Bridge Street Bridge Replacement Phoenicia Public Informational Meeting February 6, 2023

SLR

Bridge Street Bridge Replacement Phoenicia

Project Partners

- Ulster County Department of Public Works
- Ashokan Watershed Stream Management Program
 - Ulster County Soil & Water Conservation District
 - Cornell Cooperative Extension of Ulster County
 - New York City Department of Environmental Protection
- Town of Shandaken
- SLR





Mark Carabetta, CFM, PWS Environmental Scientist



Matthew Trueheart, MS Water Resources Engineer



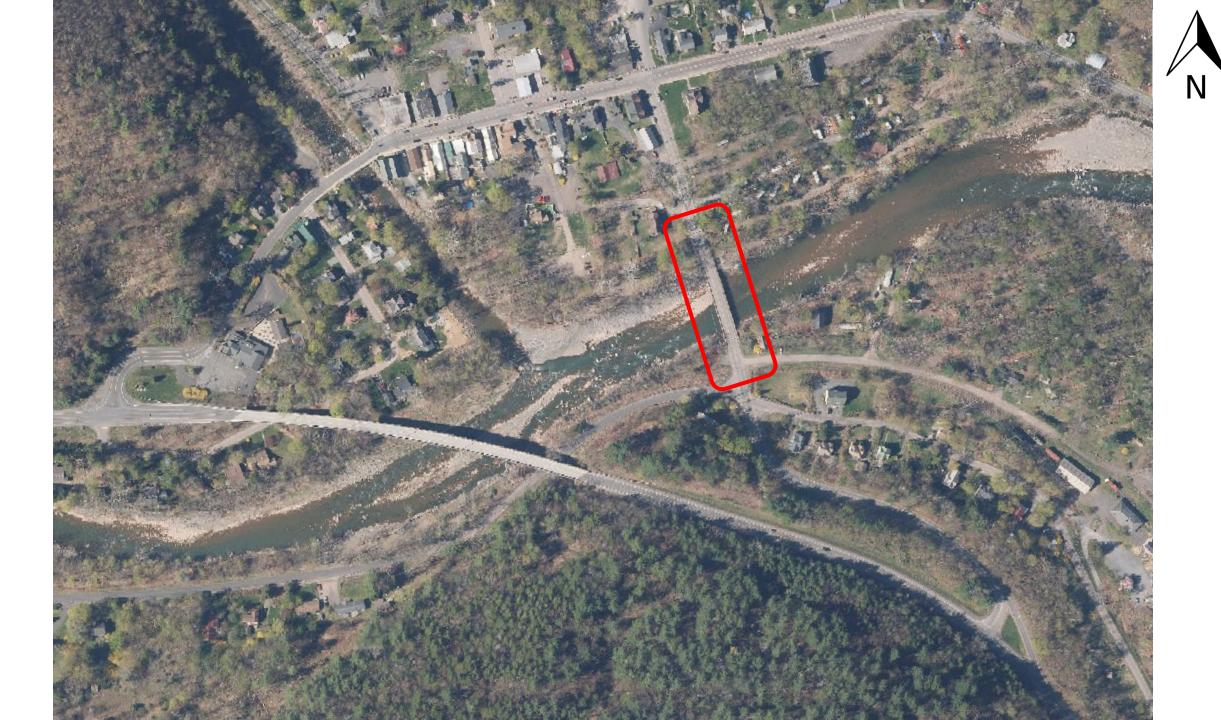
Shelley Plude, MS, PE Structural Engineer



(formerly Milone & MacBroom, Inc.)

Comment:	
Information (optional):	
Name -	
Email -	SLR







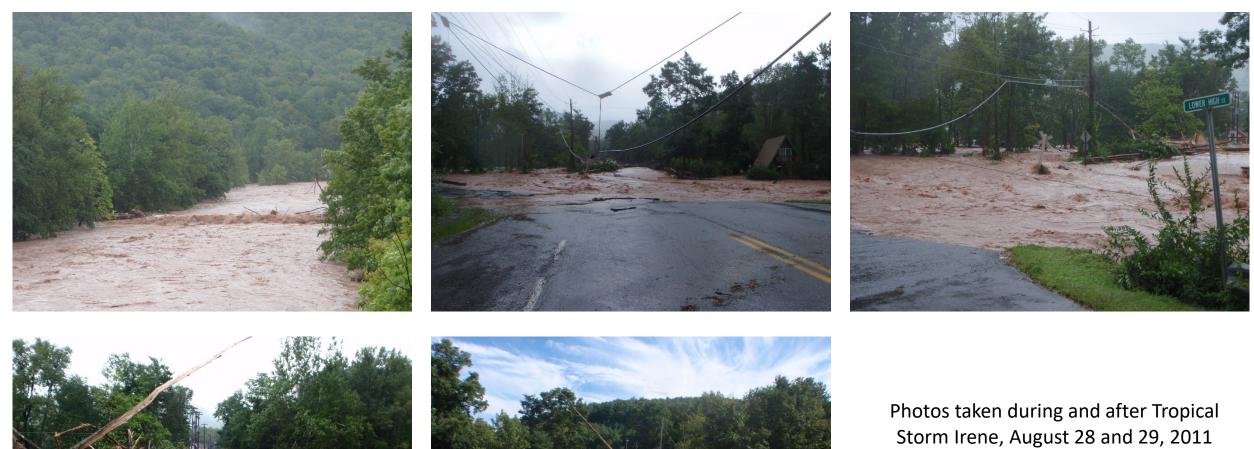




Above: photos by SLR April 8, 2022

Right: Drone aerials by SLR February 9, 2022





Provided by Ashokan Watershed Stream Management Program







Public Meeting Schedule

Public Meeting #1 (February 6, 2023)

- Project kickoff meeting
- Share design concepts
- Share initial hydraulic modeling results
- Gather comments and ideas

Public Meeting #2 (Date TBD)

- Share preliminary design progress
- Gather feedback/comments

Public Meeting #3 (Date TBD)

- Share advanced design progress
- Gather feedback/comments



Today's Discussion

- Initial hydrology & hydraulics
- Bridge structure type options
- Accommodating pedestrians and bikes
- Recreational access to Esopus Creek
- Potential impacts to roads and properties
- Water main crossing

Considerations & Topics for Future Discussion

- Utilities
- Geotechnical
- Scour potential
- Sediment transport
- Regulatory permitting considerations
- Project design and construction schedule
- Railroad crossing



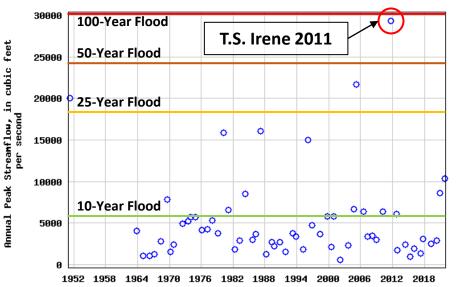
NYSDOT Hydraulic Design Criteria for Bridges

FREEBOARD MEASURED FROM LOW CHORD TO WATER SURFACE

- The proposed low chord shall not be lower than the existing low chord.
- No increase in water surface elevations compared to the existing conditions for both the 50- and 100-Year flows.
- Increase estimated flood flows to account for climate change
- Minimum of 2.0 feet of freeboard for the projected 50-Year flood.
- The projected 100-Year flow shall pass below the proposed low chord without touching it.

