Municipal Vulnerability Preparedness Program Action Grant Case Study

Municipality: City of Framingham, MA
Project Title: Walnut Street Neighborhood Flood Mitigation - Design & Permitting
Award Year (FY): 22
Grant Award: $ 269,030
Match: $ 76,670
Match Source: Cash/In-kind
One or Two Year Project: One year
Municipal Department Leading Project: DPW
Project Website URL: https://www.framinghamma.gov/3308/Walnut-Street-Neighborhood-Flood-Mitigat

Community Overview:

What is the population size of your community and where is it located?

The current population estimate for Framingham is about 72,000. The City of Framingham is in the MetroWest region of the Greater Boston metropolitan area, bordering Sudbury and Wayland to the north, Natick to the east, Sherborn and Ashland to the south, and Southborough and Marlborough to the west.

Do you have any Environmental Justice or other Climate Vulnerable communities? (Think about both those who live and work in your town.)

There are multiple Environmental Justice (EJ) communities and neighborhoods in the City, including the Walnut Street neighborhood, where this project is focused. As the EJ designation encompasses both social and economic factors, it speaks to a community's climate vulnerability. Racist systems and institutions have concentrated climate risks in communities of color, and both linguistic isolation and income affect individuals' ability to avoid and/or adapt to climate impacts.[1]

The project area spans two EJ populations. Tthe area on the west meets the EJ minority criteria, meaning that people of color comprise at least 25 percent of the population. The area to the east meets both minority and income criteria. In addition to distinct EJ communities, over 30% of Framingham's population is considered Climate Vulnerable by the American Public Health Association (APHA) due to age. Children and older adults (adults 65 and older) of all races and income levels are considered particularly vulnerable to climate change impacts such as extreme heat, air pollution, flooding, and water contamination.

[1] Metro West Climate Equity Project Climate Equity Memorandum, prepared by the Metropolitan Area Planning Council, January 2022, funded by MVP grant.

Other unique traits of your municipality like who the top employers are, geography, history, etc.

Framingham was incorporated as a town in 1700, and changed to a city form of government on January 1, 2018. City limits encompass 26.4 square miles, of which 1.3 square miles are water. Different industries have played significant roles in the City's economy—from grist mills in the 1700s and larger manufacturing companies in the 1800s. Framingham is home to Framingham State University, which was founded in 1839. The Bose Corporation, Staples, and TJX currently have their corporate headquarters in Framingham and are among the City's largest employers. Framingham today is known for its population and neighborhood diversity, good schools, and numerous recreational opportunities.

Project Description and Goals:

Where was the project located?

The project is centrally located in Framingham in the "Walnut Street neighborhood". Due to the presence of the Sudbury River and large wetland areas, much of the neighborhood is located within the 100-year and 500-year flood zones. The City's Multiple Hazard Mitigation Plan (2017) identified three repetitive flood loss properties and one severe repetitive loss property are located on Walnut Street. Several important public facilities are located within the project area including MEMA headquarters, State Police Barracks, Massachusetts National Guard, Middlesex County Courthouse, MassBay Community College, Fuller Middle School, McCarthy Elementary School, the Framingham public schools administration offices, the City's Bowditch Field Athletic & Cultural Complex, the Callahan Senior Center, the City's Parks, Recreation, & Cultural Affairs headquarters, and sewer pump stations

What climate change impacts did the project address?

This project addresses flooding concerns resulting from changing weather and precipitation patterns. The proposed project completed designs for two of the recommended alternatives to reduce flooding from the Walnut Street Area Flood Mitigation Study funded through the FY20/21 MVP Action Grant. The City will need to be able to accommodate the anticipated increase in extreme storms and yearly precipitation, which will only exacerbate flooding impacts. Therefore, this designs incorporated projected climate adaptation models for year 2070.

What were the specific goals and tasks of the project as stated in your application?

The specific goals for the Walnut Street Neighborhood Flood Mitigation - Design & Permitting project were as follows:

- Design wetland and stream restorations, including the removal of an earthen berm (also known as the "School Path") in the wetlands complex between Walnut Street and Stony Brook Road which impedes flow, creates sediment buildup, and exasperates flooding.
- Design an elevated boardwalk to replace the berm to provide ADA accessible, safe, and

walkable access through an environmental justice neighborhood to connect community amenities.
- Design stream channel and streambank restorations to reduce flooding and enhance conveyance capacity in Sucker Brook and an unnamed tributary in the Walnut Street/Sucker Brook Drainage Area.
- Draft permits for the above designs.
- Conduct robust public engagement including climate leadership training for teens, youth programs, and targeted outreach to various segments of the community.

The specific tasks for the Walnut Street Neighborhood Flood Mitigation Design & Permitting project were as follows:

- Task 1. Existing Conditions Plan
- Task 2. Preliminary Design
- Task 3. Permitting
- Task 4. Final Design
- Task 5. Public Engagement

Did your project meet the goals set forth in your application?

