

Municipal Vulnerability Preparedness Program Action Grant Case Study

Municipality: Easthampton

Project Title: Green Infrastructure Planning and Resiliency Design for Cherry Street

Award Year (FY): FY21

Grant Award: \$ 175,957

Match: \$ 58,673

Match Source: In-kind staff hours; Easthampton Media resources; cash

One or Two Year Project: One-Year Project

Municipal Department Leading Project: Department of Public Works

Project Website URL: easthamptonma.gov/mvp

Community Overview:

- Easthampton is a city with a little over 16,000 residents, located in the fertile Connecticut River Valley of Western Massachusetts.
- A significant portion of Easthampton's downtown residential neighborhoods are mapped as Environmental Justice communities based on income, including the entirety of Cherry Street and much of the adjacent neighborhoods extending east and south to Mount Tom, west to Nashawannuck Pond/Downtown Easthampton, and north to Broad Brook and the Lower Mill Pond. Per the resilientma.org website, the 2010 median household income for this EJ community was \$35,024 (compared to \$62,072 for the state of Massachusetts), 12.5% of residents in this community do not have a high school diploma, and 8.86% are identified as minorities.
- Easthampton has evolved from a rural farming village at the base of Mount Tom to a flourishing mill town and now to a vibrant and diverse community with a wealth of artists, retail shops, award-winning restaurants and numerous recreational opportunities. Our old mill buildings, once bustling with manufacturing enterprises, now buzz with the excitement of creative and cultural activities. The new boardwalk surrounding Nashawannuck Pond in the center of the city serves as a gathering place for many and affords residents and guests with an array of opportunities for leisure activity. Easthampton is a model small city of the 21st century. It retains its mill town soul, while fostering innovation. Community members treasure the abundant resources, dynamic downtown, and vibrant neighborhoods. By adapting, evolving, and making tough choices, Easthampton is sustainable, inclusive, balanced, and a great place to live.

Project Description and Goals:

- The City-Wide Green Infrastructure Master Plan encompasses recommendations for the entire city, with 20 site-specific concept designs developed for locations throughout Easthampton. The project's second component focused on site-specific design and permitting for the Cherry Street neighborhood, which is a mapped Environmental Justice area located in Easthampton's densely developed center. Housing and infrastructure in this neighborhood is typically quite old, with many homes dating to the

late 1800s or early 1900s. Lots are small and there is a high degree of impervious cover. The aging stormwater drainage system culminates in a failing outfall where the headwall has completely collapsed and several sections of pipe lay in or near Brickyard Brook where they have broken away. Siltation of the brook and degradation of the surrounding ecosystem is especially evident due to the site's proximity to a frequently-used recreational trail in the Brickyard Brook Conservation Area.

- Easthampton will see as much as 8.3 inches of additional rainfall per year by the end of the century. More critically in terms of flood potential, the City could see up to four additional days annually with precipitation over one inch. As precipitation events become more intense and less predictable, Easthampton's undersized and aging stormwater infrastructure is expected to pose a greater threat of failure and flooding. Catch basins can be overwhelmed, and even where drainage pipes are of adequate size, high volume stormwater flows can result in powerful erosive forces and scouring at outfalls, with corresponding impacts to natural streams. Cherry Street is one location where these impacts are already playing out. At the same time, harmful algal blooms and public health advisories are expected to increase in frequency as climate change leads to more extreme heat conditions and drought periods and increasingly intense precipitation events increase nutrient loads in stormwater. Green infrastructure addresses these impacts by infiltrating at least the first inch of rain during larger events and providing treatment for the "first flush" —collecting sediment and nutrients that are mobilized in heavy precipitation events.
- The MVP Action Grant focused on two primary tasks:
 - Development of a City-Wide Green Infrastructure Master Plan that included both desktop screening and field assessment of potential sites City-wide where opportunities may exist to implement green infrastructure or low impact development projects. Concepts were developed for 20 sites and include graphic representations, calculation of the potential pollution reduction benefits, and estimates of project costs. The Master Plan also includes standard engineering details for a suite of practices that could be implemented for repeated applications in multiple locations around the City.
 - Design and permitting for the Cherry Street neighborhood that included nature-based slope and outfall restoration coupled with green infrastructure solutions within the upgradient contributing drainage area to the failing stormwater outfall.
- The project has met all of the goals set forth in the City's grant application in terms of:
 - Employing nature-based solutions
 - The designs developed for Cherry Street center around nature-based solutions. At the Cherry Street outfall, the existing drainage pipe will be replaced, while anticipated increases in peak flows due to changing climate conditions will be offset by runoff reduction measures resulting from green infrastructure practices in the contributing drainage area. The slope/embankment will be reconstructed and stabilized using vegetated soil lifts and native plantings which will stabilize the slope against erosion and provide a natural character to match the setting within

