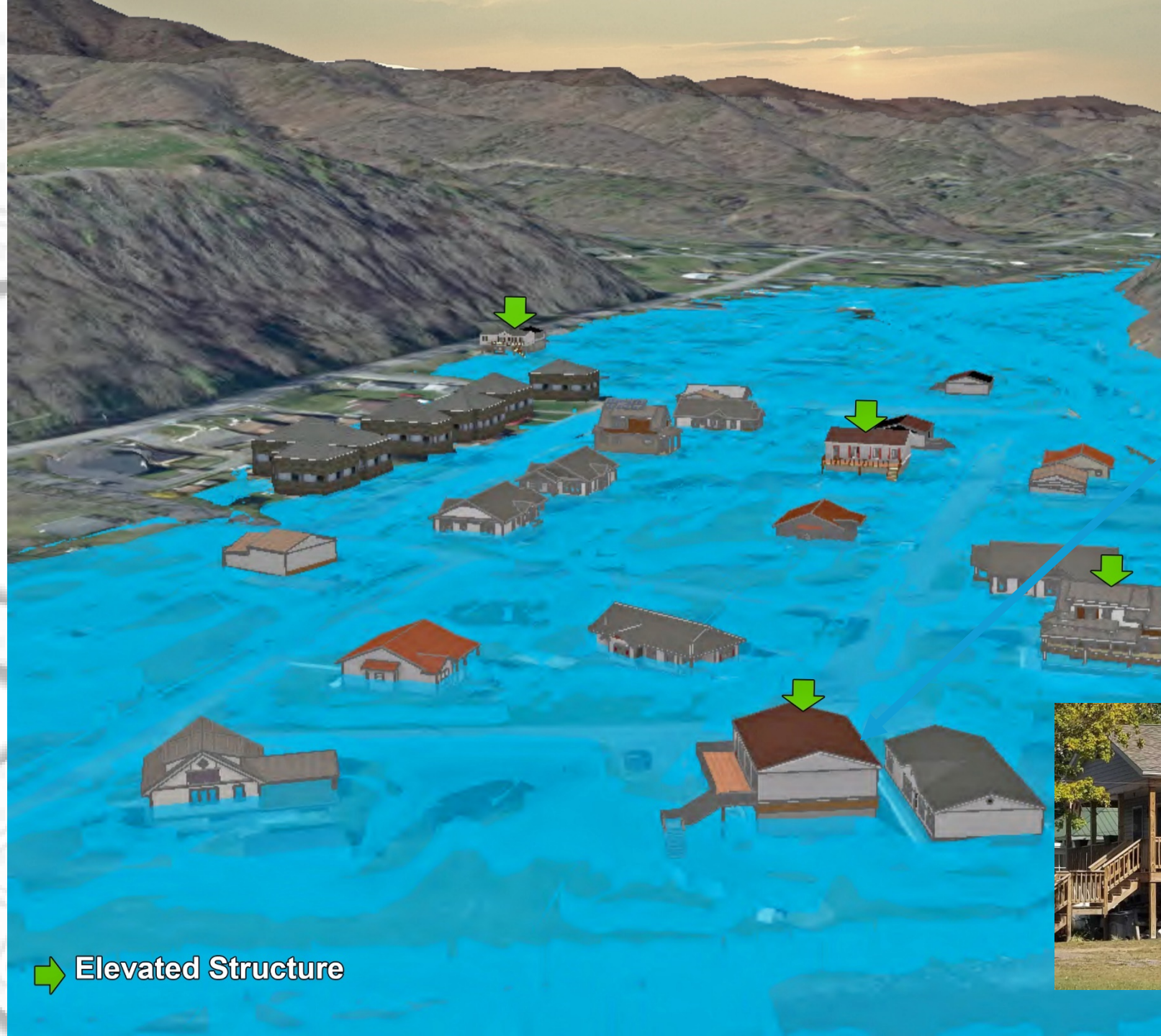


## White Sulphur Springs



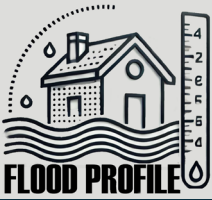


# Building Flood Profile



➔ Elevated Structure





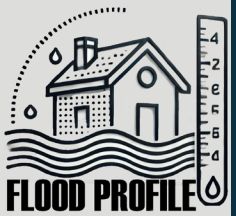
# Building Flood Profile



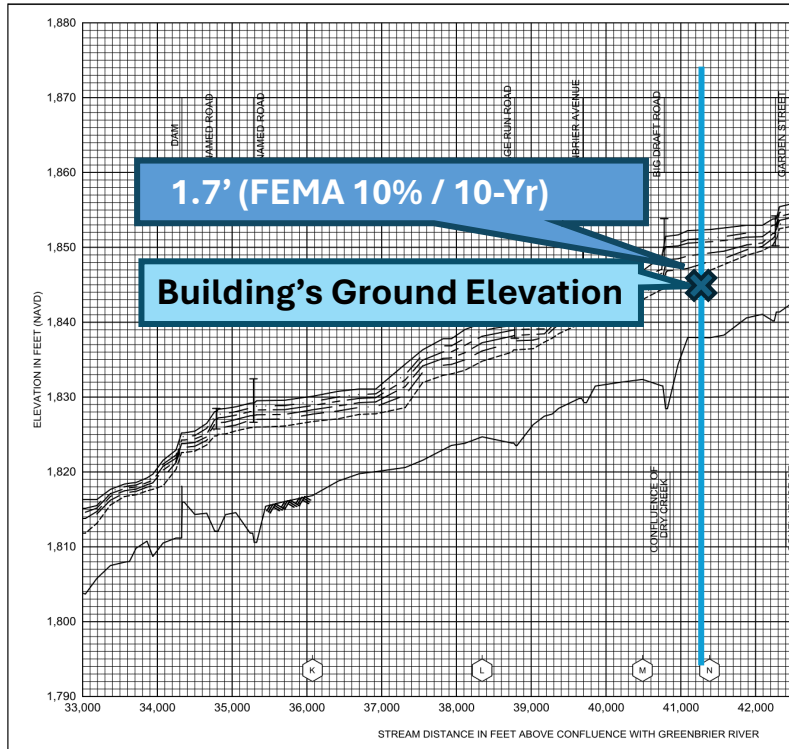
138 Mill Street, White Sulphur Springs, WV,  
24986

