TOWN OF HOOKSETT
NEW HAMPSHIRE

Hooksett Safety Center, Hooksett, New Hampshire

HAZARD MITIGATION
PLAN UPDATE
2015

Town of Hooksett, New Hampshire

Hazard Mitigation Plan Update 2015

Prepared by the Southern New Hampshire Planning Commission

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The Hooksett Town Council would like to thank the following people for contributing their time and effort to complete this *Hooksett Hazard Mitigation Plan:*

Hooksett Hazard Mitigation Plan Update 2015
Committee Members

Harold Murray, Chairman, Hooksett Fire-Rescue Department/Emergency Management

Jo Ann Duffy, Hooksett Town Planner

Dean Jore, Assistant Fire Chief, Hooksett Fire-Rescue Department

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Matthew Lavoie, Hooksett Code Enforcement Officer

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"Prevention pays. It outperforms Wall Street hands down, and at the same time, it pays dividends that you can't calculate in dollars and cents. It saves lives. It saves suffering. It saves loss of property. Prevention saves jobs. Bottom line, prevention works."

James Lee Witt, former Director, Federal Emergency Management Agency

Thanks also to:

The New Hampshire Department of Safety, Homeland Security and Emergency Management Division, which developed the "New Hampshire Multi-Hazard Mitigation Plan Update 2013," and

The Local Mitigation Planning Handbook, prepared by FEMA, March 2013.

Both publications served as models for this Plan.

PREFACE

Hazard Mitigation Planning is a new field, spearheaded by the Federal Emergency Management Agency (FEMA) during the 1990s after Hurricane Andrew caused well over 20 billion dollars in damage over several southern states. That event resulted in 54 fatalities and the disruption of millions of lives. The Disaster Mitigation Act of 2000, developed by FEMA, was intended to help both communities and states prepare for, and deal with, such disasters. While New Hampshire normally does not have hurricanes of Andrew's magnitude, this area does experience many types of hazardous occurrences that cost both lives and money.

Natural hazards occur during all four seasons in the Northeast: winter ice, snow, and nor'easters; spring flooding; summer downbursts and thunderstorms; and fall hurricanes. Planning to make a community *disaster-resistant* before these storms occur can help to save lives as well as homes and infrastructure.

The Town of Hooksett has had its share of disasters over the past 100 years. In 1936, flooding caused Main Street to be under 18 feet of water, while taking out homes and train trestles in its path.

FEMA has several programs designed to strengthen the nation's disaster resistance by reducing risks, changing conditions and behaviors before a disaster to protect lives and prevent the loss of property.

FEMA has also recently updated the existing Flood Insurance Rate Maps, as many communities had outdated maps that did not reflect the true extent of flooding potential.

A community's eligibility for hazard mitigation funding depends upon having *adopted* a FEMA approved hazard mitigation plan and updating it at least every five years. Mitigation measures contained within the plan may be sufficient to warrant a grant. The Local Mitigation Planning Handbook, prepared by FEMA, March 2013 provides guidance to local governments on developing or updating hazard mitigation plans to meet the requirements of Title 44 Code of Federal Regulations (CFR) 201.6 for FEMA approval and eligibility to apply for FEMA Hazard Mitigation Assistance grant programs.

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Executive Summary

This ***Hooksett Hazard Mitigation Plan Update 2015*** has been developed to help Hooksett become a *disaster-resistant* community by taking measures to reduce future losses from natural or man-made hazardous events *before* they occur. The *Plan* was developed by the Hooksett Hazard Mitigation Plan Committee, made up of town employees in the Fire-Rescue Department, Police Department, Public Works Department, Code Enforcement Department and Community Development Department.

Natural hazards are addressed as follows:

- Flooding
- Wind
- Wildfire
- Earthquake
- Ice & Snow Events
- Other Hazards

The Hooksett Hazard Mitigation Plan Committee identified "**Critical Facilities**" and "**Areas at Risk.**" Highlights of these features include:

Critical Facilities:

- Safety Center
- Emergency Operations Center
- Town Hall
- Post Office
- Fire Service Facilities
- Law Enforcement Facilities
- Public Works Garage
- Emergency Shelters
- Evacuation Routes
- Bridges
- Telephone Facilities
- Wireless Communication Facilities
- Emergency Fuel Facilities
- Hospitals

Areas at Risk:

- Isolated Homes
- Dams

- Major Highways
- Electrical Power Substations
- Hazardous Material Facilities
- Above Ground Storage Tanks
- Recreation Areas
- Problem Culverts
- Hydro Power Plants
- Historic/Unique Resources
- Commercial/Economic Impact Areas
- Water and Wastewater Treatment Facilities
- Churches
- Elderly Housing
- Schools
- Day Care Centers
- Socio-Economic Impact Areas

Existing Hazard Mitigation Strategies

The Hooksett Hazard Mitigation Plan Committee identified strategies related to **hazard mitigation** as follows:

- Floodplain Development Ordinance
- Elevation Certificates
- Wetlands Conservation Overlay District (zoning)
- Groundwater Resource Conservation District (zoning)
- Emergency Operations Plan (EOP)
- Evacuation and Notification
- State Dam Program
- Road Design Standards
- Shoreland Protection Act
- Best Management Practices (BMP's)
- Electrical Back-Up Generators
- Town Radio System
- Hazardous Materials Regulations
- Regulation of Travel Trailers and Motor Homes
- IBC Building Code *and* Local Building Code
- Steep Slopes and Class VI Roads
- Comprehensive Emergency Management Planning for Schools (CEMPS)
- HazMat Response Team

New Hazard Mitigation Strategies

The Hooksett Hazard Mitigation Plan Committee listed 22 **new hazard mitigation strategies** as follows:

1. Develop and coordinate local hazard mitigation outreach program (combine all public outreach efforts currently ongoing).
2. Continue Conservation Commission initiatives to purchase flood-prone properties in the Special Flood Hazard Areas.
3. Purchase additional back-up generator(s) for the Underhill School and Town Library.
4. Evaluate and participate in FEMA Community Rating System and appoint an NFIP administrator for the Town.
5. Coordinate with SouthEastern NH Hazmat to implement a hazmat education program targeted toward businesses.
6. Participate in Regional Preparedness Programs such as the Southern New Hampshire Community Preparedness Program and the Greater Manchester Hazard Vulnerability Assessment.
7. Coordinate with Pan Am Railway for emergency notification and procedures.
8. Establish tree pruning maintenance program and acquire a bucket truck and necessary equipment for protecting power lines.
9. Continue to work with and coordinate with schools on hazard risks and emergency procedures.
10. Continue program to identify fuel loads in forested areas to determine wildfire vulnerability hazard.
11. Inventory school buildings for structural resistance to earthquake hazards and incorporate analysis into school emergency planning efforts.
12. Retrofit and upgrade problem culverts.
13. Improve Storm Drain Maintenance.
14. Evaluate and consider utilizing culvert GIS-based hydraulic capacity model to determine culvert vulnerabilities.
15. Create a wildfire prevention mitigation plan.
16. Increase public awareness on wildfire prevention.
17. Work on a water conservation and drought plan to increase public awareness.
18. Examine steep slope areas in town and develop plan for landslide prevention.
19. Planning Board and town should examine methods to protect town infrastructure from wind damage.
20. Examine critical infrastructure and/or facilities that would need lightning/surge protection and/or additional ground measures.
21. Organize outreach to vulnerable populations, including establishing and promoting accessible healing and cooling centers in community.
22. Educate homeowners about property bank stabilization and planting vegetation on slopes.

This Plan is scheduled to be reviewed and updated on an annual basis by the Hooksett Emergency Management Director in coordination with the Hooksett Town Council. The next review will be during 2016.

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SECTION I - INTRODUCTION

"Plans are worthless. Planning is essential." Dwight D. Eisenhower

Natural Hazards and their Consequences

Recently, the United States has suffered a record number of natural disasters. In 2012, Hurricane Sandy caused almost 150 deaths and an estimated $75 billion in damage. Hurricane Katrina in 2005 was the costliest storm on record, causing over 1,800 deaths and over $100 billion in damage. In 1992, Hurricane Andrew caused an estimated $25 billion in damage. The 1993 Midwest floods resulted in some $12-$16 billion in damage. The 1994 Northridge earthquake caused $20 billion in damage, and the 2002 summer flooding in central Texas topped $1 billion in damage. Much of this damage might have been averted with the implementation of foresighted hazard mitigation efforts. In New England, more than 150 natural disasters during the past half century have been sufficiently catastrophic to be declared "disaster areas" by the President, making them eligible for federal disaster relief. That is about three major disasters per year. More than 60 percent were the result of flooding.

Flooding, Hooksett, NH, May 2006

Windstorm Damage, Hooksett, NH February 2010

The Town experiences floods, tornadoes, winter storms, hurricanes, earthquakes and wildfires and their occurrence is inevitable. These events can wreak havoc on the natural environment--uprooting trees, eroding riverbanks and shorelines, carving new inlets, blackening forests. Yet, the natural environment is amazingly resilient, often recuperating in a matter of days or weeks.

When these events strike the man-made environment, however, the result is often a real disaster. Disasters occur when a natural occurrence crosses paths with the man-made environment such as buildings, roads, pipelines or crops. When hurricanes tear roofs off houses, it is a disaster. When tornadoes ravage a town, it is a disaster. And when floods invade low-lying homes, it is a disaster. If only wetlands and floodplains that are not developed were flooded, rather than

homes and businesses, the impact would be minimal. The natural environment takes care of itself. The man-made environment, in contrast, often needs some emergency assistance.

What is Hazard Mitigation?

Hazard mitigation is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards (44 CFR 201.2). Hazard mitigation activities may be implemented prior to, during, or after an event. However, it has been demonstrated that hazard mitigation is most effective when based on an inclusive, comprehensive, long-term plan that is developed before a disaster occurs.[1] It includes both structural interventions, such as flood control structures, and nonstructural measures, such as avoiding construction in the most flood-prone areas. Mitigation includes not only avoiding the development of vulnerable sections of the community, but also making existing development in hazard-prone areas safer. For example, a community could identify areas that are susceptible to damage from natural disasters and take steps to make these areas less vulnerable. It could also steer growth to less risky areas. Keeping buildings and people out of harm's way is the essence of mitigation.

Mitigation is not an impediment to the growth and development of a community. On the contrary, the incorporation of mitigation measures into decisions related to a community's growth will result in a safer, more resilient, community, and one that is more attractive to new families and businesses.

Why Develop a Mitigation Plan?

The full cost of the damage resulting from natural hazards--personal suffering, loss of lives, disruption of the economy, and loss of tax base--is difficult to measure. New Hampshire is subject to many types of natural disasters: floods, hurricanes, nor'easters, winter storms, earthquakes, tornadoes and wildfires, all of which can have significant economic and social impacts. Some, such as hurricanes, are seasonal and often strike in predictable locations. Others, such as floods, can occur any time of the year and almost anywhere in the state.

Benefits of Hazard Mitigation

Hazard mitigation offers many benefits for a community:

- **Saves lives and property -** A community can save lives and reduce property damage from natural hazards through mitigation, such as elevating structures in the floodplain.
- **Reduces vulnerability to future hazards -** By having a mitigation plan in place, a community is prepared to take steps that will permanently reduce

[1] *Local Mitigation Planning Handbook, FEMA, March 2013.*

the risk of future losses. This opportunity is often lost when we build our communities without regard to natural hazards or when we rebuild them after a disaster "just like they were before." While it is natural to want to return things to the way they were, it is important to remember that, in many cases, the disaster would not have been as severe if a mitigation plan had been implemented.

- **Facilitates post-disaster funding -** By identifying and ranking projects before the next disaster, a community will be in a better position to obtain post-disaster funding because much of the background work necessary for applying for federal funding will already be done.
- **Speeds recovery –** By developing a mitigation strategy, a community can identify post-disaster mitigation opportunities in advance of a disaster. By having this strategy in place, a community can be ready to respond quickly after a disaster.

Background: Hooksett Hazard Mitigation Planning

The U.S. Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA) oversees the Hazard Mitigation Assistance (HMA) programs. FEMA provides guidance to local governments within the State of New Hampshire to establish local hazard mitigation plans. FEMA requires communities to have current Hazard Mitigation Plans as a requirement for receiving FEMA Funds. According to Title 44 Code of Federal Regulations (CFR) 201.6 (a)(1), a local government must have a mitigation plan in order to apply for and receive mitigation project grants under all other mitigation grant programs. Communities can improve their Community Rating System (CRS) (and lower National Flood Insurance Program [NFIP] premiums) when they develop a Hazard Mitigation Plan. This 10-step planning process is consistent with the multi-hazard planning regulations under 44 CFR Part 201. With funding from FEMA, NH HSEM provided funding to the Southern New Hampshire Planning Commission (SNHPC) to conduct local Hazard Mitigation Plans for its communities. In order to satisfy the planning requirements of the Disaster Mitigation Act (DMA) of 2000, the initial Plan was developed in 2002-2003, and has been updated and resubmitted to FEMA for approval every five years to reflect the most recent information for hazard mitigation in the Town.

Plan	Adopted	FEMA Approval Date
Town of Hooksett Hazard Mitigation Plan (Original)	March 24, 2004	May 26, 2004
Town of Hooksett Hazard Mitigation Plan Update 2009	July 22, 2009	September 9, 2009
Town of Hooksett Hazard Mitigation Plan Update 2015	(Date)	(Date)

Purpose

The *Hooksett Hazard Mitigation Plan Update 2015* serves as a strategic planning tool for use by the Town of Hooksett in its efforts to reduce future losses from natural or man-made hazardous events before they occur. This Plan will be a chapter of the Hooksett Master Plan, in accordance with RSA 674:2, III (e).

Authority

This *Hooksett Hazard Mitigation Plan Update 2015* was prepared in accordance with the Town of Hooksett's Emergency Operations Plan, effective in 2013, under the authority of the Planning Mandate of Section 409 of Public Law 93-288 as amended by Public Law 100-707, the Robert T. Stafford Act of 1988, and the Disaster Mitigation Act of 2000. The ***Hooksett Hazard Mitigation Plan*** will be referred to as the "Plan." After a public hearing was held the Hooksett Town Council formally adopted this *Plan* on (Date). Documentation of the Town Council's adoption of the *Plan* is provided in Appendix G.

Scope of the Plan

The scope of the *Hooksett Hazard Mitigation Plan Update 2015* includes the identification of natural hazards affecting the Town, as identified by the Hooksett Hazard Mitigation Plan Committee. The hazards were reviewed under the following categories as outlined in the State of New Hampshire Multi-Hazard Mitigation Plan, Update 2013:

1. Flooding (including hurricanes, 100-year floodplain events, debris-impacted infrastructure, erosion, mudslides, rapid snow pack melt, river ice jams, dam breach or failure)

2. Wind (including hurricanes, tornadoes, nor'-easters, downbursts and lightning)

3. Fire (including grass fires, wildland fires and issues such as isolated homes and residential areas)

4. Ice & Snow Events (including heavy snow storms, ice storms, nor'-easters, and hailstorms)

5. Earthquakes (including landslides and other geologic hazards related to seismic activity)

6. Other Events, such as radon, drought, and extreme heat.

Plan Update Methodology

In May 2013, the Hooksett Hazard Mitigation Plan Update 2015 Committee was formed to begin updating the plan. The Update Committee used the same 10-Step planning process set forth in the *Local Mitigation Planning Handbook* prepared by FEMA in March 2013. Each section of the current plan was reviewed and updated according to new information and the events of the past five years. The Update Committee consisted of representatives from various local agencies, including the Planning Department, Fire Department, Emergency Management and Code Enforcement. The Committee held a total of six public meetings beginning in May 2013 and ending in June 2014 to collect information, compile the plan update, and review the plan update.

Town of Hooksett 2013-2014 Hazard Mitigation Committee Members

Harold Murray, Chairman, Hooksett Fire-Rescue Department/Emergency Management
Jo Ann Duffy, Hooksett Town Planner
Dean Jore, Assistant Fire Chief, Hooksett Fire-Rescue Department
Leo Lessard, Hooksett Public Works Director
Matthew Lavoie, Hooksett Code Enforcement Officer

Plan Update Public Committee Meetings

On the following dates, the Hooksett Hazard Mitigation Plan Committee held public meetings at the Hooksett Safety Center: May 22, 2013, June 26, 2013, July 24, 2013, October 17, 2013, December 10, 2013 and June 19, 2014. All of these meetings provided valuable information regarding the development of this Plan. The Committee's meetings were posted in two public places at least 24 hours in advance, as required by New Hampshire State law, RSA 91-A, including the town website and town offices. Southern New Hampshire Planning Commission (SNHPC) staff facilitated each meeting and prepared an agenda, attendance sheet and minutes, which were distributed to the committee and made available for public review upon request. Although the public was noticed about the committee meetings, there was no public attendance or input received. Copies of the meeting agendas, minutes and attendance sheets are provided in Appendix F.

Coordination with other Agencies and Individuals

Hazard Mitigation Committee Member, Dean Jore, contacted other agencies and individuals for their input and comment on the Plan via email. These contacts are as follows:

- Rene LaBranche, Stantec, Engineering Review Agency
- Richard O'Brien, Fire Chief, Town of Goffstown, NH
- Nick Campasano, Deputy Chief, Manchester Fire Department

- Bruce Philips, Fire Chief/EMD, Town of Auburn, NH
- Denise Greig, Co-EMD, Town of Deerfield, NH
- Bob Panit, EMD, Town of Candia, NH
- Dana Pendergast, Fire Chief, Town of Allenstown, NH
- H. Dana Abbott, Fire Chief, Town of Bow, NH
- D. Shankle, Town Administrator, Town of Hooksett, NH
- M. Williams, Fire Chief/EMD, Hooksett Fire Department
- P. Bartlett, Police Chief, Hooksett Police Department
- C. Littlefield, Superintendent of Schools, Hooksett School District
- J. Sullivan, Chairman, Hooksett Town Council
- D. Rogers, Chairman, Hooksett Planning Board
- C. Robertson, Acting Chairman, Conservation Commission, Hooksett Conservation Commission
- M. Lavoie, Code Enforcement Officer, Hooksett Community Development Department
- L. Lessard, Director of Public Works, Highway/Public Works Department

In response, contacts from Goffstown and Deerfield both commented that the plan was comprehensive and well organized.

Incorporation of Existing Planning Documents, Studies, Reports and Technical Information

Existing Hooksett Emergency Operations Plan

The Hooksett *Emergency Operations Plan* was last updated in 2013. This Plan describes the *preparedness* activities that have been taken to improve the Town's ability to respond to an incident; the *response* activities, including rescue operations, evacuation, emergency medical care and emergency personnel training; and *recovery* activities which begin after the disaster. *Mitigation* activities help to reduce or eliminate the damages from future disaster events, and can occur before, during and after a disaster. The Emergency Operations Plan states that the Town will help develop a hazard mitigation plan. The Plan states in part:

> *"By recognizing that it is generally less expensive to mitigate the damaging effects of a disaster than it is to recover from them, the citizens of Hooksett can provide themselves with a greater measure of safety and security. …the Federal Government is encouraging communities to enact mitigation programs to cut down the cost of disaster recovery."*

The updated Hooksett Hazard Mitigation Plan Update 2015 has been developed in accordance with the Town of Hooksett's Emergency Operations Plan, effective 2013.

State of New Hampshire Legislation Related to Master Plans

During 2002, the State of New Hampshire adopted new legislation related to master plans and included a natural hazards section to be considered during the master planning process and incorporated into the master plan. This statute was most recently updated in September 2013. NH RSA 647:2 III e) states: "A natural hazards section which documents the physical characteristics, severity, frequency, and extent of any potential natural hazards to the community. It should identify those elements of the built environment at risk from natural hazards as well as extent of current and future vulnerability that may result from current zoning and development policies" The Hooksett Hazard Mitigation Plan Update 2004 was incorporated into the most recent Hooksett Master Plan (2004) as Chapter 12. The Hooksett Hazard Mitigation Plan Update 2015 is considered a chapter of the existing Master Plan.

<u>Capital Improvements Program</u>

The Capital Improvements Program (CIP) serves as the Town's long range planning document for the purchase or construction of capital assets. It reflects the individual projects, how they would be financed according to adopted Town policy and the impact of the projects on the Property Tax rate and the Sewer rates. The CIP is a valuable part of the community planning process. CIP links local infrastructure investments with master plan goals, land use ordinances, and

economic development. CIP bridges the gap between planning and spending, between the visions of the master plan and the fiscal realities of improving and expanding community facilities. ***The Hooksett Hazard Mitigation Plan Update 2015 will be reviewed and referenced within the CIP document, as appropriate, for any hazard mitigation projects approved under the CIP.***

Hooksett Wellhead Protection and Water Resources Management and Protection Plan

The Hooksett Wellhead Protection Plan was produced by the Southern New Hampshire Planning Commission for the Town in 2007 and intended to be incorporated into the Hooksett Water Resources Management and Protection Plan. ***Key information and recommendations were reviewed and incorporated into the 2015 update of the Hooksett Hazard Mitigation Plan as appropriate.***

Plan Development Steps
To complete this Plan, the Hooksett Hazard Mitigation Plan Committee followed these planning steps:

Step 1: Map the Hazards
Committee members identified areas where damage from natural disasters had previously occurred, areas of potential damage, and man-made facilities and other features that were at risk for loss of life, property damage, and other risk factors. Base maps provided by SNHPC were used in the process. Summary maps illustrate past hazards as identified by the Hooksett Hazard Mitigation Plan Committee. In addition, a summary listing of "Areas at Risk" is presented at the end of Section II.

Step 2: Determine Potential Damage
Committee members identified facilities that were considered to be of value to the Town for emergency management purposes; for provision of utilities and services; and for historic, cultural and social value. GIS-generated maps were prepared to show critical facilities identified by the Hooksett Hazard Mitigation Plan Committee. In addition, a summary listing of "Critical Facilities" is presented at the end of Section II.

Step 3: Identify Plans/Policies Already in Place
Using information and activities outlined in the *Local Mitigation Planning Handbook*, FEMA March 2013, the Committee and SNHPC staff identified existing mitigation strategies related to flood, wind, fire, ice and snow events and earthquakes that are already being implemented by the Town. A summary chart and the results of this step are presented in Section III of the Plan.

Step 4: Identify the Gaps in Protection/Mitigation
Existing strategies were reviewed for coverage, effectiveness and implementation, as well as need for improvement. A summary chart and the results of these activities are presented in Section III of the Plan.

Step 5: Determine Actions to be Taken
During an open brainstorming session, the Committee developed a list of other possible hazard mitigation actions and strategies for the Town of Hooksett. New mitigation strategies to improve Hooksett's response to hazardous events were developed and later analyzed for effectiveness. These new strategies are shown in Section IV of the Plan.

Step 6: Evaluate Feasible Options
The Committee reviewed each of the new hazard mitigation actions and strategies that were identified in the brainstorming session using Evaluation

Charts from Step 6 of the Handbook. Each strategy was rated good, average or poor for its effectiveness in accordance with 13 factors (e.g. damage reduction, environmental impact, social acceptability, financial feasibility). Each factor was then scored and all scores were totaled for each strategy. The results of this analysis are shown in Section IV of the Plan.

Step 7: Coordinate with other Agencies/Entities
Harold Murray, Chair, contacted agencies with expertise in hazard mitigation, as well as other agencies and individuals that should be contacted during this planning process. A listing of these agencies and individuals can be found on page 6.

Step 8: Determine Priorities
The Committee reviewed the preliminary prioritization list in order to make changes and determine a final prioritization for hazard mitigation actions. Recommendations were prepared for the Committee to review and prioritize. The priorities can be found at the end of Section V of the Plan.

Step 9: Develop Implementation Strategy
Using the chart provided under Step 9 in the Handbook, the Committee created an implementation strategy that includes persons responsible for implementation (who), a schedule for completion (when), and a funding source or technical assistance source (how) for each identified hazard mitigation action. The implementation strategy can be found in Section V of the Plan.

Step 10: Adopt and Monitor the Plan
SNHPC staff compiled the results of Steps 1 to 9 in a draft document, as well as helpful and informative materials from the *State of New Hampshire Multi-Hazard Mitigation Plan, Update 2015* that served as the model for the *Hooksett Hazard Mitigation Plan*. The draft *Hooksett Hazard Mitigation Plan Update 2015* was reviewed, revised and approved by the *Hooksett Hazard Mitigation Plan Committee*. The final draft was sent to NH HSEM and FEMA for conditional approval. After the plan receives Approvable Pending Adoption from FEMA, the final plan will be submitted to the Hooksett Town Council for its review and adoption. Then the plan must go back to the State of NH and then to FEMA (with the final plan inclusive of the signed adoption) for formal approval. The Plan will be reviewed on an annual basis to be certain the goals and objectives are being met, and that the policies are being adopted as stated in Section VI of the Plan.

