2nd Stakeholders Meeting for Watershed Project Plan and Environmental Assessment

Wood Pawcatuck Rivers Watershed Flood Protection Project

July 1, 2025

TODAY'S OBJECTIVES

- Review National Watershed Operations Program
- Review Information on the Wood-Pawcatuck River Watershed
- Describe Conceptual Flood Mitigation Alternatives
- **Encourage Stakeholder Input and Identify Preferences**

INTRODUCTIONS

Local Sponsors Welcome:

- **Southern Rhode Island Conservation District**
  - **Gina Fuller**
- **Sponsoring Communities**
  - **Westerly, RI**
  - **Richmond, RI**
  - **Hopkinton, RI**
  - **Charlestown, RI**
  - **South Kingstown, RI**
  - **Stonington, CT**
  - **North Stonington, CT**
  - **Voluntown, CT**
  - **Exeter, RI**
  - **Sterling, CT**

INTRODUCTIONS

- **Michael Viola, RI NRCS Program Manager**
- **Michael Wilkinson, PE, RI NRCS Civil Engineer**
- **Jim Lyons, CT NRCS (acting SCE)**

- **Consultant Team:** Pare Corporation & TetraTech

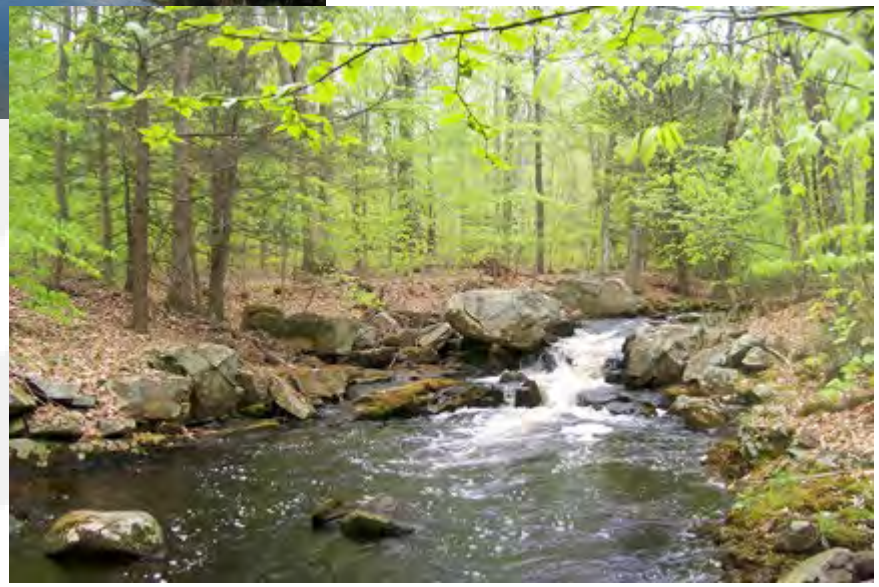
J. Matthew Bellisle, P.E., COO, Pare Corporation
Andrew Cummings, P.G., Project Geologist, Pare Corporation

Sarah Watts, Environmental Task Manager, TetraTech

PRESENTATION OVERVIEW

- Project Background
- Discussion of Alternatives
- Open Discussion

The Wood River, Richmond, RI



ROLE OF LOCAL SPONSORS

- Responsible for permits
- Land rights acquisition and utilities
- Long term operation and maintenance

- The Watershed Protection and Flood Prevention Program helps units of state, local and federally recognized tribal governments (project sponsors) protect and restore watersheds.

ROLE OF NRCS

Natural Resources Conservation Service (NRCS)

- Primary Administrator of Project
- Conducts Final Review of Project Documents
- Coordinates with Public, Tribes, and Government Agencies

NRCS applies sound engineering tools and principles to plan, design, and implement conservation practices and systems through delegated approval authority.

ROLE OF ENGINEERING CONSULTANT

Pare Corporation and TetraTech

- Conducts Field Reconnaissance and Gathers Background Data
- Completes Engineering Analyses to Characterize Watershed
- Develops and Evaluates Potential Flood Prevention Strategies
- Prepares Final Project Documents

A reminder of why we are here…

Route 91 near Chapman Pond in Westerly, 2010.

Along Pawcatuck River, Hopkinton, 2010.

Project History

- Decades of Notable Flooding Events:
  - ***November 1927***: Flooding due to tropical storm
  - ***March 1968***: Record flooding due to heavy rainfall on snowmelt
  - ***June 1982***: Flooding due to 8-inch rainstorm
  - ***March 2010***: Flood of Record
  - ***October 2012***: Flooding due to Hurricane Sandy

Project History

- ***2014***: Wood Pawcatuck Watershed Association receives grant for watershed wide management plan for flood resiliency
- ***2017***: *Wood-Pawcatuck Watershed Flood Resiliency Management Plan,* prepared and presented by Fuss &O'Neill
- ***2020***: NRCS solicits proposals for development of a *Watershed Plan and Environmental Assessment for the Wood-Pawcatuck Rivers Watershed*
- **2021***:* Study area increased through support from additional communities

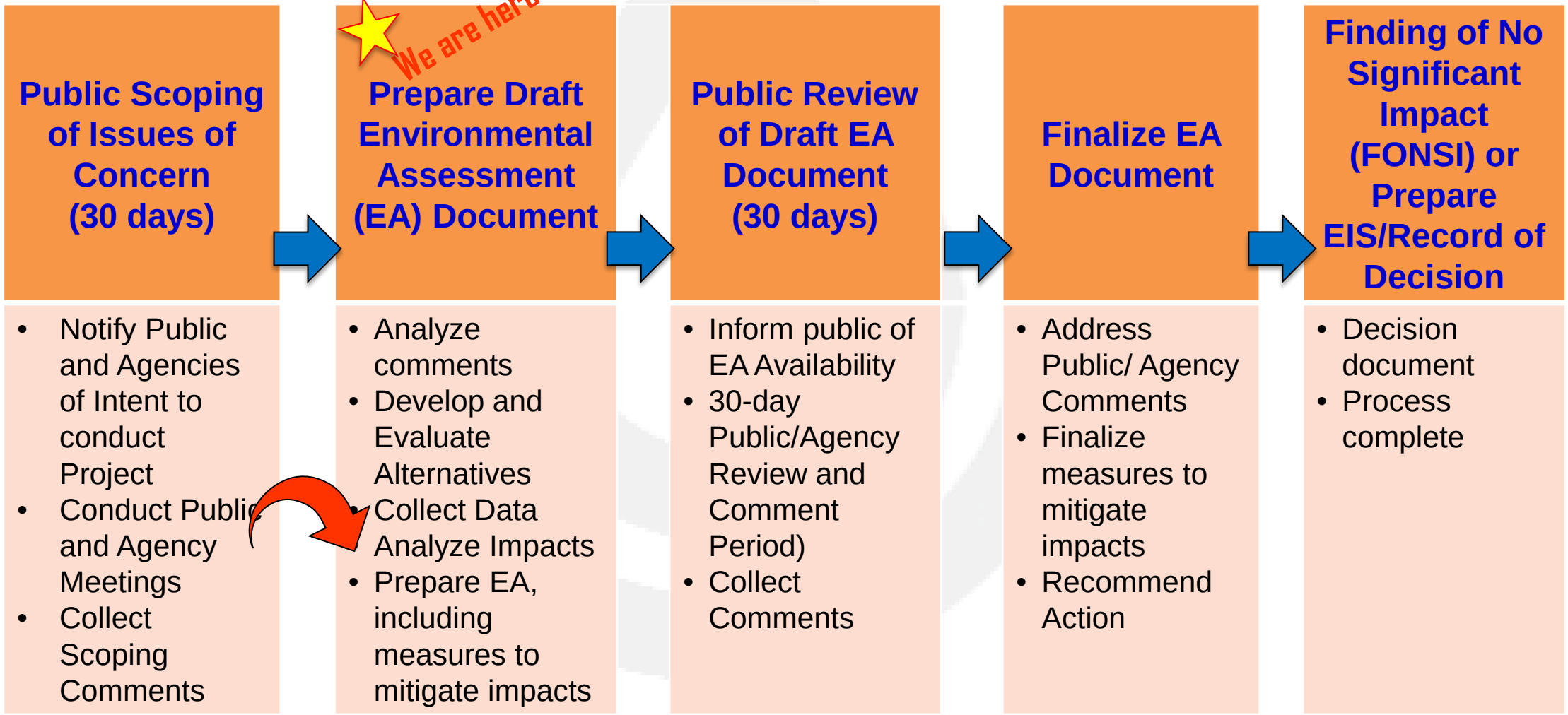
Watershed Project Plan

- Feasibility Study
- Considers several project alternatives
- Evaluates project alternatives against environmental, economic, and public concerns.
- PRESENT FINDINGS
- Determines if project should be funded.

Purpose and Need

- The project purpose is to reduce the risk of flood damages to homes and other occupied non-residential buildings along the Wood and Pawcatuck Rivers in Washington County, RI and New London County, CT resulting from floodwater in the Wood-Pawcatuck Watershed; and to reduce the risk of flood damages to structures, roads, bridges, and utilities.
- The need for the project results from recurring excessive flooding of numerous buildings (Commercial and residential) and numerous roads, bridges, and utilities. The flooding causes regular flood damages to buildings, public infrastructure, and utilities.
- The project needs to include a combination of structural and non-structural measures to avoid future damages.

