



**TO:** Hunter Flood Advisory Committee  
**FROM:** Milone & MacBroom, Inc.  
**RE:** Hunter LFA FAC Meeting  
**DATE:** July 18, 2018  
**MMI #:** 2884-10

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A meeting for the Hunter Local Flood Analysis (LFA) was held on the evening of July 18, 2018 at 7pm the Hunter Village Hall. In attendance were Mark Carabetta, Ethan Ely and Miguel Castellanos from Milone and MacBroom (MMI), as well as members of the Hunter Flood Advisory Committee (FAC). The group was joined by Stan Wase from the Greene County Highway Department, and by Wade Spanhake, Code Enforcement Officer for Hunter. A sign-in sheet and the presentation slides are appended.

A site walk was held immediately prior to the meeting. FAC members and MMI staff toured the site of floodplain enhancement scenario 2C which included the properties owned by Walter Higgins, Alan Higgins, and the Hebrew Congregation. Attendees of the site walk included MMI staff, Walter Higgins, Michelle Yost, Phil Eskeli, Joel DuBois, Wade Spanhake, Ben Sommers, and Stan Wase. After the FAC meeting, a visit was made to the Bridge Street bridge and firehouse.

The agenda for this FAC meeting was to discuss modeling results, preliminary BCA results, and next steps.

#### General Comments

- Comment was made that images of fire house and village hall showing water depths during flood events is very effective and that more buildings should be shown this way in final report. MMI replied that this can be done for public buildings such as post office and library, and possibly for hardware store which is an anchor business.
- Question was raised whether Route 23a is inundated by floodwaters anywhere between Hunter and Prattsville. This information may be helpful in calling attention to flooding along this state highway. MMI replied that this can be checked using FEMA FIRMs.
- Stan Waze reported that the Ski Bowl culvert is scheduled to be replaced in 2019. The culvert will most likely be sized to pass the 50-year flood event and possibly check dams will be placed in the channel to control sediment. MMI noted that this information will be included in the LFA report.
- In LFA report, the suggestion was made that recommendations for flood protection of individual properties should highlight specific areas where flooding is deeper and/or more frequent, such as along the south side of Main Street.

#### Bridge Street Bridge

- MMI shared hydraulic modeling and BCA results for replacing this bridge with a larger structure.
- MMI raised question of 15-ton weight limit posting at bridge. Do firetrucks exceed this limit? Gary Goodrich answered yes, some fire trucks are 19 tons. Stan Wase

commented that the bridge beams cannot be rated and there are no shop drawings available and therefore the weight limit posting may be arbitrary.

- Stan shared the most recent NYSDOT general bridge inspection report. The last inspection date is May 24, 2017. The bridge has not been red flagged.
- Stan also commented that the bridge has a low daily traffic count, has a nearby alternative crossing at Hunter Mountain bridge, and has no major structural issues, and is therefore not likely to be recommended as a priority for replacement by Greene County.
- Preliminary BCA results presented by MMI indicate benefits of \$440,474 and costs of \$4,175,000, resulting in a BCR of 0.11. The cost estimate is based on a proposed span of 150 feet, replacing the current span of 90 feet. The estimate includes \$4,000,000 for bridge construction and \$175,000 for design, geotechnical investigations and permitting.
- Stan commented that a pony truss bridge may be appropriate for this site because a low beam thickness can be maintained over a longer span. Cost may be lower than MMI's estimate. Maintaining a large enough hydraulic opening while limiting the need to elevate the road profile and not impact access to the firehouse may present a design challenge.

#### Floodplain Enhancement Scenario 2c

- MMI shared hydraulic modeling and BCA results for this scenario. The scenario differs from scenarios 2a and 2b in that it attempts to minimize the volume of material to be excavated and removed from the site, which is costly, while maximizing flood relief with the goal of removing flooding from Main Street during the 100-year flood event.
- Preliminary BCA results presented by MMI indicate benefits of \$147,811 and costs of \$1,520,000, resulting in a BCR of 0.10. The cost estimate includes design, permitting and construction, but does not include land acquisition costs because it is unclear at this point whether the project would require full acquisition or construction easements.
- Based on comments from the landowner stating the desire to continue to use the portion of the property with the building, a scenario 2d will be developed that eliminates the need to cut down the floodplain in this area. MMI will evaluate this alternative and present results at the next FAC meeting.

#### Combination Scenario

- MMI shared hydraulic modeling and BCA results for replacing the Bridge Street bridge with a larger structure and implementing floodplain enhancement scenario 2c.
- The combination shows real promise in eliminating flooding of Main Street.
- Preliminary BCA results presented by MMI indicate benefits of \$572,591 and costs of \$5,695,000, resulting in a BCR of 0.10.

#### Hunter Mountain Bridge

- Suggestion of having existing outlet culvert to Dolan's Lake resized to convey a larger flow. This will be evaluated.

**Next Meeting Date**

Next FAC meeting date has been set for August 21 at 7pm at the Village Hall.

The suggestion was made that available members of the FAC meet early to tour LFA areas prior to the meeting. More information to be provided.

# HUNTER FAC MEETING SIGN-IN SHEET



MILONE & MACBROOM

Meeting Date: 06/18/2018 @ 7:00PM

Project: Tannersville-Hunter LFA #2884-10

Place/Room: Hunter Village Hall

Name	Affiliation	E-Mail
Karen Wright	WEC S	Karenwright11@att.net
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STAN WASE	G.C.H.D.	SWASE@DISCOVERGREENE.COM
Phil Eskeli	MRCDEP	peskeli@dep.nyc.gov
Bert Sommers	Village Board	barnowl@nyc.rr.com
GARY GOODRICH	HUNTER FIRE	GGOODRICH24@HOTMAIL.COM
Mark Carabetta	MMI	MCarabetta@MMINC-Com
Miguel Castellanos	MMI	mcastellanos@mminc.com
Wade SPANHake	Hunter Code	WSPANHake@YAHOO.COM
Ethan Ely	MMI	
Michelle Yost	GCSWCD	yowhawe ☺



# Local Flood Analysis

**Town of Hunter  
Village of Hunter**

**Mark Carabetta  
Miguel Castellanos  
Ethan Ely**

# Agenda for Tonight's Meeting

1. Share modeling results
  - a) Bridge Street bridge
  - b) Schoharie Creek floodplain enhancement
  - c) Combination of bridge and floodplain enhancement
  - d) Hunter Mountain bridge
2. Share preliminary results of Benefit-Cost Analysis
3. Next steps
4. Set date for next FAC meeting



## Bridges in Hunter LFA Project Area



# Bridge Street Bridge

- Backed up water/overtopped in Irene.
- Bridge is overtopped during 50- and 100-year flood.
- Acts as a hydraulic constriction during the 10-, 50- and 100-year flood events.
- Posted with 15-ton weight limit.



