

Strategy for Reducing Risks From Natural Hazards in New Shoreham, Rhode Island

Created by: The New Shoreham Natural Hazard Mitigation Committee in consultation
with Resource Specialists, Inc.

ACKNOWLEDGMENTS

Members of the New Shoreham Natural Hazard Mitigation Committee

Town Government Members

Nancy Dodge, Town Manager
Vin Carlone, Chief of Police
Marc Tillson, Building Official
Ray Boucher, Sewer Superintendent
David Simmons, Water Superintendent
Chris Willi, Harbormaster
Beth Rousseau, Rescue Squad
Bonny Ryan, Wastewater/Rescue Squad
Michael Shea, Highway Superintendent
Jennifer Brady, Land Use Administrative Officer
Jack Savoie, First Warden
Ned Connelly, Councilor & Fire Dept
Fiona Fitzpatrick, Town Clerk
Martha Roldan, GIS Administrator
Toni Lemoine, Administrative Assistant

Community Members

Cliff McGinnes, BIPCO
Paul Overbe, Airport Manager
Rally Migliaccio
Michael Wagner, BIPCO
Fred Leeder, Postmaster
Jerry Lange, BI Health Services
Peter Gempp, Verizon
Frank Roldan, CAP

Consultant:

Resource Specialists, Inc., Cumberland, RI

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ADDITIONAL ACKNOWLEDGMENTS

Donald L. Carcieri,
Governor

MG Robert T. Bray
Director
Rhode Island Emergency Management Agency

Robert J. Warren
Executive Director
Rhode Island Emergency Management Agency

Rhode Island State Hazard Mitigation Committee

Lawrence Macedo.
State Hazard Mitigation Chairman
Rhode Island Emergency Management Agency

David J. Cluley
Senior Engineer
Rhode Island Department of Transportation

Joseph Cirillo
Building Code Commissioner
Analyst
State of RI Building Commissioner's Office

Paula Pallozzi
Chief Property and Casualty Insurance Rate
Rhode Island Department of Business Regulations

Peter S. Kent
Peter S. Kent Construction Co.

Raymond A. Allen
Administration & Operations Officer
Division of Public Utilities and Carriers

Michael DiMascolo
Deputy Chief
State Fire Marshal's Office

Eva Zito
State Hazard Mitigation Secretary
Rhode Island Emergency Management Agency

Chris Der Vartanian
Supervisor of Examinations
Rhode Island Dept. of Business Regulations

Richard Snow, P.E.
Chief Civil Engineer
Rhode Island Dept. of Transportation
Bridge Engineering

Grover Fugate
Rhode Island Coastal Resources Mgt. Council

Janet Freedman
Coastal Geologist
Rhode Island Coastal Resources Mgt. Council

Steven Wright
Superintendent
Rhode Island Dept. of Environmental Mgt.
Division of Parks and Recreation

Pamela Pogue
Flood Plain Management Coordinator
Rhode Island Emergency Management Agency

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SECTION 1.0 INTRODUCTION

Natural Hazard Mitigation is any sustained action taken to permanently reduce or eliminate long-term risk to people and property from the effects of natural hazards (e.g. wind, fire, floods, hurricanes, winter storms, etc.).

Section 1.1 What Mitigation Can Do for New Shoreham

New Shoreham, Rhode Island's smallest community is unique in many regards and requires a basic understanding of its uniqueness before changes of any type or magnitude can be considered. Differences between New Shoreham, commonly referred to as Block Island, and any other community in Rhode Island are not marginal, they are fundamental. Its location twelve miles off the southern coast of Rhode Island, with no physical connection to the rest of the state, is only the first in a litany of its differences. And it is because of these differences that Block Island is able to contribute so powerfully to the richness of Rhode Island's appeal, an appeal which would be greatly diminished if Block Island were to be homogenized into just another rural community. Accordingly, State and Federal agencies must understand that this uniqueness requires some departures from the way in which the other thirty-eight municipalities are managed.

Recognized as one of the Nature Conservancy's Last Great Places, Block Island's fragile natural environment and the remarkable social community that has evolved here are examples of its undeniable uniqueness. The island is small, remote, subject to volatile changes in weather and growth, beautiful, and home to endangered species as well as an endangered lifestyle. The natural beauty and seclusion of the island is an attraction to tourists and residents alike, yet these appealing (alluring) features also present *unique challenges in the face of natural hazards*. Distance, isolation, accessibility, communication and transportation issues, among others, must be considered when preparing for and responding to any type of threat, natural or manmade. And these factors are underscored by the interdependency of all aspects of the island where ultimately, everything local depends upon everything else local, in a tightly closed and sharply finite system. Protecting the integrity of that system is imperative to any plan for the island. Concern that the most powerful influences over the Island's development lie outside Town control has been expressed. No community ever had a stronger mandate to plan for its future than that.

Twelve miles of often rough water mark the beginning of the community's distinctiveness. Considered both a handicap and a blessing, those twelve miles have forged an exceptionally high level of self-reliance within the community. Islanders seek to protect the island's extraordinary heritage for future generations. Maintaining that special quality is enormously difficult in a place so attractive to an ever-increasing number of visitors. Such an extraordinary community needs and deserves extraordinary measures if it is to continue to successfully manage the pressures placed on it.

Of glacial creation, the island's sandy basis is not grounded in bedrock as are the neighboring mainland areas. Its topography of rolling hills has elevations ranging from 0 at its shoreline to 190' at Beacon Hill. The forty-nine (49) mile coastline is comprised of both sandy beaches and rugged terrain and punctuated by coastal bluffs which limit access by sea to several dock locations in two areas, Old Harbor on the eastern shore and New Harbor on the western. Just inland of the coastal areas, much of the land rises abruptly in high bluffs of glacial sand and clay composition. While visually majestic, these bluffs are extremely susceptible to erosion, in many locations at a rate of one (1) foot or more per year and clearly present obstacles to shoreline approach from both land and sea.

The pork-chop shaped island of less than 11 square miles (6,200 acres) measures approximately 8 miles from its northern sandy tip to its high southern bluff wall. At its widest point, the island is 3.5 miles from east to west, narrowing to less than 1/10th mile at a north-south midpoint, referred to as the "neck" where the Atlantic Ocean laps the east beaches and the waters of the Great Salt Pond abut the western shore. Inland, twenty-one (21) miles of paved roads and thirty-nine (39) miles of dirt roads, all remarkably void of traffic lights, provide vehicular access to the 1300 residences both in and out of town.

The town center, located in the Old Harbor area, is limited essentially to four streets marked by shops and restaurants, one bank, one gas station and one post office. Very few businesses remain open on a year-round basis. The numerous specialty shops and restaurants, which host thousands of summer visitors, close their doors

once the season has ended. At that time pedestrian traffic becomes sparse and vehicles encounter very few impediments to ease of travel.

The island's appeal lies in its uniqueness; the very reasons people love Block Island are the same reasons that make Block Island so different:

- What is special about this place includes what is not here, ranging from fast-food franchise restaurants to high rise hotels.
- Here, cars can't go far or fast, a reality which creates an uncomfortable fit for road standards imposed from other places where cars can do so.
- Transporting everything consumed, but not grown or made locally, has a transportation penalty, just as making things for use elsewhere is penalized by these same costs and availability.
- Fuel storage and transportation are regarded with a different view. All hazardous materials must be transported at a premium on chartered boats which carry no passengers and must navigate the commercial harbors with limited depth and restricted space to maneuver. Once on island, the trucks must negotiate the narrow, often heavily congested streets, transporting their volatile cargo to its prescribed destination.
- All of the island's electricity is generated locally and islanders feel the impacts, giving different salience to alternative energy sources.
- All of the island's water is drawn from the same aquifers that are potentially impacted by disposal of sewage and other contaminants. Emergency water supplies can't be obtained through a simple pipe connection to a neighbor, any more than mutual aid agreements can meet fire emergencies. No pharmacy, clothing store, music store, etc. exists in the off-season months.
- The one medical facility is fairly comprehensive, although limited to non-hospital related services. Visiting physicians provide periodic specialties including podiatry, routine dental care and optometry and eldercare is limited to home-assistance from island certified medical assistants and concerned community members.
- The several religious congregations actively provide both spiritual and community services and are often involved in civic undertakings in some form.
- Having a limited pool of participants means that few people must act in numerous capacities, carefully wearing the appropriate hat for each responsibility. The island's strong sense of community is evident; it is an engendered way of life for residents and an appealing quality to visitors.
- Here a tight relationship exists between living and working places. Geographic and logistic constraints force those working on the island to live on the island while doing so, unlike other communities in the state. That means that, rather than relying on a commuting labor force, Block Island must address the need for affordable housing in order to retain workers. Having local jobs held by local people in turn contributes to the cohesive sense of community that is so vital to this special place.

The Town is governed by a five-member Council, headed by a First Warden, with a Town Manager handling the day-to-day operations. Community volunteers serve on various town boards and commissions and wear many hats to cover the many services required by a viable community. However, providing services to a small population under geographic circumstances hostile to regionalization inevitably means higher costs per capita.

The island school consists of Kindergarten through Grade 12 in one building, currently under renovation and addition. The 140 plus student population increases during both the fall and spring terms when business owners and families are again in residence. Many of these families spend the off-season in places other than the island and the teachers and students are challenged with providing a reasonable transition to other schools' curricula. Since commuting to or from the island is not a viable option, teachers must live on island, at least during the week, and students wishing to attend other schools must either move off island or enroll in boarding schools. A Town-supported preschool/daycare center is in its third year of operation in a facility near the center of town. This "community center" also serves as a meeting place for senior citizens and for many island meetings and functions of modest attendance.

