TOWN OF PLYMOUTH
NEW HAMPSHIRE

Hazard Mitigation Plan

Approval Date:

June 13, 2011

TABLE OF CONTENTS

1. INTRODUCTION — Page
   - Authority 1-1
   - Funding Source 1-1
   - Purpose 1-1
   - Introduction 1-1
   - Scope of Plan 1-2
   - Methodology 1-2
   - Goals 1-5
   - Acknowledgements 1-6

2. COMMUNITY DESCRIPTION
   - Town Structure 2-1
   - Demographics 2-1
   - Geography 2-1
   - National Flood Insurance Program 2-2
   - Repetitive Loss 2-2
   - Essential Facilities Report 2-3
   - Current Development Trends 2-3
   - Disaster Risk 2-5

3. HAZARD IDENTIFICATION
   - Flood Hazards 3-1
   - Drought 3-6
   - Extreme Heat 3-7
   - Wildfire 3-7
   - Earthquake 3-8
   - Landslide 3-9
   - Severe Wind 3-9
   - Hurricane 3-11
   - Lightning 3-12
   - Winter Weather 3-13
   - Human Caused Hazards 3-15
   - Hazard Identification Map ..... End of Chapter

4. CRITICAL FACILITIES
   - Critical Emergency Response Services 4-1
   - Non-Critical Emergency Response Services 4-2
   - Populations & Places to Protect 4-2
   - Inventory of Critical Facilities & Assets 4-3
   - Critical Facilities Map ..... End of Chapter

TABLE OF CONTENTS

5. CAPABILITY ASSESSMENT
Summary of Existing Emergency & Mitigation Plans 5-1
Existing Protection Matrix 5-6

6. HAZARD MITIGATION PROJECTS
Objectives 6-1
Completed Projects 6-5
Prioritized Mitigation Projects 6-5
Mitigation Action Plan 6-8

7. ADOPTION, IMPLEMENTATION AND MONITORING
Adoption, Implementation and Monitoring 7-1
Certification 7-3

APPENDIX A Documents of the Planning Process
APPENDIX B Hazard Mitigation Resources

LIST OF MAPS
Natural Hazard Map ..... End of Chapter Three
Critical Facilities Map ..... End of Chapter Four

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Chapter 1
Introduction

AUTHORITY

This Hazard Mitigation Plan was prepared in accordance with the Disaster Mitigation Act of 2000 (DMA), Section 322, Mitigation Planning. Accordingly, this Hazard Mitigation Plan will be referred to as the "Plan".

FUNDING SOURCE

The Plan was funded by an Emergency Management Planning Grant through the NH Bureau of Emergency Management.

PURPOSE

The Plymouth Hazard Mitigation Plan is a planning tool to be used by the Town of Plymouth, as well as other local, state and federal governments, in their effort to reduce the effects from natural and man-made hazards.

INTRODUCTION

On October 30, 2000 the President signed into law the Disaster Mitigation Act of 2000 (DMA 2000). The ultimate purpose of DMA 2000 is to:

- Establish a national disaster hazard mitigation program that will reduce loss of life and property, human suffering, economic disruption, and disaster assistance costs resulting from disasters, and
- Provide a source of pre-disaster hazard mitigation funding that will assist State and local governments in accomplishing that purpose.

DMA 2000 amends the Robert T. Stafford Disaster Relief and Emergency Assistance Act by, among other things, adding a new section, 322 – Mitigation Planning. This places new emphasis on local mitigation planning. **It requires local governments to prepare and adopt jurisdiction-wide hazard mitigation plans as a condition of receiving Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) mitigation project grants.** Local governments must review and if necessary, update the mitigation plan annually to continue program eligibility.

<u>Why Develop a Mitigation Plan?</u>
The full cost of the damage resulting from natural hazards – personal suffering, loss of lives, disruption of the economy, loss of tax base – is difficult to measure. Our State is subject to many types of natural hazards: floods, hurricanes, severe winter weather, earthquakes, tornadoes, downbursts, and wildfires, all of which can have significant economic and social impacts. Some, such as hurricanes, are seasonal and strike in predictable locations. Others, such as floods, can occur anytime of the year and almost anywhere in the State.

SCOPE OF THE PLAN

The scope of this Plan includes the identification of natural and man-made hazards affecting the Town, as identified by the Hazard Mitigation Planning Committee. The hazards were reviewed under the following categories as outlined in the State of New Hampshire's Hazard Mitigation Plan:

I. **Flood, Drought, Extreme Heat and Wildfire**
II. **Geological Hazards** (Earthquake, Landslide and Subsidence)
III. **Severe Wind** (Tornado, Hurricane, Thunderstorm, Downburst, and Lightning)
IV. **Winter Weather** (Snow, Ice Storm, Extreme Cold)

In addition, the Committee discussed issues related to man-made hazards. Further development of this topic, including Terrorist Incidents should be included in any future revisions to town's Emergency Operations Plan.

METHODOLOGY

The Hazard Mitigation Planning Committee with the assistance of Hubbard Consulting, developed the contents of this Plan through a Hazard Mitigation Planning Process. Prior to this planning process the Town had hired an engineering firm to develop a hazard mitigation plan. Although that plan was never completed, there was a substantial amount of data gathered which was used by the Committee and Hubbard Consulting to develop this 2004 Plan. The Committee held a total of 3 meetings beginning on May 26, 2004 and ending on September 13, 2004. Two Public Information Meetings for the public to review and comment on the plan were held on May 26, 2004 and December 13, 2004. The Plymouth Board of Selectmen held a public meeting on June 13, 2011 to formally adopted the Plan.

During the 2010 update the Committee met to review and revise the Plan. Prior to the first public information meeting town department heads were notified and public notices were posted to residents and business owners requesting that they consider serving on the Committee. The agendas, attendance sheets are included in Appendix C. The committee analyzed and revised Chapters 2, 3, 4, 5 and 6.

The following are dates of Committee meetings and public hearings that were vital to the development of this Plan.

June 30, 2010: 1st working meeting for the Committee
July 28, 2010: 2nd working meeting for the Committee
August 25, 2010: 3rd working meeting for the Committee

The team developed this Plan as a result of the above meetings and by following these planning steps:

Step 1: Form a Hazard Mitigation Planning Committee

Prior to the first public information meeting the Town Planner invited town department heads and the general public, requesting that they consider serving on the Committee. A public informational meeting was held on May 26, 2004 to introduce the Mitigation Planning Process to the community.

Step 2: Set Hazard Mitigation Goals

At the first committee meeting on May 26, 2004, the committee identified the Town's Hazard Mitigation Goals. Thirteen Hazard Mitigation Goals were adopted from the State of NH in its Natural Hazards Mitigation Plan with a few minor changes. This first step is extremely important in helping the committee understand the purpose of the Plan and to establish a mitigation strategy for the community. (See the end of this chapter for the "Hazard Mitigation Goals of the Town of Plymouth, NH".)

Step 3: Hazard Identification

The purpose of this step was to identify the past and potential hazards. The results of this step can be found in Chapter 3 and on the "Hazard Identification Map" at the end of that Chapter. During the first meeting, the Committee members identified eleven (11) natural hazards that have or could potentially affect the Town of Plymouth:

Downburst
Drought
Earthquake
Extreme Heat
Flood
Hurricane
Landslide
Lightning
Tornado
Wildfire
Winter Weather

Step 4: Critical Facilities Analysis

The Committee members created a Critical Facilities List for the Town. The Critical Facilities List is divided into three sections: Facilities needed for emergency response, facilities not necessary for emergency response, and populations to protect in the event of a disaster. These were then mapped and evaluated for their vulnerability to the hazards identified in Step 3. The "Critical Facilities Map" in Chapter 4 identifies the critical facilities needed for emergency response. In addition, a Critical Facilities Inventory was completed with the assistance of the tax assessors department.

Step 5: Capability Assessment

The committee members identified what plans and policies are already in place to reduce the affects of hazards. The results of this step can be found in Chapter 5. Many of these plans and

technical reports were reviewed and incorporated during the planning process (i.e. Plymouth Master Plan).

Step 6: Review the Initial List of Goals

The Committee reviewed the list of Hazard Mitigation Goals that were established during the first working Committee Meeting. This step gave the Committee members direction when they began developing their list of mitigation measures.

Step 7: Develop Objectives

The committee reviewed and addressed the goals established at the first working committee meeting. The committee identified the following objectives:

Objective A: Monitor hazards and disseminate information to the public.
Objective B: Drainage projects to reduce flooding.
Objective C: Educate the public on the risk of hazards.
Objective D: Support wildland fire suppression.
Objective E: Enhance safety & security of emergency personnel under emergency conditions.
Objective F: Assist the general public and private property owners in developing an understanding of hazards and cost-effective hazard mitigation projects by making information and resources available.
Objective G: Improve the town's disaster response and recovery capability.
Objective H: Assess & catalog the Town's critical facilities and essential support services.
Objective I: Develop mitigation measures for the town's critical infrastructure.
Objective J: Develop and implement road and drainage system standards and improvements.
Objective K: Mitigate the effects of river ice.
Objective L: Promote interoperability of communications.

Step 8: Develop Specific Mitigation Measures

As a result of the objectives identified in step 7, the committee brainstormed specific projects or mitigation measures to address each hazard under the direction of the objectives and goals. The projects identified in this brainstorming session can be found in Chapter 6. The Committee then prioritized the high priority projects for each objective. The result is a list of Prioritized Hazard Mitigation Projects found in the Action Plan at the end of Chapter 6.

Step 9: Adopt and Implement the Plan

The Committee members had the opportunity to review and approve each section of the plan as it was completed. After acceptance by the committee, the Plan was submitted to the NH Homeland Security and Emergency Management (HSEM) and FEMA Region 1 for formal Approval. The Board of Selectmen formally approved the Plan on _____. The letter of approval from FEMA can be found in Appendix C. With respect to any ongoing mitigation projects, the lead and support agencies/people for such activity will be tasked with implementing the Plan's mitigation projects.

Step 10: Monitor and Update the Plan

It is important that this plan be monitored and updated annually or after a presidentially declared disaster. Chapter 7 specifically addresses this issue.

Plymouth, NH
Hazard Mitigation Goals

The overall Goals of the Town of Plymouth with respect to Hazard Mitigation are as follows:

1. To improve upon the protection of the general population, the citizens of the Town of Plymouth and guests, from all natural and man-made hazards.

2. To reduce the potential impact of natural and man-made disasters on the Town of Plymouth's Emergency Response Capability.

3. To reduce the potential impact of natural and man-made disasters on Critical Facilities in the Town of Plymouth.

4. To reduce the potential impact of natural and man-made disasters on the Town of Plymouth's infrastructure.

5. To improve the Town of Plymouth's emergency preparedness and communication network.

6. To improve the Town of Plymouth's disaster response and recovery capability.

7. To reduce the potential impact of natural and man-made disasters on private property in the Town of Plymouth.

8. To reduce the potential impact of natural and man-made disasters on the Town of Plymouth's economy.

9. To reduce the potential impact of natural and man-made disasters on the Town of Plymouth's natural environment.

10. To reduce the Town of Plymouth's potential liability with respect to natural and man-made hazards.

11. To reduce the potential impact of natural and man-made disasters on the Town of Plymouth's specific historic treasures.

12. To identify, introduce and implement cost effective Hazard Mitigation measures so as to accomplish the Town's Goals and Objectives.

13. To work in conjunction and cooperation with the State of New Hampshire's Hazard Mitigation Goals.

ACKNOWLEDGEMENTS

The Town of Plymouth would like to thank the following people for the time and effort spent to complete this Hazard Mitigation Plan for the Town of Plymouth, NH.

2010 Plymouth Hazard Mitigation Committee	
Name	**Title/Affiliation**
Brian Murphy	Town of Plymouth Building Inspector
Casino Clogston	Plymouth Fire Department
Dawn Roach	Clerical Assistant
Donna Quinn	Public Health Network Coordinator
Frank Miller	Resident
Hoby Harmon	Speare Hospital
Kate Beisiegel	Executive Assistant
Kevin Lincoln	Town of Plymouth Water & Sewer
Miriam Bader	Plymouth Town Planner
Paul Freitas	Plymouth Town Administrator
Peter Furmanick	Plymouth Highway Department
Sharon Penney	Plymouth Town Planner
Stephen Campbell	PSU CIO
Steve Temperino	Plymouth Police Department
Tammy J Hill	PSU EMD/EHS Manager
Tom Morrison	Plymouth Fire Department
Wendy Lasch-Williams	Town of Plymouth
Paul Hatch	NH HSEM
Jane Hubbard	Hubbard Consulting LLC
Bonnie Lockwood	McGrew Management Services LLC

October 1995
Rt. 175A, Holderness looking west toward Plymouth, NH

Chapter 2
Community Profile

TOWN STRUCTURE

The Town of Plymouth, New Hampshire was legally established as a corporation in 1763, and has developed into the robust, self-governing municipality it is today. The Town government is organized into several departments focused and responsible for each specific Town function. Each department retains its own staff and work.

DEMOGRAPHICS

The Town of Plymouth is located in central New Hampshire in Grafton County, along the Pemigewasset River, which flows to the Merrimack River in Franklin, NH. The Speare Memorial Hospital is the major medical and health service provider to Plymouth, NH including out-patient and emergency care. The hospital is located on Highland Street, with approximately 40 doctors on staff and a total of 47 beds available for inpatient hospital care.

Year	Plymouth	County
1990	5,811	74,929
2000	5,892	81,740
2009	6,687	88,522
Population Data Source: NH Office of Energy and Planning		

GEOGRAPHY

The topography of Plymouth varies from the steep slopes of Plymouth Mountain and Mount Tim, to relatively flat floodplain areas along the Pemigewasett River, which flows north to south to its confluence with the Merrimack River in Franklin, NH; and the Baker River, which flows west to east to its confluence with the Pemigewasett River in Plymouth. The major stream tributaries within the Town include:

- Clay Brook, flowing north to south to the Pemigewasset River;
- Glove Brook, flowing west to east to the Pemigewasset River; and
- Sanborn Hill River, flowing south to north into the Baker River.

Loon Lake is the largest lake (111 acres) within the Town of Plymouth. It is located in the northwest corner of the Town. This lake is a pristine natural lake, with no manmade dam structures. The majority of the lakeshore is undeveloped, with many small, full- and part-time residences. The lake is used solely for recreational purposes.

NATIONAL FLOOD INSURANCE PROGRAM (NFIP)

The Town of Plymouth has been a participant in the National Flood Insurance Program since 1982. The Town has Flood Insurance Rate Maps (FIRM), dated, February 20, 2008 NH. There are 25 structures in Plymouth that have NFIP flood insurance policies. There have been 12 claims made since 1982 for a total of $43,782 in insured losses. There is one "Repetitive Loss Properties" insured under the NFIP.

