Pawtucket
Central Falls

Municipal Resilience Program
Community Resilience Building Workshop
Summary of Findings
October 2020
Overview
The need for municipalities, regional planning organizations, states, and federal agencies to increase resilience and adapt to extreme weather events and a changing climate is strikingly evident amongst the communities of the state of Rhode Island. Recent events such as Tropical Storm Irene and Super Storm Sandy have reinforced this urgency and compelled leading communities like the City of Pawtucket and the City of Central Falls to proactively collaborate on planning and mitigating risks. Ultimately, this type of leadership is to be commended because it will reduce the vulnerability and reinforce the strengths of people, infrastructure, and ecosystems and serve as a model for other communities across Rhode Island, New England, and the Nation.

In February of 2020, the City of Pawtucket and the City of Central Falls jointly embarked on certification within the newly established state of Rhode Island’s Municipal Resilience Program (MRP). As an important step towards certification, Rhode Island Infrastructure Bank (RIIB) and the Nature Conservancy (TNC) provided the two Cities with a joint, community-driven process to assess current hazard and climate change impacts and to surface projects, plans, and policies for improved resilience. In October, 2020, the Pawtucket & Central Falls Core Project Team organized a Community Resilience Building Workshop lead by TNC in partnership with RIIB. The core directive of this effort was the engagement with and between community stakeholders to define strengths and vulnerabilities and the development, planning, and ultimately, implementation of priority resilience actions for the cities of Pawtucket and Central Falls.

The Pawtucket & Central Falls Community Resilience Building Workshop’s central objectives were to:

- Define top local natural and climate-related hazards of concern;
- Identify existing and future strengths and vulnerabilities;
- Identify and prioritize actions for the two Cities (individually and jointly);
- Identify opportunities to collaboratively advance actions to increase resilience alongside the other municipalities and organizations across the two Cities
The Cities of Pawtucket and Central Falls employed a unique “anywhere at any scale”, community-driven process called Community Resilience Building (CRB) (www.CommunityResilienceBuilding.org). The CRB’s tools, other relevant reports, and local maps were integrated into the workshop process to provide both decision-support and visualization around shared issues and priorities across Pawtucket and Central. The joint Pawtucket & Central Falls Natural Hazard Mitigation Plan (2018), Comprehensive Plans (Pawtucket - 2017; Central Falls - 2007), and Chapter 1 of Resilient Rhody where particularly instructive. Using the CRB process, rich with information, experience and dialogue, the participants produced the findings presented in this summary report including an overview of the top hazards, current concerns and challenges, existing strengths, and proposed actions to improve resilience to hazards and climate change today, and in the future.

The summary of findings transcribed in this report, like any that concern the evolving nature of risk assessment and associated action, are proffered for comments, corrections and updates from workshop attendees and other stakeholders alike. The leadership displayed by the cities of Pawtucket and Central Falls on community resilience building will benefit from the continuous and expanding participation of all those concerned.

**Summary of Findings**

**Top Hazards and Vulnerable Areas for the Community**

Prior to the CRB Workshop, the Core Project Team identified the top hazards for Pawtucket and Central Falls. The hazards of greatest concern are riverine flooding, Nor’easterS that bring heavy precipitation and high winds, and heatwaves. The other hazards discussed during the CRB workshop included pandemics, fires, flooding from stormwater runoff from heavy precipitation, and winter storms with associated snow and ice accumulations. These hazards have direct and increasing impacts on the residents and resources such as its neighborhoods, natural areas (rivers, wetlands, shorelines, parks), streets, sidewalks, bridges, dams, businesses, municipal facilities, social support services for disproportionately disadvantaged populations, and other critical infrastructure and community assets.
Top Hazards and Areas of Concern for the Community

Top Hazards
- Riverine and Urban Flooding
- Nor’easters/High Precipitation Storms (Wind Damage & Flooding)
- Extreme and Extended Temperatures (Heatwaves, Cold Snaps, Drought)

Areas of Concern in Pawtucket and Central Falls* - Several categories and locations were identified as being particularly vulnerable by workshop participants including:

Infrastructure: Repetitive Loss Properties (4 - Pawtucket; 5 - Central Falls), Pawtucket DPW Fuel Depots, Privately-owned Dams (Cumberland), High-hazard Dams (Attleboro), Galego Court (Pawtucket public housing units), Tower - Pawtucket City Hall, Gas Pipes and Electrical Wiring (on low lying bridges over three main rivers in Pawtucket), Water Supply Lines, Masonry Apartments, Mill Buildings, National Grid Electric’s Substation, Backflow Preventors (private properties), McCabe and Varieur Schools (emergency power sources for mass care facilities), Businesses, Evacuation Routes, Lightening Rods, Power Lines (trees), Properties along Blackstone River, Woonsocket Falls Dam (Significant Hazard Dam), Hebronville Pond Dam (High Hazard Dam), Pawtucket City Hall, Slater Mill, Grove Street High-rise, Riverfront Lofts, Roosevelt Ave Fire Station, Pawtucket Police Station, Bridge Mill Power Plant, Veterans Park Amphitheater, Cemeteries.