HAZARD MITIGATION GOALS AND OBJECTIVES

In consultation with the *State of New Hampshire Multi-Hazard Mitigation Plan Update 2013*, the Hooksett Hazard Mitigation Plan Committee developed the following hazard mitigation goals and objectives for the Town of Hooksett.

1. To improve upon the protection of the general population, citizens and guests of the State of New Hampshire, from all natural and Human-caused hazards.

2. To reduce the potential impact of natural and Human-caused disasters on the State's Critical Support Services, Critical Facilities and Infrastructure.

3. To improve the State's Emergency Preparedness, Disaster Response and Recovery Capability in all New Hampshire communities.

4. To reduce the potential impact of natural and Human-caused disasters on the State's Economy, Environment, Historical & Cultural Treasures and Private Property.

5. To identify, introduce and implement cost effective Hazard Mitigation measures in order to accomplish the State's Goals.

6. To reduce the State and municipal liability with respect to natural and Human-caused hazards generally.

7. To address the challenges posed by climate change as they pertain to increasing risks in the State and Local infrastructure and natural environment.

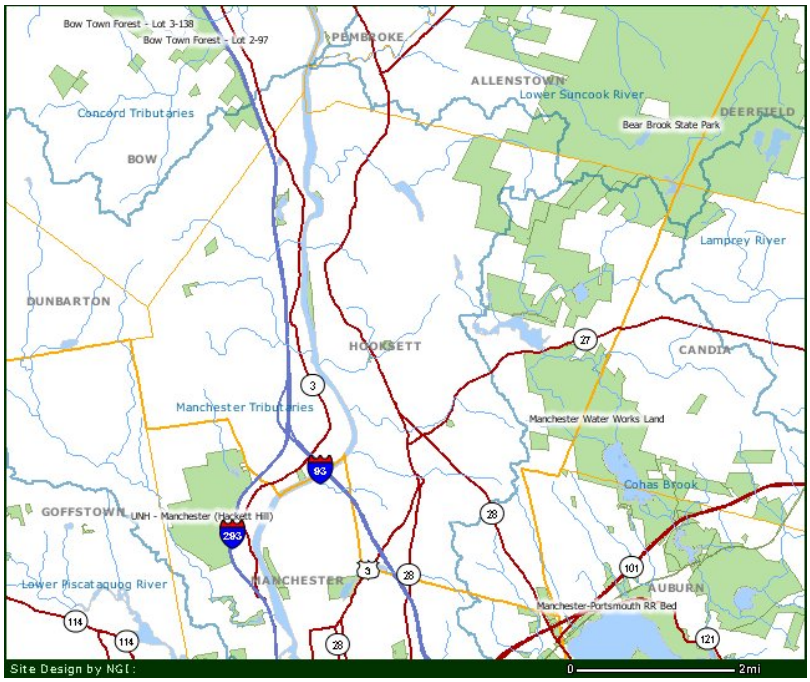
SECTION II - HAZARD IDENTIFICATION AND POTENTIAL RISK ASSESSMENT

Location, Topography and Weather Conditions

The Town of Hooksett is located in the south-central portion of the State of New Hampshire in Merrimack County. Hooksett is bordered by the towns of Allenstown and Deerfield to the north, the towns of Candia and Auburn to the east, the City of Manchester to the south, and the towns of Goffstown, Dunbarton and Bow to the west.

Hooksett encompasses a total of approximately 36.3 square miles, and is located about 11 miles south of the City of Concord, and just north of the City of Manchester. According to the 2010 U.S. Census, the population of the Town was 13,451, which is a growth of about 15 percent since the 2000 U.S. Census population count of 11,721.

Primary highway access is provided by U.S. Interstate 93, which runs north-south through the western part of Town. NH Routes 3, 3-A, 28, 28-A, and the Route 28 Bypass connect Hooksett with Manchester, Auburn, Candia, and Allenstown.



Location Map of Hooksett, New Hampshire

The principal watercourse within the Town of Hooksett is the Merrimack River. The Merrimack River floodplain ranges in width from 250 feet to 1,900 feet

throughout the Town. The floodplain consists of agricultural areas along with residential and commercial development. The river flows through the western portion of Hooksett into Manchester and into Massachusetts, where it turns northeast and empties into the Atlantic Ocean along the northeastern seaboard of Massachusetts.

Scattered throughout the Town are wet, swampy areas that serve as the headwaters for many of the streams. Along the streams, alluvial silt covers the glacial outwash areas to form the floodplains.

Hooksett is characterized as having rolling terrain with elevations ranging from 200 to 600 feet above sea level. The Town is underlain by granites, gneisses and schists. Those areas of land that are some distance away from the Merrimack River display a shallow depth to bedrock and frequent occurrence of cobble and boulders.

Average temperatures in July range from a high of 85 degrees to a low of 59. Average temperatures in January range from a high of 35 degrees to a low of -17 degrees Fahrenheit. Prolonged periods of severe cold are rare. Average annual precipitation is 40 inches.[2]

Disaster Risk

The Town of Hooksett is susceptible to a variety of natural hazards including flooding, river ice jams, severe winter storms and hurricanes.

Historically, major floods in Hooksett have resulted from either rainfall alone or a combination of snowmelt/rainfall and ice jams. Major floods occur during the spring, fall and winter seasons. Some of the more severe flooding has occurred in early spring as a result of snowmelt and heavy rains in conjunction with ice jams.

A record flood occurred in March 1936 and inundated much of the community. During this flood, Main Street in Hooksett was under 18 feet of water. A slightly smaller, but still damaging, flood occurred during the Hurricane of 1938. Discharges were not recorded for these unusual flood events but, based on records from other streams in the region, the return period for a flood comparable to the flood of 1936 exceeds 100 years.[3]

[2] Concord Climate Data for the Year 2012. National Weather Service. Gray, ME. Jan. 3, 2013. http://www.nws.noaa.gov/climate/index.php?wfo=gyx. 2013-10-15. Concord weather data is closest to Hooksett on record.

[3] Flood Insurance Study, Town of Hooksett, NH, Federal Emergency Management Agency, April 19, 2010.

The Hooksett Hydro Dam provides protection against flooding from the Merrimack River. However, no such protective measures exist on Messer Brook, Dalton Brook, or Peters Brook.

Estimated Hazard Losses

In order to estimate the potential for monetary losses due to natural hazards in Hooksett, the Hazard Mitigation Committee analyzed each hazard area and prepared a loss estimate. The estimates were calculated using FEMA's publication *Understanding Your Risks: Identifying Hazards and Estimating Losses,* August 2001. While the tables in this publication were helpful, a modified variant was utilized based on the information and data available. For instance, an abbreviated inventory of assets was conducted instead of a detailed inventory, since building specific data is not yet available in a format that can be efficiently and accurately queried to locate property specific information in a given hazard zone. Therefore, the losses below are calculated using available historical and current data to create an estimate for each hazard. Also, data that would provide estimates of future buildings, infrastructure and critical facilities in the identified hazard areas is not readily available. Some of the historical, background and risk related information considered in the estimation process is described in the subsection entitled "Past and Potential Hazards and Critical Facilities."

Human losses were not calculated during this exercise, but they could be expected to occur depending on the type and severity of the hazard. These figures exclude both the value of the land and the value of the contents of the structure. As of 2012, the value of all structures in the Town, including exempt structures such as schools and churches, was assessed at $1,652,732,082[4].

Flooding **$747,718- $2.75 million**

As of September 15, 2014, the Town of Hooksett had 59 National Flood Insurance Program policies with 21 paid losses since 1978.[5] The town has 4 repetitive loss properties since 1978 with total losses paid at $1,185,184.[6] Repetitive loss *areas* are mapped on the Past and Potential Hazards Map at the end of this chapter. The land uses within these areas are Commercial, Residential, Industrial, Semi-Public and Undeveloped. Median Purchase Price of all homes in Hooksett for 2014 was $230,000.[7]

[4] NH Department of Revenue. 2012 Equalization Reports.
http://www.revenue.nh.gov/munc_prop/equalization/2012/documents/tbc-alpha.pdf
[5] NFIP Website data, 2013
[6] FEMA, 2013
[7] NHHFA. Purchase Price Trends. 2015. NH Dept. of Revenue, PA-34 Dataset, Compiled by Real Data Corp. Filtered and analyzed by New Hampshire Housing.

Two scenarios were considered with a low estimate assuming damage to 25 percent of the structures in the floodplain with a one-foot flood depth and a high estimate assuming damage to 50 percent of the structures with a four-foot flood depth. These estimates also assume the residential structures are one- or two-story homes with basements. Standard values for percent damage, functional downtime and displacement time were used from FEMA's *Understanding Your Risks: Identifying Hazards and Estimating Losses* and its "Worksheet 4- Estimate Losses" was used to determine the actual estimates.

The low estimate was $411,188 in structural damages, $308,391 in contents loss, and $28,139 in structure use and function loss. The total low estimate loss was $747,718. The high estimate was $1,535,100 in structural damages, $1,151,325 in contents loss, and $69,947 in structure use and function loss. The total high estimate loss was $2,756,372.

Infrastructure damage could also be extensive, including roads, bridges, utilities, towers, etc. If a devastating flood were to occur, the damage to properties located within the floodplain could exceed this estimated amount. It is clear that Hooksett could benefit greatly from any flood mitigation measures that would help reduce typical losses that occur during a major flood event.

Hurricanes **$16,527,321 to $82,636,604**

A major hurricane can cause significant damage to a community. Hurricane Sandy in 2012 caused billions of dollars' worth of damage. Most of the damage is caused by high water and strong winds. The Town of Hooksett is located within a hurricane-susceptible region. However, less damage could be expected to occur in Hooksett, which is located inland, than in a more vulnerable coastal area. Assuming a community-wide assessed structural valuation of approximately $1,652,732,082, damage to 1 percent to 5 percent of those structures could result in losses of approximately $16,527,321 to $82,636,604. This does not include other damages expected to occur on public property within the community.

Debris Impacted Infrastructure; River Ice Jams **$10,000 to $5,000,000**

Much of the damage from these two hazards could be expected to occur not only on privately owned structures, but also on public property such as roads and bridges. Dollar estimates of damage from this type of hazard can range widely depending on the nature and severity of the hazard. A small-to-medium-sized event could be expected to produce a loss from $10,000 to $5,000,000.

Erosion and Mudslides **$10,000 to $5,000,000**

Erosion and Mudslide hazard events usually affect infrastructure such as roads and bridges, but they can also affect individual homes and businesses. Since this type of hazard has occurred previously in several parts of the Town of Hooksett,

experience suggests that damages from this hazard could be expected to range from a few thousand dollars to a few million dollars, depending on the severity of the event.

Rapid Snow Pack Melt **$747,718- $2.75 million**

All areas of steep slopes and erosion prone soils, as mapped in this Plan, are potentially at risk in the event of rapid snow pack melt. Since the estimated loss for this hazard is similar to flooding, the cost estimate is the same as it would be for flooding.

Dam Breach or Failure **$15,000,000 to $20,000,000+**

The Town of Hooksett has fifteen Class NM "Non-menace" dams, six Class L "low hazard potential" dams, one Class S "significant hazard potential" dam, and no Class H "high hazard potential" dams. Dam breach or failure could have catastrophic results in Hooksett, including loss of human life. Assuming all 51 structures in the special flood hazard areas were destroyed along with major losses to utilities and public properties, the total damage could exceed $20,000,000.

Tornadoes **$100,000 to $10,000,000**

The Fujita Scale is used to determine the intensity of tornadoes. Most tornadoes are in the F0 to F2 Class. Building to modern wind standards provides significant property protection from these hazard events. New Hampshire is located within Zone 2 for Design Wind Speed for Community Shelters, which is 160 mph. While it is difficult to assess the monetary impact a tornado may have on a community, the dollar range shown above indicates an approximation of what might be expected.

Nor'easter, Ice Storms, Heavy Snow Storms **$10,000 to $175,000,000**

Nor'easters and ice storms typically vary greatly depending on the amount of snow and ice that accumulates during the storm. The ice storm of 2008 caused much damage to power lines, structures and the agricultural economy in New England, with over $150 million in damages in New Hampshire due to the storm. The 2008 ice storm was declared a major disaster and damage in New Hampshire and the northeast was unprecedented. These types of storms in Hooksett could be expected to cause damage ranging from a few thousand dollars to several million, depending on the severity of the storm.

Wildfires **$215,000 to $4.3 million**

A wildfire can strike at any time, but may be expected to occur during years of drought. Presuming a small-to-medium-size fire that destroys from one to 20+ homes, damage from this hazard could be expected to range from $220,525 to $4.4 million. Other damage, e.g. to utilities, is not included in this estimate.

Earthquakes **$16,527,321 to $82,636,604**

Assuming a moderate earthquake occurs in Hooksett where structures are not built to a high seismic design level and are mostly of wood frame construction, it was estimated that about 1 percent to 5 percent of the assessed structural valuation could be lost, including both partial and total damage.

Downbursts, Lightning, Hailstorms, Radon, Drought, Extreme Heat

No major damage is known to have occurred in the Town of Hooksett related to these types of events, so no potential loss estimate has been prepared for these categories.

Obviously, all of the above figures are only estimates. The amount of damage from any hazard will vary from these figures depending on the extent and nature of the hazard that occurs.

Current Development Trends[8]

Since the mid-1960s, the Town of Hooksett has dealt with the pressure of significant population growth. From 1980 to 2010, the Town's population increased from 7,303 to 13,451, a growth rate of *over 84 percent* in 30 years. In order to accommodate this growth, nearly one acre of Hooksett's developable land per new resident has been converted to residential, commercial and industrial uses.

The following summarizes development trends over the past 30 years, which have had a significant effect on shaping the Town's current land use:

- The development of many subdivisions, driven in part by proximity to employment opportunities in the greater Manchester region, and improved transportation access provided by I-293 and I-93. Exit 10 added 250,000 square feet of space in 2003 and 2004.
- Economic development goals encourage significant commercial development to help ease the tax burden from residential owners.
- External forces, such as the real estate boom of the 1980s, the severe recession of the early 1990s and the great recession of 2007 to 2009 affect the Town and regional economy. In the last two years, the economic recovery led to a return of residential development.
- Development along NH Route 3 during the 1980s and 1990s, consisting mainly of commercial and retail uses, which has spurred the development of plans for alternate routes and improvements to NH Route 3 in order to relieve the severe traffic congestion along this corridor.
- As of 2009, the Town of Hooksett contained a ratio or percentage of residential land to industrial and commercial land in the order of 3:1. The increase in water supply made possible more intensive use of the lands in Hooksett, with smaller lots and higher densities.

In addition, a number of more recent trends have affected development in Hooksett since the 1990s, and are expected to continue for some time. These include the following:

- Pressure to build more housing with a tendency toward building single-family homes.
- The opening up to development of new areas of hilly, forested land that is beyond access to Town water and sewer.
- Many new housing units are being constructed in remote portions of Town, creating a greater burden on the Town to provide municipal services.

[8] Information from the Town of Hooksett Master Plan.

- Residential development slowed immensely during the 2007-2010 recession and is still below pre-recession levels in 2015.

Due to the economic slowdown beginning in 2007 to the present, the land use pattern in Hooksett has basically remained the same. Because of that static land use pattern, the Town's vulnerabilities to certain hazards remains the same as it was in 2009.

The Town of Hooksett's Master Plan was written in 2004, however, there was an Open Space Element rewritten in 2011 which noted some properties Hooksett has been able to purchase such as 37 acres called the Pinnacle stretching between Pine and Pinacle Streets with Pinnacle Pond to the west.[9] According to Moving Southern New Hampshire Forward there are areas in Hooksett which are considered fast growth areas such as east of NH Route 3 in the northern half and west of Route 3 in the southern half of Hooksett.[10] With this potential growth, the Town of Hooksett may be more vulnerable to some hazards such as flooding, wildfires and snow storms since there will be a larger population with more vulnerable development. The most significant obstacle to the expansion of commercial and industrial growth is the lack of municipal wastewater treatment services along NH Route 3A.

The Town of Hooksett's existing Zoning Ordinance, Floodplain Development Ordinance, Subdivision and Site Plan Review Regulations all work to minimize the impacts, if not eliminate any development in the hazard areas. The land outside of the Special Flood Hazard Areas and areas of steep slopes remain the preferred location of development in Hooksett, both by the Town and Developers. Extensive acreage of vacant developable land still exists outside of the Special Flood Hazard Areas and areas of steep slopes. The potential continuation of current rapid development trends may increase pressure to utilize these hazard areas, despite their inherent risks. Nonetheless, any proposed new developments or significant improvements in these zones would require variances from the Zoning Board of Adjustment and approval of the Planning Board. With these review opportunities and appropriate regulations, the Town will insist that any future growth in the hazard zones is constructed in a manner that creates no additional hazard risks.

National Flood Insurance Program

Hooksett has been participating in the National Flood Insurance Program (NFIP) since April 2, 1979. The latest Flood Insurance Study is dated April 19, 2010.

[9] Town of Hooksett Open Space Plan, Hooksett Open Space Plan Sub-Committee, July 2011.
[10] Moving Southern NH Forward, 2015-2035 Regional Comprehensive Plan, SNHPC, 2015, page 44.

Flood Insurance Rate Maps and the Digital Flood Insurance Rate Maps (DFIRMS), all bearing the effective date of April 19, 2010, are used for flood insurance purposes and are on file with the Hooksett Planning Board. The Town of Hooksett also continues to implement and enforce its Floodplain Development Ordinance, which regulates all new construction and substantial improvements within the Special Flood Hazard Areas (SFHAs). In addition the town has implemented the following actions related to continued compliance with NFIP:

- Address NFIP monitoring and compliance activities
- Revise/adopt subdivision regulations, erosion control regulations, board of health regulations, etc. in order to improve floodplain management in the community
- Prepare, distribute or make available NFIP insurance and building codes explanatory pamphlets or booklets
- Identify and become knowledgeable of non-compliant structures in the community
- Identify cause of submit-to-rate structures and analyze how to prevent non-compliant structures in the future
- Require the use of elevation certificates
- Work with elected officials, the NH OEP, NH DOS HS – EM and FEMA to correct existing compliance issues and prevent any future NFIP compliance issues through continuous communications, training and education

As of September 15, 2014, the Town of Hooksett had 59 National Flood Insurance Program policies with 21 paid losses.[11] The town has four repetitive loss properties since 1978 with total losses paid at approximately $1,185,184.[12] Repetitive loss *areas* are mapped on the Past and Potential Hazards Map at the end of this chapter. The land uses within these areas are Low-density residential and Medium-density residential.

[11] NFIP Website data
[12] Data provided by FEMA

Past and Potential Hazards and Critical Facilities[13]

The Hooksett Hazard Mitigation Plan Committee identified past hazard events, which include the following: flooding, wind, wildfire, ice and snow, and earthquake events. Other hazards include radon, drought, and extreme heat.

These hazards were identified in a brainstorming session with the Committee. Additionally, the State of New Hampshire Multi-Hazard Mitigation Plan, Update 2013 was consulted and any other supporting information was derived from the resources listed in the Appendices. The Past and Potential Hazards Maps at the end of this Section reflect the contents of this list. For each hazard the Committee reviewed background information; areas at risk; and the potential for the hazard to occur in the town as well as pose a risk or cause damage to structures, infrastructure or human life. Probability is based on an objective appraisal of a hazard's probability using information provided by relevant sources, observations and trends. Rankings are based on High, Moderate and Low. The probability is for a 10-year period. Tables 1 and 2 refer to this ranking system.

- High – Probability is 70 to 100 percent. The event is likely to highly likely to occur with severe strength over a significant portion of the SNHPC region.
- Moderate - Probability is 35 to 70 percent. The event is somewhat likely to occur with some damage in parts of the region.
- Low - Probability is 0 to 35 percent. While the event is unlikely or highly unlikely to occur, the probability is low for significant damage.

Natural hazards which are *most* likely to affect Hooksett: Flooding, nor'easters, lightning and radon.

Natural hazards which *may* affect Hooksett: Erosion and mudslides, dam breach or failure, wildfires, heavy snowstorms, ice storms and drought.

Natural hazards which are *less* likely to affect Hooksett: Hurricanes and tropical storms, debris impacted infrastructure, rapid snow melt, tornadoes, downbursts, hailstorms, earthquakes, landslides and extreme heat.

[13] Note: The State of New Hampshire Multi-Hazard Mitigation Plan was most recently updated and finalized on October 29, 2013.

Table 1 – Hazard Identification and Probability

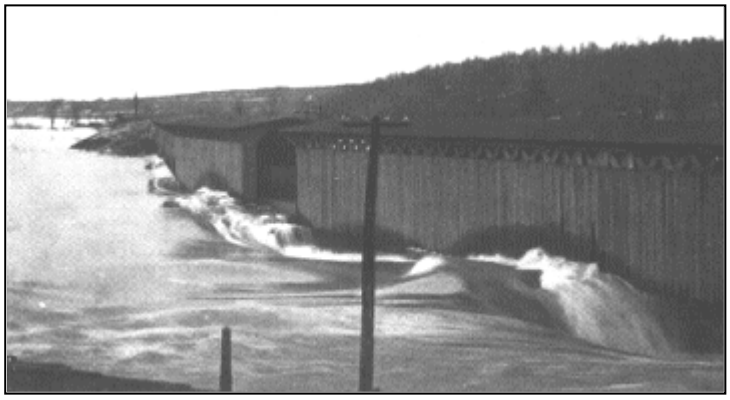
Category	Hazard Type	Sub-hazard Type	Probability
A	**Flooding**		
	1	Floodplain Events	Moderate-High
	2	Hurricanes & Tropical Storms	Low
	3	Debris-impacted infrastructure and river ice jams	Low
	4	Erosion and mudslides	Moderate
	5	Rapid snow pack melt	Low
	6	Dam breach or failure	Moderate
B	**Wind**		
	1	Hurricanes	Moderate
	2	Tornadoes	Low
	3	Nor'easters	Moderate-High
	4	Downburst	Low
	5	Lightning	High
C	**Wildfire**		
	1	Wildland Fires/Grass Fires	Moderate
	3	Isolated Homes	Low
D	**Ice and Snow Events**		
	1	Heavy Snowstorms	Moderate
	2	Ice Storms	Moderate
	3	Hailstorms	Low
E	**Earthquakes**		
	1	Earthquakes	Low
	2	Landslides	Low
F	**Other Hazards**		
	2	Radon	High
	3	Drought	Moderate
	4	Extreme Heat	Low

A. Flooding

The Hooksett Hazard Mitigation Committee reviewed the following kinds of hazards related to flooding:

1. Floodplain Events

Similar to many other New Hampshire communities, the Town of Hooksett grew along the waterways, with development concentrated along the Merrimack River. In the Town of Hooksett, major floods occur on the Merrimack River during the spring, fall, and winter seasons. Some of the more severe flooding occurs in early spring as a result of snowmelt and heavy rains in conjunction with ice jams. Autumn is another critical season for flood danger because of heavy rainfall associated with storms of tropical origin. Minor flooding incidences in the Town Hooksett can occur at any time of the year, as even heavy thunderstorms can result in rapid runoff and flooding in the downstream portion of the small streams.[14] Known effects from flooding in Hooksett include wetlands increasing in size and structural damage.



A view of the covered railroad bridges just above the Hooksett Dam during the great flood of 1936. One of these spans ended up on the south shore below the steel bridges past Robie's Store. The piers that once supported these bridges are still visible today.

Flooding is associated with different weather events and patterns. Recent notable flooding includes the 2006 Mother's Day Flood, the 2007 flooding, and the February 2010 windstorm.

Table 2 contains details on the type of damage and description, severity, and 2015 updates on areas of known flooding in the Town of Hooksett.