	Policies in Force	Premium	Insurance in Force	Number of Closed Paid Losses	$ of Closed Paid Losses	Adjustment Expense
Single Family	12	$7,965	$1,450,100	4	$6,186.50	$780.00
2-4 Family	3	$4,058	$494,100	6	$33,886.58	$2,520.00
All Other Residential	1	$191	$10,000	0	$0.00	$0.00
Non Residential	9	$7,790	$2,511,400	2	$3,709.15	$420.00
Total	25	$20,004	$4,465,600	12	$43,782.00	$3,720.00

REPETITIVE LOSS

The National Flood Insurance Program monitors properties that have been subject to continued flooding claims through the NFIP. These properties are designated as "Repetitive Loss" properties, which are defined as *"a building covered by a contract for flood insurance that has incurred flood related damages on 2 occasions during a 10-year period ending on the date of the event for which a second claim is made, in which the cost of repairing the flood damage, on the average, equaled or exceeded 25% of the market value of the building at the time of each such flood event."* The Town of Plymouth has 1 Repetitive Loss Property which is located on Smith Bridge Road. Plymouth is considered a Category C and is not required to have a Repetitive Loss Plan.

Plymouth, NH Repetitive Loss NFIP Policy Information			
Description	**AE, A1-30, AO, AH, A**	**B, C, X**	**TOTAL**
RL Buildings (Total)	1	0	1
RL Buildings (Insured)	1	0	1
RL Losses (Total)	3	0	2
RL Losses (Insured)	3	0	2
RL Payments (Total)	$26,175.28	$.00	$26,175.28
Building	$26,175.28	$.00	$26,175.28
Contents	$.00	$.00	$.00
RL Payments (Insured)	$26,175.28	$.00	$26,175.28
Building	$26,175.28	$.00	$26,175.28
Contents	$.00	$.00	$.00

ESSENTIAL FACILITIES REPORT

The Plymouth Essential Facilities report, published in 2002 by Klotz Consultants Group, Inc., provides a detailed assessment of Plymouth's essential facilities, those that absolutely must be functional immediately after a natural or man-made hazard event. These consist of the Speare Memorial Hospital, Plymouth Fire Station, Plymouth Police Station, Plymouth Elementary School, and the Plymouth Regional High School. The report identifies, locates, collects and records the structural and general building data of the Essential Facilities and analyzes the functionality of these facilities based on various sized earthquakes. The complete report is maintained on file at the Plymouth Planning Office.

CURRENT DEVELOPMENT TRENDS[1]

The most recent land cover and use information for Plymouth is derived from a 2002 statewide study and summarized in the accompanying table. Developed land – including residential, commercial and industrial buildings and the transportation network – makes up less than 7% of the town's total land area.

Plymouth Land Use/Land Cover		
Land Cover Class	**Acres**	**Total**
Developed		
Residential/Commercial/Industrial	523.0	2.9%
Transportation	695.3	3.8%
Cleared/Open		
Disturbed	20.2	0.1%
Other Cleared	960.9	5.3%
Agriculture		
Row Crops	131.6	0.7%
Hay/Pasture	1,225.6	6.7%
Forest		
Beech/Oak	4,060.3	22.3%
Birch/Aspen	268.4	1.5%
Other Hardwoods	1,988.0	10.9%
White/Red Pine	1,845.8	10.1%
Spruce/Fir 1,097.0 6.0%		
Hemlock 1,137.1 6.2%		
Mixed Forest 3,539.7 19.5%		
Open Water 296.3 1.6%		
Wetlands		
Forested 43.9 0.2%		
Open 361.1 2.0%		
Total	**18,233.4**	
Source: NH Land Cover Assessment Final Report, January 2002 (1990-99 LANDSAT data), UNH Complex Systems Research Center.		

[1] Plymouth Master Plan

The encroachment of development into environmentally sensitive areas and interior, un-fragmented land is an ongoing concern. Many of these areas are identified for protection in the Conservation Commission's 2005 Natural Resource Inventory and associated maps. The following priority areas have been recommended for additional protective measures, through local regulations or other voluntary measures:

- steep slopes (greater than 15%),
- floodplains,
- wetlands and associated buffers,
- aquifers,
- surface waters (rivers, brooks, ponds),
- riparian corridors,
- forest blocks (un-fragmented areas greater than 500 acres),
- agricultural land (prime and high priority agricultural

DISASTER RISK

Plymouth is prone to a variety of natural hazards. These include: riverine flooding, river ice jams, severe wind events (downbursts, hurricanes, and tornado activity), wildfire, drought, earthquakes, ice storms, and severe winter storms. The committee determined the following Natural Hazard and Human Caused Risk Tables based on the history of past hazards as identified in Chapter Three.

Natural Hazards	**Severity** *Avg. of Human / Property / Business* *0: n/a* *1: Low* *2: Moderate* *3: High* *4: Catastrophic*	**Probability*** *In 25 years* *Likelihood this will occur* *0: Improbable* *1: Remote* *2: Occasional* *3: Probable* *4: Frequent*	**Risk** *Severity x Probability* *0-3: Low* *4-6: Moderate* *7-9 High* *10-12: Severe*
Flood	2	3	6
Severe Winter Weather	2	3	6
Hurricane	2	2	4
Severe Wind *(Tornado/Downburst)*	2	2	4
Earthquake	3	1	3
Lightning	1	3	3
Drought	1	2	2
Wild/Forest Fire	1	2	2
Hail	1	2	2
Dam Failure	2	1	2
Extreme Heat	1	1	1
Landslide	1	1	1
Avalanche	N/A	N/A	N/A

Human Caused Hazards	**Severity** *Avg. of Human / Property / Business* *0: n/a* *1: Low* *2: Moderate* *3: High* *4: Catastrophic*	**Probability*** *In 25 years* *Likelihood this will occur* *0: Improbable* *1: Remote* *2: Occasional* *3: Probable* *4: Frequent*	**Risk** *Severity x Probability* *0-3: Low* *4-6: Moderate* *7-9 High* *10-12: Severe*
Mass Casualty (Medical)	3	2	6
Mass Casualty (Trauma)	2	3	6
Utility Interruption	2	3	6
Haz Mat (Transport)	2	2	4
Biological Terrorism	3	1	3
Civil Disorder	1	3	3
Radiological Release	3	1	3
Terrorist Attack (WMD)	3	1	3
Transport Incident *(plane, train, etc.)*	1	3	3
Armed Attack (assault, sniper)	1	2	2
Arson	1	2	2
Conventional Bomb	2	1	2
Haz Mat (Fixed)	1	2	2
Urban Fire	1	2	2

Chapter 3
Hazard Identification

Hazard identification in this Plan is based on all hazards, both natural and human-made. First, as an "exposure" or natural event having the potential to cause injuries/fatalities and property/infrastructure damage, and second, as a human-made impediment which disrupts or obstructs emergency operations during a hazardous event. The following information was completed by the Hazard Mitigation Committee.

A. FLOOD HAZARDS

Location

The following repetitive flood hazard areas are subject to riverine flooding and have been identified as being of particular concern to the Town of Plymouth:

Repetitive Flood Hazard Areas	
Flooding Source	**Affected Location**
Clay Brook	Old Hebron, New Hebron and Reservoir Road crossings
Sanborn Hill Brook	Morse Road crossing
Glove Hollow Brook	Cummings Hill Road and Texas Hill Road crossings
Storm drainage	Highland Street between Main Street and Avery Street
Storm drainage	Main Street, just south of Route 175A
Baker and Pemigewasset Rivers	Floodplains
Surface runoff	Portion of Bell Street, adjacent to hillside
Pemigewasset River	Route 3 and Railroad Street
Reed Brook	Texas Hill Road crossing
Un-named tributary to Pemigewasset River	Texas Hill Road near Route 3.
Pemigewasset River	Plymouth State University: athletic building, fields and parking lots along Bridge Street and Holderness Road; (2) 10,000 gallon underground #6 heating oil tanks behind the athletic building; sewerage pump station; the Facilities Service Building and parking; and the Plumbing, Paint and Ground Shops on River Street. (See Note)
Pemigewasset River	Oil burners at #52 & #53 North River Street (northwest of PSC PE Center).

Note: Although these locations are in Holderness, the flooding of some of these areas restricts access to Plymouth and uses Town of Plymouth emergency response personnel.

Extent/Impact

The extent of damage caused by any flood depends on the depth and duration of flooding, the topography of the area flooded, velocity of flow, rate of rise, and the amount and form of development in the floodplain. The risk and impact due to flooding is Moderate. Primarily flooding impacts the roads and culvert infrastructure as well as residential and non-residential buildings.

History

The following flood history of the Pemigewasset and Baker Rivers, Grafton County and northern New Hampshire regions, is provided, per HSEM website information:

Grafton County Flood History[1]		
Date	**Area Effected (River Basins or Region)**	**Remarks**
October 23, 1785	Cocheco, Baker, Pemigewasset, Contoocook and Merrimack	Greatest discharge at Merrimack and at Lowell, Mass. Through 1902.
March 24-30, 1826	Pemigewasset, Merrimack, Contoocook, Blackwater and Ashuelot	
April 21-24, 1852	Pemigewasset, Winnespaukee, Contoocook, Blackwater, and Ashuelot	Merrimack River at Concord; highest stream stage for 70 years. Merrimack River at Nashua, 2 feet lower than 1785.
October 3-5, 1869	Androscoggin, Pemigewasset, Baker, Contoocook, Merrimack, Piscataquog, Soughegan, Ammonoosuc, Mascoma, and Connecticut	Tropical storm lasting 36 hours. Rainfall, 6-12 inches.
November 3-4, 1927	Pemigewasset, Baker, Merrimack, Ammonoosuc and Connecticut	Upper Pemigewasset River and Baker River; exceeded the 1936 Flood. Down stream at Plymouth; less severe than 1936 flood.
March 11-21, 1936	Statewide	Double flood; first due to rains and snowmelt; second, due to large rainfall.
September 21, 1938	Statewide	Hurricane. Stream stages similar to those of March 1936 and exceeded 1936 stages in the Upper Contoocook River.
June 1942	Merrimack River Basin	This was the fourth worst flood in the lower Merrimack River basin.
June 1944	Merrimack River	This was one of the five highest known floods at Manchester on the Merrimack.
October 25, 1959	White Mountain Area; Saco, Upper Pemigewasset and Ammonoosuc Rivers	Largest of record on Ammonoosuc at Bethlehem Junctions; third largest of record on the Pemigewasset and Saco Rivers.
April 1969	Merrimack River Basin	A record depth of snow cover in the Merrimack River Basin and elsewhere resulted in excessive snowmelt and runoff when combined with sporadic rainfall.
June 1972	Pemigewasset River	Five days of heavy rain caused some of the worst flooding since 1927 damage was extensive along the Pemigewasset River.

Grafton County Flood History[1]		
Date	**Area Effected (River Basins or Region)**	**Remarks**
July 1986 – August 10, 1986	Statewide	**FEMA DR-771-NH[2]:** Severe summer storms with heavy rains, tornadoes; flash flood and severe winds.
March 31 to April 2, 1987	Androscoggin, Diamond, Saco, Ossipee, Piscataquog, Pemigewasset, Merrimack, and Contoocook Rivers.	Caused by snowmelt and intense rain. Precursor to a significant, following event.
August 7-11, 1990	Statewide	**FEMA DR-876-NH[2]:** A series of storm events from August 7-11, 1990 with moderate to heavy rains which produced widespread flooding in New Hampshire.
August 19, 1991	Statewide	**FEMA DR-917-NH[2]:** Hurricane Bob struck New Hampshire causing extensive damage in Rockingham and Stafford counties, but the effects were felt statewide.
October 1996	Northern and Western Regions	**FEMA DR-1077-NH[2]:** Heavy rains. Counties Declared: Grafton, Hillsborough, Merrimack, Rockingham, Strafford, and Sullivan.
October – November 1995	Northern and Western Regions	**FEMA DR-1144-NH[2]:** Heavy rains. Counties Declared: Carroll, Coos, Cheshire, Grafton, Merrimack and Sullivan.
June – July 1998	Central and Southern Regions	**FEMA DR-1231-NH[2]:** A series of rainfall events. Counties Declared: Grafton, Carroll, Belknap, Rockingham, Sullivan, and Merrimack (1 fatality)
September 18 – 19, 1999	Central and Southwest Regions	**FEMA DR-1305-NH[2]:** Heavy rains associated with Tropical Storm/Hurricane Floyd. Counties Designated: Belknap, Cheshire and Grafton.
May 14, 2006	New England	A low pressure developed south of New England and remained nearly stationary from the 12th to the 15th resulting in over 12 inches of rain in some locations. The Pemigewasset River at Bristol (flood stage 8.0 ft.) crested at 11.4 ft. In Plymouth, Cummings Hill Road was completely washed out. Texas Hill Road and sections of reservoir Road, Morse Road, Look Lake Road, Chaisson Road and Old Hebron Road were affected from erosion and received considerable damage. Texas Hill to Bridgewater went down 8 – 10 ft.
October 29, 2006	Central New Hampshire	The Pemigewasset River at Plymouth, (flood stage 13.0 ft), crested at 13.8 ft. Strong low pressure moving out of the lower Mississippi River Valley dumped 2 to 4 inches of rain on already saturated ground causing minor flooding on several rivers.

Grafton County Flood History[1]		
Date	**Area Effected (River Basins or Region)**	**Remarks**
April 16, 2007	Southern New Hampshire	An intense low brought strong winds and heavy rain to the region, which when combined with snow melt, produced widespread flooding across much of the region. In Plymouth, Mary Lion Hall received damage from extreme run off. The Town of Plymouth lost Morse Road and the town owned bridge on Morse Road. FEMA funds replaced road and bridge. Emergency officials went to houses to advise residents of the bridge damage. A local shelter was opened but not utilized.
August 2008	Localized	Flash flooding occurred on Cummings Hill, Texas Hill and Morse Road but caused little damage.

(1) SOURCE: Planning Committee Members and the NH Office of Homeland Security and Emergency Management (NH HSEM)

Ice Jams Flooding

Ice jams have historically been a source of flooding of rivers throughout New England. Ice jams usually occur in late winter/early spring. When ice jams occur, the river flow is either impeded (a "simple" ice jam) or fully restricted (a "dry" ice jam). A simple jam allows some water to flow under it, where a dry jam is an ice jam that has run aground and blocked the river flow. Backwater flooding is the most common adverse effect of an ice jam. This occurs very quickly after the ice jam is formed, as the flooding is a result of the channel being blocked to natural flow regardless of the amount of rainfall, although precipitation could seriously increase the degree of flooding.

