TOWN OF DERRY, NEW HAMPSHIRE

Derry Municipal Center and Emergency Management Center

HAZARD MITIGATION PLAN UPDATE 2015

Town of Derry
New Hampshire

Hazard Mitigation Plan
Update 2015

Prepared by the Southern New Hampshire Planning Commission

The preparation of this document has been financed in part by a grant from the State of New Hampshire Department of Safety, Division of Homeland Security and Emergency Management.

PREFACE

Hazard mitigation planning is a relatively new field, spearheaded by the Federal Emergency Management Agency (FEMA) during the 1990s after Hurricane Andrew caused more than $20 billion dollars in damage across several southern states. That event resulted in 54 fatalities and the disruption of millions of lives. Since that time many more natural disasters have caused great losses in the United States, including Hurricane Katrina and most recently, Hurricane Sandy. 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 England normally does not have hurricanes of Andrew's magnitude, this area does experience many types of natural disasters that cost both lives and money.

Natural disasters can 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 save lives as well as homes and infrastructure.

Several FEMA programs are designed to strengthen the nation's disaster resistance by reducing risks. This means changing conditions and behaviors prior to disasters to protect lives and prevent the loss of property. Such measures include building safely within the floodplain or removing homes altogether, engineering buildings and infrastructure to withstand earthquakes, and creating and enforcing effective building codes to protect property from floods, hurricanes and other natural hazards.

A community's eligibility for hazard mitigation funding depends upon its having adopted a FEMA approved hazard mitigation plan. Mitigation measures contained within the *Derry Hazard Mitigation Plan Update 2015* may be sufficient to receive grant funding.

It is hoped that this document will be a good first step toward analyzing natural hazards in Derry, forecasting where potential disasters might occur, and reducing the impact on lives and the community.

ACKNOWLEDGEMENTS

The Derry Town Council would like to thank the following people for contributing their time and effort to complete the ***Derry Hazard Mitigation Plan Update 2015****:*

Derry Hazard Mitigation Plan Update 2015 Committee Members

Chief George Klauber, Derry Fire Department, Emergency Management Director

Ray Brown, Derry Assistant Emergency Management Director

Lt. Bill Gillis, Derry Fire Department, Deputy Emergency Management Director

Mike Gagnon, Derry Fire Department, Deputy Emergency Management Director

Vern Thomas, Derry Police Department, Operations Captain

Robert Mackey, Director, Derry Code Enforcement

George Sioras, Director, Derry Community Development Department

Elizabeth Robidoux, Planning Assistant, Derry Community Development Department

Doug Rathburn, Town of Derry, IT/GIS Coordinator

Mark L'Heureux, Engineering Coordinator, Derry Public Works Department

Alan Cote, Superintendent of Operations, Derry Department of Public Works

A special thank you to:

The New Hampshire Department of Safety, Division of Homeland Security and Emergency Management (NH HSEM), which developed the *New Hampshire Multi-Hazard Mitigation Plan, Update 2013.*

"We will of course be there to help after disaster strikes, but as you all know, there's no substitute for mitigation before it does....

As a poet once wrote, "the test of men lies in action." We as emergency managers and first responders cannot afford to wait for action….

Through planning, mitigation, education, and cooperation, we can make sure our at-risk communities are prepared before the first drop of rain or gust of wind ever threatens our shores."

—Joe Allbaugh, Director of FEMA,
Addressing the 2002 National Hurricane Conference

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EXECUTIVE SUMMARY

The *Derry Hazard Mitigation Plan Update 2015* has been developed to help Derry become a disaster-resistant community by taking measures to reduce future losses from natural or man-made hazardous events before they occur. The Derry Hazard Mitigation Plan Committee, made up of community members and town officials, developed the plan.

The plan addresses the following natural hazards:

A. Flooding
B. Wind
C. Wildfire
D. Ice and Snow Events
E. Earthquakes
F. Other Hazards

The Derry Hazard Mitigation Plan Committee identified **Critical Facilities**, a list of emergency equipment or areas needed to respond at the time of a natural disaster, and **Areas at Risk,** equipment or areas that could be threatened if a natural disaster were to occur.

Critical Facilities:

- Police Department
- Emergency Management
- Emergency Fuel Facilities
- Wastewater Treatment Plant
- Municipal Building
- Fire Service Facilities
- Post Office
- Public Works Garage
- Emergency Shelters
- Evacuation Routes
- Bridges
- Hospitals
- Hazardous Materials Facilities and Above-Ground Storage Tanks
- Telephone and Wireless Communication Facilities
- Back-up Power Facilities

Areas at Risk:

- Water and Wastewater Systems
- Dams
- Electrical Power Substations
- Major Highways
- Schools
- Day Care Centers
- Churches
- Nursing Homes and Elderly Housing
- Recreation Areas
- Historic/Unique Resources
- Lodges and Community Centers
- Solid Waste Facilities
- Commercial/Economic Impact Areas

Existing Hazard Mitigation Strategies
The Derry Hazard Mitigation Plan Committee identified existing strategies related to hazard mitigation as follows:

- Floodplain Development District (zoning)
- Conservation Corridor Overlay District (zoning)
- Wetlands Conservation Overlay District (zoning)
- Groundwater Resource Conservation District (zoning)
- Earth Removal Regulations (zoning)
- Manufactured Housing Park District (zoning)
- Emergency Operations Plan
- Evacuation and Notification
- State Dam Program
- Road Design Standards
- Shoreland and Water Quality Protection Act
- Best Management Practices
- Back-up Electrical Generators
- Town Radio System
- Hazardous Materials Regulations
- Regulation of Travel Trailers and Motor Homes
- International Building Code and Local Building Code
- Steep Slopes and Class VI Roads
- Comprehensive Emergency Management Planning for Schools
- Elevation Certificates
- Haz-Mat Response Team
- GIS System
- Telecommunication Overlay District
- Wellhead Protection Program
- Community Notification System

New Mitigation Programs and Policies
The Committee prioritized the following new hazard mitigation strategies:

- Continue to maintain current snow removal equipment and upgrade as needed to cope with snow emergencies
- Implement drills and exercises for emergencies with elected officials
- Encourage emergency management training and coordination between schools and Derry Bureau of Emergency Management, including drills, exercises and annual training
- Continue to prohibit construction in the floodplain during review & permitting process

- Continue to implement a public awareness program for emergency management and hazard mitigation action plans and benefits to the community
- Encourage locating utilities underground for redevelopment
- Continue to participate and comply with the NFIP and consider participation in the CRS
- Continue to purchase/lease emergency vehicles and equipment to update and expand existing supply (All Departments)
- Continue to identify and remove hazardous trees in the Right of Way
- Improve drainage structures at Folsom and N. High. Improvements also needed at Tsienneto and Rt. 102.
- Continue to implement culvert analysis for inventory and condition assessment
- Continue to implement a culvert maintenance system
- Identify specific requirements and funding source for possible purchase of an additional portable generator that can be used where needed in emergencies
- Continue maintenance program for detention/retention ponds
- Continue to encourage property owners to elevate structures in the floodplain, especially insured and repetitive loss properties
- Encourage the Conservation Commission to become active in acquiring flood-prone properties for conservation and preservation purposes
- Continue to pursue funding for the upgrade of the DPW Radio system to have compatibility with Fire and Police
- Test and develop staffing plan for Pinkerton Academy Emergency Shelter Operations
- Complete Blighted Properties Ordinance
- Continue to pursue GIS data for utility infrastructure such as electric poles/circuits in Town
- Continue current plan to control the potential for waterborne illnesses to develop in standing water and disseminate information on these hazards
- Complete update of Telecommunication Overlay ordinance through Planning subcommittee
- Install visual river gauges at points of known repetitive flooding
- Continue to evaluate feasibility of adoption of Class VI Road Regulation standards
- Implement public outreach campaign to property owners along flood-prone areas

This plan is scheduled to be reviewed and updated on an annual basis by the Derry Emergency Management Director in coordination with the Derry Town Council. The next update will occur one year after Town Council approval.

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SECTION I - INTRODUCTION

Natural Hazards and Their Consequences

Recently, the United States has suffered a record number of natural disasters. In 2012, Hurricane Sandy caused almost 120 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's about three major disasters per year. More than 60 percent were the result of flooding.

December 2008 Ice Storm, Derry, New Hampshire[1].

Floods, tornadoes, winter storms, hurricanes, earthquakes and wildfires—natural disasters are part of the world around us. Their occurrence is inevitable. These events can wreak havoc on the natural environment by uprooting trees, eroding

[1] Photo courtesy Cheryl Senter/AP Photo

riverbanks and shorelines, carving new inlets, and 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 more devastating. Disasters occur when a natural occurrence crosses paths with elements of 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 undeveloped wetlands and floodplains were flooded, rather than homes and businesses, we would hardly take notice. The natural environment takes care of itself. The man-made environment, in contrast, often needs some emergency assistance.

Major events in the last 10 years that affected New England, New Hampshire, southern New Hampshire and Derry include:

- October 2005: Floods in southwestern New Hampshire caused catastrophic damage. At least five bridges were washed out, up to 18 families were left homeless, more than 1,000 people were displaced by evacuations and there were seven deaths. Rainfall amounts of approximately nine inches in southwestern New Hampshire from October 7-12 created swollen rivers, streams and brooks.

- May 2006 (Mother's Day flood): Similar to the October 2005 floods, these floods were due to record breaking amounts of rainfall in a short span of time. During the Mother's Day flood, 8.8 inches was recorded in Concord, from May 13–16. Preliminary damage assessments estimated 25 homes in the State were destroyed, another 235 severely damaged, and another nearly 4,750 damaged. Over 600 roads were closed statewide. Additionally, over 200 schools closed for at least the Monday and Tuesday following the onset of flooding. Three dams were breached, another four required controlled breaches, and two other dams failed. Additional damages to businesses are estimated to be greater than four million dollars and 115 businesses were damaged. Damages to state and local infrastructure are estimated to be beyond $14 million.

- April 2007 flood: This was a combination of heavy rainfall and rapid snowmelt. Up to seven inches of rain fell from April 16-18 from a storm that stalled off the coast of New England. The peak discharges during the April 2007 flood were the highest ever recorded at five long-term (more than 10 years of record) stream gage sites on the New Hampshire-Salmon Falls

River at Milton, Cocheco River near Rochester, Oyster River near Durham, Contoocook River at Peterborough, and South Branch Piscataquog River near Goffstown. In addition, peak discharges equaled or exceeded a 100-year recurrence interval at 10 stream gages and a 50-year recurrence interval at 16 stream gages. The most severe flooding occurred in Rockingham, Strafford, Merrimack, and Hillsborough Counties.[2]

- July 24, 2008 severe storms: There were severe storms, a tornado and flooding (50-100 year recurrence interval) in the counties of Belknap, Carroll, Merrimack, Rockingham (tornado in Deerfield), and Strafford.