The NEPA Process – Public Participation



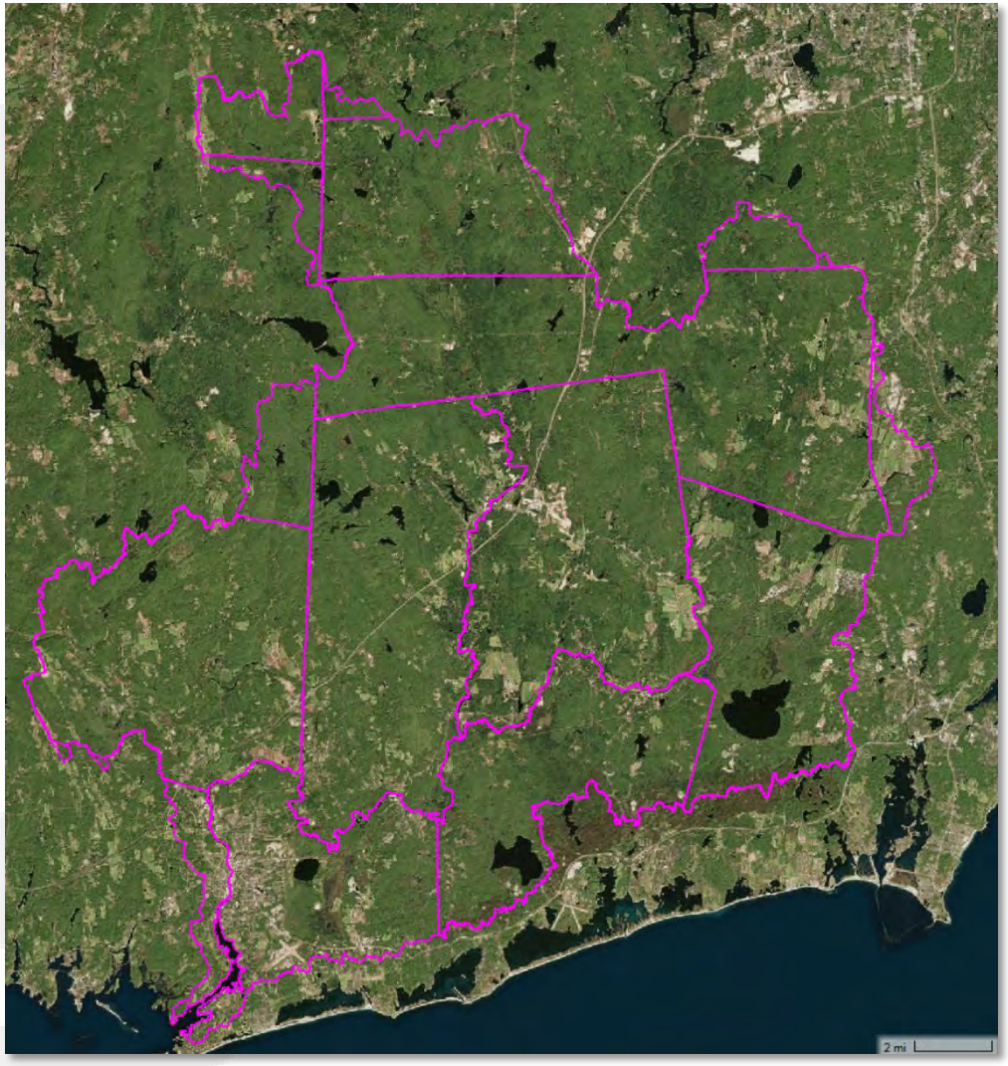
Resources Considered by NEPA

- Geology and Soils
- Water Resources
- Air Quality
- Vegetation
- Fish and Wildlife
- Socioeconomics
- Land Use
- Transportation
- Public Health and Safety (including Infrastructure and Utilities)
- Cultural Resources (including Tribal Consultation)
- Visual Character / Aesthetics

Watershed Overview

The Wood Pawcatuck Watershed At a Glance:

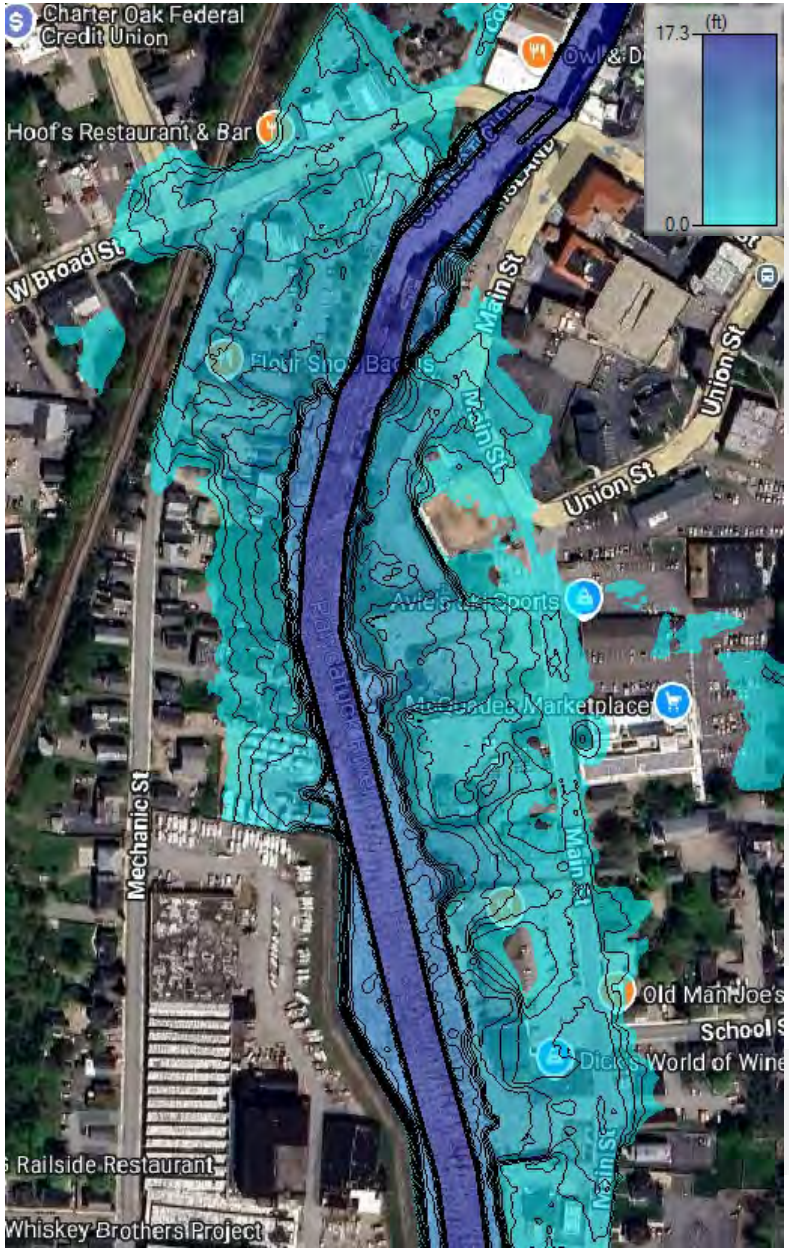
- 306 square miles
- Spans 15 towns across 2 States
- 20+ named rivers and streams
- 500+ miles of river
- 160+ documented dams
- 600+ roadway-river crossings
- 160+ identified flooding locations