In the early 1990s, the Ice Engineering Branch of Cold Regions Research Engineering Laboratory (CRREL) began the arduous project of developing the "CRREL Ice Jam Database", a compilation of ice jam events. The database was developed largely using two sources: the USGS report series of gaging station data collected for the study of the magnitude and frequency of flood, including information on peak events; and the annual USGS Water Data Reports. The following table lists the ice jams recorded in the CRREL database.

Plymouth, NH – Pemigewasset River Ice Jam History				
Date	**Location**	**Jam Type**	**Max. Water Height**	**Damages**
3/4/99	Lat:43 45' 25" Long:71 41' 19"	N/A	14.2	N/A
1/24/99	Near the Plymouth River Gage	N/A	15.06	Roads Flooded
2/22/96	Lat:43 45' 33" Long:71 41' 11"	Break-up	N/A	N/A
1/17/95	.3 mi downstream from Baker River	N/A	9.92	N/A
3/30/93	Lat:43 45' 33" Long:71 41' 11"	N/A	11.74	N/A
3/13/92	Lat:43 45' 33" Long:71 41' 11"	N/A	19.09	N/A
12/24/91	Lat:43 45' 33" Long:71 41' 11"	N/A	11.54	N/A
3/18/90	Lat:43 45' 33" Long:71 41' 11"	N/A	13.71	N/A
1/27/86	Lat:43 45' 33" Long:71 41' 11"	Break-up	20.28	N/A
3/13/85	Lat:43 45' 33" Long:71 41' 11"	N/A	9.63	N/A
2/12/81	Lat:43 45' 33" Long:71 41' 11"	N/A	20.01	N/A
3/14/77	Sandbar near Ashland Golf Course; sandbar approximately ¼ mile downstream from bridge; and sandbar at Baker River confluence	Break-up	20.06	Endangering bridge; over 30 homes evacuated in Holderness. Water 3-4' deep in most first floors; aprox. 12 commercial buildings in Holderness flooded; Plymouth State University floodproof but surrounded by water; Bridge St. closed, 12-mile detour for emergency vehicles.
1/?/76	Same as above	Break-up	N/A	Same as above.
3/20/75	Lat:43 45' 33" Long:71 41' 11"	n/a	14.02	N/A
2/?/73	Sandbar near Ashland Golf Course; sandbar approximately ¼ mile downstream from bridge; and sandbar at Baker River confluence	Break-up	N/A	Endangering bridge; over 30 homes evacuated in Holderness. Water 3-4' deep in most first floors; aprox. 12 commercial buildings in Holderness flooded; Plymouth State University floodproof but surrounded by water; Bridge St. closed, 12-mile detour for emergency vehicles.

Dam Failures

A dam failure or "breach" is a potential downstream hazard to the public, structures, infrastructure, structures, etc., through floodwave action such as flooding or excessive erosion. The evaluation, operation and maintenance of a dam are regulated under NHDES Env-Wr 100-800, which defines dam structures classification, as follows:

Per Env-Wr 301.02 Hazard Potential Classification. All dams shall be classified in accordance with the definitions of Env-Wr 101.03 through Env-Wr 101.06 as either:

(a) Class AA, non-hazard potential structures;

(b) Class A, low hazard potential structures;

(c) Class B, significant hazard potential structures; or

(d) Class C, high hazard potential structures.

According to NHDES Dam Bureau records, there are 13 earthen dams registered in the Town of Plymouth with "active" permits. These dams are all classified as "AA-Non-Menace" or "A-Low Hazard" dams. One dam, the Fox Pond Dam, is owned by the Town of Plymouth; three (3) dams are owned by the Plymouth Village Water & Sewer District; and the remaining dams are all privately owned and operated. The approximate locations of these dams are also shown on the attached ***Hazard Identification Map.*** There are no specific hazard events associated with dam failure events in Plymouth.

B. DROUGHT HAZARDS

Location

Droughts are difficult to define geographically. Due to their widespread nature a drought would affect the entire Town. However, a drought can affect fire suppression in those areas that do not have access to water.

Extent/Impact

A drought is defined as a long period of abnormally low precipitation, especially one that adversely affects growing or living conditions. Droughts are not as damaging to the Town as floods or winter weather. However a severe drought can affect public water supply, increase the probability of fires, and impede fire suppression. Those areas with minimal fire protection are at a higher risk as a result of a prolonged drought. Drought events in the central New Hampshire region are rare. The threat of drought exposure is based on decreased precipitation, which is indicated through measurements of soil moisture, groundwater levels, and streamflow. Low streamflow also correlates with low ground-water levels, due to surface water recharging from groundwater.

History

NEW HAMPSHIRE DROUGHT HISTORY			
Dates	**Area Affected**	**Recurrence Interval (Years)**	**Remarks**
1929-1936	Statewide	10 to > 25	Regional
1939-1944	Statewide	10 to > 25	Severe in southeast and moderate elsewhere
1947-1950	Statewide	10 to 25	Moderate
1960-1969	Statewide	> 25	Regional longest recorded continuous spell of less than normal precipitation
2001-2002	Statewide	Not yet determined	Third worst drought on record, exceeded only by the drought of 1956-1966 and 1941-1942

C. EXTREME HEAT

Location
Extreme heat events are difficult to define geographically. Due to their widespread nature a period of extreme heat would affect the entire Town.

Extent/Impact
Extreme heat conditions may impact the health of residents and visitors. Facilities without generators and air-conditioners that house the elderly and disabled are very susceptible to human health issues. Roads, bridges, railroads etc. may be damaged due to extreme heat. Utilities are also vulnerable as the demand for air-conditioning rises. Prolonged high temperature has also been associated with civil unrest. The following populations are at high risk during times of extreme heat:

- Populations in Elderly/Assisted Living Housing
- Special needs populations at home
- People on oxygen have more difficulty breathing
- People on oxygen must have tanks that run without electricity
- Populations in Schools/Daycare Facilities
- High Population Concentrations

History
There are no specific hazard events associated with extreme heat conditions in Plymouth.

D. WILDFIRE

Location
The upper elevations of Plymouth and Tenney Mountains are two potential forest fire areas. These areas have experienced a large amount of fallen tree and forest litter due to past winter ice storms (1998). During dry, summer months, these areas are susceptible to wildfire conditions should there be an ignition source. There have also been identified building fires at several locations on the Plymouth State University campus: Frat House, Belknap and Blair Halls on Highland Street. However, these building fires were identified as singular occurrences and not as “repetitive” fire hazard locations.

Extent/Impact

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. Fires in New Hampshire are predominantly human-caused, and roughly half of the total fire activity is in the most populous three southern counties. The proximity of many populated areas to the forested lands exposes these areas and their populations to the potential impact of wildfire. In addition, the potential for wildfires increases during a prolonged drought.

History

No significant wildfires have been identified.

E. EARTHQUAKE

Location

According to the NH State Hazard Mitigation Plan, New Hampshire is considered to lie in an area of "Moderate" seismic activity with respect to other areas of the United States and is bordered to the North and Southwest by areas of "Major" activity. There are no identified fault lines for the entire state, therefore an earthquake could occur and/or affect any location in the town.

Extent/Impact

An earthquake is defined as “a series of vibrations induced in the Earth’s crust by the abrupt rupture and rebound of rocks in which elastic strain has been slowly accumulating”. Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric and phone lines, and often cause landslides, flash floods, fires, and avalanches. It is assumed that all of the buildings in the Town have not been designed to withstand seismic activity. More specifically, the older historic buildings that are constructed of non-reinforced masonry are especially vulnerable to any moderate sized earthquake, specifically the Elementary School would be susceptible. In addition, utilities (water, gas, etc) are susceptible to earthquake damage. Plymouth has experienced the effect of small to moderate earthquakes that had minor to no effect on the town’s infrastructure. However, if a large earthquake (6+ on the Richter Scale) occurred in or around the town, it is assumed that structural damage would be moderate to severe. For a more detailed review of the impact of earthquakes refer to the Plymouth Essential Facilities Report, published in 2002 by Klotz Consultants Group. The report identifies, locates, collects and records the structural and general building data of the Essential Facilities and analyzes the functionality of these facilities based on various sized earthquakes.

New England Earthquakes (w/magnitude 4.2or more, 1924 – 1989)		
Location	**Date**	**Magnitude**
Ossipee, NH	December 20, 1940	5.5
Ossipee, NH	December 24, 1940	5.5
Dover-Foxcroft, ME	December 28, 1947	4.5
Kingston, RI	June 10, 1951	4.6
Portland, ME	April 26, 1957	4.7
Middlebury, VT	April 10, 1962	4.2
Near NH Quebec Border, NH	June 15, 1973	4.8
West of Laconia, NH	Jan. 19, 1982	4.5

Source: http://www.HSEM.state.nh.us/mitigation/default.htm

F. LANDSLIDES

Location

Slopes in excess of 25% are susceptible to landslides, especially where soils are thin or highly erodible. These areas are generally located near mountain peaks and along the sides of ridges. In addition, the increase of single residential homes on steep slopes will create higher risk.

Extent/Impact

The extent of landslides in Plymouth is going to impact a very limited area. Roads are likely to experience erosion during heavy rain events and a large scale landslide could damage only a limited amount of structures.

History

There are no substantial landslides that have occurred in Plymouth.

G. SEVERE WIND (Tornado/Downbursts)

Location

Severe wind events (downbursts, tornadoes or high winds associated with thunderstorms) can occur anywhere in Plymouth. A downburst is a severe localized wind blasting down from a thunderstorm. These "straight line" winds are distinguishable from tornado activity by the pattern of destruction and debris. 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. Generally the higher elevations are more vulnerable due to the fact that they are home to many communication towers, including emergency response/mutual aid towers. Due to the sporadic nature of Tornados, they could occur anywhere in the Town of Plymouth.

Exposures

Depending on the size and location of these events, the destruction to property may be devastating. Several of the more significant and recent events within New Hampshire have caused several millions of dollars in damage and at least 5 fatalities. An F-2 Tornado, according to the Fujita scale, maintains wind speeds from 113-157 mph. A tornado occurring in Plymouth would cause considerable damage. Roofs could be torn off frame houses; mobile homes demolished; large trees snapped or uprooted; and light object missiles would be generated as a result of an F-2 Tornado.

History

July 22, 2005: Grafton County law enforcement had numerous reports of tree limbs down on power lines in Plymouth and several surrounding towns.

January 18, 2006: High winds knocked over trees which caused power outages and other damages to the area. Trees were reported down in Grafton County by local officials.

October 20, 2006: A small but intense area of low pressure moved northeastward through the Gulf of Maine late on the 20th and into the Canadian Maritimes by the afternoon of the 21st. While most winds across the state were in the 35-45 mph range, winds likely gusted to near 60 mph in many areas. In Laconia, the maximum observed wind was 47 mph. The winds downed numerous trees onto power lines, houses, and vehicles. Public Service of New Hampshire reported more than 15,000 customers without electrical service while the New Hampshire Electrical Cooperative reported 8500 customers without service.

Oct. 28, 2006: A rapidly intensifying storm system moved up the eastern seaboard on Saturday the 28th, then tracked north across New York State on Saturday night. Sustained winds of 30 to 40 mph were common with gusts to 60 mph. Trees were reported down throughout the state. In Bethlehem and Laconia, trees were reported to have fallen on homes. Storm related wind damage totaled in the hundreds of thousands of dollars.

Aug 25, 2007: A severe thunderstorm downed numerous trees and wires in Plymouth. Numerous severe thunderstorms began developing statewide during the late afternoon of August 17th and continued through the evening hours. Wind damage was widespread with these storms along with a few reports of large hail.

Feb 26, 2010: Low pressure developed off the mid Atlantic coast on the morning of the 25th and deepened as it moved north, reaching southern New England by evening. Ahead of the low, east winds rapidly increased across New Hampshire with numerous gusts in excess of 60 mph being reported. A record number of homes and businesses lost power. Utilities reported 310,000 customers without power during the peak of the storm. In Plymouth there were multiple trees down in multiple locations. Immediately after the wind there was a snow event. Most of the town was without power for five days or more. Russell Street, Pleasant Street, Weeks Street, Page Street, Thurlow Street and Parker Street were without power the longest. Chaddarin Road, Beech Hill Road and Fair Ground Road were impacted by downed trees and power outages. Plymouth State Univertsity lost power in some buildings for short time. The local shelter was opened for 2 days. School was out for 6 days. Both schools received structural damage. The

Town Hall had $16,000 in damage and the police department had $4,000 in damage. The Highway department spent the next month clearing/cleaning the street.

H. HURRICANE

Location

When hurricane events occur in Plymouth they affect the entire town. Certainly, the heavy rainfall associated with hurricanes will impact the 100-year floodplain but the high winds can have an impact on the whole town.

Extent/Impact

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. 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. New Hampshire's exposure to direct and indirect impacts from hurricanes is real, but modest, as compared to other states in the region. That being said, the probability of hurricanes occurring in Plymouth is possible. The impact is on the floodplain areas due to heavy rains as well as high winds that cause trees to fall down thereby causing power outages, structural damage to buildings, road closures and debris management issues.

History

NEW HAMPSHIRE HURRICANES AND TROPICAL STORMS FROM 1938 TO 1999		
Name	Date	Description
The Great New England Hurricane	Sep 21, 1938	13 Deaths, 1,363 families received assistance, Disruption of electric and telephone services for weeks. 2 Billion feet of marketable lumber blown down. Flooding throughout the State, in some cases equaling and surpassing the Flood of 1936, Total Direct Losses - $12,337,643
Hurricane Carol	Aug 31, 1954	Extensive amount of trees blown down and property damage. Large crop loss. Localized flooding.
Hurricane Donna	Sep 12, 1960	Heavy flooding in Massachusetts and Southern New Hampshire
Tropical Storm Daisy	Oct 7, 1962	Heavy swell and flooding Coastal New Hampshire.
Tropical Storm Doria	Aug 28, 1971	Center passed over New Hampshire resulting in heavy rain and damaging winds.
Tropical Storm Floyd	Sep 16-18, 1999	This was originally a Hurricane that heavily impacted North Carolina and dumped heavy rains on New England resulting in a Presidential Declaration of Disaster in NH; FEMA DR-1305-NH in Belknap, Grafton and Cheshire Counties

Source: http://www.HSEM.state.nh.us/mitigation/default.htm

I. LIGHTNING

Location
The typical assets at risk to lighting strikes are communications towers, utilities, outdoor events/areas, etc.