13-17-0009-0026-0000\_138

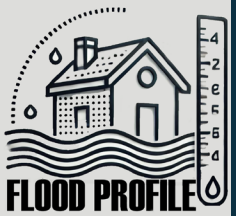




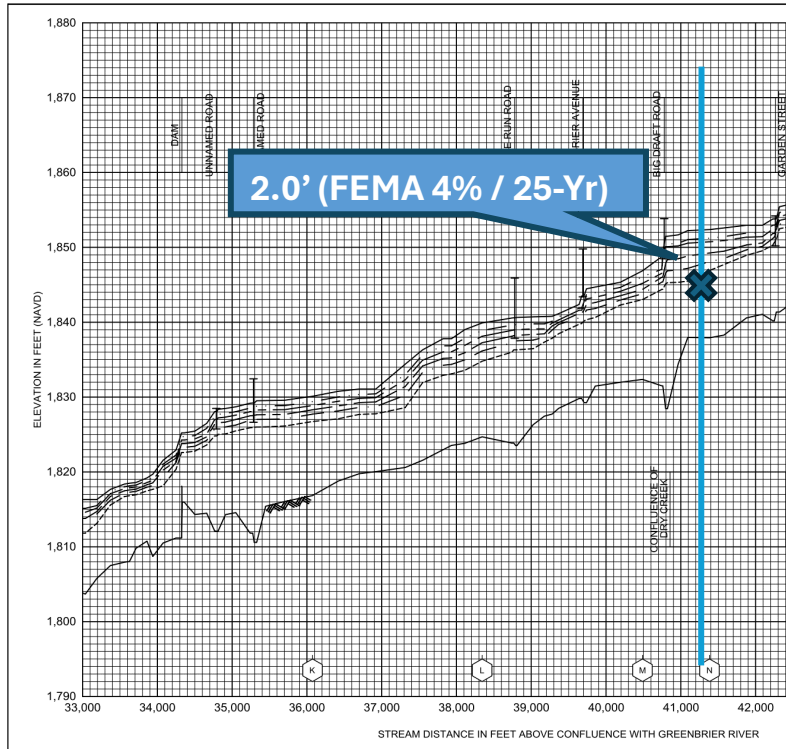
# 10% Probability of Flood in a year (10-year flood)



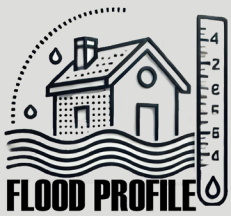
Villa-Ave



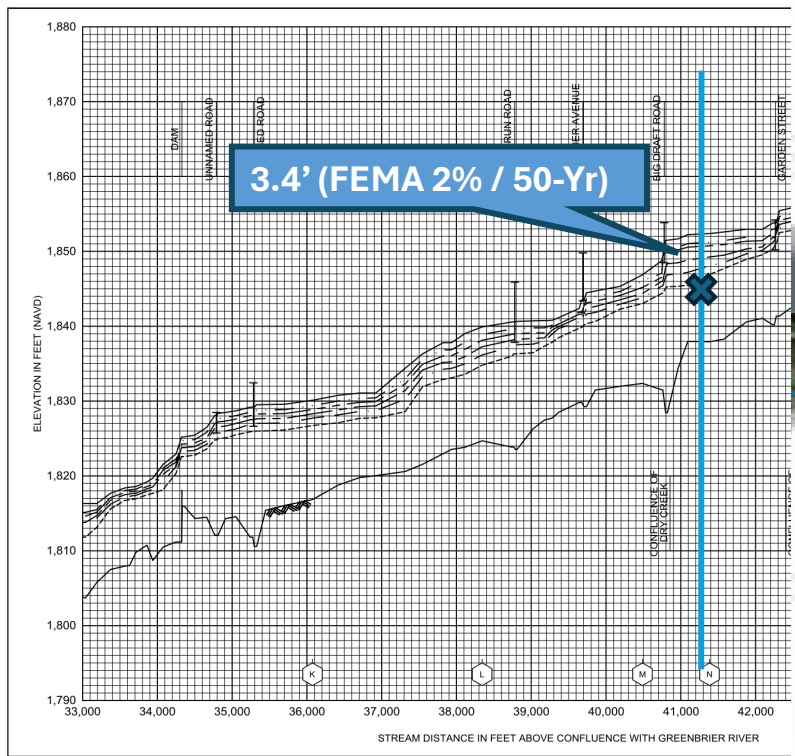
# 4% Probability of Flood in a year (25-year flood)



