

THE HOOSIC RIVER FLOOD RISK MANAGEMENT FEASIBILITY STUDY

Listening Session: Alternatives and Hydraulic and Hydrologic Analysis

Non-Federal Sponsor: The City of North Adams

Study Email:
HoosicRiver-Study@usace.army.mil

04 December 2024



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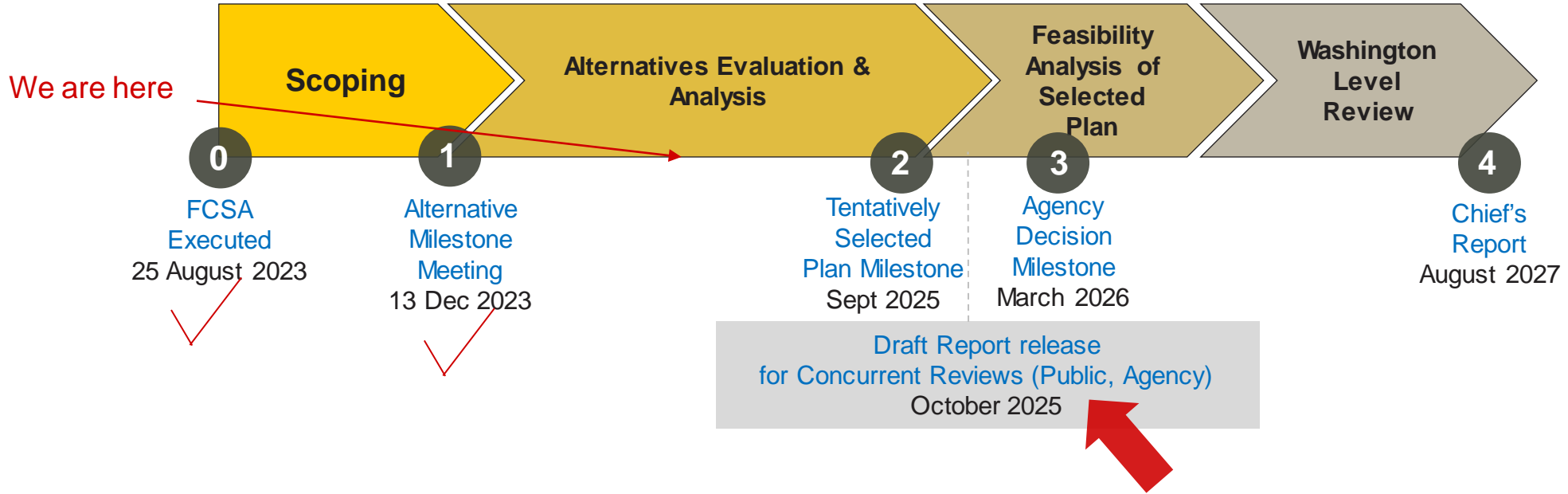


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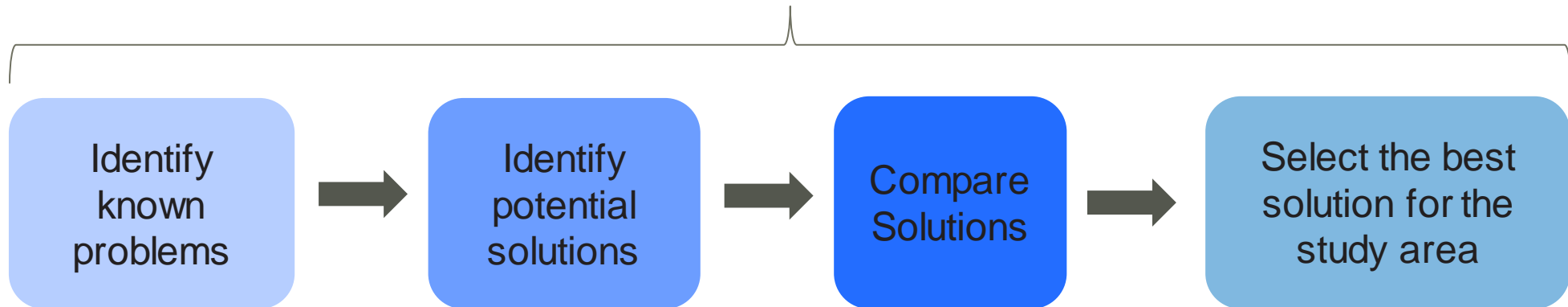


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MULTIPLE INPUTS FROM THE COMMUNITY



USACE Process





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USACE STUDY PROCESS COMPARISON CRITERIA



Hydraulic Modeling
Existing Conditions
Real Estate
Environmental Conditions

Identify known
problems

Identify
potential
solutions

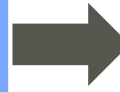
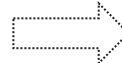
Compare
Solutions

Select the best solution for the study
area



Completeness
Effectiveness
Efficiency
Implementability
Acceptability

Life and Safety
Economic Analysis: Cost vs
Benefits
Environmental Quality
Environmental Justice
Job Creation or Loss
Leisure and Recreation
Benefits