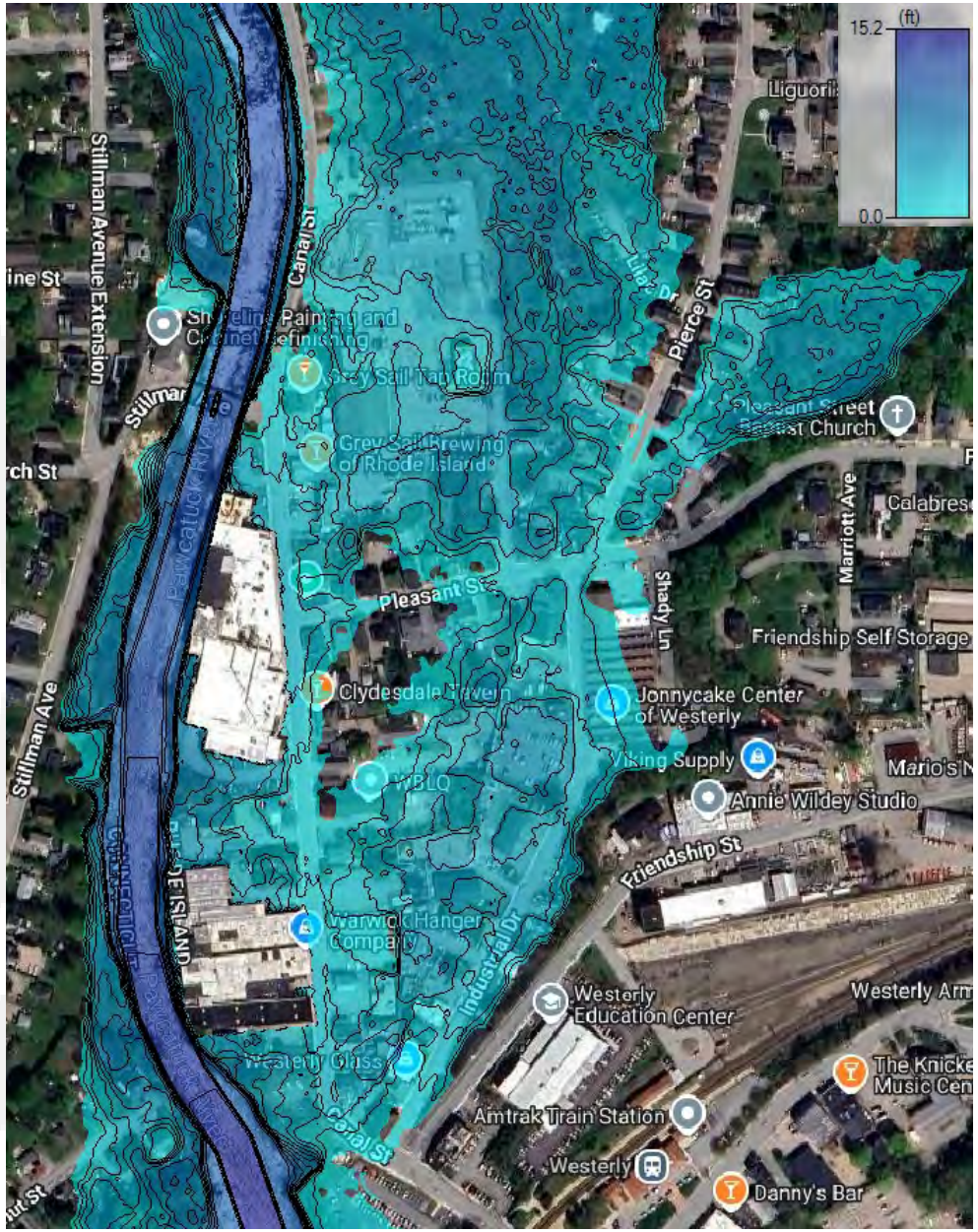


EXAMPLE FLOOD MAP RESULTS

100-YEAR STORM EVENT

Westerly, RI
&
Stonington, CT

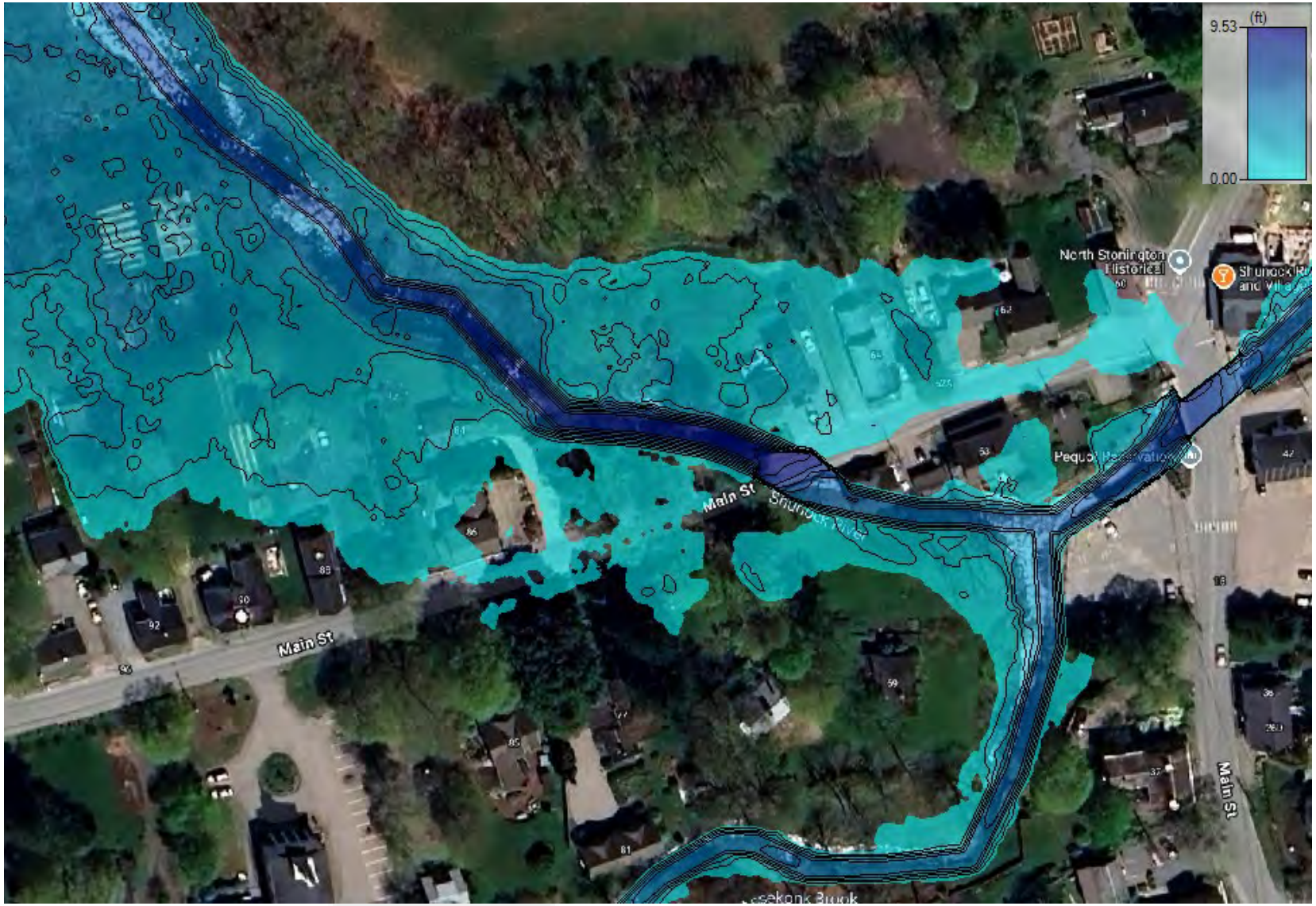




EXAMPLE FLOOD MAP RESULTS

100-YEAR STORM EVENT

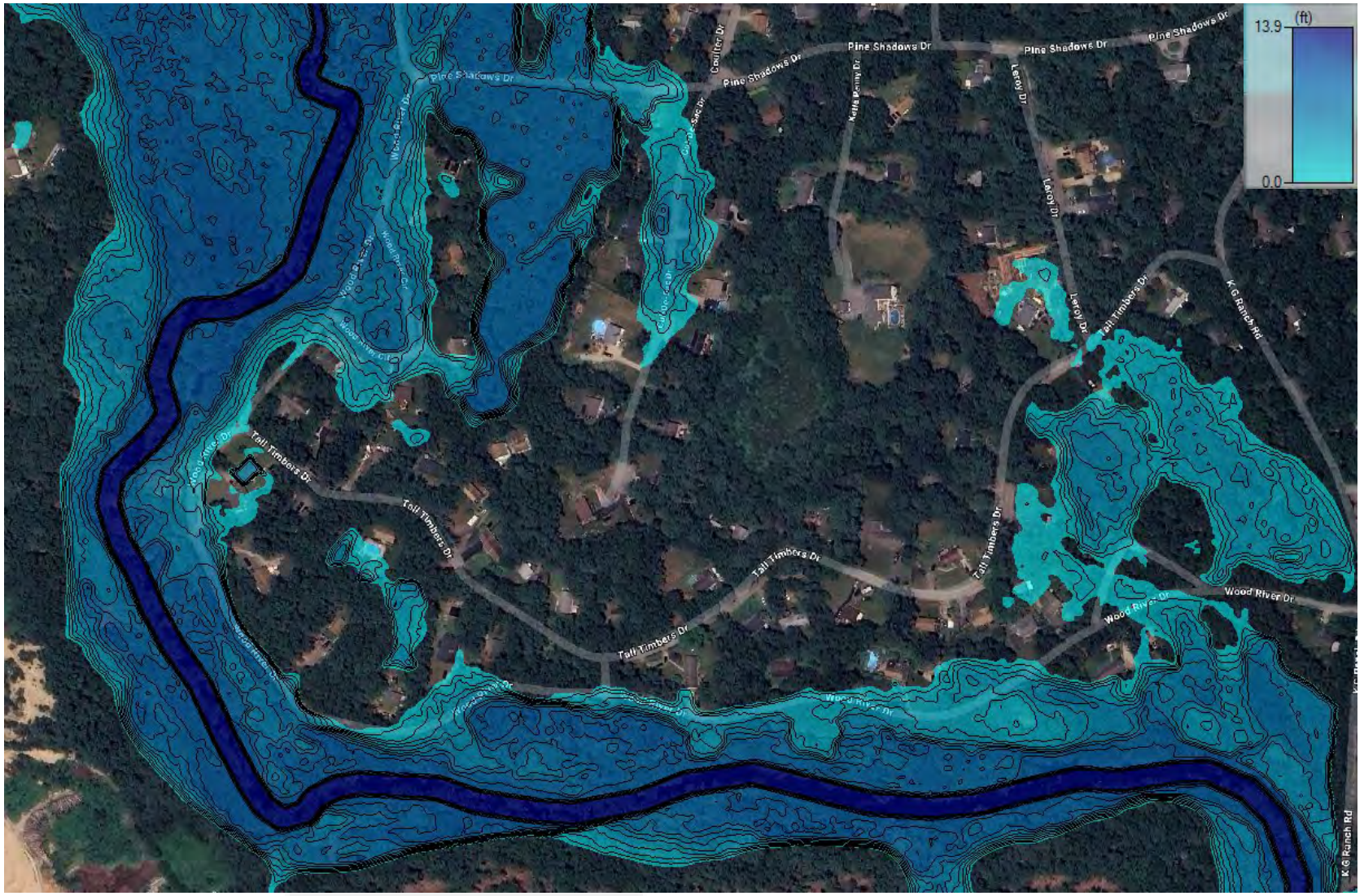
North Stonington, CT



EXAMPLE FLOOD MAP RESULTS

100-YEAR STORM EVENT

Richmond, RI



FLOOD MITIGATION STRATEGIES

- **Flood Volume and Rate Reduction**
- **Avoidance**
- **Floodproofing**
- **Barriers**
- **Drainage Improvements**
- **Nature Based Solutions**

MITIGATION CATEGORIES

- No Action
- All Non-Structural (Avoidance/Removal/Floodproofing)
- Structural & Non-Structural
  - Operations & No Operations Versions
  - Roadway Improvements
    - Improve All Impacted Roads
    - Improve *Some* Impacted Roads
    - No Road Improvements

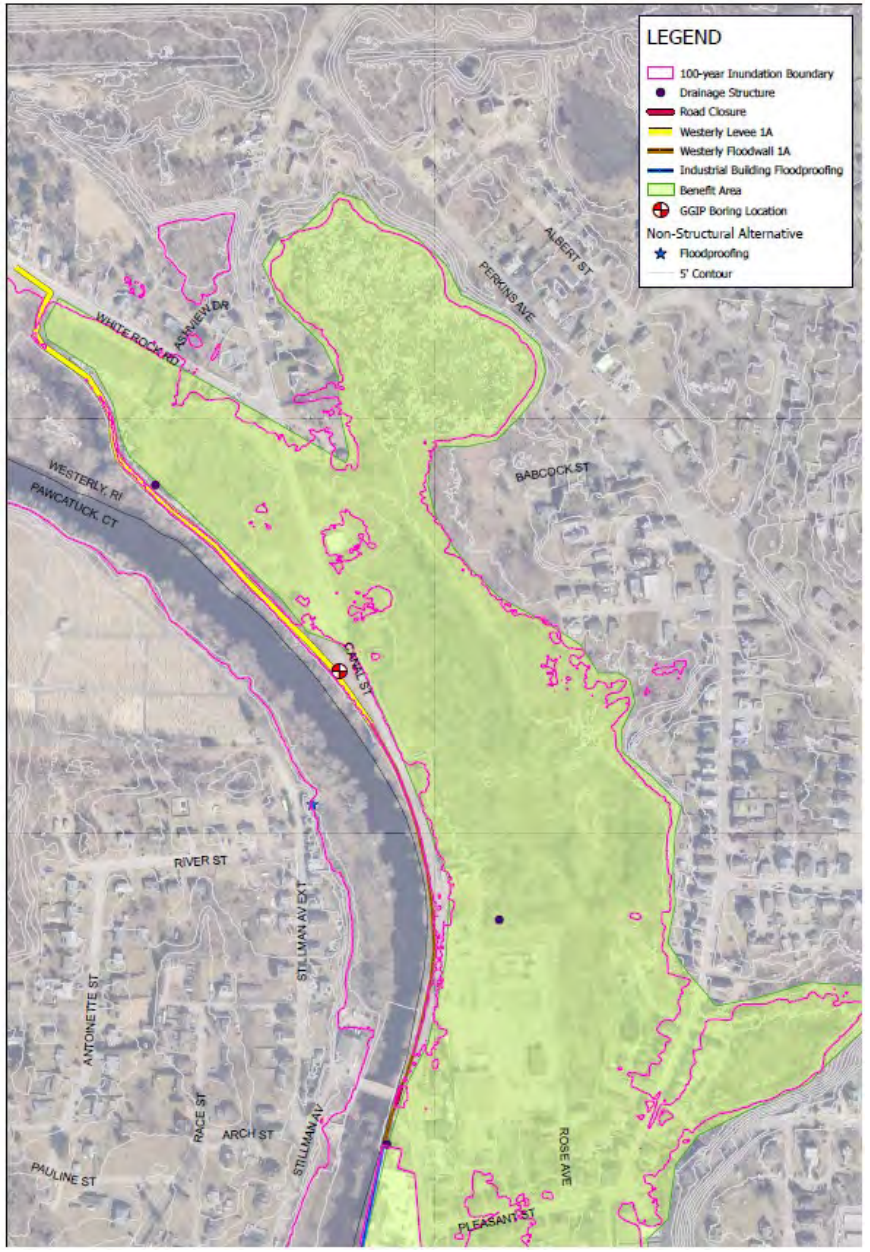
Westerly Site

Westerly, RI / Stonington, CT

- Six earthen levees, three floodwalls, and floodproofing of two industrial buildings
- Total length: 7,470 feet
- Est. Cost: $9.97M

- Levee 1A transitions to Floodwall 1A along Canal Street
- Road closure structure on the east side of the Stillman Avenue bridge
- Floodwall 1A downstream of the road closure structure ties into a floodproofed industrial building
- Three drainage structures anticipated in this section

