TOWN OF STRATHAM, NH

HAZARD MITIGATION PLAN 2007

Approved by the

STRATHAM BOARD OF SELECTMEN

And adopted as an official appendix to the Stratham Emergency Operations Plan

_____, 2007

Rockingham
Planning
Commission

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NEW HAMPSHIRE HOMELAND SECURITY AND EMERGENCY MANAGEMENT

Stratham, NH Hazard Mitigation Plan

This Plan services a dual role as a stand alone document approved by the Stratham Board of Selectmen on _____, 2007. This document also serves as an official annex to the Stratham Emergency Operations Plan.

Approved by the Stratham Board of Selectmen:

_____, Chair

_____

_____

Date _____, 2007

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EXECUTIVE SUMMARY

The Stratham Hazard Mitigation Plan (herein after, the *Plan*) was compiled to assist the Town of Stratham in reducing and mitigating future losses from natural hazard events. The *Plan* was developed by the Rockingham Planning Commission and participants from the Town of Stratham and contains the tools necessary to identify specific hazards and aspects of existing and future mitigation efforts.

The following hazards are addressed:

- Flooding
- Hurricane
- Tornado
- Severe Winter Weather
- Wildfire
- Earthquake

The Critical Facilities include:

- Fire Department
- Town Hall/EOC
- Highway Building
- Evacuation Routes
- Dams
- Culverts

The *Plan* is considered a work in progress and should be revisited frequently to assess whether the existing and suggested mitigation strategies are successful. Copies have been distributed to the Town of Stratham, and a copy will remain on file at the Rockingham Planning Commission. A copy of this Plan is also on file at New Hampshire Homeland Security and Emergency Management (NHHSEM) and the Federal Emergency Management Agency (FEMA). This *Plan* was approved by both agencies prior its adoption at the local level.

CHAPTER 1 – INTRODUCTION

BACKGROUND

New Hampshire Homeland Security and Emergency Management (NHHSEM) has a goal for all communities within the State to establish local hazard mitigation plans as a means to reduce and mitigate future losses from natural hazard events. NHHSEM outlined a process whereby communities throughout the State may be eligible for grants and other assistance upon completion of a local hazard mitigation plan. A handbook entitled Hazard Mitigation Planning for New Hampshire Communities was created by NHHSEM to assist communities in developing local plans. The State's Regional Planning Commissions are charged with providing assistance to selected communities to develop local plans.

The Plan was prepared by Rockingham Planning Commission (RPC) with the assistance of participants from the Town of Stratham, under contract with the NHHSEM operating under the guidance of Section 206.405 of 44 CFR Chapter 1 (10-1-97 Edition). The Plan serves as a strategic planning tool for use by the Town of Stratham in its efforts to identify and mitigate the future impacts of natural and/or man-made hazard events. Upon adoption of this Plan by the Stratham Board of Selectmen, it will become an official appendix to the Stratham Emergency Operations Plan.

METHODOLOGY

In September, 2006, the Rockingham Planning Commission (RPC) organized the first meeting with emergency management officials from the Town of Stratham to begin the initial planning stages of the *Plan.* RPC and participants from the Town developed the content of the *Plan* using the ten-step process set forth in the *Hazard Mitigation Planning for New Hampshire Communities*. The following is a summary of the ten-step process conducted to compile the *Plan.*

Step 1 – Map the Hazards

Areas were identified where damage from historic natural disasters has occurred and areas where critical man-made facilities and other features may be at risk in the future for loss of life, property damage, environmental pollution and other risk factors. RPC generated a set of base maps with GIS (Geographic Information Systems) that were used in the process of identifying past and future hazards.

Step 2 – Identify the Critical Facilities

Critical Facilities were identified. These included buildings and areas that were considered to be important to the Town for emergency management purposes, were identified for provision of utilities and community services, evacuation routes, and for recreational and social value. Using a high resolution digital imagery of the Town, the RPC plotted the location of these sites on a Map 3.

Step 3 – Identify Existing Mitigation Actions or Strategies

After collecting information on each critical facility in Stratham, RPC staff identified existing mitigation strategies relative to hazards that may affect the Town.

Step 4 – Identify Gaps in Existing Mitigation Actions or Strategies

The existing strategies were then reviewed by the RPC for coverage and effectiveness, as well as the need for improvement.

Step 5 – Identify Potential Mitigation Actions or Strategies

A list was developed of additional hazard mitigation actions and strategies for the Town of Stratham. Potential actions include Public education and Outreach, Drainage Improvements, and Updating the EOC.

Step 6 – Prioritize and Develop Action Plan

The proposed hazard mitigation actions and strategies were reviewed and each strategy was rated (good, average, or poor) for its effectiveness according to several factors (*e.g.*, technical and administrative applicability, political and social acceptability, legal authority, environmental impact, financial feasibility). Each factor was then scored and all scores were totaled for each strategy. Strategies were ranked by overall score for preliminary prioritization then reviewed again under Step 7.

Step 7 – Determine Priorities

The preliminary prioritization list was reviewed in order to make changes and determine a final prioritization for new hazard mitigation actions and existing protection strategy improvements identified in previous steps. RPC also presented recommendations to be reviewed and prioritized by emergency management officials.

Step 8 – Develop Implementation Strategy

An implementation strategy was developed for the Action Plan which included person(s) responsible for implementation (who), a timeline for completion (when), and a funding source and/or technical assistance source (how) for each identified hazard mitigation actions.

Step 9 – Adopt and Monitor the Plan

RPC staff compiled the results of Steps 1 to 8 in a draft document. This draft *Plan* was reviewed by members of the *Committee* and by staff members at the RPC. The draft was then submitted to NHHSEM and FEMA Region I for their review and comments (July, 2007). Any changes required by NHHSEM and FEMA were made and a revised draft document was then submitted to the Stratham Board of Selectmen for their final review on _____, 2007. A public hearing was then held by the Stratham Board of Selectmen on _____, 2007. At this public hearing the *Plan* was approved by the Board of Selectmen, and adopted as an appendix to the Stratham Emergency Operations Plan.

Step 10 – Future Updates to the Plan

When the *Plan* is updated in the future a greater effort to involve the public will be made. This may include holding public hearings (noticed in the paper), articles in the local papers and/or placing the plan online for review. This hopefully will generate more comment and involvement from the people of Stratham as well as provide an opportunity for other interested parties to take part in the planning process.

HAZARD MITIGATION GOALS AND OBJECTIVES OF THE STATE OF NEW HAMPSHIRE

The *State of New Hampshire Natural Hazards Mitigation Plan*, which was prepared and is maintained by the New Hampshire Homeland Security and Emergency Management (NHHSEM), sets forth the following related to overall hazard mitigation goals and objectives for the State of New Hampshire:

1. To improve upon the protection of the general population, the citizens of the State and guests, from all natural and man-made hazards.
2. To reduce the potential impact of natural and man-made disasters on the State's Critical Support Services.
3. To reduce the potential impact of natural and man-made disasters on Critical Facilities in the State.
4. To reduce the potential impact of natural and man-made disasters on the State's infrastructure.
5. To improve Emergency Preparedness.
6. Improve the State's Disaster Response and Recovery Capability.
7. To reduce the potential impact of natural and man-made disasters on private property.
8. To reduce the potential impact of natural and man-made disasters on the State's economy.
9. To reduce the potential impact of natural and man-made disasters on the State's natural environment.
10. To reduce the State's liability with respect to natural and man-made hazards generally.
11. To reduce the potential impact of natural and man-made disasters on the State's specific historic treasures and interests as well as other tangible and intangible characteristics which add to the quality of life of the citizens and guests of the State.
12. To identify, introduce and implement cost effective Hazard Mitigation measures so as to accomplish the State's Goals and Objectives and to raise the awareness of, and acceptance of Hazard Mitigation generally.

Through the adoption of this Plan the Town of Stratham concurs and adopts these goals and objectives.

ACKNOWLEDGEMENTS

The Town of Stratham offers thanks to the **New Hampshire Homeland Security and Emergency Management** (www.nhBEM.state.nh.us), which provided the model and funding for this document.

Name:	Position:
Chuck Grassie	Town Planner
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Terry Barnes	Code Enforcement Office
Dave Emanuel	Emergency Management Director
Robert Law	Fire Chief
Michael Daley	Police Chief
Kathy Flag	Deputy Emergency Management Director

In addition, thanks are extended to the staff of the Rockingham Planning Commission for professional services, process facilitation and preparation of this document.

CHAPTER II – COMMUNITY PROFILE

NATURAL FEATURES

The Town of Stratham is 15.1 square miles with approximately 0.3 square miles of inland waterways. As of 2005 the population density was 469.4 persons per square mile, with a total population of 7,098. This population ranks Stratham as New Hampshire's 45th largest community. The following four figures display several natural features of the Town of Stratham including wetlands, watersheds and flood zones.