[14]2010 Flood Insurance Study, Town of Hooksett, NH, FEMA, p. 13

Table 2 – Past Flooding Areas in Hooksett

	Area	Type of Damage and Description	Severity	2015 Update
1	NH Route 3 near Hooksett Kawasaki (HK) Powersports at 1354 Hooksett Rd	Water flowing over the road, but road still passable	Moderate	Listed as common flood location in Aug 2011 Irene Operational Plan. Beaver Dam plugs drainage pipe (East side of PSNH property). Did not flood again between 2004 and 2009. Suggested mitigation strategy: install Beaver pipe
2	NH Route 3A/ West River Rd and Cross Rd area in floodplain west side of Merrimack River	Water flowing over the road on West River Rd, road closure on Cross Rd	Moderate	Water flowing over the road at 263 West River Rd during major flooding (2007), nearby Cross Rd at I-93 closed during Hurricane Sandy 2012
3	Truck stop weigh station near Hackett Hill Road	Flooding in weigh station area	Low	One-time incident, no problems since
4	Scott Road / Meadowcreast Road	Water flowing over the road	Moderate	One-time incident. Adjacent to river

	Area	Type of Damage and Description	Severity	2015 Update
5	NH Route 27/ Whitehall Rd - Dube's Pond	Heavy erosion washes the road out/ covers road	Severe	Road washouts/ covered by water in Mother's Day 2006 flood and 2007 flooding, impedes traffic and coordination with Candia
6	Kimball Drive area	Road closed at #62 Kimball during Hurricane Sandy 2012	Moderate	Along river. Road closed at #62 Kimball during Hurricane Sandy 2012
7	Congregational Church, 5 Veterans Drive	Road damage/erosion	Low	Floods adjacent to river
8	Burgess Self Storage/ Manchester Manor Trailer Park, off Route 3 at 1180 Hooksett Rd	Flooding/erosion	Moderate	Listed as common flood location in Aug 2011 Irene Operational Plan. Still an issue - nearby brook causes flooding just with heavy rains. Privately owned subdivision
9	Goonan Rd	Road closed, erosion and flooding	Moderate	Floods adjacent to river
10	Pleasant St	Road tar washed out	Low	Tar washed out in Mother's Day flood; tar was replaced

	Area	Type of Damage and Description	Severity	2015 Update
11	Bullard Drive	Road closure, flooding and sinkhole	Low	Affected in Mother's Day flood, and road closed during major flooding (2007). Catch basins cannot handle the load distributed to them.
12	Edgewater Drive off 3A North of old Town Hall	Homes and road flooding	Moderate	State flood control dam above stream. Hasn't flooded recently, but in a low spot and river gets high
13	Cawley MS, Whitehall Road	Heavy erosion washes the road out	Low	Wash outs in 2006 and/or 2007 flooding
14	Mammoth Road	Heavy erosion washes the road out, road closures at multiple points	Low	Wash outs in 2006 and/or 2007 flooding. Road closed at Rae Brook Rd, Hale Ave, and Silver Ave during Hurricane Sandy 2012
15	Auburn Rd	Multiples points of road closures	Moderate	Closed from Joanne to Sergeant during major flooding (2007) and at #80 Auburn during Hurricane Sandy 2012

	Area	Type of Damage and Description	Severity	2015 Update
16	NH Route 3/ Hooksett Rd near Peter's Brook	Water flowing over the road, but road still passable	Low-Moderate	In major flooding (2007) water flowing over the road, but road still passable
17	Kennedy Dr, Morgan Dr, Grant Dr, Pleasant View Dr, and Ray Dr area	Road closures	Low-Moderate	Road closures at intersections of the streets - major flooding (2007)
18	Rusty Road, Vindale Rd, Matthew Rd, and Embassy Ave area along Messer Brook	Road closures	Low-Moderate	The first three roads closed during major flooding (2007) and Embassy Ave closed after Buddy St during Hurricane Sandy 2012
19	Stevens Dr.	Road closure, sinkholes	Low	Road closed during major flooding (2007)

Table 3 – Mitigated Flooding Areas in Hooksett contains details on the type of damage and description, severity, and 2015 updates on flooding for each mitigated area.

Table 3 – Mitigated Flooding Areas in Hooksett

	Area	Type of Damage and Description	Severity	2015 Update
28	Kmart area (NH RT and RT 27/ 101B and Bypass 28/ Londonderry Turnpike)	Severe flooding before mitigation	Severe	Mitigated, no longer floods in heavy rain. Dalton brook was lowered through blasting, a large 9'x12' box culvert was installed, piping across Rt. 28 to Kmart was increased, a pipe across Rt. 3 down Rte. 3 and into Dalton Brook was installed, and a large retention pond was built
29	Chester Turnpike	Road washed out	Severe	Washed out in Mother's Day flood - a larger culvert/ pipe installed to mitigate future flooding
30	Benton Road	Severe flooding before mitigation	Severe	Mitigated as part of Kmart area mitigation efforts; seems to be resolved

Definitions of Levels
High Severity – Potential to cause significant damage
Moderate Severity – Potential to cause minor damage
Low Severity – Will not cause damage

Please see Past and Potential Hazards GIS map at the end of Section II for the locations of the above flood hazard areas.

All Special Flood Hazard Areas (SFHAs) in the Town of Hooksett are potentially at risk if a floodplain event occurs. Please see the Past Hazards GIS map at the end of Section II for the locations of the flood hazard areas in the Town of Hooksett, including both 100-year and 500-year floodplain zones.

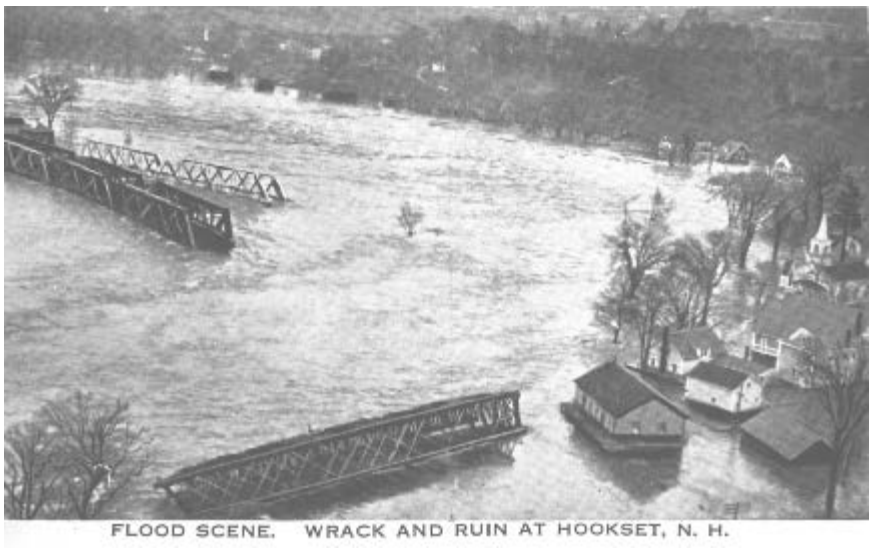
Flood hazard areas identified on the FEMA Flood Insurance Rate Map are identified as a Special Flood Hazard Area (SFHA). SFHA are defined as the area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent annual chance flood is also referred to as the base flood or 100-year flood. SFHAs are labeled as Zone A, Zone AO, Zone AH, Zones A1-A30, Zone AE, Zone A99, Zone AR, Zone AR/AE, Zone AR/AO, Zone AR/A1-A30, Zone AR/A, Zone V, Zone VE, and Zones V1-V30. Moderate flood hazard areas, labeled Zone B or Zone X (shaded) are also shown on the FIRM, and are the areas between the limits of the base flood and the 0.2-percent-annual-chance (or 500-year) flood. The areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2-percent-annual-chance flood, are labeled Zone C or Zone X (unshaded).[15]

Moderate to high probability for flooding to occur and cause damage in Hooksett

View of the 2006 Mother's Day flood in Hooksett.

[15] FEMA. NFIP Policy Index. http://www.fema.gov/floodplain-management/flood-zones. 03-26-14.

View of the devastating effects of the March 1936 flood. Many homes were lost, and the bridge trestle was displaced by water.



2. Hurricanes and Tropical Storms

"A tropical cyclone is the generic term for a non-frontal, low-pressure system over tropical or subtropical waters with organized convection (i.e. thunderstorm activity), and definite cyclonic surface wind circulation."[16]

Since 1850, about 14 hurricanes (wind speeds of at least 74 mph) have made landfall along the southern coasts of Long Island and New England[17]. Of these New England hurricanes, five crossed the state of New Hampshire as minimal hurricanes (wind speed of 74 to 110 mph), including the unnamed storms of September 1858 and 1869 as well as the more recent hurricanes Carol (1954), Donna (1960), and Gloria (1985). Other 20th century New England hurricanes to impact New Hampshire include the "Long Island Express" (1938), the "Great Atlantic Hurricane" (1944), and Hurricane Bob (1991). The September 1938 hurricane was the most notable flooding event to strike Hooksett and other municipalities in southern New Hampshire, with wind velocity reaching 163 mph at the summit of Mount Washington.

"The vast majority of hurricane losses in New England occur along the more densely populated coastal areas of Connecticut, Rhode Island, and Massachusetts where most storms make landfall. While there is no record of a hurricane landfall along the New Hampshire coast, coastal areas and inland bays are susceptible to very strong winds, storm surge flooding, and erosion. Most hurricane hazards for inland portions of the state occur in response to heavy rainfall, which can cause significant flooding in low-lying areas."[18]

Severe hurricanes reaching south-central New Hampshire in the late summer and early fall are the most dangerous of the coastal storms that pass through New England from the south. During a hurricane wind speeds may reach 250

[16] 2010 State of New Hampshire Multi-Hazard Mitigation Plan.
[17] Prof. M. Stampone, UNH and NH State Climatologist
[18] Ibid

miles per hour in a Category 5 hurricane, as measured on the Saffir-Simpson Hurricane Scale. Tropical depressions are considered to be of hurricane force when winds reach 74 miles per hour. Substantial damage may result from winds of this force, especially considering the duration of the event, which may last for many hours.

Table 4 – Saffir-Simpson Scale

Saffir-Simpson Hurricane Scale		
Category	**Winds (mph)**	**Potential Damage**
1	74-95	Minimal
2	96-110	Moderate
3	111-129	Extensive
4	130-156	Extreme
5	>157	Catastrophic

Source: NOAA

Potential effects of a hurricane include flooding; runoff not handled adequately, and disrupted travel. The following hurricanes impacted Hooksett:

September, 1985 – Gloria
August, 1991 – Bob
September, 1999 – Floyd
August, 2011 – Irene
October, 2012 - Sandy

During these events trees and power lines came down, and there was minimal structural damage. Hurricane Bob was a Presidentially Declared Disaster for the State of New Hampshire and caused about $2.3 million in damages statewide. Most recently, Hurricane Sandy was also a Presidentially Declared Disaster for the State. (FEMA, "Federally Declared Disasters by Calendar Year"). Irene's heavy rains caused flooding at a mitigated area and caused wind damage; one house was hit by a tree. Sandy was not noted as particularly significant, although it did cause road closures, downed wires, and brush had to be cleared.

Effects of hurricanes include significant flooding, disrupted travel, unmanaged runoff and slow moving traffic.

All areas of the Town of Hooksett are potentially at risk if a hurricane reaches Merrimack County, New Hampshire.

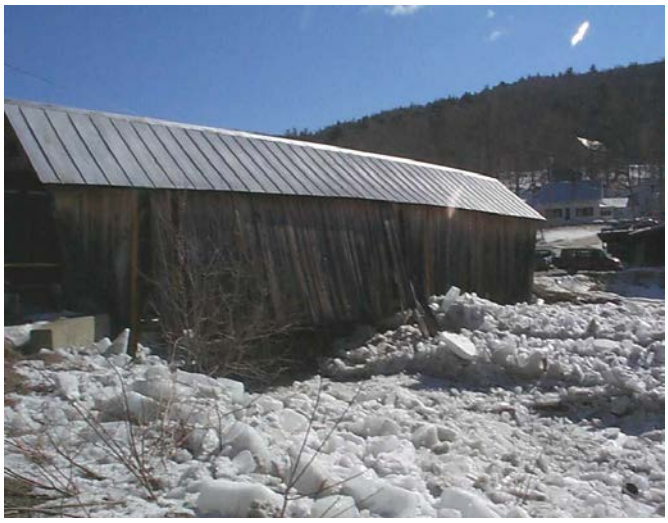
Low probability for hurricanes to occur and cause damage in Hooksett.

3. Debris-impacted infrastructure and river ice jams

Historically, many floods in Hooksett have been due to snowmelt and heavy rains in conjunction with ice jams or debris-impacted infrastructure. Bridges, culverts and related roadways were identified as most vulnerable to ice jams and debris-impacted infrastructure and are included on the Past and Potential Hazards GIS maps. If flooding occurs in the Town of Hooksett, there is the potential for debris-impacted infrastructure and ice jams to cause damage. Vegetative debris is the main source of materials for impacts in Hooksett (other than ice), though silt and soils are also a problem for the Town during hazard events.

All Special Flood Hazard Areas in the Town of Hooksett are potentially at risk if there is an ice jam or debris-impacted infrastructure. Particular concern should be given to the following locations:

- Lilac Bridge
- Train Trestle
- PSNH Dam
- Dube's Pond Dam
- Chester Turnpike (Maple Falls Brook)



Low probability for debris-impacted infrastructure or ice-jams to occur and cause damage in Hooksett

River ice jam along a covered bridge in New Hampshire

An examination of the U.S. Army Corps of Engineers Research and Development Center Ice Jam Database revealed only one ice jam in city proper from 1900 but in nearby towns along with the Merrimack River, including Bow, Goffstown and Manchester, the database includes ice jams.

4. Erosion and Mudslides

Stream bank erosion may eventually result in mudslides. Land in Hooksett which has at least 15 percent slope, a vertical rise of 15 feet over a horizontal run of 100 feet, is scattered throughout the Town, usually occurring around the hills. Areas of steep slopes in Hooksett are shown on the Critical Facilities and Past and Potential Hazards GIS maps. Deforestation may also lead to erosion and additional mudslides.

Hooksett experienced a mudslide in recent years near Granite St and Merrimack St on the backside of Dundee Ave. A house slid down in a mudslide and landed on a second house. The house that slid was removed and the Town installed a retaining wall.

Past erosion or mudslides in Hooksett have affected the following areas:

- Areas of deforestation
- NH Route 3A affected
- Train tracks damaged on east side of Merrimack River
- Granite St at Merrimack St
- Mammoth Rd/ NH Route 28A at Route 3

All areas of steep slopes and erosion prone soils, as mapped in this Plan, are potentially at risk in the case of potential erosion and mudslide events.

Moderate probability for erosion and mudslides to occur and cause damage in Hooksett

5. Rapid snow pack melt

Structures and improvements located on, along, or at the base of, steep slopes are most vulnerable to rapid snow pack melt. Again, the location of these areas can be seen on the GIS maps' depiction of steep slopes.

Areas of Concern include:

- Beauchesne subdivision

Beauchesne subdivision, an older subdivision with inadequate piping, is affected by runoff from new development. Granite Hill and Autumn Run Development were cited as areas of concern in the past, but no longer seem to be affected by this hazard.

All areas of steep slopes and erosion prone soils, as mapped in this Plan, are potentially at risk in the event of rapid snow pack melt.

Low probability for rapid snow pack melt to occur and cause damage in Hooksett.

6. Dam Breach or Failure

All class L and H dams have the potential to cause damage if they breach or fail. The Town of Hooksett has fifteen Class NM "Non-menace" dams, six Class L "low hazard potential" dams, one Class S "significant hazard potential" dam, and no Class H "high hazard potential" dams, whose locations are shown on the Past and Potential Hazards GIS Map. Appendix A includes the classes of dams.

Past incidents of dam breach or failure have occurred at:

- Goldfish Pond Dam
- Dube's Pond Dam

Goldfish Pond Dam is located in Manchester and floods Manchester. The state has completed a mitigation project for this hazard area. Dube's Pond Dam was breached, or overtopped, in the 2006 and 2007 flooding. If Dube's Pond Dam failed, the water would wash out NH Route 27 and then go into the wetland for Massabesic Lake on the other side on the road and be absorbed. The dam is about ten years old and is privately owned.

All immediate areas surrounding dams and SFHAs **in Hooksett would be impacted by a dam breach**.

Moderate probability for dam breach or failure to occur and cause damage in Hooksett

B. Wind

The Hooksett Hazard Mitigation Committee reviewed the following kinds of hazards related to wind:

1. Hurricanes

Severe hurricanes reaching south-central New Hampshire in the late summer and early fall are the most dangerous of the coastal storms that pass through New England from the south. During a hurricane wind speeds may reach 250 miles per hour in a Category 5 hurricane, as measured on the Saffir-Simpson Hurricane Scale. Tropical depressions are considered to be of hurricane force when winds reach 74 miles per hour. Substantial damage may result from winds of this force, especially considering the duration of the event, which may last for many hours. Potential effects of hurricane force winds include fallen trees on roads and communication and power towers may fall.

Table 5 – Saffir-Simpson Scale

Saffir-Simpson Hurricane Scale		
Category	**Winds (mph)**	**Potential Damage**
1	74-95	Minimal
2	96-110	Moderate
3	111-129	Extensive
4	130-156	Extreme
5	>157	Catastrophic

Source: NOAA

In addition, New Hampshire saw some localized flooding and wind damage in September 1985 – Gloria; August 1991 – Bob; and September 1999 – Floyd. In all of these cases, trees and power lines came down, but there was not much structural damage. The most recent Hurricanes to reach New Hampshire were Irene in 2011 and Hurricane Sandy in October 2012, which was downgraded to a post-tropical cyclone by the time it reached New Hampshire with most areas reporting winds of 40 to 70 mph (64 to 110 km/h)[19].

All areas of Hooksett are at risk if a hurricane reaches Merrimack County, New Hampshire.

Moderate probability for hurricane force winds to occur and cause damage

2. Tornadoes

All areas of Hooksett are potentially at risk for property damage and loss of life due to tornadoes. On average New Hampshire has 1.5-2 tornadoes per year (National Climatic Data Center.) Since 1950 there have been four known tornadoes that occurred in Merrimack County ranging from 1-2 on the Fujita scale (NOAA, Storm Prediction Center (SPC) historical tornado data); three between 1967 and 1976 and one incident in 1999. None of these are known to have had any effect in Hooksett. Most of the tornadoes in New Hampshire are small and cause only localized damage. However, on July 24, 2008, there was a larger EF-2 tornado with winds up to 157 mph that touched down in Deerfield, NH, about five miles southwest of Northwood Narrows and moved north northeast over five miles before crossing into Merrimack County. Numerous trees were downed and many homes were damaged or destroyed. A woman died when her house collapsed. This tornado cut a 50-mile path from Deerfield to Ossipee through five counties in southeast New Hampshire resulting in one

[19] NOAA. National Climatic Data Center. Storm Events Database. http://www.ncdc.noaa.gov/stormevents/eventdetails.jsp?id=416281. 01-22-14.

fatality and damage to over 100 structures. This tornado was only 10 miles from Hooksett.

Tornadoes are measured using the Enhanced Fujita Tornado Damage Scale, as seen in the following table.

Table 6 – Enhanced Fujita Tornado Damage Scale

FUJITA SCALE			DERIVED EF SCALE		OPERATIONAL EF SCALE	
F Number	Fastest 1/4-mile (mph)	3 Second Gust (mph)	EF Number	3 Second Gust (mph)	**EF Number**	**3 Second Gust (mph)**
0	40-72	45-78	0	65-85	**0**	**65-85**
1	73-112	79-117	1	86-109	**1**	**86-110**
2	113-157	118-161	2	110-137	**2**	**111-135**
3	158-207	162-209	3	138-167	**3**	**136-165**
4	208-260	210-261	4	168-199	**4**	**166-200**
5	261-318	262-317	5	200-234	**5**	**Over 200**

Source: NOAA

All areas of Hooksett are potentially at low risk for property damage and loss of life due to wind from tornadoes.

Low probability for tornadoes to occur and cause damage in Hooksett

3. Nor-'easters

A Nor'easter is "A strong low pressure system that affects the Mid-Atlantic and New England States. It can form over land or over the coastal waters. These winter weather events are notorious for producing heavy snow, rain, and tremendous waves that crash onto Atlantic beaches, often causing beach erosion and structural damage. Wind gusts associated with these storms can exceed hurricane force in intensity. A nor'easter gets its name from the continuously strong northeasterly winds blowing in from the ocean ahead of the storm and over the coastal areas.[20]" Hazards from nor'easters include icing and heavy snows which cause downed trees and power lines to go down.

[20] NOAA. National Weather Service. Glossary. http://w1.weather.gov/glossary/index.php?letter=n. 02-06-14.

Recent Nor'easters affecting Hooksett include:

- January 26 through about February 16, 2015 series of frequent heavy snowstorms taxed state and local government snow plowing budgets and caused the cancellations of schools and businesses. The January 26 through January 28, 2015 heavy snowstorm was a Presidentially declared disaster.
- November 25–30, 2014 Thanksgiving Day snowstorm caused a significant number of power outages in southern and central NH. The storm was the 4th largest in number of power outages according to PSNH.
- February 8-9, 2013, a Nor'easter, known as Winter Storm NEMO, struck the state of New Hampshire and brought almost three feet of snow to New England with wind gusts up to 75 mph. The Governor declared a State of Emergency.
- October 29 to 31, 2011 early and severe snow storm around Halloween, referred to as "Snowtober," affected communities in central and southern NH.

These were regional events that affected southern and central NH, including the Town of Hooksett.

All areas of Hooksett are potentially at risk for property damage and loss of life due to Nor'easters.

Moderate to high probability for nor'easters to occur and cause wind damage

4. Downbursts

A downburst is a severe localized wind blasting down from a thunderstorm. These 'straight line' winds are distinguishable from tornadic activity by the pattern of destruction and debris. Depending on the size and location of these events, the destruction to property may be devastating. Downbursts fall into two categories. Microbursts cover an area less than 2.5 miles in diameter and macrobursts cover an area at least 2.5 miles in diameter.[21] There are no known instances of past damage recorded from downburst activity in the Town of Hooksett. However, downbursts have occurred in nearby towns. On August 18, 1991, five people were killed and 11 injured in Stratham by a downburst causing almost $2.5 million in damage. On July 6, 1999, two people were killed when a microburst struck central New Hampshire. In 2011 there was a microburst in Bow, only 3.7 miles from the Hooksett town line.

[21] 2010 State of New Hampshire Multi-Hazard Mitigation Plan.

All locations in Hooksett are at risk for property damage and loss of life due to downbursts.

Low probability for downbursts to occur and cause damage in Hooksett

5. Lightning

Lightning is a visible electrical discharge produced by a thunderstorm. The discharge may occur within or between clouds, between the cloud and air, between a cloud and the ground or between the ground and a cloud.[22] The average number of flashes in New Hampshire from 1997-2011 were 23,360.[23]

During the development of a thunderstorm, the rapidly rising air within the cloud, combined with the movement of the precipitation, causes electrical charges to build up. Generally, positive charges build up near the top of the cloud, while negative charges build up near the bottom and ground beneath the cloud becomes positively charged. Lightning is a giant spark of electricity that occurs between the positive and negative charges within the atmosphere or between the atmosphere and the ground.

The potential magnitude of a hazard event, also referred to as the extent, scale or strength of a disaster, provides a measurement of how large and significant a hazard can become. Severe storms such as thunderstorms are usually responsible for the lightning in southern New Hampshire. Lightning fires are unpredictable and they are most dangerous when strikes occur in rural areas with limited fire suppression access. Lightning can be measured to determine how likely it may be for starting fires. Using a Level system of 1 to 6 corresponding with storm development and the number of lightning strikes, the Lightning Activity level (LAL) measures the magnitude of lightning strikes as displayed in the below table.

[22] NOAA. National Weather Service. Glossary. http://w1.weather.gov/glossary/index.php?letter=n. 02-06-14.

[23] These cloud-to-ground lightning flashes were measured by the National Lightning Detection Network® (NLDN®) over the land area inside state borders. The NLDN does not cover Alaska or Hawaii. The NLDN is owned and operated by Vaisala. http://www.lightningsafety.noaa.gov/stats/Table-Flashes_by_State_1997-2011.pdf. 02-06-14.

Lightning Activity Level (LAL)

Level	LAL Cloud and Storm Development	Cloud to Ground Strikes per 5 Minutes	Cloud to Ground Strikes per 15 Minutes
LAL 1	No thunderstorms	n/a	n/a
LAL 2	Isolated thunderstorms. Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 cloud to ground strikes in a five minute period.	1 to 5	1 to 8
LAL 3	Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud to ground strikes in a 5 minute period.	6 to 10	9 to 15
LAL 4	Scattered thunderstorms. Moderate rain is commonly produced. Lightning is frequent, 11 to 15 cloud to ground strikes in a 5 minute period.	11 to 15	16 to 25
LAL 5	Numerous thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, greater than 15 cloud to ground strikes in a 5 minute period.	>15	>25
LAL 6	Dry lightning (same as LAL 3 but without rain). This type of lightning has the potential for extreme fire activity and is normally highlighted in fire weather forecasts with a Red Flag Warning.	6 to 10	9 to 15

Source: National Weather Service

In the United States, an average of 54 people are killed by lightning annually and while none have occurred in NH, there were deaths in Florida, New Jersey, Texas, Alabama, Louisiana and Pennsylvania in 2012. The main activities for lightning include fishing, soccer and other outdoor activities.