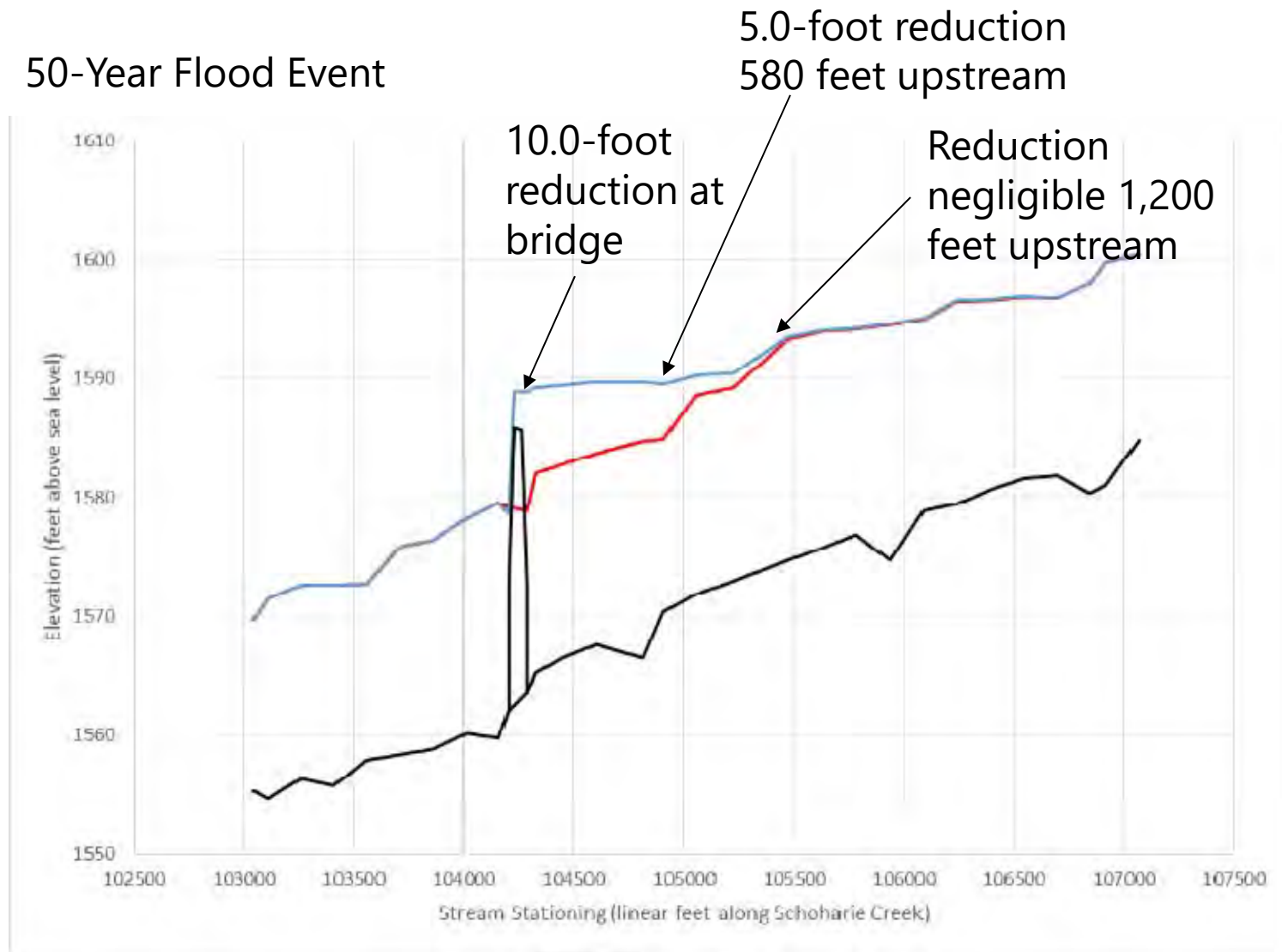


High water  
depth of  
approximately  
3.5 feet during  
100-year flood



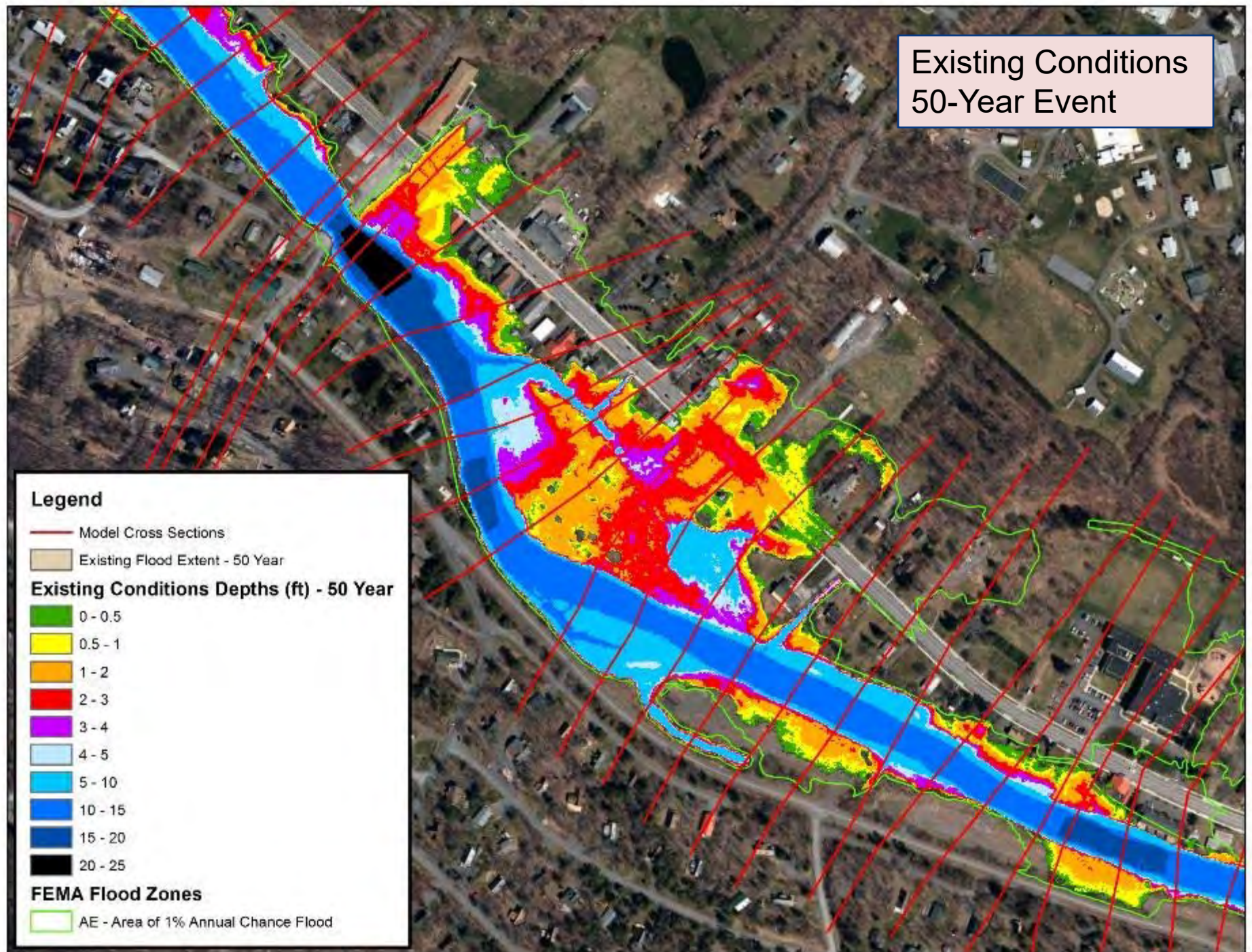
# Bridge Street Bridge

50-Year Flood Event

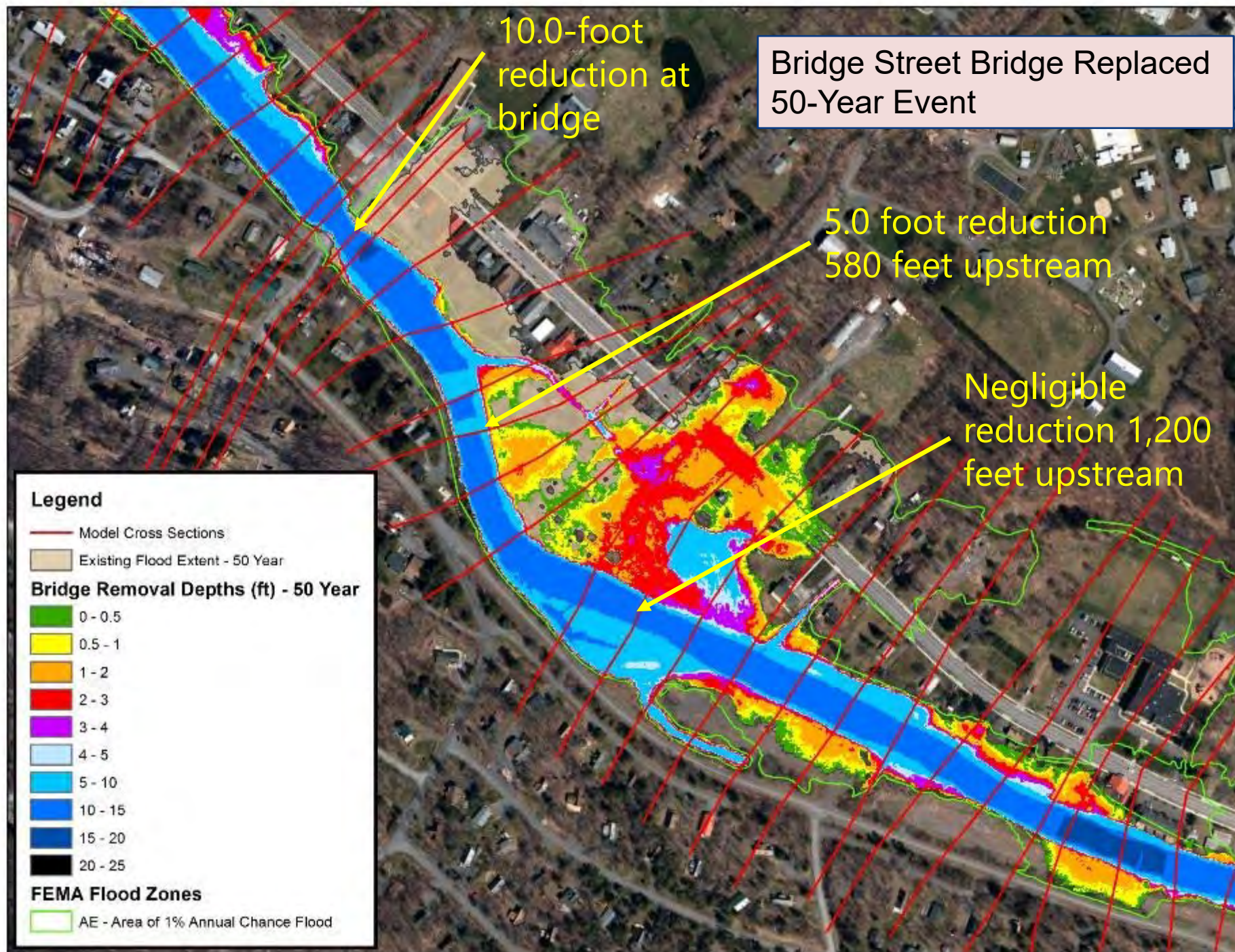




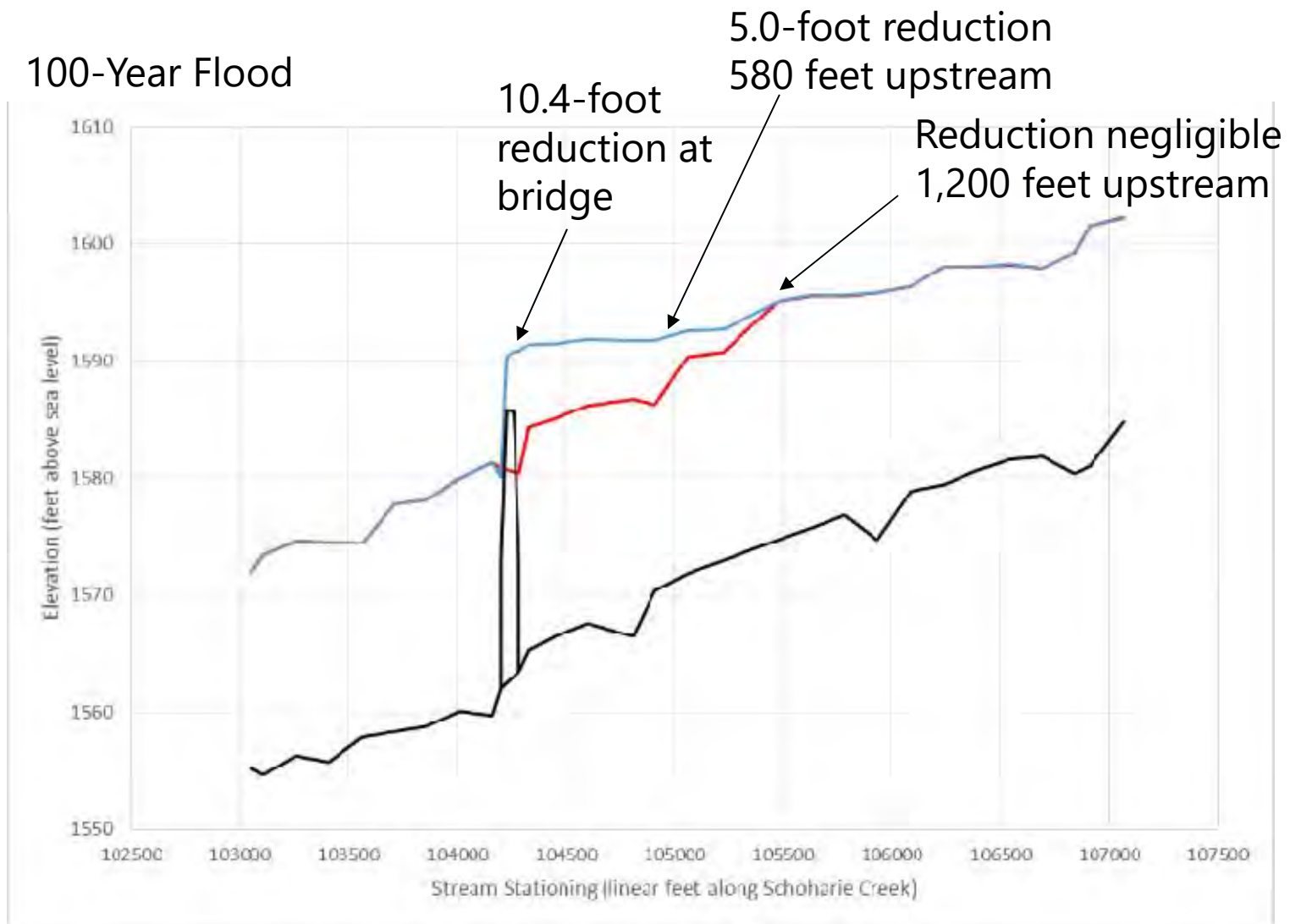
Existing Conditions  
50-Year Event





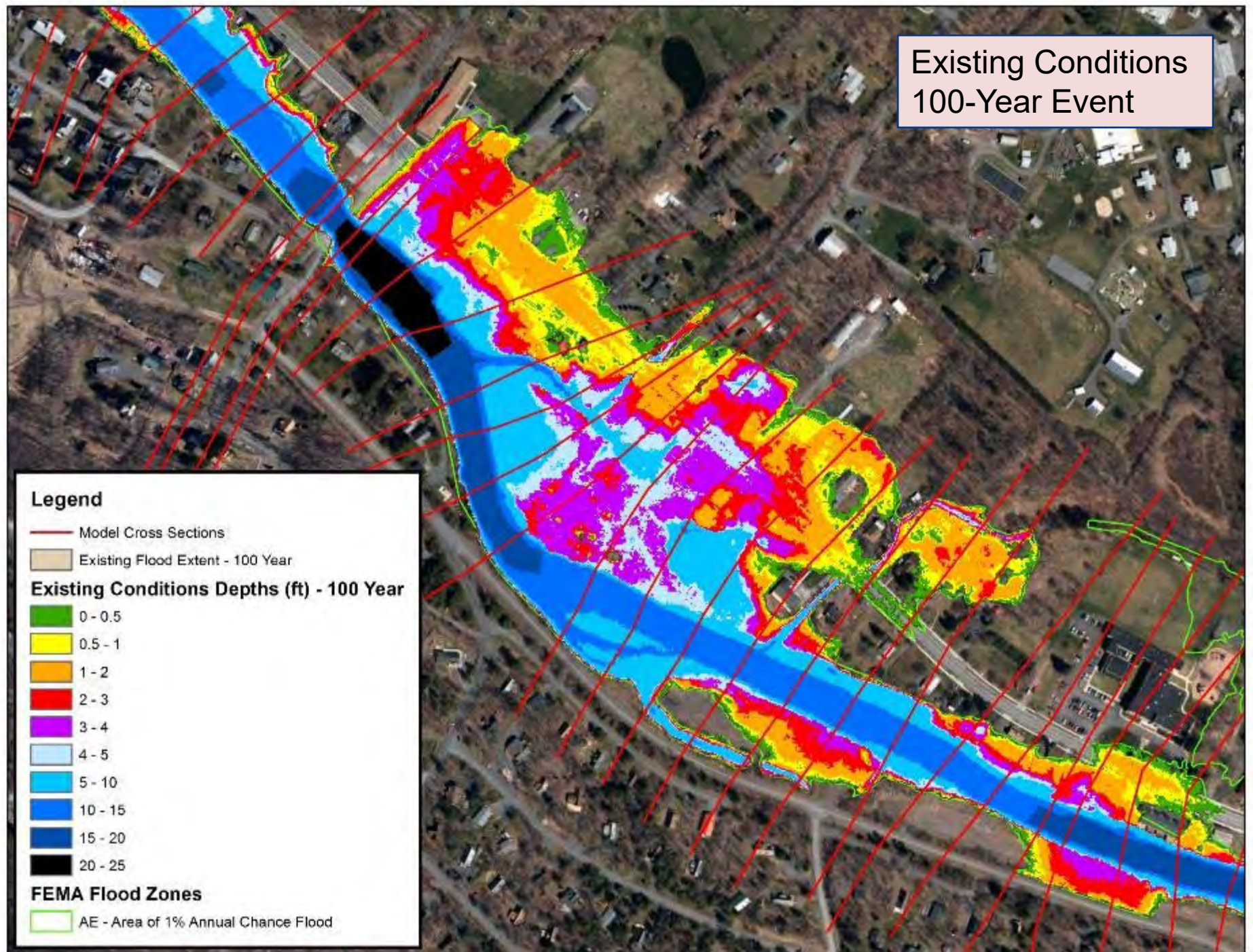


# Bridge Street Bridge

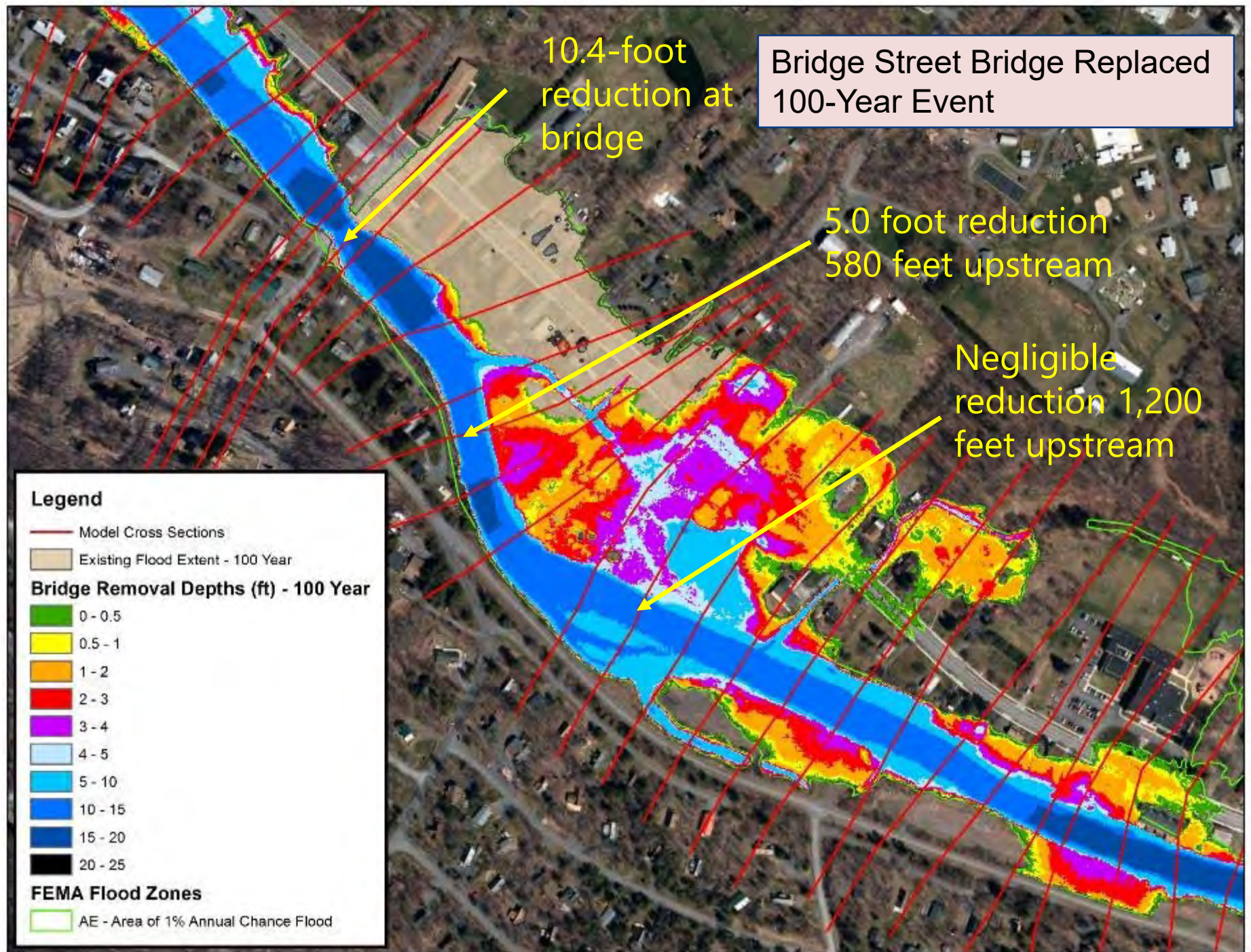




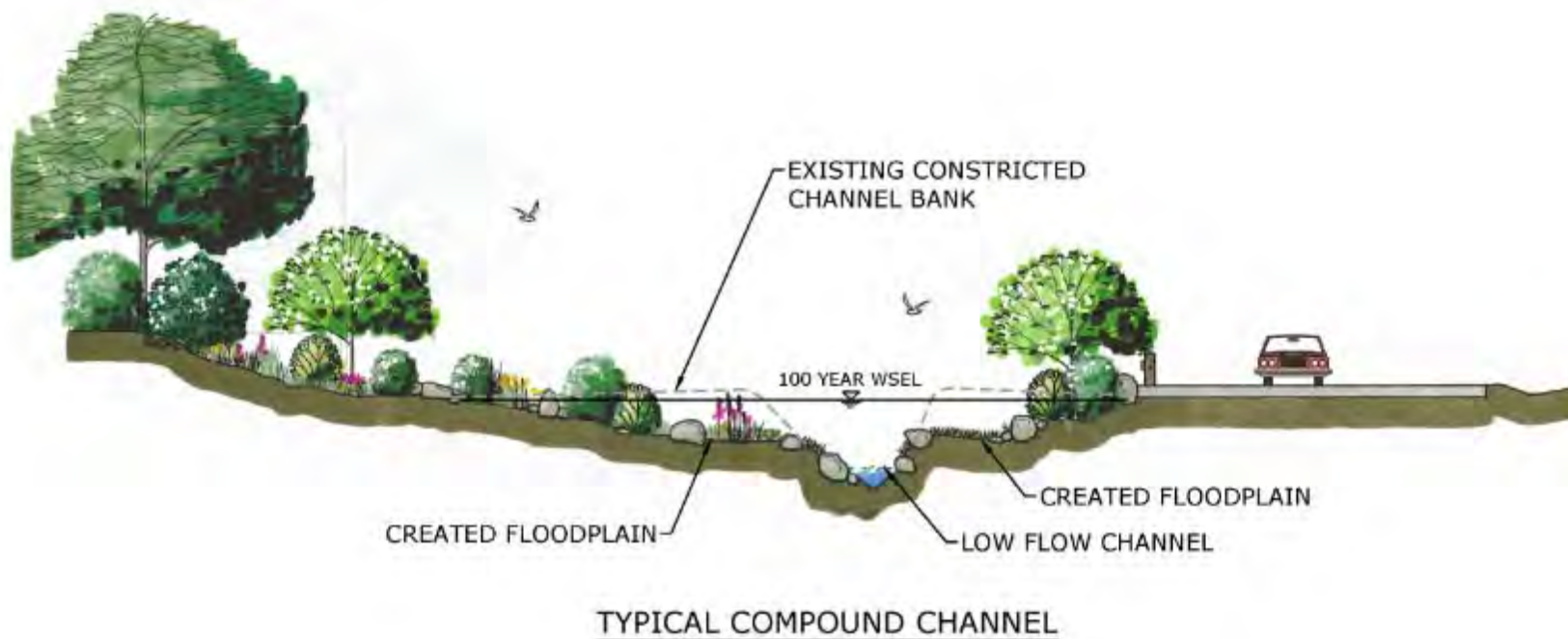
Existing Conditions  
100-Year Event



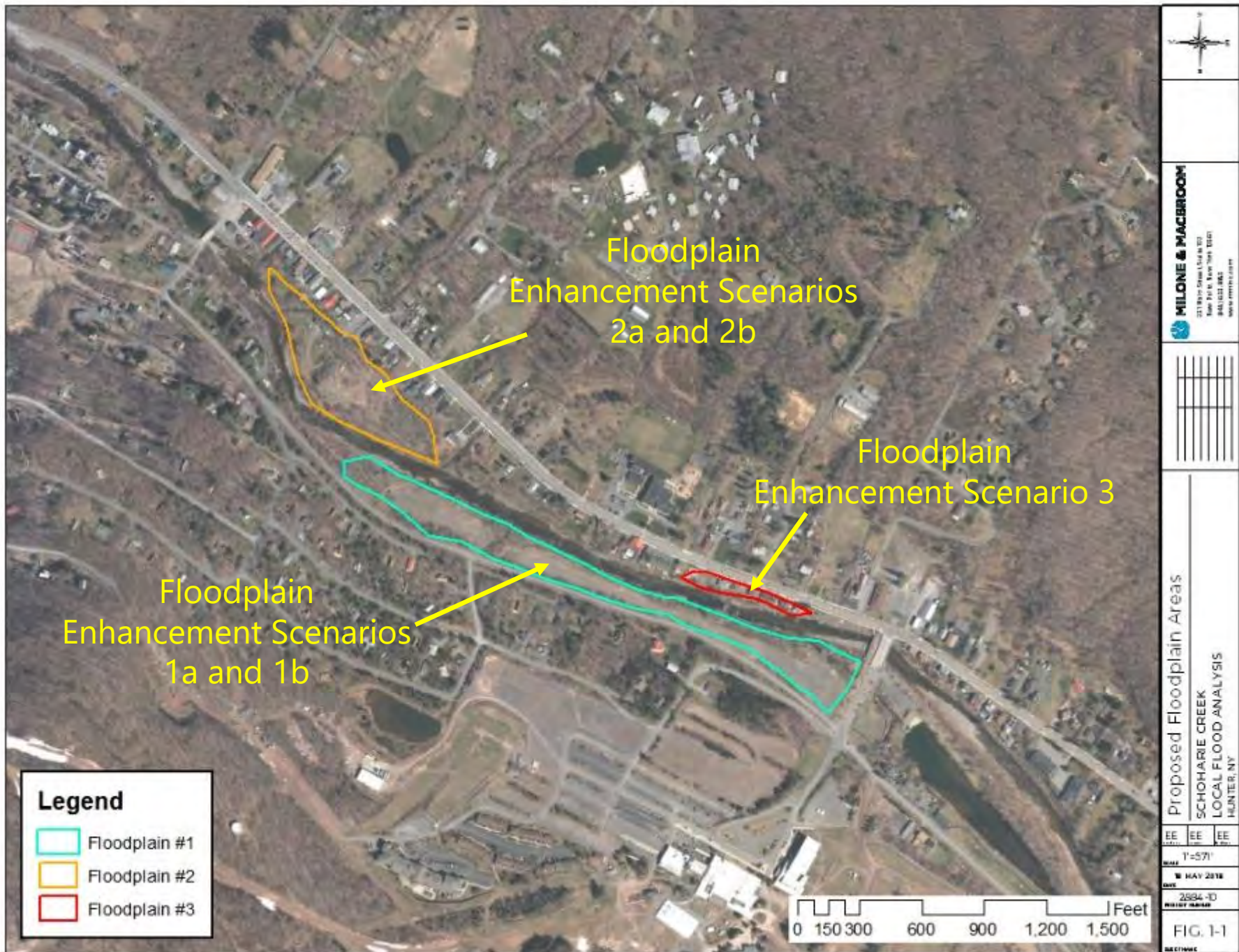