Ecosystems/Parks: Moshassuck River, Ten Mile River, Blackstone River, Water Supply Reservoirs and Supporting Open Space, Urban Tree Canopy, Parks along Blackstone River, Seekonk River, Hodgson Rotary Park, Town Landing, Festival Pier, Pierce Park, Valley Falls Pond, Scott Pond, Blackstone River Fish Passage, Blackstone Falls.

Roads, Bridges, and Road Network: Pawtucket - Armistice Boulevard (vicinity of DPW Center), Mineral Spring Avenue, Pinecrest Drive, Grand Avenue/London Avenue intersection, Grenville Street/Grotto Avenue (vicinity of Moshassuck River). Central Falls - River Street, Crown Street, Courtland Avenue, New Haven Avenue, Higginson Avenue. Low-lying Bridges/Culverts over/near Moshassuck or Blackstone Rivers (Interstate 95, Mineral Spring Avenue culvert, Roosevelt Avenue Bridge, Exchange Street Bridge).

Neighborhoods/Areas: Woodlawn, Samoset, Pine Crest, Darlington, Quality Hill, Fairlawn, Oak Hill, Conant Thread District.

*Information from workshop participants augmented via the Cities of Pawtucket and Central Falls Multi-jurisdictional NHMP (2018). See Appendix A for full list of mitigation actions from the Cities of Pawtucket and Central Falls NHMP (i.e. Section 4.0: Section 4.2 (Table 4.1); Section 4.5 (Table 4.2)).

**Current Concerns and Challenges Presented by Hazards**

The cities of Pawtucket and Central Falls has several concerns and faces multiple challenges related to the impacts of natural hazards and climate change. In recent years, Pawtucket and Central Falls have experienced a series of highly disruptive and damaging weather events including March 2010 floods, Tropical Storm Irene (August 2011), Super Storm Sandy (October 2012), winter storm Nemo (February 2013), winter storm Juno (“Snowmageddon”) (January 2015), and other less impactful, but more frequent events. Impacts from Irene included heavy, rain-induced, inland flooding and wind damage. Sandy caused extensive coastal erosion and power outages across portions of two Cities. The winter storms Nemo (19”-20”) and Juno (24”) dropped snow on the Cities knocking out power and isolating residents and neighborhoods due to extended road closures. The magnitude and intensity of these events and others across Rhode Island has increased awareness of natural hazards and climate change, while motivating communities like Pawtucket and Central Falls to proactively and comprehensively improve resilience.

This series of extreme weather events highlights that the impacts from hazards are diverse: ranging from riverine flooding of critical infrastructure, bridges, roads, and low-lying areas; urban flooding from stormwater runoff during intense storms and heavy precipitation events; property damage from trees, wind, snow, and ice. Longer periods of elevated heat, particularly in July and August, have raised concerns about vulnerable segments of the population including the elderly and disabled. The combination of these issues presents a challenge to preparedness and mitigation priorities and requires comprehensive yet tailored action for particular locations and/or areas.

The workshop participants were generally in agreement that Pawtucket and Central Falls are experiencing more intense and frequent storm events and heat waves. Additionally, there was a general concern about the increasing challenges of being prepared for the worst case scenarios (i.e. major disasters, storms, major hurricanes (Cat-3 or above)) throughout the year; but particularly in the fall/winter months due to more intense snow and ice storms coupled with colder weather.
Specific Categories of Concerns and Challenges
As in any community, Pawtucket and Central Falls are not uniformly vulnerable to hazards and climate change, and certain locations, assets, and populations have and will be affected to a greater degree than others. Workshop participants identified the following items as their community’s key areas of concern and challenges across three broad categories - Infrastructure, Societal, and Environmental.

Infrastructure Concerns and Challenges

Roads, Bridges, and Road Networks:
- Low-lying roads and buildings (e.g. mills) close to riverine systems subjected to erosion and routine flooding from rivers and stormwater runoff.
- Lack of viable, convenient public transportation and unreliability of bus routes.
- Limited bike lanes, walking paths, and low tree coverage on existing sidewalks negatively impact pedestrians’ safety and mobility.
- Small, compact roads create parking and plowing difficulties.

Stormwater Management:
- High levels of impervious surfaces (>60%) create stormwater runoff issues.
- Lack of green space for runoff in neighborhoods.
- Aged sewer and stormwater infrastructure are prone to being at-capacity and cause flooding.
- Combined sewer/stormwater systems exacerbate capacity of piped systems and overflows to riverine systems.
- Overflows into rivers that flood beyond their banks will affect residents’ hoes, businesses, and vulnerable populations.