ESOPUS CREEK - UPSTREAM

USGS 01362200 ESOPUS CREEK AT ALLABEN NY

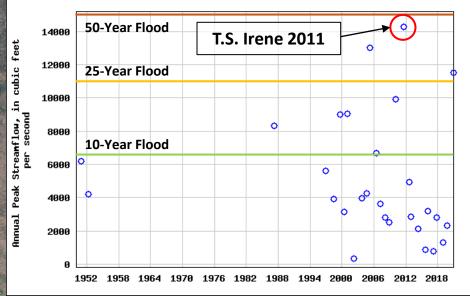


STONY CLOVE CREEK

≊USGS

USGS 01362370 STONY CLOVE CREEK BLW OX CLOVE AT CHICHESTER NY

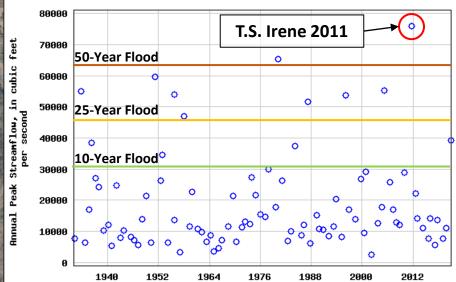
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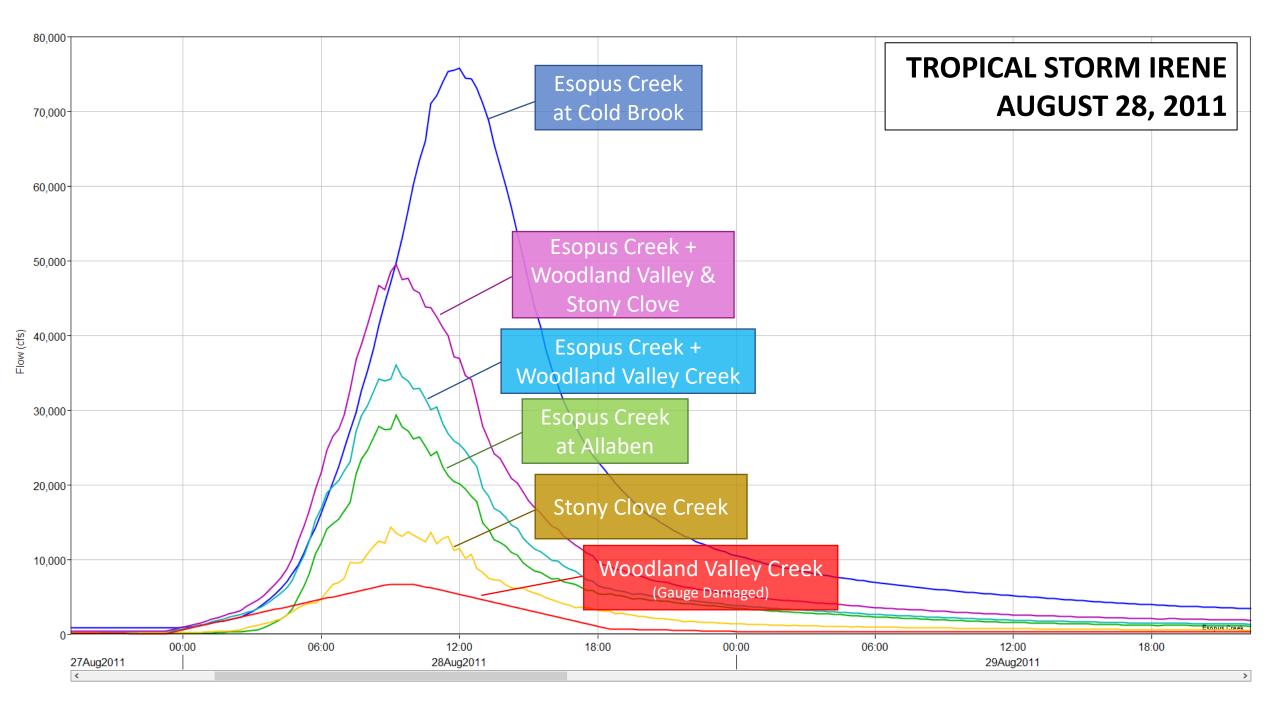


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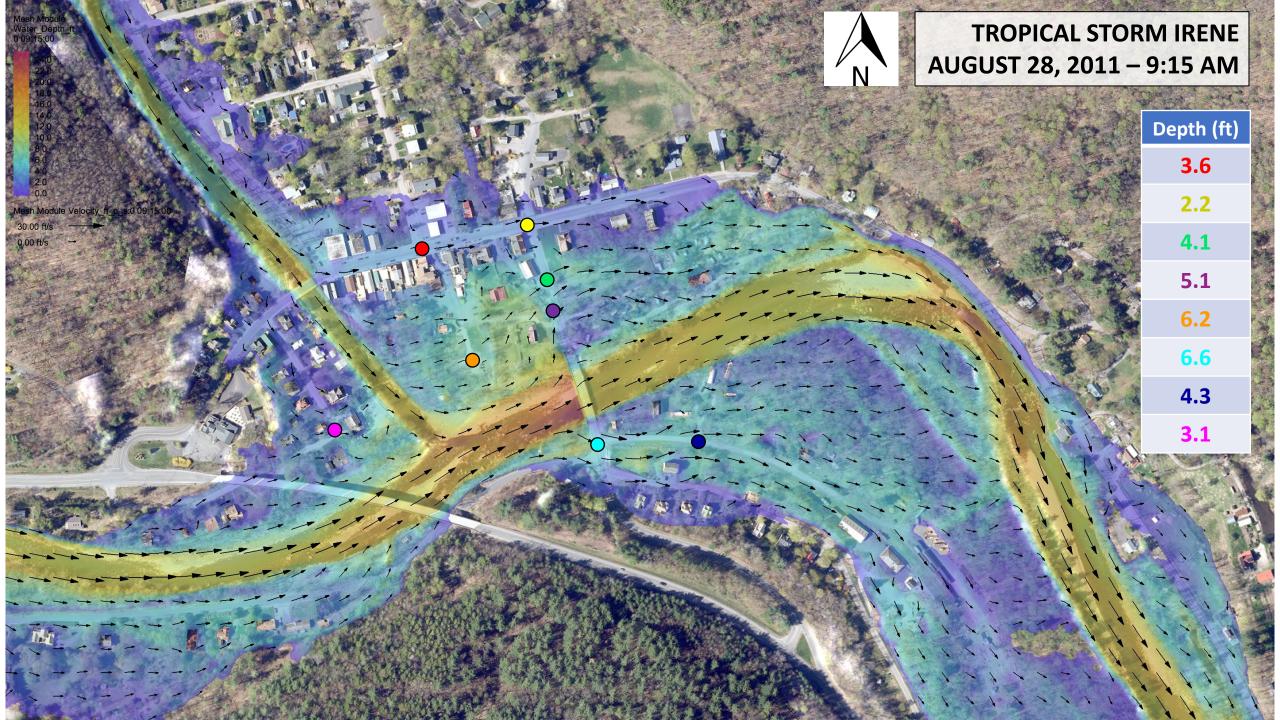
ESOPUS CREEK - DOWNSTREAM

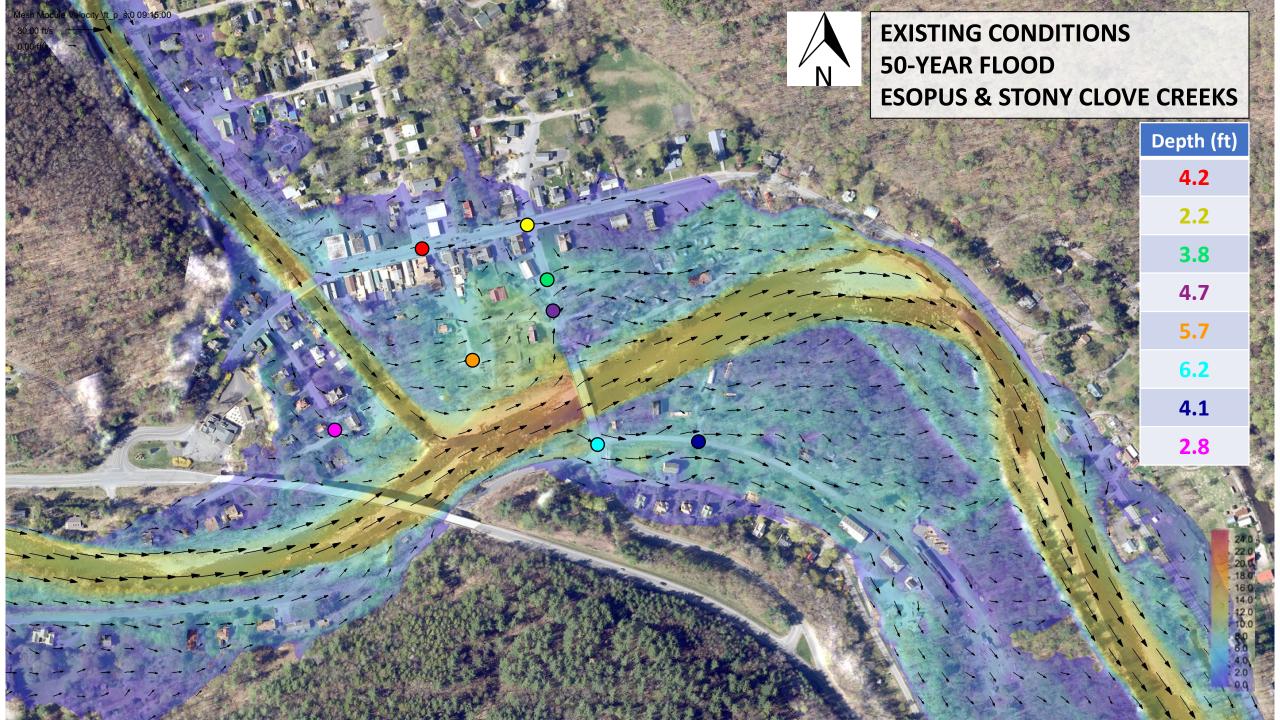
USGS 01362500 ESOPUS CREEK AT COLDBROOK NY