- March 14 – 31, 2010 storms and flooding: There were severe storms and flooding (50-100 year recurrent interval) in Hillsborough and Rockingham County.

- August 26 - September 6, 2011 Hurricane Irene: This storm produced heavy rains and caused substantial damage in New England. The storm produced substantial damage in Vermont.

- October 31, 2011 Halloween Storm: Heavy early snow storm caused extensive power outages.

- October 29, 2012 Hurricane Sandy: This storm, like Hurricane Irene, caused a Presidential Disaster Area to be declared. Hurricane Sandy created a strong storm surge and heavy rains across New England, NYC and New Jersey.

In addition to above, there were severe storms declared on January 2, 2009, March 29, 2010 and May 12, 2010 for Rockingham County. In the last two years, there was a severe snow and blizzard event in Rockingham County on February 8-10, 2013 (declared federal disaster); the November 2014 Thanksgiving Day ice storm and major snow events during the four-week period of January 26 through February 23, 2015.

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

[2] Flynn, R.H., 2008, Flood of April 2007 in New Hampshire: U.S. Geological Survey Scientific Investigations Report 2008–5120, 53 p.

disaster occurs."[3] It includes both structural interventions, such as flood control devices, 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 should not be seen as an impediment to growth and development. On the contrary, incorporating mitigation into development decisions could result in a safer, more resilient community, one that is more attractive to new families and businesses.

Why Develop a Mitigation Plan?

The full cost of the damage resulting from natural disasters—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. It can:

- **Save lives and property -** A community can save lives and reduce property damage from natural hazards by identifying risks and taking action, such as elevating structures located in the floodplain.
- **Reduce vulnerability to future hazards -** By having a mitigation plan in place, a community is prepared to take steps that will permanently reduce 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.
- **Facilitate post-disaster funding -** By identifying and ranking recovery 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.

[3] FEMA *Local Mitigation Plan Review Guide.* October 1, 2011.

- **Speed recovery –** By developing a mitigation strategy, a community can identify post-disaster mitigation opportunities in advance of a disaster and be ready to respond quickly after a disaster.

Background: Derry Hazard Mitigation Planning

The Federal Emergency Management Agency (FEMA) has mandated that all communities in the State of New Hampshire establish local hazard mitigation plans as a means to reduce future losses from natural or man-made hazard events before they occur. 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 Derry Hazard Mitigation Plan (Original)	February 17, 2004	May 26, 2004
Town of Derry Hazard Mitigation Plan Update 2009	May 5, 2009	July 15, 2009
Town of Derry Hazard Mitigation Plan Update 2015	December 1, 2015	(Date)

Purpose

The ***Derry Hazard Mitigation Plan Update 2015*** serves as a strategic planning tool for use by the Town of Derry in its efforts to reduce future losses from natural or man-made hazardous events before they occur. This plan may constitute a new section of the Derry Master Plan, in accordance with RSA 674:2.

Authority

This Hazard Mitigation Plan Update 2015 was prepared in accordance with the Town of Derry'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 ***Derry Hazard Mitigation Plan Update 2015*** will be referred to as the "Plan." The Derry Town Council formally adopted this plan after a public hearing was held on December 1, 2015. Documentation of the Town Council's adoption of the *Plan* is provided in Appendix G.

Scope of the Plan

The scope of the ***Derry Hazard Mitigation Plan Update 2015*** includes the identification of natural hazards affecting the Town, as identified by the Derry Hazard Mitigation Plan Committee (DHMPC). The committee reviewed hazards

in the following categories as outlined in the *State of New Hampshire Multi-Hazard Mitigation Plan*:

1. Flooding (including hurricanes, 100-year floodplain events, debris-impacted infrastructure, erosion, mudslides, rapid snow pack melt, river ice jams, and dam breach or failure)
2. Wind (including hurricanes, tornadoes, nor'easters, downbursts, and lightning)
3. Fire (including grass fires, forest fires and issues such as isolated homes and residential areas)
4. Ice and snow events (including heavy snowstorms, 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 April 2013, the Derry Hazard Mitigation Plan Update Committee was formed to begin updating the plan. The Update Committee used the same ten-step planning process set forth in the *Hazard Mitigation Planning for New Hampshire Communities* handbook as did the original Committee. Each section of the 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, Police Department, Public Works Department, GIS Department, and Code Enforcement. The Committee held a total of six (6) public meetings beginning April 2013 and ending June 2014 to collect information, compile the plan update, and review the plan update.

Town of Derry 2013-2014 Hazard Mitigation Committee Members

- Chief George Klauber, Derry Fire Department, Emergency Management Director
- Ray Brown, Derry Assistant Emergency Management Director
- Lt. Bill Gillis, Derry Fire Department, Deputy Emergency Management Director
- Mike Gagnon, Derry Fire Department, Deputy Emergency Management Director
- Vern Thomas, Derry Police Department, Operations Captain
- Robert Mackey, Director, Derry Code Enforcement
- George Sioras, Director, Derry Community Development Department
- Elizabeth Robidoux, Planning Assistant, Derry Community Development Department
- Doug Rathburn, Town of Derry, IT/GIS Coordinator

- Mark L'Heureux, Engineering Coordinator, Derry Public Works Department
- Alan Cote, Superintendent of Operations, Derry Department of Public Works

Public Outreach Process and Public Committee Meetings

The Derry Hazard Mitigation Plan Committee held six (6) public meetings at the Derry Town Offices: April 4, 2013, May 9, 2013, June 5, 2013, August 7, 2013, October 23, 2013 and June 9, 2014. All of the Committee's six 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 the 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

Hazard Mitigation Plan Committee member George Sioras contacted the following departments, agencies and individuals via email for their input and comment on the plan:

- Brad Benson, Derry Town Council, Chair
- David Granese, Derry Planning Board, Chair
- Larry Budreau, Derry Town Executive Department, Acting Town Administrator
- Margaret Ives, Derry Conservation Commission, Chair
- Vern Thomas, Derry Police Department, Captain
- George Klauber, Derry Fire Department, Chief/EMD
- Alan Cote, Derry Public Works Department, Superintendent
- Steve Keach, Keach-Nordstrom Engineering Review Agency (Bedford)
- Bob Mackey, Derry Code Enforcement Department, Director
- Stacey Bruzzese, Derry Chamber of Commerce, President
- Laura Nelson, Derry School District, Superintendent
- John Burke, Parkland Hospital (Derry), Director of Plant Operations and Security
- Mary Anderson, Pinkerton Academy (Derry), Headmaster

No comments were received from other agencies on the draft plan.

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

Existing Derry Emergency Operations Plan

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

State 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's RSA 647:2 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." ***It is anticipated that the Hazard Mitigation Plan will become part of the next Master Plan update by reference.***

Capital Improvements Program

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 Council policy and the impact of the projects on the Property Tax rate and the Sewer rates. ***The Derry Hazard Mitigation plan will be reviewed and referenced within the CIP document, as appropriate, for any hazard mitigation projects approved under the CIP.***

Town of Derry, Source Water Protection Plan

Source water protection involves preventing the pollution of the groundwater, lakes, rivers and streams that serve as sources of drinking water for local communities. The Town of Derry Source Water Protection Plan was completed in February 2012. It is anticipated that the next update of this plan will incorporate information and recommendations contained in the Hazard Mitigation Plan, as appropriate.

Plan Development Steps
To complete this plan, the Derry Hazard Mitigation Plan Committee followed 10 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 Derry 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 these critical facilities. 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 handbook *Local Mitigation Planning Handbook* March 2013 prepared by FEMA, the Derry Hazard Mitigation Committee (DHMC) 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 is presented in Section III.

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

Step 5: Determine Actions to be Taken
During an open brainstorming session, the Committee developed a list of other possible actions and strategies to improve the Town's response to hazardous events. These strategies are shown in Section IV.

Step 6: Evaluate Feasible Options
The Committee reviewed each of the 34 hazard mitigation actions and strategies that were identified in the brainstorming session using the evaluation charts from Step 6 of the handbook. Each strategy was rated from (1) for Poor; (2) for Average; and (3) for Good in accordance with 14 evaluation factors (e.g. damage reduction,

environmental impact, social acceptability, financial feasibility, including the STAPLEE criteria). Each factor was then scored and all scores were totaled for each strategy. The results of this analysis are shown in Section IV. A description of the STAPLEE criteria is found in Appendix E of the *Plan*.

Step 7: Coordinate with Other Agencies/Entities
The Derry Community Development Department contacted agencies with expertise in hazardous mitigation, as well as other agencies and individuals that should be involved during this planning process. A listing of these agencies and individuals can be found on page 5.

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 in Section V.

Step 9: Develop Implementation Strategy
Using the chart provided under Step 9 in the handbook, the DHMC 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.

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*, which served as the model for the ***Derry Hazard Mitigation Plan Update 2015***. The Derry Hazard Mitigation Plan Committee reviewed, revised and approved a draft of the ***Derry Hazard Mitigation Plan Update 2015***. The plan received conditional approval pending adoption from FEMA on September 25, 2015. The Derry Town Council held a public hearing and formally adopted the final plan on December 1, 2015. The plan shall be reviewed on an annual basis to be certain the goals and objectives are being met, and that the policies are being adopted. Section VI of the *Plan* details the adoption and monitoring requirements.

... [M]itigation works. The Seattle-Tacoma area did not suffer significant losses [following the February 28, 2001, earthquake] because 20 to 30 years ago local leaders invested in its future by passing building codes and issuing municipal bonds that implemented solid protective measures. –

-FEMA Director Joe Allbaugh
Congressional testimony, May 16, 2001

HAZARD MITIGATION GOALS AND OBJECTIVES

The *State of New Hampshire Multi-Hazard Mitigation Plan Update 2013*[4], which was prepared and is maintained by the New Hampshire Division of Homeland Security and Emergency Management, sets forth the following hazard mitigation goals and objectives:

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's 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's infrastructure and natural environment.

The Derry Hazard Mitigation Plan Committee concurs with and adopts these goals and objectives for the Town of Derry, New Hampshire and adds to goal No. 1: "through the timely notification for pre-emergencies."

[4] State of New Hampshire Multi-Hazard Mitigation Plan, Update 2013.