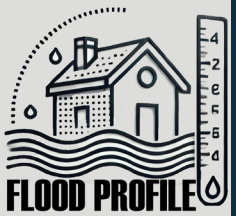
Villa-Ave



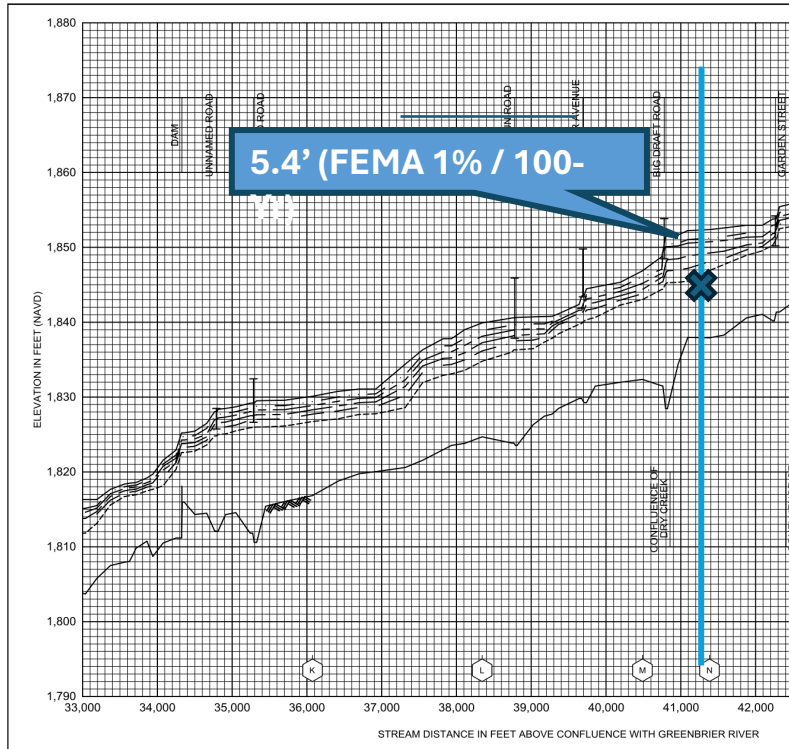
# 2% Probability of Flood in a year (50-year flood)



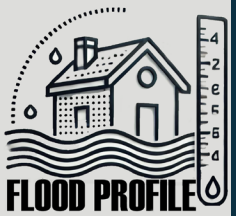
Villa-Ave



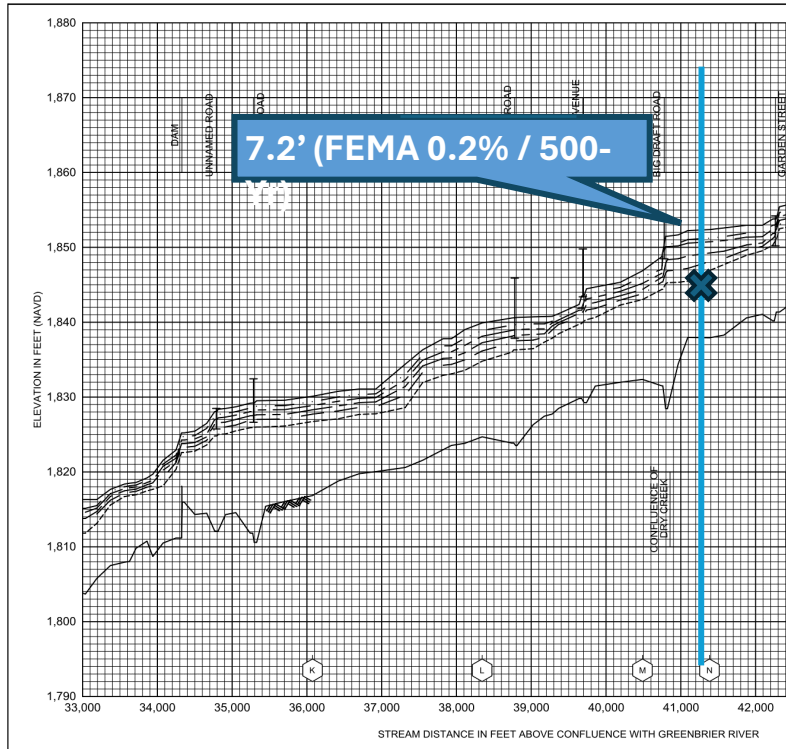
# 1% Probability of Flood in a year (100-year flood)