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OBJECTIVES

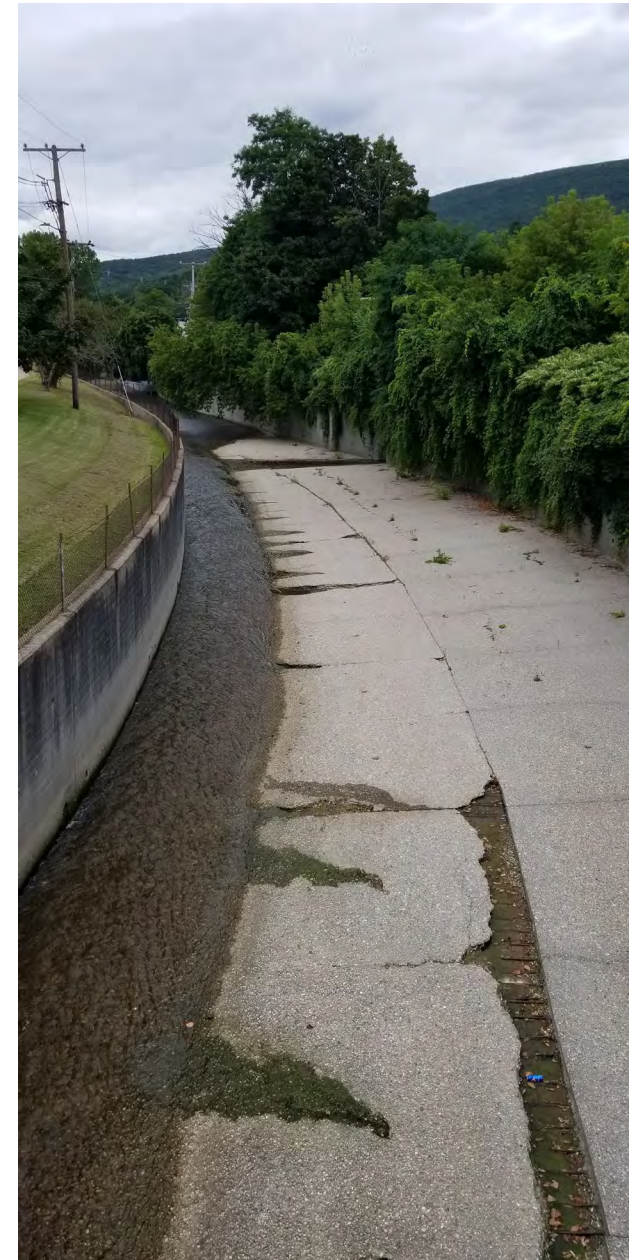
**1: Reduce Riverine
Flood Risk**

**2: Reduce Risks of
Flood Risk
Management Failure**

**3: Reconnect Stream
with Floodplain**

**4: Improve
Community Resilience**

**5: Increase the
Quantity and Quality
of Riverine Habitat**



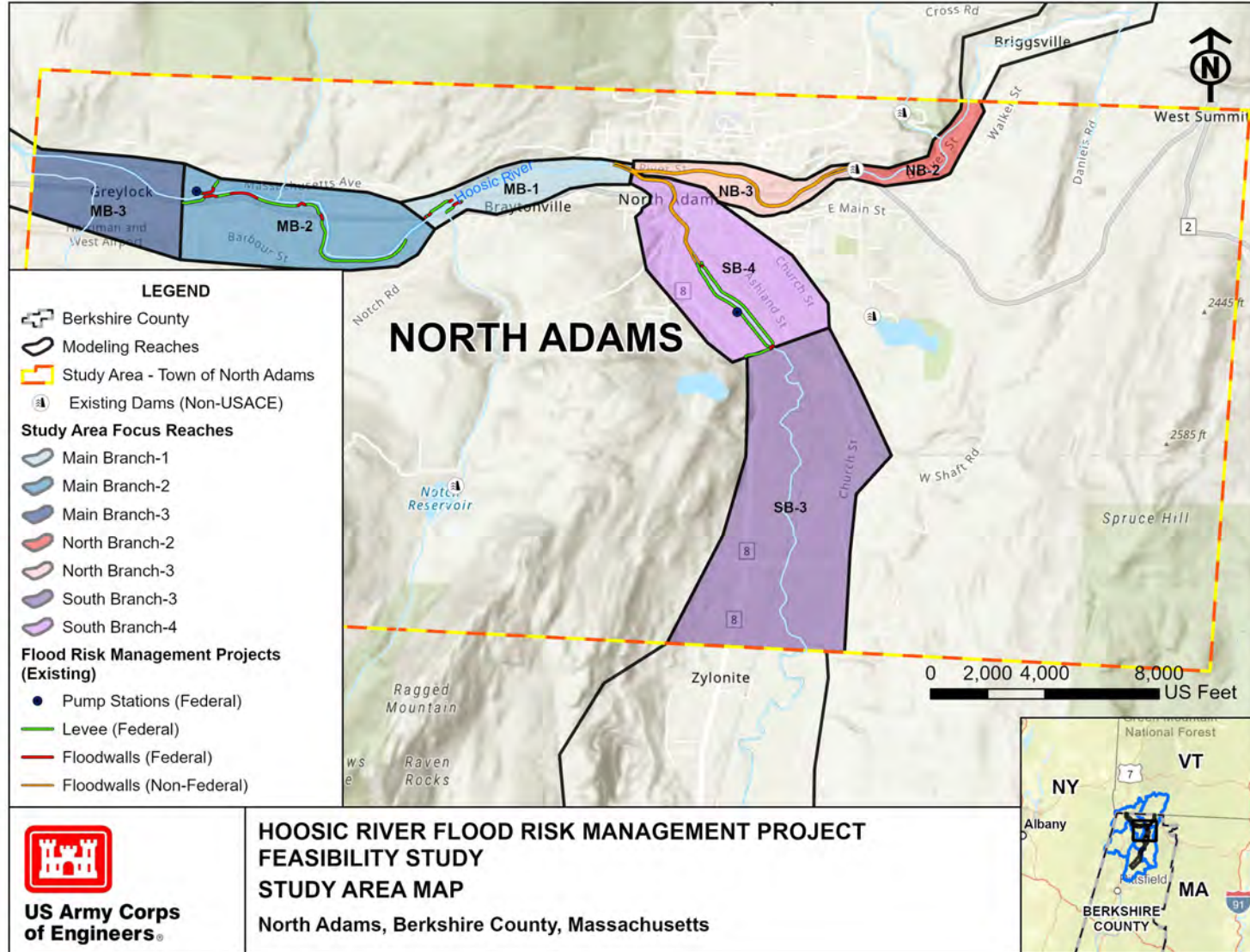


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STUDY AREA REACHES WITHIN NORTH ADAMS



CONSIDERED SOLUTIONS: STRUCTURAL

Structural

- Levee (berm)
- Floodwall
- Levee Rehabilitation
- Floodwall Rehabilitation
- Levee Setback
- Floodwall Setback





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CONSIDERED SOLUTIONS: STRUCTURAL CONT.

7