# Floodplain Enhancement Scenarios











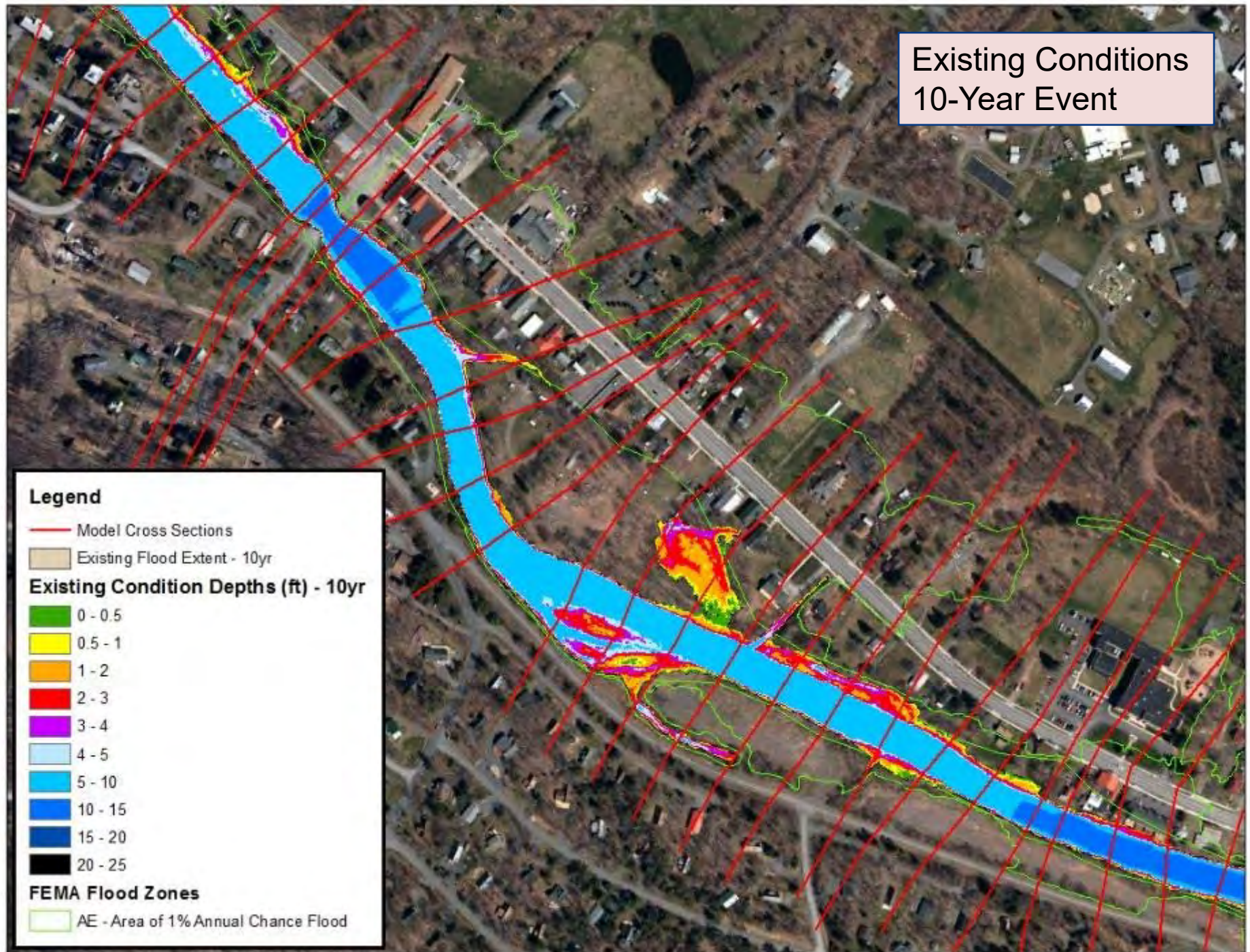


# Floodplain Site Walk





Existing Conditions  
10-Year Event





Floodplain Enhancement 2c  
10-Year Event

Floodplain  
inundated during  
flood

**Legend**

— Model Cross Sections

Existing Flood Extent - 10yr

**Proposed Condition Depths (ft) - 10yr**

0 - 0.5

0.5 - 1

1 - 2

2 - 3

3 - 4

4 - 5

5 - 10

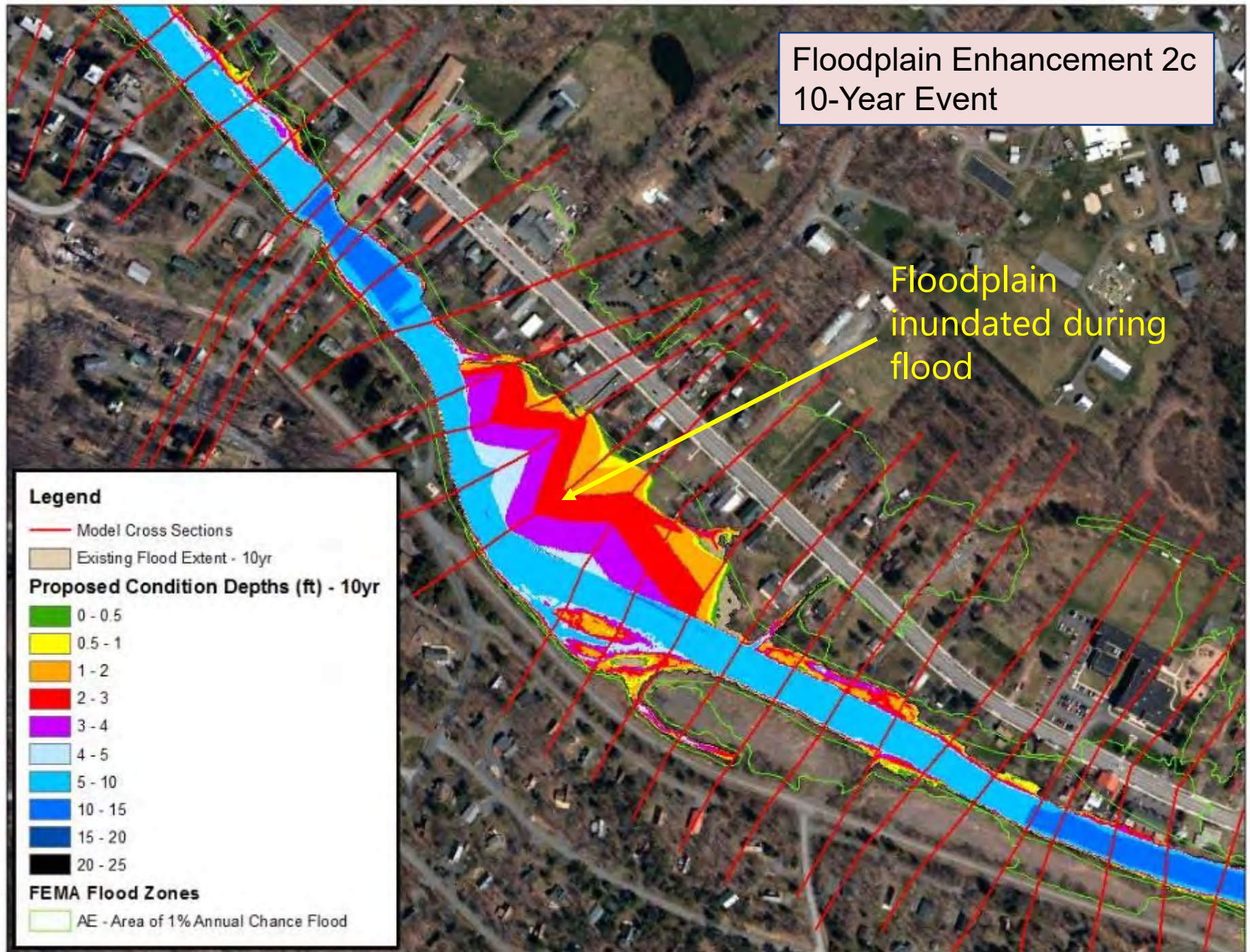
10 - 15

15 - 20

20 - 25

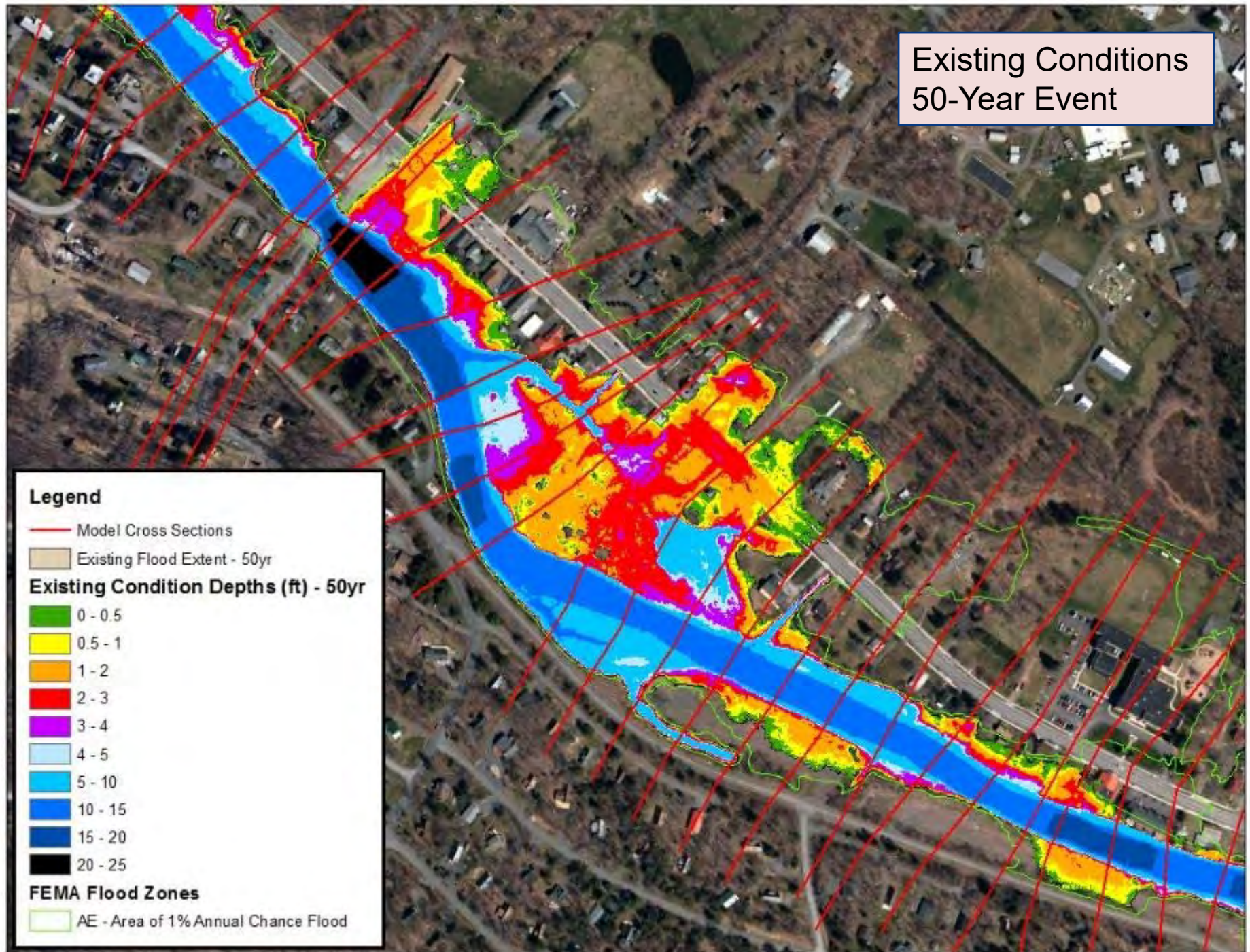
**FEMA Flood Zones**

AE - Area of 1% Annual Chance Flood





Existing Conditions  