Extent/Impact
Residents and visitors to the New Hampshire area are more vulnerable to being struck by lightning because of the activities with which they are involved, particularly on those warm summer days when lightning is most likely to occur. Often, many people are outside enjoying the variety of recreational activities that attract people to New England during the summer when the vulnerability to lightning strike is highest. More likely to be affected are structures and utilities, often resulting in structure fires and power outages.

History
June 27, 2005
Lightning caused several problems in the town of Plymouth during Monday evening, June 27. Lightning struck and ignited a fire that completely destroyed a 24- by 30-foot wooden barn in Plymouth causing an estimated $60,000 in damage. Firefighters were able to prevent an attached home from suffering significant damage. The Plymouth town hall was also struck and damaged. Slate shingles and bricks from the roof and spire were blown onto the sidewalk below, and the lightning strike left a 4-foot crack in the brick structure. A considerable amount of communications and other electronic equipment inside the building was also damaged or destroyed by the lightning strike. Total damage to the building and electronic equipment was estimated to be about $50,000. Also in Plymouth, a woman was struck and injured when lightning followed the well line into the basement of her home and along the concrete floor to where she was standing. She was taken to a nearby hospital for a treatment and then released.

2006
Wood frame campus building was hit and caught fire. Damaged but not destroyed.

J. WINTER WEATHER

Location

There is a town-wide vulnerability to severe winter weather. Nor'easters (wind), Ice Storms, Heavy Snow Accumulations and Severe Cold can occur at any place within the town and generally affect the entire town when it happens. The higher elevations are more likely to experience snow or ice before the lower terrain.

Extent/Impact

A Nor'easter is defined as a large weather system traveling from south to north, passing along, or near the seacoast. The resulting counterclockwise cyclonic winds impact the coast and inland areas from a northeasterly direction. In the winter months, oftentimes blizzard conditions accompany these events. Heavy snow accumulations (generally considered one that deposits six or more inches of snow in a 12-hour period) can have a significant affect on the town, including extended power outages, road closures, collapsed roofs and increased snow removal costs. During ice storms, ice forms on cold surfaces, such as trees and power lines. Ice damage results in power outages, road closures and forest damage. Ice on the roads can be the most difficult for a rapid emergency response. Typically the following popuations are at risk during prolonged power outages due to winter weather.

- Populations in Nursing Homes
- Populations in Elderly/Assisted Living Housing
- Special Needs populations at home
- Weeks Memorial Hospital
- Populations in School/Daycare Facilities

History

The most recent large and devastating ice storm was the "Ice Storm of January 1998". (A similar event in 1929 is believed to have been comparable to this event.) According to FEMA, the 1998 ice storm was reported to have caused damage in 52 communities in nine of New Hampshire's 10 counties. Six injuries and one death were attributed to the storm. At its height, 16 local "state of emergencies" were declared and 38 shelters were opened to assist those who had to leave their homes due to sustained power outages or blocked Town and State roads.

Recent History of Significant New Hampshire Ice Storms	
Date	***Description of Damages***
Dec 18, 2008	A major winter storm brought a mixture of snow, sleet, and freezing rain to New Hampshire from the morning of December 11th to the morning of December 12th. The greatest impact in the state was in southern and central New Hampshire where a significant ice storm occurred. Following the ice storm, recovery and restoration efforts were negatively impacted by additional winter weather events that passed through the state. In Plymouth, Wal Mart had a ruptred gas main on the roof. 6 people had to go to hospital. Reinhart automotive lost its roof. The Town recycling center lost its roof.
January 7, 1998	FEMA DR-1199-NH. 52 communities in nine counties impacted, six injuries and one fatality, 20 major roads closures, 67,586 without electricity, 2,310 without phone service, one communication tower failure,$17+ million in damages to Public Service of NH alone.
March 3-6, 1991	Numerous outages from ice-laden power lines in southern NH
February 14-15, 1986	Fiercest ice storm in 30 years over higher elevations in the Monadnock Region in 10-mile-wide swath from the MA border to New London
January 8-25, 1979	Major disruptions to power and transportation
December 22, 1969-January 17, 1970	Power disruption to many communities
December 29-30, 1942	Glaze storm of severe intensity
December 17-20, 1929	Unprecedented disruption and damage to telephone, telegraph and power system
Source: http://www.crrel.usace.army.mil/valliere/CRREL_Reports _web/reports/IceStorm98.pdf	

Recent History of Significant New Hampshire Snow Storms (Source: NH BEM www.nhoem.state.nh.us)	
Date	***Description of Damages***
January of 1923	4 storms within a week left over 30 inches of snow.
February 8-10, 1969	Event Accumulations up to 27” in southeastern New Hampshire and up to 42” in northeastern New Hampshire. Regions with snow accumulations exceeding 50 cm: parts of the New York City and Boston metropolitan areas, western Connecticut, western and eastern Massachusetts, southern Vermont, northern Rhode Island, eastern New Hampshire, and southern Maine.
February 22-28, 1969	Events Accumulations to 98” in Western Central New Hampshire, 34” in coastal areas and 2 to 3’ across New Hampshire generally. The storm produced excessive amounts of snow across New England with accumulations of greater than 75 cm across large sections of eastern Massachusetts, New Hampshire, and Maine.
January 20, 1978	20 inch snowstorm leaving 20’ high snowdrifts

February 5-7, 1978:	Events accumulations to 28" in northeast New Hampshire, 25" in west central New Hampshire and 33" along coastal New Hampshire. Hurricane-force winds and record-breaking snowfall made this storm one of the more intense to occur this century across parts of the northeastern United States.
Feb 10, 2005	An intensifying area of low pressure slowed significantly as it moved into the Gulf of Maine on the 10th of February resulting in a widespread heavy snowfall across much of New Hampshire from the early morning hours of the 10th into the afternoon of the 11th. Accumulations of 2 to 33 inches were reported across the state with the highest totals occurring in central and northern portions of the state.

K. HUMAN CAUSED HAZARDS

The Town of Plymouth Planning Department has identified the major roadways through and adjacent to Plymouth as potential areas of technical hazards, as a vehicle or bulk trucking accident could potentially release hazardous materials into the environment. These major roadways are identified as:

- Interstate Route 93;
- Routes 3 and 3A; and
- Tenney Mountain Highway.

Societal Hazards

Societal hazard exposures may occur due to civil unrest, transportation and environmental accident/emergencies, and terrorism. There have been very few identified societal hazards in the Town of Plymouth, as relayed by the Town's Police Department. These include the following civil unrest occurrences during the Plymouth State University "Spring Fling" celebrations:

- Fire Department vehicles used to hose down students.

- Circa 1986 Large party of students; aggressive incident with rocks and bottles thrown; some arrests made; some mutual aid called in; approximately 30 officers used.

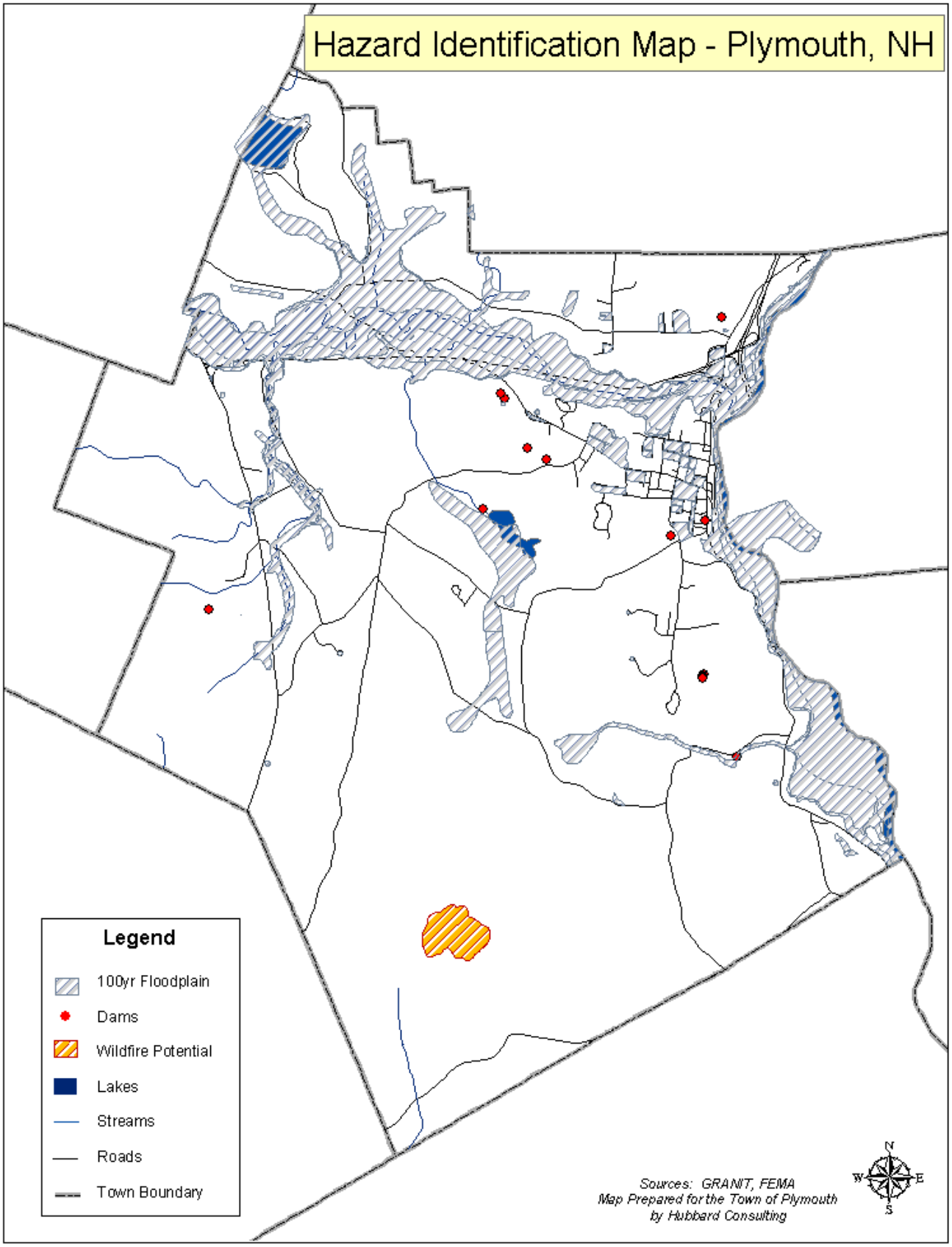
- Approximately 600-student party on Russell Street (an off-campus area); aggressive incident with burned furniture, and rocks and bottles thrown; some mutual aid called in; approximately 80 officers used.

Also, according to the Plymouth Police Department, there have been approximately six (6) "bomb scares" at the Plymouth High School. None were labeled as a "terrorist act", however.

Critical Facilities at Risk

The Hazard Mitigation Committee identified the human-caused vulnerability for the critical facilities in Plymouth. The results can be found in the following table.

Man Made Hazard Vulnerability								
Critical Facilities (Ranked Highest to Lowest)	**Score**							
	Visibility	Target	Access	Mobility	Haz.Mat.	Col.Dam.	Site Pop.	TOTAL
Speare Memorial Hospital	5	3	5	5	2	3	5	28
Plymouth Wastewater Treatment Plant,Railroad Square	3	4	2	5	3	5	5	27
Plymouth CoGen Powerplant, 6 Toby Road	3	4	2	5	3	5	5	27
Plymouth Fire Station	5	2	5	5	1	4	4	26
Plymouth Town Hall	5	2	5	5	0	4	4	25
Water Tank 01, Reservoir Road	3	4	3	5	0	5	5	25
Silver Cultural Arts Center	5	1	4	5	1	4	4	24
District Wells, Foster Street	2	4	2	5	1	5	5	24
Water Booster Station, Reservoir Road	3	4	2	5	0	5	5	24
Water Tank 02, Reservoir Road	2	4	3	5	0	5	5	24
Plymouth Regional High School	5	2	3	5	1	4	4	24
Plymouth Police Station	5	3	2	5	0	4	4	23
EOC (Located at Police Department)	5	3	2	5	0	4	4	23
Hartman Union Building	3	1	5	5	1	4	4	23
Plymouth Congregational	3	1	5	5	1	4	4	23
Plymouth Methodist Church	3	1	5	5	1	4	4	23
Saint Matthews Church	3	1	5	5	1	4	4	23
Speare Hall	4	2	4	5	0	4	4	23
PSU Campus Police Station	4	3	2	5	0	4	4	22
Church of the Holy Spirit	3	1	5	5	0	4	4	22
Plymouth Highway Garage, Green Street	3	2	5	5	1	4	2	22
Plymouth Elementary School	5	1	3	5	0	4	4	22
Plymouth Water & Sewer District Offices	3	2	4	5	0	3	3	20
Plymouth State University	3	2	3	5	0	3	4	20
“Crystal Springs”, DW Highway	3	3	5	5	0	1	1	18
Smith Bridge Road Covered Bridge	4	1	5	5	0	1	1	17
Fairgrounds Road Cemetery	3	1	1	5	0	1	1	12


Hazard Identification Map - Plymouth, NH
Legend
100yr Floodplain
Dams
Wildfire Potential
Lakes
Streams
Roads
Town Boundary
Sources: GRANIT, FEMA
Map Prepared for the Town of Plymouth
by Hubbard Consulting
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Chapter 4
Critical Facilities

The Critical Facilities List for the Town of Plymouth has been identified for the Town by the Plymouth Hazard Mitigation Planning Committee. The list is divided up into three sections: Facilities needed for Emergency Response, Facilities Not Necessary for Emergency response, and Populations and facilities to protect in the event of a disaster. These were then mapped and evaluated for their vulnerability to the hazards identified in Step 3. The "Critical Facilities Map" at the end of Chapter 4 identifies the critical facilities needed for Emergency Response. In addition, the Inventory of Critical Facilities table assesses the value of these structures.

CATEGORY 1 (Facilities needed during an event)

Plymouth Town Hall, 6 Post Office Square

Primary Emergency Operations Center, 2nd floor Town Hall, 6 Post Office Square

Secondary EOC, Pease Public Library 1 Russell St.

Plymouth Police Station, 334 Main Street

Plymouth Fire Station, 42 Highland Street

Plymouth Public Works Garage, 31 South St.