NH appears to have less lightning than the rest of the country with NH and Maine having less than two cloud-to-ground lightning strikes per square mile per year on average. However, in 2012 there were three lightning strikes in NH causing damage in Portsmouth causing damage at Sarah Long Bridge, Laconia at a residence with three people injured when the lightning struck the ground nearby. (NH Hazard Mitigation Plan, 2013)

All areas of Hooksett are potentially at risk for property damage and loss of life due to lightning. In particular, the police station communication towers at the Hooksett Safety Center have been affected by lightning on multiple occasions circa 2000, damaging the dispatch center (lightning rods were installed to mitigate the problem).

High probability for lightning to occur in Hooksett.

C. Wildfire

The Hooksett Hazard Mitigation Committee reviewed the following kinds of hazards related to wildfire:

1. Wildfires

Wildfire is defined as any unwanted and unplanned fire burning in forest, shrub or grass and are frequently referred to as forest fires, shrub fires or grass fires, depending on their location. They often occur during drought and when woody debris on the forest floor is readily available to fuel the fire. The threat of wildfires is greatest where vegetation patterns have been altered by past land-use practices, fire suppression and fire exclusion.

Historically, large NH wildfires run in roughly 50 year cycles. The increased incidence of large wildland fire activity in the late 1940s and early 1950s is thought to be associated, in part, with debris from the Hurricane of 1938. Significant woody 'fuel' was deposited in the forests during that event. Present concerns are that the Ice Storm of 2008, along with a number of other natural disasters in the past few years have left a significant amount of woody debris in the forests of the region and may fuel future wildfires.

In 1997, 85 percent of Merrimack Country was forested, and much of Hooksett remains forested today[24] suggesting a risk for wildfires.

National Wildfire Coordinating Group (NWCG) Size Fire Classification	
Class A	**1/4th acre or less**
Class B	**More than 1/4th acre, but less than 10 acres**
Class C	**10 acres or more, but less than 100 acres**
Class D	**100 acres or more, but less than 300 acres**
Class E	**300 acres or more, but less than 1,000 acres**
Class F	**1,000 acres or more, but less than 5,000 acres**
Class G	**5,000 acres or more**

There are several areas in the Town of Hooksett that are susceptible to wildfires, including

- All new developments (when trees are cut down, soil dries, leaving dead grass)
- OHRV spark causes fires
- Debris left from ice storms in 1998 and 2008
- Mountains - high fuel load areas

[24] Forest Statistics for New Hampshire 1983 and 1997, 2000

The following areas have experienced wildfires, including:

- Eastern portion of Town
- Hackett Hill Rd
- Cross Rd at Interstate 93
- Clay Pond
- Chester Turnpike North

The locations of these areas have been identified on the Past and Potential Hazards GIS map.

Since 2009 there have been no significant wildfires but small Class A fires. Between January 2009 and May 2013 there were 25-48 wildfires with weather as the contributing factor. Between 2005 and 2010, the conditions were worse and then over 2010 it was mild for fire service. In the spring season, the landscape and vegetation is greens and there are not many fires. Most fires occur in the late summer and fall, starting in August and into September when it is drier.

Moderate probability for wildfires to occur and cause damage in Hooksett. The probability was upgraded in 2009 from "Low" to "Moderate" due to the increased incidence of wildfire in the preceding five years.

2. Isolated Homes

Isolated homes are more susceptible to the impacts of wildfire due to the challenges of reaching them with fire-fighting capabilities. Isolated homes are a concern for New Hampshire, as it is heavily forested and there has been an increase in the urban-wildlife interface as towns develop and grow.

There are several areas in Hooksett with isolated residential areas and individual residential units. The locations of these areas are identified on the Past and Potential Hazards GIS Map and in the summary listing of "Areas at Risk" at the end of this section.

Locations of isolated homes include:

- Hall Mountain
- Wiggin/Mountain Rd area (On Hall Mt.)

The Sandy Lane area is not considered to be isolated as it is accessible despite having a long driveway.

Low probability for isolated homes to be damaged in Hooksett

D. Ice and Snow Events

The Hooksett Hazard Mitigation Committee reviewed the following kinds of hazards related to ice and snow events:

1. Heavy Snow Storms

A heavy snowstorm is considered to be one which deposits five or more inches of snow in a twelve-hour period or seven or more inches of snow/sleet in a 24-hour period and/or enough ice accumulation to cause damage to trees or power lines and/or a life threatening or damaging combination of snow and/or ice accumulation with wind. A blizzard is a winter storm characterized by Snow and/or blowing snow reducing visibility to 1/4 mile or less for 3 hours or longer AND Sustained winds of 35 mph or greater or frequent gusts to 35 mph or greater.[25]

Recent heavy snowstorms affecting Hooksett include:

- January 26 to about February 16, 2015 – A series of frequent heavy snowstorms. The January 26 to 28, 2015 event received a federal disaster declaration.
- November 25 to 30, 2014 - Thanksgiving Day snowstorm.
- February 2010 - Heavy snowstorm.
- March 29, 2010 - Snow and ice storm causing extensive damage and power outages.
- October 29 to 31, 2011 – the Halloween storm.
- February 8 to 10, 2013 - Nor'easter and blizzard known as Winter Storm NEMO.

All areas of Hooksett are potentially at risk for property damage and loss of life due to heavy snows. A major snow event typically occurs about every two years. High elevations in Town are especially susceptible to this hazard.

Moderate to high probability for heavy snow storms and nor'easters to occur and cause damage in Hooksett.

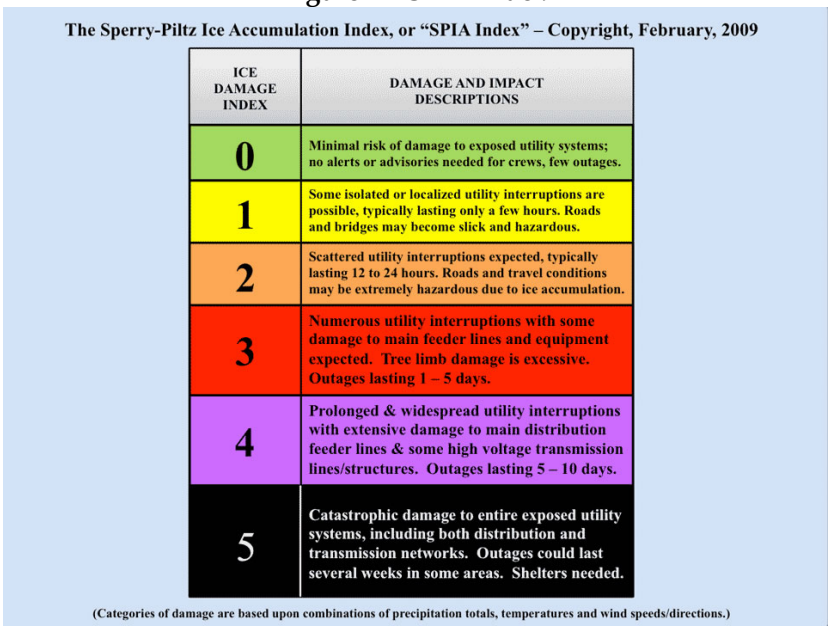
2. Ice Storms

An ice storm is used to describe occasions when damaging accumulations of ice are expected during freezing rain situations. Significant accumulations of ice pull down trees and utility lines resulting in loss of power and communication. These accumulations of ice make walking and driving extremely dangerous. Significant

[25] NOAA. National Weather Service. Definitions of Weather Watch, Warnings and Advisories. http://www.erh.noaa.gov/lwx/Defined/index.htm#Blizzard Warning. 02-06-14.

ice accumulations are usually accumulations of a ¼" or greater.[26] The Sperry–Piltz Ice Accumulation Index, or SPIA Index, predicts the projected footprint, total ice accumulation, and resulting potential damage from approaching ice storms. It is a tool to be used for risk management and/or winter weather preparedness.[27]

Figure 1 – SPIA Index



Hooksett, as well as the rest of New Hampshire and much of the Northeast, experienced an intense ice storm from December 11-12, 2008. A major disaster declaration was declared for 10 counties in New Hampshire, including Hillsborough. The damage was widespread and approximately 400,000 residents of New Hampshire lost power from the storm. Restoring power to a majority of the State took approximately 14 days and in some extreme cases it took 17 days.

"It was absolutely unprecedented in devastation. Take the largest number of outages in any past storm, multiply that figure by three, and it still won't equal the outages in the 2008 ice storm." PSNH further stated that, "the response was as unprecedented as the storm itself. PSNH put 2,400 linemen to work. On average, they restored power to 28,000 customers a day."[28] The 2008 ice storm is believed to be the worst ice storm ever recorded in New Hampshire. A similar

[26] NOAA. National Weather Service. Glossary. http://w1.weather.gov/glossary/index.php?letter=n. 02-06-14.
[27] Sidney K. Sperry, SPIDI Technologies, LLC. http://www.spia-index.com. 03-26-14.
[28] Sullivan, Margo. *State, power companies explore ice storm response*. 12/29/08. http://www.eagletribune.com/punews/local_story_364030134.html

ice storm impacted New Hampshire ten years prior in 1998. Potential effects would be nearly the same as heavy snow. Town wide communications were affected.

All areas of Hooksett are potentially at risk for property damage and loss of life due to ice storms.

Moderate probability for ice storms to occur and cause damage in Hooksett

3. Hailstorms

Hailstorms are characterized by showery precipitation in the form of irregular pellets or balls of ice more than 5 mm in diameter, falling from a cumulonimbus cloud.[29]

Most hailstones are smaller in diameter than a dime, but, stones weighing more than a pound have been recorded. Details of how hailstones grow are complicated but, the results are irregular balls of ice that can be as large as baseballs, sometimes even bigger. While crops are the major victims, hail is also a hazard to vehicles and windows. Hail damage events can be severe to persons, property, livestock and agriculture.

The Hail Size Description Chart developed by the National Oceanic and Atmospheric Administration (NOAA) and enhanced by other National Weather Service local sites depicts the potential size of hail during a hurricane or severe storm event. Some examples from the Hail Size Description chart include "1/2 inch=Pea Size" and "2 inches=Hen Egg Size."

Hail Size Description

Hailstone Diameter in Inches	Size Description
<1/4	Bb
¼	Pea Size
½	Mothball Size
¾	Penny Size
7/8	Nickel Size
Severe Criteria 1	Quarter Size
1 ¼	Half Dollar Size
1 ½	Walnut or Ping Pong Ball Size
1 ¾	Golf Ball Size
2	Hen Egg Size
2 ½	Tennis Ball Size
2 ¾	Baseball Size

[29] NOAA. National Weather Service. Glossary. http://w1.weather.gov/glossary/index.php?letter=n. 02-06-14.

3	Teacup Size
3 4/5	Softball Size
4	Grapefruit Size
4 ¾	CD/DVD
Note: Hail size refers to the diameter of the hailstone.	

Sources: National Oceanic and Atmospheric Administration (NOAA), National Weather Service (NWS)

In June 2001, golf-ball-sized hail fell in Hooksett.

All areas of Hooksett are potentially at risk from this hazard, particularly the eastern portion of the Town.

Low probability for hailstorms to occur and cause damage in Hooksett

E. Earthquakes

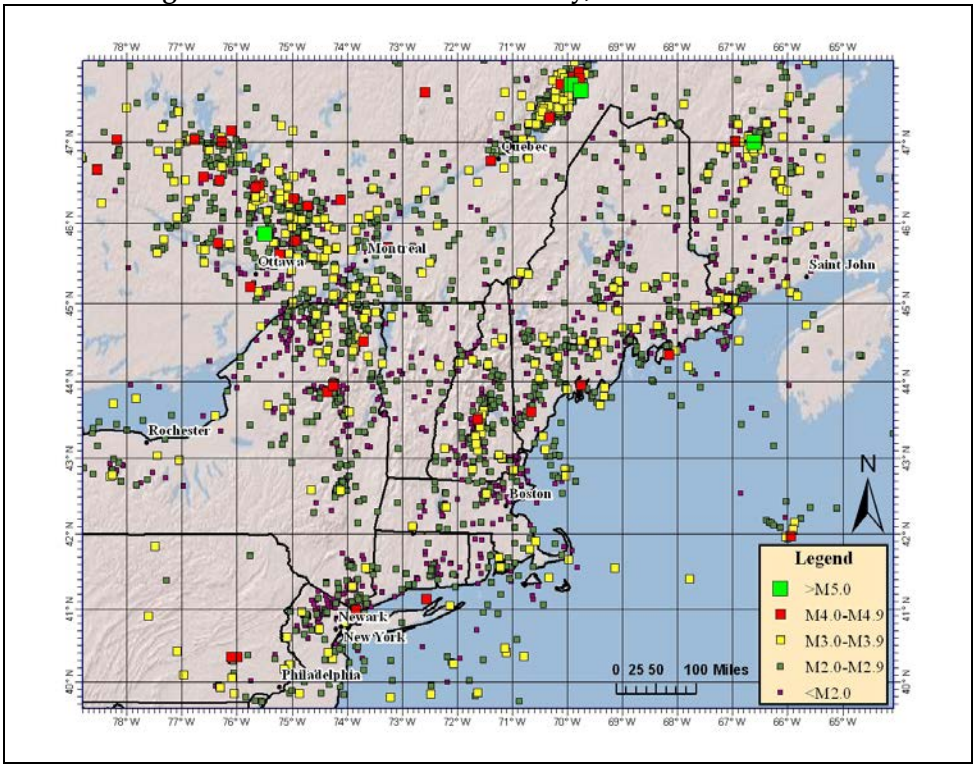
The Hooksett Hazard Mitigation Committee reviewed the following kinds of hazards related to seismic events:

1. Earthquakes

An earthquake is "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."[30]

[30] New Hampshire Hazard Mitigation Plan, 2013 Update

Figure 2 - Northeast Seismic Activity, 1975 – October 2013



Source: Weston Observatory, Boston College

In the State of New Hampshire, earthquakes are due to intraplate seismic activity, opposed to interplate activity or shifting between tectonic plates as occurs in California. The causes of intraplate earthquakes have yet to be scientifically proved. One accepted explanation for the cause of intraplate "earthquakes in the Northeast are that ancient zones of weakness are being reactivated in the present-day stress field. In this model, pre-existing faults and/or other geological features formed during ancient geological episodes persist in the intraplate crust, and, by way of analogy with plate boundary seismicity, earthquakes occur when the present-day stress is released along these zones of weakness.[31]"

There are two scales that measure earthquakes, the Modified Mercalli (MM) and the Richter scales. The Richter scale is a measurement of magnitude of the quake as calculated by a seismograph and does not measure damage. The Modified Mercalli scale denotes the intensity of an earthquake as it is perceived by humans, their reactions, and damage created. It is not a mathematically based scale but a ranking of perception. The following table gives intensities that are

[31] Kafka, Alan. Why Does the Earth Quake in New England? August 24, 2011. https://www2.bc.edu/~kafka/Why_Quakes/why_quakes.html. 02-06-14.

typically observed at locations near the epicenter of earthquakes of different magnitudes (USGS).

Table 7 - Earthquake Magnitude Scales

Magnitude	Typical Maximum Modified Mercalli Intensity
1.0 - 3.0	**I**
3.0 - 3.9	**II - III**
4.0 - 4.9	**IV - V**
5.0 - 5.9	**VI - VII**
6.0 - 6.9	**VII - IX**
7.0 and higher	**VIII** or higher

Source: USGS

One of New England's more notable seismic zones runs from the Ossipee Mountain range of New Hampshire, through the Deerfield area in northwestern Rockingham County, and continues south toward Boston, Massachusetts. This particular area has a mean return time of 408 years for a 6.0 Richter scale earthquake or a 39 percent probability of occurrence in 200 years. Additionally for a 6.5 Richter scale quake, there is a mean return time of 1,060 years or a 17 percent probability of occurrence in 200 years.[32]

The most significant historic earthquakes in New Hampshire occurred December 20th and 24th, 1940 (epicenter in Ossipee, NH west of the area known as Whittier 5.5 Richter scale magnitude).

A fall 2012 minor earthquake originating from the epicenter in Maine (4.0 magnitude on the Richter scale) was felt as far away as Boston. No property damage was recorded. The frequency of small earthquakes has been increasing in the past several decades.

All areas of Hooksett are potentially at risk for property damage and loss of life due to earthquakes.

Low to moderate probability for earthquakes to occur and cause damage.

[32] Pulli, Jay. Seismiscity, Earthquakes Mechanisms, and Seismic Wave Attenuation in the Northeastern United States, PhD Dissertation Abstract. MIT, June 10, 1983. http://erl.mit.edu/assets/Pulli-abstract.pdf. 02-06-14.

2. Landslides

The term landslide includes a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. Although gravity acting on an over-steepened slope is the primary reason for a landslide, there are other contributing factors:

- erosion by rivers, glaciers, or ocean waves create over steepened slopes
- rock and soil slopes are weakened through saturation by snowmelt or heavy rains
- earthquakes create stresses that make weak slopes fail
- earthquakes of magnitude 4.0 and greater have been known to trigger landslides
- volcanic eruptions produce loose ash deposits, heavy rain, and debris flows
- excess weight from accumulation of rain or snow, stockpiling of rock or ore, from waste piles, or from man-made structures may stress weak slopes to failure and other structures

Slope material that becomes saturated with water may develop a debris flow or mud flow. The resulting slurry of rock and mud may pick up trees, houses, and cars, thus blocking bridges and tributaries causing flooding along its path.[33]

A landslide occurs on areas of slope, and depending on where one occurs within a community and the risk factors involved, a landslide might cause no damage or material could sweep down to roadways or homes causing severe damage. There is presently no known widely-used scale measuring the magnitude of landslides. However, there are several resources which might be of use to characterize landslides and help identify the risks involved. The U.S. Geological Survey (USGS) Landslide Hazards Program identifies different types of landslides within the publication The Landslide Handbook – A Guide to Understanding Landslides 2008.

The erosion and mudslide section includes mudslide prone areas and areas at risk for landslides. Location of steep slopes in Hooksett, as shown as part of the Past and Potential Hazards Map, are at risk for landslides. It appears the largest sections of steep slopes are on the north-west side of town.

Low probability for landslides to occur and cause damage in Hooksett

[33] USGS website, 2015.

F. Other Hazards

The Hooksett Hazard Mitigation Committee reviewed the following kinds of hazards related to these events:

1. Radon

Radon is a radioactive gas with carcinogenic properties that occurs naturally. It has been identified as a problem in many New Hampshire communities. Typically the radon is found in some metamorphic rocks in southeastern New Hampshire and may enter homes in a dissolved state through the drinking water from drilled wells. The NH Office of Community and Public Health Bureau of Radiological Health, reports nearly one third of New Hampshire homes have radon levels at or above the United States Environmental Protection Agencies "action level" of four picocuries per liter for at least a portion of the year.[34]

All areas of Hooksett should be considered at risk for radon. A number of homes are known to be effected by radon.

High probability for radon to occur and cause damage in Hooksett

2. Drought

New Hampshire has been under several drought warnings, including a drought emergency, during the past ten years. While a drought is not as devastating as some other hazards, low water levels can have a negative effect on existing and future home sites, since many sites depend on groundwater for water needs. Additionally, the dry conditions of a drought may lead to an increase wild fire risk. This is especially a concern in spring, when fires run faster and the possibility of wildfire is increased.

The National Oceanic and Atmospheric Administration (NOAA) and the US Government utilize the Palmer Drought Survey Index for conditions of the Nation. The Palmer Drought Management areas divide the State into two areas and utilize the Palmer Drought Severity Index, which is based on rainfall, temperature and historic data. The New Hampshire Drought Management Team, whose efforts are coordinated by the NH DES Dam Bureau, utilizes these maps to help determine which areas are the hardest hit. There are four magnitudes of drought outlined in the New Hampshire State Drought Management Plan. The highest magnitude is Disaster, followed by Emergency, Warning and Alert. Each level has varying responses.

[34] ***New Hampshire Office of Community and Public Health Bureau of Environmental & Occupational Health. June 11, 2004.*** http://des.nh.gov/organization/divisions/air/pehb/ehs/radon/documents/search_answers.pdf

All areas of Hooksett would be affected by a drought.

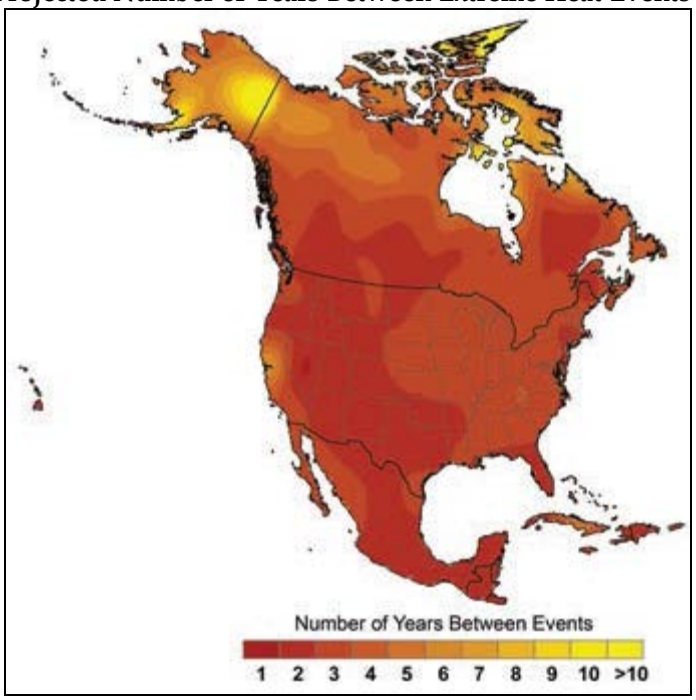
Moderate probability for drought to occur and cause damage in Hooksett

3. Extreme Heat

3. Extreme Heat

Extreme heat is an occasional and short-lived event in Southern New Hampshire. While there have been no extended periods of extreme heat in Hooksett, the state has seen a significant increase in mean annual temperature over the past 50 years.[35] By the end of this century, an extreme heat event that currently occurs once every 20 years could occur every two to four years in most parts of the country. This example is based on how the climate is expected to change under a high greenhouse gas emissions scenario.[36]

Figure 3 - Projected Number of Years Between Extreme Heat Events in the U.S.



Source: Karl, T.R., J.M. Melillo, and T.C. Peterson (eds.). 2009.
Global Climate Change Impacts in the United States

In July 2010 there was a significant heat event which triggered the opening of numerous cooling centers throughout the state as well as activation of NH's 211 system to assist individuals in finding cooling centers. Communities

[35] Hubbard Brook Ecosystem Study. November 2006.
http://www.hubbardbrook.org/research/climate/vadeboncoeur06.htm
[36] Karl, T.R., J.M. Melillo, and T.C. Peterson (eds.). 2009. *Global Climate Change Impacts in the United States*. Cambridge University Press, New York.

surrounding Hooksett (Cities of Concord and Manchester, Town of Bow) opened cooling centers. While physical damages did not occur, the potential for danger to life was high. According to the Natural Resources Defense Council, in 2011 there were record-breaking heat in five New Hampshire counties and a total of 12 broken heat records. During the summer of 2013, New Hampshire experienced several heat waves during the summer of 2013. A cooling shelter has been established at the library for the possibility of an extreme heat event.

All areas of Hooksett would be affected by extreme heat, in its event. Particular areas and populations at a greater risk are:

- Elderly populations and day care centers, identified in the "Areas at Risk" listing at the end of this section;
- Power system may become overburdened;
- Communications negatively affected by power burden; and
- Possible railroad derailment due to unstable rails and extreme expansion.

Low probability for extreme heat to occur and cause damage in Hooksett.

Geographic Information Systems (GIS) generated maps were prepared to illustrate *Past Hazards, Potential Hazards* and *Critical Facilities* as identified by the Hooksett Hazard Mitigation Plan Committee. These maps are included at the end of this section. Summary listings of "Critical Facilities" and "Areas at Risk" are also presented at the end of this section.

Town of Hooksett New Hampshire
"Critical Facilities"

The following are emergency equipment or areas that are ***needed*** to respond at the time of a natural disaster. Applicable hazard areas for each Critical Facility are keyed in parenthesis.

Key

(F) Located within the Special Flood Hazard Area and/or prone to flooding and damage due to 100-year floodplain events, ice jams, debris impacted infrastructure, hurricanes or rapid snow pack melt.

