



NORTH PROVIDENCE, RI HAZARD MITIGATION PLAN 2024 UPDATE.



Town of North Providence
Rhode Island

Acknowledgements

The Town of North Providence commends the efforts of its Hazard Mitigation Planning Committee in completing this important plan. The effort is sure to result in the protection of life and property and special thanks are extended to Committee members:

John Silva, Fire Chief/EMA Director
Ralph Nahigian, Communications Technology Director
Brent Wiegand, Director of Planning
Paul Silvestri, Assistant Fire Marshall
David D'Amico, Engineer
Michael Campagnone, Building Inspector
Bernie Salvatore, Director of Public Works
Robert Lepre, Police Department
Robert DeAngelis, EMS Bureau Chief
Lisa Kennedy, HEZ Director, Tri-County

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Executive Summary

This Hazard Mitigation Plan (HMP) is a product of the North Providence Hazard Mitigation Committee (NPHMC). It has been approved by the North Providence Town Council, the Rhode Island Emergency Management Agency, and the Federal Emergency Management Agency in accordance with the Disaster Mitigation Act of 2000.

Its overview of past natural hazard occurrences verifies that the area is vulnerable to diverse events including winter storms and flooding. The discussion puts the likelihood of these events into historical perspective and recognizes that although the probability of thunderstorm, high wind and lightning events may be higher; the intensity and potential impacts from less likely events such as hurricanes and earthquakes can be far greater.

The risk assessment portion of the plan confirms that the Town has much to lose from these events. The four highest ranking risks identified include flood prone drainage systems, potential dam failures, damage to care facilities, and critical municipal hazard response facilities.

To address these risks, the 2024 Hazard Mitigation Plan puts forth a clear mission, a distinct goal and objectives, and 21 specific mitigation actions. The Town's hazard mitigation mission is to protect and enhance the quality of life, property and resources by identifying areas at risk and implementing appropriate mitigation actions. The NPHMC was able to focus their efforts by establishing a goal to reduce or eliminate long-term risk to people and their property from the effects of natural hazards. The specific objectives to meet that goal include upgrading infrastructure, protecting property, integrating planning and management approaches, improving response effectiveness, and maintaining open space. Each of the subsequent mitigation actions for achieving these goals summarizes specific problems and possible solutions, details the primary tasks to be undertaken, identifies an appropriate lead and anticipated funding sources.

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Section 1: Introduction

1.1 Hazard Mitigation: Background

Hazard mitigation is defined by the Federal Emergency Management Agency (FEMA) as any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event. Hazard mitigation is one of four phases of emergency management, the other phases include preparedness, response and recovery. While preparedness, response, and recovery phases occur closely prior to or immediately after a hazard event, hazard mitigation is an ongoing effort to lessen the impact that disasters can have on people and property. Without mitigation, the same people and property are affected repeatedly.

States and communities across the country are increasingly realizing that simply responding to natural disasters, without addressing ways to minimize their potential effect, is no longer an adequate role for government. Striving to prevent unnecessary damage from natural disasters through proactive planning that characterizes the hazard, assesses the community's vulnerability, and designs appropriate land-use policies and building code requirements is a more effective and fiscally sound approach to achieving public safety goals related to natural hazards.¹ Money spent today on preventative measures can significantly reduce the cost of post-disaster cleanup tomorrow.

Hazard mitigation planning is advance action taken to form the foundation of a community's long-term strategy to permanently reduce or eliminate the impacts of natural hazards to people and property and enhance community resilience. Hazard Mitigation plans serve as a guide for a community to make risk-informed decisions for implementing policies, procedures, and projects, and investing available resources to minimize future disaster impacts. It coordinates available resources and identifies community policies, actions, and tools for implementation that will reduce risk and the potential for future losses town wide. The process of natural hazard mitigation planning sets clear goals, identifies appropriate actions, and produces an effective mitigation strategy that can be updated and revised to keep the plan current.

1.2 Hazard Mitigation Planning: Federal Requirements

The Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 created the system where Presidential disaster declarations trigger federal assistance via FEMA. The Disaster Mitigation Act of 2000 (DMA 2000) requires that each local government seeking FEMA mitigation funding must first have an adopted FEMA approved multi-hazard mitigation plan. DMA 2000 provides a legal basis for FEMA's state, local, and tribal mitigation planning requirements. Additionally, to receive federal funding, hazard mitigation plans must be updated and adopted by local jurisdictions every 5 years. They must include:

- Public participation and documented process
- Existing conditions and demographics
- Major disaster declarations since the previous plan
- Risk assessments and vulnerability analyses for hazards
- Mitigation actions and their status
- Identified plan maintenance and updates

The NPHMP was prepared to meet the requirements stipulated in the DMA 2000. The formal adoption and implementation of this plan will allow the Town of North Providence and its residents to become more involved in several programs offered by the FEMA including: the Building Resilient Infrastructure and Communities Program (BRIC); Community Rating System Program (CRS); the Pre-Disaster Flood Mitigation Assistance Program (FMA); and the Hazard Mitigation Grant Program (HMGP).

The purpose of the 2024 North Providence Hazard Mitigation Plan (NPHMP) is to create a comprehensive review of the Town's risk and vulnerability to natural hazards, review its existing capabilities, and develop a strategy and set of actions to mitigate future impacts of natural hazards. The NPHMP serves as guidance to help the Town of North Providence to become more resilient and reduce their losses and vulnerabilities relating to winter storms, flooding, hurricanes, lightning, wind, extreme temperatures, brushfires, drought, tornadoes, dam failure, earthquake, and hail.

The NPHMP was constructed using input from a variety of municipal and private stakeholders and the public involved in the planning process. The Hazard Mitigation Planning process encourages coordination and collaboration with the network of community stakeholders to forge partnerships that pool skills, expertise, and experience to allow for a careful selection of risk reduction actions and set funding priorities. Proceeding in this manner will help the Town ensure that the most appropriate and equitable mitigation projects are undertaken.

1.3 Plan Adoption

TOWN OF NORTH PROVIDENCE RESOLUTION OF THE TOWN COUNCIL R25-007

A RESOLUTION OF THE TOWN OF NORTH PROVIDENCE ADOPTING THE NORTH PROVIDENCE, RI HAZARD MITIGATION PLAN 2024 UPDATE.

WHEREAS the Town of North Providence recognizes the threat that natural hazards pose to people and property within North Providence; and

WHEREAS the Town of North Providence has prepared a multi-hazard mitigation plan, hereby known as the North Providence, RI Hazard Mitigation Plan 2024 Update in accordance with federal laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and

WHEREAS the North Providence, RI Hazard Mitigation Plan 2024 Update identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in North Providence from the impacts of future hazards and disasters; and

WHEREAS adoption by the North Providence Town Council demonstrates its commitment to hazard mitigation and achieving the goals outlined in the North Providence, RI Hazard Mitigation Plan 2024 Update.

NOW THEREFORE, BE IT RESOLVED BY THE TOWN OF NORTH PROVIDENCE, RI THAT:

Section 1. The Town of North Providence adopts the North Providence, RI Hazard Mitigation Plan 2024 Update. While content related to the Town of North Providence may require revisions to meet the plan approval requirements, changes occurring after adoption will not require North Providence to re-adopt any further iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

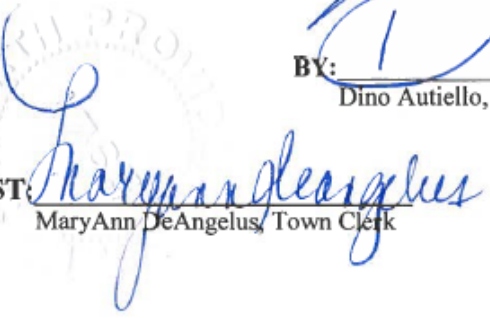
NORTH PROVIDENCE TOWN COUNCIL

ADOPTED:

BY:


Dino Autiello, President

ATTEST:


MaryAnn DeAngelus, Town Clerk

1.4 Community Profile

This section of the Plan provides a general overview of the Town of North Providence and includes summary information regarding the Town's Population and Demographics, Geography and Natural Resources, Land Use and Development, Community Development Trends, Infrastructure and Transportation, and Historical and Cultural Resources.

Population and Demographics

The Town of North Providence is home to roughly 34,100 residents. While there are residents of North Providence that come from many different backgrounds and demographics, the typical resident is white and in their mid-30s at generally middle-class income levels. However, there are vulnerable populations across the range of demographics of the town. It is well known that hazard events and disasters can disproportionately impact the elderly, the very young, persons in poverty, unhoused or poorly housed individuals, and non-English speaking populations. Statistics from the U.S. Census Bureau's 2020 Census that the Town of North Providence is focusing on to identify vulnerability include the following:

- 19.4% of the population is 65 or older
- 17% of the homes were built before 1940
- 11% percent of the population has income in the poverty level
- 22% of residents speak a primary language other than English

The 2020 U.S. Census estimates the North Providence population to be at 34,114. The median age of the Town's residents is 40. Approximately 19.4% of the population is over 65 (compared to 14% in Providence County and 19.3% in the entire state). According to the 2020 US Census Bureau, the Town is predominantly (74.5%) white. The Town has approximately 15,318 housing units with an occupancy rate of 93%. 17% of the homes were built before 1940. The median income for a family household is \$68,821. Eleven (11) percent of the population has income in the poverty level. According to the U.S. Census Quick Facts (2018-2022), in North Providence, approximately 22% of residents speak a primary language other than English.

Table 1.4.1: Demographics Summary

	North Providence	Rhode Island	United States
Age			
Persons under 5 years	4.5%	4.8%	5.5%
Persons over 65 years	19.4%	19.3%	17.7%
Race and origin			
White alone	74.5%	82.4%	75.3%
Black alone	7.8%	9.3%	13.7%
Asian alone	2.9%	3.7%	6.4%
Hispanic	14.2%	18.0%	19.5%
Two or more Races	11.0%	3.1%	3.1%
Foreign born persons	12.3%	14.4%	13.7%
With a disability, under age 65 years	10.9%	9.8%	8.9%

Persons in Poverty	10.7%	10.8%	11.1%
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Geography and Natural Resources

The Town of North Providence is located in Northern Rhode Island, bordered by the capital city of Providence to the south, Johnston to the west, Smithfield and Lincoln to the north, and Pawtucket to the east. The Town of North Providence has a total area of 5.8 square miles and is officially the smallest town in the smallest US state. The Town of North Providence is primarily drained by the Woonasquatucket and West Rivers.

According to the 2013 Comprehensive Plan, "...the topography of North Providence is determined by its bedrock geology as influenced by glaciation and erosion. Most of the Town, being composed of igneous rock, is typified by pronounced hills. The existing wooded swamps in North Providence are relatively small isolated systems, most prominent in the undeveloped areas of the town's northwest section. In most cases these wetlands are red maple swamps. Ponds within the town are scattered throughout, with most being located west of Louisquisset Pike. Areas considered as deeper lakes are Canada Pond; Wenscott Reservoir and the mill ponds on the lower portion of the Woonasquatucket River." The Woonasquatucket and West Rivers run along the western border and through the middle of the town, respectively. As important natural resources, the Town of North Providence is working with neighboring communities to promote restoration and preservation of both watersheds.

Land Use and Development

The Town of North Providence has undergone extensive planning in both the development and recent update of its Comprehensive Community Plan in identifying existing conditions, current zoning, and development trends. Historically, North Providence was built around the mill villages along the western border of the Woonasquatucket River. By the 1960s, most of the mills had been demolished. In the 1950s and 1960s, the Town of North Providence became an attractive residential community for people from Providence and Pawtucket who wished to move away from more congested settings. During the 1970s and 1980s development reached into formerly rural areas north of Mineral Spring Avenue. This development took the form of new single-family subdivisions, apartments and condominiums. New apartment construction occurred along Douglas Avenue, while condominiums dominated the area near Smithfield Road and Louisquisset. Single family homes were primarily developed in the western part of town. Without a true town center, North Providence's commercial growth was characterized by strip development, particularly along Mineral Spring Avenue. This road, with its extensive retail and service base, is now the commercial heart of the town. It stretches roughly 2.5 miles from Pawtucket to Centredale. North Providence has developed into a nearly fully developed suburban community.

Since 2000, as the economy has gone through a boom-and-bust period, North Providence has experienced a decline in population, and new housing permits.

North Providence is comprised of the following commercial districts: Marienville (retail), Geneva (commercial), Fruit Hill (commercial/professional), Centredale (commercial), Allendale- Upper Smith Street (mix residential and commercial), and Mineral Spring Avenue (commercial). Although industrial uses have largely diminished in North Providence, there are a few smaller manufacturers in the Lymanville section of town. Local businesses are paramount to the vitality of the town's commercial and industrial tax base.

Open Space and Conservation land uses include the Peter Randall Reservation, state and town park areas such as Greystone Park, the Captain Stephen Olney Park, Fells Park, Governor Nott Park, and Camp Meehan,

as well as other significantly, detached recreation sites. The table below captures the 2020 land use status as indicated in its 2024 Comprehensive Community Plan.

Table 1.4.2: North Providence 2020 Land Use

Land Use	Acreage	Percent
Residential	2,440	66%
Commercial	317	9%
Industrial	63	2%
Roads and Utilities	43	1%
Agriculture	9	<1%
Forested and Vegetated Areas	443	11%
Institutional/Public	156	4%
Recreation	126	3%
Water	81	2%
Vacant Land	16	<1%

Infrastructure and Transportation

This section provides an overview of the existing infrastructure and transportation networks in North Providence including highway and roadway infrastructure, bridges, and public transportation systems.

Roadways

North Providence has approximately 119 miles of highway and roads and some of the primary roadways include a major east-west commercial corridor (Mineral Spring Avenue) with several north-south roadways (Charles Street, Douglas Avenue, and Smith and Waterman Avenues). Route 146, a limited-access highway, passes through the town's eastern edge, with access via Mineral Spring Avenue.

Bridges

There are four bridges in North Providence including Mineral Spring, Lincoln Farms, the Greystone Sluiceway, which are state owned, and Geneva Pond. According to the 2019 National Bridge Inventory, these four bridges are all classified as in Poor Condition and slated for repair in the State's Transportation Improvement Plan.

Public Transportation Systems

There are a number of public transportation systems available in North Providence which provide a means for commuters to and travelers which are outlined further below.

- Rhode Island Public Transit Authority (RIPTA) - Approximately 1.3% of the North Providence workforce utilize public transit to commute to/from work and other locations and the RIPTA offers 10 routes.
 - Route 66 Express Beach Bus provides direct service to the Scarborough, Roger Wheeler, and Salty Brine beaches from June to August
- Hub Lines – No rail lines pass directly through North Providence, but there are several lines that stop near the Providence Amtrak/MBTA station including the Mineral Spring/North Providence, Charles Street, and Lincoln/Woonsocket lines that stop near the Providence Amtrak/MBTA station.
- Department of Elderly Affairs Ride Program – provides door-to-door transportation options for qualifying older adults and residents with disabilities.

Wastewater Treatment Facility

North Providence is one of six communities served by the Narragansett Bay Commission's (NBC) Field's Point Wastewater Treatment Facility. NBC is responsible for providing wastewater collection (interceptors) and treatment. The system of lateral sewer lines, those that run down the side streets that collect waste from individual homes and businesses, are owned and maintained by the Town. Maintenance of these lines is done on an as needed basis.

Historic and Cultural Resources

North Providence has four historic sites and two historic districts which have been placed on the National and State Register of Historic Places noted in the table below:

Table 1.4.3: Historic Locations in Providence

Property Name	Street & Number	Category of Property	Listed Date	Area of Significance	Level of Significance
Allendale Mill	494 Woonasquatucket Ave.	DISTRICT	5/7/1973	INDUSTRY; ARCHITECTURE	National
Angell, Otis, Gristmill	1 Governor Notte Pkwy.	BUILDING	11/3/2017	INDUSTRY	Local
Greystone Historic District	1-16 Beckside Rd., 1-29 Greystone Ave., 1-24 Oakleigh Ave., 1-40 Langsberries Ave., 2-20 Larchmount Ave N	DISTRICT	1/2/2008	INDUSTRY; ARCHITECTURE; COMMUNITY PLANNING AND DEVELOPMENT	State
Greystone Mill Historic District	Greystone Ave.	BUILDING	4/28/2004	INDUSTRY; ENGINEERING; ARCHITECTURE	Local
Lymansville Company Mill	184 Woonasquatucket Ave.	BUILDING	12/26/2012	ARCHITECTURE; INDUSTRY	Local
Olney, Capt. Stephen, House	138 Smithfield Rd.	BUILDING	5/1/1974	ARCHITECTURE	State
Smith, Joseph, House	109 Smithfield Rd.	BUILDING	11/28/1978	ARCHITECTURE	State
Whipple-Angell-Bennett House	157 Olney Ave.	BUILDING	7/28/1995	ARCHITECTURE	Local

According to the Rhode Island Historical Preservation and Heritage Commission, there are 83 historical sites throughout North Providence listed in the RI National Registry. Other notable cultural resources in North Providence listed on the RI State Registry (including the year built) include but are not limited to:

- Soldiers & Sailors Monument (1901) - Fruit Hill Ave
- St. James Episcopal Church (1879) - 474 Fruit Hill Ave
- Old Town Hall (1879) - 2226 Mineral Spring Ave
- Belvidere Club (1800) - 1596 Smith St
- Allendale Baptist Church (1847) - 545 Woonasquatucket Ave
- World War I Memorial (1918) – 1964 Smith St.

1.5 Disaster Declarations

A number of events have impacted North Providence including blizzards and snowstorms, hurricanes, tropical storms, and severe flood events. The following table list North Providence's Disaster Declarations:

Table 1.5.1: Disaster Declarations

Designation	Declaration Date	Incident Type	Individual Assistance	Public Assistance
DR 4766	3/20/2024	Severe Storms and Flooding	\$12,980,578.59	\$0.00
DR 4765	3/20/2024	Severe Storms and Flooding	\$6,291,414.98	\$0.00
DR 4753	1/7/2024	Severe Flooding	\$3,300,971.00	\$0.00
DR 4653	1/1/2022	Severe Winter Storm and Snowstorm	\$0.00	\$8,901,805.00
DR 4212	4/3/2015	Severe Winter Storm and Snowstorm	\$8,897,067.00	\$1,327,144.00
DR 4107	3/22/2013	Severe Winter Storm and Snowstorm	\$7,929,498.00	\$1,070,561.00
DR 4089	11/3/2012	Hurricane Sandy	\$421,341.00	\$8,629,001.00
DR4027	9/3/2011	Tropical Storm Irene	\$8,341,293.00	\$1,608,921.00
DR 1894	3/1/2010	Severe Storms and Flooding	\$37,157,115.00	\$24,263,849.00
DR 913	8/26/1991	Hurricane Bob	\$0.00	\$0.00
DR 748	10/15/1985	Hurricane Gloria	\$0.00	\$0.00
DR 3058	2/7/1978	Blizzards and Snowstorms	\$0.00	\$0.00
DR 23	9/2/1954	Hurricane Carol	\$0.00	\$0.00
	9/21/1938	New England Hurricane	\$0.00	\$0.00

Other Significant Non-Declared Events

- **Winter Storm Neko** - February 2017 – this storm dropped 14.5 inches of snow during a brief one-day siege
- **October 2018 Tornado EF 1** – October 23, 2018: An EF1 tornado struck causing damage to mostly trees. Other waterspouts were reported across the state, though they did not cause any reported damage. No injuries were reported. Winds up to 100 MPH.
- **July 2019 heat event** - 4 days of heat over 100 degrees, cooling shelters prepared.
- **July 2020 Tropical Storm Fay** - Fay's impacts were felt across a majority of the Northeastern U.S., with widespread rain, flash flooding, and minor wind damage occurring as a result of the storm. Sustained winds of 50 mph with gusts up to 70 MPH.
- **August 2020 Tropical Storm Isaias** - Isaias had 40-50 MPH wind gusts with sustained wind of 35 MPH that brought 6 inches of rain causing flooding, flash flooding, and minor wind damage as a result of the storm.
- **2021 Tropical Storm Elsa** - Elsa had 70 MPH wind gusts with sustained wind of 60 MPH which presented us with 6 inches of rain causing flooding, flash flooding, and minor wind damage occurring as a result of the storm.
- **August 2022 Rain event flooding** - 8 inches of rain in a short time frame causes flash flooding and rivers overflowing. Damage to home and community infrastructure.
- **September 2022 rain event flooding** - 6 to 8 inches of rain flash flooding and rivers overflowing. Damage to home and community infrastructure.
- **August 2023 Tornado EF 2** - On August 18, 2023, North Providence was faced with an EF2 Tornado. During this event, several areas of the community were affected due to high winds and rain. Public roads became blocked are damaged due to flying debris, trees uprooted, and wind damage. Major damage and apply for Federal assistance.

Section 2: Planning Process

2.1 Planning Process Overview

The Town of North Providence initiated the update to its Hazard Mitigation Plan in November 2023 at the recommendation of the North Providence Emergency Management Director. The Town procured CDR Maguire to assist with planning efforts and adopted the final plan in 2024. **Table 2.1.1** below provides a summary of the NPHMC meeting dates and the activities that they conducted:

Table 2.1: Summary of NPHMC Activities

Date	Activity	Description
11/20/23	Kickoff Meeting	The NPHMC met virtually to discuss hazard mitigation, develop a process for updating the plan, developed a stakeholder and public outreach strategy, and discussed recent hazard events and town updates.
11/30/2023	Public Survey	The Town shared a public survey through various channels to assess the general public's awareness of hazards. The public survey was closed in May 2024.
12/11/2023	Planning Team Meeting	The NPHMC met to discuss public opinion surveys, stakeholder outreach strategy, and mitigation actions review.
12/11/2023	Review of Mitigation Actions	The CDR team and planning team members began conducting outreach to individual town departments and organizations to discuss the status of previous mitigation actions and gathered ideas for new mitigation actions.
1/8/2024	Public Stakeholder Meeting	Identified stakeholders were invited to participate in a public meeting where an overview of mitigation, hazards impacting the town, and mitigation actions were discussed.
1/24/2024	Mitigation Action Survey	The planning team and stakeholder group were surveyed to rank and prioritize new and ongoing mitigation actions.
2/1/2024 – 12/1/2024	Plan Updates and NPHMC Review	The CDR team updated plan sections based off the input gathered from stakeholders, the public, and best available hazard data and town resources. Updates included the HIRA, Capabilities assessment, and Mitigation Strategy.
12/9/24-12/30/24	Public Comment Period	The draft 2024 hazard mitigation plan update was posted online and social media for public input.
1/6/2025	Plan Submittal to State	
TBD	Plan Adoption	

2.2 Building the Team and Support

Planning Team

The North Providence Hazard Mitigation Council (NPHMC) was previously organized by invitation from the local Emergency Management Director. The resulting NPHMC is comprised of the Emergency Management Director, Building Inspector, Town Planner, Communications Director, Assistant Fire Chief, and EMS Bureau Chief. The NPHMC were present and contributed at all planning team meetings as well as the public stakeholder meeting and provided crucial input on hazard risk and mitigation strategies, helped facilitate discussions with town departments and staff, and promoted and responded to public input surveys.

Table 2.2.1: NPHMC Representation

Name	Title	Department/Agency
John Silva	Fire Chief & EMA Director	North Providence Fire Department
Brent Wiegand	Director	Planning and Zoning
Ralph Nahigian	Director	Department of Communications
Bob DeAngelis	Chief of EMS	NP Fire
Jim Fuoroli	Director of Public Buildings	NP Buildings Department
Paul Silvestri	Assistant Fire Marshall	NP Fire
Bernie Salvatore	Director	Public Works
Michael Campagnone	Building Official	Building Inspection

Stakeholders

The NPHMC provided an opportunity for a diverse group of stakeholders to participate in the planning process. Various town departments, local organizations, and neighboring communities were contacted via email and word of mouth to participate in the planning process through the Public Stakeholder Meeting on January 8, 2024, as well through the public opinion survey and mitigation actions survey. In addition to NPHMC members, additional stakeholders that were present at the Public Stakeholder meeting included the following:

Table 2.2.2: Stakeholder Representation

Name	Title	Organization
Mike Taliencia	Foreman	NP Public Works
Robert Lepre	Deputy Chief	NP Police
Jamie Lynch	Director of Disasters	American Red Cross
Mike Scaramuzzo	Captain	NP Police
David D'Amico	Town Engineer	DETEC Engineering
Linda Giorgio	Director of Senior Services	Mancini Senior Center
Lisa Kennedy	HEZ Director	Tri-County Community Action Agency

An additional stakeholder that was not present at the Public Stakeholder Meeting but provided input in the plan through emails, conversations, and resource sharing was Stefanie Dalton from North Providence Libraries. Stakeholders that were contacted and provided an opportunity to participate included local government officials, State EMA, EMA directors from the neighboring communities of Providence, Johnston, Smithfield,

Lincoln, and Pawtucket, as well as the Town's main water source Providence Water, local watershed organization, and North Providence School District.

2.3 Public Outreach

The CDR team and planning team members conducted outreach to individual town departments and organizations to discuss the status of previous mitigation actions and gathered ideas for new mitigation actions. The town shared a public survey through various channels to assess the general public's awareness of hazards. The public Survey was closed in May 2024. Identified Stakeholders were invited to participate in a public meeting where an overview of mitigation, hazards impacting the town, and mitigation actions were discussed. Through meetings, individual outreach, and surveying, the planning team was able to gain vital input from the community to help assess hazard risk and guide the plan's prioritization of mitigation actions.

The Town shared a public survey through various channels to assess the general public's awareness of hazards and get their input on how to handle mitigating hazard impacts. The public survey was opened in January and closed in May 2024. The survey was posted to the Town's website, social media sites including the town's Facebook, school district's Facebook page, and the library's Facebook. The survey was also advertised on electronic bulletin boards and in flyers posted around town buildings, schools, senior center, and at Tri-County Community Action Agency's North Providence locations.

The Tri-County Community Action Agency was a vital partner in conducting outreach to underserved and disadvantaged communities. In addition to posting the flyers at their locations, they posted them at their food bank and local supermarkets.

Additional efforts to engage the public occurred in a public comment period to allow input on the draft plan. The public comment period was open from December 9, 2024, to December 30, 2024. Public comments were incorporated in the plan and can be found in **Appendix A**.

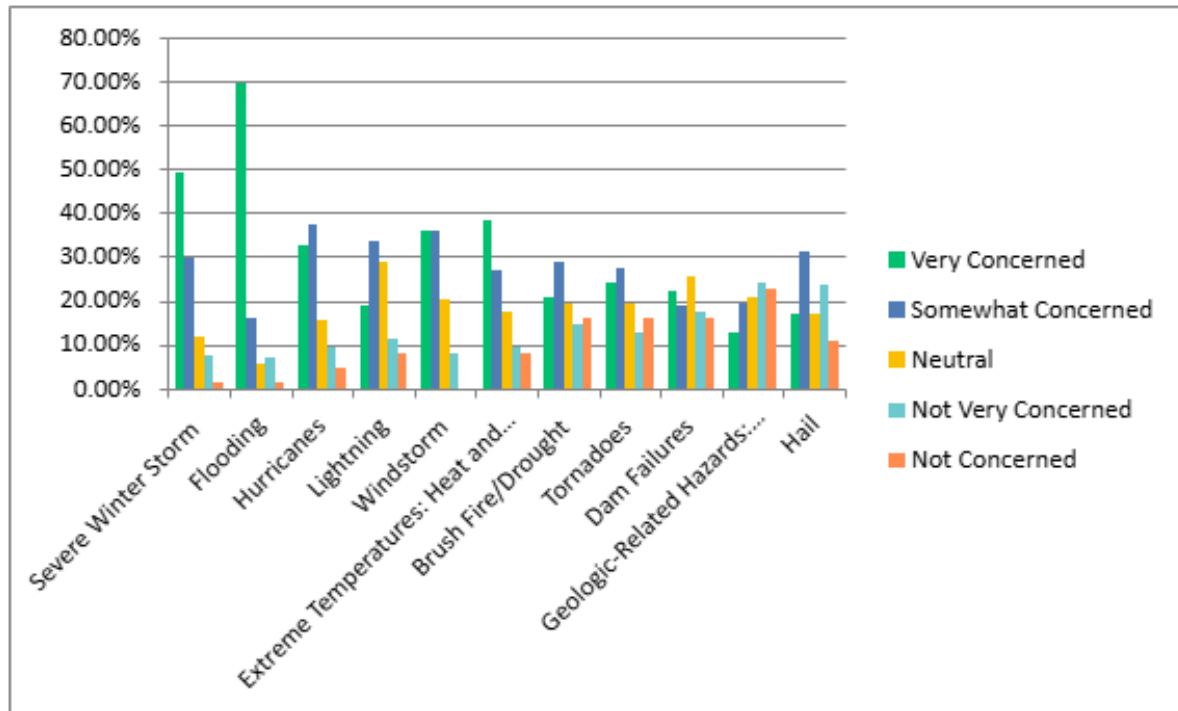
Summary of the Public Survey Results

There were 73 total responses to the public survey. Many of the respondents were long-term residents of North Providence and were able to share their experience and insight concerning hazards in their community. 49% of the respondents stated having directly experienced a natural disaster at some point in the past 5 years, with an overwhelming majority who reported experiencing flooding events, along with tornadoes and windstorms that



caused damage. Only 12% of respondents stated being aware of the Town's Hazard Mitigation Plan prior to receiving the survey. A summary of the survey results are as follows:

How concerned are you about the following natural disasters affecting North Providence? (Check the corresponding box for each hazard).



For the following categories, what do you see as vulnerable in your community? Ranked most vulnerable to least vulnerable.

1. Human (Loss of life and/or injuries)
2. Infrastructure (Damage or loss of bridges, utilities, schools, etc.)
3. Economic (Business closures and/or job losses)
4. Governance (Ability to maintain order and/or provide public amenities and services)
5. Environmental (Damage or loss of forests, rangeland, waterways, etc.)
6. Cultural/Historic (Damage or loss of libraries, museums, fairgrounds, etc.)

What specific types of community assets are most important to you? The percentage of respondents selected the following assets as either Very Important or Somewhat Important:

- Major bridges (94%)
- Hospitals (93%)
- Fire/police stations (90%)
- Small businesses (88%)
- Elder-care facilities (83%)
- Schools (K-12) (77%)
- Parks (77%)
- Major employers (76%)
- College/university (70%)

- Town Hall/courthouse (63%)
- and Museums/historic buildings (51%).

Many activities can reduce your community's risk from natural hazards. These activities can be both regulatory and non-regulatory. Please check the box that best matches your opinion of the following strategies to reduce risk and loss associated with natural disasters.

1. I support policies to prohibit development in areas subject to natural hazards (94.44%)
2. I support the disclosure of natural hazard risks during real estate transactions (94.44%)
3. I support a mix of both governmental and non-governmental approaches to reducing risk (91.55%)
4. I support steps to safeguard the local economy following a disaster event (90.14%)
5. I support improving the disaster preparedness of local schools (87.50%)
6. I support a local inventory of at-risk buildings and infrastructure (83.10%)
7. I support the use of local tax dollars to reduce risks and losses from natural disasters (77.46%)
8. I would be willing to make my home more disaster-resistant (76.06%)
9. I support implementing government rules to reduce risk (75.72%)
10. I support protecting historical and cultural structures (69.44%)
11. I support the use of tax dollars (federal and/or local) to compensate landowners for not developing in areas subject to natural hazards (46.48%)

Natural hazards can have a significant impact on a community. Planning for these events can help lessen the impact. The following statements will help determine residents' priorities in planning for natural hazards in your community.

1. Protecting critical facilities (e.g., transportation networks, hospitals, fire stations) (98%)
2. Protecting and reducing damage to utilities (95%)
3. Protecting private property (92%)
4. Enhancing the function of natural features (e.g., streams, wetlands) (91%)
5. Strengthening emergency services (e.g., police, fire ambulance) (88%)
6. Promoting cooperation among public agencies, citizens, non-profit organizations and businesses (88%)
7. Preventing development in hazard areas (84%)
8. Disclosing natural hazard risks during real estate transactions (80%)
9. Protecting historical and cultural landmarks (68%)

2.4 Discovery and Resources

During the plan update, the Planning Team reviewed and incorporated pertinent information from available resources. Existing plans, studies, reports, and technical information were reviewed and incorporated throughout the document are identified below in [Table 2.4.1](#).

Table 2.4.1: Documentation Review and Incorporation

Document Reviewed	Type	How it was incorporated
Town of North Providence 2018 Hazard Mitigation Plan	Plan	Compared hazard profiles, history, and impacts of events for the hazard profiles.
State of Rhode Island 2024 Hazard Mitigation Plan	Plan	Compared hazard profiles, history, and impacts of events for hazard profiles.
Town of North Providence 2013 Comprehensive Plan; Draft 2024 Comprehensive Plan	Plan	Incorporated information from the plans throughout the NPHMP such as community profile information, land use, transportation, community goals, various figures and data, and capability assessment.
North Providence Municipal Community Resilience Building Summary of Findings	Report	Used the plan and information in hazard profiles and mitigation strategy.
Resilient Rhody	Plan	Used information in hazard profiles
NOAA NCEI Storms Event Database	Dataset	Used data in the hazard profiles to calculate probability and impacts of hazard events.
CDC Social Vulnerability Index	Dataset	Used data to determine vulnerability throughout the town, incorporated in the vulnerability assessment.
US Census Bureau: Quick Facts, ACS, and 2020 US Census Data	Dataset	Data incorporated in community profile.
Zoning Ordinance and Zoning Maps	Ordinances/Maps	Incorporated in Capability Assessment.
Building Codes and Floodplain Regulations	Ordinances/Regs	Incorporated in Capability Assessment.
Floodplain Maps	Maps	Incorporated in Vulnerability Assessment.
Rhode Island GIS Mapping Services	Maps	Incorporated in Vulnerability Assessment and Asset Inventory.
Wenscott Reservoir Dam – Visual Inspection Report	Report	Reviewed and incorporated in Dam Hazard Profile
Climate Mapping for Resilience and Adaptation	Dataset	Incorporated in hazard profiles and risk assessment

Section 3: Hazard Identification and Risk Assessment

This history of natural hazard events verifies that the Town of North Providence is vulnerable to diverse events including blizzards, floods, and strong storms. The hazards identified by the NPHMC are in line with those discussed in the State Hazard Mitigation Plan and are of greatest concern to the Town. This section focuses on assessing the community's risk to natural hazards by identifying which natural hazards affect North Providence and reviewing North Providence's and the State of Rhode Island's hazard history. Risk includes the characteristics of the hazard and takes into account the magnitude, duration, distribution, area affected, frequency and probability of an event. The section also assesses the vulnerability of people, structures, and critical facilities to these hazards and examines the capabilities in place to mitigate them.

The primary sources of data researched to identify occurrences of natural hazard events in North Providence were the RI State Hazard Mitigation Plan 2024 Update, National Climatic Data Center within the National Oceanic Atmospheric Administration (NCDC-NOAA), the United States Geological Survey (USGS) Earthquake Hazards Program, and the Taunton, MA, National Weather Service Forecast Office.

The Hazard Identification and Risk Assessment and analysis was conducted using historical hazard event data from the National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information (NCEI) Storm Event Database. The team calculated total damages and annual frequency of incidents & episodes, annualized damages, and fatalities. The NCEI Storm Event Database receives Storm Data from the National Weather Service. The National Weather service receives their information from a variety of sources, which include but are not limited to: county, state, and federal emergency management officials, local law enforcement officials, SkyWarn spotters, NWS damage surveys, newspaper clipping services, the insurance industry and the general public, among others.

The NCEI database is an exhaustive resource that is considered the source of best-available data for historical hazard events and damages. The database records events at the county-level, and occasionally will have more detailed location information such as identifying a specific jurisdiction that was impacted by an event. The planning area of North Providence is a small jurisdiction with very few historical events recorded in the NCEI database, thus the planning team utilizes the hazard data for Providence County to assess probability, potential impacts, and risk.

3.1 Hazard Identification

The North Providence Hazard Mitigation Committee (NPHMC) reviewed the hazards listed in the State’s Hazard Mitigation Plan and recent Town experiences to continue addressing hazards in North Providence. Through surveying the NPHMC and the general public, hazards were ranked in order of risk from high to low.

It must be noted that there are numerous natural hazards that exist but are not presented. The following hazards will not be addressed in this Hazard Mitigation Plan:

- Volcanoes
- Tsunamis
- Landslides, land subsidence, expansive soils, and coastal erosion
- Avalanche
- Storm surge
- Wildfires

After the NPHMC analyzed the historical data, the committee decided not to consider these hazards due to the lack of frequency in which they occur and the minimal probability of their occurrence. North Providence does not have volcanoes or the right terrain to support landslides, avalanches, expansive soils, or land subsidence. Being an inland town, North Providence does not experience the effects of tsunamis, coastal erosion, or storm surge. Wildfires that burn through thousands of acres of forest are not a concern given the urban landscape of the Town. The NPHMC chose to discuss the brushfire threat rather than wildfires.

Through surveying the NPHMC and the general public, hazards were ranked in order of risk from high to low. Table 3.1 shows the changes in hazard priorities from the 2018 plan to the 2024 update.

Table 3.1: Hazard Risk Ranking

2018		2024	
Hazard	Risk Rank	Hazard	Risk Rank
Winter Storm	High	Flooding	High
Flooding	High	Winter Storm	High
Hurricane/Nor'easter	Medium	Severe Winds	Medium
Lightning	Medium	Hurricane/Nor'easter	Medium
High Winds	Medium	Extreme Temperatures	Medium
Extreme Temperatures	Medium	Lightning	Medium
Brushfire/ Drought	Low	Tornado	Low
Tornado	Low	Brush Fire/Drought	Low
Dam Failure	Low	Hail	Low
Earthquake	Low	Dam Failure	Low
Hail	Low	Earthquake	Low

3.2 Hazard Analysis Methodology

The Hazard Identification and Risk Assessment and analysis was conducted using historical hazard event data from the National Oceanic and Atmospheric Administration's (NOAA) National Centers for Environmental Information (NCEI) Storm Event Database. The team calculated total damages and annual frequency of incidents & episodes, annualized damages, and fatalities. The NCEI Storm Event Database receives Storm Data from the National Weather Service. The National Weather service receives information from a variety of sources, which include but are not limited to county, state, and federal emergency management officials, local law enforcement officials, SkyWarn spotters, NWS damage surveys, newspaper clipping services, the insurance industry and the general public, among others.

The NCEI database is an exhaustive resource that is considered the source of best-available data for historical hazard events and damages. The database records events at the county-level, and occasionally will have more detailed location information such as identifying a specific jurisdiction that was impacted by an event. The planning area of North Providence is a small jurisdiction with very few historical events recorded in the NCEI database, thus the planning team utilizes the hazard data for Providence County to assess probability, potential impacts, and risk.

Probability was determined based off historical occurrences. It is appropriate to assume that Providence County and the Town of North providence will experience at least similar rates of occurrences as it has historically, with the likelihood that climate change may increase frequency and future conditions of population growth and development may increase the severity of impacts experienced from hazards. Damage Potential and Impacts were determined by assessing historical damages and annualizing them to determine the average annual damages. Risk Rank was determined through NPHMC's assessment of historical data, recent hazard experiences, local knowledge, and conversations and surveys from stakeholders and the public.

3.3 Hazard Impact Summary

Table 3.2: Hazard Impact Summary

Type	Probability	Damage Potential	Impacts	Risk Rank
Flooding	High	Medium	Homes, basements, roads, storm and sewer pipes	High
Winter Storm	High	Medium	Road infrastructure, flat shelter roofs, access to communications and hospital, wear and tear on snow removal equipment, local businesses close when state shuts down roads	High
Severe Winds	Medium	Medium	Infrastructure, tree debris, roads blocked	Medium
Hurricane/Nor'easter	Low / Medium	High	Infrastructure, tree debris, roads blocked, telecom systems	Medium
Extreme Temperatures	High	Medium	Fire hazards during high temps, frozen pipes during cold temps, sensitive populations	Medium
Lightning Storm	Low	Medium	Fire alarm system, communication systems, structure fires, trees downed, long term power outages	Medium
Tornado	Low	Medium	Depends on where it hits. A tornado touchdown along Mineral Spring Ave. will cause a lot of infrastructure damage. Less developed areas may experience less infrastructure damages, but more downed trees.	Low
Brushfire/Drought	Medium	Low / Medium	Loss of forest cover, Randall Reservation, recreational outbuildings, air and water quality.	Low
Hail	Low	Low	Property, vehicles, roofs	Low
Dam Failure	Low	Low / Medium (depending on location)	Flooding of downstream neighborhoods	Low
Earthquake	Low	Medium / High	All infrastructure, especially the Longview Reservoir	Low

3.4 Hazard Profiles

Flood-Related Hazards

Description

A flood is defined as any high flow, overflow, or inundation of water over typically dry land that causes or threatens damage. Floods may result from meteorological events such as substantial precipitation, thunderstorms with heavy rainfall, overflow of dams, rapid snowmelt, and storm surges.

Riverine flooding occurs when a river or stream rises to an elevation that causes the river to overflow its banks. The rising water damages roadways, homes, buildings, and occupied spaces near the overflowing waterway. Lower levels of a watershed are more susceptible to this type of flooding because these waterways receive all the water from the upper levels and are responsible for carrying a much higher volume of water than the tributaries.

Flash floods are the rapid and extreme flow of high water into a normally dry area. A flash flood can also occur when there is a rapid rise in the water level of a stream or creek and the water rises above a pre-determined flood level within six hours of a precipitation event. This type of flooding occurs when the ground is too saturated, impervious, or flat to drain rainfall into waterways through storm sewers, ditches, creeks, and streams at the same rate as the precipitation falls.

Worldwide, flooding is the most common and costly disaster, resulting in significant loss of life and property every year. According to the RI State Hazard Mitigation Plan, “Flooding is a localized hazard that is generally the result of excessive precipitation. Flooding is the most commonly occurring natural hazard, due to the widespread geographical distribution of river valleys and coastal areas, and the attraction of human settlements to these areas. Floods have a substantial impact on the infrastructure of a region. Common effects include roadway breaches, bridge washouts, roadway wash away, and water-covered roadways. As floodwater moves rapidly and forcefully, it washes away the surface and sub-surface of roads, causing holes, ruts, and other problems for vehicles. Floodwater that is one foot deep, sometimes less depending on the force of the water, is strong enough to carry vehicles away with occupants inside.

The aftermath of flooding can be just as damaging and dangerous as the flooding itself. Cleanup is often a long, protracted activity with its own set of hazards. Prolonged power outages cause issues with refrigeration and sanitation. Sewer systems can become inundated with floodwater and cease to function properly. Standing water becomes contaminated with household and industrial chemicals, fuel, and other materials that have leaked into the water. All floodwater is considered contaminated, either from germs and disease or hazardous materials making it a direct threat to first responders and population in direct contact with the water.

For the purpose of this plan, flooding related hazards include riverine flooding, flash floods, and urban flooding. Flooding occurs in North Providence during heavy rainfall events when the rivers overtop their banks and spill out into the developed areas. North Providence receives an average of 47 inches of rain each year.

Location and Extent

FEMA, through the Risk Mapping, Assessment, and Planning (Risk MAP) program, works with partners to assess and map these flood risks producing Flood Insurance Rate Maps (FIRMs). As an additional benefit, the FIRMs serve as the basis for NFIP regulations and flood insurance purchase requirements. The FIRM depicts the SFHA, including the 1%-annual-chance flood. These areas are labeled on the map as zone, as explained in the following table:

Table 3.3: Flood Zone Descriptions

Zone	Description
A	The 1%-annual-chance or base floodplain. There are six (6) types of A Zones.
AE	The base floodplain where base flood elevations are provided.
AH	Shallow flooding base floodplain. BFEs are provided.
AO	The base floodplain with sheet flow, ponding, or shallow flooding. Base flood depths (feet above ground) are provided.
AR	The base floodplain that results from the decertification of a previously accredited flood protection system that is in the process of being restored to provide a 1%-annual-chance or greater level of flood protection.
A99	Area to be protected from base flood by levees or Federal Flood Protection Systems under construction. BFEs are not determined.
B or Shaded X	Areas between the limits of the base flood and the 0.2% annual-chance (or 500-year) flood.
C or Unshaded X	Areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2% annual-chance flood.

According to the Town's 2023 Comprehensive Community Plan, North Providence contains approximately 380 acres of Special Flood Hazard Area flood zone, 10.3% of the entire area of North Providence. This flood zone is generally associated with the two rivers within the Town, the Woonasquatucket River and the West River, and their tributaries. Much of this floodplain is developed and therefore at particular risk due to flooding.

The Town's older mills and associated villages such as Greystone, Allendale, Lymansville, and Geneva are all located close to the river for access to waterpower and at low elevation, where they are very vulnerable to flooding. Several residential neighborhoods were also developed prior to the adoption of restrictions on construction in floodplains and are also vulnerable. In particular, homes in the vicinity of Gillen Avenue, Evergreen Parkway, West River Parkway, Brown Ave. and Humbert Street have experienced problematic flooding. The distribution of the Town's flood zones are below in Table 3.4.2 below.

Table 3.4.2: Flood Zone Distribution

Flood Zone	Probability	Acres	Percentage of Town
A	1% Annual Chance Flood	40	1%
AO	1% Annual Chance Flood	1	0.03%
AE	1% Annual Chance Flood or Regulatory Floodway	288	8%
X	0.2% Annual Chance of Flooding	53	1%

Previous Occurrences

Based on data from NOAA's NCEI Storm Event Database, from 1996 to 2024, Providence County has experienced 165 flood events, which resulted in 3 injuries and \$33,660,500 in property damage. There were no recorded deaths or crop damage due to flooding events in the County. A full list of all flood events from the database can be found in [Appendix B](#).

Recent flooding events in North Providence since the last hazard mitigation plan include flooding on January 9, 2024, September 11, 2023 and September 5, 2022, which resulted in \$1,000,000 in property damage and three (3) injuries. The NCEI Storm Event Database describes the September 5, 2022 events as such: "In Providence, 7 to 10 inches of rain fell over the course of a few hours during the mid to late afternoon creating serious flash flooding. 8.31 inches of rain fell in the Elmwood section of the city and 6.89 in the College Hill section. National news media showed aerial views of Interstate 95 which had become completely flooded and was closed in both directions. The snarled traffic lasted for multiple hours. Cars were reported to be stuck in the following locations: Webster Ave., Hamilton St., Cadillac Ave. at Melrose St. (water up to the windows), Narragansett Ave at Santiago St., Rugby St. at Thurbers Ave. Additional flooding and road closure reports included: Thackery St. at Melrose St., the underpass of Rt. 10 north at Westminster St., Hartford Ave. at Heath St., Smith St. at Gention Ave., Exchange St., Pleasant Valley Parkway at Berlin St., Huntington Ave., Manton Ave. at Saban St., Elmwood Ave. ramp to Rt. 10, and Olneyville Square. One block of Atwells Avenue was washed out. Many water rescues were necessary due to life-threatening situations. Altogether, there were 3 injuries related to motor vehicle accidents during the storm and roughly 25 individuals were rescued. On Benevolent St. water invaded the 1st floor of a Brown University campus building. On Elmwood Ave. there was rapid flooding of a structure of an unspecified type. On Peace Street, there was a partial (25%) collapse of the roof of a vacant building, which was being redeveloped into a shopping plaza. A total of 41 homes and businesses were flooded. The West River overtopped its banks and flooded Charles Street and portions of Silver Spring Street in the evening. The Woonasquatucket River crested at 6.07 ft. at 315 AM on September 7th, which was above the 5.5 ft. flood stage. Many thanks to the Providence Emergency Management Agency for some of these details."

Probability of Future Occurrences

There have been 165 flood events in Providence County since 1996, averaging 5.9 events per year. The probability of a flood event occurring in Providence County in any given year will at least mirror historical event rates, but likely increase due to climate change. Based on the historical data in the NCEI database, the NPHMC has determined that there is a 100% probability of a flood occurring in North Providence within any given year. It is highly probable that North Providence will have a flood event in any given year.

As rainstorms become more intense due to climate change, increased land development and riverine flooding will continue to be a major concern for the Town. The Climate Mapping for Resilience and Adaptation (CMRA) provides further insight into how climate change may impact flooding in the future. The CMRA projects average annual total precipitation for Providence County to increase significantly throughout the century. The projections include two models, one under the conditions of lower greenhouse gas emissions and one for higher emissions. Historical (1976-2005) average annual total precipitation in the county has ranged from 46.1 to 49 inches. The CMRA projections for the early century (2015-2044) under lower emissions ranged from 46.5 to 56.5 inches, and under the higher emissions model ranged from 45.8 to 57.5 inches. The potential increase in average annual total precipitation under either emission model will see a significant increase of 7.5 to 8.5 inches a year. Increased precipitation will have an impact on frequency and intensity of rainstorms and flood probability.

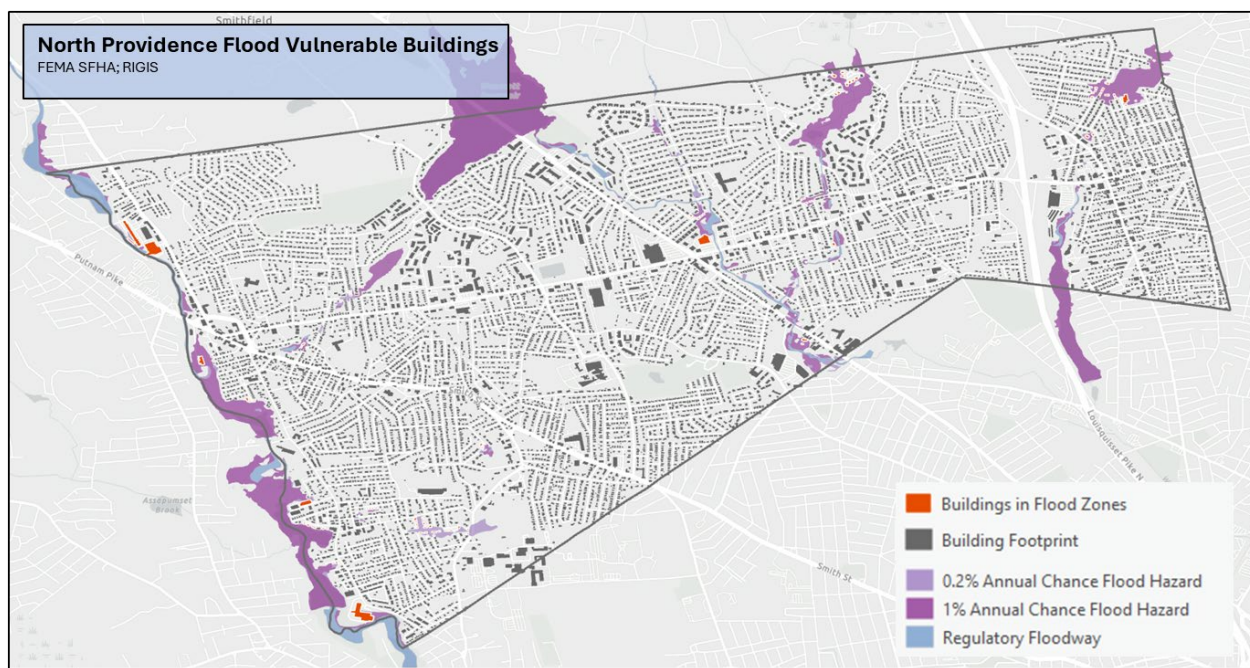
Potential Impacts

Floodwaters seek the path of least resistance as they travel to lower ground, seeping into and occupying any structure in its path. Basements and lower levels of buildings can become inundated with floodwater. Placing sandbags along the exterior of a building is only a temporary stopgap; if floodwaters do not recede quickly, the force of the water will move through the sandbags and infiltrate the structure.

The severity of flooding in North Providence is dependent upon many factors including how saturated the ground is, the amount of rainfall, and the amount of pervious surfaces in the area. Major flooding is not a common occurrence as of late but as climate patterns change North Providence may experience more intense rain events and consequently more riverine and urban flooding.

Providence County has experienced \$33,660,500 in property damage from flood events since 1996, which averages to \$1,202,160 per year. Based off historical data, the county should expect annual flood damage to be over \$1,000,000 per year, with an expectation that climate change and land use conditions could cause an increase in damage unless mitigation measures are taken to reduce the impact of flooding events.

Figure 3.5.4: Flood Vulnerable Buildings



National Flood Insurance Program

The Town of North Providence has been a compliant member of the National Flood Insurance Program (NFIP) since December 1977. The NFIP is a federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the Federal Government. This insurance is designed to provide an insurance alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and replacing their contents.

The North Providence Town Planner is the designated NFIP Coordinator, providing a variety of services to residents and Town officials. In addition to being available to respond to flood insurance questions, the NFIP Coordinator maintains all Letters of Map Amendment (LOMAs), distributes flood hazard flyers, is available for Community Assistance Visits (CAVs), and mitigates flood insurance issues between residents, lenders and insurance companies.

NFIP compliance is further enhanced by the Building Inspector's enforcement of the Rhode Island State Building Code which includes International Building Code, 2018 and one foot of freeboard for inland A zones.

There are 73 NFIP insurance policies in North Providence, 13 of which are in a Special Flood Hazard Area (SFHA) A and AE Zone. The combined coverage on those policies is \$22,733.00. Since 1978, there have been 110 flood claims resulting in a total payment of \$1,281,401. There are a total of 22 repetitive loss properties with a total of 59 losses in North Providence, 11 of which are located in the SFHA. Of the 22 properties, 18 are residential, and four (4) are non-residential. ¹

¹ Information obtained from RI State Floodplain Coordinator

Winter Related Hazards

Description

Winter storms are an event where there is heavy snow, blowing snow, wind chills, ice, and sleet. These events are potentially life threatening, can affect infrastructure, and cause widespread disruption. Winter storms form from below freezing air temperatures, atmospheric pressure, and moisture. The main types of winter storms are blizzards, ice storms, lake effect storms, and snow squalls all of which bring winter precipitation.

This risk assessment relies on NOAA's NCEI Storm Events Database as it is the best available data for locations, previous occurrences, and impacts resulting from severe winter storms. The events recorded are classified as "Blizzard", "Winter Storm," "Ice Storm," and "Heavy Snow." It is these event types that create the effects that justify mitigation activity. All can affect infrastructure and assets and endanger populations. They are defined as such:

Blizzard: A severe winter storm with winds of 35 mph or greater AND significant snow or blowing snow with visibility less than 1/4 mile.

Heavy Snow: 6 inches of snow or more in 12 hours; or 8 inches of snow or more in 24 hours.

Ice Storm: Ice accumulations that could cause extremely dangerous conditions and significant damage.

Winter Storm: A life-threatening winter storm with snow, ice, strong winds, and/or cold temperatures.

Severe winter storm events can make conditions dangerous and disruptive for local governments and residents. Heavy snow accumulations are difficult to remove. Trees, cars, roads, and other surfaces can develop a coating of ice, that make accumulations of ice hazardous to motorists and pedestrians. Ice accumulations can create slippery roads and walkways that lead to vehicle and pedestrian accidents; collapsed roofs from fallen trees and limbs from heavy ice and snow loads; and felled trees, telephone poles and lines, electrical wires, and communication towers.

Location and Extent

Winter storms can affect the entire state or large geographic areas that include multiple counties; the impacts of winter storms can occur to the whole region. Snow totals and wind speeds do vary slightly from town to town depending on the storm. North Providence is small enough that the entire town is equally at risk for winter storm impacts. On average, North Providence receives 33.8 inches of snow throughout the winter. The average winter temperature in North Providence is 41.7°F, with average monthly temperatures averaging between 23.7°F to 37.8°F.

For severe weather conditions, the National Weather Service issues some or all of the following products as conditions warrant:

Winter Weather Advisory: Winter weather conditions are expected to cause significant inconveniences and may be hazardous. If caution is exercised, these situations should not become life threatening. Often the greatest hazard is to motorists.

Winter Storm Watch: Severe winter conditions, such as heavy snow and/or ice are possible within the next day or two.

Winter Storm Warning: Severe winter conditions have begun or are about to begin

Blizzard Warning: Snow and strong winds will combine to produce blinding snow (near zero visibility), deep drifts, and life-threatening wind chill.

Ice Storm Warning: Dangerous accumulations of ice are expected with generally over one quarter inch of ice on exposed surfaces. Travel is impacted and widespread downed trees and power lines often result.

Wind Chill Advisory: Combination of low temperatures and strong winds will result in wind chill readings of -20 degrees F or lower.

Wind Chill Warning: Wind chill temperatures of -35 degrees F or lower are expected. This is a life-threatening situation.

One way to measure the extent of winter storms and ice accumulation is the Sperry-Piltz Ice Accumulation Index (SPIA). The SPIA Index is a scale for rating ice storm intensity based on the expected footprint of the storm, the expected ice accumulation as a result of a storm, and the expected damage a storm inflicts on man-made structures, especially exposed overhead utility systems such as power lines. A recreation of the SPIA is represented in the table below:

Table: Sperry-Piltz Ice Accumulation Index (SPIA)

Ice Damage Index	Radial Ice	Wind	Damage and impact description
0	0–0.25 in	0–15 mph	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	0.10–0.25 in	15–25 mph	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
	0.25–0.50 in	15–25 mph	
2	0.10–0.25 in	25–35 mph	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
	0.25–0.50 in	15–25 mph	
	0.50–0.75 in	0–15 mph	
3	0.10–0.25 in	Over 35 mph	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 to 5 days.
	0.25–0.50 in	25–35 mph	
	0.50–0.75 in	15–25 mph	
	0.75–1.00 in	0–15 mph	
4	0.25–0.50 in	Over 35 mph	Prolonged and widespread utility interruptions with extensive damage to main distribution feeder lines and some high voltage transmission lines/structures. Outages lasting 5 to 10 days.
	0.50–0.75 in	25–35 mph	
	0.75–1.00 in	15–25 mph	
	1.00–1.50 in	0–15 mph	
5	0.50–0.75 in	Over 35 mph	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.
	0.75–1.00 in	Over 25 mph	
	1.00–1.50 in	Over 15 mph	
	Over 1.50 in	Any	

Previous Occurrences

Based on data from NOAA's NCEI Storm Event Database, from 1996 to 2024, Providence County experienced 205 winter storm events. Winter storms attributed to 2 deaths and 1 injury as well as \$10,955,700.00 in property damage over the 28-year period.

The winter of 1978 is considered one of the worst winters on record for the State. On January 13, 1978, an ice storm hit the state. Heavy ice cover was most severe in Cranston and Warwick. Statewide the storm destroyed thousands of trees and left nearly 120,000 people without power and heat in some circumstances. A little more than three weeks later, on February 6, 1978, the State was pounded by what became known as the "Blizzard of 78". In Warwick, the official measure of snowfall at T.F. Green Airport was 28.6". Snow accumulations ranged from 10" on Block Island to 56" in northern areas. Because the heavy snowfall arrived during rush hour, nearly 30,000 vehicles were left stranded. The State was immobilized for almost a week and the President declared Rhode Island a disaster area. During that week 400 Army and Navy personnel aided local crews to clear streets and highways. The statewide estimated losses from the blizzard neared \$110 million and there were 21 storm-related deaths.

Since then, numerous winter storms events dumping 2 feet or more of snow have occurred: March 1993, "Storm of the Century (13 inches of snow in North Providence), January 7, 1996 (12-24 inches across the state), January 22, 2005 (15-25 inches across the state), February 8, 2013 (24 inches-30 inches across the state), and March 22, 2013 (12-24 inches reported). The severe winter storm that swept through Rhode Island on March 22, 2013 was declared a major disaster (DR-4107) by the Federal Emergency Management Agency.

This large storm which stretched from New Jersey into Canada brought more than two feet of snow to Rhode Island in less than 24 hours. National Grid estimated more than 180,000 customers in Rhode Island lost power. Other large winter storms occurred in February 2013 (DR-4107/Nemo) and January 2015 (DR-4212/Juno). The 2013 storm crippled the Town under nearly 2 feet of snow. The 2015 blizzard produced strong winds, and record snow falls of 19 inches. The governor issued a Statewide travel ban beginning January 27th at midnight and continuing through 8pm.

More recently, the Town of North Providence was impacted by a blizzard in 2022 that dumped over 29 inches of snow along with 70 MPH wind gusts. This blizzard did major damage to the Town's infrastructure and daily operations resulting in a FEMA declaration (FEMA-DR-4653).

The Town prepares for these significant winter storms by stockpiling sand and salt and securing personnel and equipment for snow removal. Road and parking surfaces are treated before winter storms and all major roads are kept clear during winter storms for safety and emergency response. A full list of winter storm events is available in [Appendix B](#).

Probability of Future Occurrences

Since 1996, Providence County has experienced 205 winter storm events, averaging 9.11 events per year. The probability of a winter storm incident occurring in Providence County in any given year has been determined to be 100% based on the NCEI data. The NPHMC agreed that there is a 100% likelihood of a heavy snow or ice storm affecting North Providence within the next year. Recent history has shown that the Town needs to continue to prepare annually for winter storms. It is highly probable that a winter storm event will occur in any given year.

The CMRA projects average annual total precipitation for Providence County to increase significantly throughout the century. The increased precipitation is likely to occur during the colder months and will lead to an increase in ice and heavy snow accumulation.

Potential Impacts

Winter storms are non-spatial hazards and are difficult to determine the location of the damage that may result from a winter storm event. Historically, severe winter storms for Rhode Island have resulted in the closing of schools/businesses, power outages, fallen trees/wires, disruption of transportation systems, and damage to commercial and residential property. North Providence has been hit with crippling snowstorms that close roads, damage trees, knock out power, and damage property.

Climate change can lead to greater variability in precipitation and temperature patterns. In the future, North Providence and the region may experience more erratic and intense winter storms as well as milder winters as average temperatures rise due to climate change. Climate change could lead to a decrease in the frequency and snowfall amounts from traditional snowstorms, and it may also increase the likelihood of winter storms that produce mixed precipitation, including freezing rain and sleet.

Providence County has experienced \$10,955,700 in property damage from winter storm events since 1996, which averages \$391,275 per year. Based off historical data, the county should expect annual winter storm damage to be nearly \$400,000 per year, with an expectation that climate change and land use conditions could cause an increase in damage unless mitigation measures are taken to reduce the impact of winter storm events.

Severe Winds

Description

Wind is the movement of air caused by a difference in pressure from one place to another. Local wind systems are created by the immediate geographic features in a given area, such as mountains, valleys, or large bodies of water. Wind effects can include blowing debris, interruptions in elevated power and communications utilities, and intensification of the effects of other hazards related to winter weather and severe storms. Severe thunderstorms can produce winds that can be life threatening and cause immense damage to property. Thunderstorms can be categorized by their physical characteristics such as the presence or absence of rotation and the number or location of updrafts and downdrafts present. Thunderstorms are categorized as Single-Cell Storms, Pulse Storm, Multicellular Cluster, Multicellular Line Storm, and Super Cell Storm all of which can produce rain, hail, damaging winds, and tornados. Most thunderstorms produce some straight-line winds as a result of outflow generated by the thunderstorm downdraft.

This section of the risk assessment will focus on damaging winds, often referred to as “straight-line” winds to differentiate the damage they cause from tornado damage. The types of damaging winds include downdraft, macroburst, microburst, downburst, gust front, and derecho. These types are categorized by the storm type it originated from, duration of gust, damage extent, and more. Generally damaging winds are classified as those exceeding 50-60 mph.

Damaging winds are reported in NOAA’s NCEI database as High or Strong Wind and Thunderstorm Wind, they are defined as:

High/Strong Wind: Sustained wind speeds of 40 miles per hour or greater lasting for 1 hour or longer, or winds of 58 miles per hour or greater for any duration.

Thunderstorm Wind: Thunderstorm wind is classified as wind gusts in excess of 50 knots (57.5 mph) that accompanies a thunderstorm.

Location and Extent

Windstorms can affect any part of Rhode Island, including North Providence. There is a continuous spectrum of storms in the sky and a storm may fluctuate from one storm type to another. To measure wind speed and its correlating potential for damage, experts use the Beaufort scale, which is a system for estimating wind strengths without the use of instruments. Below is a recreation of the Beaufort scale:

Table 3.5: Beaufort Scale

Force	Speed		Land Conditions
	Knots	MPH	
0	<1	<1	Calm, smoke rises vertically
1	1-3	1-3	Light air, direction of wind shown by smoke drift only
2	4-6	4-7	Light breeze, wind felt on face, leaves rustle, vanes moved by wind
3	7-10	8-12	Gentle breeze, leaves and small twigs in motion, wind extends light flag
4	11-16	13-18	Moderate breeze, raises dust, loose paper, small branches move
5	17-21	19-24	Fresh breeze, small trees in leaf begin to sway
6	22-27	25-31	Strong breeze, large branches in motion, umbrellas used with difficulty
7	28-33	32-38	Near gale, whole trees in motion, inconvenience felt walking against the wind
8	34-40	39-46	Gale, breaks twigs off trees, impedes progress
9	41-47	47-54	Strong gale, slight structural damage occurs
10	48-55	55-63	Storm, trees uprooted, considerable damage occurs
11	56-63	64-73	Violent storm, widespread damage
12	64+	74+	Hurricane, extreme destruction

Previous Occurrences

The NCEI Storm Event Database has recorded 251 damaging wind hazard events in Providence County since 1996, resulting in \$2,723,800.00 in property damage and 9 injuries. Since the last update of the NPHMP in 2018, there have been 99 damaging wind events in Providence County, of which three have occurred in the Town of North Providence. The three events in North Providence and the impacts are detailed below:

Table 3.6: Wind Hazard Events in Providence County

Location	Date	Type	Wind Speed	Property Damage	Event Narrative
NORTH PROVIDENCE	5/20/2019	Thunderstorm Wind	50	\$ 3,500.00	In North Providence, trees were reported down on Adams Lane, including one on a house.
NORTH PROVIDENCE	8/18/2023	Thunderstorm Wind	50	\$ 1,000.00	In North Providence, a tree and wires were down.
NORTH PROVIDENCE	8/18/2023	Thunderstorm Wind	50	\$ 5,000.00	
Totals				\$ 9,500.00	

A full list of damaging wind hazard events in Providence County since 1996 can be found in [Appendix B](#).

Probability of Future Occurrence

Since 1996, Providence County has experienced 251 wind events, averaging 4.18 events per year. The probability of damaging winds occurring in Providence County in any given year has been determined to be 100% based on the NCEI data. As referenced in the other atmospheric hazard narratives, there has been a gradual warming trend throughout the United States since the late 1970s. Gradual warming brings increased precipitation; it is a safe assumption an increase in precipitation will increase severe thunderstorms. An increase in severe thunderstorm potential will mean a potential increase in the frequency and severity of damaging wind events. It is highly probable that a wind event will occur in any given year.

The CMRA projects average annual total precipitation for Providence County to increase significantly throughout the century. The increased precipitation is likely to add humidity and moisture to the air. In addition, higher surface temperatures and changing weather patterns may lead to more severe storms and higher wind impacts.

Potential Impacts

North Providence is no more or no less susceptible to high wind than other parts of Rhode Island. The pole-mounted electrical and communication lines increase their vulnerability to damage from falling trees that have been blown over. North Providence has rolling elevations in some of the most commercially developed parts of town. At the top of these ridges along Mineral Spring Ave. and Douglas Ave., the pole mounted electrical and communication wires are particularly susceptible to high winds. The roof of the High School, along Mineral Spring High School is among the highest points in the State and is vulnerable to experience the effects of high winds.

There are demographic factors that may increase the vulnerability of the Town's population to the impacts of damaging winds. Adequate housing, reliable transportation to shelters, access to technology to know when thunderstorm conditions are present, are all factors that increase the vulnerability to damaging wind impacts. The Social Vulnerability Index score is a good indicator of which areas have higher populations with demographic factors that may make them more vulnerable to natural hazard events.

Providence County has experienced \$2,723,800 in property damage from damaging wind events since 1996, which averages to \$45,396.67 per year; based off historical data, the county should expect annual wind damage to be at least the same, with an expectation that climate change and land use conditions could cause an increase in damage.

Hurricanes and Nor'easters

Hurricane Description

Tropical cyclones, a general term for tropical storms and hurricanes, are low pressure systems that usually form over the tropics. These storms are referred to as “cyclones” due to their rotation. Tropical cyclones are among the most powerful and destructive meteorological systems on earth. Their destructive phenomena include very high winds, heavy rain, lightning, tornadoes, and storm surge. As tropical storms move inland, they can cause severe flooding, downed trees and power lines, and structural damage.

There are three categories of tropical cyclones:

1. Tropical Depression: maximum sustained surface wind speed is less than 39 mph.
2. Tropical Storm: maximum sustained surface wind speed from 39-73 mph.
3. Hurricane: maximum sustained surface wind speed exceeds 73 mph.

Nor'easter Description

Once a tropical cyclone no longer has tropical characteristics it is then classified as an extratropical system. Most Atlantic tropical cyclones begin as atmospheric “easterly waves” that propagate off the coast of Africa and cross the tropical North Atlantic and Caribbean Sea. When a storm starts to move toward the north, it begins to leave the area where the easterly trade winds prevail and enters the temperate latitudes where the westerly winds dominate. This produces the eastward curving pattern of most tropical storms that pass through the Mid-Atlantic region. When the westerly steering winds are strong, it is easier to predict where a hurricane will go. When the steering winds become weak, the storm follows an erratic path that makes forecasting very difficult. Howling winds associated with Nor'easters also have the potential to produce significant storm surge, similar to that of a Category One hurricane. In addition, these types of storms can also produce wind gusts near hurricane force as well as flooding rain and crippling snowfall.

An extra-tropical coastal storm, known as a Nor'easter, is typically a large, counterclockwise wind circulation around a low-pressure center. The storm radius is often as large as 1,000 miles, and the horizontal storm speed is about 25 miles per hour, traveling up the eastern United States coast. Sustained wind speeds of 10-40 MPH are common during a Nor'easter, with short term wind speeds gusting up to 70 MPH. Unlike hurricanes and tropical storms, Nor'easters can sit offshore, wreaking damage for days.

Nor'easters are a common winter occurrence in New England (September to April) and repeatedly result in flooding, various degrees of wave and erosion induced damage to structures, and erosion of natural resources, such as beaches, dunes and coastal bluffs. In this region, Nor'easters can bring rain or snow but because of the high wind component, they were included with hurricanes in this hazard mitigation plan.

Location and Extent

Hurricanes and tropical storms are large scale events that affect most of Rhode Island when they occur. The coastal regions of the State may experience coastal erosion and storm surge but inland communities like North Providence still get heavy rain and strong winds. All of North Providence is susceptible to Nor'easters and hurricane-force winds and rain.

Hurricanes that are likely to make it up to Rhode Island are usually weak (Category 1) or downgraded tropical systems. The wind speeds may be less, but the storms can still bring a lot of rain. Nor'easters are not frequent (one every couple of years) but have a tendency to stall and unload precipitation for a few days.

Hurricanes are categorized according to the Saffir/Simpson scale with ratings determined by wind speed and central barometric pressure. Hurricane categories range from 1 through 5, with Category 5 being the strongest (winds greater than 155 mph). A hurricane watch is issued when hurricane conditions could occur within the next 36 hours. A hurricane warning indicates that sustained winds of at least 74 mph are expected within 24 hours or less.”

The Saffir-Simpson scale below is based primarily on wind speeds and includes estimates of barometric pressure and storm surge associated with each of the five categories. It is used to give an estimate of the potential property damage and flooding expected along the coast from a hurricane landfall.

Table 3.7: Saffir-Simpson Scale of Hurricane Intensity

Category	Wind Speed (mph)	Destruction Potential
1	74-95 mph	Minimal damage to well-constructed buildings, damage to unanchored mobile homes, signs, and trees, some power outages, primarily due to downed tree limbs
2	96-110 mph	Moderate damage to roofs, windows, and doors, considerable damage to mobile homes and poorly constructed buildings, extensive tree damage, power outages, and potential for water supply disruption
3	111-129 mph	Extensive damage to roofs, windows, and doors of well-built homes, well-constructed buildings may incur structural damage, many trees will be uprooted or snapped, widespread power outages and water supply disruptions
4	130-156 mph	Catastrophic damage to roofs, walls, and windows of well-constructed buildings, severe damage to homes, including total roof failure and wall collapse, most trees and power poles will be downed, prolonged power outages, water supply disruption, and extensive structural damage
5	157 mph+	Catastrophic damage to well-built homes and buildings, complete roof failure, walls may collapse, widespread destruction of trees, power poles, and other infrastructure, extended power outages, water supply disruption, and severe structural damage

While there is a low to medium probability that the Town will be significantly impacted by a hurricane in the next five years, one direct hit on the State of Rhode Island could be catastrophic for all of the cities and towns. The Town has been impacted by hurricanes several times throughout the past century, all of which are referenced in Appendix A. Changing global climate conditions may lead to stronger, more intense storms with hurricane-force winds in the region.

Previous Occurrences

The NCEI Storm Events Database records 4 events categorized as a hurricane and tropical storm occurring in Providence County since 2008. These events include Tropical Storm Hanna (2008), Isaias (2020), Henri (2021), and Hurricane Irene (2011). The NCEI database records \$185,300 in property damage and no injuries or deaths for Providence County related to these 4 events.

The two hurricanes that resulted in the largest loss of life in the State were "The Great New England Hurricane of 1938" and "Hurricane Carol". "The Great New England Hurricane" occurred on September 21st, 1938, and is considered the worst disaster in Rhode Island history. It resulted in the deaths of 262 persons and caused damage estimated at \$100,000,000. The eye of this hurricane tracked to the west of Rhode Island and hit at high tide. During the storm, two storm surges almost 30' high destroyed most of the beach homes along the South Shore. In downtown Providence, the surge flooded the area to a depth of more than 13'9" above the mean high-water mark. As a result, persons drowned trying to escape automobiles submerged in the streets and from buildings where the first floors were flooded to the ceiling.

Throughout Rhode Island, the American Red Cross (ARC) spent \$433,485 for the rehabilitation of 3,074 families. A total of 19,695 families suffered property loss; 797 permanent homes were destroyed; 1,169 summer homes were washed away; 899 boats destroyed and 888 damaged, 177 barns and 1,800 other buildings of various types were destroyed.

On August 31, 1954, "Hurricane Carol" hit Rhode Island, in the same manner as "The Great New England Hurricane of 1938". As a result, downtown Providence was flooded when the water reached 13' above mean high-water level.

Hurricane Bob in 1991 was the last hurricane to directly hit Rhode Island. Like the rest of the state, North Providence experienced wind gusts of over 125 miles per hour, downing trees and powerlines.

Tropical Storm Irene caused minor flooding, widespread power outages, fallen trees, and tree limbs in North Providence.

Other significant hurricane events to affect the state included a downgraded hurricane. On October 29, 2012, Hurricane Sandy which had been sweeping up the Mid-Atlantic Coast had been downgraded by the time it had reached Rhode Island. Super Storm Sandy hit Rhode Island with strong winds, and storm surge, causing significant coastal erosion. Sadly, at least 182 people nationwide lost their lives in what turned out to be the nation's second most costly weather disaster. Fortunately, there were no disaster-related deaths in Rhode Island. In North Providence, almost half of the population was without electricity for several days.

More recent tropical storm events impacting the Town included the following:

- July 2020 Tropical Storm Fay - Fay's impacts were felt across a majority of the Northeastern U.S., with widespread rain, flash flooding, and minor wind damage occurring as a result of the storm. Sustained winds of 50 mph with gusts up to 70 MPH.
- August 2020 Tropical Storm Isaias - Isaias had 40-50 MPH wind gusts with sustained wind of 35 MPH it presented us with 6 inches of rain causing flooding, flash flooding, and minor wind damage occurring as a result of the storm.

- 2021 Tropical Storm Elsa - Elsa had 70 MPH wind gusts with sustained wind of 60 MPH which presented the Town with 6 inches of rain causing flooding, flash flooding, and minor wind damage occurring as a result of the storm.

Probability of Future Occurrences

Based off the NCEI Storm event database, there were 4 hurricane and tropical storm events that occurred in Providence County between 2008 and 2023, resulting in an annualized event rate of 0.26 per year. The NPHMC agreed that there is a 25-50% chance of a hurricane or Nor'easter affecting North Providence within the next year. Although North Providence is an inland community and not subject to wave energy, a hurricane's strong winds and heavy rain will still have a likely impact on this urban town. It is somewhat probable that a hurricane or Nor'easter will occur in any given year.

Predicting the probability of hurricanes and Nor'easter storms occurrences is challenging, North Providence anticipates the probability of future occurrences will match historical trends but may increase in the future due to climate change. Increased sea surface temperatures caused by climate change can impact the intensity and severity of storms. The combination of increasing precipitation and more severe hurricanes and Nor'easters may lead to more significant urban flooding as well as storm surges further inland.

Potential Impacts

Most tropical storms in North Providence cause heavy rainfall, localized flooding and high winds which bring down trees, block roadways, and damage power lines. Most of the power lines and telephone wires are above ground on poles, particularly vulnerable to storm damage.

Extreme Temperatures: Heat and Cold

Description

Extreme Heat

Extreme heat is defined as temperatures which reach 10° or more above the average high temperature for a region and last for days to several weeks, which is often referred to as a heat wave. Heatwaves can cause a strain on energy infrastructure, as the demand for electrical power increases to run air conditioning and fans. Power outages can occur and increase the risk of exposing residents to deadly temperatures. The combination of relative humidity and air temperature amplifies what is experienced outside and can impact the safety of outdoor activities for people and animals. Exposure to extreme temperatures can cause heat-related illnesses and cause residents to experience cramps, fatigue, sweating and swelling, rash, vomiting, seizures and even death. Infants left in vehicles and elderly people in poorly ventilated housing are most vulnerable to the impacts of extreme heat.

This risk assessment is based off of data from NOAA's National Centers for Environmental Information (NCEI) Storm Event Database where Extreme Heat events are categorized as "Excessive Heat" or "Heat". These event types are defined by NOAA as such:

Heat and Excessive Heat: A period of heat resulting from the combination of high temperatures (above normal) and relative humidity. A Heat event occurs and is reported in Storm Data whenever heat index values meet or exceed locally/regionally established advisory thresholds.

Extreme Cold

Extreme cold is defined as cold temperatures dropping well below the average winter temperatures and is combined with increases in wind speed. Extreme cold conditions typically accompany winter storm events but can occur on sunny days. Impacts to public health and infrastructure can occur from extreme cold conditions. Water pipes and exposed equipment may freeze and burst and cause thousands of dollars in property damage. The public health impacts from exposure to cold are frostbite or hypothermia. Frostbite occurs when areas of exposed skin and underlying tissues begin to freeze and hypothermia occurs when the body falls below 95° F and is unable to produce internal heat fast enough to warm the body. Wind chill is a major factor in extreme cold impacts to the human body as wind speed increases, heat is carried away from the body at an accelerated rate, driving down the body temperature and can cause frostbite and hypothermia. Like extreme heat, infants and the elderly are the most vulnerable population to extreme cold temperatures but can also impact anyone who is exposed to the outdoors for long periods of time.

This risk assessment is based off of data from NOAA's National Centers for Environmental Information (NCEI) Storm Event Database where Extreme Cold events are categorized as "Cold/Wind Chill" and "Extreme Cold/Wind Chill". These events are defined by NOAA as such:

Cold/Wind Chill: Period of low temperatures or wind chill temperatures reaching or exceeding local or regionally defined advisory (typical value is -18°F or colder) conditions.

Extreme Cold/Wind Chill: A period of extremely low temperatures or wind chill temperatures reaching or exceeding locally/regionally defined warning criteria (typical value around -35°F or colder).

Location and Extent

Extended periods of hot weather are not localized in Rhode Island. The coast may remain cooler than inland areas but more than one town at a time can be affected by excessive heat. All of North Providence is susceptible to extreme heat and cold weather. North Providence has a few days of extreme heat and extreme low temperatures every year. Fortunately, those spells do not last more than a few days. "The average temperature for North Providence is 53.9°F, about the same as the nationwide average (54.55°F), and 0.25°F higher than the Rhode Island average of 53.65°F. In the summer, temperatures rise to 70.5°F on average, only 1.3°F lower than the U.S. average. The winter average of 41.7°F is about the same as the U.S. average.

The National Weather Service uses a heat index that includes the combined effects of high temperature and humidity when measuring the severity of a heat wave. They also gather and compile information used to estimate the index and then distribute the determined value to the public and the weather broadcasting industry. The estimation of the heat index is a relationship between dry bulb temperatures (at different humidity's) and the skin's resistance to heat and moisture transfer. Because skin resistance is directly related to skin temperature, a relation between ambient temperature and relative humidity versus skin temperature can be determined. If the relative humidity is higher or lower than the base value, then the apparent temperature is higher or lower than the ambient temperature.

Extreme Heat

The extent of extreme heat hazard can be measured by the National Weather Service's Heat Index. The Heat Index is a measure of how hot it feels when relative humidity is factored in with the actual air temperature. The index is a relative heat measurement used to describe to the public what the combination of high temperature and high humidity feels like during periods of high temperatures.