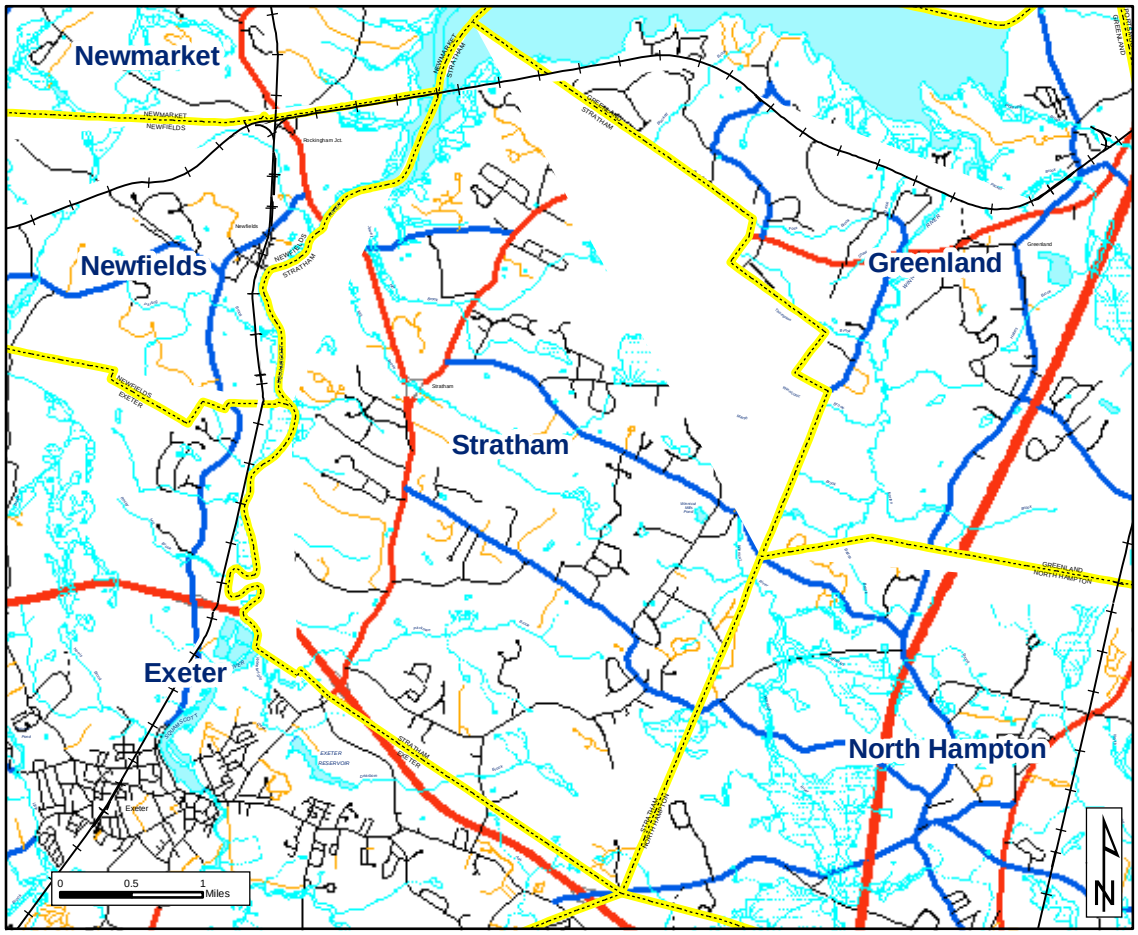

Figure 1: Location Map of Stratham, New Hampshire

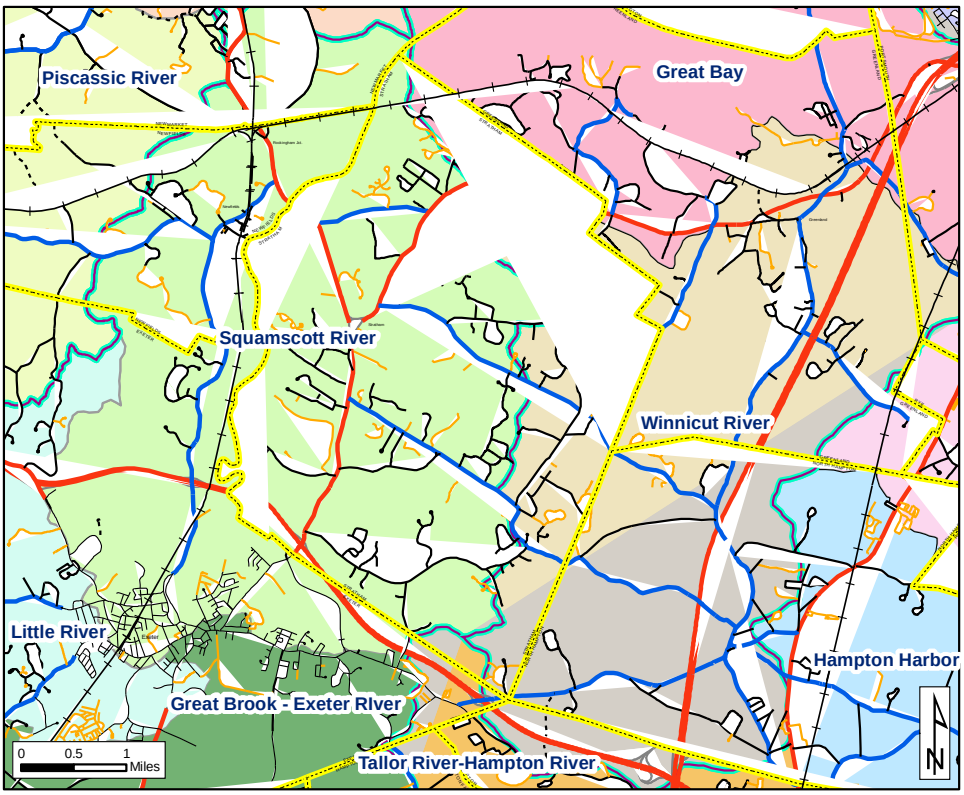

Figure 2: Watershed of Stratham, New Hampshire

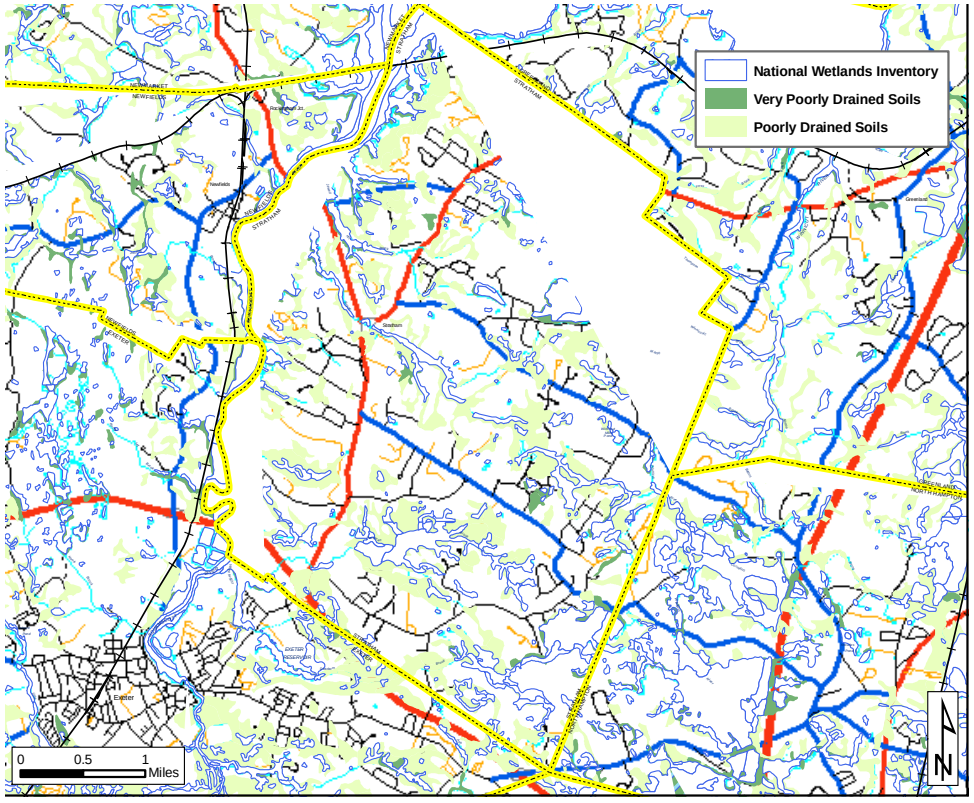

Figure 3: Wetlands Map of Stratham, New Hampshire

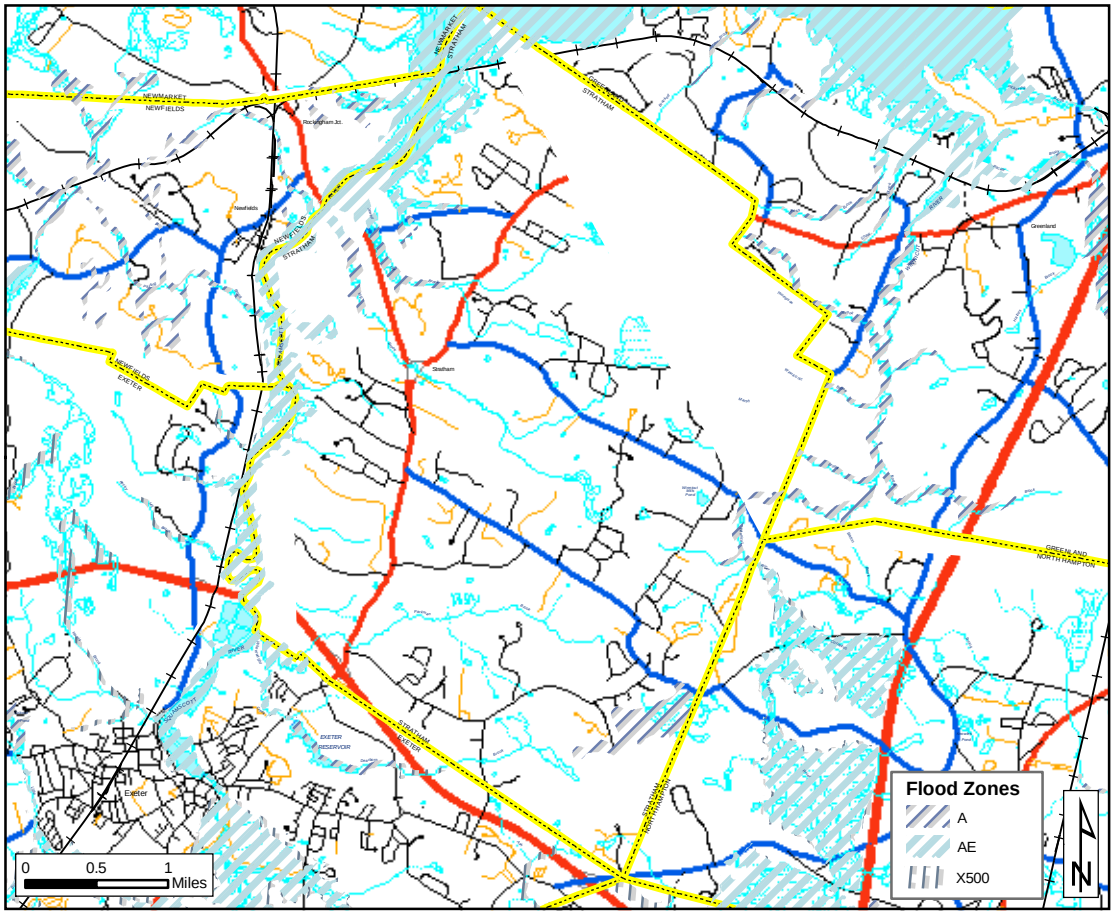

Figure 4: Flood Zone Map of Stratham, New Hampshire

LAND USE AND DEVELOPMENT

A land use map was prepared for this *Plan* using data from GRANIT (The New Hampshire Geographically Referenced Analysis and Information Transfer System). The land use data was created for Rockingham County in 1998. The data was developed through interpretation of 1:12,000 scale black and white digital orthophoto quadangles from the United States Geologic Survey. For more information on this data layer please visit http://granit.sr.unh.edu. This data is presented in Map 1: Stratham Land Use.

Stratham has several large undeveloped parcels that will likely be developed in time. With tools in place such as conservation subdivisions and a wetlands ordinance, future developments should be able to be located in a manner that will lower there risk to flooding and storm surge.