The original agricultural and fishing economy of the island was decimated by the hurricane of 1938 and eventually a strong tourist economy developed with construction, both new and renovation, becoming another thriving industry. **It has been, and remains, a major tourist destination** taxing the infrastructure and creating traffic/pedestrian congestion especially at boat times. The summer population which mushrooms to 25,000 dwindles to the hardy year-round stock of fewer than 1,000 in the off-season. Because of the short tourist

season, all visitor-based industries are challenged with meeting their economic goals in three months. The increased summer population offers a large labor force, as well as customer base, for these seasonal industries with September witnessing a sharp decline in both. Those businesses which extend their season into the fall do so with both minimal staffing and a decrease in patronage. When seasonal businesses close, the island suffers a marked increase in unemployment for the late fall, winter and spring months.

Access to mainland Rhode Island is available via ferry on a year round basis. The main ferry terminal at Old Harbor supports two vehicle-carrying boats and one passenger-only boat simultaneously. Other passenger-only ferry services use smaller docks in New Harbor during the summer months only. At that time, ferry service expands to include trips to both New London, CT and Montauk, NY as well as to Point Judith, RI. The schedule for ferry transportation varies with the seasons, with winter months offering only one trip on several week days and up to a maximum of three trips on others. It is not uncommon that service is cancelled for inclement weather, especially in the off-season.

Scheduled air service to Westerly, RI runs on a year-round basis and charter flights are available, both as weather permits. The Block Island airport is one of the busiest in the State, second only to T.F. Green (Providence). With no hanger, all aircraft are left on the grass or tarmac with tie-downs for longer durations. The short runway cannot support larger planes although small jets have managed to land and take off safely. Prevailing winds from the west, which blow across the runway, make some landings and take-offs challenging.

Since the island is at the mercy of weather and sea conditions, inaccessibility is a major drawback to island life. Transportation of all goods and services is via ferry or small airplane and involves scheduling, added expense and storage problems among other concerns. Because of the shipping issues, availability of goods and services is subject to the whims of the ocean and wind. When travel is interrupted because of weather conditions, the island must fend for itself, at least for the time-being. Island ingenuity is characteristic of long-time residents who understand and account for periods of isolation and disconnection from mainland resources. Islanders have become versed in predicting weather and are generally able to determine in advance if boats will be cancelled. Schedule adjustments are commonplace due to unsuitable weather conditions. Consequently, flexibility and accommodating spirit are key components of island survival.

This natural hazard mitigation plan is an important step in addressing, in a comprehensive manner, the natural hazards faced by the Island. The Town of New Shoreham is committed to fulfilling the goals and objectives set forth in this Plan by completing the more detailed tactical alternatives identified in Section 4.1 (Action Plan). These actions will be carefully coordinated among the various Town departments, private voluntary organizations and commercial and industrial interests which all need to be continuously involved in hazard mitigation planning.

Section 1.2 New Shoreham's Mission Statement

The Town of New Shoreham adopts this mitigation strategy to preserve and enhance the quality of life and protect property, the economy and resources for residents and visitors. By identifying potential risk areas, implementing mitigation projects to protect these areas and providing education to inform residents and visitors of the potential risks and appropriate mitigation strategies, the Town of New Shoreham can work at accomplishing these goals.

Section 1.3 Planning Process

A group of knowledgeable citizens and key business owners was assembled to begin the task of developing a Hazard Mitigation Plan, along with Town employees. Understanding the reason for the plan and the potential benefits to the island was an initial goal in order to gain the support of the group. The Town Council adopted a resolution to approve the creation of a Hazard Mitigation Team and formally appointed the members. A contractor, Resource Specialists, Inc.(RSI), was hired in the Winter of 2004 to help our committee with the planning process and an initial meeting was held between RSI and the committee to review what had previously been done on the Plan. Throughout the course of 2005, meetings were held both with RSI and the committee alone to survey the historic disasters and potential threats to the island, then to identify critical facilities and assess the potential risks to these and other island sites. Once the hazards and risks were identified, the

committee then met to examine the possible effects of natural disasters on these sites and develop mitigation actions to minimize the effects. Understandably, the actions and priorities may change with time and the plan will be amended to reflect these changes. Throughout the entire planning process, meetings were open to the public to allow for public input and discussion. Documentation pertaining to these meetings can be found in Appendix C. As noted, this core group of people included both Town residents as well as business owners. Since Block Island is a small and isolated community, with only 1,000 residents, it was difficult to obtain the participation of outside agencies, academia or neighboring communities.

SECTION 2.0 HISTORICAL REVIEW OF HAZARDOUS EVENTS FOR NEW SHOREHAM

Block Island faces several natural hazards each year, including hurricanes, wind events, heavy rain/flooding, nor'easters/winter storms, lightning, earthquakes and fires. The following sections will describe historical events that have affected the Island and its residents and are the framework that was used to complete the Hazard Profile in Section 2.8.

Most of the following information was obtained from the National Climate Data online database as well as the National Weather Service (Boston, MA) online database. Unfortunately, records have not been kept specifically for Block Island; rather, events are group by county. The only table that is completely specific to Block Island is the Wind-events Table (Table 5). In the other tables, information that is specific to Block Island is designated by two asterisks (**).

Grouping Block Island weather events into those of Washington County does not always present a clear picture of the events on Block Island. Although Washington County consists of many coastal communities, Block Island is in the middle of the ocean and would usually endure higher winds and heavier rains than along the coast, which was taken into consideration when completing the Hazard Profile.

Section 2.1 Hurricanes

Block Island faces a serious threat from hurricanes and other coastal storms and the resulting shoreline flooding and water surge. Hurricanes and coastal storms also bring extremely high winds which place unusual stresses on building and facilities.

The Island has experienced 7 hurricanes of varying magnitude since 1938. Winds have caused damage to power lines, affecting the entire community, as well as structural damage to buildings and component parts (gutters, shingles, decking, window, etc.). Accompanying wind-driven rains often enter windows, doorways and roof vents causing damage to interiors of many buildings and homes.

Since it has been such a long time since Rhode Island has experienced a major hurricane, many communities, including Block Island, have become complacent about its effects. A major spurt in tourism-fueled development created many encroachments on zones of known risk and unwise construction practices, such as placing schools over guts (creeks or small watercourses).

Table 1 – Significant Hurricanes in Rhode Island

Date	Name	Category ¹	Winds (mph)	Property Damage (\$million)	Deaths
September 21, 1938	N/A	3	95	100	262
September 14, 1944	N/A	3	82	2	0
August 31, 1954	Carol	3	110	90	19
September 11, 1954	Edna	3	40	0.1	0
September 12, 1960	Donna	2	58	2.4	0
September 27, 1985	Gloria	2	81	19.8	1
August 19, 1991	Bob	2	63	115	0

¹ Category 1 74-95 mph winds, 4'-5' storm surge; Category 2 96-110 mph winds, 6'-8' storm surge; Category 3 111-130 mph winds, 9'-12' storm surge; Category 4 131-155 mph winds, 13'-18' storm surge; Category 5 winds greater than 155 mph, with a storm surge of greater than 18' source: Saffir-Simpson Hurricane Scale.

Section 2.2 Heavy Rains and Floods

Given the fact that Block Island is surrounded by water, heavy rains and resulting floods are serious risks to the community. Many times when inland locations are receiving snow, the island is receiving a large amount of rain due to its location in the warmer ocean waters. Furthermore, there are 365 freshwater ponds on the island that can swell over their banks and create minor flooding problems for property and business owners alike. Several streets on the island are also susceptible to flooding or washouts due to poor drainage or road makeup (i.e. dirt or gravel road).

Table 2 – Significant Heavy Rain/Flooding for Washington County

Date	Rainfall (inches)	Comments
April 1, 1993	Flashflood	Pawcatuck River flooding onto Driftwood Dr.
August 29, 1997	2.5"-5"	Extensive flooding along Route 1 in Charlestown
September 18, 1996	2"-3.5"	Early season coastal storm
December 7, 1996	2"	No damage reported
January 10, 1997	Coastal flood	A new moon in combination with strong SE winds resulted in a 2'-4' storm tidal surge in Narragansett Bay.
November 1, 1997	2"- 3"	No damage reported
February 18, 1998	2"-3.5"	Flooding in poor drainage areas
March 8, 1998	2"-3"	Flooding in poor drainage areas and flood prone property
April 1, 1998	2"	No damage reported
June 13, 1998	6"-8"	Numerous small streams flooded their banks
October 11, 1998	4.84"***	Three day rain event, no flooding resulted
May 23, 1999	3.15"	No damage reported
September 10, 1999	2"-5"	No property damage reported
September 16, 1999	2"-5"	Several trees downed, no flood damage reported
March 31, 2001	4.37"***	Minor flooding
March 29, 2003	2"-3"	Flooding in poor drainage areas
Oct.13-15, 2005	13.1"***	Rain, flooding in poor drainage areas and flood prone properties

Source: National Climate Data Center and National Weather Service; Weather Station at BI Water Co. and The Block Island Times

Section 2.3 Significant Nor'easters/Snowstorms

Although the island climate is tempered by the surrounding ocean waters, later winter weather delivers its fair share of snow. Typical heavy, wet snows can cause trees limbs and branches to break and produce power outages. Also, depending on the severity of the storm, ferry service to and from the mainland can be interrupted for short periods of time.