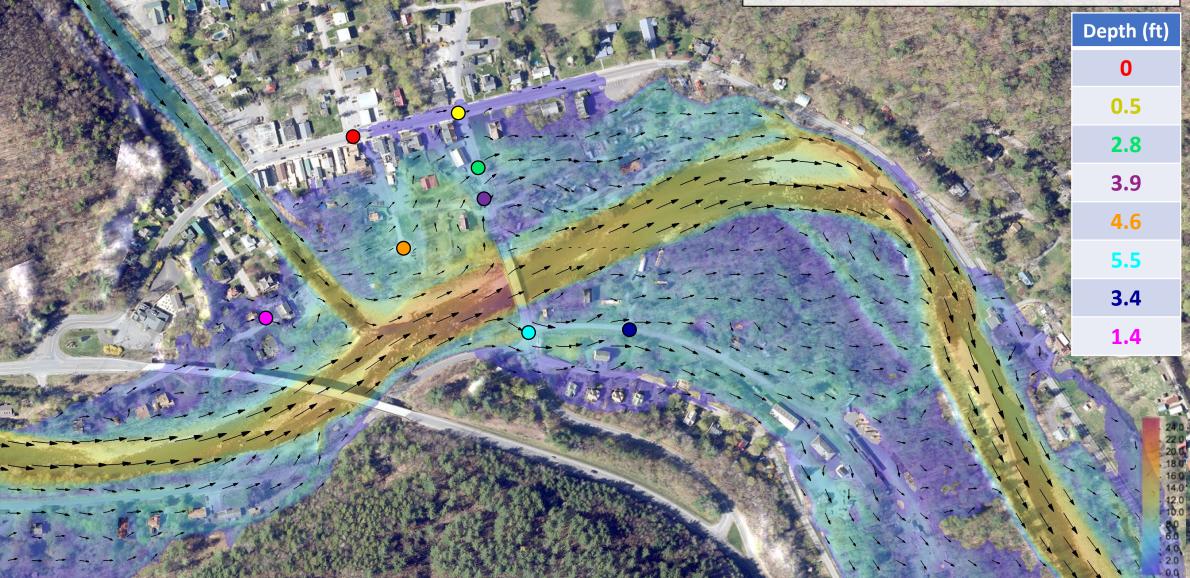


Existing Conditions Hydraulic Modeling

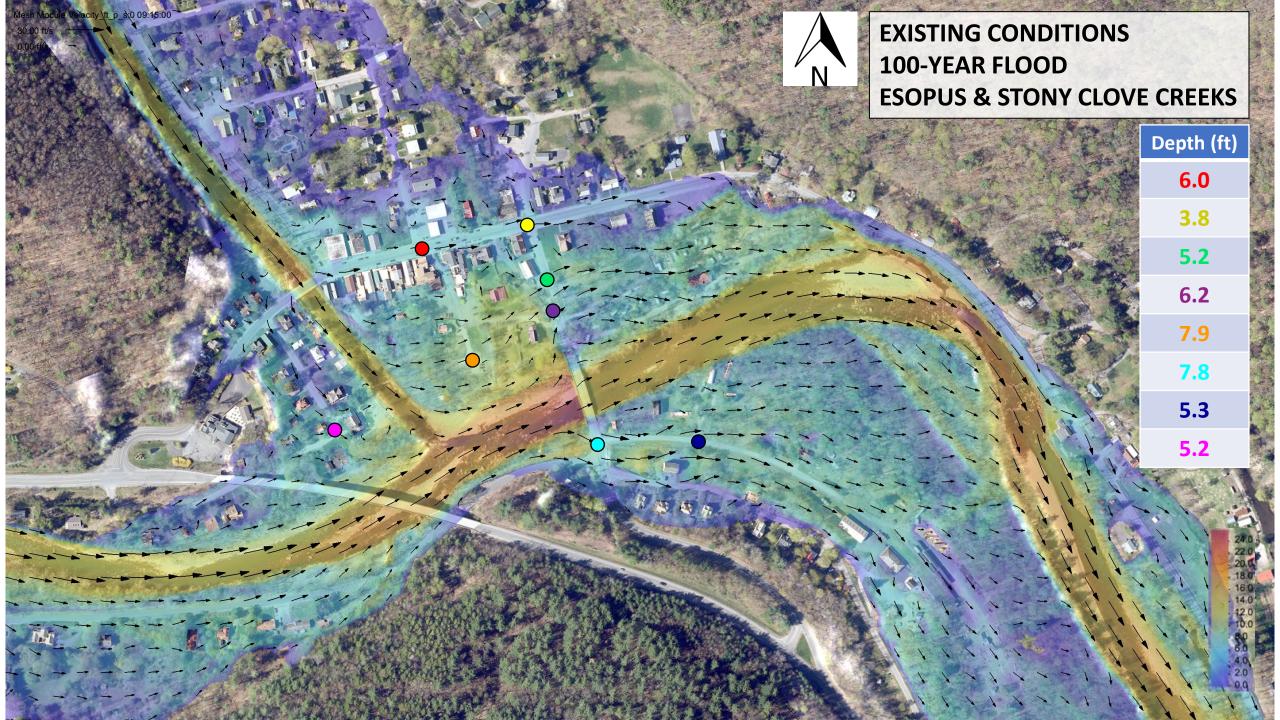




EXISTING CONDITIONS ESOPUS CREEK: 50-YEAR FLOOD STONY CLOVE CREEK: 10-YEAR FLOOD



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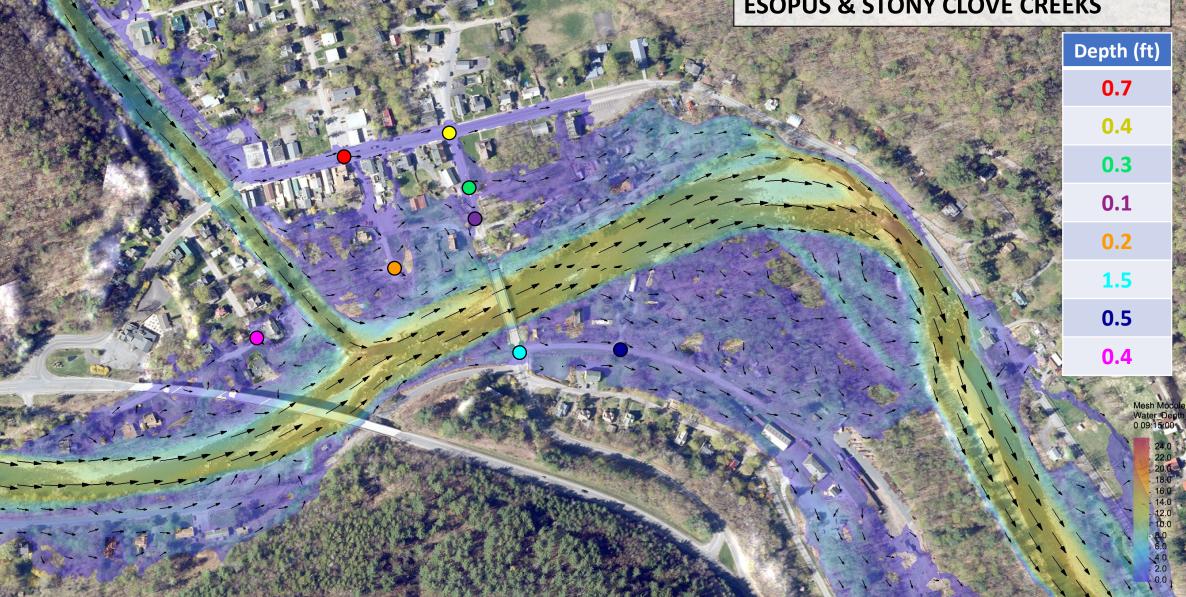


EXISTING CONDITIONS ESOPUS CREEK: 100-YEAR FLOOD STONY CLOVE CREEK: 10-YEAR FLOOD

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	Depth (ft)
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	1.8
	4.2
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EXISTING CONDITIONS 25-YEAR FLOOD ESOPUS & STONY CLOVE CREEKS