CHAPTER III – NATURAL HAZARDS IN THE TOWN OF STRATHAM

WHAT ARE THE HAZARDS?

The first step in planning for natural hazard mitigation is to identify hazards that may affect the Town. Some communities are more susceptible to certain hazards (i.e., flooding near rivers, hurricanes on the seacoast, etc.). The Town of Stratham is prone to several types of natural hazards. These hazards include: **flooding, hurricanes, tornadoes, severe winter weather, wildfires** and **earthquakes**. Other natural hazards can and do affect the Town of Stratham, but these were the hazards prioritized by the Committee for mitigation planning. These were the hazards that were considered to occur with regularity and/or were considered to have high damage potential, and are discussed below.

Natural hazards that are included in the State's Hazard Mitigation Plan that are not included in the *Plan* include: drought, extreme heat, landslide, subsidence, radon and avalanche. Subsidence and avalanche are rated by the State as having Low and No risk in Rockingham County, respectively; due to this they were left out of the *Plan*. Stratham has no record of landslides and little chance of one occurring that could possibly damage property of cause injury; so landslides were not included in this *Plan*. The State's Plan indicates that Rockingham County is at Moderate risk to drought, extreme heat, and radon; these hazards were not included in the *Plan*. When compared natural hazards that could be potentially devastating to the Town (earthquakes or hurricanes) or natural hazards that occur with regularity (flooding or severe winter weather) it was not considered an effective us of the Committee time to include drought, extreme heat, and radon in the *Plan* at this time. Other potential natural Hazards that were considered highly unlikely or only minimally dangerous, and therefore not included in the plan are: Tsunami, Thunder storms, lightning, or hail. When the *Plan* is revised and updated in the future, possible inclusion of these hazards will be reevaluated.

HAZARD DEFINITIONS

Flooding

Floods are defined as a temporary overflow of water onto lands that are not normally covered by water. Flooding results from the overflow of major rivers and tributaries, storm surges, and/ or inadequate local drainage. Floods can cause loss of life, property damage, crop/livestock damage, and water supply contamination. Floods can also disrupt travel routes on roads and bridges.

Inland floods are most likely to occur in the spring due to the increase in rainfall and melting of snow; however, floods can occur at any time of the year. A sudden thaw in the winter or a major downpour in the summer can cause flooding because there is suddenly a lot of water in one place with nowhere to go. Coastal flooding can be caused by storm surge associated with high wind events hurricanes or from tsunami.

100-year Floodplain Events

Floodplains are usually located in lowlands near rivers, and flood on a regular basis. The term 100 year flood does not mean that flood will occur once every 100 years. It is a statement of probability that scientists and engineers use to describe how one flood

compares to others that are likely to occur. It is more accurate to use the phrase "1% annual chance flood". What this means is that there is a 1% chance of a flood of that size happening in any year.

Rapid Snow Pack Melt
Warm temperatures and heavy rains cause rapid snowmelt. Quickly melting snow coupled with moderate to heavy rains are prime conditions for flooding.

River Ice Jams
Rising waters in early spring often breaks ice into chunks, which float downstream and often pile up, causing flooding. Small rivers and streams pose special flooding risks because they are easily blocked by jams. Ice collecting in river bends and against structures presents significant flooding threats to bridges, roads, and the surrounding lands.

Hurricane
A hurricane is a tropical cyclone in which winds reach speeds of 74 miles per hour or more and blow in a large spiral around a relatively calm center (see Appendix C). The eye of the storm is usually 20-30 miles wide and may extend over 400 miles. High winds are a primary cause of hurricane-inflicted loss of life and property damage. Hurricanes can also include coastal storm surge. Stratham could be affected by a storm surge from the Great Bay.

Tornadoes
A tornado is a violent windstorm characterized by a twisting, funnel shaped cloud. They develop when cool air overrides a layer of warm air, causing the warm air to rise rapidly. The atmospheric conditions required for the formation of a tornado include great thermal instability, high humidity and the convergence of warm, moist air at low levels with cooler, drier air aloft. Most tornadoes remain suspended in the atmosphere, but if they touch down they become a force of destruction.

Tornadoes produce the most violent winds on earth, at speeds of 280 mph or more. In addition, tornadoes can travel at a forward speed of up to 70 mph. Damage paths can be in excess of one mile wide and 50 miles long. Violent winds and debris slamming into buildings cause the most structural damage.

The Fujita Scale is the standard scale for rating the severity of a tornado as measured by the damage it causes (see Appendix D). A tornado is usually accompanied by thunder, lightning, heavy rain, and a loud "freight train" noise. In comparison with a hurricane, a tornado covers a much smaller area but can be more violent and destructive.

Severe Winter Weather
Ice and snow events typically occur during the winter months and can cause loss of life, property damage and tree damage.

Heavy Snow Storms

A winter storm can range from moderate snow to blizzard conditions. Blizzard conditions are considered blinding, wind-driven snow over 35 mph that lasts several days. A severe winter storm deposits four or more inches of snow during a 12-hour period or six inches of snow during a 24-hour period.

Ice Storms

An ice storm involves rain, which freezes upon impact. Ice coating at least one-fourth inch in thickness is heavy enough to damage trees, overhead wires and similar objects. Ice storms often produce widespread power outages.

Nor'easter

A Nor'easter is large weather system traveling from South to North passing along or near the seacoast. As the storm approaches New England and its intensity becomes increasingly apparent, the resulting counterclockwise cyclonic winds impact the coast and inland areas form a Northeasterly direction. The sustained winds may meet or exceed hurricane force, with larger bursts, and may exceed hurricane events by many hours (or days) in terms of duration[1].

Wildfire

Wildfire is defined as an uncontrolled and rapidly spreading fire. A forest fire is an uncontrolled fire in a woody area. They often occur during drought and when woody debris on the forest floor is readily available to fuel the fire. Grass fires are uncontrolled fires in grassy areas.

Earthquakes

Geologic events are often associated with California, but New England is considered a moderate risk earthquake zone. An earthquake is a rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric and phone lines, and often cause landslides, flash floods, fires, and avalanches. Larger earthquakes usually begin with slight tremors but rapidly take the form of one or more violent shocks, and end in vibrations of gradually diminishing force called aftershocks. The underground point of origin of an earthquake is called its focus; the point on the surface directly above the focus is the epicenter. The magnitude and intensity of an earthquake is determined by the use of scales such as the Richter scale[2] and Mercalli scale.

PROFILE OF PAST AND POTENTIAL HAZARDS

As discussed above the natural hazards that were identified for mitigation in this Plan include: flooding, hurricanes-high wind events, severe winter weather, wildfire and earthquakes. Some of the natural hazards could be included under more than one type of hazard. For example a hurricane could be considered a high wind event or a flooding event depending on the storm's consequences.

The hazard profiles below include: a description of the events included as part of the natural hazard, the geographic location of each natural hazard (if applicable), the extent of the natural hazard (e.g. magnitude or severity), probability, past occurrences, and community vulnerability.

[1] Definition of Nor'easter taken from NH State Natural Hazards Mitigation Plan October 2000 Edition.
[2] A copy of the Richter scale is displayed in Appendix E.

Past occurrences of natural hazards were mapped if possible (Map 2: Past and Future Hazards). Some of the natural hazards have not occurred within the Town of Stratham (within written memory), for these hazards the plan refers to a table of hazards that have occurred regionally and statewide (Table 3). Community vulnerability identifies the specific areas, general type of structures, specific structures, or general vulnerability of the Town of Stratham to each natural hazard.

The **extent** of a hazard will be described as Minimal, Moderate or Severe of there is no other appropriate scale t use or data on the extent is limited. These terms are defined as follows:

Minimal – local residents can handle the hazard event without help from outside sources.

Moderate - county or regional assistance is needed to survive and/or recover.

Severe – state or federal assistance is necessary to survive and/or recover.

Flooding

Description: Flooding events can include hurricanes, 100-year floods, 500-year floods, debris-impacted infrastructure, erosion, mudslides, rapid snow pack melt, and river ice jams.

Location: Stratham is vulnerable to flooding in several locations. Generally, the Town is at risk within the Flood Zones identified by FEMA on Flood Insurance Rate Maps (FIRM). Stratham has 2 major flood zones: A and AE, there is also a minor amount of X-500 (500-year floodplain). There are also several locally-identified areas susceptible to flooding that are not within these flood zones, these areas are displayed on Map 2: Past and Future Hazards.

Extent: Flooding in Stratham as **Minimal** to **Moderate**. Most of the flooding events can be handled by the town but state or federal assistance may be required to recover from the events (i.e. money for damage to infrastructure).

Probability: **HIGH**

Table 1: Probability of Flooding based on return interval

Flood Return Interval	Chance of Occurrence in Any Given Year
10-year	10%
50-year	2%
100-year	1%
500-year	0.2%

Past Occurrence: Flooding is a common hazard for the Town of Stratham. Several locations were identified as areas of chronic reoccurring flooding or high potential for future flooding. These areas are listed below. Larger flood events are listed in Table 3.

Community Vulnerability:

- Structures located in the flood zone
- Culverts

- Basements
- Erodable soils
- Locally-identified flood areas (Map 2: Past and Future Hazards)

Hurricane

Description: As described on page 10.

Location: Hurricane events are more potentially damaging with increasing proximity to the coast. For this *Plan*, high-wind events were considered to have an equal chance of affecting any part of the Town of Stratham.

Extent: Stratham is located within a Zone II hurricane-susceptible region (indicating a design wind speed of 160 mph)[3]. Between 1900 and 1996 2 hurricanes have made landfall in New Hampshire, a category 1 and a category 2. In Maine, 5 hurricanes have made landfall (all category 1). In Massachusetts, 6 hurricanes have made landfall (2 category 1, 2 category 2 and 2 category 3). From this information it can be extrapolated that East Kingston is a high risk to a hurricane event, with variable wind speeds between 74 – 130 mph (category 1-3).

Probability: **HIGH**. The State of New Hampshire's Natural Hazards Mitigation Plan rates Rockingham County with high likelihood of hurricane events.

Past Occurrence: Between 1635 and 1991, 10 hurricanes have impacted the State of New Hampshire. The worst of these occurred on September 21, 1938, with wind speeds of up to 186 mph in MA and 138mph elsewhere. Thirteen of 494 people killed by this storm were residents of New Hampshire. The Storm caused $12,337,643 in damages (1938 dollars), timber not included. The impact of these hurricanes on the Town of East Kingston is unclear. Local knowledge did not indicate that any lives were lost or that property damage was severe.