Table 3 – Significant Snowstorms for Washington County

Date	Snowfall (inches)	Comments
January 7, 1996	12"-24"	Schools closed, transportation systems disrupted
February 2, 1996	6"-8"	Difficult travel
February 16, 1996	5"-7"	Highway travel disrupted
March 2, 1996	6"-11"	Many minor accidents reported
April 9, 1996	6"-10"	Heavy wet snow with scattered power outages
April 1, 1997	4"-7"	Heavy wet snow with scattered power outages
February 25, 1999	9"-12"	Hazardous travel, schools closed
March 15, 1999	11"	Poor travel conditions, schools closed
February 18, 2000	3"-5"	None noted
December 5, 2002	6"	No storm damage or injuries reported
February 7, 2003	6"-8"	No major problems reported

February 17, 2003	15"-20"	Storm fell on President's Day so only minor accidents reported
March 6, 2003	6"-10"	Dozens of minor accidents
December 5, 2003	10"-20"	Major disruption to transportation due to poor visibility
January 27, 2004	6"***	No major problems reported
February 18, 2004	6"***	Coastal storm, heavy snow and strong winds
January 23, 2005	18"-21"***	Widespread power outage, travel disrupted

Source: National Climate Data Center and National Weather Service; Weather Station at BI Water Co., and The Block Island Times

Section 2.4 Significant Hailstorms

Hailstorms are usually associated with severe thunderstorms. There was no data listed that was specific to Block Island, however, there were several hailstorms that affected Washington County in the past with hail ranging in size from .75" to 2.75".

Table 4 – Significant Hailstorms for Washington County

Date	Magnitude (size in inches)
June 20, 1995	1"
August 4, 1995	.75"
June 19, 1998	.75"
June 30, 1998	1"-2.75"
May 24, 2000	.75"- .88"

Source: National Climate Data Center

Section 2.5 Significant Windstorms

Wind events are the most significant risk this community faces and range from nor'easters in the winter to thunderstorms in the summer. Given the Islands location and amount of ocean fetch with easterly storms, wind events are generally more intense than in inland locations. High winds can cause power outages, property damage and can seclude the Island from the "rest of the world" if ferry and air service are suspended. Furthermore, much of the island vegetation is of the maritime scrub variety comprised of smaller, brittle trees with shallow roots, unable to withstand sustained winds. As a result, they are frequent victims of windstorms, blocking roads and causing minor damage to buildings and property.

High winds can also cause increased wave action that can result in coastal erosion and minor flooding in low lying areas.

Table 5 – Significant Windstorms for Block Island

Date	Magnitude (kts or mph)	Comments
March 6, 1997	55 mph gusts	Scattered power outages, minor property damage
August 21, 1997	60 mph gusts	High winds caused 16' waves
November 27, 1997	49 mph gusts	No damage reported
February 5, 1998	60 mph gusts	Minor beach erosion
March 21, 1998	49 mph gusts	No damage reported
April 10, 1998	51 mph gusts	No damage reported
June 27, 1998	35-45 mph gusts	Some small boats capsized in Great Salt Pond
November 11, 1998	46 mph gusts	No damage reported
January 3, 1999	51 mph gusts	Minor damage reported
January 18, 1999	55 mph gusts	No damage reported
March 4, 1999	51 mph gusts	Few downed tree limbs
September 30, 1999	n/a	Sustained winds of over 30 mph
November 3, 1999	51 mph gusts	Downed tree limbs, scattered power outages
December 30, 1999	n/a	Sustained winds of 30-35 mph
May 18, 2000	n/a	Sustained winds of 31 mph
June 6, 2000	47 mph gusts	No damage reported
December 17, 2000	60 mph	Strong winds cancelled at least one Ferry run
December 30, 2000	40-50 mph gusts	Sustained winds of 25-35 mph
September 28, 2001	55 mph gusts**	Nor'easter, 30-40 mph sustained winds, 55 mph gusts
February 17, 2003	55 mph gusts**	55 mph wind gusts during a snowstorm

January 23, 2005	85 mph gusts**	Snowstorm with 85 mph wind gusts
October 13-15, 2005	40 mph gusts**	40 mph gusts, 3 days without ferry service, 1 house damaged
November 10, 2005	n/a	Sustained gale-force winds, no ferry service

Source: National Climate Data Center, Weather Station at BI Water Co., and The Block Island Times

Section 2.6 Significant Lightning Storms

Although neither the National Climate Data Center nor the National Weather Service lists any specific lightning events for Block Island, these events have a history of occurrence here. Areas abutting the Block Island Water Company have been struck by lightning several times, once resulting in a totally devastating fire. Lightning can cause power failure, fires and disruption of water service, as well as communication failures if the phone lines or public safety communication tower is struck

Section 2.7 Earthquakes, Fire and Dam Failure

Although Rhode Island is not prone to major earthquakes, they are not unknown and are usually felt only as a slight rumble lasting seconds. However, as Table 7 indicates, Block Island has experienced the effects of several earthquakes in the past.

The most recent earthquake centered in RI was in West Warwick on October 6, 2003 measuring 1.8 on the Richter Scale of 1 to 10 (10 being most severe). Most quakes felt in Rhode Island are centered in surrounding States (see Table 7). Therefore, earthquakes should be considered as a hazard to Block Island, but with low priority.

Table 6 – History of Earthquakes in Rhode Island

Date	Point of Origin	Impact on RI
February 28, 1925	St. Lawrence River region	Intensity V affects felt on Block Island and in Providence. Intensity IV effects felt in Charlestown
November 19, 1929	Grand Banks of Newfoundland	Moderate vibrations felt on Block Island and in Chepachet, Newport, Providence and Westerly
November 1, 1935	Quebec, Canada	A magnitude of 6.25 with intensity IV felt on Block Island and in Providence and Woonsocket
December 20 & 24, 1940	Lake Ossipee, NH	Intensity V affects knocked pictures off walls in Newport. Intensity IV effects were felt at Central Falls, Pascoag, Providence and Woonsocket. Intensity I-III effects were felt at Kingston, New Shoreham and Wakefield.
September 4, 1944	Massena, NY	Intensity I-III reported in Kingston, Lonsdale, Providence, Wakefield and Woonsocket
October 16, 1963	Coast of Massachusetts	A magnitude 4.5 quake caused Intensity V to be felt in Chepachet with reports of some cracked plaster. There were also reports of rattling windows and dishes and rumbling earth sounds. Other Northern RI locations felt the tremor, but with less intensity.
December 7, 1965	Unknown	Windows and doors shook in Warwick and furniture and small objects moved in Bristol.
February 2, 1967	Unknown	A magnitude 2.4 created intensity V effects in Middletown, Newport, North Kingstown and Jamestown. No damage reported.
February 3, 1973	Unknown	Explosion like or sonic boom noises were heard throughout RI and houses and windows shook, but nothing was reported by seismographs.
June 14, 1973	Western Maine	Intensity IV effects felt at Charlestown and Intensity I-III felt at Bristol, E. Providence, Harmony and Prov.
October 6, 2003	West Warwick	A magnitude of 1.8 caused minor shaking in the community, no damage reported

Source: US Geological Survey; Earthquake History of Rhode Island

There is no recorded history of major brush fires on the island, however the potential exists on the west side of the island where vegetation is lush. A fire in this area of the island would be very difficult to control due to the lack of fire hydrants there.

According to the State of Rhode Island Department of Environmental Management (DEM), there are only two dams located on New Shoreham (Block Island Rod & Gun Club Pond and Hart's Pond). DEM has classified both of these dams as low hazard, therefore, the risk of dam failure to residents and property on Block Island is not significant enough to be considered a hazard at this time, but will continuously be reviewed in each revision to ensure it is identified as time passes and the situation changes.

Section 2.8 Hazard Profile Summary

This Hazard Profile Summary lists the specific hazards that can affect New Shoreham along with specifics regarding frequency of occurrence, magnitude (% of community affected), speed of onset (warning time available), seasonal pattern, possible affects to the community and risk priority. One of the most important aspects to be considered while completing this summary was the possibility of the Island being left to “fend for itself” with respect to the rest of the State. If ferry or air service is suspended for any reason, the Island is secluded from the rest of the world and must deal with the effects of a natural hazard without outside help.

Table7 – Hazard Profile Summary

Hazard	Frequency ²	Magnitude ³	Speed of Onset	Seasonal Pattern	Possible Effects	Risk Priority
Hurricane	Likely	Catastrophic	24+ hrs.	June-Nov. with Aug. & Sept. most likely	Flooding, downed trees, power outages, property damage, loss of life	High
Heavy Rains Flooding	Highly likely	Limited	12-24 hrs.	Spring and Summer	Flooding, property damage, roads closed, dams breached	Medium
Nor'easter Snowstorm	Highly likely	Catastrophic	12-24 hrs.	Winter	Power outages, poor travel conditions, schools/businesses closed	Medium
Hail	Possible	Negligible	Minimal	Summer	Property damage	Low
Wind event	Highly likely	Catastrophic	12-24 hrs.	Any Season	Property damage, power outages, downed trees/limbs	High
Lightning	Highly likely	Limited	6-12 hrs.	Spring, Summer, Fall	Property damage, fire	High
Earthquake	Possible	Critical	Minimal	Any Season	Loss of life, property damage, power outages	Low
Wildfire	Unlikely	Unlikely	Minimal	Any Season	Property damage, environmental damage	Low

² Highly likely=near 100% probability within the next year; Likely=between 10% and 100% probability within the next year or at least one chance in next 10 years; Possible=between 1% and 10% probability within the next year or at least one chance in next 100 years; Unlikely=less than 1% probability in next 100 years

³ Catastrophic=more than 50% of community affected; Critical=25% to 50% affected; Limited= 10% to 25% affected; Negligible=Less than 10% affected.