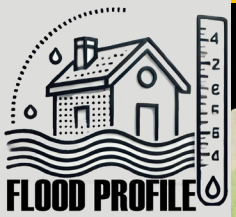
Villa-Ave



# 0.2% Probability of Flood in a year (500-year flood)

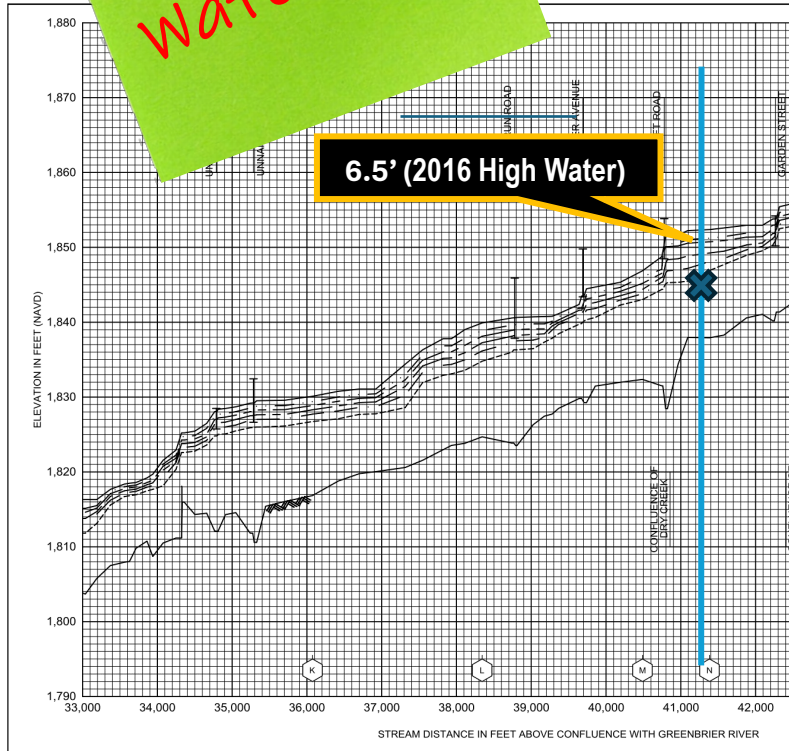


Villa Ave



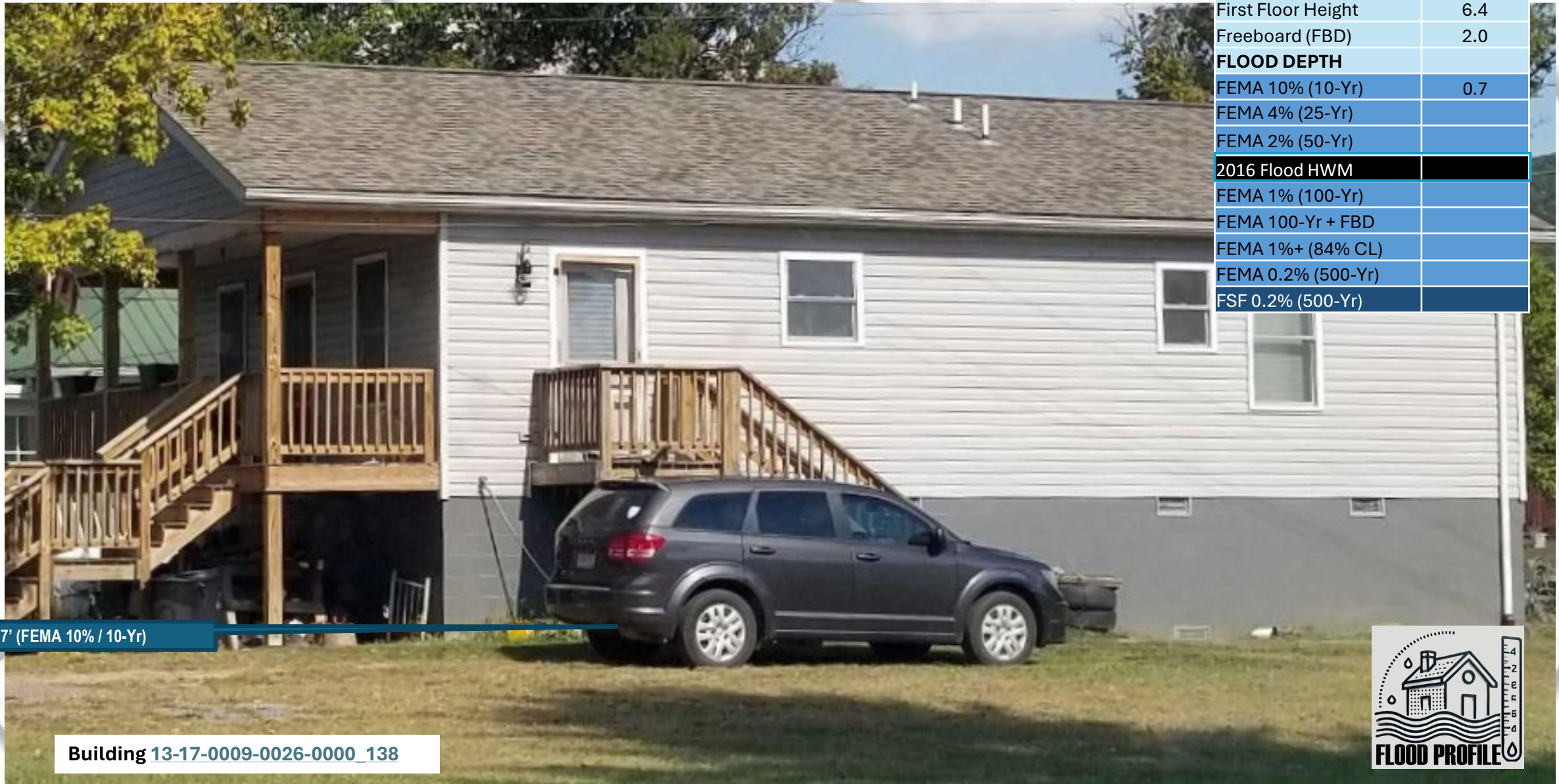
# 2016 High Watermark

High Watermark



Villa-Ave

The Design Flood Elevation (DFE) should be the BFE plus 2 feet of freeboard. The DFE should also be above the high-water marks of the 2016 flood plus freeboard.