The National Weather Service issues outlooks for excessive heat days and through local weather forecast offices provides advisories. The following are heat advisories issued by the National Weather Service:

Excessive heat warning is issued within 12 to 24 hours before the onset of extremely dangerous heat conditions. The general rule of thumb for this Warning is when the maximum heat index temperature is expected to be 105° or higher for at least 2 days and nighttime air temperatures will not drop below 75°.

Excessive heat watch is issued when conditions are favorable for excessive heat in the next 24 to 72 hours.

Heat advisory is issued within 12 hours of the onset of extremely dangerous heat conditions. The general rule of thumb for this Advisory is when the maximum heat index temperature is expected to be 100° or higher for at least 2 days, and nighttime air temperatures will not drop below 75°.

Excessive Heat Outlooks are issued when the potential exists for an Excessive Heat event in the next 3-7 days. An Outlook provides information to those who need considerable lead-time to prepare for the event.

NOAA's National Weather Service

Heat Index

Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution
 Extreme Caution
 Danger
 Extreme Danger

Extreme Cold

The definition of “Extreme Cold” by the National Weather Service is variable depending upon the region of the country in which one resides, so, rather than issue a Warning for Extreme Cold, NWS issues a warning for Wind Chill. The National Weather Service issues some or all of the following wind chill warnings:

Wind Chill Warning: NWS issues a wind chill warning when dangerously cold wind chill values are expected or occurring. If you are in an area with a wind chill warning, avoid going outside during the coldest parts of the day. If you do go outside, dress in layers, cover exposed skin, and make sure at least one other person knows your whereabouts. Update them when you arrive safely at your destination.

Wind Chill Watch: NWS issues a wind chill watch when dangerously cold wind chill values are possible. As with a warning, adjust your plans to avoid being outside during the coldest parts of the day. Make sure your car has at least a half a tank of gas and update your winter survival kit.

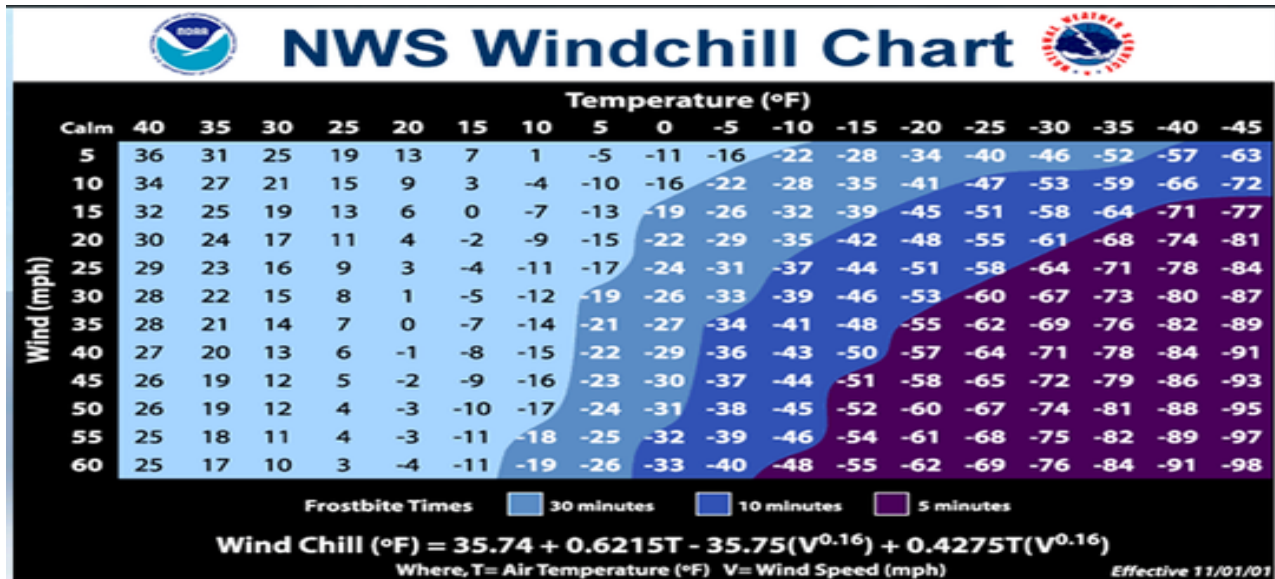
Wind Chill Advisory: NWS issues a wind chill advisory when seasonably cold wind chill values, but not extremely cold values are expected or occurring. Be sure you and your loved ones dress appropriately and cover exposed skin when venturing outdoors.

Hard Freeze Warning: NWS issues a hard freeze warning when temperatures are expected to drop below 28°F for an extended period of time, killing most types of commercial crops and residential plants.

Freeze Warning: When temperatures are forecasted to go below 32°F for a long period of time, NWS issues a freeze warning. This temperature threshold kills some types of commercial crops and residential plants.

Freeze Watch: NWS issues a freeze watch when there is a potential for significant, widespread freezing temperatures within the next 24-36 hours. A freeze watch is issued in the autumn until the end of the growing season and in the spring at the start of the growing season.

Frost Advisory: A frost advisory means areas of frost are expected or occurring, posing a threat to sensitive vegetation.



Previous Occurrences

According to the NCEI Storm Event Database, from 1998 to 2024, there have been 12 recorded events of extreme cold (4) and extreme heat (8) in Providence County. Extreme heat has caused 3 deaths, neither extreme heat or extreme cold events have caused property damage or crop damage. A list of all extreme temperature events and their impacts can be found in [Appendix B](#).

A heat wave, meaning daily maximum temperatures reaching or exceeding 90°F for three days in a row, affected the Town in July 2010. Surface temperatures approaching 100°F were experienced in North Providence while Boston, Providence and Philadelphia all saw temperatures in the 100s that broke records.

While summer temperatures seem to be rising, there is only one NOAA reported case of excessive heat since 1950. On July 22, 2011, a strong upper-level ridge brought very hot temperatures to Southern New England. A moist southwest low-level flow increased humidity levels such that heat index values rose above 105 degrees for a period of a few hours. A weather station near Smithfield, RI recorded heat indexes of 105 to 107 for over a five-hour period. On February 16, 2015, North Providence experienced extreme cold and wind chill which accompanied a heavy snowstorm. Wind chills at nearby TF Green were recorded at -26 degrees below zero. On February 14, 2016, North Providence again experienced extreme cold and wind chills when an arctic high pressure brought high winds to the area. The greater Providence area reported wind chills of -32 below zero.

Probability of Future Occurrences

The 12 extreme temperature events recorded in the NCEI database result in an average of 0.46 events per year. While it is with 100% certainty that North Providence and the greater Providence County area will experience short term extreme temperatures, the historical data suggests that it is unlikely that these events will be classified as extreme. It is somewhat probable that an extreme temperature event will occur.

Changing climate conditions may lead to more frequent or extreme heat waves in Rhode Island. The potential damages for such a short period aren't high enough to warrant extensive readiness actions but it is something to be prepared for. The CMRA projects annual single highest maximum temperature for Providence County to increase significantly throughout the century. The projections include two models, one under the conditions of lower greenhouse gas emissions and one for higher emissions. Historical (1976-2005) annual single highest maximum temperature in the county has ranged from 92.6 to 94.6 degrees Fahrenheit. The CMRA projections for the early century (2015-2044) under lower emissions ranged from 94.2 to 98.5 degrees Fahrenheit, and under the higher emissions model ranged from 94.5 to 99.2 degrees Fahrenheit.

Potential Impacts

While there are climatic variations across the region that cause certain counties and towns to experience more extreme temperature events than others, it is assumed that the entire region and the Town of North Providence is uniformly vulnerable to Excessive Heat and Extreme Cold. However, effects from Excessive Heat and Extreme Cold will vary amidst neighborhoods due to population characteristics. Both Excessive Heat and Extreme Cold impact the very young and elderly populations more severely. Persons with disabilities, the poorly housed and unhoused, and those who spend significant time outdoors are also more vulnerable to adverse health impacts from extreme temperatures.

Periods of extreme high heat typically last two or more days and can have significant effects on human health. Heat stroke and hyperthermia caused by extreme high temperatures can result in death, particularly among the elderly and infirm. Heat waves can also be accompanied by or exacerbate droughts, causing additional hazards as described above. Heat waves can also tax power systems as people run air conditioners which can overload power circuits causing brown outs and/or power failure. Outdoor workers, users of public transportation who must wait outside and lower-income citizens without access to sufficient warm winter clothing or heating fuel are particularly at risk during extended cold periods. Damage can occur to roadways and building foundations due to frost heaving. Frozen pipes can cause damage to utility infrastructure and buildings. The greatest threat to the Town of North Providence posed by extreme temperatures is the loss of life. While monetary damage to local building stock and assets themselves is expected to be negligible, monetary damage to infrastructure could be significant. "Infrastructure" here is defined more in the "systems" sense. A system could be affected or the operations within buildings/assets could be threatened if, say, pipes burst. If climate change leads to more prolonged durations of extreme cold or extreme heat, both monetary and monetized (i.e., monetizing the loss of life) damages could be more significant or more plentiful. The best estimate of potential future losses is based upon historical data. Based upon the data from NOAA'S NCEI Storm Event Database, extreme heat events from 1998 to 2024 have not caused any monetary damage to property or crops in Providence County.

Lightning Storms

Description

Lightning is a giant spark of electricity in the atmosphere between clouds, the air, or the ground. In the early stages of development, air acts as an insulator between the positive and negative charges in the cloud and between the cloud and the ground. When the opposite charges build up enough, this insulating capacity of the air breaks down and there is a rapid discharge of electricity that we know as lightning. The flash of lightning temporarily equalizes the charged regions in the atmosphere until the opposite charges build up again. Most, if not all, lightning flashes produced by storms start inside the cloud. If a lightning flash is going to strike ground, a channel develops downward toward the surface. When it gets less than roughly a hundred yards off the ground, objects like trees and bushes and buildings start sending up sparks to meet it. When one of the sparks connects the downward developing channel, a huge electric current surges rapidly down the channel to the object that produced the spark. Lightning often seeks a path through the tallest object available. Trees, utility line/poles, tall buildings and even humans can be sought as a pathway for the discharging electricity.

All thunderstorms produce lightning which often strikes outside of the area where it is raining and is known to fall more than 10 miles away from the rainfall area. Nationwide, lightning causes an average of 55 to 60 fatalities and 400 injuries each year. Lightning is one of the most underrated severe weather hazards, yet ranks as the second-leading weather killer in the United States.

Location and Extent

Thunderstorms occur throughout the region. All of North Providence is susceptible to lightning strikes. Lightning strikes occur far more times than are reported to NOAA and the NWS and as such their impact density centers on highly populated areas.

According to NOAA, Rhode Island (including North Providence), averages about 2,516 lightning flashes per year, 1 to 3 cloud-to-ground lightning flashes per square mile.

Lightning is measured by the Lightning Activity Level (LAL) scale, created by the National Weather Service to define lightning activity into a specific categorical scale. The LAL is a common parameter that is part of fire weather forecasts nationwide. The LAL is reproduced in [Table 3.7](#).

Table 3.8: Lightning Activity Level Scale

Level	Description
LAL 1	No thunderstorms
LAL 2	Isolated thunderstorms. Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 cloud to ground strikes in a five minute period.
LAL 3	Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud to ground strikes in a 5 minute period.
LAL 4	Scattered thunderstorms. Moderate rain is commonly produced. Lightning is frequent, 11 to 15 cloud to ground strikes in a 5 minute period.
LAL 5	Numerous thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, greater than 15 cloud to ground strikes in a 5 minute period.
LAL 6	Dry lightning (same as LAL 3 but without rain). This type of lightning has the potential for extreme fire activity and is normally highlighted in fire weather forecasts with a Red Flag Warning.

Previous Occurrences

According to NOAA's NCEI Storm Event Database, from 2000 to 2024, Providence County experienced \$665,000 in property damage as well as 9 injuries from 26 reported lightning strike incidents. A list of all lightning events and their impacts can be found in [Appendix B](#).

Probability of Future Occurrences

Not all thunderstorms result in cloud-to-ground lightning strikes but the conditions present themselves enough throughout the year that is a hazard that the Town will continue to prepare for. Based off the NCEI Storm Events Database, there have been 26 reported lightning strikes since 2000, resulting in an annualized rate of 1.08 strikes per year. Lightning is a severely underreported hazard and often only reported when there are damages or injuries, however it is with 100% certainty a lightning strike will occur in North Providence. It is probable a lightning strike will occur in any given year.

Future occurrences may increase due to more frequent thunderstorms resulting from climate change, increase in development and taller buildings, and improvements in recording lightning strike events.

Potential Impacts

North Providence is no more or no less susceptible to lightning than other parts of Rhode Island. A structure's vulnerability to lightning is impacted by building construction, and location to trees, or other tall structures. The pole mounted electrical and communication lines to increase their vulnerability to damage from falling trees that have either been blown over or struck by lightning.

Human vulnerability is largely determined by the availability and reception of early warnings for the approach of severe storms, and by the availability of nearby shelter. Individuals who immediately seek shelter in a sturdy building or metal-roofed vehicle are much safer than those who remain outdoors. Early warnings of severe storms are also vital for aircraft flying through the area.

Lightning seeks a path though the tallest object available; trees, utility line poles, tall buildings and even humans can be sought as a pathway for the discharging electricity. Lightning strike incidents are generally more observed and reported in higher density population centers. It is safe to assume that counties increasing in population and development will observe more lightning incidents in the future as well as impacts from lightning strikes.

Providence County has experienced \$665,000 in property damage from lightning events since 2000, which averages to \$27,708.33 per year; based off historical data, the county should expect annual lightning damage to be at least the same, with an expectation that climate change and land use conditions could cause an increase in damage.

Tornadoes

Description

A tornado is a narrow, violently rotating column of air that extends from a thunderstorm to the ground. Because wind is invisible, it is hard to see a tornado unless it forms a condensation funnel made up of water droplets, dust, and debris. The most destructive tornadoes occur from supercells, which are rotating thunderstorms with a well-defined radar circulation called a mesocyclone. Supercells can also produce damaging hail, severe non-tornadic winds, frequent lightning, and flash floods.

About 1,200 tornadoes hit the U.S. yearly. Since official tornado records only date back to 1950, we do not know the actual average number of tornadoes that occur each year. Plus, tornado spotting and reporting methods have changed a lot over the last several decades, which means that we are observing more tornadoes that actually happen. Whenever and wherever conditions are right, tornadoes are possible. In the U.S. they are most common in the central plains of North America, east of the Rocky Mountains and west of the Appalachian Mountains. They occur mostly during the spring and summer; the tornado season comes early in the south and later in the north because spring comes later in the year as one moves northward. They usually occur during the late afternoon and early evening. However, they have been known to occur in every state in the United States, on any day of the year, and at any hour.

Super Cell Tornadoes

Tornadoes that come from supercell thunderstorms are the most common, and often the most dangerous. A rotating updraft is a key to the development of a supercell, and eventually a tornado. There are many ideas about how this rotation begins. One way a column of air can begin to rotate is from wind shear – when winds at two different levels above the ground blow at different speeds or in different directions. Once the updraft is rotating and being fed by warm, moist air flowing in at ground level, a tornado can form.

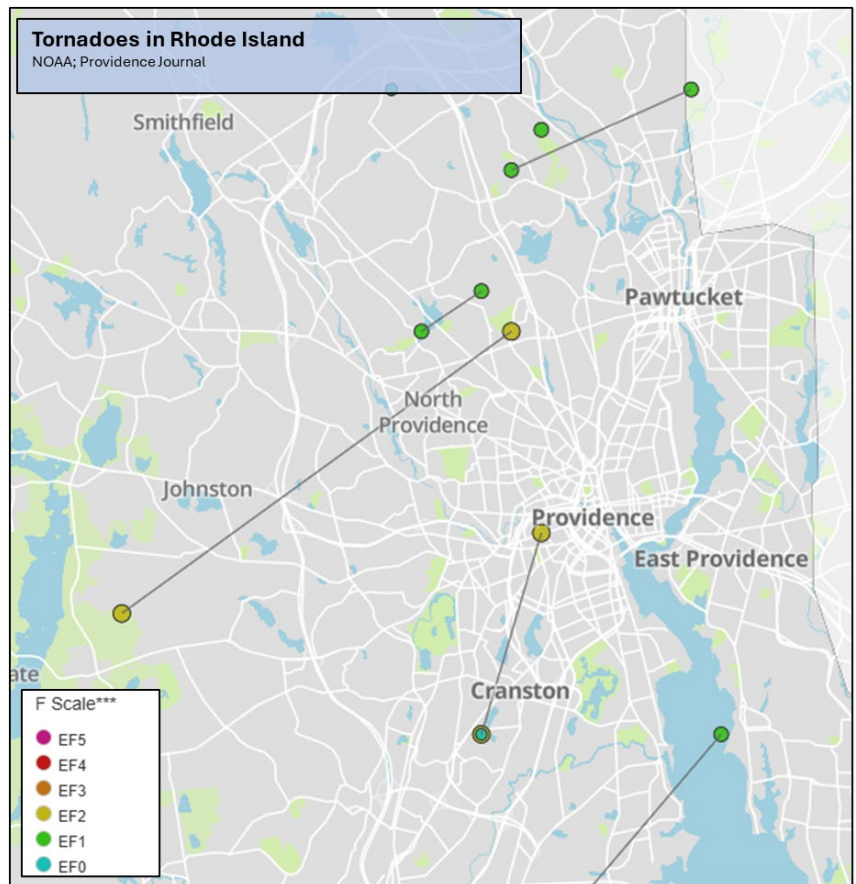
Non-Super Cell Tornadoes

Nearly 20% of all tornadoes are associated with lines of strong thunderstorms called “quasi-linear convective systems” (QLCS). QLCS tornadoes frequently occur during the late night and early morning hours. These tornadoes, however, tend to be weaker and shorter-lived on average than those associated with supercell thunderstorms. Another type of non-supercell tornado is a landspout. A landspout is a tornado with a narrow, rope-like condensation funnel that forms while the thunderstorm cloud is still growing and there is no rotating updraft - the spinning motion originates near the ground.

Location and Extent

Tornadoes can strike anywhere whenever the right weather conditions are present. The entire Town of North Providence is equally susceptible to impacts of a tornado. Tornadoes typically have narrow paths of impact compared to other natural hazards, but the potential damage along its path can be significant.

The Enhanced Fujita Scale is a set of wind estimates (not measurements) based on damage. It uses three-second gusts estimated at the point of damage based on a judgment of 8 levels of damage to the 28 indicators listed below. These estimates vary with height and exposure. Important: The 3-second gust is not the same wind as in standard surface observations. Standard measurements are taken by weather stations in open exposures, using a directly measured, "one-minute mile" speed.



The Enhanced Fujita Scale is summarized by National Weather Service (NWS) thusly:

Enhanced Fujita Scale		
Weak	EF-0	65-85 mph winds
	EF-1	86-110 mph winds
Strong	EF-2	111-135 mph winds
	EF-3	136-165 mph winds
Violent	EF-4	166-200 mph winds
	EF-5	>200 mph winds

Previous Occurrences

Based on the tornado event data from NOAA's NCEI Storm Event Database, from 1985 to 2024 Providence County has experienced 11 tornado events that have resulted in \$4,545,000.00 in property damage and 24 injuries. There have been no reported deaths or crop damage due to tornado events in Providence County.

Tornado impacts in Providence County categorized by magnitude are summarized below:

Table 3.9: Tornado Impacts in Providence County

Magnitude	Count	Property Damage	Average Annual Damage	Probability
F/EF 0	4	\$ 275,000.00	\$ 7,051.28	0.10
F/EF 1	5	\$ 1,520,000.00	\$ 38,974.36	0.13
F/EF 2	2	\$ 2,750,000.00	\$ 70,512.82	0.05
Total	11	\$ 4,545,000.00	\$ 116,538.46	0.28

On August 7, 1986, a rare outbreak of seven tornadoes occurred in New England. One such tornado, rated F2 on the Fujita Scale, carved its way through Cranston, RI, and Providence, RI, causing 20 injuries and \$2,500,000 in damages.

On October 23, 2018, North Providence experienced an EF1 tornado that caused \$1,000,000 in damage. The event narrative reported in the NCEI Storm Event Database detailed the event as such: "The tornado initially touched down in North Providence on Meadow View Blvd. around 331 PM EDT, where large branches were downed, including one on a car and a fence. In this area, wind speeds were estimated to be 60-70 mph, which is classified as EF-0 on the Enhanced Fujita Scale. From there, damage was discontinuous as the tornado headed northeastward toward the southwest part of Lincoln, with only a few treetops snapped and downed branches.

In Lincoln, the tornado caused extensive damage on Angell Road and Riata Drive around 333 PM EDT. There were numerous uprooted or snapped trees, shingles blown off several houses, and large branches downed. Wind speeds were estimated to be 90-100 mph, which is classified as EF-1 on the Enhanced Fujita Scale. Damage became more sporadic farther north on Elden Court, Dennell Drive, and Christopher Drive, where a few large trees and branches were downed. Winds in those areas were estimated at 60-80 mph, which is classified as EF-0. The tornado lifted near Christopher Drive around 334 PM EDT."

Probability of Future Occurrences

Based off the NCEI Storm Events Database, there have been 11 reported tornadoes in Providence County since 1985, resulting in an annualized rate of 0.28 events per year. It is somewhat probable that a tornado event will occur in any given year.

Gradual warming brings increased precipitation; it is a safe assumption that an increase in precipitation will increase severe thunderstorms. An increase in severe thunderstorm potential will mean a potential increase in tornado frequency.

Potential Impacts

While tornadoes do not occur frequently, they are considered low frequency, high-impact events in Rhode Island. All people are equally vulnerable to tornadoes in North Providence. Transportation and road closures could isolate some neighborhoods and services may be compromised. However, due to the unpredictability destructive capacity of tornadoes, it is costly to mitigate in a town that has infrequent tornado activity.

A tornado could inflict major, isolated damage if it were to hit North Providence. Wood-framed structures which are prevalent throughout the town are more likely to be damaged by tornadoes than stronger steel structures. However, this part of the country is not known to spur tornadoes.

There are many demographic factors that may increase the vulnerability of the state's population to the impacts of tornados. Adequate housing, reliable transportation to shelters, access to technology to know when tornado conditions are present, are all factors that increase the vulnerability to tornado impacts.

Predicting tornado paths and knowing exactly where and who will be impacted by the impacts of a tornado is not possible, but it is safe to assume that the areas of town that are more developed and more densely populated may be at higher risk of tornado impacts. Providence County has experienced \$4,545,000.00 in property damage from tornado events since 1985, which averages to \$116,538.46 per year; based off historical data, the county should expect annual tornado damage to be at least the same, with an expectation that climate change and land use conditions could cause an increase in damage.

Brushfire and Drought

Description

A brushfire is a fire burning in vegetation that is predominantly shrubs, brush, and scrub growth. Favorable fire conditions arise from extended periods of hot, dry weather and accumulated vegetation. While wildfires are generally associated with thousands of acres of trees burning, brushfires tend to be smaller, confined to the understory, and manageable. Various natural (i.e. lightning) and human actions (i.e. campfires or auto accidents) can ignite brushfires. Fuel (dry grasses, leaves, and dead trees), topography and weather (wind conditions and humidity) will dictate the extent of a brushfire.

Drought is defined as an abnormally dry period lasting months or years when an area has a deficiency of water and precipitation in its surface and or underground water supply. Most natural disasters, such as floods or forest fires, occur relatively rapidly and afford little time for preparing for disaster response. Due to its coastal location in a temperate climate, Rhode Island rarely experiences extended periods of drought. However, seasonal droughts have occurred when precipitation levels are low. Drought conditions can impact crops, water available for fire suppression, and reservoir levels. In Rhode Island, drought conditions can trigger fire hazard warnings. There are four categories of droughts:

- Meteorological – A measure of departure of precipitation from normal. Due to climatic differences, what is considered a drought in one location may not be a drought in another location.
- Agricultural – refers to a situation when the amount of moisture in the soil no longer meets the needs of a particular crop.
- Hydrological- occurs when surface and subsurface water supplies are below normal.
- Socioeconomic- refers to the situation that occurs when physical water shortage begins to affect people.

Due to the fact that drought conditions will increase the likelihood of small brushfires in the few undeveloped areas, the NPHMC decided to combine these hazards.

Location and Extent

The northwest section, north of Mineral Spring Avenue and west of Wenscott Reservoir is still undeveloped. The forested land in this area is becoming scarce as residential and commercial development expands but it is still the most at-risk location for wildfire. Brushfires, when they do occur, are generally contained to 2-3 acres. These smaller burns are usually controlled early, due to the quick response of the North Providence fire department.

Drought season, like wildfire season for Rhode Island is typically early July to September or October, when the weather is the driest. The greatest risk is in the northern part of state, which has a drier climate than southern Rhode Island. There are no major agricultural lands within the Town, so drought risk is not located in any one specific area of the Town, rather the entire Town is equally at risk of impacts to drought hazards. When drought conditions exist in North Providence, they are usually for a short period of time (weeks, not years) and affect crops and other vegetated areas. Climate change may alter weather patterns, increasing the risk of drought conditions either in length or intensity.

Characteristics and impacts of drought differ in many ways, so it is difficult to quantify drought. An existing index called the Palmer Drought Severity Index (PDSI) uses temperature and precipitation levels to determine dryness, measuring a departure from the normal rainfall in a given area. The PDSI uses temperature and precipitation levels to determine dryness. The advantage of the PDSI is that it is standardized to local climate, so it can be applied to any part of the country to demonstrate relative drought or rainfall conditions. A monthly PDSI value below -2.0 indicates moderate drought, and a value below -3.0 indicates severe drought. The U.S Drought Monitor Scale, is used to summarize drought conditions nationwide. It takes into account many different data sources including PDSI, the Keech-Byram Drought Index for fire, satellite-based vegetation assessments, and soil moisture data.

Palmer Drought Severity Index- U.S. Drought Monitor Scale

Category	Range (Per Year)
Near Normal	0.49 to -0.49
Incipient Dry Spell	-0.5 to -0.99
Mild Drought	-1.0 to -1.99
Moderate Drought	-2.0 to -2.99
Severe Drought	-3.0 to -3.99
Extreme Drought	-4.0 or less

Palmer U.S. Drought Monitor Scale

Rating	Described Condition
None	No Drought Conditions
D0	Abnormally Dry
D1	Moderate Drought
D2	Severe Drought
D3	Extreme Drought
D4	Exceptional Drought

Previous Occurrences

DROUGHT

According to the Rhode Island State Hazard Mitigation Plan and the USDA, there have been 3 Secretarial Drought Disaster Declarations in Providence County between 2012 and 2023. An additional 3 drought events were recorded in the NCEI storm events database during this same time period. Droughts are widespread and can affect any part of Rhode Island, including North Providence.

BRUSHFIRES

Once or twice a year during the hot and dry summer and fall seasons, the North Providence fire department responds to small brushfires (1-3 acres of grass and wooded areas) at the Peter Randall Reservation Area. Due to the quick response by firefighters, these brushfires have never gotten out of control.

Probability of Future Occurrences

DROUGHT

Based off the historical event data recorded in the NCEI database, there have been a total of 6 drought events since 2012 in Providence County, 5 of which occurred in 2016 and only one event in 2012. The annualized event history comes out to 0.66 drought events per year. The NPHMC believes it is somewhat probable that a drought event will occur in any given year, and more probable when there are years with lower than average precipitation and higher temperatures.

Drought is a difficult hazard to predict, however, climate modeling indicates an increase in future precipitation levels as well as an increase in temperatures. These conditions could impact the frequency and conditions of drought hazards in various ways. Current modelling from the NOAA State Climate Summary 2022 for Rhode Island suggests that annual average precipitation, as well as extreme precipitation events, are projected to increase for Rhode Island. Although increased precipitation is projected, naturally occurring droughts are projected to be more intense because higher temperatures will increase evaporation rates (RIHMP). The CMRA projects annual highest maximum temperature averaged over a 5-day period to increase 2.9 to 3 degrees Fahrenheit over the next 30 years. This increase in temperature over longer periods of time may exasperate drought impacts. The full list of all recorded drought events can be found in [Appendix B](#).

BRUSHFIRE

The probability of future brushfire events is inherently dependent on drought conditions and future development in forested and undeveloped areas. It is North Providences goal to maintain and protect open space and wooded natural areas, which will always be at risk to potential brushfire events given the right environmental and drought conditions. However, future climate conditions indicate an increase in precipitation throughout Rhode Island which will result in higher levels of ground water and soil moisture and likely reduce the probability of potential brushfires. The lack of data for brushfire history makes it difficult to develop probability of future occurrences, however based on anecdotal experience, the NPHMC believes it to be somewhat probable that a brushfire will occur in any given year, and probability to increase in years with higher temperatures and lower precipitation rates.

Potential Impacts

Drought conditions do not usually last for extended periods of time in New England. However, North Providence promotes efficient use of water and implements programs to mitigate the impacts of drought in accordance with State Guide Plan Element 724: Rhode Island Drought Management Plan. Each of the Town's water suppliers has a current Water Supply Management Plan which includes Emergency and Drought Management Procedures. These plans describe in detail the processes for responding to water-related emergencies, including drought.

The districts continue to update their plans regularly and the Town will continue cooperating with the districts to ensure appropriate drought response and ensure water service is maintained.

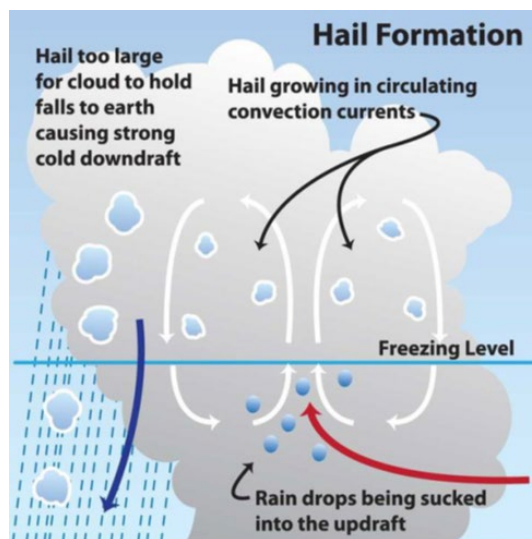
The Town is also pursuing opportunities to establish emergency connections between neighboring water suppliers such as the Town of Lincoln in compliance with State Guide Plan Element 723: Water Emergency Response Plan. Interconnections between suppliers could provide emergency back-up supplies to North Providence residents in the event of a catastrophic incident at the Scituate Reservoir which provides water to all three North Providence Water Districts.

Hail

Description

Hail is a form of precipitation consisting of solid ice that forms inside thunderstorm updrafts. Hailstones are formed when raindrops are carried upward by thunderstorm updrafts into extremely cold areas of the atmosphere and freeze. Hailstones then grow by colliding with liquid water drops that freeze onto the hailstone's surface.

Hail falls when it becomes heavy enough to overcome the strength of the thunderstorm updraft and is pulled toward the earth by gravity. Smaller hailstones can be blown away from the updraft by horizontal winds, so larger hail typically falls closer to the updraft than smaller hail. If the winds near the surface are strong enough, hail can fall at an angle. Wind-driven hail can tear up siding on houses, break windows and blow into houses, break side windows on cars, and cause severe injury and/or death to people and animals.



Hail falls along paths called swaths, which can vary from a few square acres to up to 10 miles wide and 100 miles long. Hail larger than $\frac{3}{4}$ inch in diameter can do great damage to both property and crops, and some storms produce hail over two (2) inches in diameter. Hail causes about \$1 billion in damages annually in the U.S.

Location and Extent

Severe Thunderstorms can occur anywhere in the state, which means hail can occur anywhere. There is no clear distinction between storms that do and do not produce hailstones. Nearly all severe thunderstorms produce hail aloft, though it may melt before reaching the ground. Multi-cell thunderstorms produce many hailstones, but they are not usually very large. In the life cycle of the multi-cell thunderstorm, the mature stage is relatively short so there is not much time for hailstones to grow.

In contrast, supercell thunderstorms have sustained updrafts that support large hail formation by repeatedly lifting the hailstones into the very cold air at the top of the thunderstorm cloud where they can accumulate more layers of ice.

Hailstones can range from 0.25" to 4.5" or more. Hail is typically referred to as common household items such as pea or softball size to convey hail size to the general public. Damaging hail occurs infrequently in North Providence, there is only one recorded occurrence of hail in the NCEI Storms Event Database; however, in Providence County there have been 62 recorded events with hail size ranging from 0.75 to 2.00. Since hail, like many atmospheric hazards, has a regional impact, it is safe to

Appearance	Approximate Size in Inches
Pea	0.25 - 0.50 inch
Penny	0.75 inch
Nickel	0.88 inch
Quarter	1.00 inch
Half Dollar	1.25 inch
Walnut/Ping Pong	1.50 inch
Golf ball	1.75 inch
Hen Egg	2.00 inch
Tennis Ball	2.50 inch
Baseball	2.75 inch
Tea Cup	3.00 inch
Grapefruit	4.00 inch
Softball	4.50 inch

assume that the extent of hail occurrence and hail size in the County applies to the Town of North Providence. All areas of North Providence are vulnerable to severe thunderstorms that cause hail.

Previous Occurrences

There are occasional reports of hail in Providence County. The NCEI Storm Events Database has a record of 58 occurrences of damaging hail in Providence County since 1994, but only one record of a storm causing measurable property damage. On June 24, 2008, quarter to golf ball sized hail in Pawtucket damaged several windshields, dented cars, smashed windows of a local YMCA, and caused a bank's roof to collapse. In the past 20 years, the only measurable hailstorm in North Providence was on April 22, 2010 when penny sized hail (0.75 inches) was reported by the fire department. There have been no reports of injury, death, or crop damage related to hail events in Providence County. The full list of all recorded hail events can be found in [Appendix B](#).

Probability of Future Occurrences

Providence County has experienced 58 hail incidents since 1994, averaging 1.93 incidents per year. The probability has been determined to be 100% based on the NCEI data for the 30-year period; it is 100% probable that Providence County will experience hail in any given year. Given that the NCEI Storm Events Database records events at the county level, with occasional jurisdiction records, and that hail events occur during thunderstorms which have regional impacts, it is safe to assume that the probability of Providence County applies to the jurisdictions within and the Town of North Providence equally.

Probability was determined based off historical occurrences. It is appropriate to assume that Providence County and the Town of North Providence will experience at least similar rates of occurrences as it has historically, with the likelihood that climate change may increase frequency and future conditions of population growth and development may increase the severity of impacts experienced from hail events. Increased precipitation rates projected in the CMRA will also increase the likelihood of hail events.

Potential Impacts

While hail can occur anywhere in Providence County and the Town of North Providence, vulnerability to impacts from hail varies because of population and land use. The historical data from the NCEI Storm Event Database records only one event in the county where property damage occurred. Since hail impacts are mostly observed through damage to property, structures and property are considered most vulnerable to hail impacts.

Structure vulnerability to hail is determined mainly by construction and exposure. Metal siding and roofing is better able to stand up to the damage of a hailstorm than many other materials, although it may also be damaged by denting. Exposed windows and vehicles are also susceptible to hail damage.

Human vulnerability is largely determined by the availability and reception of early warnings for the approach of severe storms, and by the availability of nearby shelter. Individuals who immediately seek shelter in a sturdy building or metal-roofed vehicle are much safer than those who remain outdoors. Unhoused or insufficiently housed populations are also vulnerable to the adverse impacts of hail.

Dam Failure

Description

Dam failures can result from natural events, human-induced events, or a combination of the two. Failures due to natural events such as prolonged periods of rainfall and flooding can result in overtopping, which is the most common cause of dam failure. Overtopping occurs when a dam's spillway capacity is exceeded and portions of the dam which are not designed to convey flow begin to pass water, erode away, and ultimately fail.

The hazard classifications are defined in the Rhode Island Dam Safety Regulations as follows:

- High Hazard – means a dam where failure or mis-operation will result in a probable loss of human life.
- Significant Hazard – means a dam where failure or mis-operation results in no probable loss of human life but can cause major economic loss, disruption of lifeline facilities, or impact other concerns detrimental to the public's health, safety, or welfare.
- Low Hazard – means a dam where failure or mis-operation results in no probable loss of human life and low economic losses. Intense storms may produce a flood in a few hours or even minutes for upstream locations. Flash floods occur within six (6) hours of the beginning of heavy rainfall, and dam failure may occur within hours of the first signs of breaching. Other failures and breaches can take much longer to occur, from days to weeks, as a result of debris jams or the accumulation of melting snow.

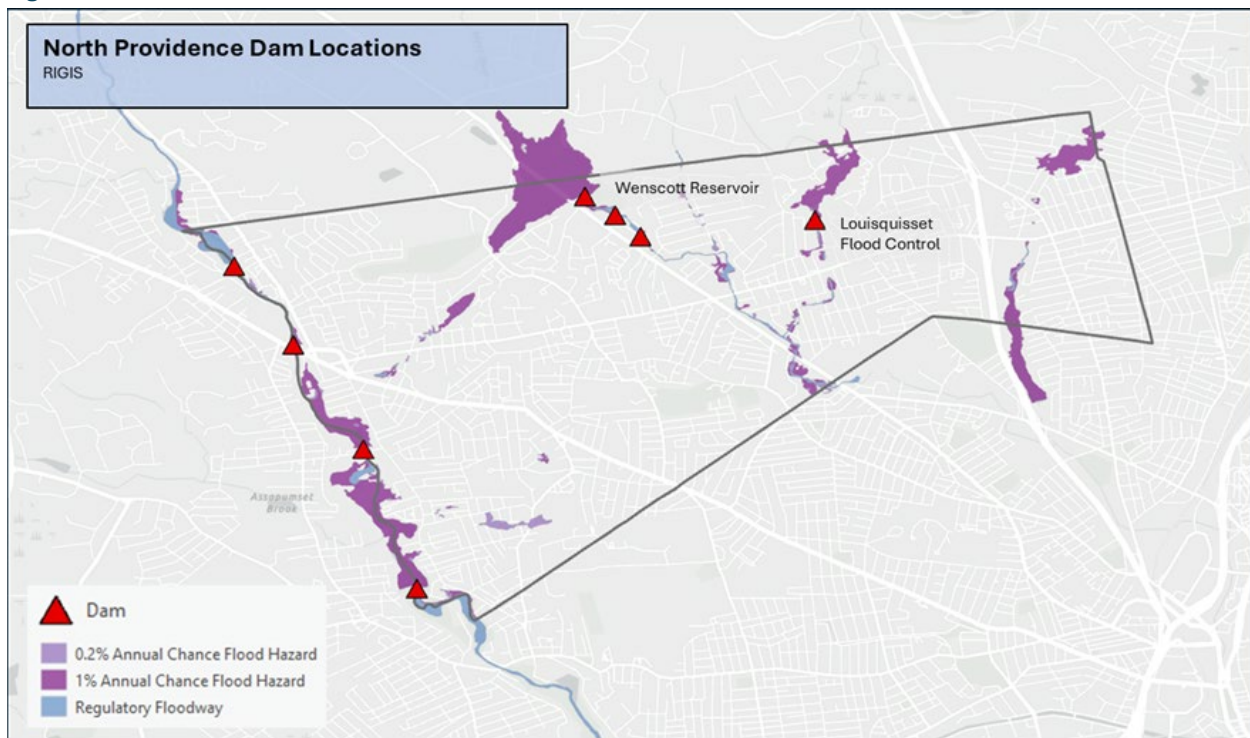
Location and Extent

There are 9 dams in North Providence, two of which are high hazard dams (Wenscott Reservoir and Louisquisset Flood Control dams). According to the North Providence Comprehensive Plan, there are two dams of historic concern. The first is the dam (Centredale Dam) on the north side of Putnam Pike in Centredale on the border between Johnston and North Providence. The second (Whipple Pond Dam) is on the West at the point where the river passes under Douglas Avenue. This dam is technically in Providence, but it held Geneva Pond (aka "Whipple Pond") in North Providence.

Other dams throughout Rhode Island that could pose a threat to North Providence include:

- Johnston (SW): the Pocasset Pond and Caesarville Pond dams (significant hazard dams)
- North Smithfield (NW): Slatersville Reservoir Upper (high hazard); Slatersville Upper Immediate (low hazard); and Blackstone dam (low hazard)
- Pawtucket (NE): Pawtucket Lower (low hazard)
- Scituate (SW): the Scituate Reservoir and Hope Dam (significant hazard dam)
- West Warwick (SW): the Riverpoint Pond Upper and Arctic Dams (high hazard dams)

Figure 3.4: Dam Locations



The two high hazard dams have the potential to cause severe damage downstream and lead to the loss of human life. Further, the *2024 State of Rhode Island Hazard Mitigation Plan* notes that “The NOAA NCEI State Climate Summary for 2022 for Rhode Island suggests that the number of extreme precipitation events are projected to increase for Rhode Island. These extreme events will likely place increased stress on dams within the State.”

Previous Occurrences

In 1991 the Centredale dam collapsed, flooded the road, and created a large rubble field north of the highway. In April 2010, the Whipple Pond dam failed and the pond emptied. Douglas Avenue was closed because of damage to the bridge abutments. The pond drained out and left the sediment exposed. While the roads have been repaired, damage to the water bodies has yet to be repaired at either location, with or without new dams. Restoration of the Allendale Dam in 2002 removed contaminated sediment, increasing the holding capacity of Allendale Pond which was breached in 1991.

Accomplished from the 2018 mitigation actions includes the repair to the Wenscott Reservoir Dam involving the installation of a new in-line gate valve, new piping and sealing were completed in 2018 to improve the structural integrity of the dam (see May 2022 *Wenscott Reservoir Dam – Visual Inspection/Evaluation Report*).

Probability of Future Occurrences

Despite the infrequent historical occurrences of dam failure, there remains a significant concern due to the two significant high hazard dams within the Town of North Providence. The Town has made it a priority to upgrade and repair dams when possible. Dams undergoing repair and/or reconstruction are required to be designed to pass at least the 1%-annual-chance rainfall event with one foot of freeboard. The most critical and hazardous dams are required to meet a spillway design standard much higher than passing the runoff from a 1%-annual-chance rainfall event. Although not all the dams have been shown to withstand the 1%-annual-chance rainfall event, most of the dams meet this standard due to original design requirements or recent spillway upgrades. It is minimally probable that a dam failure will occur in any given year.

A potential outcome of changing climate in Rhode Island is an increase in extreme precipitation events which may lead to more severe floods and a greater risk of dam failure. The NOAA NCEI State Climate Summary 2022 for Rhode Island suggests that the number of extreme precipitation events are projected to increase. These extreme events will likely place increased stress on dams within the State. The CMRA projects annual average precipitation to increase of 7.5 to 8.5 inches a year over the next 30 years and could lead to additional stress on the Town's dams.

Potential Impacts

A dam breach would send water flooding downstream, inundating homes and roads. The extent would vary depending on the neighborhood and size of the breach. Failure of either high hazard dam would result in loss of life and severely impact the residential areas downstream. Long-term displacement and economic consequences would also occur in the event of a major dam failure. Additionally, dam failure could cause structural damage to the Town's infrastructure and disrupt the operations of critical facilities and utilities.

Earthquakes

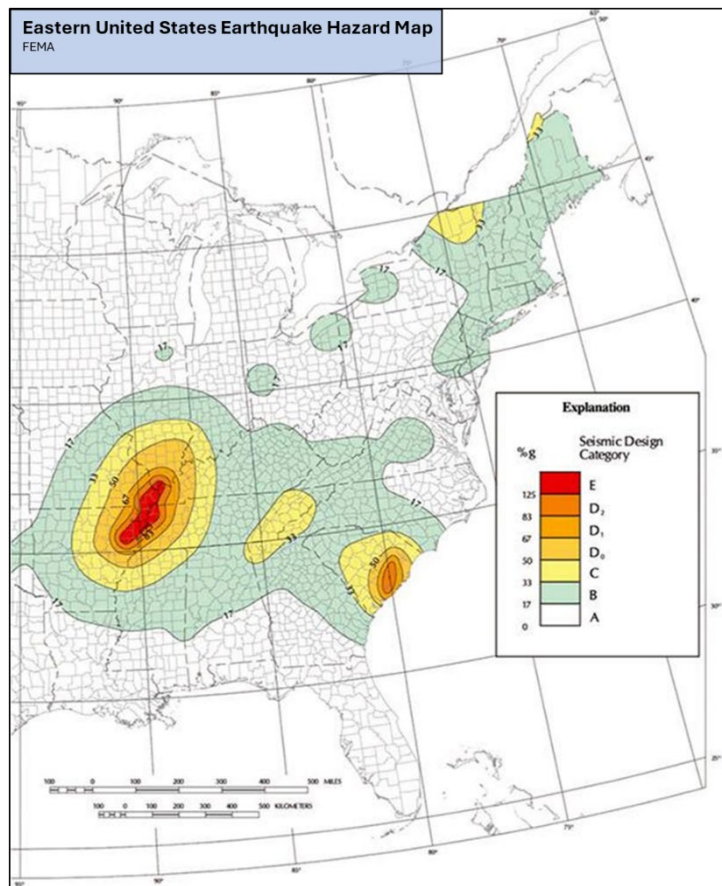
Description

An earthquake occurs when two blocks of the earth suddenly slip past one another. The surface where they slip is called the fault or fault plane. Faults allow the blocks to move relative to each other, which, when rapidly occurring, causes an earthquake. When stresses in the crust exceed the strength of the surrounding rock, a rupture or break may occur in a fault plane. The location below the earth's surface where the earthquake starts is called the hypocenter, and the location directly above it on the surface of the earth is called the epicenter. Seismic waves radiate out from the hypocenter causing the ground to shake. These waves can travel long distance, but in general are strongest near the epicenter. Seismic waves can also be generated by volcanic activity, mine blasts, and other natural and manmade sources, but are generally not strong enough to cause damage to the built environment. Sometimes earthquakes have foreshocks. These are smaller earthquakes that happen in the same place as the larger earthquake that follows. Scientists can't tell that an earthquake is a foreshock until the larger earthquake happens. The largest, main earthquake is called the mainshock. Mainshocks always have aftershocks that follow. These are smaller earthquakes that occur afterwards in the same place as the mainshock.

Location and Extent

People in New England have felt small earthquakes and suffered damage from infrequent larger ones since colonial times. According to the United States Geological Survey (USGS), moderately damaging earthquakes strike somewhere in the region every few decades, and smaller earthquakes are felt roughly twice a year. Earthquakes in the central and eastern U.S., although less frequent than in the western U.S., are typically felt over a much broader region. East of the Rockies, an earthquake can be felt over an area up to ten times larger than a similar magnitude earthquake on the west coast.

The entire Town of North Providence has the potential to be impacted by earthquakes. Rhode Island is located on the North Atlantic tectonic plate, an area of very low seismic activity and are far from the nearest plate boundaries, which are in the center of the Atlantic Ocean and in the Caribbean Sea.



The primary scale utilized to characterize seismic events is the Richter Scale, which measures the total energy released by an earthquake. Richter magnitudes are technical quantitatively based calculations that measure the amplitude of the largest seismic wave recorded. Richter magnitudes are based on a logarithmic scale and are commonly scaled from 1 to 9.9. The higher the magnitude on the Richter Scale, the more severe the earthquake. The Modified Mercalli Intensity Scale is another common tool to measure observed damage from an earthquake. Mercalli intensity levels are based on qualitative criteria that use the observations of the people who have experienced the earthquake to estimate the intensity level. The Mercalli-scale ranges from I to XIII. The higher the intensity level on the scale, the closer the person is to the epicenter. A recreation of the USGS Richter Scale and Mercalli scale is provided below:

Table 3.9: Mercalli Scale

Richter Magnitude	Mercalli Scale	Effects
1.0 to 1.9	I	Microearthquakes, not felt. Recorded by seismographs
2.0 to 2.9	II	Felt slightly by some people. No damage to buildings
3.0 to 3.9	III	Often felt by people, but very rarely causes damage. Shaking of indoor objects can be noticeable
4.0 to 4.9	IV to V	Noticeable shaking of indoor objects and rattling noises. Felt by most people in the affected area. Slightly felt outside. Generally causes zero to minimal damage. Moderate to significant damage is very unlikely. Some objects may fall off shelves or be knocked over.
5.0 to 5.9	VI	Can cause damage of varying severity to poorly constructed buildings. Zero to slight damage to all other buildings. Felt by everyone.
6.0 to 6.9	VII to VIII	Damage to a moderate number of well-built structures in populated areas. Earthquake-resistant structures survive with slight to moderate damage. Poorly designed structures receive moderate to severe damage. Felt in wider areas; up to hundreds of kilometers from the epicenter. Strong to violent shaking in the epicentral area.
7.0 to 7.9	IX to X	Causes damage to most buildings, some to partially or completely collapse or receive severe damage. Well-designed structures are likely to receive damage. Felt across great distances with major damage mostly limited to 250 km from the epicenter.
8.0 to 8.9	XI to XIII	Major damage to buildings, and structures likely to be destroyed. Will cause moderate to heavy damage to sturdy or earthquake-resistant buildings. Damaging in large areas. Felt in extremely large regions.
9.0 to 9.9	XIII	Near total destruction – severe damage or collapse to all buildings. Heavy damage and shaking extend to distant locations. Permanent changes in ground topography.

Previous Occurrences

People in New England have felt small earthquakes and suffered damage from infrequent larger ones since colonial times. The Boston area was damaged three times within 28 years in the middle 1700's. The largest known New England earthquakes occurred in 1638 (magnitude 6.5) in Vermont or New Hampshire, and in 1755 (magnitude 5.8) offshore from Cape Ann northeast of Boston. The most recent New England earthquake to cause moderate damage occurred in 1940 (magnitude 5.6) in central New Hampshire. Earthquakes that occur in the Rhode Island area often register on the Richter Scale as less than 3.5 and therefore are minimally felt. Table 3.9 presents historical seismic activity for Rhode Island and includes activity in surrounding regions that have been felt in the state.

Table 3.10: Seismic Activity In/Near Rhode Island (USGS Earthquake Database)

Date	Location	Magnitude
2/28/1925	St. Lawrence River Region	7
11/1/1935	Quebec, Canada	6.25
10/16/1963	Massachusetts Coast	4.5
6/14/1973	Western Maine	5.2
10/1/1974	1 km E of West Warwick, Rhode Island	2.5
3/11/1976	5 km SE of Portsmouth, Rhode Island	3.5
9/3/1978	10 km SE of Narragansett Pier, Rhode Island	2.8
4/3/1981	2 km ESE of Portsmouth, Rhode Island	2.7
11/6/1982	5 km SSE of North Scituate, Rhode Island	1.8
3/22/1996	2 km NE of Bristol, Rhode Island	3.1
3/6/2002	1 km WNW of East Greenwich, Rhode Island	1.9
4/20/2002	Plattsburgh, NY	5.2
10/7/2003	5 km NW of West Warwick, Rhode Island	1.8
3/11/2008	Central Connecticut	2.9
6/23/2010	Ontario-Quebec	5
4/4/2013	2 km W of Hope Valley, Rhode Island	1.8
3/7/2014	3 km NNE of Woonsocket, Rhode Island	1.71
9/9/2014	southern New England	1.53
10/13/2014	4 km E of Moosup, Connecticut	1.29
1/12/2015	2 km E of Wauregan, Connecticut	1.7
1/13/2015	2 km E of Wauregan, Connecticut	2.6
2/3/2015	7 km SE of Newport, Rhode Island	2
7/22/2015	0 km WNW of East Providence, Rhode Island	2.3
1/12/2017	1 km SE of West Warwick, Rhode Island	1.6
4/7/2018	6 km SE of Warwick, Rhode Island	1.4
6/13/2018	12 km ESE of Newport, Rhode Island	1.3
7/11/2018	0 km WNW of Greene, Rhode Island	1.3
12/1/2019	3 km SE of Newport, Rhode Island	1.8
1/2/2020	6 km WSW of Exeter, Rhode Island	1.9
6/12/2022	4 km S of Bristol, Rhode Island	1.6

Probability of Future Occurrences

Predicting future occurrences and probability of earthquakes is challenging. Earthquakes in Rhode Island have historically been infrequent, low magnitude, and with minimal impacts. In predicting probability for most hazards, annualizing historical data is the best approach available. Since 1974, there have been 19 earthquakes originating from Rhode Island. It is unconfirmed whether all of these events have been felt in the Town of North Providence, considering the size of the State, the probability calculations assume that all 19 earthquake events have been felt in the town. The annualized historical data shows that earthquakes have occurred at 0.37 per year, it is likely that future occurrences will continue at this rate. The NPHMC believes that it is somewhat probable that an earthquake event will occur in any given year.

Potential Impacts

Although earthquakes are not considered to be a major problem in the Northeast United States, they are more prevalent than one might expect. When earthquakes occur, much of the damage is a result of structures falling under the stress created by the earth's movement. Buildings that are most at risk from earthquakes are the old masonry buildings and large structures. Building failure can cause damage to the building, deaths, injuries, and loss of function. Local topography and soil type also affect earthquake severity. Steep slopes composed of loose material may produce large landslides during an earthquake. The type of construction also affects the risks of damage to a property. For these reasons, earthquake hazards are highly localized and difficult to assign regional earthquake boundaries that share the same relative degree of hazard.

3.5 Asset Vulnerability Assessment

Whereas the preceding sections of Chapter 3 identifies risks from natural hazards – detailing the hazard type, extent, location, probability, history, and potential impacts – this section will identify community assets that may be affected by hazards. The community assets that may be affected include people, structures, natural and historical resources, and community activities.

People

To assess the town’s vulnerable populations, the planning team utilized data and mapping products from the Center for Disease Control and Prevention’s (CDC) Social Vulnerability Index (SVI). Social Vulnerability is the susceptibility of social groups to the adverse impacts of natural hazards, including disproportionate death, injury, loss, or disruption of livelihood. An analysis of the Town’s vulnerability to impacts of hazards is incomplete without the context of social vulnerability.

The CDC created the SVI database to help emergency response planners and public health officials identify and map communities that will most likely need support before, during, and after a hazard event. The CDC SVI uses U.S. Census data to determine the social vulnerability of every census tract. Census tracts are ranked on 16 social factors, including poverty, lack of vehicle access, and crowded housing, and groups them into four related themes. The CDC SVI’s four themes and 16 social factors are detailed in Table 3.5.1. below.

Table 3.5.1: CDC Social Vulnerability Index Themes and Social Factors

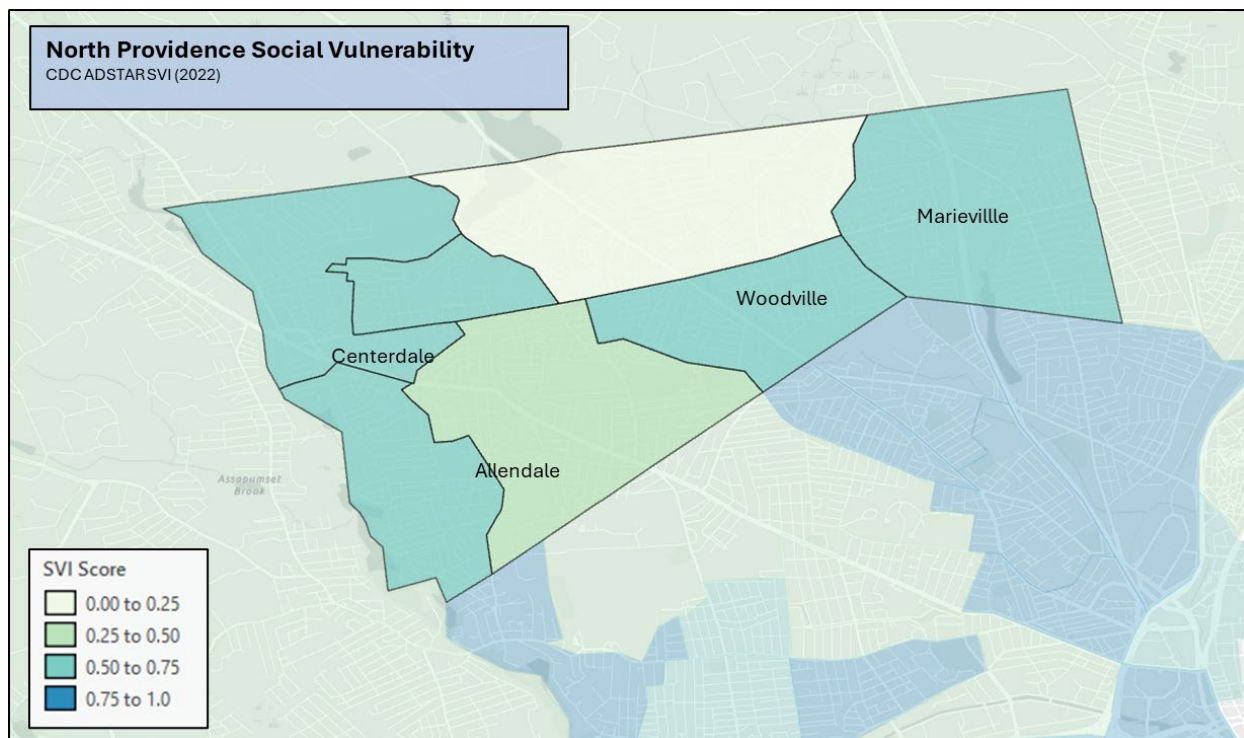
CDC SVI Themes and Social Factors	
Themes	Social Factors
Socioeconomic Status	Below 150% poverty, unemployed, housing cost burden, no high school diploma, no health insurance
Household Characteristics	Aged 65 or older, aged 17 or younger, civilian with a disability, single-parent households, English language proficiency
Racial and Ethnic Minority Status	Hispanic or Latino (of any race); Black and African American, Not Hispanic or Latino; American Indian and Alaska Native, Not Hispanic or Latino; Asian, Not Hispanic or Latino; Native Hawaiian and Other Pacific Islander, Not Hispanic or Latino; Two or More Races, Not Hispanic or Latino; Other Races, Not Hispanic or Latino
Housing Type and Transportation	Multi-unit structures, mobile homes, crowding, no vehicle, group quarters

Each census tract receives a separate ranking for each of the four themes, as well as an overall ranking. Census tracts are ranked against all other tracts in either the state or nation and receive a score from 0 to 1, which corresponds to the percentile a census tract is in. A higher score indicates that a census tract is ranked more vulnerable than other census tracts while a lower score indicates less vulnerability.

There are seven (7) census tracts in the town of North Providence, with five (5) tracts having an SVI score between 0.50 and 0.75 which indicates a medium-to-high level of vulnerability. The most vulnerable census

tract in North Providence is Census Tract 44007011800, where the Marieville neighborhood is located, having a National SVI score of 0.72. The Social Vulnerability Index data shows that the Town of North Providence's most vulnerable census tracts have higher rates of people who are elderly, under 18, in cost-burdened households, and are in households that may not own a vehicle. A map illustrating the CDC SVI scores in North Providence is below in figure 3.5.1; an interactive map from the CDC can be found on their [website](#).

Figure 3.5.1: North Providence Social Vulnerability by Census Tract



People's Vulnerability to Hazards

In most regional hazard events, such as droughts, earthquakes, extreme temperatures, hail, hurricanes, lightning, severe winds, tornados and winter storms, the entire population of North Providence is uniformly at risk. However, effects from hazards will vary due to population characteristics. The impacts of these regional hazards will impact the very young and elderly populations much more severely. Persons with disabilities, the poorly housed and unhoused, and those who spend significant time outdoors, such as outdoor workers and users of public transportation, are also more vulnerable to adverse impacts from these regional and atmospheric hazards.

The population of North Providence is also vulnerable to other hazards that impact at specific locations, such as dam failure and flooding. All residents living within the floodplain or inundation zone of a dam will be at risk, however effects from flooding will have a greater impact on residents and communities that are more socially vulnerable. Populations without access to vehicles, and those that need assistance during evacuations are more vulnerable to getting trapped in flooded homes. Further assessment of where specific properties are more at risk to flooding can be found in the flood hazard risk assessment in the previous section.

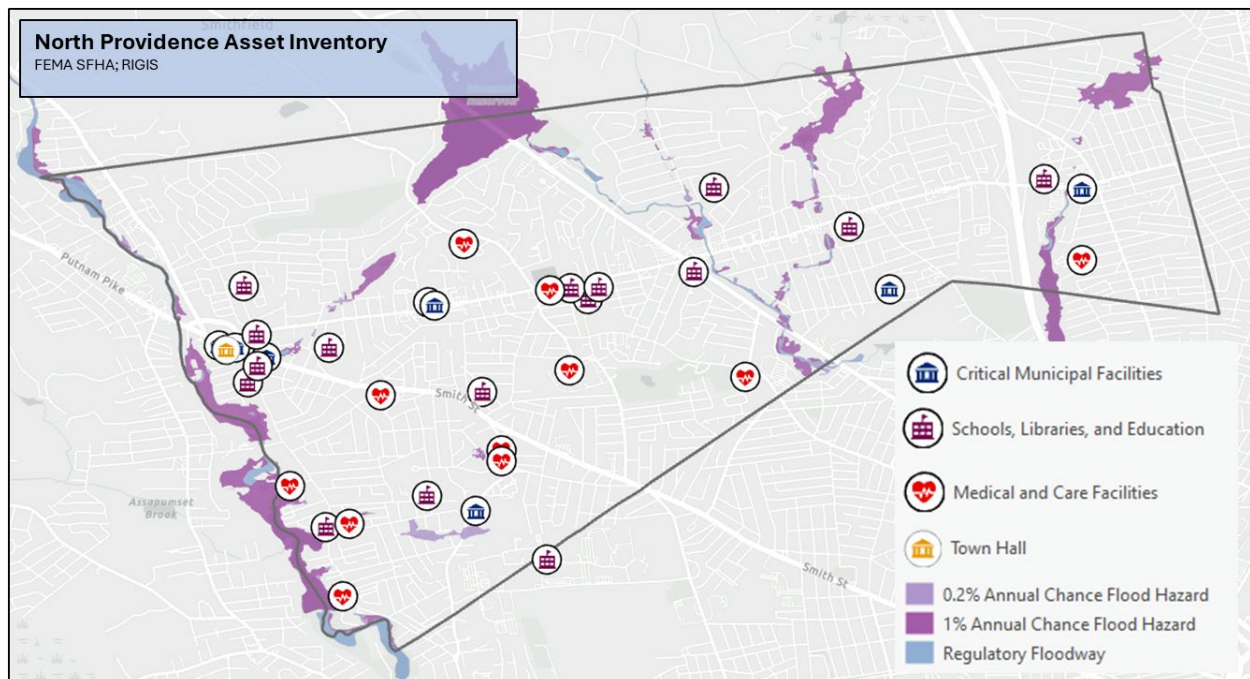
Structures

Identifying structures helps to understand what existing buildings and infrastructure may be in harm's way during a hazard event. All structures throughout the Town of North Providence are exposed to some level of risk, but some structures are more vulnerable depending on location, condition, and age.

Existing Structures

The existing structure assets in the town that have been identified as potentially being vulnerable are Dams, Care Facilities, Schools, and Critical Municipal Facilities.

Figure 3.5.2: North Providence Identified Assets



Care Facilities – The care facilities in North Providence play a vital role in providing medical services and housing for the elderly and special needs populations in town. The occurrence of a natural hazard event creates a higher potential for these special populations to become vulnerable due to their reduced mobility, thus placing their lives and living quarters in danger.

- Salvatore Mancini Resource and Activity Center
- George N. Hunt Campus School
- Our Lady of Fatima Hospital
- Hopkins Manor
- Golden Crest Nursing Center
- Fogarty Center
- The Miriam Hospital
- Darlington Memory Lane
- Lincolnwood Rehabilitation and Healthcare Center

Schools and Libraries - The Town of North Providence has 14 education centers including multiple nurseries, elementary schools, private schools, a high school, and one college, as well as two libraries. These school facilities play a vital role in educating North Providence's youth, and some are used as emergency

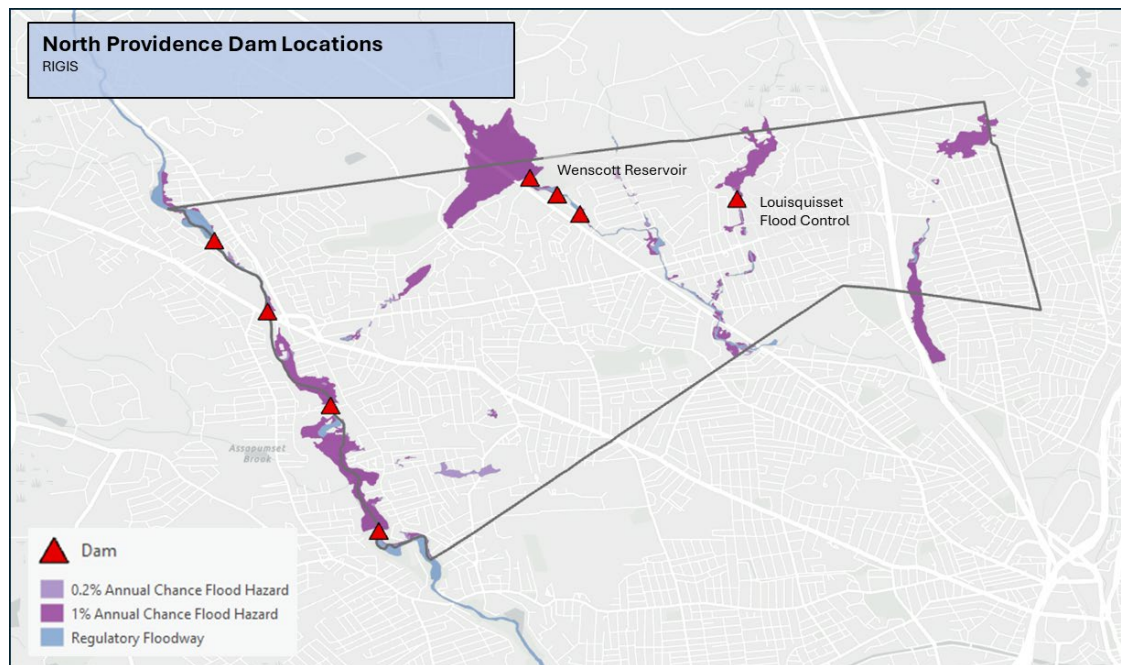
shelters and staging locations in the wake of a disaster. The occurrence of a natural hazard event creates a higher potential for students to be rendered vulnerable, thus placing their lives in danger. Furthermore, the physical structures themselves are put at risk for severe property damage due to flooding from heavy rain, high winds, earthquakes, and more. The students in North Providence will benefit from the provision of a safe and secure learning environment, as well as the protection of school infrastructure from property damage.

- Birchwood Middle School
- Brown University
- Centredale School
- De La Salle Academy
- Dr. Edwards A. Ricci School
- Dr. Joseph A. Whelan Elementary School
- Early Years Learning Center
- George N. Hunt Campus School (St. Mary's)
- Green Acres Country Day School
- Greystone School
- North Providence Career and Technical Education Pathways
- North Providence High School
- Rhode Island College

Critical Municipal Hazard Response Facilities – There are multiple structures and facilities throughout the town that are depended upon for responding to any natural hazard event, these facilities include emergency service buildings, shelters, evacuation routes, government buildings, and communication towers. Potential loss of physical access, power supply and critical systems, would the governmental and emergency response to natural hazard events. It is essential to protect public services, records, evacuation routes, and the general livelihood of North Providence residents and their property.

- Town Hall (2000 Smith Street)
- Old Town Hall (2026 Smith Street)
- Town Hall Annex (1995 Smith Street)
- Public Safety Complex (1951 Mineral Spring Ave.)
- Police/Fire Department on 1967 Mineral Spring Ave.
- Fire Department 1 on Fruit Hill
- Fire Department 2 on 1080 Mineral Spring
- Public Works on 2 Mafalda Street
- North Providence High School- Shelter (Town Shelter, not Red Cross approved) at 1828 Mineral Spring Ave.
- Back up 911 Center at RI Fire Marshall Investigation Division buildings
- Back up 911 Center at RI Fire Marshall Investigation Division buildings (1951 Smith Street) K. Communication Towers
- Mineral Spring Avenue- key viaduct for evacuation, utilities, and emergency response

Figure 3.5.6: Dam Locations



Dams - There are nine (9) dams in North Providence, two of the dams Wenscott Reservoir dam and Louisquisset Flood Control dam, are classified as high hazard. Extreme rain and earthquake events have the potential to cause structural failure resulting in catastrophic flooding in the dam's inundation zones. Flooding related to heavy rainfall can cause overtopping or even a breach of the dam. Additionally, many of the town's dams are beyond or reaching their useful life. Upgrades and structural preservation would prevent catastrophic flooding, reducing property loss and protecting public health, safety, and welfare.

Future Development

Areas of future growth and development are also important for assessing the building environment because North Providence will experience some land use change over the 5 years the plan is approved. The Town of North Providence is generally built out with a majority of the development and land use consisting of medium-high density residential development (65%). There is roughly 9% of land area consisting of commercial development, with the Centredale area representing the most recently revitalized commercial district. The Town's Comprehensive plan identifies goals to preserve land for open space and recreation, mitigate the impact of future growth on existing neighborhoods and the environment, and encourages the reuse and redevelopment of existing commercial centers and buildings. The future housing plan projects new construction will mainly be restricted to infill development and adaptive reuse in existing neighborhoods. North Providence has the goal of ensuring residents have access to a variety of affordable housing options to accommodate older populations, unhoused persons, and low- and moderate-income households.

Structure Vulnerability to Hazards

Hazards such as flooding and dam failure

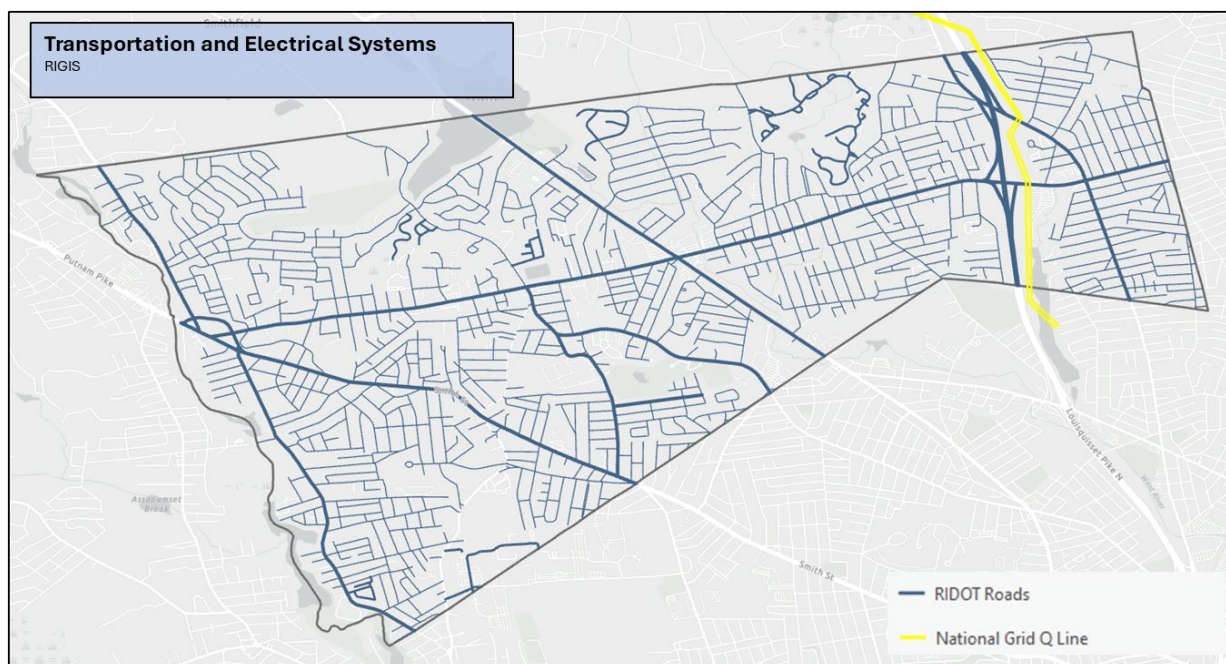
Flooding and dam failure –

Winter Storms –

Systems

Beyond just buildings, systems and community lifelines are critical for life safety and the economy. The operation of these systems during and after a disaster is crucial. Their ability to keep functioning affects both the severity of the impacts and the speed of recovery. The systems identified by the community as being the assets most critical for resilience are transportation, electrical and power, and water systems.

Figure 3.5.7: Transportation and Electrical Assets



Road Infrastructure and Stormwater Drainage Systems – The town of North Providence deals with frequent flooding and flash flooding throughout the town. When heavy rain occurs, flooding of local roads limit access and may strand residents, cause damage to homes, and undersized culverts will flood. There are multiple areas in town with low topography, which acts as a basin and collects rainwater. Improving drainage systems and roadways will help reduce damages to infrastructure and prevent flooding that causes delays in emergency services and strands residents. The streets and points within the town that experience flooding include the following:

- 1100 Block of Douglas Avenue
- Allendale Ave. at Town Line
- Bellevue Ave. neighborhood
- Brook Street
- Brown Ave.
- Centerdale Brook
- Cleveland at Lojai
- Dunbar
- East of Standish Ave.
- Elliot and Barrett Aves
- Evergreen Parkway
- Fruit Hill Ave.
- Gill and Platt streets
- May Street at Charles Street
- North of Smith Street
- Oak Street
- Smith Street at Town Line
- South of Mineral Spring Ave.
- St. John's Circle
- Terry Street
- Walter Ave.
- Warren Ave.
- West River Parkway/Lees Plat
- Woonasquatucket Ave. at Humbert Street

Based off observed commuting patterns detailed in the Town's Comprehensive Plan, North Providence serves as more of a residential community than a job center for the region. Each day about 15,100 residents leave North Providence for work, roughly 5,300 workers enter North Providence from other communities, and only around 1,100 working North Providence residents remain in Town for work. Commuting patterns suggest that Providence is the most common destination for residents who are leaving Town for work, and overall, most outbound commuters travel southeast for work. It is essential to ensure that roads are maintained and repaired after a hazard event to allow for residents and commuters to enter in and out of town freely.

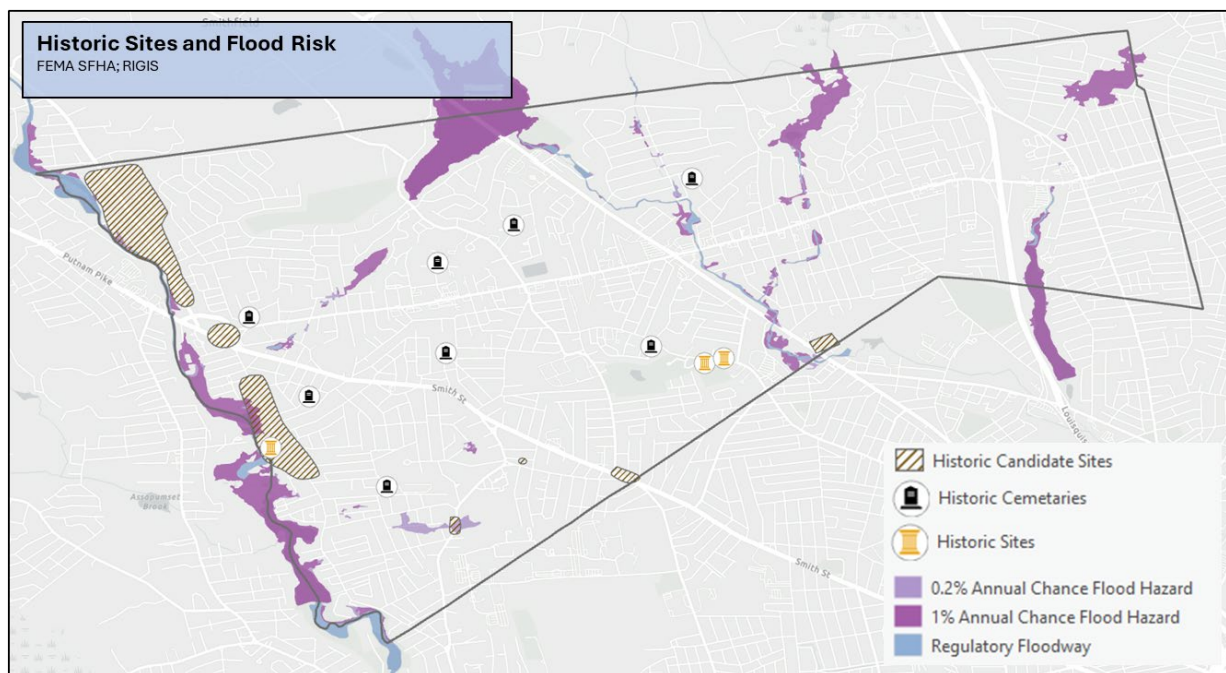
Electrical Facilities – The National Grid high voltage Q line runs through the Town's right of way. While the Q line is not owned by the Town of North Providence, the town and its residents could be at risk of loss of service and electrocution should the line be downed by high winds, winter storms, or a tornado. The town does own and maintains electrical lines and telephone poles that line streets throughout the town, these smaller lines are also vulnerable to being downed from high winds, winter storms, tornados, and hurricane winds.

Water Systems – The Town of North Providence is serviced by Longview Reservoir, Providence Water, Smithfield Water Supply Board, and East Smithfield Water District Sewer pump stations at Lojai Blvd pumps up Adams Street connector. The water systems may be vulnerable to extreme temperatures, earthquake, and flooding. The Longview Reservoir is held back by the Scituate Dam, failure of the reservoir could cause catastrophic flooding and would be a loss of a potable water source for the town.

Natural and Historic Resources

Environmental and natural resources add to a community's identity and quality of life and support ecosystem services, such as clean air and water. The natural environment can also protect residents by reducing the impacts of hazards and increasing resiliency. Historic resources tell the story of North Providence and offers many social and economic benefits to its residents. Identifying the natural and cultural resources important to the Town of North Providence helps the town protect and preserve these assets and builds a more resilient community for future generations.

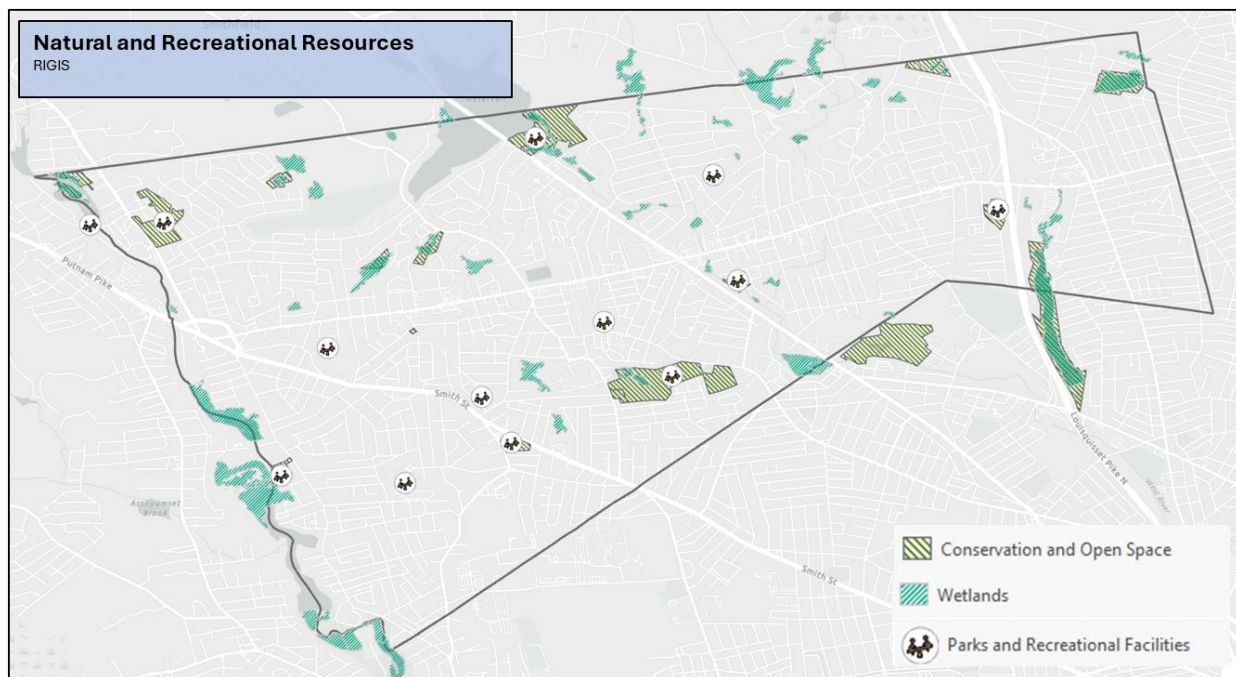
Figure 3.5.8: Historic Sites and Flood Risk



Historic Structures – The Town of North Providence has multiple structures and districts listed on the National Registry of Historic Places. These historic resources contribute to North Providence's culture, heritage, and general character. Because of the age of these structures, they are more vulnerable to hazard events including high winds, tornadoes, extreme temperatures, earthquakes, and flooding. The town will benefit from ensuring the protection of irreplaceable property that contributes to North Providence's culture, heritage, and general character.