(S) Located on or adjacent to a Steep Slope and susceptible to damage in the event of erosion, mudslides or landslides.

(X) Located in or near a known past or potential wildfire location

(T) Susceptible to Town wide hazard risks such as wind damage from hurricanes, tornados, nor'easters, downbursts, lightning, heavy snow or ice storms or hailstorms.

Emergency Operations Center, Law Enforcement and Fire Service Facilities

- James Oliver Safety Center, 15 Legends Drive (T)
- Fire Department Station 1, 1 Main Street (F, T)

Emergency Fuel Facilities

- Safety Center, 15 Legends Drive (T)
- Village Fire Station, 1 Riverside Drive (F, T)
- DOT Highway Garage, Exit 11 Route 93, Hackett Hill Road (T)

Hooksett Municipal Building

- 35 Main Street (T)

Post Office

- 1328 Hooksett Road (S, T)

Public Works Garage

- Highway Department, 210 West River Road (F, T)

Shelters

- Memorial School, 5 Memorial Drive (T)
- Underhill School, 2 Sherwood Drive (T)
- Town Office Building, 35 Main Street (T)
- Cawley Middle School, 89 Whitehall Road (F,T)

Emergency Operations Center

Village Fire Station

Hooksett Memorial Middle School

Evacuation Routes

- I-93 (F, S, T)
- Route 3/28 (F, S, T)
- Route 3-A (F, S, T)
- Route 27 (F, T)
- Route 28-A (T)
- Route 28 Bypass (F, S, T)

Bridges

Bridges are shown on the Critical Facilities Base Map contained within this document. (F, T)

Hospitals/Ambulances

No Hospitals located in Hooksett, but the Elliott Hospital and Catholic Medical Center in Manchester are used, as is the Concord Hospital in Concord.

- Hooksett Fire/Rescue 63 – Ambulance 1 and 2

Radio Towers

Emergency communications tower in Bow.

Hazardous Materials Facilities

See separate listing at the end of this section.

Wireless Communication Facilities

- Map 18 Lot 48, off Route 3 next to Brox Industries (S, T)
- Map 29 Lot 2, off Gosselin Ave., (S, T)
- Map 19 Lot 7, private on Oak Hill Road (T)
- Map 25 Lot 80-1, Safety Center (T)
- Map 2 Lot 10-1, on Pembroke water tower in Hooksett (S, T)
- Map 12 Lot 11, private, Pike property, Hackett Hill Rd (S, T)
- Map 49 Lot 1-4, 85 Londonderry Turnpike (T) – Verizon
- S Bow Rd, owned by Hooksett

"Areas at Risk"

The following are emergency equipment or areas ***not needed*** to respond at the time of a natural disaster, but which could still be threatened if a natural disaster were to occur. Applicable hazard areas for each Critical Facility are keyed in parenthesis.

Key

(F) Located within the Special Flood Hazard Area and/or prone to flooding and damage due to 100-year floodplain events, ice jams, debris impacted infrastructure, hurricanes or rapid snow pack melt.

(S) Located on or adjacent to a Steep Slope and susceptible to damage in the event of erosion, mudslides or landslides.

(X) Located in or near a known past or potential wildfire location

(T) Susceptible to Town wide hazard risks such as wind damage from hurricanes, tornados, nor'easters, downbursts, lightning, heavy snow or ice storms or hailstorms.

Water Systems- Public:

- Central Hooksett Water Precinct
  River Road (F, T)
  System Type: Community
- Hooksett Village Water Precinct
  2 Main Street (T)
  System Type: Community
- Manchester Water Works
- Pennichuck Water Works
- Pembroke Water Works

Water Systems- Private:

- A Brighter Future Day Care Center, 167 Londonderry Tpk. (T)
  System Type: Transient, Non-Community
- Peu/Smythe Woods
  Joanne Drive (T)
  System Type: Community
- Poultry Products
  11 Bemis Savoie Road (F, S, T)
  System Type: Non-Transient, Non-Community
- Tic-Tac-Tots Preschool
  145 Londonderry Turnpike (T)
  System Type: Non-Transient, Non-Community
- Well House - Wesco
  16 Springer Road (T)
  System Type: Community
- West River Road Irving Mainway
  86 West River Rd, Rte. 3-A (S, T)
  System Type: Non-Community, Transient

Sewer Pumping Stations:

- Main St by Hooksett Village Water Precinct (T)
- Veterans Drive (F, T)
- Kmart shopping plaza (F, T)
- Depot Rd (T)
- Golden Gate Drive (T)

Wastewater Treatment Plant:

- Egawes Drive (S, T)

Hooksett Wastewater Treatment Plant

Electrical Power Substation(s)

- Hooksett Hydro Station
  57 Merrimack St (F, T)
- Pinehill Transmission Substation
  Legends Dr. (T)

Major Highways/Roadways

- US I-93 (F, S, T)
- US I-293 (T)
- NH Route 3 (F, S, T)
- NH Route 3-A (F, S, T)
- NH Route 28 (F, S, T)
- NH Route 28 Bypass (F, S, T)
- NH Route 27 (F, T)

Problem Culverts

See Section II: Past and Potential Hazards; Map following Section II

Isolated Homes

- Wiggin/Mountain Rd area
  (On Hall Mt.)

Schools

- Fred C. Underhill School
  2 Sherwood Drive 623-7233 (T)
- Hooksett/Candia School District (SAU 15), 90 Farmer Road 622-3731 (T)
- Hooksett Memorial Middle School (T)
  1550 Hooksett Road 485-9959
- David H. Cawley Middle School
  85 Whitehall Rd (T)
- Southern New Hampshire University (F, T)
  2500 North River Road

Kmart Pumping Station

Hooksett Hydro Station

Fred C. Underhill School

Child Care Centers

- Above and Beyond Child Care
  1461 Hooksett Rd 627-4161 (S, T)
  Children's Country Learning Center 625-2912 (S, T)
  4 West Stearns Avenue

- Colorful Apples Learning Center, 1249 Hooksett Road, 603-206-5420
- Happy Bears Daycare Learning Center, 647-8788, 16 John's Dr. (T)
- Little Angels Learning Center 1701 Hooksett Road (T)
- Little Apples Day Care Learning Center, 625-2273, 1166 Hooksett Road (T)
- Lots of Love Family Childcare, 323 Hackett Hill Road, 603-682-3480
- Mary-Go-Round Day Care 13 Morgan Drive, 485-3254 (T)
- Merrill Johnson Early Childhood Program, 198 Londonderry Turnpike, 603-935-8260
- Miss Stephanie's Family Childcare, 147 Whitehall Road, 603-622-0028
- New Morning Before and After School Programs @ Fred Underhill, 2 Sherwood Drive, (603) 669-3591
- Polka Dots Child Care Center, 11 Kimball Drive, Suite 103, 603-772-0822
- Stand By Me Child Care And Enrichment Center, 167 Londonderry Turnpike, 603-647-5736
- Tic-Tac-Tots Preschool, 641-8687 145 Londonderry Tpk. (T) Number of Children: 35

Above and Beyond Child Care

Tic Tac Tots Preschool

Churches

- Bethel Advent Christian Church 206 Whitehall Road, 669-6712 (T)
- Church of The Nazarene 627-2971 7 Silver Avenue (T)
- Congregational Church 5 Veterans Drive, 485-9009 (F, T)
- Emmanuel Baptist Church 14 Mammoth Road, 668-6473 (T)
- Harvest Baptist Church 361 Hackett Hill Road, 627-2633 (T)
- Heritage Baptist Church, 161 Londonderry Tpk. 641-4921 (T)
- Holy Rosary Church 21 Main Street 485-8567 (T)
- Trinity Full Gospel Church 16 Highland Street 485-2772 (T)

Holy Rosary Church

Congregational Church

Lambert Park

Arthur Donati Memorial Field

Nursing Homes
None in Town

Elderly Housing # of Units

- Hollyberry Hill (T)
  319 Londonderry Tpk. 44
- West View Terrace (T)
  9 Lindsay Road 30

Recreational Areas

- Fraser Memorial Field, K Avenue, south off Alice Avenue (T)
- Donati Memorial Field, Main Street next to Village Elementary School (F, T)
- Hooksett Memorial Middle School, Hooksett Road (T)
- Underhill School, Sherwood Drive (T)
- Jacob Square, Veterans Drive, off Merrimack Street (F, T)
- Riverside Park, Merrimack St (F, T)
- Town Hall, Main Street (F, T)
- Town Boat Ramp, at Lambert Park (T)
- 29th Skeet & Sportsman Club, off Goffstown Road (T)
- Bear Brook State Park, northeast corner of Town (X, T)
- Lambert Park (F, T)
- Legends Golf & Family Recreation, 18 Legends Drive (T)
- Hooksett Space Center, corner of Route 3 and Zapora Drive (T)
- Petersbrook Fields, Industrial Drive (T)

Socio-Economic Impact Areas

- Southern New Hampshire University, 2500 River Road (F, T)
- General Electric, 31 Industrial Park Road (F, T)

Area with Second Language Need

- Southern New Hampshire University, 2500 River Road (F, T)

Hollyberry Hill Elderly Housing

West View Terrace Elderly Housing

Town Boat Ramp

Unique or Historic Resources

One site is listed on the National Register of Historic Places:

- Robie's Country Store, 8 Riverside Street, listed 8/31/2000 (F, T)

- The New Hampshire Division of Historical Resources lists the New Hampshire Canal System at the A.J. Lambert Town Park at Hooksett Falls in Hooksett Village as an historic resource for Hooksett. (F, T)
- The Merrimack River is being considered for designation by the National Parks Service as a wild and scenic river from its origin at the confluence of the Pemigewasset and Winnipesaukee Rivers in Franklin, New Hampshire, to the backwater impoundment at Hooksett Dam.
- Other historic properties include Lilac Bridge crossing the Merrimack River, one of only three span Pratt truss bridges left in New Hampshire, and the Arah Library, 18 Main Street. (F, T)

Lodges

- American Legion VFW, Riverside Street (F, T)
- Elks Lodge, Londonderry Turnpike (T)
- Grange Hall, Riverside St (F, T)

Robie's Country Store is the first landmark in Hooksett, New Hampshire to be honored with entry on the National Register of Historic Places on August 31, 2000.

Robie's store during the flood of 1936

Solid Waste/Municipal Recycling Facility/Transfer Station

- Town of Hooksett Transfer and Recycling Center, 210 W River Rd (T)
- Pinard Waste Systems Inc. 32 West River Road (T)
- Hooksett Recycling & Processing Center, 34 Industrial Park Drive (F, T)
- Outdoor World, 24 LeHoux Dr. (T)

Town of Hooksett Transfer and Recycling Center

Pinard Waste Systems, Inc.

American Legion VFW

Elks Lodge

Grange Hall

Hooksett Recycling & Processing Center

Active Dams (F, T) See Appendix A for New Hampshire Dam Classification Schedule:

Dam Name	Waterway	Type	Owner	Dam Rating	Dam Status
Dube Pond Dam	Maple Falls Brook	Earth/ Concrete	Mr. Robert Dube	S	Active
Hooksett Hydro	Merrimack	Concrete	PSNH	L	Active
Healthsource Detention Pond	Unnamed	Earth	Healthsource New Hampshire	L	Active
Goldfish Pond	Natural Swale	Earth	NHDOT	L	Active
Ledoux Dam	Unamed Brook	Earth	Sherri Thompson	L	Active
College Park Dr. Embankment Dam	Runoff	Earth	Greenview Mgt.	L	Active
Market Basket Det Pond 1	Runoff	N/A	Demoulas Supermarket, Inc.	L	Active
Market Basket Det Pond 2	Runoff	N/A	Demoulas Supermarket, Inc.	NM	Active
Old Brickyard Dam	Brickyard Brook	Earth	Hooksett Village Water Precinct	NM	Active
Kingswood Subdivision Pond 1	Dalton Brook	Earth	URDAC	NM	Active
Kingswood Subdivision Pond 2	NA	Earth	URDAC	NM	Active
Fire Pond	Natural Swale	Earth	Unknown	NM	Active
Fire Pond	Natural Swale	Earth	Alpha Construction	NM	Active

Dam Name	Waterway	Type	Owner	Dam Rating	Dam Status
Quimby Mt. Det Pond	Runoff	Earth	Rodney S. Shehyn	NM	Active
AWARE Pond 1	Runoff	Earth	AWARE	NM	Active
AWARE Pond 2	Runoff	Earth	AWARE	NM	Active
Canad Cinemas Det Pond	Runoff	Earth	Canad Inc.	NM	Active
Detention Basin Dam	Runoff	Earth	Healthsource NH	NM	Active
Hooksett Middle School	Runoff	Earth	Hooksett School District	NM	Active
University Circle Det Pond Dam	Unamed Wetland	N/A	3A Development LLC	NM	Active
US 3 & Rte. 28 Bypass Det Pond Dam	N/A	N/A	NH DOT	NM	Active
Verizon Wireless Det Pond Dam	N/A	N/A	Verizon Wireless	NM	Active

Commercial Economic Impact Areas (T)

Businesses and organizations with over 25 employees

Name	Address
• Bass Pro Shops	2 Commerce Drive
• General Electric Co. (F, T)	31 Industrial Park Drive
• Granite State Marketplace (T)	1328 Hooksett Road
• Healthsource Inc. (T)	2 College Park Drive
• Poultry Products Co. Inc. (F, S, T)	11 Bemis Road
• Wal-Mart (T)	3 Commerce Drive
• Cummings Printing Co. (F, T)	4 Peters Brook Drive
• Merchants Automotive Group (F, T)	1278 Hooksett Road
• SNHU	15 W Alice Avenue
• Hooksett Crushed Stone (S, T)	38 Hackett Hill Road
• Applebee's Restaurant (F, T)	1273 Hooksett Road
• Wendy's (T)	1323 Hooksett Road
• Fred C. Underhill Elementary School	2 Sherwood Drive
• Outdoor World (T)	24 LeHoux Drive
• Hooksett Memorial School (T)	5 Memorial Drive
• JP Noonan Transportation Inc. (T)	240 Londonderry Turnpike
• 99 Restaurant and Pub (T)	1308 Hooksett Road
• McDonald's (T)	1262 Hooksett Road
• Hooksett Town Offices (T)	35 Main Street
• Whatever Wear (F, T)	2 Brookside West
• Dunkin Donuts (T)	1284 Hooksett Road, 6 Bell Ave., 1326 Hooksett Road
• R.G. Tombs Door Co. (S, T)	38 W River Road
• Auto Wholesalers of Hooksett (T)	1339 Hooksett Road
• New Hampshire Liquor Store (T)	25 Springer Road, 140 Bicentennial Dr. 1271 Hooksett Rd, 530 West River Rd
• New England Brace Co. (T)	10 Brace Avenue
• Superior Excavating (T)	4 Hummingbird Lane
• Cocci Computer Services Inc. (T)	1558 Hooksett Road
• Kawasaki Polaris (T)	1354 Hooksett Drive
• Hooksett Fire Dept. (T)	15 Legend Dr., 1 Riverside Dr.
• Galaxy Glass & Aluminum Inc. (T)	114 Londonderry Turnpike
• Pinard Waste Systems Inc. (S, T)	32 West River Rd.
• TRB Development Group Inc. (T)	36 Londonderry Turnpike
• Manchester Sand & Gravel Co. (T)	1355 Hooksett Road.

- Granite State Industrial Park (T) 1359 Hooksett Road
- Hooksett Public Works 210 West River Rd

Hazardous Material Facilities in the Town of Hooksett (T)

Above Ground Storage Tanks:

- Al Lambert's Garage 63 Mammoth Road
- Anchor Fuels, Inc. (T) 220 Whitehall Road, Building B
- Browning Ferris Industries 34 Industrial Park Drive
- Brox Industries (F, T) 1363 Hooksett Road
- Brox Paving Materials Inc. (T) 1500 Hooksett Road
- G.E. Aviation (T) 31 Industrial Park Drive
- Hooksett Transfer/Highway(T) 210 W. River Road
- Hooksett WWTP (T) 1 Egawes Drive
- J.P. Noonan Transportation (T) 240 Londonderry Turnpike
- Lowe's(T) Rt. 3A
- Manchester Sand and Gravel Co. (T) 1355 Hooksett Road
- Old Castle Lawn & Garden(T) 24 Lehoux Drive
- Pike Industries Inc. (T) 38 Hackett Hill Road
- PSNH Pine Hill Substation(T) 7 Legends Drive
- Plourde Sand & Gravel(T) 219 W. River Road
- Pollock Oil Co. (T) Arah Street
- PSNH Transmission Facility (T) 13 Legends Drive
- PSNH General Const. & Maint. Div. (T) 1260 Hooksett Road
- Resource Construction Service (F, T) 34 Industrial Park Drive
- Waste Systems International (T) 117 Londonderry Turnpike
- Hooksett Safety Center (T) 15 Legends Dr.
- Verizon Wireless (T) 85 Londonderry Turnpike
- Valvoline Instant Oil Change (T) 1246 Hooksett Road
- Walmart Supercenter(T) 3 Commerce Drive

Active Hazardous Waste Generators[37]:

- GE Aviation 30 Industrial park Dr.
- GE Aviation 31 Industrial park Dr.
- PSNH 1250 Hooksett Rd
- Genes Hooksett Gulf 1580 DW Hwy
- Brox Industries Inc. 1500 Hooksett Rd
- K mart #3175 1267 Hooksett Rd
- Hooksett Kawasaki Inc. 1354 Hooksett Rd

[37] Active Hazardous Waste Generators may include businesses which produce household hazardous waste, or treat and store or dispose of hazardous waste, or be a waste handler or used oil marketer. Source: New Hampshire Department of Environmental Services.

• Auto Re Nu It Auto Body LLC	22 Francis Ave.
• Pro con Inc.	1359 Hooksett Rd.
• Utility Service & Assistance Inc.	117 Londonderry Tpk.
• Classic Chassis	8 Industrial park Dr.
• Grimards Auto Sales & Service	4 Londonderry Tpk.
• Thermal Stor Inc.	8 Industrial Park Dr.
• Curtis Hydraulics	8 Industrial Park Dr.
• Country Club Enterprises	1346 Hooksett Rd.
• Alliance auto sales Inc.	1346 Hooksett Rd.
• Hooksett veterinary Clinic Inc.	59 Pleasant St.
• Monro muffler & Brake Svc.	1323 Hooksett Rd.
• Cummings Printing Company	4 Peters Brook Dr.
• Rite Aid #10277	1285 Hooksett Rd.
• Allied waste recycling Svcs. of NH	34 industrial park Dr.
• Shaw's Supermarkets Inc.	1328 Hooksett Rd.
• Shaw's #7486	1328 Hooksett Rd.
• Longfellow service center	1 Silver Ave.
• Tech Auto Service	1806 Hooksett Rd.
• American Crane	220 White Hall Rd
• Woods CRW Corp of NH	1401 Hooksett Rd.
• New England Truck Maint. & Repair	1359 Hooksett Rd.
• PSNH	8 E Point Dr.
• Ivan's Auto repair	5 Eastpoint Dr.
• BJ's Wholesale	400 Quality Dr.
• NES Rentals	1614 Hooksett Rd.
• Alltune & Lube	203 Londonderry Tpk.
• Mowtown Power Equipment LLC	242a West River Rd.
• Home depot USA #3403	300 Quality Dr.
• Granite family Dentistry	1558 Hooksett Rd.#3c
• Al Lamberts Garage	63 Mammoth Rd.
• Pro Cut CNC machine	7 Lehoux Dr.
• Target Store #1520	100 Quality Dr.
• Hooksett Family Chiropractic	1100 Hooksett Rd.
• M & S Trailers	2 Sutton Cir.
• United Rentals	2 Sutton Cir.
• Elliot Laboratory at NH Oncology	200 Technology Dr.
• NH Oncology hematology pa	200 Technology Dr.
• Wal-Mart Supercenter #1698	3 Commerce Dr.
• Delta Mechanical Corp	15 Zapora Dr.
• Hannaford Supermarket	79 Bicentennial Dr.
• Encon Evaporators	1368 Hooksett Rd.

• HVAC Unlimited	193 Londonderry Tpk.
• ESI Environmental services Inc.	97 Londonderry Tpk.
• Sherwin Williams #5371	1134 Hooksett Rd.
• BA Gelinas Automotive Specialists	58 Edgewater Dr.
• Bed Bath and Beyond #756	103 Quality Dr.
• PSNH	13 Legends Dr.
• Tractor Supply Co #1454	1328 Hooksett Rd.
• Bobs Body Works	52 Londonderry Tpk.
• CPI Auto Body	52 Londonderry Tpk.
• Collision Centers of NH Hooksett	1208 Hooksett Rd.
• Pike industries Inc.	38 Hackett hill Rd.
• PSNH	73 Merrimack St.
• Chris Compos Auto tech	9 W Auburn Rd.
• Nu Coat Auto Body	9 Zapora Dr.
• Chris Compos Auto Tech	9 Zapora Dr.
• JP Noonan Transportation Inc.	240 Londonderry Tpk.
• Manchester Sand & Gravel Co.	1355 Hooksett Rd.
• Valvoline Instant Oil Change	1246 Hooksett Rd.
• Merchants Automotive Group	1278 Hooksett Rd.
• Hooksett Transfer & Recycling	210 W River Rd.
• Mikes Import Auto Sales	196 Londonderry Tpk.
• LD Auto Works	125 W River Rd.

SECTION III - EXISTING MITIGATION STRATEGIES & PROPOSED IMPROVEMENTS

Review of Existing Programs
The Hooksett Hazard Mitigation Plan Committee identified the following regulations, strategies and equipment related to mitigation measures for five types of hazards:

A. Flooding
- Floodplain Development Ordinance
- Wetlands Conservation Overlay District
- Groundwater Resource Conservation District
- Emergency Operations Plan
- Evacuation and Notification
- Road Design Standards
- Shoreland Protection Act
- Best Management Practices (BMPs)
- Electrical Back-Up Generators
- Town Radio System
- Hazardous Materials Regulations
- Elevation Certificates
- Manufactured Housing Parks (zoning)
- IBC Building Code *and* Local Building Code
- Steep Slopes and Class VI Roads
- Comprehensive Emergency Management Planning for Schools
- NH State Dam Program

B. Wind
- Emergency Operations Plan
- Electrical Back-Up Generators
- Town Radio System
- Manufactured Housing Parks (zoning)
- IBC Building Code *and* Local Building Code
- Comprehensive Emergency Management Planning for Schools

C. Wildfire
- Emergency Operations Plan
- Evacuation and Notification
- Electrical Back-Up Generators
- Town Radio System

D. Ice & Snow Events

- Emergency Operations Plan
- Electrical Back-Up Generators
- Town Radio System
- IBC Building Code *and* Local Building Code
- Comprehensive Emergency Management Planning for Schools

E. Earthquakes

- Emergency Operations Plan
- Evacuation and Notification
- Electrical Back-Up Generators
- Town Radio System
- Manufactured Housing Parks (zoning)
- IBC Building Code *and* Local Building Code
- Comprehensive Emergency Management Planning for Schools

Description of Existing Programs
The Town of Hooksett has adopted the following programs and ordinances relating to Hazard Mitigation:

Floodplain Development Ordinance
Floodplain Development Ordinance regulations apply to all lands designated as Special Flood Hazard Areas (SFHAs) by the Federal Emergency Management Agency (FEMA) in its "Flood Insurance Study for the Town of Hooksett, N.H." and the associated Digital Flood Insurance Rate Maps dated April 19, 2010. The Building Inspector shall review all building permit applications for new construction or substantial improvements to determine whether proposed building sites will be reasonably safe from flooding.

Elevation Certificates
Elevation certificates are required for Certificate of Occupancy for all new construction/ substantial improvements in SFHAs.

Wetlands Conservation Overlay District (zoning)
The Wetlands Conservation Overlay District regulates the uses allowed on lands subject to standing water or extended periods of high water table. It includes areas of Town that contain marshes, ponds, bogs, lakes, streams and rivers, as well as soils defined as poorly or very poorly drained by the National Cooperative Soil Survey conducted by the U.S. Department of Agriculture Soil Conservation Service. Contained within the Overlay District are wetlands that are 2000 square feet or larger, that are of any size if contiguous to surface waters, and all land within 50 feet of those wetlands that are included within the Wetlands Conservation District.