	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	6.4
Freeboard (FBD)	2.0
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	0.7
FEMA 4% (25-Yr)	
FEMA 2% (50-Yr)	
<b>2016 Flood HWM</b>	
FEMA 1% (100-Yr)	
FEMA 100-Yr + FBD	
FEMA 1%+ (84% CL)	
FEMA 0.2% (500-Yr)	
FSF 0.2% (500-Yr)	

0.7' (FEMA 10% / 10-Yr)

Building [13-17-0009-0026-0000](#) 138



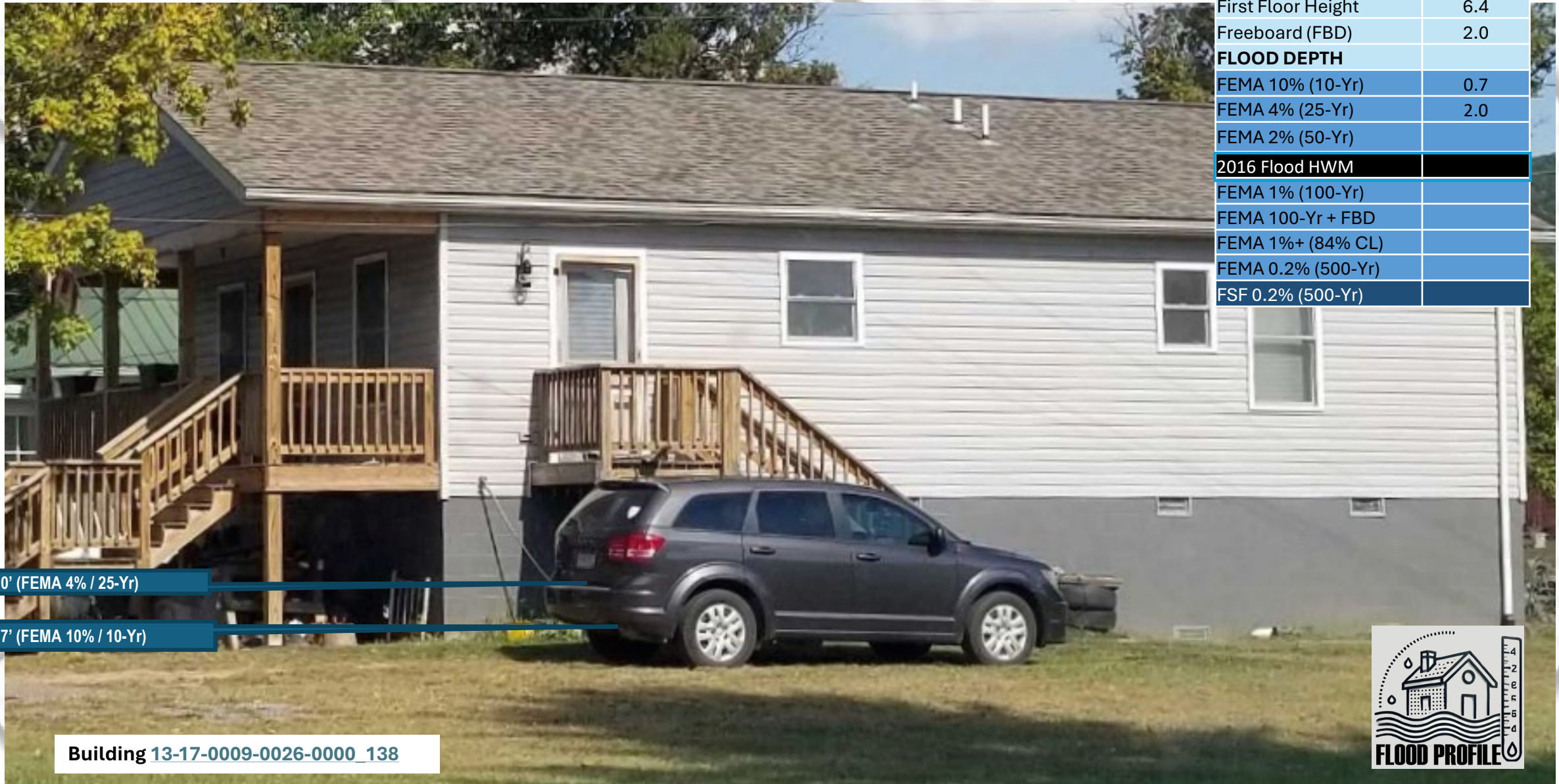
FLOOD DEPTHS:

FEMA, Effective 2023

First Street Foundation (FSF, 2022)

USGS 2016 Flood High Water Mark

The Design Flood Elevation (DFE) should be the BFE plus 2 feet of freeboard. The DFE should also be above the high-water marks of the 2016 flood plus freeboard.



	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	6.4
Freeboard (FBD)	2.0
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	0.7
FEMA 4% (25-Yr)	2.0
FEMA 2% (50-Yr)	
<b>2016 Flood HWM</b>	
FEMA 1% (100-Yr)	
FEMA 100-Yr + FBD	
FEMA 1%+ (84% CL)	
FEMA 0.2% (500-Yr)	
FSF 0.2% (500-Yr)	

2.0' (FEMA 4% / 25-Yr)

0.7' (FEMA 10% / 10-Yr)

Building [13-17-0009-0026-0000](#) 138



FLOOD DEPTHS:

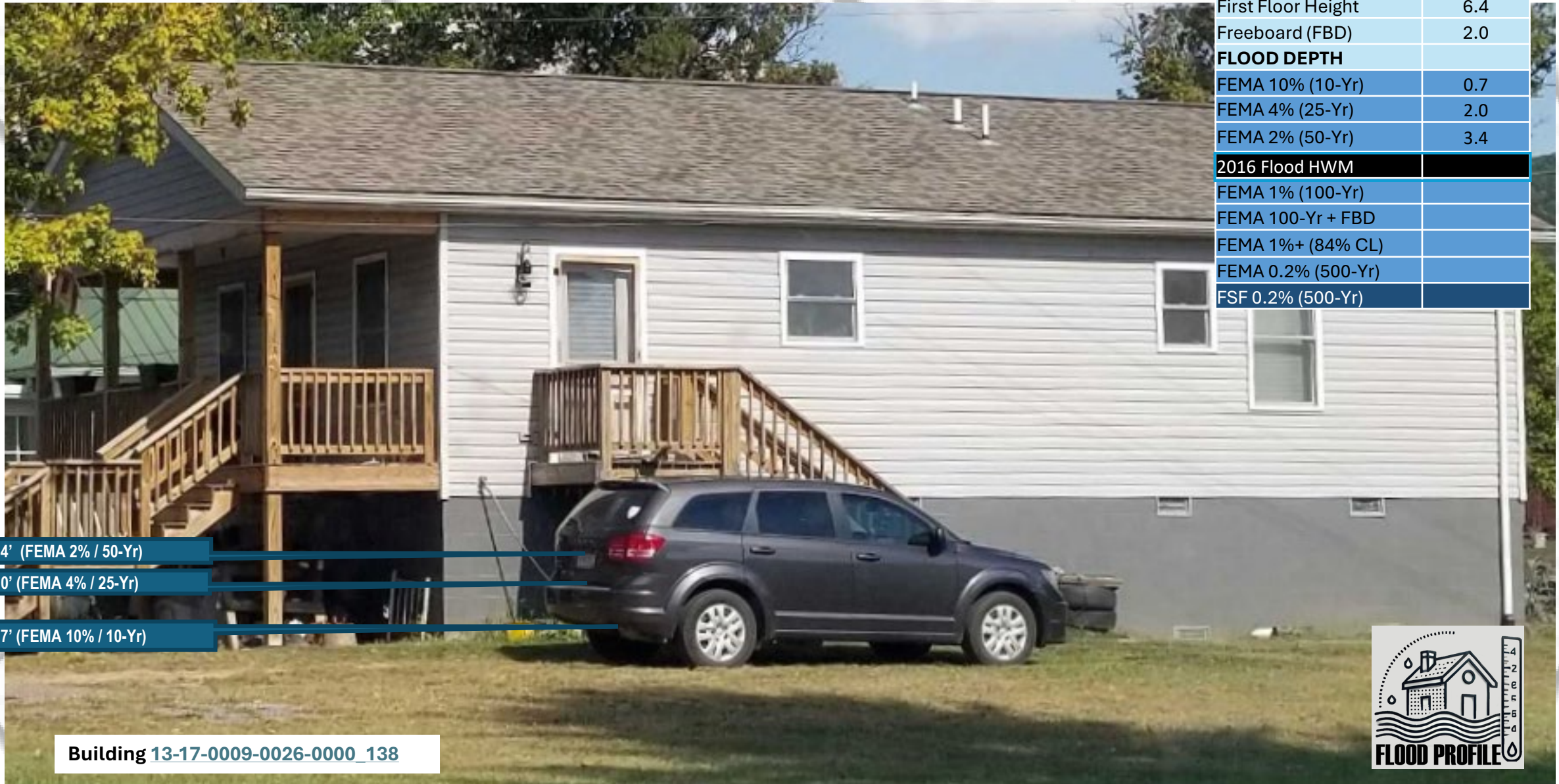
  FEMA, Effective 2023

  First Street Foundation (FSF, 2022)

  USGS 2016 Flood High Water Mark



The Design Flood Elevation (DFE) should be the BFE plus 2 feet of freeboard. The DFE should also be above the high-water marks of the 2016 flood plus freeboard.



	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	6.4
Freeboard (FBD)	2.0
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	0.7
FEMA 4% (25-Yr)	2.0
FEMA 2% (50-Yr)	3.4
<b>2016 Flood HWM</b>	
FEMA 1% (100-Yr)	
FEMA 100-Yr + FBD	
FEMA 1%+ (84% CL)	
FEMA 0.2% (500-Yr)	
FSF 0.2% (500-Yr)	

3.4' (FEMA 2% / 50-Yr)

2.0' (FEMA 4% / 25-Yr)

0.7' (FEMA 10% / 10-Yr)

Building [13-17-0009-0026-0000\\_138](#)



FLOOD DEPTHS:

FEMA, Effective 2023

First Street Foundation (FSF, 2022)

USGS 2016 Flood High Water Mark

The Design Flood Elevation (DFE) should be the BFE plus 2 feet of freeboard. The DFE should also be above the high-water marks of the 2016 flood plus freeboard.



	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	6.4
Freeboard (FBD)	2.0
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	0.7
FEMA 4% (25-Yr)	2.0
FEMA 2% (50-Yr)	3.4
<b>2016 Flood HWM</b>	
FEMA 1% (100-Yr)	5.4
FEMA 100-Yr + FBD	7.4
FEMA 1%+ (84% CL)	6.4
FEMA 0.2% (500-Yr)	
FSF 0.2% (500-Yr)	

6.4' FEMA 1%+ (84% CL)

5.4' (FEMA 1% / 100-Yr)

3.4' (FEMA 2% / 50-Yr)

2.0' (FEMA 4% / 25-Yr)

0.7' (FEMA 10% / 10-Yr)

Building [13-17-0009-0026-0000\\_138](#)



FLOOD DEPTHS:

FEMA, Effective 2023

First Street Foundation (FSF, 2022)

USGS 2016 Flood High Water Mark

The Design Flood Elevation (DFE) should be the BFE plus 2 feet of freeboard. The DFE should also be above the high-water marks of the 2016 flood plus freeboard.