50-Year Event





Floodplain Enhancement 2c  
50-Year Event

Removes  
flooding from  
Main Street

**Legend**

— Model Cross Sections

Existing Flood Extent - 50yr

**Proposed Condition Depths (ft) - 50yr**

0 - 0.5

0.5 - 1

1 - 2

2 - 3

3 - 4

4 - 5

5 - 10

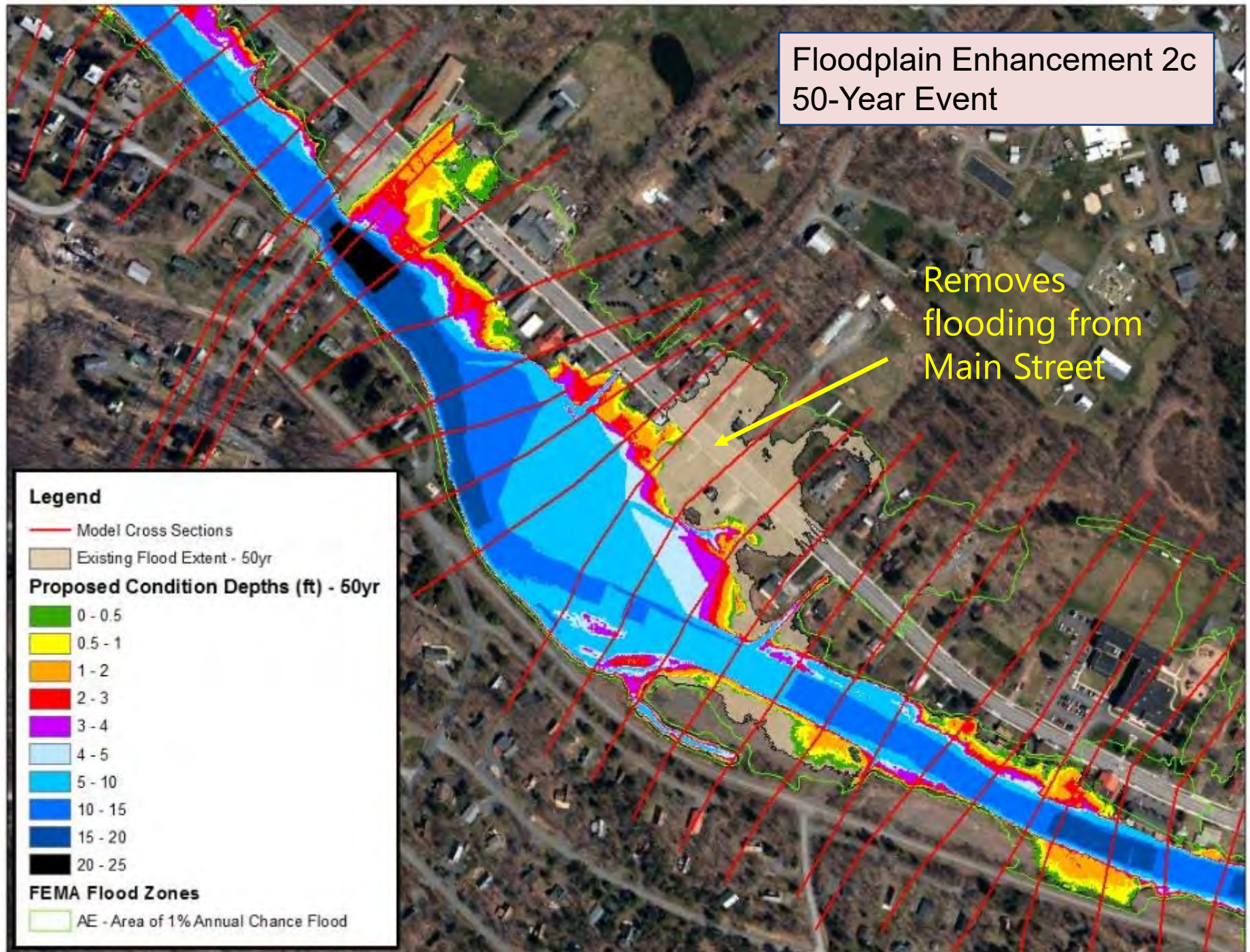
10 - 15

15 - 20

20 - 25

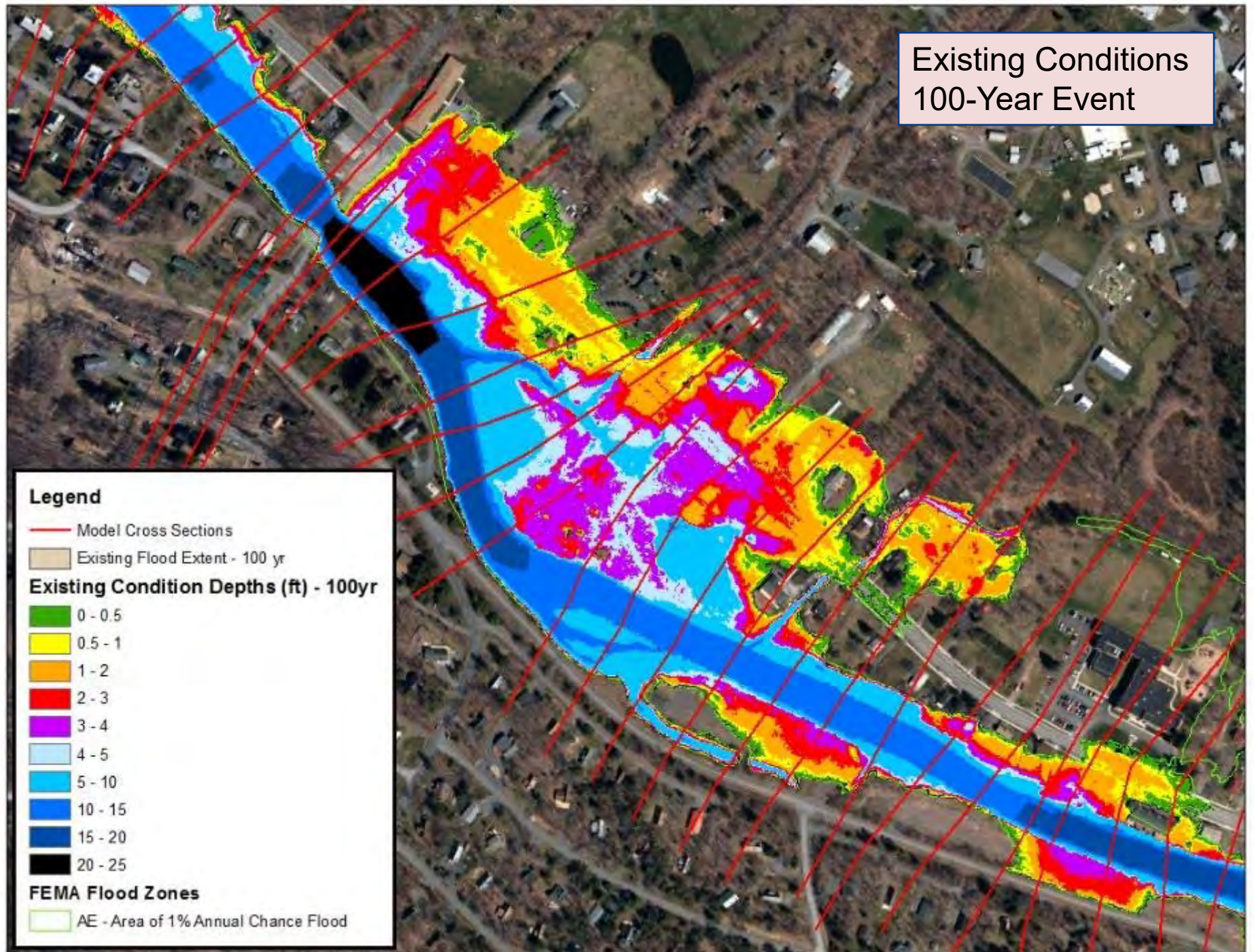
**FEMA Flood Zones**

AE - Area of 1% Annual Chance Flood





Existing Conditions  
100-Year Event





Floodplain Enhancement 2c  
100-Year Event

2.2 foot  
reduction in  
flooding depth