Emergency Management and Preparedness:
- Pawtucket City Hall, Fire Station, and Police Station are within a flood plain; emergency agencies are likely to be inundated during a weather event, hindering the communities’ response and recovery.
- Lack of community center and sufficient spaces to provide shelter during emergencies.

Housing:
- Direct impacts to structures from storms.
- Lack of education regarding the potential for current & future impacts to structures including privately owned buildings and houses.
- Absentee and/or negligent landlords and property owners.
- Lack of affordable housing, including affordable senior housing with mobility access.
- Poverty contributes to a lack of investment in properties.
**Infrastructure Concerns and Challenges (cont’d)**

**Power:**
- Occasional power outages to residential homes and businesses, particularly during the winter months.
- Low-income households vulnerability due to power outages.
- The outdated electrical grid frequently causes power outages during storms.
- Inadequate generator capacity in both Cities.

**Societal Concerns and Challenges**

**Vulnerable Populations:**
- Implications for disproportionately disadvantaged populations (i.e. homeless, elderly, low-income, non-English speakers) from flooding, winter storms, and heatwaves.
- Emergency communications with and outreach among non-English speakers.
- Severe homelessness resulting in numerous cascading impacts.
- High rates of food insecurity across both Cities.

**Development and Historic Sites:**
- Lack of access to timely funds to procure properties on teh market for conversion to open space/stormwater infrastructure improvements.
- Lack of developable space and limited to rehabilitation of existing infrastructure.
- Communities should prepare for an influx of new residents and climate refugees as people leave areas vulnerable to flooding or severe weather events.
- The limited tax base limits funds for municipal-based projects.
- Central Falls has Rhode Island’s lowest median income, causing residents to struggle with education attainment, homeownership, etc.
- Public perception that areas are unsafe places to visit impacts tourism.
- Many historic buildings are located in the floodplain.

**Environmental Concerns and Challenges**

**Rivers:**
- Flooding from Blackstone River and Ten Mile River.
- Drainage and sewer overflows pollute the rivers - including pollutants from contaminated mill sites. Issue exacerbated when contaminants infiltrate homes and businesses when rivers overtop their banks.

**Trees and Forests:**
- Prevalent heat islands pose threats to residents during extreme heat events.
- Lack of trees at bus stops, heat-sensitive areas, and other vulnerable locations.
Current Strengths and Assets

Just as certain locations, assets, and populations in Pawtucket and Central Falls stand out as particularly vulnerable to the effects of hazards and climate change, other features are notably affirmative assets for Pawtucket and Central Falls resilience building. Workshop participants identified the following items as their community’s key strengths and expressed interest in using them as the core of future resilience building actions.

- Clearly, the responsive and committed leadership exhibited by officials and staff is a very appreciated strength within and across Pawtucket and Central Falls. Ongoing collaboration between the Cities, business community, faith-based organizations, NGOs, adjoining municipalities along the Blackstone River Corridor, and state-level organizations, among others on priorities identified will help advance comprehensive, cost-effective, community resilience building actions.

- The Cities have highly experienced staff with access to adequate resources for most emergency situations. The coordination amongst various departments including leadership, Police, Fire, and EMS within and across the cities was cited as a highly valued community strength. A signed memorandum of understanding builds off a cost-sharing pilot program (2015) that merged the emergency management services of the two cities.

- The development and maintenance of a joint Hazard Mitigation Plan with a shared Emergency Manager is a unique and important testament to the deep coordination between Pawtucket and Central Falls and reflects the strong emphasis on a preparedness culture.

- The Cities are highly diverse and multicultural. Their small sizes facilitate a high degree of interconnectedness and approachability among residents and leadership.

- Pawtucket is a participant in the National Flood Insurance Program’s Community Rating System (Class 8).

- Presence and deep involvement of the NGO communities both locally and regionally across the two Cities.

- Pawtucket and Central Falls recently completed a Riverfront Corridor Market Analysis with commitments to working in tandem to develop employment and industry opportunities.
Current Strengths and Assets (cont’d)

