MAIDFORD RIVER RESTORATION PROJECT

With support from the Southeast New England Program Network (SNEP Network),The Town of Middletown and Aquidneck Land Trust are advancing use of nature- based solutions to reduce flooding and improve water quality and habitat in the Maidford River. Specifically, the project aims to:

- Enhance the river's "natural" flood storage by re-connecting the river with its floodplain; and
- Improve habitat and water quality by restoring a naturally vegetated buffer along the river, where feasible

QUESTIONS ANSWERED

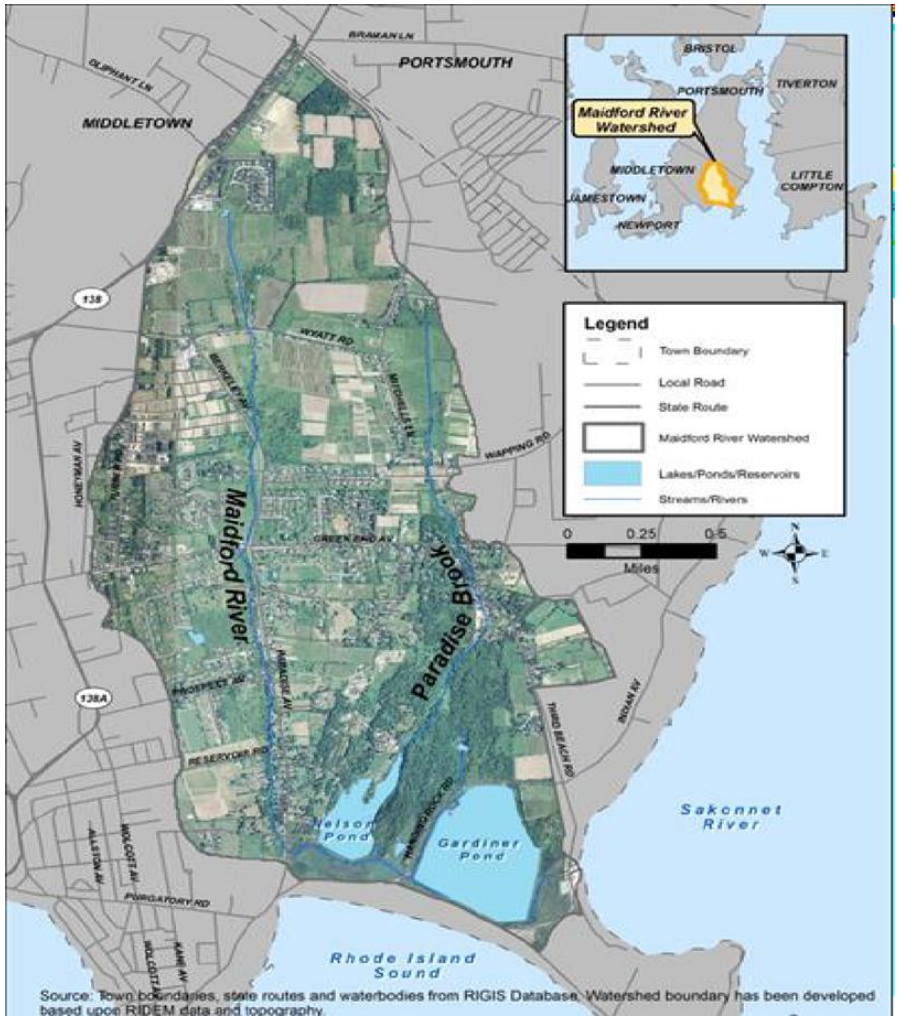
- What is the problem with the Maidford River? Why does it matter?
- How did these problems get created?
- What is the proposed solution?
- What are the next steps?

MAIDFORD RIVER WATER QUALITY

Water Quality Concerns

The river's water quality is impaired by bacteria, nutrients, and suspended solids. It contributes to:

- degraded water quality conditions and cyanobacteria blooms in two of the island's water supply reservoirs: Nelson Pond and Gardiner Pond;
- degraded habitat of Sachuest marsh home to the saltmarsh sparrow, a species of high conservation concern; and
- threatened recreational and shellfishing uses in near coastal waters of Sakonnet River including Third Beach.