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EXISTING CONDITIONS ESOPUS CREEK: 25-YEAR FLOOD STONY CLOVE CREEK: 10-YEAR FLOOD

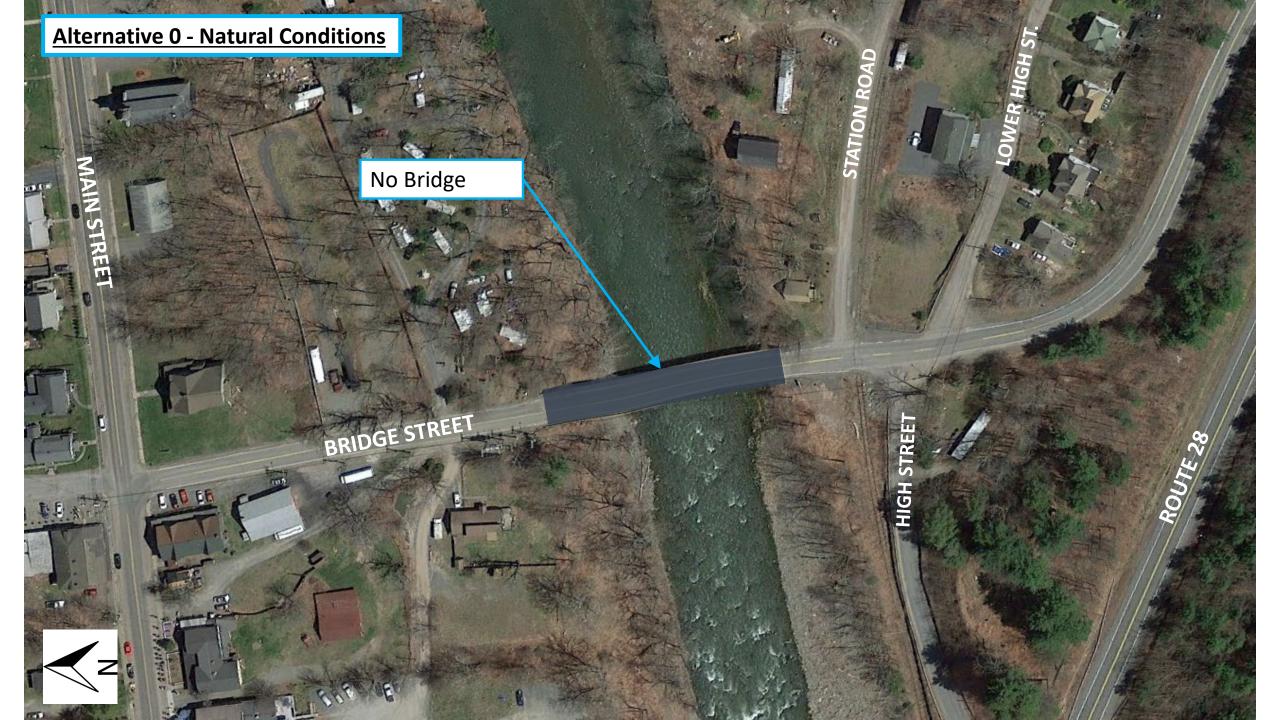
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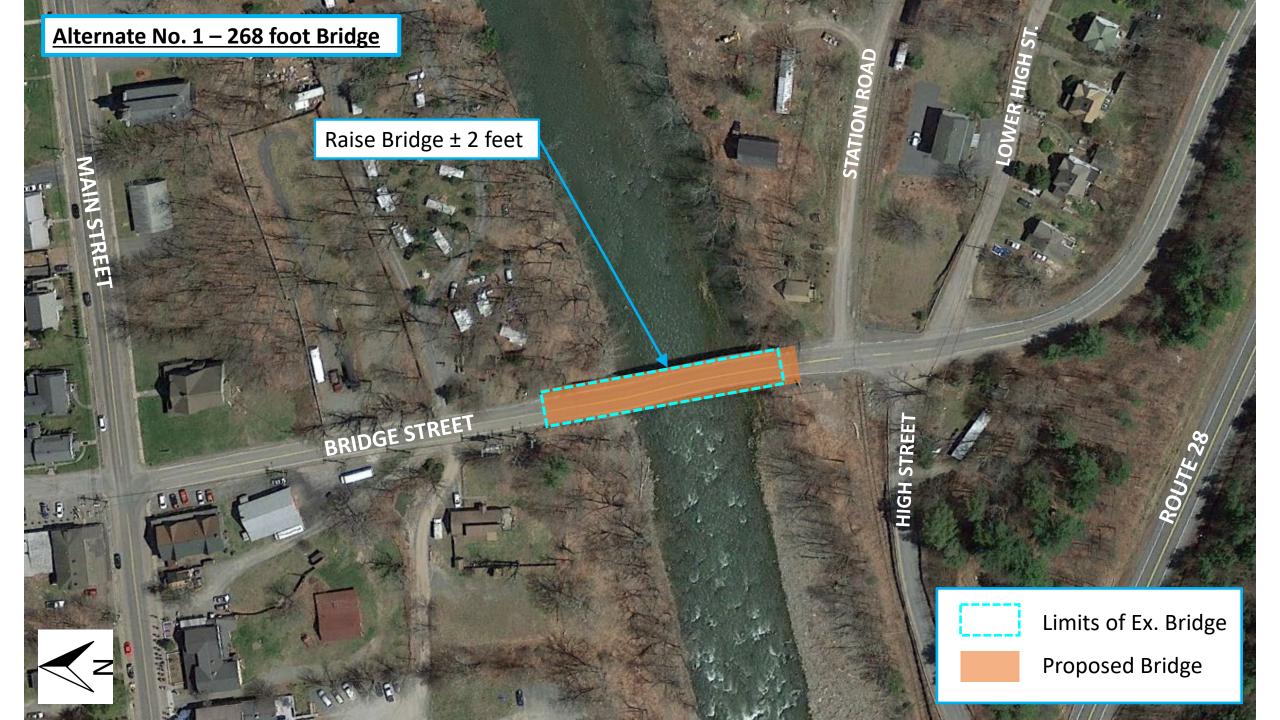
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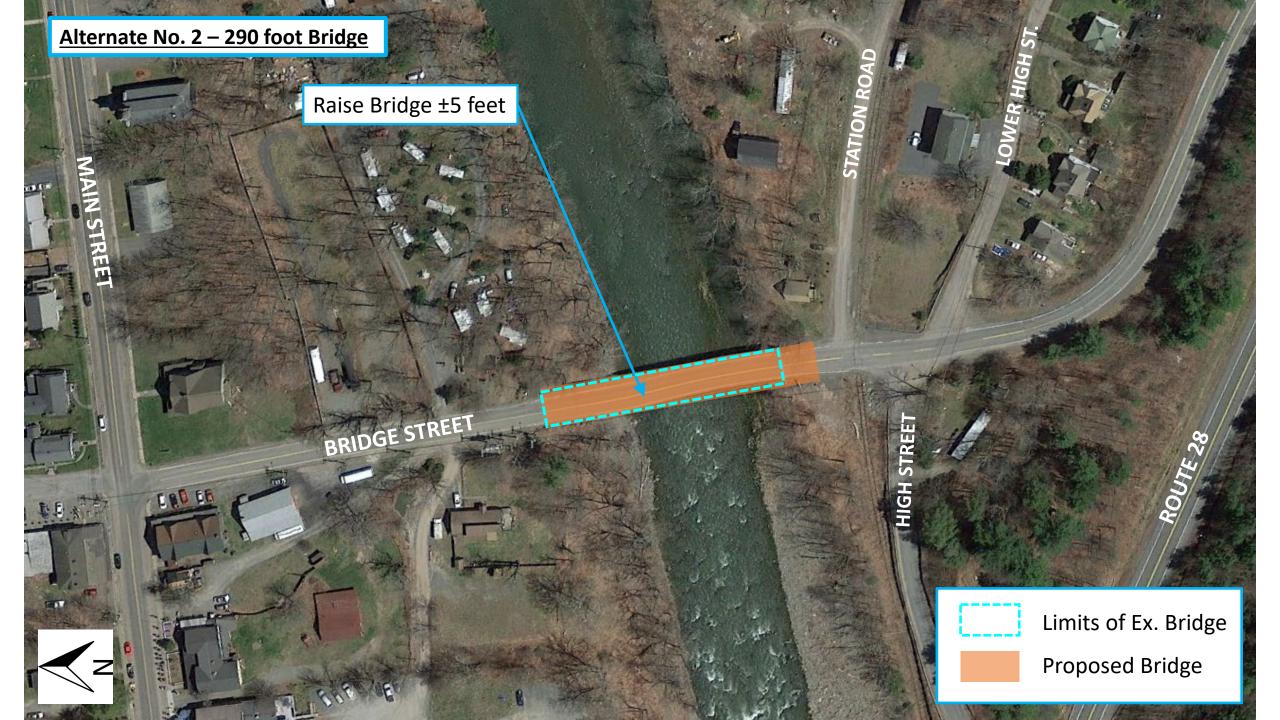
Depth (ft)

