THE CITY OF PROVIDENCE

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

RESOLUTION OF THE CITY COUNCIL

No. 183

Approved April 26, 2005

WHEREAS, The City of Providence received funding from the Rhode Island Emergency Management Agency under a Flood Mitigation Assistance Project Grant to assist in the revision of the Local Hazard Mitigation Plan; and

WHEREAS, Several public planning meetings were held between March and November 2004 regarding the review of the Local Hazard Mitigation Plan; and

WHEREAS, The Local Hazard Mitigation Plan contains several potential future projects to mitigate hazard damage in the City of Providence; and

WHEREAS, A duly-noticed public meeting was held by the Providence City Council on 4/25/05 to formally approve and adopt the Local Hazard Mitigation Plan.

NOW, THEREFORE, BE IT RESOLVED, That the Providence City Council adopts the Revisions to the Providence Hazard Mitigation Plan.

IN CITY COUNCIL
APR 25 2005
READ AND PASSED
PRES.
CLERK

APPROVED
4/26/05
MAYOR

IN CITY COUNCIL
APR 7 2005
FIRST READING
REFERRED TO COMMITTEE ON
CITY PROPERTY
Michael K. Arnott CLERK

THE COMMITTEE ON
CITY PROPERTY
Approves Passage of
The Within Resolution

4/18/05 Clerk

(Councilwoman Mazzeo (By Request)

Response to FEMA Region 1 Local Hazard Mitigation Review – Providence, RI (October 11, 2002)

Plan Review Criteria	Location in Previous Plan	Location in Plan (Updates)
Adoption by Local Governing Body (3-2)	Attached Cover Letter Section 5.1 (p. 20)	1. A copy of the signed Ordinance is included in Appendix D, the plan references the adoption under section 3.1. (p. 5)
Documentation of the Planning Process (3-6)	Section 3.1 (p.5), attached letter	1. Section 3.1 inserted new paragraph documenting planning process and public involvement (p. 5)
Profiling Hazard Events (3-14)	Section 1.0(p. 1-7)	1. Inserted Table 1 – Hazards Affecting Providence (In the next 5 years) to indicate future probability (p. 7) 2. Added new 3.2 "Geography & Hazards" (p. 7)
Assessing Vulnerability: Identifying Assets (3-18)	Maps 1, Map 2, Section 3.2 B, G (p 8-12)	1. Section 3.3, H (p. 17) added "Future Development Trends" to address vulnerability of future structures.
Assessing Vulnerability: Estimating Potential Losses (3-22)	Section 3.2 B,G (p. 8-12)	
Identification and Analysis of Mitigation Measures (3-34)	Section 4.1 (p. 12-18)	1. Section 4.2 (p. 19 – 26) addresses of advantages and disadvantages for each action along with benefits.
Implementation of Mitigation Measures (3-36)	Section 4.1 (p. 12-18)	1. Section 4.1 (p. 18) addresses how priorities were determined. Section 4.2 (p. 19-26) Action items are prioritized for each vulnerable area and include benefits & costs.

Plan Review Criteria	Location in Previous Plan	Location in Plan (Updates)
Monitoring, Evaluating, and Updating the Plan (3-44)	Not in the Plan	**1.** Section 5.2 (p. 28-29) Addresses a method and schedule for monitoring, evaluating, and updating the plan.
Continued Public Involvement (3-50)	Not in the Plan	**1.** Section 5.2 (p.28-29) addresses general public maintenance involvement in the form of public hearings

Table 2 – City of Providence Risk Assessment Matrix

	Vulnerable Areas (in order of priority)	Location	Ownership	Natural Hazard	Primary Problem Effect	Mitigation Objective	Risk [illegible]
1	Hurricane Barrier	Fox Point	Public	Possible Earthquake damage	Public safety will be compromised; significant flooding of the downtown and adjacent areas. Maintenance of pumps is required	Protection of life and property	P
2	A-V Zone properties (Includes historic properties)	City wide as shown on flood maps	Public and private	Flooding and wind damage	Structures not meeting current code requirements	Protection of life and property	H
3	Other Fields Point sites: a) Port of Providence b) Johnson & Wales University c) Other	Fields Point	Private contract with City agency	Flooding, storm surge and wind	Threat to shipping and port operations, business and properties	Uninterrupted port operations have economic benefits to the City	H
4	Local & Interstate Highway Bridges	See Action Plan	Public	Flooding, storm surge, wind damage and Earthquake damage	Loss of access, disruption of evacuation routes	Safe evacuation, if needed	H 1938 and 1954 City was flooded
5	City Hall / Other Public Properties	City Hall – 25 Dorrance Street DPW & Traffic Engineering – Allens Ave and Ernest Street	Public	Flooding , ice damage, possible earthquake, storm surge	Water damage to City records, data, land evidence records, vital statistics, computer operation and the like	Protection of essential public services	H

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Claire Bestwick

From: PEMA
Sent: Tuesday, March 22, 2005 10:32 AM
To: Claire Bestwick
Cc: Peter Marinucci; Leo Messier
Subject: Resolution for Local Hazard Mitigation Plan

Doc3.doc

Claire, This is the resolution we spoke about on the phone. Please make any changes to the format as you deem necessary. Peter will be stopping in to see you about it later today. Thanks, Sheila

L 336

DiRuzzo By Request

CERTIFICATE OF ADOPTION

City of Providence, Rhode Island
City Council
A Resolution Adopting the Local Hazard Mitigation Plan

WHEREAS, the City of Providence received funding from the RI Emergency Management Agency under a Flood Mitigation Assistance Project Grant to assist in the revision of the Local Hazard Mitigation Plan; and

WHEREAS, several public planning meetings were held between March and November 2004 regarding the review of the Local Hazard Mitigation Plan; and

WHEREAS, the Local Hazard Mitigation Plan contains several potential future projects to mitigate hazard damage in the City of Providence; and

WHEREAS, a duly-noticed public meeting was held by the Providence City Council on _____ to formally approve and adopt the Local Hazard Mitigation Plan.

NOW, THEREFORE BE IT RESOLVED that the Providence City Council adopts the Providence Hazard Mitigation Plan.

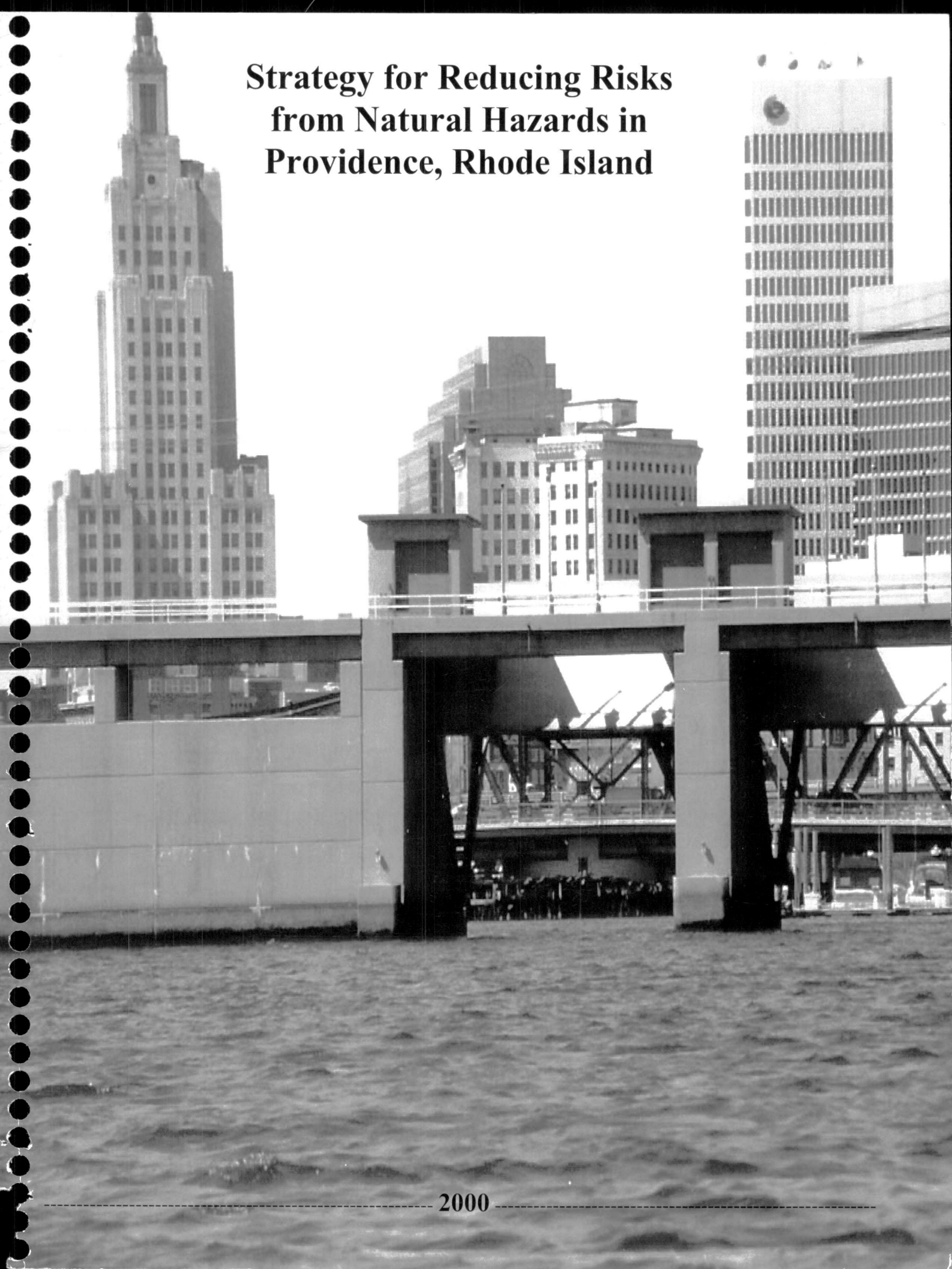
ADOPTED AND SIGNED this _____.

_____

ATTEST _____

_____ _____

Strategy for Reducing Risks from Natural Hazards in Providence, Rhode Island



2000

Acknowledgments

VINCENT A. CIANCI, JR., MAYOR OF PROVIDENCE

PROVIDENCE EMERGENCY MANAGEMENT AGENCY

John Partington, Commissioner of Public Safety

Peter Marinucci, Director

Providence City Council

John Lombardi, Ward 13, President
Ronald Allen, Ward 8
Luis Aponte, Ward 10
Patrick Butler, Ward 5
Robert Clarkin, Ward 1
Joseph DeLuca, Ward 6
Josephine DiRuzzo , Ward 15
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Jonh Igliozzi, Ward 7
Kevin Jackson, Ward 3
Peter Mancini, Ward 14
Patricia Nolan, Ward 9
Carol Romano, Ward 4
Balbina Young, Ward 11
Rita Williams, Ward 2

Providence City Plan Commission

George Calcagni, Chairman
Steven Durkee
James Leach
Miguel Luna
Bryan Principe
Robert Ricci
Melvin Zurier

Local Hazard Mitigation Committee
Peter Marinucci, Chair
James T. Morris, Public Works
S. Jon Ozbek, Planning and Development
Edgar Paxson, Inspections and Standards
James Rattigan, Fire Department
Samuel J. Shamoon, Planning and Development

Report Principal Author: Samuel J. Shamoon, Associate Director of Planning

With assistance from:

Lori Watson, Pamela Pogue, and Virginia Lee, URI's Coastal Resources Center/Rhode Island Sea Grant
Joseph Almeida, Jr., Rhode Island Emergency Management Agency
Roland Duhaime, University of Rhode Island Environmental Data Center: Geographic Information System (GIS) Maps

Report Photos: Peter Marinucci, Tina Bingham – Cover Photo: Nanette Goodridge

The Providence Emergency Management Agency would also like to thank the community of Providence, especially city staff and those active community members who participated in the planning process.

State of Rhode Island
Lincoln Almond, Governor

State Hazard Mitigation Committee
MG Reginald A. Centracchio, Director
Rhode Island Emergency Management Agency

Raymond LaBelle, Executive Director
Rhode Island Emergency Management Agency

Joseph Almeida, Jr., Chairman
State Hazard Mitigation Officer
Rhode Island Emergency Management Agency

Joseph Cirillo
Building Code Commissioner
State of Rhode Island Building Committee Office
(President of BOCA International)

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Rhode Island Emergency Management Agency

Steven Wright
Superintendent
Rhode Island Department of Environmental Management
Division of Parks and Recreation

Chris Der Vartanian
Supervisor of Examinations
Rhode Island Banking Commission

IN MEMORIAM

James T. Morris

Department of Public Works

Friend and Colleague whose extensive knowledge of the City
Was invaluable to this study
And
Who will be sorely missed

This Report is Dedicated to his
Memory

Table of Contents

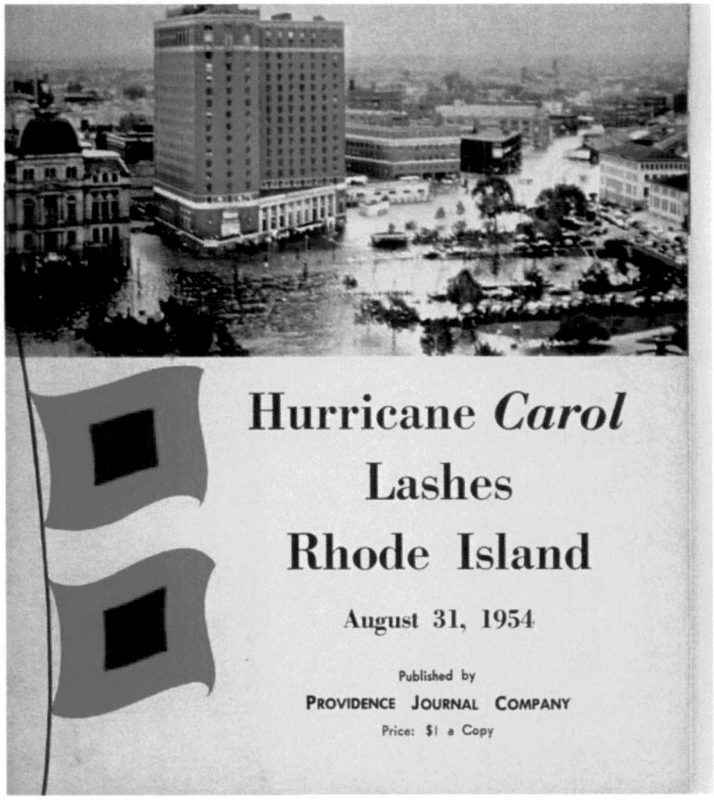
TABLES:

MAPS:

Section 1.0 – Introduction

The purpose of this report is to establish a plan to mitigate natural hazards in the City of Providence. Ideally located along the eastern seaboard of the United States, Providence prospered from its location and development as a transportation center, offering access to both water and overland routes. In 1940, the City enjoyed its highest population ever (253,504), as industries and businesses continued to migrate to Providence's active harbor and commercial areas.

The climate of Providence is typical of the North Temperate Zone, with a mean annual temperature of approximately 50 degrees Fahrenheit. The mean annual precipitation is 39.4 inches, including an average snowfall approximating 40 inches, though snowfall can occur in appreciably larger amounts. The topography is variable, consisting of hills, lowlands, and swamps. Relief ranges from a high of 250 feet at Neutaconkanut Hill Park along the western corporate limits to a low of sea level at the eastern corporate limits.



The City also has a history of natural disasters, primarily caused by severe flooding and high winds from major storms and hurricanes dating back to the 1600s. On September 22-23, 1815 Providence experienced its first recorded major hurricane. There is little information from that time, but the damages included thirty-five ships that were tossed into buildings and into each other. About 500 homes and small buildings were destroyed, but amazingly there were only two recorded fatalities, both at India Point. In Market Square, the water rose to almost twelve feet above the mean high water mark. The storm was dubbed the Great Gale.[1]

In this century, two major hurricanes, as well as a few minor ones, have struck Providence. The most devastating floods of this century were the result of hurricane tidal surges and accompanying rainfall. On September 21, 1938, a hurricane struck the Connecticut-Rhode Island coastline just hours before the expected high tide in Providence. Peak winds of over 120 miles an hour blowing up Narragansett Bay created a tidal surge that inundated the downtown commercial area of Providence with over 10 feet of water.