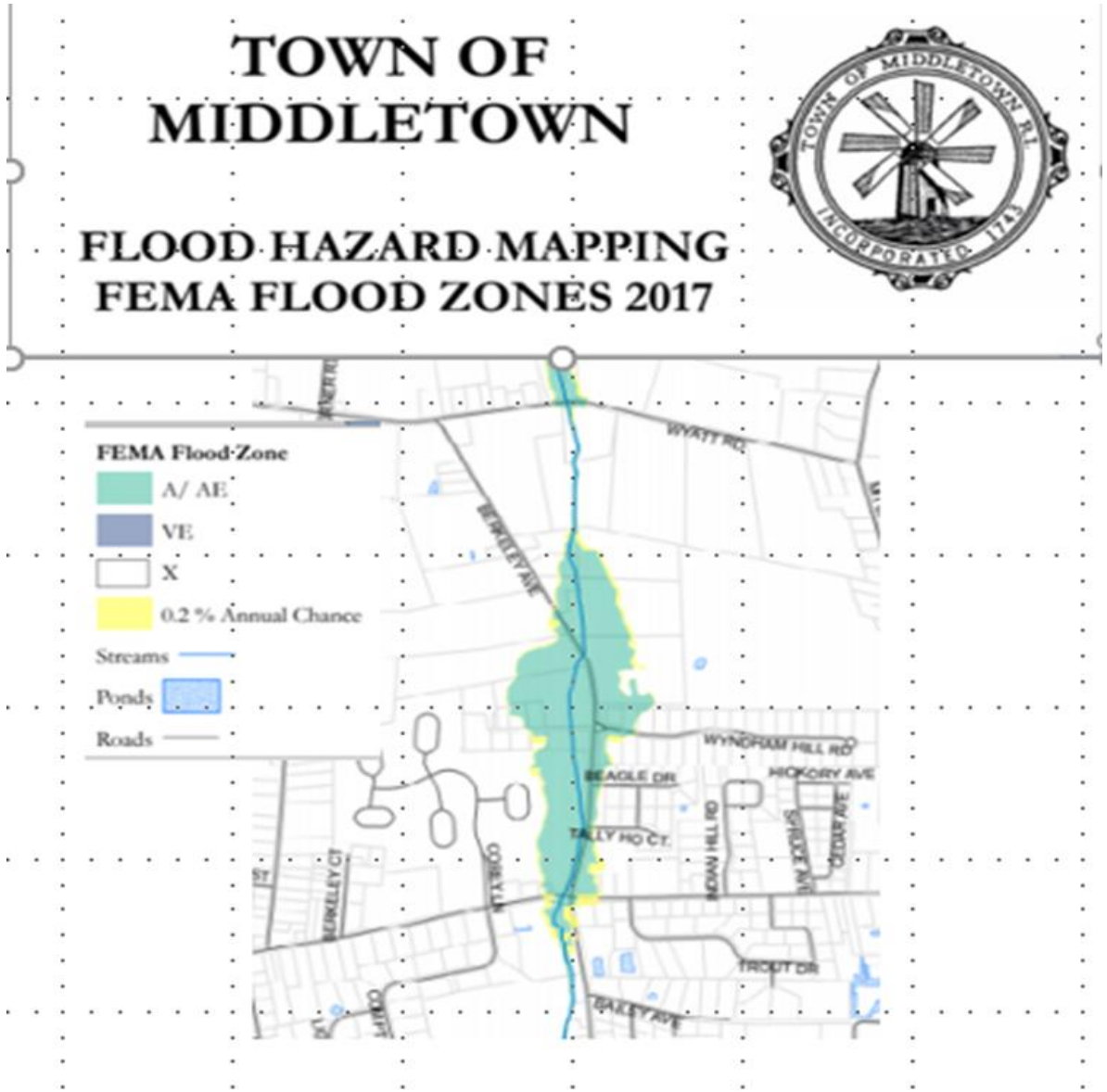


MAIDFORD RIVER WATER QUALITY

Photo taken by S. Ribas/RIDEM

MAIDFORD RIVER FLOODING CONCERNS

The map from the Town's Hazard Mitigation Plan shows the area that floods with a 1% chance of occurring annually.



MAIDFORD RIVER FLOODING CONCERNS

- Berkeley Avenue and Berkley Avenue Extension flood several times/year. When this happens roughly 100 residents living in the area have trouble reaching their homes – as do public safety vehicles.

- Another major concern is that when Berkeley Ave is flooded a primary route for emergency vehicles is blocked.