Channel Modification – Modify the existing Channel



Dams – Removal or Modification



Channel Diversion – Tunnels



CONSIDERED SOLUTIONS

Nonstructural

- Acquisition
- Flood Proofing
- Elevation of Structures/Infrastructure
- Building code updates*
- Evacuation of Community due to Flooding*
- Public Outreach/Education*
- Land-use Zoning*

* = Recommendations Implemented by local communities



Nature-Based Features (NBF)

- Stream Restoration
- Wetland Restoration
- Restoration after Nonstructural or Structural Measures
- Fish Ladder Opportunities
- Shading for Water Quality



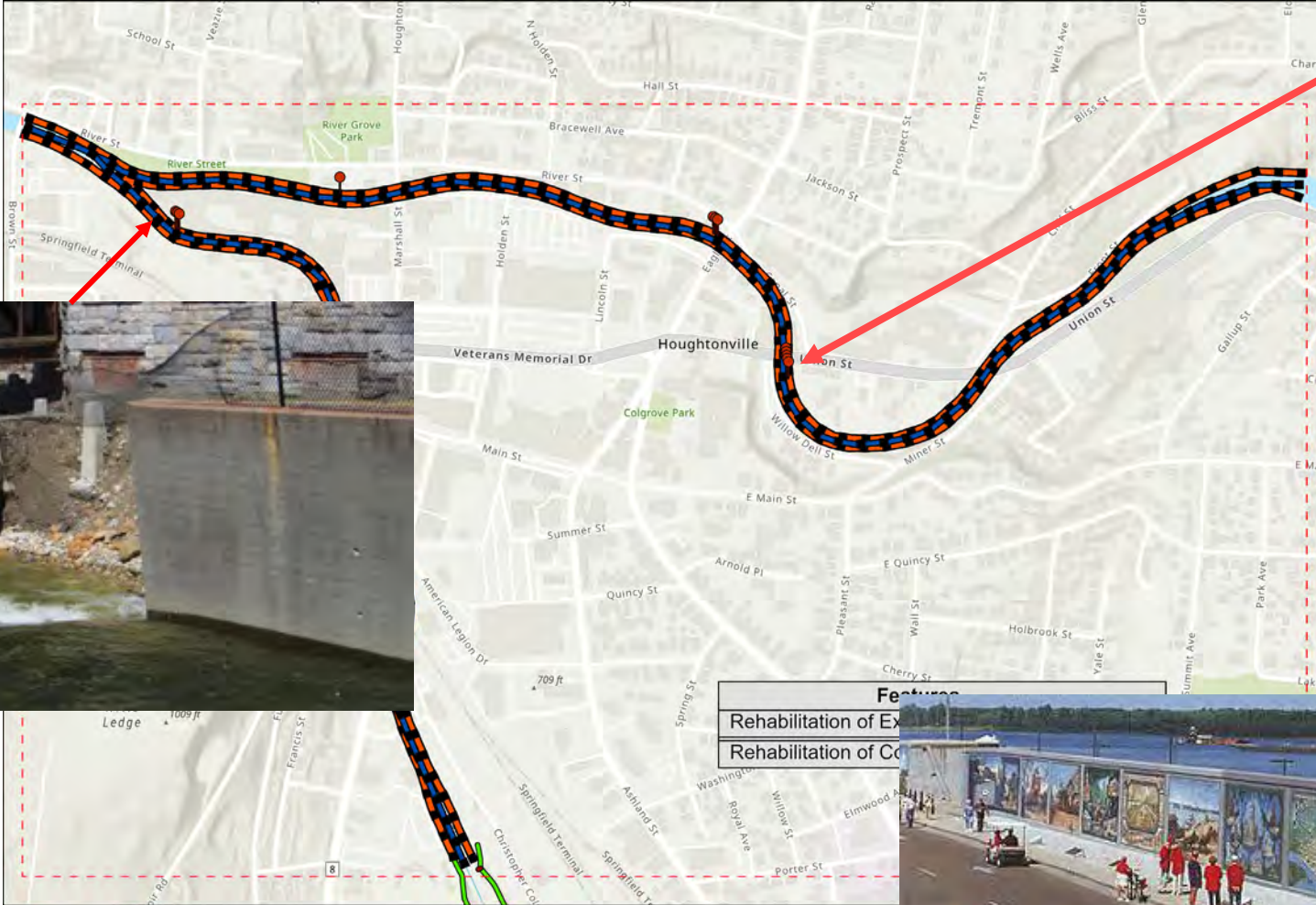


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ALTERNATIVE 1A AND 1B



LEGEND

Flood Risk Management Projects (Existing)