1 Conley, Patrick T., Campbell, Paul, *Providence, A Pictorial History*, The Donning Company, 1982.

In August 1954, Hurricane Carol also caused a severe tidal surge (References 2 and 3). The 1938 and 1954 storms had recurrence intervals of 100 and 50 years, respectively. The picture above illustrates the devastation that occurred in the downtown, before the Fox Point Hurricane Barrier was built.

Riverine flooding also occurs in Providence. In March 1968, the riverine flow of record occurred on both the Woonasquatucket and Moshassuck Rivers. Extensive flooding occurred on the Woonasquatucket River near Erickson Place, Valley Street, Amherst Street, and Eagle Street. The recurrence interval for this flood on the Woonasquatucket River at the U.S. Geological Survey (USGS) gauging station in Centerdale was estimated to be 35 years. Flooding on the Moshassuck River occurred near Canal and Mill Streets below the USGS gauge and along Interstate 95. Gauge records showed this flood to be a 38-year event on the Moshassuck River. Flooding resulting from this storm was also extensive on the West River. Areas adjacent to Charles Street were extensively flooded.[2]

1.1 Past Flood Protection Measures

Subsequent to the floods of 1938 and 1954, a hurricane barrier was constructed at Fox Point where the Providence River empties into Narragansett Bay. This structure is equipped with large gates to prevent the inflow of hurricane tides and pumps to discharge the riverine flows south of the barrier. Appurtenant structures include gates at certain road underpasses, dikes, and the embankment of Interstate 95. These measures effectively eliminate the downtown area from hurricane related flood hazards.

The Moshassuck River along Interstate 95 has improved riprap channel in many areas. Construction of State Route 146 adjacent to the West River has resulted in an improved channel through this area. The resulting channel clearing on the West River near Charles Street aids in flood hazard reduction.

During floods (from storm events having a magnitude greater than 10-year occurrence), the West River overflows its banks in the vicinity of Charles Street and main line Amtrak railroad. This flow is channelized into the railroad right-of-way, where it flows south to below Smith Street. A culvert has been installed just below Smith Street to divert this flow from the tracks to Moshassuck River. The culvert is a drop inlet structure consisting of grating across the tracks which drops into a 19 foot-by-16-foot box culvert. The diverted flow then enters the Moshassuck River. The culvert is designed to act against the 100-year flood on the river. A crib wall on the western side of the tracks diverts flow onto the tracks and into the culvert rather than into the capital area.[3]

1.2 Hurricane Barrier Protection

Since the building of the Fox Point Hurricane Barrier, the city has seen much growth in its downtown area. Major improvements in Kennedy Plaza in 1983 and 1999 have transformed the plaza into a transit mall, a highly successful skating rink and beautiful parks. In addition, the City's banks built major buildings in the period from the 1970's to the present, including the Bank Boston Tower, (formerly Hospital Trust Tower), Fleet Cen-

[2] Flood Insurance Study, Federal Emergency Management Agency, for Providence, March 11, 1985, p. 2.
[3] Ibid. p. 6.

ter, and Citizens Plaza. In addition the City and State undertook a major renewal effort in the 1980s to relocate the mainline Amtrak railroad tracks, including a new train station and some 65 acres of new development that became the Capital Center District. In 1999, the newest addition opened; a 1.2 million square foot retail establishment known as the Providence Place Mall, whose anchors are the nationally renowned Nordstrom and Filenes's department stores.

This plan is intended to address multi-hazards and suggest both short-term and long-term mitigation actions to protect the citizens of Providence. Hazard mitigation is any sustained action taken to reduce or eliminate long-term risk to people and their property from the effects of natural hazards, such as wind, fire, floods, hurricanes, earthquakes, and the like.

2.0 Goals and Objectives

It is the goal of this plan to preserve and enhance the quality of life, property and resources for the citizens of Providence by:

a) Identifying areas at risk from natural hazards, and

b) Implementing priority hazard mitigation actions in order to protect the City's built environment, people, historic, cultural, economic and natural resources.

An important benefit of hazard mitigation is that money spent today on preventive measures can significantly reduce the cost of post-disaster cleanup tomorrow. Pre-disaster planning can reduce the cost of disasters because it helps to safeguard areas. By planning ahead, Providence will minimize the economic and social disruption that can result from floods, blizzards, or hurricanes (destruction of property, loss or interruption of jobs, and the loss of businesses).

2.1 Benefits of Completing a Hazard Mitigation Strategy

Municipal officials in Providence assessed the risks to the City and developed mitigation actions that address a mix of structural and non-structural initiatives (e.g., educational programs, preventing construction in high-hazard areas, enforcing regulations) to minimize the effects of future hazards (e.g. building code enforcement, retrofitting existing structures, and removal of vulnerable structures). By creating this strategy, Providence has established an ongoing process that will make hazard mitigation a routine part of municipal government.

Formal adoption and implementation of this hazard mitigation strategy will help Providence gain credit points under the Federal Emergency Management Agency's (FEMA) Community Rating System (CRS) program, which provides discounts on the National Flood Insurance Program (NFIP) flood insurance premiums for residents of communities that voluntarily participate in this program. In that regard, the City intends to become a CRS member. As a result of adopting this Plan, the City will be eligible for credit under the Community Rating System (CRS). Up to 210 points are provided if this plan conforms to the guidelines for a floodplain management plan (FMP). In addition, the adoption of this

mitigation strategy increases Providence's eligibility for federal grants for hazard mitigation which include FEMA's pre-disaster Flood Mitigation Assistance (FMA) program and FEMA's post-disaster Hazard Mitigation Grant Program (HMGP) (See Appendix B). The thought and planning that went into this strategy and its implementation will help protect and safeguard the City in the long run. The preventative measures, if carried out, will also save money because there will be less damage in the future.

2.2 Comprehensive Planning

In 1993, the City Council adopted *Providence 2000, The Comprehensive Plan*, which reflects the overall vision for Providence. The plan outlines goals, policies, issues, and actions to be taken by the community to fulfill that vision. The potential impact of natural hazard events could be integrated into many elements of the plan. The City recognized that inclusion of mitigation initiatives -- both pre-disaster and post-disaster -- would not only benefit the community by reducing human suffering, damages, and the costs of recovery, but it will also help build and maintain the sustainability and economic health of the community over the long run. The implementation actions enhance the ongoing activities within the community and provide a framework for current decisions and for those faced in the future. This will help to insure that the vision identified in the Comprehensive Plan can continue to be realized despite the disaster event and can be used to make appropriate decisions to restore the sense of community lost to a natural disaster.

The plan was amended January 27, 1997 to change the land use map for Smith Street, adopt text corrections and revisions required by the state, and adopt an Adult Entertainment Plan as part of the Comprehensive Plan Series. In 2000, the plan was amended again. At that time the Local Hazard Mitigation Committee requested that the City Plan Commission amend Section 4.6.1 "Community Services and Facilities Goals and Policies" to specifically include the recommended mitigation actions described below in this Plan.

The Comprehensive Plan outlines goals, policies, issues, and actions to provide a framework for everyday operations within the city. The City recognized that inclusion of mitigation initiatives, both pre-disaster and post-disaster, 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 community over the long run. These proposed amendments recognize the impact of natural hazard events and provide guidance on what can be done to protect life, property, natural resources and the economic health of the City throughout various departments within the local government.

The most recent amendment was the adoption of the "Strategy for Reducing Risks from Natural Hazards in Providence, Rhode Island, 1999" as part of the Comprehensive Plan Series in March 2000. The Comprehensive Plan received final approval from the state in 2002.

Providence must continue in its pro-active economic development efforts in order to achieve substantial new employment. Improved infrastructure is another important requirement for continued economic expansion. (Roadway improvements, sewer and water

system improvements and port improvements). About forty percent (40%) of the City is in residential use. Commercial uses are generally located along the major arterial streets in the City as well as in the downtown area. Industrial uses are scattered throughout the City, Allens Avenue, including the Port of Providence.

3.0 Process Description

3.1 Planning Process

Providence initiated hazard mitigation planning in 1997 at the recommendation of Rhode Island Emergency Management Agency (RIEMA). Organized under the direction of the emergency management director, the Local Hazard Mitigation Committee (LHMC) was formed to create the original plan. The LHMC consists of the Director of the Providence Emergency Management Agency, a representative from the Public Works Department, two representatives from Planning and Development, a representative from Inspections and Standards, and a representative from the Fire Department. The committee met monthly to discuss the plan and identify mitigation projects beneficial to Providence. With the help of RIEMA and URI Coastal Resources Center, the plan was formalized and documented. Resources consulted include planning, engineering and property data and documents from the Department of Planning & Development, Fire and Police Departments, Public Works Department, Emergency Management Director, City Tax Assessor, the US Army Corps of Engineers, the Federal Emergency Management Agency, and state reports.

The plan was brought before the public as part of the City Plan Commission's and City Council's public hearing processes. The City Council first reviewed the plan and referred it to the City Plan Commission on October 7, 1999. The City Plan Commission reviewed the plan on October 18, 1999, held a public hearing on November 29, 1999, and approved the plan on February 23, 2000. The City Council then held its first reading on March 3, 2000 at which time the plan was read and passed. The final City Council hearing was held on March 16, 2000 at which time the plan was read and passed. The Mayor then approved the plan on March 23, 2000. (See Appendix D for approval history)

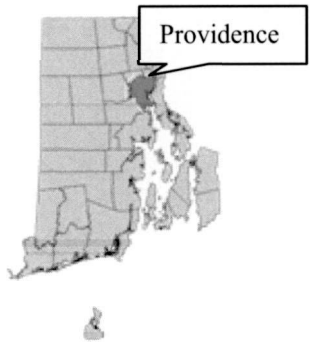
After local approval, the plan was delivered to RIEMA for state review and assessment and ultimately passed on to FEMA, Region 1 for review. FEMA's Local Hazard Mitigation Plan Review was completed in October 2002 and the plan was returned to Providence for updating. During the interim, the original plan was reviewed as projects were implemented but no amendments or updates to the plan were completed. The LHMC incorporated the theme of hazard mitigation into each of the nine elements in the comprehensive plan.

In response to comments received from FEMA, the City's Emergency Management Agency Director (in conjunction with the LHMC) has elected to update and reformat portions of the original plan to meet FEMA requirements. The updated plan will be resubmitted to RIEMA and FEMA for review and approval.

3.2 Geography & Hazards

Providence, the capital of Rhode Island, is located in Providence County in the northeastern part of the state and is bordered by the communities of Pawtucket, North Providence, Johnston and Cranston. Providence is located at the head of Narragansett Bay along three rivers, the Woonasquatucket, the Seekonk and the Providence River.

Industrial and residential flood plain development has occurred extensively throughout Providence. South of Glenbridge Avenue to the Providence River, the Woonasquatucket River flood plain is heavily developed with a mixture of industrial and residential development. North of Glenbridge Avenue, development on the Woonasquatucket River is generally confined to residential housing. The Moshassuck River flood plain is heavily developed with industries and residential land from below the North Burial Ground to the confluence with the Woonasquatucket River. The areas surrounding the West River flood plain and the Upper Canada Pond Brook are generally in residential land use. The portion of the flood plain in Providence affected by the Pocasset River consists generally of industrial development. The coastline along the Providence River is heavily developed with industrial facilities, as is the lower portion of the Seekonk River.



The Woonasquatucket River rises in North Smithfield and enters Providence from the west through the Town of Johnston. Along its course, it passes through many reservoirs and old mill ponds.

The Moshassuck River rises in Lincoln and continues south into Providence where it joins with the Woonasquatucket River to form the Providence River. Adjacent to the North Burial Ground and Interstate 95, the Moshassuck River enters a 0.5 mile long culvert which terminates just north of the confluence of the West River. The West River enters the city form the northwest and is also characterized by several old mill ponds with heavy industrial development. Upper Canada Pond Brook enters Providence in the north from its headwaters in North Providence. The portion of this stream within Providence is dominated by Upper Canada Pond. The Pocasset River flows from Johnston through the southwestern corner of Providence at the Johnston-Cranston corporate limits.

Providence Harbor and the Providence River form the northern end of Narragansett Bay, ending at the Fox Point Hurricane Barrier. The Seekonk River branches from the Providence River and is tidally affected throughout its length in Providence.

The City of Providence identified risks, assessed the degree of vulnerability of those areas "at risk" (e.g., structures, population, and natural resources), and examined possible impacts from natural disasters (e.g., loss of life, environmental damage, inconvenience to residents). Risk includes the characteristics of the hazard and takes into account the magnitude, duration, distribution, area affected, frequency, and probability of an event.

Table 1 identifies the hazards posing the greatest risk to the City of Providence.

Table 1 – Hazards Affecting Providence (In the next 5 years)

Hazard	Historical Dates	Probability (Next 5 years) (H,M,L)	Potential $ Impact
Severe Weather *	1978, 1991, 1996, 1998, 2002	H	$10 Million +
Hurricanes	1938, 1954, 1985, 1991	M	$10 Million +
Flooding and Dam Failure	1968	L	$1 Million +
Earthquake	1638, 1658, 1727, 1732, 1755, 1783, 1791, 1848, 1860, 1883, 1925, 1929, 1935, 1940, 1944, 1965, 1973**, 1974, 1976, 1978, 1981, 1982, 1996, 2002, 2003	L	$2 Million +

* Severe Weather includes: Nor'easters, Winter Storms, Ice Storms, Severe Thunderstorms, and Tornadoes
** Dates listed after 1973 only reflect earthquakes centered within RI

Severe weather and hurricanes are two of the major hazards affecting Rhode Island and Providence. They can result in flooding and high winds causing damage to residential homes, businesses, historical buildings, dams, bridges and other critical infrastructure.

Wind events are quite normal in Southern New England and happen regularly each year. In the winter months the area is susceptible to high winds from Nor'easters and winter storms. Spring and summer seasons usually bring a number of severe thunderstorms to the region. During the late summer and fall seasons the area is at risk from hurricanes. The region has been directly affected by six hurricanes over the last 75 years.

Earthquakes in New England are a greater risk than most people realize. There have been 31 recorded earthquakes in the state over the last 220 years. Rhode Island can feel the effects of an earthquake occurring in the Northeast Region. Rhode Island has experienced several minor earthquakes in the last few years, but no extensive damage has occurred. According to the RI Emergency Management Agency (RIEMA), experts believe that earthquakes are likely to strike the eastern half of the country within the next 50 years. The US Geological Survey (USGS) estimates that there is a 40 to 60 percent chance of experiencing an earthquake of magnitude 6.0 or greater on the Richter Scale (1 to 10) in the central or eastern United States within the next 30 years.

3.3 Risk and Vulnerability Assessment

Vulnerability indicates what is likely to be damaged by the identified hazards and how severe that damage could be. With help from the University of Rhode Island (URI) Environmental Data Center, Providence mapped high risk areas in the city (see maps on page 9 and page 10). These maps indicate the flood zones, areas of historic flooding (not marked on the FEMA Flood Insurance Rate Map), evacuation routes, dams, bridges, and American Red Cross–approved shelters.

The LHMC met regularly to discuss projects and develop actions that would help to meet Providence's mitigation goals. Organization of projects and actions was accomplished by thoroughly reviewing the hazards and identifying areas in the city which are at risk. The result of these efforts was the Risk Assessment Matrix presented in Table 2. Vulnerable areas have been prioritized and ordered as such.

Risks In Providence

Map 1

Social / Economic Risks
- Elderly Housing
- Community Centers / Day Care Centers

1 Dot = 30 Housing Units
(Housing Density Not Actual Locations)

Public Infrastructure
- Dam
- Bridges
- Primary Roads
- Secondary Roads

Flood Zones
- V - Zone (100 Year)
- A - Zone (100 Year)
- X - Zone (500 Year)

- Rivers and Streams
- Repetitive Flood Damage
- Open Water

Land Use / Land Cover
- Commercial/Industrial
- Forest
- Residential
- Other
- Open Space

- Municipal Boundaries

Note: Information has been extended 1 kilometer around the Providence border. This extension is intended to aid administrators in hazard mitigation. This map confers no legal status to anything hereon.