**Legend**

— Model Cross Sections

Existing Flood Extent - 100 yr

**Proposed Condition Depths (ft) - 100yr**

0 - 0.5

0.5 - 1

1 - 2

2 - 3

3 - 4

4 - 5

5 - 10

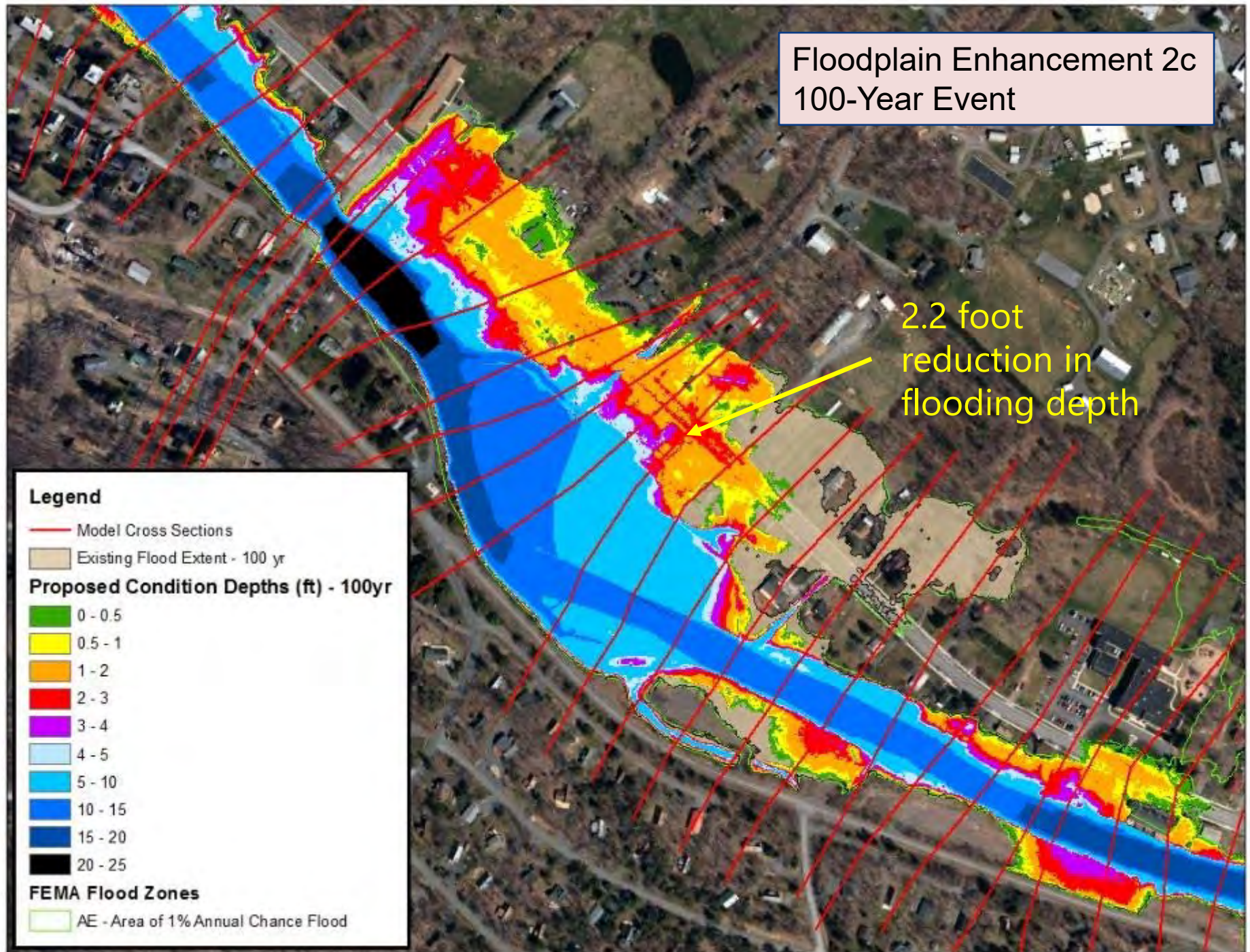
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15 - 20

20 - 25

**FEMA Flood Zones**

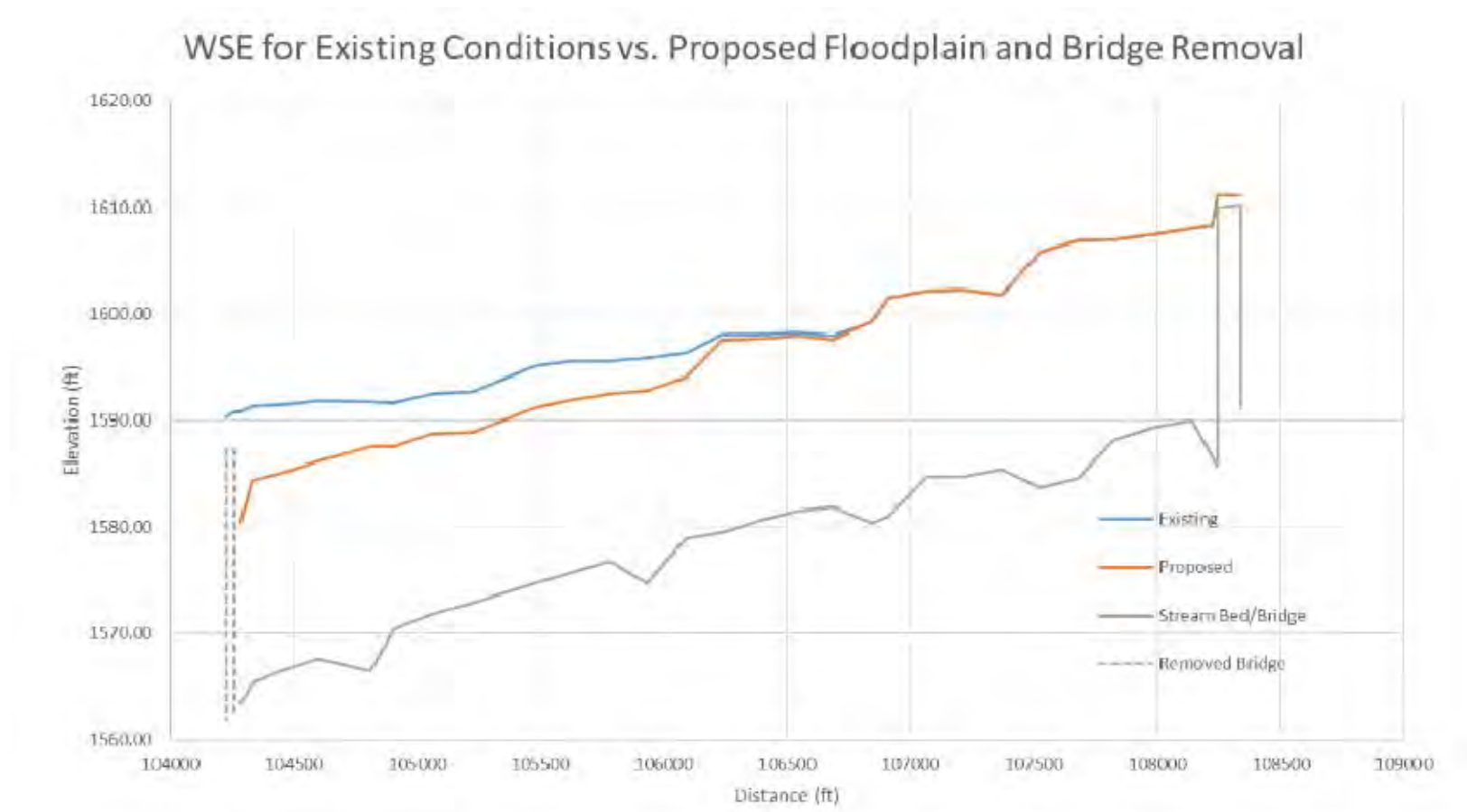
AE - Area of 1% Annual Chance Flood



# Combination Scenario

## Floodplain Enhancement Scenario 2c combined with Bridge Street Bridge

- During 100-year flood, benefits from bridge and floodplain are combined over 2,400 linear feet of channel