Plymouth CoGen Powerplant, 6 Toby Road

Speare Memorial Hospital, 16 Hospital Road

Hartman Union Building, 17 High Street (Shelter)

Church of the Holy Spirit, 34 Highland Terrace (Shelter)

Plymouth Congregational Church, 4 Post Office Square (Shelter)

Plymouth Methodist Church, Fairground Rd. (Shelter)

Episcopal Church, Highland St. (Shelter)

Saint Matthews Church, 11 School Street (Shelter)

Plymouth Water & Sewer Department, 227 Old N Main St

Town Hall

Fire Station

Speare Memorial Hospital

CATEGORY 2 (Facilities NOT immediately needed during an event)

Town Wells, Foster Street

Water Booster Station, Reservoir Road

Water Tank 01, Reservoir Road

Water Tank 02, Reservoir Road

Plymouth Wastewater Treatment Plant, Railroad Square

Plymouth Municipal Airport

Plymouth State University

CATEGORY 3 (Populations & Places to Protect)

Plymouth State College, Village Area

Plymouth Elementary School, Old Wardbridge Road

Plymouth Regional High School, Old Wardbridge Road

"Crystal Springs", DW Highway – maintained by Town of Plymouth

Hoyt Hill Water Supply Rt. 3A – maintained by NH DOT

Smith Bridge Road Covered Bridge

Senior Center, Railroad Depot

Historical Society Building, Court Street

Plymouth Town Hall, Court Street

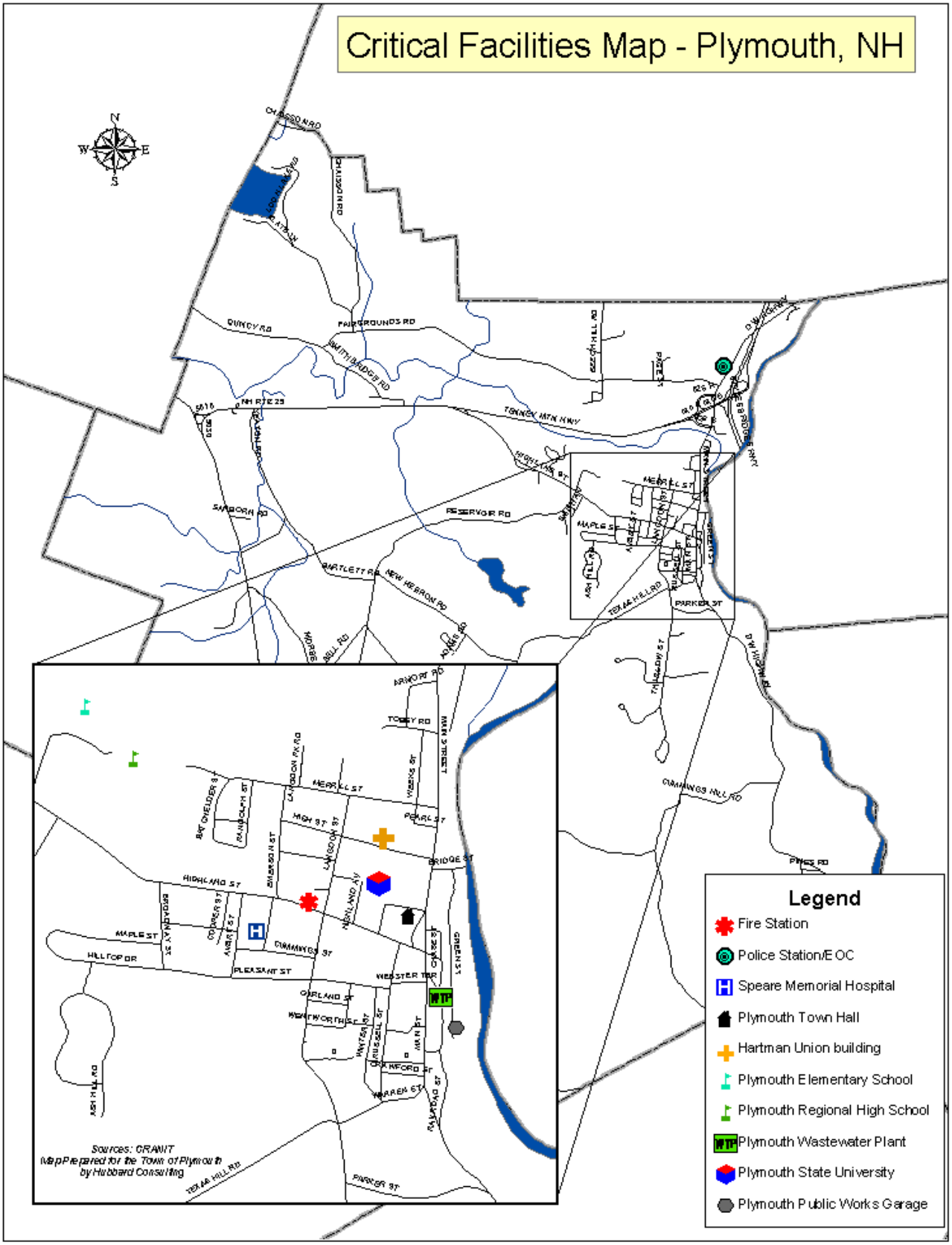
Plymouth Elementary School

Plymouth Regional High School

Smith Bridge Covered Bridge

Critical Facilities Inventory							
Facility	**Name/Location**	**Owner**	**Category 1**	**Category 2**	**Category 3**	**Hazard Vulnerability**	**Replace. Value**
Town Hall	Plymouth Town Hall	Municipal	✓			Earthquake, Tornado, Hurricane, Winter, Lightning, Downburst, Human	365,500
EOC	Plymouth Police Station	Municipal	✓			Earthquake, Tornado, Hurricane, Winter, Lightning, Downburst, Human	174,900
Police Station	Plymouth Police Station	Municipal	✓			Earthquake, Tornado, Hurricane, Winter, Lightning, Downburst, Human	174,900
	PSU Campus Police Station	PSC	✓			Earthquake, Tornado, Hurricane, Winter, Lightning, Downburst, Human	76,900
Fire Station/ EMS	Plymouth Fire Station	Municipal	✓			Earthquake, Tornado, Hurricane, Winter, Lightning, Downburst, HazMat, Human	137,300
Hospital	Speare Memorial Hospital	Private	✓			Fire, Earthquake, Tornado, Hurricane, Winter, Downburst, HazMat, Human	1,879,700
	Mid State Health Center	Private	✓			Fire, Earthquake, Tornado, Hurricane, Winter, Downburst, HazMat, Human	
Shelters	Hartman Union Building	PSC	✓			Earthquake, Tornado, Hurricane, Winter, Lightning, Downburst, Human	5,417,900
	Church of the Holy Spirit	Private	✓			Earthquake, Tornado, Hurricane, Winter, Lightning, Downburst,	116,000
	Plymouth Congregational	Private	✓			Earthquake, Tornado, Hurricane, Winter, Lightning, Downburst,	629,000
	Plymouth Methodist Church	Private	✓			Earthquake, Tornado, Hurricane, Winter, Lightning, Downburst,	213,300
	Saint Matthews Church	Private	✓			Earthquake, Tornado, Hurricane, Winter, Lightning, Downburst,	228,600
Water Treatment	Plymouth Water & Sewer Department 227 Old N Main St.	Municipal		✓		Earthquake, Tornado, Hurricane, Winter, Lightning, Downburst, HazMat, Human	68,000
	Town Wells, Foster Street	Municipal		✓		Drought, HazMat, Human	54,400
	Water Booster Station, Reservoir Road	Municipal		✓		Drought, HazMat, Human	14,500

Critical Facilities Inventory							
Facility	**Name/Location**	**Owner**	**Category 1**	**Category 2**	**Category 3**	**Hazard Vulnerability**	**Replace. Value**
Sewer Treatment	Water Tank 01, Reservoir Road	Municipal		✓		Drought, HazMat, Human	400,000
	Water Tank 02, Reservoir Road	Municipal		✓		Drought, HazMat, Human	118,500
	Plymouth Wastewater Treatment Plant, Railroad Square	Municipal		✓		Drought, HazMat, Human	307,800
Public Works	Plymouth Public Works Garage, Green Street	Municipal		✓		Earthquake, Tornado, Hurricane, Winter, Lightning, Downburst, Human	107,900
Transportation	Transport Central at the Senior Center	501C3 / Private		✓		Winter Weather, Human	Varies
Public Utilities	Plymouth CoGen Powerplant, 6 Toby Road	Private		✓		Earthquake, Tornado, Hurricane, Winter, Lightning, Downburst, HazMat, Human	90,100
Schools	Plymouth State College	PSC			✓	Flood, Drought, Heat, Fire, Earthquake, Winter, Lightning, Downburst, Hazmat, Human	2,761.500
	Plymouth Elementary School	SAU			✓	Heat, Fire, Earthquake, Winter, Lightning, Downburst, HazMat, Human	4,951,600
	Plymouth Regional High School	SAU			✓	Heat, Fire, Earthquake, Winter, Lightning, Downburst, HazMat, Human	5,297,600
Cultural Features	“Crystal Springs”, DW Highway	Private			✓	Drought, HazMat, Human	n/a
	Smith Bridge Road Covered Bridge	NH-DOT			✓	Earthquake, Hurricane, Winter, Lightning, Downburst, Human	unknown


Critical Facilities Map - Plymouth, NH
N
W
E
S
Legend
Fire Station
Police Station/EOC
Speare Memorial Hospital
Plymouth Town Hall
Hartman Union building
Plymouth Elementary School
Plymouth Regional High School
Plymouth Wastewater Plant
Plymouth State University
Plymouth Public Works Garage
Sources: GRANIT
Map Prepared for the Town of Plymouth
by Hubbard Consulting

Chapter 5
Capability Assessment

As part of the preparation of this plan, existing town mitigation and emergency plans, programs, applicable standard operating procedures, and existing and proposed mitigation projects were reviewed. The Town reviewed and incorporated mitigation strategies into these policies and regulations, as appropriate. The table includes a description of the policy/regulation, the responsible agent, the policy's effectiveness and mitigation strategies to improve mitigation efforts.

EXISTING EMERGENCY AND MITIGATION PLANS

1. **Emergency Operations Plan (currently being updated):**

   The Town is currently updating an EOP that meets the recommendations by the NH Homeland Security & Emergency Management. This plan identifies the response procedures and capabilities of the Town of Plymouth in the event of a natural or man-made disaster. The EOP is a general document that describes the preparation and emergency response required by the Town of Plymouth to react to any type of an emergency situation which would require the utilization of most or all of the community's resources and has the potential for necessitating a request for additional assistance from State and/or Federal sources.

2. **Emergency Preparedness Plan, Plymouth Co-Generation Plant – Undated:**

   The Town of Plymouth's *Emergency Preparedness Plan (EPP)* for the Plymouth Co-Generation Plant, is a general document that establishes "procedures for the mitigation of a major accident at the Plymouth Co-Generation Plan, 6 Tobey Road".

3. **Plymouth, NH Drainage Study – Dated December 1994:**

   In 1994 Hoyle, Tanner & Associates, Inc. (HTA) was retained by the Town of Plymouth to perform an evaluation of the Village areas existing closed catch basin drainage system, and make recommendations for upgrades to the system. The study analyzed the closed catch basin system for the 2-, 5-, and 10-year storm runoff events using the USDA-SCS TR 20 drainage methodology to determine watershed runoff hydrographs, and HydroCad for pipe routing determination. HTA also used aerial topography mapping prepared by Eastern Topographics, Inc. to depict the existing system structure locations and pipe sizes ("Drainage Area Improvements Map", 12/94). Results of this analysis are included in their December 1994 report.

4. **Plymouth Wastewater Facility - Emergency Operation and Response Program - Undated**

   Section 9.0 *"Emergency Operation and Response Program"* (EORP) of the Plymouth Wastewater Facility's Operation and Maintenance (O&M) manual deals with emergency

response issues, from the NHDES. "The purpose of this section is to aid the personnel in developing a program designed to:

1. Eliminate or minimize adverse effects from emergency situations affecting the treatment plant.
2. Develop procedures for properly responding to emergencies.
3. Provide instruction for the operator to assure he understands his responsibilities during emergency situations.
4. Provide inventories of available emergency equipment and outline existing mutual aid agreements and contracts with outside organizations for specialized assistance."

5. Plymouth Village Water & Sewer District Emergency Response Plan - Water Distribution System – Dated November 2001

The *Emergency Response Plan (ERP)* for the Plymouth Village Water & Sewer District, Water Division.

6. Source Water Protection Plan for Plymouth Village Water & Sewer District – Dated November 2001.

A *Source Protection Plan (SPP)* has recently been prepared by the Plymouth Source Water Protection Committee and the Northeast Rural Water Association, for the largest public drinking water system in the Town of Plymouth, the Plymouth Village Water & Sewer District.

"The purpose of this SPP is to protect the quality of Plymouth's drinking water by identifying and managing potential sources of contamination and threatening activities that occur within the source protection area. The plan identifies and outlines a structured approach to managing potential sources of contamination and threatening activities that occur within the source protection area. It is a working document that will be routinely reviewed and updated to remain current, active, and viable."

The SPP includes a listing of potential contamination sources, assessment of threats, a management plan (including recommended mitigation activities), an emergency response contingency plan, and was recently updated to include Best Management Practices and better enforcement standards.

7. Plymouth Fire Department Rules and Regulations – Dated March 1997

The Plymouth Fire Department (PFD) *Rules and Regulations* manual includes the following SOPs of as they relate to hazard mitigation and this Plan:

- Wildland Fires
- Petroleum Spills

- Earthquake Preparedness
- Incident Command System
- Mobile Magnetic Resonance Imaging (MRI) Trailer

8. Plymouth Police Department Operational Rules – Effective Date November 1996

The Plymouth Police Department (PPD) *Operational Rules* manual, as they relate to hazard mitigation and this Pan, are as follows:

- Bombs and Bomb Threats (#604)
- Fire and Medical Response (#828)
- Request for Backup/Mutual Aid (#829)
- Firearms (#410.1)
- Hazardous Materials (#415.2)
- Infection Control Plan (#713)
- Noise Complaints (#435)
- Public Information/Media Relations (#509)
- Roadblocks (#404.3)
- Special Events (#610)
- Training (#304)
- Traffic Direction and Control (#416)
- Unusual Occurrences/Civil Defense (#602)
- Use of Force (#410)
- Use of Public Address System (#404.2)

9. Plymouth State University Emergency Response Plan – Dated October 2000

The *Plymouth State University (PSU) Emergency Response Plan (ERP)* was developed by the PSU Physical Plant. The PSU ERP was developed in order "to enhance the protection of lives and property through effective use of College and campus community resources….. There are two general types of emergencies that may result in the implementation of this plan. These are large-scale disorders and large-scale natural/man-made disasters."