Summary of Westerly Site Levees			
Location	*Length (ft)*	*Avg Height (ft)*	*Max Height (ft)*
Levee 1A	1,835	4.7	7.7
Floodwall 1A	1,330	6.2	8.1



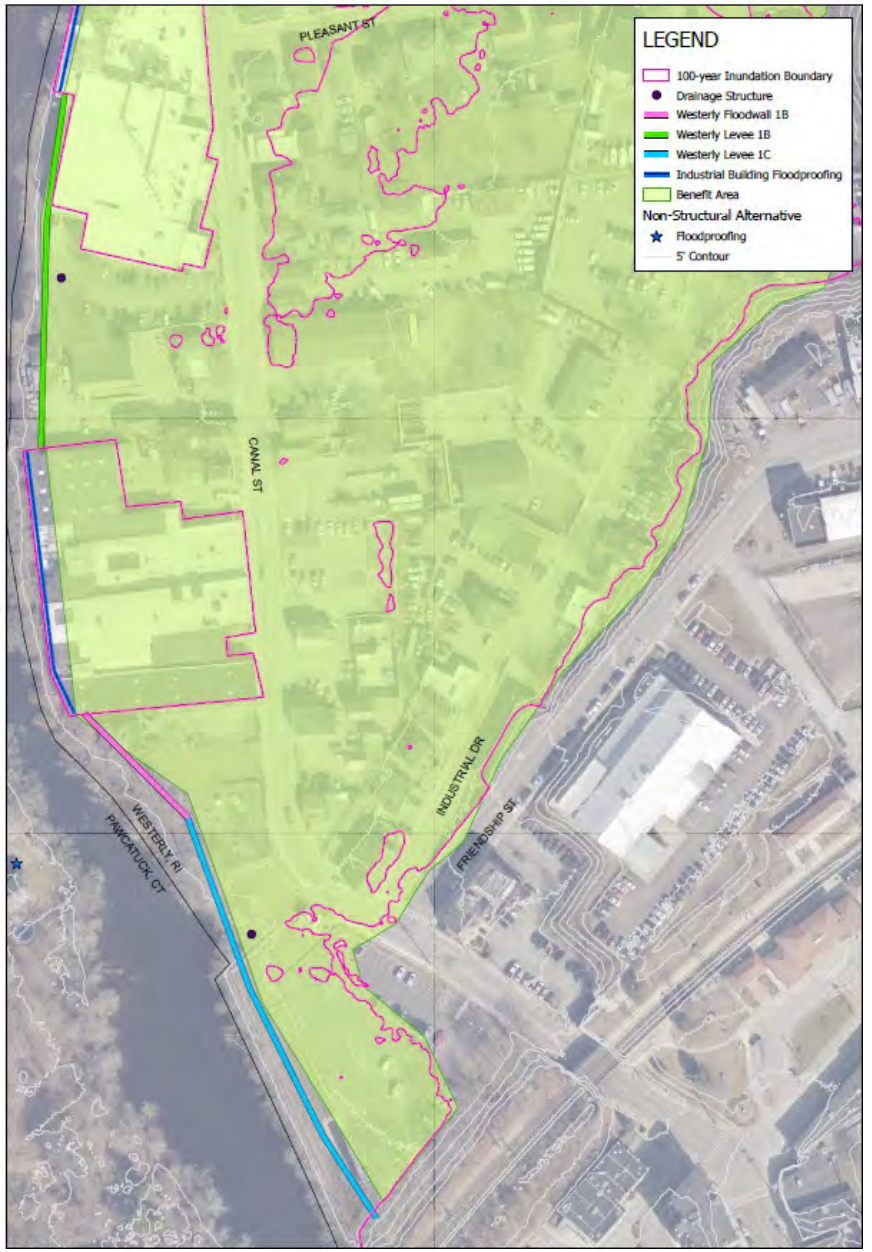
Westerly Site

Westerly, RI / Stonington, CT

- Six earthen levees, three floodwalls, and floodproofing of two industrial buildings
- Total length: 7,470 feet
- Est. Cost: $9.97M

- Levee 1B spans between two floodproofed industrial buildings
- Floodwall 1B proposed to accommodate C A Gin Concrete Company
- Levee 1C connects Floodwall 1B to the Amtrak railroad embankment to the south
- Two drainage structures are anticipated in this section

Summary of Westerly Site Levees			
Location	*Length (ft)*	*Avg Height (ft)*	*Max Height (ft)*
Levee 1B	435	8.5	9.0
Floodwall 1B	100	6.6	8.3
Levee 1C	615	6.6	8.6



Westerly Site

Westerly, RI / Stonington, CT

- Six earthen levees, three floodwalls, and floodproofing of two industrial buildings
- Total length: 7,470 feet
- Est. Cost: $9.97M

- Levee 2 spans from the Amtrak embankment to the apartment complex on Coggswell Street
- Levee is approximately 465 feet long with an average height of 5.1 feet and a maximum height of 6.3 feet
- One drainage structure anticipated in this section

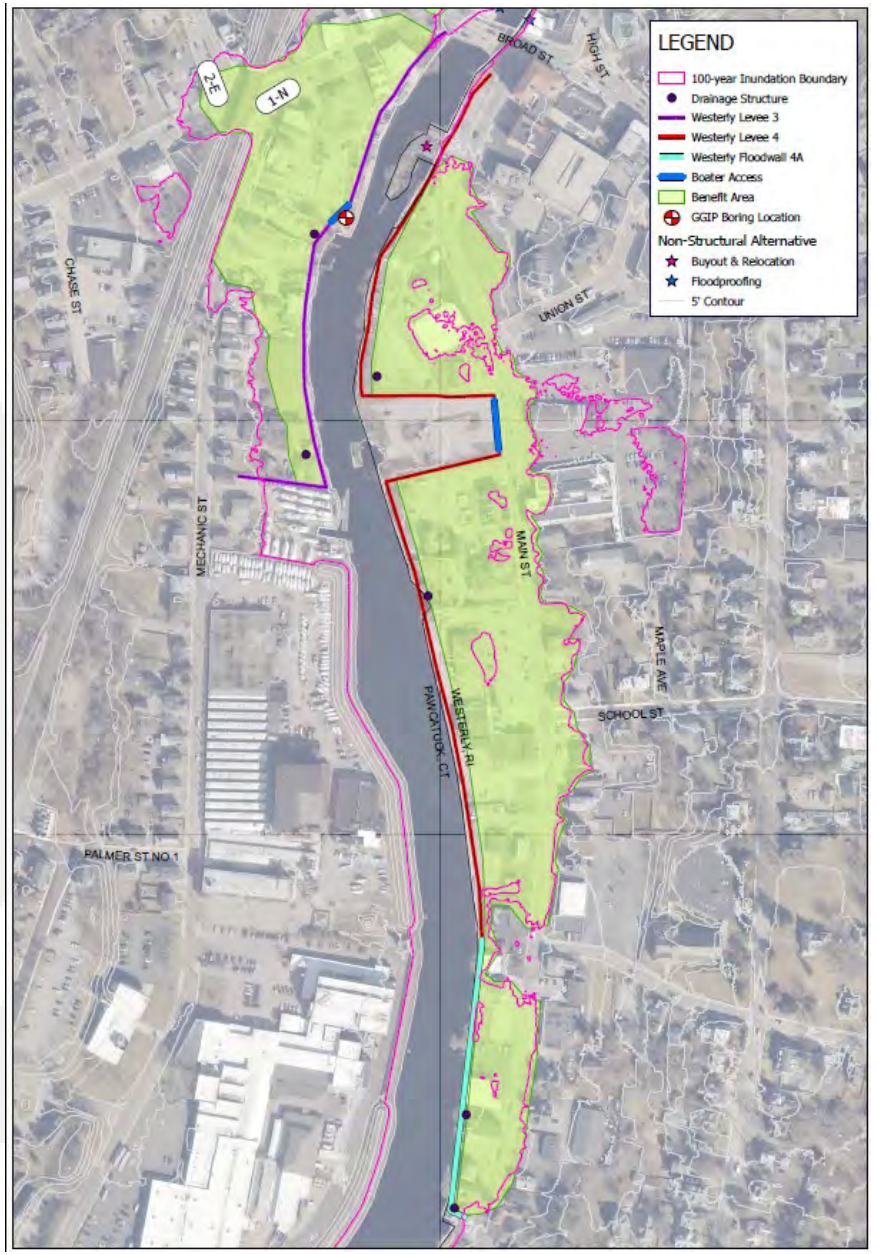
Westerly Site

Westerly, RI / Stonington, CT

- Six earthen levees, three floodwalls, and floodproofing of two industrial buildings
- Total length: 7,470 feet
- Est. Cost: $9.97M

- Levee 3 spans from the Main Street bridge to an area of high ground east of Mechanic Street
- Levee 4 spans from the Main Street bridge to the intersection of Main Street and Cross Street
- Floodwall 4A spans from the downstream end of Levee 4 to an area of high ground at Margin Street
- Two boater access structures are located at Donahue Park and the existing Westerly Boat Ramp
- Six drainage structures anticipated in this section

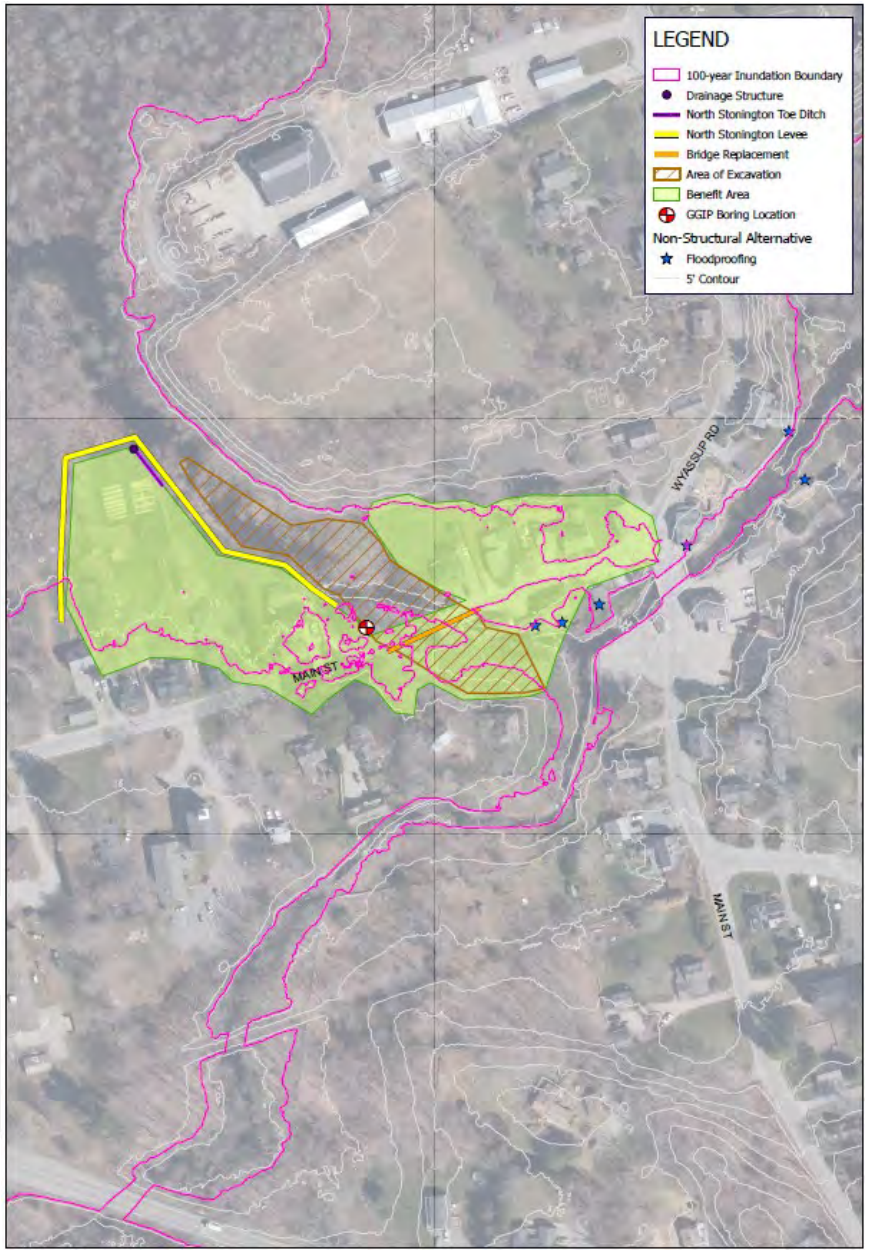
Summary of Westerly Site Levees			
Location	*Length (ft)*	*Avg Height (ft)*	*Max Height (ft)*
Levee 3	1,400	7.0	8.4
Levee 4	2,720	6.9	9.8
Floodwall 1C	700	7.5	10.5