MAIDFORD RIVER FLOODING CONCERNS

Flooding of roads, lawns and fields may damage municipal and private properties and contributes to the river's water quality problems.

Also at risk are the stone walls along Berkeley Avenue.

WATER QUALITY & FLOODING IMPACTS ARE DECADES IN THE MAKING

1972

Spring 2020

Source: RIDEM

MAIDFORD RIVER RESTORATION PROJECT: SNEP NETWORK PILOT PROJECT

In 2019, US EPA signed an agreement with New England Environmental Finance Center creating the SNEP Network which includes support for the Maidford River Restoration Project as a pilot project:

- technical assistance from Network partners (Save the Bay, Elizabeth Scott Consulting, and Throwe Environmental) and
- consultant services from Fuss & O'Neill

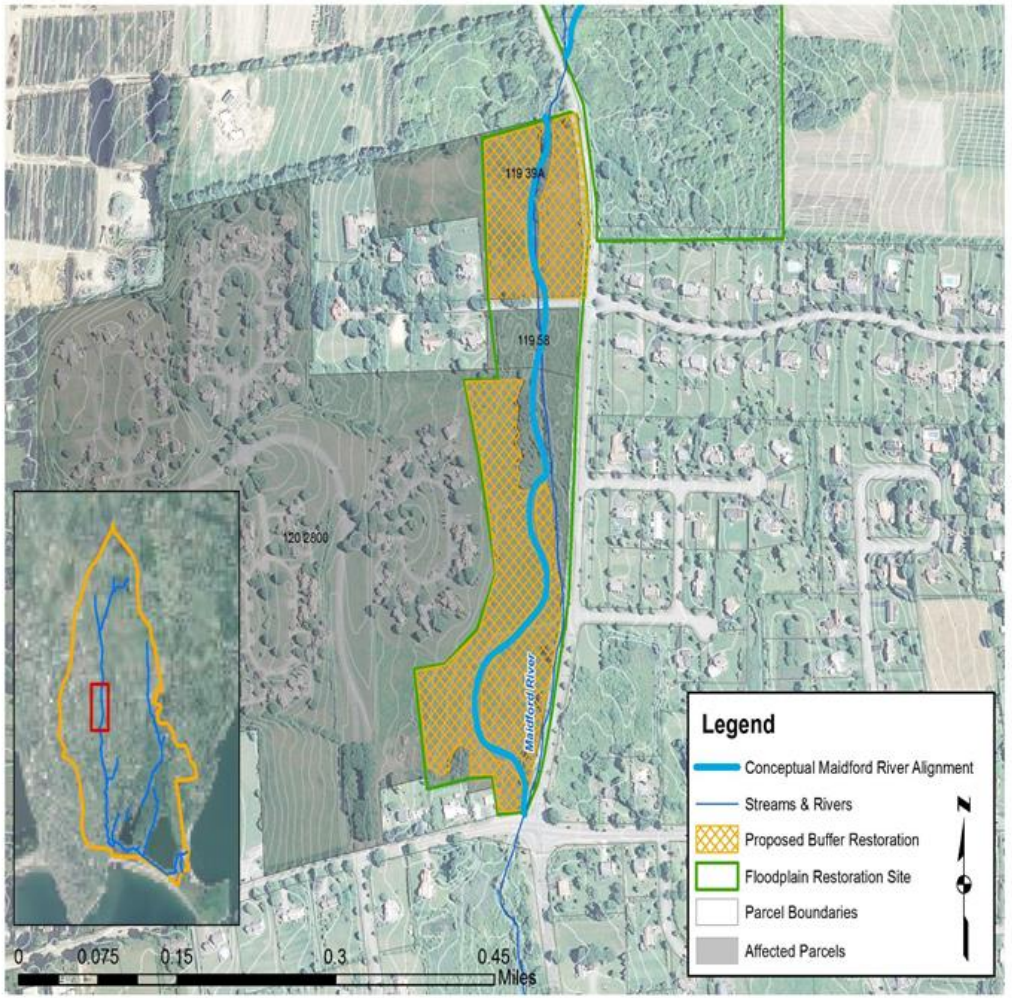
SNEP NETWORK

Project Area Boundaries: Just north of Berkeley Ave overpass to Green End Ave

FLOODPLAIN RESTORATION: BEGINNING CONCEPT

- Project builds upon ongoing watershed protection and stormwater management efforts by Aquidneck Land Trust and Town of Middletown