N W E S

2 0 2 4 6 Miles

3000 0 3000 6000 9000 12000 Feet

0.5 0 0.5 Miles

1000 0 1000 2000 Feet

COASTAL RESOURCES CENTER
University of Rhode Island

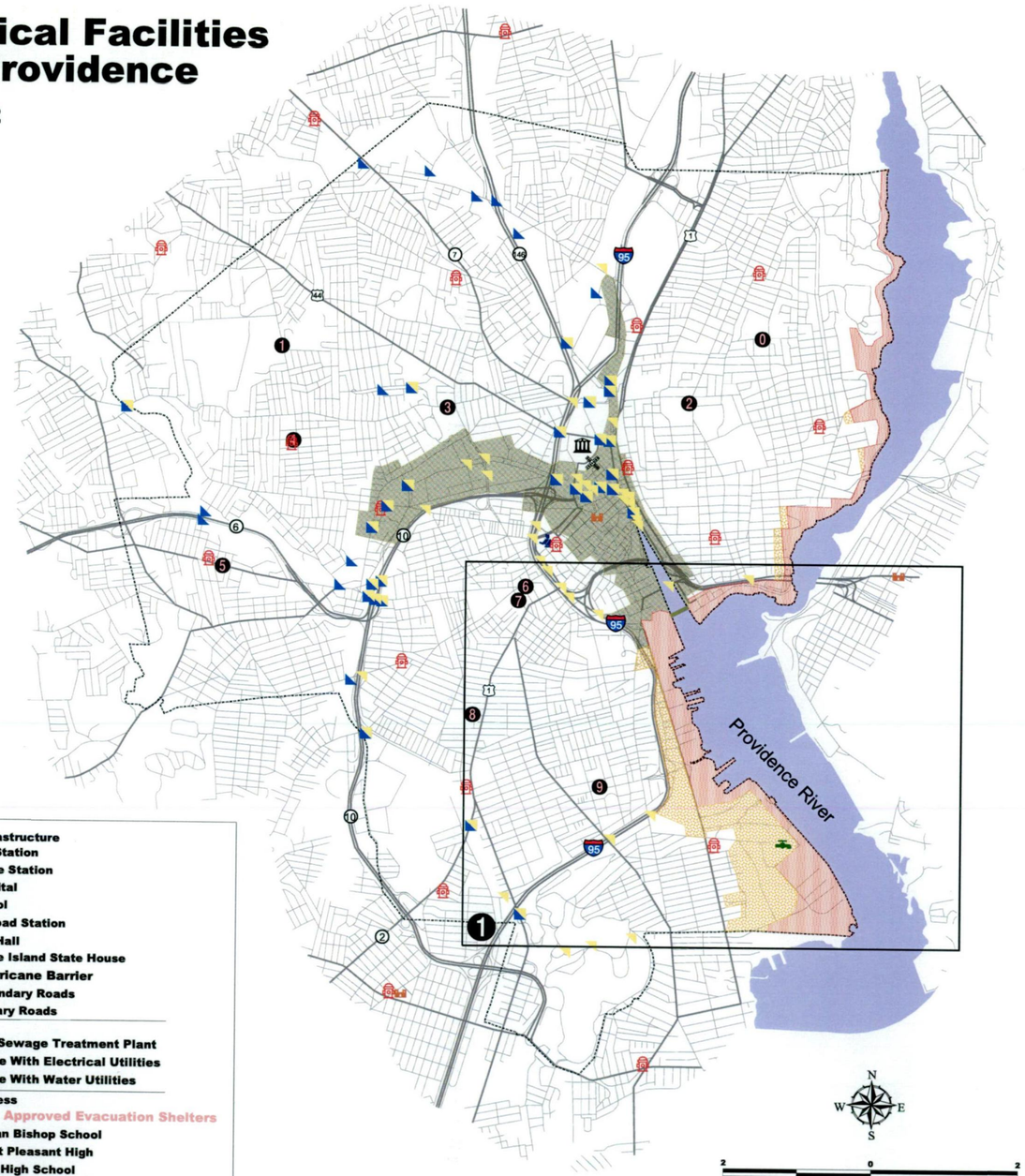
Sea Grant
Rhode Island

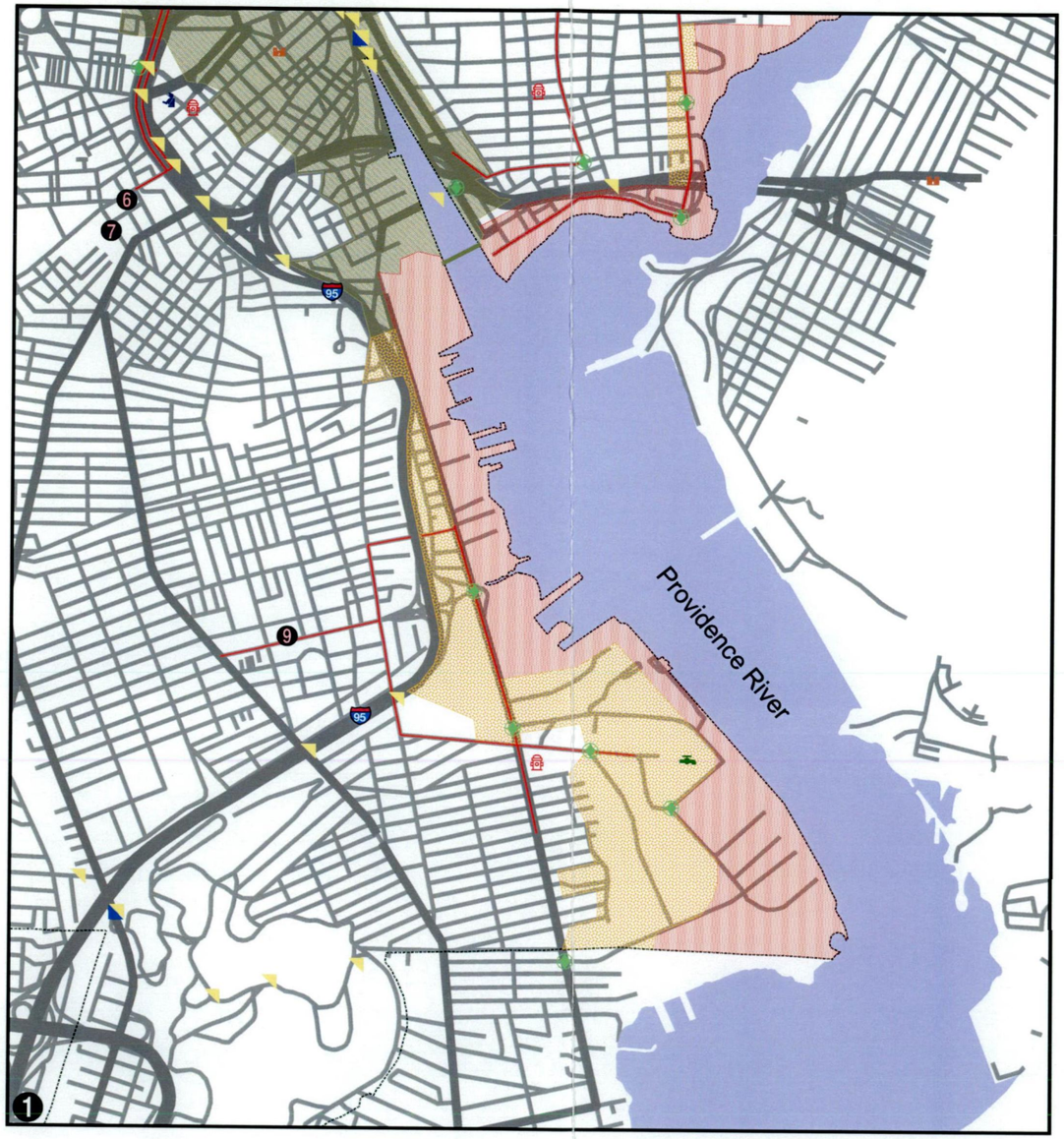
RHODE ISLAND EMERGENCY MANAGEMENT AGENCY
1996

R.J.D. - 4/99

Critical Facilities In Providence

Map 2





Public Infrastructure
- Fire Station
- Police Station
- Hospital
- School
- Railroad Station
- City Hall
- Rhode Island State House
- Hurricane Barrier
- Secondary Roads
- Primary Roads

Utilities
- NBC Sewage Treatment Plant
- Bridge With Electrical Utilities
- Bridge With Water Utilities

Preparedness

Red Cross Approved Evacuation Shelters
0. Nathan Bishop School
1. Mount Pleasant High
2. Hope High School
3. Nathanael Greene
4. George J. West School
5. Oliver H. Perry School
6. Classical High
7. Central High School
8. Gilbert Stuart School
9. Roger Williams

- Evacuation Routes
- Traffic Control Point

Flood Zones
- V - Zone (100 Year)
- A - Zone (100 Year)
- X - Zone (500 Year)

Slosh Hurricane Inundation Areas
- A (Hurricane category 1 and 2 with wind speeds up to 40 mph and category 3 with wind speeds up to 20 mph)
- B (Hurricane category 1 and 2 with wind speeds greater than 40 mph and category 3 with wind speeds greater than 20 mph)
- C (All other hurricane forward speeds and categories)
- Rivers and Streams
- Water
- Municipal Boundary

Note: Information has been extended 1 kilometer around the Providence border. This extension is intended to aid administrators in hazard mitigation. This map confers no legal status to anything hereon.

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R.J.D. - 3/00

Table 2 – City of Providence Risk Assessment Matrix

	Vulnerable Areas (In order of priority)	**Location**	**Ownership**	**Natural Hazard**	**Primary Problem/Effect**	**Mitigation Objective**	**Risk** H - Historical P - Potential
1	Hurricane Barrier	Fox Point	Public	Possible Earthquake damage	Public safety will be compromised; significant flooding of the downtown and adjacent areas. Maintenance of pumps is required	Protection of life and property	P
2	A-V Zone properties (Includes historic properties)	City wide as shown on flood maps	Public and private	Flooding and wind damage	Structures not meeting current code requirements	Protection of life and property	H
3	Other Fields Point sites: a) Port of Providence b) Johnson & Wales University c) Other	Fields Point	Private contract with City agency	Flooding, storm surge and wind	Threat to shipping and port operations, business and properties	Uninterrupted port operations have economic benefits to the City	H
4	Local & Interstate Highway Bridges	See Action Plan	Public	Flooding, storm surge, wind damage and Earthquake damage	Loss of access, disruption of evacuation routes	Safe evacuation, if needed	H 1938 and 1954 City was flooded
5	City Hall / Other Public Properties	City Hall – 25 Dorrance Street DPW & Traffic Engineering – Allens Ave and Ernest Street	Public	Flooding , ice damage, possible earthquake, storm surge	Water damage to City records, data, land evidence records, vital statistics, computer operation and the like	Protection of essential public services	H

	Vulnerable Areas (in order of priority)	**Location**	**Ownership**	**Natural Hazard**	**Primary Problem/Effect**	**Mitigation Objective**	**Risk** H - Historical P - Potential
6	Tree Trimming and Debris Management Program	City wide	Public and private	Wind	Flying debris, blockage of roads, disruption of essential services, hazard to people and property; potential loss of life, downing of power lines	Protection of property	H
7	Buildings having archaic structural systems	City wide: ▪ High rise (laterally structured) ▪ Low rise (weight supported) ▪ Public safety buildings	Public & Private	Flooding and storm surge	Hazard to people and property; potential loss of life, disruption of essential services and financial institutions	Protection of life and property, maintenance of essential commercial activity	P
8	Public Buildings and Critical Infrastructure	Neighborhood fire station, Fire Engine 14 Atwells Avenue, PEMA EOC	Public	Flooding, storm surge, and hurricane winds	High risk to critical Facilities	Critical facilities preserved	P
9	Narragansett Bay Commission (NBC) Sewage Treatment Plant	Fields Point	NBC	Flooding, fire, storm surge, earthquake damage to structures and systems	Severe public health hazard resulting from disruption of sewage treatment plant including pollution of upper Narragansett Bay	Protection of public health and decrease risk to interruption of essential services. Uninterrupted power supply	P

A. Riverine Flooding and Storm Surge

The City's topography and location along three rivers at the head of Narragansett Bay makes it vulnerable to storms and flooding. Floodplain areas are shown on Maps 1 and 2. These areas are subject to riverine flooding and the accumulation of water in depressed areas due to sustained heavy rainfall and/or melting snow.

While the Woonasquatucket and Moshassuck Rivers are prone to flooding, the properties most affected are within the 100-year flood boundary as depicted in the FEMA Floodway and Flood Boundary Maps, dated April 15, 1986 (Community Panel Number 445406 0004). These maps are available to the public at the office of the Department of Planning and Development, 400 Westminster Street, Providence, RI 02903.

The Flood Insurance Rate Maps (FIRM), published by the Federal Emergency Management Agency (FEMA) in 1985, delineate four general flood zones. In 1999, FEMA submitted an updated version of the FIRM maps to the City. Eventually, the 1999 version will replace the 1985 maps. These maps, on file in the office of the Providence Department of Planning and Development include GIS maps that show A- and V-Zones. The Floodplain Management Guidelines (43 FR 6030) establish specific requirements of compliance with Executive Order 11988 by all federal agencies. Before any development may commence, floodplain impacts must be determined.

B. Property at Risk from Flood and Wind Events

Most of the existing structures in the flood zone are older buildings, which have not been brought up to current floodplain standards.

The 100-year flood (also referred to as a base flood) is an event that has a 1% chance of happening in any given year and is the storm event used to determine the flood zones, which have specific zoning and building requirements throughout the city and state. The risk of experiencing a flood of this magnitude increases with the length of time considered.

Due to the City's low mean sea level elevation of +6.20 feet and with an average of the Providence River mean sea level of +3.50 feet, Providence had been vulnerable to extensive flood damage. As noted earlier, the City suffered extensive damage from the hurricanes of 1938 and 1954 when, in each instance, water depths of up to eight feet were experienced in the City's commercial area. Damage from the 1938 hurricane amounted to $16.3 million approximately $225 million in today's dollars. Damage from Hurricane Carol amounted to $25.1 million about $134 million in today's dollars. In July 1961 construction began on the Fox Point Hurricane Barrier and was completed in January 1966 at a cost of $16 million. Since the barrier was completed, it has prevented flood damages estimated at $2.4 million. The Fox Point Hurricane Barrier is located immediately south of the New England Power Company Plant, about 0.2 miles north of Fox Point and one mile south of downtown Providence. The barrier provides protection against tidal flooding from hurricanes and other coastal storms to about 280 acres of downtown Providence. The City of Providence operates and maintains the barrier, which is tested four times a

year and is not likely to fail for mechanical reasons. The protected area includes the commercial and industrial center, transportation facilities, public utilities, and many homes.

The area affected by historical hurricane flooding in Providence, now protected by the hurricane barrier, includes census tracts 37, 36, 31, 8 and 7. These census tracts have a total resident population of 11,109 based on the 1990 census. The total estimated employment in the protected area is estimated at 40,000. Since 1980 over 4.7 million square feet of new construction or major renovation valued at over 592.8 million dollars has been completed or started in the protected area.

Considering that there are only 241 flood insurance policies, (including those outside the floodplain) out of the more than 45,000 properties in the city, measures must be put in place to safeguard local property from flood damage. The reason for the difference in a total of 241 flood insurance policies and only 74 policies in the A and V Zone is because condominiums and apartments are included in the total and there are people who have flood insurance, but don't live in a floodplain.