Town of New Shoreham Critical Facilities

- | | | | |
|---|------------------------|-----|--------------------------|
| Q | Airport | 3 | Bridge |
| å | BI School | X | Cell Tower |
| + | Community Ctr/Day Care | 3 | State Highway Garage |
| H | Library | 3 | Town Highway Garage |
| C | Medical Center | ¶ | Transfer Station |
| C | Ferry Docks | m | Sewer Plant |
| J | Town Hall | 5 | Sewer Pump Stations |
| — | Police, Fire, Rescue | --- | Sewer Lines |
| | Post Office | — | Water Company |
| | | — | Water Distribution Lines |

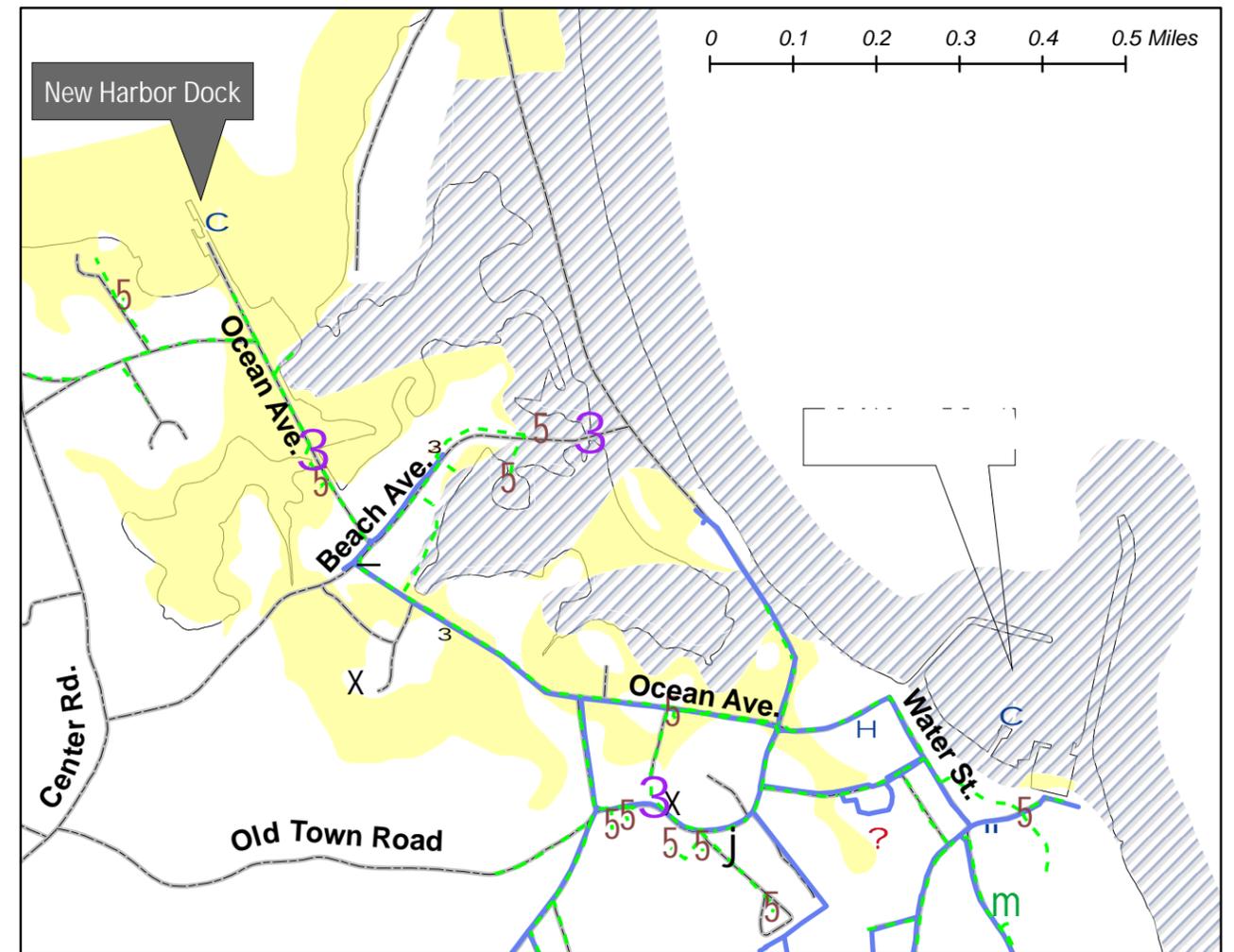
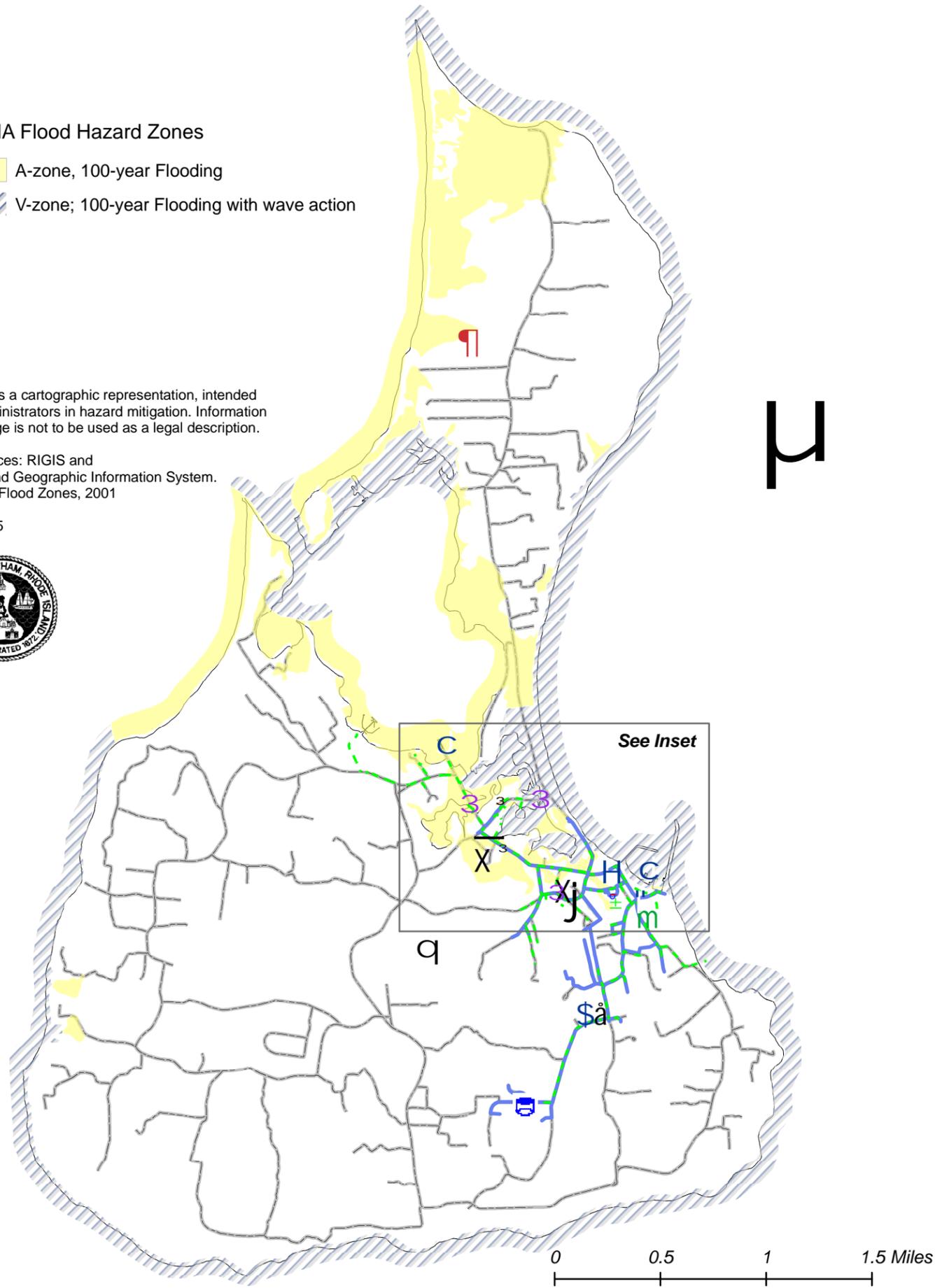
FEMA Flood Hazard Zones

- A-zone, 100-year Flooding
- V-zone; 100-year Flooding with wave action

This map is a cartographic representation, intended to aid administrators in hazard mitigation. Information on this page is not to be used as a legal description.