The design and permitting project met the goals of the application. Designs incorporated nature-based solutions and were completed for stream and wetlands restoration and replacement of the "school path" berm with an elevated boardwalk. Public engagement reached numerous populations within Framingham and their feedback was incorporated in the design.

Results and Deliverables:

The project results are described and quantified below.

Objective	**Metrics**
Improved walkability	Walking trips to school – Design includes improving approximately 360 ft of the "school path" with an elevated boardwalk
Restore wetlands and stream	Acres/linear feet – Design includes restoring approximately 4,500 SF of degraded wetlands, restoring 13,600 CF of flood storage volume; and restoring approximately 1,300 LF of stream.
Improved water quality	Total Suspended Solids and Nutrient measurements – Design includes a proposed stormwater BMP for a 8.3 acre drainage area
Flood mitigation	Reduction of repetitive loss sites & property damage
Increase awareness about climate change	80 Framingham High School Students participated in the two field trips with 4 faculty advisors

	Over 300 people participated in Framingham Earth Day festival at which the FHS Environmental Awareness Club had a booth and spoke about climate change Approximately 30 children participated in the Hoops and Homework program with 3 staff Approximately 20 older adults participated in the program at Callahan Senior Center Approximately 60 residents participated in the four public meetings where we presented on the project

The following deliverables were developed and submitted:

- Task 1. Existing Conditions Plan
    - 1.1 - Wetland Delineation Report Walnut St Framingham
    - 1.2 - Existing Conditions Survey (Oaks St)
    - 1.2 - Existing Conditions Survey (Walnut St)
    - 1.3 - Preliminary Geotechnical Report_Walnut St Boardwalk
- Task 2. Preliminary Design
    - 2.1 Preliminary Design Plans (60% Design Plan Set) "Walnut Street Area Flood Mitigation - Draft PDM.pdf"
    - 2.1 Renderings of 60% design
    - 2.2 Opinion of Cost/Technical Memo appendix in "Walnut Street Area Flood Mitigation
- Task 3. Permitting
    - 3.1 - Walnut Street - Wetlands Restoration & Permitting - Agenda for 2.1.22 Meeting
    - 3.1 – Draft Permit - Notice of Intent
    - 3.2 - Draft Permit MEPA Environmental Notification Form
    - 3.3 - Draft Permit Army Corps of Engineers Pre-Construction Notification
    - 3.4 - Draft Permit 401 Water Quality Certification & Chapter 91 Combined
    - 3.5 - Draft Permit Massachusetts Historical Commission Project Notification Form
- Task 4. Final Design
    - 4.1 Walnut Street Flood Mitigation - Draft Design Memorandum - 90% Submittal
    - 4.2 Walnut Street Flood Mitigation - 100% Design Drawings (attached separately and in the Design Memo)
    - 4.2 Walnut Street Flood Mitigation - Technical Specifications (attached separately and in the Design Memo)
    - 4.2 Walnut Street Flood Mitigation - Final Design Memorandum
        - Attachment A – 100% Design Drawings
        - Attachment B – Technical Specifications
        - Attachment C – Opinion of Probable Construction Cost
        - Attachment D – Geotechnical Engineering Report
        - Attachment E – Wetland Delineation Report

        - Attachment F – Vernal Pool Assessment Report
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- Task 5. Public Engagement
    - 5.1 Framingham celebrates Earth Day with music, food, recycling (April 2022 Metrowest Daily News article)
    - 5.1 Photos from FHS field trip to Mass Audubon Drumlin Farm 4-28-2022
    - 5.1 Photos from FHS field trip May 2022
    - 5.3 Presentation for Callahan Center 4-28-2022
    - 5.3 Framingham_April2022_Callahan_Newsletter-(see page 5)
    - 5.4 Video
    - 5.5 Presentations & Agendas
        - 5.5 Framingham Sustainability Committee Meeting Agenda and Materials (22-05-11)
        - 5.5 Framingham ConCom Agenda (05-18-2022)
        - 5.5 Walnut St presentation to ConCom 5-18-2022
        - 5.5 Disability Commission - Public Agenda (2022-05-25)
        - 5.5 Walnut St presentation to DisCom 5-25-2022
        - 5.5 FactSheet_1_Draft for City Review
        - 5.5 FactSheet_2_Draft for City Review
        - 5.5 Draft sign for City Review

More information is available on the City website at:
https://www.framinghamma.gov/3308/Walnut-Street-Neighborhood-Flood-Mitigat.