Flood insurance policy holders in Providence have suffered 65 repetitive losses within 17 properties, the third highest in the State.[4] A repetitive flood loss is significant damage to an insured structure which has sustained a minimum of two events since 1978 that NFIP has paid greater than or equal to $1,000. The repetitive loss areas are marked on the GIS map. These areas include Branch Avenue (most were industrial properties), Charles Street (industrial properties and one residential apartment), Governor Street (commercial property), India Street (industrial property), Melrose Street (industrial property near Roger Williams Park), Manton Avenue and Valley Street.

Providence has a good rate of compliance with flood insurance policies, which makes a disaster less costly. The state floodplain manager is planning a community assistance visit some time this year to confirm the City's compliance. As seen in Table 2, below the Federal Emergency Management Agency estimated that there was over $36 million worth of property in Providence insured by the National Flood Insurance Program as of July 1997.

[4] As of 12/19/98. Per Victor Parmentier, Statewide Planning

Table 3

Summary of National Flood Insurance Program Activity in Providence

Total # Policies	Total Premium	Value of Property Covered	Policies in V-Zone*	Policies in A-Zone*	# Claims since 1978	Value of Claims since 1978	Repetitive Flood Losses
241	$162,002	$36,771,100	2	72	200	$3,620,740	65

* V-zone refers to the Velocity zone, where waves greater than 2.9 feet are feasible during the 100-year flood. A-zones are the other areas within the 100-year flood zone with less than 2.9-foot waves. (FEMA, April 1999).

C. Shelters

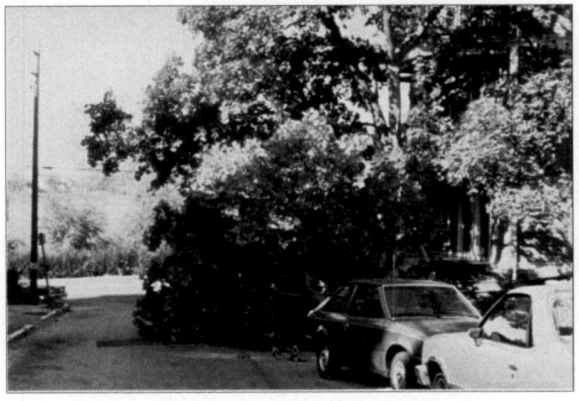
Providence has identified several emergency shelters throughout the city. The American Red Cross (ARC) requires 40 square feet of usable space per person in each shelter. Ten shelters have the American Red Cross's agreement to operate the facility as a Mass Care Facility. These are:

1. Anthony Carnevale, Jr. Elementary School
2. Christopher Del Sesto Middle School
3. Charles Fortes Elementary School
4. Alfred Lima Elementary School
5. George J. West Elementary School
6. Gilbert Stuart Middle School
7. Martin Luther King Elementary School
8. Samuel W. Bridgham Middle School
9. B. Jae Clanton Elementary School
10. Robert Bailey, III Elementary School
11. Pleasant View Elementary School
12. Mount Pleasant High School
13. Nathan Bishop Middle School

The shelters are free of flood risk and the total shelter capacity is 1,750 persons, which is sufficient for some hurricanes. The ARC recommends at least 10% (about 16,000 persons) be sheltered. To accommodate that population, all city fire stations are available, as well as all public buildings.

D. Wind

In addition to flooding, the City residents and property owners experience damage from high winds. The following pictures from recent storms illustrate how wind can cause broken tree limbs and damage to properties.



Wind Damage from Hurricane Gloria

E. Snow and Ice

Winter storms often spawn other natural hazards, such as extreme winds and coastal flooding which can lead to erosion. One such occurrence was the Blizzard of 1978, when heavy snowfall paralyzed the interstate roads and made movement through the City almost impossible, except for emergency vehicles. The weight of accumulated snow or ice can damage infrastructure and possibly cause buildings to collapse. Heavy accumulation of snow and ice and strong winds can also damage utility and power lines. Flat roofed houses face a more serious structural risk from heavy snow. Ice jam formation depends on weather and physical conditions in river channels. Conditions similar to a flash flood occur when there is a rapid rise of water at the jam and this extends upstream or when usually warm weather follows a heavy snowstorm. Ice jams are most likely to occur where the channel's slope naturally decreases, where culverts freeze solid and at natural channel constrictions such as bends and bridges, and along shallow river reaches where channels may freeze solid. Snow melting has caused road flooding in the low lying areas that were mentioned under the flood risk section. FEMA's experience has shown that no area can fully prepare for severe winter storms. However, recorded snow level (depth) data can give insight to probability and frequency of occurrence of severe winter storms.

F. Earthquakes

Earthquake risk in Providence is considered minimal. Throughout this region, there have been a total of 15 earthquakes since 1928, with one in June 1951 registering 4.6 on the Richter Scale. The City enforces the state building code which has been in existence since 1977 and has standards for new construction and major re-construction of buildings so that they are built to withstand an earthquake that registers a 3.0 on the Richter Scale. In general, buildings that are most at risk from earthquakes are old masonry buildings and large structures that were built on filled land.

FEMA has recently developed a software package called HAZUS that is used to help assess the risk from earthquakes. Information in this database includes building materials, design levels, economic value, population and bridges. This software allows the user to input a scenario of, for example, a 5.0 on the Richter Scale and the model comes up with what damages can be expected based on the intensity and location inputted. The state is now working on compiling more state-specific datasets for use with this software program that would supplement the generic Northeast states information that is currently used. Without data specific on such things as transportation, utility systems inventory, hazardous materials, demographics, vehicles inventory, building stock and essential facilities, it is impossible to do an accurate risk assessment using this software.

G. Potential Losses to the Local Economy

Since property taxes account for over half of the city's revenues, it is imperative that the community and its residents take precautions to protect their investment. According to the city's Finance Department, the average budget for the city is over $350 million per year and the local Tax Assessor reports that approximately $134 million comes from real estate taxes.

H. Future Development Trends

Industrial and residential flood plain development has occurred extensively throughout Providence. Downtown Providence has seen major commercial, residential and recreational development over the past 30 years.

Providence has experienced an increase in population figures going from approximately 154,000 in 1990 to approximately 176,000 in 2000. Providence is characterized by a mix of urban land uses including industrial, commercial, high and medium density residential, and open space. Development has been centered on downtown Providence.

Over the next five years, it is expected that the development of medium to high density residential projects will continue in downtown Providence and in the neighborhoods surrounding downtown. This includes both new construction and the conversion of existing buildings into residential units. Major downtown projects on the horizon include the construction of one or more hotels, the G-Tech office headquarters in Capital Center, one to two office buildings, and two to three parking garages. Many of these projects are located within the downtown flood zone which is currently protected by the Hurricane Barrier.

Table 3 provides an overview of land use changes in Providence over the past 43 years.

EXAMPLE

Table 4, Summary of Land Use Changes, Providence, 1961 - 2004

Land Use	1961 (acres)	1969 (acres)	1975 (acres)	1986 (acres)	2004**	Percent of Total in 2004	Percent Change 1961-2004
Residential	3,611	3,643	3,614	3,551	3,497	29	-3
Accessory to Residential*	128	316	315	307	124	1	-3
Commercial*	572	799	781	768	809	7	29
Industrial*	1,507	1,301	1,328	1,249	616	5	-144
Public & Institutional*	2,351	2,186	2,197	2,246	3,255	27	28
Street & Highway Areas	2,739	3,113	3,097	3,069	3,060	25	10
Vacant Land*	1,192	724	768	910	739	6	-61
Total	12,100	12,100	12,100	12,100	12,100	100	

* Includes waterbodies

** May be discrepancies due to differences in source/calculation method (based on current tax codes)

o May be discrepancies due to differences in source/calculation method

4.0 Identifying Mitigation Actions

4.1 Mitigation Activities

In completing the risk and vulnerability analysis, the LHMC considered projects and actions that would reduce Providence's vulnerability to the identified hazards. The Risk Assessment Matrix presented in Table 2 is the basis for the mitigation actions presented in Section 4.2. The LHMC considered the goals of this plan and prioritized the matrix and the associated actions based on historical damage, safety of the population, property protection and consistency with city-wide goals and objectives. Issues and objectives were aligned to public health risks, evacuation and mass care considerations, disruption of essential services and potential economic losses to the city.

The LHMC determined that the identified objectives could be met by considering actions aligned to the following:

- Planning and Regulations
- Property Protection, Structural Projects and Maintenance (acquisition, elevation, flood gates, sewers, repairs)
- Public Information and Outreach, Incentive Programs
- Emergency Services (Protection of Critical Facilities)
- Post Disaster Opportunities

This committee has worked to set goals and objectives that are bounded by a time frame and are compatible and consistent with state hazard mitigation goals. Upon submittal of this plan to RIEMA, the State Hazard Mitigation Committee (SHMC) is expected to review and approve these goals and objectives to ensure consistency with the statewide goals and objectives. The time frames used for this strategy are as follows:

- Short Term = 0 to 6 Months
- Medium Term = 6 to 18 Months
- Long Term = 18 Months to 5 Years

The following actions use the Risk Assessment Matrix (Table 2) to identify areas at risk, offer mitigation strategies and consider benefits. Each action offers a discussion of the project and if applicable, includes the options considered. Multiple actions associated with a vulnerable area reflect city priorities and are simply prioritized high, medium or low. If known, the actions include cost estimations and assign responsible parties to lead the efforts to complete the action. Other relevant departments/agencies that can offer support to the project are also listed. Finally, possible finance options are offered.

4.2 Mitigation Actions

Vulnerable Area One

Hurricane Barrier

Action 1 – Routine maintenance. On August 6, 1998, the Department of Public Works submitted a request to the Providence Public Building Authority for several capital and maintenance costs related to the Hurricane Barrier. Among the routine maintenance items, the following is requested of the US Army Corps of Engineers: routine electrical and mechanical maintenance, cleaning, painting & sealing, and dike maintenance. Due to the high cost of reconstruction, it will not be financially feasible to earthquake proof the hurricane barrier, nor would the costs be outweighed by the benefits.

- Action Type – Property Protection, Structural Projects and Maintenance
- Priority – High
- Lead – Department of Public Works
- Supporting – US Army Corps of Engineers
- Financing Options – Bond financing, City Budget, FEMA Hazard Mitigation, 404 Grant and Northeast States Emergency Consortium (NESEC)
- Cost – $900,000 +
- Time Frame – Medium Term
- Benefit – Protection of downtown Providence and adjacent vulnerable areas from flooding and storm surges. Ensuring the hurricane barrier is in a state of readiness for hurricane emergencies.

Action 2 – Routine overhaul of pumps – 5 year pump overhaul. Each of the five pumps has a capacity to move 620,000 gallons of water (a total of more than three million gallons of water per minute if all pumps are in operation) from the river side of the barrier to the bay side (away from downtown) during hurricanes or other high water events.

- Action Type – Property Protection, Structural Projects and Maintenance
- Priority – High
- Lead – Department of Public Works
- Supporting – US Army Corps of Engineers
- Financing Options – Bond financing, City Budget, FEMA Hazard Mitigation, 404 Grant and Northeast States Emergency Consortium (NESEC)
- Cost – $500,000 per year
- Time Frame – Long Term
- Benefit – Protection of downtown Providence and adjacent vulnerable areas from flooding and storm surges. Ensuring the hurricane barrier is in a state of readiness for hurricane emergencies.

Vulnerable Area Two

A-V Zone Properties

Action 3 – Apply for the Community Rating System (CRS).

- Action Type – Public Information and Outreach, Incentive Programs
- Priority – High
- Lead – Inspections and Standards
- Financing Options – FEMA – Flood Mitigation Assistance Program
- Cost – Staff time
- Time Frame – Medium Term
- Benefit - City membership in the CRS will enable property owners to receive a discount on flood insurance premiums.

Action 4 – Require property owners in A- and V-zones requesting building permits to comply with new flood plain standards. Consider a public outreach program to notify property owners in A- and V-zones of the requirements to comply with new flood plain standards.

- Action Type – Planning and Regulations and Public Information and Outreach, Incentive Programs
- Priority – High
- Lead – Inspections and Standards
- Financing Options – FEMA – Flood Mitigation Assistance Program
- Cost – Staff time and materials cost
- Time Frame – Medium Term
- Benefit - To encourage owners of older buildings within A- and V-zones, who are undertaking rehabilitation activities, to bring such buildings up to current flood plain standards. To educate the public on retrofitting homes.

Vulnerable Area Three

Fields Point, Port of Providence and Adjacent Sites

Action 5 – Perform study of the area with Corps of Engineers (COE) to identify up-grades necessary to limit damage due to flooding and earthquake.

- Action Type – Planning and Regulations
- Priority – High
- Lead – The City of Providence
- Supporting - COE
- Financing Options – FEMA and FMAP
- Cost – Variable depending on the COE study
- Time Frame – Medium Term
- Benefit – Mitigation against flooding, storm surges and high wind damage.

Action 6 – Retrofit the Port of Providence facility to protect against flood and earthquake damage. The Port of Providence was sold to a private entity.

- Action Type – Property Protection, Structural Projects and Maintenance
- Priority – Medium
- Lead – The City of Providence
- Financing Options – FEMA, FMAP, Corps of Engineers (COE) flood grant
- Cost – Variable depending on the COE study
- Time Frame – Long Term
- Benefit – Protection from earthquake, flood and storm surge damage

Action 7 – Enforce flood standard compliance with all new development in the Fields Point and the Port area and maintain some open space for control as part of any site plan within the area. The City is viewing the Fields Point area as a place for expanded development opportunity within the next several years. Johnson & Wales, a private educational institution, has campus facilities on this site.

- Action Type – Planning and Regulations
- Priority – High
- Lead – ProvPort and the City of Providence
- Financing Options – FEMA, FMAP, Corps of Engineers (COE) flood grant
- Cost – Staff time
- Time Frame – Long Term
- Benefit – Ensure that new development will meet flood-proofing standards.

Vulnerable Area Four

Local and Interstate Highway Bridges

Action 8 – Inspect, repair, replace and retrofit deteriorated bridge components. The following bridges are located in the floodplain. Efforts by City and state agencies will investigate retrofitting bridges. These bridges are at about the same elevation and are vulnerable to flooding. Valley Street Bridge was under water during both the 1938 and 1956 hurricanes.

City #	Location	State #	Sufficiency Rating *	Scour Rating *	Owner
4	Valley St.	051101	93.8	----	City
5	Delaine St.	040201	78.4	Low Risk	City/State
6	Tar Bridge (Manton Ave.)	051031	52.6	Low Risk	City
14	Atwells Ave. (River)	097501	79	Low Risk	City
16	Eagle St.	097201	85.1	Low Risk	City
17	Acorn St.	070501	90	Low Risk	City
19	Smith St. (River)	097801	97.6	Critical – Severe	State
26	Hawkins St. (River)	079601	49.1	Critical-Moderate	City
29	Douglas Ave.(Geneva)	097701	48.7	Stable	City
30	Manton Ave. (City line)	007801	22	Critical-Mild	State
31	Mill St. (River)	097901	65.8	Low Risk	City
50	Point St. (River) rebuilt 1998	098001	100	-----	City
51	Park St. (River)	070401	82.6	-----	City

City #	Location	State #	Sufficiency Rating *	Scour Rating *	Owner
52	Dean St.	077601	58.6	-----	State
53	Pl. Valley Pkwy.	077701	63.2	Low Risk	State
54	Stevens St.	088101	75.6	-----	City
55	Randall St. (River)	097401	48.7	Critical – Severe	City
57	Charles St. (W. River)	097301	98.6	Critical – Severe	City
58	West River St. (River)	088301	84.7	-----	City
59	Branch Ave. (River)	097601	44.9	Low Risk	City
60	Veazie St. (River)	089001	67.0	Critical-Moderate	City
63	Smithfield Ave (River)	093201	81.1	-----	City
65	Exchange St.	087401	99.3	-----	City
66	Steeple St.	086701	97.5	-----	City
67	Washington St.	086801	83.3	-----	City
68	Park Row East	086601	97.3	-----	City
69	Waterplace West (Ped.)	086302		-----	City
70	Waterplace East (Ped.)	087502		-----	City
71	College St.	087001	94.2	-----	City
72	College St. North (Ped.)	086902		-----	City
73	College St. South (Ped.)	087102		-----	City
74	Crawford St. (Bridge)	087001	95.1	-----	City
75	Crawford St. (Ped.)	087302		-----	City
77	Memorial Blvd. (North)	098101	79.2	-----	City
79	Bath St./East (Ped.)	077801	49.3	Stable	City
80	Bath St./West	077901	87.7	Low Risk	City

* Sufficiency Rating is a factor that takes into consideration the condition of the main bridge deck, the substructure and support elements. A rating of 0 is total failure and 100 is considered perfect. The term Scour Rating refers to conditions underwater that may result in loss of material in the bridge's footings and substructure. Any "critical" rating would require attention.[5]

Note that the Manton Avenue Bridge has the lowest sufficiency rating at 22.0. All the other bridges have a rating of 40 or higher. Those below 50 will need immediate attention. Bridges such as Smith Street, Randall Street, and Charles Street have Scour Ratings of "Critical-Severe," while Hawkins Street and Veazie Street are rated "Critical-Moderate." These bridges will need attention in the near future.