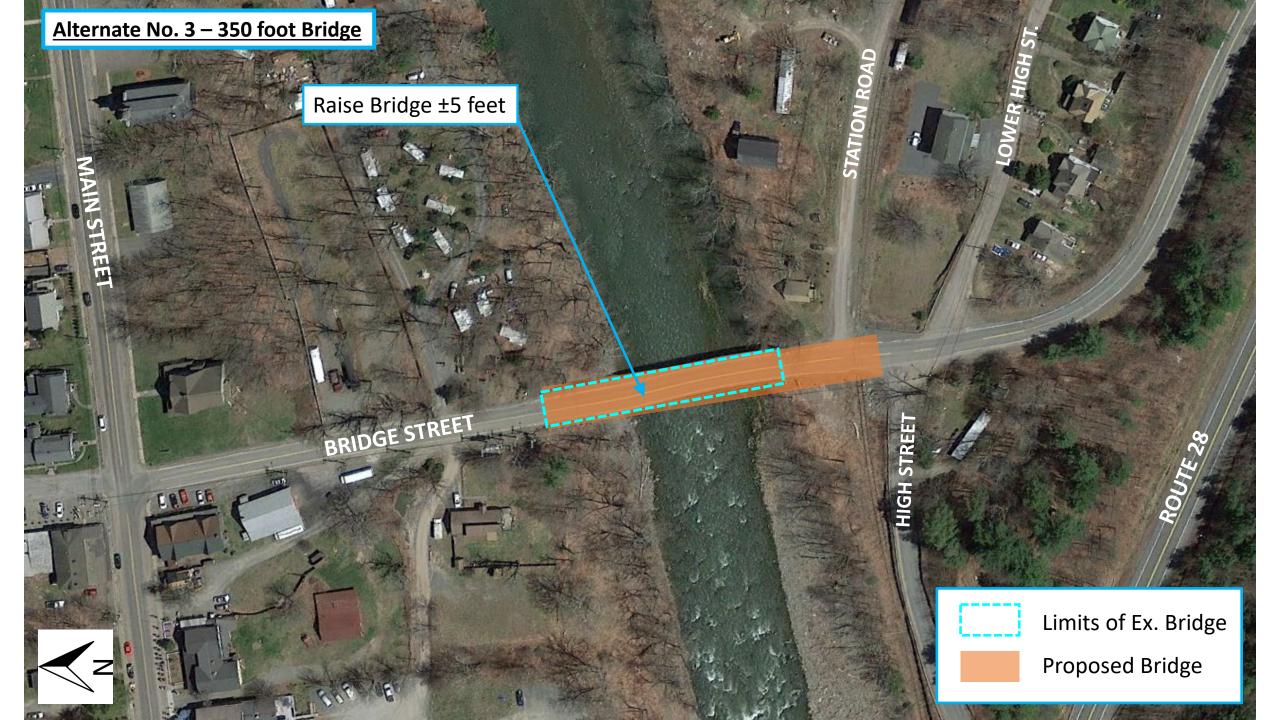
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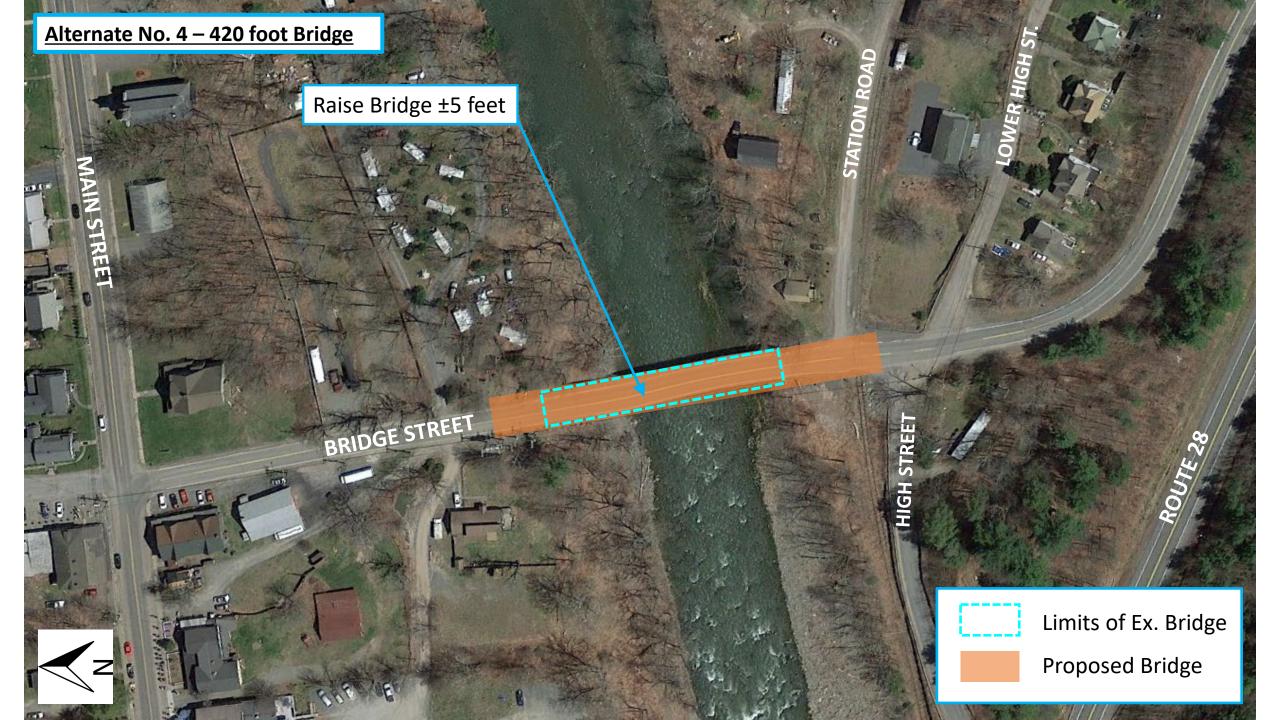
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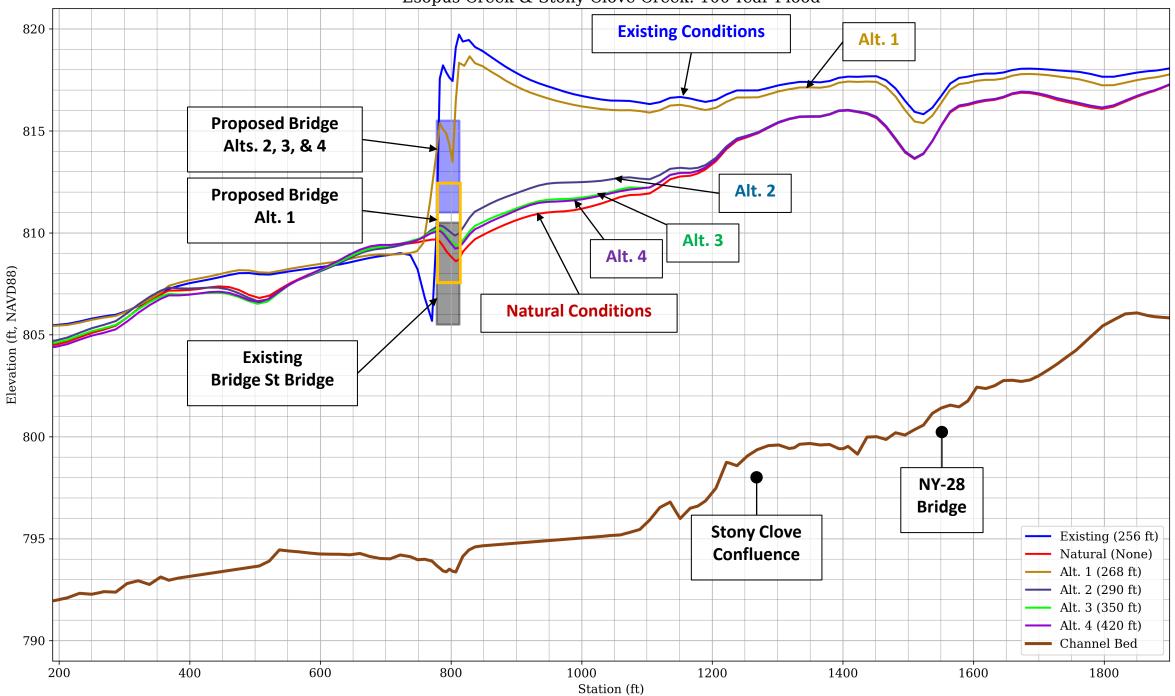