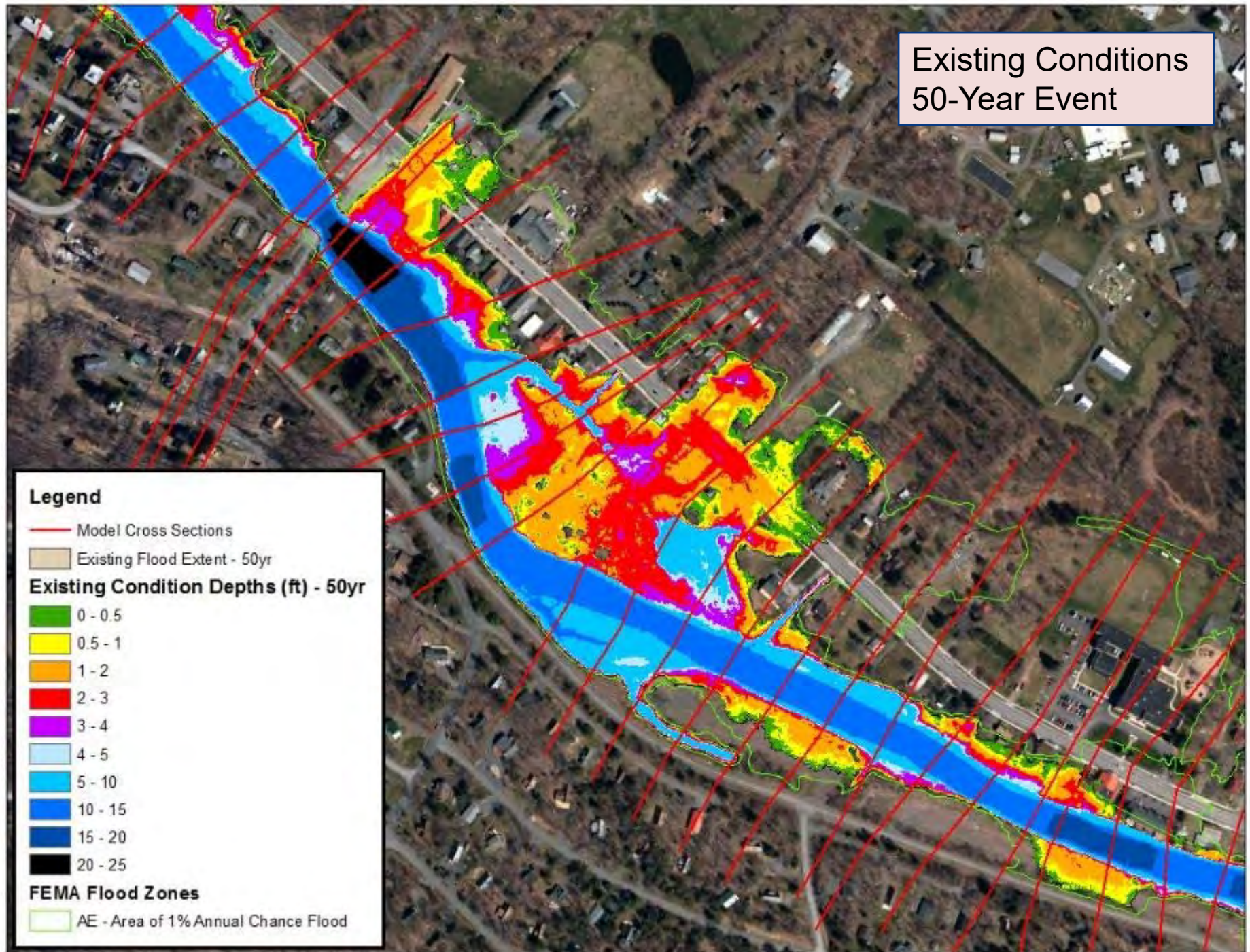




High water depth  
of 1.1 feet during  
100-year flood



Existing Conditions  
50-Year Event





Floodplain/Bridge Combo  
50-Year Event

Removes flooding  
from Main Street

**Legend**

— Model Cross Sections

Existing Flood Extent - 50yr

**Proposed Condition Depths (ft) - 50yr**

0 - 0.5

0.5 - 1

1 - 2

2 - 3

3 - 4

4 - 5

5 - 10

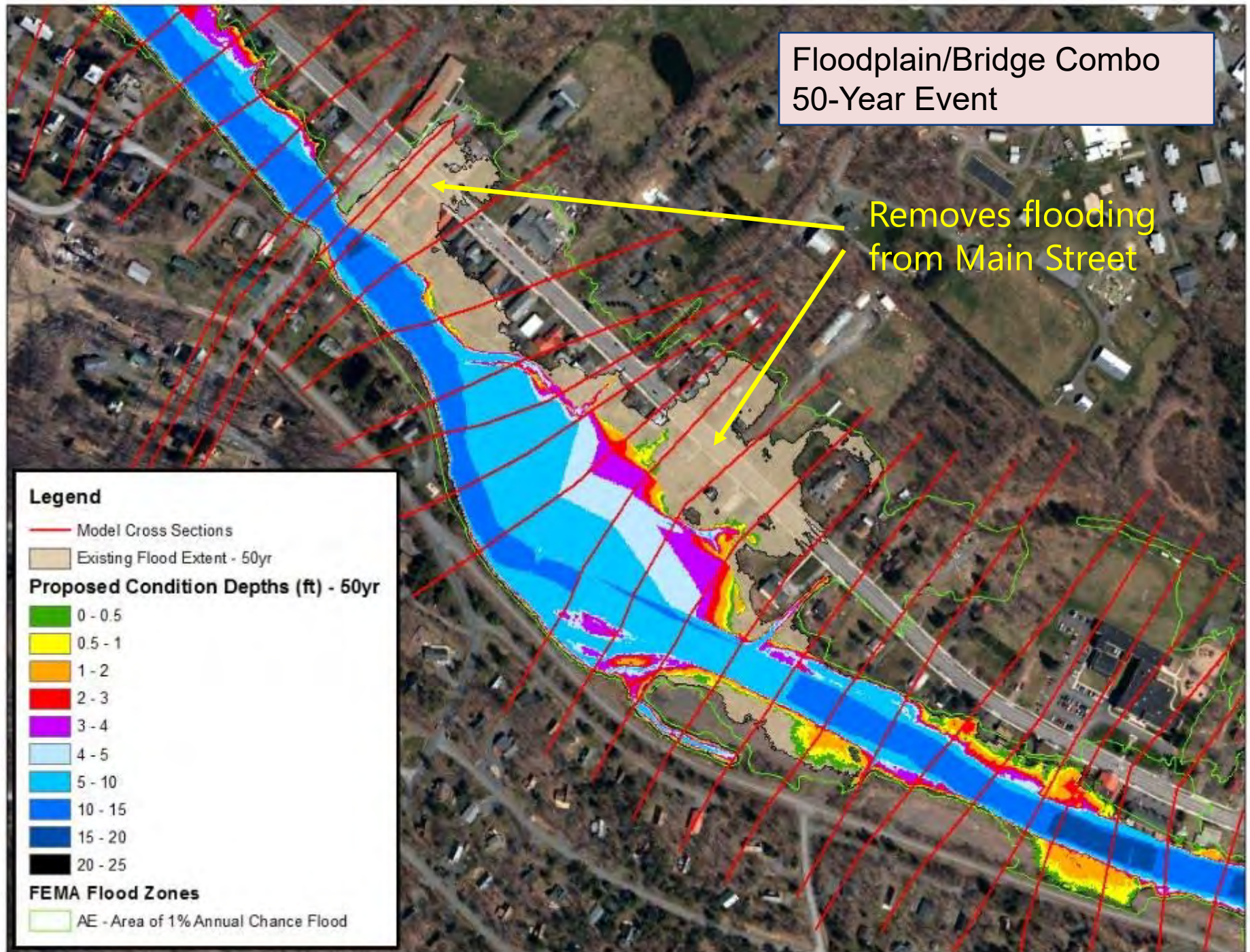
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15 - 20

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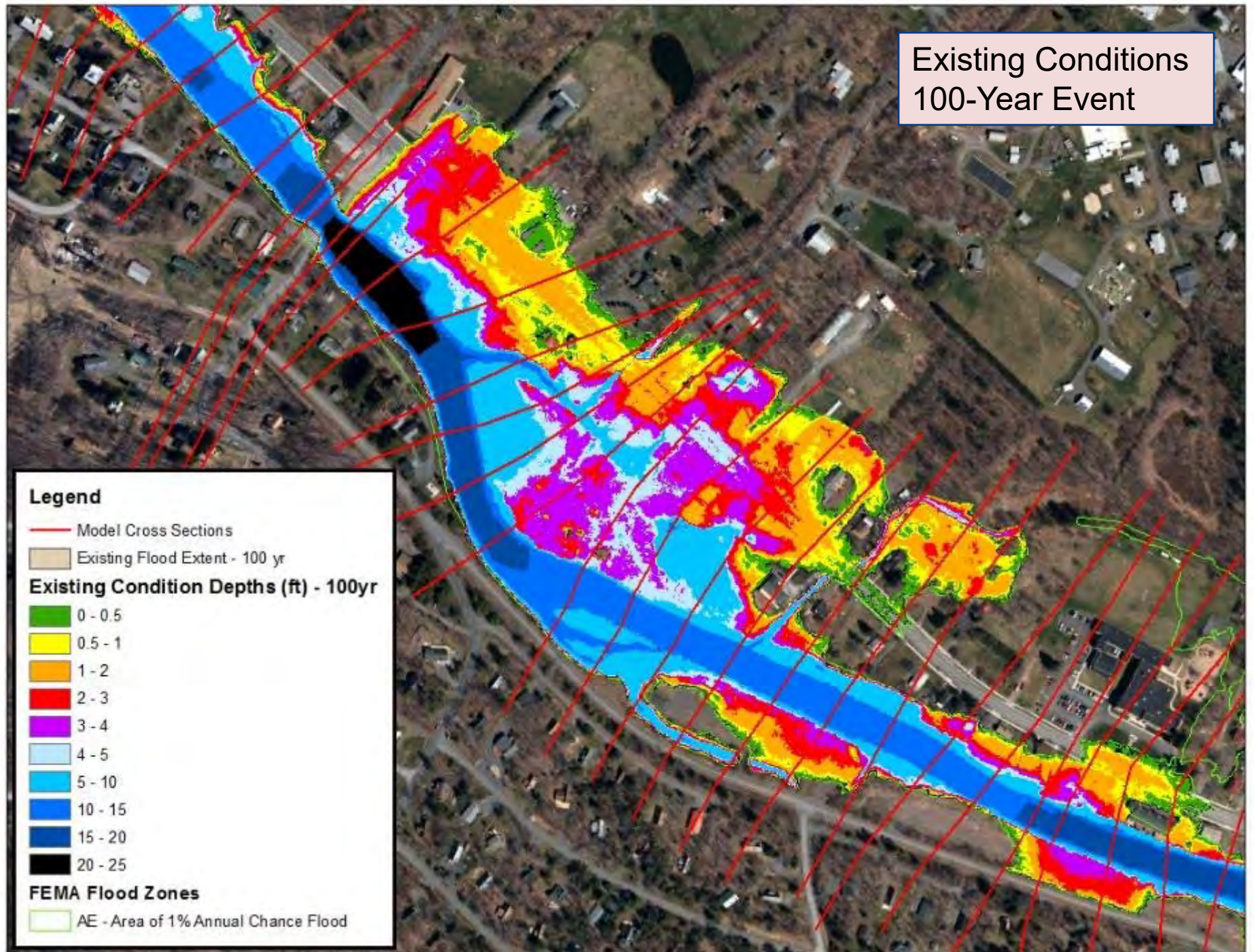
**FEMA Flood Zones**