- Action Type – Property Protection, Structural Projects and Maintenance
- Priority – High
- Lead – Department of Public Works and RIDOT
- Supporting – FHWA
- Financing Options – FHWA and RIDOT, FMAP
- Cost – Variable depending on DPW/DOT study
- Time Frame – Long Term
- Benefit – Determine the condition of existing bridges and take corrective action to repair and/or replace bridges that are below the standards established

[5] Source: RIDOT, Bridge Inspection, 1998. These standards are derived by the NBIS (National Bridge Inspection Standard).

by the NBIS (National Bridge Inspection Standards). Protect highway infrastructure.

Vulnerable Area Five

City Hall and Other Public Properties

Action 9 – Initiate study to determine the current storage situation of vital documents. For the most part, the City Hall is protected from serious flooding by the Hurricane Barrier. In the unlikely event that the barrier should fail, the City's Department of Public Property must insure that vital documents are stored in upper stories or in flood-proof cabinets.

- Action Type – Property Protection, Structural Projects and Maintenance
- Priority – High
- Lead – Department of Public Property
- Financing Options – City budget, FEMA, FMAP
- Cost – $100,000 +
- Time Frame – Long Term
- Benefit – Protection of vital documents and data at City Hall from water or other damage.

Vulnerable Area Six

Tree Trimming and Debris Management Program

Action 10 – Initiate tree trimming and debris management program. Form a partnership with Narragansett Electric to implement the program which will help to reduce loose limbs and remove diseased trees.

- Action Type – Property Protection, Structural Projects and Maintenance
- Priority – High
- Lead – Parks Department
- Supporting – Narragansett Electric
- Financing Options – Narragansett Electric, City budget
- Cost – Approximately $20,000
- Time Frame – Medium Term
- Benefit – Protection of lives and property from falling tree limbs. Removal of dead and deteriorating trees and shrubs before they pose a problem to city residents. Prevention of power line collapse from falling trees and heavy limbs.

Vulnerable Area Seven

Buildings with Archaic Structural Systems

Action 11 – Retrofit older buildings to comply with current code requirements.
Like City Hall, Downtown Providence is protected from serious flooding by the Hurricane Barrier. Moreover, most new buildings are earthquake resistant. Some buildings both in and out of downtown would require some retrofitting. Buildings constructed after the end of the second world war would have been designed according to then accepted structural engineering practice, resembling current code requirements, to withstand hurricane force winds. Some pre-war buildings may not have utilized structural engineering criteria resembling current code requirements. Structural analysis should be provided by property owners to determine which buildings are structurally consistent with current code requirements and currently accepted engineering practice.

- Action Type – Property Protection, Structural Projects and Maintenance
- Priority –
- Lead – Department of Inspections and Standards
- Financing Options – City budget for public buildings, private funds for privately-owned buildings
- Cost – Based on study
- Time Frame – Long Term
- Benefit – Protection of older buildings from flooding, winds and other natural hazards.

Vulnerable Area Eight

Public Buildings and Critical Infrastructure

Action 12 – The City's Fire Engine 14 on Atwells Avenue at Valley Street is in a floodplain. Evaluate one of the following two options to determine which would be better in the long-term: 1) Relocation of the fire station 2) Build a retaining wall on the fire station side of the river to protect from possible flooding.

- Action Type – Emergency Services (Protection of Critical Facilities)
- Priority – Medium
- Lead – City of Providence
- Financing Options – City budget, FEMA grants, Army Corps of Engineers, or Bonds
- Cost – Staff time
- Time Frame – Long term
- Benefit – Protection of existing Critical Infrastructure from flooding.

Action 13 – Execute the chosen option from Action 12.

- Action Type – Emergency Services (Protection of Critical Facilities)
- Priority – Medium
- Lead – City of Providence and Army Corps of Engineers

- Financing Options – City Budget, FEMA Flood Grants, and Army Corps of Engineers
- Cost – A retaining wall = 200,000+ A new building = 1million+
- Time Frame – Long term
- Benefit – Protection of existing Critical Infrastructure from flooding.

Action 14 – Providence's EOC is currently located in the Public Safety Complex. The city would like to centralize the EOC by relocating it to a dedicated space in the Providence Emergency Management Agency's (PEMA's) headquarters, located outside of the downtown flood zone. While PEMA's headquarters are not located in a flood zone, some work is required to make sure the building is hurricane resistant. The building needs a new roof retrofitted to protect against hurricane winds. The building also needs new windows with hurricane proof glass to stand up to strong winds and airborne debris.

- Action Type – Emergency Services (Protection of Critical Facilities)
- Priority – High
- Lead – City of Providence
- Financing Options – City budget, FEMA/Homeland Security Grants
- Cost – $200,000 +
- Time Frame – Medium term
- Benefit – Protection of future Critical Infrastructure from hurricanes and high winds.

Action 15 – Purchase an emergency generator for the future PEMA EOC facility. In the event of a power outage during a natural disaster the EOC would need back-up power in order to stay operational.

- Action Type – Emergency Services (Protection of Critical Facilities)
- Priority – High
- Lead – City of Providence
- Financing Options – City budget, FEMA/Homeland Security Grants
- Cost – $50,000 +
- Time Frame – Medium term
- Benefit – Protection of future Critical Infrastructure from power loss.

Vulnerable Area Nine

Narragansett Bay Commission Sewage Treatment Plant

Action 16 – Update the Narragansett Bay Commission Emergency Operations Plan.

1. The Narragansett Bay Commission prepared its own emergency operations plan in 1988. The plan is currently under review and will be updated by NBC's consultants.[6] The plan includes emergency procedures resulting from power fail-

[6] Information supplied by Paul A. Desrosiers, Assistant Treatment Manager for the Narragansett Bay Commission (October 22, 1998)

ure, flood, hurricane, windstorm and earthquake, including fires and explosions resulting from such disasters. (Copies of the plan are available at the NBC office at 2 Ernest Street, Providence, RI 02905 and from the City's Emergency Operations Department).

- Action Type – Planning and Regulations
- Priority – Medium
- Lead – Narragansett Bay Commission (NBC)
- Financing Options – NBC
- Cost – Based on study
- Time Frame – Long Term
- Benefit – Protection of the City and State's investment in the regional sewer system.

4.3 Capability Assessment

The community has initiated many studies and activities over the years that have laid the foundation for the development of its mitigation strategy. The city implements and enforces the state building code, and participates in the National Flood Insurance Program, as do all of the communities in Rhode Island. The city's Emergency Operation Plan for Hazard Mitigation recommended pre- and post-disaster strategies and measures to reduce loss of life and destruction of property. A variety of hazard mitigation strategies were developed following a Federal Disaster Declaration for Hurricane Gloria in 1986.

In 1993 the City Council adopted *Providence 2000, The Comprehensive Plan*, which reflects the overall vision for Providence. The plan outlines goals, policies, issues, and actions to be taken by the community to fulfill that vision. It was determined that the potential impact of natural hazard events could be integrated into many elements of the plan, which would help carry out and implement the suggested mitigation actions in this plan. The city recognized that inclusion of mitigation initiatives – both pre-disaster and post-disaster – would not only benefit the community by reducing human suffering, damages, and the costs of recovery, but it will also help build and maintain the sustainability and economic health of the community over the long run.

The implementation actions enhance the ongoing activities within the community and provide a framework for current decisions and for those faced in the future. A hazard mitigation component, identifying both pre-disaster and post-disaster actions, should be an extension of the Comprehensive Plan. This will help to insure that the vision identified in the Comprehensive Plan can continue to be realized despite the disaster event and can be used to make appropriate decisions to restore the sense of community lost to a natural disaster.

A. The Fox Point Hurricane Barrier - A Major Mitigation Action

The barrier itself is a 700-foot-long concrete structure, 25 feet high, that extends westerly across the Providence River from Tockwotton Street, near Fox Point to Globe Street, near the power plant. The facility's five pumps are capable of pumping 3,150,000 gallons of

water per minute. The structure contains three transfer gate openings that, when closed, prevent the entry of floor waters from the bay. It permits the passage of small vessels when open. Each gate is 40 feet high and 40 feet wide. Two 10 to 15 foot high earth fill dikes, each with stone slope protection, flank each side of the barrier. The eastern dike is 780 feet long and the western dike is 1,400 feet long.

A pumping station and cooling water canal are integral parts of the project. During a tidal/flood situation, the pumping station's five large pumps can discharge the floodwaters of the Providence River through the barrier into the bay. Two gated openings in the pumping station, each 10 feet high and 15 feet wide, admit water into the cooling water canal used by the New England Power Company located immediately behind the barrier. There are three vehicular gates, located at Allens Avenue, South Main Street, and the New England Power Company and five sewer gates that prevent high tides from backing up through the sewer lines. With continued funding for pending maintenance projects, the Barrier will continue to hold its ground as it provides safety against flood for the City of Providence.

B. Emergency Operations Plan

The city revised its Emergency Operations Plan in 2004. The plan addresses the response to extraordinary emergency situations associated with natural disasters. Developed in conjunction with the Rhode Island Emergency Management Agency, the plan predetermines, to the maximum extent possible, actions taken by the community to prevent or minimize disasters.

The plan primarily addresses response and recovery operations associated with catastrophic incidents. This will help insure that activities during the response and recovery phase of the natural disaster will address mitigation, thereby reducing potential losses in the future. At a minimum, the city should develop a list of Funding Priorities for incorporation into the plan, as a reference of ideas for potential mitigation grants. If the city chooses to develop a post-disaster redevelopment plan, the plan should be consistent with the Emergency Operations Plan (and the Local Comprehensive Plan), so that actions taken in short-term recovery are compatible and compliment the long-term vision of the community.

C. Debris Removal Plan

The Debris Removal Plan provides policies and guidance to the City of Providence for the removal and disposition of debris caused by a major disaster. A debris management task force has been created to work with the Public Works Director in determining the extent of damage and debris resulting from a disaster and to assist the local authorities in the process.

5.0 Plan Implementation and Maintenance

5.1 Strategy Adoption

The City of Providence Emergency Management Plan and Hazard Mitigation Strategy was approved for adoption by the LHMC on April 6, 1999. This plan was approved by the Providence City Council as an element of *Providence 2000 - The Comprehensive Plan*. This new plan revision, which responds to FEMA's comments, needs to gain the approval of the State Hazard Mitigation Committee (SHMC), the executive director of the Rhode Island Emergency Management Agency (RIEMA) and the Federal Emergency Management Agency Region I. Once the plan is approved, the City's Comprehensive Plan will incorporate the updated plan.

5.2 Implementation, Evaluation, and Revision of Strategy

"The success of the hazard mitigation plan is measured by the degree to which actions are accomplished. Without the implementation and maintenance of the plan, the previous components have merely been an effort in research void of any practical application."
-*Tennessee Emergency Management Agency*

Implementation

The LHMC realized that assigning a time frame to each recommended mitigation action is important so that activities can be coordinated with other important governmental functions, such as committee meetings and budget hearings. Assigned time frames also provide inputs to a project plan used for tracking the progress of all activities.

In order to establish the authority and accountability for implementation, Providence includes amendments to its comprehensive plan that incorporate the theme of hazard mitigation. Once the plan is adopted, the actions are assigned to the responsible agencies for review and planning. Providence is now acting on securing sufficient resources to carry out these recommended actions.

Formal adoption and implementation of this hazard mitigation strategy will help Providence gain credit points under the Federal Emergency Management Agency's (FEMA) Community Rating System (CRS) program, which provides discounts on National Flood Insurance Program (NFIP) flood insurance premiums for residents of communities that voluntarily participate in this program. In addition, the adoption of this mitigation strategy increases Providence's eligibility for federal grants for hazard mitigation which include FEMA's Pre-Disaster Flood Mitigation Assistance (FMA) program, Pre-Disaster Mitigation Program (PDM) and post-disaster Hazard Mitigation Grant Program (HMGP). (Refer to Appendix B for further information.)

Evaluation

The LHMC and other local officials will meet every two years to ensure that the mitigation actions are being implemented in accordance with the assigned time frames. They will monitor and document progress. Within two months of this meeting, a status report

will be given to the plan commission and city council. Progress will be reviewed with the public every two years at advertised public hearings held by the City Plan Commission.

Revision

The local strategy will also be evaluated and updated every two years, after a disaster, or as funding opportunities arise for the actions and projects identified in the plan. Any updates will be reviewed and submitted to RIEMA upon local approval to ensure that the state hazard mitigation strategy remains current. Revisions will be reviewed with the public every two years at advertised public hearings held by the City Plan Commission.

Appendix A

Proposal to amend *Providence 2000 - The Comprehensive Plan*

Plan Amendment

4.6.1 COMMUNITY SERVICES AND FACILITIES GOALS AND POLICIES

Add a new CS11
Emergency Management/Hazard Mitigation

The general scope of City-provided services and facilities includes Public Safety, Fire, Ambulance Rescue, Police, Emergency Management (pre-and post-disaster), and Animal Control.

The function of Emergency Management for the City of Providence is shared among a number of City departments and state counterparts that are involved in hazard mitigation and emergency relief and response. Depending on the nature and severity of the emergency, staff from public works, police, fire and engineering will act in accordance with the City's Emergency Management Operations Plan, revised in September, 1997. Copies of the Plan are available in the Providence Emergency Management Agency, 200 Chad Brown Street, Providence; the Department of Public Works, Providence Police Department, and Department of Inspections and Standards.

This plan establishes the Mayor as the director for Emergency Response and the main point of contact for all emergency management issues. Headquarters are located at City Hall, 25 Dorrance Street, Providence, RI. The back-up site if the City Hall is not available, is the Providence Emergency Management Agency, 200 Chad Brown Street, Providence.

Due to the unpredictability and many potential sources of man-made disasters, Providence's principal focus is concentrated on responses to the threat of natural disasters, such as floods, hurricanes, northeasters, and blizzards. In addition, the City, in accordance with title III Emergency Planning and Right to Know (Public Law 99-499) has emergency plans for each City facility. The Providence Fire Department has a hazardous materials response plan in effect, and the Narragansett Bay Commission has emergency rules and procedures relating to wastewater and sewage treatment plant protection. All plans are up-dated and kept on file with the appropriate partner agencies, Rhode Island Emergency Management Agency (RIEMA), Rhode Island Department of Labor, and the Rhode Island League of Cities and City Inter-Local Risk Management Trust.

Natural Hazard Mitigation

The Rhode Island Emergency Management Agency and The University of Rhode Island's Coastal Resources Center/Rhode Island Sea Grant assisted the

City in developing a specific Natural Hazard Mitigation Strategy. Mitigation planning combines technical analysis and community participation to make wise choices among alternative strategies to achieve long-term sustainability. This strategy will provide the framework for the City to conduct pro-active planning and education to prevent damage to property, life, and resources, and to preserve and enhance the quality of life, property and resources for residents and visitors of Providence by the following:

- Incorporating hazard mitigation into project review,
- Developing and implementing public outreach and incentive programs, and
- Determining post-disaster mitigation opportunities

Natural hazards that affect Providence are floods, severe winds and snow/ice. The mitigation strategy assesses what is at risk and recommends detailed mitigation actions, please refer to the local hazard mitigation strategy that is updated yearly.