	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	6.4
Freeboard (FBD)	2.0
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	0.7
FEMA 4% (25-Yr)	2.0
FEMA 2% (50-Yr)	3.4
<b>2016 Flood HWM</b>	<b>6.5</b>
FEMA 1% (100-Yr)	5.4
FEMA 100-Yr + FBD	7.4
FEMA 1%+ (84% CL)	6.4
FEMA 0.2% (500-Yr)	
FSF 0.2% (500-Yr)	

6.5' (2016 High Water)

6.4' FEMA 1%+ (84% CL)

5.4' (FEMA 1% / 100-Yr)

3.4' (FEMA 2% / 50-Yr)

2.0' (FEMA 4% / 25-Yr)

0.7' (FEMA 10% / 10-Yr)

Building 13-17-0009-0026-0000\_138



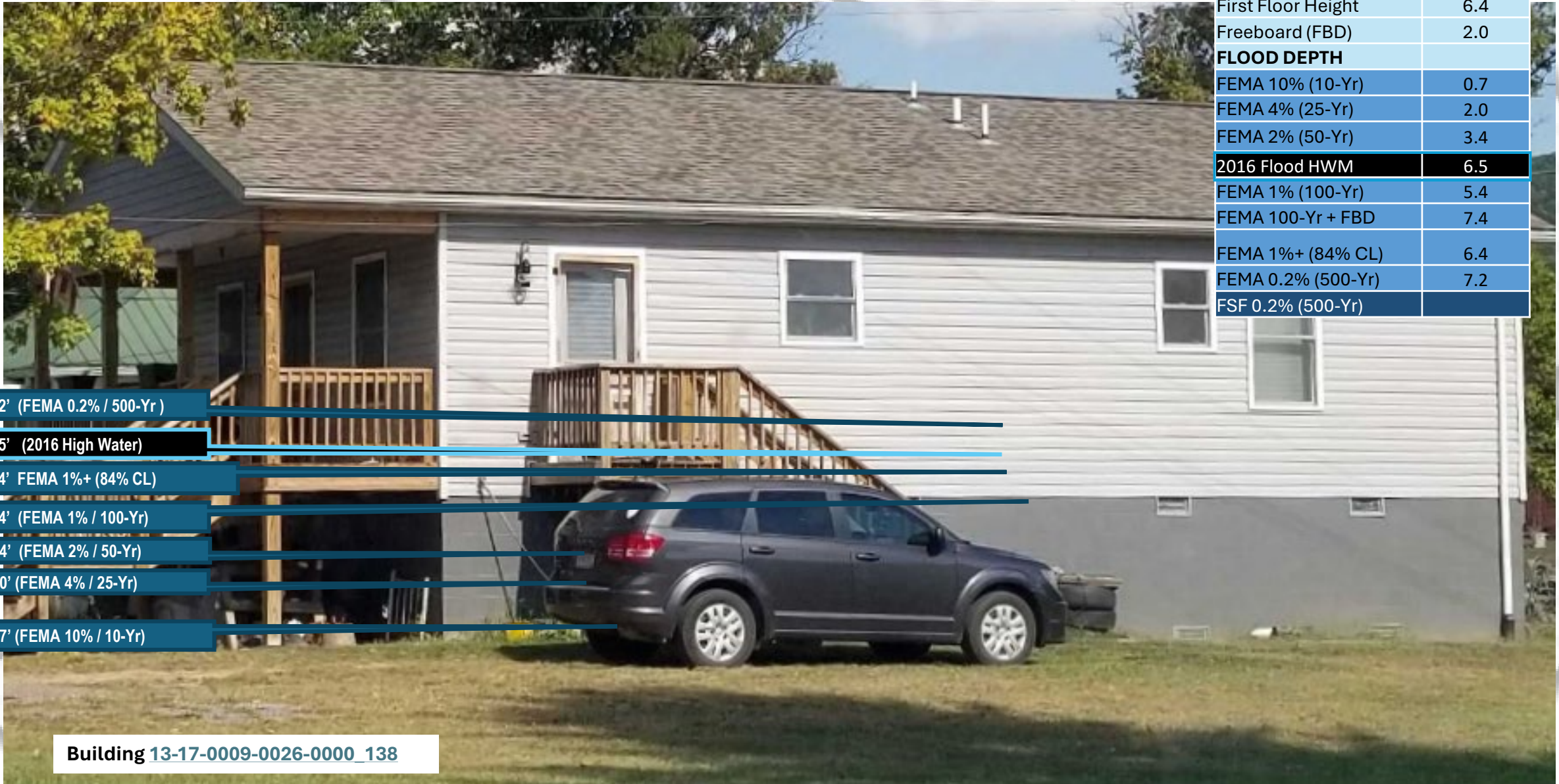
FLOOD DEPTHS:

FEMA, Effective 2023

First Street Foundation (FSF, 2022)

USGS 2016 Flood High Water Mark

The Design Flood Elevation (DFE) should be the BFE plus 2 feet of freeboard. The DFE should also be above the high-water marks of the 2016 flood plus freeboard.