10. Zoning Ordinance

Currently the Town of Plymouth has adopted the appropriate Building Codes and regulations for building construction within the Town. The Town has a qualified professional Building Inspector to permit and inspect all new and modified buildings. Land use permits are reviewed by the Fire Chief, Town Planner, Public Works Director and the Water & Sewer Department to assure compliance with appropriate safety codes; FEMA/NFIP requirements; and NHDES septic and water system requirements. By adopting and enforcing state and nationally accepted building codes the town can mitigate the effects of snow load, wind, earthquake, fire etc.

11. Floodplain Ordinance (Article VII)

Article VII of the 2004 Zoning Ordinance includes the Floodplain Development regulations which meet the minimum requirement of the National Flood Insurance Program. However the ordinance should be revised to include a reference to the most current FEMA flood map for the Town of Plymouth, which is dated February 2, 2008.

12. Subdivision and Site Plan Regulations

Revise both sets of regulations to include review of a proposed subdivision and site plan by the Plymouth Conservation Commission, should the development potentially impact designated wetlands, floodplain, conservation or environmentally sensitive areas; and the recommended Building Inspector, to assure compliance with Town Zoning and FEMA/NFIP requirements.

13. Pemigewasset River Corridor Management Plan and Stewardship Program

In 1988, NH Legislature approved RSA 483, which established the NH "Rivers Management and Protection Program (RMPP)". In June 1991, two sections of the Pemigewasset River were designated for inclusion in the RMPP. The Pemigewasset River Local Advisory Committee (PRLAC) was created and charged with developing a management plan for the section of the Pemigewasset River from the northernmost Thornton town line to the confluence with the Winnipesaukee River in Franklin, NH. After a number of years of research and data collection, including a comprehensive survey of public opinion, PRLAC has completed a draft management plan for this section of the Pemigewasset River (January 2001) as well as the Baker River Management Plan for erosion and stream maintenance.

14. Master Plan

The Master Plan serves as the guiding document for future development in Plymouth. Second, it serves as the guiding document to assist the Planning Board as it updates the Town Zoning Ordinance, Subdivision and Site Plan Review Regulations.

15. Comprehensive Shoreland Protection Act

The CSPA establishes minimum standards for activities within the Protected Shoreland that are designed to protect the water quality of the state's larger water bodies and to fulfill the state's role as trustee of those waters.

16. Greater Plymouth Public Health Network

The Greater Plymouth Public Health Network (GPPHN) works to assure coordinated and comprehensive delivery of essential public health services and serves as a local liaison with state agencies involved in the public's health and safety.

17. School Emergency Response Plan

Both the Elementary and the High School have a Comprehensive Emergency Response Plan. Their Plans are designed to provide a framework for protecting students, staff and school facilities, as well as to describe the responsibilities of staff members, for a wide range of emergency and disaster situations that may occur.

18. CodeRED

Grafton County has instituted CodeRED, an ultra high-speed telephone communication service for emergency notifications. This system allows the County to telephone targeted areas of the Grafton County Dispatch area in case of an emergency situation that requires immediate action (such as a missing child or evacuation notices). The system is capable of dialing thousands of phone numbers per hour. It then delivers our recorded message to a live person or an answering machine, making three attempts to connect to any number.

Integration of Mitigation Priorities into Planning and Regulatory Tools

The Town should conduct periodic review of these regulations and this Hazard Mitigation Plan. Reviewing these plans on a regular basis will ensure the integration of mitigation strategies. This review will continue to be a priority of the Plymouth Emergency Management Director and will likely include yearly requests in the annual budget process. Moreover, as suggested in the onset of this document, this *Plan* is a planning tool to be used by the Town of Thornton, as well as other local, state, and federal governments, in the effort to reduce future losses from natural and/or man-made hazardous events before they occur. Under the Prioritized Mitigation Projects *Action Plan* (found in Chapter 6), all parties listed under the Responsibility/Oversight category shall also review this listing annually, and consider the listed (and updated) mitigation projects within their annual budget requests.

Existing Protection Matrix

Existing Protection	Date	Responsible Agent	Effectiveness (Poor/Avg/Good)	Recommended Changes
Emergency Operations Plan	1987	EMD	Poor	Update with ESF format
Emergency Preparedness Plan, Plymouth Co-Generation Plant	Undated	EMD/Fire Chief	Good	Update plan
Plymouth, NH Drainage Study	December 1994	Public Works Director	Avg.	Will be updated as projects are completed
Plymouth Wastewater Facility - Emergency Operation and Response Program	Undated	Plymouth Village Water & Sewer District (PVWSD) Administrator	Avg.	Update the Plan
Plymouth Village Water & Sewer District Emergency Response Plan – Water Distribution System	November 2001	PVWSD Administrator	Avg.	Review & possibly update
Source Water Protection Plan for Plymouth Village Water & Sewer District	November 2001	PVWSD Administrator	Good	Needs to be coordinated with the zoning ordinance and town planning process
Plymouth State University Emergency Response Plan	October 2007	PSU	Avg.	Update to stay up to date with state and federal guidelines.
Zoning Ordinance	March 2008	Community Planner/ Planning Board	Avg.	Incorporate source water protection measures.
Floodplain Ordinance (Article VII)	March 2008	Community Planner/ Planning Board	Avg.	Develop compensatory flood requirements
Subdivision and Site Plan Regulations	March 2002	Community Planner/ Planning Board	Avg.	Update for clarification
Master Plan	2008	Planning Board / Community Planner	Good	Continue to update Chapters in the Master Plan.
Shoreland Protection Act	2008	Planning Board / NH DES	Good	Continue to enforce shoreland regulations.
Central NH Haz Mat	n/a	Lakes Region Haz Mat team	Good	Continue training for the 5 haz mat techs.

Greater Plymouth Public Health Network	2010	Public Health Network	Good	Continue to participate in Regional Public Health Meetings.
Lakes Region Fire Mutual Aid	n/a	LRFMA	Good	Continue to participate in LRFMA.
Police Mutual Aid with surrounding communities and Grafton County Sheriff's Office	2010	Police	Good	Update mutual aid agreements as necessary.
Elementary School Emergency Response Plan	2009	Asst. Principal	Good	Continuously monitor and update to meet state requirements.
High School Emergency Response Plan	2009	Principal/Staff	Good	Continuously monitor and update to meet state requirements.
Code Red (Reverse Notification System)	n/a	Grafton County Sheriff	Good	Include CodeRed process in EOP.
PSU Alert System	n/a	Plymouth State University	Good	Continue alerting through signs and texts.
Speare Memorial Hospital Emergency Response Plan	2010	Speare Memorial Hospital	Good	Continuously monitor and update to meet state requirements.
Public Access Channel (3 & 20)	2010	Town	Good	Continue to post emergency info on public access channels

Chapter 6
Mitigation Projects

Identify Objectives and Mitigation Projects:
In this step the Hazard Mitigation Planning Committee identified, evaluated and prioritized mitigation objectives and projects. At the beginning of the meeting the Committee reviewed the Goals established at the first working committee meeting (see Chapter 1). To focus the discussion, the Committee developed objectives and mitigation projects for each of the hazards affecting the Town of Plymouth. The objectives and projects are as follows:

Objective A: Enhance the Town's capability to monitor and anticipate potential hazard conditions and disseminate appropriate information to the public in a timely manner.

1. Work with the NH Department of Environmental Services (DES), National Weather Service (NWS) and United States Geological Survey (USGS) to develop a real-time flood-forecasting system and reservoir operations model to reduce flooding impacts and potential flood damage within Plymouth and the Pemigewasset and Baker River network

Objective B: Implement drainage projects to reduce flooding throughout the Town.

1. Continue implementation of planned Stormwater improvements throughout the town; Old Hebron Road, Chaisson Road, Loon Lake Road, Bell Road and Reservoir Road.

Objective C: Educate the public on the risk of hazards by providing information and reference materials regarding specific repetitive hazards to the public.

1. Develop and continue the Comprehensive Emergency Management Planning for Schools (CEMPS) program at the Elementary School and Regional High School.

2. *Conduct an assessment of the Village and Plymouth State University for CBRNE exposure.*

Objective D: Support the NH-DRED in the implementation of the State's Wildland Fire Suppression Plans and initiatives.

1. Update the Town's Wildfire Standard Operating Procedures to incorporate the State's Forest Fire Plan and related plans toward the development of cost-effective wildland fire hazard mitigation measures.

2. Purchase a wood chipper for highway and recycling center for use in disposing of wood debris.

Objective E: Enhance the Towns capability to operate and work in a safe and secure environment under emergency conditions.

1. Upgrade the Emergency Operations Center. to include security features and back up power system.

2. Evaluate the need for additional "physical security" at the Town Hall, Police Department, Fire Department and other municipal critical infrastructure.

3. Update and maintain plan for emergency evacuation of Plymouth residents, guests, and Plymouth State College students.

4. Update and maintain the Emergency Preparedness Plan for the Plymouth Co-Generation Plan, to include: current date, written SOPs for actions to be taken in the event of an emergency; emergency notification flowchart with names/numbers/radio frequencies/address; and an annual concurrence page.

5. Update Fire Department SOPs with description of responsibilities, emergency notification flowchart with names/numbers/radio frequencies/address; and an annual concurrence page.

6. Provide Incident Command System (ICS) training to emergency management personnel, critical facility managers and other town staff members.

7. *Construct a Public Safety Center to house police and fire.*

8. *Develop MOU with local Petroleum Companies to provide gas to emergency vehicles during prolonged power outages.*

Objective F: Assist the general public and private property owners in developing an understanding of hazards and cost-effective hazard mitigation projects by making information and resources available.

1. Distribute available public educational hazard mitigation materials (i.e. posters, brochures) to display in public areas (i.e. library, school, town hall)

2. Publish and distribute information to the public that identifies hazard mitigation measures and the availability of mitigation resources.

3. Consider application to the NFIP Community Rating System, which provides flood insurance premium reductions to property owners.

Objective G: Improve the Town's Disaster Response and Recovery Capability.

1. Update the 1987 Emergency Management Plan to meet the new Emergency Support Function (ESF) format required by the Bureau of Emergency Management.

2. Develop an exercise/drill procedure to annually test Plymouth's Emergency Operations Plan.

3. Purchase a 16' zodiac for the water & sewer department.

4. Develop MOUs with private entities to utilize boats, ATVs, snowmobiles, etc.

5. *Improve protection of Vital Records and develop a Continuity of Operations Plan (COOP) to be included in the update Emergency Operations Plan.*

Objective H: Identify, assess and catalogue the Town's critical and essential support services.

1. None

Objective I: Develop, review and prioritize cost effective hazard mitigation measure designed to reduce the potential impact of natural and human-caused disaster on the Town's critical infrastructure.

1. Continue to implement the Plymouth Village Water & Sewer Districts' "Drinking Water Source Protection Program" in conjunction with NH-DES, to identify methods for protecting public water supplies in Plymouth and develop a plan for implementing the identified protection methods through zoning ordinance amendment.

2. Relocate the Town Highway Garage out of the 100-year floodplain.

Objective J: Continue to develop, adopt and implement standards for the Town's roadway and drainage systems.

1. Develop a team of town officials and professional engineers to review the Town's roadway and drainage standards, for improvement recommendations and mitigation measures.

2. Increase Plymouth's participation in the local river corridor stewardship programs for the Pemi and Baker Rivers that address the maintenance of stormwater runoff systems.

3. Coordinate NH Department of Transportation (DOT) with and research and other state and federal agencies relative to grants that may be available for mitigation projects on the Town's road and drainage systems.

4. Implement recommendations of the South Main Street drainage improvement study of 2004.

5. Upgrade the steam cleaner system with bigger generator to maintain clear culverts during cold weather conditions.

Objective K: Develop strategies to mitigate the effects of river ice impacts on structures and related flooding.

1. Work with CRREL to determine pre-ice jam mitigation measures that can be performed to minimize flooding effects by the ice jams on the Pemi and Baker Rivers.

Objective L: Promote inter-operability of communications for town emergency response personnel.

1. Provide portable radios for the Highway Department and Water & Sewer Department.

Completed Projects since 2004

The Town of Plymouth completed the original version of this plan in November of 2004. Since that time the town has completed the projects listed below. These completed projects are not included in the 2010 edition of the Hazard Mitigation plan. In addition, the Committee added new projects to the Mitigation Action Plan and those projects are identified in *Italics* in the Action Plan.

Completed Projects since 2004
Develop an information dissemination program including the Plymouth Fire Department, local broadcast and cablecast media for use during times of heightened potential hazard conditions.
Develop compensatory storage requirements in the Floodplain Ordinance.
Create a town-wide awareness of the potential hazards in the Town of Plymouth through various public education programs.
Install staff gauges and other such monitoring equipment as recommended from the development of a real-time flood-forecasting system and reservoir operations models.
Upgrade the Town of Plymouth website to include natural hazard information and general emergency management information.
Purchase and install a proper sized generator at the Elementary School
Consider location, construction type, etc., relative to identified specific hazard mitigation before construction/repair of the Town's Critical Facilities.
Updated communications equipment for Police, Fire and Schools
Retrofitting the Plymouth Wastewater Treatment facility to withstand the 100-year flood (project is currently underway)
Organize and train town officials and volunteers in ice monitoring activities to provide early warning information.
Develop SOPs for Mass Casualty Incident (MCI) with Lakes Region and Plymouth dispatch.
Purchase 60 "lock-boxes" to facilitate the evacuation of vehicles in PSU parking lot in the 100-year floodplain. (NOTE: This project was removed as it is no longer necessary due to the University's alerting system. Evacuation of vehicles is managed through their alerting system.)

Prioritized Mitigation Projects:

In 2010, each committee member reviewed the 31 projects listed above. After careful evaluation, the committee ranked the projects by voting for half of the projects. The project that received the most votes was ranked as the highest priority and the project receiving the least amount of votes received the lowest priority. The committee was able to determine a basic benefit/cost by using the STAPLEE method. For each project identified, the committee considered the STAPLEE Criteria (Social, Technical, Administrative, Political, Legal, Economic and Environmental) to guide their decision in prioritizing the projects.

The following table shows the complete list of projects and their order of priority. The medium and high priority projects were then placed in an Action Plan found on Page 6-8 which identifies Responsibility, Funding and a Time frame for each high priority project.

