Municipal Vulnerability Preparedness Program Action Grant Case Study

Municipality: Town of Millbury
Project Title: Armory Village Green Infrastructure Project
Award Year (FY): FY 19
Grant Award: $1,000,000
Match: $782,861.73
Match Source: Town (cash and in-kind)
One or Two Year Project: 2 years
Municipal Department Leading Project: Department of Planning & Development
Project Website URL: https://www.millbury-ma.org/planning-development/pages/armory-village-revitalization-project

Community Overview:

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

  Millbury is a community of 13,732 residents (US Census 2015-2019 ACS Estimate) located within central Massachusetts.

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

  Millbury Center is an Environmental Justice Income Area that is home to 1,174 people or 8.4% of Millbury's total population (US Census 2015-2019 ACS Estimate). The Armory Village Green Infrastructure Project fell entirely within the boundaries of the Environmental Justice Income Area.

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

  Encompassing a geographic area of 15.84 square miles, Millbury is bordered by Worcester to the north, Grafton to the east, Oxford and Auburn to the west, and Sutton to the south. The community has direct access to the regional and state highways of Route 20, Route 146 and Interstate 90 making it attractive for residential, commercial and industrial development. Millbury is home to the Shoppes of Blackstone Valley, the largest open-air shopping center in Central Massachusetts. Millbury is also attractive as a bedroom community for those working in Worcester, Boston and along the industrial corridor of Route 495.

  The Blackstone River bisects Millbury from north to south. Flowing 46 miles from Worcester, Massachusetts to Providence, Rhode Island, the Blackstone River and its tributary streams were early defining influences on Millbury's development as a prominent mill community. The success of these enterprises is the reason Millbury is

included within the Blackstone River Valley National Heritage Corridor, which is the birthplace of the American Industrial Revolution. Millbury has a growing opportunity to take advantage of the river and its industrial past to promote the community and attract new economic opportunities. The sensitive conversion of historic mill structures, including Cordis Mills and Felters Mill, into a mixture of uses celebrates Millbury's heyday as an industrial village while enabling new kinds of economic activity.

Project Description and Goals:

- Where was the project located?

  The "Armory Village Green Infrastructure Project" is located within Millbury Center, the commercial and civic heart of Millbury. Phase 1 focuses on the intersection of Main/South Main/Elm Streets, the Upper and Lower Commons, and the portion of South Main Street located immediately upslope of the Blackstone River. It also includes small portions of Main Street (from the intersection north to just beyond its intersection with Church Street) and Elm Street (from the intersection west to the intersection with Harris Place).

- What climate change impacts did the project address?

  Green infrastructure features were installed to address heat island impacts and downstream flooding of the Blackstone River. The project also features new ADA-compliant sidewalks and pedestrian signals, pedestrian plazas, streetscape furniture, and sharrows that make Millbury Center easier to navigate via foot and bicycle.

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

  The "Armory Village Green Infrastructure Project" strived to (1) reduce sediment, pathogens, oil and grease, metals and nutrient loads as well as the quantity/velocity of stormwater flows to the Blackstone River through the use of green infrastructure features; (2) improve local air quality, provide shade and increase evapotranspiration; (3) educate municipal officials and the public on the types and benefits of Green Infrastructure features; and (4) demonstrate the use of infiltration-based green infrastructure within Millbury's commercial and civic core as a way of promoting stakeholder support for its use in other areas of Millbury Center and the broader Blackstone River Watershed.

  The project consisted of the following specific tasks as described below:

  Task #1: Permitting and Bidding - Construction plans and specifications were publicly bid in accordance with Massachusetts Procurement Law. Plans were stamped by a professional engineer and submitted for review and comment to the MassDEP project officer. A Post-construction Stormwater Management Permit was secured from the

Planning Board in accordance with Millbury Municipal Code, Chapter 13.15 and a Negative Determination of Applicability was secured from the Conservation Commission for work within 200' of the Blackstone River (sidewalk reconstruction).

Task #2: Construction – The Town entered into contracts with two construction companies to complete the work: JH Lynch & Sons, Inc. of Millbury, MA and the Nunes Companies, Inc. of Ludlow, MA. Work under the contract began in April 2020 and was completed by June 30, 2021. Weston & Sampson Engineers assisted the Town of Millbury with the procurement process and construction phase services.