AE - Area of 1% Annual Chance Flood





Existing Conditions  
100-Year Event





Floodplain/Bridge Combo  
100-Year Event

Removes flooding  
from Main Street

**Legend**

— Model Cross Sections

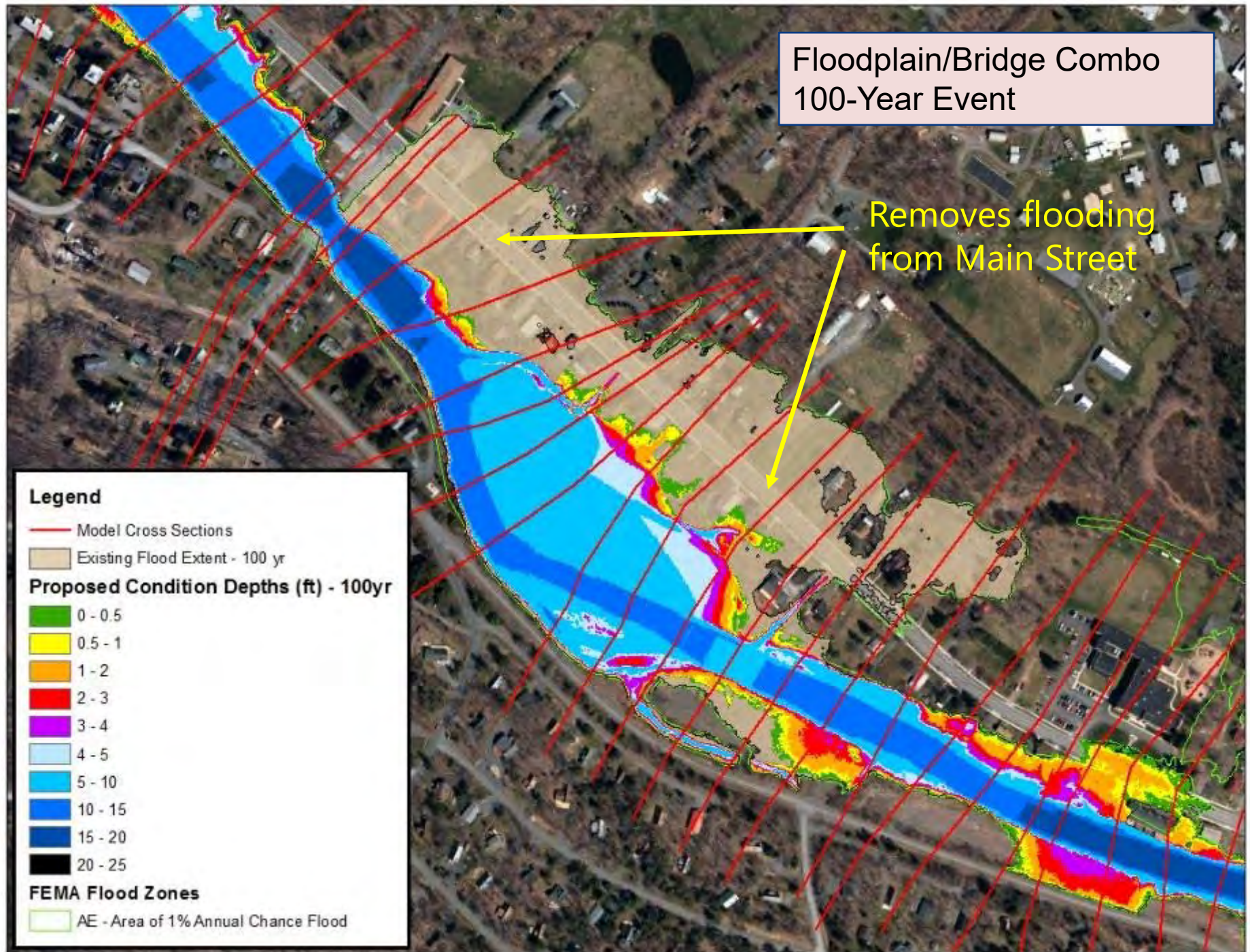
Existing Flood Extent - 100 yr

**Proposed Condition Depths (ft) - 100yr**



**FEMA Flood Zones**

AE - Area of 1% Annual Chance Flood





# Bridges in Hunter LFA Project Area





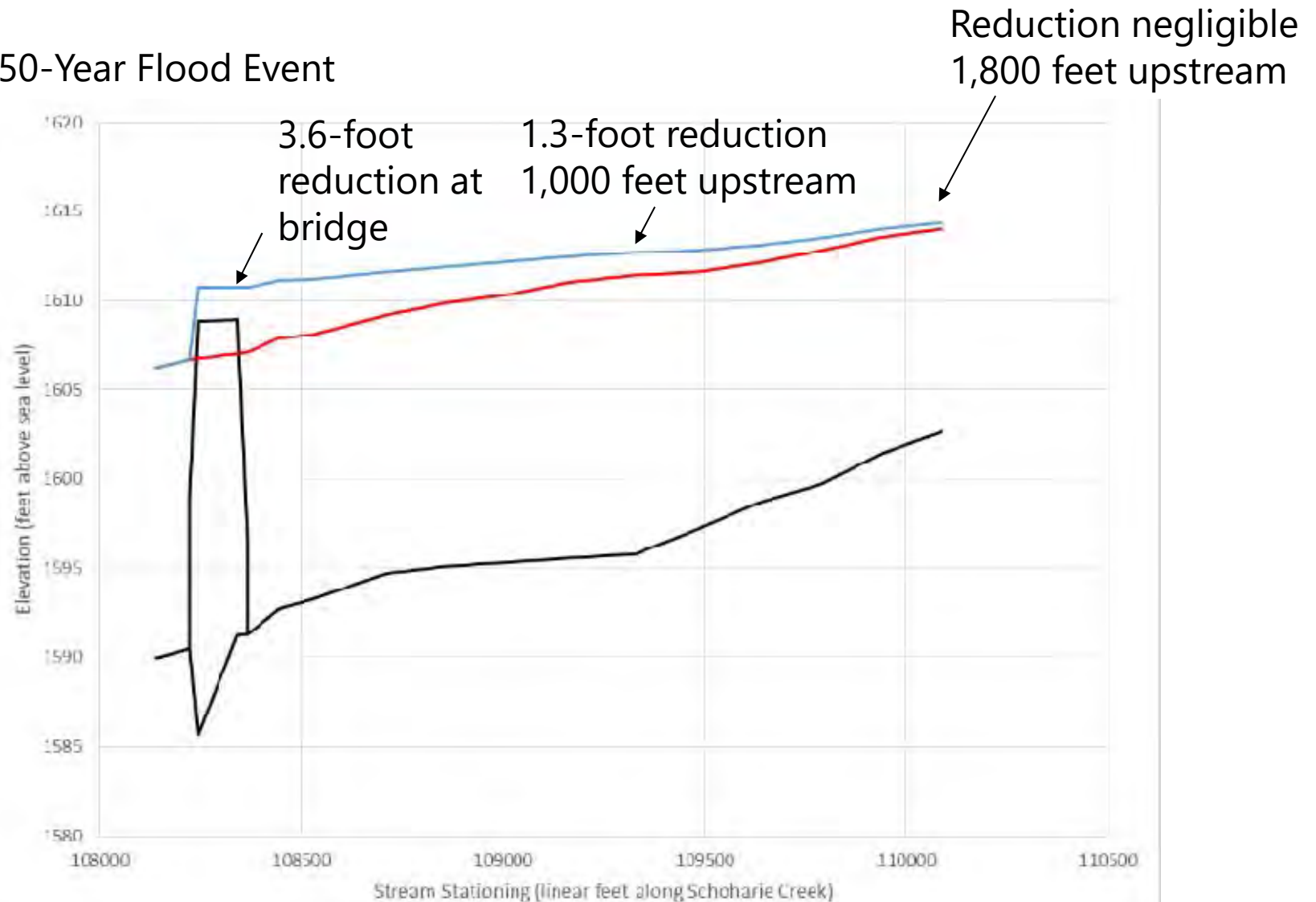
# Hunter Mountain Bridge

- Consists of two bridges.
- Backed up water/flanked in Irene.
- Hydraulic modeling indicates that the bridge is overtopped during the 50- and 100-year flood.
- Acts as a hydraulic constriction during the 50- and 100-year flood events.