PRIORITZED MITIGATION PROJECTS Project Description	Priority
1. Work with the NH-DES, NWS and USGS to develop a real-time flood-forecasting system and reservoir operations model to reduce flooding impacts and potential flood damage within Plymouth and the Pemigewasset and Baker River network. Since 2004, have improved flood forecasting, but can still use improvement.	High
2. Upgrade the Emergency Operations Center to include security features and backup power system.	High
3. Update and maintain plan for emergency evacuation of Plymouth residents, guests, and Plymouth State University students.	High
4. Provide National Incident Management System (NIMS) / Incident Command System (ICS) training to emergency management personnel, critical facility managers and other town staff members. Since 2004, training has been an on-going process and needs to continue.	High
5. Update the 1987 Emergency Management Plan to meet the new Emergency Support Function (ESF) format required by the Bureau of Emergency Management.	High
6. Provide portable radios for the Highway Department and Water & Sewer Department	High
7. Construct a Public Safety Center to house police and fire.	High
8. Continue implementation of planned Stormwater improvements throughout the town; Cummings Hill Road, Texas Hill Road, Morse Road, Old Hebron Road, Chaisson Road, Loon Lake Road, Bell Road and Reservoir Road.	Medium
9. Develop and continue the Comprehensive Emergency Management Planning for Schools (CEMPS) program at the Elementary School and Regional High School. Since 2004, many of the essential staff have taken ICS training and both schools are updating there plans.	Medium
10. Purchase a wood chipper for highway and recycling center for use in disposing of wood debris.	Medium
11. Evaluate the need for additional "physical security" at the Town Hall, Police Department, Fire Department, Highway Department and Senior Center.	Medium
12. Develop an exercise/drill procedure to annually test Plymouth's Emergency Operations Plan.	Medium
13. Continue to implement the Plymouth Village Water & Sewer Districts' "Drinking Water Source Protection Program" in conjunction with NH-DES, to identify methods for protecting public water supplies in Plymouth and develop a plan for implementing the identified protection methods through zoning ordinance amendment.	Medium
14. Relocate the Town Highway Garage out of the 100-year floodplain.	Medium
15. Develop a team of town officials and professional engineers to review the Town's roadway and drainage standards, for improvement recommendations and mitigation measures.	Medium
16. Coordinate with and research NHDOT and other state and federal agencies relative to grants that may be available for mitigation projects on the Town's road and drainage systems.	Medium
17. Upgrade a steam cleaner system with bigger generator to maintain clear culverts during cold weather conditions (i.e. ice/debris blockage).	Medium
18. Improve protection of Vital Records and develop a Continuity of Operations	Medium

PRIORITZED MITIGATION PROJECTS Project Description	Priority
Plan (COOP) to be included in the update Emergency Operations Plan.	
19. Conduct an assessment of the Village and Plymouth State University for CBRNE exposure.	Medium
20. Develop MOU with local Petroleum Companies to provide gas to emergency vehicles during prolonged power outages.	Medium
21. Update the Town's Wildfire Standard Operating Procedures to incorporate the State's Forest Fire Plan toward the development of cost-effective wildland fire hazard mitigation measures.	Low
22. Update and maintain the Emergency Preparedness Plan for the Plymouth Co-Generation Plan, to include: current date, written SOPs for actions to be taken in the event of an emergency; emergency notification flowchart with names/numbers/radio frequencies/address; and an annual concurrence page.	Low
23. Update Fire Department SOPs with description of responsibilities, emergency notification flowchart with names/numbers/radio frequencies/address; and an annual concurrence page.	Low
24. Distribute available public educational hazard mitigation materials (i.e. posters, brochures) to display in public areas (i.e. library, school, town hall)	Low
25. Publish and distribute information to the public that identifies hazard mitigation measures and the availability of mitigation resources.	Low
26. Consider application to the NFIP Community Rating System, which provides flood insurance premium reductions to property owners.	Low
27. Purchase a 16' zodiac for the water & sewer department.	Low
28. Develop MOUs with private entities to utilize boats, ATVs, snowmobiles, etc.	Low
29. Increase Plymouth's participation in the local river corridor stewardship programs for the Pemi and Baker Rivers that address the maintenance of stormwater runoff systems.	Low
30. Implement recommendations of the South Main Street drainage improvement study of 2004.	Low
31. Work with CRREL to determine pre-ice jam mitigation measures that can be performed to minimize flooding effects by the ice jams on the Pemi and Baker Rivers. (Note: The pier on the new DiCenzo Bridge may or may not reduce the potential for ice jams.)	Low

MITIGATION ACTION PLAN

The following is the list of high priority projects, voted on by the Committee. The following action plan identifies Responsibility, Funding and a Time frame for the high priority projects for each category.

Mitigation Action Plan Plymouth, NH					
Project	**Responsibility/ Oversight**	**Funding/Support**	**Timeframe**	**Hazards Addressed**	**Priority**
Work with the NH-DES, NWS and USGS to develop a real-time flood-forecasting system and reservoir operations model to reduce flooding impacts and potential flood damage within Plymouth and the Pemigewasset and Baker River network.	Emergency Management Director (EMD)	Emergency Management Planning Grant (EMPG)	As funds allow	Flood	High
Upgrade the Emergency Operations Center to include security features and backup power system.	EMD	EMPG Grant / Town Match	2 years	All Hazards	High
Update and maintain plan for emergency evacuation of Plymouth residents, guests, and Plymouth State University students.	EMD/Police/ Fire	Staff Time	1 year	All Hazards	High
Provide National Incident Management System (NIMS) / Incident Command System (ICS) training to emergency management personnel, critical facility managers and other town staff members. Since 2004, training has been an on-going process and needs to continue.	EMD	Homeland Security and Emergency Management (HSEM)	Current to date	All Hazards	High
Update the 1987 Emergency Management Plan to meet the new Emergency Support Function (ESF) format required by the NH Homeland & Emergency Management.	EMD	Grant/Staff time	6 months	All Hazards	High

Mitigation Action Plan Plymouth, NH					
Project	**Responsibility/ Oversight**	**Funding/Support**	**Timeframe**	**Hazards Addressed**	**Priority**
Project	**Responsibility/ Oversight**	**Funding/Support**	**Timeframe**	**Hazards Addressed**	**Priority**
Provide portable radios for the Highway Department and Water & Sewer Department	EMD	Grant/ Town Budget	1 year	All Hazards	High
Construct a Public Safety Center to house police and fire.	Board of Selectmen	Grants / Town Budget	2 years	All Hazards	High
Evaluate the need for additional "physical security" at the Town Hall, Police Department, Fire Department, Highway Department and Senior Center.	EMD / Board of Selectmen	Town Budget & Domestic Anti-Terrorism Technology Development Program	3-5 years	Human Caused	Medium
Develop an exercise/drill procedure to annually test Plymouth's Emergency Operations Plan.	EMD	HSEM Grants	2012	All Hazards	Medium
Continue to implement the Plymouth Village Water & Sewer Districts' "Drinking Water Source Protection Program" in conjunction with NH-DES, to identify methods for protecting public water supplies in Plymouth and develop a plan for implementing the identified protection methods through zoning ordinance amendment.	Town Planner	Staff time / DES	1-2 years	Drought, Human Caused	Medium

Mitigation Action Plan Plymouth, NH					
Project	**Responsibility/ Oversight**	**Funding/Support**	**Timeframe**	**Hazards Addressed**	**Priority**
Relocate the Town Highway Garage out of the 100-year floodplain.	DPW Director/Selectmen	Flood Mitigation Assistance grant / Town match	3-5 years	Flood	Medium
Upgrade a steam cleaner system with bigger generator to maintain clear culverts during cold weather conditions (i.e. ice/debris blockage).	EMD/Public Works Director	Town Budget/EMPG	1-2 years	Winter Weather	Medium
Continue implementation of planned Stormwater improvements throughout the town; Cummings Hill Road, Texas Hill Road, Morse Road, Old Hebron Road, Chaisson Road, Loon Lake Road, Bell Road and Reservoir Road.	DPW Director	Grants / Town Budget	Cummings & Texas Hill = 1 year Remainder 3 yrs	Flood	Medium
Develop and continue the Comprehensive Emergency Management Planning for Schools (CEMPS) program at the Elementary School and Regional High School. Since 2004, many of the essential staff have taken ICS training and both schools are updating there plans.	SAU / Police Dept.	HSEM	1 year	All Hazards	Medium
Purchase a wood chipper for highway and recycling center for use in disposing of wood debris.	DPW Director	Grants / Town Budget	2 years	Hurricane, Severe Wind, Winter Weather	Medium

Mitigation Action Plan Plymouth, NH					
Project	**Responsibility/ Oversight**	**Funding/Support**	**Timeframe**	**Hazards Addressed**	**Priority**
Develop a team of town officials and professional engineers to review the Town's roadway and drainage standards, for improvement recommendations and mitigation measures.	DPW Director	Staff Time	1 year	Flood	Medium
Coordinate with and research NHDOT and other state and federal agencies relative to grants that may be available for mitigation projects on the Town's road and drainage systems.	DPW Director	Grants / Town Budget	1 year	Flood	Medium
Improve protection of Vital Records and develop a Continuity of Operations Plan (COOP) to be included in the update Emergency Operations Plan.	Town Administrator	grant	2 years	All Hazards	Medium
Conduct an assessment of the Village and Plymouth State University for CBRNE exposure.	Police Department	Staff Time	1 year	Human Caused	Medium
Develop MOU with local Petroleum Companies to provide gas to emergency vehicles during prolonged power outages.	EMD	Staff Time	1 year	Winter Weather, Severe Wind	Medium

Chapter 7
Adoption, Implementation & Monitoring

Adoption

The Plymouth Board of Selectmen, by majority vote, officially adopted the *Plymouth Hazard Mitigation Plan* on June 13, 2011. The Adoption Certification is on the following page. This plan identifies Mitigation Actions to be implemented as outlined in the "Prioritized Mitigation Projects" in Chapter 6.

Implementation

There were 31 mitigation projects that were prioritized by the Committee. For high and medium priority projects, the Committee identified who, when and how they would be implemented, in the Action Plan found on Page 6-9 in Chapter 6. It will be the future responsibility of the Town Planner and Emergency Management Director to ensure implementation of these Prioritized Projects.

Monitoring and Updates

The *Plymouth Hazard Mitigation Plan* must be reviewed, evaluated and updated at least once every five years. The Town Planner and the Emergency Management Director shall review the Plymouth Hazard Mitigation Plan annually or after a disaster, in order to track progress and update the Mitigation Projects identified in Chapter 6. It shall be the responsibility of the Emergency Management Director to ensure that review of the Plan is initiated and coordinated with the Plymouth Hazard Mitigation Planning Committee. Changes will be made to the Plan to accommodate for projects that have failed or are not considered feasible after a review for their consistency, the timeframe, community priorities and funding resources.

The Town Planner and EMD will convene the Committee at least once every five years to ensure the following:

- The Hazard Analysis will be evaluated for accuracy.
- Projects completed will be evaluated to determine if they met their objective.
- Projects not completed since the last updated will be reviewed to determine feasibility of future implementation.
- Lastly, new projects will be identified and included in future updates as needed.
- The public, members of the Committee, surrounding communities, businesses, academia, State agencies and non-profit agencies, will continue to be invited and involved during this process. Theses groups can be notified through invitations, public notices, newspaper articles, brochures and/or other public outreach activities.
- In keeping with the process of adopting the 2010 Plymouth Hazard Mitigation Plan, a public hearing to receive public comment will be held. This will require the posting of two public notices, and where appropriate by posting a notice on the town's Web Site.

- Updates to the *Plan* may be adopted subsequent to a public meeting or hearing by the Plymouth Board of Selectmen.
- Once every five years, the EMD will convene at least one meeting with the Committee to review the plan, receive public input and submit an updated plan to FEMA for approval.

TOWN OF PLYMOUTH, NH
HAZARD MITIGATION PLAN

RESOLUTION OF ADOPTION

WHEREAS, several public meetings and committee meetings were held between June 2010 and August 2010 regarding the development and review of the Plymouth Hazard Mitigation Plan; and

WEREAS, the Plymouth Hazard Mitigation Plan contains several potential future projects to mitigate hazard damage in the Town of Plymouth; and

WEREAS, a public meeting was held by the Board of Selectmen on 6/13/11 to formally approve and adopt the Plymouth Hazard Mitigation Plan.

NOW, THEREFORE, BE IT RESOLVED that the Plymouth Board of Selectmen approves the Plymouth Hazard Mitigation Plan.

APPROVED and SIGNED this 13 day of June 2011.

Signature: _____
Chairman of the Board of Selectmen

Signature: _____
Selectman

Signature: _____
Selectman

Signature: _____
Selectman

Signature: _____
Selectman

Appendix A:
Documents of the Planning Process

Including:

Agendas
Attendance Sheets
Public Notices

Plymouth, NH
All Hazard Mitigation Plan Update

Committee Meeting
June 30, 2010
AGENDA

1. Review Mitigation Goals

2. Risk Rating Matrix

3. Update Hazards (Ref: 2004 Chap.3)

4. Set date for next Committee Meeting

   Update Inventory of Critical facilities
   Update Capability Assessment
   Mitigation Projects – Any completed? Add new?

Name	Title/Affiliation
Brian Murphy	Town of Plymouth Building Inspector
Peter Furmanick	Plymouth Highway Department
Casino Clogston	Plymouth Fire Department
Tom Morrison	Plymouth Fire Department
Dawn Roach	Clerical Assistant
Kate Beisiegel	Executive Assistant
Donna Quinn	Public Health Network Coordinator
Steve Temperino	Plymouth Police Department
Stephen Campbell	PSU CIO
Tammy J Hill	PSU EMD/EHS Manager
Miriam Bader	Plymouth Town Planner
Frank Miller	Resident
Paul Freitas	Plymouth Town Administrator
Paul Hatch	NH HSEM
Jane Hubbard	Hubbard Consulting LLC
Bonnie Lockwood	McGrew Management Services LLC

Plymouth, NH
All Hazard Mitigation Plan Update

Committee Meeting
July 28, 2010
AGENDA

1. Update Inventory of Critical Facilities

2. Update Capability Assessment

3. Set date for next Committee Meeting

   Update Mitigation Projects
   Identify New Mitigation Projects
   Prioritize Projects

Name	Title/Affiliation
Brian Murphy	Town of Plymouth Building Inspector
Peter Furmanick	Plymouth Highway Department
Casino Clogston	Plymouth Fire Department
Sharon Penney	Plymouth Town Planner
Dawn Roach	Clerical Assistant
Wendy Lasch-Williams	Town of Plymouth
Donna Quinn	Public Health Network Coordinator
Steve Temperino	Plymouth Police Department
Frank Miller	Resident
Paul Freitas	Plymouth Town Administrator
Paul Hatch	NH HSEM
Jane Hubbard	Hubbard Consulting LLC
Bonnie Lockwood	McGrew Management Services LLC

Plymouth, NH
All Hazard Mitigation Plan Update

Committee Meeting
August 25, 2010
AGENDA

1. Update current project list (completed/not completed/not applicable)

2. Identify New Mitigation Projects

3. Prioritize Mitigation Projects (via email)

Name	Title/Affiliation
Kevin Lincoln	Town of Plymouth Water & Sewer
Steve Campbell	PSU CIO
Peter Furmanick	Plymouth Highway Department
Casino Clogston	Plymouth Fire Department
Wendy Lasch-Williams	Town of Plymouth
Donna Quinn	Public Health Network Coordinator
Steve Temperino	Plymouth Police Department
Frank Miller	Resident
Paul Freitas	Plymouth Town Administrator
Hoby Harmon	Speare Hospital
Tom Morrison	Plymouth Fire Department
Paul Hatch	NH HSEM
Jane Hubbard	Hubbard Consulting LLC
Bonnie Lockwood	McGrew Management Services LLC

PRESS RELEASE #1

PUBLIC NOTICE TO THE RESIDENTS OF PLYMOUTH, NH

PUBLIC HEARING-OPEN FORUM

July 28, 2010 10:00 – 12:00 pm
Plymouth Town Office

The Town of Plymouth has been in the process of working with the Hazard Mitigation Planning Committee to update/revise Plymouth's *Hazard Mitigation Plan, 2000.* The *Plan* identifies potential natural and man-made hazards throughout the town and various projects and/or strategies to mitigate their effects. The President signed into law, The Disaster Mitigation Act of 2000 (DMA), Section 322-Mitigation Planning. It requires all local governments prepare and adopt jurisdiction-wide hazard mitigation plans as a condition of receiving Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) project grants.