the conservation area. Additional live stakes and native plantings will be used upstream and downstream to proactively prevent future storm damages from extending erosion in these areas. These restoration elements at the outfall will be coupled with extensive green infrastructure in the contributing drainage area to address the source of the problem by decreasing and slowing runoff. In these ways, the project addresses the immediate, ongoing problems generated by current climate impacts at the failing outfall, and also implements new designs for long-term prevention of future erosion and stream degradation. Targeting improvements in the upgradient neighborhood to reduce overall stormwater runoff in the contributing drainage areas will ultimately improve water quality and help to reduce velocities during high flow events and thereby limit erosion and scour throughout the stream reach.

- Similarly, the City-Wide Green Infrastructure Master Plan highlights concepts for 20 additional projects so that green infrastructure and nature-based approaches can gradually be incorporated into the City's planned capital projects.
- Improving equitable outcomes for and fostering strong partnerships with EJ and other Climate Vulnerable Populations
 - The green infrastructure solutions and integrated green streetscape developed for Cherry Street will have multiple benefits to this EJ community:
 - Helping to limit flooding risks in the neighborhood
 - Attenuating the impacts of increasingly heavy precipitation
 - Infiltrating stormwater to enhance groundwater recharge and limit transport of sediments and nutrient pollution
 - Protecting the quality of streams and ponds in and adjacent to the EJ neighborhood
 - Improving the level of stormwater management service provided to these neighborhoods (currently, stormwater infrastructure in these neighborhoods is some of the oldest in the City)
 - Providing aesthetic and quality of life benefits in low-income neighborhoods
 - Increasing shade along Cherry Street for increased cooling during extreme heat
 - Increasing walkability and safety along the sidewalks
 - ADA accessibility for improved connectivity between the EJ neighborhood and downtown recreation, public transit, and other resources (including Brickyard Brook Conservation Area)
 - The City-Wide Green Infrastructure Master Plan also identified key projects to engage other vulnerable populations in the City to re-envision public spaces and parks to create multiple benefits for resilience to flooding and heat impacts while simultaneously offering enhanced recreation and community amenities.

- Providing regional benefits
 - Easthampton sits on top of the Barnes Aquifer, which serves the communities of Easthampton, Southampton, Holyoke, and Westfield. By identifying ways to treat stormwater pollutants before they make their way into groundwater, this project has co-benefits not only for the receiving waters in Easthampton, but also for maintaining the quality of groundwater in this valuable regional aquifer. Notably, the Broad Brook Basin of the Barnes Aquifer is designated by EPA Region 1 as a Sole Source Aquifer. The project specifically targeted impaired waterbodies and identified green infrastructure projects that could significantly lessen pollutant loads to both the Manhan River and Nashawannuck Pond, both of which ultimately flow to the Connecticut River.
- Implementing the public involvement and community engagement plan set forth in your application
 - Certain elements of the planned community engagement activities had to be modified to accommodate restrictions associated with COVID-19, but the project had several key outreach successes.
 - A planned field trip in coordination with Easthampton Public Schools was modified to a 'virtual field trip' which ended up being a great opportunity to share information more widely. The City worked with Easthampton Media to shoot a 15 minute field trip video at the Cherry Street project site which was geared toward the 5th grade audience but shared widely on YouTube and the City's webpage. The project team met with 5th grade students via Zoom to watch the video and answer questions about climate change, stormwater, green infrastructure, and the MVP project, and how the project relates to topics the students had been discussing in class. As the project moves forward to construction, the video will be an opportunity to continue sharing with the community about why the project matters. A follow-up post-construction field trip is planned for the 6th graders so that the same students will be able to see how the project actually gets constructed.
 - Additional outreach to elementary students included a backpack mailer which included at-home stormwater tracing activities and recommendations for ways to improve resilience on a residential scale.
 - A Neighborhood meeting was held via Zoom on February 22nd to review the concept design and discuss the project with residents before design and permitting progressed. Advertising was via direct mailer, and this meeting was attended by over 20 residents who were eager to learn more about the project. Feedback was very positive, with nearly universal support for the project. Residents also provided important feedback about plant types, maintenance, and locations of green infrastructure practices that was all incorporated into the permit-level design plans.
 - While most of Easthampton's typical large events were put on hold due to COVID, the project team was still able to develop engaging outreach