- The concept for the project was first proposed in the Maidford River Conservation Plan prepared for Aquidneck Land Trust by Fuss & O'Neill



PRELIMINARY STEP: SITE VISIT

Field Observations (September 21, 2020):

- Dry channel throughout site; soils dry in floodplain
- Stream is already evolving to form meanders and pools
- Evidence of sediment movement downstream with heavy sediment deposits in streambed and on floodplain

Sediment deposition in the streambed

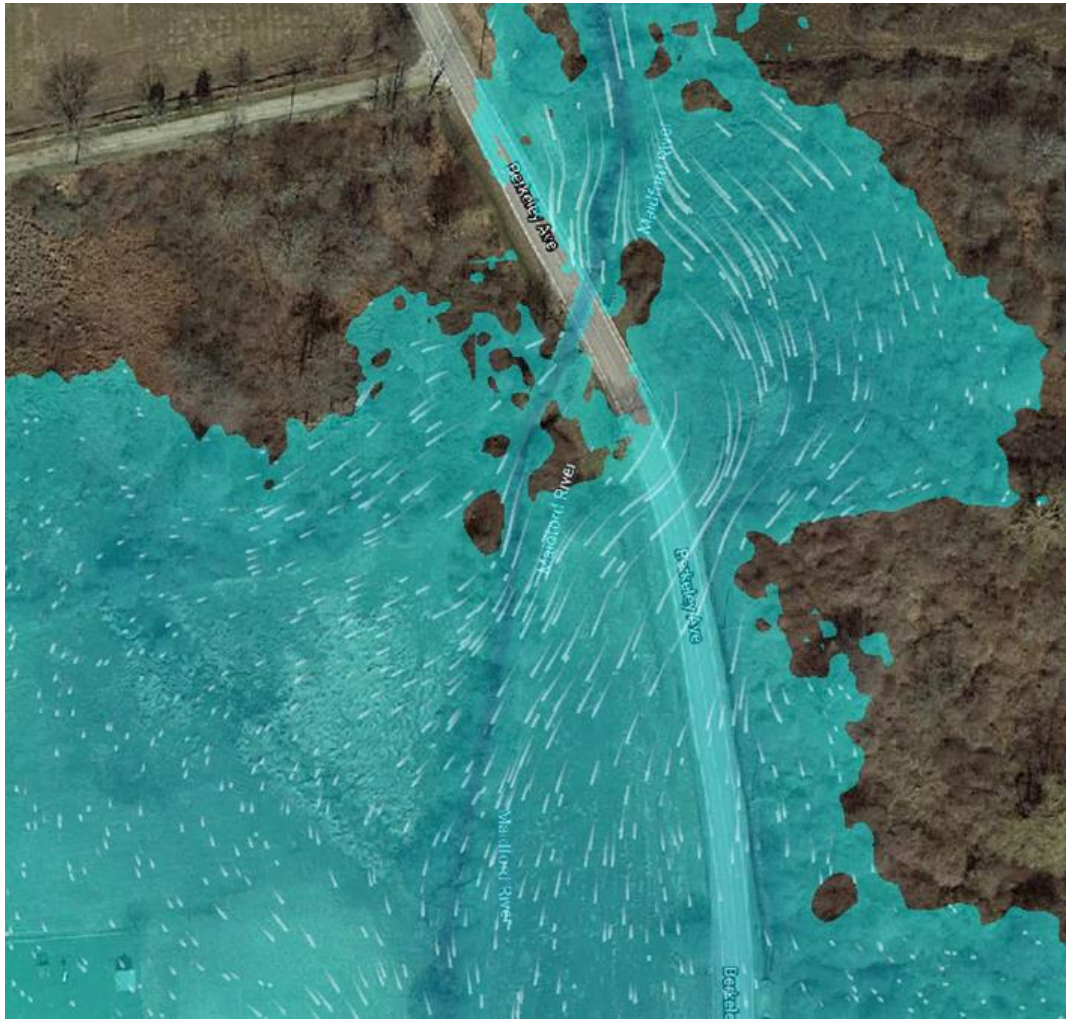
Sediment deposition in Berkeley Ave Extension culvert

FIELD OBSERVATIONS (SEP. 21, 2020)

- Numerous invasive species on site
- Stone wall and large trees along west channel bank between Green End Avenue and Tally Ho Court are being undermined by erosion