North Stonington Site

North Stonington, CT

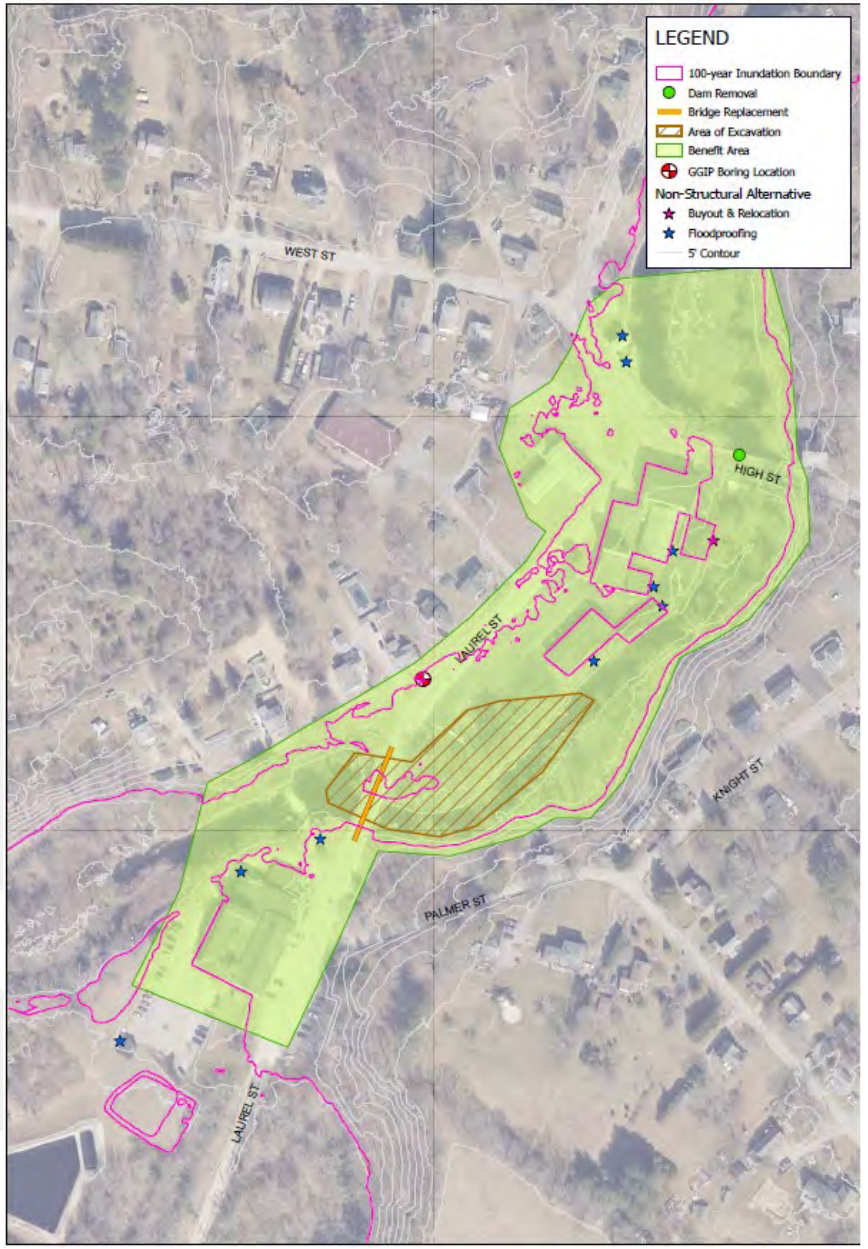
- One earthen levee, a channel hydraulics improvement program, and associated bridge replacement
- The levee spans from an area of high ground near 96 Main Street to the Stonington Village Green
- Levee is approximately 730 feet long with an average height of 2.6 feet and a maximum height of 4.8 feet
- Channel hydraulics improvement – essentially channel restoration
  - Will require replacement of the Main Street Bridge
- One drainage channel and drainage structure anticipated
- Est Costs: Levee $462k, Excavation $357k, Bridge Replacement ~$12M



Ashaway Site

Hopkinton, RI

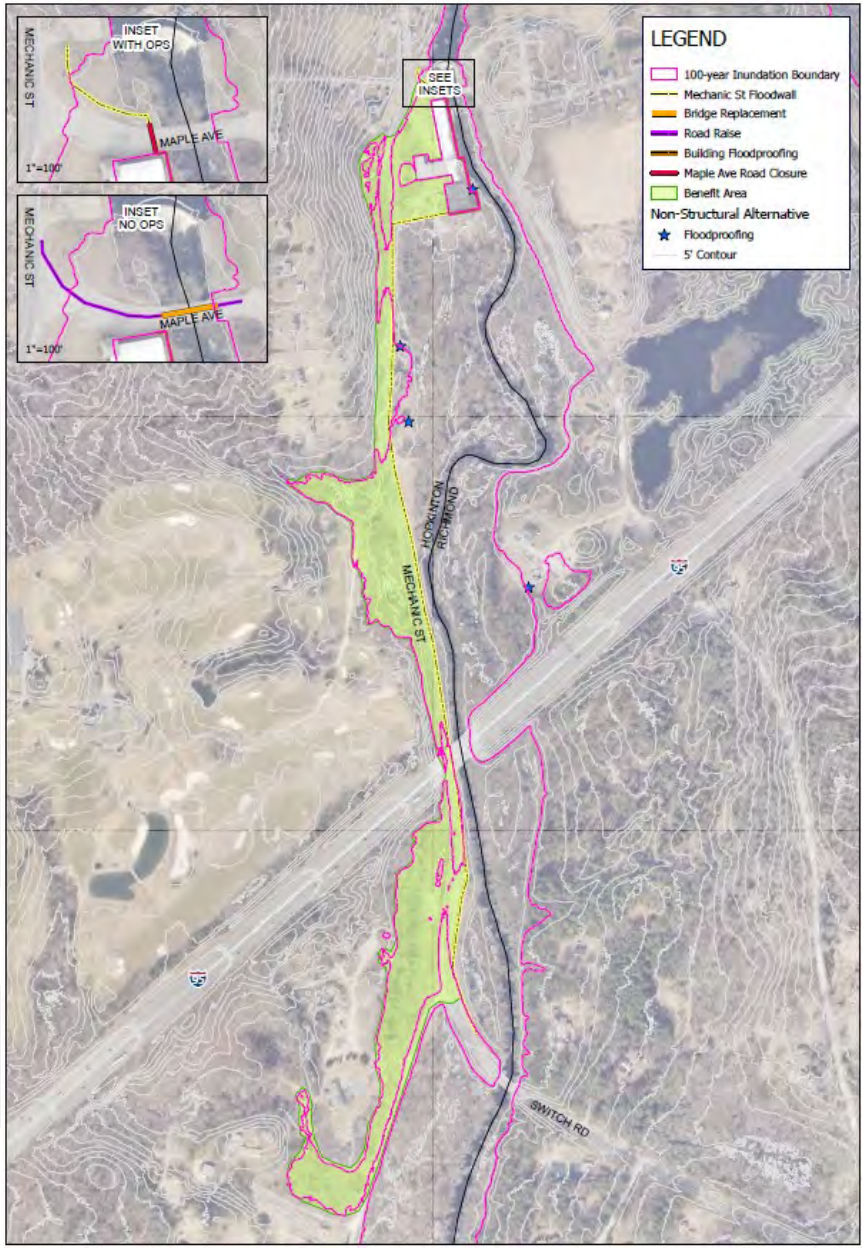
- One dam removal, a channel hydraulics improvement program, and associated bridge replacement
- Dam removal – Ashaway Mill Pond Dam
- Ashaway Line Pond Dam found to have no effect on local flooding
- Channel hydraulics improvement – Increases stream capacity and improves conveyance
  - Will require replacement of the Laurel Street Bridge
- Est. Costs: Dam removal $559k, Excavation $2.1M, Bridge replacement ~$12M