- Numerous public amenities and open spaces that improve residents’ quality of life in Pawtucket and Central Falls - particularly along the Blackstone River.
- Strong focus by municipality on utilizing natural systems to help minimize the impacts of extreme weather and climate change via nature-based solutions.
- Emphasis by residents on volunteering time and resources to strengthen their community and help other residents thrive.
- Blackstone and Ten Mile River dams as classified by DEM as “low hazard”.
- Existing flood mitigation efforts at Slater Dam and the riverfront.
- Strong emphasis on riverfront access in both Pawtucket and Central Falls waterfront parks coupled with public education about the importance of Blackstone River.
- The Tree Planting and Rain Barrel Programs increase public greenery and shade.
- The Broad Street Regeneration Initiative improved Broad Street’s walkability, streetscape, drainage structures, and road surface.
- Recent public infrastructure projects focused on removing dilapidated housing and replacing it with new housing.
- The Macomber Stadium renovation and newly developed soccer field will offer quality recreational opportunities for residents.
- Redundant road network ensures emergency services can easily access points across the community.
- Train Station under construction will likely bring new development and jobs to the Cities.
- New community health station addresses communities’ health care needs.
- Affordable housing is highly prioritized in both Cities.
- National Historical Park could continue to be a catalyst for improvements in river ecology, expansion of river access, STEM activities in classrooms, tourism, and job growth.
- Pawtucket-Central Falls water parks help families stay safe and cool during extreme heat events.
**Recommendations to Improve Resilience**

A common thread throughout the workshop discussions was the recognition that Pawtucket and Central Falls need to be better prepared through longer term, community-based, planning and respective actions across the areas of concern. To that end, the workshop participants reached agreement on several key topics requiring more immediate and/or ongoing attention including:

- Infrastructure improvements (i.e. wastewater treatment system and facilities, stormwater management systems, green stormwater infrastructure);
- Quality of life improvements (i.e. greening of neighborhoods, walkability, sustainability, park access improvements, green infrastructure, community events, affordable housing, improved job opportunities, transportation);
- Emergency management (i.e. preparedness, communications, sheltering, heating/cooling centers, continuation of services, parking).

In direct response, the workshop participants developed the high priority actions below organized across several sub-categories including capacity building, projects, plans/preparedness/studies/outreach, and policy. Mitigation actions from the joint Pawtucket and Central Falls NHMP (2018) are provided in Appendix A for cross reference.

**Higher Priority Actions**

*Capacity Building:*

- Secure funding to hire a joint Pawtucket-Central Falls coordinator to oversee both communities’ sustainability and resiliency efforts, engagements, and programs.
- Expand funding for affordable housing through grants and by advocating for additional state-bond and state-funding mechanisms.
- Leverage existing relationships between the leadership of both communities to increase residents’ utilization of existing facilities and public services, expand outreach regarding climate change impacts, and increase shelter capacity during extended extreme weather events.
- Explore and secure federal funding (e.g. FEMA, RIDEM, National Park Service River, Trails & Conservation Assistance, ACOE) for resiliency efforts and/or to increase staffing capacity.
Higher Priority Actions (cont’d)

Projects:

- Expand rain barrel and tree-planting programs to reduce stormwater runoff and heat island effects and other programs that prioritize equity and resident’s needs.
- Create household and common gardening programs to help reduce food insecurity.
- Implement green stormwater infrastructure projects (rain gardens, bioswales, etc.) to reduce localized flooding and improve water quality in receiving water bodies.
- Construct new and retrofitted heating and cooling centers with back-up power in areas that will maximize the benefits to vulnerable communities.

Plans/Preparedness/Studies/Outreach:

- Update Central Fall’s Comprehensive Plan and ensure for close interconnections with Pawtucket’s Comprehensive Plan (i.e. common zoning designations, future growth areas, transportation, etc.)
- Continue to collaboratively build and complete the Pawtucket-Central Falls Economic Development Plan.
- Create green schoolyards strategic plan and fund pilot green stormwater projects.
- Expand outreach on resilience and climate-related issues in coordination with youth programs and local NGOs and ensure resources are available in multiple languages.
- Consider planning for the development a “Resident Resilience Task Force”.
- Prioritize the need for utility upgrades, including electrical upgrades across Cities.
- Use the Pawtucket-Central Falls Walk-Bike Master Plan to identify priority areas for improved quality of life and access across both Cities.
- Identify and create new green spaces to serve multiple functions, including recreation, flood reduction, parking during emergencies, snow removal, stormwater mitigation, etc.
- Build upon existing work with the Narragansett Bay Commission to conduct inventory across both communities of streets and other public spaces in need of green stormwater infrastructure.
Higher Priority Actions (cont’d)

- Develop a senior housing strategy to help improve access to green, affordable, and energy-efficient housing.
- Develop emergency parking plan - especially during winter months - and promote parking efficiency for underused lots as part of larger transportation improvement efforts and strategy.
- Create additional public parking opportunities for large storm events that are increasing in intensity and frequency (more specifically snow events) to help remove cars from compact streets where snow removal operations are severely compromised and create public safety impacts.
- Gather communities together for events that promote community involvement in resiliency and conservation efforts (e.g. Earth Day, tree-planting, river clean-up).
- Create a vision for the future use of the OSRAM-Sylvania plant, redevelopment of Conant Thread District, and abandoned Pawtucket-Central Falls Train Station.
- Convene and strategically identify open space parcels for future acquisition that will improve the overall resilience of Pawtucket and Central Falls and dedicate funding via bonding and other sources of funds to secure priority parcels that will increase quality of life and reduce risk of flooding and heatwaves for residents.