Community Vulnerability:

- Power lines,
- Shingled roofs,
- Chimneys, and
- Trees
- Mobile homes

Tornadoes

Description: As described on page 10.

Location: For this *Plan*, Tornado events were considered to have an equal chance of affecting any part of the Town of Stratham.

Extent: From 1950 to 1995 Rockingham County was subject to 9 recorded tornado events, these included 2 type F0 (Gale Tornado, 40-72 mph), 2 type F1 (Moderate Tornado, 73-112 mph), 4 type F2 (Significant Tornado, 113-157 mph) and 1 type F3 (Severe Tornado, 158-206 mph)[4]. Type 3 tornados can cause severe damage including tearing the roofs and

[3] "Understanding Your Risks, Identifying Hazards and Estimating Losses", FEMA, page
[4] The tornado project .com

walls from well-constructed homes, trees can be uprooted, trains over-turned, and cars lifted off the ground and thrown[5].

Probability: **HIGH**. The State of New Hampshire's Natural Hazards Mitigation Plan rates Rockingham County with high likelihood of tornado events

Past Occurrence: Rockingham County tornado history is as follows: Category F0 tornados occurred on Oct. 03, 1970 and June 09, 1978. Category F1 tornados occurred on July 31, 1954 and July 26, 1966. Category F2 tornados occurred on Aug. 21, 1951, June 19, 1957, July 02, 1961 and June 09, 1963. The category F3 tornado occurred on June 09, 1953.

Community Vulnerability:

- Power lines,
- Shingled roofs,
- Chimneys, and
- Trees
- Mobile homes

Severe Winter Weather

Description: There are three types of winter events**:** blizzards, ice storms and extreme cold. All of these events are a threat to the community with subzero temperatures from extreme wind chill and storms causing low visibility for commuters. Snow storms have been known to collapse buildings. Ice storms disrupt power and communication services. Extreme cold affects the elderly.

Location: Severe winter weather events have and equal chance of affecting any part of the Town of Stratham.

Extent: Large snow events in Southeastern New Hampshire can produce 30 inches of snow, or more. Portions of central New Hampshire recorded snowfalls of 98" during one slow moving storm in February of 1969. Ice storms occur with regularity in New England. Seven severe ice storms have been recorded that affected New Hampshire since 1929. These events caused disruption of transportation, loss of power and millions of dollars in damage.

Probability: **HIGH**. The State of New Hampshire's Natural Hazards Mitigation Plan rates Rockingham County with high likelihood of heavy snows and ice storms.

Past Occurrence: A list of past winter storm events is displayed below, in Table 3.

Community Vulnerability:

- Power lines
- Trees
- Elderly Populations

[5] "Understanding Your Risks, Identifying Hazards and Estimating Losses", FEMA, page

Wildfire

Description: Wildfires include grass fires and forest fires.

Location: The Committee identified no areas of Town as at-risk to wildfires (see Map 2: Past and Future Hazards).

Extent: The extent of wildfires in Stratham is **Minimal**. A wildfire in the Town of Stratham is unlikely, but if a crown fire were to occur it could be very damaging to structures abutting large wooded areas of Town.

Probability: **MODERATE**. The State of New Hampshire's Natural Hazards Mitigation Plan rates Rockingham County with moderate risk to wildfires.

Past Occurrence: There are no records of any sizable wildfire in the Town of Stratham

Community Vulnerability:

- Structures located near large open vegetated areas prone to lightning strike
- Vulnerability increases during drought events

Earthquake

Description: Seismic activity including landslides and other geologic hazards.

Location: An earthquake has an equal chance of affecting all areas in the Town of Stratham.

Extent: New England is particularly vulnerable to the injury of its inhabitants and structural damage because of our built environment. Few New England States currently include seismic design in their building codes. Massachusetts introduced earthquake design requirements into their building code in 1975 and Connecticut very recently did so. However, these specifications are for new buildings, or very significantly modified existing buildings only. Existing buildings, bridges, water supply lines, electrical power lines and facilities, etc. have rarely been designed for earthquake forces (New Hampshire has no such code specifications).

Probability: **MODERATE**. The State of New Hampshire's Natural Hazard Mitigation Plan ranks all of the Counties in the State with at moderate risk to earthquakes. The Town of Stratham's Peak Ground Acceleration (PGA) values range between 6.1 and 21.0[6]. These numbers are associated with how much an earthquake is felt and how much damage it may cause (Table 2).

[6] http://geohazards.cr.usgs.gov/eq/pubmaps/us.pga.050.map.gif

Table 2: Peak Ground acceleration (PGA) values for Stratham (information from State and Local Mitigation Planning, FEMA).

PGA	Chance of being exceeded in the next 50 years	Perceived Shaking	Potential Damage
6.1	10%	Moderate	Very Light
10.6	5%	Strong	Light
21.0	2%	Very Strong	Moderate

Past Occurrence: Large earthquakes have not affected the Town of Stratham within recent memory. A list of earthquakes that have affected the region is displayed in Table 3.

Community Vulnerability:

- Dams,
- Bridges,
- Brick Structures,
- Infrastructure,
- Water and Gas lines, and
- Secondary hazards such as fire, power outages, or hazardous material leak or spill.

Table 3: Past Hazard Events in Stratham, NH and Rockingham County

Hazard	Date	Location	Critical Facility or Area Impacted	Remarks/Description
Flood	March 11-21, 1936	Statewide	$133,000,000 in damage throughout New England, 77,000 homeless.	Double Flood; snowmelt/heavy rain.
Flood	September 21, 1938	Statewide	Unknown	Hurricane; stream stage similar to March 1936
Flood	July 1986 – August 10, 1986	Statewide	Unknown	**FEMA DR-771-NH**: Severe storms; heavy rain, tornadoes , flash flood, severe wind
Flood	August 7-11 1990	Statewide	Road Network	**FEMA DR-876-NH**: A series of storms with moderate to heavy rains; widespread flooding.
Flood	August 19, 1991	Statewide, Primarily Rockingham and Strafford Counties	Road Network	**FEMA DR-917-NH:** Hurricane Bob; effects felt statewide; counties to east hardest hit.
Flood	October 28, 1996	Rockingham County	Unknown - Typically structures and	North and west regions; severe storms.

Hazard	Date	Location	Critical Facility or Area Impacted	Remarks/Description
			infrastructure in the floodplain	
Flood	June – July 1998	Rockingham County	Heavy damage to secondary roads occurred	**FEMA DR-1231-NH:** A series of rainfall events
Hurricane	October 18,19 1778	Rockingham County	Unknown	40-75 mph winds
Hurricane	1804	Rockingham County	Unknown	
Hurricane	September 8, 1869	Rockingham County	Unknown	> 50 mph winds
Great Hurricane Of 1938	September 21, 1938	All of Southern New England, Including Rockingham County	2 billion board feet of timber destroyed; electric and telephone disrupted, structures damaged, flooding; statewide 1,363 families received assistance.	Max. wind speed of 186 mph in MA and 138mph max. elsewhere 13 of 494 dead in NH; $12,337,643 total storm losses (1938 dollars), timber not included.
Hurricane Carol	August 31, 1954	Southern New England, Including Rockingham County	Extensive tree and crop damage in state.	SAFFIR/SIMPSON HURRICANE SCALE[7] - Category 3, winds 111-130 mph
Hurricane Donna	September 12, 1960	Southern and Central NH, Including Rockingham county	Unknown	Category 3 Heavy Flooding
Hurricane Belle	August 10, 1976	Southern New England, Including Rockingham county	Unknown	Category 1, winds 74-95 mph Rain and flooding in NH
Hurricane Gloria	September 27, 1985	Southern New England, including Rockingham County	Unknown	Category 2, winds 96-110 mph >70 mph winds; minor wind damage and
Tropical Storm Floyd	September 16-18 1999	Statewide, Including Rockingham County	Unknown	
Ice Jam	Feb 29, 2000	Brentwood, NH Exeter River	Unknown	Discharge 570 cfs
Ice Jam	Mar 29, 1993	Epping, NH Lamprey River	Road flooding	
Tornado	May 21, 1814	Rockingham County	Unknown	F2[8]
Tornado	May 16, 1890	Rockingham County	Unknown	F2
Tornado	August 21, 1951	Rockingham County	Unknown	F2

[7] For a complete description of the Saffir/Simpson Hurricane Scale see Appendix C.
[8] For a complete description of the Fujita Tornado Damage Scale see Appendix D

Hazard	Date	Location	Critical Facility or Area Impacted	Remarks/Description
Tornado	June 9, 1953	Rockingham County	Unknown	F3
Tornado	June 19, 1957	Rockingham County	Unknown	F2
Tornado	July 2, 1961	Rockingham County	Unknown	F2
Tornado	June 9, 1963	Rockingham County	Unknown	F2
Downburst	July 6, 1999	Stratham, NH	Five fatalities and eleven injuries. Major tree damage, power outages	Microburst $2,498,974 in damages
Ice Storm	December 17-20 1929	NH	Telephone, telegraph and power disrupted.	
Ice Storm	December 29-30 1942	NH	Unknown- Typically damage to overhead wires and trees.	Glaze storm; severe intensity
Ice Storm	December 22 1969	Parts of NH	Power disruption	Many communities affected
Ice Storm	January 17, 1970	Parts of NH	Power disruption	Many communities affected
Ice Storm	January 8-25 1979	NH	Major disruption of Power and transportation	
Ice Storm	March 3-6 1991	Southern NH	Numerous power outages in southern NH	Numerous in Southern NH
Ice Storm	January 7, 1998	Rockingham County	Power and phone disrupted, communication tower collapsed.	$17,000,000 in damages to PSNH equipment.
Snowstorm	February 4-7 1920	New England	Disrupt transportation for weeks	Boston 37-50cm of sleet , ice and snow
Snowstorm	February 15, 1940	New England	Paralyzed New England	30cm of snow with high wind.
Snowstorm	February 14-17 1958	Southern NH	Unknown	20-33" of snow
Snowstorm	March 18-21 1958	South central NH	Unknown	22-24"of snow
Snowstorm	March 2-5 1950	Southern NH	Unknown	25"of snow
Snowstorm	January 18-20 1961	Southern NH	Unknown	Blizzard Conditions; 50cm of snow
Snowstorm	February 8-10 1969	Southeastern NH	Paralyzing snow	27"of snow and high winds
Snowstorm	February 22-28 1969	Central NH	Unknown	34-98"of snow; very slow moving
Snowstorm	February 5-7	Statewide	Trapped commuters on	Hurricane force winds;

Hazard	Date	Location	Critical Facility or Area Impacted	Remarks/Description
"Blizzard of'78"	1978		highways, businesses closed	25-33"of snow. People disregard warnings due to a series of missed forecasts
Snowstorm	April 5-7 1982	Southern NH	Unknown	Late season with thunderstorms and 18-22" of snow
Earthquake	November 18, 1929	Grand Banks Newfoundland	No damage	Richter Magnitude Scale: 7.2[9]
Earthquake	December 20, 1940	Ossipee	Ground Cracks and damage over a broad area	Richter Magnitude Scale: 5.5; Felt over 341 miles away.
Earthquake	December 24, 1940	Ossipee	Ground Cracks and damage over a broad area	Richter Magnitude Scale: 5.5; Felt over 550 KM away.
Earthquake	June 15, 1973	Quebec/NH border	Minor damage	Richter Magnitude Scale: 4.8
Earthquake	June 19, 1982	West of Laconia	Little damage	Richter Magnitude Scale: 4.5
Drought	1929-36	Statewide	Unknown	Regional
Drought	1939-44	Statewide	Unknown	Severe in southeast NH
Drought	1947-50	Statewide	Unknown	Moderate
Drought	1960-69	Statewide	Unknown	Longest recorded continuous period of below normal precipitation
Drought Warning	June 6, 1999	Most of State	Unknown	Governors office declaration; Palmer Drought Survey Index indicate "moderate drought" for most of state.