Scenario	Total Bridge Span (ft)	Low Chord Raised by (ft)	Impact to Southern Bank	Impact to Northern Bank
Existing Conditions	256			
Alt. 0 (Natural Conditions)			Minimal	Minimal
Alternative 1	268 (+12)	2.0	Minimal	Minimal
Alternative 2	290 (+34)	5.0	Significant	Moderate
Alternative 3	350 (+95)	5.0	Significant	Moderate
Alternative 4	420 (+165)	5.0	Significant	Significant

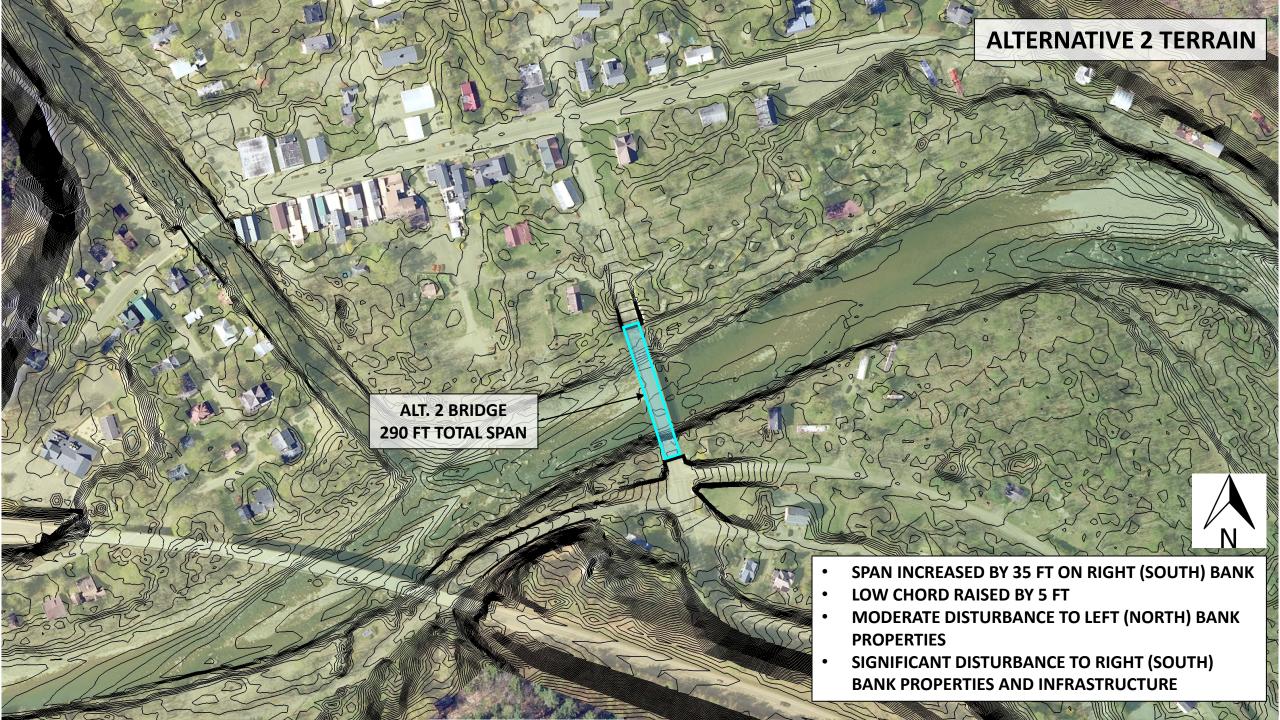


Scenario	Total Bridge Span (ft)	Low Chord Raised by (ft)	Current Hydraulic Performance (FEMA)	Future Hydraulic Performance (NYSDOT Criteria)
Existing Conditions	256		10-Year Flood	Not Possible
Natural Conditions				
Alt. 1	268	2.0	25-Year Flood	Not Possible
Alt. 2	290	5.0	100-Year Flood	Possible
Alt. 3	350	5.0	100-Year Flood	Possible
Alt. 4	420	5.0	100-Year Flood	Possible



Esopus Creek & Stony Clove Creek: 100-Year Flood

Scenario	Total Bridge Span (ft)	Low Chord Raised by (ft)	Current Hydraulic Performance (FEMA)	Future Hydraulic Performance (NYSDOT Criteria)
Existing Conditions	256		10-Year Flood	Not Possible
Natural Conditions				
Alt. 1	268	2.0	25-Year Flood	Not Possible
Alt. 2	290	5.0	100-Year Flood	Possible
Alt. 3	350	5.0	100-Year Flood	Possible
Alt. 4	420	5.0	100-Year Flood	Possible



ALTERNATIVE 3 TERRAIN

ALT. 3 BRIDGE 350 FT TOTAL SPAN

- SPAN INCREASED BY 95 FT ON RIGHT (SOUTH) BANK
- LOW CHORD RAISED BY 5 FT

5

- MODERATE DISTURBANCE TO LEFT (NORTH) BANK PROPERTIES
- SIGNIFICANT DISTURBANCE TO RIGHT (SOUTH) BANK
 PROPERTIES AND INFRASTRUCTURE

ALTERNATIVE 2 100-YEAR FLOOD ESOPUS & STONY CLOVE CREEKS

	100-Year Depth (ft)	50-Year Depth (ft)
-	5.9 (-0.1)	4.2 (0)
	3.2 (-0.6)	2.1 (-0.1)
	2.5 (-2.7)	0.9 (-2.9)
	3.2 (-3.0)	1.4 (-3.3)
1	4.3 (-3.6)	2.0 (-3.7)
	0 (-7.8)*	0 (-6.2)*
1	2.1 (-3.2)	0.8 (-3.3)
	3.9 (-1.3)	2.0 (-0.8)

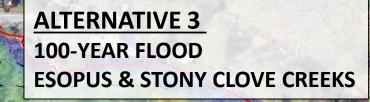
24.0 22.0 20.0 18.0 16.0 14.0

10.0 8.0 6.0

Existing Conditions

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24.0 22.0 20.0 18.0 16.0 14.0 12.0 10.0

8.0

Existing Conditions

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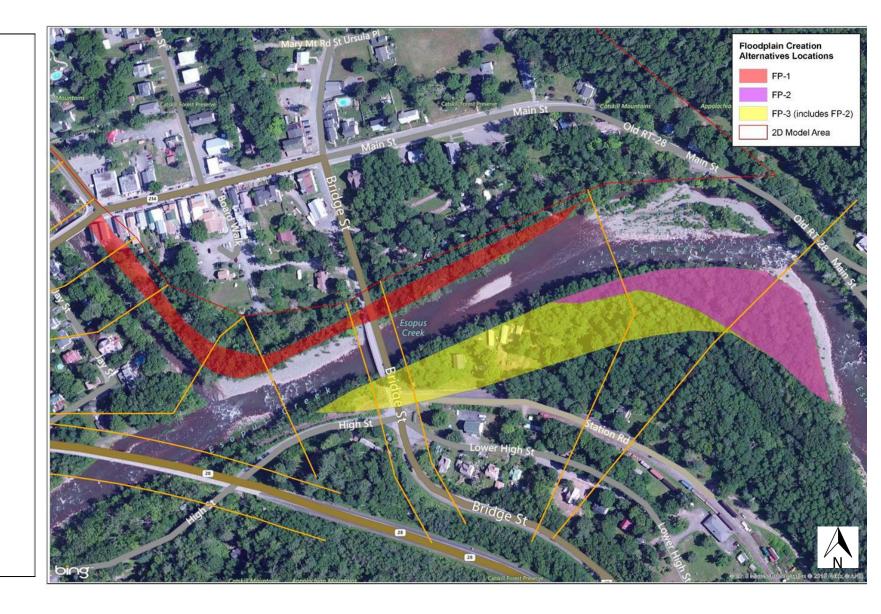
Local Flood Analysis Town of Shandaken Along Esopus Creek Hamlets of Phoenicia and Mt. Tremper Ulster County, New York June 2016 (Revised October 24, 2016)