GOAL

To conduct pro-active planning and education to prevent damage to property, life, and resources and to preserve and enhance the quality of life, property, and resources for residents and visitors of Providence by identifying and promoting educational opportunities to introduce residents and visitors to various appropriate hazard mitigation management strategies; and implementing a variety of technical and/or educational mechanisms for effective resource management programs, and to implement priority hazard mitigation programs in order to protect Providence's cultural, historical, structural and natural environment, and to protect the individuals residing in Providence.

POLICIES

A. The City must do its utmost to secure public safety and prevent loss of property and life in the event of a natural or man-made emergency.

B. Provide for well-planned and effective emergency response through coordination with the Rhode Island Emergency Management Agency, Federal Emergency Agency (FEMA), and adjacent cities, in developing an Emergency Operating Plan.

C. Continued participation in the FEMA National Flood Insurance Program Community Rating System (CRS).

D. Continued improvement of special emergency response plans for City facilities.

E. Maintaining and up-dating Hazardous Materials Response Plans and associated training.

F. Improvement of the City's radios communications system and utility telemetry system.

Appendix B - Technical and Financial Assistance for Mitigation

State Resources

Rhode Island Emergency Management Agency
645 New London Avenue
Cranston, RI 02920
Phone: (401) 946-9996

Coastal Resources Center
University of Rhode Island
Narragansett Bay Campus
Narragansett, RI 02882
Phone: (401) 874-6224

Coastal Resources Management Council
Stedman Government Center
4808 Tower Hill Road
Wakefield, RI 02879
Phone: (401) 222-2476

Rhode Island Geological Survey
8 Ranger Road, Suite 2
University of Rhode Island
Kingstown, RI 02881
Phone: (401) 874-2265

Department of Administration/Division of Planning
One Capitol Hill
Providence, RI 02908
Phone: (401) 222-6478

State of Rhode Island Building Committee Office
Building Commissionerís Office
One Capitol Hill
Providence, RI 02903
Phone: (401)222-3529

Rhode Island Builders Association
The Terry Lane Corporation
Terry Lane
Gloucester, RI 02814
Phone: (401) 568-8006

Department of Transportation-Design Section/Bridges
2 Capitol Hill, Room 231D
Providence, RI 02903
Phone: (401) 222-2053

Rhode Island Department of Business Regulations
233 Richmond Street
Providence, RI 02903
Phone: (401) 222-2246

State Fire Marshal's Office
24 Conway Avenue
North Kingstown, RI 02852
Phone: (401) 222-2335

Rhode Island Banking Commission/Associate Director
233 Richmond Street
Providence, RI 02903
Phone: (401) 222-2405

Public Utilities Commission
100 Orange Street
Providence, RI 02903
Phone: (401) 277-3500 Ext. 153

Department of Environmental Management
Division of Parks and Recreation
2321 Hartford Avenue
Johnston, RI 02919
Phone: (401) 222-2635

Federal Resources

Federal Emergency Management Agency
Mitigation Division
Region I Office
J.W. McCormack POCH, Room 462
Boston, MA 02109
(617) 223-9561

U.S. Army Corps of Engineers
New England District
424 Trapelo Road
Waltham, MA 02254
(617) 647-8505

Department of Agriculture
Natural Resources Conservation Service
(formerly Soil Conservation Service)
451 West Street
Amherst, MA 01002
(413) 253-4362

Department of Commerce
National Weather Service
Forecast Office
445 Myles Standish Boulevard
Taunton, MA 02780
(508) 823-2262

Economic Development Administration
143 North Main Street, Suite 209
Concord, NH 03301
(603) 225-1624

Department of the Interior
National Park Service
Rivers and Trails Conservation Program
Regional Office
15 State Street
Boston, MA 02109
(617) 223-5203

U.S. Fish and Wildlife Service
New England Field Office
22 Bridge Street, Unit #1
Concord, NH 03301-4986

Department of Housing and Urban Development
Community Development Block Grants
Region I - O'Neill Federal Building
10 Causeway Street
Boston, MA 02222
(617) 565-5354

Small Business Administration
360 Rainbow Boulevard South, 3rd Floor
Niagara Falls, NY 14303
(716) 282-4612 or (800) 659-2955

Environmental Protection Agency
Region I - JFK Federal Building
Government Center
Boston, MA 02203
(617) 565 3400

Other Resources

The Association of State Floodplain Managers (ASFM)
Professional association with a membership of almost 1,000 state employees that assist communities with the NFIP. ASFPM has developed a series of technical and topical research papers and a series of proceedings from their annual conferences. Many mitigation "success stories" have been documented through these resources and provide a good starting point for planning.

Floodplain Management Resources Center
Free library and referral service of the ASFPM for floodplain management publications. Co-located with the Natural Hazards Center at the University of Colorado in Boulder, staff can use keywords to identify useful publications from the more than 900 flood-related documents in the library.

Institute for Business and Home Safety (IBHS)
(formally Insurance Institute for Property Loss Reduction)
An insurance industry-sponsored, nonprofit organization dedicated to reducing losses—deaths, injuries, and property damage—resulting from natural hazards. IBHS efforts are directed at five specific hazards: flood, windstorm, hail, earthquake, and wildfire. Through its public education efforts and information center, IBHS communicates the results of its research and statistical gathering, as well as mitigation information, to a broad audience.

Volunteer Organizations
Organizations, such as the American Red Cross, the Salvation Army, Habitat for Humanity, Interfaith, and the Mennonite Disaster Service, are often available to help after disasters. Service organizations, such as the Lions, Elks, and VFW are also available. These organizations have helped others with food, shelter, clothing, money, etc. Habitat for Humanity and the Mennonite Disaster Service provide skilled labor to help rebuild damaged buildings incorporating mitigation or floodproofing concepts. The offices of individual organizations can be contacted directly, or the FEMA Regional Office may be able to assist.

Flood Relief Funds
After a disaster, local businesses, residents, and out-of-town groups often donate money to local relief funds. They may be managed by the local government, one or more local churches, or an ad hoc committee. No government disaster declaration is needed. Local officials should recommend that the funds be held until an applicant exhausts all sources of public disaster assistance. Doing so allows the funds to be used for mitigation and other projects that cannot be funded elsewhere.

New England States Emergency Consortium (NESEC)
Lakeside Office Park
NESEC conducts public awareness and education programs on natural disaster and emergency management activities throughout New England. Brochures and videotapes are available on such topics as earthquake preparedness, mitigation, and hurricane safety tips. NESEC maintains a WWW homepage that is accessible at http://www.serve.com/NESEC.

The New England Floodplain and Stormwater Managers Association (NEFSMA)
Professional organization for New England floodplain and stormwater managers. Provides workshops, conferences, and a newsletter to membership and interested individuals and companies. Contact: Nicholas Winter, chairman, at (617) 727-0488 or NEFSMA's homepage on the Web at http://www.seacoast.com/~nefsma.

Appendix C –Financing Options

Federal Emergency Management Agency

National Flood Insurance Program (NFIP)

All of Rhode Island's 39 municipalities participate in the NFIP. Flood insurance is made available to residents in exchange for community compliance with minimum floodplain 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 levels on the maps.
- Require design techniques to minimize flood damage for structures being built in high hazard areas.

Coverage for land subsidence, sewer backup and water seepage is also available subject to the conditions outlined in the NFIP standard policy. Since homeowners' insurance does not cover flooding, a community's participation in the NFIP is vital to protecting property in the floodplain as well as being essential to ensure that federally backed mortgages and loans can be used to finance floodprone property.

If a community participating in NFIP's Community Rating System (CRS) program performs activities that include maintaining records for floodplain development, publicizing the flood hazard, improving flood data and floodplain management planning, then the flood insurance premiums paid by policy holders in the community will be reduced by 5 to 45 percent. Developing a flood mitigation plan or a multi-hazard mitigation plan will help communities gain additional credit under the CRS.

For further information contact the State of Rhode Island Flood Plain Manager (401) 222-6478 or FEMA Region I (617)223-9561.

Flood Mitigation Assistance Program (FMAP)

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. Each state has the the discretion to award funds to communities or to state government agencies. The program may fund up to 75 percent of the total 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". There are limits on the frequency of grants and the amount of funding that can be allocated to a state or community in any 5-year period.

The Rhode Island Emergency Management Agency (RIEMA) receives about $110,000 to award as grants form the Federal Emergency Management Agency (FEMA) every April plus $12,000 for planning and $12,600 for technical assistance. In order to be eligible for these grants, communities must have a flood mitigation plan or a multi-hazard mitigation strategy. Communities that are suspended or on probation from NFIP are not eligible. In 1998, Charlestown, RI received over $108,000 to help implement the mitigation activities as indicated in the proposed Comprehensive Plan amendments. In 1999, Pawtucket, RI received $100,000 to floodproof city hall, which is located along the Blackstone River (the lowest elevation in the city).

For further information contact the State of Rhode Island Hazard Mitigation Officer (401)946-9996 or FEMA Region I (617)223-9540.

Hazard Mitigation Grant Program (HMGP):

Also known as the 404 Program of HMGP, this program is available only after a federally declared disaster occurs, so the amount available varies with each disaster. 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 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 and turning 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 (401)946-9996 or FEMA Region I (617)223-9540.

Project Impact

This is a new initiative of FEMA's which is to help create "disaster resistant" communities. RIEMA and the State Hazard Mitigation Committee select and nominate municipalities that are either high-risk or have demonstrated pro-active efforts to help safeguard their community. The city of Warwick was nominated as Rhode Island's first Project Impact city and it will serve as a model to other municipalities. In 1999, Warwick received $300,000 for implementation of preventative measures, which will be taken to help safeguard the city. FEMA expects Congress to approve this funding each year.

For further information contact the RIEMA's Project Impact Program Coordinator (401)946-9996 or FEMA Region I (617)223-4175.

National Weather Service (NWS)

The Taunton, Massachusetts NWS office has developed a partnership with RIEMA and donates staff time and tide gauges to help RIEMA gain more lead time before a storm hits.

For further information contact NWS (508)823-2262.

American Red Cross (ARC)

The American Red Cross chapter of Rhode Island has supplied public education materials and they have also volunteered to conduct training programs and hold seminars.

For further information contact ARC (401)831-7700.

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 100n 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 floodplain 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 no-federal share of the cost 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 flood control and erosion projects, for example. 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. Federal limits for each state is $500,000 annually.

For further information contact US ACE (978)318-8087 or (978)318-8647.

Website at http://www.usace.army.mil.

State of Rhode Island

The State 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.

RI Department of Environment Management

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 a revolving loan. For state-owned recreational areas, improvements could be made by coordinating with ongoing Rhode Island Department of Environmental Management (RIDEM) efforts on various projects. Funds may be available through the RI DEM Parks and Recreation Division for tree trimming, dune restoration and bulkhead repair. In addition, the state has several funding programs (amount varies for each program) 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 several incorporated land trusts who work to preserve land and natural resources. Land owners 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 lands or open space.

For current funding availability contact the Open Space and Recreational Bond Fund Land Acquisition Program or RI DEM at (401)222-2776.

RI Department of Transportation

The State Planning Council designates which enhancement projects from the Transportation Improvements Plan the state will work on. Applications for the Federal Wooden Bridge Replacement Program can be made through RI DOT. RI DOT has a debris management program that activates during a storm event.

For further information contact RI DOT (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 NESEC (781)224-9876.

Appendix D – Public Information and Outreach

DIRECTOR MAYOR

PROVIDENCE EMERGENCY MANAGEMENT AGENCY

January 22, 2004

S. Jon Ozbek
Principal Planner
Planning & Development
400 Westminster Street
Providence, RI 02903

Dear Mr. Ozbek:

The Providence Hazard Mitigation Committee convened on January 20, 2004 to address the Federal Emergency Management Agency (FEMA) recommendations in updating our Hazard Mitigation Plan. As indicated in my letter to you dated January 6, 2004, members of Planning and Development, Inspection and Standards, Public Works, Fire Department and the Tax Assessor were invited to attend and participate with this Agency in the process. In attendance at the January 20 meeting were myself, Gerald Florio representing DPW and Karen Scarcella from the Tax Assessor's office. Mr. Ed Paxon phoned to say he could not attend. We went over the changes and each was given a copy of the Federal Register and the suggested recommendations from PEMA.

Enclosed please find copies of the Federal Register and the recommendations we need to address. There are eleven (11) items that did not receive either "satisfactory" or "outstanding" and they are marked "need improvement'; you will find a hand written asterisk and a number from one to eleven next to the ones that need attention. Please review them at your earliest convenience and forward your comments to me. You will be notified of the next meeting within a few weeks.

This project must be completed and approved by FEMA in order for the City of Providence to be considered for any further federal funds. Thank you for your anticipated assistance.

Sincerely,

Peter Marinucci
Deputy Director

Enclosure: 3
PM/sdp

325 Washington Street • Providence, Rhode Island 02903 • (401) 243-6425 • Fax: (401) 243-6411 • TDD #: (401) 831-3456

DIRECTOR

MAYOR

PROVIDENCE EMERGENCY MANAGEMENT AGENCY

January 22, 2004

Gary Mulcahy
Acting Fire Chief
Public Safety Complex
325 Washington Street
Providence, RI 02903

Dear Chief Mulcahy:

The Providence Hazard Mitigation Committee convened on January 20, 2004 to address the Federal Emergency Management Agency (FEMA) recommendations in updating our Hazard Mitigation Plan. As indicated in my letter to you dated January 6, 2004, members of Planning and Development, Inspection and Standards, Public Works, Fire Department and the Tax Assessor were invited to attend and participate with this Agency in the process. In attendance at the January 20 meeting were myself, Gerald Florio representing DPW and Karen Scarcella from the Tax Assessor's office. Mr. Ed Paxon phoned to say he could not attend. We went over the changes and each was given a copy of the Federal Register and the suggested recommendations from PEMA.

Enclosed please find copies of the Federal Register and the recommendations we need to address. There are eleven (11) items that did not receive either "satisfactory" or "outstanding" and they are marked "need improvement'; you will find a hand written asterisk and a number from one to eleven next to the ones that need attention. Please review them at your earliest convenience and address the ones that you feel pertain to your department.

This project must be completed and approved by FEMA in order for the City of Providence to be considered for any further federal funds. Thank you for your anticipated assistance.

Sincerely,

Peter Marinucci
Deputy Director

Enclosure: 3
PM/sdp

January 6, 2004

John Gelati
Acting Tax Assessor
Office of the Assessor
City Hall
Providence, RI 02903

RE: LOCAL HAZARD MITIGATION COMMITTEE

Dear Mr. Gelati:

This Agency has been informed by the Rhode Island Emergency Management Agency (RIEMA) of the Federal Disaster Mitigation Act (DMA 2000) requirements pertaining to the development and implementation of Local Hazard Mitigation Plans. Providence must complete its Hazard Mitigation Plan and have it federally approved by November 2004, or it will not be eligible for federal public disaster assistance funds after a natural disaster event. This legislation sets forth the criteria that must be followed in order to receive the approval by the Federal Emergency Management Agency (FEMA).

The Providence Emergency Management Agency (PEMA), together with representatives from the city's Redevelopment Agency, Public Works Department, Department of Inspections and Standards and the Fire Department developed the Hazard Mitigation Plan to mitigate natural hazards in the City in 1999. This Plan was completed and presented to the State Hazard Mitigation Committee for review and was approved in the year 2000.

FEMA has provided us with a scoring template that contains comments related to the Plan. These comments and changes need to be addressed soon, in order to resubmit the Plan to RIEMA for final approval.

I would like to ask for your assistance and participation in this process and invite you to attend a meeting at 10:00 a.m. on January 20, 2004 in the Fire Department's conference room, located on the third floor of the Public Safety Complex, 325 Washington Street.

If for any reason you cannot attend this meeting yourself, please assign someone else from your department to attend. Your input is essential to the success of our goal. Please confirm your attendance by calling this office at 243-6425.

