Northampton Critical Infrastructure Flood Resiliency Project

Hockanum Pumping Station Improvements & Historic Mill River Dredging

Northampton | FY25/26 ACTION GRANT

Type 2: Design and Permitting

MVP REGION
Greater Connecticut River Valley

GRANT AWARD
$337,615.00

MATCH AMOUNT
$37,510.00

MATCH SOURCE
Cash

MUNICIPAL DEPARTMENT LEADING PROJECT
Northampton Department of Public Works

Outcomes

Briefly describe the outcomes of your project

- The improvements will safeguard populated areas along the Connecticut River from storm events, including over 2,600 buildings valued at $1.8 billion.
- Dredging will also restore acres of wetland resources in the Mill River adjacent to the pumping station.

Core principles exemplified

List the MVP core principles that your project exemplifies.

1. Increasing equitable outcomes for Environmental Justice (EJ) and other priority
2. Building community capacity for climate resilience
3. Pursuing innovative, transferable approaches

Community Overview

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

The City of Northampton has a population of approximately 29,571 according to the 2020 US Census. It is located in Hampshire County and is approximately 19 miles north of the City of Springfield.

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

Block Group 3, Census Tract 8219.03, Hampshire County, Massachusetts
  - EJ Criteria: Minority
  - EJ characteristics:
    - Minority population 25%
    - Median household income: $63,125 (75% of the MA MHHI, Northampton has a median household income of $71,866
    - Households with language isolation: 5%
  - 2020 Census: block group had a population of 1,832 in 881 households

The eventual implementations of the project will enhance community resilience by addressing critical infrastructure vulnerabilities identified through community input during the MVP planning process and an engineering needs assessment. By upgrading flood control infrastructure and implementing nature-based solutions such as sediment removal, the improvements will better protect the municipality and low-lying EJ communities from the escalating threats of climate change-induced storms and flooding.

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

The City of Northampton offers a lifestyle rich in cultural, artistic, academic, and business resources. The downtown center is one of the most vibrant in New England. The superb quality of life in Northampton contributes to a strong and diversified economic base. Northampton is unique in the number of independently owned businesses that make up its business community.

Northampton is a blend of traditional neighborhoods and a lively and sophisticated cultural community. The city has been recognized in recent years by numerous publications as a top-rated town for the arts, for families, for historic preservation and for outdoor activities. The City of Northampton is part of the Pioneer Valley and the Connecticut River Valley, and is nearby the Mount Holyoke and Mount Tom Ranges.

Located in the heart of the Five-College area and home to prestigious Smith College for women, Northampton is one of the northernmost cities in the Knowledge Corridor of the greater Hartford-Springfield area and is part of the Five College Consortium that includes Amherst College, Hampshire College, Mount Holyoke College, and the University of Massachusetts – Amherst.

Project description and goals

- **Where was the project located?**

The Hockanum Flood Control Pumping Station and the Mill River are located on the same property as the City's Wastewater Treatment Facility (WWTF) at 33 Hockanum Road. Both the pumping station and the Mill River are vital components of the City's flood control system. During periods of high Connecticut River water levels, the pumping station operates to lower the Old Mill River's water elevation, preventing

flooding in low-lying areas of Northampton, including commercial hubs and EJ populations.

- **What climate change impacts did the project address?**

The completed design for the eventual improvements will:

- Enhance flood control infrastructure, safeguarding the municipality and low-lying EJ communities from the escalating impacts of climate change-induced storms
- Improve the ecological function of the Mill River by removing sediment and restoring habitats, leading to cleaner air and water, thereby supporting residents' well-being
- Provide protection and resilience to low-lying EJ communities against storm events and Connecticut River flooding
- Preserve commercial and residential properties, safeguarding local businesses and property values, and maintaining a stable and prosperous local economy during extreme weather events
- Protect the City's WWTF, adjacent to the pumping station, from flooding
- Prevent potential inundation depths of over 23 feet and damage to over 2,600 buildings and properties valued at $1.8 billion
- Increase community awareness of how climate change affects critical utility and flood control infrastructure and its impact on vulnerable communities
- The station design was intended to take the high risk of extreme precipitation, urban flooding, riverine flooding, and extreme heat into consideration, and with regular maintenance and available funding via Northampton's stormwater utility enterprise fund, the station will be financially viable and is expected to continue its high level of service beyond its expected life of 50 years

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

The Northampton Critical Infrastructure Flood Resiliency Project aims to upgrade the Hockanum Pumping Station in accordance with up-to-date climate change data and dredge the Historic Mill River to bolster critical infrastructure resilience and safeguard low-lying EJ communities. The pump station is still utilizing original equipment that has surpassed its reliable service life. The upgrades will ensure reliability and enhance overall resiliency. The Historic Mill River provides stormwater storage upstream, and the dredging work will restore maximum capacity that previously existed.

The Northampton Critical Infrastructure Flood Resiliency Project consists of the following two elements:

- Dredging the Historic Mill River to restore flood storage capacity and remediate contaminants.
- Upgrades to the Hockanum Pumping Station to withstand current project flows and rain events using up-to-date climate change data.

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

The project has met the following project goals:

- Nature-based solutions

  The project employs nature-based-solutions via the eventual dredging of the Historic Mill River. By removing accumulated sediment and contaminants from the Mill River, the project will restore and manage the ecological system to enhance flood mitigation and improve water quality. This nature-based approach reduces flood risks but also promotes ecological resilience and habitat restoration.

