

## Municipal Vulnerability Preparedness Program Action Grant Case Study

**Municipality:** Natick

**Project Title:** Building Resilience across the Charles River Watershed

**Award Year (FY):** FY22

**Grant Award:** \$233,085.00

**Match:** \$84,037.00

**Match Source:** Charles River Watershed Association (CRWA), municipal partners

**One or Two Year Project:** One year

**Municipal Department Leading Project:** Natick Community & Economic Development is the project fiscal agent; this project is an initiative of the Charles River Climate Compact (CRCC).

**Project Website URL:** <https://www.crwa.org/watershed-model.html>

### Community Overview:

- This is a regional project focused on the upper/middle Charles River watershed, the focus area is approximately 270 square miles touching 33 cities and towns (bolded communities participated in this project): **Arlington**, Ashland, **Bellingham**, Belmont, **Boston**, Brookline, **Dedham**, **Dover**, Foxborough, **Franklin**, **Holliston**, Hopedale, Hopkinton, Lexington, Lincoln, Medfield, **Medway**, Mendon, Milford, **Millis**, **Natick**, **Needham**, **Newton**, **Norfolk**, **Sherborn**, Walpole, **Waltham**, **Watertown**, Wayland, **Wellesley**, **Weston**, Westwood, and **Wrentham**; **Cambridge** also participated although they are downstream of the study area
- Fifteen communities in the Charles River watershed (including Cambridge and Somerville which are downstream of the upper/middle watershed area) have environmental justice populations. Additionally, each watershed community has identified climate vulnerable residents within their community through the MVP Planning process.
- This project was highly unique in that it involved 20 communities in one of the State's most-densely developed watersheds working together to address precipitation based flooding at the watershed scale. The watershed scale is ideal for assessing flood risk as flood waters follow watershed boundaries, not political boundaries.

### Project Description and Goals:

- This project focuses on the upper and middle Charles River watershed, a 270 square mile area stretching from Hopkinton to Newton/Watertown.
- The project team developed the Charles River Flood Model (CRFM) to assess the impacts of precipitation-based flooding on the upper/middle Charles River watershed and how much water flows downstream into Boston and Cambridge.
- The project successfully accomplished all of the objectives laid out in the proposal, these were:

- Develop a prioritization matrix to identify up to four priority site-specific projects to set them up for implementation
  - Produce concept design plans for the site-specific priority projects
  - Develop policy guidance recommendations and tools for implementation of non-site-specific strategies (i.e. reduction of impervious cover, management of a certain volume of water on site, land conservation, green streets, etc.)
  - Update and expand the CRFM to increase the detail and accuracy of the model in predicting flooding impacts; and run the refined model to assess additional storm scenarios and nature-based solutions
  - Develop an Implementation Plan which includes a prioritized list of site-specific projects and concept designs for up to four projects, recommendation for strategies to be implemented across the watershed, and resources to support implementation of the strategies.
  - Continue to engage with watershed residents, and those vulnerable to climate impacts in particular, to inform them about the CRFM as a tool, its findings, and to seek input on the Implementation Plan.
  - Share this approach with other watershed scale/regional groups across the State interested in potentially pursuing similar work.
- Project successes include:
    - Employing nature-based solutions: modeled the flood reduction benefits of nature-based solutions at multiple scales, compiled resources to support nature-based solutions implementation at the local level
    - Improving equitable outcomes for and fostering strong partnerships with EJ and other Climate Vulnerable Populations: Engaged residents in a variety of ways, both in person and online, translated materials, interpreters at online and in person events, and attended events in EJ communities.
    - Providing regional benefits: This is a regional project which identified solutions that reduce flooding across the region.
    - Implementing the public involvement and community engagement plan set forth in your application: Over 300 residents were engaged in person, and an estimated 200 people were engaged through online meetings and surveys
    - Finishing the project on time: The project was completed on time.

### **Results and Deliverables:**

- The following is an overview of the project accomplishments:
  - Developed an updated and expand Charles River Flood Model
  - Compiled over 50 flood mitigation project suggestions
  - Prioritized 3 projects for concept design
  - Held public input sessions in these communities

- Submitted project ideas for funding
- Attended 10 in person community events
- Updated flood scenarios per updated climate projections
- Updated flood mitigation scenarios with public feedback and input
- Additional project information, including recordings of past events can be found here: [www.crwa.org/watershed-model.html](http://www.crwa.org/watershed-model.html)

### **Lessons Learned:**

- The flooding impacts of climate change will be severe across the Charles River watershed.
- It will require bold action to mitigate expected flooding and collectively we need to start taking aggressive measures, this cannot wait.
- Development practices need to change quickly as allowing undeveloped watershed land to develop in traditional ways that do not account for the flooding impacts of climate change will have significant negative consequences for watershed flooding. Even taking a modest approach to flood mitigation on new development will not be enough.
- The project involved a technical subject, development of a flood model, however, as a tool it has the potential to impact local policy and result in on the ground changes. It was a challenge at times to balance the communication of highly-technical information to those who wanted it, while also keeping people who were not as interested in the technical details engaged.
- There are many opportunities for flood mitigation projects across the watershed, we just need funding to support implementation.
- Developing a flood model as a regional collaboration is an impactful and cost-effective way to conduct flood planning, the team prepared two presentations about our process for other groups to learn from.

### **Partners and Other Support:**

- In addition to the communities listed above, the project team includes Charles River Watershed Association (lead facilitator), Weston & Sampson (technical lead) and Communities Responding to Extreme Weather (C.R.E.W. – engagement lead)

# Project Photos:



Charles River Flood Model Part I: Stormwater Modeling



## FLOODING IN NORFOLK

### Are you prepared?

**Projected Flooding in Norfolk**  
How are we impacted?

**Present 2-year storm**  
(50% chance of happening any year with current climate)

**2070 100-yr storm**  
(1% chance of happening any year with climate change)

**On Maps**  
More and darker blue = more extensive flooding

**Norfolk in the Charles River Watershed**

The Town of Norfolk is collaborating with watershed and local organizations to create tools and resources that help residents respond, including flood mapping and nature-based solutions!

### Who is responding? How can we prepare?

**The Charles River Flood Model (CRFM)**  
It was developed by Weston & Sampson in collaboration with the Charles River Watershed Association and 23 communities.

**Nature-Based Solutions (NBS)**  
NBS help store, filter, and absorb water where it falls & reduce flooding and pollution into the river.

**What is the CRFM?**  
The CRFM is a decision-making tool for towns and cities that models flooding impacts from current and future storm events caused by climate change.

Scan Here to access the CRFM  
[www.crrwa.org/watershed-model.html](http://www.crrwa.org/watershed-model.html)

Scan Here to help your community respond to flooding!  
[bit.ly/crrwa\\_survey](https://bit.ly/crrwa_survey)

Weston & Sampson | Charles River Watershed Association | CREW