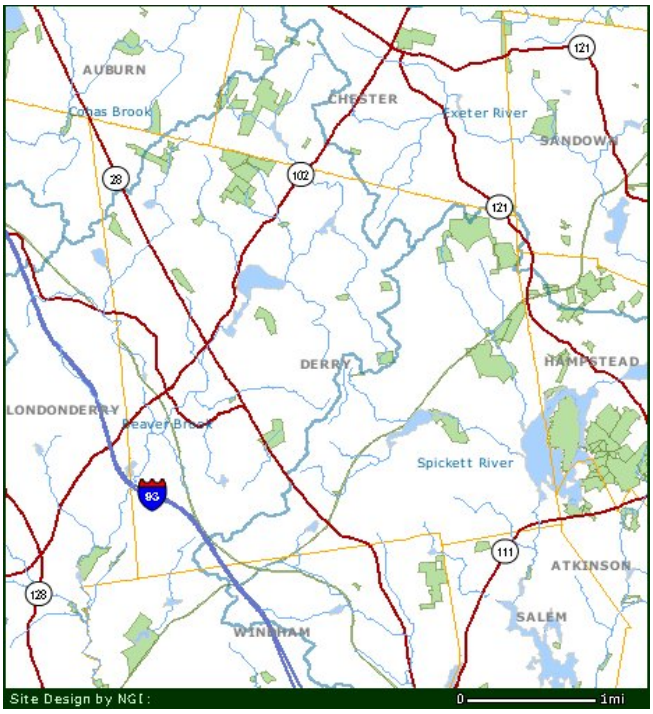
SECTION II - HAZARD IDENTIFICATION AND POTENTIAL RISK ASSESSMENT

Location, Topography and Weather Conditions

The Town of Derry is located in the south-central portion of the State of New Hampshire in Rockingham County. Derry is bordered by the towns of Chester and Auburn to the north, the Town of Londonderry to the west, the towns of Windham and Salem to the south, and the towns of Atkinson, Hampstead and Sandown to the east. It is located about 10 miles southeast of the City of Manchester and about 13 miles northeast of the City of Nashua.

Derry encompasses a total of approximately 35.6 square miles. According to the U.S. Census 2010, the population of the Town was 33,109.

Primary highway access is provided in part by U.S. Interstate 93, which runs north-south through the southwestern part of Town. Route 28 Bypass connects Derry with Auburn to the north and Windham to the south, and Route 102 provides access to Londonderry to the west and Chester to the east.



Location Map of Derry, New Hampshire[5]

[5] Map courtesy Complex Systems Research Center

The principal watercourses within the Town of Derry are Beaver Brook and Hornes Brook. Beaver Brook originates at the outlet of Beaver Lake and flows in a southwesterly direction for four miles before entering the Town of Londonderry. Hornes Brook originates at Hornes Pond in Derry and flows in a southerly direction before emptying into Beaver Brook.

The Beaver Brook floodplain ranges in width from 20 to 2,900 feet. This floodplain is primarily open or wooded, with some residential and commercial development. The Hornes Brook floodplain ranges in width from 20 to 350 feet, and consists of residential and commercial development. The floodplains of the remaining streams in Derry average 350 feet in width. They are wooded and contain sparse residential development.

The Town is characterized by stratified and unstratified material deposited by a receding glacial ice sheet. Irregular slopes, coarse soils, occasional outcrops of bedrock, and boulders are common. Soils are very acidic and are associated with swamps and wetlands. Wet swamp areas and kettle-hole ponds serve as the headwaters for many streams in the area. These swamps and ponds provide large amounts of natural storage and reduce peak discharges.

Elevations in the Town range from approximately 190 feet near Island Pond to approximately 600 feet at the summit of Warner Hill.

The climate in Derry is typical of Southern New Hampshire, with warm summers and cool winters. 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.[6]

[6] Concord Climate Data for the Year 2012 (closest weather station to Derry). National Weather Service. Gray, ME. Jan. 3, 2013. http://www.nws.noaa.gov/climate/index.php?wfo=gyx. 2013-10-15.

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

Historically, major floods occur during the spring, fall and winter seasons in Derry. Some of the more severe flooding has occurred in early spring because of snowmelt, heavy rains and ice jams. The following is an estimate of damage in dollars that may result when a natural hazard occurs in the Town.

Vulnerability Assessment
In order to estimate the potential for monetary losses due to natural hazards in Derry, each hazard area was analyzed using either FEMA's HAZUS software or the publication *Understanding Your Risks: Identifying Hazards and Estimating Losses,* August 2001. While the tables in this publication were helpful, a modified variant was utilized in some instances 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 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."

The most accurate and detailed flood hazard data on the quantity of development in the hazard zone comes directly from the NFIP data. For this analysis the FEMA HAZUS software was used to estimate losses for flooding. As of October 2013 the software is still using 2000 U.S. census data (an update for 2010 U.S. census data is expected by the end of 2013). The age of the data used in the current software combined with a disclaimer[7] on uncertainty in building count results requires suitable caution when using the results, but gives the town a detailed baseline and a methodology for determining losses. Further analysis is recommended using a detailed inventory in conjunction with HAZUS software when an update to reflect the most recent U.S. census data is available. Erosion, landslides and other events related to steep slopes have been estimated using assessing data. The one caveat

[7] *"The estimates of social and economic impacts [contained in this report] were produced using HAZUS loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific flood. These results can be improved by using enhanced inventory data and flood hazard information."*

of using the assessing data is that it overestimates the number of dwelling units and structures within the zone, because it is not possible to determine what assets on a parcel are included in or outside the hazard zone unless the entire parcel is within the zone.

Human losses were not calculated during this exercise, but they could be expected to occur depending on the type and severity of the hazard. In 2012, the value of all structures in the Town, including exempt structures such as schools and churches, was assessed at $2.36 billion.[8]

Flooding **$21 million – $24 million**

Current HAZUS models indicate that there are 203 residential structures located in the 100-year floodplain. As of September 15, 2014 there are 171 NFIP policies in-force for the Town of Derry with $26,613,500 total insurance in-force. There have been 27 claims filed since 1978 totaling approximately $192,970.21 in losses paid to date[9]. The town has six residential repetitive loss properties since 1978 with losses totaling approximately $117,155. 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, Medium-density residential and Medium-high density residential.

Default depth-damage functions were used to estimate losses, which assume that inventory is evenly distributed across each census block. For example, if 25 percent of the block has two feet of water, it is assumed that 25 percent of the four single-family dwellings in the block are in two feet of water. Default damage functions for contents loss, inventory loss and income losses were used from FEMA's *HAZUS software*. Losses are reported as totals for each occupancy and building type rather than for each building. Estimated losses for a 100-year flood event are outlined below:

Count of Buildings by Range of Damage	None	1-10%	11-20%	21-30%	31-40%	41-50%	Substantial	Total
Residential Total	192	0	1	0	6	4	0	203
Pre-firm			1		3	2		
Post-firm					3	2		

[8] NH Department of Revenue. 2012 Equalization Reports.
http://www.revenue.nh.gov/munc_prop/equalization/2012/documents/tbc-county.pdf
[9] NH Office of Energy and Planning March 2015, NFIP Website data.

Total Losses (Capital Stock and Income)	$21,372,000
Total Residential Losses (Capital Stock*)	$10,056,000
Utilities infrastructure losses (wastewater)	$7,730
Vehicles (day)	$2,729,672
Vehicles (night)	$3,057,560
Total displaced population (Households)	1,649
Total shelter need (# People)	1,076
Debris generated (tons)	1,000

*Building, contents and inventory losses

Estimates for a 500-year flood event are $24 million in total losses, $12 million in total residential losses and shelter needs for 1,152 residents. 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 Derry could benefit greatly from any flood mitigation measures that would help reduce typical losses that occur during a major flood event. Economic losses for flooding are depicted on Map #3 following section II.

Hurricanes **Up to $8,000,000**

A major hurricane can cause significant damage to a community. Most of the damage is caused by high water and strong winds. The Town of Derry is located in a hurricane-susceptible region. However, less damage could be expected to occur in Derry, which is located inland, than in a more vulnerable coastal area. HAZUS modeling was used to estimate damage from a Hurricane similar in size to Hurricane Gloria, 1985. This hurricane caused the most significant impacts to the Town and is considered a realistic worst-case scenario for the Town for this hazard. Estimated losses and impacts for a significant hurricane similar to the historic Hurricane Gloria are outlined below:

Building Damage by Count by General Occupancy	None	Minor	Moderate	Severe	Destruction	Total
Agriculture	39	1	0	0	0	40
Commercial	559	10	1	0	0	570
Education	26	0	0	0	0	26
Government	16	0	0	0	0	16
Industrial	191	4	0	0	0	195
Religion	37	1	0	0	0	38
Residential	9,578	205	22	1	0	9,806
Total	10,446	221	23	1	0	10,691

Total Losses	$7,923,000
Total Residential Losses	$7,619,000
Total Commercial Losses	$244,000
Total Industrial Losses	$52,000
Total Religion/Non-Profit Losses	$21,000
Total Education Losses	$11,000
Total Government Losses	$4,000
Total displaced households	4
Total shelter need	0
Debris generated (tons)	7,723

Debris Impacted Infrastructure and 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. 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, with additional losses from more serious events.

Erosion and Mudslides **$10,000 to $10.4 million**

Erosion and mudslide damage usually affects infrastructure such as roads and bridges, but can also affect individual homes and businesses. There are a total of 2,908.2 acres of steeply sloped land in Derry. This includes either entire parcels or portions of 2,058 parcels that have a minimum of .01 acres in the steeply sloped zone. At the present time it is not possible to determine the value of the steep slope portion of each lot or whether the structures on each lot are in the hazard zone. Therefore, the most specific data available includes the entire parcel's value and contents irrelevant of the inclusion in the steep slope zone. Given these caveats, of the 2,058 lots with a minimum of .01 acres steep, there are 4,699 dwelling units on 1805 built lots[12]. The estimated valuation of buildings on these lots is $414,178,000, based on the January-July 2013 median sales price of $193,000.[13] Since this type of hazard has occurred previously in several parts of the Town of Derry, experience suggests that damages from this hazard could be expected to range from a few thousand dollars to approximately 2.5 percent of the total building valuation, depending on the severity of the event.

[12] Derry Parcels 2014, Town of Derry. UNH GRANIT 1:24,000 and National Cooperative Soil Survey

[13] New Hampshire Housing Finance Authority. Purchase Price Data. http://www.nhhfa.org/housing-data-demographics.cfm. 2013-10-16.

Rapid Snow Pack Melt **$21 million – $24 million**

Since the estimated loss for this hazard is similar to flooding, the cost estimate is the same as that for flooding.

Dam Breach or Failure **$30,000,000+**

The Town of Derry has no Class H "high hazard potential" dams, five Class S "significant hazard potential" dams, five Class L "low hazard potential" dams, twelve Class NM "non-menace hazard potential" dams, and a number of "inactive" dams. Dam breach or failure could have catastrophic results in Derry, including loss of human life. Assuming all 203 structures in the special flood hazard areas were destroyed, along with major losses to utilities and public properties, the total damage could easily exceed $30,000,000.