Data Sources: RIGIS and Block Island Geographic Information System. FEMA Q3 Flood Zones, 2001

mkr 8/2005



Town of New Shoreham Natural Hazard Risk Map

-  Community Wellhead Protection Area
-  Non-community Wellhead Protection Area
-  Block Island National Wildlife Refuge
-  Freshwater Ponds
-  Protected Open Space
-  Population Density = 1 - 7 dwelling units per acre
source: RI landuse/landcover classification 1995

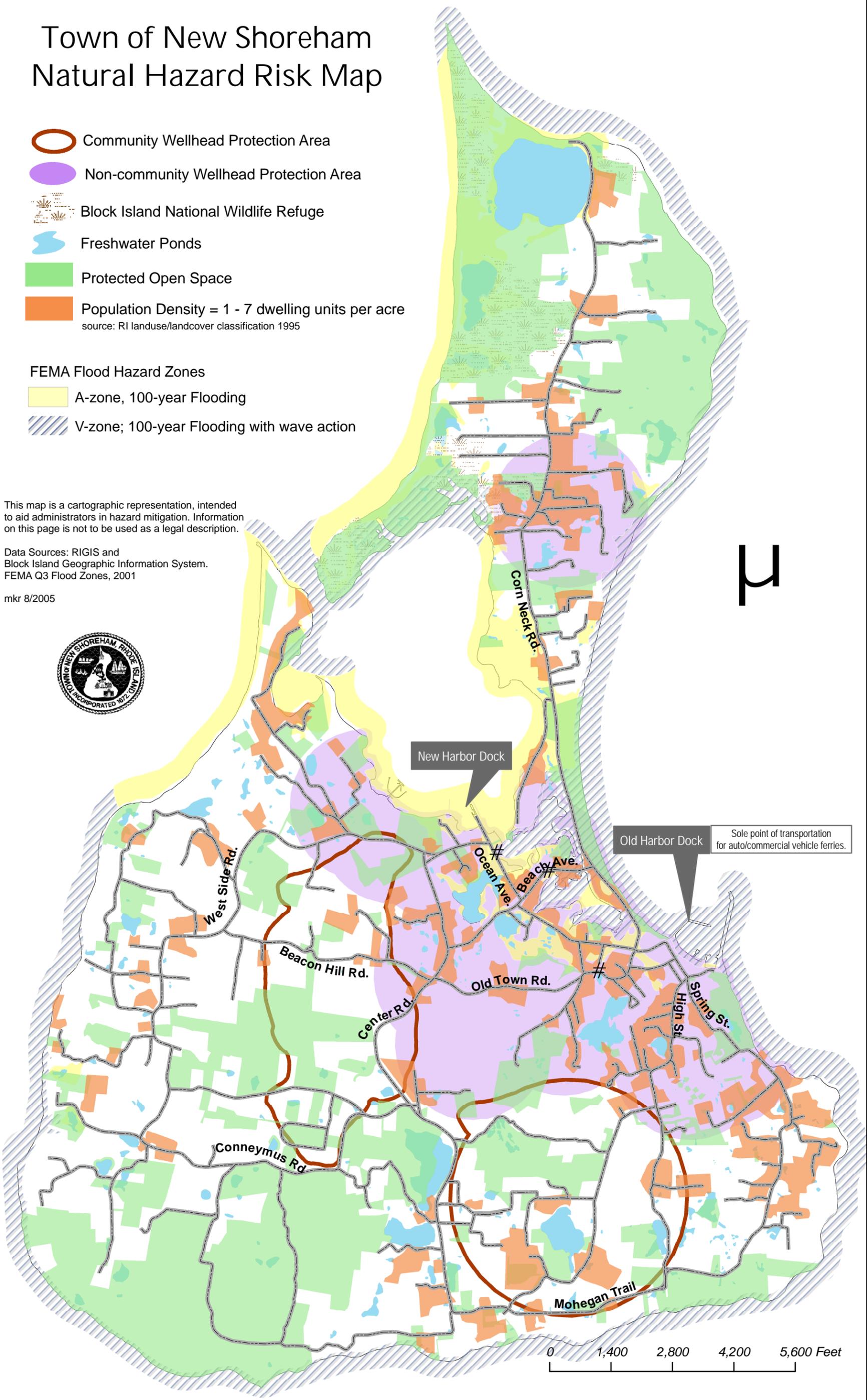
FEMA Flood Hazard Zones

-  A-zone, 100-year Flooding
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This map is a cartographic representation, intended to aid administrators in hazard mitigation. Information on this page is not to be used as a legal description.

Data Sources: RIGIS and Block Island Geographic Information System.
FEMA Q3 Flood Zones, 2001

mkr 8/2005



SECTION 3.0 VULNERABILITY/ RISK ASSESSMENT

Block Island is vulnerable to a number of major natural hazards with the potential for substantial loss of life and property damage. This section focuses on assessing the community's risk and vulnerability. It will identify the areas at risk (e.g. structures, population or natural resources), the vulnerability of those areas the impacts (loss of life, environmental damage or inconvenience to residents) if those areas were affected by a natural disaster. The risk matrix (Table 8) summarizes the major risks to New Shoreham.

Utilizing their own GPS mapping system, New Shoreham mapped high-risk areas in the Town.

Map 1: Critical Facilities in New Shoreham, indicates public infrastructure (Town Hall, Fire Stations, Police Station and schools), utilities, evacuation routes and American Red Cross approved shelters.

Map 2: Risks in New Shoreham, indicates public infrastructure (dams, bridges, major roads), social/economic risks, land use/land cover, flood zones, repetitive loss areas and areas of historic flooding (not marked on the FEMA Flood Insurance Rate Map).

Section 3.1 Population at Risk

As previously mentioned, the year-round population on the Island is approximately 1,000, with a seasonal population of approximately 20,000-25,000 (June-September). This means that depending on the time of year, there are two populations at risk. During the peak season, there are daily visitors to the island arriving in the morning and leaving the same day and therefore do not have somewhere to seek shelter (i.e. a hotel room or bed and breakfast, etc.) should it become necessary. The community needs to provide a safe haven for these people as well as a way to communicate this information to them. Accommodations also need to be made for those individuals that are visiting the Island for an extended period of time that need to seek shelter somewhere other than where they are staying. Furthermore, in the event of bad weather, the ferry service and airport may need to close for a period of time, basically stranding people on the Island.

The second population potentially at risk which could need sheltering during a severe weather event is the year round population. In the event of a power outage where electricity, water or sewer service is interrupted, this population would need somewhere to stay for an unknown duration. Furthermore, some residents live in areas of the Island can be cut off from the rest of the island (the north area of the "neck") when access roads to their property are flooded. These people would need shelter locations that are accessible to them in the event that they become isolated from the rest of the Island.

The main shelter for the Island has been designated at the Block Island School . This shelter is more than adequate to accommodate the year-round island population in the event of an emergency, but would be inadequate when the population rises dramatically in the summer months. Another smaller shelter location has been identified at the Block Island Medical Center.

Section 3.2 Property at Risk

Block Island consists of residential homes, historical buildings and hotels/inns that are vulnerable to the effects of natural disasters such as a hurricane or high winds. Also, the only island school also serves as the Town's shelter. Other critical facilities at risk are the water, sewer and power plants that serve the Island. Damage to these facilities would be detrimental to the residents since these services are not available elsewhere and no neighboring community exists where residents could "tie into" on a temporary basis.

Building and zoning codes in the community reflect efforts by the Town to be proactive in reducing potential risks from disasters however, some properties are located in known risk areas. According to FEMA, there are 52 properties on the island that have National Flood Insurance as of December 31, 2003 with a total value of over \$11 million. Since 1978 there have been 7 claims filed under the National Flood Insurance Program with over \$125 thousand dollars being paid to policy holders. There have also been occasions where properties have been damaged by high winds, but no dollar amount is available for these damages.

Section 3.3 The Economy at Risk

According to the Town of New Shoreham Comprehensive Plan, “The economy of Block Island is fundamentally shaped by its resort/vacation economy. There is little in the Island economy that is not directly or indirectly reliant on that seasonal activity for its financial base”. Additionally, there are fewer than 2% of the Island’s residents that work off-island. That being said, it is easy to see how this island and its residents would be devastated in the event of a natural disaster. Furthermore, the active part of hurricane season also happens to coincide with the peak tourist season for the Island. Any disruption to the tourists visiting the Island would potentially place many of the smaller businesses out of business for good, with some being able to survive by serving the year-round population.

Block Island is looking for other ways to diversify its economy, however, it is also cautious to ensure that year-round Islanders are the benefactors of such change. The small Island community is turning to such items as “value-added agriculture”, where agricultural raw materials are made into consumer products, such as honey and herb products and organic wine. What is important to the Island is that whatever is done to diversify the economy does not change or alter the atmosphere of the Island (such as building a gaming casino).

Section 3.4 Identifying the Issues

As an Island community, with many miles of shoreline, Block Island faces many threats from natural disasters that risk losses to lives, property, natural/cultural resources, the economy and quality of life. The Risk Assessment Matrix (Table 8) identifies the areas that are at greatest risk during natural events and that pose a threat to the community with respect to population, property and natural and economic resources as well as the probability (historical or potential) of occurrence. After the threats were identified, risk areas and mitigation benefits were identified to complete the table. This Matrix serves as the basis for Mitigation Actions Table that identifies projects to be undertaken by the Town.

Section 3.5 Capability Assessment

The capability assessment refers to the existing plans, programs and policies that have or will incorporate hazard mitigation or other proactive tools.

The Town of New Shoreham recently (2002) revised its Comprehensive Plan, which is a plan that describes the vision of the community and sets forth actions that can be taken to meet that vision. Items such as land use, housing, economic development, natural and cultural resources, open space and services and facilities are addressed in the plan. It has been recognized in the Comprehensive Plan that there is a need for the Town to continue to grow, but to also preserve the unique characteristics of the community. Many elements of the Comprehensive Plan relate to the same needs that have been identified in this Plan relative to the preservation of the community. Therefore, this Natural Hazard Mitigation Plan will become an Appendix to the Town Comprehensive Plan.

The Town’s building codes and zoning regulations reflect the Town’s efforts to be proactive in reducing potential risks from disasters. The Comprehensive Plan indicates that the Town has utilized weatherization grants in the past to help ensure that properties are protected from weather events. The Town also participates in the NFIP, as do all communities in Rhode Island.