MMI #4615-04-6

Prepared for: Town of Shandaken P.O. Box 134 7209 Route 28 Shandaken, New York 12480 Prepared by: MILONE & MACBROOM, INC. 231 Main Street, Suite 102 New Paltz, New York 12561 (845) 633-8153 www.miloneandmacbroom.com

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Local Flood Analysis for Phoenicia and Mt Tremper, conducted by Milone & MacBroom (now SLR) in 2016



Floodplain Enhancement Example:

Steele Creek Restoration and Flood Mitigation Project, Village of Ilion, Herkimer County, NY





ENHANCED FLOODPLAIN AND NEW BRIDGE STREET BRIDGE DURING FLOOD CONDITIONS

ALTERNATIVE 2 RIGHT & LEFT BANK FLOODPLAINS

LEFT BANK FLOODPLAIN ENHANCEMENT

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RIGHT BANK FLOODPLAIN ENHANCEMENT

ALT. 2 BRIDGE 290 FT TOTAL SPAN

FOPUS-

mill

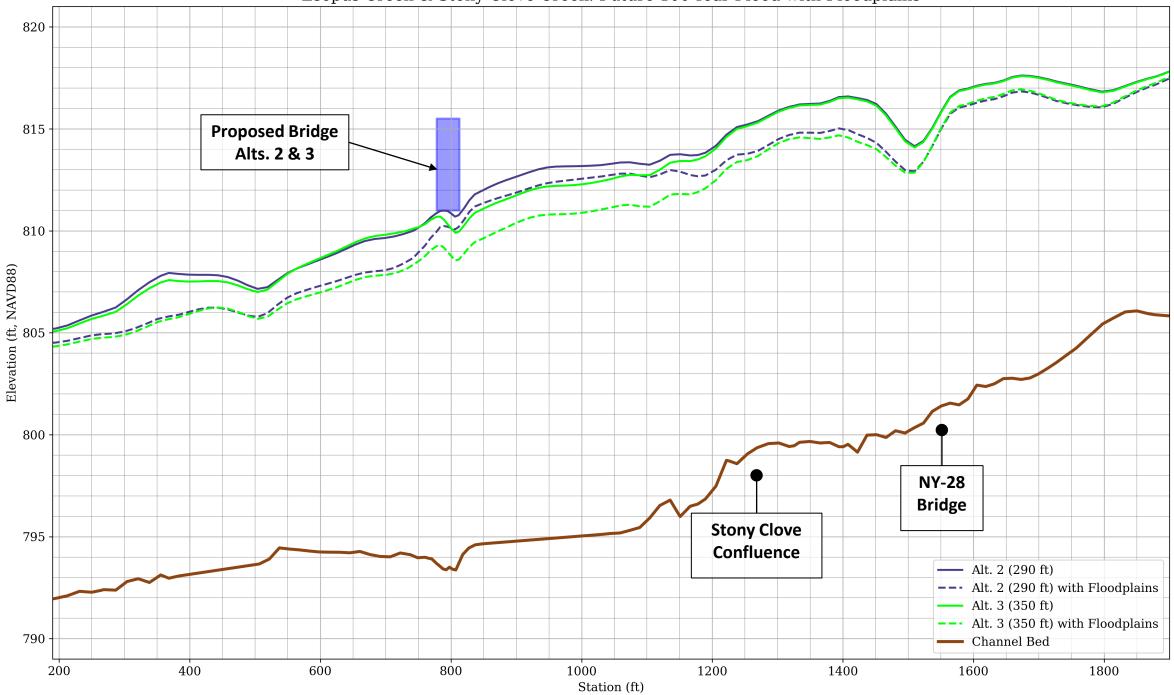
ALTERNATIVE 3 RIGHT & LEFT BANK FLOODPLAINS

LEFT BANK FLOODPLAIN ENHANCEMENT

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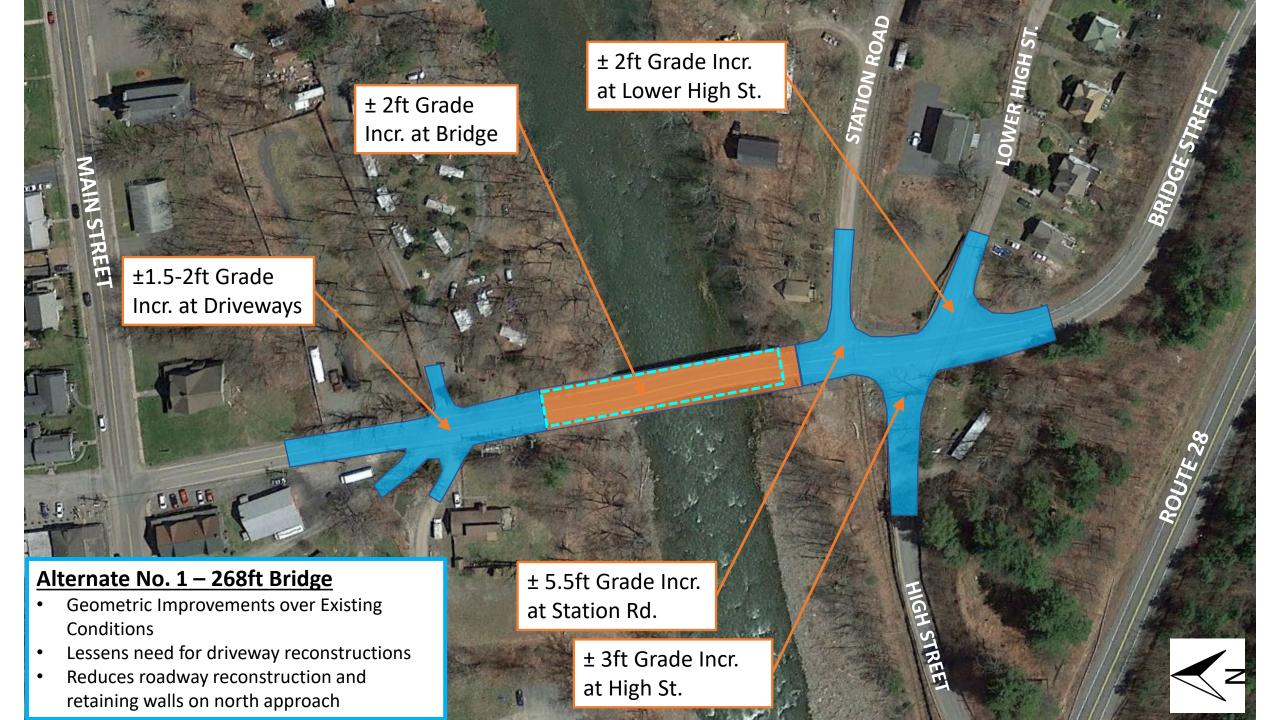
RIGHT BANK FLOODPLAIN ENHANCEMENT