Groundwater Resource Conservation District (zoning)
The Groundwater Resource Conservation District was designated in order to protect, preserve and maintain existing and potential groundwater supply and groundwater recharge areas within known aquifers from adverse development, land use practices or depletion. This is to be accomplished by regulating land uses that would contribute polluted water or other pollutants to designated aquifers identified as being needed for present and future public and private water supplies. It includes those areas designated as having high and medium potential to yield groundwater as shown on the Town of Hooksett Groundwater Conservation District map on file with the Planning Board.

Emergency Operations Plan
Hooksett maintains an Emergency Operations Plan. This Plan was last updated in 2013.

Evacuation and Notification
Hooksett maintains an Emergency Operations Plan that addresses evacuation procedures for emergency notification and routes to be taken. Emergency notifications are provided by the State CityWatch system.

State Dam Program
Hooksett maintains Class L and H dams in coordination with the State Dam Program.

Road Design Standards
Hooksett maintains road design regulations (NH DOT Standards) as part of its subdivision regulations.

Shoreland Protection Act
The Shoreland Protection Act, adopted by the State of New Hampshire during 1994 and last updated in 2011, establishes minimum standards for the future subdivision, use, and development of all shore lands within 250 feet of the state's public waters. When repairs, improvements, or expansions are proposed to existing development, the law requires these alterations to be consistent with the intent of the Act. The Department of Environmental Services (DES) is responsible for enforcing the standards within the protected shoreland, unless a community adopts an ordinance, or shoreland provisions, equal to or more stringent than those provided for by the Act.

Best Management Practices (BMPs)
BMPs are established by the State for erosion and sediment control, protection of the natural environmental, and prevention of potential damage due to poor construction methods.

Electrical Back-Up Generators
The Town has electrical back-up generators at its two fire stations, one at each school (excluding the Underhill School), and one at the Town Hall for sheltering purposes.

Town Radio System
The existing radio system has a number of dead spots in Town due to existing antenna placement. Updates in 2002 helped to eliminate some of the dead spots. Upgrades are ongoing and in progress.

Hazardous Materials Regulations
New Hampshire regulations regarding hazardous materials are enforced by the Town of Hooksett.

International Building Code, Local Building Code, and Fire Codes
The Town of Hooksett enforces the *State of New Hampshire Building Code as authorized in RSA 155-A*. The Town of Hooksett also enforces a fire code to protect residents from fire hazards in residential and non-residential facilities.

Steep Slopes and Class VI Roads
Regulations for steep slopes and Class VI Roads are both found within the Town's Subdivision Ordinance, and are both enforced within Hooksett.

Comprehensive Emergency Management Planning for Schools (CEMPS)
CEMPS is currently coordinated between the State of New Hampshire and the school district. This training program for schools has been utilized in the past and will continue to be a valuable training program in future years.

HazMat Response Team
Hooksett continues to depend on mutual aid within the Town's District for hazardous materials response.

Merrimack Riverfront Conservation Preserve Project
Since 2007, the Conservation Commission has been working on the Merrimack Riverfront Conservation Preserve Project, which aims to conserve more than 135 acres and almost 4,000 feet of riverfront on the Merrimack River. In July 2013, 6.21 acres and 333.83 feet of riverfront were acquired for conservation purposes. The Hooksett Conservation Commission actively seeks to protect waterfront property for conservation and recreational use.

National Flood Insurance Program (NFIP)
Hooksett has participated in the NFIP since March 1978. The Town continues to implement and enforce their Floodplain Development Ordinance. The Town also continues to implement multiple flood hazard mitigation actions, regulations, and outreach related to continued compliance with NFIP.

Public Outreach Program
Public outreach efforts include education on hazard mitigation programs, the importance of wetlands and (separately) groundwater recharge, land clearing procedures, transport of hazardous materials. The Town of Hooksett is working to establish a comprehensive coordinated outreach program to address all hazards identified for the town on an ongoing basis.

Existing Protection Matrix
The Hooksett Hazard Mitigation Plan Committee has developed a matrix, presented on the following pages, of existing strategies that support hazard mitigation efforts. This matrix, a summary of the preceding information, includes

the type of existing protection (Column 1), a description of the existing protection (Column 2), the area of Town affected (Column 3), the effectiveness or enforcement of the strategy (Column 4), the identified improvements or changes needed (Column 5) and the 2015 Update (Column 6).

Existing Protection Policies, Programs and Proposed Improvements for the Town of Hooksett

TYPE OF EXISTING PROTECTION	DESCRIPTION	AREA OF TOWN COVERED	EFFECTIVENESS OR ENFORCEMENT **Poor- Not meeting minimum requirements** **Good – Meeting requirements** **Excellent – Exceeding requirements**		IMPROVEMENTS OR CHANGES NEEDED **2015 Update**
Floodplain Development Ordinances	Guides development in floodplains to minimize or prevent any increased risk to existing properties in the Special Flood Hazard Areas	All lands designated as special flood hazard areas by FEMA	Building Inspector Planning Board	Good	Educate public about hazard mitigation programs, including GIS maps. The online GIS application now has a Flood Map layer, which is available to the public.
Elevation Certificates	Required for Certificate of Occupancy for all new construction/ substantial improvements in SFHAs	100 year Floodplain- SFHA	Building Inspector	Good	Ordinance meets Floodplain Management Regulation Requirements. FEMA flood map updates completed as of April 2010
Wetland Conservation Overlay District	Protects aquifers and wetlands and includes 75' wetlands buffer beyond the boundary of each prime wetland	All lands within the wetland overlay district	Building Inspector Planning Board Conservation Commission	Good	Educate the public about wetlands and their unique importance. Merrimack Riverfront Conservation Preserve Project being implemented by the Conservation Commission, along with public outreach.

TYPE OF EXISTING PROTECTION	DESCRIPTION	AREA OF TOWN COVERED	EFFECTIVENESS OR ENFORCEMENT Poor- Not meeting minimum requirements Good – Meeting requirements Excellent – Exceeding requirements		IMPROVEMENTS OR CHANGES NEEDED 2015 Update
Groundwater Resource Conservation District	Protects groundwater supply and recharge areas from adverse development or depletion	Areas with high and medium potential to yield groundwater shown on the Hooksett Groundwater Conservation District Map	Planning Board. Health Officer Code Enforcement Conservation Commission	Good	Educate the public regarding the importance of groundwater recharge; enhance GIS capability. An online GIS Groundwater Resources layer is now available to the public.
Emergency Operations Plan (EOP)	Describes duties of Town personnel during an emergency	All areas of Town	Emergency Management	Good	Plan meets all state/federal requirements. Last updated in 2013.
Evacuation and Notification	Evacuation procedures with emergency notification and routes to be taken	All areas of Town	Emergency Management	Good	Plan meets all state/federal requirements. Contained within EOP, which was last updated in 2013. State "CityWatch" emergency notification system is in place (instead of "Code Red" system). The CityWatch database is currently being updated. State Reverse 911 program implementation needed.
NH State Dam Program	Maintenance of Class L and S Dams in coordination with the State Dam Program	All Class L and S Dams in Hooksett	NH State Dam Program	Good	More information should be available State led program is working as described.
Road Design Standards	NH DOT Standards and Town Standards.	All new subdivisions	Planning Board	Good	Regulations and standards meet all state/federal requirements Local authority is responsible for enforcing these regulations/standards. They are periodically reviewed and updated as required. Regulations/standards are working as prescribed.

TYPE OF EXISTING PROTECTION	DESCRIPTION	AREA OF TOWN COVERED	EFFECTIVENESS OR ENFORCEMENT Poor- Not meeting minimum requirements Good – Meeting requirements Excellent – Exceeding requirements		IMPROVEMENTS OR CHANGES NEEDED 2015 Update
Shoreland Protection Act	Standards for use of all shorelands within 250 ft. of state public waters to protect streambanks and water quality from the adverse effects of development	All property within 250 feet of state public waters	Planning Board NH Department of Environmental Services	Good	Educate property owners about land clearing procedures. Integrate into comprehensive outreach program
Best Management Practices (BMP's)	State guidelines for erosion and sediment control; protection of the natural environment & prevention of potential damage due to poor construction methods	All areas of Town	State of NH DPW (Town/ Highway)	Good	Program meets all state/federal requirements Program is working as described.
Generators	One at each fire station, one at each school, and one at Town Hall for sheltering purposes	All areas of Town	Fire Dept. School District DPW (Maintenance)	Good	Purchase additional mobile back-up generator(s). Town Hall, Underhill School and library needs a generator
Town Radio System	Communications between fire, police, emergency services	All areas of Town	Emergency Personnel Police Department	Good	Capitol Compact Area dispatches (Concord FD) for Hooksett Fire: Hooksett Police dispatch for themselves and DPW utilizes their own radio system. These Town agencies can communicate with each other through each radio system.

TYPE OF EXISTING PROTECTION	DESCRIPTION	AREA OF TOWN COVERED	EFFECTIVENESS OR ENFORCEMENT Poor- Not meeting minimum requirements Good – Meeting requirements Excellent – Exceeding requirements		IMPROVEMENTS OR CHANGES NEEDED 2015 Update
Hazardous Materials Regulations	State regulations administered by Town	All areas of Town	Police, Fire Depts.	Good.	Certified to Operations level. Recognition of emergency, basic mitigation in place. Part of South East Hazardous Mutual Aid Program, of which 13 towns are a part of. Take care of companies Tier2 Program submittal and there needs to be a better, more stream-lined approached to make it easier. So, it could be improved. Educate the public and town government about transport of hazardous materials . Integrate into comprehensive outreach program. Maybe on website.
IBC, Local Building Codes, and Fire Codes	Regulates construction of buildings to set a minimum standard of protection to building occupants	All areas of Town	Building Inspector Code Enforcement	Good	Ordinance meets all state/federal requirements. Local authority is responsible for enforcing this ordinance. It is periodically reviewed and updated as required. Ordinance is working as described.
Comp Emergency Management Planning for Schools (CEMPS)	Education for school teachers, administrators and children about emergency situations	All schools	Emergency Planning personnel	Good	Plan is working as intended. In progress; exercises held regularly and school plans updated annually. Training with state, doing fire drills and practicing evacuations.
Steep Slopes & Class VI Roads Regulations	Subdivision Regulations; set standards to prevent erosion, mudslides, etc.	Slopes over 15% and Class VI Roads	Highway Dept./ Public Works	Good.	Ordinance meets all state/federal requirements. Local authority is responsible for enforcing this ordinance. It is periodically reviewed and updated as required. Ordinance is working as described.
HazMat Response Team	Continued dependence on mutual aid within the Town's District		Fire Department	Excellent	Plan meets all state/federal requirements. Plan is working as described.

TYPE OF EXISTING PROTECTION	DESCRIPTION	AREA OF TOWN COVERED	EFFECTIVENESS OR ENFORCEMENT Poor- Not meeting minimum requirements Good – Meeting requirements Excellent – Exceeding requirements		IMPROVEMENTS OR CHANGES NEEDED 2015 Update
Merrimack Riverfront Conservation Preserve Project	Aims to conserve more than 135 acres and almost 4,000 feet of riverfront on the Merrimack River	Areas of Town along Merrimack River	Hooksett Conservation Commission Planning Department	Good	More land needs to be conserved in order to meet the goal. In July 2013, 6.21 acres and 333.83 feet of riverfront were acquired for conservation purposes. The Conservation Commission continues to pursue conservation lands for this project.
National Flood Insurance Program (NFIP)	Provides flood insurance and guidance for multiple flood hazard mitigation actions, regulations, and outreach related to continued compliance with NFIP	Areas delineated in Flood Insurance Rate Maps, Flood Boundary and Floodway Map, and the Special Flood Hazard Areas as regulated by the Floodplain Development Ordinance	The Town enforces the Floodplain Development Ordinance DPW Planning Department	Good	The Town has online access to updated Flood Insurance Maps (2010). Evaluate and participate in FEMA Community Rating System and appoint a point person as the NFIP administrator
Public Outreach Program	Public outreach efforts include education on hazard mitigation programs, the importance of wetlands and (separately) groundwater recharge, land clearing procedures, transport of hazardous materials	All areas of Town	Emergency Management Fire Department Police Department Public Works Department Planning Department	Good	Need to combine various Town public outreach efforts into a single program.. Various public outreach initiatives exist, but some are not established and they are not yet combined into a single program. Area of improvement could be National Fire/EMS Week.

Summary of Recommended Improvements

The Hooksett Hazard Mitigation Plan Committee recommends the following *improvements* to existing Town programs related to hazard mitigation:

1. **Shoreland Protection Act:** Educate property owners on land clearing procedures as part of new general Public Outreach Program.

2015 Update: Integrate into comprehensive public outreach program.

2. **Generators:** Purchase additional backup generator(s) for the Underhill School and Town Library

2015 Update: Generator needs not yet fully met, continue to encourage Underhill School and Town Library to purchase backup generator(s).

3. **Hazardous Materials Regulations:** Educate the public about the transport of hazardous materials as part of new general Public Outreach Program.

2015 Update: Integrate into comprehensive public outreach program.

4. **Comprehensive Emergency Management Planning for Schools (CEMPS):** Exercises held regularly and school plans updated regularly.

2015 Update: In progress and plans updated annually.

5. **Merrimack Riverfront Conservation Preserve Project:** More land needs to be conserved in order to meet town conservation goals.

2015 Update: In July 2013, 6.21 acres and 333.83 feet of riverfront were acquired for conservation purposes. The Conservation Commission continues to pursue conservation lands for this project.

6. **National Flood Insurance Program (NFIP):** Participate in FEMA Community Rating System and appoint a point person as the NFIP administrator

2015 Update: The Town has online access to updated Flood Insurance Maps (2010). Evaluate and participate in FEMA Community Rating System and appoint a point person as the NFIP administrator.

7. **Public Outreach Program:** Need to combine various Town public outreach efforts into a single program.

2015 Update: Various public outreach initiatives exist, but some are not established and they are not yet combined into a single program.

The following chart shows the 2009 Prioritized Implementation Schedule with a 2015 Update.

2009 Prioritized Implementation Schedule							
ACTION #	**MITIGATION ACTION**	**COST/BENEFIT**	**PRIORITY POINTS**	**WHO (LEADERSHIP)**	**WHEN (DEADLINE)**	**HOW (FUNDING)**	**2015 UPDATE[38]**
1	Upgrade Town radio system to provide better town-wide coverage between Police, Fire and EMS	HSEM provides grants for radio upgrade. The Town would like to complete this activity within the next 5 Years.	42	Police/Fire/[EMS]	Completed 2014 and Deferred	HSEM (Grants)/EMA Town Budget	Hooksett Fire and Hooksett Ambulance are both dispatched through Concord Fire Alarm. PD are upgrading; lack of resources
2	Update Emergency Operations Plan (EOP), existing dated 2010	Emergency Management Director responsible for this action. Cost is existing staff time.	42	EMD	Deferred 2015	Grants, Existing Staff Time & Town Budget	Being updated; expected completion 2015; lack of time and resources
3	Coordinate with NH DOT upgrading NH Rt. 3 from the intersection of NH Rt 28 Bypass to the intersection of NH Rt. 27.	DPW to be responsible for coordinating with the State on this action, using existing staff time as the only cost.	42	DPW	Deferred 2015	State, Existing Staff Time, & Town Budget	In progress, expected completion; lack of funding

2009 Prioritized Implementation Schedule							
ACTION #	**MITIGATION ACTION**	**COST/BENEFIT**	**PRIORITY POINTS**	**WHO (LEADERSHIP)**	**WHEN (DEADLINE)**	**HOW (FUNDING)**	**2015 UPDATE[38]**
4	Pursue a regional Emergency Shelter at SNHU in lieu of local shelters	EMD to be responsible for this action, using existing staff time as the only cost. This action is already in progress and should be complete within 2-5 Years.	42	EMD	Deleted	Existing Staff Time	Deleted; Hooksett Town Hall is the designated shelter with a backup generator, kitchen, & shower
5	Upgrade culvert at the K-Mart area (NH Route 3 and 27/101B intersection)	Initial expense will avoid years of flooding and damage	35	Highway Dept./NH DOT	Completed 2013	Local/State	Completed
6	Develop a culvert maintenance program	Regular cleaning of culverts can save many dollars in flooding costs	31	Highway Dept.	Completed 2012 and Deferred	Local/State	Complete. Highway Dept. implements a culvert maintenance program as part of operations. Resources
7	Develop control mechanism for beaver actions in wetlands	Beaver pipes are an inexpensive way to avoid excessive water build up from beaver dams	28	Private, Conservation Commission	Completed 2013	NH F&G, Current Tax Law	Catch program is in place and is implemented as needed.
8	Educate the public about the importance of wetlands	Cost is minimal when considering its positive impact.	28	Conservation Commission	Completed 2012	Current Use Tax & DES Publications	Complete. Integrate into local hazard mitigation public outreach program.

2009 Prioritized Implementation Schedule							
ACTION #	**MITIGATION ACTION**	**COST/BENEFIT**	**PRIORITY POINTS**	**WHO (LEADERSHIP)**	**WHEN (DEADLINE)**	**HOW (FUNDING)**	**2015 UPDATE[38]**
9	Educate public about dam safety	Education on dam safety (inspection and maintenance programs) will help residents understand its importance. Very little cost involved.	28	Dam Owner	Deleted	Private	PSNH Program. Delete as mitigation action – existing program.
10	Educate property owners on appropriate land clearing procedures.	NH Division of Forests has knowledge pertaining to clearance procedures for private lots; little cost to the Town.	28	NH DRED Div of Forest, Bldg. Insp.	Completed 2012 Deferred	State/Town Funds	Complete. Integrate into local hazard mitigation public outreach program. Lack of resources and time
11	Educate public on groundwater recharge	The Conservation Commission could spearhead this effort, with little cost to the Town.	28	Conservation Commission	Completed 2013 Deferred	Current Use Tax & DES Publications	Complete. Integrate into local hazard mitigation public outreach program. Lack of resources and time
12	Haz-Mat education and outreach on hazardous materials transport on highways	NHDOT and HSEM provide free literature educate the public on transport of hazardous materials.	28	Fire, Highway, NHDOT, NSEM	Deferred.	Local, State	Integrate into local hazard mitigation public outreach program. SW has a program for Haz waste. Additional education / outreach needed.

2009 Prioritized Implementation Schedule							
ACTION #	**MITIGATION ACTION**	**COST/BENEFIT**	**PRIORITY POINTS**	**WHO (LEADERSHIP)**	**WHEN (DEADLINE)**	**HOW (FUNDING)**	**2015 UPDATE[38]**
13	Coordinate with NH DOT to replace the culvert on Londonderry Tpk near Kmart	Initial expense will avoid years of flooding and damage	28	DPW	Completed 2013	State, Existing Staff Time & Town Budget	Complete
14	Educate the public on the proper disposal of ashes and proper generator use	Information and outreach efforts at little cost.	28	EMD	Completed 2012 Deferred	Existing Staff Time & Town Budget	Smokey Bear Program from State. Integrate into local hazard mitigation public outreach program. Time
15	Enhance GIS system for floodplain mapping	Initial expense involved but can develop an easy method of public access to floodplain information	27	Planning Board	Completed 2013	Local	Hooksett online GIS application has a Flood Map layer, available to the public.
16	Encourage Con Com to purchase flood prone properties for conservation purposes	Potential funding sources will reduce cost	27	Conservation Commission	Deferred.	Current Use Tax	Complete and implemented as funding is available. 2015 Priority. Lack of funding

2009 Prioritized Implementation Schedule							
ACTION #	**MITIGATION ACTION**	**COST/BENEFIT**	**PRIORITY POINTS**	**WHO (LEADERSHIP)**	**WHEN (DEADLINE)**	**HOW (FUNDING)**	**2015 UPDATE[38]**
17	Update Flood Insurance Rate Maps, existing maps are dated March 1982	FEMA will allocate monies to help accomplish this task	25	FEMA	Completed 2010	FEMA, NFIP, MM	The Town has online access to updated Flood Insurance Maps (2010)
18	Purchase flood prone properties in the Special Flood Hazard Areas	Prevents construction in the floodplain; saves significant expenditures for damage to flood prone properties, especially repetitive loss properties	25	Town Council Since 2007, the Con Com has worked on the Merrimack Riverfront Conservation Preserve Project, to conserve more than 135 acres and almost 4,000 feet of the Merrimack River.	Deferred	Local/FMAP	In July 2013, 6.21 acres and 333.83 feet of riverfront were acquired. On 2015 Priority. Additional land to purchase. Lack of adequate funding
19	Develop a culvert analysis program, maintain a database of all culverts w details	Maintaining information on culvert status will ease long term maintenance costs	22	Highway Dept.	Deferred	Local/State	New program is just now available to accomplish this.

2009 Prioritized Implementation Schedule							
ACTION #	**MITIGATION ACTION**	**COST/BENEFIT**	**PRIORITY POINTS**	**WHO (LEADERSHIP)**	**WHEN (DEADLINE)**	**HOW (FUNDING)**	**2015 UPDATE[38]**
20	Develop early warning system for floodplain residents	Initial costs outweighed by ability to warn residents early and save lives	15	HSEM/Police	Completed 2012	NH HSEM, FMAP	Complete; Citywatch system in place
21	Hurricane proofing of public buildings	Hurricane proofing of public buildings can be inexpensive and protect valuable investments	14	Schools/EMD	Delete	Grant/Local	Delete. Implement through building codes; other measures costly

Summary of Grant Acronyms used in the Prioritized Implementation Schedule:
MM= Map Modernization- digital flood maps and updates (See Appendix D)
FMAP= Flood Mitigation Assistance Program (See Appendix D)
FMAGP= Fire Management Assistance Grant Program (See Appendix D)
NFIP= National Flood Insurance Program

SECTION IV - NEWLY IDENTIFIED MITIGATION STRATEGIES AND CRITICAL EVALUATION

Summary of New Strategies

The Hooksett Hazard Mitigation Plan Committee identified the following mitigation strategies[39]:

1. Develop and coordinate local hazard mitigation outreach program (combine all public outreach efforts currently ongoing)
2. Continue Conservation Commission initiatives to purchase flood-prone properties in the Special Flood Hazard Areas
3. Purchase additional back-up generator(s) for the Underhill School and Town Library
4. Evaluate and participate in FEMA Community Rating System and appoint an NFIP administrator for the Town
5. Coordinate with SENHHMMAD to implement a hazmat education program targeted towards businesses
6. Participate in Regional Preparedness Programs such as the Southern New Hampshire Community Preparedness Program and the Greater Manchester Hazard Vulnerability Assessment
7. Coordinate with Pan Am Railway for emergency notification and procedures
8. Establish tree pruning maintenance program and acquire a bucket truck and necessary equipment for protecting power lines
9. Continue to work with and coordinate with schools on hazard risks and emergency procedures
10. Continue program to identify fuel loads in forested areas to determine wildfire vulnerability hazard
11. Inventory school buildings for structural resistance to earthquake hazards and incorporate analysis into school emergency planning efforts
12. Retrofit and upgrade problem culverts.
13. Improve Storm Drain Maintenance.
14. Evaluate and consider utilizing culvert GIS-based hydraulic capacity model to determine culvert vulnerabilities.
15. Create a wildfire prevention mitigation plan.
16. Increase public awareness on wildfire prevention.
17. Work on a water conservation and drought plan to increase public awareness.
18. Examine steep slope areas in town and develop plan for landslide prevention.
19. Planning Board and town should examine methods to protect town infrastructure from wind damage.

[39] More specific details on each new hazard mitigation strategy can be found in Section V "Prioritized Implementation Schedule and Funding Sources."

20. Examine critical infrastructure and/or facilities that would need lightning/surge protection and/or additional ground measures.
21. Organize outreach to vulnerable populations, including establishing and promoting accessible healing and cooling centers in community.
22. Educate homeowners about property bank stabilization and planting vegetation on slopes.

Summary of Critical Evaluation Method

Initial selection of mitigation projects was based on filling in perceived gaps in hazard protection within the Town. Any actions that were deferred from the Hooksett Hazard Mitigation Plan Update 2009 or that require continued implementation were included in the 2014 critical evaluation process.[40] In addition, the Hooksett Hazard Mitigation Committee reviewed each section of the FEMA guidance document *Mitigation Ideas*[41] and considered a comprehensive range of mitigation strategies and projects for each of the identified hazards that the Town is susceptible to. For example, Nor'easters was an identified hazard under wind, rated moderate-high for probability in Hooksett. Existing mitigation strategies that the town is already implementing include:

- Adoption and Enforcement of Building Codes
- Assessing Vulnerability to Severe Wind
- Protecting Power Lines and Infrastructure
- Requiring underground utilities in new developments

Mitigation strategies included in the current prioritized implementation schedule (Section V) include:

- Establish tree pruning maintenance program and acquire a bucket truck and necessary equipment for protecting power lines
- Develop and coordinate local hazard mitigation outreach program (combine all public outreach efforts currently ongoing)
- Participate in Regional Preparedness Programs such as the Southern New Hampshire Community Preparedness Program and the Greater Manchester Hazard Vulnerability Assessment

The Hooksett Hazard Mitigation Committee considered the following additional mitigation strategies for this hazard from the FEMA publication *Mitigation Ideas*:

- Retrofit Residential Buildings to current building code
- Retrofit Public Buildings and Critical Facilities to current building code

When considering the STAPLEE criteria (described below) the town decided that these mitigation strategies were not feasible to undertake currently.