- Allendale Mill (494 Woonasquatucket Ave.)
- Captain Stephen Olney House (138 Smithfield Road)
- Smith-Cushing House (109 Smithfield Road)
- Old Town Hall (2226 Mineral Spring Avenue)
- Fruit Hill Avenue School (354 Fruit Hill Avenue)
- William W. Angell House (157 Fruit Hill Avenue)
- Blacksmith Shop/Belvedere Club (1596 Smith Street)
- Joseph Smith House (109 Smithfield Road)
- Greystone Historic District

Figure 3.5.9: Natural and Recreational Assets



Recreational Facilities – The Town of North Providence has many outdoor recreational facilities that residents enjoy including playgrounds, sports fields, parks, and campgrounds. These facilities provide residents of North Providence with places to go for recreational and leisure activities. The occurrence of a natural hazard event creates a threat of property damage. Some of the recreational facilities may be at risk of flooding, damage to trees from high wind events, and brushfires.

- Governor Notte Park
- Camp Meehan
- Ivan Street Playground
- Ivan Street Lot
- Captain Joseph DeNinno Field
- Captain Stephen Olney Memorial Park
- Miller-Waite-Evans Memorial Park
- North Providence Little League West

Community Activities

Economy

After a disaster, economic resiliency is one of the major drivers of a speedy recovery. The Town's Comprehensive Plan's Economic Development chapter provides many insights into the Town's economic activities. There are 828 employers in the town, with health care (125), professional and technical services (106), retail (93), accommodation and food service (76), and construction (75) as the leading industries in terms of number of businesses. While all businesses and industries may be impacted by a natural hazard or disaster event, certain industries may be more vulnerable to economic losses. Accommodation & Food Services and Retail Trade businesses are likely to be the most impacted in the aftermath of a hazard event as residents and visitors will be less likely to patronize businesses in areas of town that have been impacted by an event.

Town Events

The Town of North Providence holds various town events throughout the year. Many of the events coincide with holidays and occur during months that may experience hazard events.

Table 3.5: Vulnerability Assessment Matrix

	People	Structures	Systems	Natural & Historic Resources	Community Activities
Flooding	Medium	High	Medium	Medium	Low
Winter Storm	Medium	Medium	High	Low	Medium
Severe Winds	Low	Medium	High	Low	Low
Hurricane/Nor'easter	Medium	Medium	Medium	Low	Low
Extreme Temperatures	High	Low	High	Low	Medium
Lightning	Medium	Low	Low	Low	Low
Tornado	High	High	High	Low	Low
Drought/Brushfire	Low	Low	Low	Low	Low
Hail	Low	Medium	Medium	Low	Low
Dam Failure	High	High	High	Low	Low
Earthquake	Low	Medium	Medium	Medium	Low

Section 4: Capability Assessment

The capability assessment is an evaluation of the existing authorities, policies, programs, funding and resources available to the Town of North Providence to accomplish hazard mitigation. The purpose of the capability assessment is to highlight successes, identify shortcomings, and to lay the groundwork for possible improvement. North Providence recognizes that the inclusion of mitigation initiatives would not only benefit the community by reducing human suffering, damages and the costs of recovery, but would also help build and maintain the sustainability and economic health of the Town. Section 4.2 details the Town's existing plans, programs, and policies that were reviewed and contribute to hazard mitigation efforts.

4.1 Summary of Existing Capabilities

Planning and Regulatory

North Providence Comprehensive Plan

The North Providence Comprehensive Plan was originally adopted on September 22, 1998. In 2012 the Town updated its comprehensive plan. The updated plan was approved by the Planning Board and adopted by the Town Council in 2013. As a result of State Legislation that passed in June 2023, the Town rewrote their zoning ordinance. The plan is slated for final review and approval in 2025. The plan provides a long-range guide for the Town's future with a comprehensive look at the community as a whole. It addresses land use, housing, economic development, municipal services and facilities, natural resources, historic and cultural resources, open space and recreation, and transportation and circulation, with some hazard mitigation activities. The Town recognizes the importance of hazard mitigation, its interaction with municipal land use and infrastructure planning, and the need for a comprehensive planning approach which accommodates these interdependencies.

Emergency Operations Plan (EOP)

The North Providence EOP was last updated in 2022. Its primary purpose is to plan for the coordination and execution of specific roles, duties and responsibilities of individual municipal emergency response personnel in the event of a disaster or general emergency. North Providence's plan combines mitigation, preparedness, response, and recovery.

North Providence Community Resilience Building Plan

In the summer of 2023, the Town of North Providence embarked on certification within the state of Rhode Island's Municipal Resilience Program (MRP). As a prerequisite to certification, the Rhode Island Infrastructure Bank (RIIB) and The Nature Conservancy (TNC) provided the Town with a community-driven process to assess current hazards and climate change impacts, and to surface projects, plans, and policies for improved resilience. In July 2023, North Providence's Core Team helped organize their Community Resilience Building process and workshop facilitated by TNC in partnership with RIIB. The core directive of this effort was the engagement with and between community members to define strengths and vulnerabilities and the development of priority resilience actions for the Town of North Providence.

Providence Great Streets Master Plan

In January 2020, the Providence Great Streets Initiative and Urban Trail Network Master Plan was published ([PLANS - Providence Streets Coalition](#)). This initiative was a collaborative effort between the Mayor's Office, community partners and citizens to provide safe, clean, healthy, inclusive and vibrant streets in Providence. "The Great Streets Master Plan establishes a vision and framework for specific public realm improvements citywide that will ultimately connect every Providence neighborhood to a safe, comfortable, high-quality network of public improvements where residents and visitors can walk, run, bike, scoot, and skate to get to schools, jobs, parks, and other important destinations." This plan includes a number of goals that align with the Town's mitigation goals, including the reduction of stormwater runoff and flooding.

Building Codes

All municipalities within the State of Rhode Island share a single building code (RIGL 23-27.3-100 et. AL.). The Code itself (which incorporates the 2018 International Building Code) was last amended in 2021 and provides comprehensive construction requirements designed to mitigate the impacts from natural hazards, such as high wind events. The RISBC also requires one foot of freeboard for all new and substantially improved construction in the floodplain. The Code is enforced by the North Providence Building Inspections Department and provides an additional layer of regulatory control to those discussed above.

Floodplain Ordinance and NFIP

The Town of North Providence is an active and compliant member of the National Flood Insurance Program since 1977. As such, North Providence residents are able to purchase flood insurance to protect their property against flood losses. The Town of North Providence has adopted the most recent (October 2015) Flood Insurance Rate Maps (FIRM) and Flood Insurance Study (FIS). The North Providence Town Planner is the designated NFIP Coordinator, providing a variety of services to residents and Town officials. In addition to being available to field flood insurance questions and regulate development permits, the NFIP Coordinator maintains all Letters of Map Amendment (LOMAs), distributes flood hazard flyers, is available for Community Assistance Visits (CAVs), and mitigates flood insurance issues between residents, lenders and insurance companies.

The Town's floodplain regulations include provisions in the zoning ordinance concerning Substantial Improvement/Substantial Damage (SI/SD) that are made at the local level. The Zoning Officer is responsible for making determinations to enforce the NFIP's SI/SD requirements.

For substantial improvements, the Town tracks cumulative improvements generally by using the evaluation from the Tax Department for the total price of the property and the Planning and Zoning Department uses a 10-year span of building permits to identify improvements made. When plans are submitted to the Town for structural improvements or damage that fall in the SFHA, and costs are 50%+, the Town ensures the new improvements also include increasing flood protection. This involves the Building Official screening the building permits for renovations after floods as they're responsible for reviewing 100% of the building permits. All the Town's floodways are flagged on Viewpoint so if the Building Official sees a flagged property, he/she looks back to see what projects were done and if he/she believes it is getting close to the 50%, he/she forwards the application to the Town Planner/NFIP Coordinator to make an official determination. If they meet that 50% threshold, then the Town requires the property owner to fully conform to the Floodplain regulations by either building with 1 foot of freeboard above base flood elevation, obtaining an elevation certificate to prove they are not in the floodplain or install flood vents when permitted, depending on the circumstances.

Further, when the Town evaluates significant damage impacts following an event/disaster, they analyze weather outcomes and predictions from the National Weather Association, Rhode Island Emergency Management and past reports to help predict and prepare to mitigate against future impacts. This planning effort includes community leaders, Public Works, Police Department, Mayor, Building Officials, Schools, Planning and Zoning, etc.

Zoning Ordinance

The North Providence Zoning Ordinance provides tools the town can use to reduce impacts to natural resources. The Flood Hazard District requires a permit to be issued by the Building Inspector for all proposed construction, development, or storage of equipment and/or materials within a floodplain or flood hazard area. Flood-carrying capacity within the floodplain, flood hazard area, or watercourse cannot be altered or relocated. Hydrological and hydraulic analyses must be performed to demonstrate that the proposed project will not increase flood levels within the Town during the occurrence of the base flood discharge. FEMA's FIRMs are used by the ordinance to identify floodplain and flood hazard areas.

Planning Board

The North Providence Planning Board is tasked with formulating and updating the Town's Comprehensive Plan and the Town's Capital Improvement Budget. They are assisted by the Planning Department when reviewing subdivision and land development projects.

North Providence Land Trust

The North Providence Land Trust (NPLT) was established in 2000 to preserve open space in North Providence. The purpose of the NPLT is "... to preserve open space, protect wetlands, water bodies, ground and surface water resources, farmlands, historical or cultural places on interest, scenic views, unusual, exceptional or exemplary natural habitats, provide opportunities for research and education on natural resources on land trust held properties and to secure for the town the goals and objectives established in the comprehensive plan." They have the ability to acquire land for the benefit of all North Providence residents. This preservation of open space can increase the ability of the land to retain more rain and flood waters, rather than damage infrastructure. They can help identify areas for preservation in future hazard mitigation planning efforts.

North Providence Environmental Commission

The Environmental Commission was created to help create green infrastructure, spearhead environmental education, conserve the town's natural resources, involve neighborhoods in beautification and recycling efforts, and help residents understand the value of a healthy and beautiful place to live. This group can help with public outreach during future hazard mitigation planning efforts.

Rhode Island State Dam Safety Program

The Town of North Providence participates in the State Dam Safety Program because the Wenscott Reservoir and Louisquisset Flood Control Dam are classified as two of the sixteen high hazard dams within the State. The State Dam Safety Program was created to facilitate the enforcement of the primary dam inspection law (RIGL 46-19, Inspection of Dams and Reservoirs). RIGL 46-19 states that dam owners are responsible for the safe operation, maintenance, repair, and rehabilitation of a dam, which are the essential elements in preventing dam failure; furthermore, dam owners are liable for the consequences of accidents or failures of their dams. According to the Dam Safety and Maintenance Task Force, RIGL 46-19 needs to be updated to address the specifics of a comprehensive dam inspection and permitting program. In addition, the current

law does not address the fiscal impacts of dam repairs or removal, and the possible need for state financial assistance to assist dam owners undertake crucial and necessary repairs. Changes in the dam safety program, including changes in dam hazard statuses will be updated as required in future hazard mitigation planning efforts.

North Providence Historic District Commission

The North Providence Historic District Commission was established to uphold development standards and review construction projects within the communities' historic districts. Standards are designed to stabilize and improve property values in such historic districts, to preserve specific buildings, to foster civic beauty, to strengthen the local economy and to promote the use of such districts and specific buildings for the education, pleasure and pride of the residents of the Town of North Providence.

Administrative and Technical

Mayor's Office

The Mayor is the chief executive and administrative officer as well as Public Safety Director of the Town. The Mayor's office is the motivating force behind the day-to-day operations of all municipal departments in Town in addition to administration and all policy and program development. Many Town events are organized and coordinated through this office as well as all constituent services. The Mayor is supportive of mitigating the impacts of natural hazards and initiatives to make North Providence a more resilient community.

Town Council

The North Providence Town Council is comprised of 7 members, elected from the town at-large to serve for a term of two years. These elected members are the governing body by which new plans and policies are adopted. They take a holistic view of the Town's operations when formulating policies and exercising town powers. Educating the Town Council members about the importance of hazard mitigation is not only beneficial for the Town's resiliency but also facilitates plan adoption.

Planning Department

The Department of Planning carries out all the planning functions related to land use, environmental protection, and economic development required by the Town Charter, the ordinances of the Town, and the laws of the State of Rhode Island, and shall provide administrative assistance to the Planning Board and the Zoning Board of Review. Actions as outlined in this hazard mitigation plan will help prioritize the growth and resiliency goals of the community. The Town's planner has participated in the development of this plan.

Building and Zoning Department

The Building and Zoning Department is responsible for administration and enforcement of the state building code, the zoning ordinance, and the Housing Maintenance and Occupancy Code, and any other function required by the ordinances of the Town or the laws of the State of Rhode Island.

Emergency Management

In addition to managing the EOP, the Emergency Management department engages in disaster preparedness and response activities to better safeguard the Town from natural and manmade disasters. The department director led the effort to update this hazard mitigation plan.

This department has a strong working relationship with National Grid- the local energy supplier. On more than one occasion, having a direct person to call at National Grid has helped the North Providence EMA Director mitigate power outages and prioritize power ups on critical infrastructure.

Geographic Information Systems (GIS)

The North Providence GIS Coordinator creates, maintains, and analyzes spatial data. They manage the data for new tax maps, new zoning maps, updating roads, hydrants, and buildings. The GIS Coordinator is able to provide parcel data used in the vulnerability assessment as well as assist with the mapping efforts that went into the development of the hazard mitigation plan.

Public Works

The DPW is responsible for repairing and maintenance of approximately 115 miles of Town roads and all public properties, snow removal and treatment of roads during winter months repairing and maintaining all surface deficiencies in roads year-round, cleaning up Town areas of overgrowth and debris, curbside removal of tree-related debris, grass cutting at all public schools, curbside service including branches and yard waste, and coordinating and proving emergency public works and engineering related needs during an emergency or a disaster (Town of North Providence). Upcoming projects within the Town will provide an opportunity for drainage improvements to the Town roadways. Elements of this hazard mitigation plan will help the public works department prioritize projects and facilitate grant applications for funding. This department is out in the Town every day and offers firsthand experience on vulnerable systems, and infrastructure needs. Representatives from the department participated in stakeholder meetings and surveys.

Police and Fire

Police and Fire Departments in North Providence ensure the safety and wellbeing of town citizens. As part of the hazard mitigation planning committee, members of the police and fire department can suggest actions that can improve disaster response. They can also use this plan as guidance when applying for grant funding.

The North Providence Fire Department was awarded an upgrade to a Class 1 rating by the Insurance Services Office (ISO) in 2014 and has maintained that status since. This rating represents an exemplary fire suppression program. North Providence is one of 63 Class 1 departments nationwide. A strong program can reduce potential damage from natural hazards and support a faster recovery process.

During ambulance calls, North Providence EMS responders add Special Needs patients to the Town's registry. This running list does not ensure better emergency services, but rather alerts officials who may need special assistance during a disaster situation.

Division of Communications

The Division of Communications handles Information Technology and Telecommunication services for all Town Departments, including the School Department. Division leader Director Ralph Nahigian works with the Police IT Assistant, Network Manager, Systems Administrator, and School IT Technicians. Communication improvements include live mapping of wireless 9-1-1 calls, and an 800 MHz radio system used by North Providence Police and Fire. The Director understands the importance of effective pre-disaster plans and emergency response. This mature department will be an asset to implementing some of the public education components of this plan.

Finance Department and Grant Writers

The Finance Department consists of three (3) divisions under the direction of the Finance Director. The Divisions are Purchasing, Tax Assessor, and Tax Collector. The Finance Department's mission is to provide accurate and reliable financial reporting to the Mayor and his Administration, the North Providence Town Council and its Committees, External Auditors, Rhode Island Department of Municipal Affairs, Bond Creditors, Taxpayers, and Residents. The finance department plays a role in securing and managing grants and has hired a grant writer on retainer to assist the Town in securing grant funding.

Tri-County Community Action Agency

Tri-County Community Action Agency was established under President Johnson's "War on Poverty" and the passage of the Economic Opportunity Act of 1964. They offer a broad range of services and programs to provide a helping hand to those in need and to build a foundation of self-sufficiency. Tri-County partners with community organizations and local governments to provide services and programs to marginalized and disadvantaged populations. Tri-County consists of a network of 14 locations throughout the state of Rhode Island, including one in North Providence, that provide programs and services for medical care, emergency services, WIC and nutrition support, employment training, substance abuse and prevention, senior and disabled programs, and more.

A major program, Tri-County, runs the Health Equity Zones, or HEZ's. They were created to address the social determinants of health and to help remove barriers to achieving a healthy lifestyle. The Tri-County HEZ program serves the towns of Johnston, North Providence and Smithfield and through partnerships with local community organizations, works to ensure residents are connected to the services they need to be healthy. Tri-County also provides emergency boiler repair or replacement services for homeowners at no cost to eligible residents, as well as assisting homeowners with weatherizing their homes and providing financial assistance for energy bills during winter months.

North Providence Mancini Senior Center

The mission of the North Providence Mancini Center is to promote healthy aging, independence and the well-being of older adults through health, wellness, educational, cultural and recreational programs and services.

Financial

Town of North Providence

The Town regularly plans and budgets for both short and long-term capital improvement projects through its Capital Improvement Plan. The budget for fiscal year 2025 prioritizes the town's aging infrastructure and is committed to pursuing grant funding to offset municipal tax dollars to fund improvements. The Town considers and pursues federal, state, and local grant opportunities to assist in funding hazard mitigation initiatives, including FEMA's Hazard Mitigation Assistance (HMA) portfolio of grant opportunities.

Rhode Island Infrastructure Bank (RIIB)

The Rhode Island Infrastructure Bank has awarded an \$80,500 Municipal Resilience Program Action Grant to North Providence to fund the design of a drainage project in the Fruit Hill Avenue area. The project is intended to bring flooding relief to residents in the area of Cottage Avenue and McArthur Drive. It's one of several projects town officials are seeking funding for to address flooding, as heavier rain events continue to pound substandard drainage infrastructure.

Education and Outreach

Town Websites and Social Media

The Town's Division of Communication maintains and updates the Town's website as well as social media accounts for various Town departments and agencies. Outreach efforts for this plan was promoted through these avenues, and various hazard warnings and information are regularly posted.

CodeRED

The Town uses CodeRED as a mass notification system to alert residents regarding emergency situations and information. In the event of a town-wide emergency or a localized geographical emergency, the town's police department, fire department, emergency management agency or designated local official will be able to call, email, and text thousands of residents at once, notifying them of the emergency and also give instructions if needed. Using GIS (Geographic Information System) mapping databases provided by the town's GIS Coordinator

StormReady

The StormReady program provides communities with the communication and safety skills needed to save lives and property--before, during and after the event. StormReady helps community leaders and emergency managers strengthen local safety programs. StormReady uses a grassroots approach to help communities develop plans to handle all types of extreme weather. The program encourages communities to take a proactive approach to improving local hazardous weather operations by providing emergency managers with clear-cut guidelines on how to improve their hazardous weather operations. To be designated as a StormReady community, communities must establish a 24-hour warning point and emergency operations center, have more than one way to receive severe weather warnings and forecasts and to alert the public, create a system that monitors weather conditions locally, promote the importance of public readiness through community seminars, and develop a formal hazardous weather plan, which includes training severe weather spotters and holding emergency exercises. The Town of North Providence became StormReady in 2018. By doing so, they have made a commitment to community resiliency in the face of extreme weather events.

Rhode Island Special Needs Emergency Registry (RISNER)

The Town of North Providence participates in the Rhode Island Special Needs Emergency Registry program. Residents that enroll in the program can let police, fire, and emergency management in town better prepare for and respond to their needs during a hurricane, storm, or other emergency. The information submitted to RISNER is shared with local and state first responders and emergency management officials. Information is held confidentially and only accessed to assist in the safety and well-being of residents.

4.2 Capability Needs and Challenges

The previous section demonstrates Town of North Providence's capabilities to implement effective hazard mitigation solutions; this section will discuss the Town's ability to expand and improve the identified capabilities to achieve mitigation.

Planning and Regulatory

- Update the Town's Emergency Operations Plan (EOP)
- Develop and update Emergency Action Plans (EAP) for identified hazardous dams
- Consider the benefits of entering into the NFIP's Community Rating System (CRS)
- Reestablish the Town's Historic District Commission to ensure the town can protect historic and cultural resources

Administrative and Technical

- Improve coordination between Town departments so that mitigation needs, actions, and resources can be better identified

Financial

- Consider developing partnerships with other communities, non-profits, and regional organizations to better leverage funding and resources for mitigation projects that benefit multiple communities

Education and Outreach

- Expanding current outreach efforts to marginalized and disadvantaged populations
- Develop educational material for specific hazards to be disseminated during months when hazards are likely to occur

Section 5: Mitigation Strategy

Whereas the two preceding Chapters identify risks and vulnerabilities from natural hazards and programmatic capabilities, this chapter establishes hazard mitigation goals and specific mitigation actions that define the Town's strategy to mitigate hazard risks. The Mitigation Strategy section provides a road map for the Town of North Providence to become more resilient to adverse impacts of the hazards identified in the HIRA chapter.

The mitigation actions include projects, policies, and programs that the Town aspires to implement over the 5-year period of the plan. The mitigation strategy and actions are comprehensive but not conclusive. The North Providence Hazard Mitigation plan is a living document; as the Town continues to address mitigation, the NPHMC and the Emergency Management director will periodically add or adjust the mitigation strategy and may incorporate more mitigation actions to address the Town's mitigation needs.

5.1 Mitigation Goals

It is the mission of the Town and the NPHMC to protect and enhance the quality of life, property and resources by identifying areas at risk from natural hazards and implementing hazard mitigation actions to protect the Town's residents; infrastructure; economy and its historical, natural and cultural resources. To achieve its mission the North Providence Hazard Mitigation Committee aims to reduce or eliminate long-term risk to people and their property from the effects of natural hazards. The NPHMC identified the following goals to implement its hazard mitigation strategy and mission:

1. **Upgrade Infrastructure:** Specifically flood prone drainage systems, streets, dams, and municipal facilities. The Town experiences frequent flooding during heavy rain events. Although the problems are known, solutions have not been identified.
2. **Protect Vulnerable Populations:** The Town has a large percentage of older, special needs residents, and other socially vulnerable populations that may require additional assistance during an emergency. The Special Needs Emergency Registry lets police, fire, and other first responders better prepare for and respond to a community's needs during a hurricane, flood, or other emergencies.
3. **Promote Public Awareness and Education:** The Town has an effective Communications Department and Emergency Management team that has a goal to educate residents about potential risks and dangers of hazards as well as conduct outreach to help the Town be better prepared for future events.
4. **Improve Response Effectiveness:** The Emergency Management Department, Police, Fire and EMT prepare for and respond to all hazard events within the Town, additional equipment, services, and technology will improve their capabilities and increase the effectiveness of their response in the wake of an event.
5. **Maintain and Protect Open Space, Recreation Areas, and Historic Resources:** Implement mitigation actions that preserve and enhance natural areas, increase vegetation and open space, and protect the Town's historic resources.

5.2 Identifying Mitigation Actions

After establishing mitigation goals, the North Providence Hazard Mitigation Council and the planning team worked together with stakeholders and town staff to review a comprehensive range of mitigation actions that would achieve the goals of the Town's Mitigation Strategy. The NPHMC and Planning team reviewed the Town's previous mitigation actions from the 2018 plan, FEMA's Mitigation Ideas Guide, and other mitigation resources. To review the status of the previous mitigation actions, the planning team collaborated with town staff and stakeholders that were identified as lead agencies for actions in the previous plan; actions were assessed for status and relevancy. To generate new mitigation ideas, the Planning Team and NPHMC discussed mitigation actions over various virtual meetings as well as gained input from stakeholders at the public Stakeholder Meeting. The results of these meetings, emails, and discussions are detailed in the following sections and comprise of the new set of mitigation actions.

The mitigation planning regulations require jurisdictions to identify and analyze a comprehensive range of specific mitigation actions and projects to reduce the impacts of the hazards each identified in the risk assessment. There were many mitigation actions that were considered during discussions with the NPHMC and stakeholders, all of which fall under four categories of action types: local plans and regulations, structure and infrastructure projects, natural systems protection, and education and awareness programs. Further detail regarding these action types are as follows:

- **Local Plans and Regulations:** These actions include government authorities, policies or codes that influence the way land and buildings are developed and built. Examples of these actions include:
 - Comprehensive plans
 - Land use ordinances and Subdivision regulations
 - Building codes and enforcement
 - NFIP CRS
 - Capital improvement programs
 - Stormwater management regulations and master plans
- **Structure and Infrastructure Projects:** These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. Examples of these actions include:
 - Acquisitions and elevations of structures in flood-prone areas
 - Utility undergrounding
 - Structural retrofits
 - Floodwalls and retaining walls
 - Detention and retention structures and culverts
 - Safe rooms

- **Natural Systems Protection and Nature-based Solutions:** This type of action can include green infrastructure and low impact development, nature-based solutions, Engineering with Nature and bioengineering to incorporate natural features or processes into the built environment. Examples of these actions include:
 - Sediment and erosion control
 - Stream corridor restoration
 - Forest management
 - Conservation easements
 - Wetland restoration and preservation
 - Land conservation
 - Greenways
 - Rain Gardens

- **Education and Awareness Programs:** These types of actions keep residents informed about potential natural disasters. Many of these types of actions are eligible for funding through the FEMA HMA program. Examples of these actions include:
 - Radio or television spots and social media outreach
 - Websites with maps and information
 - Presentations to school groups or neighborhood organizations
 - Mailings to residents in hazard-prone areas

5.3 Review of the 2018 Mitigation Actions

The North Providence Hazard Mitigation Committee and the planning team reviewed the 18 mitigation actions that were identified in the 2018 North Providence Hazard Mitigation Plan to assess their status and relevance for the 2024 Mitigation Plan. The NPHMC and town staff provided updates for the 2018 mitigation actions through meetings and emails. The following table lists the mitigation actions, their status, and details. There were eight (8) mitigation actions that were completed by the Town; ongoing actions have been incorporated into the new mitigation strategy.

Table 5.1: North Providence 2018 Mitigation Actions

#	Action	Status	Notes
1	Ordinance to regulate dumping in streams and ditches	Completed	Implemented into code of ordinance
2	Require and maintain FEMA elevation certificates	Completed	Implemented into code of ordinance
3	Expand zoning regulations to promote low impact development	Completed	Implemented into development codes
4	Require soil percolation test for new development	Completed	Implemented into development codes
5	Widen culvert along Woonasquatucket Avenue	Ongoing	Included in 2024 Mitigation Actions
6	Construct a detention basin to manage stormwater flow from RICC	Completed	Construction completed in 2022
7	Create EOP for Wenscott Reservoir and Louisquiset Flood Control Dams	Ongoing	Included in 2024 Mitigation Actions
8	Repairs at Wenscott dam	Ongoing	Included in 2024 Mitigation Actions
9	Promote Special Needs Registry	Ongoing	Info posted to Town's Facebook, EM/PD sites. Included in 2024 Mitigation Actions.
10	Incorporate hazard mitigation principals into all aspects of publicly funded building projects.	Completed	
11	Install secure broadband town-wide	Ongoing	Awaiting funding, construction hasn't started
12	Public education on protecting your property in the winter	Ongoing	Included in 2024 Mitigation Actions
13	Create an urban forest management plan	Ongoing	Included in 2024 Mitigation Actions
13a	Implement tree planting and maintenance program as identified in the urban forest management plan	Ongoing	Included in 2024 Mitigation Actions
14	Re-establish the volunteer North Providence Historic District Commission	Completed	Included in 2024 Mitigation Actions

#	Action	Status	Notes
14a	Involve the North Providence Historic District Commission in annual review of the hazard mitigation plan to identify additional potential mitigation actions	Ongoing	Included in 2024 Mitigation Actions
15	Hazard safety for school children	Ongoing	Included in 2024 Mitigation Actions
16	Conduct one active shooter exercise per school annually	Ongoing	The active shooter training is an ongoing process.
17	Improve building structure for Greystone, Centredale, and Whelan Schools	Ongoing	In process of being completed
18	Demolish and replace Marieville, James L. McGuire, and Stephen Olney schools	Completed	Stephen Olney and McGuire were completed in 2021. The Marieville School has not been started, students are combined with another school.

5.5 Prioritization of Mitigation Actions

Having identified appropriate mitigation actions, the North Providence Hazard Mitigation Committee set about prioritizing them for implementation. To accomplish this for the 2024 plan, the planning team established criteria to determine the prioritization for each action. The criteria consist of the results from two surveys: the NPHMC ranking of mitigation actions and the public survey results that ranked hazard risk; the timeframe to complete the mitigation action; and an estimated cost-benefit ratio.

The planning team developed a Mitigation Action Survey for the NPHMC and stakeholders to rank the actions on a scale from 1 to 5, with 1 being the lowest priority and 5 being the highest. The results were tabulated and an average score for each action was identified. The Mitigation Action Survey also asked to assign a timeframe for when each action should be implemented, the timeframe (from plan adoption) of Short Term is to be completed within 1-3 years, Medium Term within 3-5 years, and Long Term greater than 5 years. In the prioritization criteria, actions that were assigned Short Term received 3 points, Medium Term received 2 points, and Long Term received 1 point.

Part of the plan's public outreach efforts included a public survey for residents to help identify hazards and identify solutions to address mitigation throughout the Town. Survey respondents were asked to order each hazard according to their perceived risk. From this survey. From the survey results and discussions with the NPHMC, the planning team organized the hazards into High, Medium, and Low risk categories. In the prioritization criteria, mitigation actions that addressed High-risk hazards received 3 points, Medium-risk hazards received 2 points, and Low-risk hazards received 1 point.

Through research and discussions, the NPHMC and Planning team assigned estimated costs and potential benefits to each mitigation action. Quantifying costs and benefits and conducting a FEMA approvable BCA for each mitigation action was beyond the scope of this plan, instead each mitigation action was assigned an estimated value for their costs and benefits that a benefit cost ratio was derived from. Mitigation actions that were estimated to cost staff time and under \$15,000 received one dollar sign (\$), actions estimated to be between \$15,000 and \$50,000 received two-dollar signs (\$\$), between \$50,000 and \$100,000 received three-dollar signs (\$\$\$), between \$100,000 and \$250,000 received four-dollar signs (\$\$\$\$), and over \$250,000 received five-dollar signs (\$\$\$\$\$). Benefits for each mitigation action were assigned based off of the same dollar amount categories as the costs. The prioritization criteria were used to calculate a total score for each mitigation action. The formula is as follows:



The results of the prioritization criteria determined the prioritization for each mitigation action. The prioritization criteria table and calculations can be found in [Appendix C](#). The following section details the mitigation actions they are organized in accordance with the results of the prioritization criteria, and include details regarding each action's hazard it addresses, type of action, community lifeline the action supports, responsible agency or department for carrying out the action, and potential funding sources that have been identified to complete the action.

The Town's programmatic capabilities as identified in Section 4 will help further the implementation of the actions proposed in this hazard mitigation plan. Limitations to successful action completion include the following: available funding (either limited grant awards or constraints on matching local funds) or shifts in Town priorities. An action that is listed as high priority when the hazard mitigation plan is drafted may be cast aside for a newer, unrelated project that holds more political influence or has greater benefits. However, the Town of North Providence has established programs, plans, departments, and ordinances that aim to improve the quality of life of its citizens and build a more resilient community through implementing its Mitigation Strategy.

5.5 2024 Mitigation Actions

Table 5.2: 2024 Mitigation Actions

#	Action	Hazard	Type	Community Lifeline	Lead Agency (Bold)	Time-frame	Funding
1	Hire an engineer to develop a stormwater and flood study to identify solutions to flooding issues and vulnerabilities throughout town.	Flood, Dams	Planning and Prevention, Property Protection	Water Systems, Transportation, Shelter	Public Works , Emergency Management, Planning	Short	Community funds, FEMA HMA Grants , RI Infrastructure Bank Stormwater Grant , CDBG-MIT
2	Improve the debris management program by focusing on drainage culverts, stormwater infrastructure, and stream clearing.	Flood	Emergency Services	Safety and Security, Transportation	Public Works , Emergency Management	Short	Staff time, Community funds
3	Incorporate stream gauge monitoring into flood preparedness activities.	Flood	Planning and Prevention, Emergency Services	Safety and Security	Emergency Management	Short	Staff time, USGS Stream gage Network
4	Establish an initiative to acquire and demolish repetitively flooded homes.	Flood	Structural Projects, Property Protection, Natural Resource Protection	Shelter, Transportation, Water Systems	Emergency Management , Planning	Medium	FEMA HMA Grants, USDA NRCS Emergency Watershed Protection Buyout Program
5	Public education on protecting your property in the winter.	Winter, Extreme Temps	Public Education and Awareness	Shelter, Transportation, Water Systems	Communications , Emergency Management	Long	Staff time, Community funds, FEMA HMA
6	Identify projects to reduce sanitary sewer overflows that occur frequently during rainstorms.	Flood	Planning and Prevention, Structural Projects	Water Systems, Transportation	Public Works	Long	EPA Clean Water State Revolving Fund Loans , RIIB Sewer Tie-In Loan Fund ,

#	Action	Hazard	Type	Community Lifeline	Lead Agency (Bold)	Time-frame	Funding
7	Purchase capital equipment to perform debris removal post-storm.	Flood, Tornado, Winter, Winds	Emergency Services	Safety and Security, Energy, Transportation, Communications	Emergency Management, Finance	Short	Community Funds, FEMA HMA and PA, CDBG, FEMA EMPG
8	Wenscott dam repairs, rehabilitation, and upgrades.	Flood, Dams	Structural Projects	Water Systems	Public Works, Emergency Management	Short	FEMA HMA and HHPD , Community Funds, USACE, CDBG, RIIB Municipal Infrastructure Grant Program , RIIB Drinking Water SRF , and USDA NRCS Watershed Rehabilitation Grant
9	Create EOP for Wenscott Reservoir and Louisquisset Flood Control Dams.	Flood, Dams	Planning and Prevention	Water Systems	Public Works, Emergency Management, Planning	Medium	Staff time, Community funds, FEMA HHPD , FEMA EMPG
10	Promote Special Needs Registry.	All	Public Education and Awareness, Planning and Prevention	Communications, Health and Medical, Safety and Security	Communications, Emergency Management	Medium	Staff time, Community funds
11	Work with the American Red Cross and Tri-County to identify vulnerable populations to conduct direct outreach and education activities, specifically the Marieville neighborhood and other disadvantaged communities.	All	Public Education and Awareness	Food, Hydration, Shelter; Health and Medical	Emergency Management, Tri-County, Senior Center	Medium	Staff time, Community funds
12	On-Line reporting of damage in a form format that would require the fields requested by the EMA director or RIEMA, or FEMA for an event that had just occurred (reverse 911).	All	Emergency Services	Safety and Security	Communications, Emergency Management	Medium	Staff time, Community funds, FEMA EMPG

#	Action	Hazard	Type	Community Lifeline	Lead Agency (Bold)	Time-frame	Funding
13	Widen culvert along Woonasquatucket Avenue.	Flood	Structural Projects	Transportation, Water Systems	Public Works , Emergency Management	Medium	FEMA HMA, CDBG, RIDOT Municipal Road and Bridge Fund Program
14	Develop an Urban Forest Management Plan and implement native tree planting and maintenance program to help the Town become more pervious, resistant to heat island impacts, and become more drought resistant.	Flood, Extreme Temps, Drought	Natural Resource Protection	Water Systems, Transportation	Planning , Public Works	Medium	Staff time, Community funds, USDA Forest Service Urban and Community Forestry Program , RI DEM Urban and Community Forestry Grant program , American Forests
15	Identify a location and procedures to set up a Multi-Agency Resource Center (MARC) to provide assistance to survivors and affected populations in the wake of a disaster.	All	Emergency Services	Food, Hydration, Shelter; Health and Medical	Emergency Management	Medium	Staff time, Community funds, FEMA EMPG
16	Increase the amount of vegetation and green infrastructure throughout the town.	Flood, Drought, Extreme Temps	Natural Resource Protection	Water Systems, Transportation	Planning , Public Works	Long	Community Funds, RIIB Municipal Resilience Program , RI DEM Green Space Grant , FEMA HMA
17	Hazard safety and education for school children.	All	Public Education and Awareness	Safety and Security	School District , Communications, Emergency Management	Long	Staff time, Community funds, FEMA HMA
18	Require zoning certificates for placement of outdoor structures (e.g. sheds, gazebos, carports, etc.)	Tornado, Winds	Planning and Prevention	Shelter, Transportation	Planning	Medium	Staff time, Community funds
19	Conduct one active shooter exercise per school annually.	NA	Emergency Services	Safety and Security	Police , Emergency Management, Schools	Medium	Staff time, Community funds
20	Involve the North Providence Historic District Commission in annual review of the hazard mitigation plan to identify additional potential mitigation actions.	All	Planning and Prevention	Safety and Security	Emergency Management , Planning	Long	Staff time, Community funds

#	Action	Hazard	Type	Community Lifeline	Lead Agency (Bold)	Time-frame	Funding
21	Improve building structure for Greystone, Centredale, and Whelan Schools.	Tornado, Winds	Property Protection, Structural Projects	Safety and Security, Shelter, Energy	School District , Public Works, Emergency Management	Long	Community funds, RI Energy Efficient Buildings Fund , FEMA HMA

Additional mitigation actions were identified after the State’s review of the Plan. They are as follows:

#	Action	Hazard	Type	Community Lifeline	Lead Agency	Time-frame	Funding
22	Update the Town’s EMA website, providing information to educate the public on all of the hazards that impact the town.	All	Public Education and Awareness	Safety and Security	Communications , Emergency Management	Medium	Community funds

Section 6: Plan Implementation, Maintenance, and Integration

6.1 Plan Implementation

The Town of North Providence and the North Providence Hazard Mitigation Committee realize that successful hazard mitigation is an ongoing process that requires implementation, evaluation, and updates to this plan. The town also understands the importance of continuing to integrate appropriate sections of the plan into the town's Comprehensive Plan and Emergency Operations Plan. It is intended that this plan and the ongoing efforts of the NPHMC will preserve and enhance the quality of life, property, and resources for the Town of North Providence.

Once the North Providence Hazard Mitigation Plan is approved by FEMA, the mitigation strategy will be implemented. The timeframe assigned to each mitigation action will provide a guideline for implementing each action throughout the life of this plan and help the Town prioritize projects in the Town's subsequent Capital Improvement Plans as well as when applying for upcoming grant opportunities. However, the progress on plan implementation may vary depending on available funding and staff capacity to accomplish mitigation actions. Adoption of this mitigation strategy increases North Providence's eligibility for federal hazard mitigation grants.

6.2 Monitoring, Evaluating, and Updating the Plan

The plan is a living document that requires adjustments to maintain its relevance as conditions in the Town change and actions are completed over time. Once the plan is adopted by the Town Council, the NPHMC will be responsible for maintaining the plan by tracking the implementation, assessing how well the plan is achieving its purpose and goals, and reviewing and updating as needed. The local EMA Director will lead annual meetings of the NPHMC and be responsible for leading the group through plan monitoring, evaluation, and updates; and provide a yearly status report to the Mayor. It is recommended that this review be conducted prior to the Town's annual budget process so that any locally funded projects can be considered in the budget process. Prior to the annual meeting of the NPHMC, the committee will informally discuss additional stakeholders that should be involved in the review process. This may vary from year to year, depending on which mitigation actions are currently underway and Town priorities.

Monitoring

The NPHMC, under the leadership of the Town's Emergency Management Director, will meet biannually, in April and September, to monitor and evaluate the actions contained in the plan and monitor progress made on the mitigation strategy. At each meeting, the committee members will discuss the actions assigned to them to ensure continual progress with mitigation efforts. The status of each mitigation action will be documented and meeting minutes recorded. The NPHMC will also continue to reevaluate membership of the committee to ensure effective engagement of the appropriate parties.

The NPHMC will utilize the Local Mitigation Planning Handbook as a resource document to update this plan. This guide contains worksheets which will help the Committee evaluate and monitor the results of the

mitigation actions. The NPHMC will also identify potential mitigation projects that can be implemented in a post-disaster scenario, taking the opportunity to improve North Providence's disaster resilience.

Evaluating

At the annual meetings, the NPHMC will evaluate both the mitigation strategy, including goals and actions, and the planning process. Evaluation will occur at least annually and may also occur in the aftermath of a disaster or hazard event. The NPHMC will base its evaluation on whether the actions have met the following criteria:

- Increased public awareness/education
- Reduction in hazard damage
- Actions being implemented in the designated timeframes
- Actions staying within the cost estimate

The NPHMC, led by the EMA Director, will document and report its findings to the Town Council and Mayor. The NPHMC will involve the public in the action evaluation process by holding two annual advertised public meetings and/or using public surveys in order to review the evaluation and solicit input. At the annual meetings, the NPHMC will also discuss any changes in hazard risk and frequency to evaluate if the hazard prioritization remains current and what progress has been made. The NPHMC will also discuss any changes in the Town's capabilities to evaluate if any new capabilities implemented in the Town can be used to further enact the mitigation strategy.

Updating

Recognizing that this is a living document, the NPHMC will make changes to it after each annual monitoring and evaluation meeting or disaster, as conditions warrant. These revisions will also reflect changes to priorities and funding strategies that may have been implemented. The plan will be reviewed and updated every 5 years, led by the NPHMC and the Town's EMA director, using the same process as the initial plan development with public workshops and public hearings. A full revision of the plan will commence a year in advance of the current plan expiration date in order to ensure the Town always has an approved plan. The update will be completed every five years and will incorporate a formalized process for prioritizing actions and weighing the cost/benefit of such actions. All updates or revisions to the plan will be submitted to the RIEMA.

6.2 Continued Public Involvement

Keeping the plan current also means continuing to give the public ways to be involved in the plan and how it is carried out. North Providence will continue public involvement in the plan maintenance process by:

- The approved/adopted plan will be posted on the Town's web site
- The annual meeting of the NPHMC to review the implementation of the Plan is a public meeting and will be posted per Town guidelines.
- The NPHMC will include the public in the preparation of the five-year plan update using an enhanced version of the public participation process used in this plan. It is critical to include the public and neighboring towns early on in the planning process.
- Prior to the next plan update, the NPHMC will again circulate a public survey to get a better understanding of how North Providence residents are affected by natural hazards in their own neighborhoods.

- The North Providence Emergency Management Director will reach out to neighboring community leaders prior to the plan update and during the draft phase to capture their comments and suggestions.
- Prior to the next plan update, the NPHMC will continue talking about the importance of hazard mitigation at various meetings of the North Providence Environmental Commission, the Planning Board, and the North Providence Land Trust.

6.3 Plan Integration

Plan Integration means to include hazard mitigation principles, risk information and mitigation actions into other community plans. Integrating the NPHMP into other plans can create co-benefits, reduce risk and increase resilience. The Town of North Providence recognizes the important benefits associated with hazard mitigation, its interaction with municipal land use and infrastructure planning, and the need for a comprehensive planning approach, which accommodates these interdependencies. While the entire hazard mitigation plan has not been formally integrated into the 2024 Comprehensive Plan, natural hazards and applicable mitigation actions have been incorporated in the natural resources and infrastructure chapters. The NPHMC, Town Council, and Mayor are dedicated to making the Town of North Providence more resilient and will integrate the NPHMP into appropriate planning mechanisms and existing capabilities as needed. Beyond the comprehensive plan, the NPHMP will be incorporated into the following planning mechanisms:

- The mitigation goals and actions of the hazard mitigation plan will be considered in the next capital improvements planning process, which occurs annually.
- Risk Assessment data and prioritization of hazards will be integrated in any updates to the Town's EOP.
- Integrate the contents of the NPHMP into the next Community Resilience Building Plan.

Tables and Figures

Table 3.1: Hazard Risk Ranking

Table 3.2: Hazard Impact Summary

Table 3.3: Flood Zone Descriptions

Table 3.4: Flooding Probability

Table 3.5: Beaufort Scale

Table 3.6: Wind Hazard Events in Providence County

Table 3.7: Saffir-Simpson Scale of Hurricane Intensity

Table 3.8: Lightning Activity Level Scale

Table 3.9: Tornado Impacts in Providence County

Table 3.10: Seismic Activity In/Near Rhode Island

Appendices

Appendix A: Planning Process Documentation

Appendix B: HIRA Documentation and Data

Appendix C: Mitigation Strategy Documentation

Appendices

Appendix A: Planning Process Documentation

A.1: Kick-off Meeting Documents

North Providence Hazard Mitigation Plan Update Planning Team Kickoff Meeting November 20, 2023

A kickoff meeting was held on November 20, 2023 with members of the North Providence Hazard Mitigation planning team and CDR Maguire, the consultant hired to complete the Hazard Mitigation Plan update. The meeting started with a round of introductions, and an overview of the Hazard Mitigation process. The CDR Maguire team was led by Misty Berryman (Project Manager) and Daniel Blanchard (Lead Hazard Mitigation Planner) who provided an overview of the agenda items for discussion.

Agenda

- Overview of Hazard Mitigation
- HMA Grant Opportunities
 - BRIC/FMA 2023
- Timeline for the Plan Update
- Composition and Roles of the Planning Team
- Public Outreach Strategy
 - Mitigation Survey
- Town Updates and Recent Events
 - Recent Plans, Policies, and Department Changes
- Next Steps and Meetings
- Housekeeping

Attendees from the North Providence Hazard Mitigation Planning Team included the following:

Name	Title	Dept/Organization
John Silva	Fire Chief/Plan Lead	Fire Dept
Bernie Salvatore	Acting Director	Public Works
Brent Wiegand	Town Planner	Planning & Zoning
David D'Amico	Engineering Services	
Lisa Kennedy		Tri-County Community Action Agency
Mayor Lombardi	Mayor	Mayor's Office
Michael Campagnone	Building Official	Building Inspection
Michael Tavarozzi	Captain	Police Dept
Paul Silvestri	Assistant Fire Marshall	Fire Dept
Ralph Nahigian	Communications Director	Communications/IT
Robert Howe	EM Director	Emergency Management
Robert J. DeAngelis	EMS Bureau Chief	Emergency Medical Services
Robert Lepre	Deputy Chief	Police Dept.

Overview of Hazard Mitigation

The CDR team provided an overview of the hazard mitigation process, goals, the emergency management cycle, the benefits of hazard mitigation, and provided further explanation on mitigation activities and projects. CDR went on to provide an overview of the Hazard Mitigation Assistance (HMA) programs and funding requirements for HMA programs, including the requirement that they have a FEMA-approved

Hazard Mitigation Plan adopted by the community before applying for project funding. The CDR team discussed the planning elements and requirements as well as the current HMA grant funding opportunities including Building Resilient Infrastructure and Communities (BRIC) and Flood Mitigation Assistance (FMA).

Timeline for the Plan Update

The CDR team provided a proposed project timeline for updating the plan, seeking feedback from stakeholders and the public, transmitting the plan for state and FEMA review, and adoption of the plan through a resolution.

Composition and Roles of the Planning Team

Discussion was held regarding the current composition of the planning team and the type of stakeholder representation that was needed. There was further discussion on the planning team roles and responsibilities. This included an emphasis on stakeholder engagement and outreach, including but not limited to organizations that work with underserved and marginalized communities, environmental groups, historic preservation, schools, utilities, non-profits and business community, and neighboring jurisdictions.

Public Outreach Strategy

The importance of public outreach was discussed with the planning team to ensure that public participation occurred throughout the entire planning process. Some strategies for public outreach and engagement included the development of a public opinion hazard survey to assess the citizens' perceptions of natural hazards in North Providence and the Town's efforts to build a more resilient community through its planning and mitigation efforts.

Recent Plans, Policies, and Department Changes

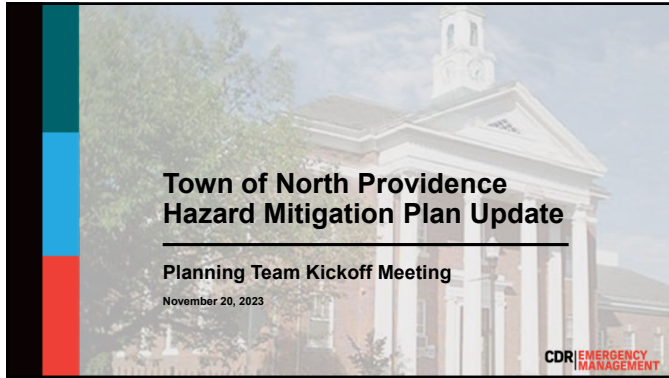
The CDR team also discussed updates for the mitigation plan triggered by changes due to legislative actions and policy updates, updates to other Town plans including the Emergency Operations Plan, Comprehensive Plan and Capital Improvement Plan, changes to building codes, mapping changes, and THIRA updates to ensure these plans aligned with the Town's Hazard Mitigation Plan. The Town had also experienced a number of recent flood events and wanted to memorialize these hazard events, its impacts and potential actions to mitigate against future impacts.

Updates to Risk Assessment and Mitigation Actions

During the kickoff meeting, there was further discussion on updating the characteristics and potential consequences of hazards. This included discussion on implementing social vulnerabilities into hazard mitigation planning process and ensuring that climate change considerations were also an important component of the planning process.

Next Steps and Meetings

The CDR Maguire and North Providence Hazard Mitigation Planning Team scheduled the next planning meeting for December 11, 2023 to conduct a risk assessment and capabilities assessment review, further discuss changes to the mitigation strategy and actions completed to date, and discuss responses received to date on the Natural Hazards Public Opinion Survey.



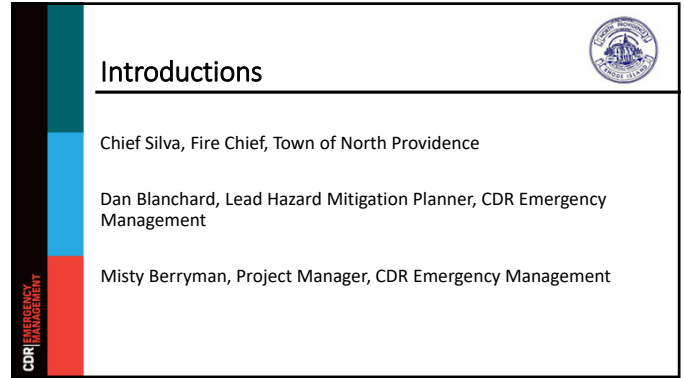
Town of North Providence Hazard Mitigation Plan Update

Planning Team Kickoff Meeting

November 20, 2023

CDR EMERGENCY MANAGEMENT

1



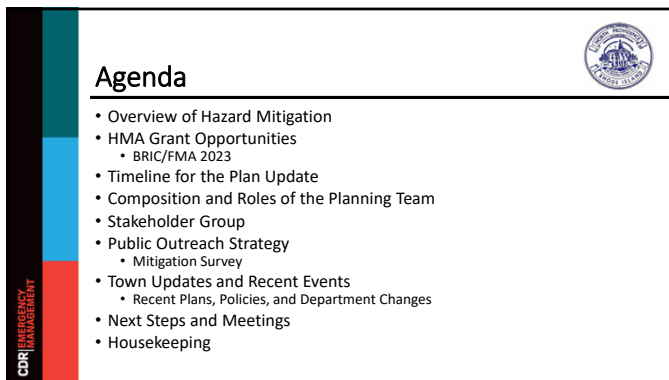
Introductions

Chief Silva, Fire Chief, Town of North Providence

Dan Blanchard, Lead Hazard Mitigation Planner, CDR Emergency Management

Misty Berryman, Project Manager, CDR Emergency Management

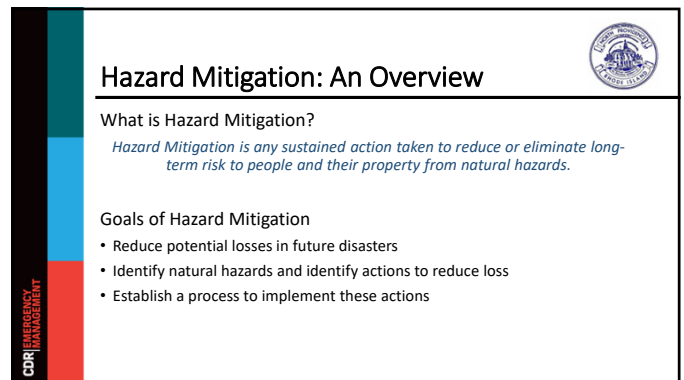
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Agenda

- Overview of Hazard Mitigation
- HMA Grant Opportunities
 - BRIC/FMA 2023
- Timeline for the Plan Update
- Composition and Roles of the Planning Team
- Stakeholder Group
- Public Outreach Strategy
 - Mitigation Survey
- Town Updates and Recent Events
 - Recent Plans, Policies, and Department Changes
- Next Steps and Meetings
- Housekeeping

3



Hazard Mitigation: An Overview

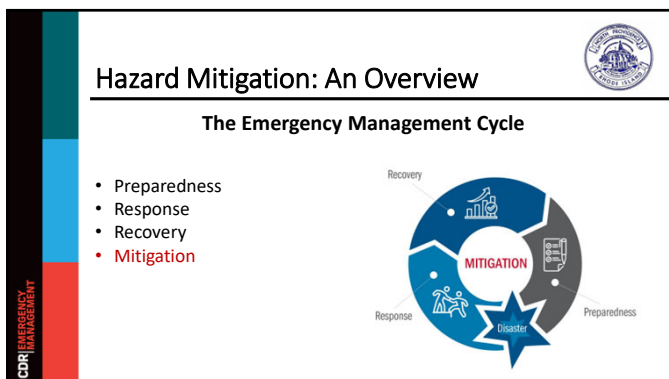
What is Hazard Mitigation?

Hazard Mitigation is any sustained action taken to reduce or eliminate long-term risk to people and their property from natural hazards.

Goals of Hazard Mitigation

- Reduce potential losses in future disasters
- Identify natural hazards and identify actions to reduce loss
- Establish a process to implement these actions

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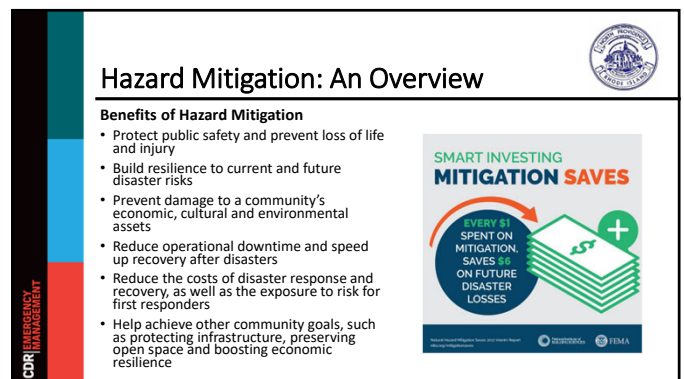
Hazard Mitigation: An Overview

The Emergency Management Cycle

- Preparedness
- Response
- Recovery
- **Mitigation**



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Hazard Mitigation: An Overview

Benefits of Hazard Mitigation

- Protect public safety and prevent loss of life and injury
- Build resilience to current and future disaster risks
- Prevent damage to a community's economic, cultural and environmental assets
- Reduce operational downtime and speed up recovery after disasters
- Reduce the costs of disaster response and recovery, as well as the exposure to risk for first responders
- Help achieve other community goals, such as protecting infrastructure, preserving open space and boosting economic resilience



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Mitigation Activities & Projects

Education and Awareness

These types of actions keep residents informed about potential natural disasters. Many of these types of actions are eligible for funding through the FEMA HMA program.

- Radio or television spots and social media outreach
- Websites with maps and information
- Real estate disclosure
- Presentations to school groups or neighborhood organizations
- Mailings to residents in hazard-prone areas
- Targeted outreach to underserved communities
- Outreach materials in languages other than English



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Mitigation Activities & Projects

Local Plans and Regulations

These actions include government authorities, policies or codes that influence the way land and buildings are developed and built.

- Building codes and enforcement
- Comprehensive plans
- Land use ordinances
- Subdivision regulations
- Development review
- Open space preservation
- Stormwater management regulations
- Capital Improvement programs



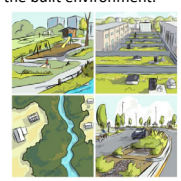
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Mitigation Activities & Projects

Nature-based solutions

This type of action can include green infrastructure and low impact development, nature-based solutions, Engineering with Nature and bioengineering to incorporate natural features or processes into the built environment.

- Sediment and erosion control
- Stream corridor and wetland restoration
- Forest management
- Conservation easements
- Greenways
- Rain gardens



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Mitigation Activities & Projects

Structure and Infrastructure Projects

These actions involve modifying existing structures and infrastructure to protect them from a hazard. This could apply to public or private structures as well as critical facilities and infrastructure.

- Property acquisition and elevations
- Rain detention and retention structures
- Utility undergrounding
- Backup generators
- Structural retrofits
- Floodwalls
- Culverts
- Safe rooms



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Funding Hazard Mitigation

FEMA's Hazard Mitigation Assistance (HMA) Programs*

Building Resilient Infrastructure and Communities (BRIC) - **\$1 Billion in 2023**
 Flood Mitigation Assistance (FMA) - **\$700 Million in 2023**
 High Hazard Potential Dams (HHPD) Program
 Hazard Mitigation Grant Program (HMGP)
 Hazard Mitigation Grant Program Post Fire
 Legislative Appropriations (LPDM)

* Must have a FEMA-approved Hazard Mitigation Plan adopted by the community

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Funding Hazard Mitigation

Other Mitigation Funding Programs

Local funds

- Capital Improvement Budget
- Department and agency funds

Other Federal Funding

- Community Development Block Grant – Mitigation (CDBG-MIT)
- EPA's Clean Water State Revolving Funds (CWSRF)
- Federal grants from NOAA, DOE, USACE, and USDA

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Hazard Mitigation Planning

What is a Hazard Mitigation Plan?

- Boosts awareness and better understanding of the risks and vulnerabilities from natural hazards
- Identifies actions and long-term strategies to reduce the risks and potential impacts of natural hazards
- Can be used as a community investment strategy when mitigation measures are aligned with community goals and capital improvement plans
- Helps build partnerships with community stakeholders and supports vulnerable populations

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Hazard Mitigation Planning

The Planning Process

```

graph LR
    S1[Step 1: Organize the Planning Process and Resources] --> S2[Step 2: Assess Risks]
    S2 --> S3[Step 3: Develop a Mitigation Strategy]
    S3 --> S4[Step 4: Adopt and Implement the Plan]
  
```

Step 1: Organize the Planning Process and Resources

- Task 1: Determine the Planning Area and Resources
- Task 2: Build the Planning Team
- Task 3: Create an Outreach Strategy

Step 2: Assess Risks

- Task 4: Conduct a Risk Assessment

Step 3: Develop a Mitigation Strategy

- Task 5: Review Community Capabilities
- Task 6: Develop a Mitigation Strategy

Step 4: Adopt and Implement the Plan

- Task 7: Review and Adopt the Plan
- Task 8: Keep the Plan Current
- Task 9: Create a Safe and Resilient Community

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Timeline For Updating the HMP

- Kickoff Meeting (11/20/2023)
- Public Outreach Surveys (11/27 - 12/8)
- HIRA Updated (12/11)
- Meeting 2: Planning Team and External Stakeholders (12/12)
 - Develop Mitigation Strategy
- Planning Team and Stakeholders Review Draft Plan (12/18 - 1/5)
- Adoption Resolution & Submit to State (1/15 - 1/19)
- State Approval and Submission to FEMA (Late-January)
- FEMA Approval & Apply for BRIC/FMA (Early/Mid-February)
- State BRIC/FMA Applications due to FEMA (February 29)

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Stakeholder Group

- Stakeholders are individuals or groups that a mitigation action or policy affects
- Involving them in the planning process helps to gain support for the plan and identify barriers to carrying it out
- Planning team members work in all stages of the planning process; stakeholders may not
- Stakeholders can advise the planning team on a specific topics and give input from varied points of view in the community

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Stakeholder Group

Required Stakeholders

- Local and regional agencies involved in Hazard Mitigation
- Agencies with the authority to regulate development
- Neighboring Communities
- Business, Academia, and other private interests
- Nonprofit organizations that work with underserved and marginalized communities
- Stakeholders that represent Community Lifelines
 - Safety and Security
 - Hazardous Materials
 - Food, Water, Shelter
 - Health and Medical
 - Energy
 - Transportation
 - Communications

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Stakeholder Group

Other Stakeholders

- Elected officials and planning commission members
- Business leaders and large employers
- Regional, state and federal agencies
- Cultural institutions and historic preservationists
- Colleges and universities
- Nonprofit Organizations
 - Local Red Cross, environmental or conservation groups, faith groups, food banks and social services, etc.
- Neighborhood groups or community leaders

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Public Outreach Strategy

- Public Survey
 - Link and QR code
 - Email to Town departments and stakeholders
 - Flyers with QR code posted around town
 - Social Media Posts
 - Website posts
 - Town EM page
 - Library Page
- Update at upcoming public meetings
- Engage disadvantaged groups and community members directly



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CDR | EMERGENCY MANAGEMENT

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CDR | EMERGENCY MANAGEMENT

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Misty Berryman, Project Manager
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Appendix A: Planning Process Documentation

A.2: NPHMC Planning Meeting Documents

North Providence Hazard Mitigation Plan Update
Planning Team Meeting
December 11, 2023

A planning meeting with CDR Maguire (consultant) and the North Providence Hazard Mitigation Planning Committee (NPHMPC) was held on December 11, 2023 to further the discussion from the November 20, 2023 kickoff meeting. The topics of discussion are further detailed below.

Agenda

- Risk Assessment & Capabilities Assessment Review
- Overview of Mitigation Strategy Updates
 - Mitigation Survey Responses (to date)
- Schedule Stakeholder Meeting
 - Additional Stakeholder Engagement/Public
 - Public Notices
- Updated Timeline

The following members of the North Providence Hazard Mitigation Planning Team attended this meeting:

- | | |
|---|---|
| • John Silva, Fire Chief & EMA Director | • Ralph Nahigian, Communications Director |
| • Bernie Salvatore, DPW Director | • Lisa Kennedy, Tri-County |
| • David D’Amico, Engineer | • Robert DeAngelis, EMS Bureau Chief |
| • Robert Lepre, Police Dept. | |
| • Paul Silvestri, Asst Fire Marshall | |

Risk Assessment and Capabilities Assessment Review

During this planning meeting, the CDR team discussed the importance of the risk assessment which provides the foundation for proposed actions to reduce losses from unidentified hazards. This included any changes to hazards with respect to location, extent, previous occurrences, future probability, vulnerability and impacts.

As the Town had been subjected to a number of recent impacts from floods, drought, and other severe weather events, there was substantive discussion on the need to mitigate against these impacts, most notably areas throughout the Town that were repetitively affected.

There was also discussion on reviewing and updating the Capabilities Assessment to address any changes to the Town’s planning and regulatory framework, level of administrative and technical support, and fiscal resources.

Overview of Mitigation Strategy Updates

CDR and the NPHMPC discussed the status of the approved mitigation actions from the 2015 Hazard Mitigation Plan and updated the mitigation actions table to note the eight (8) actions that had been completed. The NPHMPC provided status updates on the ongoing actions and updated the project completion timelines. As a result of repetitive and recent impacts to the Town from newer events, the NPHMPC focused on mitigation strategies to help minimize future impacts.

Next Steps and Meetings

The CDR Maguire and the NPHMPC scheduled the next planning meeting for January 8, 2024 to conduct a risk assessment and capabilities assessment review, address changes to mitigation strategy and propose new mitigation actions, and discuss responses received to date on the Natural Hazards Public Opinion Survey.

Town of North Providence Hazard Mitigation Plan Update

Planning Team Meeting

December 11, 2023

CDR | EMERGENCY
MANAGEMENT

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Agenda

- Documentation Needs
- Updated Timeline
- Schedule Stakeholder Meeting
 - Additional Stakeholder Engagement/Public
 - Public Notices
- Public Opinion Survey
 - Updates
 - Re-post?
- Overview of Mitigation Strategy Updates
 - Mitigation Survey Responses (to date)

2

Documentation Needs

- Existing Documentation Review
 - Documentation Needed
 - Emergency Operations Procedure (2009?)
 - THIRA
 - EOP for Wenscott Reservoir and Louississet Flood Control Dams (estimated completion timeline?)
 - North Providence Land Use (last version 2011)
 - Summary of NPHMC activities post 2015
 - FIRMS/FIS (Oct 2015?)
 - New plans implemented since 2018?
 - Documentation Pending Update
 - Comprehensive Plan (2013) - under revision

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Timeline For Updating the HMP

- Kickoff Meeting (11/20)
- Public Outreach Surveys (11/27 - 12/15)
- HIRA Updated (1/10)
- Meeting 2: Planning Team and External Stakeholders (1/8)
 - Discuss Mitigation Strategy
- Planning Team and Stakeholders Review Draft Plan (1/10-1/15)
- Adoption Resolution & Submit to State (1/18)
- State Approval and Submission to FEMA (Late-January)
- FEMA Approval & Apply for BRIC/FMA (Early/Mid-February)
- State BRIC/FMA Applications due to FEMA (February 29)

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Next Steps & Meetings

Next Steps

- Confirm date for next stakeholder/public meeting to discuss mitigation strategy (1/8/24 or 1/9/24)
- Review and Discuss Mitigation Strategy
- Share results of survey and risk assessment

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Stakeholder/Public Engagement

Required Stakeholders

- ☐ Local and regional agencies involved in Hazard Mitigation
- ☐ Agencies with the authority to regulate development
- ☐ Neighboring Communities
- ☐ Business, Academia, and other private interests
- ☐ Nonprofit organizations that work with underserved and marginalized communities (Tri-County)
- ☐ Stakeholders that represent Community Lifelines
 - Safety and Security
 - Hazardous Materials
 - Food, Water, Shelter
 - Health and Medical
 - Energy
 - Transportation
 - Communications

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Stakeholder Engagement (cont.)

Other Stakeholders

- Elected officials and planning commission members
- Business leaders and large employers
- Regional, state and federal agencies
- Cultural institutions and historic preservationists
- Colleges and universities
- Nonprofit Organizations
 - Local Red Cross, Environmental or Conservation groups, faith groups, food banks and social services, etc.
- Neighborhood groups or community leaders

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Public Opinion Survey Updates

- 26 surveys submitted to date
- Survey date expires 12/15/23
- Repost to Facebook?

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Public Survey Response

• **Greatest Hazard Concerns**

How concerned are you about the following natural disasters affecting North Providence? (Check the corresponding box for each hazard)

Answered: 26 (Skipped: 0)

Prior to receiving this survey, were you aware of your Town's hazard mitigation plan?

Answered: 16 (Skipped: 0)

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Overview of Mitigation Strategy Updates

- **Mitigation Survey Responses (to date)**
- **Review of Mitigation Action Updates**
 - Existing and New Actions

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Contact Information

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CDR | EMERGENCY MANAGEMENT

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Misty Berryman, Project Manager
misty.berryman@cdrmaguire.com

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Appendix A: Planning Process Documentation

A.3: Stakeholder Meeting Documents

North Providence Hazard Mitigation Plan Update Public Stakeholder Meeting January 8, 2024

A stakeholder meeting with CDR Maguire (consultant) and the North Providence Hazard Mitigation Planning Committee was held on January 8, 2024 to further the discussion from the December 11, 2023 planning meeting. The topics of discussion are further detailed in the Agenda and sections below.

AGENDA

- **Overview of Hazard Mitigation**
 - **Funding**
 - **Hazard Mitigation Planning**
- **Public Survey Responses**
- **Hazard Profile**
- **Mitigation Actions**
 - **Previous Mitigation Actions**
 - **New Actions**

The following members of the North Providence Hazard Mitigation Planning Team and external stakeholders attended this meeting as noted below:

- John Silva, Fire Chief
- Robert Lepre, Police Department
- Paul Silvestri, Asst Fire Marshall, Fire Department
- Ralph Nahigian, Communications Director, Public Safety Department
- Mike Scaramuzzo, Captain, Police Department
- Lisa Kennedy, HEZ Director, Tri-County
- Robert DeAngelis, EMS Bureau Chief
- Mike Taliercia, Foreman, Public Works
- David D'Amico, Engineer
- Jamie Lynch, Director, American Red Cross
- Linda Georgio, Director of Senior Services, Mancini Center
- Jim Fuoroli, Director of Public Buildings

Overview of Hazard Mitigation (HM)

The meeting began with an overview of Hazard Mitigation, including the process, goals, project types, benefits, and HM funding programs, along with discussion on the value of a Hazard Mitigation Plan (HMP). The CDR team provided an overview of the planning process and goals the Town intended to accomplish through the update of their HMP.

Public Survey Responses

Following the HM overview, CDR presented the survey findings to date of the North Providence Hazard Mitigation Public Opinion Survey. 46 responses were received and over 52% of the respondents stated they or someone in their household had experienced a natural disaster within the last 5 years, the majority of which involved flooding. The survey results also indicated concern by residents of being impacted by natural disasters in North Providence, namely flooding (67.44%), severe winter storms (43.90%) and

extreme temperatures: heat and cold (33.33%). The public survey was posted in November 2023 and would remain open through May 2024.

Hazard Profile

Further discussion was held concerning prevalent hazards in North Providence, most notably flooding and impacts. There was extensive discussion on flood prone areas throughout North Providence and the planning committee proposed a new mitigation action to hire an engineer to develop a stormwater and flood study to identify solutions to flooding issues throughout the Town. The Planning Committee also focused on a number of solutions including an enhanced debris management program to address drainage culverts, stormwater infrastructure, and stream clearing, among a number of other solutions proposed as new mitigation actions.

Mitigation Actions

CDR and the planning team discussed the status of the 18 prior approved mitigation actions and noted that eight actions were completed including the following:

COMPLETED MITIGATION ACTIONS

Mitigation Action #	Action	Status
1	Ordinance to regulate dumping in streams and ditches	Implemented into code of ordinance
2	Require and maintain FEMA elevation certificates	Implemented into code of ordinance
3	Expand zoning regulations to promote low impact development	Implemented into development codes
4	Require soil percolation test for new development	Implemented into development codes
6	Construction a detention basin to manage stormwater flow from RICC	Construction completed in 2022
10	Incorporate hazard mitigation principals into all aspects of publicly funded building projects.	Completed
14	Re-establish the volunteer North Providence Historic District Commission	Included in 2024 Mitigation Actions
18	Demolish and replace Marieville, James L. McGuire, and Stephen Olney schools	Stephen Olney and McGuire were completed in 2021. The Maryville School has not been started, students are combined with another school.

During the stakeholder meeting, new mitigation actions were also proposed which included the following, primarily with the intent to mitigate against future flooding and impacts:

NEW MITIGATION ACTIONS

- Hire an engineer to develop a stormwater and flood study to identify solutions to flooding issues throughout town.
- Improve the debris management program by focusing on drainage culverts, stormwater infrastructure, and stream clearing.

- Incorporate stream gauge monitoring into flood preparedness activities.
- Establish an initiative to acquire and demolish repetitively flooded homes.
- Identify projects to reduce sanitary sewer overflows that occur frequently during rainstorms.
- Purchase capital equipment to perform debris removal post-storm.
- Work with the American Red Cross and Tri-County to identify vulnerable populations to conduct direct outreach and education activities, specifically the Marieville neighborhood and other disadvantaged communities.
- Promote online reporting of damage in a form format that would require the fields requested by the EMA director or RIEMA, or FEMA for an event that had just occurred (reverse 911).
- Identify a location and procedures to set up a Multiagency Resource Center (MARC) to provide assistance to survivors and affected populations in the wake of a disaster.
- Require zoning certificates for placement of outdoor structures (e.g. sheds, gazebos, carports, etc.)

Next Steps:

CDR will update mitigation actions matrix to reflect new proposed actions and develop a Mitigation Actions Prioritization Survey for the planning committee to complete so all new and ongoing actions can be ranked and prioritized.

CDR and the Planning Committee will continue updating the plan with input gathered from stakeholders, the public, and best available hazard data and Town resources. Once the plan updates are complete, the draft plan will be posted to the Town's website for public input.

From: [John Silva](#)
To: [Culp, Rae-Anne \(EMA\)](#); [Smithfield \(Todd Manni\)](#); [planning@northprovidenceri.gov](#); [bsalvatore@northprovidenceri.gov](#); [david@engineeringtec.com](#); [ems@northprovidenceri.gov](#); [mayorsoffice@northprovidenceri.gov](#); [lkennedy@tricityri.org](#); [buildinginspector@northprovidenceri.gov](#); [mtavarozzi@northprovidenceri.gov](#); [pddeputychief@northprovidenceri.gov](#); [afm@northprovidenceri.gov](#); [hez@tricityri.org](#); [Jennifer Papagos](#); [SMarokhovsky@tighebond.com](#); [FRANKC@provwater.com](#); [Linda Giorgio](#); [Stefanie Blankenship](#); [Joseph B. Goho](#); [Jim Fuoroli](#)
Cc: [Misty Berryman](#); [Daniel Blanchard](#); [Lincoln \(Sean Thompson\)](#)
Subject: North Providence Mitigation Plan Meeting
Date: Tuesday, January 2, 2024 9:42:01 AM

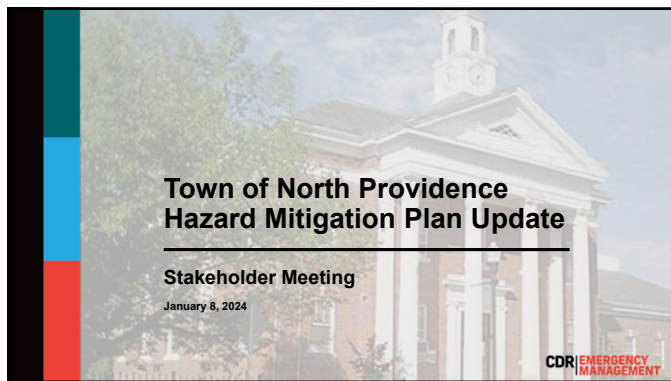
“The Town of North Providence is currently undergoing updates to its Hazard Mitigation Plan to build a more disaster resilient community. The town’s Mitigation Plan may include actions and policies that will affect how community stakeholders prepare, respond, recover, and reduce risk to future natural hazards.

The planning team has identified you and your organization as a community stakeholder, and we would like to offer you the opportunity to be involved in the planning process through your participation at a mitigation stakeholder meeting. The town will be hosting a mitigation stakeholder meeting at **6pm on January 8, 2024**, in the Community Room at the Public Safety Complex (1835 Mineral Spring Avenue, North Providence, Rhode Island).

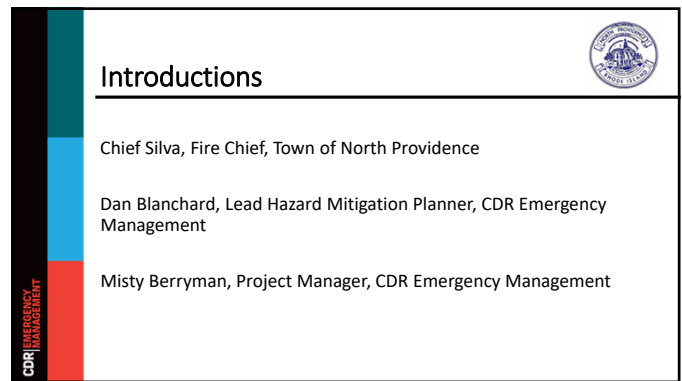
The meeting will include information about the natural hazards the town is vulnerable to, federal grant funding available for mitigation projects, and the town’s goals and priorities to mitigate future hazard risks. As a stakeholder, you can help by sharing your organization’s experience with natural hazards such as flooding, tornadoes, severe winter storms, and more. The town is seeking stakeholder input to identify community assets and problem areas, highlight issues of concern, share threat and hazard history, help prioritize proposed mitigation alternatives, and share ideas for long-term public involvement after plan adoption.

Your input into this planning process is valuable to help guide decisions concerning mitigation actions in North Providence to reduce the risks and impacts of natural hazards. If you are interested in attending, please respond to this email to be included in the meeting invitation. If you are unable to attend but would like to provide input, please reach out to find out more ways to get involved.”

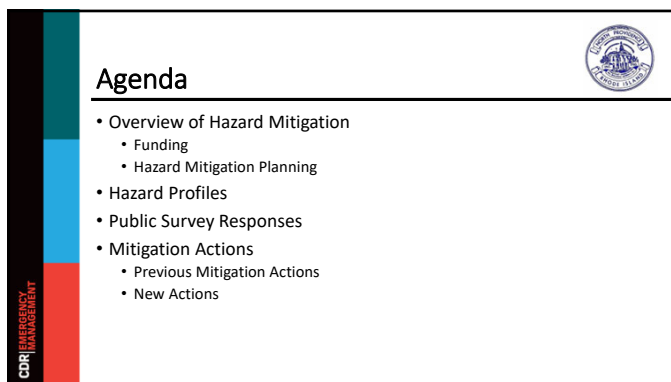
Chief of Department
John A Silva



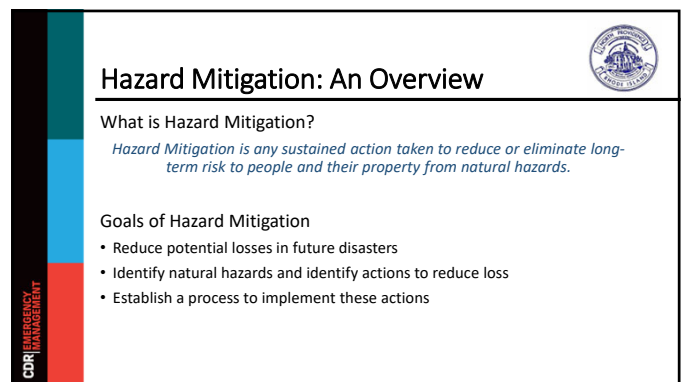
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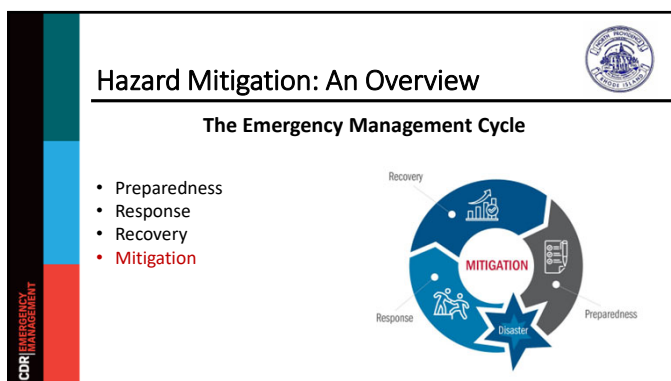
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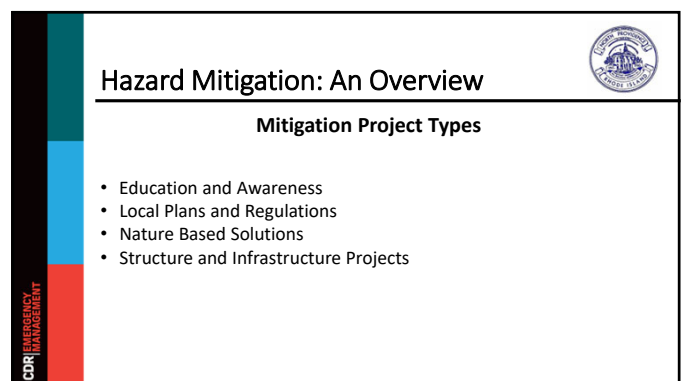
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4



5



6

Hazard Mitigation: An Overview

Benefits of Hazard Mitigation

- Protect public safety and prevent loss of life and injury
- Build resilience to current and future disaster risks
- Prevent damage to a community's economic, cultural and environmental assets
- Reduce operational downtime and speed up recovery after disasters
- Reduce the costs of disaster response and recovery, as well as the exposure to risk for first responders
- Help achieve other community goals, such as protecting infrastructure, preserving open space and boosting economic resilience



CDR EMERGENCY MANAGEMENT

7

Funding Hazard Mitigation

FEMA's Hazard Mitigation Assistance (HMA) Programs*

- Building Resilient Infrastructure and Communities (BRIC) - **\$1 Billion in 2023**
- Flood Mitigation Assistance (FMA) - **\$700 Million in 2023**
- High Hazard Potential Dams (HHPD) Program
- Hazard Mitigation Grant Program (HMGP)
- Hazard Mitigation Grant Program Post Fire
- Legislative Appropriations (LPDM)



* Must have a FEMA-approved Hazard Mitigation Plan adopted by the community

CDR EMERGENCY MANAGEMENT

8

Hazard Mitigation Planning

What is a Hazard Mitigation Plan?