Task #3: Outreach and Education - The Millbury Director of Planning & Development launched a public outreach and education campaign with the assistance of the Assistant Planner, Acting DPW Director and Weston & Sampson Engineers.

Task 4: Pre- and Post-Construction Dry and Wet Weather Outfall Screening and Sampling - Weston & Sampson Engineers performed pre- and post-construction dry and wet weather screening and sampling at outfalls that discharge to the Blackstone River that are tributary to the impacted drainage area as a way of gauging the effectiveness of the green infrastructure features to infiltrate and cleanse stormwater flows.

Task #5: Inspection and Maintenance Procedures for Best Management Practices – Weston & Sampson Engineers developed procedures and an Operation & Management Plan that supported the long-term operation and maintenance of open space areas, as well as drainage infrastructure and BMPs/green infrastructure installed as part of the project.

Task #6: GPS Mapping of Drainage Infrastructure Post-Construction including BMPs – Weston & Sampson Engineers prepared an updated map of the municipal drainage system and GIS stormwater data layer to include the stormwater infrastructure installed as part of this project.

Task #7: Project Administration and Reporting – The Director of Planning & Development performed all project administration tasks including selection of contractors, preparation of and awarding of contracts, collection and payment of invoices, tracking expenditures, coordination between contractors, engineers, utility companies, and municipal staff, preparation and submission of monthly progress updates, preparation and submission of a final project report and a brief project summary communicating lessons learned to MA Executive Office of Energy & Environmental Affairs in support of 319 grant reporting requirements. She was assisted in these efforts by Weston & Sampson Engineers, the Assistant Planner and Planning Clerk.

- Did your project meet the goals set forth in your application in terms of:
    - Employing nature-based solutions- YES

- Improving equitable outcomes for and fostering strong partnerships with EJ and other Climate Vulnerable Populations- YES
- Providing regional benefits- YES
- Implementing the public involvement and community engagement plan set forth in your application- YES, although modifications were made to our community engagement plan during the construction phase to take into account COVID-19 shutdowns and the Governor's Emergency Order limiting public assembly. Instead of in-person community meetings, outreach consisted of press releases, letters, emails, telephone calls, community outreach meetings held via ZOOM video conferencing, and one-on-one, door-to-door discussions with businesses, property owners and other stakeholders.
- Finishing the project on time- NO, the project was not completed by the original grant deadline of June 30, 2020. Due to a variety of unforeseen circumstances that caused delays, the Town requested and received a one-year extension. The contract extension provided a new completion date of June 30, 2021, which was met. The first major delay was owing to an unsuccessful first bid process in fall 2019. Only one bid was received that was approximately $1.9 million over budget. This prompted the Town of Millbury to work with Weston & Sampson Engineers on a variety of design modifications aimed at reducing costs. One strategy was to issue two Invitations for Bid (IFB's)- one to attract a MassDOT prequalified road contractor to satisfy the contract requirements of MassDOT's Complete Streets Construction Grant program and a second to attract a landscaping contractor that did not meet that criteria. The redesigned project was rebid in January 2020 and the Town ultimately signed contracts with J.H. Lynch & Sons, Inc. and Nunes Companies, Inc. in March 2020. Unfortunately, the COVID-19 shutdowns further delayed the project as certain materials could not be easily attained including traffic signalization equipment, streetlights and various other parts and components. Moreover, planned replacement of water main and services by Aquarion Water Company and gas main and services by Eversource were delayed several months, which interfered with the timely completion of work by JH Lynch & Sons and Nunes Companies.

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.

  This project resulted in intersection narrowing and the installation of 5 rain gardens, 5 sets of vegetated bumpouts, one flow-through planter, one Stormtech subsurface stormwater management system, approximately 4,200 square feet of porous pavers, and 19 street trees. Approximately 4,150 linear feet of 8" and 20" sewer and drain lines were cleaned, tv-inspected and repaired/replaced as necessary. Also, water main, gate valves and boxes, water services, and hydrants were replaced within the project scope.