Finally, the Town of New Shoreham Emergency Operations Plan, which addresses the response to extraordinary emergency situations associated with various types of disasters (i.e. natural, technological, man-made, etc.) was also recently revised. The EOP also addresses pre- and post-disaster strategies to deal with hazards identified in this Plan, such as hurricane and flood evacuations, public warning and sheltering.

Section 3.6 Future Development Trends

According to the Town of New Shoreham Comprehensive Plan, 39% of the Island’s land area is protected from development (1,800 acres as open space and 1,000 acres as wetlands and coastal features controls) with a community goal to protect 50% of the total land area from development. Furthermore, regulations have been

put in place to confine all business to the downtown district and a minimum of 3 acre lots elsewhere on the Island. With these figures in mind, that allows for a potential 600 new single family homes to be built on the Island on the 1300 acres that are available for future development.

The Comprehensive Plan also points out a very interesting observation that is a unique situation for Block Island; the fact that the Island is losing land to erosion. This is not a new problem, considering that the Southeast Lighthouse had to be moved back 245 feet in 1993 to save it from the eroding bluffs, however, it is a problem that needs to be considered when approving new development on the Island.

The Island residents clearly want their Island to remain the quiet, cozy community that presently exists and is mindful of what is built on the Island. Furthermore, the community realizes that the majority of the Island, if not all, is home to critical habitats that need to be protected.

Preservation of Wetlands

The environmental and economic values of wetlands are endless and becoming more realized over time, especially on Block Island. Wetlands play an important role in flood control. Wetlands collect and detain flood waters, reducing their force and destructiveness, which is readily apparent in southern states where over fifty percent of wetlands have been eliminated. Wetlands also provide a valuable, natural service regarding water quality. Wetlands absorb and filtrate pollutants that could otherwise degrade the quality of water in rivers, lakes, and ponds. Wetlands provide necessary spawning/ rearing habitat and food supply for freshwater fish. Wetlands also provide the critical habitat for most waterfowl, as well as an enormous diversity of plants and animals. Additional benefits of wetlands include: groundwater recharge, erosion control, land formation, and recreation.

Risk Assessment Matrix

The Town of New Shoreham Natural Hazard Mitigation Committee completed the following Risk Assessment Matrix (Table 8) after reviewing the natural hazards that can and have impacted the Town. In completing this matrix, the committee identified areas that are at risk and vulnerable to costly damage and loss of life. The Committee determined the vulnerable areas that needed to be addressed first in order for the mitigation strategy to produce the most benefit for the Town and its residents and these items have been ranked as such on the matrix.

Table 8.0 Risk Assessment Matrix

Rank	What is at Risk	Location	Ownership	Natural Hazard	Primary Problem or Effect	Mitigation Benefits	Risk Historic = H Potential = P
1.1	Town Hall Vault	Old Town Road	Town	Hurricane Flooding Fire	Basement is subject to flooding/mold Present vault is in a flood plain	Maintain vital Town records Maintain Continuity of Government	H & P
1.2	Block Island Water Company	Payne Road	Town	Lightning Fire	No sprinkler system or lightning protection	Reduce loss of and damage to Plant Reduce health hazard	H & P
1.3	New Shoreham Sewer Pump Stations	5 sites in Old and New Harbors	Town	Flooding Power loss	No adequate back-up power	Maintain sewage facility Eliminate contamination of ground water	P
1.4	Old Town Road Bridge/Dam	Old Town Road	Town & State	Flooding Hurricane Winter Storm	Major evacuation route Can not support emergency vehicles Property downstream subject to flooding	Maintain evacuation route Public Safety	H
2.1	Old Harbor Dock	Water Street	Town	Flooding Hurricane Winter Storm	Structural damage noted underwater No adequate back-up dock	Maintain the Island's lifeline for supplies and evacuation	H & P
2.2	Fire/Rescue Building	Beach Avenue	Town	Hurricane Winter Storm	Building can not withstand high winds Building can not accommodate needed apparatus	Reduce loss/damage to building and life Maintain public safety Decrease response time	P
3.1	North end of Corn Neck Rd	Northern end of the Island	Town	Flooding Hurricane Winter Storm	Residents vulnerable to being cut off from the rest of the Island due to only one road leading in that is susceptible to wash-outs	Maintain the safety of the residents that reside on this end of the Island	H & P
3.2	Power lines in Old Harbor	Old Harbor area	Town & State	Winter Storm Hurricane	Loss of power from downed power lines	Maintain electric service Public Safety	H & P

SECTION 4.0 MITIGATION ACTIONS

In completing the risk and vulnerability analysis, the New Shoreham hazard mitigation committee considered projects and actions that would reduce New Shoreham's vulnerability to the identified hazards. The Risk Assessment Matrix presented in Table 8 is the basis for the Mitigation Actions Table presented in Section 4.1. The New Shoreham Hazard Mitigation Committee considered the following actions to reach the objectives of this plan and prioritized the recommended projects/actions based on historical damage, safety of the population, property protection and consistency with Town-wide goals and objectives. The prioritization of the projects was accomplished through a round-table discussion of Committee. Each project was evaluated and prioritized based on cost; benefit to the community; feasibility and reasonableness of the project being completed. As shown on the Risk Matrix and Mitigation Table, more than one item is ranked as a 1, 2 or 3, this is because the Committee wanted to emphasize the importance of those items, but not move them to a lower ranking since they have similar importance.

The New Shoreham Hazard Mitigation Committee 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

Section 4.1 Mitigation Actions Table and Descriptions

Mitigation Actions Table

<i>Priority</i>	<i>Project</i>	<i>Location</i>	<i>Owner</i>	<i>Natural Hazard</i>	<i>Mitigation Objective</i>	<i>Cost est.</i>
1.1	Town Hall	Old Town Rd	Town	Hurricane/Flood	New vault to protect vital records	\$135,000
1.2	BI Water Co	Payne Road	Town	Fire/Lightning	Sprinkler system; lightning protection	\$30,000
1.3	Sewer Pump Stations	5 sites in Old & New Harbors	Town	Flooding/Power Failure	Portable generators (2)	\$40,000 each
1.4	Old Town Rd bridge/dam	Old Town Rd	Town/State	Hurricane/Winter Storm/ Flooding	Replace bridge/culvert; engineering design, DEM permits, etc.	\$75,000
2.1	Old Harbor Dock	Water Street	Town	Hurricane/Winter Storm	Rebuild east and south docks	\$2.5 million
2.2	Fire/Rescue Building	Beach Ave	Town	Hurricane/Winter Storm/ Fire	Repair rear of building; new roof, door & frame; Construct new fire/rescue building	\$348,792 \$157,000 raised
3.1	North end of Corn Neck Rd	Transfer Station - West Beach Rd.	Town	Hurricane/Storm	500 kw generator for Neck use; fuel storage unit	\$65,000
3.2	Bury power lines	Water St./Corn Neck/ Spring St	Town/State	Hurricane/Winter Storm	Engineering study to bury critical lines along east side of Island	\$37,000 \$12,000 raised

Mitigation Action Descriptions

Hazard Mitigation Plan – Action Item 1-1 Town Hall Vault

Natural Hazards:

Fire, Flood, Mold, Mildew

Assessment of Need:

The current Town vault cannot accommodate the number of vital records requiring secure storage. Land evidence records in the vault have suffered from mold/mildew and a dehumidifier has been installed to counteract the humidity of the island climate. Continual monitoring of the equipment and the actual records is required.

Other vital records which should be in the vault are stored in the basement and attic and, aside from being insecure, are subject to flooding, fire, and mold/mildew damage. Historical evidence indicates that the Town Hall has suffered from fire and flooding with loss and damage to these documents which are essential to the Town's continuity of government.

Mitigation Objective:

Replace the vault with a larger, climate controlled unit and install it within the Town Hall expansion currently under construction.

Responsible Persons:

Herman Mast, Construction Manager with Fiona Fitzpatrick, Town Clerk

Estimated Timeframe for Completion:

Medium term -6 to 18 months

Hazard Mitigation Plan – Action Item 1-2 BI Water Company

Natural Hazards:

Fire, Lightning

Assessment of Need:

Historically, there have been fires and damage from lightning strikes in the area of the Water Company, some as recent as 2003. This is the Island's sole source of water treatment for the public water supply, with two large storage tanks on the property. With very few large trees in the area, the property is vulnerable to lightning strikes and consequential fire and equipment damage.

Mitigation Objective:

Install lightning protection equipment and a sprinkler system at the Water Treatment Plant.

Responsible Person:

David Simmons, Water Superintendent

Estimated Timeframe for Completion:

Medium term – 6 to 18 months

**Hazard Mitigation Plan – Action Item 1-3
Sewer Pump Stations**

Natural Hazards:

Flooding, Storm-related Power Failures

Assessment of Need:

There are five sewer pump stations within the New Harbor and Old Harbor sections of town. In the event of an extended power failure, sewage contamination could jeopardize public health via groundwater intrusion. Untreated sewage overflow presents a significant danger to the water quality of the Great Salt Pond and to the viability of its shellfish beds. Bordering the northern area of the Great Salt Pond is the Block Island National Wildlife Refuge, an environmentally sensitive area, which is vulnerable to such risk.

The capacity of the municipal sewer system is taxed with the astronomical population explosion in the peak season and past experiences demonstrating the potential for overflow have proven the need for careful management and monitoring of the pump stations. The threat to the island's groundwater cannot be minimized or overlooked.

Mitigation Objective:

Purchase two portable generators for rapid response during power failures.