Thank you for your anticipated cooperation.

Sincerely,

Peter Marinucci
Deputy Director

City of Providence

STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

CHAPTER 2000-5

No. 135 **AN ORDINANCE** AMENDING *PROVIDENCE 2000: THE COMPREHENSIVE PLAN*, CHAPTER 1994-52, No. 798, ADOPTED ON DECEMBER 27, 1994, AS AMENDED.

Approved March 23, 2000

Be it ordained by the City of Providence:

That Chapter 1994-52, No. 798, approved December 27, 1994, also known as *Providence 2000: The Comprehensive Plan*, (hereinafter referred to as "Plan") is hereby amended, pursuant to Rhode Island General Laws Section 45-22.2-12. The following sections shall be considered to be a single action to amend to the Plan.

Section 1 - To adopt the plan entitled **"Strategy for Reducing Risks from Natural Hazards in Providence, Rhode Island, 1999"** as Plan Number 5 of the Comprehensive Plan Series of *Providence 2000: The Comprehensive Plan*, attached and made part of this Ordinance.

Section 2 - This Ordinance shall take effect upon passage.

IN CITY COUNCIL
MAR 3 2000
FIRST READING
READ AND PASSED
CLERK

IN CITY COUNCIL
MAR 16 2000
FINAL READING
READ AND PASSED
PRESIDENT
CLERK

APPROVED
MAR 23 2000
MAYOR

No.

CHAPTER

AN ORDINANCE

IN CITY COUNCIL
OCT 7 1999
FIRST READING
REFERRED TO COMMITTEE ON
~~ORDINANCES~~ Urban Redevelopment, Renewal and Planning
Michael R. Clement CLERK

THE COMMITTEE ON
U.R.R.P.
Recommends Set up P.H.
Barbara A. Ferris
10/18/99 Clerk
11/29/99 P.H. Held

THE COMMITTEE ON
URBAN REDEVELOPMENT
RENEWAL & PLANNING
Approves Passage of
The Within Ordinance
Claire E. Bertrand
Feb. 23 2000 Clerk

Council President Lombardi (By request)

MEMORANDUM

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TO : JOHN J. PARTINGTON
COMMISSIONER OF PUBLIC SAFETY

FROM: PETER MARINUCCI
DIRECTOR

DATE: NOVEMBER 23, 1999

RE : NATIONAL SUMMIT

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The Providence Emergency Management Agency has developed a plan to mitigate natural hazards in the city. This plan is intended to address the multi-hazards and suggests both short term and long term mitigation actions to protect the citizens of Providence. Hazard Mitigation is any action taken to reduce or eliminate long risk to people and property from the effects of natural hazards, such as winds, fire, floods, hurricanes, etc.

Goals: It is the goal of the Hazard Mitigation Plan to preserve and enhance the quality of life, property and resources for the citizens of Providence by:

1) identifying areas at risk from natural hazard.
2) implementing priority hazard mitigation actions in order to protect the city's built environment, people, historic, cultural, economic and natural resources.

Pre-disaster planning will reduce the cost of post disaster clean up significantly. Money spent today will save money on recovery tomorrow.

By developing this Hazard Mitigation Plan, Providence has become a Disaster Resistant Community . Providence is now a Project Impact Community qualified to receive up to $300,000.00 in Federal Grants through FEMA.

On December 12 through December 16, 1999 the Federal Emergency Management Agency is sponsoring a National Summit in Washington, DC. This summit will attract more than 1,000 public officials, public administrators, educators, media and corporate partners who are committed to building disaster resistant communities. The attendees will learn how to get the private corporates involved in the community and build public support for all the Mitigation Projects.

FEMA reimburses all expenses for attending.

FEMA is sponsoring this summit. The attendees must pay for transportation, hotel and meals. FEMA will reimburse later. FEMA allows up to $6,000.00 per community for travel and related expenses.

Hazardous Mitigation Meeting - 5/3/99

Present: Victor Parmateer, Lori Watson, Joseph Almeida, Sam Shamoon, Peter Marinucci

Met at Victor Parmateer's office (Statewide Planning) at 2:30 p.m. and made final corrections to the Local Hazardous Mitigation Plan.

Mr. Shamoon will forward a copy of the completed plan to this office after he has made the corrections.

The next meeting of the State Planning Committee will take place at RIEMA on 6/16/99. At that time the Plan will be reviewed.

MEETING OF THE PROVIDENCE HAZARD MITIGATION COMMITTEE

Date: April 6, 1999

Place: Providence Emergency Management Agency
200 Chad Brown Street
Providence, Rhode Island

Time: 9:15 a.m.

Topic: Make Final Corrections/Additions to Plan /before Submission to State

Attendees: Peter Marinucci, Deputy Director, PEMA
Edgar Paxson, Chief of Building Inspection
Samuel Shamoon, Associate Director of Planning & Development
Joseph Almeida, Jr., Federal Disaster Planner, RIEMA
Lori Watson, Haz/Mit Specialist, URI Coastal Resources
Chief John Thomas, Fire Department

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Minutes Sheila Del Pico, Secretary 9:15 a.m. - 10:05 a.m.

A meeting of the Providence Hazard Mitigation Committee convened at 9:15 a.m. in the office of Providence Emergency Management.

Mr. Marinucci thanked the committee for their hard work and especially Sam Shamoon for all his effort.

Committee members discussed the plan and made final corrections. It was decided that the cover picture would be in color and the inside pictures would remain black & white. Ms. Watson will make several additions and fax them to Mr. Shamoon (add appendix c, grant info, update state committee).

Mr. Shamoon will make several corrections/changes to the plan including changing the order of items 4.1 -4.10 (pages 8-18), adding JT Morris's figures on pump capacity (p. 19) and filling in the date our EOP was revised (p. 22).

Mr. Paxson will write something to be included in the Earthquake info (4.7) and fax it to Mr. Shamoon.

Ms. Watson suggested that we add newspaper clippings (last 5 years) to the plan. We will select some articles and send them to Mr. Shamoon for inclusion in the plan.

We will send copies of the plan to Chief Rattigan and James Morris for their final input.

All changes will be submitted to Mr. Shamoon who will then have the plan ready to be picked up by Ms. Watson on Friday.

The plan will be reviewed by the State on 4/28. When it has approval, we will send it to Mayor Cianci for his approval before going to city committee. The Mayor is aware of the plan as Mr. Marinucci has corresponded with him concerning it.

The meeting adjourned at 10:05 a.m.

PROVIDENCE EMERGENCY MANAGEMENT AGENCY

JOHN J. PARTINGTON
DIRECTOR
PETER P. MARINUCCI
DEPUTY DIRECTOR

200 Chad Brown Street
Providence, Rhode Island 02908
272-3121; Extension 2607
FAX 331-7948; T.D.D. 831-3456

VINCENT A. CIANCI, JR.
MAYOR
EDWARD W. XAVIER
OPERATION & PLANNING OFFICER

ATTENDANCE SHEET
****

DATE: 4/6/99

AME	BUSINESS ADDRESS	PHONE #
Ed Paxton	Inspection & Standards	421-7740 x 353
Lori Watson	RIEMA/CRC	874-6855
Joseph Almeida, Jr	R.I.E.M.A	946-9996
Sam Shayoon	DPD	351-4300
Jack Thomas	Prov. Fire Dept	781-3439

PROVIDENCE EMERGENCY MANAGEMENT AGENCY

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VINCENT A. CIANCI, JR.
MAYOR
EDWARD W. XAVIER
OPERATION & PLANNING OFFICER

April 1, 1999

The Honorable Vincent A. Cianci, Jr.
Mayor of Providence
City Hall
25 Dorrance Street
Providence, Rhode Island 02903

Dear Mayor Cianci:

I have received a copy of a letter addressed to you by US Congressman Robert Weygand, dated March 17, 1999, indicating his support for a legislation intended to assist cities and towns in Rhode Island in obtaining grants for disaster mitigation. This bill, designed to create federal funding for disaster prevention programs, requires a participating community to submit a comprehensive plan for mitigation against disaster to the Federal Emergency Management Agency (FEMA).

I am happy to report that this Agency has already drafted a plan to address this issue; in fact, last year, upon learning of this program, I formed a Hazard Mitigation Committee. This committee is comprised of one member each from the Fire Department, Planning and Development, Inspection and Standards, Public Works and myself as Chairman. We have identified areas at risk from natural hazards in the City of Providence, assessed its vulnerabilities and developed mitigation actions that address initiatives to minimize the effects of future hazards.

On April 6, 1999 the committee will review the final draft of the plan and then it will be sent to the State Mitigation Committee for its approval. Once the state committee accepts our draft, I will forward you a copy for review and, if you accept it, it will then be sent to the other city agencies for their approvals.

In the meantime, I am keeping in contact with the Rhode Island Emergency Management Agency (RIEMA) to secure the funds once our plan is accepted.

Sincerely yours,

Peter Marinucci
Deputy Director

PM/sdp

JOHN J. PARTINGTON
DIRECTOR
PETER P. MARINUCCI
DEPUTY DIRECTOR

PROVIDENCE EMERGENCY MANAGEMENT AGENCY

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VINCENT A. CIANCI, JR.
MAYOR
EDWARD W. XAVIER
OPERATION & PLANNING OFFICER

MEMORANDUM
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TO : LOCAL HAZARDOUS/MITIGATION COMMITTEE

FROM : PETER MARINUCCI, DEPUTY DIRECTOR

DATE : MARCH 26, 1999

SUBJ : THE PROVIDENCE PLAN

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A MEETING OF THE HAZARDOUS/MITIGATION COMMITTEE IS SCHEDULED FOR TUESDAY, APRIL 6, 1999 AT 9:00 A.M. IN MY OFFICE.

THIS IS A VERY IMPORTANT MEETING, PLEASE MAKE EVERY EFFORT TO ATTEND. THIS WILL BE OUR LAST MEETING BEFORE THE PLAN IS SENT TO THE STATE FOR FINAL APPROVAL.

TELEPHONE MY OFFICE TO CONFIRM YOUR ATTENDANCE.

PM/sdp

MEETING OF THE
PROVIDENCE HAZARD MITIGATION COMMITTEE

Date: November 18, 1998

Place: Providence Emergency Management Agency
200 Chad Brown Street
Providence, Rhode Island

Time: 9:45 a.m.

Topic: Discuss final draft of Hazard Mitigation Plan for the City of Providence

Attendees: Peter Mariucci, Deputy Director, PEMA
James T. Morris, Superintendent of Hurricane Barrier
Edgar Paxson, Chief of Building Inspection
James T. Rattigan, Fire Chief
Samuel Shamoon, Associate Director of Planning & Development
Joseph Almeida, Jr., Federal Disaster Planner, RIEMA
Lori Watson, Haz/Mit Specialist, URI Coastal Resources

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Minutes Sheila Del Pico, Secretary 9:45 a.m. - 11:25 a.m.

A meeting of the Providence Hazard Mitigation Committee convened at 9:45 a.m. in the office of Providence Emergency Management.

Ms. Watson expressed the importance of prioritizing the projects on the matrix. We have them numbered at random instead of importance, so the committee's first task was to prioritize the projects. They will appear as follows on the Matrix:

1. Hurricane Barrier
2. A-V Zone
3. Port of Providence
4. Bridges
5. City Hall
6. Tree Trimming
7. Buildings having archaic structural systems
8. Public Buildings
9. NBC

Ms Watson suggested moving the Matrix to page 15.

Much discussion ensued about the plan. Mr. Shamoon went over the changes with the committee members. The rest of the meeting was spent "brainstorming" on new project actions. Highlights follow:

A-V Zone - Ms. Watson felt that the public should be notified if they reside in a floodplain and she explained that other cities and towns do that but the City of Providence has never done this. Mr. Paxson stated that when people come in for permits we wait for them to tell us that they live in a flood zone rather than telling them. The committee discussed ways of informing people without causing panic. Should we send carefully worded letters to people. Would they come from EMA or Building Inspection We can get sample letters from Narragansett Electric. Display FEMA Q-3 Flood Maps in the Building Inspection Dept. Tell people that according to FEMA they are located in a flood plain (no need to mention the City al all). It was suggested that all AV-zone property owners when applying for permits will be told that they are in a flood zone. Ms. Watson will check on this with other towns and cities. We would have to speak to the Mayor before any action takes place. Ms. Watson stated that federal grants are available under the flood program which cities can apply for on behalf of private citizens to help them retrofit their property.

City Hall

1).Vital Records should not be kept in the basement or on the first floor of City Hall (includes License Bureau, Vital Statistics, Board of Canvass) When plan is complete this should be brought up at a Director's meeting to suggest that records be stored higher up. 2). Address concern for the aerials, antennas and towers in severe weather (according to insurance standards). 3). Currently city hall uses sandbags to prepare for flooding but it was suggested that the basement be made flood-proof; 4). Instead of municipal use FEMA.

Downtown - High Rise

1). Don't limit to downtown (use citywide); 2). Leave out earthquake (state meteorologist says that we are not in danger) 3). Use public education and outreach programs ; 4). Ms. Watson mentioned that maybe we could use the fact the RI was named as showcase state; 5). Instead of cost unknown say variable depending on property, city budget and staff time.

Hurricane Barrier

1). FEMA Funds - Haz/Mit - 404 Grants, Bond Issue, NESEC, FEMA Hurricane Protection Money; 2). We have $900,000 for improvements to pumps #2 & #3 from bond money.

Bridges

1). Are there bridges that are at greater risk than others; 2). Are some more low lying than others; 3). Prioritize according to deterioration; 4). Note which have been recently repaired; 5). Note that Valley Street bridge was under water in both 38 and 54 hurricanes.

Jim Morris will get information on bridges and report to Sam Shamoon.

NBC

1). Uninterrupted power supply.

Port of Providence

1). Mention that we tried contacting Prov Port; 2). Any new development at the port must meet new codes; 3). Fences - need to be 8ft into foundation or they will be swept away (Mr. Paxson will check into)

Discussed the possibility of the Army Corps of Engineers doing a study on flooding at the port - perhaps the entire V-zone. We can apply for F-Map Money, FEMA Money.

Public Safety Buildings

1). Can be relocated in case of emergency; 2). Find out how much PS building will cost ($12 mil?), financing is from sale of existing property; 3). Engine #14 (Atwells Ave. Is in floodplain.

Tree Trimming

1). Copy from Pawtucket Plan; 2). Can talk to electric company (Mike or Paul) and state DOT; 3). Ongoing and long term.

Mr. Shamoon will make the corrections and mail it to Lori Watson. Hoping to have the plan ready so that it can go to the City Planning Commission meeting set for December 15, 1998. The Plan must go before the Public Hearing Board which meets in January and also the City Council it was suggested by Mr. Shamoon that perhaps we could hold a joint meeting. The Plan must pass twice and then go to the Mayor for his signature. Mr. Shamoon is hopeful that it can be accomplished by February.

The meeting was adjourned at 11:25.

PROVIDENCE EMERGENCY MANAGEMENT AGENCY

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DIRECTOR
PETER P. MARINUCCI
DEPUTY DIRECTOR

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VINCENT A. CIANCI, JR.
MAYOR
EDWARD W. XAVIER
OPERATION & PLANNING OFFICER

MEMORANDUM
* * * * * * * * * * * * * * *

TO : LOCAL HAZARDOUS/MITIGATION COMMITTEE

FROM : PETER MARINUCCI, DEPUTY DIRECTOR PM.

DATE : OCTOBER 27, 1998

SUBJ : THE PROVIDENCE PLAN

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A MEETING OF THE HAZARDOUS/MITIGATION COMMITTEE IS SCHEDULED FOR WEDNESDAY, NOVEMBER 18, 1998 AT 9:30 A.M. AT MY OFFICE FOR THE PURPOSE OF FINALIZING THE DRAFT.

THIS IS A VERY IMPORTANT MEETING, PLEASE MAKE EVERY EFFORT TO ATTEND. IF THIS IS NOT POSSIBLE, PLEASE SEND A REPRESENTATIVE.

TELEPHONE MY OFFICE TO CONFIRM YOUR ATTENDANCE.