Lessons Learned:

The City of Framingham learned the following lessons from this project:

- Youth involvement
    - Involve local youth environmental leaders in your projects. By far the most rewarding subtask of this project was working with the Framingham High School students. These future climate leaders are inspiring. They brought so many great ideas to the table and were amazing ambassadors in the community. More people probably learned about our project at the FHS booth at the Framingham Earth Day Festival than in all our other outreach efforts combined. This investment and benefit is not as easy to quantify as other more technical aspects of this project (as compared to acres of wetlands restoration), but I think it will be one of the most beneficial aspects of the project. It is clear that if we want these projects to be successful, engaging youth now so that they are inspired to take over these projects in the (near) future will be critical.
- Schedule & procurement
    - By far the most challenging part of this project was the 1-year schedule, especially due to contracting and procurement constraints. Contracting with the state took approximately 2 months and municipal procurement for consultants

and vendors took another 2-4 months. We lost about 4-6 months of an already aggressive schedule to administrative tasks. We recommend either awarding contracts earlier or extending the schedules to 2-year projects.

- Go to where the people are
    - We continue to see increased participation by going to meetings, events, and organizations where our residents already congregate. For this project, instead of having stand-alone public meetings, we asked to be added to agendas for public meetings already planned by various City commissions (Sustainability, Conservation, Disability, & Parks). Not only did this increase attendance, it also increased the variety of perspectives heard. Another successful outreach effort was providing programming at the Senior Center. Next we hope to partner with the public library and other local organizations.
- Engage the public early in the design process to incorporate their feedback and develop partnerships
    - Too often the public is not engaged until the project has been fully designed at which point it's difficult to make changes. We engaged the public at the preliminary design and got great feedback about what they want included in climate resiliency & recreation projects. For example, we got great feedback about how to increase accessibility and ways to improve the design to meet multi-generational needs (e.g. benches that accommodate wheelchairs & stroller parking).
    - The biggest challenge of engaging the public early is keeping public engagement momentum. We often hear "You asked for our opinion, but then you never did anything with it." Part of the challenge is the big lag between beginning design and completing construction. It is hard to keep the public engaged when we cannot commit to a construction date since we do not have reliable, predictable funding for climate resiliency projects yet. We continue to try to find the best way to keep the public involved throughout the project from conception to construction.
- Impacts of COVID pandemic
    - FY22 had particular challenges resulting from the COVID pandemic. We had significant uncertainty with our public engagement programs because of COVID restrictions that were not lifted until around April 2022. We were unable to do as much with the youth programs as we had hoped because we had to wait until the restrictions were lifted which gave us a very short window to plan & execute programming. For example, we began in late April (once we got the ok from the school for off-site field trips) to try to plan a field trip in early June. Most of the locations had limited or no availability, there was still a bus shortage which impacted the potential schedule, and procurement was challenging.
- Impacts of labor shortages
    - The unprecedented labor shortages in FY22 and personnel impacts from COVID affected our schedule and ability to meet in-kind labor match. Many members of our team (both consultants and City staff) were out for COVID-related sick time during FY22 which delayed some of our deliverable deadlines. The labor

shortage made it difficult for the consultant to meet the proposed scope by the milestones and for the City staff to meet in-kind labor match requirements. We were able to adapt fairly well, but this would not be sustainable for FY23 and our future schedules will build in more time to account for these challenges. The City will also not be able to dedicate staff time and rely on in-kind labor as much as we have in the past to support future grant projects until the labor shortage is over.

Partners and Other Support:

Framingham Public Schools was an amazing partner for this project. Funding from this grant allowed the Framingham High School Environmental Awareness Club to participate in environmental leadership training through field trips and programming. Then the students took what they learned and became ambassadors to the community (teaching others at the Framingham Earth Day Festival) and advocated to the school administration and fellow students. The club's faculty advisors, Rebecca Maynard and Emily Rathmell, were absolutely amazing. The success of this program was due to their commitment of time and effort and because they cared so much about the students. A few students said this program and their teachers' mentorship has inspired them to pursue environmental studies in college.

Hoops and Homework, an after-school program serving youth ages 5-14 in Environmental Justice communities in Southeast Framingham, was another great partner. Funding from this grant was used to hire Mass Audubon to provide education programming about climate change to the Hoops and Homework students. The students loved getting outside and interacting with nature. The perspective and feedback from youth and family in our most urbanized areas was very helpful in understanding how our residents are being affected by climate change. This often unheard perspective was incorporated into the design and engineering process for the project.

Another previous unheard perspective was from older adults. The DPW partnered with the Callahan Senior Center to offer programming about climate change. In return, the seniors provided valuable feedback on the design and what they want from climate resilient City projects. The program was so well-received, the DPW hopes to partner with the Callahan Senior Center for more programming and outreach.

This project was a collaborative effort amongst the City's Department of Public Works, Conservation Commission, Parks and Recreation Department, School Department, and Sustainability Coordinator. This inter-departmental team is key for the future success of this project and other climate resilient efforts.

The City worked with the engineering consulting firm, Weston & Sampson, to produce the deliverables discussed above.

Project Photos: Project photos have been uploaded to the project sharepoint.