Policy:

- Consider establishing policies that require development plans to include maximum use of green infrastructure (i.e. tree planting, green stormwater infrastructure, etc.).
- Establish zoning consistency between both Cities and continue to work collectively to attract and retain business in a unified manner.

Priority Actions

In addition to these higher priority actions, the workshop participants identified the list of priority actions below organized across several sub-categories including capacity building, projects, plans/preparedness/studies/outreach, and policy. These actions are considered important or “priority” for Pawtucket and Central Falls, but not as high priority as the preceding list, currently.
Priority Actions (cont’d)

*Capacity Building:*

- Review and modify on an annual basis the respective Capital Plans to ensure resilience in fully integrated into funded projects and other budgeted expenditures.
- Increase funding for Rain Barrels and Tree Planting Programs to scale up both programs and improve their accessibility to front-line communities and non-English speakers.
- Create an Emergency Defense Fund to help businesses and community members following extreme weather events or other major crises.
- Hire a grant-writer who can bring more funds for resiliency-related projects and programs into Central Falls and Pawtucket.
- Increase regional collaboration on projects to better compete against coastal communities for resilience and sustainability funds (i.e. work with Cumberland and other municipalities along the Blackstone River Corridor).
- Offer incentives and training to associations and organizations to ensure that volunteers are trained and equipped to support emergency personnel.
- Invest further in mental health support and resources to help improve the overall mental resilience of the Cities’ residents.

*Projects:*

- Construct bike path along Blackstone River as part of Blackstone Bikeway.
- Use green infrastructure along Broad Street to limit impacts of stormwater runoff.
- Improve public transportation and streets’ walkability across and between both Cities.
- Fix broken pedestrian-crossing signs in Pawtucket and improve crosswalks to increase the safety of residents.
- Plant trees and greenery to reduce communities’ vulnerability to heat, including at bus stops, school yards, play grounds, and other vulnerable neighborhoods.
- Conduct small-scale, de-paving projects in areas experiencing routine flooding. Conduct fundraise to build a new community center.
Priority Actions (cont’d)

- Update Blackstone River Fish Passage’s infrastructure and utilize it as an opportunity to reexamine replacement of historic armoring of the riverbank.
- Invest in solar power to supply residential areas and municipal facilities.
- Redevelop brownfields and remove toxic materials.

Plans/Preparedness/Studies/Outreach:

- Examine the efficacy of existing policies limiting carbon emissions and/or consider alternative policies.
- Expand environmental education in schools and create multilingual environmental awareness programs for residents.
- Address historic buildings and sites flooded in 2005.
- Create an emergency alert system that reaches majority of residents - consider using the Blackstone Alert model.
- Conduct feasibility assessment for undergrounding utility lines in high risk areas.
- Reevaluate risk to residential housing and implications of housing density in neighborhoods with vulnerable populations (i.e. elderly, working poor) and with evacuation routes subjected to closure during major events.
- Cooperate with local businesses to identify potential heating and cooling centers in proximity to vulnerable populations and at-risk neighborhoods.
- Refine evacuation routes, emergency plans, and extreme weather event plans.
- Conduct community information sessions on recycling.
- Promote the use of the new train station and ensure it remains accessible by bus, bike, and pedestrians.
- Explore using athletic fields for stormwater management storage options.
- Examine how to best communicate with residents without internet access and considering the use of youth ambassadors to strengthen response.
- Research and share information about the health effects of climate change.
- Consider supporting restaurants as cooling centers.
Priority Actions (cont’d)

- Evaluate the clearing of unused property to develop more public parking, incorporating the trade-off between funding improvements in parking versus housing and education.
- Meet with the owners of designated refuge buildings and organizations to ensure that they are properly equipped and able to offer the necessary accommodations to residents during emergencies.

Policy:

- Introduce new and/or strengthen existing Low Impact Development ordinances across both Cities.
- Modify zoning laws to allow for higher density housing and less parking to reduce housing costs and oversupply of parking.
- Examine zoning codes and ordinances for development and land use to see where resiliency and sustainability can be incorporated and incentivized.
- Implement, improve, and broaden types of infrastructure and development eligible for financing under Super TIFs (Tax Increment Financing).
- Improve enforcement of existing policies and executive orders relating to wetlands, floodplains, and stormwater management.
CRB Workshop Participants: Department/Organization

