

Municipal Vulnerability Preparedness Program Action Grant Case Study

Municipality: City of Melrose and 17 Upper Mystic River Watershed Cities and Towns

Project Title: Working Across Boundaries to Minimize Stormwater Flood Damage in the Upper Mystic Watershed

Award Year (FY): FY22

Grant Award: \$108,655

Match: \$ 37,500

Match Source: Cash match from Barr Foundation funding of Mystic River Watershed Association and in-kind hours by municipal officials

One or Two Year Project: Two-year

Municipal Department Leading Project: City of Melrose Engineering

Project Website URL: <https://resilient.mysticriver.org/stormwater-flood-resilience>

Community Overview:

- This project serves the seventeen communities located upstream of the Amelia Earhart Dam in the Upper Mystic River Watershed: Arlington, Belmont, Burlington, Cambridge, Chelsea, Everett, Lexington, Malden, Medford, Melrose, Reading, Somerville, Stoneham, Wakefield, Watertown, Winchester, and Woburn which range in population from just under 23,000 to over 118,000 (Census 2020).
- Demographics within Upper Mystic vary widely and include many environmental justice and climate-vulnerable populations including minority neighborhoods, English language isolated households and neighborhoods, and low-income households; aging populations, young children, populations exposed to environmental contaminants, and food-insecure populations.
- The communities vary from dense metropolitan core communities with areas of intensive industrial land use to low-density suburban towns with large quantities of open space.

Project Description and Goals:

- Where was the project located?
- What climate change impacts did the project address?
- What were the specific goals and tasks of the project as stated in your application?
- Did your project meet the goals set forth in your application in terms of:
 - Employing nature-based solutions
 - Improving equitable outcomes for and fostering strong partnerships with EJ and other Climate Vulnerable Populations
 - Providing regional benefits
 - Implementing the public involvement and community engagement plan set forth in your application
 - Finishing the project on time

This project is the third phase of a larger effort to prevent stormwater flood damages across the Upper Mystic watershed.

This phase succeeded in its goal of documenting where flood damage occurs and create measures of its social, economic, and infrastructure costs, especially to low-income residents of color, through a desktop exposure analysis and many engagement sessions with stakeholders throughout the region. Lastly, the project succeeded in coordinating across fractured municipal governments throughout the region to produce a toolbox of policy strategies geared toward cost-effective, multiple-benefit solutions for the most vulnerable areas in their communities.

Results and Deliverables:

- Describe, and quantify (where possible) project results (e.g. square footage of habitat restored or created, increase in tree canopy coverage, etc.). Report out on the metrics outlined in your application.
- Provide a brief summary of project deliverables with web links, if available.

The project achieved these goals by providing a web viewer displaying simulated 2070 flood extent throughout the watershed with a technical memo on using the web viewer, identifying existing facilities exposed to future flooding, analyzing cascading social impacts of future flooding in partnership with municipal and community organizations based throughout the watershed, engaging with municipal staff to develop land use policy recommendations suitable for the context of the many diverse cities and towns throughout the watershed. The project team partnered with Everett Community Growers and the City of Everett to build residents' capacity to use zoning and municipal code as tools for promoting climate resilience while preventing displacement. Staff from each participating municipality were engaged throughout the process of developing the land use strategies toolkit and expressed interest in furthering land use policies which advance climate and particularly stormwater resilience within their community and downstream.

Products include (1) a stormwater resilience land use strategies memo and a matrix identifying current land use resilience policy in each Upper Mystic city and town; (2) improvements to the Upper Mystic web flood viewer to improve its accessibility and usability by diverse stakeholders in the watershed; and (3) a memo documenting specific follow-on opportunities regulatory/policy/land use (non-structural strategies) for individual municipalities.

Lessons Learned:

- What lessons were learned as a result of the project? Focus on both the technical matter of the project and process-oriented lessons learned.
 - In many Upper Mystic cities and towns, there is untapped potential to further climate resilience land use strategies through collaboration among different municipal departments

- Paid, ongoing engagement through workshops or focus groups which typically build on each other is one highly successful model to engage with residents, especially priority populations
- There is broad demand for thoughtfully presented data products on future precipitation-driven flooding throughout the watershed, though presenting these data products in a broadly accessible and interpretable way is a challenge
- Many follow-on opportunities were identified for individual municipalities (see *'Supplemental Item B - Recommendations for Individual Municipalities'* technical memorandum). Of these, some of the more common recommendations to improve local flood resiliency include:
 - updating the source and standard for precipitation volumes specified in local stormwater management ordinances and bylaws;
 - adopting more robust stormwater storage or green infrastructure/L.I.D. performance standards for high-intensity, short-duration storms (e.g., 2-year, 2-hour or similar) which are becoming more intense and frequent, are not yet factored into design standards from the State and for which fewer local communities have developed localized guidance;
 - revisiting the parcel/project size applicability threshold for enforcing stormwater regulations in the context of MBTA Communities (3A) plans and other future zoning updates (i.e., capturing more development/redevelopment projects that affect watershed imperviousness and stormwater detention and peak rate controls);
 - enacting local wetland protections that are stronger than the State's Wetlands Protection Act (WPA) Chapter 40 base standards, such as additional provisions for Lands Subject to Flooding (LSF) and Isolated Lands Subject to Flooding can protect Isolated Wetlands and intermittent streams located upgradient from Bordering Vegetated Wetlands (BVW) that are not included in base WPA regulations;
 - consideration for delineation of localized floodplains (beyond FEMA SFHAs) and/or adopting Inland Flood Resilience overlays.
- **What is the best way for other communities to learn from your project/process?**
 - It may be helpful for other communities implementing regional projects to use similar engagement models to those employed in this project, especially those which incorporate the project's lessons learned
 - This effort builds upon a growing literature and case studies of resilient land use and policy best practices, such as those developed by MAPC's Climate Resilient Land Use Strategies (2022) and the Nashua River Communities' Resilient Lands Management Project (2022)
 - In particular, a key theme in these types of projects is the need to diversify beyond DPW, engineering and planning departments as non-structural flood resiliency measures will require significant collaboration and co-production with other entities (health departments, inspectional services, housing, conservation, EMS and services supporting vulnerable residents – such as councils on aging,

food accessibility services, and other resources supporting multifamily housing and renters).

Partners and Other Support:

- Core project team, including Jay Coy (Melrose), Cat Pedemonti (MyRWA), Emily Sullivan (City of Somerville), Andréanne Chu Breton-Carbonneau; Kyle Johnson, Caitlin Spence, Chris Balerna [Kleinfelder]
- Seventeen cities and towns in the Upper Mystic watershed participating in the Resilient Mystic Collaborative (RMC)
- Mystic River Watershed Association (MyRWA),
- Upper Mystic Stormwater Working Group
- Massachusetts Department of Conservation and Recreation
- Everett Community Growers and City of Everett

Project Photos:

- In your electronic submission of this report, please attach (as .jpg or .png) a few high-resolution (at least 300 pixels per inch) representative photos of the project. Photos should not show persons who can be easily identified, and avoid inclusion of any copyrighted, trademarked, or branded logos in the images. MVP may use these images on its website or other promotional purposes, so please also let us know if there is someone who should receive credit for taking the photo.
 - Image 1: Credit MyRWA, Kleinfelder, Stantec, and the Upper Mystic Stormwater Working Group
 - Image 2: Credit MyRWA, Kleinfelder, and Everett Community Growers' *Heat, Health, and Housing* working group