- Levee (Federal)
- Floodwalls (Federal)
- Floodwalls (Non-Federal)
- Identified Floodwall Deficiencies

Proposed Flood Risk Management Measures

- Rehabilitation of Existing Floodwalls
- Rehabilitation of Concrete Channel

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Features

- Rehabilitation of Existing Floodwalls
- Rehabilitation of Concrete Channel



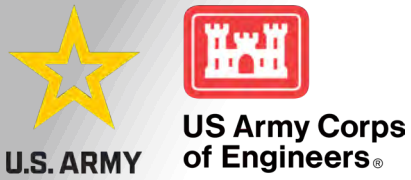
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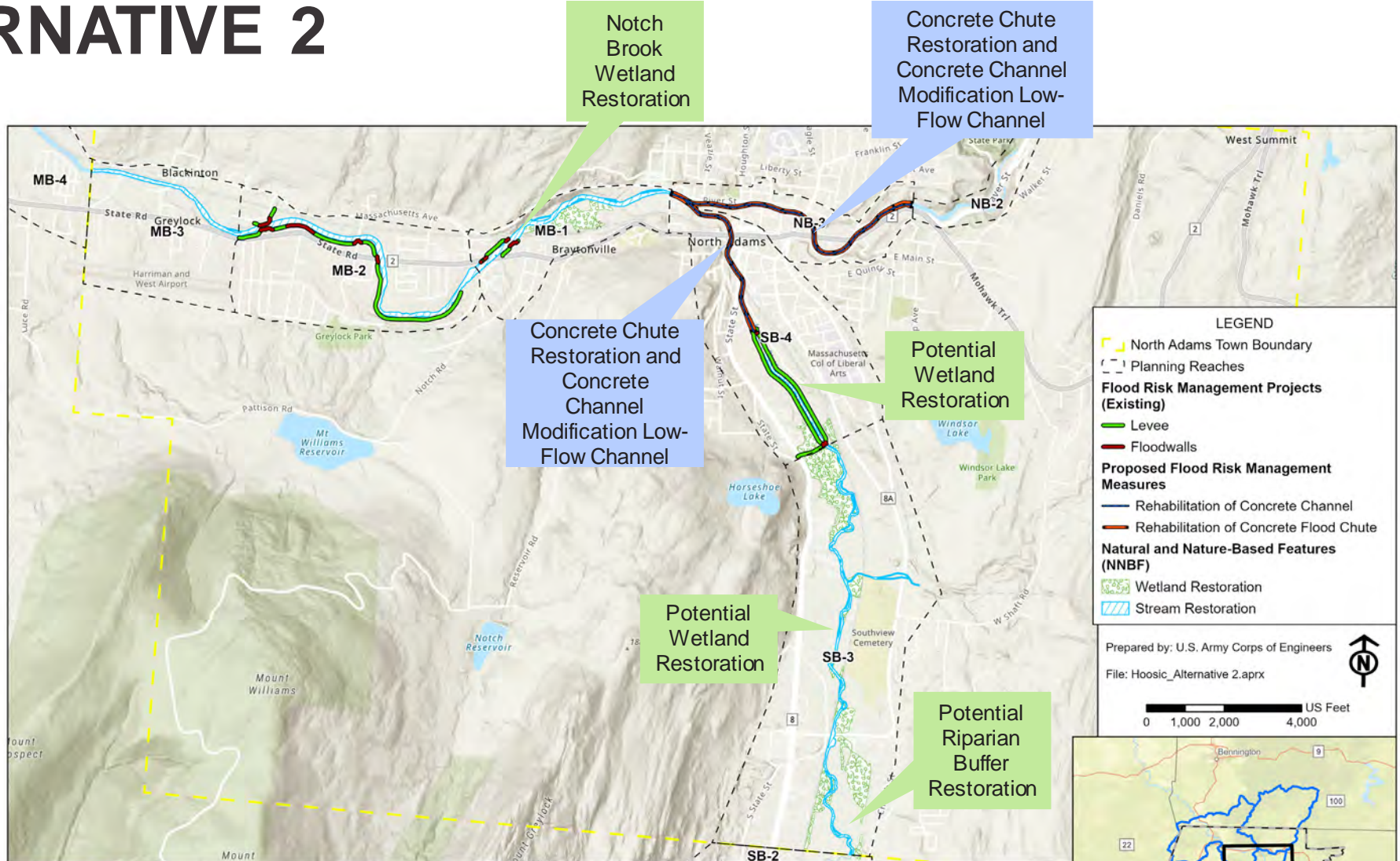
North Adams, Berkshire County, Massachusetts