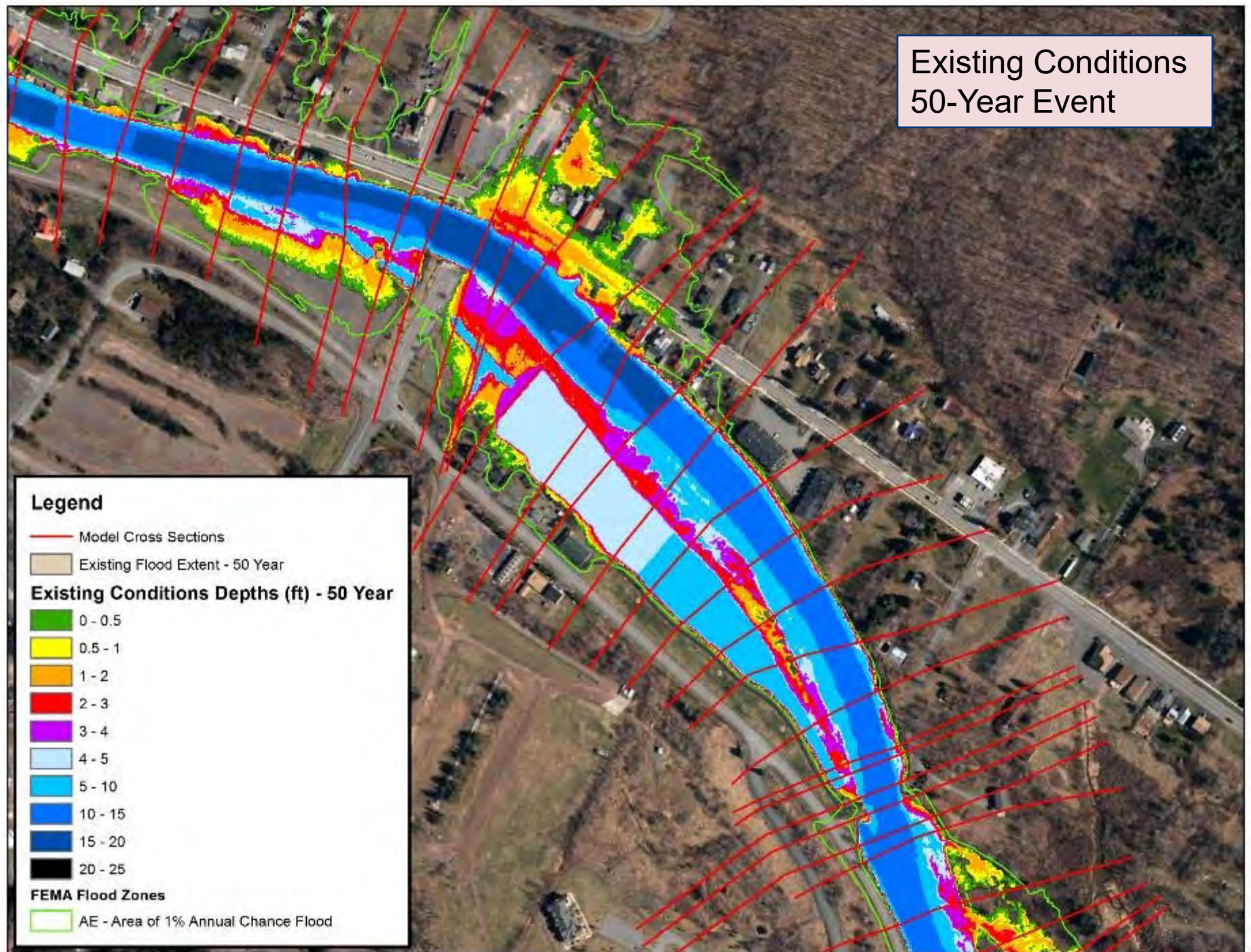
# Hunter Mountain Bridge

50-Year Flood Event



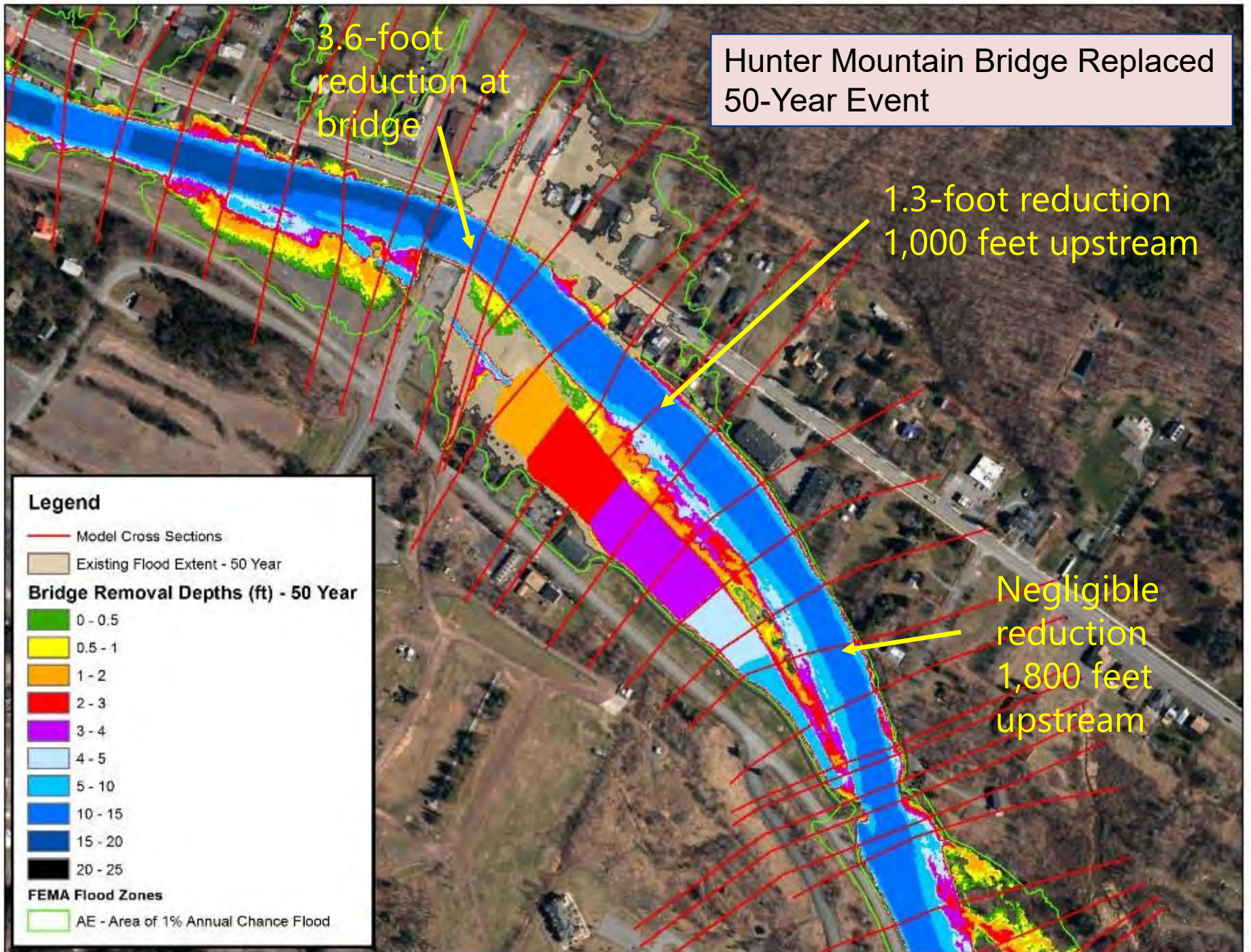


Existing Conditions  
50-Year Event



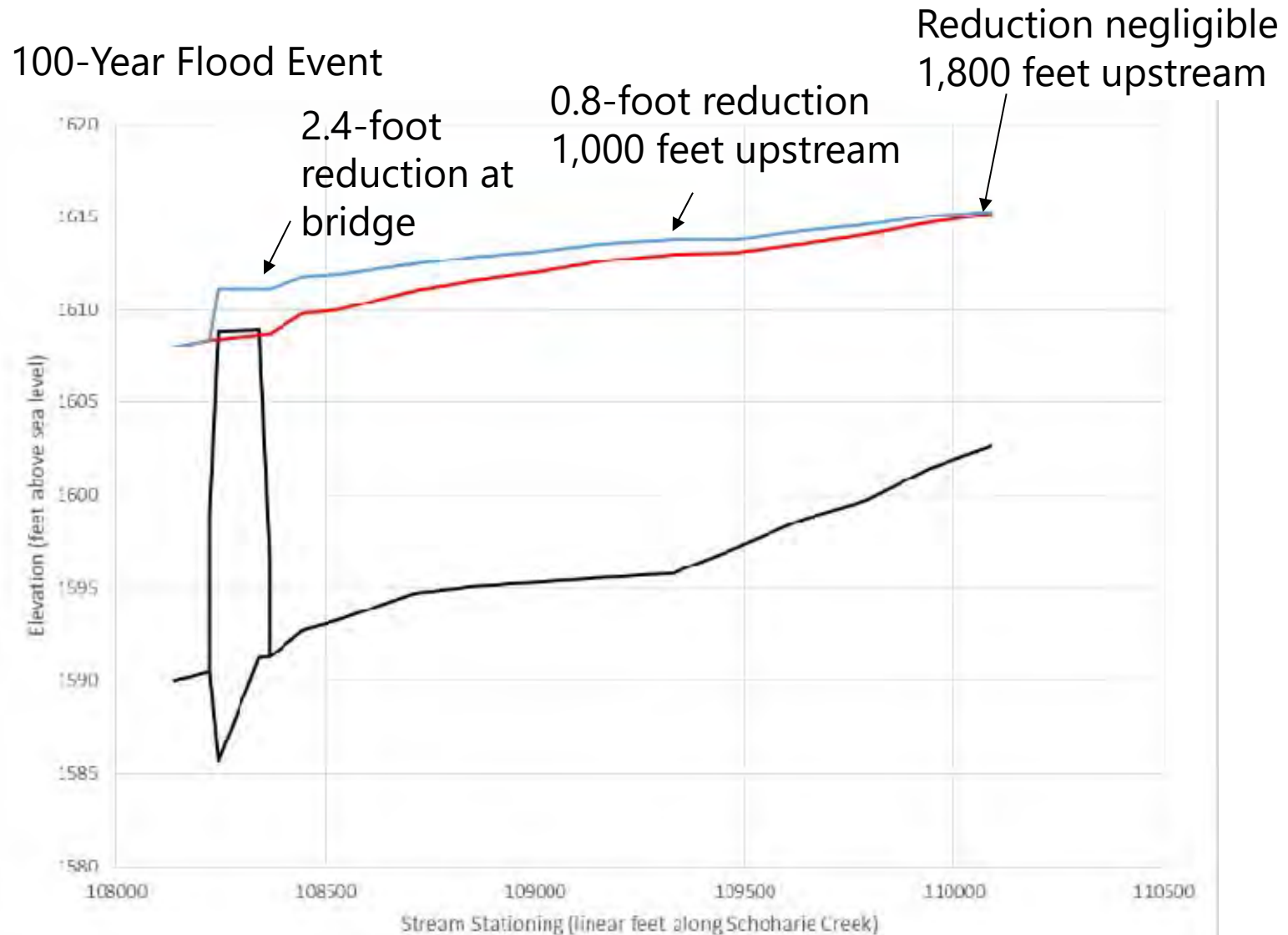


## Hunter Mountain Bridge Replaced 50-Year Event



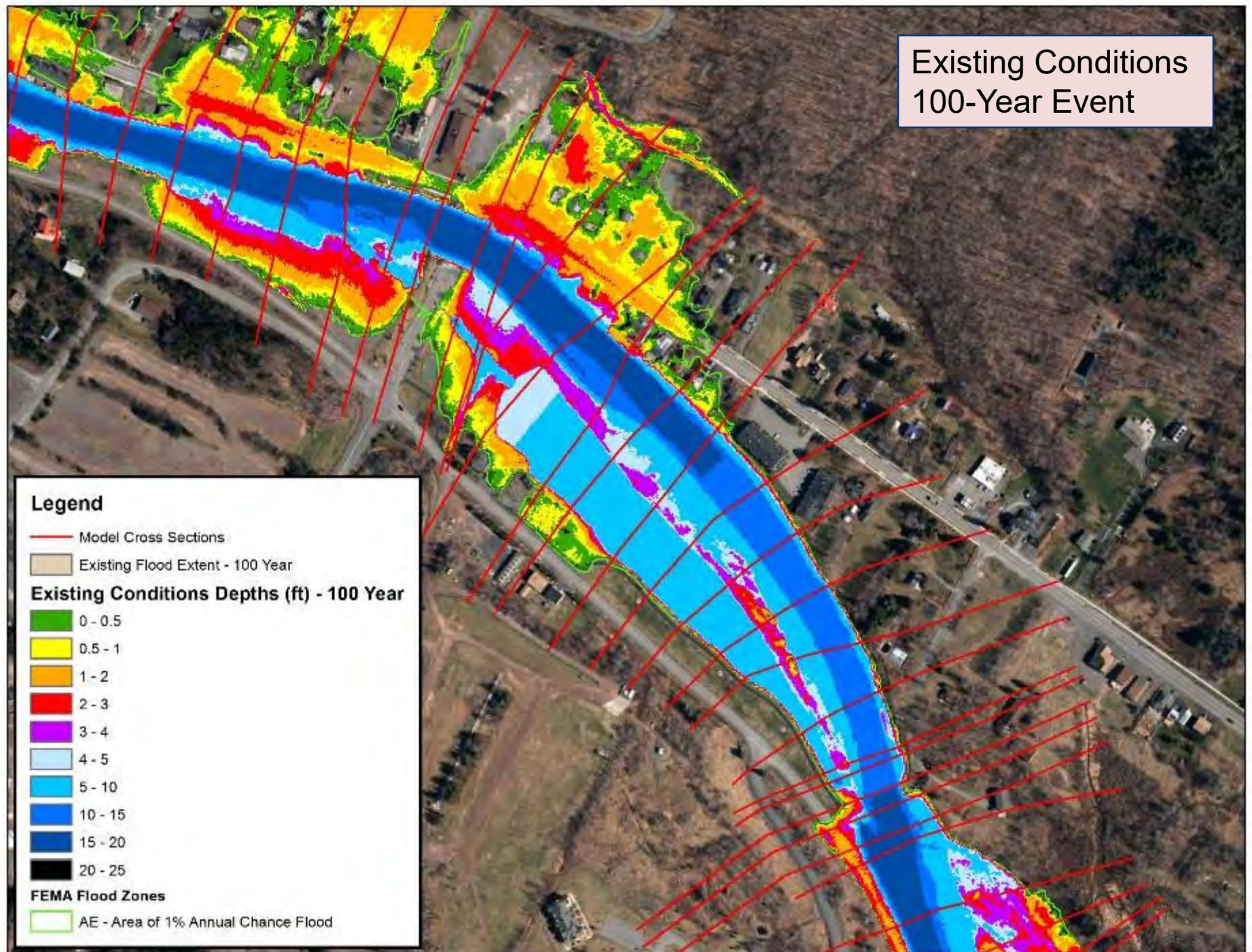


# Hunter Mountain Bridge





Existing Conditions  
100-Year Event





## Hunter Mountain Bridge Replaced 100-Year Event

2.4-foot  
reduction at  
bridge

0.8-foot reduction  
1,000 feet upstream

Negligible  
reduction 1,800  
feet upstream

### Legend

— Model Cross Sections

Existing Flood Extent - 100 Year

#### Bridge Removal Depths (ft) - 100 Year

0 - 0.5

0.5 - 1

1 - 2

2 - 3

3 - 4

4 - 5

5 - 10

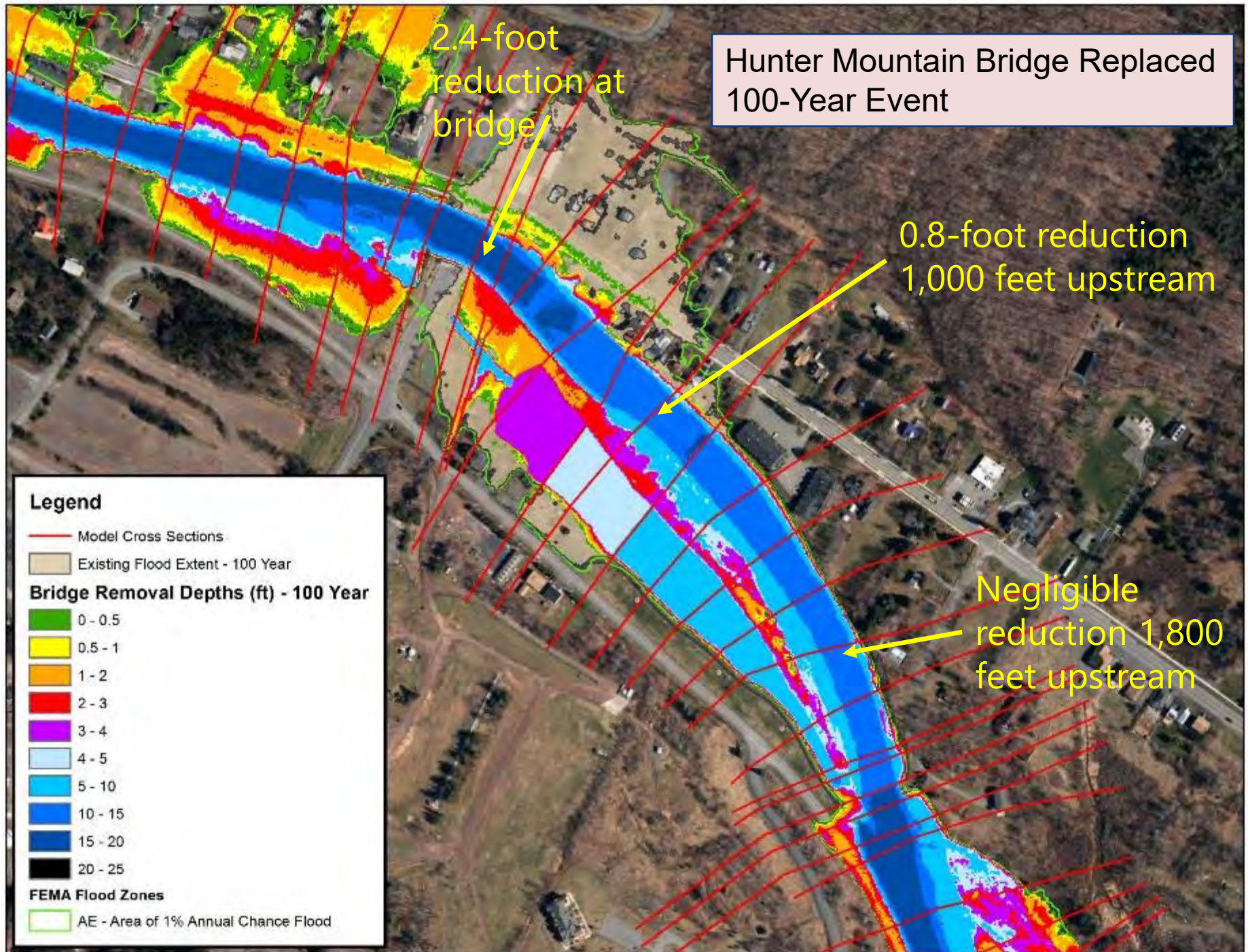
10 - 15

15 - 20

20 - 25

#### FEMA Flood Zones

AE - Area of 1% Annual Chance Flood

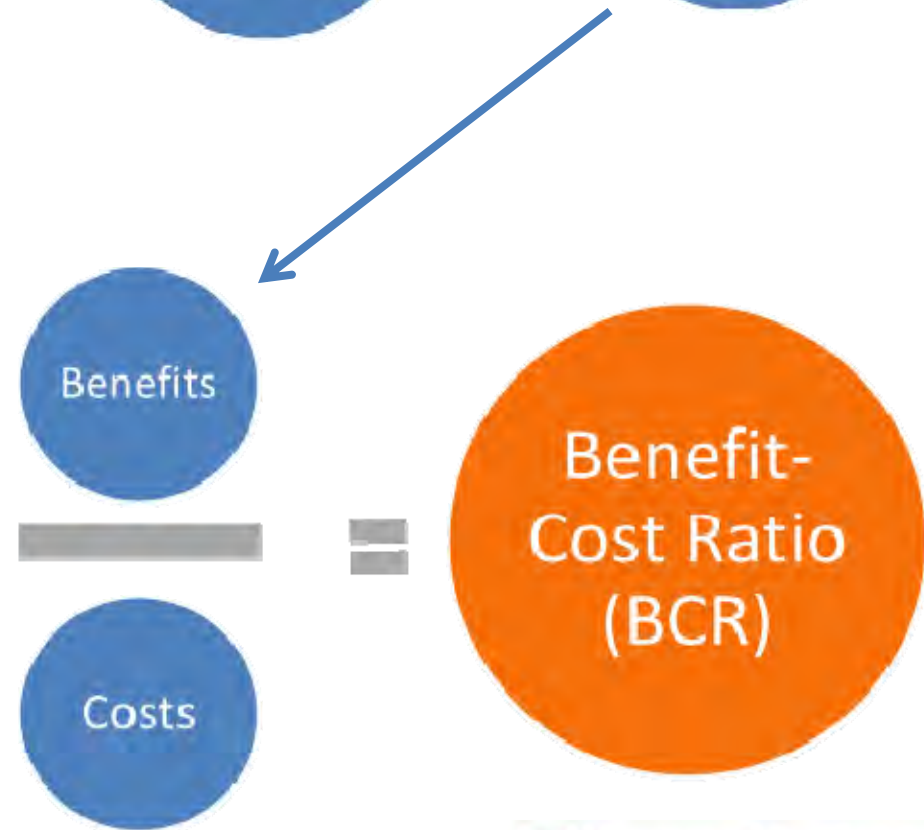


# Benefit-Cost Analysis (BCA)

What is BCA?



*Process of determining the Benefit-Cost Ratio (BCR) of a project*



*Benefits and costs both have the unit of \$\$\$\$\$*



# Bridge Street Bridge Replacement

## Cost/Benefit:

Benefit Cost Summary	
Total Benefits	\$440,474
Total Costs	\$4,175,000
Benefit Cost Ratio	<b>0.11</b>

# Floodplain Enhancement Scenario 2c

## Cost/Benefit:

Benefit Cost Summary	
Total Benefits	\$147,811
Total Costs	\$1,520,000
Benefit Cost Ratio	<b>0.10</b>



# Floodplain/Bridge Combo

## Cost/Benefit:

Benefit Cost Summary	
Total Benefits	\$572,591
Total Costs	\$5,695,000
Benefit Cost Ratio	<b>0.10</b>



# Floodplain/Bridge Combo

## Cost/Benefit:

Benefit Cost Summary	
Total Benefits <sup>1</sup>	\$572,591
Total Costs	\$1,520,000
Benefit Cost Ratio	<b>0.38</b>

1 – Assumes that Bridge Street bridge has been replaced with a hydraulically adequate structure



# Summary

## BCRs:

Alternative	BCR
Bridge Street bridge replacement	<b>0.11</b>
Floodplain 2c	<b>0.10</b>
Floodplain 2c and Bridge Street bridge replacement	<b>0.10</b>
Floodplain 2c assuming Bridge Street bridge has been replaced	<b>0.38</b>

# Next Steps

## **Next Steps for MMI**

- Refine Benefit-Cost Analysis
- Continue with LFA Recommendations and Report

## **Next Steps for FAC**

- Is Bridge Street Bridge replacement feasible?
- Is Hunter Mountain Bridge replacement feasible?
- Is Floodplain Enhancement Scenario #2c feasible?
- Is additional flood damage information available?



# LFA Meeting Schedule

Public Meeting #1 -  
gather information about  
flooding and property  
damage (April 19)

Public Meeting #2 -  
present results and  
gather feedback  
(Fall)

FAC Kick-off (February  
28)

FAC (June 4)

FAC (July 18)

FAC (Aug or Sept)

FAC (Nov or Dec)



Questions, Comments, or Thoughts?