The Hooksett Hazard Mitigation Plan Committee selected those mitigation actions that were determined to be most important to the town. Mitigation strategies continuing from 2009, the newly identified mitigation strategies and those improvements recommended in Column 5 of the Existing Protection Matrix were compiled and

[40] See Appendix H for past prioritized implementation schedules and funding sources.
[41] FEMA. *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*. January 2013.

reviewed by each member of the committee using the STAPLEE process for prioritization. Using the following criteria[42], rating scores were assigned to each criterion based on (1) Poor; (2) Average; (3) Good. Total scores can range from a minimum of 14 to a maximum of 42 points.

Criteria:

- ***Social*****:** *(1)* Is the proposed action socially acceptable to the community? (2) Are there equity issues involved that would mean that one segment of the community is treated unfairly?
- ***Technical:*** *(3)* Is the proposed action technically feasible and will it work? (4) Is it a long term solution?
- ***Administrative:*** *(5)* Can the community implement the action? Is there someone to coordinate and lead the effort? (6) Are there funding sources already allocated or available for this project?
- ***Political:*** *(7)* Is the action politically acceptable? (8) Does the project help to achieve other community objectives?
- ***Legal:*** *(9)* Is the community authorized to implement the proposed action? (10) Is there a clear legal basis of precedent for this project or is there chance of legal challenge?
- ***Economic:*** *(11)* What are the costs and benefits of this action? Does the cost seem reasonable for the size of the problem and the likely benefits? (12) Does the project reduce potential future damages from disasters?
- ***Environmental:*** *(13)* How will the action impact the environment, i.e. land, water, animals, plants? (14) Will the action need and meet environmental regulatory approvals

Preliminary Prioritization

The Hooksett Hazard Mitigation Plan Committee assigned the following scores to each of the 22 strategies for its effectiveness related to the critical evaluation factors listed above. The following groups the strategies into lists based on the type of protection offered and are in order of highest to lowest priority.

Score	Action	Hazard(s)
Preventative		
38	Continue to work with and coordinate with schools on hazard risks and emergency procedures	All
36	Continue program to identify fuel loads in forested areas to determine wildfire vulnerability hazard	Fire

[42] These are derived from the STAPLEE method criteria. Explanation of STAPLEE is provided in Appendix E.

31	Establish tree pruning maintenance program and acquire a bucket truck and necessary equipment for protecting power lines	Wind / Winter weather
30	Participate in Regional Preparedness Programs such as the Southern New Hampshire Community Preparedness Program and the Greater Manchester Hazard Vulnerability Assessment	All
30	Coordinate with Pan Am Railway for emergency Notification and procedures	Hazardous Materials
30	Inventory school buildings for structural resistance to earthquake hazards and incorporate analysis into school emergency planning efforts	Earthquake
30	Participate in Regional Preparedness Programs such As the Southern New Hampshire Community Preparedness Program and the Greater Manchester Hazard Vulnerability Assessment.	All
24	Create a wildfire prevention mitigation plan.	Fire
18	Evaluate and consider utilizing culvert GIS-based Hydraulic capacity model to determine culvert Vulnerabilities.	Flood
15	Examine steep slope areas in town and develop plan For landslide prevention.	Landslides

Property Protection

36	Continue program to identify fuel loads in forested areas to determine wildfire vulnerability hazard	Fire
30	Coordinate with Pan Am Railway for emergency Notification and procedures	Hazardous Materials
30	Inventory school buildings for structural resistance to earthquake hazards and incorporate analysis into school emergency planning efforts	Earthquake
25	Examine critical infrastructure and/or facilities that Would need lightning/surge protection and/or Additional ground measures.	Lightning
22	Planning Board and Town should examine methods To protect town infrastructure from wind damage.	Wind

Protection of the Floodplain

35	Conservation Commission Property Purchases	Flooding
33	Retrofit and upgrade problem culverts	Flooding
33	Improve Storm Drain maintenance	Flooding
29	Evaluate and participate in FEMA Community Rating System and appoint an NFIP administrator	Flooding

	for the Town	
Emergency Services		
32	Develop a sheltering plan for staffing, protocol And outreach.	All
27	Purchase additional back-up generator(s) for the Underhill School and Town Library	All
26	Organize outreach to vulnerable populations, Including establishing and promoting accessible Heating and cooling centers in community.	All
Public Information		
29	Develop and coordinate local hazard mitigation outreach program (combine all public outreach efforts currently ongoing)	All
29	Coordinate with SENHHMMAD to implement a hazmat education program targeted toward businesses	Hazardous Materials
24	Increase public awareness on wildfire prevention.	Fire
21	Work on water conservation and drought plan to increase public awareness.	Drought

SECTION V - PRIORITIZED IMPLEMENTATION SCHEDULE AND FUNDING SOURCES

Implementation Strategy for Priority Mitigation Actions

The Hooksett Hazard Mitigation Plan Committee created the following prioritized schedule for implementation. The following chart shows the new 2015 Mitigation Measures Prioritized Implementation Schedule. The beginning of the timeframe begins when the Plan is approved.

Ranking and Priority Mitigation Actions

Rank	STAPLEE Score	Problem	Mitigation Action	Hazard & Party	Est. Cost & Funding	Timeframe
1	38	Increase students awareness on hazards and preparedness	Continue to work with and coordinate with schools on hazard risks and emergency procedures	All EMD, PD & FD	<$10,000 EMD Budget	Short Term
2	36	Dry wood wildfire vulnerability	Continue program to identify fuel loads in forested areas to determine wildfire vulnerability hazard	Fire FD	No Cost FD Budget	Short Term
3	35	Continual flooding of properties in SFHA	Continue CC initiatives to purchase flood prone properties in the SFHA	Flooding EMD FD	$100,000 > Current Use Land Use Change Tax	Long Term
4	33	Flooding caused by inadequate culverts	Retrofit and upgrade problem culverts	Flooding DPW	$100,000 > FEMA NH HS EM Town	Medium Term
5	33	Flooding caused by storm drains	Improve Storm Drain maintenance	Flooding DPW	<$10,000 Town	Short Term
6	32	Need for sheltering facilities	Develop a sheltering plan for staffing, protocol and outreach	All EMD	<$10,000 Town	Medium Term
7	31	Overhanging	Establish tree	Wind / Winter	$50,000	Short term

		trees cause power outages	pruning / maintenance program; buy bucket truck and necessary equipment	weather DPW	$100,000	
8	30	Need for planning and coordination of preparedness programs	Participate in Regional Preparedness Programs – SNHCPP and Greater Manchester Hazard Vulnerability Assessment	All EMD FD	<$10,000 Town	Short Term
9	30	Rapid notification for haz mat incidents	Coordinate with Pan Am Railway for emergency notification and procedures	Hazardous Materials EMD NH HSEM	NC Town	Short Term
10	30	School building analysis for earthquakes	Inventory school buildings for structural resistance to earthquake hazards and incorporate analysis into school emergency planning efforts	Earthquakes Building Inspector Code Enforcement	$100,000 > FEMA NH HS EM Town	Medium Term
11	29	Outreach & education effort for local hazard mitigation	Develop and coordinate local hazard mitigation outreach program (combine all public outreach efforts currently ongoing)	All EMD FD	NC Staff time NH HSEM	Long Term
12	29	Participation CRS will save money	Evaluate and participate in FEMA CRS and appoint NFIP administrator	Flooding EMD	<$10,000 Town	Short term
13	29	Educate local businesses on potential hazards	A formalized education and outreach program to	Hazardous Materials EMD NH HSEM	<$10,000 Town	Medium term

			businesses will mitigate potential hazards from the use and transport of hazardous materials			
14	27	Need for backup generator	Purchase additional backup generator (s) for Underhill School and Town Library	All EMD Underhill	$50,000 $100,000 School Budget	Long term
15	26	Outreach to vulnerable populations	Organize outreach to vulnerable populations, including accessible heating and cooling centers in community.	All EMD	<$10,000 Town	Medium term
16	25	Protect critical infrastructure from power interruptions	Examine critical infrastructure and/or facilities that would need lightning/surge protection and/or additional ground measures.	Lightning DPW EMD	<$10,000 Town	Medium term
17	24	Wildfires	Create a wildfire prevention mitigation plan	Fire FD	<$10,000 Town Staff time	Medium term
18	24	Wildfires	Increase public awareness on wildfire prevention	Fire FD	<$10,000 Town Staff time	Medium term
19	22	Wind damage to town infrastructure	Planning Board and town should examine methods to protect town infrastructure from wind damage.	Wind DPW Planning Board	<$10,000 Town Staff time	Medium term
20	21	Potential drought	Work on water conservation	Drought Water Dept	<$10,000 Water Dept	Medium term

		conditions	and drought plan to increase public awareness.		Staff time	
21	18	Identify the vulnerabilities of culverts	Evaluate and consider utilizing culvert GIS-based hydraulic capacity model to determine culvert vulnerabilities.	Flooding DPW	$10,000 to $50,000 Town CIP NH HSEM	Medium term
22	15	Identify the potential for landslides	Examine steep slope areas in town and develop plan for landslide prevention.	Landslides DPW Planning Dept	<$10,000 Town Staff time	Short term

Time frame	
Short Term	1 year or less
Medium Term	2 to 3 years
Long Term	4 to 5 years

Additional funding sources will be researched by the Town of Hooksett as required to successfully implement the above mitigation actions. Grants will be particularly researched on a project by project basis to search out the best suited grant match.

Summary of Acronyms in the Prioritized Implementation Schedule:
CIP = Capital Improvements Program
CRS = Community Rating System
DPW= Department of Public Works
EMD = Emergency Management Director
FD = Fire Department
FEMA= Federal Emergency Management Agency
FMAP= Flood Mitigation Assistance Program (see Appendix F)
IT = Information Technology
PD = Police Department
PDM= Pre-Disaster Mitigation Program (see Appendix F)
MRWC= Merrimack River Watershed Council
NC = No Cost
NFIP = National Flood Insurance Program
NH DES = New Hampshire Department of Environmental Services
NH DOT = New Hampshire Department of Transportation
NH HSEM= New Hampshire Homeland Security and Emergency Management

NH DOT= New Hampshire Department of Transportation

Cost of Implementation

The following table provides information on the approximate estimated costs of implementing each of the above prioritized mitigation actions. The actual final project budgets may exceed or be less than the estimated range. These estimates represent a generic project of its type. These figures are to serve as a comparative tool for project selection and planning purposes. Figures were derived from personal knowledge of the Hooksett Hazard Mitigation Committee, past project costs in the Southern New Hampshire region, and Internet searches for project costs from either Town requests for proposals or manufacturers' specifications.

NC = No Cost
AC = Annual Cost

	Cost Range			
Project	**< $10,000**	**$10,000-$50,000**	**$50,000-$100,000**	**>$100,000**
1. Continue to work with and coordinate with schools on hazard risks and emergency procedures	X			
2. Continue program to identify fuel loads in forested areas to determine wildland fire vulnerability hazard	NC			
3. Continue Conservation Commission initiatives to purchase flood-prone properties in the Special Flood Hazard Areas				X
4. Establish tree pruning maintenance program and acquire a bucket truck and necessary equipment for protecting power lines			X	
5. Participate in Regional Preparedness Programs such as the Southern New Hampshire Community Preparedness Program and the Greater Manchester Hazard Vulnerability Assessment	X			
6. Coordinate with Pan Am Railway for emergency notification and procedures	NC			

Project	Cost Range			
	< $10,000	$10,000-$50,000	$50,000-$100,000	>$100,000
7. Inventory school buildings for structural resistance to earthquake hazards and incorporate analysis into school emergency planning efforts				X
8. Develop and coordinate local hazard mitigation outreach program (combine all public outreach efforts currently ongoing)	AC			
9. Evaluate and participate in FEMA Community Rating System and appoint an NFIP administrator for the Town	X			
10. Coordinate with SENHHMMAD to implement a hazmat education program targeted towards businesses	X			
11. Purchase additional back-up generator(s) for the Underhill School			X	
12. Retrofit and upgrade problem culverts.				X
13. Improve Storm Drain maintenance.	X			
14. Develop a sheltering plan for staffing, protocol and outreach.	X			
15. Organize outreach to vulnerable populations, including establishing and promoting accessible heating and cooling centers in community.	X			
16. Examine critical infrastructure and/or facilities that would need lightning/surge protection and/or additional ground measures.	X			
17. Create a wildfire prevention mitigation plan.	X			
18. Increase public awareness on wildfire prevention.	X			

Project	Cost Range			
	< $10,000	**$10,000-$50,000**	**$50,000-$100,000**	**>$100,000**
19. Planning Board and town should examine methods to protect town infrastructure from wind damage.	X			
20. Work on water conservation and drought plan to increase public awareness.	X			
21. Evaluate and consider utilizing culvert GIS-based hydraulic capacity model to determine culvert vulnerabilities.		X		
22. Examine steep slope areas in town and develop plan for landslide prevention.	X			

SECTION VI - ADMINISTRATIVE PROCEDURES REGARDING ADOPTION AND MONITORING OF THE PLAN

"Incorporating hazard mitigation considerations into the thought processes and decision making that comprise local planning reinforces community sustainability and strengthens community planning programs. It ensures that the community survives natural disasters so that it can grow and develop as it was envisioned."

Michael J. Armstrong
Associate Director for Mitigation
Federal Emergency Management Agency

Adoption

Upon notification that FEMA has approved this plan, the Hooksett Town Council will hold a public hearing to formally adopt the ***Hooksett Hazard Mitigation Plan Update 2015*** as an official statement of Town policy. In the future, this plan may constitute a new section of the Hooksett Master Plan, in accordance with RSA 674:2 III e). As required by FEMA, the public hearing shall be held two weeks before this *Plan* is voted on by the Hooksett Town Council and the public hearing shall be properly posted and advertised by the Town in accordance with New Hampshire state law. Documentation that the plan has been formally adopted by the Hooksett Town Council is included in the *Plan* (see Appendix I).

Adoption of the Hooksett Hazard Mitigation Plan Update 2015 demonstrates the Town's commitment to hazard mitigation. It also qualifies the community for federal, state and local funding and prepares the public for what the community can be expected to do both before and after a natural hazard disaster occurs.

Incorporation into other Planning Mechanisms

The Hazard Mitigation Committee and the Town Council shall seek to incorporate the Priority Mitigation Actions identified in the Priority Implementation Schedule of Section V of the Plan into other planning mechanisms, including the Town's Master Plan and Capital Improvement Program (CIP).

The 2009 Hooksett Hazard Mitigation Plan was incorporated by reference into the current version of the Hooksett Master Plan. During the next Master Plan update process, the most current Hooksett Hazard Mitigation Plan will also be incorporated by reference.

During the next CIP process, scheduled for Fall 2015, the most current Hooksett Hazard Mitigation Plan will be referenced within project descriptions, as applicable, within the CIP document.

During the next Hooksett Emergency Operations Plan update, scheduled for 2015, the most current Hooksett Hazard Mitigation Plan will be reviewed and referenced within the document, as appropriate.

Monitoring, Evaluating and Updates: Continued Public Involvement

The ***Hooksett Hazard Mitigation Plan Update 2015*** shall be reviewed and updated annually. The Hooksett Emergency Management Director shall be responsible for initiating this review in coordination with the Hooksett Town Council.

The Hooksett Hazard Mitigation Committee will meet once a year, to review and update the Hooksett Hazard Mitigation Plan Update 2015. The public will continue to be invited and encouraged to be involved during this process and review meetings. All meetings involving implementation or updates of the plan shall be open to the public as is required by RSA 91-A and notice of the meeting will be publicized on the local access television station and local newspaper. To gain additional public involvement, draft copies of the amended Hazard Mitigation Plan will be made available at two public locations for review and comment. The document should be left for a minimum of two weeks and then all comments will be considered in drafting final revisions.

Changes should be made to the *Plan* to accommodate for actions that have failed or are not considered feasible after a review for their consistency with STAPLEE, the timeframe, the community's priorities, and funding resources. Priorities that were not ranked high, but identified as potential mitigation strategies, should be reviewed as well during the monitoring and update of this *Plan* to determine feasibility of future implementation. The Hooksett Hazard Mitigation Committee (HHMC) will convene annually to meet and review the *Plan*. In keeping with the process of adopting the ***Hooksett Hazard Mitigation Plan Update 2015***, a public hearing to receive comment on the *Plan* maintenance and updating shall be held every five years when a new plan is in the process of being submitted to FEMA. The final product will be adopted by the Town Council.

The ***Hooksett Hazard Mitigation Plan Update 2015*** will be reviewed, updated, re-submitted to FEMA for approval and subsequently adopted by the town at a minimum of every five years, in order to reflect changes in development, progress in local mitigation efforts, changes in priorities and in order to continue to be eligible for mitigation project grant funding. The next update to be re-submitted to FEMA for approval will take place in 2020.

APPENDIX A - NEW HAMPSHIRE DAM CLASSIFICATION SCHEDULE

Non Menace (NM) structure means a dam that is not a menace because it is in a location and of a size that failure or misoperation of the dam would not result in probable loss of life or loss to property, provided the dam is:

- Less than six feet in height if it has a storage capacity greater than 50 acre-feet; or
- Less than 25 feet in height if it has a storage capacity of 15 to 50 acre-feet.

Low Hazard (L) structure means a dam that has a low hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following:

- No possible loss of life.
- Low economic loss to structures or property.
- Structural damage to a town or city road or private road accessing property other than the dam owner's that could render the road impassable or otherwise interrupt public safety services.
- The release of liquid industrial, agricultural, or commercial wastes, septage, Or contaminated sediment if the storage capacity is less than two-acre-feet and is located more than 250 feet from a water body or water course.
- Reversible environmental losses to environmentally-sensitive sites.

Significant Hazard (S) structure means a dam that has a significant hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following:

- No probable loss of lives.
- Major economic loss to structures or property.
- Structural damage to a Class I or Class II road that could render the road impassable or otherwise interrupt public safety services.
- Major environmental or public health losses, including one or more of the following:
- Damage to a public water system, as defined by RSA 485:1-a, XV, which will take longer than 48 hours to repair.
- The release of liquid industrial, agricultural, or commercial wastes, septage, sewage, or contaminated sediments if the storage capacity is 2 acre-feet or more.
- Damage to an environmentally-sensitive site that does not meet the definition of reversible environmental losses.

High Hazard (H) means a dam that has a high hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in probable loss of human life as a result of:

- Water levels and velocities causing the structural failure of a foundation of a habitable residential structure or commercial or industrial structure, which is occupied under normal conditions.
- Water levels rising above the first floor elevation of a habitable residential structure or a commercial or industrial structure, which is occupied under normal conditions when the rise due to dam failure is greater than one foot.
- Structural damage to an interstate highway, which could render the roadway impassable or otherwise interrupt public safety services.
- The release of a quantity and concentration of material, which qualify as "hazardous waste" as defined by RSA 471-A:2 VI.
- Any other circumstance that would more likely than not cause one or more deaths.

APPENDIX B - DEFINITIONS

Areas at Risk: Those areas or facilities that would be threatened by a hazardous event such as schools, parks, commercial areas, day care facilities and senior housing areas.

Critical Facilities: Those facilities that would be needed during a hazardous event, such as EMS, law enforcement, electric generators, and emergency shelters.

Emergency Management Plan (EMP): A jurisdiction's Emergency Management Plan, typically designed to establish the procedures that will take place during an emergency, and designate who will be responsible to perform those procedures.

GIS: Geographic Information Systems includes a form of mapping that enables users to easily locate physical attributes of a community such as dams, bridges, wetlands, steep slopes, etc. Much of the data for these maps is maintained by Complex Systems Research Center, Durham NH.

Hazard Mitigation is the practice of reducing risks to people and property from natural hazards. FEMA defines Hazard Mitigation as *"any action taken to reduce or eliminate the long-term risk to human life and property from hazards."*

APPENDIX C - RESOURCES, BIBLIOGRAPHY, WEBSITES

I. AGENCIES

New Hampshire Homeland Security & Emergency Management		271-2231
Federal Emergency Management Agency		617-956-7506
NH Regional Planning Commissions:		
	Central NH Regional Planning Commission	226-6020
	Lakes Region Planning Commission	279-8171
	Nashua Regional Planning Commission	424-2240
	North Country Council	444-6303
	Rockingham Planning Commission	778-0885
	Southern New Hampshire Planning Commission	669-4664
	Southwest Region Planning Commission	357-0557
	Strafford Regional Planning Commission	742-2523
	Upper Valley Lake Sunapee Regional Planning Commission	448-1680
NH Executive Department:		
	New Hampshire Office of State Planning	271-2155
NH Department of Cultural Affairs		271-2392
	Division of Historical Resources	271-3483
NH Department of Environmental Services		271-4974
	Air Resources	271-1370
	Waste Management	271-2900
	Water Resources	271-3434
	Bureau of Dams	271-3406
NH Fish and Game Department		271-3511
NH Department of Resources and Economic Development		271-3556
	Natural Heritage Inventory	271-2214
	Division of Forests and Lands	271-2214
	Division of Parks and Recreation	271-3556
NH Department of Transportation		271-3734
U.S. Department of Commerce		
	National Oceanic and Atmospheric Administration	301-713-4000
	National Weather Service; Gray, Maine	207-688-3216
U.S. Department of the Interior		
	U.S. Fish and Wildlife Service	223-2541
	U.S. Geological Survey	226-7800
U.S. Department of Agriculture		
	Natural Resource Conservation Service	223-6023

II. PUBLICATIONS

1. *Community-Based Hazard Mitigation Planning: Lowering the Risks and Costs of Disasters*; New England Training Workshop, 27 August 1998; sponsored by the Federal Emergency Management Agency/Region I, Massachusetts Department of Environmental Management, Massachusetts Emergency Management Agency, and the Massachusetts Chapter of the American Planning Association.

2. *Community Flood Mitigation Planning Guidebook*; Wisconsin Department of Natural Resources.

3. *Federal Programs Offering Non-Structural Flood Recovery and Floodplain Management Alternatives*; the Office of Management and Budget; June 1998

4. *Flood Hazard Mitigation Planning: A Community Guide*; The Commonwealth of Massachusetts, Department of Environmental Management, Flood Hazard Management Program; June 1997

5. *Hazard Mitigation Plan*; Charlestown, Rhode Island; January 1997.

6. *Hazard Mitigation Planning Handbook*; Federal Emergency Management Agency; 1997.

7. *Hazard Mitigation Planning for New Hampshire Communities*; Southwest Regional Planning Commission. July 1999.

8. Kafka, Alan. *Why Does the Earth Quake in New England?* August 24, 2011. https://www2.bc.edu/~kafka/Why_Quakes/why_quakes.html. 02-06-14.

9. *Local Mitigation Plan Review Guide*; Federal Emergency Management Agency; 2011.

10. *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*. Federal Emergency Management Agency. January 2013

11. *Montpelier Flood Hazard Mitigation Plan*; City of Montpelier Department of Planning and Development; May 1998.

12. *National Mitigation Strategy: Partnerships for Building Safer Communities*; Federal Emergency Management Agency; December 6, 1995.

13. *Post-Disaster Hazard Mitigation Planning Guidance for State and Local Governments*; Federal Emergency Management Agency, September 1990.

14. *Protecting Business Operations: Second Report on Costs and Benefits of Natural Hazard Mitigation*; Federal Emergency Management Agency; August 1998.

15. Pulli, Jay. *Seismiscity, Earthquakes Mechanisms, and Seismic Wave Attenuation in the Northeastern United States*, PhD Dissertation Abstract. MIT, June 10, 1983. http://erl.mit.edu/assets/Pulli-abstract.pdf. 02-06-14.

16. *Real Estate Sales Tracking in the SNHPC Region*; Southern New Hampshire Planning Commission. Annual Report. 2004.

17. *Reducing Losses in High Risk Flood Hazard Areas: A Guidebook for Local Officials*; Federal Emergency Management Agency; February 1987.