ALTERNATIVE 1B - COMPREHENSIVE SYSTEM REHABILITATION





ALTERNATIVE 2



Notch Brook Wetland Restoration

Concrete Chute Restoration and Concrete Channel Modification Low-Flow Channel

Concrete Chute Restoration and Concrete Channel Modification Low-Flow Channel

Potential Wetland Restoration

Potential Wetland Restoration

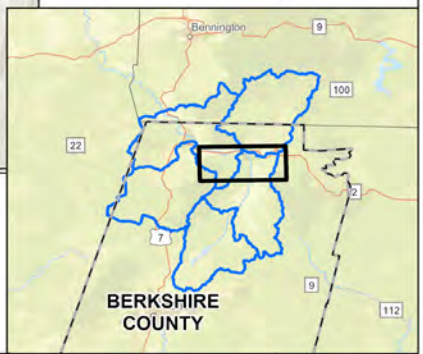
Potential Riparian Buffer Restoration



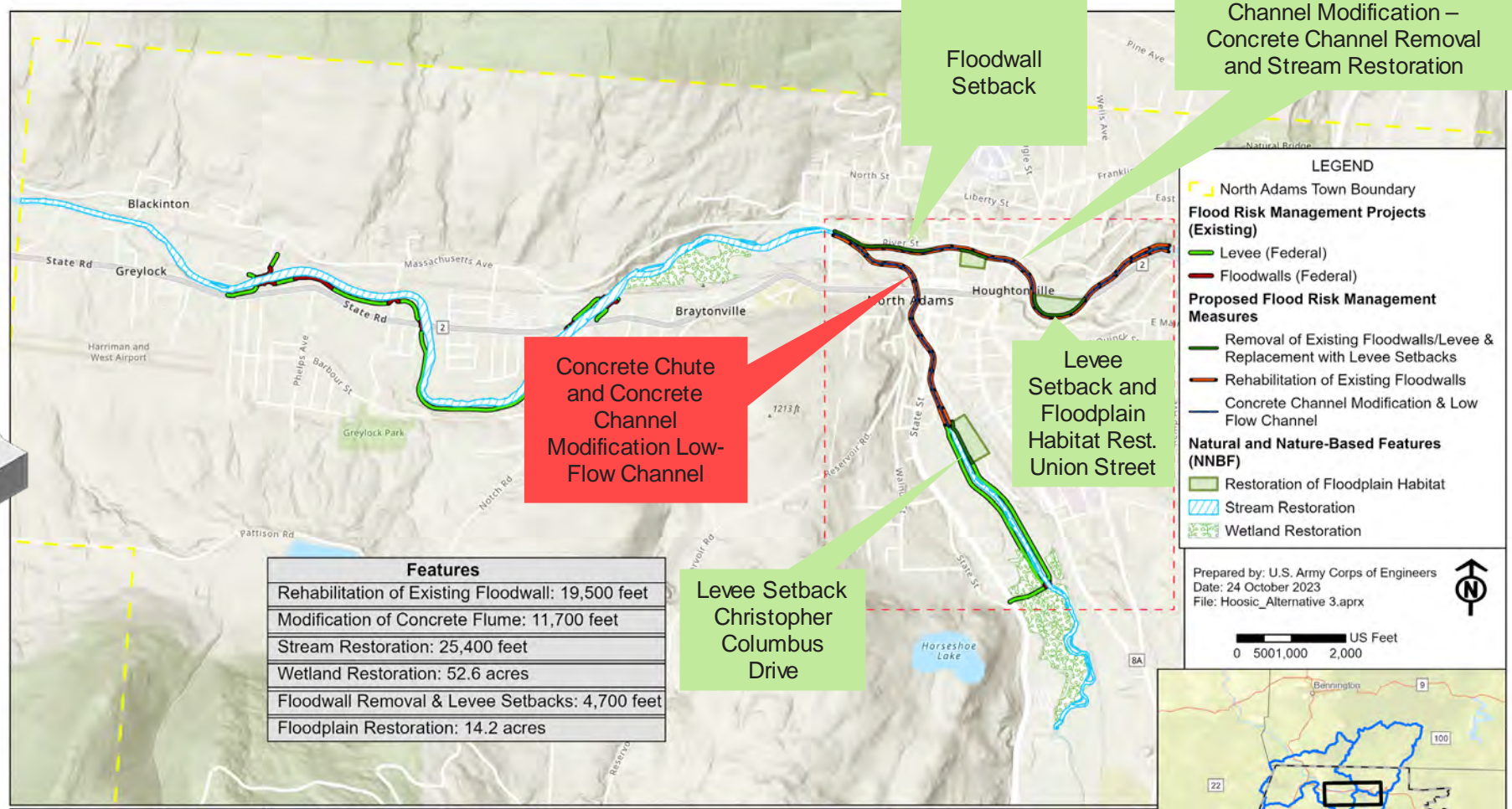
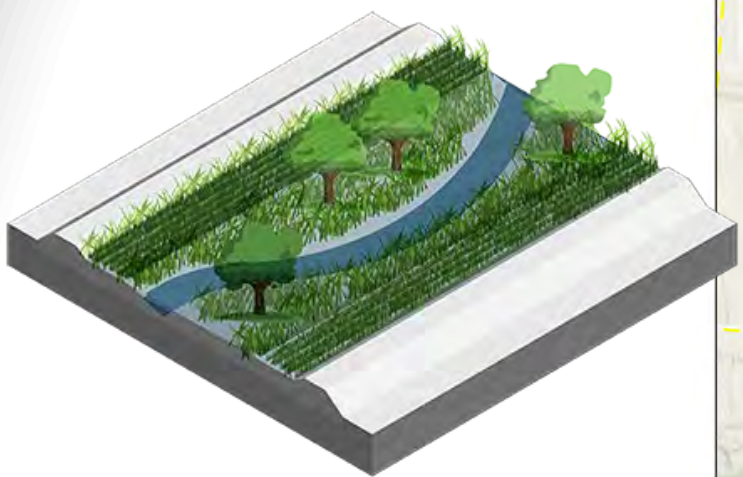
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HOOSIC RIVER FLOOD RISK MANAGEMENT PROJECT FEASIBILITY STUDY