	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	6.4
Freeboard (FBD)	2.0
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	0.7
FEMA 4% (25-Yr)	2.0
FEMA 2% (50-Yr)	3.4
<b>2016 Flood HWM</b>	<b>6.5</b>
FEMA 1% (100-Yr)	5.4
FEMA 100-Yr + FBD	7.4
FEMA 1%+ (84% CL)	6.4
FEMA 0.2% (500-Yr)	7.2
FSF 0.2% (500-Yr)	

7.2' (FEMA 0.2% / 500-Yr)

6.5' (2016 High Water)

6.4' FEMA 1%+ (84% CL)

5.4' (FEMA 1% / 100-Yr)

3.4' (FEMA 2% / 50-Yr)

2.0' (FEMA 4% / 25-Yr)

0.7' (FEMA 10% / 10-Yr)

Building [13-17-0009-0026-0000\\_138](#)

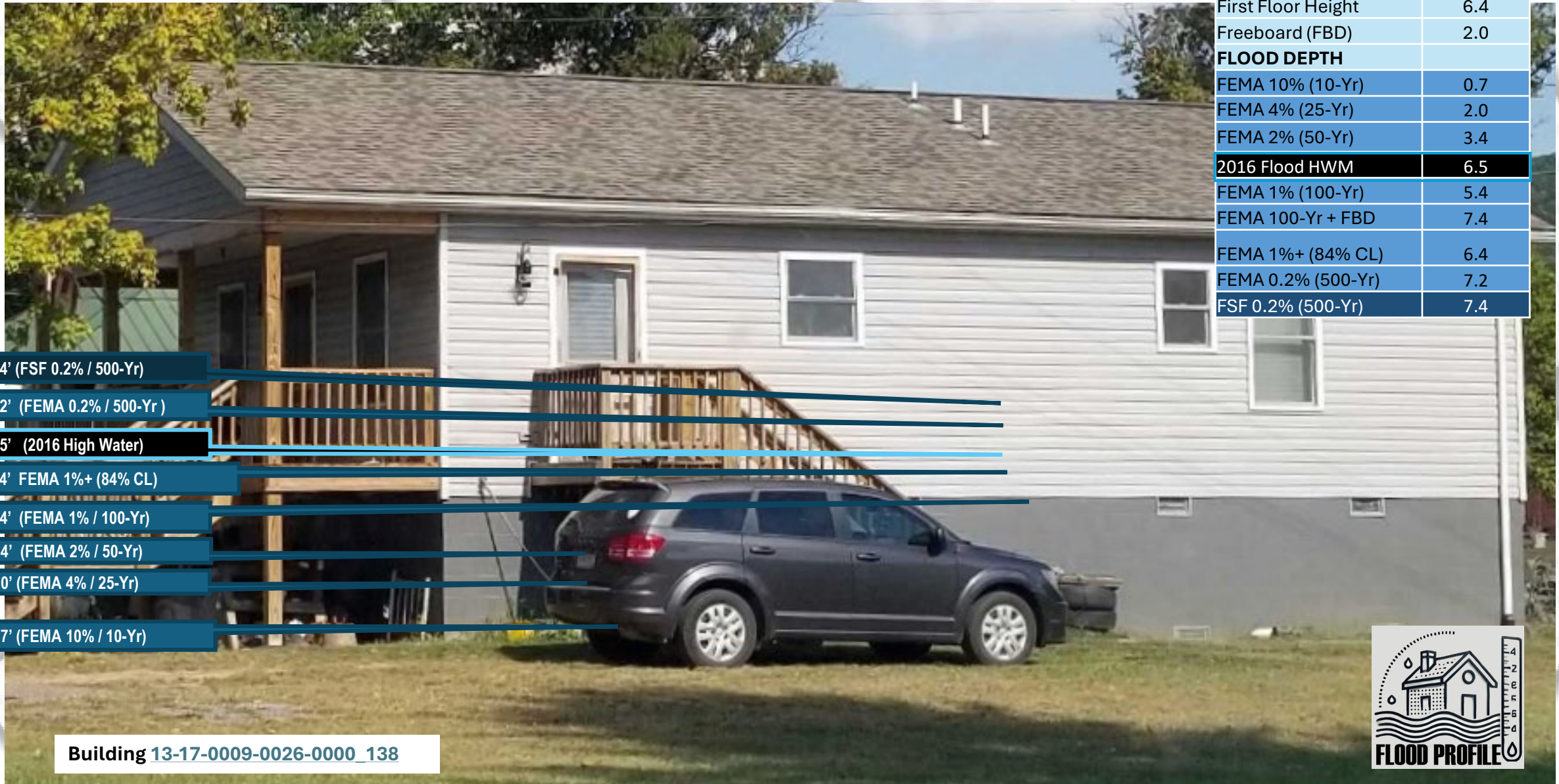
FLOOD DEPTHS:

FEMA, Effective 2023

First Street Foundation (FSF, 2022)

USGS 2016 Flood High Water Mark

The Design Flood Elevation (DFE) should be the BFE plus 2 feet of freeboard. The DFE should also be above the high-water marks of the 2016 flood plus freeboard.



	HEIGHT (ft.)
<b>BUILDING</b>	
First Floor Height	6.4
Freeboard (FBD)	2.0
<b>FLOOD DEPTH</b>	
FEMA 10% (10-Yr)	0.7
FEMA 4% (25-Yr)	2.0
FEMA 2% (50-Yr)	3.4
<b>2016 Flood HWM</b>	<b>6.5</b>
FEMA 1% (100-Yr)	5.4
FEMA 100-Yr + FBD	7.4
FEMA 1%+ (84% CL)	6.4
FEMA 0.2% (500-Yr)	7.2
FSF 0.2% (500-Yr)	7.4

7.4' (FSF 0.2% / 500-Yr)

7.2' (FEMA 0.2% / 500-Yr)

6.5' (2016 High Water)

6.4' FEMA 1%+ (84% CL)

5.4' (FEMA 1% / 100-Yr)

3.4' (FEMA 2% / 50-Yr)

2.0' (FEMA 4% / 25-Yr)

0.7' (FEMA 10% / 10-Yr)

Building 13-17-0009-0026-0000\_138



FLOOD DEPTHS:

  FEMA, Effective 2023

  First Street Foundation (FSF, 2022)

  USGS 2016 Flood High Water Mark