Tornadoes **$200,000 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; 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 range of damage shown above indicates an approximate amount that could be expected.

Nor'easters, Ice Storms, Heavy Snowstorms **$10,000 to $5,000,000**

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 and structures in northern New England, with $15 million in federal aid to New Hampshire. These types of storms in Derry could be expected to cause damage ranging from a few thousand dollars to several million, depending on the severity of the storm.

Wildfires **$289, 500 to $5.8 million**

A wildfire can strike at any time, but may be expected to occur during years of drought. Damage from a small-to-medium-size fire that destroys from one to 20 homes could be expected to range from $289,500 to $5.8 million. Other damage, such as utilities, is not included in this estimate.

Earthquakes **$8.2 to $19.5 million**

Two scenarios were analyzed for possible losses due to earthquake hazards in Derry. The first scenario assumes low seismic design for structures and a peak ground acceleration (PGA) of .05. Combined structure loss, contents loss and structure use and function loss is $8.2 million. The second scenario assumes low seismic design for structures and PGA of .07. Combined structure loss, contents loss and structure use and function loss is $19.5 million.

Downbursts, Lightning, Hailstorms, Landslides, Radon, Drought, Extreme Heat
$10,000 to $1 million

In this grouping, downbursts, hailstorms and lightening have the potential to create damage; the extent of damage would vary due to intensity and area of location. These events tend to be localized. The damage could range from a few thousand dollars to a million plus, depending on the severity of the event. No major damage is known to have occurred in the Town related to these types of events

Note: The above figures above are estimates and should be viewed as such. These numbers are only an approximate indication of losses that could potentially occur during a particular disaster in Derry.

Current Development Trends

Since 1980, the Town of Derry has had to cope with the pressure of significant population growth. The Town's population rose from 18,875 in 1980 to 34,021 in 2000, an increase of over 80 percent in 20 years. Since 2000 the Town has seen a slight decline in population to 33,109 in 2010.[14] This is due to a combination of growth management efforts along with the economic recession and housing market crash of the late 2000s. Effects of these events are still being felt in 2015. Development trends during this time have had a significant effect on shaping the Town's current land use.

Development growth was the single most consuming issue facing Derry during the 1980s and 1990s. A large majority of this development growth was residential. This growth substantially altered the face of Derry and its land use. From 2000-2010 this growth slowed significantly and the town saw the least amount of new growth during this time period in the region (4.3 percent), coupled with a slight decline in the population.

More than two-thirds of Derry's land area is in already-developed parcels, most of that in residential use. Only about a quarter of the Town's land area remains in vacant and developable parcels. Even when adding the development potential in unused parcels, there clearly is a declining potential for additional development in Derry.

The distribution of acreage among categories of land use is consistent with typical patterns, with residential use dominating and commercial and industrial land use comprising a small but highly visible share of the total. Perhaps the most striking departure from typical land use patterns is the small share of public land in Derry.

Derry has the capacity for no more than about 6,000 new housing units in addition to the 13,000 units now in the community. A build-out study done for Derry in 2009 suggests that the town could reach full build-out by 2057 under current zoning.

The 2009 build-out report also suggests that the town is unlikely ever to exceed approximately 50,000 persons.

The western section of Derry, closest to Interstate 93, contains the highest proportion of developed land. Commercially and industrially developed lands are located predominantly in the central and west sections of Town, while East Derry's land use character is predominantly lower density residential.

[14] 1980, 2000 and 2010 U.S. Census Bureau data.

Derry's goals for land use and growth are as follows:

The Town of Derry's vision for the future includes an attractive, thriving community that has a strong sense of cohesiveness in all aspects of community and government; a balance between open space preservation and development while maintaining the Town's rural character; improving and maintaining a healthy economy; improving sustainable growth and development practices that contribute to good health, attractiveness and economic development in town; continued preservation of important historical sites and buildings; an increased effort to reduce the residential tax burden; the creation of Derry as a destination and improving upon drawing visitors and increasing economic development at a sustainable rate.

Based on the growth pattern in developed areas, the Town of Derry is not more vulnerable to hazards with one possible exception. More homes are exposed to wildfires due to less open space acreage and the possibility of drought/extreme heat due to warmer weather. By incorporating the polices and goals of the Hazard Mitigation Update 2015, Update, the Town will be in a position to manage future development in relationship to the impact of future natural hazards.

The Town of Derry'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 Derry, both by the Town and Developers.

National Flood Insurance Program

Derry has been participating in the National Flood Insurance Program (NFIP) since April 15, 1981. Flood Insurance Rate Maps and Digital Flood Insurance Rate Maps are effective May 17, 2005, are used for flood insurance purposes and are on file with the Derry Planning Board. The Town of Derry also continues to implement and enforce their Floodplain Development Ordinance (Article VII), 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:

- Participate in NFIP training offered by the State and/or FEMA (or in other training) that addresses flood hazard planning and management
- Establish mutual aid agreements with neighboring communities to address administering the NFIP following a major storm event.
- Address NFIP monitoring and compliance activities
- Revise/adopt subdivision regulations, erosion control regulations, board of health regulations, etc. 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
- Inspect foundations at time of completion before framing to determine if lowest floor is at or above Base Flood Elevation (BFE), if they are in the floodplain
- Require the use of elevation certificates
- Enhance local officials, builders, developers, local citizens and other stakeholders' knowledge of how to read and interpret the FIRM
- Work with elected officials, the state and FEMA to correct existing compliance issues and prevent any future NFIP compliance issues through continuous communications, training and education

Current HAZUS models indicate that there are 203 residential structures located in the 100-year floodplain. As of September 15, 2014 there are 171 NFIP policies in-force in the Town of Derry with $26,613,500 total insurance in-force. There have been 27 paid losses since 1978 totaling approximately $192,970.21 to date[15]. The town has 6 residential repetitive loss properties since 1978 with losses totaling approximately $117,155. 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, Medium-density residential and Medium-high density residential.

[15] NH OEP, March 2015, NFIP Website data.

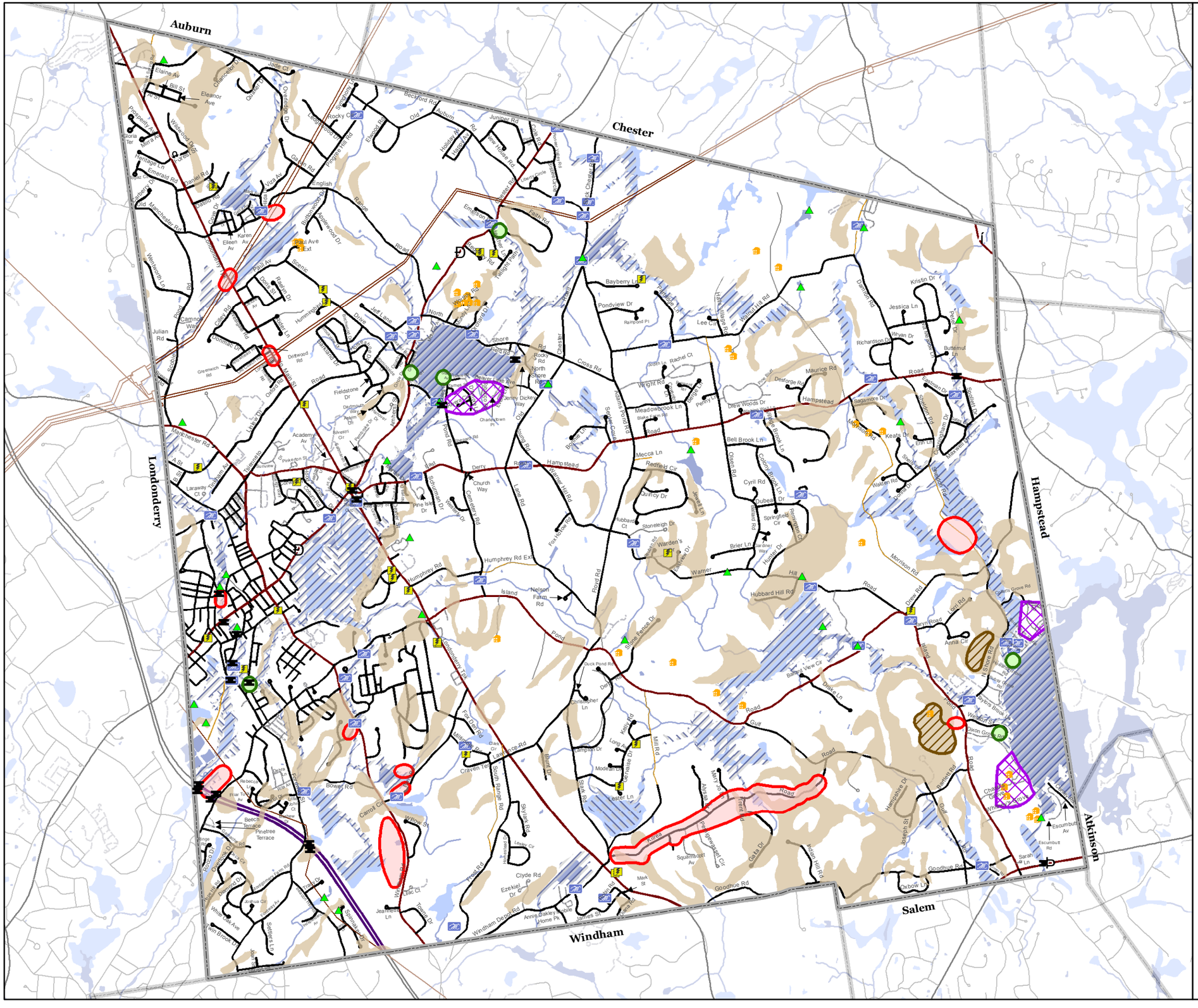
Past and Potential Hazards and Critical Facilities[16]

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

These hazards were identified in a Committee brainstorming session. Additionally, the State of New Hampshire Multi-Hazard Mitigation plan was consulted and any other supporting information was derived from the resources listed in the Appendices. The Past and Potential Hazards Map 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 a limited objective appraisal of a hazard's probability using information provided by relevant sources, observations and trends. Rankings are based on the following:

Low: Less than 1 percent probability in the next 100 years.
Moderate: Between 1 and 10 percent probability in the next year; or at least one chance in the next 100 years.
High: Between 10 and 100 percent probability in the next year; or at least one chance in the next 10 years.

[16]New Hampshire Multi-Hazard Mitigation Plan, Update 2013.