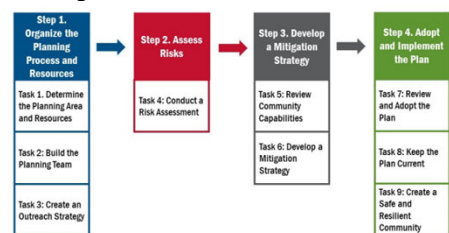
- Boosts awareness and better understanding of the risks and vulnerabilities from natural hazards
- Identifies actions and long-term strategies to reduce the risks and potential impacts of natural hazards
- Can be used as a community investment strategy when mitigation measures are aligned with community goals and capital improvement plans
- Helps build partnerships with community stakeholders and supports vulnerable populations

CDR EMERGENCY MANAGEMENT

9

Hazard Mitigation Planning

The Planning Process



```

graph LR
    S1[Step 1. Organize the Planning Process and Resources] --> S2[Step 2. Assess Risks]
    S2 --> S3[Step 3. Develop a Mitigation Strategy]
    S3 --> S4[Step 4. Adopt and Implement the Plan]
  
```

Step 1. Organize the Planning Process and Resources

- Task 1: Determine the Planning Area and Resources
- Task 2: Build the Planning Team
- Task 3: Create an Outreach Strategy

Step 2. Assess Risks

- Task 4: Conduct a Risk Assessment

Step 3. Develop a Mitigation Strategy

- Task 5: Review Community Capabilities
- Task 6: Develop a Mitigation Strategy

Step 4. Adopt and Implement the Plan

- Task 7: Review and Adopt the Plan
- Task 8: Keep the Plan Current
- Task 9: Create a Safe and Resilient Community

CDR EMERGENCY MANAGEMENT

10

Public Survey Results

- Received 46 responses to date
- Majority of respondents from 02904 area code
- Sample responses below

Disaster Type	Reported Impact	Zip Code
Flood	Our basement flooded in September and again in December from the big rain and wind storms that we had. Lost all of the carpeting and some furniture in the basement.	02911
Flood	Intense rainfall in the Tanglewood rd area causes flooding to the properties below that location, mainly the Countryside Condo Units! Several older residents in the area are scared when large rainfall amounts are predicted!	02904
Flood	Flooding because of drainage systems that aren't maintained in terms of clearance	N/A
Flood	Flooding in home areas. Tree fallen in yard. Fence blown down from wind storm.	02904
Flood	Flooding of my basement that caused appliances lost, and also an array of clothes and household decorations	02904
Flood	Flooding	02904
Flood	Flooding	02904
Flood	Flooding	02904
Flood	Flooding in my yard, street and home	02904

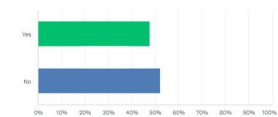
CDR EMERGENCY MANAGEMENT

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Public Survey Results

During the past 5 years, have you or someone in your household directly experienced a natural disaster? This could be an earthquake, severe windstorm, flood, wildfire, or other type of natural disaster

Answered: 46 Skipped: 0

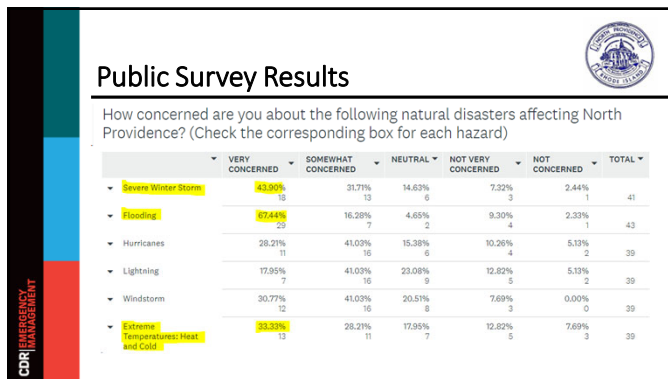


ANSWER CHOICES	RESPONSES
Yes	47.83% 22
No	52.17% 24

Total Respondents: 46

CDR EMERGENCY MANAGEMENT

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Hazard Profiles – Flooding

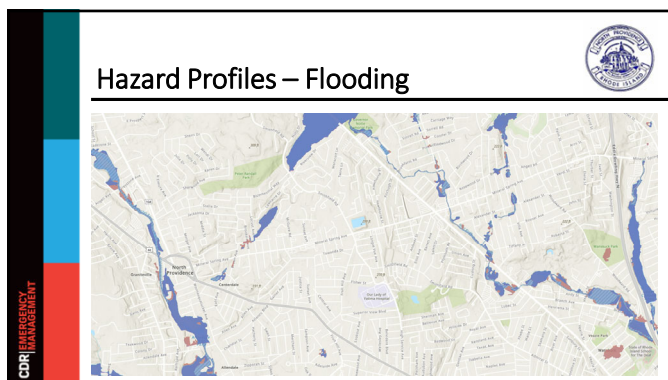
Definition – Flooding is a localized hazard that is a result of excessive precipitation. It is the most commonly occurring natural hazard and includes riverine flooding, flash floods, urban flooding, and dam breaches.

Location – Developed land within the flood zones of the Woonasquatucket and West Rivers are particularly at risk.

Impacts – Roads and homes can be inundated with flood waters causing temporary road closures and damage to properties.

Previous Occurrences – Recent occurrences include heavy rainfall from remnants of Tropical Storms Lee (2011) and Andrea (2013), as well as September 11, 2023.

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Hazard Profiles – Winter Storms

Definition – Heavy Snow, Ice Storms, Blizzard, Extreme Cold, and Severe winter weather

Location – Winter storms occur regionally, the entire town is equally at risk of impacts

Impacts – Road closures and traffic delays, downing of trees and power lines, power outages can occur, as well as damage to property

Previous Occurrences – Ice Storms and Blizzards of 1978 and March 1993 (13-in. of snow). More recent disaster declarations include Winter Storm Nemo in March 2023 and Blizzard Juno in January 2015.

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Hazard Profiles – Hurricanes/Nor'easters

Definition – Low-pressure storm systems that create high speed rotational winds and storm surge.

Location – Hurricanes and Nor'easters occur on a regional scale and mostly impact coastal regions. However, North Providence is still susceptible to hurricane-force winds and rain.

Impacts – Heavy rainfall and flooding as well as downed trees and power lines. Road closures and power outages are may occur.

Previous Occurrences – “The Great New England Hurricane of 1938”, Hurricane Carol (1954), Hurricane Bob (1991), and Super Storm Sandy (2012).

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Hazard Profiles – Others

- Thunderstorms and lightning
- Drought and Brushfire
- High Wind
- Tornadoes
- Extreme Temperatures
- Dam Failure
- Earthquakes
- Hail

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Mitigation Activities & Projects

Education and Awareness

These types of actions keep residents informed about potential natural disasters. Many of these types of actions are eligible for funding through the FEMA HMA program.

- Radio or television spots and social media outreach
- Websites with maps and information
- Real estate disclosure
- Presentations to school groups or neighborhood organizations
- Mailings to residents in hazard-prone areas
- Targeted outreach to underserved communities
- Outreach materials in languages other than English



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Mitigation Activities & Projects

Local Plans and Regulations

These actions include government authorities, policies or codes that influence the way land and buildings are developed and built.

- Building codes and enforcement
- Comprehensive plans
- Land use ordinances
- Subdivision regulations
- Development review
- Open space preservation
- Stormwater management regulations
- Capital Improvement programs



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Mitigation Activities & Projects

Nature-based solutions

This type of action can include green infrastructure and low impact development, nature-based solutions, Engineering with Nature and bioengineering to incorporate natural features or processes into the built environment.

- Sediment and erosion control
- Stream corridor and wetland restoration
- Forest management
- Conservation easements
- Greenways
- Rain gardens



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Mitigation Activities & Projects

Structure and Infrastructure Projects

These actions involve modifying existing structures and infrastructure to protect them from a hazard. This could apply to public or private structures as well as critical facilities and infrastructure.

- Property acquisition and elevations
- Rain detention and retention structures
- Utility undergrounding
- Backup generators
- Structural retrofits
- Floodwalls
- Culverts
- Safe rooms



22

Mitigation Actions

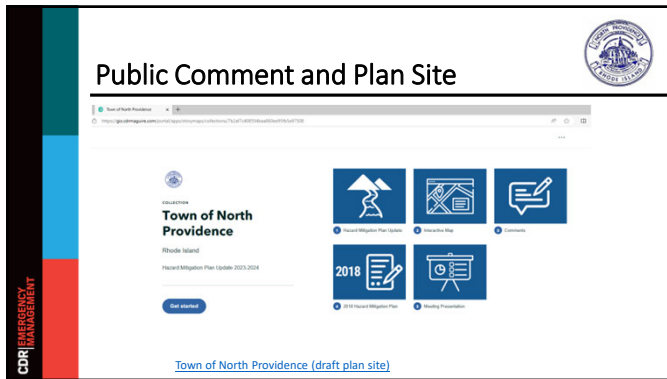
- Review Mitigation Actions from the 2018 Plan
- New Actions – Any Ideas?

23

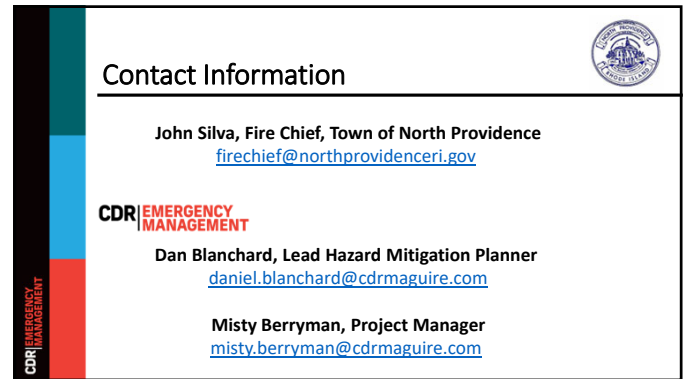
Next Steps

- Finalize the Risk Assessment
- Finalize the Mitigation Strategy
 - Assess progress of past mitigation actions
 - Prioritize new mitigation actions
- Review the Draft Plan
- Draft Plan Public Comment Period
- Submit to RIEMA
- Plan Adoption and Submit to FEMA
- FEMA Approval

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25



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Appendix A: Planning Process Documentation

A.4: Public Survey Documents



Help Us Make North Providence More Disaster Resilient.

NORTH PROVIDENCE HAZARD MITIGATION PLAN UPDATES.

Building A Resilient Community Together

The Town of North Providence, RI is currently undergoing updates to its Hazard Mitigation Plan to build a more resilient community.

Why Your Input Matters

Your input into this planning process is valuable to help guide decisions concerning mitigation actions in your community to reduce the risks and impacts of natural hazards.

What's In The Survey?

This survey focuses on your perceptions of natural hazards in North Providence, RI. We're also interested in your preferred methods to minimize these hazards' impact.



For more information visit:
northprovidenceri.gov



Town of North Providence
Rhode Island

Taking The Survey Is Easy.

Participate in this brief survey—it'll take just 10 minutes or less. You can access it through:

Online Survey Link:

<https://www.surveymonkey.com/r/XJSZ2YD>



**SCAN
TAKE
SURVEY**



Together, let's build a safer North Providence. Your contribution makes a difference!

Thank you for your commitment to our community's disaster resilience.



Natural Hazards Public Opinion Survey

This is a survey on public perceptions and opinions about natural hazards in North Providence, RI. In addition, we would like information about the methods and techniques you prefer for reducing the risks and losses associated with these hazards.

The information you provide will be used to help improve public/private coordination, mitigation, and risk reduction efforts in North Providence. The survey should take less than 30 minutes to complete.

This is a public opinion survey. The results will inform local natural hazard mitigation planning. Your returned, completed survey indicates your willingness to take part in the study. Participation in this study is voluntary and anonymous. None of the information you provide will be attributed to you directly.

1. During the past 5 years, in the county you currently reside in, have you or someone in your household directly experienced a natural disaster? This could be an earthquake, severe windstorm, flood, wildfire, or other type of natural disaster

☐ Yes

☐ No

2. If you answered yes above, please describe the natural disaster event and impacts you recently experienced

3. How concerned are you about the following natural disasters affecting your county? (Check the corresponding box for each hazard)

	Very Concerned	Somewhat Concerned	Neutral	Not Very Concerned	Not Concerned
Drought	☐	☐	☐	☐	☐
Dust Storm	☐	☐	☐	☐	☐
Earthquake	☐	☐	☐	☐	☐
Flood	☐	☐	☐	☐	☐
Landslide/Debris Flow	☐	☐	☐	☐	☐
Wildfire	☐	☐	☐	☐	☐
Extreme Heat	☐	☐	☐	☐	☐
Windstorm	☐	☐	☐	☐	☐
Severe Winter Storm	☐	☐	☐	☐	☐

4. Whom would you most trust to provide you with information about how to make your household and home safer from natural disasters? (Please check up to three

- ☐ News Media
- ☐ Government Agency
- ☐ Insurance Agent or company
- ☐ Utility company
- ☐ University or research institution
- ☐ Neighbor/friend/family member
- ☐ Elected official
- ☐ American Red Cross
- ☐ Other non-profit organization
- ☐ Social media (e.g., Facebook)
- ☐ Not sure
- ☐ Other (please specify)

5. Prior to receiving this survey, were you aware of your county's hazard mitigation plan?

- ☐ Yes
- ☐ No

6. To assess community risk, we need to understand which community assets may be vulnerable to natural hazards in the region. Vulnerable assets are those community features, characteristics or resources that may be impacted by natural hazards (e.g., populations with functional needs, economic components, environmental resources, etc.). The next set of questions will focus on vulnerable assets in your community. It will also cover your preferred strategies to mitigate risk to those assets.

Community assets are features, characteristics or resources that either make a community unique or allow the community to function. For the following categories, what do you see as vulnerable in your community? Write a short description for each.

Human (Loss of life and/or injuries)

Economic (Business closures and/or job losses)

Infrastructure (Damage or loss of bridges, utilities, schools, etc.)

Cultural/Historic (Damage or loss of libraries, museums, fairgrounds, etc)

Environmental (Damage or loss of forests, rangeland, waterways, etc)

Governance (Ability to maintain order and/or provide public amenities and services)

7. Next we would like to know what specific types of community assets are most important to you. (Check the corresponding box for each asset)

	Very Important	Somewhat important	Neutral	Not very important	Not important
Elder-care facilities	☐	☐	☐	☐	☐
Schools (K-12)	☐	☐	☐	☐	☐
Hospitals	☐	☐	☐	☐	☐
Major bridges	☐	☐	☐	☐	☐
Fire/police stations	☐	☐	☐	☐	☐
Museums/historic buildings	☐	☐	☐	☐	☐
Major employers	☐	☐	☐	☐	☐
Small businesses	☐	☐	☐	☐	☐
College/university	☐	☐	☐	☐	☐
Town Hall/courthouse	☐	☐	☐	☐	☐
Parks	☐	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐
Other:	☐	☐	☐	☐	☐

8. Many activities can reduce your community's risk from natural hazards. These activities can be both regulatory and non-regulatory. Please check the box that best matches your opinion of the following strategies to reduce risk and loss associated with natural disasters.

	Strongly Agree	Agree	Neutral	Strongly Disagree	Not Sure
I support implementing government rules to reduce risk	☐	☐	☐	☐	☐
I support implementing government rules to reduce risk	☐	☐	☐	☐	☐
I support a mix of both governmental and non-governmental approaches to reducing risk	☐	☐	☐	☐	☐
I support policies to prohibit development in areas subject to natural hazards	☐	☐	☐	☐	☐
I support the use of tax dollars (federal and/or local) to					

compensate landowners for not developing in areas subject to natural hazards	☐	☐	☐	☐	☐
I support the use of local tax dollars to reduce risks and losses from natural disasters	☐	☐	☐	☐	☐
I support protecting historical and cultural structures	☐	☐	☐	☐	☐
I would be willing to make my home more disaster-resistant	☐	☐	☐	☐	☐
I support steps to safeguard the local economy following a disaster event	☐	☐	☐	☐	☐
I support improving the disaster preparedness of local schools	☐	☐	☐	☐	☐
I support a local inventory of at-risk buildings and infrastructure	☐	☐	☐	☐	☐
I support the disclosure of natural hazard risks during real estate transactions	☐	☐	☐	☐	☐

9. Natural hazards can have a significant impact on a community. Planning for these events can help lessen the impacts. The following statements will help determine residents' priorities in planning for natural hazards in your county. Please tell us how important each one is to you.

	Very Important	Somewhat Important	Neutral	Not Very Important	Not Important
Protecting private property	☐	☐	☐	☐	☐
Protecting critical facilities (e.g., transportation networks, hospitals, fire stations)	☐	☐	☐	☐	☐
Preventing development in hazard areas	☐	☐	☐	☐	☐
Enhancing the function of natural features (e.g., streams, wetlands)	☐	☐	☐	☐	☐
Protecting historical and cultural landmarks	☐	☐	☐	☐	☐
Protecting and reducing damage to utilities	☐	☐	☐	☐	☐
Strengthening emergency services (e.g., police, fire ambulance)	☐	☐	☐	☐	☐
Disclosing natural hazard risks during real estate transactions	☐	☐	☐	☐	☐
Promoting cooperation among public agencies, citizens, non-profit organizations and businesses	☐	☐	☐	☐	☐

10. Finally, we would appreciate any information you are willing to share with us about your household. This information will remain confidential and is for survey comparison purposes only.

Zip code (optional):

County:

11. How long have you lived in the state?

- ☐ Less than 1 year
- ☐ 1-5 years
- ☐ 6-9 years
- ☐ 10-19 years
- ☐ 20 or more years

12. Do you own or rent your home?

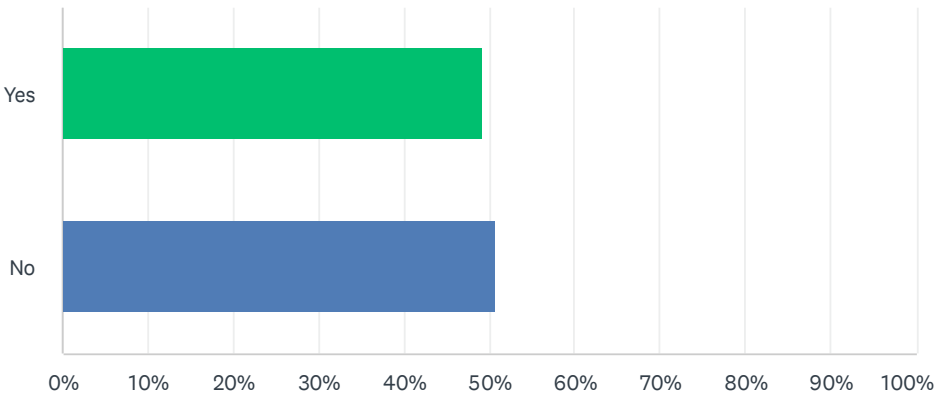
- ☐ Own
- ☐ Rent

13. Do you own/rent a:

- ☐ Single-family home
- ☐ Duplex
- ☐ Apartment (3-4 units in structure)
- ☐ Apartment (5 or more units in structure)
- ☐ Condominium/townhouse
- ☐ Manufactured home
- ☐ Other (please specify)

Q1 During the past 5 years, have you or someone in your household directly experienced a natural disaster? This could be an earthquake, severe windstorm, flood, wildfire, or other type of natural disaster

Answered: 73 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	49.32%	36
No	50.68%	37
Total Respondents: 73		

Q2 If you answered yes above, please describe the natural disaster event and impacts you recently experienced

Answered: 36 Skipped: 37

Q2 If you answered yes above, please describe the natural disaster event and impacts you recently experienced

Answered: 36 Skipped: 37

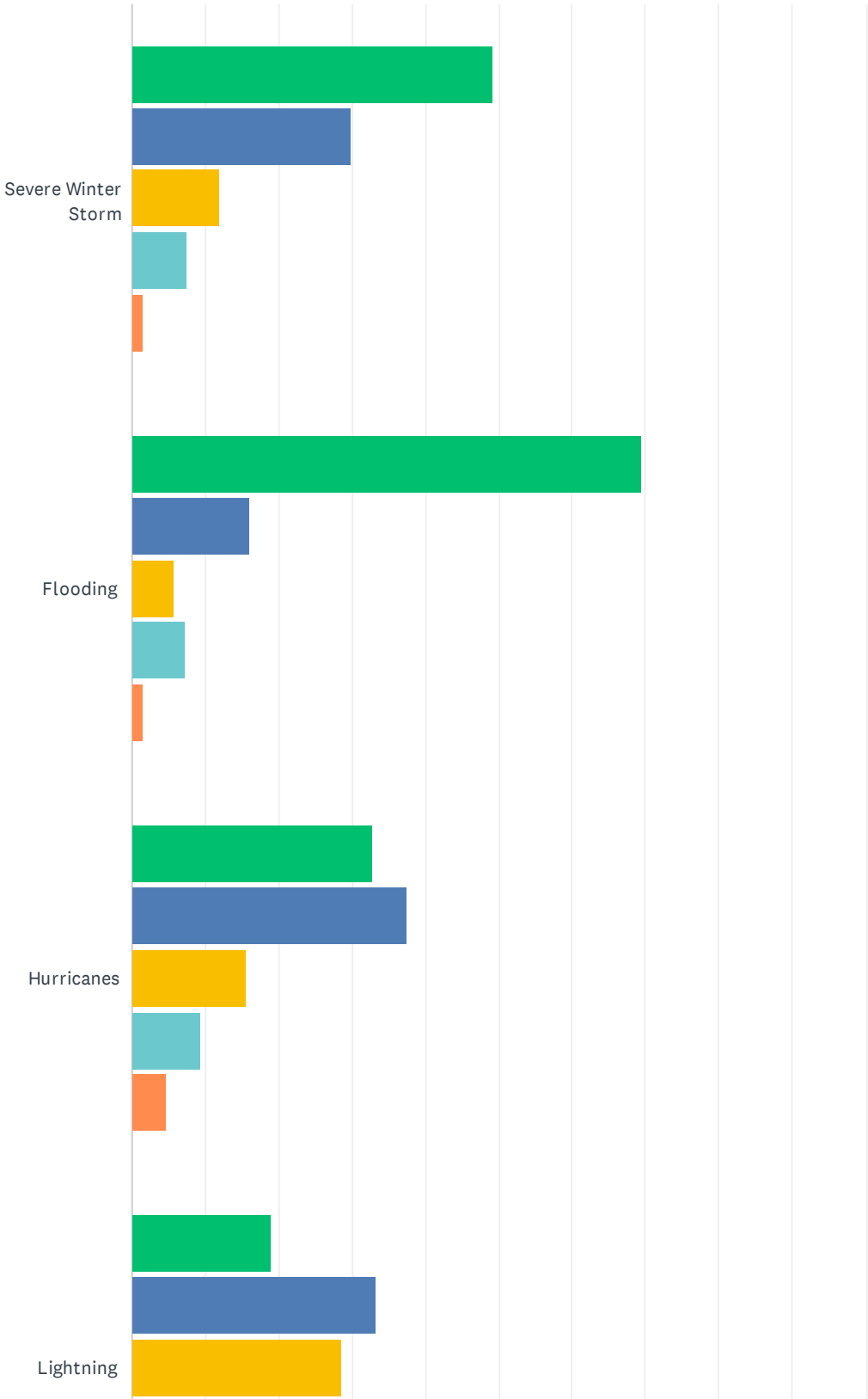
#	RESPONSES	DATE
1	Our house at 1 Bourne Ave flooded in September, leaving us virtually homeless. It flooded again in January, so may not be possible to rebuild.	3/8/2024 11:10 AM
2	Flood & snow that stopped me from accessing my home	2/23/2024 3:47 PM
3	Water in basement	2/19/2024 8:47 PM
4	Our basement flooded twice this winter. Our street was redone summer of 2023 Been this house for over 45 years This has never happened before	2/14/2024 5:07 PM
5	We have been impacted by recent flooding. Two of our vehicles were damaged.	2/14/2024 10:00 AM
6	A tornado happened on two different occasions near our neighborhood.	2/14/2024 4:51 AM
7	Windstorm & flooding	2/6/2024 7:18 PM
8	flood	2/2/2024 7:30 AM
9	Sewage backup on woonasquatucket Ave	1/17/2024 9:43 AM
10	Flood	1/13/2024 7:18 PM
11	Flooding at St John's circle North Providence	1/13/2024 9:30 AM
12	Rain storms. Flooding in the basement multiple times.	1/13/2024 9:18 AM
13	September 11, 2023 flooding of 15 Carriage Way and 01/10.2024 flooding	1/11/2024 9:40 AM
14	Flooding is a major problem on my street. There is very poor drainage, despite repeated complaints. On 9/11/23, my house flooded and I lost my heating system and hot water tank	1/10/2024 7:12 AM
15	Flooding	1/8/2024 12:07 PM
16	Flood	1/7/2024 3:03 PM
17	Toronado	1/2/2024 9:51 PM
18	House stove fire	12/31/2023 12:57 PM
19	Our basement flooded in September and again in December from the big rain and wind storms that we had. Lost all of the carpeting and some furniture in the basement.	12/29/2023 1:07 PM
20	Intense rainfall in the Tanglewood rd area causes flooding to the properties below that location, mainly the Countryside Condo Units! Several older residents in the area are scared when large rainfall amounts are predicted!	12/29/2023 6:26 AM
21	Flooding because of drainage systems that aren't maintained in terms of clearance	12/28/2023 6:46 PM
22	Flooding in home areas. Tree fallen in yard. Fence blown down from wind storm.	12/21/2023 9:56 AM
23	COVID, severe wind, minor flooding.	12/18/2023 11:35 AM
24	Flooding in my basement	12/15/2023 9:40 PM
25	Tornado, flooding, tree damage	12/15/2023 11:54 AM
26	Water entered under garage door from the street. Water was 2 feet deep between neighbor in back yard and basement door.	12/13/2023 9:03 AM
27	Flooding, tornado	11/30/2023 11:37 PM

Natural Hazards Public Opinion Survey

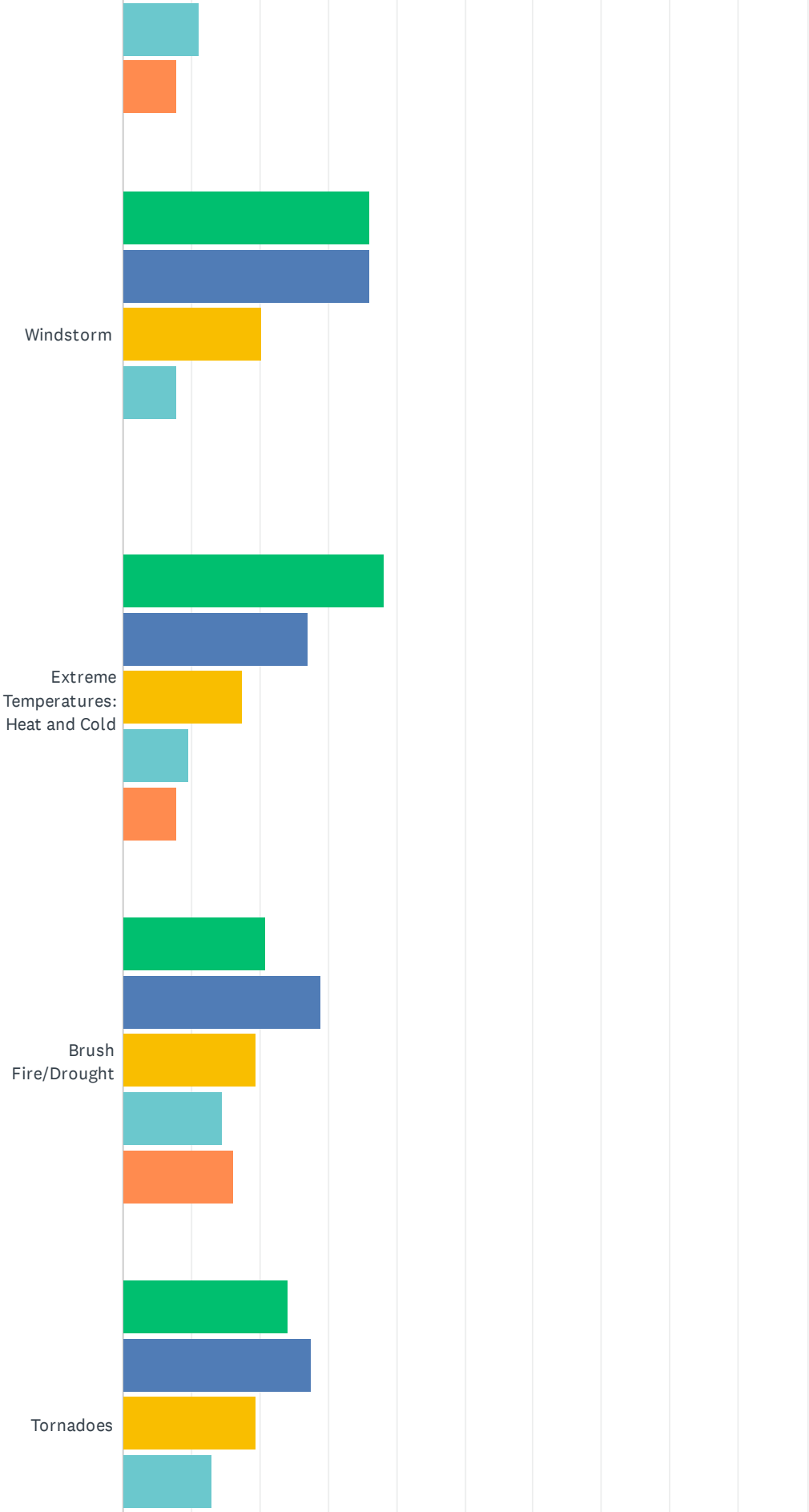
28	tornado, severe storms	11/30/2023 8:12 PM
29	Flooding of my basement that caused appliances lost, and also an array of clothes and household decorations	11/30/2023 6:31 PM
30	Heavy winds where my canopy went flying over the fence	11/30/2023 4:49 PM
31	flood	11/30/2023 1:04 PM
32	Flooding	11/30/2023 12:16 PM
33	tornado hit our house	11/30/2023 7:45 AM
34	Flooding Severe wind	11/30/2023 7:11 AM
35	Flooding in my yard, street and home	11/30/2023 6:28 AM
36	tornado - trees in the neighborhood were sheared at the top. Plants and bushes in my yard were uprooted, broken or twisted.	11/29/2023 8:34 PM

Q3 How concerned are you about the following natural disasters affecting North Providence? (Check the corresponding box for each hazard)

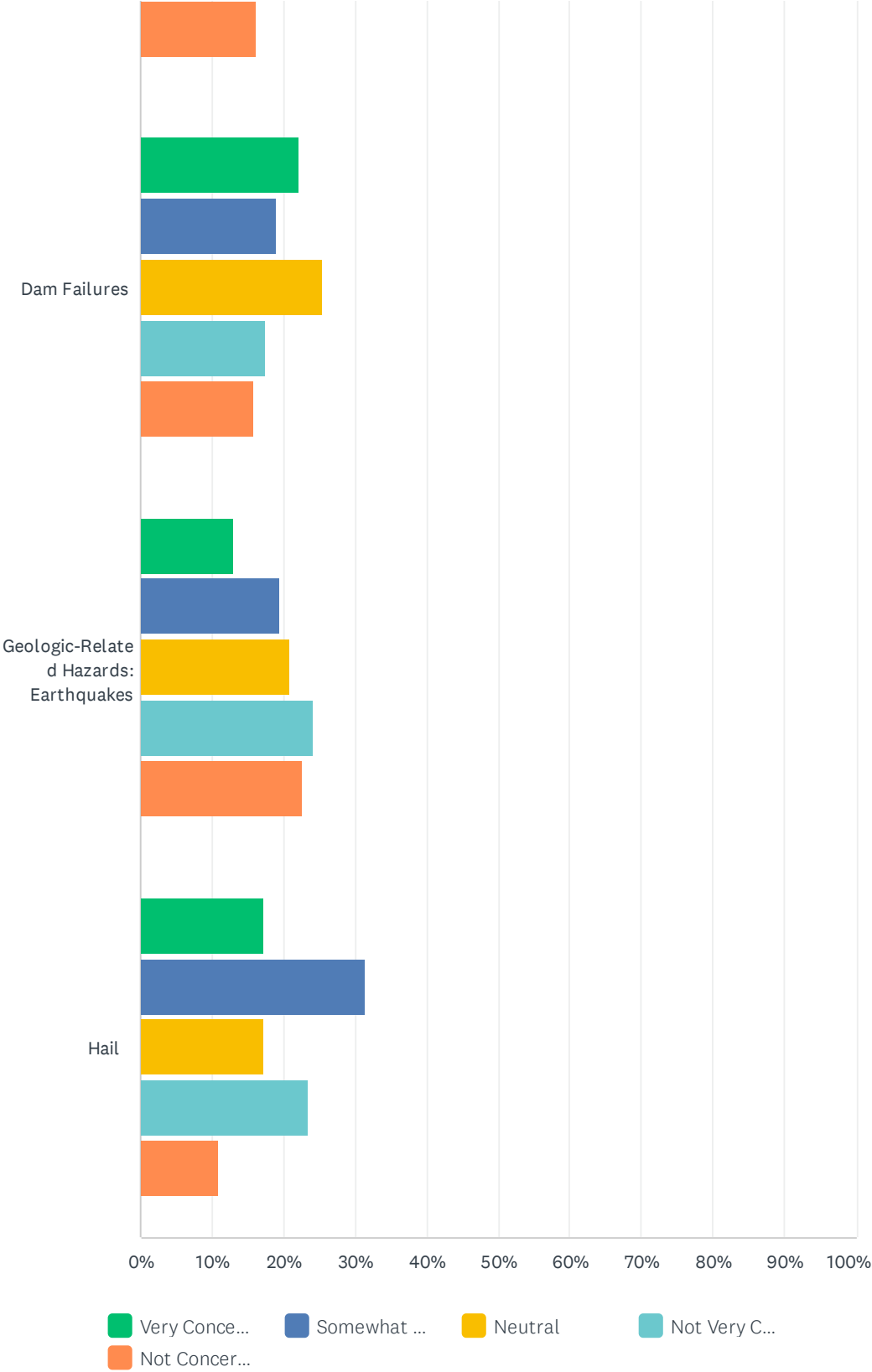
Answered: 73 Skipped: 0



Natural Hazards Public Opinion Survey



Natural Hazards Public Opinion Survey

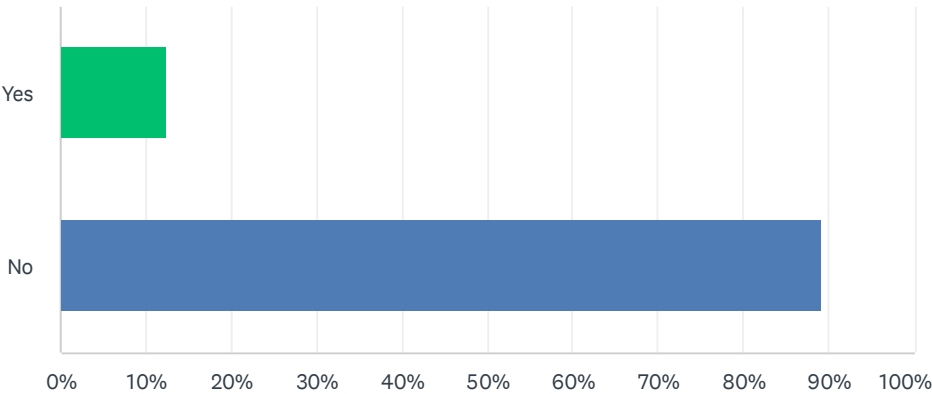


Natural Hazards Public Opinion Survey

	VERY CONCERNED	SOMEWHAT CONCERNED	NEUTRAL	NOT VERY CONCERNED	NOT CONCERNED	TOTAL
Severe Winter Storm	49.25% 33	29.85% 20	11.94% 8	7.46% 5	1.49% 1	67
Flooding	69.57% 48	15.94% 11	5.80% 4	7.25% 5	1.45% 1	69
Hurricanes	32.81% 21	37.50% 24	15.63% 10	9.38% 6	4.69% 3	64
Lightning	19.05% 12	33.33% 21	28.57% 18	11.11% 7	7.94% 5	63
Windstorm	35.94% 23	35.94% 23	20.31% 13	7.81% 5	0.00% 0	64
Extreme Temperatures: Heat and Cold	38.10% 24	26.98% 17	17.46% 11	9.52% 6	7.94% 5	63
Brush Fire/Drought	20.97% 13	29.03% 18	19.35% 12	14.52% 9	16.13% 10	62
Tornadoes	24.19% 15	27.42% 17	19.35% 12	12.90% 8	16.13% 10	62
Dam Failures	22.22% 14	19.05% 12	25.40% 16	17.46% 11	15.87% 10	63
Geologic-Related Hazards: Earthquakes	12.90% 8	19.35% 12	20.97% 13	24.19% 15	22.58% 14	62
Hail	17.19% 11	31.25% 20	17.19% 11	23.44% 15	10.94% 7	64

Q4 Prior to receiving this survey, were you aware of your Town's hazard mitigation plan?

Answered: 73 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	12.33%	9
No	89.04%	65
Total Respondents: 73		

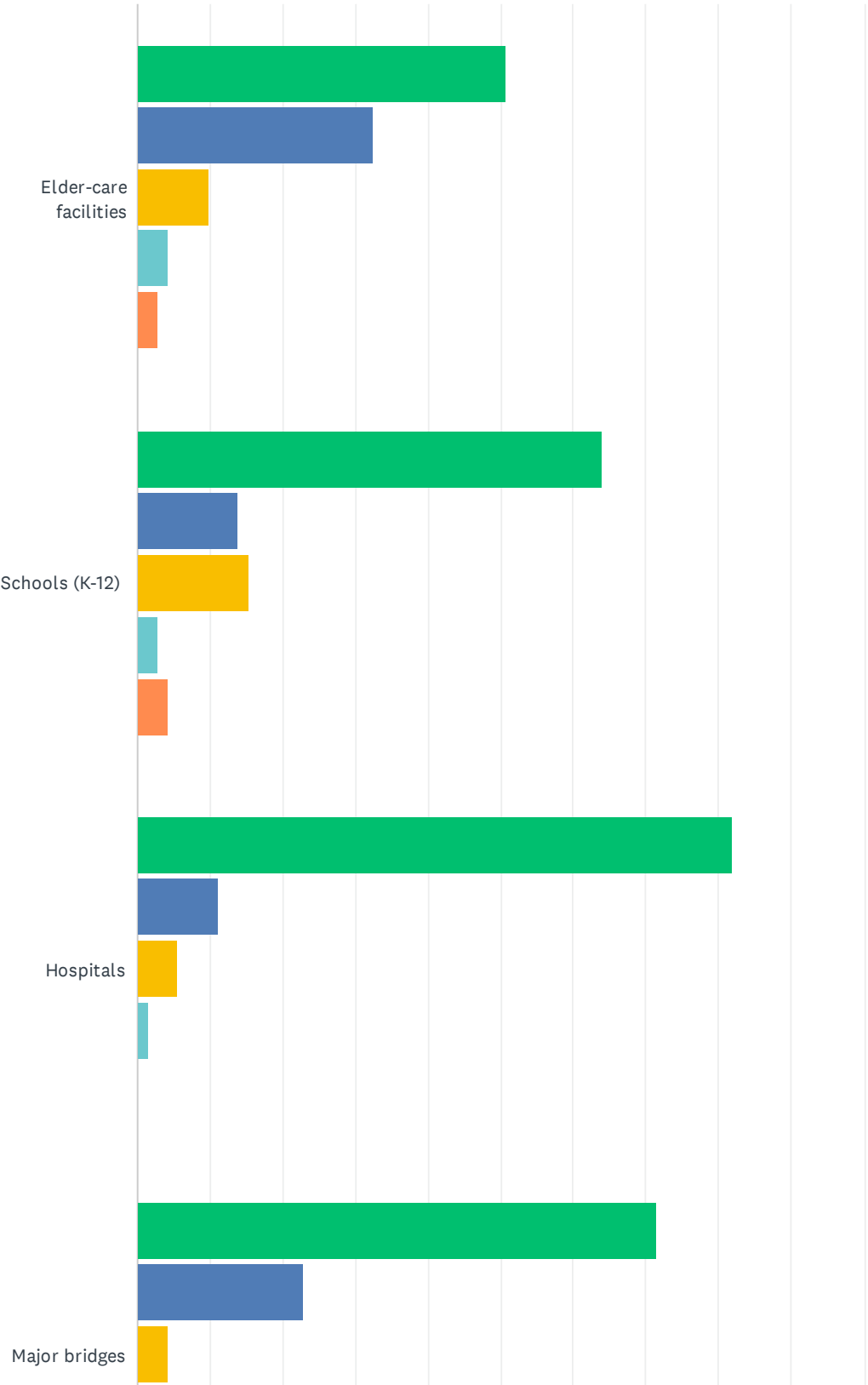
Q5 To assess community risk, we need to understand which community assets may be vulnerable to natural hazards in the region. Vulnerable assets are those community features, characteristics or resources that may be impacted by natural hazards (e.g., populations with functional needs, economic components, environmental resources, etc.). The next set of questions will focus on vulnerable assets in your community. It will also cover your preferred strategies to mitigate risk to those assets. Community assets are features, characteristics or resources that either make a community unique or allow the community to function. For the following categories, what do you see as vulnerable in your community? Write a short description for each.

Answered: 42 Skipped: 31

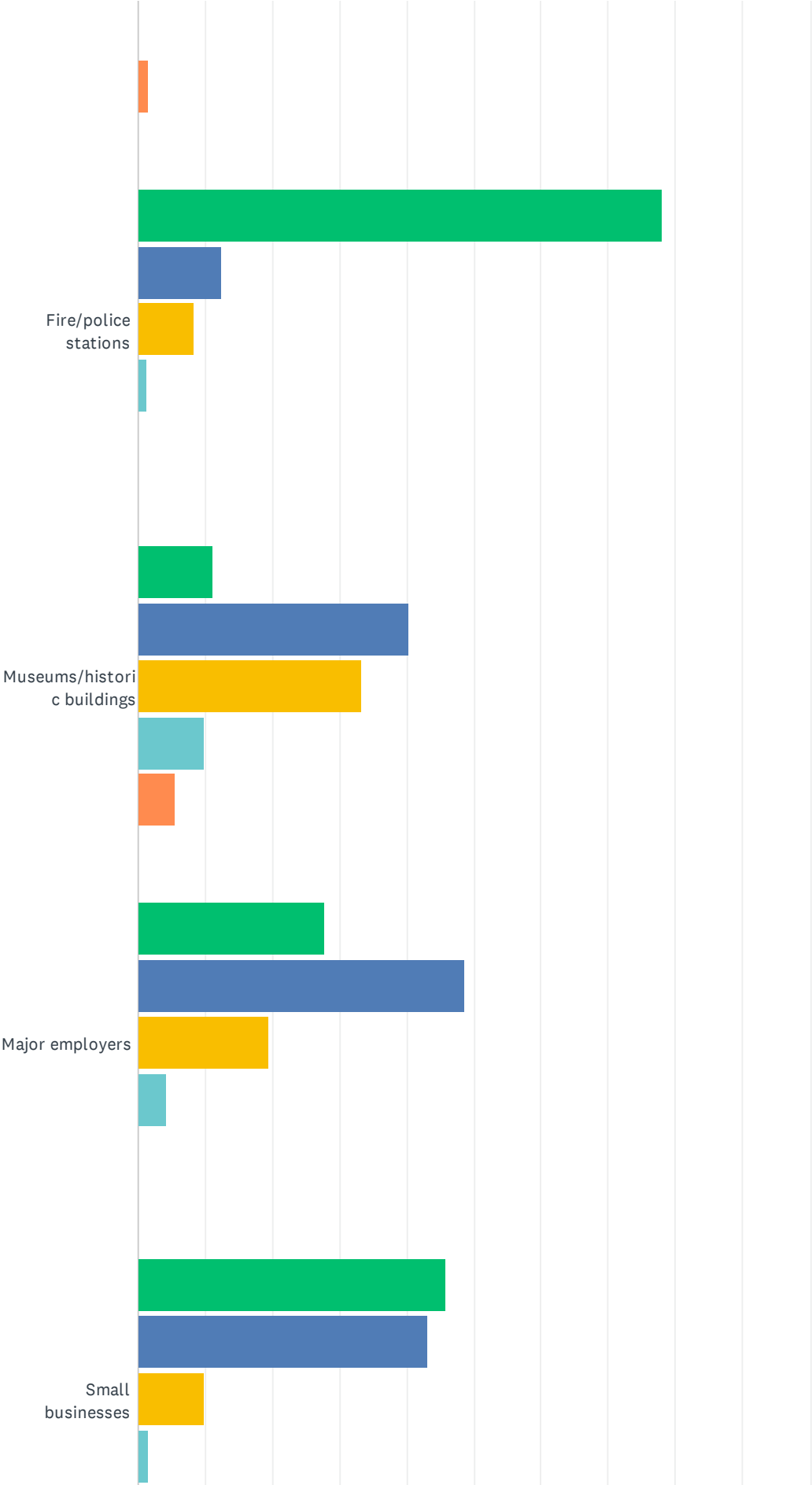
ANSWER CHOICES	RESPONSES	
Human (Loss of life and/or injuries)	92.86%	39
Economic (Business closures and/or job losses)	78.57%	33
Infrastructure (Damage or loss of bridges, utilities, schools, etc.)	80.95%	34
Cultural/Historic (Damage or loss of libraries, museums, fairgrounds, etc)	64.29%	27
Environmental (Damage or loss of forests, rangeland, waterways, etc)	64.29%	27
Governance (Ability to maintain order and/or provide public amenities and services)	73.81%	31

Q6 Next we would like to know what specific types of community assets are most important to you. (Check the corresponding box for each asset)

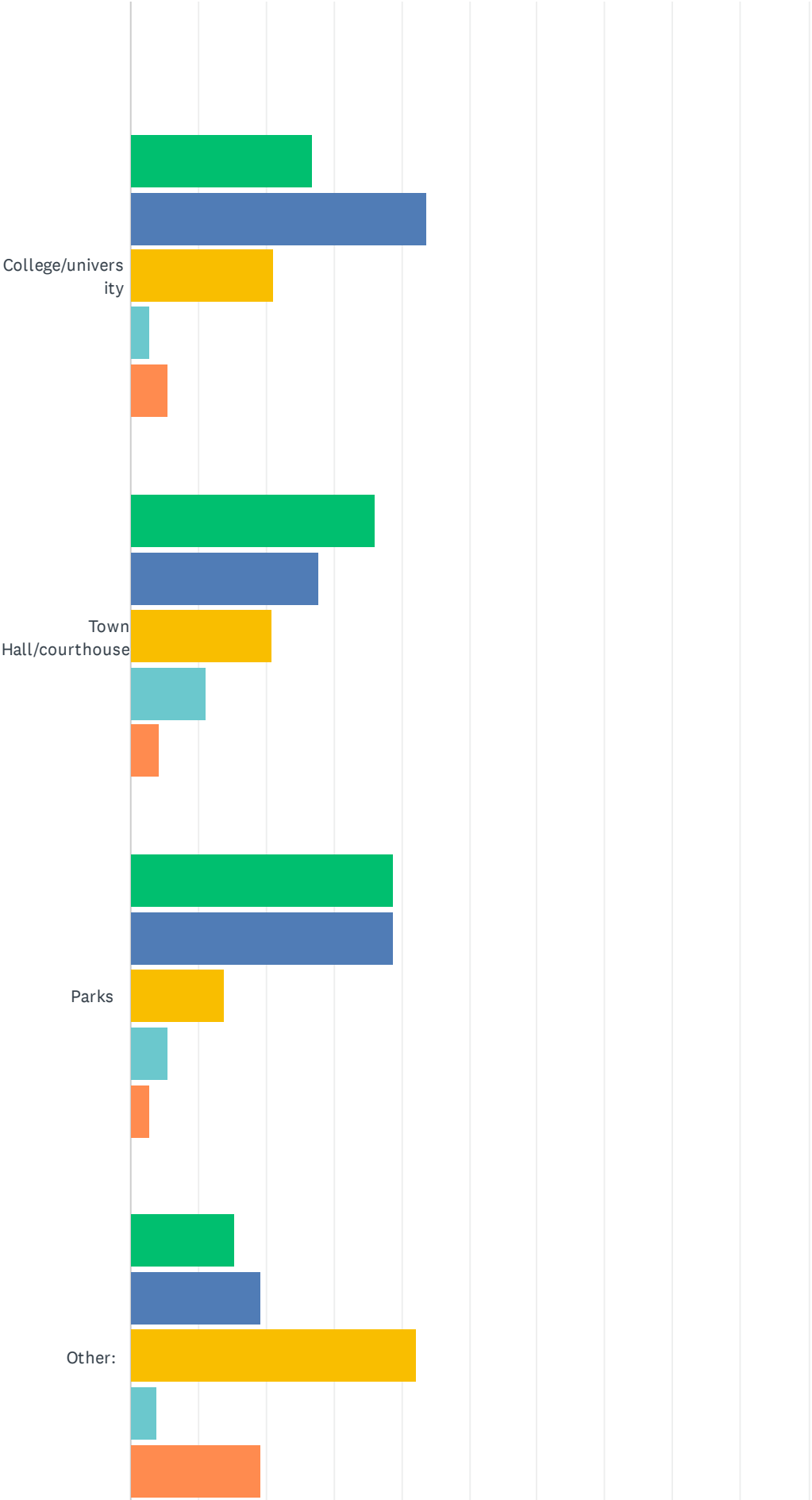
Answered: 73 Skipped: 0



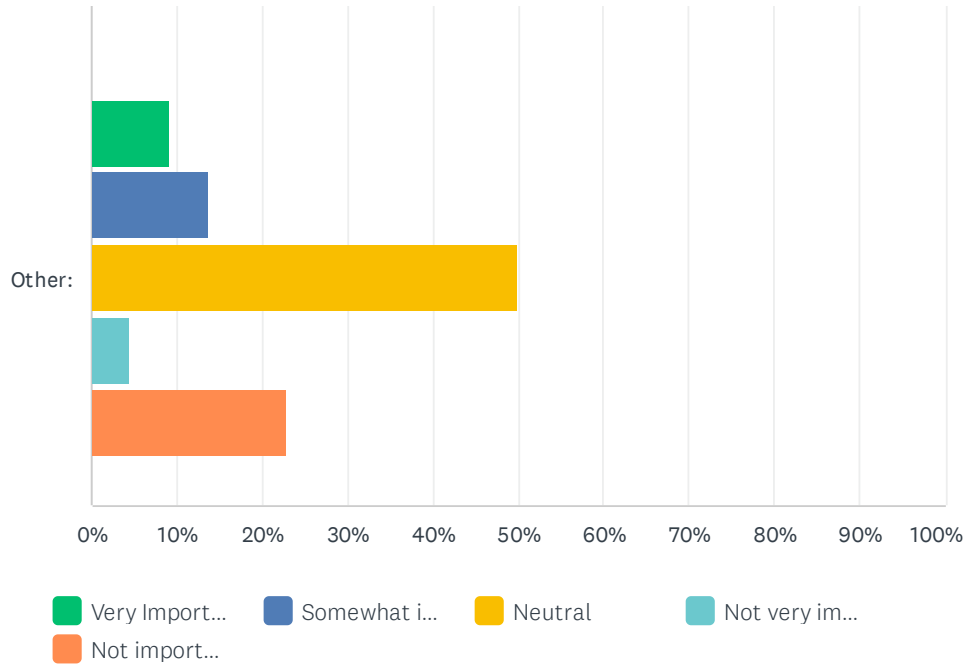
Natural Hazards Public Opinion Survey



Natural Hazards Public Opinion Survey



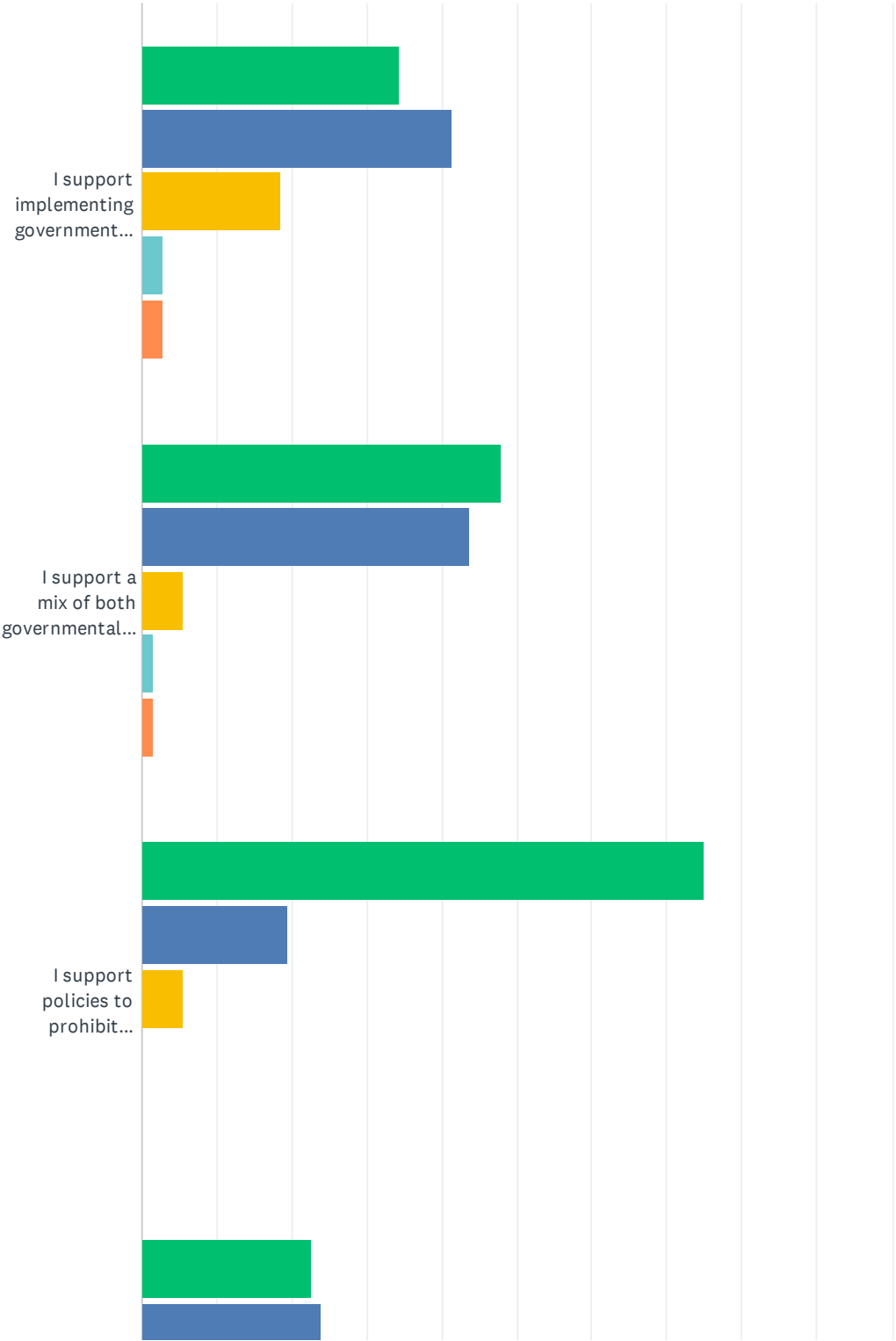
Natural Hazards Public Opinion Survey



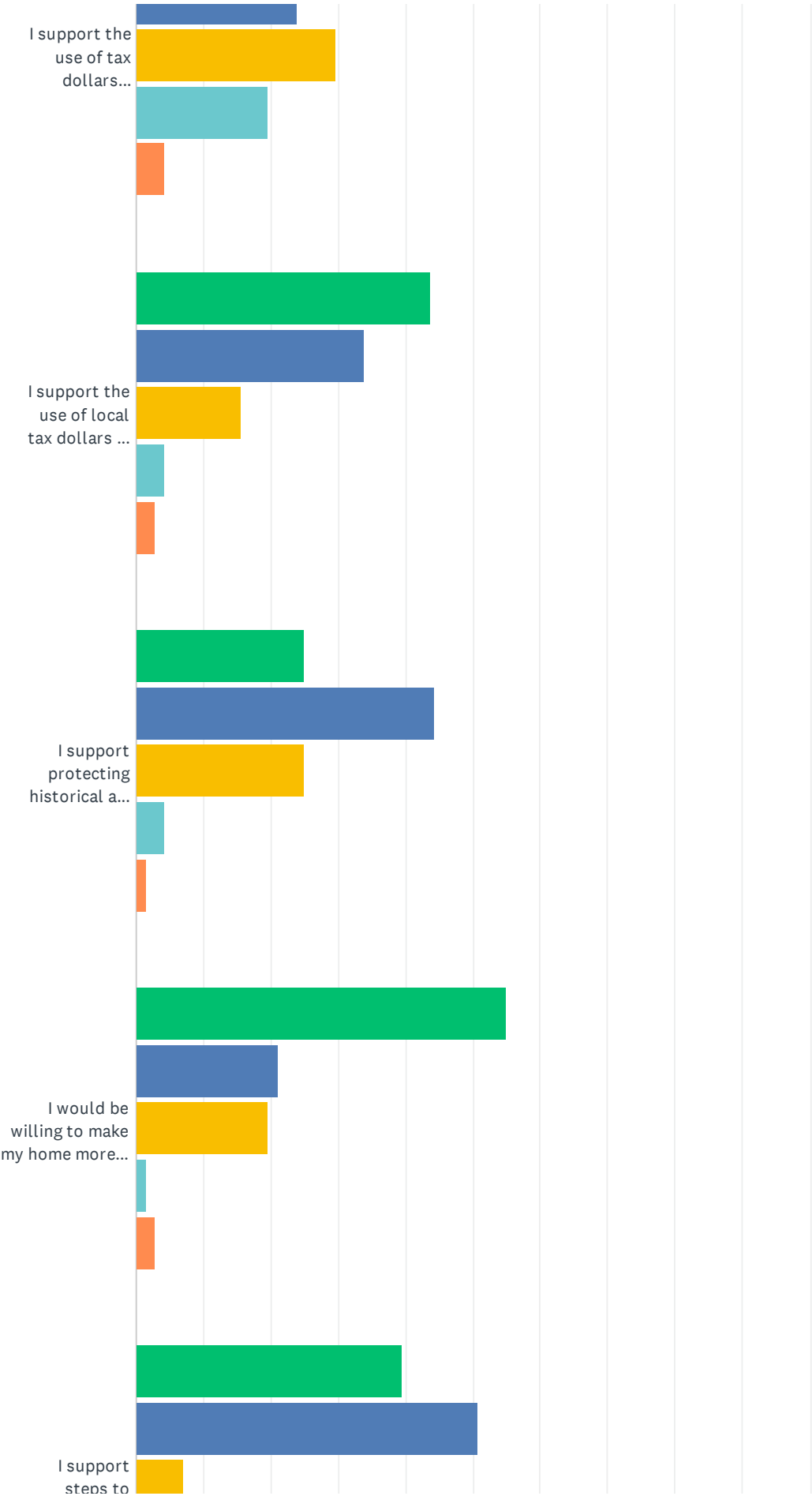
	VERY IMPORTANT	SOMEWHAT IMPORTANT	NEUTRAL	NOT VERY IMPORTANT	NOT IMPORTANT	TOTAL	WEIGHTED AVERAGE
Elder-care facilities	50.70% 36	32.39% 23	9.86% 7	4.23% 3	2.82% 2	71	1.76
Schools (K-12)	63.89% 46	13.89% 10	15.28% 11	2.78% 2	4.17% 3	72	1.69
Hospitals	81.94% 59	11.11% 8	5.56% 4	1.39% 1	0.00% 0	72	1.26
Major bridges	71.43% 50	22.86% 16	4.29% 3	0.00% 0	1.43% 1	70	1.37
Fire/police stations	78.08% 57	12.33% 9	8.22% 6	1.37% 1	0.00% 0	73	1.33
Museums/historic buildings	11.11% 8	40.28% 29	33.33% 24	9.72% 7	5.56% 4	72	2.58
Major employers	27.78% 20	48.61% 35	19.44% 14	4.17% 3	0.00% 0	72	2.00
Small businesses	45.83% 33	43.06% 31	9.72% 7	1.39% 1	0.00% 0	72	1.67
College/university	26.76% 19	43.66% 31	21.13% 15	2.82% 2	5.63% 4	71	2.17
Town Hall/courthouse	36.11% 26	27.78% 20	20.83% 15	11.11% 8	4.17% 3	72	2.19
Parks	38.89% 28	38.89% 28	13.89% 10	5.56% 4	2.78% 2	72	1.94
Other:	15.38% 4	19.23% 5	42.31% 11	3.85% 1	19.23% 5	26	2.92
Other:	9.09% 2	13.64% 3	50.00% 11	4.55% 1	22.73% 5	22	3.18

Q7 Many activities can reduce your community’s risk from natural hazards. These activities can be both regulatory and non-regulatory. Please check the box that best matches your opinion of the following strategies to reduce risk and loss associated with natural disasters.

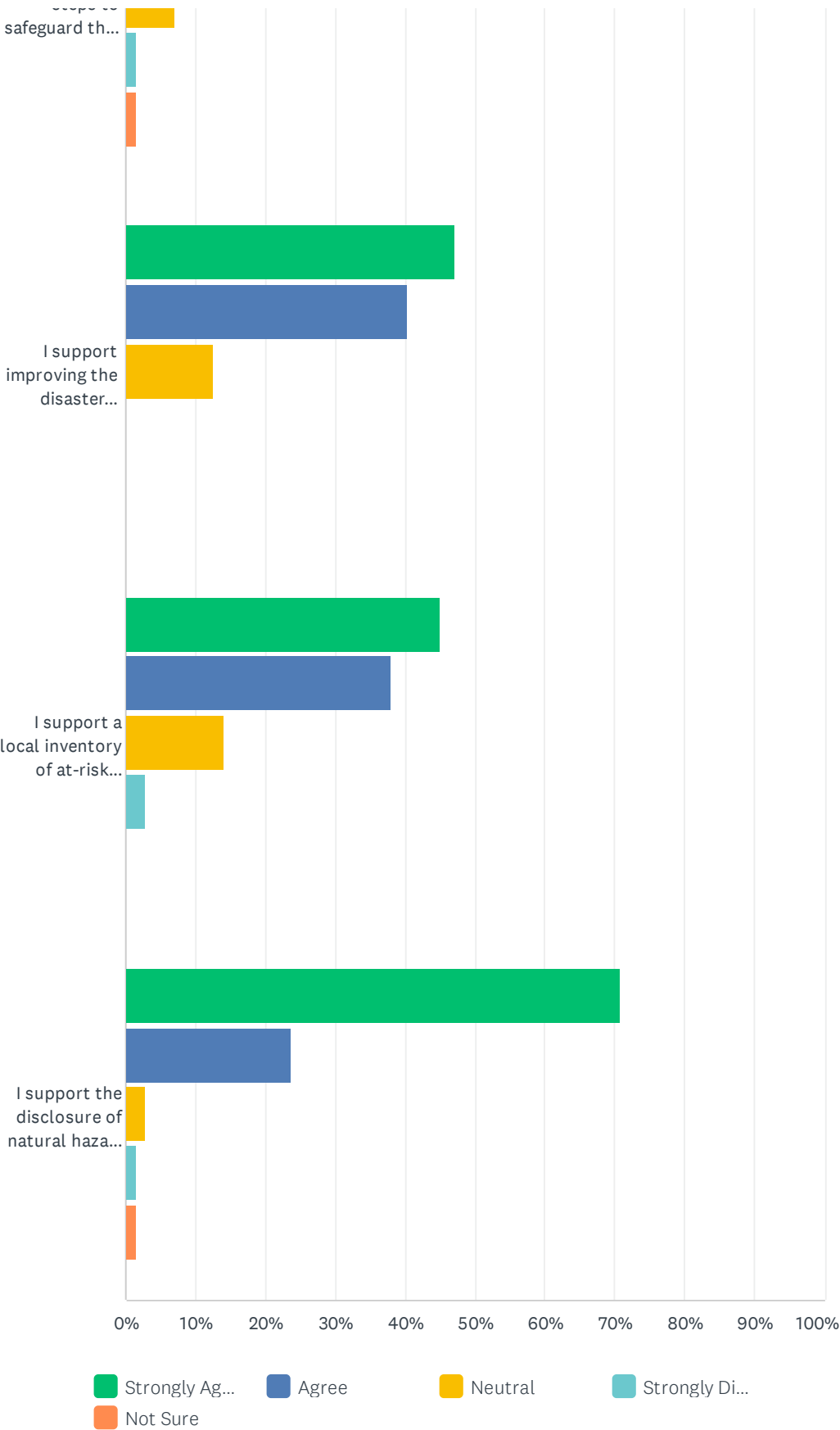
Answered: 72 Skipped: 1



Natural Hazards Public Opinion Survey



Natural Hazards Public Opinion Survey

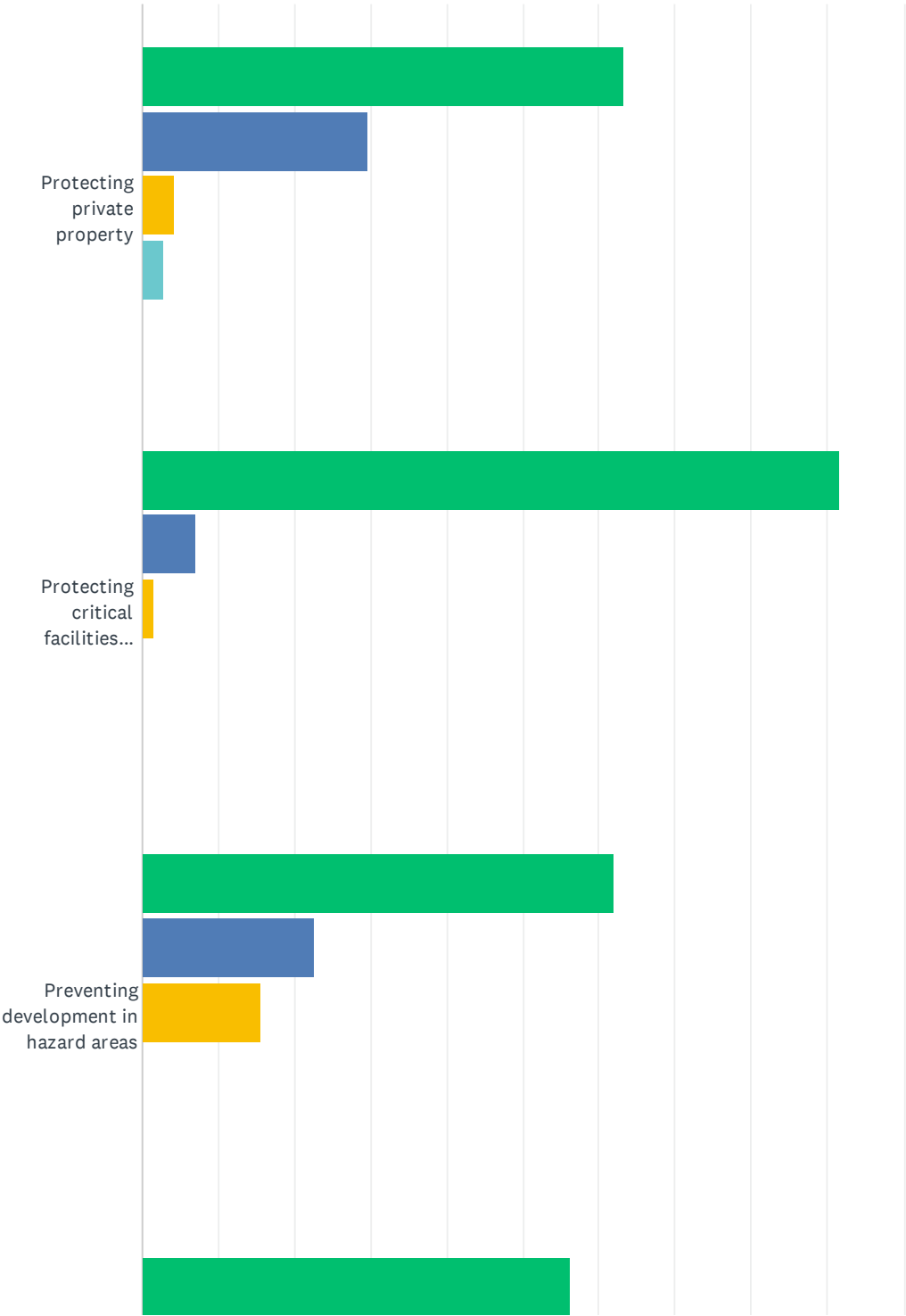


Natural Hazards Public Opinion Survey

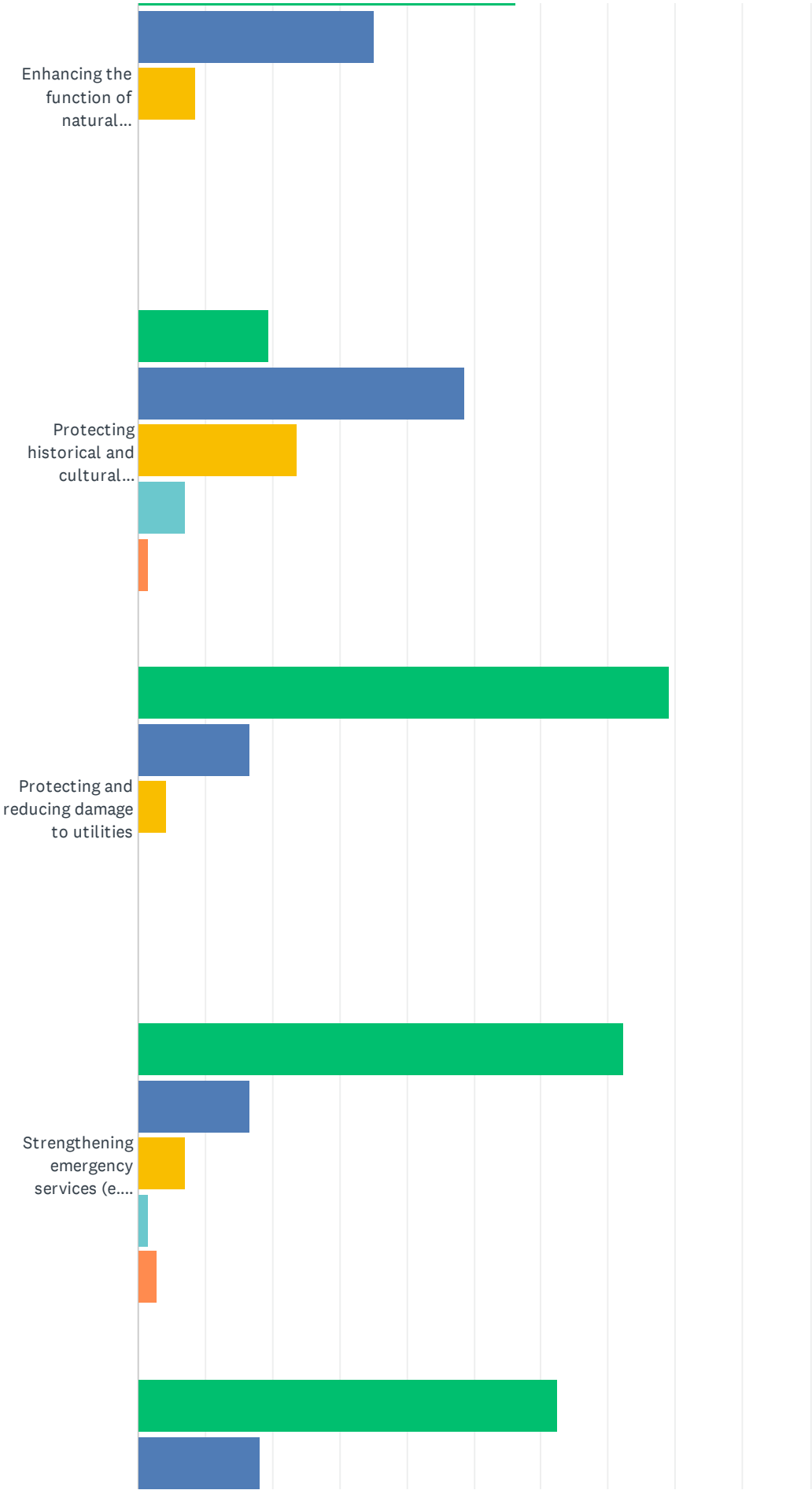
	STRONGLY AGREE	AGREE	NEUTRAL	STRONGLY DISAGREE	NOT SURE	TOTAL	WEIGHTED AVERAGE
I support implementing government rules to reduce risk	34.29% 24	41.43% 29	18.57% 13	2.86% 2	2.86% 2	70	1.99
I support a mix of both governmental and non-governmental approaches to reducing risk	47.89% 34	43.66% 31	5.63% 4	1.41% 1	1.41% 1	71	1.65
I support policies to prohibit development in areas subject to natural hazards	75.00% 54	19.44% 14	5.56% 4	0.00% 0	0.00% 0	72	1.31
I support the use of tax dollars (federal and/or local) to compensate landowners for not developing in areas subject to natural hazards	22.54% 16	23.94% 17	29.58% 21	19.72% 14	4.23% 3	71	2.59
I support the use of local tax dollars to reduce risks and losses from natural disasters	43.66% 31	33.80% 24	15.49% 11	4.23% 3	2.82% 2	71	1.89
I support protecting historical and cultural structures	25.00% 18	44.44% 32	25.00% 18	4.17% 3	1.39% 1	72	2.13
I would be willing to make my home more disaster-resistant	54.93% 39	21.13% 15	19.72% 14	1.41% 1	2.82% 2	71	1.76
I support steps to safeguard the local economy following a disaster event	39.44% 28	50.70% 36	7.04% 5	1.41% 1	1.41% 1	71	1.75
I support improving the disaster preparedness of local schools	47.22% 34	40.28% 29	12.50% 9	0.00% 0	0.00% 0	72	1.65
I support a local inventory of at-risk buildings and infrastructure	45.07% 32	38.03% 27	14.08% 10	2.82% 2	0.00% 0	71	1.75
I support the disclosure of natural hazard risks during real estate transactions	70.83% 51	23.61% 17	2.78% 2	1.39% 1	1.39% 1	72	1.39

Q8 Natural hazards can have a significant impact on a community. Planning for these events can help lessen the impacts. The following statements will help determine residents' priorities in planning for natural hazards in your community. Please tell us how important each one is to you.

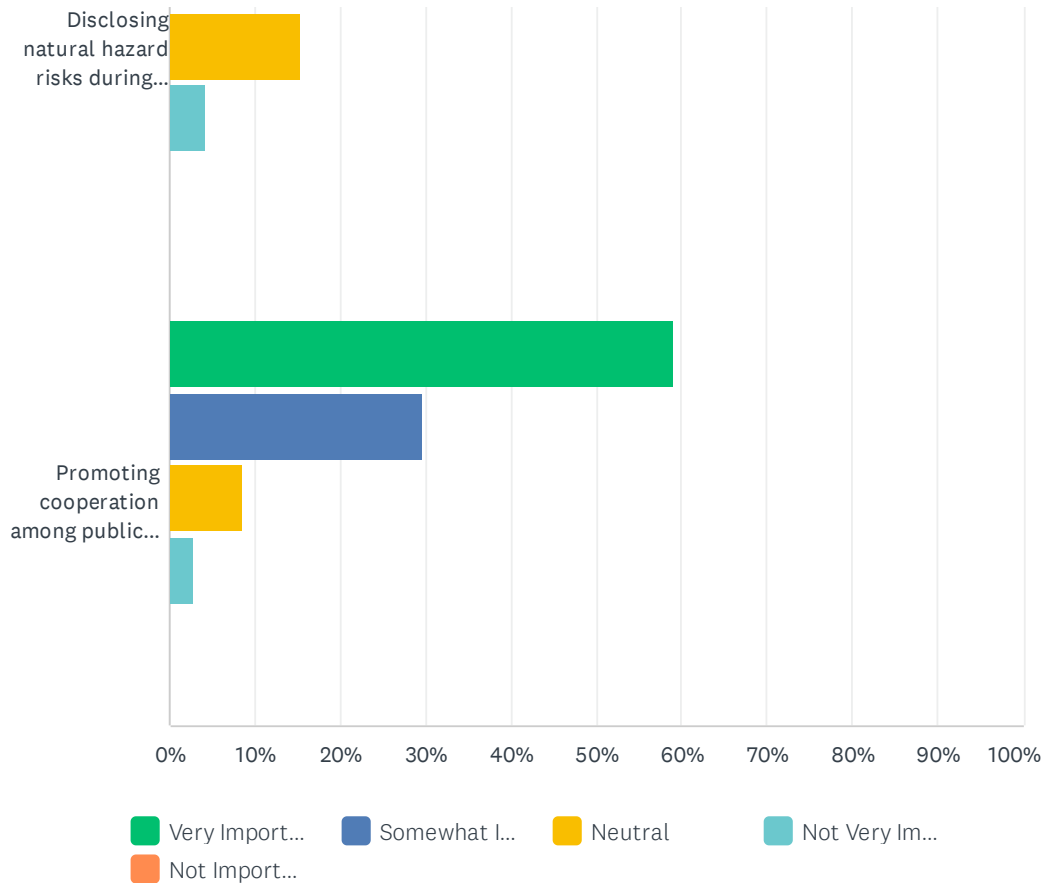
Answered: 72 Skipped: 1



Natural Hazards Public Opinion Survey



Natural Hazards Public Opinion Survey



	VERY IMPORTANT	SOMEWHAT IMPORTANT	NEUTRAL	NOT VERY IMPORTANT	NOT IMPORTANT	TOTAL
Protecting private property	63.38% 45	29.58% 21	4.23% 3	2.82% 2	0.00% 0	71
Protecting critical facilities (e.g., transportation networks, hospitals, fire stations)	91.67% 66	6.94% 5	1.39% 1	0.00% 0	0.00% 0	72
Preventing development in hazard areas	61.97% 44	22.54% 16	15.49% 11	0.00% 0	0.00% 0	71
Enhancing the function of natural features (e.g., streams, wetlands)	56.34% 40	35.21% 25	8.45% 6	0.00% 0	0.00% 0	71
Protecting historical and cultural landmarks	19.44% 14	48.61% 35	23.61% 17	6.94% 5	1.39% 1	72
Protecting and reducing damage to utilities	79.17% 57	16.67% 12	4.17% 3	0.00% 0	0.00% 0	72
Strengthening emergency services (e.g., police, fire ambulance)	72.22% 52	16.67% 12	6.94% 5	1.39% 1	2.78% 2	72
Disclosing natural hazard risks during real estate transactions	62.50% 45	18.06% 13	15.28% 11	4.17% 3	0.00% 0	72
Promoting cooperation among public agencies, citizens, non-profit organizations and businesses	59.15% 42	29.58% 21	8.45% 6	2.82% 2	0.00% 0	71

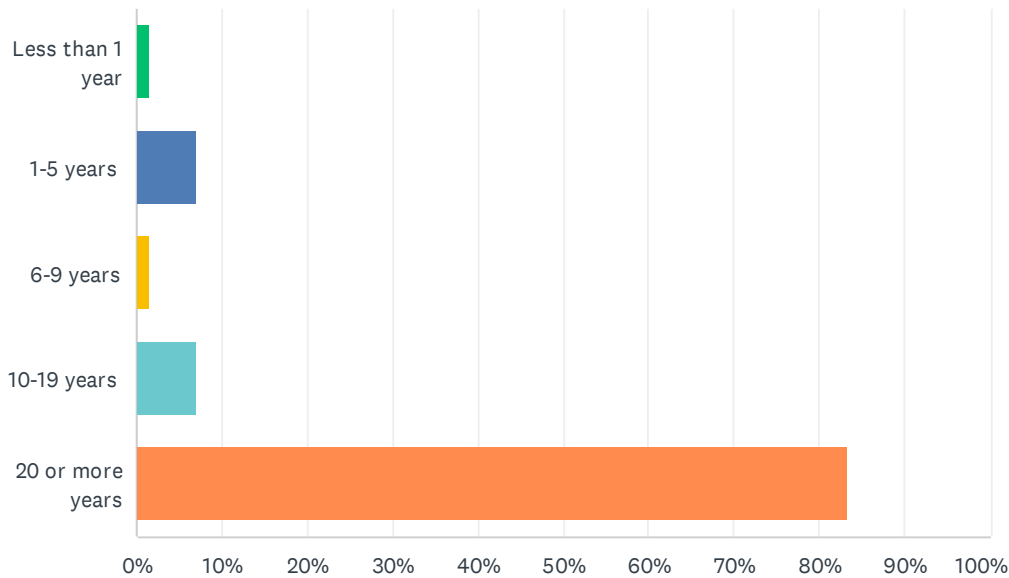
Q9 Finally, we would appreciate any information you are willing to share with us about your household. This information will remain confidential and is for survey comparison purposes only.

Answered: 59 Skipped: 14

ANSWER CHOICES	RESPONSES	
Zip code (optional):	100.00%	59

Q10 How long have you lived in the state?