[9] For a complete description of the Richter Magnitude Scale see Appendix E.

CHAPTER IV – CRITICAL FACILITIES

The Critical Facilities List for the Town of Stratham has been identified by Stratham's Hazard Mitigation Committee. The Critical Facilities List has been broken up into four categories. The *first category* contains facilities needed for Emergency Response in the event of a disaster. The *second category* contains Non-Emergency Response Facilities that have been identified by the committee as non-essential. These are not required in an emergency response event, but are considered essential for the everyday operation of Stratham. The *third category* contains Facilities/Populations that the committee wishes to protect in the event of a disaster. The *fourth category* contains Potential Resources, which can provide services or supplies in the event of a disaster. Map 3: Critical Facilities at the end of this Chapter identifies the location of the facilities and the evacuation routes. A detailed description of critical facilities can be found in Table 4.

Table 4: Category 1 - Emergency Response Services and Facilities:

Critical Facility	Address	Comments
Stratham Fire Station	4 Winnicut Road	
Stratham Police Station	76 Portsmouth Ave.	
Stratham Town Hall/ EOC	10 Bunker Hill Drive	Shelter, Generator
Stratham Highway Garage	70 Bunker Hill Drive	Back up EOC
Hydrants	Throughout Town	See Map 2
Water Line	Throughout Town	See Map 2
Pump Houses	2 in Stratham	See map 2

Table 4: Category 2 - Non Emergency Response Facilities:

The Town has identified these facilities as non-emergency facilities; however, they are considered essential for the everyday operation of Stratham.

Critical Facility	Address	Comments
Radio/Cell Tower	Long Hill Rd.	
Post Office	College Road	
PSNH Substation	Grace Lane	
Industrial Park	Domain Drive	
5 Telephone Switching Stations	Throughout Town	See Map 2
Stratham Mobil	Portsmouth Ave	Gas Station
Irving	Portsmouth Ave	Gas Station
Shell Station	Portsmouth Ave	Gas Station
Gibbs	Portsmouth Ave	Gas Station
Stratham Village Market	Portsmouth Ave	Gas Station
Culverts	Throughout Town	See Map 2

Table 4: Category 3 - Facilities/Populations to Protect:

The third category contains people and facilities that need to be protected in event of a disaster.

Critical Facility	Address	Comments
Stratham Co-op Middle School	Academic Way	
Stratham Memorial School	39 Gifford Farm Rd.	Elem. School, ~700 students
Cornerstone Baptist Christian Academy	8 Winnicut Rd.	Private School
Stratham Hill Park	270 Portsmouth Ave.	Possible large summer population
NH Community Technical College	271 Portsmouth Ave.	
Discovery Center	89 Depot rd, Greenland	Located in Greenland and Stratham
Richie McFarland Center	Sandy Point Rd.	School for disabled students
Treasures Daycare	High Street	
Deb's Daycare	Pond View Drive	
Stratham Community Church	Emery Lane	Church/ Daycare/ Homeless Shelter
Stuart Farm	College Road	Fertilizer in bulk
Acorn School	Winnicut Road	Daycare, 50 kids
4 Pines daycare	Winnicut Road	May not be open
Timberland Daycare	200 Domain Drive	Daycare within Industrial Park
Vineyards' Elderly Housing	Academic Way	
Kids Stop	Stonybrook Drive	Daycare
SPCA	Portsmouth Ave.	Animal Shelter
Radiation Technologies	Portsmouth Ave.	
Stratham Birthing Center	Frying Pan Lane	Midwifery
Scammans Home and Garden	College Way	Propane/ Fertilizers
Stratham Historical Society	2 Winnicut Rd.	

Table 4: Category 4 - Potential Resources:

This category contains facilities that provide potential resources for services or supplies in the event of a natural disaster.

Critical Facility	Address	Comments
Stratham Town Hall	10 Bunker Hill Drive	Shelter
Dr. Zeff's	College Way	Doctor
Shaw's	Portsmouth Ave	Grocery Store
Scammans Home and Garden	College way	Hardware
Market Basket	Portsmouth Ave	Grocery Store
Rite Aid	Portsmouth Ave	Pharmacy
CVS (new)	Portsmouth Ave	Pharmacy

CHAPTER V – POTENTIAL HAZARD AFFECTS

IDENTIFYING VULNERABLE FACILITIES

It is important to determine what the most vulnerable areas of the Town of Stratham are and to estimate their potential loss. The first step is to identify the areas most likely to be damaged in a hazard event. To do this, the locations of buildings and other structures were compared to the location of potential hazard areas identified by the Hazard Mitigation Committee using GIS (Geographic Information Systems). Vulnerable buildings were identified by comparing their location to possible hazard events. For example, all of the structures within the 100-year and 500-year floodplains were identified and used in conducting the potential loss analysis for flooding.

CALCULATING THE POTENTIAL LOSS

The next step in completing the loss estimation involved assessing the level of damage from a hazard event as a percentage of the buildings' assessed value. The assessed value for every parcel in Stratham was provided for the purpose of calculating damage estimates. The damage estimates are divided into two categories based on hazard types: hazards that are location specific (e.g. flooding), and hazards that could affect all areas of Stratham equally. Damage estimates from hazards that could affect all of Stratham equally are much rougher estimates, based on percentages of the total assessed value of Stratham. Damage estimates from hazard with a specific location are derived from the assessed values of the parcels with the hazard area. Stratham's Parcels database was used in conjunction with building footprints, elevation data, and 2005 digital aerial images of the Town; to determine which buildings were potentially in danger from each of the location specific hazard areas. The GIS was used to determine which parcels were affected by which potential hazard areas.

After identifying the parcels and buildings that are at risk, the next step was to calculate a damage estimate for each potential hazard area. FEMA provides a model for estimating damage for various flooding events, so the flood damage estimates provide information including: damage estimates for structures, contents of buildings, functional downtime and replacement time. For wildfire and urban conflagration, damage estimates were determined for the buildings in the potential hazard areas as well as estimates of the building content value, based on the same estimates from the flood model. The following discussion summarizes the potential loss estimates due to natural hazard events.

Flooding

Structures in the flood zone were identified by overlaying digital versions of FEMA's FIRM maps on digital aerial photography of the town of Stratham. Because of the scale and resolution of the FIRM maps and imagery this is only an approximation of the total structures located within the 100-year floodplain (A-zone and AE-zone). The Federal Emergency Management Agency (FEMA) has developed a process to calculate potential loss for structures during flood. The potential loss for residential and non-residential structures was calculated separately. The value of residential structures was determined by dividing the number of residential unit in the Town by the total assessed value of the residences (2005 Stratham Town Report). Structures identified were assumed to be residencies. The average assed value of a residential structure was $211,188

The costs for repairing or replacing bridges, railroads, power lines, telephone lines, and contents of structures are not included in this estimate. In addition, the figures used were based on buildings which are one or two stories high with basements. The percentage of structural damage and contents damage that could be expected for each flood depth is shown in Table 5, along with estimates of functional downtime (how long a business/residence would be down before relocating) and displacement time (how long a business/residence would be displaced from its flooded location).

The following calculation is based on **eight-foot flooding** and assumes that, on average, one or two story buildings with basements receive 49% damage (Understanding Your Risks, Identifying Hazards and Estimating Losses, FEMA page 4-13):

Potential Structure Damage: 49%
Approximately 8 structures in the AE Zone assessed at $1,689,504 = $827,857 potential damage
Approximately 9 structures in the A Zone assessed at $1,900,692 = $931,339 potential damage

The following calculation is based on **four-foot flooding** and assumes that, on average, one or two story buildings with basements receive 28% damage:

Potential Structure Damage: 28%
Approximately 8 structures in the AE Zone assessed at $1,689,504 = $473,061 potential damage
Approximately 9 structures in the A Zone assessed at $1,900,692 = $532,194 potential damage

The following calculation is based on **two-foot flooding** and assumes that, on average, one or two story buildings with basements receive 20% damage (Understanding Your Risks, Identifying Hazards and Estimating Losses, FEMA page 4-13):

Potential Structure Damage: 20%
Approximately 8 structures in the AE Zone assessed at $1,689,504 = $337,901 potential damage
Approximately 9 structures in the A Zone assessed at $1,900,692 = $380,138 potential damage

Table 5: Percentages of structural and content damage, based on the assessed value of a flooded parcel. Also shows the functional downtime and displacement time for each flood event.

Flood Depth	One-foot	Two-foot	Four-foot
% Structural Damage: Buildings	15%	20%	28%
% Structural Damage: Mobile Homes	44%	63%	78%
% Contents Damage: Buildings	22.5%	30%	42%
% Contents Damage: Mobile Homes	30%	90%	90%
Flood Functional Downtime: Buildings	15 days	20 days	28 days
Flood Functional Downtime: Mobile Homes	30 days	30 days	30 days
Flood Displacement Time: Buildings	70 days	110 days	174 days
Flood Displacement Time: Mobile Homes	302 days	365 days	365 days

~Dam Breach and Failure

Dam breach and failure could impact Stratham through flooding. Potential losses will depend on the extent of the breach and would mostly affect Roadway infrastructure.

Hurricane/ High Wind Events

~Hurricane

Hurricanes do affect the Northeast coast periodically. Since 1900, 2 hurricanes have made landfall in the State of New Hampshire. Due to the coastal location of the Town of Stratham, hurricanes and storm surges present a real hazard to the community. Even degraded hurricanes or tropical storms could still cause significant damage to the structures and infrastructure of the Town of Stratham. The assessed value of all residential and commercial structures in the Town of Stratham, including exempt structures such as schools and churches, and utilities is $697,882,418 (Assuming 1% to 5% damage, a hurricane could result in $6,978,824 to $34,894,120 of structure damage.