Mechanic Street Site

Hopkinton, RI

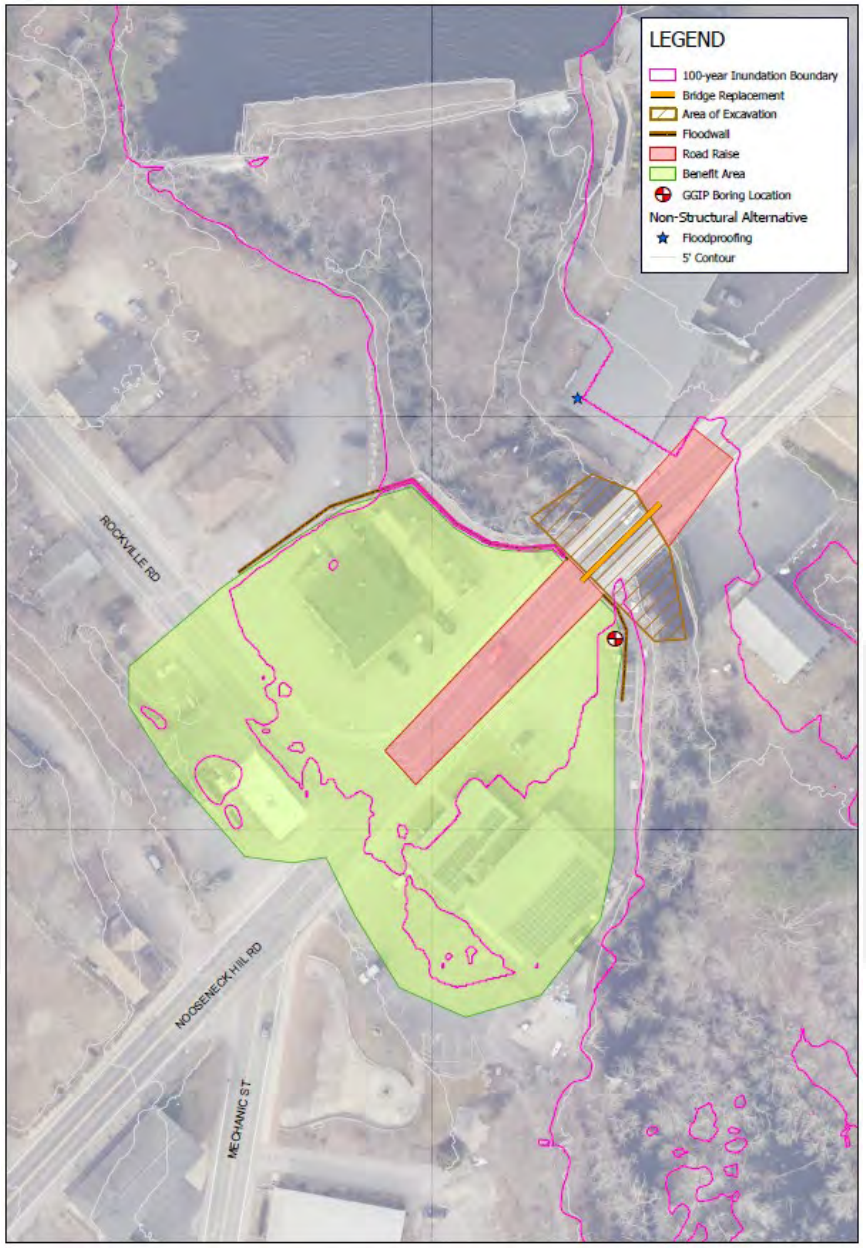
- A long, low floodwall located primarily along the northbound shoulder of Mechanic Street, floodproofing of one industrial building
- The floodwall is 3,760 feet long with an average height of 3.6 feet and a maximum height of 5.4 feet.
- Road closure structure or road raise options
  - Road closure structure is more economical, but requires operations
  - Road raise is less economical (would need bridge replacement and no NRCS cost sharing), but no operations required
- Residents at 53 and 59 Mechanic Street will require driveway modifications
- Small boat access north of Switch Road will need to be relocated
- Est. Cost: $2.9M With Operations
  $8.4M Without Operations (new bridge)

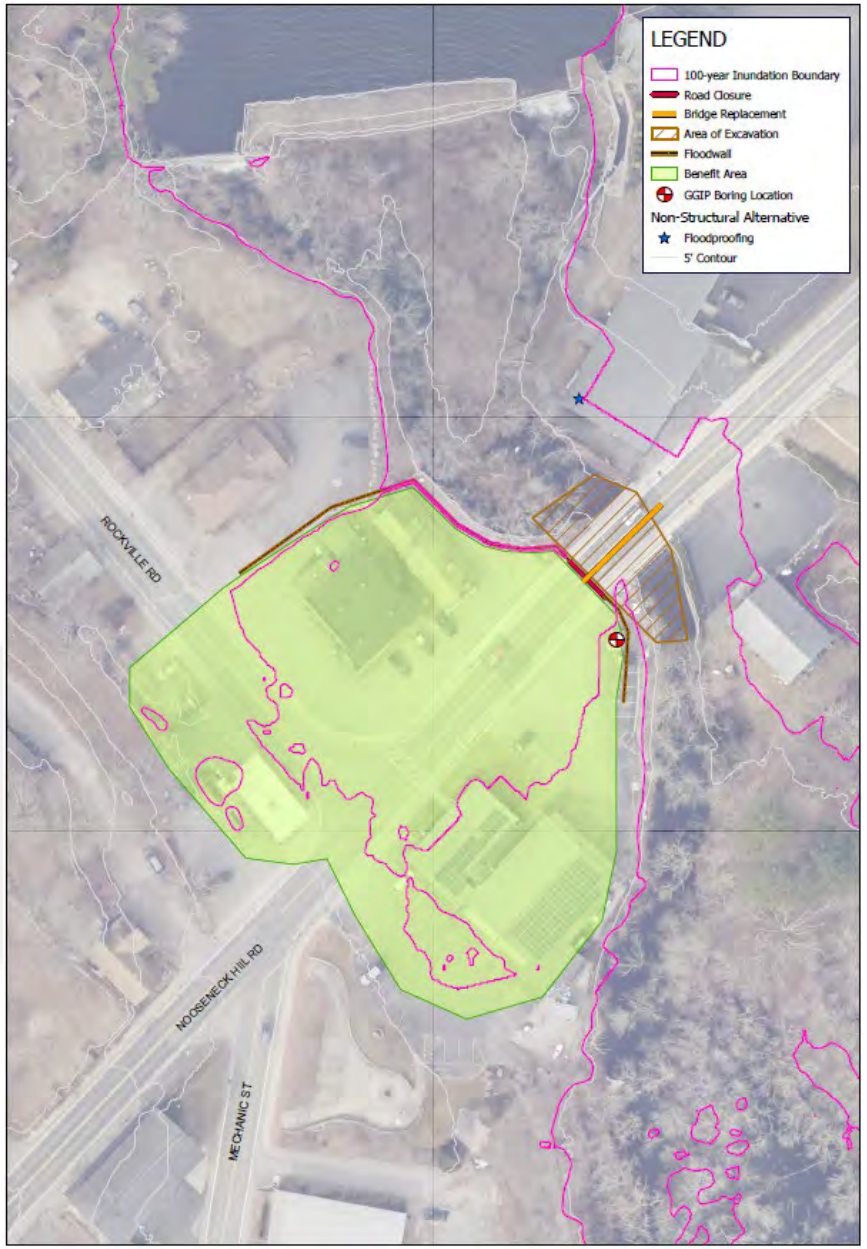


Hope Valley West Site

Hopkinton, RI

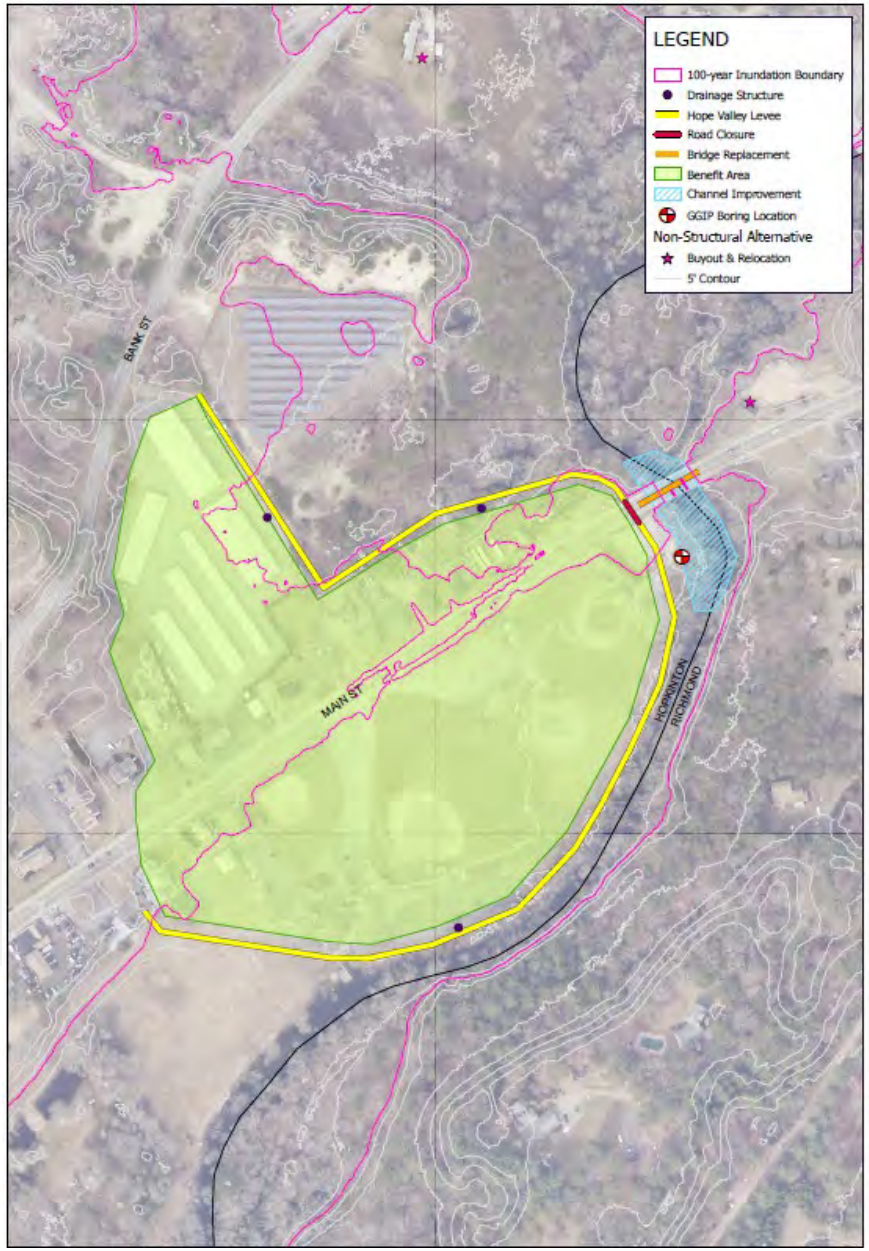
- Replacement and extension of an existing floodwall along the west bank of Brushy Brook
- Floodwall is 325 feet long with an average height of 2.7 feet and a maximum height of 3.7 feet
- Road closure structure or road raise options
  - Road closure structure is more economical, but requires operations
  - Road raise is less economical (no NRCS cost sharing), but no operations required
- Channel hydraulic improvement program
  - Will require replacement of the Main Street bridge
- Est. Cost: Ops Floodwall $571k
  No Ops Floodwall $2.9M
  Excavation $25k
  Bridge replacement $4.5M