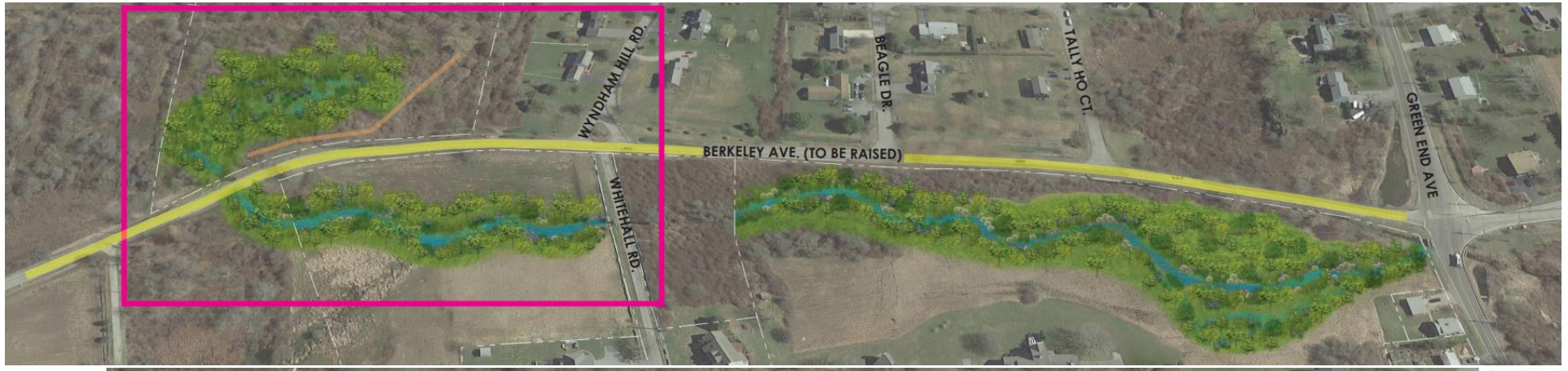
FLOODPLAIN RESTORATION ALTERNATIVES EVALUATED

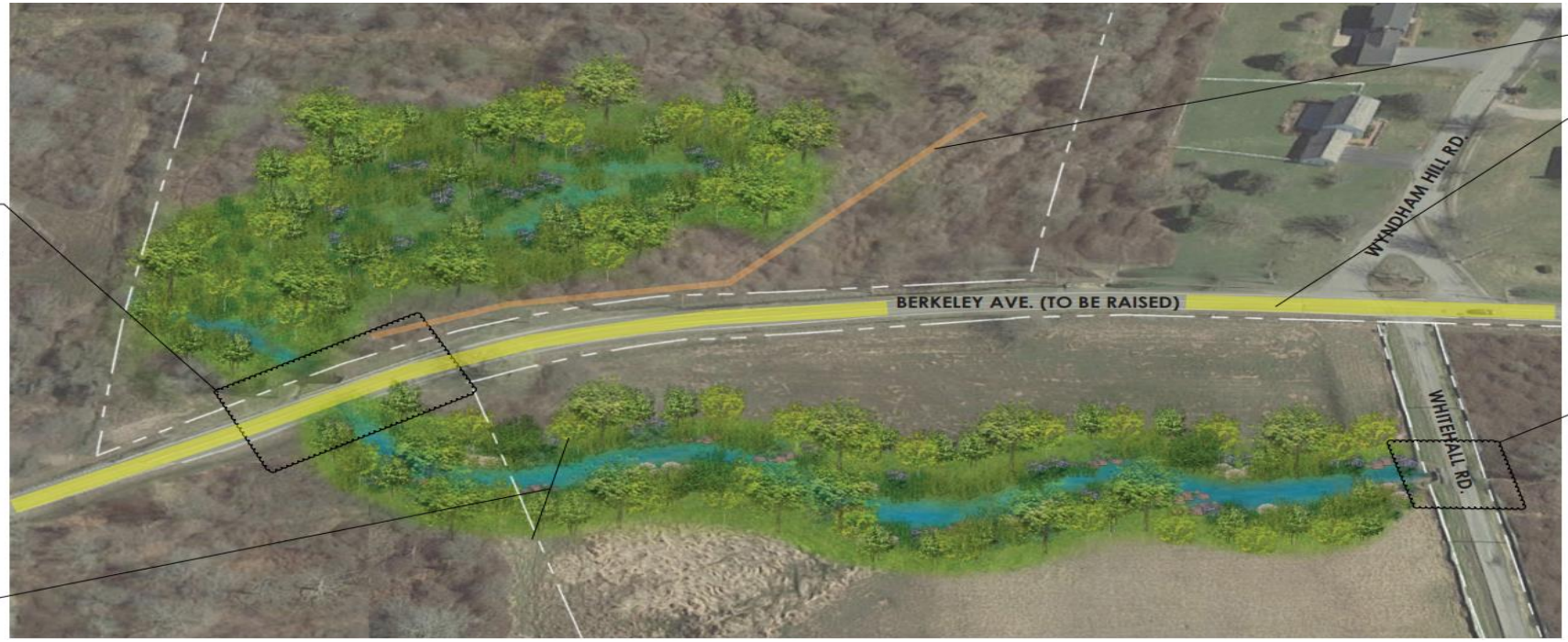
Using information collected from field assessments, historical topographic maps, and modeling, various floodplain restoration alternatives were evaluated for their flood mitigation and water quality benefits.