~Tornado

Tornadoes are relatively uncommon natural hazards in New Hampshire. On average, about six touch down each year. Damage largely depends on where the tornado strikes. If is strikes an inhabited area, the impact could be severe. The assessed value of all residential and commercial structures in the Town of Stratham including exempt structures such as schools and churches, and utilities is $697,882,418 (Assuming 1% to 5% damage, a Tornado could result in $6,978,824 to $34,894,120 of structure damage.

~Severe Lightning

The amount of damage caused by lightning will vary according to the type of structure hit and the type of contents inside. There is now record of monetary damages inflicted in the Town of Stratham from lightning strikes.

Severe Winter Weather

~Heavy Snowstorms

Heavy snowstorms typically occur during January and February. New England usually experiences at least one or two heavy snow storms with varying degrees of severity each year. Power outages, extreme cold and impacts to infrastructure are all effects of winter storms that have been felt in Stratham in the past. All of these impacts are a risk to the community, including isolation, especially of the elderly, and increased traffic accidents. Damage caused as a result of this type of hazard varies according to wind velocity, snow accumulation and duration. Heavy snowstorms in Stratham could be expected to cause damage ranging from a few thousand dollars to several million, depending on the severity of the storm.

~Ice Storms

Ice storms often cause widespread power outages by downing power lines, making power lines at risk in Stratham. They can also cause severe damage to trees. In 1998, an ice storm inflicted $12,466,202 worth of damage to New Hampshire as a whole. Ice storms in Stratham could be expected to cause damage ranging from a few thousand dollars to several million, depending on the severity of the storm.

Wildfire

Wildfires have not damaged homes in Stratham in recent memory. Due to the ability and coordination of the emergency response services in Stratham and the surrounding Towns, a catastrophic wildfire is highly unlikely. In an extreme drought year the potential would increase for a severe fire that could damage homes. If a fire were to occur in a drought year it would still be rapidly contained but still has the potential to destroy a number of homes. Single family homes of wood-frame construction would be at the highest risk. Damage estimates would be the number of homes destroyed multiplied by the average assessed value, of the residential structures which is $211,188.

Earthquakes

Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric and phone lines and are often associated with landslides and flash floods. Four earthquakes in New Hampshire between 1924-1989 had a magnitude of 4.2 or more. Two of these occurred in Ossipee, one west of Laconia, and one near the Quebec border. If an earthquake were to impact the Town of Stratham underground lines would be susceptible. In addition, buildings that are not built to a high seismic design level would be susceptible to structural damage. The assessed value of all residential and commercial structures in Stratham, including exempt structures such as schools and churches, and utilities is $697,882,418 Based on Table 9 below, an earthquake could cause a range of damage depending on the construction and materials used to build the structures. Making the assumption that all of the structures in Stratham are single family homes built Pre-code, and wood frame construction, an earthquake could result in $2,791,530 of damage for a 0.07 PGA earthquake to $23,030,120 of damage for a 0.20 PGA earthquake.

Table 6: Earthquake Damage and Loss of Function Table. Building Damage and Functional Loss are based on the type of Structure and the PGA (g). Two PGA (Peak Ground Acceleration) were chosen for this Table, 0.07 and 0.20 which represent a low and high example of potential earthquake in Stratham, NH.

		Wood Frame Construction				**Reinforced Masonry**				**Unreinforced Masonry**	
PGA (g)		High	Mod.	Low	Precode	High	Mod.	Low	Precode	Low	Precode
0.07	**Single Family**	**0.1**	**0.2**	**0.3**	**0.4**	**0.1**	**0.2**	**0.4**	**0.5**	**0.6**	**1.0**
0.20		**1.3**	**1.7**	**2.8**	**3.3**	**1.3**	**2.5**	**6.1**	**9.0**	**6.5**	**9.4**
0.07		0	0	1	1	0	1	2	7	6	12
0.20		2	3	9	15	4	16	58	106	64	114
0.07	**Apartment**	**0.1**	**0.2**	**0.3**	**0.3**	**0.1**	**0.2**	**0.4**	**0.5**	**0.6**	**0.8**
0.20		**1.5**	**1.9**	**3.0**	**3.2**	**1.5**	**2.6**	**5.4**	**6.9**	**5.5**	**7.5**
0.07		0	0	1	1	0	1	2	8	7	13
0.20		2	3	10	16	4	19	72	129	76	147
		Steel Frame (Braced)				**Reinforced Masonry**				**Unreinforced Masonry**	
		High	Mod.	Low	Precode	High	Mod.	Low	Precode	Low	Precode
0.7	**Retail Trade**	**0.2**	**0.3**	**0.4**	**0.5**	**0.1**	**0.2**	**0.4**	**0.6**	**0.7**	**1.0**
0.20		**2.4**	**2.8**	**3.8**	**5.6**	**1.5**	**2.7**	**5.9**	**8.3**	**6.1**	**8.7**
0.07		0	0	0	0	0	0	0	1	1	2
0.20		2	3	6	12	1	3	12	22	14	24
		Pre-Cast Concrete Tilt-up				**Light Metal Building**					
		High	Mod.	Low	Precode	High	Mod.	Low	Precode		
0.07	**Wholesale Trade**	**0.2**	**0.4**	**0.5**	**0.6**	**0.4**	**0.7**	**1.0**	**1.6**		
0.20		**2.6**	**4.1**	**8.3**	**10.8**	**3.8**	**5.4**	**10.3**	**14.8**		
0.07		0	1	1	2	1	2	3	6		
0.20		4	8	22	36	6	13	28	43		
0.07	**Office Building**	**0.2**	**0.3**	**0.4**	**0.6**	**0.2**	**0.3**	**0.4**	**0.5**		
0.20		**2.0**	**2.9**	**5.6**	**8.1**	**2.5**	**2.9**	**3.7**	**5.2**		
0.07		0	0	0	1	0	0	0	1		
0.20		1	3	11	21	2	3	5	11		
		Pre-cast Concrete Tilt-up									
		High	Mod.	Low	Precode						
0.07	**Light Industrial**	**0.1**	**0.4**	**0.4**	**0.5**						
0.20		**2.6**	**3.9**	**6.0**	**7.4**						
0.07		0	1	1	2						
0.20		4	7	21	34						

2.0	Building Damage = % of damage based on value
2	Loss of Function (# of Days)
	No Information

High, Moderate, Low and Precode refer to general seismic design level

CHAPTER VI – EXISTING HAZARD MITIGATION ACTIONS

Table 7: Existing Hazard Mitigation Strategies

Existing Protection	Protections Provided and Additional Comments
Wetland Ordinance	Wetland setback, prevents flooding.
Flood Ordinance/NFIP	Member of NFIP since 1989. 11 Current policies totaling $2,696,000.
EOP	Updated as of 2003. Includes hazardous materials plan dated 1989.
Police Department	10 full time, 6 part-time
Fire department	65 volunteers, 25 of which are EMT's
Public works	4 full-time, 3 part-time.
Shoreland Protection Act	Protection for areas within 150 feet from Great Bay and 4th Order streams.
(Stratham) Office of Emergency Management	25 volunteers
Land Use Department	1 Planner, 1 Building Inspector/Code Enforcement Officer, 1 Health Officer and 1 Secretary.

CHAPTER VII – POTENTIAL MITIGATION ACTIONS

POTENTIAL MITIGATION STRATEGIES

The Action Plan was developed by analyzing the existing Town programs, the proposed improvements and changes to these programs. Additional programs were also identified as potential mitigation strategies. These potential mitigation strategies were ranked in five categories according to how they accomplished each item:

- Prevention
- Property Protection
- Structural Protection
- Emergency Services
- Public Information and Involvement

Table 8: Potential Hazard Mitigation Strategies

Mitigation Strategies or Action	Hazard(s) Mitigated
Mobile Digital Radios	Flooding, Earthquake, Hurricane, Tornado, Severe Winter Weather, Wildfire
4 Digital Base Stations (Highway, FD, EOC, Town Hall)	Flooding, Earthquake, Hurricane, Tornado, Severe Winter Weather, Wildfire
Variable Message Board at Fire House	Flooding, Earthquake, Hurricane, Tornado, Severe Winter Weather, Wildfire
Broadband Internet for the EOC	Flooding, Earthquake, Hurricane, Tornado, Severe Winter Weather, Wildfire
Establish Citizen Corps. Program	Flooding, Earthquake, Hurricane, Tornado, Severe Winter Weather, Wildfire
Establish EOC at the new Fire Station	Flooding, Earthquake, Hurricane, Tornado, Severe Winter Weather, Wildfire
Generator for Elementary School (at a minimum for the critical areas: kitchen Gym…)	Flooding, Earthquake, Hurricane, Tornado, Severe Winter Weather, Wildfire
Water Line for Police Station	Flooding, Earthquake, Hurricane, Tornado, Severe Winter Weather, Wildfire
Additional phone lines for EOC	Flooding, Earthquake, Hurricane, Tornado, Severe Winter Weather, Wildfire
Additional Road Barricades, Signage, and Cones	Flooding, Earthquake, Hurricane, Tornado, Severe Winter Weather, Wildfire
GIS Digitization of Structures on Tax Maps	Flooding, Earthquake, Hurricane, Tornado, Severe Winter Weather, Wildfire

Mitigation Strategies or Action	Hazard(s) Mitigated
Reflective Vests and Coats	All Hazards requiring Emergency Response
Cable Access Station with Emergency Message Scrolling System	Flooding, Earthquake, Hurricane, Tornado, Severe Winter Weather, Wildfire
Educate residents about being prepared via Library Website and Library Newsletter	Flooding, Earthquake, Hurricane, Tornado, Severe Winter Weather, Wildfire
Work with SAU 16 to Formalize Use of Coop Middle School as an Official Shelter	All Hazards requiring sheltering residents
Educate Residents about importance of self-identifying critical needs residents	Flooding, Earthquake, Hurricane, Tornado, Severe Winter Weather, Wildfire
Cots and Blankets for Shelters	All Hazards requiring sheltering residents
Improve communications with a Repeater on Stratham Hill Park	All Hazards requiring Emergency Response
Update EOP to be NIMS Compliant	All Hazards requiring Emergency Response
Reverse 911 system	Flooding, Hurricane, Severe Winter Weather, Wildfire
Website Development/ Public Education	Flooding, Earthquake, Hurricane, Tornado, Severe Winter Weather, Wildfire
Utility Crew Cab Pickup for FD/EMD	All Hazards requiring Emergency Response
Address Flooding Infrastructure Issues (see Below)	Flooding

Below are 10 areas of local flooding problems. These areas should be targets of potential mitigation work for flooding.