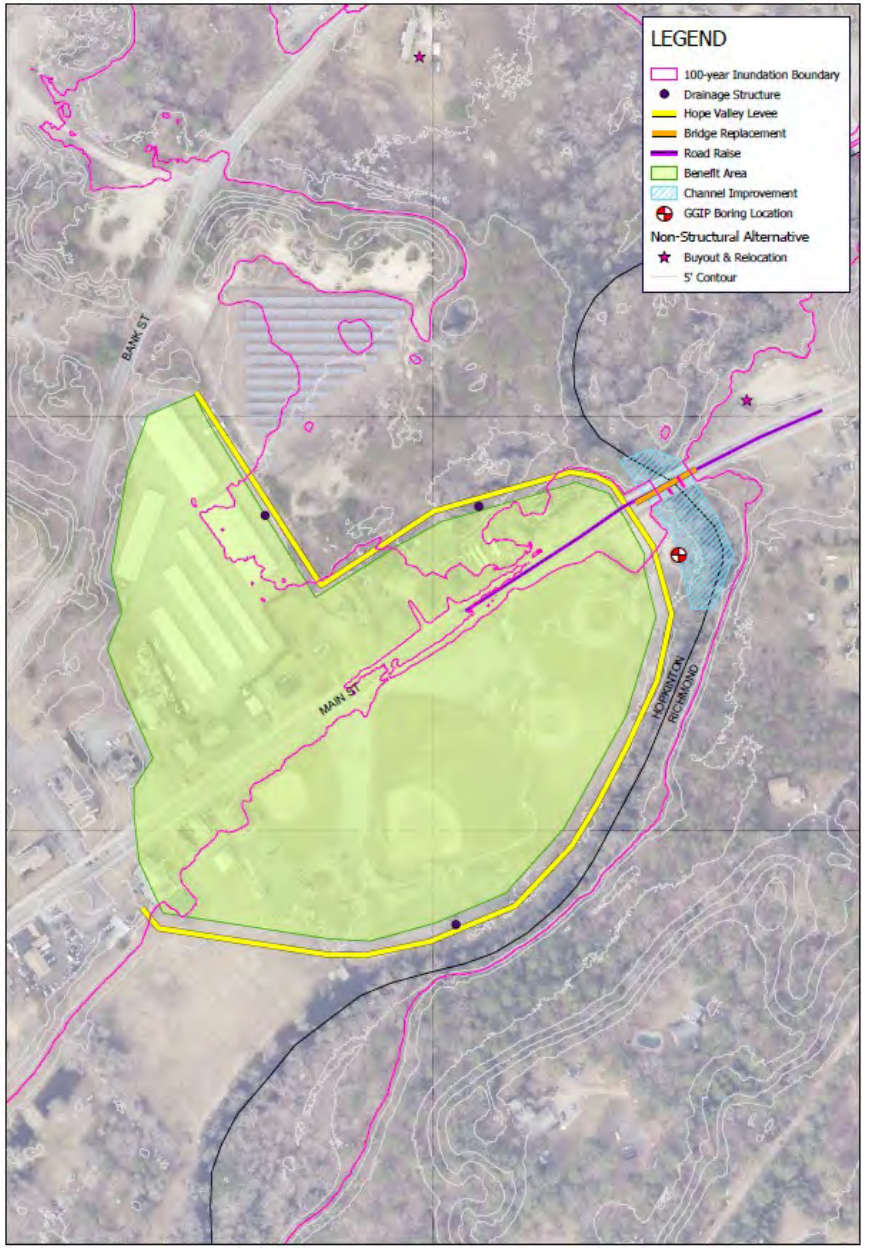




Hope Valley East Site
Options 1 & 2 of 3
Hopkinton, RI

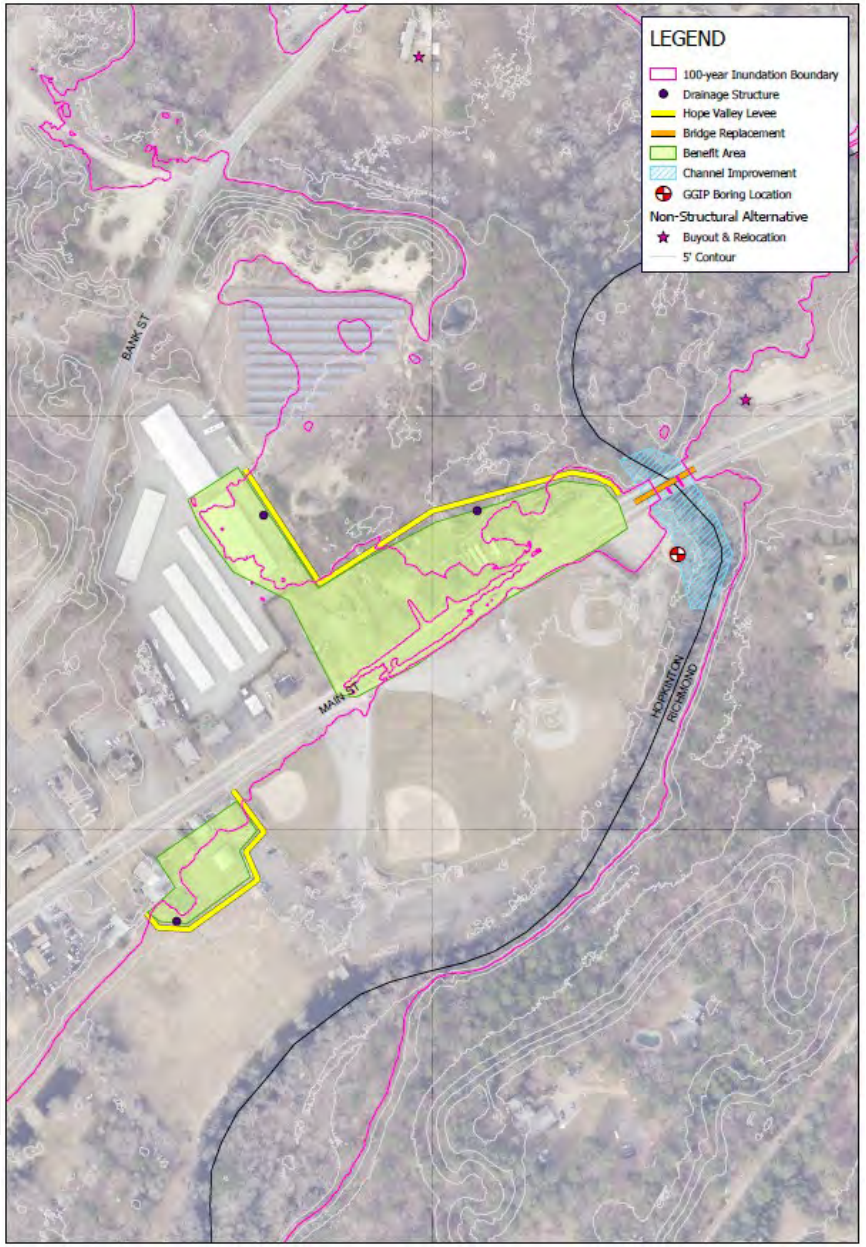
- A levee protecting both residential and commercial buildings, as well as the Chariho Athletic Fields
- Levee is 2,570 feet long with an average height of 8.3 feet and a maximum height of 11.5 feet
- Road closure structure or road raise options
  - Road closure structure is more economical, but requires operations
  - Road raise is less economical (no NRCS cost sharing), but no operations required
- Channel hydraulic improvement program
  - Will require replacement of the Main Street bridge
- Three drainage structures are anticipated
- Est Cost: Ops & No Ops $2.9M
  Excavation ~$170k, Bridge replacement $10.6M





Hope Valley East Site
Option 3 of 3
Hopkinton, RI

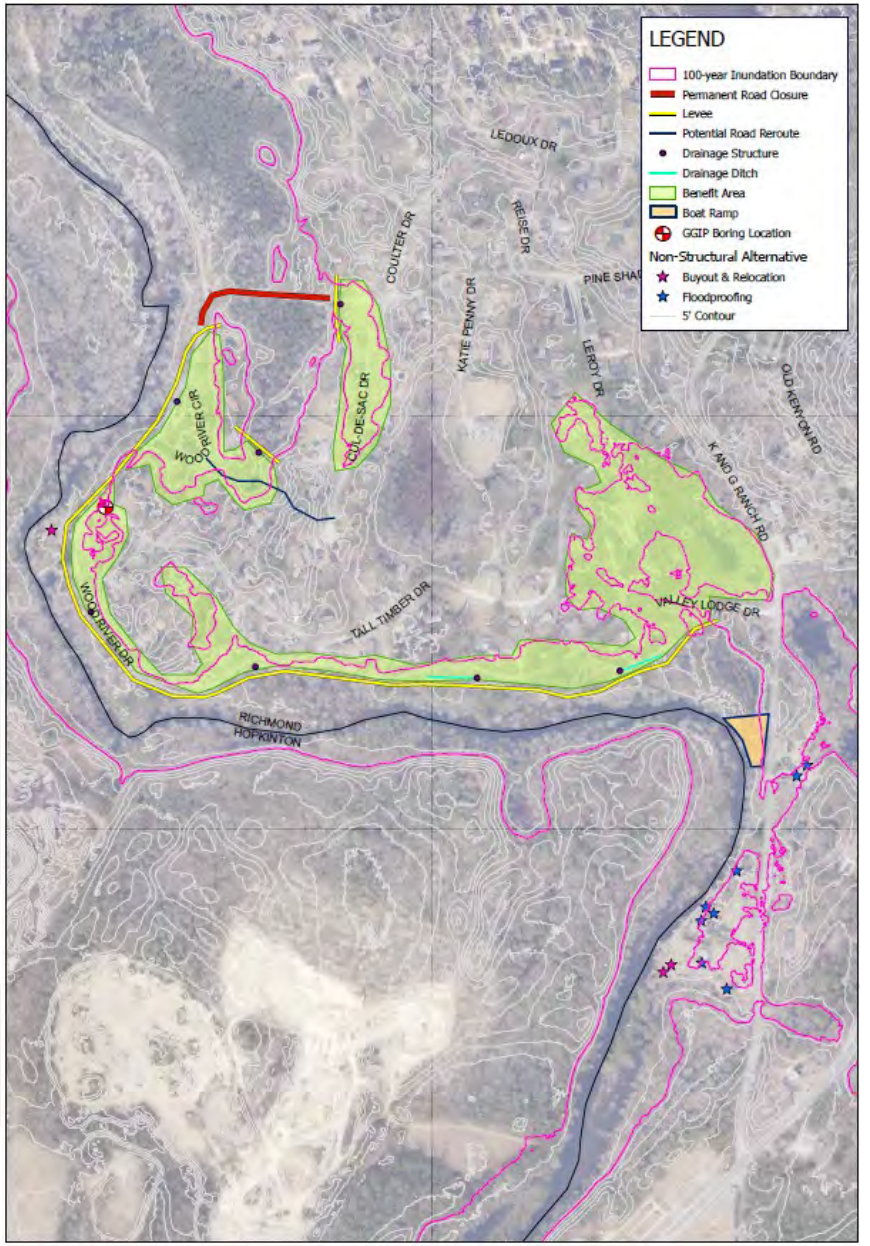
- Two smaller levees instead of one large levee
  - Chariho Athletic Field is not protected
- North Levee is 1,130 feet long with an average height of 3.4 feet and a maximum height of 8.6 feet
- South Levee is 450 feet long with an average height of 4.5 feet and a maximum height of 5.7 feet
- Does not require road closure structure or road raise
- Channel hydraulic improvement program
  - Will require replacement of the Main Street bridge
- Est. Cost: Levee $1.2M, Excavation $165k, Bridge replacement $10.6M