Map #2

Past & Potential Hazards

Town of Derry

Past and Potential Hazards

- Flood Damaged Area
- Lightning
- Isolated Homes
- Dams
- Bridges
- Repetitive Loss Areas
- Erosion/Mudslide
- Wildfire/Fire hazard
- Wind
- Steep Slopes
- 100 Year Floodplain
- 500 Year Floodplain

- Town Boundary
- Parcel
- Utility Lines
- Rivers and Streams

Waterbodies

- Lake/Pond
- Swamp/Marsh

Roads

- Interstate Highway
- State Roads
- Local Roads
- Private Roads
- Not Maintained

0 0.5 1 2 Miles

0 3,000 6,000 12,000 Feet

Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
Individual Community Parcel Data

TheTown of Derry and the SNHPC make no representations or guaranties to the accuracy of the features and designations of this map.

Map produced by SNHPC August 2013.

This map is designed as part of the Towns Hazard Mitigation Plan and is for planning purposes only. It is not to be used for legal boundary determinations or for regulatory purposes.

N W E S

SNHPC

Map #1

Critical Facilities

Town of Derry

CriticalFacilities

- Emergency Fuel Facilities
- Back-up Power
- Emergency Management
- Fire Department
- Hospitals/Ambulance
- Municipal Building
- Police Department
- Post Office
- Shelters
- Public Works Garage
- Radio Towers
- Wastewater Treatment Plant
- Wireless Communication Facilities
- EvacuationRoutes
- Town Boundary
- Parcel
- 100 Year Floodplain
- 500 Year Floodplain

Waterbodies

- Lake/Pond
- Swamp/Marsh
- Rivers and Streams
- Utility Lines
- Steep Slopes

Roads

- Interstate Highway
- State Roads
- Local Roads
- Private Roads
- Not Maintained

0 0.5 1 2 Miles

0 3,000 6,000 12,000 Feet

Data Sources:
Granit Digital Data (1:24,000)
NH Department of Transportation
Individual Community Parcel Data

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N W E S

SNHPC

Table 1 - Hazard Identification and Probability

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

A. Flooding

The Derry 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 Derry developed along the waterways, predominantly the Beaver Lake and Brook area. Past history within Rockingham County indicates that major floods occur during the spring, fall, and winter seasons. Some of the most severe flooding occurs in early spring as a result of snowmelt and heavy rains in conjunction with ice dams. Less frequently, flooding occurs later in the year as a result of localized thunderstorms or hurricanes.[17] Flood events of a magnitude which are expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than one year are considered. For example, the risk of having a flood which equals or exceeds the 100-year flood (1-percent chance of annual exceedance) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10).[18]

Development in Derry is concentrated in the vicinity of Beaver Lake and Brook as well as Hornes Pond and Brook. The following areas have had flooding problems, including erosion and problem culverts:

Table 2 – Flood Hazard Areas in Derry

Area	Type of Damage and Description	Severity	2015 Update
Old Chester Rd at the fire pond	Erosion of pavement	Severe	Debris plugged - debris still causes minor overtopping
Cemetery Rd at Humphrey Rd	Road and shoulder erosion	Severe	Plugged catch basins - shoulder stabilized with erosion stone

[17] Rockingham County, New Hampshire Flood Insurance Study. May 17, 2005. Vol. 1, pg. 10.
[18] Rockingham County, New Hampshire Flood Insurance Study. May 17, 2005. Vol. 1, pg. 13.

Area	Type of Damage and Description	Severity	2015 Update
N High St at Franklin St	Shoulder, road and culvert erosion	Severe	Preliminary engineering work completed for replacement of culvert with a bridge - needs funding
North Shore at Island Pond Rd	Road and shoulder erosion	Severe	Undersized culverts continues to be an issue - needs to be replaced with bridge
East Derry Rd from Pine Isle Dr. to Shurman Dr.	Shoulder erosion	Severe	Isolated incident with no further issues
Pond Rd at the Beaver Lake Bridge	Shoulder Erosion	Moderate	Dam removed December 2012 - may allow for better flow under bridge
Robin Rd (top half)	Road and shoulder erosion	Moderate	Isolated incident with no further issues
Fordway Bridge	Road and shoulder erosion	Moderate	Bridge replaced in 2011 - still located in floodplain with potential for overtopping
Bowers Rd at the Windham Rd end	Road and shoulder erosion	Moderate	Debris and capacity issues - mitigation still needed
Rt. 102 at Jake's Auto Body (between Beaver Rd and Tsienneto Rd)	Undersized culverts	Moderate	State responsibility - still needs mitigation
Hampstead Rd at Damren Rd	Shoulder Erosion	Moderate	State responsibility - still needs mitigation - undersized culverts

Area	Type of Damage and Description	Severity	2015 Update
Warner Hill Rd between Hubbard Hill Rd and Hunter	Shoulder Erosion	Moderate	Potential for moderate issues still, due to steep slopes in the area
Walnut Hill Rd near Partridge Ln	Debris- caused shoulder erosion	Moderate	Isolated incident with no further issues
Old Auburn Rd (south end)	Road and shoulder erosion	Minor	Minor one-time issue
North Shore Rd at Beaver Lake	Road and shoulder erosion	Minor	Minor one-time issue
Tsienneto Rd at the intersection of Route 102	Road and shoulder erosion	Minor	Continues to overtop with minor issues
Florence St at the bridge	Road and shoulder erosion	Minor	Bridge replaced - potential for minor erosion still due to location within a floodplain
Goodhue Rd near Goodhue Extension	Road and shoulder erosion	Minor	Located in floodplain - no improvements made - erosion is minor
Germantown Rd (Private)	Road and shoulder erosion	Minor	Minor issue - Mitigation is a private responsibility
Rockingham Shores Rd (Private)	Road and shoulder erosion	Minor	Minor issue - Mitigation is a private responsibility
South Main St at the bridge	Shoulder erosion	Minor	Minor issues with potential for recurrence
Island Pond Rd between Taryn Rd and Drew Rd	Shoulder Erosion	Minor	Isolated incident with no further issues
Pingree Hill Rd at Old Auburn Rd	Debris clogging catch basin	Minor	Isolated incident with no further issues

Area	Type of Damage and Description	Severity	2015 Update
Rt. 102 at the Chester Town line	Undersized culvert	Minor	State responsibility - still needs mitigation
Rt. 102 at Emerson Dr.	Undersized culvert	Minor	State responsibility - still needs mitigation
Warner Hill Rd - south of Stoneleigh Dr.	Shoulder erosion	Minor	Isolated incident with no further issues
Adams Pond Rd at Old Chester Rd	Shoulder Erosion	Minor	Isolated incident with no further issues
Hampstead Rd at Fire Station	Shoulder Erosion	Minor	Isolated incident with no further issues
Hampstead Rd at Village Brook Ln	Shoulder Erosion	Minor	State Highway - minor issues
Old Auburn Rd at Bisbee Circle	Shoulder Erosion	Minor	Isolated incident with no further issues
Eastman Dr. at Spollett	Dam collapse upstream	Minor	Isolated incident with no further issues
Back Chester Rd at Adam's Pond Dam	Shoulder Erosion	Minor	Dam may be replaced or removed in near future by private entity
Damren Rd near Hidden Valley Campground	Shoulder Erosion	Minor	Isolated incident with no further issues after debris cleanup

The following flooding hazards have been mitigated:

Table 3 – Mitigated Flood Hazard Areas in Derry

Area	Type of Damage and Description	Severity	2015 Update
Back Chester Rd at the Chester Town line	Total road loss and erosion	Severe	Additional culverts put in (1996) - no issues since
Berry Rd at Windham Rd	Shoulder and culvert erosion	Severe	Culvert and headwalls replaced in 2008 - no recurrence since

Collettes Grove at North Shore Rd	Road and shoulder erosion	Severe	Upgraded to a bridge
Dubeau Dr. at East Derry Memorial School (repaired after flooding event)	Culvert failed	Severe	Mitigated with a replacement culvert 2007
Island Pond Rd at Taylor Mill (near intersection of Gulf Rd - mitigated after the May 2006 flood)	Road washed out	Severe	State mitigated with new box culvert to replace degraded stone culvert
Bradford St (Oct. '05 - mitigated after flood event)	Undersized culvert	Severe	Replaced culvert with a bridge
Windham Rd at Strawberry Hill Rd	Shoulder and culvert erosion	Moderate	Culvert replaced in 2010 with no recurrence since
Drew Rd at North Shore Rd	Road and shoulder erosion	Moderate	Culvert overtopped and was replaced with a bridge

Please see Past Hazards GIS map at the end of Section II for exact hazard locations.

All Special Flood Hazard Areas in the Town of Derry are potentially at risk if a 100-year floodplain event occurs. Particular concern should be given to the above listed known problem locations. Please see the Past Hazards GIS map at the end of Section II for the locations and extent of the flood hazard areas in the Town of Derry, 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 one 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).[19]

The following potential hazard areas for bridges are of particular concern and may pose a flooding risk:

- ***North Shore Rd near Beaver Lake Park (Jenney Dickey Brook)***
- ***Bradford Street Bridge***
- ***Highland Ave Bridge***
- ***South Ave Bridge***
- ***West Broadway Bridge***
- ***Maple Street Bridge***
- ***Birch Street Bridge***
- ***East Derry Road at Thornton Street***
- ***Fordway Extension Bridge***

High probability for flooding to occur and cause damage in Derry's floodplain

2. Hurricanes

In 1938, a hurricane hit the Town of Derry along with many other communities in Southern New Hampshire. Since 1635, a total of 14 recorded hurricanes have reached the state: during 1635, 1778, 1804, 1815, 1869, 1938, 1954(2), 1960, 1985, 1991, 1999, 2011 and 2012. Hurricanes Carol and Edna caused considerable damage during August and September 1954 in Derry, and the 1938 hurricane had a measurable impact on the town. The most recent hurricanes were: August 2011 – Irene and October 2012 - Sandy. In these cases, trees came down, power lines came down, flooding occurred, but there was not a lot of structural damage. The greatest risk is during the months of August and September.

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

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

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

All areas of Derry are at risk if a hurricane reaches Rockingham County, NH.

Moderate probability for hurricanes to occur and cause damage in Derry

3. Debris-impacted infrastructure and river ice jams

Historically, many floods in Derry 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 map.

If flooding occurs in the Town of Derry, 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 Derry, though silt and soils are also a problem for the Town during hazard events. The most recent debris-impact event happened during the Mother's Day flood of 2006 at North High and Folsom Rd. There is potential in rural areas of Derry for beaver dams to cause debris-related flooding in small streams and rivers.