North Adams, Berkshire County, Massachusetts
ALTERNATIVE 2 - COMPREHENSIVE SYSTEM REHABILITATION AND AQUATIC ECOSYSTEM RESTORATION



ALTERNATIVE 3

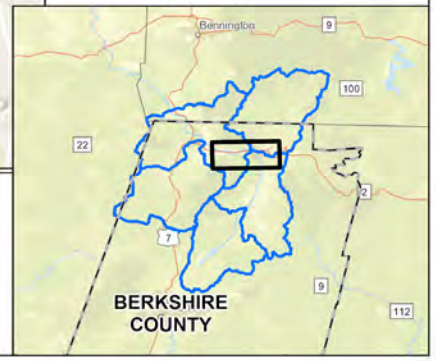


Features
Rehabilitation of Existing Floodwall: 19,500 feet
Modification of Concrete Flume: 11,700 feet
Stream Restoration: 25,400 feet
Wetland Restoration: 52.6 acres
Floodwall Removal & Levee Setbacks: 4,700 feet
Floodplain Restoration: 14.2 acres



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**HOOSIC RIVER FLOOD RISK MANAGEMENT PROJECT
FEASIBILITY STUDY**
North Adams, Berkshire County, Massachusetts
**ALTERNATIVE 3 - COMPREHENSIVE SYSTEM REHABILITATION, LEVEE SETBACKS,
AND ECOSYSTEM RESTORATION**