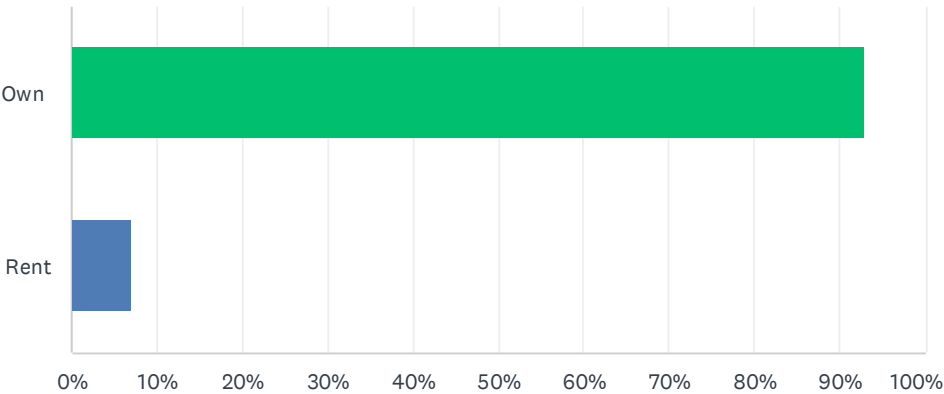
Answered: 72 Skipped: 1



ANSWER CHOICES	RESPONSES	
Less than 1 year	1.39%	1
1-5 years	6.94%	5
6-9 years	1.39%	1
10-19 years	6.94%	5
20 or more years	83.33%	60
Total Respondents: 72		

Q11 Do you own or rent your home?

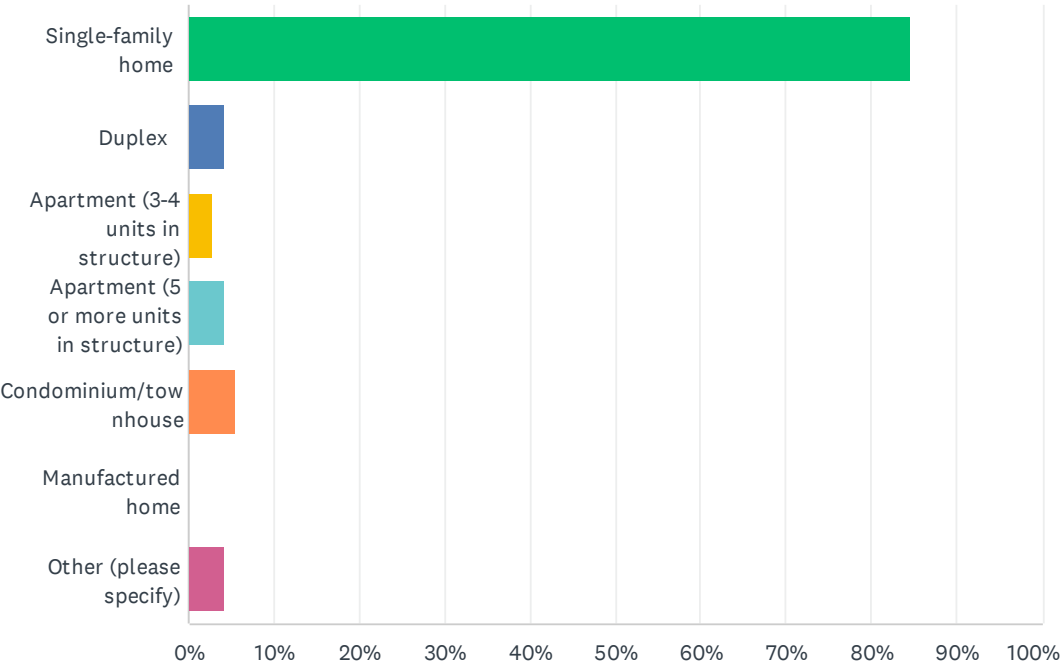
Answered: 71 Skipped: 2



ANSWER CHOICES	RESPONSES	
Own	92.96%	66
Rent	7.04%	5
Total Respondents: 71		

Q12 Do you own/rent a:

Answered: 72 Skipped: 1



ANSWER CHOICES	RESPONSES	
Single-family home	84.72%	61
Duplex	4.17%	3
Apartment (3-4 units in structure)	2.78%	2
Apartment (5 or more units in structure)	4.17%	3
Condominium/townhouse	5.56%	4
Manufactured home	0.00%	0
Other (please specify)	4.17%	3
Total Respondents: 72		

Misty Berryman

From: John Silva <firechief@northprovidenceri.gov>
Sent: Thursday, November 30, 2023 8:41 AM
To: Misty Berryman; Daniel Blanchard
Subject: Fwd: Print and post
Attachments: Survey.JPG; Flyer North Prov Hazard Mitigation Plan_v1.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

surveys are online at all locations (school sites, library, town, facebook, senior center)and being posted today.

Chief of Department
John A Silva

----- Forwarded message -----

From: **Ralph Nahigian** <commsdirector@northprovidenceri.gov>
Date: Thu, Nov 30, 2023 at 6:36 AM
Subject: Print and post
To: Justin Rogers <gis@northprovidenceri.gov>, John Silva <firechief@northprovidenceri.gov>, John Horan <asstfirechief@northprovidenceri.gov>

Gm Justin, Can you please print the following with 11x17 paper color
Please make 10 copies
Im not sure what will be better for you to print the PDF or the Jpeg so I sent you both

Post
Glass doors at Lobby entrance to Police Station
Glass Front door on Town Hall main Entrance
Library Entrance (give to Library Director)
School Admin Entrance 2240 MSA

Chief Silva will advise where else

--

Director Ralph K. Nahigian
Department Of Communications and Technology
1835 Mineral Spring Ave.
North Providence, RI 02904
401-719-1500 EXT 1303

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From: [Lisa Kennedy](#)
To: [Misty Berryman](#)
Subject: Re: Hazard Mitigation Public Survey/Stakeholder Engagement
Date: Monday, December 4, 2023 12:50:03 PM
Attachments: [image001.png](#)
[image002.png](#)
[image003.png](#)
[image004.png](#)
[image005.png](#)
[image006.png](#)
[Outlook-cid_image0.png](#)

Hi Misty,
I received the flyer and I can help distribute to the residents of NP and put it out on our Facebook page. I see that someone has already posted at the schools, and Libraries we are good partners with them. I can also post at our local supermarkets in NP. and any where else I can think of and of course our Food Bank

Thanks

Lisa Kennedy
HEZ Director



Tri-County Community Action Agency - HEZ
104 Greenville AVE. | Johnston, RI 02919
P: (401) 349-6969 | F: (401) 351-6611 |
lkennedy@tricityri.org
www.tricityri.org

From: Misty Berryman <misty.berryman@cdrmaguire.com>
Sent: Wednesday, November 29, 2023 3:24 PM
To: Lisa Kennedy <lkennedy@tricityri.org>
Subject: Hazard Mitigation Public Survey/Stakeholder Engagement

Hi Lisa,

I hope all is well with you. I'm touching base on a few items below for the Hazard Mitigation public survey outreach as well as stakeholder engagement for these planning efforts.

- We've produced (see attached) a public opinion survey to promote feedback on the hazard mitigation efforts for North Providence. We want to promote awareness of this survey and the upcoming plan updates, so if you're able to post this to your website, that would be great. Also, if you're able to post some flyers at your facility and any other locations that would promote awareness and participation in the survey, we'd greatly appreciate your efforts with that (please note we've received word that the flyers will be distributed at the Town Hall, Tax Assessor's Office, schools, and public library). Chief Silva mentioned if you needed flyers printed out for distribution, he could help with that.
 - I know everyone isn't tech savvy or has access to technology, so I wanted to get your feedback on other ways we can engage the disadvantaged groups in the survey and planning efforts.

- We also want to ensure we include stakeholders who understand the needs of the community who can provide considerable insight into mitigation strategies, and we'd appreciate your feedback on stakeholders that can be reached out to for engagement in this process.

If you'd like to give me a call to discuss, we can go from there.

Thank you for being part of the planning team and your assistance with this planning process.

Best,

Misty



Misty Berryman, PMP
Project Manager

311 W. Main Street

Frankfort, KY 40601

C: 850-544-1202

cdr-em.com

misty.berryman@cdrmaguire.com



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North Providence Union Free Library

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  Comment

Intro

Come in to browse items and use computers 6 days a week!
Attend Informational and recreational prog

Page · Library

1810 Mineral Spring Avenue, North Providence, RI, United States, Rhode Island

(401) 353-5600

nprlib@nprovlib.org

nprovlib.org

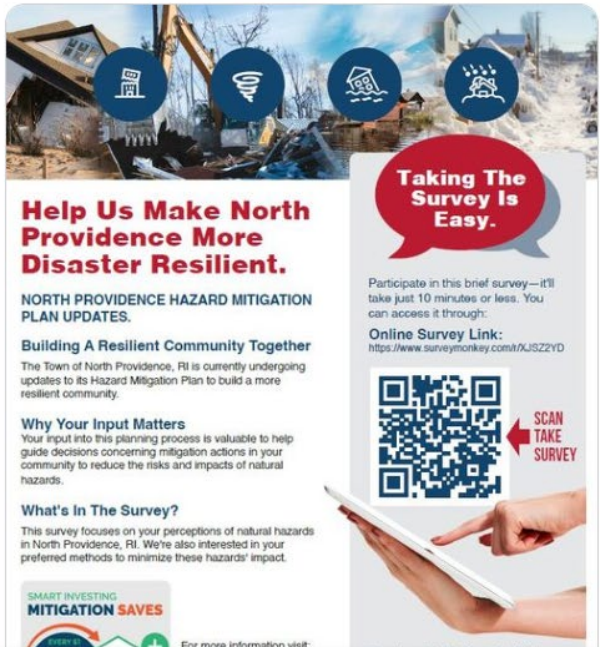
Open now

Rating · 4.8 (23 Reviews)

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North Providence Union Free Library
1d ·

Participate in this brief survey — it will take just 10 minutes or less. You can access it through our
Online Survey Link: <https://www.surveymonkey.com/r/XJSZ2YD>



Help Us Make North Providence More Disaster Resilient.

NORTH PROVIDENCE HAZARD MITIGATION PLAN UPDATES.

Building A Resilient Community Together

The Town of North Providence, RI is currently undergoing updates to its Hazard Mitigation Plan to build a more resilient community.

Why Your Input Matters

Your input into this planning process is valuable to help guide decisions concerning mitigation actions in your community to reduce the risks and impacts of natural hazards.

What's In The Survey?

This survey focuses on your perceptions of natural hazards in North Providence, RI. We're also interested in your preferred methods to minimize these hazards' impact.

SMART INVESTING MITIGATION SAVES

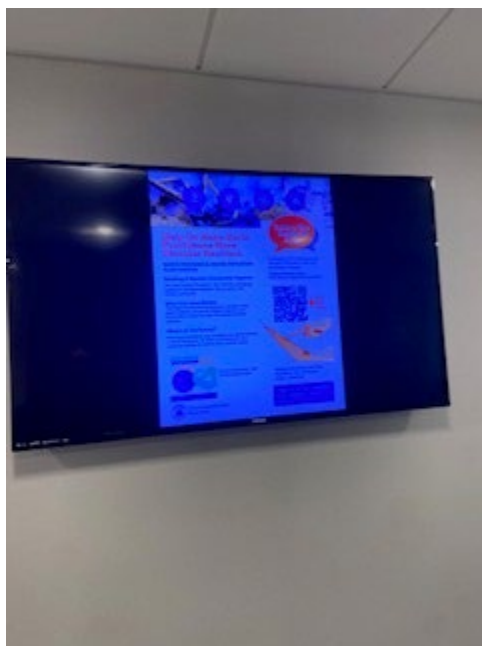
For more information visit:

Taking The Survey Is Easy.

Participate in this brief survey—it'll take just 10 minutes or less. You can access it through:

Online Survey Link:
<https://www.surveymonkey.com/r/XJSZ2YD>

SCAN TAKE SURVEY



Located at 1835 Mineral Springs



North Providence School District

906 likes • 1.1K followers

Pasts About Photos Videos

Intro

The is the official page of the North Providence School District

Page - Education website

[npssd.k12.ri.us](#)

Not yet rated (2 Reviews)

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North Providence School District

1d ·

Participate in this brief survey — it will take just 10 minutes or less. You can access it through our Online Survey Link: <https://www.surveymonkey.com/r/XUSZ2YD>



Help Us Make North Providence More Disaster Resilient.

NORTH PROVIDENCE HAZARD MITIGATION PLAN UPDATES

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This survey focuses on your perceptions of natural hazards in North Providence, RI. We're also interested in your preferred methods for disaster threat reduction.



For more information visit: northprovidencetown.gov

Town of North Providence
About Us

Taking The Survey Is Easy.

Participate in this brief survey — it'll take just 10 minutes or less. You can access it through:

Online Survey Link: <https://www.surveymonkey.com/r/XUSZ2YD>



SCAN
TAKE
SURVEY



Together, let's build a safer North Providence. Your contribution makes a difference!

Thank you for your commitment to our community's disaster resilience.

Like

Comment

164 of 345



Town of North Providence

Rhode Island



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Help Us Make North Providence More Disaster Resilient

Participate in this brief survey — it will take just 10 minutes or less. You can access it through our [Online Survey Link](#)
[More Info and QR Code](#)

Welcome to North Providence Online

Search NorthProvidenceRI.gov

ENHANCED BY Google



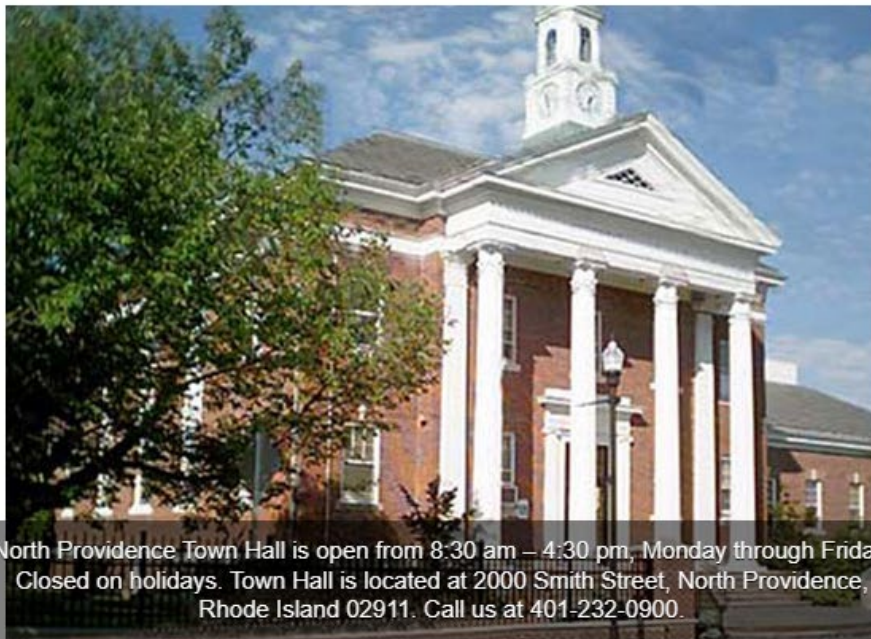
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Quick Links to Departments



North Providence News

- ▶ [Help Us Make North Providence More Disaster Resilient](#)
- ▶ [Donate and Dedicate an Ornament for the Tree Lighting Ceremony on December 3rd](#)
- ▶ [Rhode Island Special Needs Emergency Registry](#)
- ▶ [American Rescue Plan Act of 2021 \(ARPA\)](#)
- ▶ [CCRI Drivers Ed offered at North Providence Public Safety Complex](#)
- ▶ [North Providence Pool and Fitness Center CLOSED Until Further Notice](#)



North Providence Town Hall is open from 8:30 am – 4:30 pm, Monday through Friday. Closed on holidays. Town Hall is located at 2000 Smith Street, North Providence, Rhode Island 02911. Call us at 401-232-0900.

Appendix A: Planning Process Documentation

A.5: Public Input Documents



Town of North Providence

Rhode Island



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Welcome to North Providence Online

Town of North Providence

**YOUR
INPUT IS
REQUESTED**



LOCAL HAZARD



MITIGATION PLAN

**View or Pay
Your Bill Online**



We are now back LIVE with
online Bill Pay..

This is a new program so the
website will look different
then you're used to.

Search NorthProvidenceRI.gov

ENHANCED BY Google



Find a Department

Quick Links to Departments



North Providence News

- NP Police Camera Registry Program
- Get the 2024 North Providence Trash & Recycling Calendar
- Help Us Make North Providence More Disaster Resilient
- North Providence Pool and Fitness Center CLOSED Until Further Notice

Upcoming Town Meeting Agendas

- North Providence Historic District Commission - 12/10/2024 11:15 PM
- North Providence Mayor Salvatore Mancini Union Free Public Library & Cultural Center Board of Trustees - 12/17/2024 06:00 PM
- North Providence Planning Board - 12/19/2024 06:00 PM



Town of North Providence

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Intro

Official Facebook Page of the Town Of North Providence, Rhode Island. For full information on the T

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2000 Smith St, North Providence, RI, United States, Rhode Island

(401) 232-0900

northprovidenceri.gov

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Town of North Providence

6 hours ago ·

<https://gis.cdماغuire.com/.../7b2af7c408594baa860ee95fb5...>

Town of North Providence

**YOUR
INPUT IS
REQUESTED**



LOCAL HAZARD



168 of 345



Collection

Town of North Providence

Rhode Island

Hazard Mitigation Plan Update 2023-2024

[Get started](#)



1 Read the Plan



2 Submit Your Comments



3 Interactive Map



4 2018 Hazard Mitigation Plan



5 Meeting Presentation

<https://gis.cdrmaguire.com/portal/apps/storymaps/collections/7b2af7c408594baa860ee95fb5e97508>

Town of North Providence Hazard Mitigation Plan Comments

Commenter Name: Heather Conca

Interest: Self

Comments: I live at 58 BrownAve and our street is not listed in the mitigation plan, but we flood constantly due to poor drainage and sewer backup. I have had to take out a second mortgage just to keep up with the cleanup of my basement, and remodeling due to massive street flooding on 3 separate occasions. My insurance carrier actually refused to renew my policy, making me in-insurable with any other insurance company except one, and I now have to pay over 3,000 a year for insurance! As a single mom of two, working two jobs to make ends meet and provide for my family, to have no assistance from the town is inexcusable. The least that the town can do is include our street in the mitigation plan!

Email: heather.conca@yahoo.com

Town of North Providence Hazard Mitigation Plan Comments

Commenter Name: Jessy Jakulevicius

Interest: Self

Comments: The plan fails to acknowledge that there is a stream that runs through Stephen Olney park. Two bridges span the stream within the park - one used for service vehicles, and the other a pedestrian bridge. The stream exits the park at the Western end of Wendell St. where it was diverted underground when the neighborhood was built. The stream is visible on historic aerial photographs in the decades preceding its diversion underground. The underground diversion cannot handle most average rainfall events without overflowing onto Wendell St. essentially re-establishing it's original above ground flow route which is now occupied by houses along Wendell and Link streets.

Email: Jessyjakul@gmail.com

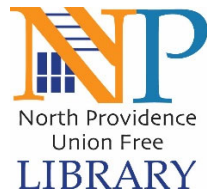
Town of North Providence Hazard Mitigation Plan Comments

Commenter Name: Rosenda Montanez

Interest: Self

Comments: I am the homeowner of 54 Brown Avenue. I have owned the house for 3 years and have experienced major flooding in our basement. With sump pumps installed the basement has had 5 feet of water multiple times since we moved in 2021. The storm water drainage system fails on Brown Avenue with every heavy rain. Our family has gone through a lot of losses and stress with this system failure and have not received a proper solution from the town. I would like to list Brown Avenue on Page 58 of the North Providence Hazard Mitigation Plan 2023-2024 as myself and neighbors have experienced an excessive amount of damages to our property and are more than happy to show pictures of the severity.

Email: rosenda.toj@gmail.com



Natural hazards at the library

Rain:

Parking lot flooding with constant and torrential rain. The drain in the parking lot will back up if there is a significant amount of rain over a short amount of time, or longer periods of time if the rain is steady enough. The result is a flooded staff parking area against the wall which adjoins the Barone Orthodontics building.



(Water pools up in the parking lot during steady or torrential rains)



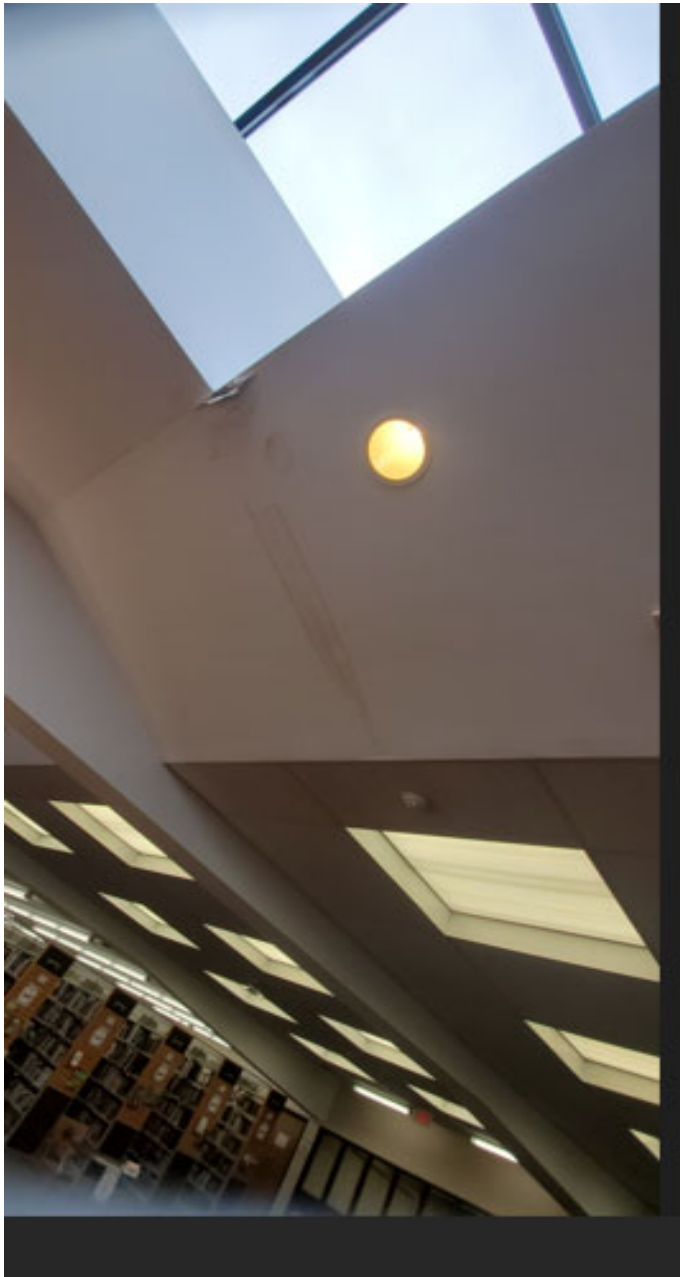
(Flooded employee parking area during a rain storm. This was prior to the drain being fixed by DPW in 2021. However, water still pools up during storms. DPW comes by every couple of hours to check on it and drain it).

We have had mysterious pools of water appear under the rug in areas of the library, such as in the Circulation Department back work area. We are unsure where it comes from.



(Mysterious pool of water coming up from the floor in the Circulation Department)

We have had roof leaks and there are some areas in the library that need to be looked at again as the leaks have progressed over the last 3 years. There is an area that leaks from the ceiling coming from the skylight that runs the length of the building over the indoor staircase.



(leak from ceiling under the skylights)

Winter storms:

Snow that accumulates on the roof areas melts then becomes thick ice. Our gutters and flat roof outside Director's office / over the main entrance tend to back up with heavy rains and snow. When it is cold enough, the water freezes which caused the sky lights to shatter three winters ago. Luckily no one was entering or exiting the building at the time. Large icicles form from the gutters and downspouts as well. Even when gutters are cleaned and water is removed from problem areas, it just builds up again with the next rain or snow.



(December 2020: Gina assessing the situation after both skylights crashed down over the entrance to the library following snow and icy conditions)



(December 2020: When the two skylights over the entrance cracked and fell down onto the main entrance to the library. Snow and ice had built up on them. They have not been replaced since and are covered up.)





(standing water on the roof above the front entrance)



(When gutters are clogged, water builds up on the roof)



(more standing water)

During the summer of 2023, we escaped tornado damage. However, because of our large glass skylight and large windows in offices upstairs, we evacuated the 2nd floor and went into a room centrally located in the library with staff and patrons. We did not want to risk the glass falling in and harming anybody.

Concerns:

Water build up on roof leads to mold, leaks, and icy conditions which can and has caused structural damage and loss of historical documents in our RI History Room.

Water build up in parking lot can cause cars to flood (employees have had severely damaged cars in the past due to the flooding down in the employee parking area)

Draining water freezes during frigid temperatures which creates slick conditions for walking/driving.

FEATURED

North Providence residents most concerned about flooding, winter storms

By ETHAN SHOREY Valley Breeze Editor ethan@valleybreeze.com
Dec 18, 2024



A sliding glass door at a home on Carriage Way in North Providence was all that held back the bulk of floodwaters during a heavy rain event earlier this year.

NORTH PROVIDENCE – In a survey of local residents and the natural disasters they’re concerned about, some 70 percent said they’re very concerned about flooding impacting the town.

That was 20 percent higher than the next type of disaster in the “very concerned” category, with severe winter storms around 50 percent, and 30 to 40 percent higher than every other type of disaster.

Of the 70 or so people surveyed and then asked about activities they support to reduce the community’s risk, nearly 95 percent, the highest figure of any response, said they support policies prohibiting development in areas subject to natural hazards. An equally high number supported the disclosure of natural hazard risks during real estate transactions.

The North Providence Hazard Mitigation Plan, described as a living document as the town continues to adjust to natural threats, identifies flooding and winter storm damage as the two greatest hazards. The NPHMP Committee is made up of various town officials and employees who identify potential vulnerabilities to hazards.

There were 73 total responses to a public survey. Many of the respondents were long-time residents of North Providence and were able to share their experience and insight with hazards in their community. Some 49 respondents stated having directly experienced a natural disaster at some point in the past five years, with an overwhelming majority reporting experiencing flooding events.

As explained in the introduction to the plan, people in communities across the country are increasingly realizing that simply responding to natural disasters, without addressing ways to minimize their potential effect is no longer an adequate role for government.

“Striving to prevent unnecessary damage from natural disasters through proactive planning that characterizes the hazard, assesses the community’s vulnerability, and designs appropriate land-use policies and building code requirements is a more effective and fiscally sound approach to achieving public safety goals related to natural hazards,” it states. “Money spent today on preventative measures can significantly reduce the cost of post-disaster cleanup tomorrow.”

The Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988 created the system where presidential disaster declarations trigger federal assistance via FEMA. The Disaster Mitigation Act of 2000 requires that each local government seeking FEMA mitigation funding must first have an adopted FEMA approved multi-hazard mitigation plan. DMA 2000 provides a legal basis for FEMA’s state, local, and tribal mitigation planning requirements. Additionally, to receive federal funding, hazard mitigation plans must be updated and adopted by local jurisdictions every five years.

According to North Providence’s updated draft plan, now available for public comment on the town’s website, a history of natural hazard events verifies that the town is vulnerable to diverse events including blizzards, floods, and strong storms. The hazards identified by a committee are in line with those discussed in the state’s hazard mitigation plan and

are of greatest concern to the town.

According to North Providence's 2023 comprehensive community plan, the town contains approximately 380 acres of special flood hazard area flood zone, or 10.3 percent of the entire area of the town. This flood zone is generally associated with the two rivers within the town, the Woonasquatucket River and the West River, and their tributaries. Much of this floodplain is developed and therefore at particular risk due to flooding, states the plan.

With 165 flood events in Providence County since 1996, the committee finds that there is a 100-percent likelihood that the town will experience flooding within the next year.

"As rainstorms become more intense due to climate change, increased land development and riverine flooding will continue to be a major concern for the town," states the plan.

The mitigation strategy section provides a road map for the town to become more resilient to adverse impacts of the hazards. The actions include projects, policies, and programs that the town aspires to implement over the five-year period of the plan.

"It is the mission of the town and the (committee) to protect and enhance the quality of life, property, and resources by identifying areas at risk from natural hazards and implementing hazard mitigation actions to protect the town's residents, infrastructure, economy and its historical, natural and cultural resources," it states. "To achieve its mission, the North Providence Hazard Mitigation Committee aims to reduce or eliminate long-term risk to people and their property from the effects of natural hazards."



Planned mitigation actions by the town include:

- Hiring an engineer to develop a stormwater and flood study to identify solutions to local flooding issues;
- Improving the debris management program by focusing on drainage culverts, stormwater infrastructure, and stream clearing;
- Incorporating stream gauge monitoring into flood preparedness activities;
- Establishing an initiative to acquire and demolish repetitively flooded homes;
- Public education on protecting one's property in the winter;
- Identifying projects to reduce sanitary sewer overflows that occur frequently during rainstorms;
- Purchasing capital equipment to perform debris removal after storms;

- Repairing and upgrading the Wenscott Dam;
- Widening the culvert along Woonasquatucket Avenue;
- Developing an urban forest management plan and implementing tree planting and maintenance;
- Identifying a location and procedures to set up a multi-agency resource center to provide help to survivors and affected populations after a disaster;
- Increasing the amount of vegetation and green infrastructure throughout town;
- And requiring zoning certificates for placement of outdoor structures such as sheds and gazebos, among others.

The committee identified the following goals to implement its hazard mitigation strategy and mission:

- Upgrade infrastructure, specifically flood-prone drainage systems, streets, dams and municipal facilities.

“The town experiences frequent flooding during heavy rain events. Although the problems are known, solutions have not been identified,” it states.

- Protect vulnerable populations.

“The town has a large percentage of older, special needs residents, and other socially vulnerable populations that may require additional assistance during an emergency,” it states. “The Special Needs Emergency Registry lets police, fire, and other first responders better prepare for and respond to a community’s needs during a hurricane, flood, or other emergencies.”

- Promote public awareness and education.

“The town has an effective communications department and emergency management team that has a goal to educate residents about potential risks and dangers of hazards as well as conduct outreach to help the town be better prepared for future events,” it states.

- Improve response effectiveness.

“The emergency management department, police, fire, and EMT prepare for and respond to all hazard events within the town, additional equipment, services, and technology will improve their capabilities and increase the effectiveness of their response in the wake of an event.”

- Maintain and protect open space, recreation areas, and historic resources.

“Implement mitigation actions that preserve and enhance natural areas, increase vegetation and open space, and protect the town’s historic resources.”

Ethan Shorey

Chief Editor

Appendix B: HIRA Documentation and Data

B.1: Storm Event History Summary Tables

Tornado Event History for Providence County, RI (NCEI Storm Events Database)

Count	Location	Date	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
1		8/26/1985	F1	0	0	\$ -	
2		8/7/1986	F1	0	0	\$ 250,000.00	
3		8/7/1986	F2	0	20	\$ 2,500,000.00	
4		8/8/1986	F1	0	0	\$ 250,000.00	
5		9/23/1989	F0	0	3	\$ 250,000.00	
6	FOSTER	8/16/2000	F0	0	0	\$ -	Based upon the damage observed, the tornado was rated an F0, with wind speeds of 40 to 72 mph. The path length was only 0.2 mile and the width was 15 yards. The funnel was observed moving from southwest to northeast.
7	NORTH PROVIDENCE	10/23/2018	EF1	0	0	\$ 1,000,000.00	The tornado initially touched down in North Providence on Meadow View Blvd. around 331 PM EDT, where large branches were downed, including one on a car and a fence. In this area, wind speeds were estimated to be 60-70 mph, which is classified as EF-0 on the Enhanced Fujita Scale. From there, damage was discontinuous as the tornado headed northeastward toward the southwest part of Lincoln, with only a few treetops snapped and downed branches. In Lincoln, the tornado caused extensive damage on Angell Road and Riata Drive around 333 PM EDT. There were numerous uprooted or snapped trees, shingles blown off several houses, and large branches downed. Wind speeds were estimated to be 90-100 mph, which is classified as EF-1 on the Enhanced Fujita Scale. Damage became more sporadic farther north on Elden Court, Dennell Drive,

Count	Location	Date	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
							and Christopher Drive, where a few large trees and branches were downed. Winds in those areas were estimated at 60-80 mph, which is classified as EF-0. The tornado lifted near Christopher Drive around 334 PM EDT.
8	MOOSUP VLY	11/13/2021	EF0	0	0	\$ 10,000.00	Based on definitive radar confirmation of a tornado debris signature and video footage from our media partners, we confirmed that an EF-0 tornado touched down in Plainfield, CT at approximately 4:48 PM EST on Saturday, November 13. Maximum wind speed was estimated at 80 mph and the maximum path width was estimated at 100 yards. The tornado was in contact with the ground for 6.13 miles...approximately 4.7 miles in CT and 1.4 miles in RI. Several hardwood trees were uprooted on a hilltop on Sterling Hill Road near Goshen Road. The tornado then tracked northeastward into Rhode Island and ended at the Cucumber Hill Farm in Foster at approximately 5:02 PM EST. Sheared trees and downed hardwood trees were observed on the farm. A heavy, large red trailer also was moved approximately 50 feet.
9	WATERMAN FOUR CORNER	8/18/2023	EF2	0	1	\$ 250,000.00	A tornado caused significant damage along a discontinuous path in Scituate, Johnston, and North Providence, Rhode Island. This is the strongest tornado to have struck Rhode Island since the F-2 tornado in Cranston and Providence on August 7, 1986. The tornado first touched down near Byron Randall Road in Scituate which is where the most severe damage occurred. There were hundreds of

Count	Location	Date	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
							large trees either uprooted or snapped at their bases. One home sustained damage to its roof, the top of its chimney was blown off, windows were blown in, and an exterior door was dislodged from its framing. Damage was consistent with winds of around 115 mph which is classified as EF-2 on the Enhanced Fujita Scale. The tornado then tracked into Johnston where it crossed I-295 at Exit 10 and lifted a vehicle into the air before dropping it back onto the highway. The driver was transported to an area hospital with minor injuries. From there, the tornado moved across Bridle Way and Carriage Way where a number of trees were snapped or uprooted, some of which fell onto homes or vehicles. Some homes also lost some singles from their roofs. A metal Stop sign pole was bent in half and the sign was blown away. The tornado then caused damage in Highland Memorial Park Cemetery where a number of large trees were either snapped or uprooted. The damage observed in Johnston was consistent with winds of 90 to 100 mph which is classified as EF-1 on the Enhanced Fujita Scale. Finally, the tornado crossed into North Providence. Similar to Johnston, a number of trees were either snapped or uprooted, some falling onto homes or vehicles. Most of the damage observed was to the north of Mineral Spring Avenue. One of the harder hit areas included Lydia Avenue, Armand Drive, and Bennett Street where

Count	Location	Date	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
							two homes were made uninhabitable from fallen trees. The damage observed in North Providence was consistent with winds of 90 to 100 mph which is classified as EF-1 on the Enhanced Fujita Scale. The National Weather Service would like to thank the Rhode Island Emergency Management Agency, the Scituate Police Department, the Johnston Police Department, the North Providence Fire Department, and Skywarn Amateur Radio Operators for their assistance with the damage survey.
10	GLOCESTER	9/13/2023	EF1	0	0	\$ 20,000.00	An EF-1 with maximum winds of 100 mph began in a wooded area between Chopmist Hill Road (Route 102) and Bungy Road in the town of Glocester, RI here the tornado either snapped or uprooted an estimated 75 or more, healthy and mature trees. The tornado moved northeast and crossed Bungy Road before dissipating over an open field. Most notable, a small outbuilding, used as bus stop shelter was blown away by the tornado with remnants littered west of the original location. Some pieces were found an a neighbors roof. This damage and the tree damage along the path was consistent with wind speeds between 90 and 100 mph, resulting an EF-1 rating on the Enhanced Fujita Scale.
11	PAWTUCKET	9/13/2023	EF0	0	0	\$ 15,000.00	An EF-1 with maximum winds of 100 mph began east of North Central State Airport along Wellington Road in the town of Lincoln, RI. A video did show a funnel cloud passing

Count	Location	Date	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
							over the adjacent airport but found no damage. The tornado uprooted a large tree and damaged am estimated 20' by 30' section of roof on a building across the street and due north of the uprooted tree. Video provided by Lincoln Animal Control showed a thin tornado passing at the end of the facility's driveway and twisting a large branch from a tree. The tornado moved northeast into a field of solar panels which uplifted two sections. From here, the tornado likely lifted before moving across Route 146 at Route 116 which was documented on a DOT camera. This damage and the tree damage along the path was consistent with wind speeds between 90 and 100 mph, resulting an EF-1 rating on the Enhanced Fujita Scale.
Total				0	24	\$ 4,545,000.00	

Lightning Event History for Providence County, RI (NCEI Storm Events Database)

Count	Locations	Date	Deaths	Injuries	Property Damage	Event Narrative
1	BURRILLVILLE	6/27/2000	0	0	\$ -	Lightning struck a church steeple in Burrillville, igniting a fire that nearly destroyed the church.
2	CENTRAL FALLS	9/15/2000	0	0	\$ 15,000.00	Lightning struck a house in Central Falls, igniting a gas line which caused extensive damage to part of the home.
3	JOHNSTON	5/29/2001	0	0	\$ 20,000.00	A cluster of thunderstorms dumped torrential rainfall and small hail in a narrow corridor of Glocester, causing a washout at the intersection of Route 102 and Snake Hill Road. Rainfall rates exceeded 2 inches per hour in a 10-mile wide corridor in the hilly terrain of western and central Providence County. In Johnston, lightning struck a tree, then traveled to a nearby house causing a pair of windows to blow out. A 4-foot long piece of the tree pierced the screen of a basement door. There were no injuries.
4	PROVIDENCE	6/11/2001	0	0	\$ 10,000.00	A severe thunderstorm downed several large trees in South Kingstown. Lightning from thunderstorms that evening struck the radio tower of the East Providence Police Department, as well as the Charlestown Rescue Squad.
5	FOSTER	6/17/2001	0	0	\$ 150,000.00	Torrential rainfall associated with the remnants of Tropical Storm Allison resulted in flash flooding throughout Providence County. In Foster, two roads were washed out when runoff carved gulches into the roadways. In Woonsocket, the foundations of two buildings were washed out. Several roads in Providence and Coventry were either flooded or washed out as well. Storm totals of 3 to 6 inches were common throughout northern Rhode Island, with as much as 7.10 inches in North Smithfield. Lightning struck a log house in Foster which ignited a fire, and completely destroyed the home.
6	BURRILLVILLE	7/15/2001	0	4	\$ -	Lightning struck a family of four in Burrillville, as they took refuge in their trailer during a thunderstorm. They were treated at a local hospital for minor injuries and later released.
7	CRANSTON	4/3/2002	0	1	\$ -	Lightning from an isolated thunderstorm moving across Rhode Island struck a woman as she waited at a bus stop.
8	LINCOLN	5/31/2002	0	0	\$ 100,000.00	Lightning struck a house in Lincoln and ignited a fire that caused approximately \$100,000 in damage.

Count	Locations	Date	Deaths	Injuries	Property Damage	Event Narrative
9	WEST GLOCESTER	6/22/2002	0	1	\$ -	A severe thunderstorm downed large branches and wires in Scituate. In West Glocester, a lifeguard was struck by lightning as the storms moved through, and was treated for minor injuries at a local hospital.
10	CRANSTON	8/2/2002	0	0	\$ 8,000.00	Severe thunderstorms downed several trees in Smithfield and Providence. Lightning from the same storms struck a communications tower and several utility poles.
11	SMITHFIELD	7/19/2005	0	0	\$ 5,000.00	Scattered strong to severe thunderstorms moved across Rhode Island during the early evening hours of 19 July. The hardest hit areas were in Providence and Newport counties. In Jamestown, a bolt of lightning knocked out the main power supply to the town.
12	SMITHFIELD	7/19/2005	0	0	\$ 10,000.00	
13	SMITHFIELD	6/20/2006	0	0	\$ 50,000.00	A severe thunderstorms brought down large branches in Woonsocket. In Smithfield, lightning struck a house and ignited a fire in the attic.
14	PROVIDENCE	7/18/2006	0	0	\$ 25,000.00	Lightning from the storms caused considerable damage in the city of Providence. Lightning struck the State House, causing some marble tiles to fall from the roof. A major fire was ignited on a tanker at the port of Providence on Narragansett Bay, when it was struck by lightning. No one was injured in either case. An estimated 37,000 customers lost power during the storms.
15	FOSTER	7/28/2006	0	0	\$ 15,000.00	Severe thunderstorms brought damaging winds to much of northern Rhode Island.
16	LINCOLN	1/11/2008	0	0	\$ 5,000.00	Lightning struck a house in Johnston blowing off vinyl siding and blowing out a basement window. Several people were in the house at the time of the strike but none were injured. No fire was started. Several other locations were without power due to other lightning strikes in the area, including the Lincoln Mall.
17	SCITUATE	7/23/2008	0	0	\$ 15,000.00	A house on Howard Avenue was struck by lightning and caught fire.
18	LIMEROCK	6/25/2012	0	0	\$ 150,000.00	Lightning struck a house, setting it on fire. Two people evacuated the house, but their dog was killed in the fire.
19	CHEPACHET	7/1/2012	0	3	\$ -	Three children were struck by lightning while playing outside at a Fourth of July party. Lightning struck the backyard where the children were playing. The 5 year old, 13 year old, and 14 year old were all transported to Hasbro Children's hospital for non-life threatening injuries.
20	OLNEYVILLE	7/20/2013	0	0	\$ 5,000.00	Lightning struck a large, multi-family house on Butler Avenue, igniting a fire.

Count	Locations	Date	Deaths	Injuries	Property Damage	Event Narrative
21	CHOPMIST	6/23/2015	0	0	\$ 5,000.00	A utility pole was struck by lightning on North Road.
22	SMITHFIELD	8/4/2015	0	0	\$ 2,000.00	A house on Randall Road was struck by lightning, starting a small fire in the basement.
23	CHOPMIST	8/12/2016	0	0	\$ 15,000.00	Lightning struck a house on Chopmist Hill Road, setting a fire in the basement.
24	FOSTER	8/12/2016	0	0	\$ 30,000.00	Lightning struck two barns, one on Shippee Schoolhouse Road and the other on Round Hill Road. Both were set on fire.
25	EDGEWOOD	8/12/2016	0	0	\$ 25,000.00	Lightning struck People's Baptist Church on Elmwood Avenue, starting a fire in the attic. The vinyl siding melted and wood shingles under the siding burned as well.
26	OAK LAWN	6/13/2022	0	0	\$ 5,000.00	In Cranston at 430 AM EDT (330 AM EST), a tree and wires were brought down onto a home due to a lightning strike. Street not specified.
Total			0	9	\$ 665,000.00	

Severe Wind Event History for Providence County, RI (NCEI Storm Events Database)

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
1		1/19/1996	High Wind	53	0	0	\$ -	Strong to gale force south winds with gusts to 40 to 60 mph and isolated gusts to hurricane force preceded a sharp cold front extending from a low pressure system moving east across the northern Great Lakes region. Some peak wind gusts included: Tiverton, 73 mph; Little Compton, 61 mph; North Kingstown, Quonset Airport, 61 mph; and Woonsocket, 61 mph. There were scattered reports of property damage as well as scattered power outages from falling trees and tree limbs. The high winds also brought a strong January thaw with temperatures rising into the 50s. The combination of rain and snow melt produced some areas of street flooding.
2		1/27/1996	High Wind	50	0	0	\$ -	
3		2/25/1996	High Wind	58	0	0	\$ -	A deep low pressure system over northern Maine combined with a strong high pressure area centered over South Carolina to produce a tight pressure gradient" and a period of very powerful and damaging west to northwest winds. In Narragansett
4	BURRILLVILLE	5/21/1996	Thunderstorm Wind	59	0	0	\$ -	
5	NORTH PROVIDENCE	5/21/1996	Thunderstorm Wind	62	0	0	\$ -	A cold front moving rapidly into a hot, humid, air mass set the stage for severe thunderstorms. A wind gust to 68 mph was reported in Burrillville and a gust to 71 mph was reported in North Providence. Trees and wires were reported down in Smithfield and a tree was blown down on a house in Lincoln.
6		7/13/1996	High Wind	61	0	0	\$ -	Falling trees and tree limbs knocked out power to up to 32,000 electric customers. Just about all of the power was restored within 12 hours. Heavy rainfall affected most of the state with two to five and one-half inches. Less than two inches of rain fell across

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
								the southeast corner of the state. A total of 5.51 inches of rain was recorded at Coventry with 5.41 inches in Providence. Urban street flooding occurred during the heaviest rainfall. Road washouts were reported in Coventry, Warwick, and Cranston.
7		3/6/1997	High Wind	54	0	0	\$ -	High winds, with gusts reaching 50 to 62 mph from the west and northwest, occurred across the state in the wake of strong low pressure that passed through New England and into the Gulf of Maine. Wind speeds increased dramatically around mid-morning and the strongest winds occurred during the afternoon. Buildings and vehicles were damaged by falling trees and tree limbs in many communities throughout the state. In Burrillville and Glocester, houses were damaged by falling trees and in Chepachet, a parked car was set afire by a falling power line. Part of a roof was blown off a school in Providence. Up to 11,800 electric customers were without power during the afternoon, but only a couple of thousand remained without power by early evening. A peak gust to 62 mph was reported from downtown Providence around mid-afternoon. Some peak gusts reported around the state included: Little Compton, 58 mph; Coventry, 57 mph; Block Island, 55 mph; and Woonsocket, 52 mph.
8	CRANSTON	6/22/1997	Thunderstorm Wind	57	0	0	\$ -	A line of thunderstorms, some severe, moved southeastward across Rhode Island with large hail, frequent cloud to ground lightning, and wind gusts measured up to 80 mph. A microburst moved through part of East Providence (the Riverside section and Bullocks Neck) and West Barrington (the Bullocks Cove area). A boat was lifted off its cradle on land and landed on top of a car and a crane was turned about 30 degrees in the Bullocks Cove area. Two boats were swamped in the Cove and there was considerable tree damage. A lightning bolt started a fire which

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
								destroyed an upstairs apartment in West Barrington. As a result of a National Weather Service survey of the area, winds in the microburst were estimated to have been in the range of 80 to 90 mph. Large hail up to 1.50 inches in diameter accompanied the microburst.
9	EAST PROVIDENCE	6/22/1997	Thunde rstorm Wind	70	0	0	\$ 70,000.00	A line of thunderstorms, some severe, moved southeastward across Rhode Island with large hail, frequent cloud to ground lightning, and wind gusts measured up to 80 mph. A microburst moved through part of East Providence (the Riverside section and Bullocks Neck) and West Barrington (the Bullocks Cove area). A boat was lifted off its cradle on land and landed on top of a car and a crane was turned about 30 degrees in the Bullocks Cove area. Two boats were swamped in the Cove and there was considerable tree damage. A lightning bolt started a fire which destroyed an upstairs apartment in West Barrington. As a result of a National Weather Service survey of the area, winds in the microburst were estimated to have been in the range of 80 to 90 mph. Large hail up to 1.50 inches in diameter accompanied the microburst.
10	LINCOLN	5/31/1998	Thunde rstorm Wind	50	0	0	\$ -	A severe thunderstorm moved across northern Rhode Island shortly after 11 PM. Dime size hail was reported in Cranston. Trees were reported down in Cumberland. Large limbs and wires were downed in Lincoln.
11	SCITUATE	6/19/1998	Thunde rstorm Wind	50	0	0	\$ -	Severe thunderstorms produced large hail and damaging winds in a few towns in Washington, Kent, and Providence Counties. Dime to nickel size hail was reported from North Kingstown in Washington County. Two trees were blown down in Scituate in Providence County and dime size hail fell in West Greenwich in Kent County. In addition, flooding occurred in coventry in Kent County, when streams flowing into Johnston Pond overflowed their banks.

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
12		1/18/1999	High Wind	52	0	0	\$ -	
13	CUMBERLAND	7/19/1999	Thunderstorm Wind	50	0	0	\$ -	Severe thunderstorms moved across northern Rhode Island, after causing extensive wind damage in northern Connecticut. Thunderstorm winds downed five-inch diameter trees in Cumberland, blocking a roadway, and also downed power lines in Lincoln.
14		9/16/1999	High Wind	50	0	0	\$ -	Tropical Storm Floyd brought high winds and torrential rainfall to Rhode Island, as it tracked from northern Connecticut into central and northeast Massachusetts. Although many areas received strong winds, the highest wind gusts were confined to coastal Washington County, where several trees were downed in Westerly, and also in northern Providence County, where branches, trees, and wires were downed in Smithfield, Woonsocket, and Cumberland.
15		11/2/1999	High Wind	52	0	0	\$ -	Strong winds buffeted Rhode Island, as deepening low pressure moved across southern Canada. High winds in Providence and western Kent Counties resulted in several large trees, limbs, and power lines down in Coventry, Scituate, and Burrillville. In Foster, about 30 to 35 trees were downed by high winds, and some electric customers lost power for about four hours. Wind gusts were estimated to be near 60 mph, and primarily affected the higher elevations. Elsewhere in the Ocean State, strong winds resulted in scattered downed tree limbs and power lines. Winds gusted as high as 51 mph at T.F. Green State Airport in Warwick and also on Block Island.
16		2/14/2000	High Wind	50	0	0	\$ -	Low pressure tracking across Connecticut and central Massachusetts brought a period of high winds to parts of Rhode Island around noon. In East Providence, a gust to 58 mph was reported, while in Tiverton, winds gusted to 59 mph. Strong winds buffeted all of the Ocean State during the late morning and early afternoon, with sustained winds near 35 mph and

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
								wind gusts up to 55 mph. Some of the higher gusts reported include 54 mph at T.F. Green State Airport in Warwick, 53 mph in Woonsocket, 50 mph in Warren and Westerly, 47 mph in North Kingstown, and 46 mph in Newport. No wind damage was reported.
17	CUMBERLAND	4/9/2000	Thunderstorm Wind	50	0	0	\$ -	Isolated severe thunderstorms developed early in the morning ahead of a warm front. The storms were aided by strong low level winds. A spotter in Tiverton reported a gust to 64 mph, while in Woonsocket, a gust to 66 mph downed large branches. An off-duty National Weather Service meteorologist also reported downed branches in Cumberland.
18	BURRILLVILLE	6/2/2000	Thunderstorm Wind	52	0	0	\$ -	Severe thunderstorms moved through northern Rhode Island, in advance of a strong cold front. A spotter in Greenville reported a gust to 62 mph. Large branches were reported down in Burrillville, Glocester, and Smithfield. Several trees were also downed.
19	SCITUATE	6/11/2000	Thunderstorm Wind	50	0	0	\$ -	Isolated severe thunderstorms downed trees in Scituate, and produced dime size hail in Warwick.
20	WOONSOCKET	8/10/2000	Thunderstorm Wind	70	0	0	\$ 15,000.00	A long-lived supercell, which formed over eastern New York during the late evening of the 9th, strengthened as it moved across northern Connecticut, where it caused wind damage and dropped large hail. The storm entered northern Rhode Island during the early morning of the 10th, and produced several brief microbursts in northern Providence County. The damage was rather isolated, but where it occurred was significant. A few large oak trees were snapped off near their tops in a subdivision behind Bryant College in Smithfield. One large pine tree was snapped at the college, and grass was flattened to the ground. All of the trees fell in a west-northwest to east-southeast direction. In Glocester, a very large and centuries-old chestnut tree was snapped off, blocking a portion of Route 102. In

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
								addition to the wind damage, the storm dropped golf ball size hail in Cumberland. The supercell then moved across southeast Massachusetts, causing additional wind damage and producing large hail. Wind speeds were estimated between 70 and 85 mph.
21		10/28/2000	Strong Wind	0	0	0	\$ 8,000.00	An intensifying storm system moving away from the East Coast combined with a strong cold front passing through New England to bring strong winds to northern Rhode Island. The strongest winds were felt in the higher elevations of Providence County, where a porch was blown down in West Glocester, near George Washington State Park.
22		12/12/2000	High Wind	50	0	0	\$ -	A strong cold front brought damaging wind gusts to portions of Rhode Island. Even though there were scattered reports of wind damage throughout the Ocean State, the strongest winds of nearly 60 mph were felt in the higher terrain of northwest Providence County, and along the coastal plain of Washington County. There were many reports of downed trees, tree limbs, and wires in these areas. About 3,500 electric customers lost power statewide. In addition, the combination of strong southwest winds ahead of the front and a high astronomical tide caused minor coastal flooding in low lying areas of eastern Narragansett Bay, including Bristol, Barrington, and Newport.
23		12/17/2000	High Wind	50	0	2	\$ -	A rapidly strengthening low pressure system west of New England brought a period of damaging southerly winds to much of the Ocean State, as lines of showers passed through southern New England. Following the passage of a strong cold front later in the day, increasing northwest winds caused damage over much of the state once again. Peak wind gusts of nearly 60 mph were common throughout Rhode Island, resulting in countless reports of downed trees,

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
								tree limbs, and power lines. About 5,700 electric customers were left without power statewide. Two people were injured just outside Providence, when the car they were driving in was struck by a falling tree. High winds and rough seas forced the cancellation of at least one run of the Block Island Ferry.
24	WOONSOCKET	6/30/2001	Thunderstorm Wind	50	0	0	\$ -	Severe thunderstorms dropped dime to quarter sized hail in Woonsocket, and downed trees and large branches in Woonsocket, Burrillville and Glocester.
25	BURRILLVILLE	6/30/2001	Thunderstorm Wind	50	0	0	\$ -	Severe thunderstorms dropped dime to quarter sized hail in Woonsocket, and downed trees and large branches in Woonsocket, Burrillville and Glocester.
26	SCITUATE	6/22/2002	Thunderstorm Wind	50	0	0	\$ 2,000.00	A severe thunderstorm downed large branches and wires in Scituate. In West Glocester, a lifeguard was struck by lightning as the storms moved through, and was treated for minor injuries at a local hospital.
27	PROVIDENCE	7/23/2002	Thunderstorm Wind	50	0	0	\$ 5,000.00	Severe thunderstorms downed trees in Coventry, Providence, and Scituate and produced dime sized hail in Cranston.
28	SMITHFIELD	8/2/2002	Thunderstorm Wind	50	0	0	\$ 2,000.00	Severe thunderstorms downed several trees in Smithfield and Providence. Lightning from the same storms struck a communications tower and several utility poles.
29		9/11/2002	High Wind	0	0	0	\$ 20,000.00	High winds buffeted parts of northern and central Rhode Island, as a result of Hurricane Gustav passing several hundred miles southeast of New England and high pressure over southern Canada. Although wind speeds were measured as high as 50 mph, there were numerous reports of downed trees and branches which took down power lines and disrupted service to about eighteen thousand electric customers. The damage was likely due to weakened root systems, as a result of the longer term drought being felt over much of the northeast, in addition to the fact that most trees still had their leaves.
30		9/11/2002	High Wind	0	0	0	\$ 20,000.00	

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
31	SMITHFIELD	8/13/2003	Thunderstorm Wind	50	0	0	\$ 5,000.00	A severe thunderstorm downed trees and wires in East Greenwich, and flooded South Road, making it impassable for a time. Another severe thunderstorm downed a tree and large branches on Barnes Street in Smithfield.
32		10/15/2003	High Wind	50	0	0	\$ 15,000.00	High winds downed trees and large limbs across northern Rhode Island, causing scattered power outages. A large limb fell onto railroad tracks in Cumberland. Although peak winds only reach 45 to 55 mph, they were strong enough to cause damage.
33		11/13/2003	High Wind	50	0	0	\$ 100,000.00	Low pressure moving through the St. Lawrence Valley brought high winds to much of southern New England. In Rhode Island, peak wind gusts of 50 to 60 mph brought down trees and power lines.
34	WOONSOCKET	8/21/2004	Thunderstorm Wind	62	0	0	\$ 500,000.00	A severe thunderstorm produced a microburst with winds estimated at 70 mph in Woonsocket, according to a National Weather Service storm survey. Trees were downed and uprooted in the Jillson Avenue area just south of the Bernon Heights School. Wind got underneath a carport and caused significant damage. A 200-year old oak tree was split in half and landed on two cars. No injuries were reported. The same storm also downed trees in Cumberland.
35		11/5/2004	High Wind	50	0	0	\$ 20,000.00	Low pressure strengthening off the New England coast brought strong west winds to Rhode Island, with gusts of 45 to 55 mph reported in many areas. Gusts estimated as high as 60 mph were reported in northwest Providence County, which brought down a large tree in Woonsocket.
36		12/1/2004	High Wind	58	0	0	\$ 40,000.00	Damaging winds affected parts of central and northern Rhode Island, as strengthening low pressure tracked across northern New England and a strong cold front moved through the region. There were many reports of downed trees and power lines, especially in the higher elevations.

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
37		12/23/2004	High Wind	58	0	0	\$ 50,000.00	Damaging winds affected parts of northern Rhode Island, as a strong cold front pushed through the region. Gusts estimated near 60 mph brought down trees and wires in Providence, Smithfield, and Johnston. There were no reports of injuries.
38		3/8/2005	High Wind	50	0	0	\$ 50,000.00	Low pressure strengthened rapidly off the Delaware coast and tracked southeast of New England, bringing snow and high winds to Rhode Island. While snowfall amounts were limited to between 2 and 5 inches because of rain at the start, wind gusted to over 70 mph during the height of the storm. On Block Island, a gust to 71 mph was reported at the airport, but no damage occurred. A trained spotter in Warwick reported a 70 mph gust, and another spotter in Bristol reported a 59 mph gust, and likewise no damage occurred in either location. Amateur radio operators reported large trees down in Burrillville and six trees down in Portsmouth. Officially, the snowfall total at T.F. Green State Airport was 1.9 inches.
39		4/2/2005	High Wind	50	0	0	\$ 35,000.00	Low pressure moving through the mid Atlantic states brought strong southeast winds to parts of southern New England, including the higher elevations of northern Rhode Island where a gust to 58 mph was reported by an amateur radio operator. Several trees were blown down in Foster and Burrillville. There were no reports of injuries.
40		5/7/2005	High Wind	50	0	0	\$ 15,000.00	A strong coastal storm brought high winds to parts of Rhode Island, where winds gusted to an estimated 60 mph. The high winds were confined to the higher

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
								elevations of Providence County and in Newport County, where trees and wires were brought down in Smithfield and Portsmouth.
41	SMITHFIELD	7/19/2005	Thunde rstorm Wind	52	0	0	\$ 5,000.00	Scattered strong to severe thunderstorms moved across Rhode Island during the early evening hours of 19 July. The hardest hit areas were in Providence and Newport counties. No injuries directly resulted from these thunderstorms.
42	BURRILLVILLE	8/5/2005	Thunde rstorm Wind	52	0	0	\$ 25,000.00	Showers and thunderstorms developed in a humid airmass ahead of an approaching cold front during the afternoon across northern Rhode Island. Some of these thunderstorms were severe, producing damaging winds. These severe winds downed wires, limbs, and trees, which, in turn, knocked out electricity to thousands of customers. The severe thunderstorm winds blew down a street light pole in Foster. The winds also downed many small trees on Interstate 295 near Exit 10 in Cumberland. No known injuries directly resulted from these severe thunderstorms.
43	CUMBERLAN D	8/5/2005	Thunde rstorm Wind	50	0	0	\$ 5,000.00	
44	BURRILLVILLE	8/14/2005	Thunde rstorm Wind	50	0	0	\$ 20,000.00	Showers and thunderstorms developed across northern Rhode Island in a hot and humid airmass ahead of a weak cold front during the evening hours of 14 August 2005. One thunderstorm became severe, producing damaging winds that knocked down numerous trees and wires in Burrillville, Foster, North Smithfield, Glocester, and Woonsocket. In addition, flash flooding in Woonsocket submerged a car. The occupants of the car had to be rescued from their car. No known injuries directly resulted from these storms.
45	FOSTER	8/21/2005	Thunde rstorm Wind	50	0	0	\$ 5,000.00	A line of heavy showers and thunderstorms moved across northern Rhode Island during the late afternoon of 21 August 2005. One thunderstorm was severe, producing damaging wind gusts that knocked trees down on wires on Central Pike in Foster. No

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
								known injuries directly resulted from this severe thunderstorm.
46		9/29/2005	High Wind	58	0	0	\$ 15,000.00	A powerful cold front with a sharp temperature gradient moved across Rhode Island during the late morning and early afternoon hours of 29 September 2005. This cold front produced high winds that caused power outages, and knocked down trees, limbs, power poles, and wires across the region. Wind gusts between 40 and 60 mph were common during this event. No known injuries directly resulted from this high wind event.
47		10/16/2005	High Wind	58	0	0	\$ 40,000.00	Damage was reported across Providence County. Multiple trees, limbs, and wires were reported down in Cumberland, Woonsocket, Johnston, and East Providence. In addition, strong wind gusts knocked a large tree down on wires on Morgan Avenue in Johnston, which temporarily knocked out power to the Johnston NOAA All Hazards Weather Radio. No injuries directly resulted from this high wind event.
48		10/25/2005	High Wind	58	0	0	\$ 20,000.00	In Providence, strong winds knocked a large tree down on interstate 95, partially blocking the northbound side of the interstate. In addition, several trees, wires, and limbs were reported down in Woonsocket, West Greenwich, Exeter, and Tiverton.
49		1/18/2006	High Wind	58	0	0	\$ 50,000.00	Wind gusts downed a tree on a house on Cathedral Street in Cumberland. Two large trees and limbs were blown down in Coventry. In Warwick, winds knocked a utility pole and a transformer down.
50		1/21/2006	High Wind	58	0	2	\$ 50,000.00	An intensifying low pressure system moved east across Quebec, swinging a cold front across southern New England during the mid to late afternoon of 21 January 2006. This cold frontal passage produced strong gusty winds that knocked down trees, limbs, and wires across Rhode Island. Trees and wires were reported blown down in Glocester. In Cumberland, a drive through roof was blown down onto a car. In

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
								Foster, a tree was blown down onto a car, causing two minor injuries to the people inside.
51		2/17/2006	Strong Wind	50	0	0	\$ 10,000.00	A strong cold front swept across southern New England during the morning and afternoon hours of 17 February 2006. This cold front produced strong winds that brought down a one foot diameter tree in Glocester, Rhode Island. No known injuries directly resulted from this strong wind event.
52	SCITUATE	5/21/2006	Thunde rstorm Wind	50	0	0	\$ 15,000.00	Severe thunderstorms produced penny to nickel sized hail in Smithfield and Glocester. The storms also downed trees and wires in Scituate.
53	WOONSOCKET	6/20/2006	Thunde rstorm Wind	50	0	0	\$ 5,000.00	A severe thunderstorms brought down large branches in Woonsocket. Later in the afternoon, another severe thunderstorm brought down wires in Providence, and blew down scaffolding at the state capitol building. Penny sized hail was reported with another storm in Cumberland.
54	PROVIDENCE	6/20/2006	Thunde rstorm Wind	50	0	0	\$ 25,000.00	
55	WOONSOCKET	6/23/2006	Thunde rstorm Wind	50	0	0	\$ 15,000.00	Severe thunderstorm winds brought down three large trees and a telephone pole on South Main Street and Roberta Street in Woonsocket.
56	SCITUATE	7/18/2006	Thunde rstorm Wind	50	0	0	\$ 25,000.00	Severe thunderstorms moved through Rhode Island at night, in advance of a cold front pushing through southern New England. Thunderstorm winds brought down trees and large limbs in Scituate, Johnston, Cranston, Warwick, Barrington, Middletown, North Kingstown, and Portsmouth. Damage was more widespread in greater Providence, where nearly two dozen large trees were downed around Roger Williams Park and about one hundred others were either split or splintered by strong winds. In Cranston, a large maple tree fell onto a car and another large tree destroyed a garage. An estimated 37,000 customers lost power during the storms.

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
57	GLOCESTER	7/28/2006	Thunde rstorm Wind	50	0	0	\$ 25,000.00	Severe thunderstorms brought damaging winds to much of northern Rhode Island. Large tree limbs were blown down in Glocester and Pawtucket. Trees were downed near Rhode Island College in Providence, which temporarily blocked a roadway. In Cumberland, a tree fell onto a house in the Diamond Hill section.
58	FOSTER	8/2/2006	Thunde rstorm Wind	50	0	0	\$ 5,000.00	Shortly before 7 pm, the storms entered southern Rhode Island from Worcester County Massachusetts and Windham County Connecticut. A tree was downed on Route 101 in Foster. As the storms reached southern Rhode Island, a trained spotter in Bristol reported an unofficial wind gust to 69 mph. Large tree limbs were downed in Portsmouth and Tiverton. Penny sized hail was also reported in Tiverton. Wires were downed in Newport. In Warren, 12 students had to be rescued when their boats capsized. No one was injured. To date, the last derecho to affect southern New England was on July 15, 1995, when a band of severe thunderstorms raced from Michigan at midnight to the Massachusetts coast by 8 am. Those storms produced a wind gust to 93 mph at Otis Massachusetts in Berkshire County, and damage was reported as far east as Worcester County.
59		10/29/2006	High Wind	50	0	0	\$ 10,000.00	Trees and large branches were downed on School Street in Cumberland. A large tree was blown down on Mason Street in Woonsocket, which temporarily shut down the roadway. The peak wind gust at TF Green State Airport in Warwick was 51 mph.
60		12/1/2006	High Wind	50	0	1	\$ 25,000.00	High tension wires and trees were brought down in Smithfield, on River and Lincoln Streets. Trees and wires were downed on Greenfield Road. One person was injured in Foster when a tree fell on Barlow Trail.
61		4/16/2007	High Wind	52	0	0	\$ 15,000.00	An unusually strong and slow moving coastal storm for mid April tracked to western Long Island Sound on April 16th before weakening slowly and drifting

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
								offshore. This storm brought a variety of impacts, including damaging winds in excess of 60 mph, widespread river and stream flooding, and significant coastal flooding through several high tide cycles. East to northeast winds gusted as high as 60 mph. The highest gusts reported were 62 mph in Middletown, 61 mph at T.F. Green Airport in Warwick, and 60 mph in downtown Providence. There were widespread reports of downed trees, large branches, and power lines, especially in southern Rhode Island and as far inland as Providence. Rainfall totals of 3 to 5 inches, combined with wet antecedent conditions, resulted in widespread river and stream flooding, as well as significant flooding of urban areas. Minor to moderate flooding affected the Blackstone and Pawtuxet Rivers. The highest rainfall total reported was 5.00 inches in Little Compton. Many small streams throughout Rhode Island also rose out of their banks and flooded nearby areas, including roadways. Minor to moderate coastal flooding occurred along the coastline of Rhode Island through several high tide cycles, due to the combination of strong onshore winds, high seas, and astronomically high tides. Along the South Coast, the worst coastal flooding occurred with the morning high tide on the 16th, where flood waters and debris closed several shore roads. Large boulders that washed ashore had to be removed with snow plows, according to media reports.
62	BURRILLVILLE	5/16/2007	Thunderstorm Wind	50	0	0	\$ -	A bow echo downed several trees in Burrillville, Pawtucket, and Cumberland.
63	WOONSOCKET	6/28/2007	Thunderstorm Wind	56	0	0	\$ -	Very strong thunderstorms wind gusts.

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
64	LINCOLN	6/28/2007	Thunde rstorm Wind	50	0	0	\$ -	Trees downed on Route 246.
65	CRANSTON	8/13/2007	Thunde rstorm Wind	50	0	0	\$ -	Large tree branches down on Laurehurst Road.
66		2/10/2008	High Wind	58	0	0	\$ 5,000.00	High winds affected much of Southern New England as an arctic front moved through the area. Winds gusted as high as 67 mph in Woonsocket, Rhode Island and downed tree limbs and wires across much of Rhode Island.
67		3/8/2008	High Wind	50	0	0	\$ 4,000.00	Numerous large branches were downed on Route 102 near Route 7 in Burrillville.
68	JOHNSTON	7/2/2008	Thunde rstorm Wind	50	0	0	\$ 4,000.00	In the Stonyville section of Johnston, two trees and several large limbs were downed by thunderstorm winds. In Smithfield, a tree on Whipple Street was downed by thunderstorm winds.
69	NORTH PROVIDENCE	7/2/2008	Thunde rstorm Wind	50	0	0	\$ 6,000.00	In North Providence, a large tree and branches on Smithfield Road and Smith Street were downed by thunderstorm winds. The tree landed on a house. In Pawtucket, a tree on Sherman Street was downed by thunderstorm winds, landing across the road.
70	SCITUATE	7/23/2008	Thunde rstorm Wind	50	0	0	\$ 5,000.00	Trees on Thompson Hill were downed by thunderstorm winds.
71	SCITUATE	9/9/2008	Thunde rstorm Wind	50	0	0	\$ 5,000.00	Trees along Route 14 were downed by thunderstorm winds, some blocking the road.
72	LIMEROCK	9/9/2008	Thunde rstorm Wind	50	0	0	\$ 5,000.00	Large trees and wires on Mason Road were downed by thunderstorm winds.
73	SCITUATE	6/27/2009	Thunde rstorm Wind	50	0	0	\$ 500.00	Large branches on Route 102 were downed by thunderstorm winds.

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
74		1/25/2010	High Wind	52	0	0	\$ 40,000.00	A weather station at a spotter's home recorded a wind gust of 60 mph. A tree was downed in Cumberland on Nate Whipple Highway. In North Smithfield, a tree on Route 146 was downed.
75		4/29/2010	Strong Wind	40	0	0	\$ 15,000.00	Strong winds brought down wires on Pawtucket Avenue near Taunton Avenue in East Providence.
76	LIMEROCK	6/20/2010	Thunde rstorm Wind	50	0	0	\$ 10,000.00	Trees and wires were downed by thunderstorm winds.
77	OAK LAWN	6/28/2010	Thunde rstorm Wind	50	0	0	\$ -	An amateur radio operator recorded a wind gust of 58 mph on their home weather station. No damage was reported.
78	KENT	6/28/2010	Thunde rstorm Wind	50	0	0	\$ 1,000.00	A tree on Pawtucket Avenue was downed by thunderstorm winds.
79	GRANTS MILLS	8/5/2010	Thunde rstorm Wind	50	0	0	\$ 15,000.00	Three to four trees on Tower Hill Road were downed by thunderstorm winds. Trees also were downed on Arnold Mills and Diamond Hill Roads.
80	HAMLET	6/8/2011	Thunde rstorm Wind	50	0	0	\$ 3,000.00	A tree on Highland Street was downed by thunderstorm winds.
81	KENT	6/9/2011	Thunde rstorm Wind	50	0	0	\$ 30,000.00	Several 4 to 6 inch diameter trees were downed in the Veterans Memorial Parkway area. Also, a utility pole was downed across a road in the same area.
82	NORTH PROVIDENCE	6/9/2011	Thunde rstorm Wind	50	0	0	\$ 250,000.00	Numerous trees, utility poles, utility lines, and wires were downed across North Providence and Providence as the result of a microburst. This included 42 trees in Roger Williams Park and more than 200 trees on city property. Trees were downed onto cars and buildings.
83	OAK LAWN	6/9/2011	Thunde rstorm Wind	50	0	0	\$ 50,000.00	Numerous trees, large branches, and wires were downed, including trees on Route 10 South and Maplewood Avenue.

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
84	CUMBERLAND HILL	8/10/2011	Thunderstorm Wind	50	0	0	\$ 5,000.00	Trees and wires on Wrentham Road were downed by thunderstorm winds.
85		12/8/2011	High Wind	55	0	0	\$ -	A 63 mph wind gust was recorded on a citizen's home weather station in Burrillville.
86		12/27/2011	Strong Wind	47	0	0	\$ 15,000.00	A cooperative observer recorded a 54 mph wind gust on their home weather station in North Foster. Numerous small trees were downed throughout Scituate.
87	CHEPACHET	7/1/2012	Thunderstorm Wind	52	0	0	\$ 30,000.00	An amateur radio operator recorded a 60 mph wind gust on their home weather station. In addition, a tree on Durfee Hill Road was downed onto wires. Trees in Bowditch Lake Campground were downed onto recreational vehicles and wires in George Washington Campground were downed.
88	SCITUATE	7/1/2012	Thunderstorm Wind	50	0	0	\$ 5,000.00	A tree on Rockland Road was downed onto wires by thunderstorm winds.
89	FOSTER	7/1/2012	Thunderstorm Wind	50	0	0	\$ 10,000.00	Trees were downed by thunderstorm winds in Foster.
90	SPRAGUEVILLE	7/1/2012	Thunderstorm Wind	50	0	0	\$ 5,000.00	Wires were downed by thunderstorm winds.
91	SPRAGUEVILLE	7/18/2012	Thunderstorm Wind	50	0	0	\$ 10,000.00	Trees on Route 7 and Route 5 were downed by thunderstorm winds.
92	CHEPACHET	7/24/2012	Thunderstorm Wind	53	0	0	\$ -	An amateur radio operator recorded a 61 mph wind gust on their home weather station. No damage was reported.
93		9/18/2012	Strong Wind	40	0	0	\$ 2,000.00	A branch and wires were downed on Sunset Drive in North Providence.
94		10/29/2012	High Wind	50	0	0	\$ 30,000.00	A tree was downed onto a car on Veterans Memorial Parkway in East Providence. Those in the car were transported to the hospital. The roof of the U.S. Postal

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
								Service building on Newman Avenue in East Providence was partially collapsed after being damaged by high winds. Wind gusts in southeast Providence County were reported by spotters in North Providence and in the Rumford section of East Providence to be between 46 and 52 mph.
95		1/20/2013	Strong Wind	40	0	0	\$ 5,000.00	A tree and wires were downed on Howard Avenue in Scituate.
96		1/31/2013	High Wind	56	0	0	\$ 25,000.00	Law enforcement reported wind gusts up to 64 mph in Scituate. The media reported gusts to 51 mph in Woonsocket. A primary power line was downed on East School Street in Woonsocket. In Glocester, a tree was downed across Snake Hill Road.
97		11/1/2013	Strong Wind	40	0	0	\$ 5,000.00	A tree was downed onto the ramp from Reservoir Avenue to Route 10 Eastbound in Cranston. The Automated Surface Observation System from the nearby T.F. Green State Airport in Warwick (KPVD) recorded wind gusts of 52 mph.
98		11/27/2013	Strong Wind	40	0	0	\$ 3,000.00	A tree was downed onto Howard Hill Road in Foster.
99		1/11/2014	Strong Wind	40	0	0	\$ 3,000.00	Wires were downed in the area of Mineral Spring Avenue at Spicer Street.
100		3/26/2014	Strong Wind	40	0	0	\$ 5,000.00	A tree was downed at the intersection of Metcalf Avenue and Winona Street in North Providence.
101		3/17/2015	Strong Wind	45	0	0	\$ 5,000.00	Wires were downed onto Washington Avenue in East Providence.
102		4/4/2015	Strong Wind	41	0	0	\$ 25,000.00	The Automated Surface Observation System at T F Green Airport (KPVD) recorded sustained winds of 37 mph and gusts to 47 mph. Two utility poles fell on a car on Diamond Hill Road in Woonsocket. A tree fell on wires on North Road in Foster.
103	CHOPMIST	6/23/2015	Thunderstorm Wind	50	0	0	\$ 5,000.00	A tree on Langlais Drive was downed by thunderstorm winds.

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
104	CRANSTON	6/23/2015	Thunderstorm Wind	50	0	0	\$ 20,000.00	A tree was downed onto a house on Brackens Street.
105	NORTH PROVIDENCE	6/23/2015	Thunderstorm Wind	50	0	0	\$ 15,000.00	Several trees and wires were downed onto Hope Street, Central Avenue, and Smithfield Road.
106	SOUTH PROVIDENCE	8/4/2015	Thunderstorm Wind	50	0	0	\$ 5,000.00	A tree on Benefit Street was downed, closing the road.
107	CRANSTON	8/4/2015	Thunderstorm Wind	50	0	0	\$ 25,000.00	Dozens of streets were blocked by downed trees, including Phoenix Avenue. A tree hit power lines, snapping a utility pole and burying one family's cars.
108	EAST PROVIDENCE	8/4/2015	Thunderstorm Wind	50	0	0	\$ 5,000.00	Wires were downed by thunderstorm winds.
109		10/29/2015	Strong Wind	30	0	0	\$ 2,000.00	A tree was downed onto a driveway in Cumberland.
110		2/16/2016	Strong Wind	40	0	1	\$ 25,000.00	Strong winds brought down a tree onto a car at Route 7 and Bryant University, resulting in one minor injury which required transport to the hospital.
111	CHEPACHET	2/25/2016	Thunderstorm Wind	40	0	0	\$ 5,000.00	A tree on Route 44 in Glocester was downed by thunderstorm winds, blocking the road.
112		2/25/2016	High Wind	50	0	0	\$ 20,000.00	A tree on Pippin Orchard Road in Cranston was downed by high winds. Trees along Atwood Avenue were downed. A sign was blown over onto cars. Several large branches were downed, blocking Hope Road.
113	SPRAGUEVILLE	2/25/2016	Thunderstorm Wind	50	0	0	\$ 5,000.00	A large tree and wires on Whipple Avenue near the Douglas Pike were downed by thunderstorm winds, blocking Whipple Avenue.
114	OAK LAWN	2/25/2016	Thunderstorm Wind	50	0	0	\$ 1,000.00	A tree limb was downed, blocking the eastbound lane of the Plainfield Pike in Cranston.

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
115	SCITUATE	2/25/2016	Thunderstorm Wind	50	0	0	\$ 15,000.00	A tree and a utility pole on Locust Grove in Scituate were downed by thunderstorm winds.
116	SCITUATE	2/25/2016	Thunderstorm Wind	50	0	0	\$ 5,000.00	A large pine tree was downed, blocking one lane of a road in Scituate.
117	OLNEYVILLE	2/25/2016	Thunderstorm Wind	50	0	0	\$ 1,000.00	A window was blown out of a house in the Mount Pleasant neighborhood of Providence.
118	OAK LAWN	2/25/2016	Thunderstorm Wind	50	0	0	\$ 20,000.00	Multiple trees were downed in the western part of Cranston.
119	JOHNSTON	2/25/2016	Thunderstorm Wind	50	0	0	\$ 5,000.00	Wires on Hartford Avenue in Johnston were downed by thunderstorm winds.
120	CHEPACHET	2/25/2016	Thunderstorm Wind	50	0	0	\$ 5,000.00	A tree was downed, blocking a road in Glocester.
121	FOSTER	2/25/2016	Thunderstorm Wind	50	0	0	\$ 5,000.00	A tree on Luther Road in Foster was downed by thunderstorm winds.
122		3/17/2016	Strong Wind	40	0	0	\$ 15,000.00	A tree and wires were downed, snapping a utility pole in half in Foster.
123	JOHNSTON	3/17/2016	Thunderstorm Wind	50	0	0	\$ 5,000.00	A tree was downed onto wires on Spring Street by thunderstorm winds.
124		3/31/2016	High Wind	50	0	0	\$ 50,000.00	A tree near Hope Road and Burlingame Road was downed in Cranston. Wires on Blackberry Knoll Way were downed in Johnston. Several trees and four utility poles on Maple Avenue were downed in North Providence.
125		3/31/2016	Strong Wind	40	0	0	\$ 10,000.00	A tree was downed onto wires in Woonsocket. A tree and wires on Windsor Road were downed in Foster.

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
126		4/1/2016	Strong Wind	40	0	0	\$ 10,000.00	A tree and branches were downed on Paris Iron Road in Glocester. In Woonsocket, trees and wires on Talcott Street were downed.
127	SCITUATE	7/7/2016	Thunde rstorm Wind	50	0	0	\$ 25,000.00	A tree was downed onto a utility pole with power lines down on Nipmuc Road in Scituate. Also, a tree was downed on Route 12 and Seven Mile Road.
128	OAK LAWN	7/17/2016	Thunde rstorm Wind	40	0	0	\$ 5,000.00	A tree was downed by thunderstorm winds, blocking Tweed Street.
129	CUMBERLAN D	7/23/2016	Thunde rstorm Wind	40	0	0	\$ 500.00	Three to five inch diameter limbs were downed by thunderstorm winds.
130	PAWTUCKET	7/23/2016	Thunde rstorm Wind	40	0	0	\$ 5,000.00	A large tree was downed onto a moving car on Main Street. Occupants were trapped in the car but not injured.
131	CUMBERLAN D HILL	8/6/2016	Thunde rstorm Wind	50	0	0	\$ 5,000.00	A tree was downed onto a car on Mendon Road by thunderstorm winds.
132	FOSTER	8/12/2016	Thunde rstorm Wind	50	0	0	\$ 25,000.00	Several trees were downed on Route 6 by thunderstorm winds.
133	FOSTER	8/12/2016	Thunde rstorm Wind	50	0	0	\$ 15,000.00	Trees and wires on Foster Road were downed by thunderstorm winds.
134	CHEPACHET	8/12/2016	Thunde rstorm Wind	50	0	0	\$ 10,000.00	Trees on Lake Washington Drive and Reynolds Road were downed by thunderstorm winds.
135	NORTH PROVIDENCE	8/12/2016	Thunde rstorm Wind	50	0	0	\$ 5,000.00	A tree and wires on Clark Street were downed by thunderstorm winds.
136	SCITUATE	8/12/2016	Thunde rstorm Wind	50	0	0	\$ 5,000.00	A tree was downed onto wires on Hill Road by thunderstorm winds. The wires were blocking the road.