All Special Flood Hazard Areas in the Town of Derry are potentially at risk if there is an ice jam or debris-impacted infrastructure. Please see the Past Hazards GIS map at the end of Section II for the locations and extent of the flood hazard areas in the Town of Derry, which are susceptible to this hazard should it occur.

Moderate to high probability for debris-impacted infrastructure or ice-jams to occur and cause damage in Derry

4. Erosion and mudslides

Stream bank erosion may eventually result in mudslides. Land in Derry 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 and extent of steep slopes in Derry are shown on the Critical Facilities and Past and Potential Hazards GIS maps.

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. In Derry, most erosion occurs in **streambeds** due to flooding, but on **Island Pond Road beyond Drew Road**, erosion from private property affects roadways.

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

5. Rapid snow pack melt

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

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.

Moderate probability for rapid snow pack melt to occur and cause damage in Derry

6. Dam breach or failure

All class L and S dams have the potential to cause damage if they breach or fail. Adams Pond Dam presents Derry's most significant problem, though Harantis Lake Dam in Chester is also a concern for Derry. A dam breach at Beaver Lake and East Derry Rd necessitated repairs in 2013.

The Town of Derry has no Class H "high hazard potential" dams, five Class S "significant hazard potential" dams, five Class L "low hazard potential" dams, 12 Class NM "non-menace hazard potential" dams, and a number of "inactive" dams. Active dams are shown on the GIS maps. The dam classes are defined in Appendix A. Please see the Past and Potential Hazards Map at the end of Section II for dam locations.

All immediate areas surrounding dams and Special Flood Hazard Areas in Derry would be impacted by a dam breach.

The following Dams are potential hazard areas and are of particular concern:

- ***Meadow Dam***
- ***Hood Pond Dam***
- ***Adam's Pond Dam (Private)***
- ***Harantis Lake Dam (Private) in Chester***
- ***Stickney Dam at Island Pond (Private)***
- ***Wastewater Treatment Plant***
- ***Coles Marsh Dam (Beaver Dam)***

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

7. Localized Flooding

Shallow, localized flooding problems outside of the Special Flood Hazard Areas (SFHA) can result from ponding, poor drainage, inadequate storm sewers, clogged culverts or catch basins, sheet flow, obstructed drainage ways, sewer backup, or overbank flooding from small streams. These kinds of flood events can occur anywhere in a community.[20]

Derry has approximately 100 detention ponds that are designed for 50-year flood hazards. These ponds do not pose a significant risk to the community, but have the potential to cause localized flooding problems.

Localized flooding problems would impact the immediate area around them only, but all of Derry is susceptible to this type of hazard.

Low probability for localized flooding to occur and cause damage in Derry

B. Wind

The most frequent problem and risk associated with all types of wind storms is downed trees and secondary impacts of their falling, including downed power lines. In February 2010, New Hampshire experienced a strong windstorm that was a Presidential Declared Disaster, but it was classified as a "severe winter storm" (FEMA, "Federally Declared Disasters by Calendar Year").

The February 2010 windstorm, classified as a "severe winter storm," is the only recorded storm with severely high winds from 1950 to 2013, which was not associated with one of the specific wind event types as identified below (NOAA Climatic Data Center). The Town had a significant number of downed trees, including one that caused major damage to a house, essentially cutting it in half. There was also major damage from downed trees sustained in the Collette's Grove

[20] FEMA. Reducing Damage From Localized Flooding. June 2005.

area of Town. In addition, there was a major power outage from the storm lasting multiple days for complete restoration.

Other notable wind-related storm damage in the Town of Derry includes:

- The "No name storm" on October 31, 1991, caused much damage;
- Downed tree from a windstorm caused sustained damage to a house in the in the Beaver Lake and Grandview area in 2009.

The Derry Hazard Mitigation Committee reviewed these other potential problems 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.

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

All areas of Derry are at risk if a hurricane reaches Rockingham County, NH.

High probability for hurricane force winds to occur and cause damage in Derry

2. Tornadoes

All areas of Derry are potentially at risk for property damage and loss of life due to tornadoes. Since 1950 there were 11 known tornadoes that occurred in Rockingham County ranging from 0-3 on the Fujita scale (NOAA, Storm

Prediction Center (SPC) historical tornado data).[21] None of these are known to have had any effect in Derry, although there was a significant tornado that affected the Town of Deerfield nearby on July 24, 2008, resulting in one fatality. That tornado traveled from Deerfield 50 miles northeast to Ossipee, NH.

Tornadoes are measured using the Enhanced Fujita Tornado Damage Scale, as seen in the following table (National Oceanic and Atmospheric Administration).

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 Derry are at risk if a tornado reaches Rockingham County, NH.

Low probability for tornadoes to occur and cause damage in Derry

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

[21] Tornado History Project. http://www.tornadohistoryproject.com/tornado/New-Hampshire/Rockingham/map. 04-02-14.

winds blowing in from the ocean ahead of the storm and over the coastal areas."[22] Hazards from nor'easters include icing and heavy snows which cause downed trees and power lines to go down. Nor'easters are characterized similarly to blizzards, with snow and/or blowing snow reducing visibility to 1/4 mile or less for three hours or longer AND Sustained winds of 35 mph or greater or frequent gusts to 35 mph or greater.[23] Recent Nor'easters to affect the Town of Derry include:

- March 14 – 31, 2010 storms and flooding: There were severe storms and flooding (50-100 year recurrent interval) in Hillsborough and Rockingham County.

- August 26 - September 6, 2011 Hurricane Irene: This storm produced heavy rains and caused substantial damage in New England. The storm produced substantial damage in Vermont.

- October 31, 2011 Halloween Storm: Heavy early snow storm caused extensive power outages.

- October 29, 2012 Hurricane Sandy: This storm, like Hurricane Irene, caused a Presidential Disaster Area to be declared. Hurricane Sandy created a strong storm surge and heavy rains across New England, NYC and New Jersey.

- February 8-10, 2013: Major winter snowstorm (declared federal disaster)

- November 2014 Thanksgiving Day: Ice storm and major snowstorm.

- January 26 through February 23, 2015: Several major snow events.

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

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

[22] NOAA. National Weather Service. Glossary. http://w1.weather.gov/glossary/index.php?letter=n. 02-06-14.
[23] 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.

4. Downbursts

"A downburst is a severe localized wind blasting down from a thunderstorm. These 'straight line' winds are distinguishable from tornado activity by the pattern of destruction and debris. 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."[24]

The town has experienced high concentrated winds. Wind shears at Beaver Lake snapped 18-inch diameter trees in 2001. This causes problems with communication towers, and large trees adjacent to power lines also caused problems.

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

Low probability for downbursts to occur and cause damage in Derry

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.[25] The average number of flashes in New Hampshire from 1997-2011 was 23,360.[26]

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 provides a measurement of how large and significant a hazard can become. Severe storms such as thunderstorms are usually responsible for lightning strikes in southern NH. Lightning fires are unpredictable and they are most dangerous when strikes occur in rural areas with

[24] 2013 State of New Hampshire Multi-Hazard Mitigation Plan.
[25] NOAA. National Weather Service. Glossary. http://w1.weather.gov/glossary/index.php?letter=n. 02-06-14.
[26] 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.

limited fire suppression access. 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 table below.

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 five-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 five-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 were fishing, soccer and other outdoor activities. NH seems 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 Multi-Hazard Mitigation Plan, 2013)

The northeast part of Town is the most vulnerable. The treatment plant, the tall white pines at Beaver Lake, the cell tower at Central Fire Station, the Police Station communication towers, and the Warner Hill tower are also especially vulnerable. ***Between 2010 and 2013 there were eight reported incidences of lightning strikes in Derry and numerous other events associated with lightning.***[27]

[27] Data provided by Derry Fire Department. June 2013.

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

Low to moderate probability for lightning to occur and cause damage in Derry

C. Wildfire

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

1. Wildfires

Historically, large NH wildfires run in roughly 50-year cycles. The increased incidence of large wildfire 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."[28] 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.

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. The Table below shows the National Wildfire Coordinating Group (NWCG) Size Fire Classification.

National Wildfire Coordinating Group (NWCG) Size Fire Classification	
Class A	1/4 acre or less
Class B	More than 1/4 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

The Wildland Urban Interface (WUI) Hazard Scale by the U.S. Department of Commerce National Institute of Standards and Technology (NIST) is a new rating system that evaluates several characteristics of wildfires around two factors, Ember Exposure (E-) and Fire Exposure (F-) threats. The 1 to 4 scale of exposure helps emergency responders recognize the potential scale of danger they face before suppressing a wildfire that has begun to spread into occupied lands. The WUI E- and F- Scales are not currently recognized by the National Fire Protection Association (NFPA). The WUI Hazard Scale can measure the potential magnitude of how a wildfire can devastate buildings and threaten people.

[28] New Hampshire Multi-Hazard Mitigation Plan, Update 2013.

The Haines Lower Atmosphere Stability Index maintained by the U.S. Wildland Fire Assessment System (WFAS) is a regularly used wildfire rating system. The index measures the stability and dryness of the air over a fire to determine the potential for large fire growth. The Haines Index values can range between 2 to 6. The drier and more unstable the lower atmosphere is, the higher the index (highest potential for large fires). The table below displays the Haines Index, which measures the potential for existing wildfires to grow into larger wildfires.

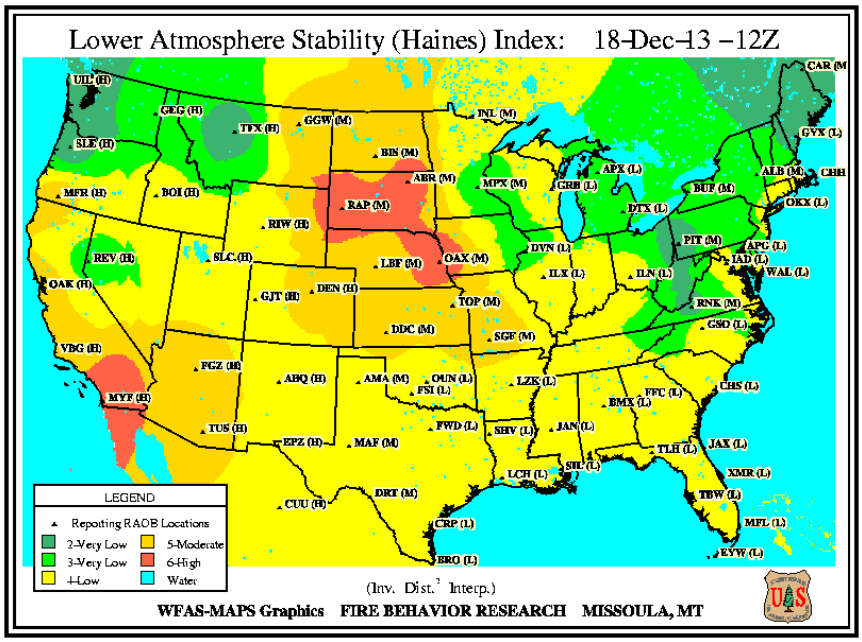
Haines Index

Haines Rating for Lower Atmosphere	Large Fire Growth Potential	Description	WFAS Daily Map Color
2	Very Low Potential	Moist Stable Lower Atmosphere	Teal
3	Very Low Potential	4. ____	Green
4	Low Potential	5. ____	Orange
5	Moderate Potential	6. ____	Dark Orange
6	High Potential	Dry Unstable Lower Atmosphere	Red

Source: U.S. Wildland Fire Assessment System (U.S. WFAS)

The WFAS generates daily Lower Atmosphere Stability (Haines Index) Maps for the lower atmosphere for emergency responders to ascertain the level of potential wildfire escalation leading to extreme wildfires. The below figure displays an example daily Haines Index Map of the United States. In the southern NH region, the wildfire escalation conditions are considered to be Very Low Potential to Low Potential for that day. The Haines Index Map is a graphical depiction of the measurement of the potential for existing wildfires to grow into larger wildfires. Several other maps generated on WFAS provide information for weather, drought, and fire monitoring which help enable local responder preparedness.