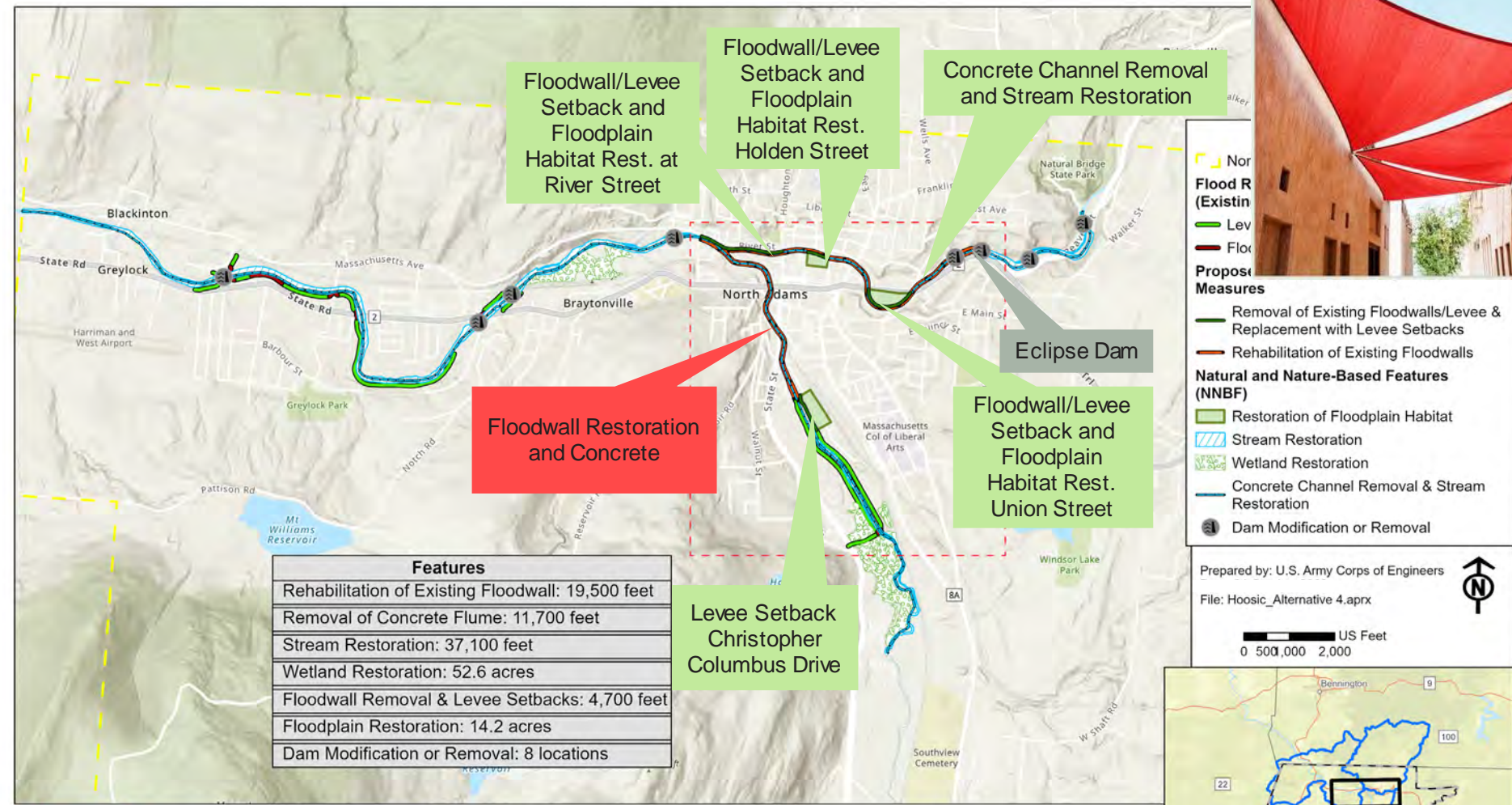


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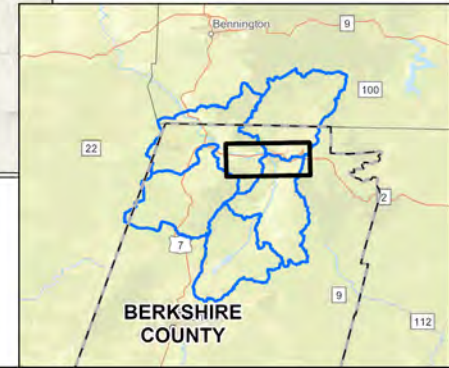
ALTERNATIVE 4



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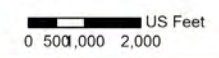
HOOSIC RIVER FLOOD RISK MANAGEMENT PROJECT FEASIBILITY STUDY

North Adams, Berkshire County, Massachusetts
ALTERNATIVE 4 - FLOODWALL REHABILITATION, LEVEE SETBACKS,
COMPREHENSIVE ECOSYSTEM RESTORATION, & FISH PASSAGE IMPROVEMENTS



Prepared by: U.S. Army Corps of Engineers

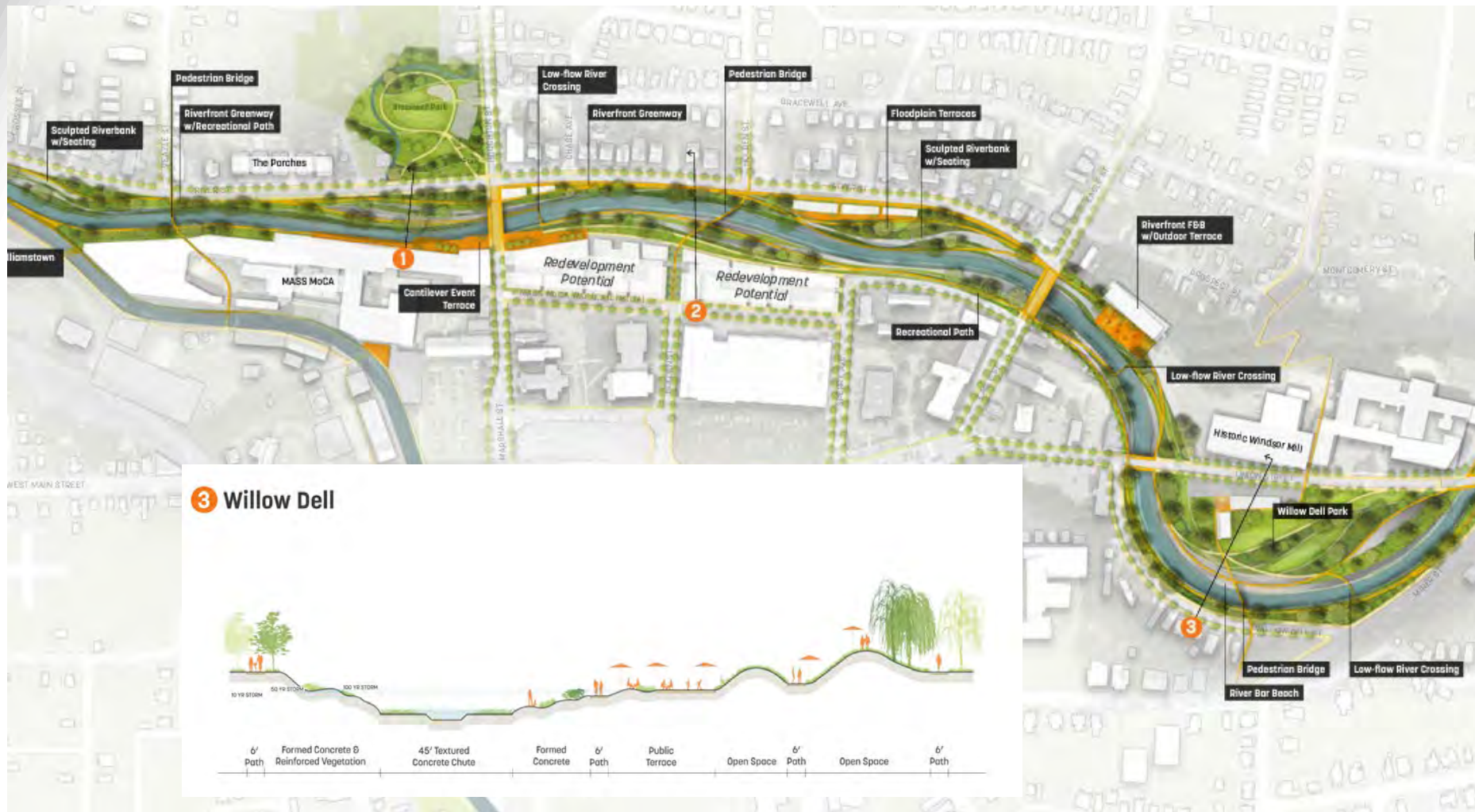
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ALTERNATIVE 5