PM/sdp

MEMORANDUM
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TO : LOCAL HAZARDOUS/MITIGATION COMMITTEE

FROM : PETER MARINUCCI, DEPUTY DIRECTOR

DATE : SEPTEMBER 18, 1998

SUBJ : THE PROVIDENCE PLAN

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A MEETING OF THE HAZARDOUS/MITIGATION COMMITTEE IS SCHEDULED FOR MONDAY, SEPTEMBER 28, 1998 AT 9:00 A.M. AT MY OFFICE FOR THE PURPOSE OF COMPLETING THE DRAFT.

THIS IS A VERY IMPORTANT MEETING, PLEASE MAKE EVERY EFFORT TO ATTEND. IF THIS IS NOT POSSIBLE, PLEASE SEND A REPRESENTATIVE.

TELEPHONE MY OFFICE TO CONFIRM YOUR ATTENDANCE.

PM/sdp

PROVIDENCE EMERGENCY MANAGEMENT AGENCY

JOHN J. PARTINGTON
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VINCENT A. CIANCI, JR.
MAYOR
EDWARD W. XAVIER
OPERATION & PLANNING OFFICER

MEMORANDUM
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TO : LOCAL HAZARDOUS/MITIGATION COMMITTEE

FROM: PETER MARINUCCI, DEPUTY DIRECTOR P.M.

DATE : JULY 10, 1998

SUBJ : THE PROVIDENCE PLAN

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A MEETING OF THE HAZARDOUS/MITIGATION COMMITTEE IS SCHEDULED FOR TUESDAY, JULY 21, 1998 AT 9:30 A.M. AT MY OFFICE FOR THE PURPOSE OF FINALIZING THE REVISIONS TO THE DRAFT.

PLEASE TELEPHONE MY OFFICE TO CONFIRM YOUR ATTENDANCE.

PM/sdp

MEETING OF THE
PROVIDENCE HAZARD MITIGATION COMMITTEE

Date: March 13, 1998

Place: Providence Emergency Management Agency
200 Chad Brown Street: Providence, Rhode Island

Time: 10:15 a.m.

Topic: Completion of Plan

Attendees: Peter Marinucci, Deputy Director
Providence EMA
James T. Morris, Superintendent
Providence Hurricane Barrier
Jon Ozbek, Senior Planner
Planning & Development
Samuel Shamoon, Associate Planner
Planning & Development

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Minutes Sheila DelPico, Secretary 10:15 a.m. - 10:35 a.m.

The meeting of the Providence Hazard Mitigation Committee convened at 10:15 a.m. in the office of Providence Emergency Management.

Mr. Marinucci opened the meeting by passing out the pages of suggestions to the draft made by Ed Paxson who was unable to attend this morning's meeting. The committee went over the above and discussed changes to the second half of the draft and corrected where necessary.

Mr. Shamoon will make corrections on his disk and will send it to us for the secretary to merge with the first half of the plan.

Mr. Shamoon also offered to make approximately 20 color copies for us of figure #2.

The plan is now completed.

Mr. Marinucci will call the state to get together with us at the next meeting. (Date to be announced).

Meeting adjourned at 10:35 a.m.

MEETING OF THE
PROVIDENCE HAZARD MITIGATION COMMITTEE

Date: December 16, 1997

Place: Providence Emergency Management Agency
200 Chad Brown Street; Providence, Rhode Island

Time: 9:45 a.m.

Topic: Discuss Risk Assessment Chart

Attendees: Peter Marinucci, Deputy Director
Providence EMA
James T. Morris, Superintendent
Providence Hurricane Barrier
Jon Ozbek, Senior Planner
Planning & Development
Edgar Paxson, Chief
Building Inspection

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Minutes Sheila DelPico, Secretary 9:45 A.M. - 10:59 A.M.

The meeting of the Providence Hazard Mitigation Committee convened at 9:45 A.M. in the office of Providence Emergency Management.

Mr. Marinucci opened the meeting by passing out the Risk Assessment Chart. Much discussion took place.

Mr. Ozbek presented the first half of the draft on behalf of Mr. Shamoon who had made corrections and suggestions to. The committee went over his changes.

Mr. Marinucci will talk to Mr. Shamoon about rewriting the second half.

Mr. Ozbek excused himself early from the meeting.

No date was set for the next meeting.

Meeting adjourned at 10:59 A.M.

Providence Hazard Mitigation Committee

12/02/97
9:30 AM
Providence Emergency Management Agency
200 Chad Brown Street, 3rd floor
Providence, Rhode Island 02908

Meeting called by:	Peter Marinucci	Type of meeting:	Hazard Mitigation Draft Plan

Committee Members: Peter Marinucci, James T. Morris, Jon Ozbek, Edgar Paxon, James Rattigan, Sam Schamoon

Handout: *Providence Draft for Hazard Mitiigation*

Agenda

1. Committee Reports:	Emergency Management Agency	Peter Marinucci
	Department of Public Works -	
	Providence Hurricane Barrier	James T. Morris, Superintendent
	Department of Building Inspection	Edgar Paxon, Chief
	Providence Fire Department	James T. Rattigan, Chief
	Planning & Development	Sam Schamoon, Assoc. Director
		Jon Ozbek, Senior Planner

2. Risk Assessment Matrix # 1
3. Risk Mitigation Matrix # 2
4. Existing Goals for Haz/Mit
5. Next Meeting Date
6. Adjournment

Additional Information

Resource persons:

Special notes:

PROVIDENCE HAZARD MITIGATION COMMITTEE

Date: December 2, 1997

Place: Providence Emergency Management Agency
200 Chad Brown Street, Providence, RI

Time: 9:45 a.m.

Topic: Discuss revised draft of Hazard Mitigation Plan for the City of Providence

Attendees:
Peter Marinucci, Deputy Director
Providence EMA
James T. Morris, Superintendent
Fox Point Hurricane Barrier
Jon Ozbek, Senior Planner
Planning & Development
Edgar Paxson, Chief
Building Inspection
James T.. Rattigan, Chief
Providence Fire Department

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Minutes Sheila Del Pico, Secretary 9:45 - 11:30 a.m.

The meeting of the Providence Hazard Mitigation Committee convened at 9:45 a.m. in the office of Providence Emergency Management.

Mr. Marinucci began the meeting by passing out the revised pages (1st 16) of the Pawtucket Plan hereafter referred to as the "Providence Plan". He asked the members to go over the changes page-by-page to get their input.

Jon Ozbek will summarize the 7 goals (found pages 13-14) using the Providence Comprehensive Plan as a base.

Mr. Marinucci handed out the Risk Assessment Chart and the Committee worked as a whole to list the priorities for the City. After much discussion the following was decided upon:

1. Hurricane Barrier
2. Public Safety Buildings
3. V-Zone
4. Local Bridges
5. Schools
6. Hospitals
7. City Hall
8. Fields Point
9. Scituate Reservoir Water Purification Plant
10. High Rises (over 6 stories)

Mr. Ozbeck excused himself early from the meeting. He will speak to George Turlo about rewriting pages 16-23 of the plan.

Mr. Morris has updated maps of the downtown area (1990) with plat and lot listings. He will supply us with copies as well as lists of bridges and schools (catholic and public).

The next meeting is scheduled for 12/16/97 at 9:30 a.m.

The meeting adjourned at 11:30

Providence Hazard Mitigation Committee

11/18/97
9:30 AM to AM
Providence Emergency Management Agency
200 Chad Brown Street, 3rd floor
Providence, Rhode Island 02908

Meeting called by:	Peter Marinucci	Type of meeting:	Hazard Mitigation Draft Plan

Committee Members: Peter Marinucci, James T. Morris, Jon Ozbek, Edgar Paxon, James Rattigan, Sam Shamoon

Handout: Pawtucket Draft for Hazard Mitiigation

Agenda

1. Committee Reports:

Department of Public Works - Providence Hurricane Barrier	James T. Morris, Superintendent
Department of Building Inspection	Edgar Paxon, Chief
Providence Fire Department	James T. Rattigan, Chief
Planning & Development	Sam Shamoon, Assoc. Director
	Jon Ozbek, Senior Planner

2. Risk Assessment Matrix # 1
3. Risk Mitigation Matrix # 2
4. Next Meeting Date
5. Adjournment

Additional Information

Resource persons:

Special notes:

LOCAL HAZARD MITIGATION COMMITTEE
NOVEMBER 18, 1997

REPORTS:

- RESEARCH AREAS AT RISK
- COMPLETE TWO MULTI-HAZARD MATRICES:

  RISK ASSESSMENT MATRIX
  MITIGATION MATRIX

- IDENTIFY 3-4 GENERAL CATEGORIES AT RISK ON THE RISK ASSESSMENT MATRIX
- ASSESS THE EXISTING CONDITIONS - WHAT PROGRAMS ARE ALREADY IN PLACE TO ADDRESS THESE RISKS?
- WORKING WITH THE LOCAL PLANNER PICK 2-3 IN EACH OF THE SEVEN ELEMENTS IN THE LOCAL COMPREHENSIVE PLAN AND INCORPORATE THE TEAM OF HAZARD MITIGATION (7 ELEMENTS ARE: LAND USE, HOUSING, ECONOMIC DEVELOPMENT, NATURAL & CULTURAL RESOURCES, SERVICE & FACILITIES, OPEN SPACE & RECREATION AND TRANSPORTATION.)
- DEVELOP A MISSION STATEMENT
- BEGIN TO IDENTIFY RISK AREAS ON GIS MAPS

PROVIDENCE HAZARD MITIGATION COMMITTEE

Date: November 18, 1997

Place: Providence Emergency Management Agency
200 Chad Brown Street, Providence, Rhode Island

Time: 9:52 a.m.

Topic: Discuss 1st draft of Hazard Mitigation Plan for the City of Providence

Attendees: Peter Marinucci, Deputy Director
Providence EMA
David Costa, Fire Marshall
Providence Fire Department
Edgar Paxson, Chief
Building Inspection
Sam Shamoon, Associate Director
Planning & Development

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Minutes Sheila DelPico, Secretary 9:52 A.M - 11:06 A.M.

The meeting of the Providence Hazard Mitigation Committee convened at 9:52 A.M. in the office of Providence Emergency Management. Mr. Morris called to say that he would not make the meeting and Mr. Shamoon was delayed.

Mr. Marinucci opened the meeting by stating that he had received a copy of the City's Comprehensive Plan as promised by Mr. Shamoon at the previous meeting. Said plan will be assimilated into the Pawtucket report. Mr. Marinucci has already started making changes to the disk. He asked the Committee to go over the Plan page by page as a group to get input on the changes.

Much discussion ensued over changes to the Plan.

Mr. Shamoon volunteered Jon Ozbek to make maps and also stated that George Turlo of Planning can help rewrite Action 1, Risk Area 1, 2 and maybe 3. Pages 16-23 on Pawtucket draft. He is on vacation until 12/1. At that time he will work on it.

Mr. Paxson suggested overlaying a flood plain zoning map on a planning map.

It was decided that Mr. Marinucci will put together a first draft to be circulated among the Committee who will make his individual additions/corrections. This draft will encompass the first 16 pages of the Pawtucket Plan (meeting scheduled for 12/2) We will then have a meeting with RIEMA people to go over the 2nd draft (meeting scheduled for 12/9)

Discussed top priorities for life and safety

1. Hurricane Barrier - Pumping Station
2. Fire Stations
3. Electric Power Plant

Mr. Shamoon excused himself from the meeting.

General discussion: Hospitals (are they quakeproof ?)
Shelters -Specifically schools (no backup generators). Mr. Costa added that the new Bucklin St. school has an emergency generator.
Surplus property (PM obtained generators)
V-zone (DPW, Salt Pile, Damn, Allens Avenue)

Mr. Marinucci gave Mr. Costa & Mr. Paxson copies of his agenda outline for 11/18/97
Mr. Marinucci inquired if Chief Rattigan had gotten in touch with Pawtuckets' Fire Chief - Mr. Costa believed that he had but that he was not very active in developing Pawtucket's Plan.

The next meeting is scheduled for Tuesday, December 2nd at 9:30 a.m.

Meeting adjourned at 11:06 a.m.

Providence Hazard Mitigation Committee

11/4/97
9:30 AM to 10:30AM
Providence Emergency Management Agency
200 Chad Brown Street, 3rd floor
Providence, Rhode Island 02908

Meeting called by:	Peter Marinucci	Type of meeting:	Hazard Mitigation Draft Plan

Attendees:	Peter Marinucci, James T. Morris, Jon Ozbek, Edgar Paxon, James Rattigan - Sam Shannon
Handout:	Pawtucket Draft for Hazard Mitiigation

Agenda

1. Introduction
2. Mission Statement - Draft
3. Issue Identifications - Research
4. Risk Matrix # 1
5. GIS Maps
6. Next Meeting Date
7. Adjournment

Additional Information

Resource persons:

Special notes:

MEETING OF THE
PROVIDENCE HAZARD MITIGATION COMMITTEE

Date: November 4, 1997

Place: Providence Emergency Management Agency
200 Chad Brown Street, 3rd floor
Providence, Rhode Island

Time: 9:30 A.M.

Topic: Discuss 1st Draft of Hazard Mitigation Plan for the City of Providence

Attendees: Peter Marinucci, Deputy Director
Providence EMA
James T. Morris, Superintendent
Providence Hurricane Barrier
Jon Ozbek, Senior Planner
Planning & Development
Edgar Paxson, Chief
Building Inspection
James T. Rattigan, Chief
Providence Fire Department
Sam Shamoon, Associate Director
Planning & Development

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Minutes Sheila Del Pico, Secretary 9:30 - 10:30 A.M.

The meeting of the Providence Hazard Mitigation Committee convened at 9:30 a.m. in the office of Providence Emergency Management.

Mr. Marinucci opened the meeting by explaining that money is available from the Federal Government. They would like to see Hazard Mitigation plans in effect in all States. It would enable the Government to pay us ahead of time. He went on to explain what the plan would do for Providence. (Damages from earthquake, floods, hurricanes, loss of life, etc.)

The Committee will need to meet approximately 3 times in order to formulate the plan which needs to be completed by January.

The State selected Pawtucket and Charlestown (due to their flooding potential) to receive monies for Haz/Mit - Charlestown has already received the money and Pawtucket should shortly. Mr. Marinucci passed out copies of Pawtucket's plan for the Committee to review and to use as a guideline for our own plan. Lori Watson who is affiliated with URI and Joseph Almeida from RIEMA worked with Pawtucket on their plan and will be available to help us. The Pawtucket plan was covered page by page by the Committee and suggestions were made to add such

information as population, density and bridges; to contact engineering offices for area hospitals to see if buildings are earthquake proof. It was suggested that an engineering study be made on public buildings. Planning has a list of public facilities - schools and city owned properties and they can submit this list to us. They will also furnish GIS maps.

Mr. Shamoon spoke about the City's Comprehensive Plan and about incorporating this new plan into it. He will sent us a copy of the plan today and give us a copy of their plan on disk.

Mr. Marinucci stated that when the plan is finished it will be submitted for review by the Statewide Planning Board, then to FEMA and on to public hearings before it becomes part of the City's Comprehensive plan. Mr. Shamoon further explained the sequence of hearings.

Mr. Morris spoke about flooding and the Hurricane Barrier and will furnish us with any information he can. He also invited everyone to attend the next barrier test.

Ed Paxson expressed a need for a revised map due to the changes in the downtown river but it was generally felt that the changes were not significant enough to warrant new maps at this time. Mr. Paxson also stated that he will make a research list - give input on buildings that may collapse.

Chief Rattigan will collect any information that he feels will be useful to us.

Mr. Marinucci again stressed that there is a lot of money available from FEMA for many projects and that we have received grants for projects with the hurricane barrier in the past and we are currently applying for another one. We have a good working relationship with the state and it is important that we get this plan done as soon as possible.

The next meeting will be held at 9:30 a.m. on Tuesday, November 18th.

Meeting adjourned at 10:30 a.m.

Respectfully submitted,

Sheila Del Pico, Secretary