- Improving equitable outcomes for and fostering strong partnerships with EJ and other Climate Vulnerable Populations

  The eventual implementation of the proposed improvements will directly benefit EJ and Climate Vulnerable communities located in the low-lying areas of the City adjacent to the project. In safeguarding these areas against flooding from extreme weather events, the project directly protects against potential loss of life, property damage, and disruption to daily life. Dredging the Mill River to remove sediment and contaminants not only improves flood mitigation but also enhances environmental quality and public health in EJ communities. By reducing exposure to harmful pollutants and restoring ecological function, the project contributes to addressing the root causes of social vulnerability and promotes community wellbeing.

- Regional Benefits

  The eventual improvements will serve as a local resiliency project example for Northampton's surrounding communities. The project will be of interest for other communities looking to increase the climate resilience of major utility and flood control infrastructure. Both West Springfield and Chicopee have very similar flood resiliency infrastructure built by USACE in the 1940s. The project will serve as an example of how to prepare critical infrastructure for the predicted increase of the frequency and intensity of natural hazards.

- Public involvement and community engagement

  Public awareness efforts include the posting of a detailed informational flyer on the DPW website that will serve to educate the public about the complex history of the site, its historic design for flood resiliency, the importance of protecting low-lying EJ communities who are most at-risk in the event of catastrophic infrastructure failure, and how the City is improving the facility to account for increased precipitation and storm events. The flyer will be available on the City of Northampton's DPW website and physically at the DPW building.

- Finishing the project on time

  All project deliverables were completed on time.

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.**

The improvements will safeguard populated areas along the Connecticut River from storm events, including over 2,600 buildings valued at $1.8 billion. Dredging will also restore acres of wetland resources in the Mill River adjacent to the pumping station.

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

Project Task	Description of Task / Scope	Deliverables
Task 1: Project Kick-off, Management, and Reporting		
Sub-task 1.1- Kick-off meeting with Town, EEA, and Consultant	Kickoff Meeting and Site Visit	Meeting notes, sign-in sheet
Sub-task 1.2 - Monthly progress reports FY25 (template provided)	Monthly Progress Reports using template	Monthly progress reports submitted by the 30th of each month of the grant period to your MVP Regional Coordinator
Sub-task 1.3 - Project Case Study (required at end of project; template provided)	City will develop case study based on MVP Template	Final Case Study Report, PowerPoint slide, project photos
Sub-task 1.4 - Monthly Progress Meetings	Monthly Progress Meetings, Develop Meeting Minutes	Meeting notes
Task 2: Community Engagement in FY25		
Sub-task 2.1 - Community Outreach	Post information about the project on the city's website and use the News Flash feature to provide residents and business owners project information	City website post

Task 3: Design Services FY25		
Sub-task 3.1 - 60% Design	Develop design drawings to 60% level, meet with City to review	60% Drawings
Sub-task 3.2 - 90% Design	Address City comments from 60% level review and progress drawings to 90% level. Develop technical specifications and project manual for review. Meet with City to review.	90% Drawings and technical specifications/project manual
Sub-task 3.3 - 100% Design	Finalize 100% drawings and specifications/project manual, address remaining City and USACE comments.	100% Drawings and technical specifications/project manual
Sub-task 3.4 - USACE Coordination	Submit to USACE for comment at the 60%, 90%, and 100% design levels. Review and address their comments.	60%, 90%, 100% review packages to USACE

Partners and Other Support

- **List all project partners and describe their role in supporting/assisting in the project.**

The entirety of the project was completed by the City of Northampton and their Consultant, Tighe & Bond, Inc.
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- City of Northampton Project Team
    - Donna LaScaleia, Director of Public Works
    - Katelyn Deppen, (previous) Engineering Superintendent
    - Kris Baker, PE, (previous) City Engineer
    - City of Northampton Project Team roles

Kris Baker and Katelyn Deppen provided project management, grant oversight and administration, and provided the consultant team with relevant reference materials and input on the designs. Donna LaScaleia provided general oversight and design input throughout the life of the project.

- Tighe & Bond, Inc. Consultant Team
    - Zachariah Chornyak, PE, Project Director
    - Matthew Kirk, PE, Project Manager
    - Matthew Stanley, PE
    - Megan Sidur, EIT
    - Armando Pardave, EIT
    - Matthew Romano, PE
    - Jacey Rondeau, EIT
    - John Frawley, PE
    - Olivia Robillard, EIT
    - Jens Meinig, CPD

Collectively, the project team has extensive experience in river dredging, flood mitigation, natural hazard resilience, and engineering and construction services. The consultant team was the main team behind the design of the improvements for the pumping station and the dredging of the Mill River.

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 engine selection for the new pumps widely varied with operating parameters. Because of this, it was difficult to fully design the HVAC, electrical, and mechanical systems at the station. It was determined the best approach was to procure the engines through the Chapter 30B process, which allowed the City more control over the design and equipment utilized within the station to ensure the resulting improvements were resilient to the predicted increase and frequency of natural hazard events such as flooding and extreme precipitation.

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

Contact Donna LaScaleia, Director of City of Northampton Public Works at dpwinfo@northamptonma.gov

Website and additional links

Ongoing project updates are accessible via the City of Northampton's Current Projects webpage of their municipal website. Subsections for the two components of the project are linked below, as well as the informational flyer developed as part of the education and outreach component of the project.

Hockanum Improvements:
https://www.northamptonma.gov/1268/Current-Projects#Hockanum2

Mill River Dredging:
https://www.northamptonma.gov/1268/Current-Projects#Dredging

Informational Flyer:
https://www.northamptonma.gov/DocumentCenter/View/31340/FLOOD-CONTROL-FLIER