City of Central Falls - Office of the Mayor
City of Pawtucket - Office of the Mayor
City of Pawtucket - Fire
City of Central Falls - Police Department
City of Pawtucket - Planning
City of Central Falls - Planning
City of Pawtucket - Department of Public Works
City of Central Falls - Department of Public Works
City of Central Falls - Legal Department
City of Pawtucket & Central Falls Emergency Management Agency
City of Central Falls - Planning Board
Pawtucket-Central Falls Development
Central Falls Housing Authority
Groundwork Rhode Island
Blackstone Valley Tourism Council
Northern Rhode Island Chamber of Commerce
Keep Blackstone Valley Beautiful
National Park Service
Progresso Latino
Pare Corporation
Pawtucket and Central Falls Core Project Team
Jillian Finkle - Principal Planner - City of Central Falls
Anthony Herbert - Principal Planner - City of Pawtucket

Online CRB Workshop Facilitation Team
Rhode Island Infrastructure Bank - Shaun O'Rourke (Program Lead & Facilitator)
The Nature Conservancy - Adam Whelchel (Lead Facilitator)
The Nature Conservancy - Sue AnderBois (Lead Coordinator)
Audubon Society of Rhode Island - Meg Kerr (Facilitator)
Save the Bay - David Prescott (Facilitator)
The Nature Conservancy - Sheila Dormody (Facilitator)
Second Nature - Alex Maxwell (Facilitator)
Scribes - Kim Krioith (RIIB), Isabel Harrington (RIIB), Tim Mooney (TNC - RIFO), Catherine Campbell (TNC -RIFO),

Recommended Citation

Acknowledgements
Special thanks to the City leadership, staff, and community members for their willingness to embrace the process in hopes of a more resilient future for Pawtucket and Central Falls. This online workshop was made possible in large part through the generous contribution of the facilitation team members including scribes who skillfully conducted the Pawtucket and Central Falls Community Resilience Building workshop in close partnership with the joint City Core Project Team.
Appendix A

Cities of Pawtucket & Central Falls
Natural Hazard Mitigation Plan (2018)
Section 4.0 Mitigation Strategies
(Section 4.2 - Table 4.1)
(Section 4.5 - Table 4.2)
prepared by
Punchard Consulting & Jamie Caplan Consulting
### Table 4-1: Mitigation Goals

<table>
<thead>
<tr>
<th>Goal #1</th>
<th>Protect the lives and property of community members from natural hazards.</th>
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</thead>
<tbody>
<tr>
<td>Goal #2</td>
<td>Protect existing and future critical facilities and infrastructure from natural hazards.</td>
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<tr>
<td>Goal #3</td>
<td>Protect cultural, historic, and natural resources from natural hazards.</td>
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<td>Goal #4</td>
<td>Prepare community members for the types of natural hazards that can affect the area through education and outreach initiatives.</td>
</tr>
<tr>
<td>Action #</td>
<td>Action Title</td>
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<tr>
<td>---------</td>
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<tr>
<td>1</td>
<td>EMAP Accreditation</td>
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<tr>
<td>2</td>
<td>Increased CRS Rating</td>
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<tr>
<td>3</td>
<td>Debris Management Plan</td>
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<td>4</td>
<td>Maintain and Regularly Update Parcel-Base GIS Database</td>
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<td>Building Code Compliance Enforcement</td>
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<td>6</td>
<td>Low-Impact Development</td>
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<td>7</td>
<td>Recovery and Reconstruction Ordinance</td>
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<td>8</td>
<td>Publicly-Owned Dam Inspection, Classification, and Maintenance</td>
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<td>9</td>
<td>Develop Actionable Strategy to Address Repetitive Loss Properties</td>
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<td>10</td>
<td>Increase Green Infrastructure</td>
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<td>Relocate the City’s Fuel Depots</td>
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<td>12</td>
<td>Privately-Owned Dam/Flood Control Devices Inspection, Classification, and Maintenance</td>
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<td>13</td>
<td>Public Housing Units</td>
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<td>14</td>
<td>Ensuring the Safety of Elderly Housing and Public Housing</td>
</tr>
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<td>15</td>
<td>City Hall</td>
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<td>16</td>
<td>Installation of Underground Overflow Tanks</td>
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<td>17</td>
<td>Localized Flooding of Roadways</td>
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### Mitigation Goals and Actions