Guinea Road; on the bottom of the hill as it starts going back up the hill by house number 17, there is a small man made pond that has been there for years with drainage going across the street and to do with the new housing developments run off and drainage during different times of the year the culvert pipe cannot handle the amount of water and the road to floods which causes washouts on both sides of the road. Over the past twenty years, we have had to close the road three different times for about 4-5 hours before the water went down in the area. In the past ten years, we have had the road washout and six feet of water over the road that we had to rebuild with FEMA's help.

Stratham Heights Road; between 120-140, this area is on a hill and has a lot of run-off. In the past years, we have had half the road washout which we had to re-gravel and repave. This road was put in a long time ago and cannot handle the amount of water run-off that it receives. The swales need to be dug out and hundreds of feet of pipe and a bunch of catch basins need to be installed so we can prevent this area from washing out again. The amount of money needed to fix this problem area is approximately $170,000 - $200,000.

28 Union Road, there is a brook that goes under the road and the existing culvert cannot handle the amount of water anymore. When we get a lot of heavy rain the stream rises to the edge of the road and then across the road then we need to close the road down to traffic.

Barkers Pond on Union Road; Development has caused increases in the flow of water into this area which causes it to over flow the earth dam at least two times a year we have to close the road down to one lane traffic.

98 Union Road, Existing culvert cannot handle the current run-off and causing flooding 2-3 times a year.

126 and 158 Union Road, cross culvert that drains a large swamp area that has 4-5 developments around it that drain into the swamp. At times with heavy rain the single 26" pipe cannot handle the amount of water flow, it then rises until it goes over the roadway. In the next 2-4 years we are going to have to replace all these pipes with larger and double pipes to handle the flow of water.

Willowbrook and Lovell Road pond; we have two 24" culvert out flow pipes from the pond. The water runs thru here year round even in drought conditions. I think there is about two million gallons a day that run thru this area, and every once in a while we have to close the road down to thru traffic.

22 Frying Pan Lane; a small stream that runs across the road, through a 24" culvert pipe, and at times the water will get 6-8 inches across the road. This road to occasionally has to be closed to through traffic.

Frying Pan Lane, between the horse farm and the Laws farm; a culvert that cannot handle that water either and sometimes runs across the road, in fact today, 10-12-2006 the 2 ½ inches of rain last night cause this area to flow across the road for about 1-1 ½ hours or so to do with the changes upstream and new developments.

Squamscott Road there are two large culverts that drain into the tidal river and during extreme high tides and bad storms I have seen as much as 2-3 feet of water over the roadway.

CHAPTER VIII – PRIORITIZATION OF MITIGATION ACTIONS

The goal of each strategy or action is reduction or prevention of damage from a hazard event. In order to determine their effectiveness in accomplishing this goal, a set of criteria was applied to each proposed strategy. A set of questions developed by the Committee that included the STAPLEE method was developed to rank the proposed mitigation actions. The STAPLEE method analyzes the Social, Technical, Administrative, Political, Legal, Economic and Environmental aspects of a project and is commonly used by public administration officials and planners for making planning decisions. The following questions were asked about the proposed mitigation strategies identified in Table 8:

- Does it reduce disaster damage?
- Does it contribute to other goals?
- Does it benefit the environment?
- Does it meet regulations?
- Will historic structures be saved or protected?
- Does it help achieve other community goals?
- Could it be implemented quickly?

STAPLEE criteria:

- **Social**: Is the proposed strategy socially acceptable to the community? Are there equity issues involved that would mean that one segment of the community is treated unfairly?
- **Technical**: Will the proposed strategy work? Will it create more problems than it solves?
- **Administrative**: Can the community implement the strategy? Is there someone to coordinate and lead the effort?
- **Political**: Is the strategy politically acceptable? Is there public support both to implement and to maintain the project?
- **Legal**: Is the community authorized to implement the proposed strategy? Is there a clear legal basis or precedent for this activity?
- **Economic**: What are the costs and benefits of this strategy? Does the cost seem reasonable for the size of the problem and the likely benefits?
- **Environmental**: How will the strategy impact the environment? Will the strategy need environmental regulatory approvals?

Each proposed mitigation strategy was evaluated using the above criteria and assigned a score (Good = 3, Average = 2, Poor = 1) based on the above criteria. An evaluation chart with total scores for each strategy can be found in the collection of individual tables under Table9.

Table 9.1: Digital Radios

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	1
Does it contribute to other goals?	3
Does it benefit the environment?	2
Does it meet regulations?	3
Will historic structures be saved or protected?	2
Does it help achieve other community goals?	3
Could it be implemented quickly?	2
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	2
E: Are other Environmental approvals required?	3
Score	**36**

Table 9.2: 4 Base Stations

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	1
Does it contribute to other goals?	3
Does it benefit the environment?	2
Does it meet regulations?	3
Will historic structures be saved or protected?	2
Does it help achieve other community goals?	3
Could it be implemented quickly?	2
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	2
E: Are other Environmental approvals required?	3
Score	**36**

Table 9.3: Sign at Fire House

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	1
Does it contribute to other goals?	3
Does it benefit the environment?	2
Does it meet regulations?	3
Will historic structures be saved or protected?	2
Does it help achieve other community goals?	3
Could it be implemented quickly?	2
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	2
E: Are other Environmental approvals required?	3
Score	**36**

Table 9.4: Broadband Internet for EOC

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	3
Does it meet regulations?	3
Will historic structures be saved or protected?	2
Does it help achieve other community goals?	3
Could it be implemented quickly?	3
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	2
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	3
E: Are other Environmental approvals required?	3
Score	**40**

Table 9.5: Establish Citizen Corps Program

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	2
Does it contribute to other goals?	3
Does it benefit the environment?	3
Does it meet regulations?	3
Will historic structures be saved or protected?	2
Does it help achieve other community goals?	2
Could it be implemented quickly?	1
S: Is it Socially acceptable?	2
T: Is it Technically feasible and potentially successful?	2
A: Is it Administratively workable?	2
P: Is it Politically acceptable?	2
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	3
E: Are other Environmental approvals required?	3
Score	**33**

Table 9.6: Fire Station/EOC

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	3
Does it meet regulations?	3
Will historic structures be saved or protected?	3
Does it help achieve other community goals?	3
Could it be implemented quickly?	2
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	3
E: Are other Environmental approvals required?	3
Score	**41**

Table 9.7: Generator for Elementary School

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	2
Does it meet regulations?	2
Will historic structures be saved or protected?	1
Does it help achieve other community goals?	3
Could it be implemented quickly?	2
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	2
P: Is it Politically acceptable?	2
L: Is there Legal authority to implement?	1
E: Is it Economically beneficial?	3
E: Are other Environmental approvals required?	2
Score	**32**

Table 9.8: Water line for Police Station

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	3
Does it meet regulations?	3
Will historic structures be saved or protected?	3
Does it help achieve other community goals?	3
Could it be implemented quickly?	1
S: Is it Socially acceptable?	2
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	2
P: Is it Politically acceptable?	2
L: Is there Legal authority to implement?	1
E: Is it Economically beneficial?	2
E: Are other Environmental approvals required?	2
Score	**33**

Table 9.9: Additianal phone lines for EOC

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	3
Does it meet regulations?	3
Will historic structures be saved or protected?	2
Does it help achieve other community goals?	3
Could it be implemented quickly?	3
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	2
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	3
E: Are other Environmental approvals required?	3
Score	**40**

Table 9.10: Road Barricades, Signage, and Cones

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	3
Does it meet regulations?	3
Will historic structures be saved or protected?	2
Does it help achieve other community goals?	3
Could it be implemented quickly?	3
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	3
E: Are other Environmental approvals required?	3
Score	**41**

Table 9.11: GIS Digitization of Structures on Tax Maps

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	3
Does it meet regulations?	3
Will historic structures be saved or protected?	3
Does it help achieve other community goals?	3
Could it be implemented quickly?	2
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	2
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	3
E: Are other Environmental approvals required?	3
Score	**40**

Table 9.12: Reflective Vests and Coats

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	1
Does it meet regulations?	3
Will historic structures be saved or protected?	1
Does it help achieve other community goals?	3
Could it be implemented quickly?	3
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	3
E: Are other Environmental approvals required?	3
Score	**38**

Table 9.13: Cable Access with Emergency Message Scrolling System

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	3
Does it meet regulations?	3
Will historic structures be saved or protected?	2
Does it help achieve other community goals?	3
Could it be implemented quickly?	1
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	2
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	2
E: Is it Economically beneficial?	3
E: Are other Environmental approvals required?	3
Score	**37**

Table 9.14: Educate residents about being prepared via Library Website and Library Newsletter

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	3
Does it meet regulations?	3
Will historic structures be saved or protected?	2
Does it help achieve other community goals?	3
Could it be implemented quickly?	3
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	2
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	3
E: Are other Environmental approvals required?	3
Score	**40**

Table 9.15: Work with SAU 16 to Formalize Use of Coop Middle School as an Official Shelter

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	2
Does it contribute to other goals?	2
Does it benefit the environment?	1
Does it meet regulations?	3
Will historic structures be saved or protected?	1
Does it help achieve other community goals?	3
Could it be implemented quickly?	2
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	2
P: Is it Politically acceptable?	2
L: Is there Legal authority to implement?	1
E: Is it Economically beneficial?	2
E: Are other Environmental approvals required?	3
Score	**30**

Table 9.16: Educate Residents about importance of self-identifying critical needs residents

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	1
Does it meet regulations?	3
Will historic structures be saved or protected?	1
Does it help achieve other community goals?	3
Could it be implemented quickly?	2
S: Is it Socially acceptable?	1
T: Is it Technically feasible and potentially successful?	2
A: Is it Administratively workable?	2
P: Is it Politically acceptable?	1
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	2
E: Are other Environmental approvals required?	3
Score	**30**

Table 9.17: Cots and Blankets for Shelters

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	2
Does it meet regulations?	3
Will historic structures be saved or protected?	1
Does it help achieve other community goals?	3
Could it be implemented quickly?	3
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	2
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	3
E: Are other Environmental approvals required?	3
Score	**38**

Table 9.18: Improve communications with a Repeater on Stratham Hill Park

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	3
Does it meet regulations?	3
Will historic structures be saved or protected?	3
Does it help achieve other community goals?	3
Could it be implemented quickly?	2
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	2
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	3
E: Are other Environmental approvals required?	3
Score	**40**