All residents are formally invited to review a draft of the updated/revised *Plan*, and publicly comment on their concerns regarding the *Plan*.

PRESS RELEASE #2

PUBLIC NOTICE TO THE RESIDENTS OF PLYMOUTH, NH

PUBLIC HEARING-OPEN FORUM

August 25, 2010 10:00 - 12:00pm
Plymouth Town Office

The Town of Plymouth has been in the process of working with the Hazard Mitigation Planning Committee to update/revise Plymouth's *Hazard Mitigation Plan, 2000*. The *Plan* identifies potential natural and man-made hazards throughout the town and various projects and/or strategies to mitigate their effects. The President signed into law, The Disaster Mitigation Act of 2000 (DMA), Section 322-Mitigation Planning. It requires all local governments prepare and adopt jurisdiction-wide hazard mitigation plans as a condition of receiving Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) project grants.

All residents are formally invited to review a draft of the updated/revised *Plan*, and publicly comment on their concerns regarding the *Plan*.

Appendix B:
Hazard Mitigation Resources

♦ HAZARD MITIGATION GRANT PROGRAM - "Section 404 Mitigation"

The Hazard Mitigation Grant Program (HMGP) in New Hampshire is administered in accordance with the 404 HMGP Administration Plan which was derived under the authority of Section 404 of the Stafford Act in accordance with Subpart N. of 44 CFR.

The program receives its funding pursuant to a Notice of Interest submitted by the Governor's Authorized Representative (or GAR, i.e. the Director of NHOEM) to the FEMA Regional Director within 60 days of the date of a Presidentially Declared Disaster. The amount of funding that may be awarded to the State/Grantee under the HMGP may not exceed 15% of (over and above) the overall funds as are awarded to the State pursuant to the Disaster Recovery programs as are listed in 44 CFR Subpart N. Section 206.431 (d) (inclusive of all Public Assistance, Individual Assistance, etc.). Within 15 days of the Disaster Declaration, an Inter-Agency Hazard Mitigation Team is convened consisting of members of various Federal, State, County, Local and Private Agencies with an interest in Disaster Recovery and Mitigation. From this meeting, a Report is produced which evaluates the event and stipulates the State's desired Mitigation initiatives.

Upon the GAR's receipt of the notice of an award of funding by the Regional Director, the State Hazard Mitigation Officer (SHMO) publishes a Notice of Interest (NOI) to all NH communities and State Agencies announcing the availability of funding and solicits applications for grants. The 404 Administrative Plan calls for a State Hazard Mitigation Team to review all applications. The Team is comprised of individuals from various State Agencies.

Eligible Subgrantees include:

- State and Local governments,
- Certain Not for Profit Corporations
- Indian Tribes or authorized tribal organizations
- Alaskan corporations not privately owned.

Minimum Project Criteria

- Must conform with the State's "409" Plan
- Have a beneficial impact on the Declared area
- Must conform with:
  - NFIP Floodplain Regulations
  - Wetlands Protection Regulations
  - Environmental Regulations
  - Historical Protection Regulations
- Be cost effective and substantially reduce the risk of future damage
- Not cost more than the anticipated value of the reduction of both direct damages and subsequent negative impacts to the area if future disasters were to occur i.e., min 1:1 benefit/cost ratio
- Both costs and benefits are to be computed on a "net present value" basis
- Has been determined to be the most practical, effective and environmentally sound alternative after a consideration of a range of options
- Contributes to a long-term solution to the problem it is intended to address
- Considers long-term changes and has manageable future maintenance and modification requirements

Eligible Projects may be of any nature that will result in the protection to public or private property and include:

- Structural hazard control or protection projects
- Construction activities that will result in protection from hazards
- Retrofitting of facilities
- Certain property acquisitions or relocations
- Development of State and local mitigation standards
- Development of comprehensive hazard mitigation programs with implementation as an essential component
- Development or improvement of warning systems

♦ FLOOD MITIGATION ASSISTANCE (FMA) PROGRAM

New Hampshire has been a participant in the Flood Mitigation Assistance Program (FMA or FMAP) since 1996/97. In order to be eligible, a community must be a participant in the National Flood Insurance Program.

Flood Mitigation Assistance Program

- NFIP Funded by a % of Policy Premiums
- Planning Grants
- Technical Assistance Grants to States (10% of Project Grant)
- Project Grants to communities
- Communities must have FEMA approved Flood Mitigation Plan to receive Project Funds

In 1997, the State was awarded funds to assist communities with Flood Mitigation Planning and Projects. A Planning Grant from the 1996/97 fund was awarded to the City of Keene in 1998. In preparation for the development of the Flood Mitigation Plan, the Planning Department of the City of Keene created a digital data base of its floodplain including the digitizing of its tax assessing maps as well as its Special Flood Hazard Areas in GIS layers. The Plan Draft was submitted to FEMA for review and approval in March of 2000. The Plan includes a detailed inventory of projects and a "model" project prioritization approach.

In 1998, the FMAP Planning Grant was awarded to the Town of Salem. Given the complexity of the issues in the Spicket River watershed, the Town of Salem subcontracted a substantial portion of the development of its Flood Mitigation Planning to SFC Engineering Partnership of Manchester, NH, a private engineering firm. Salem submitted a Plan and proposed projects to the State and FEMA in May of 1999 which were approved by FEMA. This made Salem the first community in NH to have a FEMA/NFIP approved Flood Mitigation Plan.

Eligible Projects

(44 CFR Part 78)

- Elevation of NFIP insured residential structures
- Elevation and dry-proofing of NFIP insured non-residential structures
- Acquisition of NFIP insured structures and underlying real property
- Relocation of NFIP insured structures from acquired or restricted real property to sites not prone to flood hazards
- Demolition of NFIP insured structures on acquired or restricted real property
- Other activities that bring NFIP insured structures into compliance with statutorily authorized floodplain management requirements
- Beach nourishment activities that include planting native dune vegetation and/or the installation of sand-fencing.
- Minor physical mitigation projects that do not duplicate the flood prevention activities of other Federal agencies and lessen the frequency of flooding or severity of flooding and decrease the predicted flood damages in localized flood problem areas. These include: modification of existing culverts and bridges, installation or modification of flood gates, stabilization of stream banks, and creation of small debris or flood/storm water retention basins in small watersheds (not dikes, levees, seawalls etc.)

♦ PRE-DISASTER MITIGATION PROGRAM (PDM)

FEMA has long been promoting disaster resistant construction and retrofit of facilities that are vulnerable to hazards in order to reduce potential damages due to a hazard event. The goal is to reduce loss of life, human suffering, economic disruption, and disaster costs to the Federal taxpayer. This has been, and continues to be accomplished, through a variety of programs and grant funds.

Although the overall intent is to reduce vulnerability before the next disaster threatens, the bulk of the funding for such projects actually has been delivered through a "post-disaster" funding mechanism, the Hazard Mitigation Grant Program (HMGP). This program has successfully addressed the many hazard mitigation opportunities uniquely available following a disaster. However, funding of projects "pre-disaster" has been more difficult, particularly in states that have not experienced major disasters in the past decade. In an effort to address "pre-disaster mitigation", FEMA piloted a program from 1997-2001 entitled "Project Impact" that was community based and multi-hazard oriented.

Through the Disaster Mitigation Act of 2000, Congress approved creation of a national Predisaster Hazard Mitigation program to provide a funding mechanism that is not dependent on a Presidential disaster declaration. For FY2002, $25 million has been appropriated for the new grant program entitled the ***Pre-Disaster Mitigation Program (PDM)***. This new program builds on the experience gained from Project Impact, the HMGP, and other mitigation initiatives.

Eligible projects include:

- State and local hazard mitigation planning
- Technical assistance [e.g. risk assessments, project development]
- Mitigation Projects
  - Acquisition or relocation of vulnerable properties
  - Hazard retrofits
  - Minor structural hazard control or protection projects
- Community outreach and education [up to 10% of state allocation]

The funding is 75% Federal share, 25% non-Federal, except as noted below. The grant performance periods will be 18 months for planning grants, and 24 months for mitigation project grants. The PDM program is available to regional agencies and Indian tribes. Special accommodation will be made for "small and impoverished communities", who will be eligible for 90% Federal share, 10% non-Federal.

♦ COMMUNITY DEVELOPMENT BLOCK GRANT PROGRAM

These Federal funds are provided through the U.S. Department of Housing and Urban Development (HUD) and are administered by the CDBG Program of the New Hampshire Office of State Planning.

Some CDBG disaster related funding has been transferred to FEMA recently and the SHMO is scheduled to receive guidance as to which specific funds and, new program management criteria.

The specific CDBG funds designated for hazard mitigation purposes are made available to address "unmet needs" pursuant to a given Disaster Declaration to States which request them. For these funds, project selection guidance is provided by NHOEM and NHOSP administers the grant.

Pursuant to Declaration DR-1144-NH, $557,000.00 was made available to the State and pursuant to DR-1199-NH, the grant award is targeted at $1,500,000.00.

In October of 1998, HUD announced the program guidelines for the expenditure of the DR-1144-NH related funding and the community of Salem applied for, and has received preliminary approval for funding to acquire a 19 unit trailer park in the Floodplain.

Community Development Block Grant

- ***U.S. Dept. of Housing and Urban Development***
- ***Funds for a Declared Disaster's "Unmet Needs"***
- ***Projects must meet one of three National Objectives***
- ***Provide a direct benefit to low and moderate income persons or households***
- ***Prevent or eliminate slums and blight***
- ***Eliminate conditions which seriously and immediately threaten the public health and welfare***

Additional conditions with respect to the expenditure of these funds includes the provision that at least 50% of the grant award must be expended in a manner which benefits individuals who earn 80% or less than the area's (county's) median income.

WEBSITES FOR MITIGATION RESOURCES	
American Planning Association	http://www.planning.org
Catalog of Federal Domestic Assistance Programs	http://aspe.os.dhhs.gov/cfda
Community Rating System	http://www.fema.gov/nfip/crs.htm
FEMA Individual Assistance Program	http://www.fema.gov/rrr/inassist.shtm
FEMA Mitigation Planning	http://www.fema.gov/fima/planning
FEMA Public Assistance Program	http://www.fema.gov/rrr/pa
Flood Hazard Mitigation	http://www.fema.gov/hazards/floods
Flood Mitigation Assistance Program	http://www.fema.gov/fima/mtap.shtm
Habitat for Humanity	http://www.habitat.org/
Hazard Mitigation Grant Program	http://www.fema.gov/fima/hmgp/
HAZUS and HAZUS–MH	http://www.fema.gov/hazus/index.shtm
Home Rule and Dillon Rule	http://www.naco.org/pubs/research/briefs/dillon.cfm
Institute for Business and Home Safety	http://www.ibhs.org/
Institute for Local Self Government	http://www.ilsg.org/
Landslide Hazard Mitigation	http://www.fema.gov/hazards/landslides
Maxwell Campbell Public Affairs Institute:	http://www.governing.com/gpp/2000/gp0intro.htm
City and County Report Cards	http://www.governing.com/gpp/2002/gp2intro.htm
Mitigation Success Stories	http://www.fema.gov/fima/success.shtm
Multi-hazard Mapping Initiative	http://www.hazardmaps.gov
National Association of Regional Councils	http://www.narc.org
National Dam Safety Program	http://www.fema.gov/fima/damsafe/
National Earthquake Hazard Reduction Program	http://www.fema.gov/hazards/earthquakes/eqmit.shtm
National Flood Insurance Program	http://www.fema.gov/nfip
National Hurricane Program	http://www.fema.gov/hazards/hurricanes/nhp.shtm
National League of Cities	http://www.nlc.org
Native eDGE	http://nativeedge.hud.gov
NH Bureau of Emergency Management	http://www.nhoem.state.nh.us
Pre-Disaster Mitigation Program	http://www.fema.gov/fima/pdm
Protecting Your Home	http://www.fema.gov/hazards/tornadoes/presskit3.shtm
Protecting Your Property from Fire: Dealing with Vegetation and Combustible Materials	http://www.fema.gov/fima/how2001
Protecting Your Property from Fire: Roofing	http://www.fema.gov/fima/how2002.shtm
Protecting Your Property from Wind	http://www.fema.gov/fima/how2018.shtm
Protecting Yourself from Tornadoes: Safe Rooms	http://www.fema.gov/mit/saferoom
Small Business Administration	http://www.sba.gov/disaster
The Grantsmanship Center: Community Foundations	http://www.tgci.com/resources/foundations/searchGeoLoc.asp
Tribal Governments: Laws, Legislation, and Related Topics	http://www.findlaw.com/01topics/21indian/index.html
U.S. Army Corps of Engineers	http://www.usace.army.mil
U.S. Department of Agriculture	http://www.usda.gov/da/disaster/nda.htm
U.S. Department of Agriculture, Natural Resources Conservation Service	http://www.nrcs.usda.gov
U.S. Department of Housing and Urban Development	http://www.hud.gov/offices/cpd/communitydevelopment/programs/dri/driquickfacts.cfm
U.S. Department of Transportation	http://www.fhwa.dot.gov/programadmin/erelief.html
U.S. Environmental Protection Agency	http://www.epa.gov/
U.S. State and Local Government Gateway	http://www.firstgov.gov/Government/State_Local.shtml
Wildfire Hazard Mitigation	http://www.fema.gov/hazards/fires