Preliminary Hydraulic Model Output

CONCEPTUAL DESIGN TO MAXIMIZE FLOOD REDUCTION & WATER QUALITY BENEFITS





Potentially replace culvert at Berkeley Avenue, and/or Install floodplain relief culverts under Berkeley Avenue (need and dimensions to be determined based on additional modeling)

Add river sinuosity in the northern portion of project area; Expand floodplain to 80-foot terrace

Install deflection berm (dimensions to be determined based on additional modeling)

Raise Berkeley Avenue ±2 feet from upstream of Maidford River crossing to Green End Avenue

Replace Whitehall Road culvert to lower elevation and increase capacity.

Deepen channel in vicinity of Whitehall Road to meet lower elevation of Whitehall Road culvert

Potentially, install floodplain relief culverts under Berkeley Avenue (need and dimensions to be determined based on additional modeling)

CONCEPTUAL DESIGN (CONTINUED)

Add river sinuosity in the northern portion of project area; Expand floodplain to 80-foot terrace

Relocate Maidford River to the west, away from Berkeley Avenue, and into the open field

Expanded floodplain area at southern extent of the river in the area upstream of Green End Avenue

Raise Berkeley Avenue ±2 feet from upstream of Maidford River crossing to Green End Avenue

NEXT STEPS

- Project Team has requested RIDEM to verify wetland edge within project area and will request a meeting with RIDEM to get input.
- Consultants have completed topographic survey of the project area. Information will be input to a model to further evaluate flood mitigation and water quality benefits and develop 30% Design through an iterative process.
- 30% Design will be presented to Project Team and affected property owners in project area for approval.
- Town is seeking additional funding to position itself to advance project to 60% Design and complete necessary permit applications should property owners agree to proceed.

MONITORING IMPROVEMENTS

With support from EPA, starting this summer the Project Team is working with a consultant to collect pre-implementation data. Once the project is completed, the same data can be collected post-implementation to document improvements.

- Water Quality & Flow Data @ 3 locations (Berkeley Ave culvert, Green End Ave., and Prospect St) to document:
  - Pounds of phosphorus
  - Pounds of nitrogen
  - Pounds of sediment (total suspended solids)
- Habitat Conditions:
  - Aquatic habitat and diversity of aquatic organisms/communities
  - Riparian habitat (changes in naturally vegetated buffer)

FUNDS TO ADVANCE PROJECT

Collaborative effort to advance project

- EPA via SNEP Network has provided initial support for project including assistance from Save the Bay, Elizabeth Scott Consulting, Throwe Environmental, and consultants Fuss and O'Neill
- NRCS has awarded a Regional Conservation Partnership Program Grant to the Rhode Island State Conservation Committee which includes $1,070,000 available for Eastern RI Conservation District (includes $500,000 match from RIDOT) to support implementation of Maidford River restoration activities.
- Town of Middletown has applied for grants to advance project design and preparation of necessary state and federal permits.

ADDITIONAL INFORMATION

Southeast New England Network (SNEP Network): www.snepnetwork.org

Maidford River Pilot Project webpage: snepnetwork.org/maidford/

To be added to Maidford River Restoration Project mailing list: contact Jed Thorpe at jthorpe@savebay.org