Table 9.19: Update EOP to be NIMS Compliant

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	3
Does it meet regulations?	3
Will historic structures be saved or protected?	3
Does it help achieve other community goals?	3
Could it be implemented quickly?	2
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	2
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	3
E: Are other Environmental approvals required?	3
Score	**40**

Table 9.20: Reverse 911 System

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	3
Does it meet regulations?	3
Will historic structures be saved or protected?	3
Does it help achieve other community goals?	3
Could it be implemented quickly?	2
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	3
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	2
E: Are other Environmental approvals required?	3
Score	**40**

Table 9.21: Utility Crew Cab Pickup for FD/EMD

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	2
Does it contribute to other goals?	2
Does it benefit the environment?	1
Does it meet regulations?	2
Will historic structures be saved or protected?	2
Does it help achieve other community goals?	3
Could it be implemented quickly?	2
S: Is it Socially acceptable?	2
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	2
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	2
E: Are other Environmental approvals required?	3
Score	**32**

Table 9.22: Flooding: **Guinea Road**

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	2
Does it meet regulations?	3
Will historic structures be saved or protected?	2
Does it help achieve other community goals?	3
Could it be implemented quickly?	2
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	2
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	2
E: Are other Environmental approvals required?	3
Score	**38**

Table 9.23: Flooding: **Stratham Heights Road**

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	2
Does it meet regulations?	3
Will historic structures be saved or protected?	2
Does it help achieve other community goals?	3
Could it be implemented quickly?	2
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	2
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	2
E: Are other Environmental approvals required?	3
Score	**38**

Table 9.24: Flooding: **28 Union Road**

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	2
Does it meet regulations?	3
Will historic structures be saved or protected?	2
Does it help achieve other community goals?	3
Could it be implemented quickly?	2
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	2
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	2
E: Are other Environmental approvals required?	3
Score	**38**

Table 9.25: Flooding: **Barkers Pond on Union Road**

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	2
Does it contribute to other goals?	2
Does it benefit the environment?	1
Does it meet regulations?	2
Will historic structures be saved or protected?	2
Does it help achieve other community goals?	3
Could it be implemented quickly?	2
S: Is it Socially acceptable?	2
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	2
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	2
E: Are other Environmental approvals required?	3
Score	**32**

Table 9.26: Flooding: **98 Union Road**

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	2
Does it meet regulations?	3
Will historic structures be saved or protected?	2
Does it help achieve other community goals?	3
Could it be implemented quickly?	2
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	2
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	2
E: Are other Environmental approvals required?	3
Score	**38**

Table 9.27: Flooding: **126 and 158 Union Road**

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	2
Does it meet regulations?	3
Will historic structures be saved or protected?	2
Does it help achieve other community goals?	3
Could it be implemented quickly?	2
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	2
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	2
E: Are other Environmental approvals required?	3
Score	**38**

Table 9.28: Flooding: **Willowbrook and Lovell Road pond**

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	2
Does it meet regulations?	3
Will historic structures be saved or protected?	2
Does it help achieve other community goals?	3
Could it be implemented quickly?	2
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	2
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	2
E: Are other Environmental approvals required?	3
Score	**38**

Table 9.29: Flooding: **22 Frying Pan Lane**

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	2
Does it contribute to other goals?	2
Does it benefit the environment?	1
Does it meet regulations?	2
Will historic structures be saved or protected?	2
Does it help achieve other community goals?	3
Could it be implemented quickly?	2
S: Is it Socially acceptable?	2
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	2
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	2
E: Are other Environmental approvals required?	3
Score	**32**

Table 9.30: Flooding: **Frying Pan Lane**

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	2
Does it meet regulations?	3
Will historic structures be saved or protected?	2
Does it help achieve other community goals?	3
Could it be implemented quickly?	2
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	2
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	2
E: Are other Environmental approvals required?	3
Score	**38**

Table 9.31: Flooding: **Squamscott Road**

Criteria	Evaluation Rating (1-3)
Does it reduce disaster damage?	3
Does it contribute to other goals?	3
Does it benefit the environment?	2
Does it meet regulations?	3
Will historic structures be saved or protected?	2
Does it help achieve other community goals?	3
Could it be implemented quickly?	2
S: Is it Socially acceptable?	3
T: Is it Technically feasible and potentially successful?	3
A: Is it Administratively workable?	3
P: Is it Politically acceptable?	2
L: Is there Legal authority to implement?	3
E: Is it Economically beneficial?	2
E: Are other Environmental approvals required?	3
Score	**38**

CHAPTER IX – ACTION PLAN

This step involves developing an action plan (table 10) that outlines who is responsible for implementing each of the prioritized strategies determined in the previous step, as well as when and how the actions will be implemented. The following questions were asked to develop an implementation schedule for the identified priority mitigation strategies:

WHO? Who will lead the implementation efforts? Who will put together funding requests and applications?

HOW? How will the community fund these projects? How will the community implement these projects? What resources will be needed to implement these projects?

WHEN? When will these actions be implemented, and in what order?

Table 10: Action Plan for proposed mitigation actions

Score	Project	Responsibility/ Oversight	Funding/ Support	Estimated Cost	Timeframe
41	Fire Station/EOC	Fire Chief	Local/ Grants	$4.2million	2007
41	Water-filled Road Barricades, signage and Cones	Highway	Local/ Grants	$15,000	2007
40	Additional Phone Lines for EOC	EMD	RERP	$7,200	2010
40	GIS Digitization of Structures on Tax Maps	Town Planner	Local/ Grants	$5,000	2007
40	Broadband Internet for EOC	EMD	Local/ Grants	$1,200/ year	2008
40	Reverse 911	EMD	Local/ Grants	Unknown when draft was submitted	2008
40	Library Website and Newsletter for Emergency Education	Library Director/ EMD	Local/ Grants	$1,000	Ongoing
40	Stratham Hill Repeater	PD	Local/ Grants	$40,000	2008
40	Update EOP to be NIMS compliant	EMD	Local/ Grants	$7,000	2008

Score	Project	Responsibility/ Oversight	Funding/ Support	Estimated Cost	Timeframe
38	Reflective Vests and Coats	Police Chief	Local/ Grants	$3,000/ 50 vests	2007
38	Cots and Blankets	EMD	Local/ Grants	$5,000	2008
38	Flooding: **Guinea Road**	EMD / Highway	Local/ Grants	Unknown	2008
38	Flooding: **Stratham Heights Road**	EMD / Highway	Local/ Grants	$200,000	2008
38	Flooding: **28 Union Road**	EMD / Highway	Local/ Grants	Unknown	2008
38	Flooding: **Barkers Pond on Union Road**;	EMD / Highway	Local/ Grants	Unknown	2008
38	Flooding: **98 Union Road**	EMD / Highway	Local/ Grants	Unknown	2008
38	Flooding: **126 and 158 Union Road**	EMD / Highway	Local/ Grants	Unknown	2008
38	Flooding: **Willowbrook and Lovell Road pond**	EMD / Highway	Local/ Grants	Unknown	2008
38	Flooding: **22 Frying Pan Lane**	EMD / Highway	Local/ Grants	Unknown	2008
38	Flooding: **Frying Pan Lane**	EMD / Highway	Local/ Grants	Unknown	2008
38	Flooding: **Squamscott Road**	EMD / Highway	Local/ Grants	Unknown	2008
37	Cable Access Station with Emergency Message Scroll	EMD	Local/ Grants	$100,000	2009
36	Digital Radios	Highway	Local/ Grants	$70,000	2007
36	4 Base Stations	Fire Chief	Grants	$80,000	2010
36	Sign at Fire Station	EMD	Local/ Grants	$10,000	2007
33	Establish Citizen Core Program	EMD	State	$6,000	2007
33	Water line for Police Station	Public Works	Local/ Grants	$15,000	2007
32	Generator for Elementary School	CEO	Local/ Grants	$60,000	2009
32	Utility Crew Cab Pickup for FD/EMD	FD/EMD	Local/ Grants	$40.000	2008

Score	Project	Responsibility/ Oversight	Funding/ Support	Estimated Cost	Timeframe
30	Self ID of Critical Needs Residents	EM Department	Local/ Grants	$4,000	Ongoing
30	Cooperative Middle School as Shelter	Superintendent/Town Administrator/ EMD	Local/ Grants	$1,000	2007

CHAPTER X – INCORPORATING, MONITORING, EVALUATING AND UPDATING THE PLAN

Incorporating the Plan into Existing Planning Mechanisms

Upon completion and approval by FEMA and the State of New Hampshire, the *Plan* will be adopted as a stand alone document of the Town and as an appendix of the Town's Emergency Operations Plan (EOP). Future updates the EOP will incorporate the *Plan* as a referenced appendix, but the two plans will always be printed as separated documents. The EOP is subject to annual review.

The *Plan* will also be consulted when the Town updates its Capital Improvement Program (CIP). The Planning Board is responsible for updating the CIP annually, and will review the Action Plan during each update. The Planning Board in conjunction with Stratham's Emergency Management will determine what items can and should be added to the CIP based on the Town's annual budget and possible sources of other funding.

The *Plan* will also be referenced in any future update of the Stratham Master Plan. Portions of the *Plan* could be incorporated into a Natural Hazards Chapter of the Master Plan. It will also be the responsibility of the Planning Board to incorporate current and future strategies identified in the *Plan* into proposed zoning ordinances and updates to Town Subdivision and Site Plan Review Regulations.

Monitoring, Evaluating and Updating the Plan

Recognizing that many mitigation projects are ongoing, and that while in the implementation stage communities may suffer budget cuts, experience staff turnover, or projects may fail altogether, a good plan needs to provide for periodic monitoring and evaluation of its successes and failures and allow for updates of the *Plan* where necessary.

In order to track progress and update the Mitigation Strategies identified in the Action Plan (Table __), it is recommended that the Town revisit the *Plan* annually, or after a hazard event. If it is not realistic or appropriate to revise the *Plan* every year, then the *Plan* will be revisited no less then every five years. The Emergency Management Director is responsible for initiating this review with members of the Town that are appropriate including members of the public. In keeping with the process of adopting the 2005 *Plan*, a public hearing to receive public comment on *Plan* maintenance and updating will be held during the any review of the *Plan*. This publicly noticed meeting will allow for members of the community not involved in developing the *Plan* to provide input and comments each time the *Plan* is revised. The final revised *Plan* will be adopted by the Board of Selectmen appropriately, at a second publicly noticed meeting.

Changes should be made to the *Plan* to accommodate for projects that have failed or are not considered feasible after a review for their consistency with STAPLEE, the timeframe, the community's priorities, and funding resources. Priorities that were not ranked high, but identified as potential mitigation strategies, should be reviewed as well during the monitoring and update of this *Plan* to determine feasibility of future implementation.