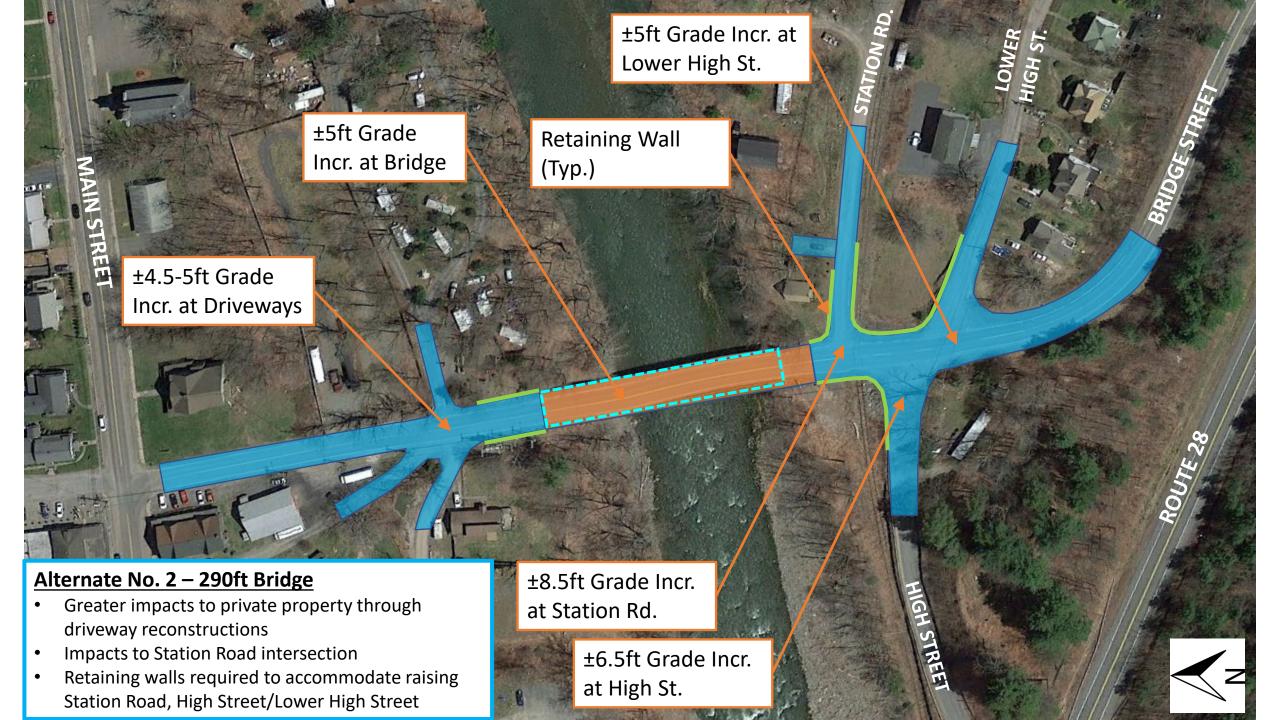
ALT. 3 BRIDGE 350 FT TOTAL SPAN

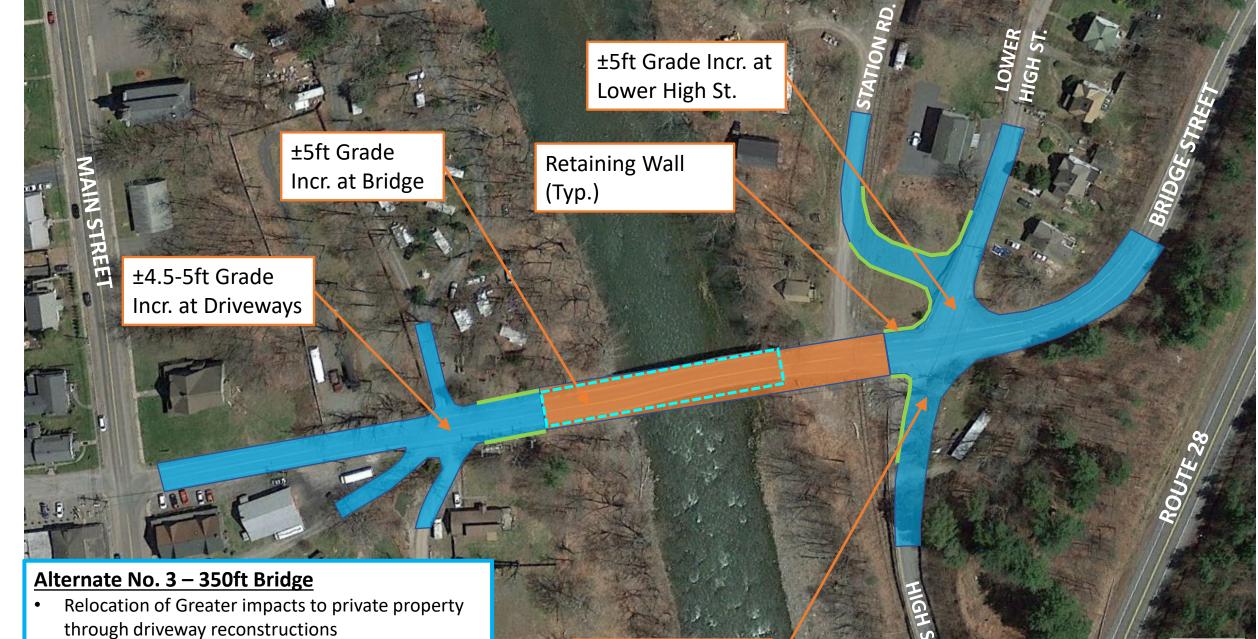


Esopus Creek & Stony Clove Creek: Future 100-Year Flood with Floodplains

Scenario	Total Bridge Span (ft)	Low Chord Raised by (ft)	Current Hydraulic Performance (FEMA)	Future Hydraulic Performance (NYSDOT Criteria)	Floodplain Enhancement
Existing Conditions	256		10-Year Flood	Not Possible	Not Assessed
Natural Conditions					Additional ±1 to ±2 feet of flood reduction in future floods
Alt. 1	268	2.0	25-Year Flood	Not Possible	Not Assessed
Alt. 2	290	5.0	100-Year Flood	Possible	Additional ±0.5 to ±1.5 feet of flood reduction in future floods
Alt. 3	350	5.0	100-Year Flood	Possible	Additional ±1 to ±2 feet of flood reduction in future floods
Alt. 4	420	5.0	100-Year Flood	Possible	Additional ±1 to ±2 feet of flood reduction in future floods





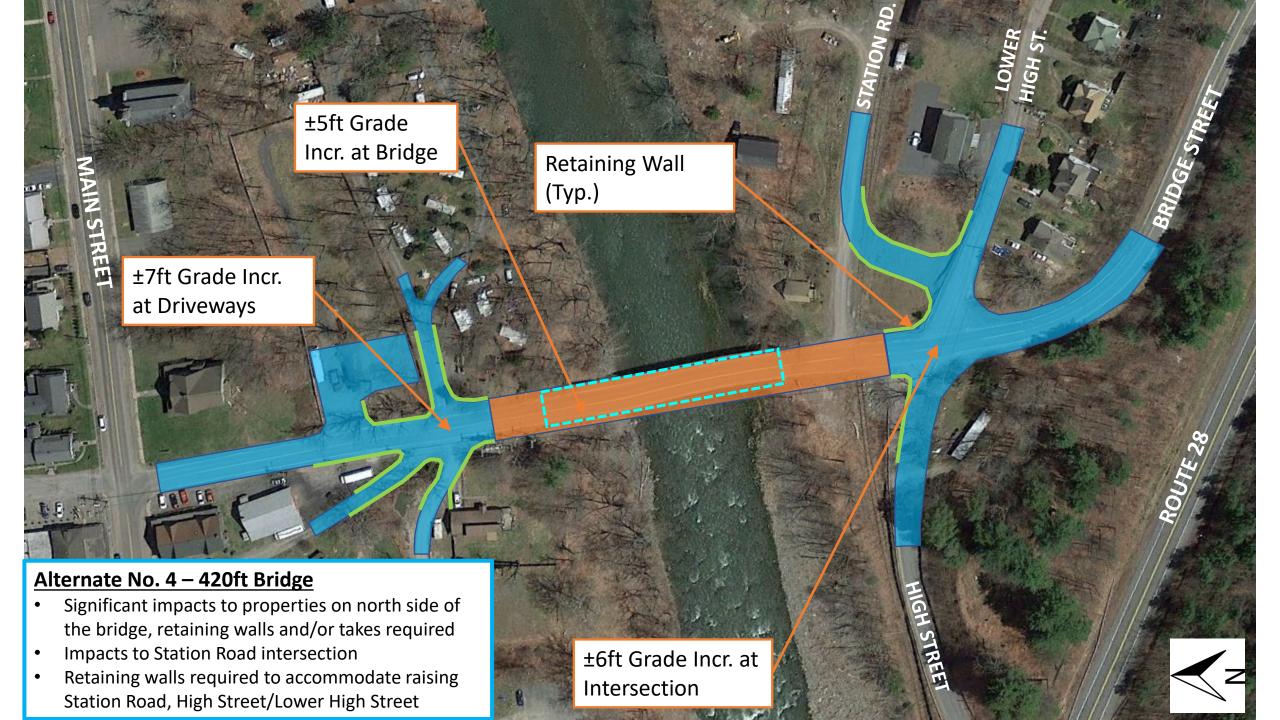


- Impacts to Station Road intersection
- Impacts to Station Road intersection
- Retaining walls required to accommodate raising Station Road, High Street/Lower High Street

±6.5ft Grade Incr. at High St.

100.000

REE



Next Steps in Bridge Design

- Pedestrian and Bicycle Accommodations
 - Sidewalks, Bike Lanes
- Finalizing Span Configuration
 - Elimination of Piers
 - Span to Depth Considerations
- Structure Type
 - Steel
 - Prestressed Concrete
 - Prefabricated Structures
 - Minimize Structure Depth to Reduce Roadway Impacts
 - Constructability Considerations
- Accelerated Construction Methods





Photo Credit: PCI Northeast



Photo Credit: US Bridge

Thank you!

Don't forget to fill out comment cards and put in the box!

Or email comments to phoeniciabridge@slrconsulting.com