<table>
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<tr>
<th>Action #</th>
<th>Action Title</th>
<th>Mitigation Goal</th>
<th>Mitigation Category</th>
<th>Hazard(s) Addressed</th>
<th>Estimated Cost</th>
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<th>Lead Department</th>
<th>Implementation Schedule</th>
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<td>Bridge Inspection</td>
<td>2</td>
<td>Structure and Infrastructure Projects</td>
<td>Flood; Earthquake</td>
<td>Varies dependent upon structure/remediation measure</td>
<td>RIEMA, FEMA, CIP, RIDOT</td>
<td>DPW (Highway and Bridges Division)</td>
<td>2018-2023</td>
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<td>Emergency Procedure for Gas/Electrical Lines Running on Bridges</td>
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<td>Structure and Infrastructure Projects</td>
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<td>Structure and Infrastructure Projects</td>
<td>Flood; Earthquake</td>
<td>Staff time</td>
<td>Pawtucket Water Supply Board</td>
<td>DPW (Highway and Bridges Division) Pawtucket Water Supply Board</td>
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<td>Elevate Low-Lying Bridges/Culverts</td>
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<td>Structure and Infrastructure Projects</td>
<td>Flood</td>
<td>Varies dependent on scope of modification</td>
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<td>DPW (Highway and Bridges Division)</td>
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<td>22</td>
<td>Industries in the Floodplain</td>
<td>1, 2</td>
<td>Structure and Infrastructure Projects</td>
<td>Flood</td>
<td>Varies dependent on scope of improvements, private property owners</td>
<td>Private land owners, RIEMA, FEMA</td>
<td>Building and Code Enforcement</td>
<td>2018-2023</td>
<td>High</td>
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<tr>
<td>23</td>
<td>Develop Retrofit (Dry/Wet Floodproof, Elevation) Program</td>
<td>1, 2</td>
<td>Structure and Infrastructure Projects</td>
<td>Flood</td>
<td>N/A</td>
<td>Private land owners, RIEMA, FEMA</td>
<td>Building and Code Enforcement</td>
<td>January 2020</td>
<td>Medium</td>
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<tr>
<td>24</td>
<td>Masonry Apartments and Mill Buildings</td>
<td>1, 2</td>
<td>Structure and Infrastructure Projects</td>
<td>Earthquake</td>
<td>Staff time</td>
<td>Private land owners, RIEMA, FEMA</td>
<td>Building and Code Enforcement</td>
<td>January 2021</td>
<td>Medium</td>
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**Section 4: Mitigation Strategy**
<table>
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<tr>
<th>Action #</th>
<th>Action Title</th>
<th>Mitigation Goal</th>
<th>Mitigation Category</th>
<th>Hazard(s) Addressed</th>
<th>Estimated Cost</th>
<th>Potential Funding Source</th>
<th>Lead Department</th>
<th>Implementation Schedule</th>
<th>Priority</th>
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<tr>
<td>25</td>
<td>School Vulnerability</td>
<td>2</td>
<td>Structure and Infrastructure Projects</td>
<td>Multiple</td>
<td>Staff time</td>
<td>Pawtucket School Department Budget, CIP</td>
<td>Building and Code Enforcement, Fire Department</td>
<td>2018-2023</td>
<td>Medium</td>
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<td>26</td>
<td>Installation of Video Monitoring System - Monitor Capacity and Condition of Sewer Infrastructure</td>
<td>2</td>
<td>Structure and Infrastructure Projects</td>
<td>Flood</td>
<td>$50,000</td>
<td>RIEMA, FEMA, CIP, DEM</td>
<td>DPW (Sewer and Sanitation Division)</td>
<td>January 2020</td>
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<td>27</td>
<td>Continue to Implement Infrastructure Replacement Plan</td>
<td>2</td>
<td>Structure and Infrastructure Projects</td>
<td>Flood</td>
<td>Variable</td>
<td>RIEMA, FEMA, CIP, RIDOT</td>
<td>DPW (Sewer and Sanitation Division)</td>
<td>2018-2023</td>
<td>Medium</td>
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<td>28</td>
<td>Installation of Seawall at Narragansett Electric’s Substation</td>
<td>2</td>
<td>Structure and Infrastructure Projects</td>
<td>Flood</td>
<td>High</td>
<td>Private funding</td>
<td>Narragansett Electric (National Grid)</td>
<td>January 2023</td>
<td>Medium</td>
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<td>Backflow Prevention Valve Rebate Program</td>
<td>1, 4</td>
<td>Structure and Infrastructure Projects</td>
<td>Flood</td>
<td>$500 per rebate</td>
<td>RIEMA, FEMA, City Budget, Private land owners</td>
<td>DPR</td>
<td>January 2021</td>
<td>Low</td>
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<td>30</td>
<td>Acquire and Preserve Open Space along the Moshassuck River</td>
<td>3</td>
<td>Natural Systems Protection</td>
<td>Flood</td>
<td>Variable</td>
<td>CDBG, CIP, RIDEM</td>
<td>DPR, PRA, Mayor’s Office</td>
<td>January 2021</td>
<td>Medium</td>
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<tr>
<td>Action #</td>
<td>Action Title</td>
<td>Mitigation Goal</td>
<td>Mitigation Category</td>
<td>Hazard(s) Addressed</td>
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<td>Lead Department</td>
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<td>Priority</td>
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<td>32</td>
<td>Contain Hazardous Materials</td>
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<td>Natural Systems Protection</td>
<td>Coastal Storm</td>
<td>Staff time</td>
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<td>Pawtucket Fire Department</td>
<td>January 2022</td>
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<td>33</td>
<td>Open Space Acquisition</td>
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<td>Natural Systems Protection</td>
<td>Flood</td>
<td>Varies dependent upon property acquisition</td>
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<td>DPR, PRA, Mayor’s Office</td>
<td>January 2023</td>
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<td>Volunteer Disaster Resistance Program</td>
<td>1, 4</td>
<td>Education and Awareness Programs</td>
<td>Sea Level Rise / Climate Change Impacts</td>
<td>Staff time or dependent upon level of training</td>
<td>City Budget, grants</td>
<td>Pawtucket EMA</td>
<td>January 2019</td>
<td>Medium</td>
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<td>Public Information, Outreach and Incentive Program</td>
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<td>Education and Awareness Programs</td>
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<td>Staff time</td>
<td>Private land owners, RIEMA, FEMA</td>
<td>Building and Code Enforcement</td>
<td>2018-2023</td>
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<td>Information Brochure</td>
<td>1, 4</td>
<td>Education and Awareness Programs</td>
<td>Multiple</td>
<td>Staff time</td>
<td>City Budget, grants</td>
<td>Pawtucket EMA</td>
<td>2018-2023</td>
<td>Medium</td>
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<td>Mass Care Facility Equipment</td>
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<td>$160,000 each</td>
<td>FEMA (EMPG); City budget/soft-match</td>
<td>Pawtucket EMA</td>
<td>July 2019</td>
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<td>38</td>
<td>Volunteer Disaster Assistance Officer</td>
<td>1, 4</td>
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<td>Multiple</td>
<td>Staff time</td>
<td>City Budget, grants</td>
<td>Pawtucket EMA</td>
<td>2018-2023</td>
<td>Medium</td>
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<td>39</td>
<td>Elderly and Special Needs Residents</td>
<td>1</td>
<td>Emergency Services</td>
<td>Multiple</td>
<td>Staff time</td>
<td>N/A</td>
<td>Pawtucket Housing Authority</td>
<td>2018-2023</td>
<td>High</td>
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<td>Business Continuation</td>
<td>1, 4</td>
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<td>Multiple</td>
<td>Staff time</td>
<td>N/A</td>
<td>Pawtucket Police Department</td>
<td>January 2020</td>
<td>Medium</td>
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<tr>
<td>41</td>
<td>Coordinate Evacuation Plans with Neighboring Municipalities</td>
<td>1</td>
<td>Emergency Services</td>
<td>Multiple</td>
<td>Staff time</td>
<td>N/A</td>
<td>Pawtucket Police Department</td>
<td>January 2020</td>
<td>Medium</td>
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<tr>
<td>Action #</td>
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<td>42</td>
<td>Maintain Viable Evacuation Routes</td>
<td>1, 2</td>
<td>Emergency Services</td>
<td>Multiple</td>
<td>Staff time</td>
<td>N/A</td>
<td>DPW (Highway and Bridge Division)</td>
<td>January 2020</td>
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<td>GIS Integration Citywide</td>
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<td>Multiple</td>
<td>Staff time</td>
<td>RIEMA, FEMA, City Budget</td>
<td>DPR</td>
<td>2018-2023</td>
<td>High</td>
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<td>44</td>
<td>Publish Evacuation Routes</td>
<td>1</td>
<td>Emergency Services</td>
<td>Multiple</td>
<td>Staff time</td>
<td>N/A</td>
<td>DPR</td>
<td>January 2019</td>
<td>High</td>
</tr>
</tbody>
</table>
Appendix B