The project resulted in the addition of 5,180 square feet of pervious surface to this urban landscape, which increased the total amount of pervious surface within the Phase I project area by 45%.

Weston & Sampson Engineers calculated the pollutant removal numbers for the rain gardens, porous pavers, vegetated bumpouts, and tree pits using the MassDEP Stormwater Handbook/EPA BATT Tool/Simple Method. Taken annually, these features will remove the following quantity of pollutants per year (approximately):

Nitrogen: 18.89 (lb/year)

Phosphorous: 2.915 (lb/year)

Sediment: 723.21 (lb/year)

Metals: 1,466.9 (ug/l/year)

Bacteria: 25,271.21 (1,000 col/ml/year)

- Provide a brief summary of project deliverables with web links, if available.

  Project deliverables included the following:

  - Draft and final bid documents – final design drawings and specifications.
  - Negative Determination of Applicability.
  - Post-construction Stormwater Management Permit.
  - Fully constructed project.
  - "As-built" drawings of the completed BMPs.
  - Digital format photo-documentation of site, construction, and completed BMPs before, during and after construction.
  - Two public information sessions hosted by the Millbury Director of Planning & Development, Millbury DPW, Weston & Sampson Engineers, and construction contractors held via ZOOM video conferencing. Project updates at two Board of Selectmen meetings.
  - Press releases prepared by the Director of Planning & Development that were published in the Millbury-Sutton Chronicle.
  - Project webpage (https://www.millbury-ma.org/planning-development/pages/armory-village-revitalization-project) featuring the design plans and bid documents, before and after pictures of the project area, video links to the public information sessions, tips that homeowners could use to incorporate Low Impact Development techniques on their property, fact sheets about green infrastructure and bumpouts, and links to Low Impact Development and green infrastructure resources.

- Informational sign installed on Upper Common that explains how the green infrastructure features installed work together to address flooding, contamination of the Blackstone River and climate change.
- Technical memorandum summarizing the results of pre- and post-construction screening and sampling results.
- Operation & Maintenance Plan.
- Inspection forms that will facilitate catch basin cleaning and maintenance of BMPs.
- Updated map of the municipal drainage system and GIS stormwater data layer to be uploaded onto the interactive, web-based GIS mapping program available through the Town of Millbury Assessor's Department webpage.
- Monthly progress updates.
- Final project report.
- Project summary.

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.

  The project manager learned a number of lessons during the course of this project, which will come in handy for implementation of the Phase II construction project currently wrapping up design. The project manager's major challenges included initial financing coupled with cost overruns, the difficulty of coordinating multiple grants with varying construction deadlines and delays resulting from an unsuccessful first bid coupled with COVID-19 shutdowns.

  More specifically, lessons learned are:

  - A creative way to fund a downtown revitalization project and minimize long-term capital costs is to accomplish multiple, interrelated goals simultaneously. However, coordination of multiple funding sources can be very complicated and challenging. The biggest challenge was the varying grant construction deadlines, a couple of which did not take into account the lengthy procurement process and weather in New England (cold snowy winters and rainy springs). Substantial completion of the phase 1 project took 9 months between April and December 2020 (some items were delayed until spring 2021 due to weather and shipment delays owing to the COVID-19 pandemic). Two of the grants were awarded in summer/fall 2019 with a completion date of June 30, 2020. The construction deadlines were impossible to achieve because of the lengthy bid/contract process coupled with the inability to build during the winter season in Massachusetts and shutdowns related to the COVID-19 pandemic.