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
137	SCITUATE	8/12/2016	Thunderstorm Wind	50	0	0	\$ 5,000.00	A tree was downed onto Route 101 by thunderstorm winds.
138	SCITUATE	8/14/2016	Thunderstorm Wind	50	0	0	\$ 5,000.00	A tree on East Road was downed by thunderstorm winds.
139	JOHNSTON	8/14/2016	Thunderstorm Wind	50	0	0	\$ 5,000.00	Wires were downed by thunderstorm winds.
140		9/5/2016	Strong Wind	40	0	0	\$ 25,000.00	A tree was downed, blocking Carpenter Road in Scituate. A large tree was downed onto wires on Howard Avenue.
141		10/23/2016	Strong Wind	36	0	0	\$ 300.00	A tree was reported down on Flat Street in Cumberland. Not too far to the southeast, a peak wind gust of 42 mph was reported at T.F. Green Airport in Cumberland, RI.
142		11/21/2016	Strong Wind	42	0	0	\$ 900.00	Wind gusts estimated between 45 and 50 mph knocked a 12-inch diameter branch, which fell onto a car on Manville Hill Road in Cumberland, RI at 330 PM. A few hours earlier, the ASOS at T.F. Green Airport in Warwick (PVD) recorded a peak wind gust to 46 mph at 1051 AM and an amateur radio operator measured peak gust to 49 mph at 1048 AM in Warwick.
143		12/15/2016	Strong Wind	43	0	0	\$ 700.00	Winds brought a tree down on Hartford Avenue in Johnston. About the same time, winds at T. F. Green Airport in Warwick (Kent County) gusted to 49 mph.
144		1/24/2017	Strong Wind	40	0	0	\$ 11,000.00	A tree was down on wires at Cumberland Hill and caused a power outage. High tension wires were down on Putnam Pike in Gloucester. A telephone pole and wires were down in Foster.
145		1/24/2017	Strong Wind	40	0	0	\$ 3,500.00	Wires down on East Scenic View Drive in Johnston. Multiple trees and wires down on Phenix Ridge Drive in Cranston.

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
146	PAWTUCKET	7/12/2017	Thunderrstorm Wind	50	0	0	\$ 1,000.00	At 220 PM EST, a tree was brought down on Bucklin Street in the Darlington section of Pawtucket.
147	SOUTH PROVIDENCE	7/12/2017	Thunderrstorm Wind	50	0	0	\$ 1,000.00	At 245 PM EST, a tree was brought down on North Main Street in Providence.
148	SLATERSVILLE	8/2/2017	Thunderrstorm Wind	50	0	0	\$ 1,000.00	At 1235 PM EST, a tree was brought down in North Smithfield on Providence Pike at Industrial Drive.
149		10/24/2017	Strong Wind	43	0	0	\$ 3,000.00	Tree down on Luther Road in Foster. Tree down on wires on Isthmus Road.
150		10/25/2017	Strong Wind	43	0	0	\$ 1,000.00	At 930 AM EST, a tree was brought down on U.S. Route 6, the Danielson Pike.
151		10/29/2017	High Wind	52	0	0	\$ 25,000.00	At 1106 PM EST, an amateur radio operator in Providence reported a wind gust to 61 mph. At 1250 AM EST, trees and wires were reported down in Cranston on Narragansett Blvd, Taft Street, Glenham Road, Cranston Street, Phippen Orchard Road, Lippit Avenue, Seven Mile Road, Sagamore Road, Massachusetts Street, Natick Avenue, Sheldon Street, and Curry Road.
152		10/29/2017	Strong Wind	46	0	0	\$ 5,000.00	At 1120 PM EST, and amateur radio operator reported several large trees down on Twin River Road in Lincoln near the casino.
153		4/16/2018	Strong Wind	41	0	0	\$ 1,000.00	At 1:50 PM EST, a tree was reported down on Reservoir Road near State Route 10 in Cranston. At 3:57 PM EST, the Automated Surface Observing System near door in Warwick at T. F. Green Airport measured a wind gust to 47 mph.
154		4/16/2018	Strong Wind	40	0	0	\$ 1,000.00	At 3:52 PM EST a tree was reported down on Howard Hill Road in Foster.
155	GRANTS MILLS	9/6/2018	Thunderrstorm Wind	50	0	0	\$ 1,000.00	At 3:49 PM EST, wind brought a large tree down in Cumberland on Diamond Hill Road at Tower Hill Road.

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
156		10/15/2018	Strong Wind	46	0	0	\$ 1,000.00	At 11:55 PM EST, a tree was reported down on the Putnam Pike in Glocester.
157		10/27/2018	Strong Wind	35	0	0	\$ 100.00	At 1240 PM EDT in Providence, a tree was down on wires on Sunbury Street.
158		11/3/2018	Strong Wind	43	0	0	\$ 700.00	In Pawtucket at 209 PM EDT, a large tree was down on Hatfield Street.
159		11/3/2018	Strong Wind	43	0	0	\$ 500.00	In Glocester at 207 PM EDT, a tree was down on Reservoir Road.
160		12/18/2018	Strong Wind	40	0	0	\$ 1,000.00	At 8:02 AM EST a large tree was reported down on Wood Street in Providence.
161		1/30/2019	Strong Wind	40	0	0	\$ 1,000.00	At 7:16 PM EST an amateur radio operator in Providence reported a large tree down on Blackstone Street.
162		1/30/2019	Strong Wind	40	0	0	\$ 1,500.00	At 8:33 PM EST an amateur radio operator reported a tree down on Thompson Hill Road in Cumberland, and wires down on Social Street in Woonsocket.
163		2/25/2019	Strong Wind	48	0	0	\$ 8,000.00	At 1:45 PM EST, the Automated Weather Observing System platform at North Central Airport in Smithfield reported a wind gust to 55 mph. At 2:45 PM EST broadcast media reported that a utility pole fell across Allens Avenue blocking traffic.
164	SCITUATE	5/20/2019	Thunderrstorm Wind	50	0	0	\$ 3,000.00	Scituate Police reported multiple trees down across town.
165	FOSTER	5/20/2019	Thunderrstorm Wind	50	0	0	\$ 3,000.00	In Foster, trees and wires were down on Walker Road at South Killingly Road. Another tree was down on Mount Hygeia Road.
166	JOHNSTON	5/20/2019	Thunderrstorm Wind	50	0	0	\$ 500.00	In Foster, large branches, one foot in diameter, were down on Hartford Avenue by Brown Avenue.
167	OLNEYVILLE	5/20/2019	Thunderrstorm Wind	50	0	0	\$ 700.00	A NWS employee reported a one-foot diameter tree limb down on Irving Avenue in Providence. Two one-foot diameter tree limbs were down on Arlington Avenue by Irving Avenue. A couple of isolated four-

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
								inch diameter tree limbs were down on Blackstone Blvd. in Providence.
168	OLNEYVILLE	5/20/2019	Thunde rstorm Wind	50	0	0	\$ 300.00	Amateur radio operators reported numerous six-inch diameter tree limbs down on Pembroke Field at Brown University in Providence.
169	NORTH PROVIDENCE	5/20/2019	Thunde rstorm Wind	50	0	0	\$ 3,500.00	In North Providence, trees were reported down on Adams lane, including one on a house.
170	OLNEYVILLE	5/20/2019	Thunde rstorm Wind	50	0	0	\$ 1,300.00	A NWS employee reported a three-foot diameter tree was snapped on Taber Avenue at Laurel Avenue. Wires were down, connected to a house.
171	BRIDGETON	7/17/2019	Thunde rstorm Wind	50	0	0	\$ 3,000.00	In Burrillville, trees and wires were down on Roosevelt Avenue. A tree and wires were down on Sherman Farm Road (Route 98).
172	WALLUM LAKE	8/19/2019	Thunde rstorm Wind	50	0	0	\$ 800.00	In Burrillville, trees were down on Buck Hill Road.
173	FOSTER CENTER	8/21/2019	Thunde rstorm Wind	50	0	0	\$ 2,000.00	In Foster, a tree was down on a house on South Killingly Road. Large tree limbs were down on Foster Center Road.
174	SCITUATE	8/21/2019	Thunde rstorm Wind	50	0	0	\$ 1,000.00	In Scituate, a tree was down on a house on Rockland Road. Trees and wires were down on Rockland Road at Central Pike.
175		10/10/2019	Strong Wind	45	0	0	\$ 200.00	In Providence, wires were reported down on Kenyon Street.
176		10/16/2019	High Wind	52	0	0	\$ -	In Cranston a 60 mph wind gust was reported.
177		10/16/2019	Strong Wind	45	0	0	\$ 500.00	In Lincoln there was a tree down on Parker St.
178		10/31/2019	Strong Wind	35	0	0	\$ 300.00	In Providence at 913 PM EST, a tree was reported down on Pleasant Valley Parkway.
179		11/1/2019	High Wind	50	0	0	\$ 1,500.00	At 206 AM EST in Woonsocket, amateur radio operators reported a tree down on a house on Grove Street.

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
180		1/16/2020	Strong Wind	43	0	0	\$ 500.00	An amateur radio operator reported a tree down on a car on Prairie Ave in Providence.
181		2/7/2020	High Wind	49	0	1	\$ 5,000.00	In Central Falls, the Fire Department reported that at 530 PM EST a tree fell on Perry Street, injuring one person. The Providence Journal reported that a tree smashed a parked car on Washington Street across from the Providence Public Safety Complex. Between 3 PM and 4 PM, there were several measured gusts between 54 mph and 56 mph across the city of Providence, as well as in Smithfield.
182		2/7/2020	High Wind	48	0	0	\$ 1,000.00	In Cumberland at 345 PM EST, a NWS employee reported a large tree down. Based on surrounding data, winds were estimated to have gusted to around 55 mph.
183		2/27/2020	Strong Wind	39	0	0	\$ 5,000.00	Wind gusts ranged from 40 to 50 mph across northern Rhode Island, averaging about 45 mph. In Scituate at 330 PM EST, two trees were down on Route 116. One of the trees fell on a Providence water truck.
184		4/13/2020	High Wind	48	0	0	\$ 1,200.00	In Burrillville at 1044 AM EST (1144 AM EDT) amateur radio reported a tree down on wires on Victory Hwy. Later at 249 PM EST an NWS employee also reported a tree down on a house on Steere Farm Rd. In Foster at 120 PM EST a tree was down blocking South Killingly Rd. In Scituate there was a tree down on a house on Old Plainfield Pike at 220 PM EST.
185		5/9/2020	Strong Wind	42	0	0	\$ 600.00	At 934 AM EST (1034 AM EDT), winds gusted to 48 mph at the ASOS at T.F. Green Airport, located in Kent County...but that was representative of winds throughout the state. In Smithfield at 130 PM EST, a tree and wires were down on Douglas Pike. In Scituate at 350 PM EST, a tree and power lines were down on Howard Avenue.
186		5/9/2020	High Wind	42	0	0	\$ 10,000.00	At 934 AM EST (1034 AM EDT), the ASOS at T.F. Green Airport, located in Kent County, recorded a wind gust to 48 mph, but this was representative of winds

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
								throughout the state. In Providence at 1010 AM EST, a tree and wires were down on South Lane and at 1250 PM EST, a tree and power lines were down onto two cars on Horton Street. No injuries were reported. Also in Providence, at 421 PM EST, a tree was down on Arlington Avenue.
187	GRANTS MILLS	6/6/2020	Thunde rstorm Wind	50	0	0	\$ 3,000.00	In Cumberland, a tree was down on a house...street not documented.
188	WATERMAN FOUR CORNER	8/22/2020	Thunde rstorm Wind	50	0	0	\$ 1,000.00	In Scituate, trees were down on Tunk Hill Road.
189		9/30/2020	High Wind	44	0	0	\$ 800.00	Winds gust reports included: North Providence 51 mph at 558 AM EDT (amateur radio) and Providence 47 mph at 736 AM EDT (HADS). However, at T.F. Green Airport (KPVD) just south of Providence the ASOS recorded a gust to 56 mph at 723 AM EDT. In Cranston at 630 AM EDT, a tree and wires were down on Main Street.
190		10/7/2020	Strong Wind	43	0	0	\$ 4,000.00	During the early afternoon, prior to the squall line, southwest winds were gusting to 40 to 50 mph. In Scituate at 215 PM EDT, the media reported that a tree landed on an occupied car outside of Scituate Middle/High School. Thankfully, the driver was reportedly okay.
191	PASCOAG	10/7/2020	Thunde rstorm Wind	52	0	0	\$ 30,000.00	In Burrillville, a tree was down on two cars, which were heavily damaged. There were no injuries.
192	CUMBERLAN D HILL	10/7/2020	Thunde rstorm Wind	53	0	0	\$ -	In Cumberland at 607 PM EDT, an amateur radio operator measured a wind gust to 61 mph.
193	CUMBERLAN D HILL	10/7/2020	Thunde rstorm Wind	52	0	0	\$ 1,000.00	In the Manville section of Lincoln, a tree was uprooted.

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
194	SOUTH PROVIDENCE	10/7/2020	Thunderrstorm Wind	53	0	0	\$ -	In Providence at 624 PM EDT, a HADS (Hydrometeorological Automated Data System) site measured a wind gust to 61 mph.
195		10/10/2020	Strong Wind	37	0	0	\$ 800.00	Winds were generally gusting to 40 to 45 mph. In North Smithfield at 1052 AM EDT, a tree and wires were down on Old Greenville Road between Hanton Road and Deerfield Drive.
196		11/1/2020	Strong Wind	43	0	0	\$ 500.00	In Johnston, a tree was down on Central Avenue at Reservoir Avenue.
197		11/15/2020	Strong Wind	48	0	0	\$ 800.00	In Johnston at 812 PM EST, a tree was down on wires on Rome Avenue.
198	NORTH SCITUATE	11/15/2020	Thunderrstorm Wind	50	0	0	\$ 500.00	In Scituate, a tree was down on Pine Hill Road.
199		11/30/2020	High Wind	52	0	0	\$ 1,000.00	Winds were generally gusting to around 60 mph. At 251 PM EST, the ASOS at T.F. Green Airport (KPVD) in Warwick recorded a gust to 58 mph and at 324 PM EST, an amateur radio operator reported a gust to 61 mph in North Smithfield. In Pawtucket at 326 PM EST, a tree was down on Seneca Avenue and at 727 PM EST another tree was down on Pleasant Street near Jenks Way.
200		11/30/2020	High Wind	53	0	0	\$ 2,500.00	In North Smithfield at 324 PM EST, amateur radio reported a wind gust to 61 mph. In Smithfield at 325 PM EST, a tree was down on Log Road. In Cumberland at 415 PM EST, a NWS employee reported a tree down on Pennsylvania Avenue. Also in Cumberland at 527 PM EST, an amateur radio operator reported a large tree down on wires on Reservoir Road at Kern Blvd, which is on the east side of the Diamond Hill Reservoir. In Burrillville at 654 PM EST, a tree was down on Wallum Lake Road.
201		12/5/2020	Strong Wind	37	0	0	\$ 2,000.00	Winds were generally gusting 40-45 mph. In Cumberland at 3:24 PM EST a large tree branch fell into a house on Farm Dr.

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
202		12/25/2020	Strong Wind	43	0	0	\$ 1,000.00	In Pawtucket at 815 AM EST, a large tree was down on Pawtucket Avenue.
203		12/25/2020	Strong Wind	43	0	0	\$ 1,600.00	In Cumberland at 750 AM EST, a tree and power lines were down on Tower Hill Road. In Lincoln at 857 AM EST, a tree and wires were down on Twin River Road.
204		3/1/2021	High Wind	48	0	0	\$ 5,000.00	Winds generally were gusting to 50 to 60 mph. At the North Central State Airport in Smithfield, the ASOS (KSFZ) recorded a gust to 55 mph at 1256 AM EST on March 2nd. In Scituate at 647 PM EST on March 1st, a tree and wires were down on Route 101. In Foster at 1029 PM EST on March 1st, a tree was down on Danielson Pike. In Cumberland at 713 AM EST on March 2nd, a tree was down onto a house on Cedar Way.
205		3/2/2021	Strong Wind	49	0	0	\$ 10,000.00	Winds generally were gusting to 50 to 55 mph. At 3 AM EST on March 2nd, a mesonet site at Fox Point in Providence recorded a gust to 56 mph. At nearby T. F. Green Airport in Warwick, the ASOS (KPVF) recorded a gust to 49 mph at 451 AM EST on March 2nd. In Providence at 1212 AM EST on March 2nd, a tree was down on a vehicle on the I-95 ramp at Exit 23. In East Providence at 714 AM EST, a tree and wires were down on a house on Ridgewood Drive.
206		3/29/2021	Strong Wind	43	0	0	\$ 1,000.00	Winds generally were gusting up to 50 mph. In Cumberland at 755 AM EST, a tree was down on Elm Street. In Smithfield at 1150 AM EST, a tree was down on Burlingame Road.
207		4/30/2021	Strong Wind	43	0	0	\$ 1,000.00	Winds were generally gusting to 40 to 50 mph. In Lincoln at 430 PM EDT there were two large pine trees down on the corner of Harris Ave and Old Louisquisset Pike.
208		4/30/2021	Strong Wind	43	0	0	\$ 1,000.00	Winds were generally gusting to 40 to 50 mph. In East Providence at 538 PM EDT a tree was blocking Armistice Rd. In Pawtucket at 610 PM EDT a tree was down blocking a road and sidewalk.

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
209	GLENDALE	7/27/2021	Thunde rstorm Wind	50	0	0	\$ 5,000.00	In the Oakland section of Burrillville, a tree was down on a car near 1720 Victory Highway. Public report was relayed by amateur radio.
210	DIAMOND HILL	7/27/2021	Thunde rstorm Wind	50	0	0	\$ 500.00	In Cumberland, a tree was down at the intersectionn of Diamond Hill Road (Route 114) and Nate Whipple Highway (Route 120).
211	ABBOTT RUN	7/27/2021	Thunde rstorm Wind	50	0	0	\$ 15,000.00	In Cumberland, the top third of a large pine tree was snapped off on the 30 block of Rhode Island Avenue. The tree top caused damage to a work van, boat, and fence. Smaller limbs landed on a power line and caught fire.
212		10/27/2021	High Wind	48	0	0	\$ 15,000.00	Winds were generally gusting to 50 to 55 mph in northwest Providence County. In Glocester at 804 AM EDT (704 AM EST) on the 27th, a large tree was down on Rt. 133.
213		10/27/2021	Strong Wind	48	0	0	\$ 3,000.00	Winds were generally gusting to 50 to 55 mph in northwest Providence County. In Glocester at 804 AM EDT (704 AM EST) on the 27th, a large tree was down on Rt. 133.
214		11/12/2021	Strong Wind	48	0	0	\$ 500.00	In East Providence, a tree was down on Route 114 at New Road.
215		11/12/2021	Strong Wind	48	0	0	\$ 800.00	In Cumberland, a tree was down on power lines on Quick Road.
216	SOUTH PROVIDENCE	11/13/2021	Thunde rstorm Wind	50	0	0	\$ 300.00	Providence Police Dept. reported a large tree branch down on Transit Street.
217	GLOCESTER	11/13/2021	Thunde rstorm Wind	61	0	0	\$ 10,000.00	In Scituate, a telephone pole was snapped in half and a tree and wires were down on Rocky Hill Road. Also, amateur radio operators reported a tree down on a car on Old Harmony Road.
218	RUMFORD	11/13/2021	Thunde rstorm Wind	50	0	0	\$ 500.00	In East Providence, the Police Department reported a tree down on Roger Williams Avenue in the Rumford section of the city.
219		12/6/2021	Strong Wind	43	0	0	\$ 800.00	Winds generally were gusting to 45 to 50 mph. At the Fox Point Hurricane Barrier in Providence, a gust to 50

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
								mph was reported at 1030 PM EST. The ASOS at T.F. Green Airport (KPVF) in Warwick recorded a gust to 46 mph at 815 PM EST. In North Providence at 739 PM EST, a tree was down on power lines on Waterman Avenue.
220		12/11/2021	Strong Wind	39	0	0	\$ 1,800.00	In Glocester at 430 PM EST, a large tree was down on wires... street not specified. In Foster at 920 PM EST, a tree was down on Cucumber Hill Road.
221		1/17/2022	Strong Wind	39	0	0	\$ 500.00	In Cranston at 704 AM a tree was down on Cranston St.
222		1/17/2022	Strong Wind	39	0	0	\$ 1,000.00	In Woonsocket a tree and wires were down on New Boston Rd.
223		2/18/2022	Strong Wind	39	0	0	\$ 1,500.00	In Cranston at 7:30 AM EST a large tree was blocking Crocus Dr, there was a tree down on Fletcher Ave at Britton St, and there were power lines down on Julia St at Legion Way.
224	LIMEROCK	7/2/2022	Thunderrstorm Wind	50	0	0	\$ 500.00	In Lincoln, a tree was down between Twin River Road and Breakneck Hill Road.
225	CLAYVILLE	7/12/2022	Thunderrstorm Wind	50	0	0	\$ 500.00	In Foster, police reported a tree down at the intersection of Route 94 (Foster Center Road) and Route 102. Report relayed via amateur radio operators.
226	GLOCESTER	7/12/2022	Thunderrstorm Wind	50	0	0	\$ 1,500.00	In Glocester, a tree was down on Hunting House Road and a tree was down on Cranberry Ridge Road. A little farther east, two large limbs were down on Snake Hill Road at Paris Irons Road. Reports relayed via amateur radio operators.
227	GREENVILLE	7/12/2022	Thunderrstorm Wind	55	0	0	\$ 3,500.00	In the Greenville portion of Smithfield, multiple trees were down...on Maplecrest Drive, along Route 44, and on Arthur Street. Reports relayed by amateur radio operators.
228		11/30/2022	Strong Wind	43	0	0	\$ 500.00	In the Chepachet section of Glocester, a tree was down in the 1600 block of Snake Hill Road. Report relayed by amateur radio.

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
229		11/30/2022	Strong Wind	43	0	0	\$ 1,000.00	In Scituate, a large tree was down at the intersection of Plainfield Pike and Wilbur Hollow Road. Report relayed by amateur radio.
230		12/23/2022	Strong Wind	43	0	0	\$ 800.00	In Burrillville, a pine tree was snapped in half and took down wires on North Hill Road. Winds generally were gusting to 45 to 50 mph. At 1130 AM, a CWOP station in Cumberland recorded a gust to 45 mph.
231		12/23/2022	High Wind	50	0	0	\$ 1,000.00	In Providence at 1249 PM, a large tree was down on Wolcott Street near Regent Avenue. Winds generally were gusting to 55 to 60 mph. A gust to 64 mph was recorded a little farther south at T.F. Green Airport in Warwick, RI (KPDV) at 310 PM.
232		2/3/2023	Strong Wind	43	0	0	\$ 2,800.00	Winds generally were gusting to 45 to 55 mph. In Foster at 530 PM EST, a tree was down on wires, causing a utility pole to break on Pine Tree Lane and Winsor Road.
233		2/3/2023	Strong Wind	46	0	0	\$ 1,000.00	Winds generally were gusting to 50 to 55 mph. In Cranston at 550 PM EST, a large tree was down on Phenix Avenue and Phenix Ridge Drive.
234	SIMMONS CORNER	6/27/2023	Thunderrstorm Wind	50	0	0	\$ 500.00	In Foster, a tree was down on the 100 block of Danielson Pike.
235	HARMONY	6/27/2023	Thunderrstorm Wind	50	0	0	\$ 500.00	In Glocester, a tree was down on the 300 block of Cooper Road.
236	WALLUM LAKE	6/27/2023	Thunderrstorm Wind	50	0	0	\$ 1,000.00	In Burrillville, a large tree was down on Buck Hill Road near the fire tower. Report relayed by amateur radio.
237	SIMMONS CORNER	7/4/2023	Thunderrstorm Wind	50	0	0	\$ 2,000.00	In Foster, multiple trees were down on Paris Olney Hopkins Rd.
238	HUGHESDALE	7/4/2023	Thunderrstorm Wind	50	0	2	\$ 1,000.00	In Johnston, there was a tree down near Park Plaza Apartments with 2 injuries.

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
239	CHEPACHET	7/27/2023	Thunde rstorm Wind	50	0	0	\$ 1,000.00	In Glocester, there were 3 inch diameter tree limbs broken and power poles broken.
240	FOSTER CENTER	7/29/2023	Thunde rstorm Wind	50	0	0	\$ 800.00	In Foster, a tree and wires were down on North Rd.
241	SAUNDERSVI LLE	8/18/2023	Thunde rstorm Wind	50	0	0	\$ 5,000.00	In Scituate, there were numerous trees down on Byron Randall Rd. Additionally, a tree was down on a home.
242	SOUTH PROVIDENCE	8/18/2023	Thunde rstorm Wind	50	0	0	\$ 3,000.00	In Providence, multiple trees and wires were down.
243	WATERMAN FOUR CORNER	8/18/2023	Thunde rstorm Wind	50	0	0	\$ 5,000.00	In Scituate, there was a tree down on a house.
244	HUGHESDAL E	8/18/2023	Thunde rstorm Wind	50	0	0	\$ 1,000.00	In Johnston, a tree and wires were down.
245	PRIMROSE	8/18/2023	Thunde rstorm Wind	50	0	0	\$ 300.00	In North Smithfield, a tree was down on the road.
246	NORTH PROVIDENCE	8/18/2023	Thunde rstorm Wind	50	0	0	\$ 1,000.00	In North Providence, a tree and wires were down.
247	NORTH PROVIDENCE	8/18/2023	Thunde rstorm Wind	50	0	0	\$ 5,000.00	In North Providence, trees were down on cars.
248	GLOCESTER	9/13/2023	Thunde rstorm Wind	50	0	0	\$ 800.00	In Glocester, a tree and wires were down on Bungy Rd.
249		12/18/202 3	High Wind	56	0	0	\$ 5,000.00	Winds generally gusted 50 to 65 mph. The highest gust was 65 mph at Fox Point in Providence. In East Providence at 9:20 AM EST a brick facade was ripped off of the Healthtrax building on Catamore Blvd.

Count	Location	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
250		1/10/2024	High Wind	52	0	0	\$ -	A NOS-nwlon sensor gusted to 60 mph at Fox Point in Providence at 1:48 AM EST.
251		4/3/2024	High Wind	52	0	0	\$ -	In Woonsocket a CWOP station reported a gust to 60 mph at 12:45 AM EDT.
Totals					0	9	\$ 2,723,800.00	

Hail Event History for Providence County, RI (NCEI Storm Events Database)

Count	Location	Date	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
1	Johnston	5/23/1994	1	0	0	\$ -	
2	North Smithfield	5/25/1994	1	0	0	\$ -	A thunderstorm moving to the east across the state brought a couple reports of large hail, while marble-size hail fell at some other locations along with gusty winds.
3	Pawtucket	5/25/1994	1.75	0	0	\$ -	A thunderstorm moving to the east across the state brought a couple reports of large hail, while marble-size hail fell at some other locations along with gusty winds.
4	Cranston	6/20/1995	1.75	0	0	\$ -	
5	CRANSTON	6/22/1997	0.75	0	0	\$ -	South Cranston
6	EAST PROVIDENCE	6/22/1997	1.5	0	0	\$ -	A line of thunderstorms, some severe, moved southeastward across Rhode Island with large hail, frequent cloud to ground lightning, and wind gusts measured up to 80 mph. A microburst moved through part of East Providence (the Riverside section and Bullocks Neck) and West Barrington (the Bullocks Cove area). A boat was lifted off its cradle on land and landed on top of a car and a crane was turned about 30 degrees in the Bullocks Cove area. Two boats were swamped in the Cove and there was considerable tree damage. A lightning bolt started a fire which destroyed an upstairs apartment in West Barrington. As a result of a National Weather Service survey of the area, winds in the microburst were estimated to have been in the range of 80 to 90 mph. Large hail up to 1.50 inches in diameter accompanied the microburst. Elsewhere, quarter size hail was reported by a spotter in Coventry and strong winds overturned a boat in Narragansett Bay. Two people swam to shore but there were no injuries. Dime size hail fell in Bristol. Golfball size hail was reported by one spotter in Tiverton, while dime size hail was observed by two other spotters, one of whom recorded a wind gust to 70 mph. A spotter 5 miles south of

Count	Location	Date	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
							the Greene State Airport in Warwick reported a peak wind gust to 75 mph. There were numerous lightning strikes, some resulting in small fires which caused minor damage in many towns in central and southeast Rhode Island. In Cranston, the Deputy Fire Chief rushed from fire to fire like never before." Three small fires were reported in Providence but all were extinguished within minutes. In Warwick
7	BURRILLVILLE	8/6/1997	0.75	0	0	\$ -	A funnel cloud was observed to the northeast when viewed by eyewitnesses in Little Compton in Newport County. There were isolated reports of severe weather in Providence County during the late afternoon. Dime size hail was reported in Burrillville and Woonsocket and ping-pong ball size hail fell in North Smithfield.
8	NORTH SMITHFIELD	8/6/1997	1.5	0	0	\$ -	A funnel cloud was observed to the northeast when viewed by eyewitnesses in Little Compton in Newport County. There were isolated reports of severe weather in Providence County during the late afternoon. Dime size hail was reported in Burrillville and Woonsocket and ping-pong ball size hail fell in North Smithfield.
9	WOONSOCKET	8/6/1997	0.75	0	0	\$ -	A funnel cloud was observed to the northeast when viewed by eyewitnesses in Little Compton in Newport County. There were isolated reports of severe weather in Providence County during the late afternoon. Dime size hail was reported in Burrillville and Woonsocket and ping-pong ball size hail fell in North Smithfield.
10	CRANSTON	5/31/1998	0.75	0	0	\$ -	A severe thunderstorm moved across northern Rhode Island shortly after 11 PM. Dime size hail was reported in Cranston. Trees were reported down in Cumberland. Large limbs and wires were downed in Lincoln.
11	SCITUATE	5/10/2000	0.88	0	0	\$ -	A severe thunderstorm produced nickel size hail in Scituate.
12	HOPE	7/18/2000	0.75	0	0	\$ -	Severe thunderstorms moved across Rhode Island ahead of a cold front. Hail the size of golf balls fell in West Warwick, and thunderstorm winds downed one large tree and several large branches. Traffic was momentarily snarled on

Count	Location	Date	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
							Interstate 95 as the storm passed. Dime size hail fell in Hope.
13	CUMBERLAND	8/10/2000	1.75	0	0	\$ -	A long-lived supercell, which formed over eastern New York during the late evening of the 9th, strengthened as it moved across northern Connecticut, where it caused wind damage and dropped large hail. The storm entered northern Rhode Island during the early morning of the 10th, and produced several brief microbursts in northern Providence County. The damage was rather isolated, but where it occurred was significant. A few large oak trees were snapped off near their tops in a subdivision behind Bryant College in Smithfield. One large pine tree was snapped at the college, and grass was flattened to the ground. All of the trees fell in a west-northwest to east-southeast direction. In Glocester, a very large and centuries-old chestnut tree was snapped off, blocking a portion of Route 102. In addition to the wind damage, the storm dropped golf ball size hail in Cumberland. The supercell then moved across southeast Massachusetts, causing additional wind damage and producing large hail. Wind speeds were estimated between 70 and 85 mph.
14	WOONSOCKET	6/30/2001	1	0	0	\$ -	Severe thunderstorms dropped dime to quarter sized hail in Woonsocket, and downed trees and large branches in Woonsocket, Burrillville and Glocester.
15	CRANSTON	7/23/2002	0.75	0	0	\$ -	Severe thunderstorms downed trees in Coventry, Providence, and Scituate and produced dime sized hail in Cranston.
16	PROVIDENCE	7/2/2004	0.75	0	0	\$ -	Severe thunderstorms dropped quarter sized hail in Coventry, Johnston, Providence, and North Kingstown. Dime sized hail was reported in Warwick and Barrington.
17	JOHNSTON	7/2/2004	1	0	0	\$ -	Severe thunderstorms dropped quarter sized hail in Coventry, Johnston, Providence, and North Kingstown. Dime sized hail was reported in Warwick and Barrington.
18	NORTH SCITUATE	4/15/2006	0.75	0	0	\$ -	An isolated severe thunderstorm produced penny sized hail in North Scituate. No injuries or damage was reported.

Count	Location	Date	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
19	SMITHFIELD	5/21/2006	0.88	0	0	\$ -	Severe thunderstorms produced penny to nickel sized hail in Smithfield and Glocester. The storms also downed trees and wires in Scituate.
20	SMITHFIELD	5/21/2006	0.88	0	0	\$ -	Severe thunderstorms moved across northern Rhode Island from northeast Connecticut, ahead of a cold front heading east from the Great Lakes. The storms produced penny sized hail in Smithfield and nickel sized hail in Glocester, but also brought down trees and wires in Scituate.
21	CUMBERLAND	6/20/2006	0.75	0	0	\$ -	A severe thunderstorms brought down large branches in Woonsocket. Later in the afternoon, another severe thunderstorm brought down wires in Providence, and blew down scaffolding at the state capitol building. Penny sized hail was reported with another storm in Cumberland. In Smithfield, lightning struck a house and ignited a fire in the attic.
22	JOHNSTON	7/18/2006	1.75	0	0	\$ -	Severe thunderstorms moved through Rhode Island at night, in advance of a cold front pushing through southern New England. Thunderstorm winds brought down trees and large limbs in Scituate, Johnston, Cranston, Warwick, Barrington, Middletown, North Kingstown, and Portsmouth. Damage was more widespread in greater Providence, where nearly

Count	Location	Date	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
							two dozen large trees were downed around Roger Williams Park and about one hundred others were either split or splintered by strong winds. In Cranston, a large maple tree fell onto a car and another large tree destroyed a garage. An amateur radio operator in Johnston also reported golf ball sized hail as the storms moved through. Lightning from the storms caused considerable damage in the city of Providence. Lightning struck the State House, causing some marble tiles to fall from the roof. A major fire was ignited on a tanker at the port of Providence on Narragansett Bay, when it was struck by lightning. No one was injured in either case. An estimated 37,000 customers lost power during the storms.
23	SCITUATE	6/1/2007	1	0	0	\$ -	Quarter size hail reported in Scituate. Trees and wires were also downed.
24	WOONSOCKET	6/28/2007	1	0	0	\$ -	A large and powerful thunderstorm produced nickel to quarter size hail across a large area of Northern Rhode Island, including the cities of Woonsocket, Lincoln, and Smithfield.
25	OLNEYVILLE	6/17/2008	0.88	0	0	\$ -	Penny to nickel size hail fell in a swath from the Federal Hill area of Providence to Allens Avenue near the power plant to East Providence.
26	KENT	6/24/2008	1	0	0	\$ -	Quarter sized hail fell on the Riverside/Barrington line.
27	PAWTUCKET	6/24/2008	1	0	0	\$ -	A slow moving cold front provided a focus for severe thunderstorms. These thunderstorms produced very heavy

Count	Location	Date	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
							rain that resulted in flash flooding, hail, and damaging winds.
28	PAWTUCKET	6/24/2008	1.75	0	0	\$ 20,000.00	Quarter to golfball sized hail damaged several windshields, dented cars and smashed windows in the area surrounding the Pawtucket YMCA. In addition, the amount of hail piled up on the roof of a bank, caused a portion of the roof to collapse. Hail had to be shoveled off the remaining portion of the roof.
29	SCITUATE	7/2/2008	1	0	0	\$ -	Nickel to quarter size hail fell along the Danielson Pike.
30	JOHNSTON	7/2/2008	0.75	0	0	\$ -	Penny size hail fell in a swath from Johnston to Providence.
31	PAWTUCKET	7/2/2008	0.75	0	0	\$ -	An upper level trough approaching Southern New England set off showers and thunderstorms across much of the area. With cold temperatures aloft, hail was the main threat experienced. However, thunderstorm winds and heavy rainfall also produced some damage and complications, with portions of a few roads closed due to fallen trees or flooding.
32	SPRAGUEVILLE	7/2/2008	0.88	0	0	\$ -	Penny to nickel sized hail fell in a swath from Lincoln to Smithfield.
33	CUMBERLAND HILL	7/2/2008	0.88	0	0	\$ -	Penny to nickel size hail fell in Cumberland.
34	OAK LAWN	7/23/2008	1.75	0	0	\$ -	Ping pong to golfball size hail fell in Cranston.
35	NORTH PROVIDENCE	4/22/2010	0.75	0	0	\$ -	Penny sized hail was reported in North Providence.
36	WOODLAWN	4/22/2010	1	0	0	\$ -	Quarter sized hail fell in Providence near Route 10. Penny sized hail fell in Cranston.
37	PASCOAG	5/26/2010	1	0	0	\$ -	A backdoor cold front combined with a sea breeze front, warm temperatures, and plenty of instability to produce showers and thunderstorms across much of southern New England.
38	LIMEROCK	5/7/2011	0.88	0	0	\$ -	Low pressure moving across the region produced showers and thunderstorms. With a cold pool aloft (colder than normal temperatures at 500mb), these thunderstorms produced penny to nickel size hail.

Count	Location	Date	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
39	KENT	6/9/2011	1	0	0	\$ -	A Mesoscale Convective System moved out of the Great Lakes and across New York state providing a focus for convection across southern New England. One overnight thunderstorm produced a severe microburst in Providence, RI that downed numerous trees throughout town.
40	CHEPACHET	7/1/2012	1	0	0	\$ -	A weak cold front produced showers and thunderstorms, a few of which became severe producing both large hail and gusty winds.
41	SCITUATE	7/1/2012	1	0	0	\$ -	Quarter size hail fell on Hartford Avenue.
42	JOHNSTON	7/1/2012	0.75	0	0	\$ -	A weak cold front produced showers and thunderstorms, a few of which became severe producing both large hail and gusty winds.
43	PASCOAG	7/1/2012	0.75	0	0	\$ -	A weak cold front produced showers and thunderstorms, a few of which became severe producing both large hail and gusty winds.
44	PASCOAG	7/18/2012	1.75	0	0	\$ -	A cold front moved across southern New England into a warm moist airmass with plenty of instability. This resulted in severe thunderstorms and in some cases training of storms that resulted in flash flooding across some of the more urban areas. A microburst occurred in Arlington, knocking down numerous trees and damaging a roof.
45	SPRAGUEVILLE	7/18/2012	1.75	0	0	\$ -	Nickel to golfball size hail fell in Smithfield and North Smithfield.
46	CUMBERLAND HILL	7/18/2012	2	0	0	\$ -	A cold front moved across southern New England into a warm moist airmass with plenty of instability. This resulted in severe thunderstorms and in some cases training of storms that resulted in flash flooding across some of the more urban areas. A microburst occurred in Arlington, knocking down numerous trees and damaging a roof.
47	MOHEGAN	7/18/2012	1	0	0	\$ -	A cold front moved across southern New England into a warm moist airmass with plenty of instability. This resulted in severe thunderstorms and in some cases training of storms that resulted in flash flooding across some of the more urban areas. A microburst occurred in Arlington, knocking down numerous trees and damaging a roof.

Count	Location	Date	Magnitude	Deaths	Injuries	Property Damage	Event Narrative
48	CHEPACHET	7/24/2012	0.75	0	0	\$ -	A cold front moving through a very warm, moist airmass over Rhode Island and eastern Massachusetts resulted in showers and thunderstorms. Many of these storms became severe, producing damaging winds and large hail.
49	FOSTER	7/24/2015	0.75	0	0	\$ -	Penny size hail fell on East Killingly Road in Foster.
50	HOPE	7/23/2016	0.88	0	0	\$ -	A cold pool aloft coupled with a large area of instability and a mid level disturbance moving through the area resulted in showers and thunderstorms across much of southern New England. The stronger of these storms produced hail and wind damage.
51	LIMEROCK	9/30/2017	0.75	0	0	\$ -	At 1042 AM EST, an amateur radio operator reported dime-size hail at Lincoln.
52	SCITUATE	6/29/2019	1.75	0	0	\$ -	At 2:51 PM EST, an amateur radio operator reported one-inch diameter hail in Scituate. At 3 PM EST, 1.75 inch diameter hail fell on Lincoln. At 3:04 PM EST, 1.75 inch diameter hail fell on Cumberland.
53	PASCOAG	6/30/2019	0.75	0	0	\$ -	At 1:42 PM EST, an amateur radio operator reported three-quarter inch diameter hail in Burrillville RI.
54	CRANSTON	6/30/2019	0.75	0	0	\$ -	At 2:25 PM EST, amateur radio operators reported one episode of one-inch diameter hail and one episode of three-quarter inch diameter hail in Cranston RI.
55	HAMLET	3/29/2020	1	0	0	\$ -	Quarter size hail was reported in Woonsocket at 820 PM EST.
56	CUMBERLAND HILL	7/17/2021	0.75	0	0	\$ -	In Cumberland, dime size hail was reported.
57	CUMBERLAND HILL	9/28/2021	0.75	0	0	\$ -	In Cumberland, a thunderstorm produced dime size hail.
58	FOSTER	6/2/2023	0.75	0	0	\$ -	In Foster, there were several reports of dime size hail.
Totals				0	0	\$ 20,000.00	

Flood Event History for Providence County, RI (NCEI Storm Events Database)

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
1		1/12/1996	Flash Flood	0	0	\$ -	Snow quickly changed to heavy rain and resulted in massive highway flooding. Giant puddles flowed across expressways and urban streets. Rainfall, thawing temperatures, and snow melt clogged catch basins. In Scituate, officials closed Route 116 when 4 feet of water filled the road. In Providence, cars stalled out in several streets filled with 2 to 3 feet of water.
2		1/12/1996	Flash Flood	0	0	\$ -	
3		1/28/1996	Flood	0	0	\$ -	Ahead of an approaching sharp cold front, south winds gusting to 50 to 60 mph, heavy rainfall of 1 to 2 inches, and very mild temperatures rising into the 50s occurred. A peak wind gust to 63 mph was reported at Tiverton. Two large trees and two power poles were reported blown down in Foster. Scattered power outages were reported throughout the state as some trees and tree limbs were blown down by the high winds. Minor river flooding occurred within about 24 hours of the storm. The Blackstone River in Woonsocket reached a crest of 9.5 feet at 4 PM on the 28th; flood stage is 9.0 feet.
4		4/17/1996	Flood	0	0	\$ -	A strong storm system moving through southern New England brought two to three and one-half inches of rainfall on April 16th to central and northern Rhode Island. In addition, strong winds accompanied this system along the south coast in Newport County. Tiverton reported a gust to 60 mph and Barrington had a gust to 58 mph from the east-southeast. The heavy rain fell on ground that had been saturated by heavy snowmelt from a record April snowfall the previous week. This resulted in minor flooding along the Patuxent River in Providence and Kent Counties between 3 PM and 5 PM on April 17th, or about 24 hours after the rain ended. The Blackstone River crested at Woonsocket at 9.1 feet at 2:30 PM on the 17th; flood stage is 9 feet.
5	CRANSTON	7/13/1996	Flash Flood	0	0	\$ -	

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
6		10/21/1996	Flood	0	0	\$ -	An extensive, slow moving surface low pressure system became positioned along the mid-Atlantic coast during the evening of October 19th and meandered there for 48 hours before finally heading northeast across southeast New England. This storm brought heavy rain to most of the state. Wind gusts to hurricane force were reported along the south coast, where a gust to 81 mph was recorded at Little Compton. Strong east wind gusting to gale force began by noon on October 19th well ahead of the rain and continued into the early morning hours of the 20th. The Blackstone River at Woonsocket reached flood stage of 9 feet at 7 AM on October 21st, crested at 9.3 feet at midnight at the end of the day on the 21st, and then fell below flood stage at 2 PM on October 22nd.
7	CRANSTON	1/24/1998	Flash Flood	0	0	\$ -	In Cranston, the Pocasset River overflowed its banks, flooding a local road with 2 feet of water between 7:00 AM and 9:00 AM on January 24th. Later, between 1:00 PM and 3:00 PM, flooding was reported along the Woonasquatucket River in North Providence. There were no reports of property damage. The flooding was in response to heavy rainfall which occurred throughout Providence County. Total 24-hour reports included 3.50 inches of rain at Clayville and 3.61 inches in downtown Providence. As much as 3 inches fell during a 12-hour period.
8		3/10/1998	Flood	0	0	\$ -	A powerful storm system moving slowly toward the northeast from the Ohio Valley to the eastern Great Lakes brought strong winds and heavy rainfall to Rhode Island, resulting in urban street flooding, basement flooding, and river flooding. The Blackstone River at Woonsocket crested at 10.3 feet on March 10th at 6:00 PM; flood stage is 9.0 feet. Urban flood control systems prevented any flooding in the city. Several parking lots were reported flooded with up to 3 feet of water along the Blackstone River in Cumberland.

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							At times the rainfall was torrential, especially in thunderstorms during the evening on March 9th. In West Warwick, a bolt of lightning struck a garage and the resulting fire spread to the nearby house. Damage was reported at \$50,000. Two other lightning strikes did minor damage in Providence and Cumberland. Rainfall totals of 2 to 4 inches were reported across the state, most of it falling in about 30 hours. A record daily rainfall total of 3.02 was set on March 9th at Providence. Some of the maximum totals across the state included: Coventry
9	GLOCESTER	6/13/1998	Flash Flood	0	0	\$ -	Ponaganset Pond
10	SOUTH FOSTER	6/13/1998	Flash Flood	0	0	\$ -	Ponaganset River
11	WOONSOCKET	6/13/1998	Flash Flood	0	0	\$ -	Case Pond
12	SOUTH FOSTER	6/14/1998	Flash Flood	0	0	\$ -	Ponaganset River
13	NORTH PROVIDENCE	6/14/1998	Flash Flood	0	0	\$ -	Woonasquatucket River
14	CRANSTON	6/14/1998	Flash Flood	0	0	\$ -	Pawtuxet River
15		6/14/1998	Flood	0	0	\$ -	On June 12th through June 14th, a very slow moving complex storm system moved through southeast New England. The combination of its slow movement and the presence of tropical moisture across the region produced rainfall of 6 to 8 inches over much of Rhode Island. The heaviest rainfall amounts of 7 to 8 inches occurred in the northeast corner of the state in Providence County.

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							Numerous small streams flooded over their banks. The following is a list of those reported to have flooded: On June 13th, in Glocester, in Providence County, the Ponaganset Pond flooded over at 3:25 PM; the Ponaganset River in South Foster reached flood stage of 5 feet at 7:45 PM, crested at 5.3 feet at 10 PM, then fell below flood stage at 4 AM on June 14th. Then, it flooded again at 8 AM on the 14th, crested at 5.3 feet at 1 PM, then fell below flood stage at 7 PM -- all on June 14th. Case Pond in Woonsocket flooded from 12:45 AM on the 14th till 5 PM the same day. The Woonasquatucket River in North Providence was in flood from 9:30 AM on the 14th until 8 AM on the 15th. The Pawtuxet River was above flood stage at Warwick in Kent County from 8:39 AM on June 14th until 8 AM on the 16th. Only minor flooding occurred along one major river -- the Blackstone. The Blackstone River reached flood stage of 9 feet at Woonsocket at 9 PM on the 14th, crested at 9.17 feet at 6 AM on the 15th, then fell below flood stage at 11 AM later that same morning.
16	PROVIDENCE	6/30/1998	Flash Flood	0	0	\$ -	A slow moving warm front with an abundance of tropical moisture produced several hours of torrential rain with amounts totaling 3 to 6 inches during the morning and early afternoon. Showers and thunderstorms produced the torrential rainfall across northern Rhode Island. The Louisquisset River in Providence came out of its banks at 2:30 PM. During the evening, more thunderstorm activity produced flooding in Smithfield and North Providence when the Woonasquatucket River overflowed its banks flooding low-lying sections. A severe thunderstorm (supercell) brought large hail during the evening. Baseball size hail was reported in Richmond, while dime size hail fell in Exeter and North Kingstown. The same storm also produced nickel size hail in Barrington. Two telephone poles were reported
17	NORTH PROVIDENCE	6/30/1998	Flash Flood	0	0	\$ -	

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							down in Ashaway, although there were no other reports of strong winds.
18	SOUTH FOSTER	7/1/1998	Flash Flood	0	0	\$ -	Ponaganset River
19	NORTH PROVIDENCE	7/1/1998	Flash Flood	0	0	\$ -	Woonasquatucket River
20	CRANSTON	7/1/1998	Flash Flood	0	0	\$ -	Pawtuxet River
21	JOHNSTON	8/26/1999	Flash Flood	0	0	\$ -	Pocaset River
22	SMITHFIELD	9/10/1999	Flash Flood	0	0	\$ -	Woonasquatucket River
23	CRANSTON	9/16/1999	Flash Flood	0	0	\$ -	Pawtuxet River
24	CRANSTON	4/22/2000	Flash Flood	0	0	\$ -	Pawtuxet River
25	CRANSTON	3/22/2001	Flash Flood	0	0	\$ -	Pawtuxet River at Cranston
26		3/22/2001	Flood	0	0	\$ 3,000,000.00	Blackstone River at Woonsocket
27	CRANSTON	3/30/2001	Flash Flood	0	0	\$ -	Pawtuxet River at Cranston
28		3/31/2001	Flood	0	0	\$ -	Blackstone River at Woonsocket
29	CRANSTON	4/1/2001	Flash Flood	0	0	\$ -	Pawtuxet River
30	GLOCESTER	5/29/2001	Flash Flood	0	0	\$ 5,000.00	A cluster of thunderstorms dumped torrential rainfall and small hail in a narrow corridor of Glocester, causing a washout at the intersection of Route 102 and Snake Hill Road. Rainfall rates exceeded 2 inches per hour in a 10-mile wide corridor in the hilly terrain of western and central Providence County. In Johnston, lightning struck a tree, then traveled to a nearby house causing a pair of windows to blow out. A 4-foot long piece of the tree pierced the screen of a basement door. There were no injuries.

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
31	FOSTER	6/17/2001	Flash Flood	0	0	\$ -	Torrential rainfall associated with the remnants of Tropical Storm Allison resulted in flash flooding throughout Providence County. In Foster, two roads were washed out when runoff carved gulches into the roadways. In Woonsocket, the foundations of two buildings were washed out. Several roads in Providence and Coventry were either flooded or washed out as well. Storm totals of 3 to 6 inches were common throughout northern Rhode Island, with as much as 7.10 inches in North Smithfield. Lightning struck a log house in Foster which ignited a fire, and completely destroyed the home.
32		4/14/2004	Flood	0	0	\$ -	Pawtuxet River at Cranston
33		4/14/2004	Flood	0	0	\$ -	Blackstone River at Woonsocket
34		3/28/2005	Flood	0	0	\$ 50,000.00	Pawtuxet River at Cranston
35		3/29/2005	Flood	0	0	\$ -	
36	WOONSOCKET	8/14/2005	Flash Flood	0	0	\$ 10,000.00	Showers and thunderstorms developed across northern Rhode Island in a hot and humid airmass ahead of a weak cold front during the evening hours of 14 August 2005. One thunderstorm became severe, producing damaging winds that knocked down numerous trees and wires in Burrillville, Foster, North Smithfield, Glocester, and Woonsocket. In addition, flash flooding in Woonsocket submerged a car. The occupants of the car had to be rescued from their car. No known injuries directly resulted from these storms.
37	CRANSTON	9/15/2005	Flash Flood	0	0	\$ 15,000.00	An approaching cold front interacted with a very humid airmass, which was in place across Southern New England, producing locally heavy downpours that caused flash flooding across Rhode Island during the late morning and early afternoon hours of 15 September 2005. A widespread two to five inches of rain fell from this flood event; and most of the rain fell within a three hour period. Most of the flooding occurred across Providence and Kent counties.

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							More specifically, three feet of water was reported on Pontiac Avenue in Cranston, which stranded cars on this flooded roadway. Also, three feet of water was reported on Killingly Street in Providence; and cars parked in the Coventry High School parking lot had water up to their doors. No known injuries directly resulted from this flash flood event.
38		10/15/2005	Flood	0	0	\$ 60,000.00	A low pressure system interacted with a plume of tropical moisture as the low slowly moved parallel to the Long Island and south Massachusetts coasts, resulting in excessive rain and flooding across Rhode Island. Between 2.5 and 4.5 inches of rain fell from this event. Many roads were closed region wide; and approximately 500 evacuations occurred. These evacuations were concentrated mainly along the Pawtuxet, Pocasset, Woonasquatucket, and Blackstone Rivers. Along the Blackstone River, evacuations occurred in Woonsocket and Central Falls. In Providence, the fire department rescued people from their flooded cars on Charles Street and Branch Avenue near the Woonasquatucket River. In Coventry, there were several reports of water flooding Main Street, causing flooding in basements and first floors of multiple homes nearby. In addition, a large section of Route 117 in Coventry was flooded with between 2 and 3 feet of water. In Cranston, the Pawtuxet River overflowed its banks, flooding Knight Street and several nearby businesses. The Pawtuxet River also flooded portions of Warwick, causing Fletcher Road, Route 37, and Pontiac Avenue to be closed

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							by police. Evacuations and rescues were also performed in Warwick. The Woonasquatucket River at Centerdale experienced a new record flood from this event. A new record flood stage of 8.26 feet was observed at the U.S. Geological Survey (USGS) gage location. This flood stage caused flooding, and subsequent road closure, at Route 44 approaching Centerdale. No injuries directly resulted in Rhode Island from this significant rainfall event.
39		10/15/2005	Flood	0	0	\$ 50,000.00	A low pressure system interacted with a plume of tropical moisture as the low slowly moved parallel to the Long Island and south Massachusetts coasts, resulting in excessive rain and flooding across Rhode Island. Between 2.5 and 4.5 inches of rain fell from this event. Many roads were closed region wide; and approximately 500 evacuations occurred. These evacuations were concentrated mainly along the Pawtuxet, Pocasset, Woonasquatucket, and Blackstone Rivers. Along the Blackstone River, evacuations occurred in Woonsocket and Central Falls. In Providence, the fire department rescued people from their flooded cars on Charles Street and Branch Avenue near the Woonasquatucket River. In Coventry, there were several reports of water flooding Main Street, causing flooding in basements and first floors of multiple homes nearby. In addition, a large section of Route 117 in

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							Coventry was flooded with between 2 and 3 feet of water. In Cranston, the Pawtuxet River overflowed its banks, flooding Knight Street and several nearby businesses. The Pawtuxet River also flooded portions of Warwick, causing Fletcher Road, Route 37, and Pontiac Avenue to be closed by police. Evacuations and rescues were also performed in Warwick. The Woonasquatucket River at Centerdale experienced a new record flood from this event. A new record flood stage of 8.26 feet was observed at the U.S. Geological Survey (USGS) gage location. This flood stage caused flooding, and subsequent road closure, at Route 44 approaching Centerdale. No injuries directly resulted in Rhode Island from this significant rainfall event.
40		10/15/2005	Flood	0	0	\$ 200,000.00	A low pressure system interacted with a plume of tropical moisture as the low slowly moved parallel to the Long Island and south Massachusetts coasts, resulting in excessive rain and flooding across Rhode Island. Between 2.5 and 4.5 inches of rain fell from this event. Many roads were closed region wide; and approximately 500 evacuations occurred. These evacuations were concentrated mainly along the Pawtuxet, Pocasset, Woonasquatucket, and Blackstone Rivers. Along the Blackstone River, evacuations occurred in Woonsocket and Central Falls. In Providence, the fire department rescued people from

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							their flooded cars on Charles Street and Branch Avenue near the Woonasquatucket River. In Coventry, there were several reports of water flooding Main Street, causing flooding in basements and first floors of multiple homes nearby. In addition, a large section of Route 117 in Coventry was flooded with between 2 and 3 feet of water. In Cranston, the Pawtuxet River overflowed its banks, flooding Knight Street and several nearby businesses. The Pawtuxet River also flooded portions of Warwick, causing Fletcher Road, Route 37, and Pontiac Avenue to be closed by police. Evacuations and rescues were also performed in Warwick. The Woonasquatucket River at Centerdale experienced a new record flood from this event. A new record flood stage of 8.26 feet was observed at the U.S. Geological Survey (USGS) gage location. This flood stage caused flooding, and subsequent road closure, at Route 44 approaching Centerdale. No injuries directly resulted in Rhode Island from this significant rainfall event.
41		10/15/2005	Flood	0	0	\$ 40,000.00	A low pressure system interacted with a plume of tropical moisture as the low slowly moved parallel to the Long Island and south Massachusetts coasts, resulting in excessive rain and flooding across Rhode Island. Between 2.5 and 4.5 inches of rain fell from this event. Many roads were closed region wide; and approximately 500 evacuations occurred. These evacuations were concentrated mainly along the Pawtuxet, Pocasset, Woonasquatucket, and Blackstone Rivers. Along the Blackstone River, evacuations occurred in Woonsocket and

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							Central Falls. In Providence, the fire department rescued people from their flooded cars on Charles Street and Branch Avenue near the Woonasquatucket River. In Coventry, there were several reports of water flooding Main Street, causing flooding in basements and first floors of multiple homes nearby. In addition, a large section of Route 117 in Coventry was flooded with between 2 and 3 feet of water. In Cranston, the Pawtuxet River overflowed its banks, flooding Knight Street and several nearby businesses. The Pawtuxet River also flooded portions of Warwick, causing Fletcher Road, Route 37, and Pontiac Avenue to be closed by police. Evacuations and rescues were also performed in Warwick. The Woonasquatucket River at Centerdale experienced a new record flood from this event. A new record flood stage of 8.26 feet was observed at the U.S. Geological Survey (USGS) gage location. This flood stage caused flooding, and subsequent road closure, at Route 44 approaching Centerdale. No injuries directly resulted in Rhode Island from this significant rainfall event.
42		10/15/2005	Flood	0	0	\$ 100,000.00	A low pressure system interacted with a plume of tropical moisture as the low slowly moved parallel to the Long Island and south Massachusetts coasts, resulting in excessive rain and flooding across Rhode Island. Between 2.5 and 4.5 inches of rain fell from this event. Many roads

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							were closed region wide; and approximately 500 evacuations occurred. These evacuations were concentrated mainly along the Pawtuxet, Pocasset, Woonasquatucket, and Blackstone Rivers. Along the Blackstone River, evacuations occurred in Woonsocket and Central Falls. In Providence, the fire department rescued people from their flooded cars on Charles Street and Branch Avenue near the Woonasquatucket River. In Coventry, there were several reports of water flooding Main Street, causing flooding in basements and first floors of multiple homes nearby. In addition, a large section of Route 117 in Coventry was flooded with between 2 and 3 feet of water. In Cranston, the Pawtuxet River overflowed its banks, flooding Knight Street and several nearby businesses. The Pawtuxet River also flooded portions of Warwick, causing Fletcher Road, Route 37, and Pontiac Avenue to be closed by police. Evacuations and rescues were also performed in Warwick. The Woonasquatucket River at Centerdale experienced a new record flood from this event. A new record flood stage of 8.26 feet was observed at the U.S. Geological Survey (USGS) gage location. This flood stage caused flooding, and subsequent road closure, at Route 44 approaching Centerdale. No injuries directly resulted in Rhode Island from this significant rainfall event.

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
43		10/15/2005	Flood	0	0	\$ 20,000.00	A low pressure system interacted with a plume of tropical moisture as the low slowly moved parallel to the Long Island and south Massachusetts coasts, resulting in excessive rain and flooding across Rhode Island. Between 2.5 and 4.5 inches of rain fell from this event. Many roads were closed region wide; and approximately 500 evacuations occurred. These evacuations were concentrated mainly along the Pawtuxet, Pocasset, Woonasquatucket, and Blackstone Rivers. Along the Blackstone River, evacuations occurred in Woonsocket and Central Falls. In Providence, the fire department rescued people from their flooded cars on Charles Street and Branch Avenue near the Woonasquatucket River. In Coventry, there were several reports of water flooding Main Street, causing flooding in basements and first floors of multiple homes nearby. In addition, a large section of Route 117 in Coventry was flooded with between 2 and 3 feet of water. In Cranston, the Pawtuxet River overflowed its banks, flooding Knight Street and several nearby businesses. The Pawtuxet River also flooded portions of Warwick, causing Fletcher Road, Route 37, and Pontiac Avenue to be closed by police. Evacuations and rescues were also performed in Warwick. The Woonasquatucket River at Centerdale experienced a new record flood from this event. A new record flood stage of 8.26 feet was observed at the U.S. Geological Survey (USGS) gage location. This flood stage caused flooding, and subsequent road closure, at Route 44 approaching Centerdale.

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							No injuries directly resulted in Rhode Island from this significant rainfall event.
44		10/15/2005	Flood	0	0	\$ 200,000.00	A low pressure system interacted with a plume of tropical moisture as the low slowly moved parallel to the Long Island and south Massachusetts coasts, resulting in excessive rain and flooding across Rhode Island. Between 2.5 and 4.5 inches of rain fell from this event. Many roads were closed region wide; and approximately 500 evacuations occurred. These evacuations were concentrated mainly along the Pawtuxet, Pocasset, Woonasquatucket, and Blackstone Rivers. Along the Blackstone River, evacuations occurred in Woonsocket and Central Falls. In Providence, the fire department rescued people from their flooded cars on Charles Street and Branch Avenue near the Woonasquatucket River. In Coventry, there were several reports of water flooding Main Street, causing flooding in basements and first floors of multiple homes nearby. In addition, a large section of Route 117 in Coventry was flooded with between 2 and 3 feet of water. In Cranston, the Pawtuxet River overflowed its banks, flooding Knight Street and several nearby businesses. The Pawtuxet River also flooded portions of Warwick, causing Fletcher Road, Route 37, and Pontiac Avenue to be closed by police. Evacuations and rescues were also performed in Warwick. The Woonasquatucket River at Centerdale experienced a

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							new record flood from this event. A new record flood stage of 8.26 feet was observed at the U.S. Geological Survey (USGS) gage location. This flood stage caused flooding, and subsequent road closure, at Route 44 approaching Centerdale. No injuries directly resulted in Rhode Island from this significant rainfall event.
45		10/15/2005	Flood	0	0	\$ 200,000.00	A low pressure system interacted with a plume of tropical moisture as the low slowly moved parallel to the Long Island and south Massachusetts coasts, resulting in excessive rain and flooding across Rhode Island. Between 2.5 and 4.5 inches of rain fell from this event. Many roads were closed region wide; and approximately 500 evacuations occurred. These evacuations were concentrated mainly along the Pawtuxet, Pocasset, Woonasquatucket, and Blackstone Rivers. Along the Blackstone River, evacuations occurred in Woonsocket and Central Falls. In Providence, the fire department rescued people from their flooded cars on Charles Street and Branch Avenue near the Woonasquatucket River. In Coventry, there were several reports of water flooding Main Street, causing flooding in basements and first floors of multiple homes nearby. In addition, a large section of Route 117 in Coventry was flooded with between 2 and 3 feet of water. In Cranston, the Pawtuxet River overflowed its banks, flooding Knight Street and several nearby businesses. The Pawtuxet River also flooded portions of Warwick, causing Fletcher Road, Route 37, and Pontiac Avenue to be closed by police. Evacuations and rescues were also performed in

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							Warwick. The Woonasquatucket River at Centerdale experienced a new record flood from this event. A new record flood stage of 8.26 feet was observed at the U.S. Geological Survey (USGS) gage location. This flood stage caused flooding, and subsequent road closure, at Route 44 approaching Centerdale. No injuries directly resulted in Rhode Island from this significant rainfall event.
46		10/15/2005	Flood	0	0	\$ 30,000.00	A low pressure system interacted with a plume of tropical moisture as the low slowly moved parallel to the Long Island and south Massachusetts coasts, resulting in excessive rain and flooding across Rhode Island. Between 2.5 and 4.5 inches of rain fell from this event. Many roads were closed region wide; and approximately 500 evacuations occurred. These evacuations were concentrated mainly along the Pawtuxet, Pocasset, Woonasquatucket, and Blackstone Rivers. Along the Blackstone River, evacuations occurred in Woonsocket and Central Falls. In Providence, the fire department rescued people from their flooded cars on Charles Street and Branch Avenue near the Woonasquatucket River. In Coventry, there were several reports of water flooding Main Street, causing flooding in basements and first floors of multiple homes nearby. In addition, a large section of Route 117 in Coventry was flooded with between 2 and 3 feet of water.

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							In Cranston, the Pawtuxet River overflowed its banks, flooding Knight Street and several nearby businesses. The Pawtuxet River also flooded portions of Warwick, causing Fletcher Road, Route 37, and Pontiac Avenue to be closed by police. Evacuations and rescues were also performed in Warwick. The Woonasquatucket River at Centerdale experienced a new record flood from this event. A new record flood stage of 8.26 feet was observed at the U.S. Geological Survey (USGS) gage location. This flood stage caused flooding, and subsequent road closure, at Route 44 approaching Centerdale. No injuries directly resulted in Rhode Island from this significant rainfall event.
47	CRANSTON	6/7/2006	Flood	0	0	\$ -	Pawtuxet River
48	COUNTYWIDE	6/7/2006	Flood	0	0	\$ 20,000.00	A late season coastal storm brought heavy rain to Rhode Island, which resulted in widespread flooding in Providence County as well as near Narragansett Bay. Storm total rainfall averaged 2 to 4 inches. In the city of Providence, flooding closed Valley Street at Atwells Avenue. A car was submerged on Charles Street, and the driver had to be rescued from the flood waters. Flooding was also reported in Burrillville and Cumberland. Three roads were closed due to flooding in Middletown.

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							Chestnut Street and Hope Avenue in Bristol were also closed because of flooding. The Pawtuxet River at Cranston went into moderate flood, and crested at 12.57 feet at 415 pm EDT on June 8. Flood stage is 9 feet.
49	CRANSTON	10/28/2006	Flood	0	0	\$ 5,000.00	Widespread urban flooding was reported in greater Providence. The Pawtuxet River at Cranston went into minor flood, cresting at 9.5 feet which was just over its flood stage of 9 feet.
50	CRANSTON	11/24/2006	Flood	0	0	\$ -	Minor flooding occurred along the Pawtuxet River at Cranston, after nearly 4 inches of rain in an 18-hour period. The river crested just below 10 feet during the morning of the 24th. Flood stage is 9 feet. No flood damage was reported.
51	CUMBERLAND	3/2/2007	Flood	0	0	\$ 25,000.00	Significant urban flooding was reported in Woonsocket, Cumberland, Lincoln, and Cranston where several roads were closed. In Smithfield, flooding was especially severe. About 15 roads were closed and cars were stranded, which required boat rescues in some cases. A section of Commerce Street at Sanderson Road was washed out. In Providence, the area of Roger Williams College including Smith Street and Chalk Stone Avenue was closed due to flooding.
52	CRANSTON	4/15/2007	Flood	0	0	\$ 30,000.00	Moderate flooding occurred along the Pawtuxet River. At Cranston, the river crested at 12.4 feet at 1 pm on the 17th (flood stage is 9 feet). Flooding was reported in several neighborhoods near the river in Cranston.
53	CRANSTON	2/13/2008	Flood	0	0	\$ 30,000.00	Route 114 near Greenville Road was flooded in Cranston. Also, Natick and Wilbur Avenues and Fletcher Streets were impassable due to flooding and the Meshanicut Valley construction site was washed out. The Natick Avenue bridge was closed to all traffic because of severe erosion caused by the heavy rain. Several basements were flooded

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							in Scituate. In addition, Route 116 near the reservoir was flooded with 18 inches of water flowing over the road. In Johnston, severe erosion on the sides of the Plainfield Pike was reported with 12 inches of water flooding portions of the road.
54	WOONSOCKET	3/8/2008	Flood	0	0	\$ 30,000.00	In Woonsocket, several roads were flooded. A golf course near the intersection of Route 7 and Interstate 295 in Smithfield was flooded. Pawtucket Avenue in Pawtucket was impassable near the Massachusetts State Line. In Cumberland, numerous backyards were flooded as well as several streets. Several roads in Burrillville were washed out by heavy rain.
55	LONSDALE	6/24/2008	Flash Flood	0	0	\$ -	Heavy rain resulted in flash flooding throughout Pawtucket, with many roads closed due to the flooding. Some of these roads include: East Avenue, Roosevelt Avenue, and Armistice Boulevard.
56	KENT	7/23/2008	Flash Flood	0	0	\$ 15,000.00	Heavy rain resulted in flash flooding across much of Rhode Island. In East Providence, 4.5 inches of rain fell in 45 minutes. At the intersection of Alexander Avenue and North Broadway, water was two feet deep. In Providence, Route 10 was impassable due to flooding. In Cranston, Pontiac Avenue was closed due to flooding.
57	PRIMROSE	9/6/2008	Flood	0	0	\$ -	Heavy rain associated with Tropical Storm Hanna ranged from three to four inches resulting in flooding of Waterman and Edmond Streets.
58	OAK LAWN	9/6/2008	Flood	0	0	\$ -	Heavy rain associated with Tropical Storm Hanna ranged from four to five inches resulting in street flooding that closed several streets.
59	CRANSTON	12/12/2008	Flood	0	0	\$ 2,000.00	Route 10 and Wellington Road in Cranston were flooded. The Woonasquatucket River at Centerdale overflowed its banks flooding Atwells Avenue in Providence. Benjamin Road in North Providence was closed due to flooding.
60	GLENDALE	12/12/2008	Flood	0	0	\$ 50,000.00	The Branch River overflowed its banks damaging the bridge on the Victory Highway Bridge on Route 107.
61	NORTH PROVIDENCE	7/2/2009	Flash Flood	0	0	\$ -	Atwood Avenue in Johnston and the intersection of Main and Charles Streets in North Providence were closed due to

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							flooding. Pawtucket Avenue at Waterman Avenue in Providence was impassable due to flooding.
62	UNION VLG	7/2/2009	Flash Flood	0	0	\$ -	One inch of rain fell in twenty minutes, flooding many streets and rendering them impassable.
63	CRANSTON	8/5/2009	Flood	0	0	\$ -	Several streets in Cranston were flooded with water halfway up car tires (about 6 inches).
64	HOWARD	3/29/2010	Flood	0	0	\$ 26,640,000.00	Six to nine inches of rain fell across Providence County, resulting in rises on both the Blackstone River at Woonsocket and the Pawtuxet River at Cranston. The Blackstone rose to moderate flood and the Pawtuxet rose to nearly 21 feet, surpassing the previous flood of record set only two weeks prior of nearly 15 feet. The Woonasquatucket, Runnins, and Ten Mile Rivers also flooded. Several small streams rose above flood stage across Providence County, including the Woonasquatucket River at Centerdale and the Branch River near North Smithfield. Numerous streets and basements were flooded across all of Providence County, including Cranston, North Smithfield, Johnston, Scituate, East Providence, North Providence, Providence, Pawtucket, and Cumberland. Several were undermined and eroding away, including the major east/west route through Cumberland, Nate Whipple Highway (Route 120) and Old Sayles Hill Road in North Smithfield. The portion of Old Sayles Hill Road that eroded leads to a dead end, stranding residents at the end. Flooding over the railroad tracks between Providence and Attleboro, MA resulted in the Massachusetts Bay Transit Authority cancelling commuter rail service to Providence. About 45 people were evacuated from the Riveredge Village apartment complex in the Manton neighborhood of Providence. Roughly 120 homes were evacuated in the Valley View neighborhood in Cranston. A four building condo complex on Fordson Avenue was also evacuated. About 300 people total were evacuated from their homes in Cranston. In Cumberland, all 193 apartments in the Ashton Mill complex and 200

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							residents of an assisted living facility (One Mendon Road) were evacuated. A house on Dexter Lane in Scituate was flooded, trapping an elderly resident. Houses near the intersection of Warren and Waterman Avenues in East Providence were evacuated. Tenants from lower level units of an apartment building on Exchange Court in Pawtuxet were asked to evacuate due to flooding. A car on Valley Street in Providence was stuck in flood waters, leaving the driver stranded. Two homes on Tuxedo Street in Providence were looted while their owners were kept away for safety reasons. The Woonasquatucket River rose in Providence inundating two major parks and the Eagle Square shopping center, including an Eye and Audiology Clinic for the VA Hospital. It also flooded a bridge that takes Valley Street over the river and forced the evacuation of houses and some apartment complexes in nearby neighborhoods, including Olneyville and Manton. The animal shelter in Cumberland was evacuated to the animal shelter in nearby Lincoln. One of Cumberland's largest employers, Hope Global, was damaged by the flooding. Employees were able to safeguard much of the equipment at the company by raising it off the floor several feet but 30,000 square feet worth of offices and furniture were ruined. Damage estimates for Hope Global thus far have totaled around \$400,000. In Woonsocket, flooding caused a national computer system failure at CVS that affected prescription services in all 7,000 of its pharmacies. Stores were able to fill prescriptions but were unable to process insurance claims. This resulted in some delays in filling the prescriptions. In North Providence, a dam was breached, emptying Geneva Pond into West River. A nearby bridge that carries Douglas Avenue over West River sustained damage to its abutments and was closed. The Cranston wastewater treatment plant failed during the flooding, untreated sewage into the Pocasset River at a rate of 8 million gallons per day. In Johnston, the Pocasset Bridge on Route 14 (Plainfield Street) that spans the Pocasset

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							River was closed after it started to show four large cracks. Several items that had floated down the river were caught under the bridge, blocking the water flow. City Hall experienced some flooding as well, prompting employees to shut down the computer system.
65	(PVD)TF GREEN ARPT P	4/1/2010	Flood	0	0	\$ -	Six to nine inches of rain fell across Providence County, resulting in rises on both the Blackstone River at Woonsocket and the Pawtuxet River at Cranston. The Blackstone rose to moderate flood and the Pawtuxet rose to nearly 21 feet, surpassing the previous flood of record set only two weeks prior of nearly 15 feet. The Woonasquatucket, Runnins, and Ten Mile Rivers also flooded. Several small streams rose above flood stage across Providence County, including the Woonasquatucket River at Centerdale and the Branch River near North Smithfield. Numerous streets and basements were flooded across all of Providence County, including Cranston, North Smithfield, Johnston, Scituate, East Providence, North Providence, Providence, Pawtucket, and Cumberland. Several were undermined and eroding away, including the major east/west route through Cumberland, Nate Whipple Highway (Route 120) and Old Sayles Hill Road in North Smithfield. The portion of Old Sayles Hill Road that eroded leads to a dead end, stranding residents at the end. Flooding over the railroad tracks between Providence and Attleboro, MA resulted in the Massachusetts Bay Transit Authority cancelling commuter rail service to Providence. About 45 people were evacuated from the Riveredge Village apartment complex in the Manton neighborhood of Providence. Roughly 120 homes were evacuated in the Valley View neighborhood in Cranston. A four building condo complex on Fordson Avenue was also evacuated. About 300 people total were evacuated from their homes in Cranston. In Cumberland, all 193 apartments in the Ashton Mill complex and 200 residents of an assisted living facility (One Mendon Road)

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							were evacuated. A house on Dexter Lane in Scituate was flooded, trapping an elderly resident. Houses near the intersection of Warren and Waterman Avenues in East Providence were evacuated. Tenants from lower level units of an apartment building on Exchange Court in Pawtuxet were asked to evacuate due to flooding. A car on Valley Street in Providence was stuck in flood waters, leaving the driver stranded. Two homes on Tuxedo Street in Providence were looted while their owners were kept away for safety reasons. The Woonasquatucket River rose in Providence inundating two major parks and the Eagle Square shopping center, including an Eye and Audiology Clinic for the VA Hospital. It also flooded a bridge that takes Valley Street over the river and forced the evacuation of houses and some apartment complexes in nearby neighborhoods, including Olneyville and Manton. The animal shelter in Cumberland was evacuated to the animal shelter in nearby Lincoln. One of Cumberland's largest employers, Hope Global, was damaged by the flooding. Employees were able to safeguard much of the equipment at the company by raising it off the floor several feet but 30,000 square feet worth of offices and furniture were ruined. Damage estimates for Hope Global thus far have totaled around \$400,000. In Woonsocket, flooding caused a national computer system failure at CVS that affected prescription services in all 7,000 of its pharmacies. Stores were able to fill prescriptions but were unable to process insurance claims. This resulted in some delays in filling the prescriptions. In North Providence, a dam was breached, emptying Geneva Pond into West River. A nearby bridge that carries Douglas Avenue over West River sustained damage to its abutments and was closed. The Cranston wastewater treatment plant failed during the flooding, untreated sewage into the Pocasset River at a rate of 8 million gallons per day. In Johnston, the Pocasset Bridge on Route 14 (Plainfield Street) that spans the Pocasset River was closed after it started to show four large cracks.

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							Several items that had floated down the river were caught under the bridge, blocking the water flow. City Hall experienced some flooding as well, prompting employees to shut down the computer system. Damage amounts can be found in the March Storm Data when most of the damage occurred. Rivers and small streams remained in flood into April.
66	SOUTH PROVIDENCE	7/14/2010	Flash Flood	0	0	\$ 30,000.00	Two vehicles were stranded in three feet of water in East Providence.
67	OAK LAWN	9/8/2011	Flash Flood	0	0	\$ 30,000.00	Cars were stranded on Oaklawn and Wilbur Avenues in Cranston with water nearly to the cars roofs. In Providence, the northbound portion of Route 10 from Union Avenue to Westminster Street was closed due to flooding from 0903am EST to 0924am EST. The southbound portion of Route 10 at Reservoir Avenue were closed as well and reopened at 1030am EST. Numerous cars were stranded in floodwaters in Cranston.
68	CUMBERLAND HILL	9/8/2011	Flood	0	0	\$ -	Numerous streets throughout Woonsocket were closed due to flooding. This included northbound and southbound lanes of Route 146. All lanes reopened by noon.
69	BRIDGETON	7/28/2012	Flood	0	0	\$ 25,000.00	Grove Street was flooded with cars stuck in the flood waters.
70	VALLEY FALLS	7/28/2012	Flash Flood	0	0	\$ 30,000.00	Central Avenue in Pawtucket was flooded with 6 inches of water. In Providence, cars were stuck in flood waters near the Dunkin Donuts Center in LaSalle Square. The entrance to Roger Williams Hospital was closed for an hour due to flooding. In North Providence, a basement flooded on Sherwood Avenue and a car was stuck in floodwaters on Brown Street. Reservoir Avenue at Park Avenue in Cranston was closed due to flooding.
71	ABBOTT RUN	7/28/2012	Flood	0	0	\$ 15,000.00	Abbot Street was closed due to flooding. Also, several basements were flooded.
72	VALLEY FALLS	8/10/2012	Flash Flood	0	0	\$ -	Several streets in Cranston flooded including Oaklawn and Fletcher Avenues, and Wilbur Street. Gano Street in Providence flooded over the curbs. In Pawtucket, Central Avenue flooded over the curbs. Warren Avenue near

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							Interstate 195 in East Providence was closed due to flooding. At Warren Avenue and Catamore Boulevard, water was flowing up to one and a half feet deep.
73	OLNEYVILLE	8/15/2012	Flood	0	0	\$ 15,000.00	Route 10 Northbound was flooded with cars stranded at Exit 6.
74	CENTRAL FALLS	6/7/2013	Flood	0	0	\$ -	Three to five inches of rain fell across the Providence metro area. Several basements were flooded along Lockbridge Street in Pawtucket.
75	THORNTON	6/7/2013	Flood	0	0	\$ -	Three to five inches of rain fell across the Providence metro area. In Providence, the exit ramp for Atwells Avenue from Interstate 95 southbound was flooded with one and a half feet of water. In North Providence, Cottage Avenue was flooded and impassable. Also, several basements were flooded along Brook Street. In Cranston, Park and Reservoir Avenues were flooded and impassable.
76	SMITHFIELD	6/7/2013	Flood	0	0	\$ 20,000.00	Three to five inches of rain fell across the Providence metro area. Several cars were stuck in several feet of water on Lisa Ann Circle.
77	HOWARD	7/11/2013	Flood	0	0	\$ 3,000.00	Atwood Avenue and Pontiac Avenue in Cranston were flooded. A car was stuck in the flood waters on Pontiac Avenue.
78	SAYLESVILLE	7/20/2013	Flood	0	0	\$ -	Route 146 was flooded at Twin River Road.
79	WATERMAN FOUR CORNER	9/2/2013	Flood	0	0	\$ -	Plainfield Pike was flooded with water about six inches deep at the ramp to Interstate 295.
80	WATERMAN FOUR CORNER	9/2/2013	Flash Flood	0	0	\$ 1,500,000.00	Heavy rain over the same part of Rhode Island for the second day in a row resulted in widespread flash flooding across much of Kent County and Cranston. Information on flooding in Kent County can be found in a separate event entry for Kent County. In Cranston, a car became stuck in flood waters in a rotary, stranding a man on the roof of the car. A car flooded at the intersection of Wellington and Essex Streets resulted in a water rescue done by boat. The fire department rescued occupants of a car stuck in flood waters on Oaklawn Avenue. An area of Cranston Street including the 1500 block was flooded with one to two feet of water. Dean Estates apartment buildings were evacuated

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							by boat by the fire department after flood waters inundated the basement/garden level apartments up to the ceilings. When firefighters arrived at the apartments, water was already four feet deep. One firefighter was injured when the first floor collapsed because of the basement flooding. About 60 people were evacuated from the complex. One lane of Budlong Road was damaged by flooding. Reservoir and Pontiac Avenues were flooded and impassable. Route 10 south at Interstate 95 was closed due to flooding.
81	CENTRAL FALLS	9/2/2013	Flood	0	0	\$ -	The emergency room of Memorial Hospital flooded.
82	THORNTON	1/11/2014	Flood	0	0	\$ -	Over one inch of rain in a short time resulted in flooding on parts of Oaklawn Avenue, Atwood Avenue, and Plainfield Street in Cranston where as much as 1 to 2 feet of water covered the road. One car was stranded in flood waters on Wilbur Avenue. The right lane of I-95 northbound by Route 10 was flooded.
83	OLNEYVILLE	6/13/2014	Flood	0	0	\$ -	Heavy rain produced flooding 12 inches deep at the intersection of Helme and Valley Streets. The intersection of Delaine Street and Sonoma Court was flooded with 15 inches of water deep.
84	ESMOND	8/13/2014	Flash Flood	0	0	\$ 20,000.00	Numerous roads flooded and impassable. Several cars trapped and stalled due to flooding.
85	GEORGIAVILLE	8/13/2014	Flash Flood	0	0	\$ -	Route 44 in Chepachet and Greenville Center was flooded with 2 feet of standing water.
86	KENT	10/22/2014	Flood	0	0	\$ 30,000.00	Two to three feet of water stood in the intersection of Charles and Orms Streets. A car was abandoned in the intersection. A car was stuck in flood waters on Whipple Street.
87	PAWTUCKET	5/31/2015	Flash Flood	0	0	\$ -	In North Providence, cars were stuck in flood waters on Stella Drive and Sherman Avenue. The intersection of Newport Avenue and Ferris Avenue in East Providence was flooded and impassable. In Pawtucket, the intersection of Conant and Weeden Street was flooded and impassable. Route 44 in Smithfield was flooded with 6 to 12 inches of water. In Cranston, Wilbur Avenue was impassable and two cars were stuck in floodwaters at the Oaklawn underpass.