materials that introduce residents to the impacts of climate change, provide action steps for individuals, and present key information about the City's project and proactive steps for resilience. These materials were used at information booths hosted at the Easthampton Community Center during food bank pickups, and will hopefully be used at the Farmer's Market before the end of the project. The tri-fold boards that were developed will continue to be used as the project progresses and can be modified to incorporate information on other specific projects in the future.

- Throughout the project, the City's webpage served as a clearinghouse for information and will continue to host the City's resilience projects going forward.
- Finishing the project on time
 - All project deliverables were completed on time and on budget.

Results and Deliverables:

- The project application identified the following metrics for project success:
 - Production of implementable designs for Cherry Street, as well as receipt of necessary permits.
 - The designs developed for Cherry Street have been successfully permitted and were designed to be compatible with the needs and requests of residents for maintenance of parking, sidewalk improvements, etc. The project has the full support of the neighborhood to move forward and residents are eager to see it implemented.
 - Demonstrated quantitative reductions in pollutants expected to result from implementation of the prescribed green infrastructure practices at Cherry Street.
 - The designs developed and permitted for Cherry Street respond to predicted increases in precipitation by providing treatment and infiltration for the first inch of runoff within the neighborhood. This will effectively infiltrate runoff from most precipitation events directly into the ground for groundwater recharge. By infiltrating at least the first inch of runoff during larger events, green infrastructure practices will also provide treatment for the "first flush" —collecting sediment and nutrients that are mobilized in heavy precipitation events and treating them through bioretention planters and tree box filters rather than allowing these pollutants to be carried directly into Brickyard Brook and ultimately to the City's impaired waterbodies.
 - Identification of projects within the City-Wide Master Plan that reflect the priorities of DPW and other City stakeholders, and incorporation of a set of standard engineering details that can be utilized to encourage and facilitate incorporation of green infrastructure into all City projects.
 - The City-Wide Green Infrastructure Master Plan includes projects to specifically address priority areas for the City, including:

- Industrial Parkway and its contributing drainage areas, which is a top priority on the City’s list of stormwater needs
- Neighborhood improvements for Terrace View to provide both stormwater management/drainage improvements, shade for cooling, and better community amenities for an underserved low-income neighborhood that has been targeted by the City for investment
- Proposed green infrastructure strategies for New City and the neighborhoods draining to Nashawannuck Pond, both of which have experienced ongoing issues with erosion and nutrient pollution
- Nature-based solutions to address a problematic stormwater outfall within Edward Dwyer Conservation Area, with multiple focuses on restoration, resilience, and improved recreation/outreach opportunities
 - Elements used in the concepts presented in the Master Plan center around a core set of green infrastructure practices, for which standard engineering details and notes were developed. These include: curbed bioretention planters, treebox filters, crosswalk curb extension planters, bioretention swales with check dams, rain garden/bioretention areas, infiltration trenches, and pervious pavers, along with a suite of interchangeable inlet treatments to be matched to different applications.
- Key project deliverables include the permitted Cherry Street green infrastructure designs, completed City-Wide Green Infrastructure Master Plan, and outreach materials (most notably the virtual field trip video and information boards). Deliverables will remain available on the project website: easthamptonma.gov/mvp