KG Ranch Site
Option 1 – No Operations Required
Richmond, RI

- Two small levees and one large levee
- Would require the permanent closure of a section of Pine Shadows Drive
    - A connector road between Cul-De-Sac Drive and Wood River Circle was considered
- A boat ramp will be constructed to compensate for loss of river access
- Seven drainage structures and two drainage channels are anticipated
- Est. Cost: $4.9M

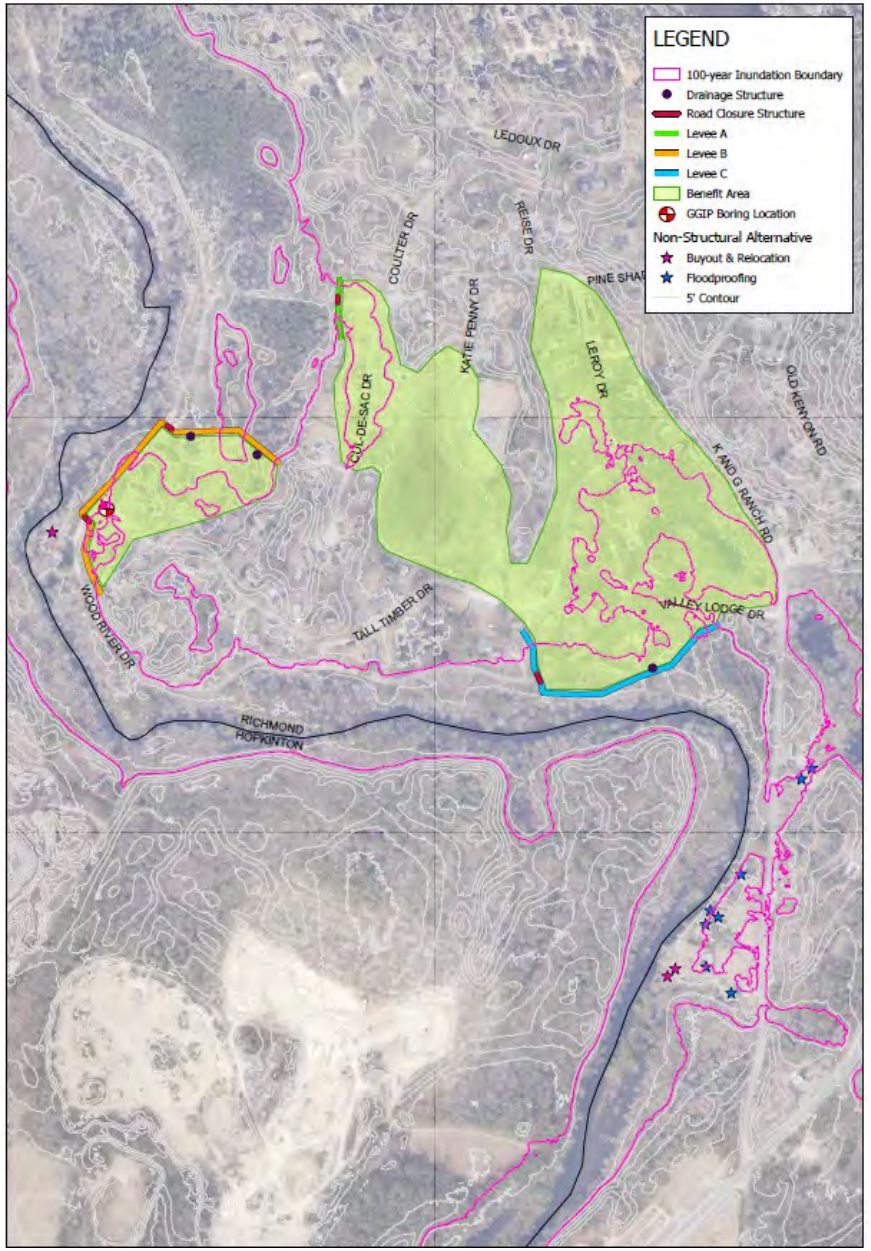
Summary of KG Ranch Site Levees - Option 1			
Location	*Length (ft)*	*Avg Height (ft)*	*Max Height (ft)*
Pine Shadows	225	4.3	6.4
Cul-De-Sac	190	8.8	13
Wood River	3,820	8.2	13.5



KG Ranch Site
Option 2 – Operations Required
Richmond, RI

- A system of four levees
- Four road closure structures
- Three drainage structures are anticipated
- Est. Cost: $3.1M

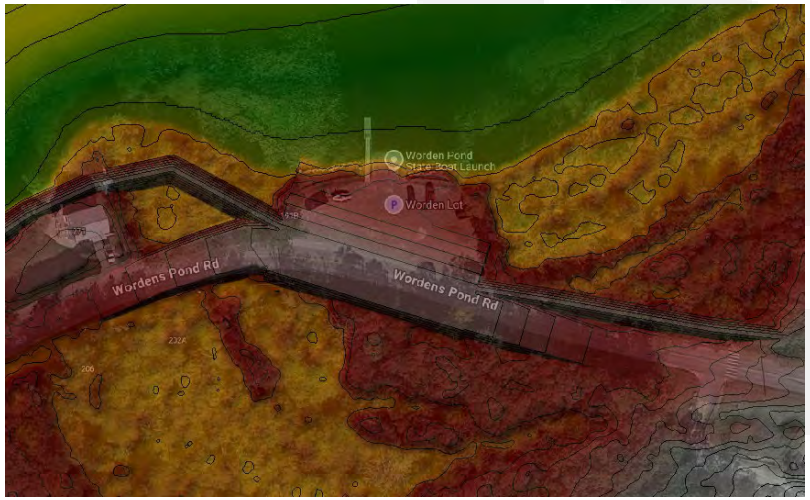
Summary of KG Ranch Site Levees - Option 2			
Location	*Length (ft)*	*Avg Height (ft)*	*Max Height (ft)*
Pine Shadows	225	4.3	6.4
Cul-De-Sac	190	8.8	13
Wood River W	1,050	4.6	9.2
Wood River S	945	5.9	7.9

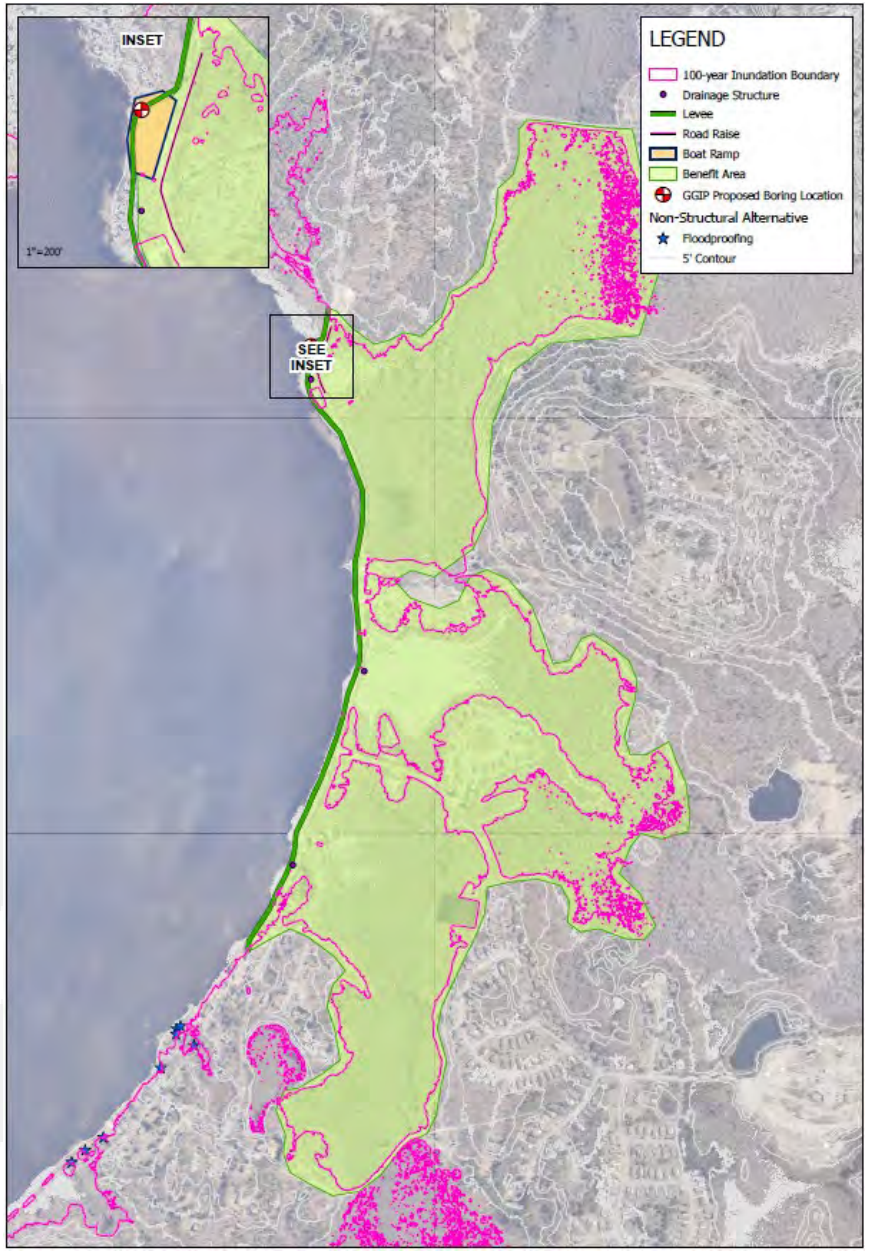


Wordens Site

South Kingston, RI

- A single long, low levee along the southern shore of Worden's Pond
- Levee is 5,130 feet long with an average height of 4.8 feet and a maximum height of 6.0 feet
- Worden's Pond Boat Ramp – Upstream slope flattened and downstream road raised to allow for continued access
- Three drainage structures are anticipated
- Est. Cost: $2.4M





Roadway Improvement Options

- **All Roads**
  - 89 Road Crossings Identified
  - Road Raises $35.9M, Bridges $153.1M

- **Select Roads**
  - Roads determined to be critical for emergency response
  - 15 Road Crossings
  - Road Raises $7.7M, Bridges $41.3M

- **No Roads**

Non-Structural Measures

- Avoidance (Buyout & Relocation)
  - 7 to 11 Structures Identified (4 may have floodproofing measures)

- Floodproofing
  - Approximately 230 Structures Identified

NEXT STEPS

- Document and Assess Findings of this Meeting
- Complete Field Studies and Investigations
- Identify and Evaluate Alternatives
- Coordinate with Various Governing Agencies
- Finalize Watershed Plan and Environmental Assessment Document

CONTACTS

Any questions or comments please feel free to contact:

Michael Viola
RI State Program Manager
Natural Resources Conservation Service
Michael.viola@usda.gov
O - (401) 822-8875

For Project Specific Comments, Questions, and Concerns, please email:

Wood-Pawc@parecorp.com