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
88	MANTON	6/21/2015	Flood	0	0	\$ -	In Providence, Valley Street was blocked because of flooding. A car also got stuck in flood waters at the intersection of Lockwood Street and Haskins Street. In Cranston, the intersection of Wilbur and Oaklawn Avenue was blocked because of flooding. Several cars became stuck in flood waters at various intersections throughout the city.
89	WATERMAN FOUR CORNER	7/7/2016	Flood	0	0	\$ -	A portion of Route 116 in Scituate was temporarily closed due to flooding. No damage was reported.
90	BRIDGETON	7/7/2016	Flood	0	0	\$ -	Grove and Centennial Streets in Burrillville were flooded and impassable.
91	OAK LAWN	7/17/2016	Flood	0	0	\$ -	The intersection of Wilbur and Oaklawn Avenues was flooded and impassable.
92	ESMOND	8/6/2016	Flood	0	0	\$ 15,000.00	A car was stuck in flood waters on Mineral Spring Avenue in North Providence. The McCoy Stadium field and parking lot in Pawtucket was flooding, cancelling the scheduled Pawtucket Red Sox game.
93	OAK LAWN	8/12/2016	Flood	0	0	\$ 5,000.00	One foot of water flooded the intersection of Wilbur and Oaklawn Avenues. A car was stuck in flood waters under Wilbur Avenue bike path bridge.
94	WATERMAN FOUR CORNER	8/12/2016	Flood	0	0	\$ -	Seven Mile Road was flooded and impassable.
95	OAK LAWN	8/13/2016	Flood	0	0	\$ 5,000.00	A car was stuck in flood waters on Wilbur Avenue.
96	CRANSTON	9/30/2017	Flood	0	0	\$ -	At 1209 PM EST, an amateur radio operator reported that Pontiac Avenue in Cranston was flooded.
97	THORNTON	1/13/2018	Flood	0	0	\$ -	At 859 AM EST, Fletcher Avenue in Cranston was reported closed. Standing water to at least one foot depth filled the road across several blocks. Rainfall between three and four inches was measured in the vicinity of Cranston.
98	ABBOTT RUN	7/6/2018	Flood	0	0	\$ 5,000.00	At 11:20 AM EST, a trained spotter reported flooding from heavy rain on Industrial Road in Cumberland. People on the road were unable to exit their vehicles. Rainfall of 1.25 inches was reported in Cumberland.
99	OAK LAWN	8/4/2018	Flood	0	0	\$ 5,000.00	At 10:36 AM EST, a car was trapped in flooding at an underpass on Wilbur Avenue near the intersection with Oaklawn Avenue in Cranston.

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
100	OAK LAWN	9/25/2018	Flood	0	0	\$ -	At 10:25 PM EST, cars were reported partly submerged in an apartment complex on Oaklawn Avenue in Cranston; flooding also took place on the property in front of the complex.
101	OAK LAWN	9/25/2018	Flood	0	0	\$ -	At 10:30 PM EST, the intersection of Wilbur Avenue at Oaklawn Avenue in Cranston was flooded and impassable.
102	OLNEYVILLE	9/25/2018	Flood	0	0	\$ -	At 11:02 PM EST, Valley Street at Helme Street in Providence was flooded and impassable.
103	THORNTON	9/26/2018	Flood	0	0	\$ -	At 12:18 AM on Sept 26, Fletcher Road in Cranston was closed due to flooding.
104	CENTRAL FALLS	9/26/2018	Flood	0	0	\$ -	At 12:54 AM EST, Higginson Avenue in Lincoln near the Wood and Wire Fence Company was flooded and impassable.
105	OLNEYVILLE	9/26/2018	Flood	0	0	\$ -	At 1:10 AM EST, Dexter Street in Providence was flooded and impassable from Althea Street to Ford Street.
106	OLNEYVILLE	9/26/2018	Flood	0	0	\$ -	At 1:20 AM EST, Westminster Street, Union Avenue, and part of State Route 10 in Providence were all flooded and impassable.
107	HAMLET	8/7/2019	Flood	0	0	\$ -	In Woonsocket, Hamlet Avenue had several feet of street flooding.
108	HAMLET	8/7/2019	Flood	0	0	\$ -	In Woonsocket, Fairmount Street was impassable due to flooding.
109	HAMLET	9/2/2019	Flood	0	0	\$ -	In Woonsocket, Hamlet Avenue at Front Street was flooded and impassable for a time.
110	WOODLAWN	9/2/2019	Flood	0	0	\$ -	In Pawtucket, Mineral Spring Avenue at San Antonio Way was flooded and impassable for a time.
111	CENTRAL FALLS	9/2/2019	Flood	0	0	\$ -	In Pawtucket, Weeden Street at the Conant Street Bridge was flooded and impassable for a time. One car was stuck in the street flooding and removed from the roadway.
112	HARRISVILLE	6/28/2020	Flash Flood	0	0	\$ 10,000.00	In Burrillville, the Harrisville Fire Department was responding to water emergency calls. One foot of street flooding was reported on Main Street in the Harrisville section. In the Oakland section of Burrillville, a car was stuck in flood waters in Victory Highway, which was flooded and impassable between Oakland School Street and Remington Avenue.

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
113	PAWTUCKET	6/28/2020	Flood	0	0	\$ -	Armistice Blvd. was flooded and impassable in front of the DPW building.
114	KENT	12/1/2020	Flood	0	0	\$ -	In East Providence, street flooding was reported on Catamore Boulevard.
115	CRESCENT PARK	12/25/2020	Flood	0	0	\$ -	In East Providence, a car was stuck on Wampanoag Trail (Route 114) due to street flooding.
116	SAYLESVILLE	7/17/2021	Flood	0	0	\$ -	In Lincoln, Holiday Court and Holiday Drive was flooded and impassable.
117	HARBOR JCT	7/17/2021	Flood	0	0	\$ -	In Providence, Eddy Street between Nebraska Street and Pavillion Avenue was flooded and impassable.
118	OLNEYVILLE	7/17/2021	Flood	0	0	\$ -	In Providence, Fallon Avenue was flooded and impassable.
119	SOUTH PROVIDENCE	11/12/2021	Flood	0	0	\$ 6,000.00	In the eastern portion of Providence, there was two feet of street flooding, with a car stuck. Trenton Street at Gano Street was closed and so was a section of India Street.
120	CRESCENT PARK	6/13/2022	Flood	0	0	\$ 5,000.00	Street flooding was reported in the Riverside portion of East Providence, along Wampanoag Trail. At the intersection with Mink Street, flooding was described as significant requiring DPW assistance. Also, a car was stuck in flooding at the Argyle Avenue intersection.
121	LONSDALE	8/23/2022	Flood	0	0	\$ -	In Cumberland, Abbott Street was flooded and impassable.
122	KENT	8/23/2022	Flash Flood	0	0	\$ 20,000.00	In East Providence, at 310 PM EDT (210 EST) flash flooding caused the blockage of all travel lanes on Interstate 195 westbound at Exit 2. At 323 PM EDT (225 PM EST), a car was reportedly stuck in flood waters on Roma Street. At 402 PM EDT (302 PM EST), Broadway was completely flooded between Juniper and Laura Streets. Also in East Providence, at 520 PM EDT (420 PM EST), Waterman Avenue was flooded and impassable.
123	CENTRAL FALLS	8/23/2022	Flash Flood	0	0	\$ 8,000.00	In Central Falls, a car was stuck in flash flooding on Higginson Avenue. Water was reportedly up to some peoples' knees.
124	CHEPACHET	9/5/2022	Flood	0	0	\$ -	In Gloucester, the public reported flooding on an unspecified street.
125	SPRING GROVE	9/5/2022	Flash Flood	0	0	\$ -	In the Chepachet section of Burrillville, Rt. 44 was underwater at Terry Ln. and Spring Grove Rd.

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
126	ABBOTT RUN	9/5/2022	Flood	0	0	\$ -	In Cumberland, Industrial Rd. was flooded. Relayed by amateur radio.
127	OLNEYVILLE	9/5/2022	Flash Flood	0	0	\$ 3,000.00	In Providence County, very heavy rain fell, eventually amounting to 7 to 10 inches. Approximately 6 inches fell in 2 hours leading to flash flooding. At 1:51 PM EDT Oregon St. at Whipple St. was closed. At 2:05 PM EDT a car was stuck in street flooding on Valley St. at Eagle St. Cars were traveling in the wrong direction to avoid flooding on Pleasant Valley Parkway. At 2:26 PM EDT Dexter St. at Huntington Ave. was reported to be flooded and impassable. Relayed by amateur radio.
128	NORTH PROVIDENCE	9/5/2022	Flash Flood	0	0	\$ -	In North Providence, Library Rd. by Adams Library was flooded and impassable. Relayed by amateur radio.
129	OLNEYVILLE	9/5/2022	Flash Flood	0	0	\$ 10,000.00	In Cranston, at 2:02 PM EDT a car was stuck in street flooding on Fletcher Ave. Between 2:04 and 2:11 PM EDT multiple cars were stuck in street flooding on Atwood Ave. At 2:13 PM EDT Rt. 10 north at Union Ave was flooded and impassable with cars stuck in the flooding. Relayed by amateur radio.
130	NORTH PROVIDENCE	9/5/2022	Flash Flood	0	3	\$ 1,000,000.00	In Providence, 7 to 10 inches of rain fell over the course of a few hours during the mid to late afternoon creating serious flash flooding. 8.31 inches of rain fell in the Elmwood section of the city and 6.89 in the College Hill section. National news media showed aerial views of Interstate 95 which had become completely flooded and was closed in both directions. The snarled traffic lasted for multiple hours. Cars were reported to be stuck in the following locations: Webster Ave., Hamilton St., Cadillac Ave. at Melrose St. (water up to the windows), Narragansett Ave at Santiago St., Rugby St. at Thurbers Ave. Additional flooding and road closure reports included: Thackery St. at Melrose St., the underpass of Rt. 10 north at Westminster St., Hartford Ave. at Heath St., Smith St. at Gentian Ave., Exchange St., Pleasant Valley Parkway at Berlin St., Huntington Ave., Manton Ave. at Saban St., Elmwood Ave. ramp to Rt. 10, and Olneyville Square. One block of Atwells

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							Avenue was washed out. Many water rescues were necessary due to life-threatening situations. All together, there were 3 injuries related to motor vehicle accidents during the storm and roughly 25 individuals rescued. On Benevolent St. water invaded the 1st floor of a Brown University campus building. On Elmwood Ave. there was rapid flooding of a structure of unspecified type. On Peace Street, there was a partial (25%) collapse of the roof of a vacant building, which was being redeveloped into a shopping plaza. A total of 41 homes and businesses were flooded. The West River overtopped its banks and flooded Charles Street and portions of Silver Spring Street in the evening. The Woonasquatucket River crested at 6.07 ft. at 315 AM on September 7th, which was above the 5.5 ft. flood stage. Many thanks to the Providence Emergency Management Agency for some of these details.
131	CRANSTON	9/5/2022	Flash Flood	0	0	\$ 18,500.00	In Cranston, very heavy rain fell totaling 8 to 11 inches. More than 6 inches fell in 2 hours during the mid afternoon. Five cars were stuck in flash flooding on Cranston St. Three cars were stuck on Oaklawn Ave. Rt. 10 was both northbound and southbound was closed due to flash flooding.
132	WOODLAWN	7/4/2023	Flash Flood	0	0	\$ -	In North Providence, there was a social media report of 2.5 feet of water running over May St.
133	OLNEYVILLE	7/4/2023	Flash Flood	0	0	\$ -	In Providence, the corner of Valley St and Atwells Ave was flooded and impassable.
134	CRANSTON	7/4/2023	Flash Flood	0	0	\$ -	In Cranston, Pleasant St was flooded and impassable.
135	SOUTH PROVIDENCE	7/4/2023	Flash Flood	0	0	\$ -	In Providence, the intersection of Francis St and West Exchange St closed due to flooding.
136	NORTH PROVIDENCE	7/4/2023	Flash Flood	0	0	\$ -	In Providence, Jastram St was flooded with 5 cars stuck in floodwaters.
137	EAST PROVIDENCE	7/4/2023	Flash Flood	0	0	\$ -	In Providence, Pawtucket Ave was flooded.

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
138	PHILLIPSDALE	7/4/2023	Flash Flood	0	0	\$ -	In Pawtucket, an entire basement level of an apartment complex was compromised due to flooding. American Red Cross requested to help displaced residents.
139	CENTRAL FALLS	7/4/2023	Flash Flood	0	0	\$ -	In Lincoln, there were cars stuck in flood waters.
140	OLNEYVILLE	7/10/2023	Flood	0	0	\$ -	In Providence, Rt 146 had significant flooding.
141	CRANSTON	7/10/2023	Flood	0	0	\$ -	In Cranston, Park Ave at Southern St was flooded and impassable.
142	OLNEYVILLE	7/10/2023	Flood	0	0	\$ -	In Providence, Rt 10 northbound was closed at Union Ave due to flooding.
143	OAK LAWN	7/16/2023	Flash Flood	0	0	\$ -	In Cranston, Oaklawn Ave was flooded and impassable.
144	KENT	7/16/2023	Flash Flood	0	0	\$ -	In East Providence, Pawtucket Ave at Allerton Ave was flooded and impassable.
145	SOUTH PROVIDENCE	7/16/2023	Flash Flood	0	0	\$ -	In Providence, Gano St at Wickenden St was flooded.
146	PAWTUCKET	7/16/2023	Flash Flood	0	0	\$ -	In Pawtucket, Mendon Ave at Carter St was flooded with cars stuck.
147	EAST PROVIDENCE	7/16/2023	Flash Flood	0	0	\$ -	In East Providence, the Rebello Tunnel was closed due to flooding.
148	COMSTOCK GARDENS	9/10/2023	Flood	0	0	\$ -	In Cranston, Scituate Ave was flooded.
149	OLNEYVILLE	9/10/2023	Flash Flood	0	0	\$ -	In Providence, there was water covering Rt 10 at Union Ave.
150	SOUTH PROVIDENCE	9/10/2023	Flash Flood	0	0	\$ -	In Providence, multiple water rescues were done for vehicles stranded in flood waters. Rt 10 was closed and several manhole covers were pushed up.
151	PHILLIPSDALE	9/11/2023	Flood	0	0	\$ -	In Pawtucket, Newport Ave at Ferris Ave was flooded.
152	SAYLESVILLE	9/11/2023	Flood	0	0	\$ -	In Lincoln, Breakneck Hill Rd was flooded.
153	PAWTUCKET	9/11/2023	Flood	0	0	\$ -	In Pawtucket, Newport Ave was flooded.
154	PAWTUCKET	9/11/2023	Flash Flood	0	0	\$ -	In Pawtucket, cars were stuck in flood waters near Armistice Blvd.
155	NORTH PROVIDENCE	9/11/2023	Flash Flood	0	0	\$ -	In North Providence, there was a flooded basement on Brown Ave.

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
156	NORTH PROVIDENCE	9/11/2023	Flash Flood	0	0	\$ -	In North Providence, there was a flooded basement on Brown Ave.
157	WOODLAWN	9/11/2023	Flash Flood	0	0	\$ -	In North Providence, Branch Ave was closed with cars stranded.
158	ABBOTT RUN	9/11/2023	Flash Flood	0	0	\$ -	In Cumberland, there was an inch of basement flooding along Pennsylvania Ave.
159	ABBOTT RUN	9/11/2023	Flash Flood	0	0	\$ -	In Cumberland, there was an inch of basement flooding along Pennsylvania Ave.
160	LONSDALE	9/11/2023	Flash Flood	0	0	\$ -	In Cumberland, water entered homes on Fairhaven Rd. Marshall Ave was flooded and water came into a home through the basement window on Mowry Ave.
161	HAMLET	9/13/2023	Flash Flood	0	0	\$ -	In Woonsocket, two cars were stuck in street flooding on Mandeville Hill Rd.
162	HAMLET	9/13/2023	Flash Flood	0	0	\$ -	In Woonsocket, a car was stuck in flooding on Railroad St.
163	HAMLET	9/13/2023	Flash Flood	0	0	\$ -	In Woonsocket, there was 2 feet of water in a back yard entering a house.
164	CENTRAL FALLS	1/10/2024	Flood	0	0	\$ -	Places like Cranston and North Providence recieved 4.86 inches and 4.54 inches of rain respectively. In Central Falls at 1:00 AM EST a section of Higginson Ave was closed due to flooding. At 2:10 AM EST in Johnston the exit off ramps of Rt 6 East and Rt 6 West to Atwood Ave were closed. In Providence at 3:55 AM EST there was significant flooding at Charles St with several cars stranded. In Cumberland at 8:34 AM EST West Sneeck Brook was out of its banks causing a section of Westwood Dr to be washed out.
165	OLNEYVILLE	1/13/2024	Flash Flood	0	0	\$ -	Flooding as deep as 2 to 3 feet affected many of the same locations that were flooded during the January 9-10, 2024 storm including Branch Avenue, Valley Street, Charles Street, Hartford Avenue, and Pocasset Avenue in Providence.
Totals				0	3	\$ 33,660,500.00	

Extreme Temperature Event History for Providence County, RI (NCEI Storm Events Database)

Count	Date	Type	Deaths	Injuries	Damage	Event Narrative
1	9/27/1998	Heat	0	0	\$ -	The mercury soared to 86 degrees at the T.F. Green State Airport. This broke the record high for the date of 85 degrees set in 1972.
2	2/12/1999	Heat	0	0	\$ -	The high temperature of 61 degrees at T.F. Green Airport in West Warwick, reached during the late evening hours, broke the previous record high of 57 degrees which was set in 1984.
3	3/18/1999	Heat	0	0	\$ -	The high temperature of 71 degrees at T.F. Green State Airport in West Warwick broke the previous record high for the date of 69 degrees, which was set in 1945.
4	6/9/2008	Heat	2	0	\$ -	An elderly couple in Central Falls, RI was found dead in their apartment where temperatures had reached 102 degrees.
5	7/6/2010	Heat	0	0	\$ -	Heat index values at the Smithfield (KSFZ) Automated Weather Observing System were 100 to 104 degrees.
6	7/7/2010	Heat	0	0	\$ -	
7	7/22/2011	Excessive Heat	0	0	\$ -	The Automated Weather Observation System at North Central State Airport (KSFZ) near Smithfield recorded heat indexes of 105 to 107 over a five hour period.
8	7/20/2013	Heat	1	0	\$ -	A 90 year old woman died at the Charlesgate Nursing Center in Providence. The woman was not in poor health but lived in a room without air conditioning. Despite air conditioned rooms being available to the woman, she remained in her room. The Rhode Island Medical Examiner's Office confirmed that the cause of death was hyperthermia or extreme heat. A heat advisory was in effect for southeast Providence County, with heat index values up to 102 expected. Heat index values reached 92 in Providence by 8am, peaked at 101 at 2pm and remained there for 3 hours before temperatures fell below 80 after a thunderstorm. Time of death is approximate.
9	2/16/2015	Extreme Cold/Wind Chill	0	0	\$ -	The Automated Weather Observing Station at North Central State Airport (KSFZ - Smithfield, RI) recorded wind chills as low as 30 below zero during this six hour time frame.
10	2/16/2015	Extreme Cold/Wind Chill	0	0	\$ -	The Automated Surface Observation Station at T.F. Green Airport in Warwick, RI (KPVD) recorded wind chills as low as 26 below zero.
11	2/14/2016	Extreme Cold/Wind Chill	0	0	\$ -	Wind chills as low as 32 below zero were reported at TF Green Airport in Warwick, which is representative of greater Providence.
12	2/14/2016		0	0	\$ -	
Total			3	0	\$ -	

Drought Event History for Providence County, RI (NCEI Storm Events Database)

Count	Date	Deaths	Injuries	Damage	Event Narrative
1	4/12/2012	0	0	\$ -	The U.S. Drought Monitor declared severe drought (D2) over northwestern Providence County from April 12 through April 24. This was deemed a meteorological drought due to precipitation levels approximately one half of normal.
2	4/12/2012	0	0	\$ -	The U.S. Drought Monitor declared severe drought (D2) over southeastern Providence County from April 12 through April 24. This was deemed a meteorological drought due to precipitation levels approximately one half of normal.
3	8/2/2016	0	0	\$ -	The U.S. Drought Monitor expanded the Severe Drought (D2) designation into northwestern Providence County on August 2nd.
4	9/1/2016	0	0	\$ -	The U.S. Drought Monitor continued the Severe Drought (D2) designation in northwestern Providence County through the month of September.
5	9/13/2016	0	0	\$ -	The U.S. Drought Monitor expanded the Severe Drought (D2) designation into southeastern Providence County on September 13th. This continued through the month of September.
6	10/1/2016	0	0	\$ -	The U.S. Drought Monitor placed southeast Providence County in a Severe Drought (D2) designation through the month of October.
7	10/1/2016	0	0	\$ -	The U.S. Drought Monitor placed the majority of northwest Providence County in a Severe Drought (D2) designation through the month of October. Then with the October 25 rendition of the U.S. Drought Monitor, the area was placed in Moderate Drought (D1) conditions.
8	11/1/2016	0	0	\$ -	On November 1, the U.S. Drought Monitor reduced the northwest Providence County designation to Moderate Drought (D1) and continued that through the end of the month.
9	11/1/2016	0	0	\$ -	On November 1, the U.S. Drought Monitor reduced the southeast Providence County designation to Moderate Drought (D1) and continued that through the end of the month.
Total		0	0	\$ -	

Winter Weather Event History for Providence County, RI (NCEI Storm Events Database)

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
1	County Wide	1/2/1996	Heavy Snow	0	0	\$ -	A strong low pressure system moved from Tennessee to the Virginia coast and then northeast off the New Jersey coast, passing southeast of Cape Cod. This system produced heavy snow across the central and northern part of the state. Some snowfall totals, which included light snow which fell into the early morning hours on the 4th included: Woonsocket, 12.0 inches; Johnston, 11.0 inches; Coventry, 9.5 inches; Warwick, 7.3 inches; Middletown, 3.0 inches; and Block Island, 2.0 inches. Most schools and some businesses were closed on the 3rd. The morning commute on the 3rd was a difficult one when snow fell at the rate of 0.5 to 2.0 inches per hour.
2	County Wide	1/2/1996	Heavy Snow	0	0	\$ -	
3	County Wide	1/7/1996	Heavy Snow	0	0	\$ -	An intense east coast low pressure system moved northeast from eastern Georgia, passing along the coast of the Carolinas and then close to 40 degrees North and 70 degrees West. This storm was one of the most significant winter storms to hit southern New England in the past 20 years and was named the Blizzard of '96" from the Middle Atlantic states into New England
4	County Wide	1/7/1996	Heavy Snow	0	0	\$ -	
5	County Wide	2/2/1996	Heavy Snow	0	0	\$ -	A coastal low pressure system brought a heavy snowfall of 6 to 8 inches to many parts of the state. Some snowfall totals included: North Kingstown, 8 inches; Tiverton, 7.5 inches; Clayville, 7 inches; Cumberland, 6.5 inches; Johnston and Lincoln, 6 inches; and Providence and Cranston, 5.8 inches. Travel conditions were difficult during the heavy snow, but since the storm occurred late Friday evening into Saturday morning, there were fewer cancellations than normal.
6	County Wide	2/2/1996	Heavy Snow	0	0	\$ -	
7	County Wide	2/16/1996	Heavy Snow	0	0	\$ -	A rapidly intensifying low pressure system moved northeast from off the Virginia Capes passing southeast of Cape Cod. It brought still another in a long series of major snowstorms this winter season. Snowfall totals of 5 to 7 inches fell across the state: T.F. Green Airport in West Warwick, 7.0 inches; Tiverton, 6.6 inches; Clayville, 6 inches; downtown Providence, 5.5 inches; and North Foster, 5.2 inches. The
8	County Wide	2/16/1996	Heavy Snow	0	0	\$ -	

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							seasonal snowfall total reached 79.9 inches at North Foster and a record 78.0 inches at the National Weather Service Office at T.F. Green Airport in West Warwick. Highway travel was seriously disrupted for the Friday afternoon rush hour and many motorists were delayed several hours before arriving home.
9	County Wide	3/2/1996	Heavy Snow	0	0	\$ -	A low pressure system located about 100 miles off the North Carolina coast at 7 AM moved northeast and spread snow across the entire state during the forenoon. The snow became moderate to heavy by noon and continued into the late afternoon and early evening. Most of the state received 6 to 11 inches of snow. Specific snowfall totals included: Narragansett, 11 inches; downtown Providence, Middletown, and Newport, 9 inches; West Warwick, 8.5 inches; and Westerly, 7.5 inches. Numerous skidding accidents were reported on area highways.
10	County Wide	3/2/1996	Heavy Snow	0	0	\$ -	
11	County Wide	3/3/1996	Winter Weather	0	0	\$ -	Two cold fronts swept across the state from west to east during the day, bringing snow squalls accompanied by briefly low visibility and winds gusting up to 40 to 50 mph. Around noon, visibility was reportedly reduced to 1/4 miles in downtown Providence in a heavy snow squall. Snowfall amounts ranged from a few tenths of an inch to up to one inch. A peak wind gust to 48 mph was reported from downtown Providence.
12	County Wide	3/3/1996	Winter Weather	0	0	\$ -	
13	County Wide	3/7/1996	Heavy Snow	0	0	\$ -	A low pressure system moved from North Carolina northeastward to just southeast of New England and brought yet another heavy snowstorm to northern and central Rhode Island. Only a few inches accumulated across the south, where the precipitation was mostly rain and sleet. Light freezing rain and drizzle occurred on March 6th and early on March 7th before significant snow accumulation began. A thin coating of glaze resulted in very icy roads. Numerous minor skidding accidents occurred. Some snowfall totals from this storm included: North Foster, 7.6 inches; Cumberland, 7.5 inches. There was also
14	County Wide	3/7/1996	Heavy Snow	0	0	\$ -	

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							a total of 7.5 inches in West Warwick, where the seasonal total reached a record 98 inches.
15	County Wide	4/7/1996	Heavy Snow	0	0	\$ -	A low pressure system developed off the North Carolina coast and a nor'easter accompanied by heavy, wet snow began during the late afternoon on Easter Sunday. The maximum snowfall accumulation of 6 to 8 inches fell in the higher elevations in the northern part of the state. The greatest reported totals included: North Foster, 8.0 inches; West Warwick, 7.0 inches; Woonsocket, 6.1 inches; and Johnston, 6.0 inches. Temperatures remained slightly above freezing during this storm, except in the higher elevations. Snow melted to only slushy accumulations on pavements but stuck to trees and wires. No significant travel problems were reported.
16	County Wide	4/7/1996	Heavy Snow	0	0	\$ -	
17	County Wide	4/9/1996	Heavy Snow	0	0	\$ -	
18	County Wide	4/9/1996	Heavy Snow	0	0	\$ -	
19	County Wide	12/6/1996	Heavy Snow	0	0	\$ -	An intensifying storm system moving eastward from the southeast tip of Long Island caused heavy, wet snow across much of the state. The greatest amounts were reported from the higher elevations of western and northwestern Rhode Island. Some snowfall totals included: North Foster, 11.3 inches; Scituate and Glocester, 8 inches; Cumberland and West Warwick, 7 inches; and Lincoln, 6 inches. Two to 5 inches of snow fell farther south and east, including 3 inches at both Westerly and East Providence. Portsmouth reported 4 inches. The storm caused scattered power outages and poor road conditions.
20	County Wide	12/6/1996	Heavy Snow	0	0	\$ -	
21	County Wide	12/7/1996	Heavy Snow	0	0	\$ -	A low pressure system centered over Georgia at 7 AM on December 7th moved rapidly northeast across North Carolina. The intensifying system then moved about parallel to the Mid-Atlantic coast with its center reaching Plymouth County in southeast Massachusetts. Heavy, wet snow fell over northwest Rhode Island and a few inches of snow accumulated in the central part of the state. Heavy rain fell along the coastal areas and southeast Rhode Island. Snowfall totals reached 7 to 10 inches in the higher elevations around Foster and Burrillville. About 4 inches was reported from Lincoln. Rainfall totals of around 2

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							inches were reported from such locations as Woonsocket and Newport. There were no reports of significant damage from this storm.
22	County Wide	1/11/1997	Heavy Snow	0	0	\$ -	A developing low pressure system south of Long Island spread snow across the entire state. Snowfall totals ranged from about 4 inches along the south coast to 7 inches in the northwest corner of the state. The maximum total was 7.4 inches at North Foster. Some other totals included: Warwick, 7.1 inches; Scituate and Burrillville, 7.0 inches; East Providence, 6.7 inches; Pawtucket, 6.5 inches; and Glocester, Lincoln, and downtown Providence, 6.0 inches. This was a quick-hitting storm system with snowfall rates up to two inches per hour. Most of the snowfall lasted only 6 hours. Since this snow fell on a Saturday morning, there were minimal effects on highway travel, but there were the usual spinouts and minor collisions on the highways.
23	County Wide	1/11/1997	Heavy Snow	0	0	\$ -	
24	County Wide	1/31/1997	Winter Weather	0	0	\$ -	Light freezing drizzle coated roads with a thin layer of glaze, resulting in treacherous driving conditions. Countless skidding accidents occurred throughout the area. The Jamestown Bridge was closed temporarily. Mostly only minor injuries were reported but one man was killed in Lincoln when the jeep he was driving skidded off Route 99 and rolled down an embankment.
25	County Wide	1/31/1997	Winter Weather	0	0	\$ -	
26	County Wide	3/31/1997	Heavy Snow	0	0	\$ -	A low pressure system formed off the New Jersey coast during the early morning hours and intensified rapidly as it moved to a position 60 miles south of Newport, Rhode Island by early evening. Pressure falls of 14 millibars occurred during a 12 hour period. The system then retreated to the south during the evening. Precipitation began occurring from south to north across the state during the morning and began mixing and changing to heavy, wet snow in the northwest portion of the state by late morning and during the afternoon. Over the remainder of the state, rain became mixed with snow during the afternoon and had changed to all snow over most of the state, with the exception of the south coast, by midnight. The weight of the
27	County Wide	3/31/1997	Heavy Snow	0	0	\$ -	

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							heavy, wet snow began knocking down tree limbs and power lines and widespread power outages began occurring during the late afternoon and evening across much of the state, except the area from Providence south and southwestward where there were only scattered outages. Highway travel was just about impossible during the evening due to the prevailing blizzard conditions. Snowfall totals by midnight exceeded one foot in northern Rhode Island, with 15 inches at North Foster and 14 inches at Woonsocket.
28	County Wide	4/1/1997	Heavy Snow	0	0	\$ 100,000.00	A low pressure system which formed off the New Jersey coast during the early morning hours of March 31st intensified rapidly as it moved to a position 60 miles south of Newport, Rhode Island. This system retreated to the south during the early morning hours of April 1st, pulling in cold air from the north. The center then moved slowly eastward. Heavy snow and strong winds produced blizzard and near-blizzard conditions across most of Rhode Island during the early morning hours on April 1st. Snowfall accumulations set all-time records for April across most of the state, with amounts ranging from around 4 inches along the south coast to nearly 30 inches along the Massachusetts border in the extreme northern portion of the state. The heavy, wet snow made snow removal extremely difficult and highway travel was just about impossible during the height of the storm. Over a thousand tree limbs and some trees were reported down in Providence and some streets were initially left unplowed due to fallen tree limbs and wires. Schools were closed for two days. Up to 55,000 electric customers were without power at the height of the storm early on April 1st. Most of the estimated dollar damage was due to snow removal and power restoration.
29	County Wide	4/1/1997	Heavy Snow	0	0	\$ 100,000.00	
30	County Wide	12/23/1997	Heavy Snow	0	0	\$ -	A low pressure system developing off the Delaware coast moved to the northeast and intensified rapidly, passing southeast of Cape Cod. This storm brought a surprise

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							heavy snowfall to northern Rhode Island. Heavy snowfall was a surprise to everyone including weather forecasters. Despite some slick driving and early school dismissals, there was little disruption to many local communities. However, in the Woonsocket-Cumberland area there were dozens of auto accidents.
31	County Wide	2/25/1999	Heavy Snow	0	0	\$ -	A strong low pressure system, which passed about 200 miles southeast of Cape Cod, brought heavy snow to Rhode Island. Over a foot of snow was reported west and north of Providence. The storm closed schools across the state, and created hazardous road conditions. This was the heaviest snowfall of the winter to date. The highest snowfall reported was 14.9 inches in North Foster. Other snowfall amounts included 14 inches in Clayville, 13.5 inches in Westerly and Middletown, 13.3 inches in Ashaway, and 12 inches in West Warwick and West Greenwich. Woonsocket reported 8 inches, and the greater Providence area received between 6 and 8 inches of snow.
32	County Wide	2/25/1999	Heavy Snow	0	0	\$ -	
33	County Wide	3/15/1999	Heavy Snow	0	0	\$ -	A strong low pressure system, centered off the coast of Virginia during the early morning hours, moved to a position southeast of Nantucket by early afternoon. This system brought a late season snowstorm to all of Rhode Island, with totals of 7 to 12 inches. At the height of the storm, the snow fell at the rate of one to two inches per hour.
34	County Wide	3/15/1999	Heavy Snow	0	0	\$ -	
35	County Wide	1/13/2000	Heavy Snow	0	0	\$ -	Low pressure passing south of Cape Cod brought the first widespread snowfall of the season to Rhode Island. Accumulations ranged from as little as one inch on the south coast to as much as 4 to 6 inches in northwest Providence County. T.F. Green State Airport in Warwick reported a storm total of 3.2 inches. Snow began falling during the morning commute, which caused roads to quickly become iced over. Over 50 accidents were reported throughout the state, especially in Greater Providence. Although a trace of snow had already fallen at T.F. Green State Airport, it was the first accumulating snowfall since March 15, 1999.
36	County Wide	1/13/2000	Heavy Snow	0	0	\$ -	

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
37	County Wide	1/25/2000	Heavy Snow	0	0	\$ -	A winter storm tracking from south of Long Island to southeast Massachusetts brought heavy snow to northwest Providence County. Storm totals of 4 to 8 inches were common, with as much as 8 inches in Smithfield. Snowfall amounts were lower heading to Providence and the south coast, as snow turned to mixed precipitation and eventually rain. T.F. Green State Airport reported 2.8 inches of snow from the storm, but about 70 percent of the flights were canceled, mostly because planes never arrived at the airport from other snow-bound airports in the East. About 30 minor accidents were reported during the storm.
38	County Wide	2/18/2000	Heavy Snow	0	0	\$ -	Low pressure tracking from the Ohio Valley to the coast of southern New England brought heavy snow to much of the Ocean State, with the exception of the south coast where 3 to 5 inches of snow fell. Most places in central and northern Rhode Island received 6 to 8 inches of snow from this storm, with the highest amounts in northwest Providence County. The storm coincided with the beginning of the Presidents' Day holiday weekend and the start of school vacation week, and snarled traffic on major highways and created treacherous driving conditions. Dozens of accidents were reported, many due to excessive speed. At T.F. Green State Airport in Warwick, where nearly 5 inches of snow fell, about 60 percent of the scheduled flights were canceled during the height of the storm.
39	County Wide	2/18/2000	Heavy Snow	0	0	\$ -	
40	County Wide	11/26/2000	Winter Weather	0	0	\$ -	Low pressure moving north up the mid Atlantic coast brought a period of light freezing rain to much of northern Rhode Island. Ice accretion was under one quarter inch, but the freezing rain left black ice on roads, causing dozens of accidents at the end of the Thanksgiving weekend, usually a busy travel day. A series of minor accidents on Interstate 95 in West Greenwich forced the closure of the highway for nearly two hours. Temperatures warmed into the 40s by late morning, ending the danger of icing.
41	County Wide	12/30/2000	Heavy Snow	0	0	\$ -	The season's first winter storm dumped 6 to 9 inches of snow in western Kent and northwest Providence Counties.

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							Since the storm occurred on a Saturday, no major problems with travel were noted. The immediate Providence area down to the south coast reported 1 to 4 inches of snow, before a change to rain occurred.
42	County Wide	1/20/2001	Heavy Snow	0	0	\$ -	Heavy snow fell across all of Rhode Island. The highest snowfall totals were found in Providence, Bristol, and Newport Counties, where as much as 8 inches of snow were recorded. Since the storm occurred over the weekend, impact on travel was kept to a minimum, but there were still several minor accidents throughout the state. Only a few hundred electric customers were left without power. Some snowfall totals from the storm include 8 inches in Tiverton, East Providence, Woonsocket, and Johnston; 7 inches in Burrillville, Cranston, Foster, and West Warwick; and 6 inches in Cumberland, Coventry, and North Kingstown.
43	County Wide	1/20/2001	Heavy Snow	0	0	\$ -	
44	County Wide	1/30/2001	Winter Weather	0	0	\$ -	Freezing rain resulted in dozens of minor accidents in northwest Providence and Western Kent Counties.
45	County Wide	2/5/2001	Heavy Snow	0	0	\$ -	A winter storm brought heavy snow and strong winds to northern Rhode Island. The highest totals, between 7 and 15 inches, were reported in northwest Providence County. Amounts of 4 to 8 inches were common in southeast Providence County, with lower amounts farther to the south. Traffic leaving Providence on Routes 6 and 295 was snarled for several hours, as many commuters tried to leave work early. About 1,300 customers were left without power during the storm.
46	County Wide	2/5/2001	Heavy Snow	0	0	\$ -	
47	County Wide	2/25/2001	Winter Weather	0	0	\$ -	Snow changed to sleet and freezing rain, creating slippery travel at the end of the February school vacation week. There were many minor accidents throughout Rhode Island, especially north of Providence, where there several injuries indirectly attributed to the icy conditions.
48	County Wide	2/25/2001	Winter Weather	0	0	\$ -	
49	County Wide	3/5/2001	Heavy Snow	0	0	\$ 10,000,000.00	A major winter storm impacted central and northern Rhode Island with heavy snow and strong winds. The slow-moving storm, which tracked south of New England, dumped more than a foot of snow across Providence and
50	County Wide	3/5/2001	Heavy Snow	0	0	\$ -	

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							Kent counties and knocked out power to tens of thousands of customers. Schools and businesses were shut down for three days in some communities.
51	County Wide	3/9/2001	Heavy Snow	0	0	\$ 500,000.00	A winter storm tracking from the Great Lakes to just south of New England brought heavy snow to northern Providence County. The highest snowfall totals were found in the higher elevations, where 6 to 8 inches of snow fell.
52	County Wide	11/27/2002	Heavy Snow	0	0	\$ -	A winter storm passing southeast of New England brought heavy snow to northern Rhode Island. The highest totals were observed in the higher elevations of northwest Providence and western Kent Counties, where around 8 inches of snow fell. On average, storm totals ranged from 4 to 8 inches. The storm occurred on the day before Thanksgiving, but impact on travel was minimal since most people traveled the day before, in anticipation of the storm. Still, several minor accidents were reported throughout the region, but no injuries were directly attributable to the storm.
53	County Wide	11/27/2002	Heavy Snow	0	0	\$ -	
54	County Wide	12/5/2002	Heavy Snow	0	0	\$ -	A winter storm passing about 200 miles southeast of Nantucket brought heavy snow to much of Rhode Island. Due to its offshore track, the storm brought the most snow to central and southern sections of the Ocean State, where amounts averaged around 7 inches. Amounts averaged less in northwest Providence County, generally between 2 and 5 inches. No storm damage or injuries were reported.
55	County Wide	12/25/2002	Winter Storm	0	0	\$ 10,000.00	A major winter storm impacted southern New England on Christmas Day, bringing heavy, wet snow and high winds to the Ocean State. The greatest snowfall accumulations were reported in northwest Providence County, where amounts of 4 to 7 inches were common. Only 1 to 3 inches of snow were observed farther south into Kent and southeast Providence Counties, where rain was reported through much of the day. The weight of the snow, combined with strong northeast winds, brought down tree limbs and power lines in Woonsocket, North Smithfield, and Burrillville. About 2,000 customers lost power during the

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							height of the storm. At T.F. Green State Airport in West Warwick, sustained winds reached 40 mph during the evening.
56	County Wide	1/3/2003	Winter Storm	0	0	\$ -	A powerful winter storm tracked south of New England and dumped heavy snow over northwest Rhode Island. Totals of 5 to 10 inches were common in northwest Providence County. Aside from scattered power outages and dozens of minor accidents, little significant impact occurred from the storm since most residents avoided travel. No injuries or damage was directly attributable to the storm.
57	County Wide	2/7/2003	Winter Storm	0	0	\$ -	A winter storm passing southeast of Nantucket brought heavy snow to Rhode Island. Amounts of 6 to 12 inches were common, with the greatest amounts in the higher elevations of northern Providence County. No significant storm damage was reported, mainly due to the fluffy, light nature of the snow as temperatures fell into the teens and 20s during the height of the storm. The main impact was to travel, as police and fire departments responded to numerous fender-benders. No injuries were reported.
58	County Wide	2/7/2003	Winter Storm	0	0	\$ -	
59	County Wide	2/17/2003	Winter Storm	0	0	\$ -	A major winter storm impacted southern New England with heavy snow and strong winds as it tracked southeast of Nantucket. Snowfall totals of one to two feet were widely observed throughout Rhode Island. No significant damage was reported due to the storm, primarily since the snow was fluffy and light with temperatures in the teens and 20s. Impact on travel was minimal, since the storm affected the region on Presidents Day and most schools were closed that week. However, there were numerous reports of minor accidents as a result of slippery roads. No injuries were reported.
60	County Wide	2/17/2003	Winter Storm	0	0	\$ -	
61	County Wide	3/6/2003	Winter Storm	0	0	\$ 50,000.00	A fast moving winter storm passing south of New England brought heavy snow to Rhode Island, where totals of 6 to 10 inches were common. Although dozens of minor accidents were reported as a result of poor visibility and slippery roads, the overall impact of this late season storm was far
62	County Wide	3/6/2003	Winter Storm	0	0	\$ 50,000.00	

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							less on the Ocean State than to areas in adjacent southeast Massachusetts.
63	County Wide	12/5/2003	Winter Storm	0	0	\$ -	A major winter storm brought heavy snow and strong winds to southern New England, dumping 1 to 2 feet of snow over a large area as it tracked slowly off the coast. In Rhode Island, snowfall amounts averaged between 10 and 20 inches, and had a major disruption on transportation due to the combination of poor visibility and snow covered roads. Dozens of minor accidents were reported.
64	County Wide	12/5/2003	Winter Storm	0	0	\$ -	
65	County Wide	3/16/2004	Heavy Snow	0	0	\$ -	A late season winter storm passing southeast of New England brought heavy snow to northwest Rhode Island, where snowfall totals of 4 to 8 inches were common. Lesser amounts of 3 to 6 inches were reported elsewhere in the Ocean State, primarily due to warmer surface temperatures which allowed for some melting.
66	County Wide	11/12/2004	Heavy Snow	0	0	\$ -	The first widespread snowfall of the season affected Rhode Island from the afternoon of the 12th through midday on the 13th, as low pressure developed off the mid Atlantic coast and tracked southeast of New England. Many locations throughout the Ocean State reported snowfall totals between 2 and 5 inches, but totals between 4 and 8 inches were widely observed in Providence County. Despite this being the first widespread snowfall of the season, the storm had little significant impact, aside from several minor accidents.
67	County Wide	11/12/2004	Heavy Snow	0	0	\$ -	
68	County Wide	12/26/2004	Winter Storm	0	0	\$ -	A powerful winter storm brought heavy snow and strong winds to Rhode Island. Snowfall totals of 6 to 10 inches were widely observed throughout the state, along with winds gusting as high as 50 mph along the south coast. There were dozens of reports of accidents due to the combination of slick roads and poor visibility.
69	County Wide	12/26/2004	Winter Storm	0	0	\$ -	
70	County Wide	1/5/2005	Winter Storm	0	0	\$ -	Strengthening low pressure tracking southeast of Nantucket brought heavy snow to northern Rhode Island

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
71	County Wide	1/5/2005	Winter Storm	0	0	\$ -	and much of interior southern New England. Snowfall totals of 5 to 7 inches were widely observed throughout Providence County.
72	County Wide	1/22/2005	Winter Storm	0	0	\$ -	A major winter storm brought heavy snow, high winds, and coastal flooding to southern New England. In Rhode Island, snowfall totals of 15 to 25 inches were widely observed. Winds gusting as high as 60 mph at times (mainly around greater Providence) created near blizzard conditions at times, making travel impossible during the height of the storm. Officially, the snowfall total at T.F. Green State Airport in Warwick was 23.4 inches, which was the second greatest snowstorm for the Providence area since records began in 1905. The snowfall total of 16.4 inches on the 23rd set a daily snowfall record, easily breaking the previous record of 8 inches set in 1965.
73	County Wide	1/22/2005	Winter Storm	0	0	\$ -	
74	County Wide	2/24/2005	Heavy Snow	0	0	\$ -	Low pressure over the Mid Atlantic states strengthened rapidly as it passed southeast of Nantucket, and brought heavy snow to much of southeast New England, including Rhode Island. Snowfall totals averaged 5 to 8 inches throughout the Ocean State, with locally as much as 10 inches near the south coast.
75	County Wide	2/24/2005	Heavy Snow	0	0	\$ -	
76	County Wide	3/1/2005	Winter Storm	0	0	\$ -	Heavy snow and gusty winds affected Rhode Island and all of southern New England, as low pressure reformed off the mid Atlantic coast and tracked southeast of the region. Snowfall totals of 4 to 8 inches were widely observed.
77	County Wide	3/1/2005	Winter Storm	0	0	\$ -	
78	County Wide	3/12/2005	Winter Storm	0	0	\$ -	Low pressure south of Long Island intensified rapidly as it headed to the Canadian Maritimes, and brought heavy snow to northwest Rhode Island and much of interior southern New England. Snowfall totals ranged from as little as 1 to 3 inches along the coast to as much as 9 inches inland.
79	County Wide	3/23/2005	Heavy Snow	0	0	\$ -	Low pressure off the Virginia coast tracked well southeast of New England, but brought pockets of heavy snow to northwest Rhode Island. Totals of 4 to 8 inches were common throughout western Kent and northwest

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							Providence counties, with as little as 1 to 3 inches near the coast. Officially, the snowfall total at T.F. Greene State Airport in Warwick was 2.1 inches. Other snowfall totals, as reported by trained spotters, included 9 inches in Foster and Burrillville, 8 inches in Scituate, and 6 inches in Coventry and Johnston.
80	County Wide	2/12/2006	Winter Storm	0	0	\$ 10,000.00	Low pressure centered off the Virginia coast intensified into a strong Noreaster as it tracked about 75 miles southeast of Nantucket Sunday afternoon, 12 February 2006. This strong Noreaster produced heavy snow and windy conditions across Rhode Island. Blizzard criteria was met at the T.F. Green Airport in Warwick between 1051 AM and 3 PM. 9.4 inches of snow accumulated at T.F. Green airport, which breaks the previous record snowfall maximum for the date. The accumulating snow began around 6 AM and tapered off around 6 PM. Snowfall amounts generally ranged between 9 and 14 inches, with some locations reporting up to 16 inches of snow. No known injuries directly resulted from this winter storm.
81	County Wide	2/12/2006	Winter Storm	0	0	\$ 10,000.00	
82	County Wide	2/14/2007	Winter Storm	0	0	\$ -	Snowfall totals ranged from 2 inches in North Foster and Smithfield to 4 inches in Burrillville. Light icing was also reported from a combination of snow, sleet, and freezing rain. The wintry mix changed to rain for a few hours, before ending as a period of freezing drizzle.
83	County Wide	3/16/2007	Winter Storm	0	0	\$ -	Snowfall totals ranged from 7 inches in Woonsocket to 8 inches in North Foster.
84	County Wide	3/16/2007	Winter Storm	0	0	\$ -	
85	County Wide	12/13/2007	Heavy Snow	0	0	\$ -	High pressure across the St. Lawrence Valley locked in cold air across southern New England and combined with low pressure south of the coast to produce a significant snowfall. Snow fell at rates of up to two inches per hour for an eight to ten hour period resulting in nearly a foot of snow in most locations. Many motorists were affected as early dismissals from work and school just before snow began
86	County Wide	12/13/2007	Heavy Snow	0	0	\$ -	

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							created rush hour like conditions which limited the snowplows' ability to plow.
87	County Wide	12/16/2007	Heavy Snow	0	0	\$ -	Two low pressure systems merged into a storm over eastern Massachusetts and produced strong winds and a variety of winter weather across Rhode Island.
88	County Wide	12/16/2007	Heavy Snow	0	0	\$ -	
89	County Wide	1/14/2008	Heavy Snow	0	0	\$ 30,000.00	Low pressure moved up the Atlantic coast and spread snow across southern New England. Heavy snow fell across northern Rhode Island, downing trees and power lines.
90	County Wide	2/1/2008	Winter Weather	1	0	\$ -	A car began skidding sideways while on a curve in the road and was struck by a loaded flatbed tow truck. The truck driver tried to avoid the accident, but because of the icy roads was unable to move quickly. The driver of the car was killed.
91	County Wide	12/19/2008	Heavy Snow	0	0	\$ -	Ten to twelve inches of snow fell across northwestern Providence County.
92	County Wide	12/19/2008	Heavy Snow	0	0	\$ -	Nine to ten inches of snow fell across the Providence metro area.
93	County Wide	12/31/2008	Heavy Snow	0	0	\$ -	Numerous reports of five to eight inches of snow were received.
94	County Wide	12/31/2008	Heavy Snow	0	0	\$ -	Numerous reports of six to ten inches of snow were received.
95	County Wide	1/18/2009	Heavy Snow	0	0	\$ -	Six to seven inches of snow fell across northwestern Providence County.
96	County Wide	1/18/2009	Heavy Snow	0	0	\$ -	
97	County Wide	3/2/2009	Heavy Snow	0	0	\$ -	Seven to ten inches of snow fell across southeast Providence County.
98	County Wide	3/2/2009	Heavy Snow	0	0	\$ -	Five to ten inches of snow fell across northwest Providence County.
99	County Wide	12/19/2009	Heavy Snow	0	0	\$ -	Fourteen to nineteen inches of snow fell across northwest Providence County.
100	County Wide	12/19/2009	Heavy Snow	0	0	\$ -	
101	County Wide	12/26/2010	Winter Storm	0	0	\$ 15,000.00	Snowfall totals of 8 to 12 inches were observed in southeast Providence County, including 11 inches in downtown

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
102	County Wide	12/26/2010	Winter Storm	0	0	\$ -	Providence. High winds brought down wires on Pawtucket Avenue in Providence.
103	County Wide	1/12/2011	Heavy Snow	0	0	\$ -	Ten to twenty-two inches of snow fell across northwest Providence County.
104	County Wide	1/12/2011	Heavy Snow	0	0	\$ -	Eight to fourteen inches of snow fell across southeastern Providence County.
105	County Wide	1/18/2011	Winter Storm	0	0	\$ -	Between 2 to 4 inches of snow fell across Northwest Providence County followed by a third of an inch of ice accumulation over isolated locations.
106	County Wide	1/21/2011	Winter Storm	0	0	\$ -	Between 6 to 7.5 inches of snow fell across Northwest Providence County.
107	County Wide	1/26/2011	Heavy Snow	0	0	\$ -	Twelve to seventeen inches of snow fell across northwest Providence County.
108	County Wide	1/26/2011	Heavy Snow	0	0	\$ -	Nine to eleven inches of snow fell across southeast Providence County.
109	County Wide	2/1/2011	Winter Storm	0	0	\$ -	A total of 6-8 inches of snow fell across Northwest Providence County over the two day period, with upwards of a tenth of an inch of ice accumulation for isolated locations falling during the morning period on the 2nd.
110	County Wide	2/1/2011	Winter Storm	0	0	\$ -	
111	County Wide	10/29/2011	Winter Weather	0	0	\$ -	Three to six inches of snow fell across northwest Providence County, with the higher amounts falling to the north and west.
112	County Wide	1/19/2012	Winter Weather	0	0	\$ -	Amateur Radio operators reported 3 to 5 inches of snow on the ground.
113	County Wide	1/19/2012	Winter Weather	0	0	\$ -	
114	County Wide	1/21/2012	Winter Weather	0	0	\$ -	Amateur Radio operator reported 3 to 5 inches of snow on the ground.
115	County Wide	1/21/2012	Winter Weather	0	0	\$ -	
116	County Wide	2/29/2012	Winter Weather	0	0	\$ -	Three to six inches of snow fell across northwest Providence County.
117	County Wide	2/29/2012	Winter Weather	0	0	\$ -	Three to four inches of snow fell across southeast Providence County.
118	County Wide	11/7/2012	Winter Weather	0	0	\$ -	

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
119	County Wide	11/7/2012	Winter Weather	0	0	\$ -	
120	County Wide	12/29/2012	Heavy Snow	0	0	\$ -	Snowfall totals between eight and thirteen inches were reported in northwest Providence County.
121	County Wide	12/29/2012	Heavy Snow	0	0	\$ -	
122	County Wide	2/8/2013	Heavy Snow	0	0	\$ -	Twenty-one to twenty-eight inches of snow fell across northwestern Providence County.
123	County Wide	2/8/2013	Heavy Snow	1	0	\$ -	Seventeen to twenty-one inches of snow fell across southeastern Providence County. A Rhode Island man died from a heart attack while shoveling snow from the blizzard. No further details were available, including what city or town the man was from.
124	County Wide	2/8/2013	Blizzard	0	0	\$ -	Near blizzard conditions were observed on the Automated Surface Observing System at TF Green State Airport (KPVD) for two to three hours prior to the most intense part of the storm. Wind sensors were lost during the height of the storm, making verification difficult. Times are estimated based on surrounding stations and radar data. The highest wind gust observed was 54 mph at a Weatherflow reporting site at Providence Harbor.
125	County Wide	2/8/2013	Blizzard	0	0	\$ -	Blizzard conditions were observed on the Automated Weather Observation System at North Central State Airport in Smithfield, MA (KSFZ) for a total of five and a half hours.
126	County Wide	2/17/2013	Winter Weather	0	0	\$ -	Three to four inches of snow fell across northwestern Providence County.
127	County Wide	2/17/2013	Winter Weather	0	0	\$ -	Two to four inches of snow fell across southeastern Providence County.
128	County Wide	3/7/2013	Heavy Snow	0	0	\$ -	Five to twelve inches of snow fell across northwestern Providence County.
129	County Wide	3/7/2013	Winter Weather	0	0	\$ -	Five to six inches of snow fell across southeastern Providence County.
130	County Wide	3/18/2013	Winter Weather	0	0	\$ -	Two to five inches of snow fell across northwestern Providence County.
131	County Wide	12/14/2013	Heavy Snow	0	0	\$ -	Four to eight inches of snow fell across northwestern Providence County.

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
132	County Wide	1/2/2014	Heavy Snow	0	0	\$ -	Seven to eight inches of snow fell across northwestern Providence County.
133	County Wide	1/2/2014	Heavy Snow	0	0	\$ -	Seven to eleven inches of snow fell across southeastern Providence County.
134	County Wide	1/21/2014	Heavy Snow	0	0	\$ -	Ten to twelve inches of snow fell across northwestern Providence County.
135	County Wide	1/21/2014	Heavy Snow	0	0	\$ -	Six to ten inches of snow fell across southeastern Providence County.
136	County Wide	2/5/2014	Heavy Snow	0	0	\$ -	Five to ten inches of snow fell across northwestern Providence County.
137	County Wide	2/5/2014	Heavy Snow	0	0	\$ -	Five to seven inches of snow fell across southeastern Providence County.
138	County Wide	2/13/2014	Heavy Snow	0	0	\$ -	Five to ten inches of snow fell across northwestern Providence County.
139	County Wide	12/9/2014	Winter Weather	0	0	\$ -	An eighth of an inch of ice accumulated on exposed surfaces in the western part of Glocester. Numerous accidents were reported.
140	County Wide	1/24/2015	Heavy Snow	0	0	\$ -	Four to seven inches of snow fell across northwestern Providence County.
141	County Wide	1/26/2015	Blizzard	0	0	\$ -	Blizzard conditions occurred at nearby T.F. Green Airport from approximately 6 am to 9 am. Outside this time frame, near blizzard conditions occurred with gusty winds and limited visibilities. Fourteen to twenty inches of snow fell across southeastern Providence County.
142	County Wide	1/26/2015	Heavy Snow	0	0	\$ -	Near blizzard conditions occurred at Smithfield State Airport. Sixteen to thirty inches of snow fell across northwestern Providence County.
143	County Wide	2/2/2015	Heavy Snow	0	0	\$ -	Three to thirteen inches of snow fell across northwestern Providence County.
144	County Wide	2/2/2015	Heavy Snow	0	0	\$ -	Six to thirteen inches of snow fell across southeastern Providence County.
145	County Wide	2/5/2015	Winter Weather	0	0	\$ -	Two to four inches of snow fell across northwest Providence County.
146	County Wide	2/8/2015	Heavy Snow	0	0	\$ -	Six to sixteen inches of snow fell across northwestern Providence County.

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
147	County Wide	2/8/2015	Heavy Snow	0	0	\$ -	Seven to thirteen inches of snow fell across southeastern Providence County.
148	County Wide	2/14/2015	Heavy Snow	0	1	\$ -	Eight to thirteen inches of snow fell across northwestern Providence County. A 56 year old female custodian was injured when she fell through a skylight while clearing the snow from the roof of Smithfield High School on February 18th.
149	County Wide	2/14/2015	Heavy Snow	0	0	\$ -	Seven to twelve inches of snow fell across southeastern Providence County.
150	County Wide	2/21/2015	Winter Weather	0	0	\$ -	One to five inches of snow fell across northwestern Providence County.
151	County Wide	2/25/2015	Winter Weather	0	0	\$ -	One to four inches of snow fell across southeastern Providence County.
152	County Wide	3/1/2015	Winter Weather	0	0	\$ -	Three to five inches of snow fell across northwestern Providence County.
153	County Wide	3/1/2015	Winter Weather	0	0	\$ -	Four to six inches of snow fell across southeastern Providence County.
154	County Wide	3/5/2015	Winter Weather	0	0	\$ -	Three to four inches of snow fell across southeastern Providence County.
155	County Wide	1/23/2016	Heavy Snow	0	0	\$ -	Four to eight inches of snow fell across southeastern Providence County.
156	County Wide	1/23/2016	Heavy Snow	0	0	\$ -	Five to eight inches of snow fell across northwestern Providence County.
157	County Wide	2/5/2016	Heavy Snow	0	0	\$ 50,000.00	Five to twelve inches of snow fell across northwestern Providence County. In addition, heavy snow downed trees and wires in Scituate. A utility pole and several tree limbs were downed in Burrillville.
158	County Wide	2/5/2016	Heavy Snow	0	0	\$ -	Six to eight inches of snow fell across southeastern Providence County.
159	County Wide	2/8/2016	Heavy Snow	0	0	\$ -	Six to nine inches of snow fell across northwestern Providence County.
160	County Wide	2/8/2016	Heavy Snow	0	0	\$ -	Four to eight inches of snow fell across southeastern Providence County.
161	County Wide	3/21/2016	Winter Weather	0	0	\$ -	One to six inches of snow fell across northwestern Providence County.

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
162	County Wide	3/21/2016	Winter Weather	0	0	\$ -	One to three inches of snow fell across southeastern Providence County.
163	County Wide	4/3/2016	Winter Weather	0	0	\$ -	Three to seven inches of snow fell across northwestern Providence County.
164	County Wide	4/4/2016	Heavy Snow	0	0	\$ -	Four to seven inches of snow fell across northwestern Providence County.
165	County Wide	4/4/2016	Heavy Snow	0	0	\$ -	Five to eight inches of snow fell across southeastern Providence County.
166	County Wide	12/17/2016	Winter Weather	0	0	\$ -	Three and one-half to four and one-half inches of snow fell over Southeast Providence County.
167	County Wide	12/17/2016	Winter Weather	0	0	\$ -	Three and one-half to five inches of snow fell over Northern and Western Providence County.
168	County Wide	1/7/2017	Winter Storm	0	0	\$ -	Eight to ten inches of snow fell on Southeast Providence County during the day and evening.
169	County Wide	1/7/2017	Winter Storm	0	0	\$ -	Eight to eleven inches of snow fell on Northwest Providence County during the day and evening.
170	County Wide	2/9/2017	Winter Storm	0	0	\$ -	Ten to fifteen inches of snow fell on Northwest Providence County.
171	County Wide	2/9/2017	Winter Storm	0	0	\$ -	Ten to twelve inches of snow fell on Southeast Providence County.
172	County Wide	3/14/2017	Heavy Snow	0	0	\$ -	Snow began falling off-and-on before daybreak, then fell in earnest during the morning, before changing over to rain by noon. A NWS employee reported 5.5 inches in North Providence. The general public also reported 5.5 inches in Pawtucket.
173	County Wide	3/14/2017	Heavy Snow	0	0	\$ -	
174	County Wide	12/9/2017	Winter Storm	0	0	\$ -	Four to six inches of snow fell on Northwest Providence County.
175	County Wide	12/9/2017	Winter Weather	0	0	\$ -	Two and one-half to four and one-half inches of snow fell on Southeast Providence County.
176	County Wide	12/23/2017	Winter Weather	0	0	\$ -	Ice accumulation in Northwest Providence County was up to one-quarter inch.
177	County Wide	1/4/2018	Winter Storm	0	0	\$ -	Eight to fourteen inches of snow fell on Northwest Providence County.
178	County Wide	1/4/2018	Winter Storm	0	0	\$ -	Twelve to sixteen inches of snow fell on Southeast Providence County.

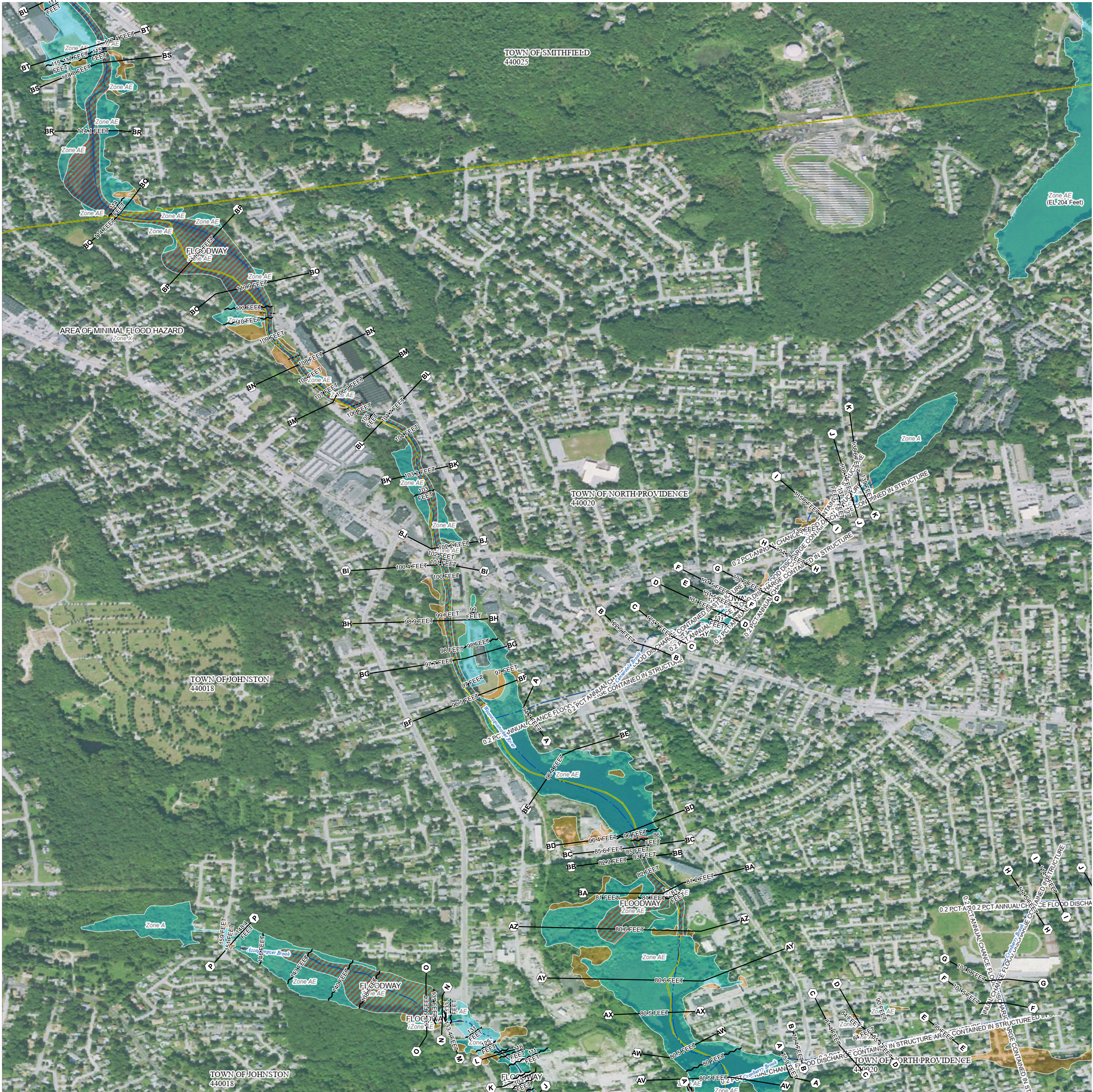
Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
179	County Wide	1/30/2018	Winter Weather	0	0	\$ -	From four to six inches fell on Southeast Providence County.
180	County Wide	1/30/2018	Winter Storm	0	0	\$ -	From five to seven inches fell on Northwest Providence County.
181	County Wide	2/14/2018	Winter Weather	0	0	\$ 30,000.00	At 714 AM EST in Foster and Scituate, several multiple vehicle accidents were reported due to icing.
182	County Wide	2/17/2018	Winter Storm	0	0	\$ -	From five to six inches of snow fell on Northwest Providence County.
183	County Wide	3/7/2018	Winter Storm	0	0	\$ -	From six to thirteen inches of snow fell on Northwest Providence County.
184	County Wide	3/13/2018	Winter Storm	0	0	\$ -	From twelve to seventeen inches of snow fell on Southeast Providence County.
185	County Wide	3/13/2018	Winter Storm	0	0	\$ -	From From thirteen to twenty-five inches of snow fell on Northwest Providence County.
186	County Wide	11/15/2018	Heavy Snow	0	0	\$ -	Based on numerous reports from CoCoRaHS, spotters, the public, and the media, snowfall averaged 7.5 inches in northwest Providence County. The measurements ranged from 5.0 inches in Woonsocket to 9.0 inches in Burrillville.
187	County Wide	11/15/2018	Heavy Snow	0	0	\$ -	
188	County Wide	1/19/2019	Winter Weather	0	0	\$ -	Three to five inches of snow fell on Northwest Providence County. A member of the General Public in Burrillville reported ice accumulation of one-quarter inch.
189	County Wide	3/3/2019	Winter Storm	0	0	\$ -	From eight to twelve inches of snow fell on Southeast Providence County.
190	County Wide	3/3/2019	Winter Storm	0	0	\$ -	From ten to fifteen inches of snow fell on Northwest Providence County.
191	County Wide	4/18/2020	Winter Weather	0	0	\$ 700.00	An average of 5 to 5.5 inches of snow fell in northwest Providence County, with the highest reports being 5.8 inches in Burrillville (public), 5.5 inches in Pascoag (amateur radio), and 5.4 inches in North Foster (Co-Op observer). However only 2.5 inches was observed in Harrisville (amateur radio) and 4.2 inches in Glocester (trained spotter). In Glocester at 515 AM EST (615 AM EDT), a medium sized tree was reported down on wires on Money Hill Road.
192	County Wide	10/30/2020	Heavy Snow	0	0	\$ -	Snowfall averaged about 5.5 inches across northwest Providence County. In Burrillville, an amateur radio

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
							operator reported 6.0 inches. A CoOp Observer in North Foster recorded 5.7 inches. In Cumberland, a trained spotter reported 5.5 inches. In Smithfield and North Smithfield, amounts ranged from 4.2 to 4.8 inches.
193	County Wide	12/16/2020	Heavy Snow	0	0	\$ -	Snowfall generally ranged from 8.4 to 14 inches. Some specific amounts included a public report of 14 inches in Glocester, a CoCoRaHS report of 13.0 inches in Burrillville, 11.1 inches in North Smithfield, and 9.6 inches in Woonsocket. Winds gusted to 40 to 45 mph.
194	County Wide	12/16/2020	Heavy Snow	0	0	\$ -	
195	County Wide	2/1/2021	Winter Storm	0	0	\$ -	Snowfall amounts averaged 8 to 10 inches but ranged from as little as 3 inches in Woonsocket to 12.5 inches in North Foster. Winds generally were gusting from 35 to 45 mph. At 256 AM EST on the 2nd the AWOS at KSFZ in North Smithfield reported a gust of 39 mph.
196	County Wide	2/7/2021	Heavy Snow	0	0	\$ -	Heavy snow ranged from 6 to 11 inches in northwest Providence County. The highest amount was 11.0 inches in Burrillville.
197	County Wide	2/7/2021	Heavy Snow	0	0	\$ -	
198	County Wide	1/7/2022	Heavy Snow	0	0	\$ -	Snowfall ranged from 8 to 12 inches with the highest amount (12 inches) reported in Harrisville and Burrillville.
199	County Wide	1/7/2022	Heavy Snow	0	0	\$ -	Snowfall ranged from 5 to 6 inches with the greatest measurement (6.5 inches) reported in North Providence.
200	County Wide	1/28/2022	Winter Storm	0	0	\$ -	Snowfall generally ranged from 13 to 19 inches. The highest amount reported was 19.1 inches in Harrisville. Winds gusted 30 to 40 mph. The Smithfield Airport ASOS (KSFZ) reported blizzard criteria from 806 AM EST to 827 AM EST and from 853 AM EST to 956 AM EST but then all wind data were lost and thus a blizzard was unable to be determined.
201	County Wide	1/28/2022	Heavy Snow	0	0	\$ -	Wind gusted 30 to 40 mph. Snowfall ranged from 16 to 24 inches. The highest report was 24.3 inches in Riverside.
202	County Wide	2/27/2023	Heavy Snow	0	0	\$ -	Snowfall in northwest Providence County generally ranged from 5.5 to 7.0 inches, with the highest amounts in the higher terrain. Some specific amounts included: 7.0 inches in Foster; 6.3 inches in Glocester; 6.0 inches in Burrillville; and 5.5 inches in Smithfield.

Count	Location	Date	Type	Deaths	Injuries	Property Damage	Event Narrative
203	County Wide	1/6/2024	Heavy Snow	0	0	\$ -	Generally 7 to 11 inches of snow fell. Some accumulations included 11 inches in Burrillville, 11 inches in Glocester, and 10.5 inches in Harrisville.
204	County Wide	2/13/2024	Heavy Snow	0	0	\$ -	Generally 5 to 10 inches of snow fell, with more in western Rhode Island and less in eastern Rhode Island. Some notable accumulations include 10.5 inches in Scituate, 10.3 inches in Foster, and 9.7 inches in Smithfield.
205	County Wide	2/13/2024	Heavy Snow	0	0	\$ -	Generally 3 to 7 inches of snow fell. Some notable accumulations included 7 inches in North Providence and 5.8 inches in Providence.
Total				2	1	\$ 10,955,700.00	

Appendix B: HIRA Documentation and Data

B.2: Town of North Providence FIRM Maps



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR DRAFT FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, AB9
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee See Notes Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		Cross Sections with 1% Annual Chance
		Water Surface Elevation
		Coastal Transect
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary

NOTES TO USERS

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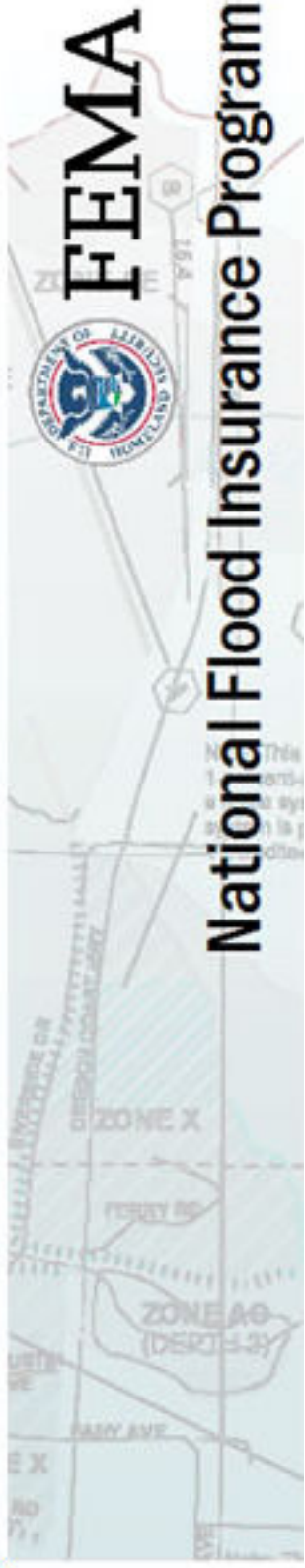
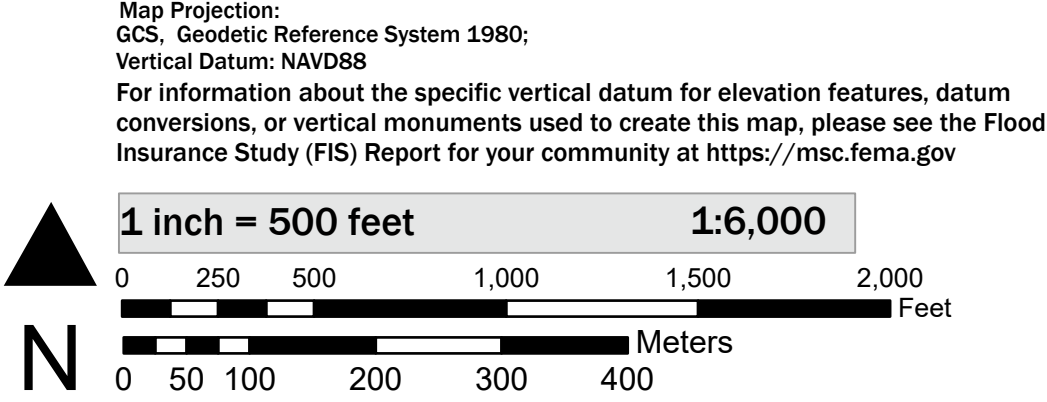
To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Basemap information shown on this FIRM was provided in digital format by USDA, Farm Service Agency (FSA). This information was derived from NAIP, dated April 11, 2018.

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SCALE



NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

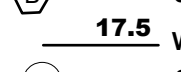
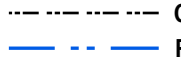
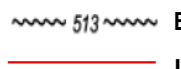
PANEL 301 OF 451

Panel Contains:	440020	0301
COMMUNITY	NUMBER 440025	PANEL 0301
	TOWN OF NORTH PROVIDENCE	
	TOWN OF JOHNSTON	
	TOWN OF SMITHFIELD	



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR DRAFT FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee See Notes Zone X
OTHER AREAS		Area with Flood Risk due to Levee Zone D
		NO SCREEN Area of Minimal Flood Hazard Zone X
GENERAL STRUCTURES		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D
OTHER FEATURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
		Cross Sections with 1% Annual Chance
		Water Surface Elevation
		Coastal Transect
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary

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For community and countywide map dates, refer to the Flood Insurance Study Report for this jurisdiction.