Responsible Persons:

Ray Boucher, Sewer Superintendent and James Geremia, Town Engineer

Estimated Timeframe for Completion:

Medium term – 6 to 18 months

**Hazard Mitigation Plan – Action Item 1-4
Old Town Road Bridge/Sluice**

Natural Hazards:

Hurricane, Winter Storm, Flooding

Assessment of Need:

Old Town Road serves as a main route connecting Old Harbor with the airport and points west of town. The portion of road containing the bridge also serves as a connector from the Police/Fire/Rescue Building with the school and the medical center. At this time, the roadway over the sluice is unable to support trucks or rescue vehicles.

The bridge also serves as a culvert, directing drainage from Mill Tail Pond to Harbor Pond and, ultimately, the Atlantic Ocean. Malfunction of the dam/sluice would put the road and downstream properties at risk from flooding. Also downstream is Ocean Avenue, a heavily-traveled connecting road from Old Harbor to the Police and Fire/Rescue Building and New Harbor locations. Also located on Ocean Avenue, just below the overflow from the dam/sluice is the sewer pump station. This pump station is at risk of flooding if the dam fails.

Mitigation Objective:

Complete an engineering design, replace the culvert and sluice, construct the bridge/roadway capable of serving as an evacuation/rescue route.

Responsible Persons:

Michael Shea, Highway Supervisor and James Geremia, Town Engineer

Estimated Timeframe for Completion:

Long term – 18 months to 5 years

**Hazard Mitigation Plan – Action Item 2-1
Old Harbor Dock**

Natural Hazards:

Hurricane, Winter Storm

Assessment of Need:

Old Harbor Dock provides the point of access for the sole year-round ferry, the main transportation source for residents and supplies. An engineering study of the dock was completed in September 2000. Structural analysis concluded that the east bulkhead had failed, leaving the dock inaccessible to trucks and emergency vehicles including ambulances. The south bulkhead is supporting the parking lot and dock simultaneously. The amount of pedestrian traffic and the low load limit prohibits emergency vehicles from the south dock. The study recommended that the use of the south dock should be restricted to pedestrian access only and no storage. Failure to repair the south bulkhead could jeopardize the integrity of the parking lot, harbormaster building, and south dock. In the event of a storm, the dock is at risk of severe damage further compromising its integrity and putting lives and property in jeopardy.

Mitigation Objective:

Replace the east bulkhead, repair the south bulkhead, and replace the decking. Delaying repairs will mean accelerated deterioration of the docks and increased risk to public safety.

Responsible Persons:

Chris Willi, Harbormaster and James Geremia, Town Engineer

Estimated Timeframe for Completion:

Long term – 18 months to 5 years

**Hazard Mitigation Plan – Action Item 2-2
Fire/Rescue Building**

Natural Hazards:

Hurricane, Winter Storm, Fire

Assessment of Need:

Given the remote location of Block Island, the Fire Department and Rescue Squad have no opportunity for mutual aid from neighboring departments. Although it is a small rural community, the island faces many of the same emergencies experienced by urban centers, as well as other unique, island-related crises. The Rescue Squad provides care to a diverse group of patients, with needs ranging from simple transportation to the medical center or airport to minor moped injuries and life-threatening situations. The Squad members are trained first-responders and are well-versed in transporting patients to the Block Island airport for airlift via Life Flight or the U.S. Coast Guard.

Presently, one structure serves both the Fire and Rescue Squads. This three-bay garage cannot accommodate the vehicles which include three fire trucks, a tanker, a fire dept pick-up truck, three ambulances and one FEMA trailer. One ambulance and the FEMA trailer must remain outside, with the critical supplies from the trailer removed and stored in the building. In the event of a disaster, the supplies must be reloaded prior to dispatch.

Entrances to the garage are too steep and the entrances too low to allow rescue vehicles to back in. This means that they must be dispatched in reverse, utilizing precious time in emergencies. When housed, the only possible arrangement is for the ambulances to block the fire engines. The blocking of the fire equipment presents a hardship in cases of emergencies when time is crucial.

The building is a wooden structure which will not withstand hurricane-force winds and is without benefit of a sprinkler system. In addition, the closet used as the site for refilling oxygen tanks is not up to current safety standards.

Mitigation Objective:

Construct a new garage with two bays, an area for training, and an approved area for safely refilling oxygen tanks. The new facility also will provide a critically needed area for decontamination.

Responsible Persons:

Joseph Sprague, Fire Chief and Vincent Carlone, Police Chief/Head of EOC

Estimated Timeframe for Completion:

Medium term – 6 to 18 months

**Hazard Mitigation Plan – Action Item 3-1
North End Seclusion – Corn Neck Road**

Natural Hazards:

Hurricane, Storm, Nor'easter

Assessment of Need:

The north end of the Island is vulnerable to being cut off from the rest of the Island. The only road connecting north to south could be breached by wave action during a hurricane or winter storm or might be washed out by heavy rain. This would place residents on the north end at risk of no power or access to town and supplies. Historically, storms have crossed the road at its narrowest point and demonstrated the potential of isolating the north end.

Mitigation Objective:

Purchase and install a generator and portable fuel tanker at the Transfer Station which will be attached to the power grid and provide back-up power if the integrity of the grid is compromised. This will mitigate the potential danger to residents and damage to property by quickly providing power in the event of disruption.

Responsible Person:

James Geremia, Town Engineer

Estimated Timeframe for Completion:

Medium term – 6 to 18 months

**Hazard Mitigation Plan – Action Item 3-2
Bury Power Lines**

Natural Hazards:

Hurricane, Winter Storm, Nor'easter

Assessment of Need:

The Old Harbor section on the eastern coast of the Island has been assessed as susceptible to high winds during much of the year and as highly susceptible during a hurricane or severe winter storm. Many of the town's critical facilities are in this area of the Island including the Library, Town Hall, Community/Day Care Center, Post Office, and Sewer Treatment Plant and would be susceptible to power failure caused by downed power lines. Area businesses acknowledge the importance of insuring the integrity of power service by burying lines and have contributed approximately \$12,000 toward this project to date.

Mitigation Objective:

Provide an engineering study with the intention of placing power lines underground along the wind-prone Water Street and adjoining sections serving critical public facilities.

Responsible Person:

James Geremia, Town Engineer

Estimated Timeframe for Completion:

Long term – 18 months to 5 years

Section 4.2 – Strategy Adoption

The members of the New Shoreham Natural Hazard Mitigation Committee unanimously adopted this plan and recommended it be forwarded to the RIEMA for approval by the State Hazard Mitigation Committee, the executive director of the RIEMA and then FEMA Region I. Once the Plan has received conditional approval from FEMA, a Resolution will be presented to the Town Council for formally adopt the Plan for the Town of New Shoreham.

Section 4.3 – Implementation, Evaluation and Revision of Strategy

The Committee recognizes that this is just the beginning of a formalized natural hazard mitigation program for the Town. In order to begin the process of incorporating natural hazard mitigation into all planning processes for the Town, this Plan will become an Appendix to the present Comprehensive Plan for the Town, since the Comprehensive Plan was just revised, and further revision of the Comprehensive Plan will incorporate mitigation actions throughout the Plan.

The actions listed in Section 4.1 above will set the stage for future revisions and updates of the Plan. These actions look at the most obvious risks to the community and will help to further investigate mitigation actions that can be taken to further reduce vulnerability.

It was determined that the Emergency Management Director will be responsible for the overall coordination of the Plan with the various agencies involved and will be responsible for documenting the progress of each action (via the use of the Action Progress Form at the end of this Plan). It was the consensus of the committee that this will help in not only the evaluation of the present plan, but with the revision/update of the plan as well since all documentation will be maintained in one location.

The present committee plans to meet quarterly to review the status of each action and discuss any new actions or hazard areas that may be identified. The update/revision of the Plan will be done annually or after a disaster occurs. A full revision of the Plan will be completed every five years and will incorporate a more formalized process for prioritizing actions and weighing the cost/benefit of such actions. All updates or revisions to the Plan will be submitted to the RIEMA upon local approval to insure the State Hazard Mitigation Strategy also remains current.

Continued involvement by members of the community is anticipated and welcomed since Block Island has such a small year round population and most residents, if not all, are very much involved in items that affect the future of their community. Committee meetings will continue to be open to the public to allow for public input and any openings on the committee will be offered to residents/business owners to ensure continued public involvement.

REFERENCES

Earthquake: Needs Assessment. Rhode Island Emergency Management Agency. October 1994.

Flood Hazard Mitigation Planning: A Community Guide. Massachusetts Department of Environmental Management Flood Hazard Management Program. June 1997.

National Climatic Data Center. National Oceanic and Atmospheric Administration.
National Climatic Data Website – www.ncdc.noaa.gov .

State and Local Mitigation Planning How-To Guides. FEMA. FEMA 386-2, August 2001.
FEMA 386-3, April 2003. FEMA 386-4, April 2003.

Town of New Shoreham Comprehensive Plan, 2003.

Town of New Shoreham Emergency Operations Plan.