- The best time to attract the maximum number of bidders and most competitive pricing is January/February.
- Project oversight and public outreach consumed significantly more time than originally anticipated.
- It is important to set aside at least 15% as a project contingency for unforeseen issues and to articulate to Town leaders that unforeseen issues are typical with any construction project.
- It is important to be conservative with the public and municipal leaders as to municipal share of construction costs and competitiveness of grants. That way, grant awards will be celebrated as an accomplishment instead of expected.
- Always expect the unexpected and remain flexible and open-minded throughout construction.
- Regular and in-person updates to business owners goes a long way but it is also important to recognize that pleasing everyone is an impossible feat. By its nature, construction is an unwelcome inconvenience to business owners and their patrons.
- It is smarter to go with a uniform color of porous pavers to simplify the installation process. Quite different from the samples provided, the porous pavers that the Town purchased varied from bright orange to mottle to dark gray. Unfortunately, the landscaper installing the pavers did not vary the colors between pallets resulting in great variation in color in sections throughout the downtown that simply looked bad. Consequently, sections of porous pavers had to be removed and reinstalled at increased cost to both the contractor and the Town.
- Most of the bumpouts installed as part of this project, particularly those abutting crosswalks on Elm Street and Main Street, are as wide as parking spaces. The resulting choke points are difficult for bicyclists to navigate and motor vehicles to exit driveways/roadways immediately abutting bumpouts due to the radii of the bumpouts. This has resulted in a handful of traffic accidents and damage to vertical granite curb from mounting vehicles. Phase II of the downtown revitalization project, which is currently in design, features bumpouts that are 2' shallower with adjusted radii at driveways/roadway openings to make them easier to navigate by bicyclists, automobiles and snowplows.
- It is important to develop a financial and staffing strategy early on with regards to long-term maintenance of landscape features, which need to be mulched annually, pruned, weeded and trash and sediment removed in accordance with maintenance procedures provided by Weston & Sampson Engineers. Prior to project completion, the DPW must be adequately staffed and personnel trained.

- What is the best way for other communities to learn from your project/process?

  Other communities are welcome to visit our project webpage, tour our downtown and/or contact me directly at lconnors@townofmillbury.net.

Partners and Other Support:

- Include a list of all project partners and describe their role in supporting/assisting in the project.

  Project Visioning – In winter of 2015, the Town received technical assistance from a multi-disciplinary team consisting of Mass Audubon, the Central Massachusetts Regional Planning Commission, the Horsley Witten Group, and the Blackstone River Coalition. The Town also engaged Weston & Sampson Engineers to assist with the project. Funded by the Environmental Protection Agency through the New England Interstate Water Pollution Control Commission, the technical assistance resulted in a plan for addressing stormwater impacts and minimizing nonpoint source pollutants while simultaneously revitalizing Millbury Center through implementation of Low Impact Development and Green Infrastructure measures. This plan became the basis for the Phase I project.

  MassDOT Complete Streets Program – The Town received a $174,499 Complete Streets Construction Grant from this program to fund installation of new pedestrian signals, ADA-compliant sidewalks and ramps, granite curb and a bike rack.

  MA DEP Section 319 Non-point Source Pollution Program – The Town secured a $150,000 grant from this program to fund a portion of the design costs, as well as installation of green infrastructure features within the Lower Common and the intersection of Main/South Main/Elm Streets.

  Narragansett Bay Estuary Program – The Town received a $75,000 grant from the Narragansett Bay Estuary Program to help pay for improvements to the Lower Common, including construction of a pedestrian plaza, retaining walls, a flow-through planter, and rain gardens.

  Town of Millbury – The Town of Millbury contributed $623,000 towards construction activities and $116,350 towards design of the Phase I project. The Town also contributed in-kind services in the amount of $25,607.84.

  Sewer Commission – The Sewer Commission contributed $200,000 towards paving and the repair/replacement of sewer main and services within the project scope.

  Aquarion Water Company – Aquarion Water Company replaced all water mains and services, gates, and hydrants within the project scope at their cost.

  Millbury Center Beautification Initiative – The Initiative was heavily involved in initial visioning activities as well as shaping the design. The Initiative contributed $12,000 towards the purchase and installation of streetscape furniture (decorative LED lighting, benches and trash barrels) in Lower Common and Upper Common.

The Millbury Redevelopment Authority – The Millbury Redevelopment Authority paid for the purchase and installation of a 4-dial clock on the Lower Common (approximately $30,000) and contributed $9,000 towards the purchase and installation of decorative pavers within the surrounding pedestrian plaza.

Others local entities involved in the project design and public outreach efforts included the Department of Public Works, Board of Selectmen, Planning Board (issued the post-construction stormwater management permit), the Conservation Commission (issued the Negative Determination of Applicability), the Disabilities Commission, the Roadway Advisory Committee, and the Complete Streets Committee.

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.

  Photos are attached.