Pawtucket
Central Falls
Map Resource Packet*
Used During
Workshop

Figure A-6: Special Flood Hazard Areas

Source: FEMA Flood Insurance Rate Map (FiRM)

FEMA Flood Zones
- Regulatory Floodway
- Zone AE (1% Annual Chance Flood)
- Zone VE (1% Annual Chance Flood with Velocity Wave Action)
- Zone X (0.2% Annual Chance Flood)

Source: FEMA

Appendix A: Hazard Analysis and Risk Assessment
Figure A-7: Hurricane Storm Surge Inundation Areas

Source: Rhode Island Worst Case Hurricane Surge Inundation Areas, Rhode Island Geographic Information System (RIGIS)

Evacuation Routes
Worst-case Hurricane Surge Inundation Zone

Hurricane Category
- Category 1
- Category 2
- Category 3
- Category 4

Source: U.S. Army Corps of Engineers, New England District
Figure A-9: Repetitive Loss Areas

Source: City of Pawtucket Planning Department
Figure A-8: Potential Sea Level Rise Inundation for Pawtucket

Source: RI STORMTOOLS
Figure 1. Sea Level Rise Scenarios

Source: RI Division of Planning and NOAA Coastal Services Center
Map 8. Recreation Resources

Map 9. Community Services and Facilities