Haines Index Lower Atmosphere Stability Map (Daily)

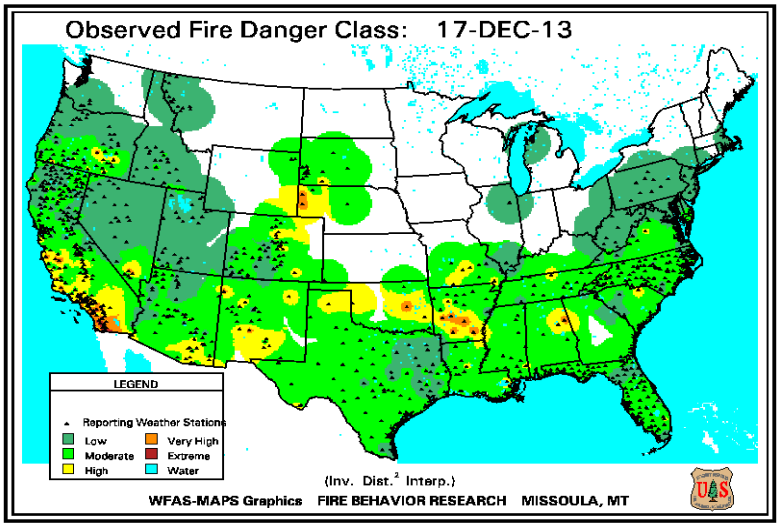


Source: U.S. Wildland Fire Assessment System (US WFAS), December 18, 2013

Other measurements of how severe a fire could become in Derry are available. Drought conditions can be found in the Palmer Drought Severity Index (PDSI), which measures the balance between moisture demand and moisture supply in the form of cumulative monthly moisture conditions. There is the Keetch-Byram Drought Index designed specifically for fire potential assessment, a measurement of cumulative moisture deficiency relating to flammability of organic material in the ground. The U.S. Drought Monitor measure the weekly drought intensity of NH counties (and nationwide) on an intensity scale of DO (Abnormally Dry) to D4 (Exceptional Drought). When conditions are dry, fires are more likely to start and continue burning.

The National Fire Danger Rating System (NFDRS) on WFAS is another fire rating system that considers current and future predicted weather, fuel types, and fuel moisture reported by reporting stations. Values in between the stations are estimated and a map is generated for the Observed Fire Danger Classification in a particular area. See the map below as an example.

Fire Danger Classification Map (Daily)



Source: National Fire Danger Rating System (NFDRS)

The National Weather Service (NWS) has an online National Fire Weather mapping tool that displays selections of different criteria such as Fire Weather Watches, Large Fires, and NWS Fire Weather Zones. In the future, this online map will identify the location of Fire Weather Watches, Red Flag Warnings, or Hazardous Weather outlooks across the state of NH and northeast. This map will measure the magnitude of weather conditions contributing to the development of wildfires which might damage Derry.

New Hampshire has 350-400 wildfires during an average year and 95 percent of these fires are caused by humans and five percent are caused by lightning.[29] The vast number of these fires occur in the most populated areas like Hillsborough and Rockingham Counties. These fires are suppressed quickly with an average fire size of less than one acre. The primary cause of wildfires in NH continues to be escaped debris burns, with miscellaneous causes (power lines, fireworks, etc.) and campfires being the top three. Average acres burned per year in NH are between 200-250 acres and months of April and May experience the highest number of fire starts with the period of October and November following with the highest number. These time periods are vulnerable because the predominant forest type is hardwood trees, so in spring before they green up and the late fall after the leaves have dropped. It normally only occurs with an extended period of hot, dry weather conditions. The total number of fires started has decreased between 2006 and 2011.[30]

[29] NH Multi-Hazard Mitigation Plan, 2013.
[30] NH Multi-Hazard Mitigation Plan, 2013.

Several areas of the Town of Derry are susceptible to wildfires, including the following areas: Kilrea Road; Windham Road; Kendall Pond Road; power lines off Route 28 Bypass; Weber Forest area; and the swamp off Berry Road. Areas where off-highway recreational vehicle sparks can cause fires are susceptible. All new developments are also at risk (when trees are cut down, soil dries, leaving dead grass), and there is a moderate risk for homes located within forested areas.

The following areas sustained damage from wildfires in the past 10 years and are susceptible to them again in the future:

- Strawberry Hill
- English Range Rd (Power Lines)
- Arrowhead Rd
- Steven Dr.
- Kilrea Rd
- Island Pond Rd at the ledges

The location and extent of these areas are identified on the Past and Potential Hazards GIS map at the end of Section II.

Moderate probability for wildfires events to occur and cause damage

2. Urban fire hazards

Derry, with a population of 32,988 (NH OEP 2013 population estimate) and 931 persons per square miles is the second largest and densest town in the Southern New Hampshire Planning Commission Region. This places Derry at an increased risk of wildfires. A conflagration in 1960 destroyed 13 structures, including Chelmsford Shoe. Today, the shoe factory at Elm and Maple streets is susceptible to a wildfire, along with vacant and uninhabited buildings on Broadway in the downtown area.

All areas of Derry are at risk for urban fires, especially the west urbanized area.

Low to moderate probability for urban fires to occur and cause damage in Derry

3. 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 Derry with isolated residential areas and individual residential units. The location and extent of these areas is identified on the Past

and Potential Hazards Map, including homes on Jackman Rd at Rockingham County Recreational Trail, Waterman Hill Road and Morrison Road.

Other areas of isolated homes include:

- Featherbed Lane
- Walnut Hill Rd
- Halls Village Rd
- Worthley Rd
- Island Pond Rd
- Whitneys Grove

Low probability for isolated homes to be damaged in Derry

D. Ice and Snow Events

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

1. Heavy snowstorms

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 powerlines 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.[31] Most recently the Town experienced several Nor'Easters during the winters of 2013-2014 and 2014-2015.

All areas of Derry are potentially at risk for property damage and loss of life due to heavy snows, especially high elevations in Town.

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

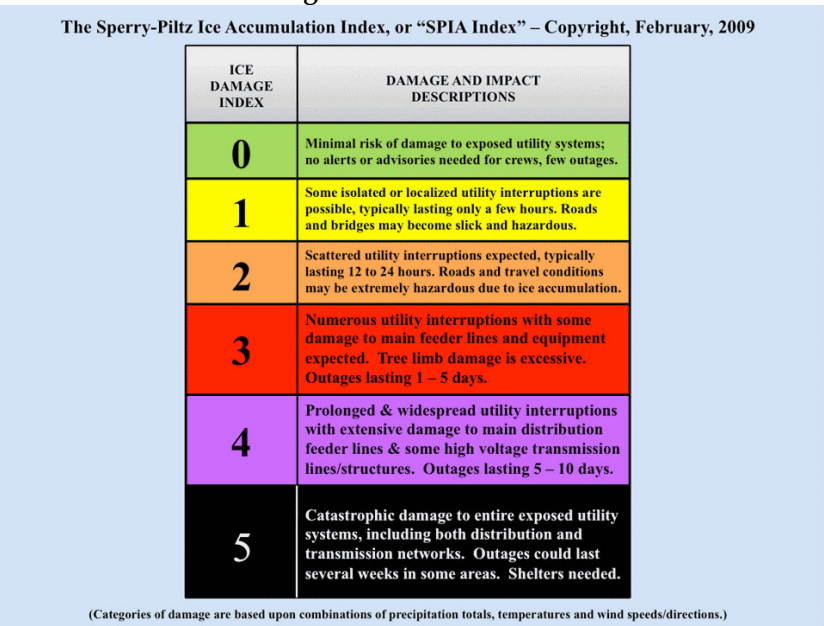
2. Ice storms

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

[31] 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.[32] 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.[33]

Figure 1 – SPIA Index



A large storm on January 15, 2007 knocked out power to the town for three days. With five utility companies in town, this poses coordination issues when there is a power loss. Also between 2004 and 2009, in general, there was more ice and less snow than usual.

Derry and the rest of New Hampshire and much of the Northeast experienced an intense ice storm on 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 spokesman Matt Chagnon went on to say

[32] NOAA. National Weather Service. Glossary. http://w1.weather.gov/glossary/index.php?letter=n. 02-06-14.
[33]Sidney K. Sperry, SPIDI Technologies, LLC. http://www.spia-index.com. 03-26-14.

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."[34] The 2008 ice storm is believed to be the worst ice storm ever recorded in New Hampshire.

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

Moderate to High probability for ice storms to occur and cause damage in Derry.

3. Hailstorms

Hailstorms are characterized by showery precipitation in the form of irregular pellets or balls of ice more than five mm in diameter, falling from a cumulonimbus cloud.[35]

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

[34] Sullivan, Margo. *State, power companies explore ice storm response*. 12/29/08. http://www.eagletribune.com/punews/local_story_364030134.html

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

2	Hen Egg Size
2 ½	Tennis Ball Size
2 ¾	Baseball Size
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)

All areas of Derry would potentially be at risk were a hailstorm to occur.