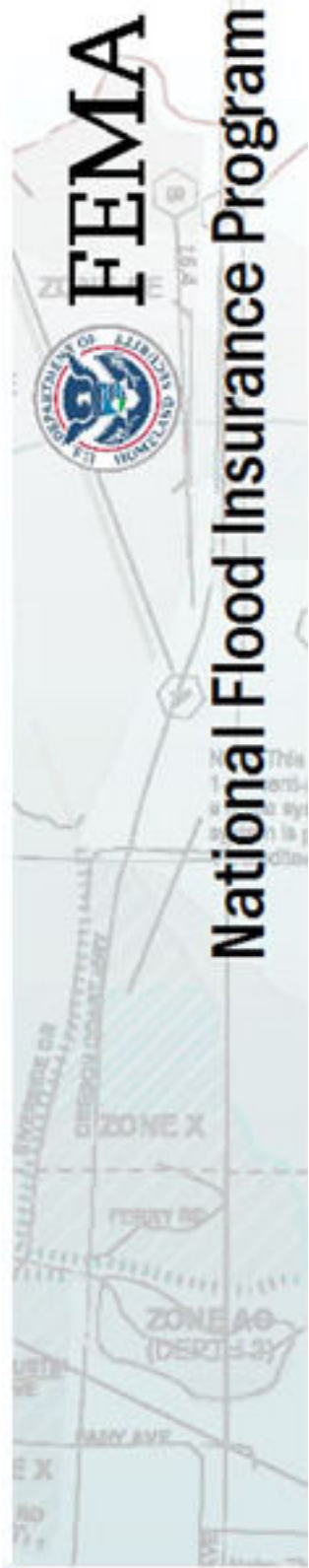
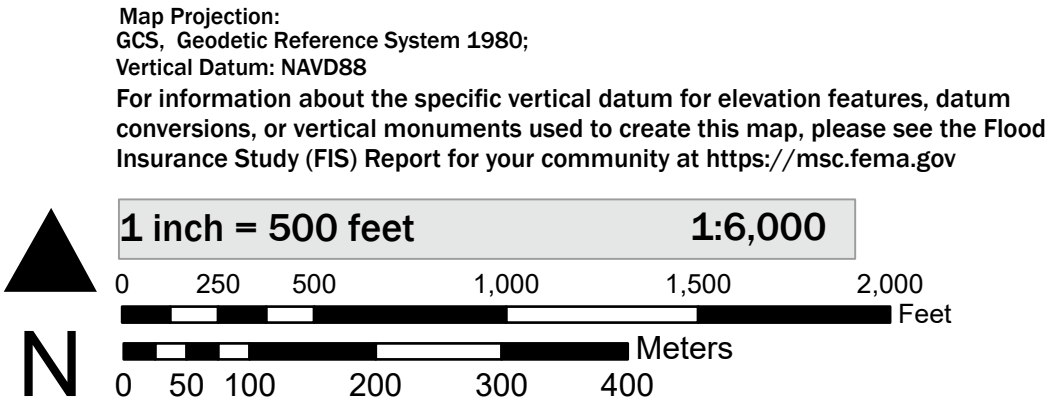
To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

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SCALE



NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

PANEL 302 OF 451

Panel Contains:

COMMUNITY
TOWN OF NORTH
PROVIDENCE
TOWN OF LINCOLN
CITY OF
PROVIDENCE
TOWN OF
SMITHFIELD

440020 0302
445400 0302
NUMBER PANEL
440025 0302

MAP NUMBER
44007C0302H
EFFECTIVE DATE
October 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR DRAFT FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>
		With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i> Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile <i>Zone X</i>
		Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
		Area with Reduced Flood Risk due to Levee See Notes <i>Zone X</i>
OTHER AREAS		Area with Flood Risk due to Levee <i>Zone D</i>
		NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
OTHER AREAS		Effective LOMRs
		Area of Undetermined Flood Hazard <i>Zone D</i>
GENERAL STRUCTURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		Cross Sections with 1% Annual Chance
		Water Surface Elevation
		Coastal Transect
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary

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For community and countywide map dates, refer to the Flood Insurance Study Report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

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SCALE

Map Projection:
GCS, Geodetic Reference System 1980;
Vertical Datum: NAVD83

For information about the specific vertical datum for elevation features, datum conversions, or vertical monuments used to create this map, please see the Flood Insurance Study (FIS) Report for your community at <https://msc.fema.gov>

1 inch = 500 feet

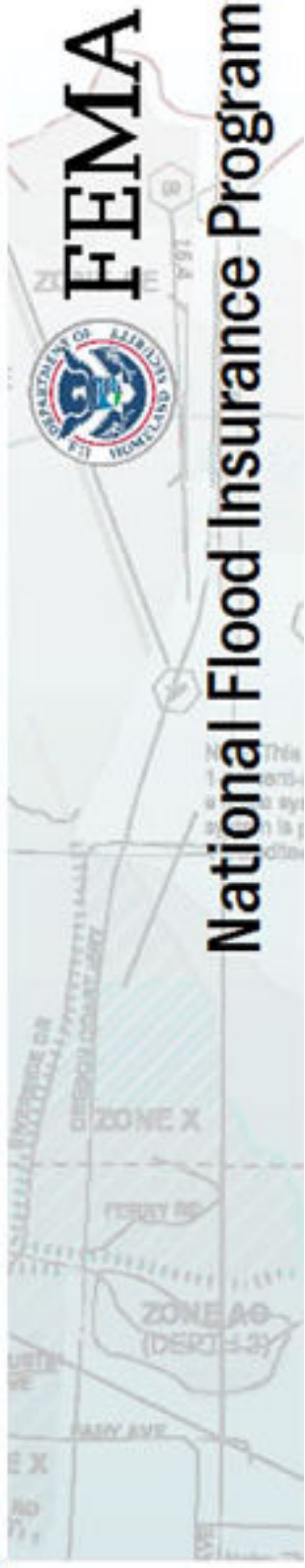
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0 250 500 1,000 1,500 2,000

0 50 100 200 300 400

Feet

Meters



NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

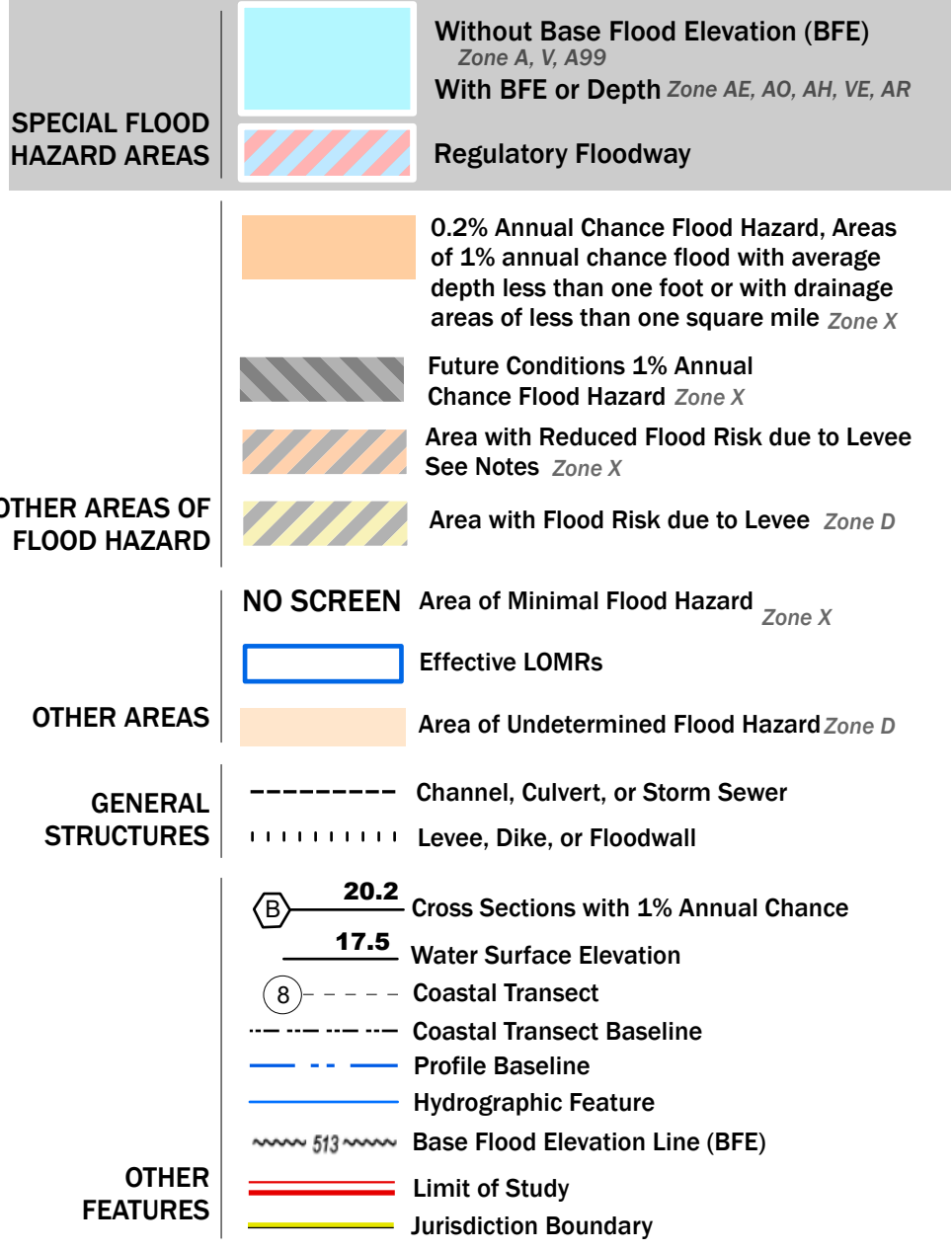
PANEL 189 OF 451

Panel Contains:	440020	0189
COMMUNITY	NUMBER 440025	PANEL 0189
	TOWN OF NORTH PROVIDENCE	
	TOWN OF LINCOLN	
	TOWN OF SMITHFIELD	



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR DRAFT FIRM PANEL LAYOUT



NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-6267) or visit the FEMA Flood Map Service Center website at <https://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to the Flood Insurance Study Report for this jurisdiction.

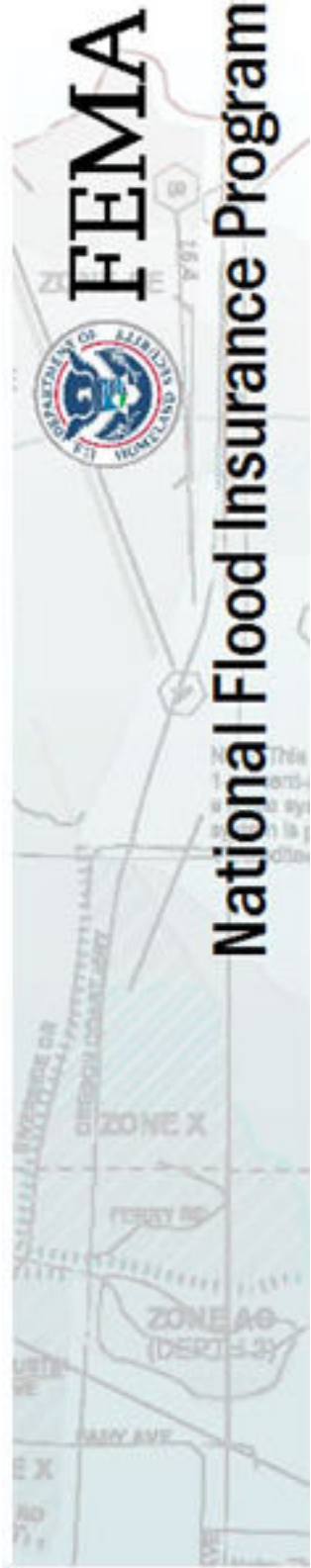
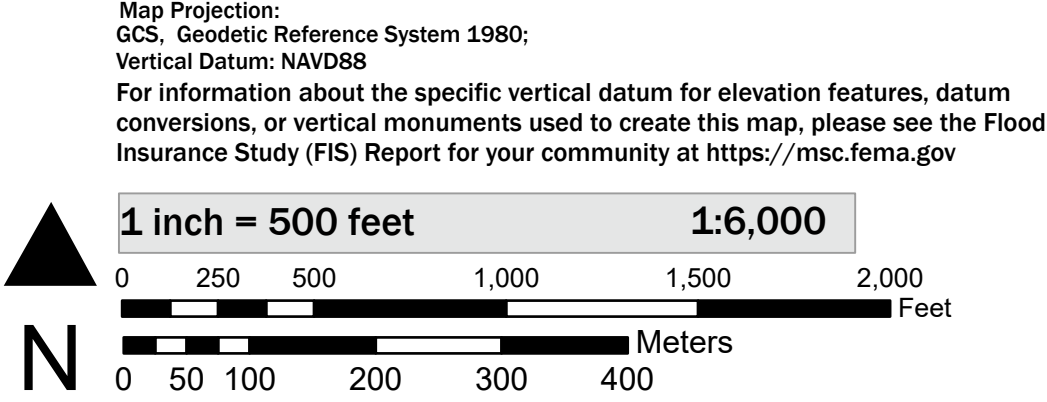
To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Basemap information shown on this FIRM was provided in digital format by USDA, Farm Service Agency (FSA). This information was derived from NAIP, dated April 11, 2018.

This map was exported from FEMA's National Flood Hazard Layer (NFHL) on **1/13/2025 2:22 AM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time. For additional information, please see the Flood Hazard Mapping Updates Overview Fact Sheet at <https://www.fema.gov/media-library/assets/documents/118418>

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards. This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date.

SCALE



NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

PANEL 306 OF 451

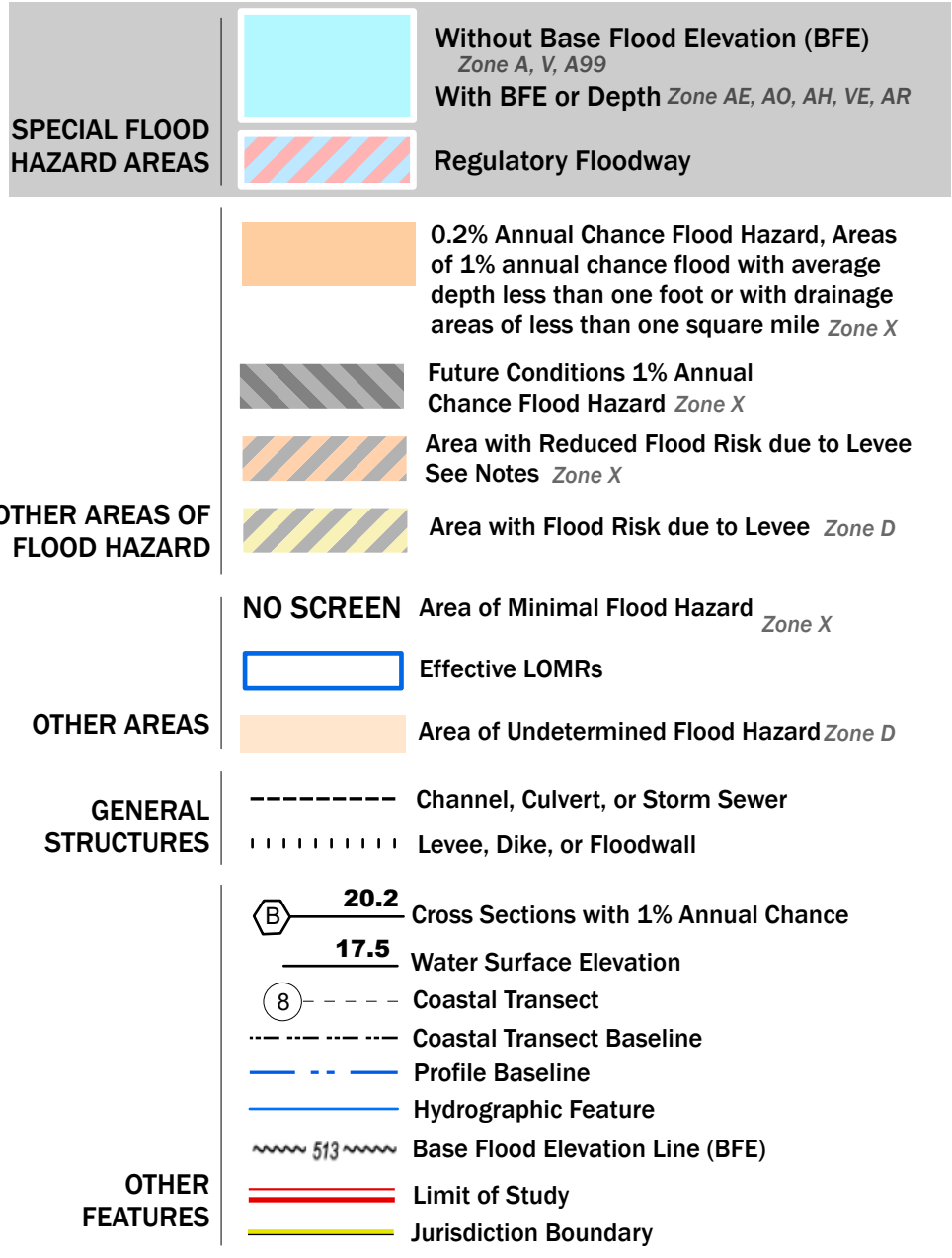
Panel Contains:	440020	0306
COMMUNITY	445406	0306
TOWN OF NORTH PROVIDENCE	440022	0306
CITY OF PROVIDENCE		
CITY OF PAWTUCKET		

MAP NUMBER
44007C0306H
EFFECTIVE DATE
October 02, 2015



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR DRAFT FIRM PANEL LAYOUT



NOTES TO USERS

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Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to the Flood Insurance Study Report for this jurisdiction.

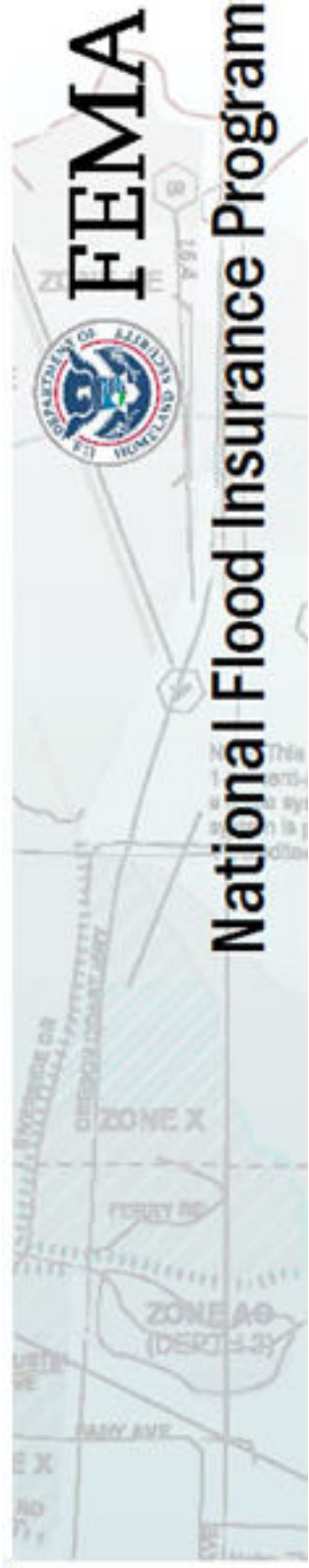
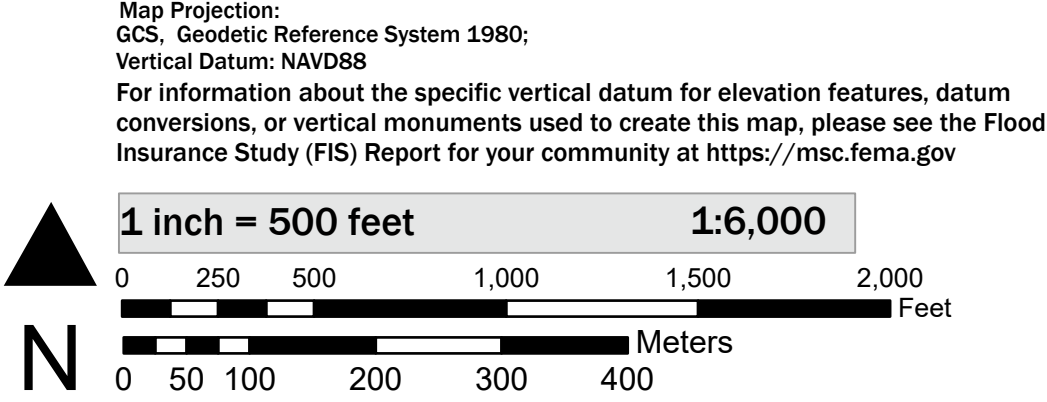
To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Basemap information shown on this FIRM was provided in digital format by USDA, Farm Service Agency (FSA). This information was derived from NAIP, dated April 11, 2018.

This map was exported from FEMA's National Flood Hazard Layer (NFHL) on **1/13/2025 2:23 AM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time. For additional information, please see the Flood Hazard Mapping Updates Overview Fact Sheet at <https://www.fema.gov/media-library/assets/documents/118418>

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards. This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date.

SCALE



NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

PANEL 193 OF 451

Panel Contains:
COMMUNITY
TOWN OF NORTH PROVIDENCE
TOWN OF LINCOLN
CITY OF PAWTUCKET
CITY OF CENTRAL FALLS

440020 0193
445400 0193
440022 0193
445394 0193



FLOOD HAZARD INFORMATION

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR DRAFT FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee See Notes Zone X
OTHER AREAS		Area with Flood Risk due to Levee Zone D
		NO SCREEN Area of Minimal Flood Hazard Zone X
GENERAL STRUCTURES		Effective LOMRs
		Area of Undetermined Flood Hazard Zone D
OTHER FEATURES		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
		20.2 Cross Sections with 1% Annual Chance
		17.5 Water Surface Elevation
		8 Coastal Transect
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Jurisdiction Boundary

NOTES TO USERS

For information and questions about this Flood Insurance Rate Map (FIRM), available products associated with this FIRM, including historic versions, the current map date for each FIRM panel, how to order products, or the National Flood Insurance Program (NFIP) in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-6627) or visit the FEMA Flood Map Service Center website at <https://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to the Flood Insurance Study Report for this jurisdiction.

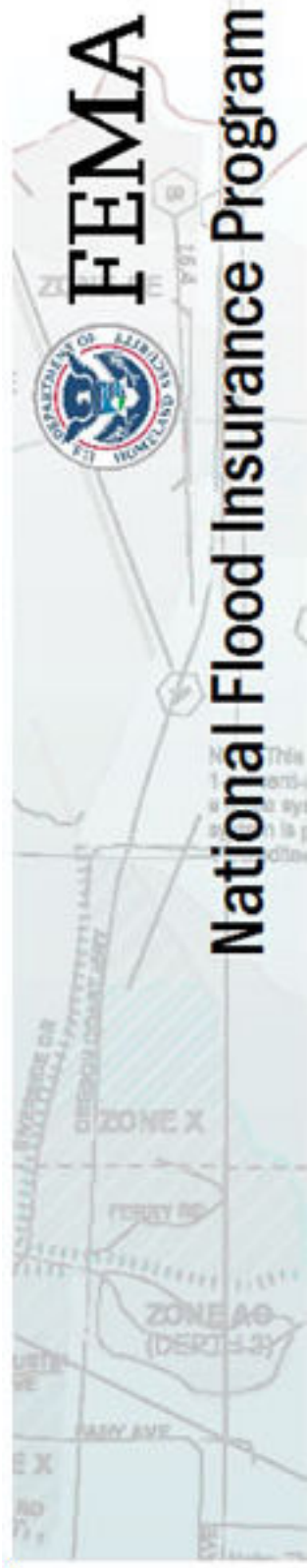
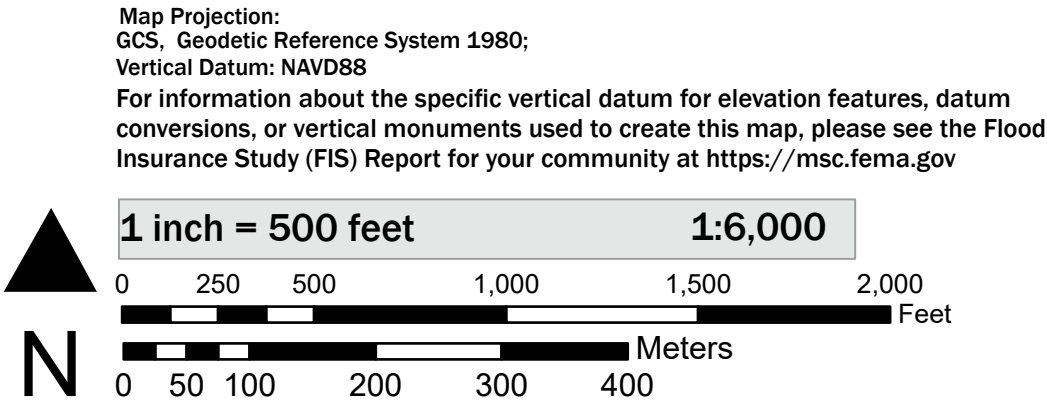
To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

Basemap information shown on this FIRM was provided in digital format by USDA, Farm Service Agency (FSA). This information was derived from NAIP, dated April 11, 2018.

This map was exported from FEMA's National Flood Hazard Layer (NFHL) on 1/13/2025 2:26 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time. For additional information, please see the Flood Hazard Mapping Updates Overview Fact Sheet at <https://www.fema.gov/media-library/assets/documents/118418>

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards. This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date.

SCALE



NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP

PANEL 303 OF 451

Panel Contains:	440020	0303
COMMUNITY	445005	0303
TOWN OF NORTH PROVIDENCE	440018	0303
CITY OF PROVIDENCE		
TOWN OF JOHNSTON		

MAP NUMBER
44007C0303H
EFFECTIVE DATE
October 02, 2015

Appendix B: HIRA Documentation and Data

B.3: Climate Mapping For Resilience and Adaptation Report

Climate Mapping For Resilience and Adaptation

Report on Providence County

44007
Providence County

Prepared by Esri

Providence County, Rhode Island

Total Population
① 635,737

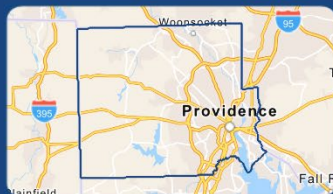
% Population with Income Below Poverty
① 15%

Building Codes Hazard Resistance
① Lower Resistance

% Population Disadvantaged
① 36.35%

National Risk Index Rating
Relatively High
Source: [FEMA National Risk Index](#)

B Billion-Dollar Weather and Climate Disasters



U.S. Climate Resilience Toolkit
Source: Census Bureau, CEO, Esri, FEMA, MRLC, NOAA, UCSD

Extreme Heat

Future Climate Indicators

Indicator	Modeled History (1976 - 2005)	Early Century (2015 - 2044)		Mid Century (2035 - 2064)		Late Century (2070 - 2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max
Temperature thresholds:							
Annual days with maximum temperature > 90°F	4 days 4 - 7	13 days 7 - 21	14 days 8 - 22	19 days 9 - 32	24 days 11 - 39	25 days 11 - 45	51 days 17 - 82
Annual days with maximum temperature > 95°F	1 days 0 - 1	3 days 1 - 5	3 days 1 - 5	4 days 1 - 9	7 days 2 - 13	7 days 2 - 16	22 days 4 - 46
Annual days with maximum temperature > 100°F	0 days 0 - 0	0 days 0 - 1	0 days 0 - 1	1 days 0 - 2	1 days 0 - 3	1 days 0 - 2	6 days 0 - 19
Annual days with maximum temperature > 105°F	0 days 0 - 0	0 days 0 - 0	0 days 0 - 0	0 days 0 - 0	0 days 0 - 1	0 days 0 - 1	1 days 0 - 7
Annual temperature:							
Annual single highest maximum temperature °F	94 °F 93 - 95	97 °F 94 - 99	97 °F 95 - 99	98 °F 95 - 101	99 °F 96 - 101	99 °F 96 - 103	103 °F 97 - 109
Annual highest maximum temperature averaged over a 5-day period °F	88 °F 87 - 89	91 °F 89 - 93	91 °F 90 - 93	92 °F 90 - 95	94 °F 91 - 96	94 °F 91 - 98	98 °F 92 - 103
Cooling degree days (CDD)	587 degree-days 536 - 638	839 degree-days 680 - 1,104	862 degree-days 718 - 1,043	977 degree-days 755 - 1,291	1,103 degree-days 815 - 1,429	1,120 degree-days 773 - 1,526	1,668 degree-days 1,050 - 2,215

N/A = Data Not Available for the selected area

Providence County, Rhode Island



Total Population
① **635,737**



% Population with Income Below Poverty
① **15%**



Building Codes Hazard Resistance
① **Lower Resistance**



% Population Disadvantaged
① **36.35%**



National Risk Index Rating
Relatively Low
Source: [FEMA National Risk Index](#)



[Billion-Dollar Weather and Climate Disasters](#)



U.S. Climate Resilience Toolkit

Source: Census Bureau, CEO, Esri, FEMA, MRLC, NOAA, UCSD

©2025 Esri

Drought

Future Climate Indicators

Indicator	Modeled History (1976 - 2005)	Early Century (2015 - 2044)		Mid Century (2035 - 2064)		Late Century (2070 - 2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max
Precipitation:							
Average annual total precipitation	48"	50"	50"	50"	51"	52"	54"
	46 - 49	47 - 56	46 - 58	46 - 55	47 - 57	46 - 57	47 - 62
Days per year with precipitation (wet days)	183 days	181 days	181 days	180 days	179 days	180 days	176 days
	177 - 187	174 - 193	170 - 192	169 - 188	167 - 194	168 - 192	152 - 197
Days per year with no precipitation (dry days)	182 days	184 days	184 days	185 days	186 days	186 days	189 days
	178 - 188	172 - 191	174 - 195	177 - 196	171 - 198	173 - 197	169 - 213
Maximum number of consecutive dry days	11 days	11 days	12 days	12 days	12 days	12 days	12 days
	10 - 13	10 - 13	10 - 13	10 - 14	10 - 14	10 - 13	10 - 15
Temperature thresholds:							
Annual days with maximum temperature > 90 °F	4 days	13 days	14 days	19 days	24 days	25 days	51 days
	4 - 7	7 - 21	8 - 22	9 - 32	11 - 39	11 - 45	17 - 82
Annual days with maximum temperature > 100 °F	0 days	0 days	0 days	1 days	1 days	1 days	6 days
	0 - 0	0 - 1	0 - 1	0 - 2	0 - 3	0 - 2	0 - 19

N/A = Data Not Available for the selected area

Providence County, Rhode Island



Total Population
① **635,737**



% Population with Income Below Poverty
① **15%**



Building Codes Hazard Resistance
① **Lower Resistance**



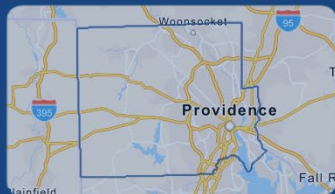
% Population Disadvantaged
① **36.35%**



National Risk Index Rating
Very Low
Source: [FEMA National Risk Index](#)



[Billion-Dollar Weather and Climate Disasters](#)



U.S. Climate Resilience Toolkit

Source: Census Bureau, CEO, Esri, FEMA, MRLC, NOAA, UCSD

©2025 Esri

Wildfire

Future Climate Indicators

Indicator	Modeled History (1976 - 2005)	Early Century (2015 - 2044)		Mid Century (2035 - 2064)		Late Century (2070 - 2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
Min - Max							
Precipitation:							
Days per year with no precipitation (dry days)	182 days	184 days	184 days	185 days	186 days	186 days	189 days
	178 - 188	172 - 191	174 - 195	177 - 196	171 - 198	173 - 197	169 - 213
Maximum number of consecutive dry days	11 days	11 days	12 days	12 days	12 days	12 days	12 days
	10 - 13	10 - 13	10 - 13	10 - 14	10 - 14	10 - 13	10 - 15
Days per year with precipitation (wet days)	183 days	181 days	181 days	180 days	179 days	180 days	176 days
	177 - 187	174 - 193	170 - 192	169 - 188	167 - 194	168 - 192	152 - 197
Temperature thresholds:							
Annual days with maximum temperature > 90°F	4 days	13 days	14 days	19 days	24 days	25 days	51 days
	4 - 7	7 - 21	8 - 22	9 - 32	11 - 39	11 - 45	17 - 82
Annual days with maximum temperature > 100°F	0 days	0 days	0 days	1 days	1 days	1 days	6 days
	0 - 0	0 - 1	0 - 1	0 - 2	0 - 3	0 - 2	0 - 19

N/A = Data Not Available for the selected area

Providence County, Rhode Island



Total Population
① **635,737**



% Population with Income Below Poverty
① **15%**



Building Codes Hazard Resistance
① **Lower Resistance**



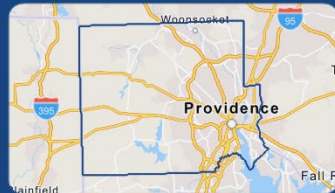
% Population Disadvantaged
① **36.35%**



National Risk Index Rating
Relatively Moderate
Source: [FEMA National Risk Index](#)



[Billion-Dollar Weather and Climate Disasters](#)



U.S. Climate Resilience Toolkit

Source: Census Bureau, CEO, Esri, FEMA, MRLC, NOAA, UCSD

©2025 Esri

Flooding

Future Climate Indicators

Indicator	Modeled History (1976 - 2005)	Early Century (2015 - 2044)		Mid Century (2035 - 2064)		Late Century (2070 - 2099)	
		Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions	Lower Emissions	Higher Emissions
	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max	Min - Max
Precipitation:							
Annual average total precipitation	48" 46 - 49	50" 47 - 56	50" 46 - 58	50" 46 - 55	51" 47 - 57	52" 46 - 57	54" 47 - 62
Days per year with precipitation (wet days)	183 days 177 - 187	181 days 174 - 193	181 days 170 - 192	180 days 169 - 188	179 days 167 - 194	180 days 168 - 192	176 days 152 - 197
Maximum period of consecutive wet days	11 days 9 - 12	11 days 10 - 13	11 days 10 - 13	11 days 9 - 13	11 days 9 - 12	11 days 10 - 12	11 days 9 - 14
Annual days with:							
Annual days with total precipitation > 1inch	8 days 7 - 8	9 days 7 - 11	9 days 7 - 11	9 days 8 - 11	10 days 8 - 12	10 days 8 - 13	11 days 8 - 14
Annual days with total precipitation > 2 inches	1 days 1 - 1	1 days 1 - 2	1 days 1 - 2	1 days 1 - 2	1 days 1 - 2	1 days 1 - 2	2 days 1 - 3
Annual days with total precipitation > 3 inches	0 days 0 - 0	0 days 0 - 0	0 days 0 - 1	0 days 0 - 1	0 days 0 - 1	0 days 0 - 1	0 days 0 - 1
Annual days that exceed 99th percentile precipitation	7 days 6 - 8	8 days 7 - 9	8 days 7 - 10	9 days 8 - 10	9 days 8 - 11	9 days 8 - 11	11 days 10 - 14
Days with maximum temperature below 32 °F	25 days 22 - 28	17 days 7 - 22	16 days 8 - 22	13 days 5 - 19	11 days 6 - 16	10 days 3 - 16	4 days 1 - 11

N/A = Data Not Available for the selected area

Appendix B: HIRA Documentation and Data

B.4: Community Assets Lists

CRITICAL MUNICIPAL FACILITIES INVENTORY	
Name	Location
Town Hall	2000 Smith Street
Old Town Hall	2026 Smith Street
Town Hall Annex	1995 Smith Street
Public Safety Complex	1951 Mineral Spring Avenue
Police/Fire Department	1967 Mineral Spring Avenue
Fire Department	Fruit Hill
Fire Department	1080 Mineral Spring Avenue
Public Works	2 Mafalda Street
North Providence High School- Shelter	1828 Mineral Spring Avenue
Backup 911 Center	1951 Smith Street
Communication Towers	Various locations
Mineral Spring Avenue	East/West transect

SCHOOL INVENTORY	
Name	Location
Birchwood Middle School	10 Birchwood Avenue
Centredale School	41 Angell Avenue
Dr. Edwards A. Ricci School	55 Intervale Avenue
Dr. Joseph A Whelan Elementary School	1440 Mineral Spring Avenue
Early Years Learning Center	33 Maple Avenue
George N. Hunt Campus School (St. Mary's)	440 Fruit Hill Avenue
Green Acres Country Day School	2 Thomas Street
Greystone School	100 Morgan Avenue
James L. McGuire School	55 Central Avenue
Marieville Elementary School	1135 Mineral Spring Avenue
North Providence High School (Shelter)	1828 Mineral Spring Avenue
Rhode Island College	600 Mt. Pleasant Avenue
Rhyme and Reason Nursery School	7 Rockwell Avenue
Stephen Olney School	1378 Douglas Avenue

CARE FACILITIES

Facility Name	Location
Salvatore Mancini Resource and Activity Center	2 Atlantic Blvd
George N. Hunt Campus School	440 Fruit Hill Avenue
Our Lady of Fatima Hospital	200 High Service Ave.
Hopkins Health Center	610 Smithfield Road
Golden Crest Nursing Home	100 Smithfield Road
John E. Fogarty Center	220 Woonasquatucket Ave.

DAM INVENTORY		
Name	River/Stream	Hazard Classification
Wenscott Reservoir	West River	High
Louisquisset Flood Control	West River- Trib	High
Geneva Sportsmen's Club Pond	West River	Low
Shippee Pond	Shippee Brook	Low
Allendale Pond	Woonasquatucket River	Low
Lymansville	Woonasquatucket River	Low
Centredale	Woonasquatucket River	Low
Greystone	Woonasquatucket River	Low
Douglas Terrace Pond	West River	Low
Whipple Pond (located in Providence)	West River	Low

Data obtained from RI DEM 2023 Dam Report

Appendix C: Mitigation Strategy Documentation

C.1: Mitigation Actions Prioritization Matrix

Mitigation Actions Priority Matrix

Action	Survey Score	Timeframe	Time Score	Hazard	Hazard Priority	Cost	Benefits	Ratio	Priority Score
Hire an engineer to develop a stormwater and flood study to identify solutions to flooding issues throughout town.	4.00	Short	3	Flood	3	\$\$	\$\$\$\$	2	20.00
Improve the debris management program by focusing on drainage culverts, stormwater infrastructure, and stream clearing.	4.50	Short	3	Flood	3	\$\$	\$\$\$	1.5	15.75
Incorporate stream gauge monitoring into flood preparedness activities.	3.75	Short	3	Flood	3	\$\$	\$\$\$	1.5	14.63
Establish an initiative to acquire and demolish repetitively flooded homes.	4.14	Medium	2	Flood	3	\$\$\$	\$\$\$\$	1.33	12.16
Public education on protecting your property in the winter	3.63	Long	1	Winter	3	\$	\$\$	1.5	11.44
Identify projects to reduce sanitary sewer overflows that occur frequently during rain storms.	4.38	Long	1	Flood	3	\$\$\$	\$\$\$\$	1.33	11.14
Purchase capital equipment to perform debris removal post-storm	4.63	Short	3	Flood, Tornado, Winter, Winds	3	\$\$\$\$	\$\$\$\$	1	10.63
Repairs at Wenscott dam	4.38	Short	3	Flood	3	\$\$\$\$	\$\$\$\$	1	10.38
Create EOP for Wenscott Reservoir and Louisquisset Flood Control Dams	4.50	Medium	2	Flood	3	\$\$	\$\$	1	9.50
Promote Special Needs Registry	4.00	Medium	2	All	3	\$	\$	1	9.00
Work with the American Red Cross and Tri-County to identify vulnerable populations to conduct direct outreach and education activities, specifically the Marieville neighborhood and other disadventa...	4.00	Medium	2	All	3	\$	\$	1	9.00
On-Line reporting of damage in a form format that would require the fields requested by the EMA director or RIEMA, or FEMA for an event that had just occurred (reverse 911)	3.88	Medium	2	All	3	\$\$	\$\$	1	8.88
Widen culvert along Woonasquatucket Avenue	3.86	Medium	2	Flood	3	\$\$\$\$	\$\$\$\$	1	8.86
Develop an Urban Forest Management Plan and implement tree planting and maintenance program.	3.75	Medium	2	Flood	3	\$\$	\$\$	1	8.75
Identify a location and procedures to set up a Multi-Agency Resource Center(MARC) to provide assistance to survivors and affected populations in the wake of a disaster.	3.63	Medium	2	All	3	\$	\$	1	8.63

Action	Survey Score	Timeframe	Time Score	Hazard	Hazard Priority	Cost	Benefits	Ratio	Priority Score
Increase the amount of vegetation and green infrastructure throughout the town.	4.00	Long	1	Flood	3	\$\$\$	\$\$\$	1	8.00
Hazard safety and education for school children	3.75	Long	1	All	3	\$	\$\$	1	7.75
Require zoning certificates for placement of outdoor structures (e.g. sheds, gazebos, carports, etc)	3.63	Medium	2	Tornado, Winds	2	\$	\$	1	7.63
Conduct one active shooter exercise per school annually	4.75	Medium	2	NA	0	\$	\$\$	1	6.75
Involve the North Providence Historic District Commission in annual review of the hazard mitigation plan to identify additional potential mitigation actions	3.38	Long	1	All	0	\$	\$\$	1.5	6.56
Improve building structure for Greystone, Centredale, and Whelan Schools	3.88	Long	1	Tornado, Winds	2	\$\$\$\$	\$\$\$\$	0.8	5.50

Appendix C: Mitigation Strategy Documentation

C.2: Mitigation Actions Prioritization Survey and Results

Misty Berryman

From: Misty Berryman
Sent: Wednesday, January 24, 2024 12:53 PM
To: 'afm@northprovidenceri.gov'; 'bsalvatore@northprovidenceri.gov';
'buildinginspector@northprovidenceri.gov'; 'david@engineeringtec.com';
'ems@northprovidenceri.gov'; 'John Silva'; 'lkennedy@tricountyri.org';
'mayorsoffice@northprovidenceri.gov'; 'mtavarozi@northprovidenceri.gov';
'pddeputychief@northprovidenceri.gov'; 'planning@northprovidenceri.gov'
Cc: jim.fuoroli@npsd.k12.ri.us; jamie.lynn@redcross.org; Daniel Blanchard;
npmcdirector@northprovidenceri.gov
Subject: Mitigation Actions Prioritization Survey

Importance: High

Follow Up Flag: Follow up
Due By: Monday, January 29, 2024 7:00 AM
Flag Status: Flagged

Good afternoon everyone,

In follow up to feedback we received during the 1/8/24 Hazard Mitigation stakeholder meeting, we've updated the new mitigation actions proposed and created a survey of both the existing and new actions to finalize the prioritization and timeframes for completion of each project. If possible, can you complete the survey responses by 1/31/24 so we can update the draft plan with changes to the mitigation actions.

The link to the survey is provided below and should take 20 minutes or less to complete.

<https://forms.office.com/r/3tx94iLEpV>

Chief, I don't have an email for Mike Taliencia (DPW), so would you mind passing this survey along for his feedback?

Lisa, I don't have the contact information for the watershed stakeholders you mentioned following the meeting, so if you would forward this survey along to them for feedback, we'd greatly appreciate it! We'll also reach out to them once the draft plan is posted for their feedback as well.

If you have any questions, please let me know. Thank you all for your continued efforts to make North Providence more hazard resilient!

Best,
Misty



Misty Berryman, PMP
Project Manager
Massachusetts Emergency Management
311 W. Main St.
Frankfort, KY 40601
C: 850-544-1202
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[Confidentiality Notice](#)

North Providence Mitigation Actions Prioritization Survey

9	08:19	Active
Responses	Average time to complete	Status

1. Name and Organization

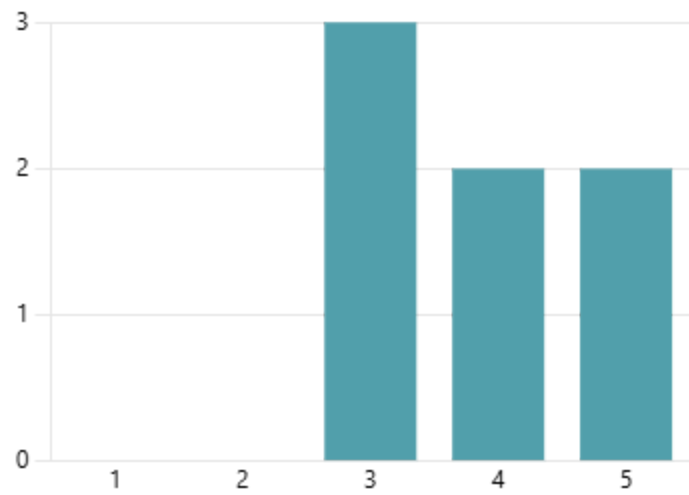
8	Latest Responses
Responses	<i>"North Providence"</i> <i>"North Providence Fire Department"</i>

2. Email

8	Latest Responses
Responses	<i>"Planning@northprovidencerigov"</i> <i>"ems@northprovidenceri.gov"</i>

3. Widen culvert along Woonasquatucket Avenue

3.86
Average Rating



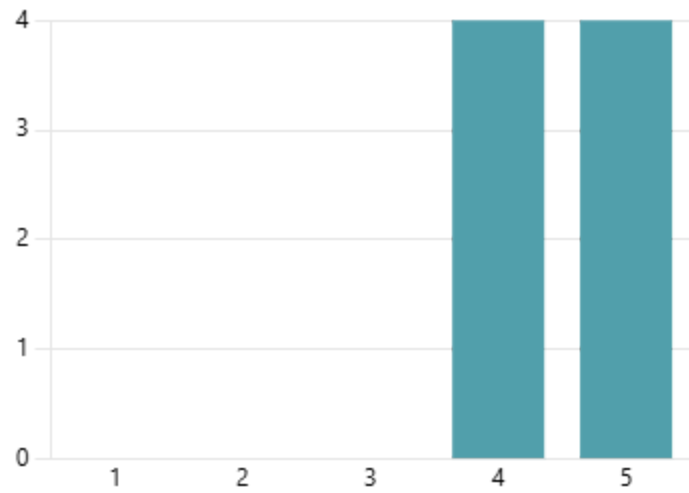
4. Widen culvert along Woonasquatucket Avenue

Short-Term	1
Medium Term	5
Long-Term	2



5. Create EOP for Wenscott Reservoir and Louisquisset Flood Control Dams

4.50
Average Rating



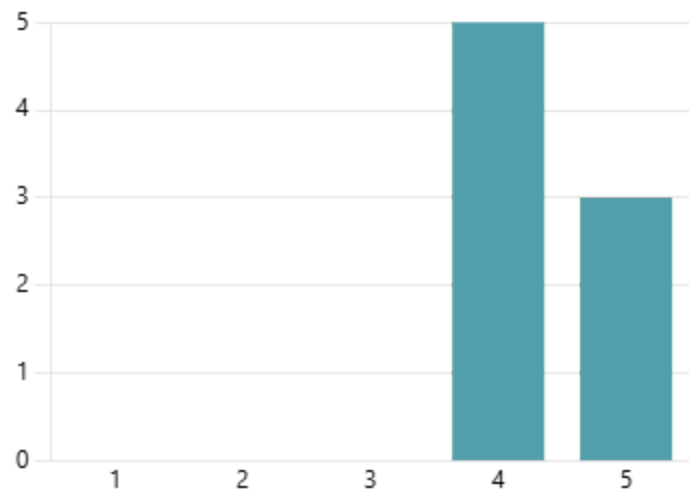
6. Create EOP for Wenscott Reservoir and Louisquisset Flood Control Dams

Short-Term	2
Medium Term	4
Long-Term	2



7. Repairs at Wenscott dam

4.38
Average Rating



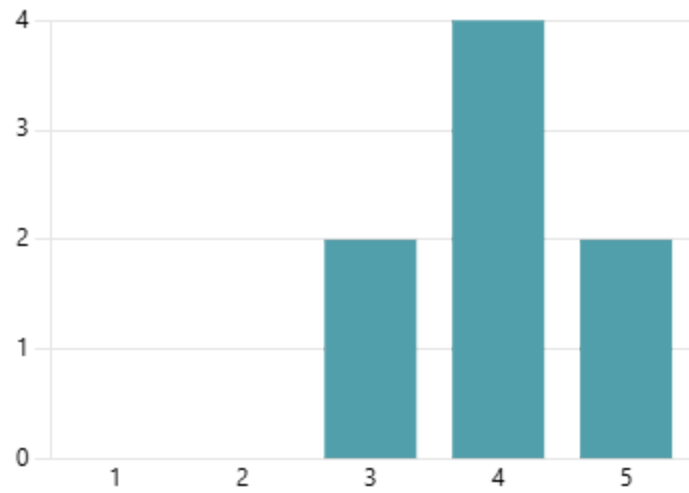
8. Repairs at Wenscott dam

Short-Term	3
Medium Term	3
Long-Term	2



9. Promote Special Needs Registry

4.00
Average Rating



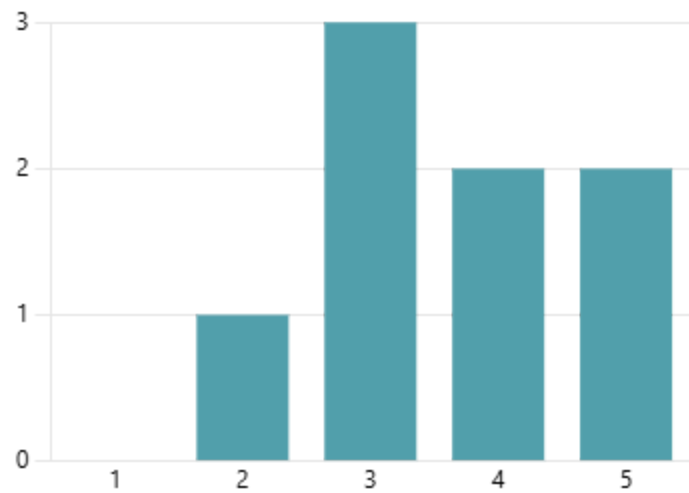
10. Promote Special Needs Registry

● Short-Term	2
● Medium Term	4
● Long-Term	2



11. Public education on protecting your property in the winter

3.63
Average Rating



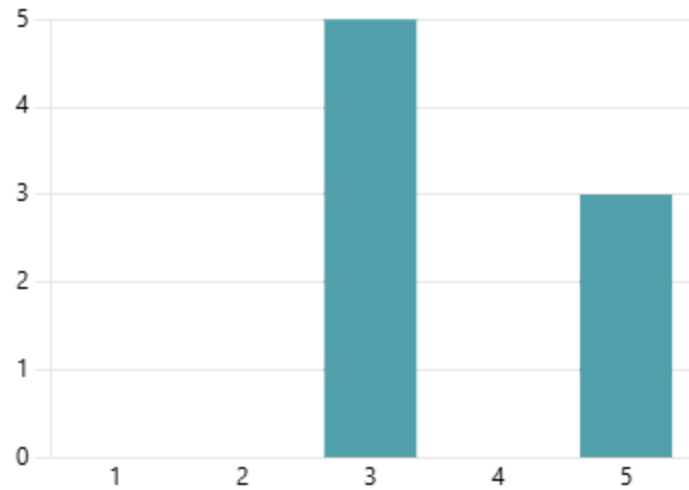
12. Public education on protecting your property in the winter

Short-Term	2
Medium Term	1
Long-Term	5



13. Develop an Urban Forest Management Plan and implement tree planting and maintenance program.

3.75
Average Rating



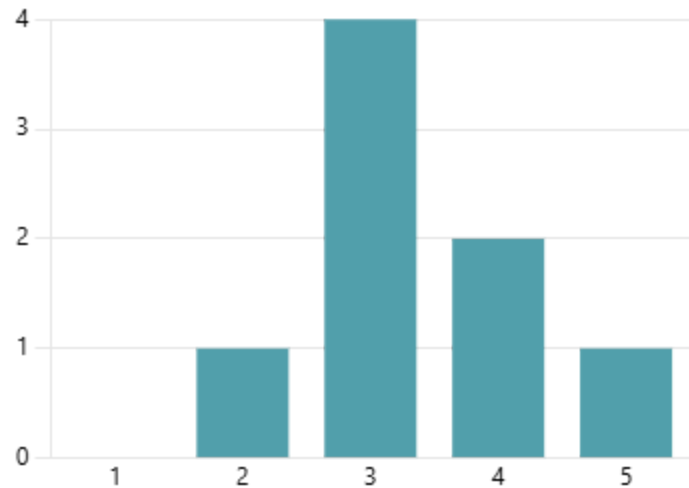
14. Develop an Urban Forest Management Plan and implement tree planting and maintenance program.

Short-Term	1
Medium Term	4
Long-Term	3



15. Involve the North Providence Historic District Commission in annual review of the hazard mitigation plan to identify additional potential mitigation actions

3.38
Average Rating



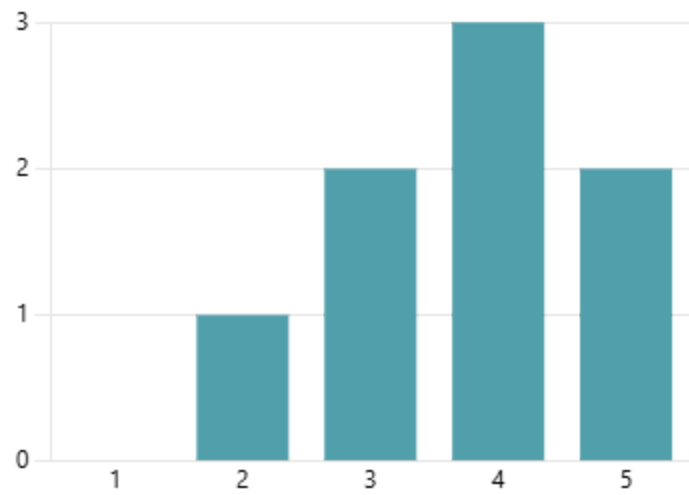
16. Involve the North Providence Historic District Commission in annual review of the hazard mitigation plan to identify additional potential mitigation actions

Short-Term	0
Medium Term	3
Long-Term	5



17. Hazard safety and education for school children

3.75
Average Rating



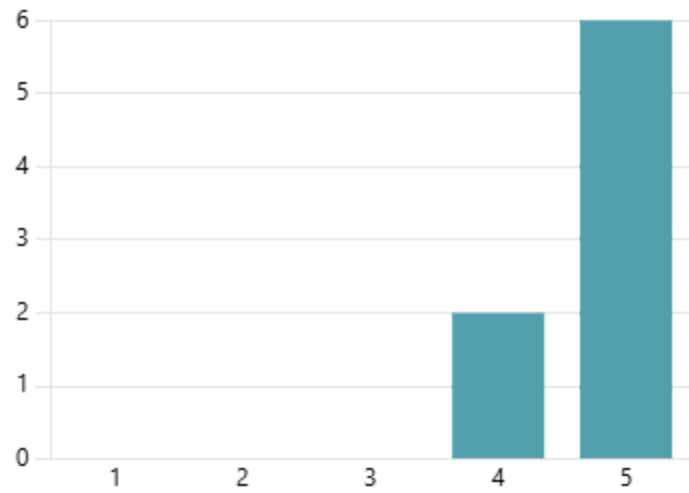
18. Hazard safety and education for school children

- Short-Term 2
- Medium Term 2
- Long-Term 4



19. Conduct one active shooter exercise per school annually

4.75
Average Rating



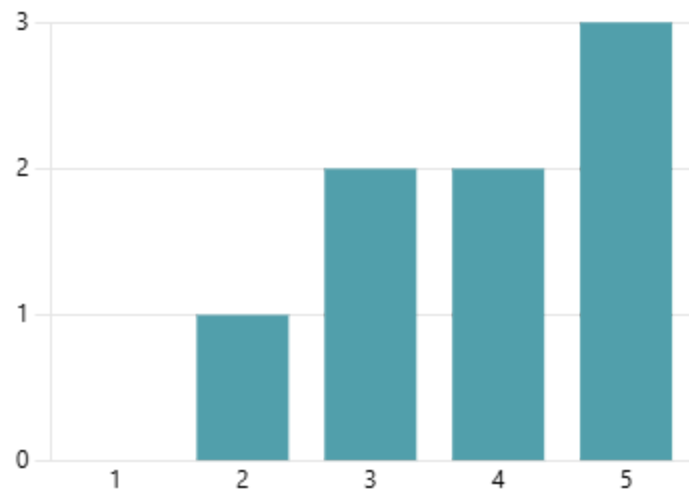
20. Conduct one active shooter exercise per school annually

Short-Term	2
Medium Term	3
Long-Term	3



21. Improve building structure for Greystone, Centredale, and Whelan Schools

3.88
Average Rating



22. Improve building structure for Greystone, Centredale, and Whelan Schools

Short-Term	1
Medium Term	2
Long-Term	5



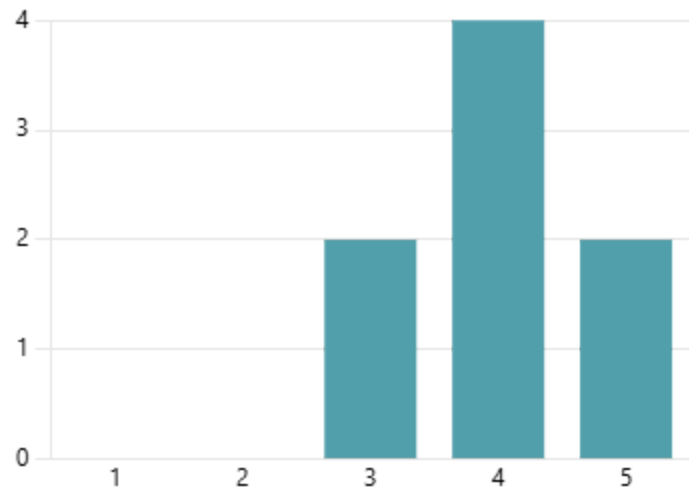
23. Please provide any comments you may have regarding the previous mitigation actions.

2
Responses

Latest Responses
"NA"

24. Increase the amount of vegetation and green infrastructure throughout the town.

4.00
Average Rating



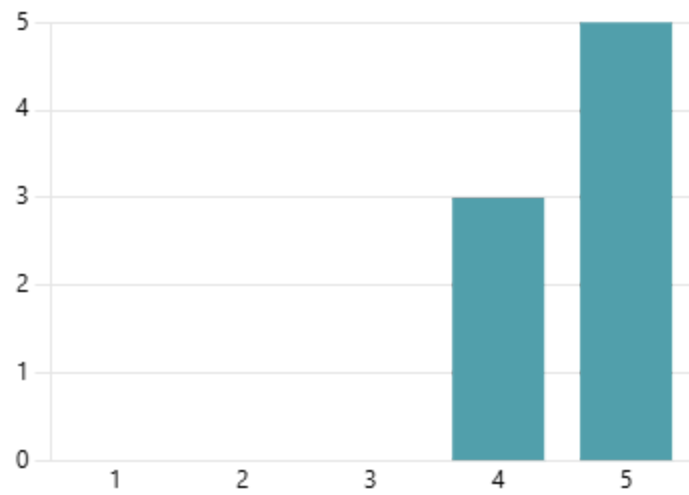
25. Increase the amount of vegetation and green infrastructure throughout the town.

Short-Term	0
Medium Term	4
Long-Term	4



26. Purchase capital equipment to perform debris removal post-storm

4.63
Average Rating



27. Purchase capital equipment to perform debris removal post-storm

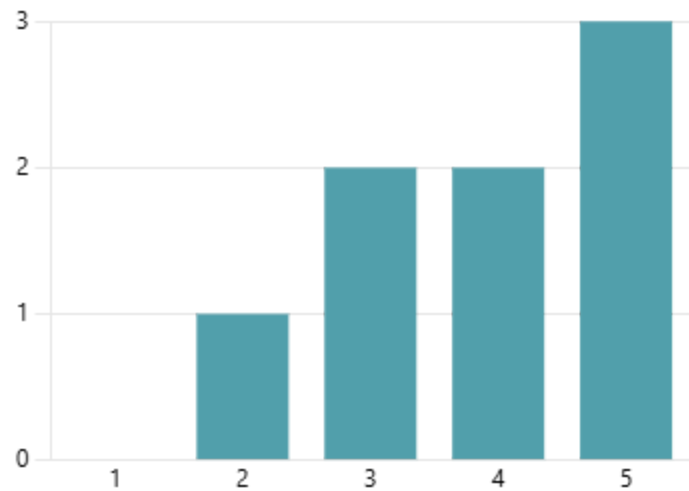
Short-Term	4
Medium Term	1
Long-Term	3



28. On-Line reporting of damage in a form format that would require the fields requested by the EMA director or RIEMA, or FEMA for an event that had just occurred (reverse 911)

3.88

Average Rating



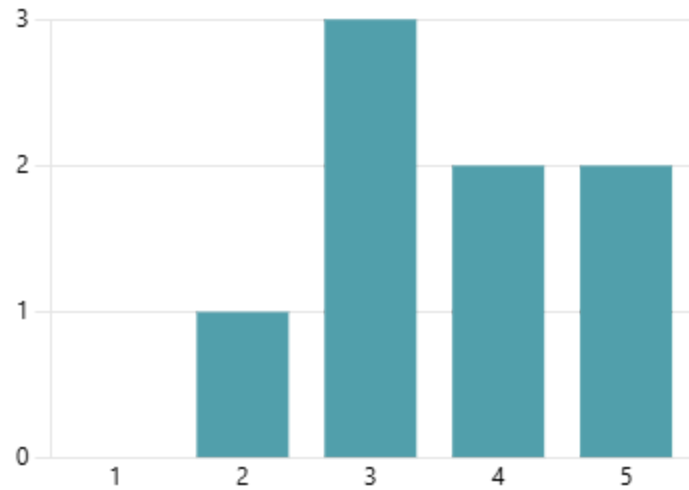
29. On-Line reporting of damage in a form format that would require the fields requested by the EMA director or RIEMA, or FEMA for an event that had just occurred (reverse 911)

Short-Term	4
Medium Term	2
Long-Term	2

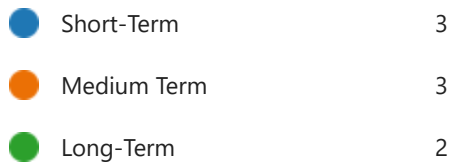


30. Require zoning certificates for placement of outdoor structures (e.g. sheds, gazebos, carports, etc)

3.63
Average Rating

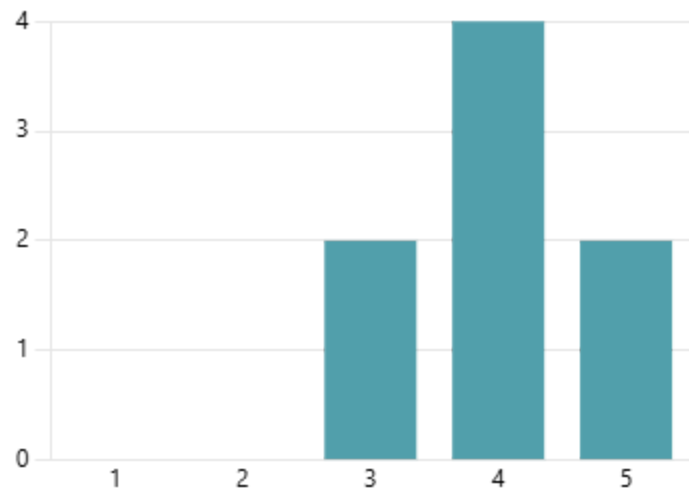


31. Require zoning certificates for placement of outdoor structures (e.g. sheds, gazebos, carports, etc)



32. Work with the American Red Cross and Tri-County to identify vulnerable populations to conduct direct outreach and education activities, specifically the Marieville neighborhood and other disadvantaged population groups.

4.00
Average Rating



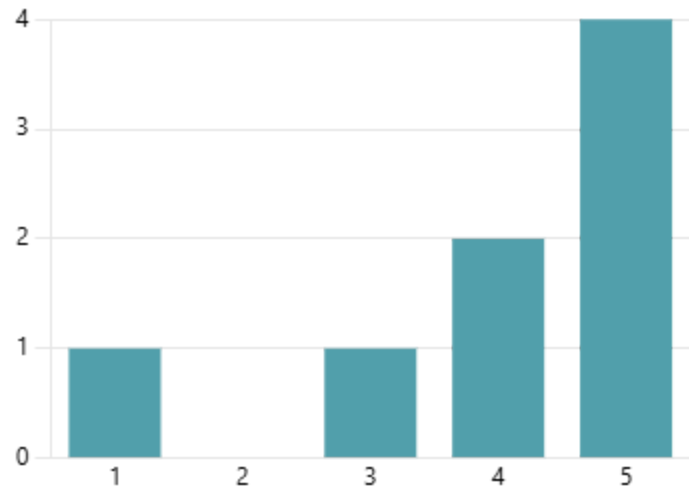
33. Work with the American Red Cross and Tri-County to identify vulnerable populations to conduct direct outreach and education activities, specifically the Marieville neighborhood and other disadvantaged population groups.

Short-Term	3
Medium Term	4
Long-Term	1



34. Hire an engineer to develop a stormwater and flood study to identify solutions to flooding issues throughout town.

4.00
Average Rating



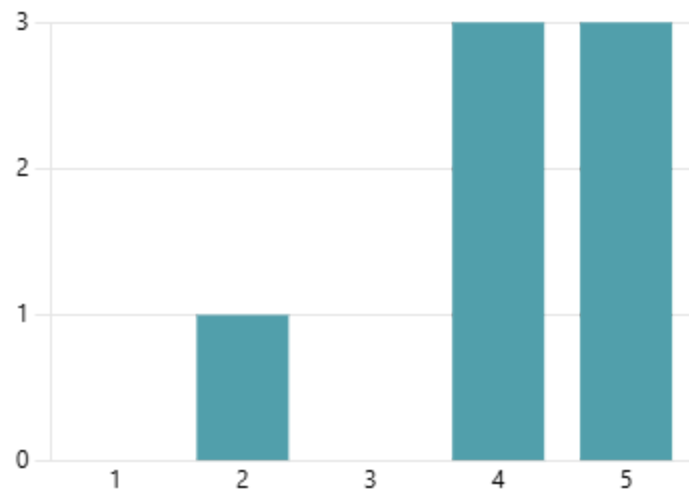
35. Hire an engineer to develop a stormwater and flood study to identify solutions to flooding issues throughout town.

● Short-Term 3
● Medium Term 2
● Long-Term 3



36. Establish an initiative to acquire and demolish repetitively flooded homes.

4.14
Average Rating



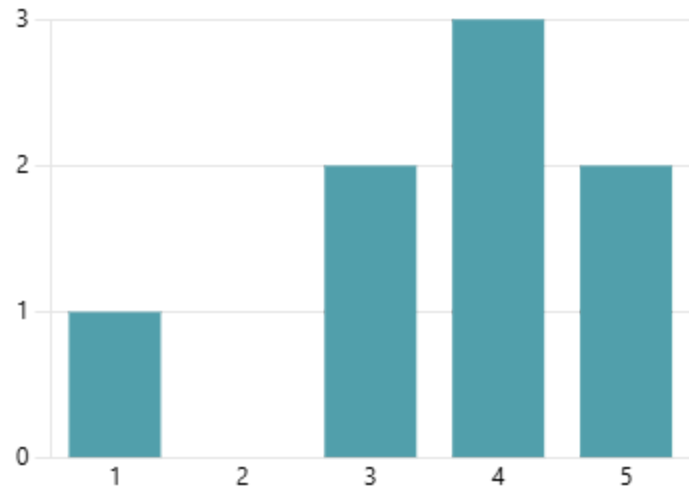
37. Establish an initiative to acquire and demolish repetitively flooded homes.

Short-Term	1
Medium Term	4
Long-Term	3



38. Identify a location and procedures to set up a Multi-Agency Resource Center(MARC) to provide assistance to survivors and affected populations in the wake of a disaster.

3.63
Average Rating



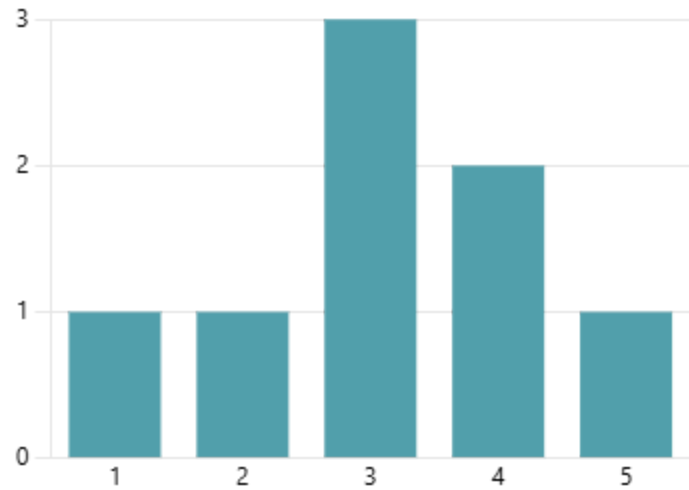
39. Identify a location and procedures to set up a Multi-Agency Resource Center to provide assistance to survivors and affected populations in the wake of a disaster.

● Short-Term 2
● Medium Term 4
● Long-Term 2



40. Conduct an assessment of the town's soils and roadways to determine the extent of sinkholes and compaction.

3.13
Average Rating



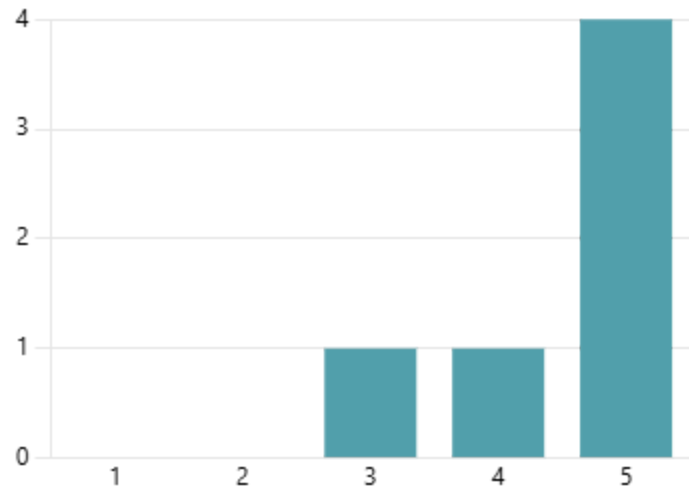
41. Conduct an assessment of the town's soils and roadways to determine the extent of sinkholes and compaction.

Short-Term	1
Medium Term	2
Long-Term	5



42. Improve the debris management program by focusing on drainage culverts, stormwater infrastructure, and stream clearing.

4.50
Average Rating



43. Improve the debris management program by focusing on drainage culverts, stormwater infrastructure, and stream clearing.

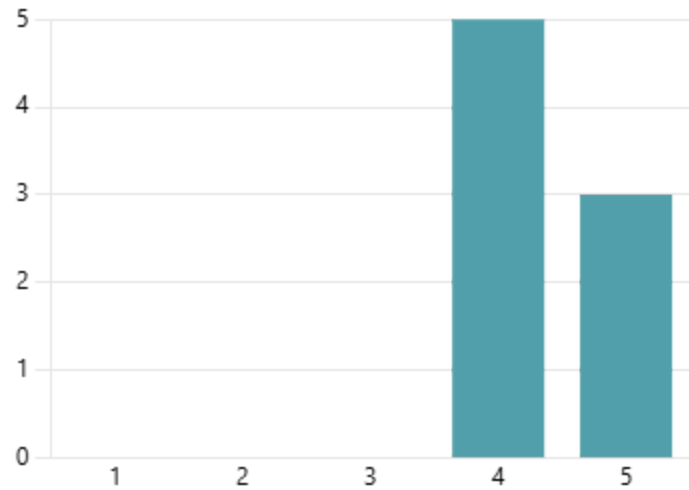
Short-Term	3
Medium Term	3
Long-Term	2



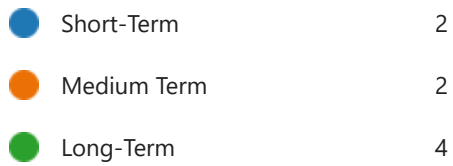
44. Identify projects to reduce sanitary sewer overflows that occur frequently during rain storms.

4.38

Average Rating

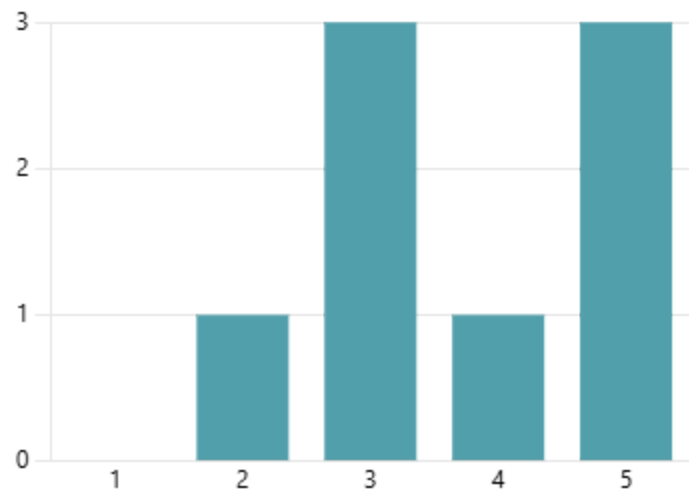


45. Identify projects to reduce sanitary sewer overflows that occur frequently during rain storms.

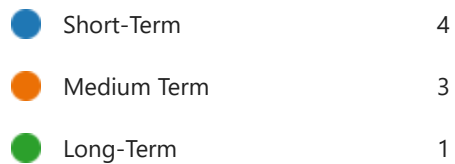


46. Incorporate stream gauge monitoring into flood preparedness activities.

3.75
Average Rating



47. Incorporate stream gauge monitoring into flood preparedness activities.



48. Propose a mitigation action

1
Responses

Latest Responses
"NA"

Appendix C: Mitigation Strategy Documentation

C.3: Possible Funding Sources

**Federal Emergency Management Agency
National Flood Insurance Program (NFIP)**

All of Rhode Island's 40 municipalities participate in the NFIP. This program is a direct agreement between the federal government and the local community that flood insurance will be made available to residents in exchange for community compliance with minimum flood plain management regulations. Communities participating in the NFIP must:

- Adopt the flood insurance rate maps as an overlay regulatory district.
- Require that all new construction or substantial improvement to existing structures in the flood hazard area be elevated or (if nonresidential) floodproofed to the identified flood level on the maps.
- Require design techniques to minimize flood damage for structures being built in high hazard areas, such as floodways or velocity zones.

In return for community adoption of these standards, any structure in that community is eligible for protection by flood insurance, which covers property owners from losses due to inundation from surface water of any source. Coverage for land subsidence, sewer backup, and water seepage is also available subject to the conditions outlined in the NFIP standard policy (see Appendix F, Federal Resources, for contacts regarding insurance coverage and purchase). Since homeowner's insurance does not cover flooding, a community's participation in the NFIP is vital to protecting property in the flood plain as well as being essential to ensure that federally backed mortgages and loans can be used to finance flood prone property.

Hazard Mitigation Grant Program (HMGP)

Also known as the 404 Program or HMGP, this program is available only after a federally declared disaster occurs. It represents an additional 15 percent of all the infrastructure and individual assistance funds that are provided to states to repair damages and recover from losses and is administered by the state in partnership with FEMA. Having a plan or completed mitigation action matrix prior to a disaster event is extremely helpful in meeting the state's deadlines for applications and ensuring the project is eligible and technically feasible. It provides 75/25 matching grants on a competitive basis to state, local, and tribal governments, as well as to certain nonprofit organizations that can be matched by either cash or in-kind services. The grants are specifically directed toward reducing future hazard losses and can be used for projects protecting property and resources against the damaging effects of floods, earthquakes, wind, and other hazards. Specific activities encouraged under the HMGP include acquiring damaged structures to turn the land over to the community for open space or recreational use, relocating damaged or damage-prone structures out of the hazard area, and retrofitting properties to resist the damaging effects of disasters. Retrofitting can include wet- or dry-floodproofing, elevation of the structure above flood level, elevation of utilities, or proper anchoring of the structure.

For further information contact the state of Rhode Island hazard mitigation officer at (401) 946-9996 or FEMA Region I at (617) 223-9540.

Flood Mitigation Assistance Program (FMA)

Two programs that have been authorized under the National Flood Insurance Reform Act of 1994 include the Flood Mitigation Assistance (FMA) program and a provision for increased cost of compliance (ICC) coverage. FMA makes grants available on a pre-disaster basis for flood mitigation planning and activities, including acquisition, relocation, and retrofitting of structures. FMA grants for mitigation projects will be available only to those communities with approved hazard mitigation plans.

ICC coverage has recently been implemented for all new NFIP policies and renewals and is intended to be "mitigation insurance" to allow homeowners whose structures have been repeatedly or substantially damaged to cover the cost of elevation and design requirements for rebuilding with their flood insurance claim up to a

maximum of \$15,000.00. A certain amount of funding is allotted to each state per year based on a risk formula for floods. Each state has the discretion to award funds to communities or to state government agencies. States may use whatever criteria or method they choose to award the funds as long as the applicant and the proposal are eligible. The program may fund up to 75 percent of the cost of the proposed project, with a minimum of 25 percent of the cost coming from the community. A minimum of half the community share must be cash or "hard match."

Funds can also be granted to communities to help them prepare local flood mitigation plans. The same match requirements apply. Once a community receives a planning grant, however, it is not eligible to receive additional planning grants for another five years. For further information on the FMA program or ICC coverage contact RIEMA at (401) 946-9996.

Natural Resources Conservation Service (NRCS)

Small Watershed Program and Flood Prevention Program

The Watershed and Flood Prevention Act, P.L. 83-566, August 4, 1954, (16 USC 1001 – 1008) authorized this program. Prior to fiscal year 1996, small watershed planning activities and the cooperative river basin surveys and investigations authorized by Section 6 of the Act were operated as separate programs. The 1996 appropriations act combined the activities into a single program entitled Watershed Surveys and Planning Program.

The purpose of the Watershed Program, including River Basin operations, is to assist Federal, State, local agencies, local government sponsors, tribal governments, and program participants to protect and restore watersheds from damage caused by erosion, floodwater, and sediment, to conserve and develop water and land resources, and solve natural resource and related economic problems on a watershed basis. The program provides technical and financial assistance to local people or project sponsors, builds partnerships, and requires local and state funding contribution.

Resource concerns addressed by the program include watershed protection, flood prevention, erosion and sediment control, water supply, water quality, opportunities for water conservation, wetland and water storage capacity, agricultural drought problems, rural development, municipal and industrial water needs, upstream flood damages, water needs for fish, wildlife, and forest-based industries, fish and wildlife habitat enhancement, wetland creation and restoration, and public recreation in watersheds of 250,000 or fewer acres. Both technical and financial assistance are available.

Wildlife Habitat Incentives Program

The Wildlife Habitat Incentives Program (WHIP) is a voluntary program for people who want to develop and improve habitat primarily on private land. Through WHIP USDA's Natural Resources Conservation Service (NRCS) provides both technical assistance and up to 75 percent cost-share assistance to establish and improve fish and wildlife habitat. WHIP agreements between NRCS and the participant generally last from 5 to 10 years from the date the agreement is signed.

National Weather Service (NWS)

The Taunton, Massachusetts NWS office has developed a partnership with RIEMA. NWS donates staff time and tide gauges to help gain more lead time for evacuation.

For further information contact NWS at (508) 823-2262. <http://www.nws.noaa.gov/>.

American Red Cross (ARC)

The ARC chapter of Rhode Island has supplied public education materials and volunteered to conduct training programs and hold seminars for the Rhode Island Hazard Mitigation Project.

For further information contact the Rhode Island Chapter of the American Red Cross at (401) 831-7700. <http://www.redcross.org>.

U.S. Army Corps of Engineers

Beneficial Uses of Dredged Material – Section 204, Water Resources Development Act of 1992, as amended, authorizes projects for the protection, restoration, and creation of aquatic and ecologically related habitats, including wetlands, in connection with dredging an authorized federal navigation project. Non-federal sponsors are responsible for 25 percent of the project cost and 100 percent of the cost of operation, maintenance, replacement and rehabilitation. There is an annual appropriations limit of \$15 million. For projects with an estimated federal cost of less than \$5 million, divisions have approval authority.

1948 Flood Control Act, as amended - Section 205 (Small Flood Damage Reduction Projects) aids in the development and construction of small flood damage reduction projects for eligible non-federal sponsors. The 1960 Flood Control Act, as amended, provides 100 percent funding for technical and planning guidance to state and local governments and federally recognized Native American tribes to help develop and interpret flood and flood plain data, such as flood hazard mapping, and for assessment for structural and non-structural flood damage reduction measures.

Under Flood Control Act of 1946 – Section 14, as amended, projects are eligible for construction only after an analysis demonstrates the engineering and environmental feasibility and economic justification of the improvement. The local sponsor must be a municipality or public agency. Funding may also be available for flood damage reduction measures if the community writes a request letter to the U.S. Army Corps of Engineers. The non-federal cost share is 35 percent of the analysis and implementation, and the initial \$40,000 of the analysis is 100 percent federally funded.

The 1974 Water Resources Development Act, as amended – Section 22 (Planning Assistance to States Program) provides technical assistance for such flood projects as erosion and control. This program uses cost-shared studies with a non-federal sponsor. The non-federal share of the cost is 50 percent and in-kind services are not authorized. The federal limit for each state is \$500,000 annually.

For more information, contact the U.S. Army Corps of Engineers at (978) 318-8087 or (978) 318-8647. <http://www.usace.army.mil>.

State of Rhode Island

The capital budget is approved on a 5-year basis and is proposed by the governor. If there is any surplus available in the emergency fund, this could be a possible source of financing for mitigation projects.

Rhode Island Department of Environmental Management (DEM)

In the 1980's, four major open space bond issues were approved that resulted in an investment of more than \$100 million for recreational and open space land acquisition. Each application is reviewed by a committee to assure consistency with local plans and habitat values. The state participates in funding either through a matching grant or of a revolving loan. Funds may be available through the DEM Parks and Recreation Division for tree trimming, dune restoration and bulkhead repair.

In addition, the state has several funding programs for the acquisition of land or purchase of development rights to protect open spaces. For instance, two Rhode Island municipalities use a real estate transfer tax for land preservation. Rhode Island has incorporated land trusts that work to preserve land and natural resources. Landowners can participate in the Farm, Forest and Open Space Program. Under this program, land may qualify for a reduced property tax assessment if it meets specific criteria as farmland, forest land or open space.

For current funding availability contact the Open Space and Recreational Bond Fund Land Acquisition Program or DEM at (401) 222-2776.

Rhode Island Department of Transportation (DOT)

The State Planning Council designates which Transportation Improvements Plan enhancement projects the state will pursue. Applications for the Federal Wooden Bridge Replacement Program can be made through DOT. In addition, DOT has a debris management program that goes into effect during a storm event. The new federal transportation bill, TEA-21, is a successor to the 1991 Intermodal Surface Transportation Efficiency Act (ISTEA). There are a few categories within this bill that may have available funding for natural hazard mitigation projects. These include transportation enhancement (categories include storm water remediation, storm water runoff protection, and environmental mitigation) and bridge replacement. The municipality must apply for project funds through DOT. The annual funding averages for Rhode Island are \$156,781.00. There is an average of \$26,749 available under the Bridge Rehabilitation and Replacement category.

For further information contact DOT at (401) 277-2481.

North East States Emergency Consortium (NESEC)

Since 1998, RIEMA has been given funds for preventative measures and maintenance. Providence and Woonsocket both received \$5,000 grants from NESEC for mitigation activities that were addressed in their local hazard mitigation strategies.

For further information contact at (781) 224-9874.

Municipal

Several utility companies have prevention and clean-up programs that require cooperation from municipalities. For instance, companies are usually willing to co-sponsor planting low-growing trees as part of a tree replacement program. Utility companies will provide the bucket truck area lift if the town/city helps dispose of tree trunks. The Clean Water Finance Agency has financing programs for local government units and water suppliers. The clean water state revolving fund uses monies from the Federal Clean Water Act to support sewer work such as sewer extensions and septic system repair, and to give homeowners of all incomes low-interest loans for septic system repairs. The community wide onsite wastewater management plan is a Clean Water Finance Agency program for failing or sub-standard septic systems, and it identifies areas in municipalities where system failures could cause degradation to water quality. Municipal loans for large infrastructure projects are also available through this program at discounted interest rates.