APPENDIX A – Technical and Financial Assistance for Mitigation

State Resources

Coastal Resources Center

University of Rhode Island
Narragansett Bay Campus
Narragansett, RI 02882
(401) 874-6224

Coastal Resources Management Council

Steadman Government Center
4808 Tower Hill Road
Wakefield, RI 02879
(401) 222-2476

Department of Administration

Division Of Planning
One Capitol Hill
Providence, RI 02908
(401) 222-6478

Department of Environmental Management

Division of Parks and Recreation
2321 Hartford Avenue
Johnston, RI 02919
(401) 222-2635

Department of Transportation-Design Section/Bridges

2 Capitol Hill, Room 231D
Providence, RI 02903
(401) 222-2053

Rhode Island Banking Commission/ Associate Director

233 Richmond Street
Providence, RI 02903
(401) 222-2405

Rhode Island Builders Association

The Terry Lane Corporation
Terry Lane
Glocester, RI 02814
(401) 568-8006

Rhode Island Department of Business Regulations

233 Richmond Street
Providence, RI 02903
(401) 222-2246

Rhode Island Emergency Management Agency

645 New London Avenue
Cranston, RI 02920
(401) 946-9996

Public Utilities Commission

100 Orange Street
Providence, RI 02903
(401) 222-3500 ext. 153

State Fire Marshal's Office

272 West Exchange Street
Providence, RI 02903
(401) 222-2335

State of Rhode Island Building Committee Office

Building Commissioner's Office
One Capitol Hill
Providence, RI 02903
(401) 222-3529

Federal Resources

Economic Development Administration

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

Federal Emergency Management Agency

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

Small Business Administration

360 Rainbow Blvd., South, 3rd Floor
Niagara Falls, NY 14303
(716) 282-4612 or (800) 659-2955

U.S. Army Corps of Engineers

New England District
424 Trapelo Road
Waltham, MA 02254
(617) 647-8505

U.S. Department of Agriculture

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

U.S. Fish and Wildlife Service

New England Field Office
22 Bridge Street, Unit #1
Concord, NH 03301-4986

Other Resources

The Association of State Floodplain Managers (ASFPM)

Professional association with a membership of almost 1,000 state employees that assists 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 publication. 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) (formerly 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

U.S. Department of Commerce

National Weather Service

Forecast Office
445 Myles Standish Boulevard
Taunton, MA 02780
(508) 823-2262

U.S. Department of Housing and Urban Development

Comm. Development Block Grants
Region I-O’Neill Federal Building
10 Causeway Street
Boston, MA 02222
(617) 656-5354

U.S. Department of the Interior

National Park Service

River & Trail Conservation Program
Regional Office
15 State Street
Boston, MA 02109
(617) 223-5203

U.S. Environmental Protection

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

U.S. Geological Society

12201 Sunrise Valley Drive
Reston, VA

communicates the results of its research and statistical gathering, as well as mitigation information, to a broad audience.

Volunteer Organizations

Organization, 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 organization, 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 flood proofing 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 world wide web home page 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. NEFSMA home page is accessible at <http://www.seacoast.com/~nefsma>.

APPENDIX B – Existing Protection Systems – State and Federal

State

Earthquakes and Hurricanes:

A certain amount of funding is allotted to each state per year based on a risk formula for earthquakes. Coastal states are allocated funds based on a risk formula for hurricanes. Each state receiving such funds has the ability to grant project funds to a community. There is not a match requirement on the part of the community, but the funds are limited and are generally only available once a year. The projects or products proposed for such funding must demonstrate that earthquake or hurricane risk will be reduced or eliminated and that the proposed projects or product is a cost-effective measure (a stringent cost/benefit analysis need not be performed). Information about the amount of funding available per year and the state requirements for eligibility and performance may be obtained from the RIEMA at (401) 946-9996.

Economic/Community Development

There may be programs existing to help flood proof homes using Community Development Block Grant funds. There may be housing assistance programs in the community that can be used following a major flood, achieving both the objectives of reducing flood damage and improving the community's housing stock (see Appendix A, "Federal Resources", for more information).

Evacuation Plans and Systems

The community's emergency operations center should have evacuation plans in place. For communities near a nuclear power plant, evacuation plans are required and may also be used for flood evacuation. The RIEMA may have additional evacuation plan information.

Land Use Restrictions

There are several federal and state regulations that serve to restrict land use in certain areas that may help reduce flood hazard vulnerability. If the community has open land owned by the state or federal government, examine what restrictions are placed on its development. In addition, the state Wetlands Protection Act regulates the development of all lands identified as significant to the protection of resources identified in the act.

Septic Systems

If there are areas in the community not served by a public sewer system, state septic system regulation influence development and may be a consideration for mitigation alternatives that include rebuilding and elevation of structures. Specific design requirements must be met for any construction in coastal velocity zones or river floodways. Generally, an inspection of a septic system is required if there is a change in use of the structure, an increase in flow or failed system. Limited inspections are required if the footprint of the structure is being changed. Upgrades are required by the state if an inspection reveals a failed system. However, local regulations may be more restrictive than state requirements, requiring inspections or upgrades in other cases.

Warning Systems and Emergency Operations Plans:

The community may have a flood warning system in place and should have a plan for response to flooding.

Federal

Community Rating System (CRS)

A voluntary initiative of the NFIP, the CRS was developed to encourage communities to perform activities that exceed the minimum NFIP floodplain management standards. If a community participating in the CRS performs activities that include maintaining records for floodplain development, publicizing the flood hazard, improving flood data and conducting 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 will help communities gain additional credit under the CRS.

Hazard Mitigation Grant Program

Also known as the 404 Program or HMGP, this program is available only after a federally declared disaster occurs. It represents an additional 15 percent of all the infrastructure and individual assistance funds that are

provided to states to repair damages and recover from losses and is administered by the state in partnership with FEMA. Having a plan or completed mitigation action matrix prior to a disaster event is required by FEMA and is extremely helpful in meeting the states' deadlines for applications and ensuring the project is eligible and technically feasible. It provides 75/25 matching grants on a competitive basis to state, local and tribal governments, as well as to certain nonprofit organization that can be matched by either cash or in-kind services. The grants are specifically directed toward reducing future hazard losses and can be used for projects protecting property and resources against the damaging effects of floods, earthquakes, wind and other hazards. Specific activities encouraged under the HMGP include acquiring damaged structures to turn the land over to the community for open space or recreations 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-flood proofing, elevation of the structure above flood level, elevation of utilities or proper anchoring of the structure.

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. A certain amount of funding is allotted to each state per year based on a risk formula for floods. Each state has the discretion to award funds to communities or to state government agencies. States may use whatever criteria or method they choose to award the funds as long as the applicant and the proposal are eligible. The program may fund up to 75 percent of the 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". Funds can also be granted to communities to help them prepare local flood mitigation plans. The same match requirements apply. Once a community receives a planning grant, however, it is not eligible to receive additional planning grants for another five years. For further information on the FMA program or ICC coverage, contact the RIEMA at (401) 946-9996.

National Flood Insurance Program (NFIP)

All of Rhode Island's 39 municipalities participate in the NFIP. This program is a direct agreement between the federal government and the local community that flood insurance will be made available to residents in exchange for community compliance with minimum 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) flood proofed to the identified flood level on the maps

Require design techniques to minimize flood damage for structures being built in high hazard areas, such as floodways or velocity zones

In return for community adoption of these standards, any structure in that community is eligible for protection by flood insurance, which covers property owners from losses due to inundation from surface water of any source. Coverage for land subsidence, sewer backup and water seepage is also available subject to the conditions outlined in the NFIP standard policy (see Appendix A, "Federal Resources", for contacts regarding insurance coverage and purchase). 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 flood prone property.

APPENDIX C – Resolution and Miscellaneous Information

Hazard Mitigation Planning Committee/Public Meetings dates:

- February 8, 2004
- March 3, 2004
- December 21, 2004
- February 4, 2005
- April 24, 2005
- May 3, 2005
- May 17, 2005

The following is an example of a public notice posted in The Block Island School, Island Free Library, US Post Office, Town Hall, and the *Block Island Times* newspaper (local weekly publication).



Two committee members attended a FEMA-sponsored informational and planning meeting in Lincoln, RI, on October 13, 2004.

Committee members joined into discussion with other island communities (Martha's Vineyard, Nantucket), focusing on mitigation efforts toward continuity of transportation and services during natural disasters.

The *Block Island Times* published feature articles on the planning process: May 2 and October 22, 2005.

**TOWN OF NEW SHOREHAM
RESOLUTION TOWN OF NEW SHOREHAM MITIGATION PLAN**

BE IT RESOLVED BY THE TOWN COUNCIL OF THE TOWN OF NEW SHOREHAM AS FOLLOWS:

Whereas, The Town of New Shoreham has developed a Hazard Mitigation Plan as directed by the Federal Emergency Management Agency (FEMA) and the Rhode Island Emergency Management Agency (RIEMA); and,

Whereas, The New Shoreham Hazard Mitigation Plan was developed by Resource Specialists, Inc. and with the members of the New Shoreham Hazard Mitigation Committee; and,

Whereas, The cost of developing the New Shoreham Hazard Mitigation Plan was covered by a grant from the Rhode Island Emergency Management Agency (RIEMA); and,

Whereas, The New Shoreham Hazard Mitigation Plan now has been given official and final approval by the Federal Emergency Management Agency (FEMA) as well as the Rhode Island Emergency Management Agency (RIEMA)

Now, therefore, be it resolved by the Town Council of the Town of New Shoreham, Rhode Island, as follows:

1. That the Town Council determines that the Town of New Shoreham Hazard Mitigation Plan is acceptable.
2. That this resolution shall become effective immediately upon its passage by the New Shoreham Town Council.

DATE ADOPTED: May 15, 2006

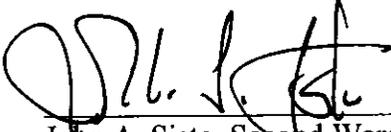
A TRUE COPY, ATTEST:



Fiona Fitzpatrick
Town Clerk



John T. Savoie, First Warden



John A. Sisto, Second Warden



Robert Ellis Smith, Councilor



Mary Jane Balser, Councilor



Ned S. Connelly, Councilor