Lessons Learned:

- Having a strong project team that reaches across municipal departments is key to effective implementation projects. Our project group consisted of a core of dedicated staff from DPW, Planning, and the Mayor’s Office. This makeup gave us a team that could effectively discuss and address infrastructure priorities as well as long-term planning goals and overall vision for the City. Having these perspectives represented made it easy to make decisions about which project sites to focus on, how to best approach the public engagement components of the project, and how to ensure that our project would integrate well with larger City planning and priorities.
- We had hoped to implement a Community Liaison model by hiring a resident from Easthampton’s environmental justice community to help create a bridge between municipal staff and the public. However, with many events and gatherings cancelled due to COVID, we didn’t have enough opportunities to be in the community early on in the project to effectively identify a good person for this role, and we found that advertising this position through the City’s standard job process was not successful in

reaching our intended audience. We were able to leverage other community connections among our project team and neighborhood residents to successfully engage the Cherry Street Neighborhood without the help of a Community Liaison, but as we gear up for future grants and projects, we are thinking carefully about how to establish relationships in advance that will help us identify a liaison to more fully fill this role.

- Projects that fulfill infrastructure needs while also meeting real needs in the community are an easy sell for residents. By its nature, our green infrastructure project on Cherry Street allowed us to offer residents not only improved utility service and resilience, but also a much improved streetscape with better walkability, increased tree cover, safety enhancements, and a dramatic aesthetic lift. We knew that maintaining on-street parking would be an issue, and we were able to address this in our conceptual design and head off any concerns. Then we were able to fine-tune the design with resident input for a project that everyone is excited to see move to construction.

Partners and Other Support:

- City of Easthampton Project Team
 - Diane Rossini, Project Lead, Staff Engineer
 - Jamie Webb, Assistant Planner
 - Greg Nuttelman, DPW Director
 - Jeff Bagg, City Planner
 - Dan Murphy, City Engineer
 - Nicole LaChapelle, Mayor
 - Julie Anne Levin, Easthampton Public Schools Director of Curriculum
 - Ryan Arnold, Easthampton Media
 - Tim Riley, Easthampton Media
 - Pascommuck Conservation Trust

As the project lead for the City, Diane Rossini has provided project management, grant oversight and administration, and leadership of the project team and coordination of the work done, as well as technical review of the engineering design, and a starring role in the virtual field trip video created for the 5th grade. Jamie Webb provided significant coordination and input for outreach and engagement activities. Both Jamie Webb and Jeff Bagg provided review input on project elements with regards to how they fit with larger planning initiatives in the City. Greg Nuttelman and Dan Murphy played the same role with regards to DPW priorities, providing additional information on City infrastructure and priorities, areas of ongoing impacts, and plans for related projects that might impact proposed green infrastructure ideas. The DPW department also coordinated as necessary with neighbors of the future construction site. Mayor LaChapelle played a guiding role in helping to develop the vision of the project, as well as lead the team in efforts to seek additional funding for implementation to move projects forward. Easthampton Media provided filming and video production services to

create a fun and engaging video tour of the project site as a virtual field trip activity for the 5th grade. Julie Anne Levin helped the team to develop effective curriculum ideas to engage the elementary schools in the project, connect with elements of the state curriculum, and coordinate with teachers to navigate revised activities that would work with COVID restrictions. Pascommuck Conservation Trust collaborated with the City project team to help shape the outfall restoration project within Brickyard Brook Conservation Area, which is managed by the Trust. They provided input on preferred plantings and restoration approaches, and reviewed project designs.

- Fuss & O'Neill – Engineering Consultant Team

Julianne Busa, PhD, Project Manager
Sean Arruda, PE, Engineering Design
Michael Soares, Wetland Scientist, Permitting
Jon Allard, PLA, Senior Landscape Architect

Project Photos:

- See attached images of existing/proposed conditions at Cherry Street and sample graphics from the Green Infrastructure Master Plan. Photo credit: Fuss & O'Neill.