18. *State of New Hampshire Multi-Hazard Mitigation Plan, 2010*. New Hampshire Homeland Security and Emergency Management (NHHSEM). Concord, NH: New Hampshire Homeland Security and Emergency Management, October 2010

19. *State of New Hampshire 2007 Multi-Hazard Mitigation Plan*; New Hampshire Homeland Security and Emergency Management (NH HSEM). Concord, NH: NH Homeland Security and Emergency Management, October 2007.

20. *State of New Hampshire 2004 Multi-Hazard Mitigation Plan*; New Hampshire Homeland Security and Emergency Management (NH HSEM). Concord, NH: NH Homeland Security and Emergency Management, October 2004.

21. *State of New Hampshire 1999 Natural Hazard Mitigation Plan*; New Hampshire Homeland Security and Emergency Management (NH HSEM). Concord, NH: NH Homeland Security and Emergency Management, October 1999.

22. *Texas Community Officials Primer on Floodplain Planning Strategies and Tools*; Texas Natural Resource Conservation Commission; June 1994.

23. *The Local Mitigation Strategy: A Guidebook for Florida Cities and Counties*; Florida Depart. of Community Affairs; April 1998.

III. WEBSITES

Sponsor	*Internet Address*	*Summary of Contents*
Natural Hazards Research Center, U. of Colorado	*http://www.colorado.edu/hazards/*	*Searchable database of references and links to many disaster-related web sites.*
Atlantic Hurricane Tracking Data by Year	*http://weather.unisys.com/hurricane/*	*Hurricane track maps for each year, 1886 – 1996*
National Emergency Management Association	*http://nemaweb.org*	*Association of state emergency management directors; list of mitigation projects.*
NASA – Goddard Space Flight Center "Disaster Finder:	*http://www.gsfc.nasa.gov/ndrd/disaster/*	*Searchable database of sites that encompass a wide range of natural disasters.*

NASA Natural Disaster Reference Database	*http://gcmd.nasa.gov/Resources/pointers/hazards.html*	*Searchable database of worldwide natural disasters.*
U.S. State and Local Gateway	*http://www.statelocal.gov/*	*General information through the federal-state partnership.*
National Weather Service	*http://nws.noaa.gov/*	*Central page for National Weather Warnings, updated every 60 seconds.*
USGS Real Time Water Data	*http://waterdata.usgs.gov/nwis/rt*	*Provisional hydrological data*
Dartmouth Flood Observatory	*http://www.dartmouth.edu/~floods/*	*Observations of flooding situations.*
FEMA, National Flood Insurance Program, Community Status Book	*http://www.fema.gov/fema/csb.shtm*	*Searchable site for access of Community Status Books*
Florida State University Atlantic Hurricane Site	*http://www.met.fsu.edu/explores/tropical.html*	*Tracking and NWS warnings for Atlantic Hurricanes and other links*
National Lightning Safety Institute	*http://lightningsafety.com/*	*Information and listing of appropriate publications regarding lightning safety.*
NASA Optical Transient Detector	*http://www.nasa.gov/centers/marshall/news/background/facts/otd.html*	*Space-based sensor of lightning strikes*
LLNL Geologic and Atmospheric Hazards	*https://www.llnl.gov/*	*General hazard information developed for the Department of Energy.*
The Tornado Project Online	*http://www.tornadoproject.com/*	*Information on Tornadoes, including details of recent impacts.*
National Severe Storms Laboratory	*http://www.nssl.noaa.gov/*	*Information about and tracking of severe storms.*
Earth Satellite Corporation	*http://www.earthsat.com/*	*Flood risk maps searchable by state.*
USDA Forest Service Web	*http://www.fs.fed.us/lan*	*Information on forest fires and land management.*

APPENDIX D - TECHNICAL AND FINANCIAL ASSISTANCE FOR HAZARD MITIGATION

This matrix provides information about key all-hazards grant programs from the Departments of Homeland Security, Justice, Transportation, Health and Human Services, and Education under which state, local, and tribal governments, first responders, and the public are eligible to receive preparedness, response, recovery, mitigation, and prevention assistance.

Agency	Office/ Directorate	Program	**Purpose**	**Funding Beneficiaries**
Programs to prepare the Nation to address the consequences of natural and man-made disasters and emergencies.				
Department of Homeland Security	*Border and Transportation Security Directorate*	State Homeland Security Grant Program (SHSP) www.fema.gov	SHSP supports the implementation of state Homeland Security Strategies to address the identified planning, organization, equipment, training, and exercise needs to prevent, protect against, mitigate, respond to, and recover from acts of terrorism and other catastrophic events. SHSP also provides funding to implement initiatives in the State Preparedness Report	State governments
	Emergency Preparedness and Response Directorate	Emergency Management Performance Grants (EMPG) www.fema.gov	To assist State and local governments in enhancing and sustaining all-hazards emergency management capabilities.	States with pass through to local emergency management organizations
	Emergency Preparedness and Response Directorate	Assistance to Firefighters Grant Program (AFG) www.usfa.fema.gov/grants	The primary goal of the Assistance to Firefighters Grants is to meet the firefighting and emergency response needs of fire departments and nonaffiliated emergency medical services organizations.	Local, State, and Regional Fire Departments and agencies.
	Emergency Preparedness and Response Directorate	Citizen Corps www.citizencorps.gov	To bring community and government leaders together to coordinate community involvement in emergency preparedness, planning, mitigation, response and recovery.	States with a pass through to local governments

Agency	Office/ Directorate	Program	**Purpose**	**Funding Beneficiaries**
	Emergency Preparedness and Response Directorate	Emergency Management Institute Training Assistance www.fema.gov	To defray travel and per diem expenses of State, local and tribal emergency management personnel who attend training courses conducted by the Emergency Management Institute, at the Emmitsburg, Maryland facility; Bluemont, Virginia facility; and selected off-site locations. Its purpose is to improve emergency management practices among State, local and tribal government managers, in response to emergencies and disasters. Programs embody the Comprehensive Emergency Management System by unifying the elements of management common to all emergencies: planning, preparedness, mitigation, response, and recovery.	State, local, and tribal emergency managers
	Health Resources and Services Administration	State Rural Hospital Flexibility Program www.ruralhealth.hrsa.gov	To help States work with rural communities and hospitals to develop and implement a rural health plan, designate critical access hospitals (CAHs), develop integrated networks of care, improve emergency medical services and improve quality, service and organizational performance.	States with at least one hospital in a non-metropolitan region
Department of Health and Human Services	*Health Resources and Services Administration*	EMS for Children www.hrsa.gov	To support demonstration projects for the expansion and improvement of emergency medical services for children who need treatment for trauma or critical care. It is expected that maximum distribution of projects among the States will be made and that priority will be given to projects targeted toward populations with special needs, including Native Americans, minorities, and the disabled.	State governments and schools of medicine

Agency	Office/ Directorate	Program	**Purpose**	**Funding Beneficiaries**
	National Institute of Health	Superfund Hazardous Substances Basic Research and Education www.niehs.nih.gov/research/supported/dert/programs/srp/	To establish and support an innovative program of basic research and training consisting of multi-project, interdisciplinary efforts that may include each of the following: (1) Methods and technologies to detect hazardous substances in the environment; (2) advance techniques for the detection, assessment, and evaluation of the effects of hazardous substances on humans; (3) methods to assess the risks to human health presented by hazardous substances; and (4) and basic biological, chemical, and physical methods to reduce the amount and toxicity of hazardous substances.	Any public or private entity involved in the detection, assessment, evaluation, and treatment of hazardous substances; and State and local governments
	Centers for Disease Control	Immunization Research, Demonstration, Public Information and Education Training and Clinical Skills Improvement Projects www.cdc.gov	To assist States, political subdivisions of States, and other public and private nonprofit entities to conduct research, demonstrations, projects, and provide public information on vaccine-preventable diseases and conditions.	States and nonprofits organizations
Department of Transportation	*Pipeline and Hazardous Materials Safety Administration (PHMSA)*	Hazardous Materials Emergency Preparedness Training and Planning Grants http://phmsa.dot.gov/hazmat/grants	Increase state, local, territorial, and Native American tribal effectiveness to safely and efficiently handle HazMat accidents and incidents; enhance implementation of the Emergency Planning and Community Right-to-Know Act of 1986; and encourage a comprehensive approach to emergency planning and training by incorporating response to transportation standards.	States, local, territorial, tribal governments.
Programs to coordinate Federal response efforts and to assists states, localities, and tribes in responding to disasters and emergencies.				
Department of Homeland Security	*Emergency Preparedness and Response Directorate*	Urban Search and Rescue www.fema.gov	To expand the capabilities of existing Urban Search and Rescue Task Forces.	28 existing US&R Task Forces

Agency	Office/ Directorate	Program	**Purpose**	**Funding Beneficiaries**
Programs to provide assistance to States, localities, tribes, and the public to alleviate suffering and hardship resulting from Presidentially declared disasters and emergencies caused by all types of hazards.				
Department of Homeland Security	*Emergency Preparedness and Response Directorate*	Individuals and Households Program (IHP) www.fema.gov/assistance/process/guide.shtm	To provide assistance to individuals and families who have been affected by natural or man-made Presidentially declared disasters. Funding provided from the Disaster Relief Fund.	Individuals and Families
	Emergency Preparedness and Response Directorate	Public Assistance (PA) www.fema.gov/government/grant/pa/index.shtm	To provide assistance to states, localities, tribes, and certain non-profit organizations affected by natural or man-made Presidentially declared disasters. Funding provided from the Disaster Relief Fund	State, local and tribal governments; private non-profit organizations
	Emergency Preparedness and Response Directorate	Fire Management Assistance Grant Program www.fema.gov/government/grant/fmagp/index.shtm	Provide funds to States, local, and tribal governments for the mitigation, management, and control of wildland fires posing serious threats to improved property.	State, local and tribal governments
Small Business Administration	*Office of Disaster Assistance*	Disaster Loan Program www.sba.gov/services/disasterassistance/	To offer financial assistance to those who are trying to rebuild their homes and businesses in the aftermath of a disaster.	Individuals, families, private sector
Department of Justice	*Office for Victims of Crime*	Antiterrorism and Emergency Assistance Program www.ojp.usdoj.gov/ovc/publications/infores/terrorism/	To provide assistance programs for victims of mass violence and terrorism occurring within and outside the United States and a compensation program for victims of international terrorism.	Public and private nonprofit victim assistance agencies
Programs to reduce or eliminate future risk to lives and property from disasters.				
Department of Homeland Security	*Emergency Preparedness and Response Directorate*	Hazard Mitigation Grant Program (HMGP) www.fema.gov/government/grant/hmgp/index.shtm	To provide assistance to states, localities, and tribes to fund projects that will reduce the loss of lives and property in future disasters. Funding is provides from the Disaster Relief Fund and administered by the states according to their own priorities.	State, local, and tribal governments

Agency	Office/ Directorate	Program	Purpose	Funding Beneficiaries
	Emergency Preparedness and Response Directorate	Pre-Disaster Mitigation Program (PDM) www.fema.gov/government/grant/pdm/index.shtm	This program provides funding for mitigation activities before disaster strikes. In recent years it has provided assistance for mitigation planning. In FY03, Congress passes a competitive pre-disaster mitigation grant program that will include project funding.	State, local, and tribal governments
Department of Homeland Security	*Emergency Preparedness and Response Directorate*	Flood Mitigation Assistance Program (FMA) www.fema.gov/government/grant/fma/index.shtm	The FMA program was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 (42 U.S.C. 4101) with the goal of reducing or eliminating claims under the National Flood Insurance Program (NFIP).FEMA provides FMA funds to assist States and communities implement measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program.	State, local and tribal governments
Other				
Department of Housing and Urban Development	*NH Office of Energy and Planning*	Community Development Block Grant Program (CDBG) Disaster Recovery Assistance www.hud.gov/offices/cpd/communitydevelopment/programs/	HUD provides flexible grants to help cities, counties, and States recover from Presidentially declared disasters, especially in low-income areas, subject to availability of supplemental appropriations.	State, local and tribal governments

Mitigation Programs of Other NH State Agencies

The following agencies of the state of New Hampshire are directly or indirectly involved in activities that include Hazard Mitigation Planning and/or program implementation:

- NH Department of Transportation Bureau of Repair and Maintenance
- NH OSP/NFIP Program
- NH OSP Coastal Program
- NH DRED Division of Forests and Lands
- NH DES Water Resources Division – Dam Safety Program
- NH DES Wetlands Program
- NH DES Shoreline Protection

APPENDIX E - STAPLEE CRITERIA

STAPLEE is an acronym for a general set of criteria common to public administration officials and planners. It stands for the Social, Technical, Administrative, Political, Legal, Economic, and Environmental criteria for making planning decisions. Questions to ask about suggested actions include:

- ***Social*:** Is the proposed action socially acceptable to the community? Are there equity issues involved that would mean that one segment of the community is treated unfairly?

- ***Technical:*** Will the proposed action work? Will it create more problems than it solves?

- ***Administrative:*** Can the community implement the action? Is there someone to coordinate and lead the effort?

- ***Political:*** Is the action politically acceptable? Is there public support both to implement and to maintain the project?

- ***Legal:*** Is the community authorized to implement the proposed action? Is there a clear legal basis of precedent for this study?

- ***Economic:*** What are the costs and benefits of this action? Does the cost seem reasonable for the size of the problem and the likely benefits?

- ***Environmental:*** How will the action impact the environment? Will the action need environmental regulatory approvals?

APPENDIX F - MEETING AGENDAS, MINUTES AND ATTENDANCE SHEETS

APPENDIX G - DOCUMENTATION OF PLAN ADOPTION

Town of Hooksett, New Hampshire
Hooksett Town Council

A Resolution Approving the Hooksett Hazard Mitigation Plan
Update 2015

WHEREAS, the Southern New Hampshire Planning Commission received funding from the New Hampshire Department of Safety – Homeland Security and Emergency Management under a Pre-Disaster Mitigation Grant to assist the Town of Hooksett in the preparation of the Hooksett Hazard Mitigation Plan Update 2015; and

WHEREAS, the Town of Hooksett has developed and received "Approval Pending Adoption" from the Federal Emergency Management Agency (FEMA) for its Hazard Mitigation Plan under the requirements of 44CFR 201.6; and

WHEREAS, several public planning meetings/hearings were held between May 2013 and June 2014 regarding the development and review of the Hooksett Hazard Mitigation Plan Update 2015; and

WHEREAS, the Town of Hooksett authorizes responsible departments and/or agencies to execute their responsibilities demonstrated in the Hooksett Hazard Mitigation Plan Update 2015; and…"

WHEREAS, the Hooksett Hazard Mitigation Plan Update 2015 contains several potential future projects to mitigate hazard damage in the Town of Hooksett; and

WHEREAS, a public hearing was held by the Hooksett Town Council on (Date) to formally approve and adopt the Hooksett Hazard Mitigation Plan Update 2015.

NOW, THEREFORE BE IT RESOLVED that the Hooksett Town Council adopt the Hooksett Hazard Mitigation Plan Update 2015.

APPROVED and SIGNED this _____ day of _____, 2014.

Town Council

_____

_____

_____

_____

_____

ATTEST_____

APPENDIX H - PAST PRIORITIZED IMPLEMENTATION SCHEDULES

2004 Prioritized Implementation Schedule							
	MITIGATION ACTION	**COST/BENEFIT**	**PRIORITY POINTS**	**WHO (LEADERSHIP)**	**WHEN (DEADLINE)**	**HOW (FUNDING)**	**2009 UPDATE**
1	Update Flood Insurance Rate Maps. Existing date March 1982	FEMA will allocate monies to help accomplish this task	42	FEMA	2002	FEMA, NFIP, MM	Updated maps anticipated in 2009
2	Purchase emergency vehicles and equipment (boats)	Vehicles and boats initially expensive but can save lives	42	FEMA, Fire, Police, Rescue	2002-03	Local, Grants	Completed
3	Develop a website for floodplain information, covering both local, NFIP and general information of interest	Website is inexpensive to develop and can provide critical information to the residents of Hooksett on Flood Mitigation efforts and practices	42	In-House Staff	2003-04	Local/Grants	Town updates their website as needed and the State has developed a website for floodplain information
4	Enhance GIS system for floodplain mapping	Initial expense involved but can develop an easy method of public access to floodplain information	42	Planning Board	2002-03	Local	Pending updated maps from FEMA, anticipated in 2009
5	Develop a culvert analysis program, maintain a database of all culverts including location, status, condition and maintenance records	Maintaining information on culvert status will ease long term maintenance costs	42	Highway Dept.	2003-04	Local/State	Ongoing

2004 Prioritized Implementation Schedule							
	MITIGATION ACTION	**COST/BENEFIT**	**PRIORITY POINTS**	**WHO (LEADERSHIP)**	**WHEN (DEADLINE)**	**HOW (FUNDING)**	**2009 UPDATE**
6	Develop a culvert maintenance program	Regular cleaning of culverts can save many dollars in flooding costs	42	Highway Dept.	2003-04	Local/State	Ongoing
7	Coordinate information gathering and analysis with the Town of Bow about the potential impacts of Garvin Falls Dam in Hooksett	Coordination is an inexpensive way to stay informed about changes to the dam and its operation	41	Local Staff	Ongoing	Local	Plan in Place
8	Education for citizens about flood mitigation – distribution about mitigation efforts residents and the town can make &/or are currently doing	Education program is a very cost effective way to keep citizens informed	41	Planning Board/OEM	2002	Local	State programs exist for floodplain education
9	Upgrade culvert at the K-mart area (Rt 3 and 27/101B intersection)	Initial expense will avoid years of flooding and damage	41	Highway Dept/NH DOT	2004	Local/State	Progress has been made and upgrade is ongoing
10	Upgrade Town radio system to provide better town wide coverage between Police, Fire, and Rescue	OEM provides grants for radio upgrade. The Town would like to complete this activity during 2002	41	Police, Fire, Rescue	2002-03	OEM (Grants), EMA, Town Budget	Still in progress, completion expected by early 2009
11	Update Emergency Management Plan (EMP), existing dated May 1997	Emergency Management Director to be responsible for this action. Only cost is existing staff time.	40	EMD	2002	Existing Staff Time and Town Budget	Updated in 2004, another update is scheduled for 2009-2010

2004 Prioritized Implementation Schedule							
	MITIGATION ACTION	**COST/BENEFIT**	**PRIORITY POINTS**	**WHO (LEADERSHIP)**	**WHEN (DEADLINE)**	**HOW (FUNDING)**	**2009 UPDATE**
12	Develop a tree maintenance program to clear trees and hanging limbs from roadways	Could be accomplished by Town workers, DPW	40	Highway Dept.	2002	Local Staff Time	Ongoing under the State
13	Purchase and install river gauges with transmitting capabilities, especially for known vulnerable or flood prone locations	Inexpensive way to monitor river levels especially during flood events	40	USGS, Local	2003	State, Federal, FMAP	Ongoing through USGS
14	Purchase hoses for wildfire fighting	Many wildfires in the northeast section of Town. Hoses may also be used for structural firefighting	40	Fire Dept.	2003	Local, State, FMAGP	Completed and ongoing
15	Encourage Conservation Commission to purchase flood prone properties for conservation and preservation purposes	Potential funding sources include a number of local, state and federal agencies for open space purchases	40	Conservation Commission	2002-04	Current use tax	Ongoing
16	Discourage construction in the floodplain during the review and permitting process	Excellent way to save expenditures on flood damage, at little or no cost to Town	40	Planning Board	Ongoing	Private	Complete and ongoing

2004 Prioritized Implementation Schedule							
	MITIGATION ACTION	**COST/BENEFIT**	**PRIORITY POINTS**	**WHO (LEADERSHIP)**	**WHEN (DEADLINE)**	**HOW (FUNDING)**	**2009 UPDATE**
17	Comprehensive Emergency Management Planning for Schools (CEMPS) development	CEMPS provides training for school personnel to prepare for an emergency. There is no cost to the local school district for this service	40	School, Fire, Police, Local, OEM	2002	NH OEM	Ongoing
18	Purchase portable generators to be used at varying locations during an emergency	Initially expensive but costs outweighed by usefulness during emergency situations	40	Fire Dept.	2004-06	Impact Fees (Public Safety)	Purchased 3 permanent generators for schools and safety center instead of portable
19	Plan for needed new cisterns and maintenance	Planning for, construction of, and regular maintenance of cisterns will keep them in good operational condition while saving Town maintenance expenses in the future	38	School, Fire, Police, Local, OEM	2002	NH OEM	In affect, ongoing with any new development

2004 Prioritized Implementation Schedule							
	MITIGATION ACTION	**COST/BENEFIT**	**PRIORITY POINTS**	**WHO (LEADERSHIP)**	**WHEN (DEADLINE)**	**HOW (FUNDING)**	**2009 UPDATE**
20	Purchase flood prone properties in the Special Flood Hazard Areas	Similar to discouraging construction in the floodplain; saves large sums in expenditures for damage to floodprone properties, especially repetitive loss properties	38	Town Council	2002	Local, FMAP	Incomplete due to cost issues
21	Develop Wellhead Protection Program	Planning process could be expensive or inexpensive, but will help to retain food drinking water quality	37	Village Water Precinct	2003-04	Private, Grants	Completed
22	Develop early warning system for floodplain residents	Initial costs outweighed by ability to warn residents early and save lives	36	OEM, Police	2003-04	NH OEM, FMAP	Pending State Program
23	Maintenance program for detention/retention ponds	Clogged ponds expensive; less flooding when they are properly maintained	36	Highway	Ongoing	Local	In progress, ongoing with development of town
24	Elevate structures in the floodplain, especially insured and repetitive loss properties	Saves many thousands of dollars in flood damage repairs, especially repetitive loss properties	36	Planning Board, Private	2003-04	FMAP	Ongoing through NFIP requirements

2004 Prioritized Implementation Schedule							
	MITIGATION ACTION	**COST/BENEFIT**	**PRIORITY POINTS**	**WHO (LEADERSHIP)**	**WHEN (DEADLINE)**	**HOW (FUNDING)**	**2009 UPDATE**
25	Increase public awareness of personal responsibilities for emergency management	Public awareness programs inexpensive compared to lives saved during emergency management	35	EMD	Ongoing	Local, NH OEM	Website developed and State has developed a website as well
26	Develop control mechanism for beaver actions in wetlands	Inexpensive way to avoid excessive water build up from beaver dams	33	Private, Conservation Commission	Ongoing	NH F&G, Current Use Tax	State Fish & Game permission needed for this action
27	Educate the public about the importance of wetlands	The Conservation Commission could be responsible for this, and the cost would be minimal when considering the impact it will have on residents	29	Conservation Commission	2002-03	Current Use Tax, DES Publications	Ongoing
28	Educate public about dam safety	Education on dam safety (inspection and maintenance programs) will help residents understand the importance of these programs. Very little cost involved in this mitigation method	29	Dam Owner	Predetermined Schedule	Private	Ongoing

2004 Prioritized Implementation Schedule							
	MITIGATION ACTION	**COST/BENEFIT**	**PRIORITY POINTS**	**WHO (LEADERSHIP)**	**WHEN (DEADLINE)**	**HOW (FUNDING)**	**2009 UPDATE**
29	Educate property owners on appropriate land clearing procedures	The NH Forest Service has knowledge pertaining to clearance procedures for private lots, little cost to the Town	29	State Forest Service, Bldg Insp.	2002-03	State, Town Funds	Ongoing
30	Educate public on groundwater recharge	The Conservation Commission could spearhead this effort, with little cost to the Town	28	Conservation Commission	2002-03	Current Use Tax, DES Publications	Ongoing
31	Haz-Mat education on hazardous materials transport on highways	NHDOT and OEM provide cost-free literature for use by towns to educate the public on transport of hazardous materials	28	Fire, Highway, NHDOT, OEM	2003-04	Local, State	Ongoing
32	Develop a River Stewardship Program, coordinate with other conservation commissions & organizations in Hooksett & surrounding towns	Volunteers and others assist with activities that keep a river healthy	28	Conservation Commission, MRWC	Ongoing	Private	Ongoing through State programs
33	Hurricane proofing of public buildings	Can be inexpensive and protect valuable investments	26	Schools, EMD	2003-04	Grant, Local	Incomplete due to lack of resources

2004 Prioritized Implementation Schedule							
	MITIGATION ACTION	**COST/BENEFIT**	**PRIORITY POINTS**	**WHO (LEADERSHIP)**	**WHEN (DEADLINE)**	**HOW (FUNDING)**	**2009 UPDATE**
34	Coordinate with Town of Candia about potential effects of Dube Pond Dam on the Town of Hooksett	As with the Town of Bow, coordination is an inexpensive way to stay informed about changes to the dam and its operation	14	Planning	2002-03	Local	Plan in place