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END
1 Boundary
ent Projects

al)
Management
ng Floodwalls/Levees
ith Levee Setbacks
Existing Floodwalls
l Modification & Low

ased Features
wall

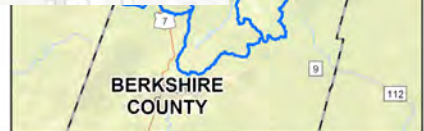
Corps of Engineers
aprx

US Feet
1,650

BERKSHIRE
COUNTY



FEASIBILITY STUDY
North Adams, Berkshire County, Massachusetts
**ALTERNATIVE 5 - HOOSIC RIVER REVIVAL CONCEPT - FLOODWALL REHABILITATION,
LEVEE SETBACKS, FLOODPLAIN RESTORATION, & RIVER ACCESS TRAILS**



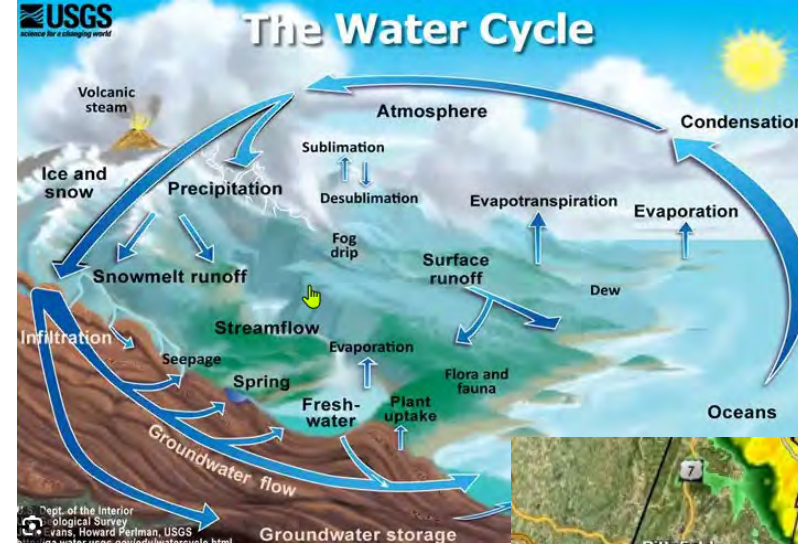
WHAT IS HYDROLOGY & HYDRAULICS (H&H)

H&H

- The study of the water cycle and it's effects.
- Hydrology tells us about the amount of water we get.
- Hydraulics looks at how the water interacts as it flows in rivers, streams and channels, like the flood chute

Why We Do Modeling

- It allows us to:
 - Recreate historic and reoccurring events to understand the effects on North Adams.
 - Propose modifications to the system and evaluate the impacts.
 - Does it make the flooding better or worse?
 - Compare alternatives and identify a Tentatively Selected Plan.





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HEC-RAS MODELING RESULTS (100-YEAR OR 1% EVENT)



Legend

— River Cross Section
(used in model)

The darker the **Blue**,
the deeper the water

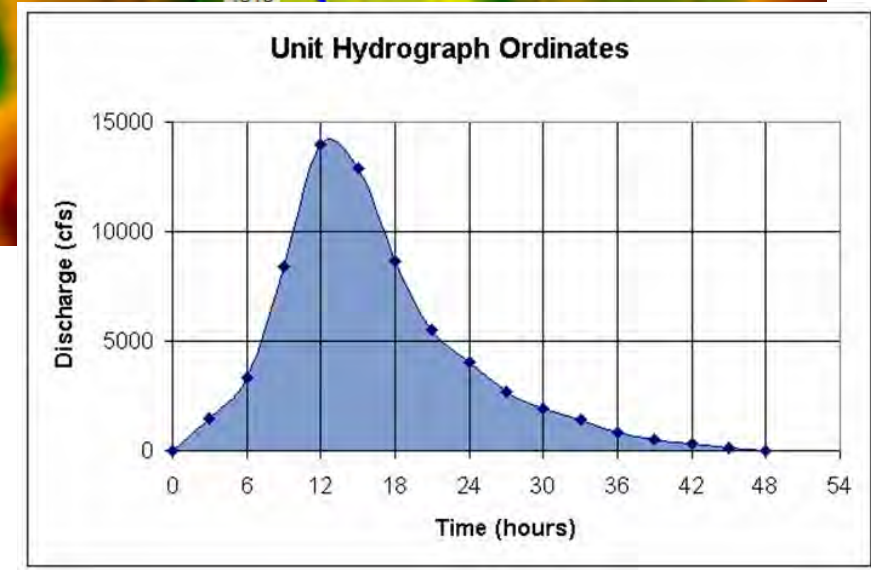
PROBABILITY AND NEXT STEPS

Flood Probability

- Flood events are characterized by the probability they will occur in any given year.
- 100-year flood = 1% chance of occurring in one year.
- 2-year flood = 50% chance of occurring in one year.
- Multiple high-level flood events can happen in one year.

Next Steps

- The model will continue to be refined to accurately reflect the real world conditions of North Adams.
- Different model iterations will help inform the decision making process throughout the study.



Typical Hydrograph showing stream flows for a storm



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QUESTIONS?

17



Our questions for you:

- Do you have pictures or videos of large storm events in the river?
- Have you seen areas of flooding outside of the channel?

Send email follow-ups to:

HoosicRiver-Study@usace.army.mil