Low probability for hailstorms to occur and cause damage in Derry

E. Earthquakes

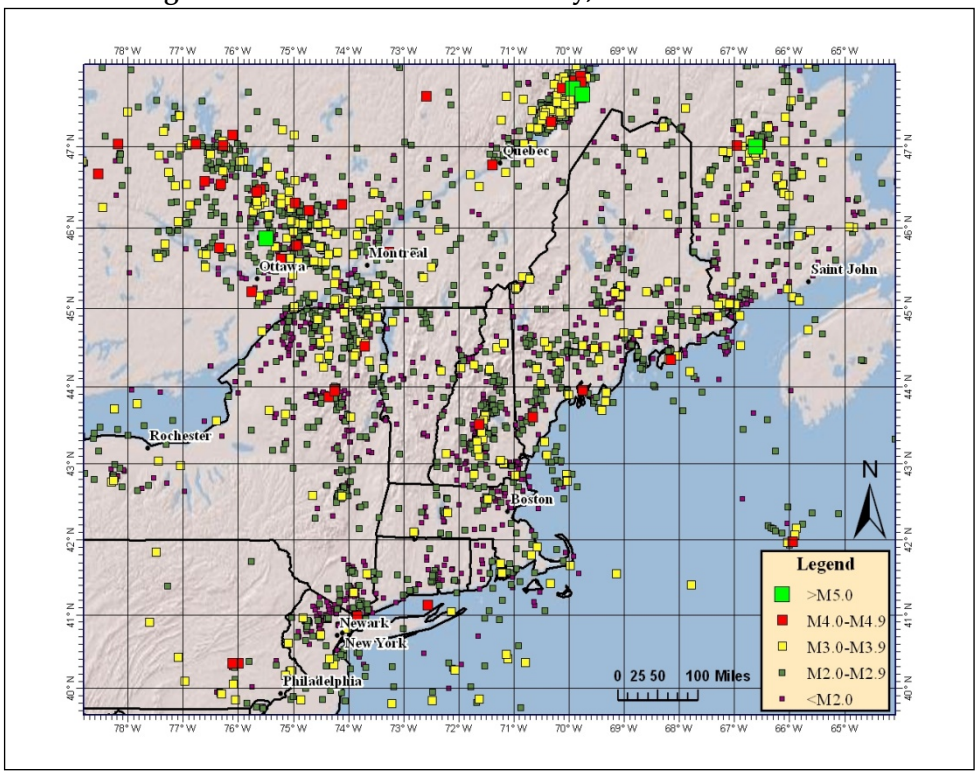
The Derry Hazard Mitigation Committee reviewed the following kinds of hazards related to seismic events:

1. Earthquakes

"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."[36] In general, New England is considered to have a moderate seismic vulnerability but a high seismic risk because of our built environment. As a tremor in Town during 2002 showed, all areas of Derry are potentially at risk for property damage and loss of life due to earthquakes. If a tremor does occur, six miles of transit pipeline are at risk. In October 2012 the Town of Derry also felt a magnitude 4.0 earthquake with an epicenter close to Hollis Center, Maine.

[36] State of New Hampshire Multi-Hazard Mitigation Plan, 2013.

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 proven. 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.[37]"

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

[37] 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.

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 area of New Hampshire, through the Deerfield area, 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.[38]

The most significant historic earthquakes in New Hampshire occurred December 20 and 24, 1940 (epicenter just west of Whittier, NH, 5.5 Richter scale magnitude).

All areas of Derry 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 in Derry

2. Landslides

"'The sliding of a mass of soil, detritus or rock on or from a steep slope.' More specifically, a landslide is the downward movement of slope forming materials reacting under the force of gravity including: mudflows, mudslides, debris flows, rockslides, debris avalanches, debris slides and earth flows. …Landslides may be formed when a layer of soil atop a slope becomes saturated by significant precipitation and slides along a more cohesive layer of soil or rock."[39]

[38] 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.

[39] 2010 State of New Hampshire Multi-Hazard Mitigation Plan.

The location and extent of areas of steep slopes in Derry are shown as part of the Past and Potential Hazards Map at the end of Section II. These areas are at risk for landslides.

Low probability for landslides to occur and cause damage in Derry

F. Other Hazards

The Derry 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.[40]

All areas of Derry 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 Derry

2. Drought

New Hampshire has been under several drought warnings, including drought emergencies in the past. 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 wildfire risk.

Drought conditions can be found in the Palmer Drought Severity Index (PDSI), which measures the balance between moisture demand and moisture supply in the form of cumulative monthly moisture conditions. There is the Keetch-Byram Drought Index designed specifically for fire potential assessment, a measurement of cumulative moisture deficiency relating to flammability of organic material in the ground. The U.S. Drought Monitor measure the weekly drought intensity of NH counties (and nationwide) on an intensity scale of DO (Abnormally Dry) to D4 (Exceptional Drought).

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[40] ***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

New Hampshire breaks the State into five Drought Management Areas, including three along the southern portion of the State, and Derry is in the Southern Interior Area (i.e. Hillsborough and Rockingham Counties). Federal agencies have coordinated to develop the National Drought Monitor which classifies the duration and severity of the drought using precipitation, stream flow, and soil moisture data coupled with information provided on a weekly basis from local officials. The NH Drought Management, part of DES, utilizes these maps to help determine which areas are the hardest hit. NH DES also maintains a "Situation Summary" where precipitation, stream flow, groundwater level, lake level and fire danger data from all over the state can be accessed to assess if areas in NH are being impacted by drought.[41]

There are five magnitudes of drought in the NH State Drought Management Plan ranging from Exceptional to Extreme, Severe, Moderate and Abnormally Dry. In regard to recurrence intervals there have been 1 year recurrence intervals for the Moderate level drought, 2 year recurrence interval for the Severe level drought, 9 years for the Extreme level and greater than 25 years for the Exceptional level in the Southern Interior (i.e. Rockingham County) Area. Between the years of 1950-2010 the following years have had an Extreme drought in this Area: 1957, 1963, 1965, 1966, 1970 (no data in the 1970s-1990s), 2001 and 2010. (NH Hazard Mitigation Plan, 2013).

Three systems in Town have restrictions prohibiting outdoor watering, at Autumn Woods, Willow Bend and the Gervaise Drive neighborhood New Hampshire has been under several drought warnings, including a drought emergency, during the past ten years.

All areas of Derry would be affected by a drought, with particular risk noted at any pasture land in high elevations and former farms.

Moderate probability for drought to occur and cause damage in Derry

3. Extreme heat

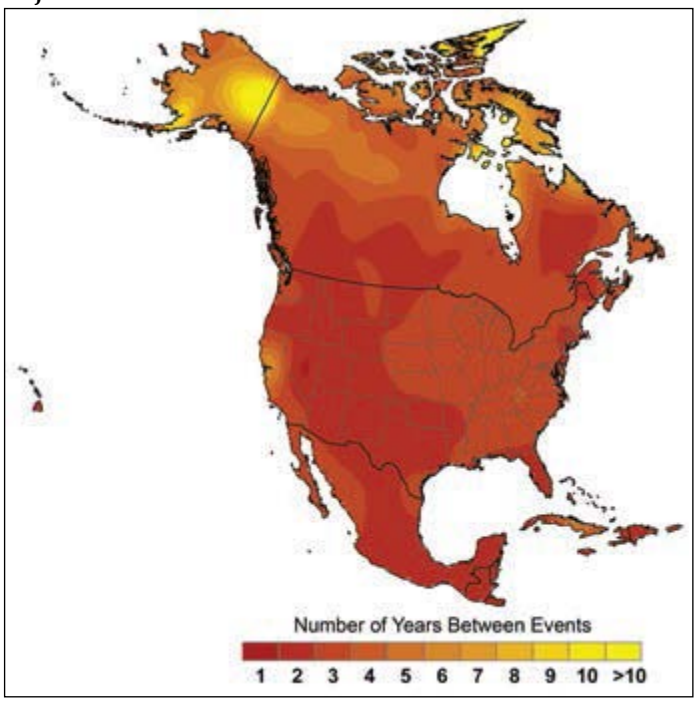
Extreme heat is an occasional and short-lived event in Southern New Hampshire. While there have been no extended periods of extreme heat in Derry, New Hampshire has seen a significant increase in mean annual temperature over the past 50 years.[42] By the end of this century, an extreme heat event that currently occurs once every 20 years could occur every two to four years in most parts of the

[41] NH Multi-Hazard Mitigation Plan, 2013

[42] Hubbard Brook Ecosystem Study. November 2006.
http://www.hubbardbrook.org/research/climate/vadeboncoeur06.htm

country. This example is based on how the climate is expected to change under a high greenhouse gas emissions scenario (A2; see page 7 for a description of scenarios).[43]

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.

All areas of Derry 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;
- Possible railroad derailment due to unstable rails and extreme expansion.

Low probability for extreme heat to occur and cause damage in Derry

4. Aircraft emergency

The Town has participated in planning for this severe type of emergency, since Derry is in the direct flight path of Manchester-Boston Regional Airport. An Aircraft Emergency Mitigation Plan has been developed and is being utilized by

[43] 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.

the airport for aircraft emergencies. A Regional response plan is needed so surrounding towns can work with the airport to plan for aircraft emergencies that might affect them.

All areas of Derry would be at risk in the event of an aircraft emergency.

Low to moderate probability of an aircraft emergency to occur and cause damage

5. Haz-Mat transportation

Transportation of hazardous materials across town roads presents a critical threat to the Town of Derry. The Town of Derry complies with State regulations regarding hazardous materials as well as participates in the Southeastern New Hampshire Hazardous Materials District.

All areas of Derry would be at risk in the event of a Haz-Mat transportation emergency.

Low to Moderate probability of Haz-Mat transportation emergency to occur and cause damage with the proximity of I-93 and the emergency bypass ways through Derry.

GIS (Geographic Information Systems) generated maps have been prepared to illustrate past hazards, potential hazards and critical facilities as identified by the Derry Hazard Mitigation Plan Committee. These maps are included at the end of this section, following the summary listings of "Critical Facilities" and "Areas at Risk."

Town of Derry, 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.

Police Department
- 1 Municipal Drive (T)

Emergency Management
- 14 Manning Street (T)

Emergency Fuel Facilities
- 131 East Broadway (F, T)
- NH Department of Transportation, Kendall Pond Road (T)

Derry Wastewater Treatment Plant
- Transfer Lane, off Fordway (S, T)

Derry Municipal Building
- 14 Manning Street (T)

Fire Department
- 131 East Broadway (F, T)
- 190 Warner Hill Road (T)

Derry Police Department, 1 Municipal Drive

Derry Municipal Building, 14 Manning Street

Fire Department (cont.)

- 74 Hampstead Road (T)
- 1 English Range Road (T)

Post Office

- 24 Tsienetto Road (T)
- 50 East Derry Road (T)

Shelters

- West Running Brook School, 1 West Running Brook Lane (T)
- Ernest P. Barka Elementary School, 21 Eastgate Road (T)
- Pinkerton Academy,
- 5 Pinkerton Street (T)
- Hood Middle School,
- 5 Hood Road (T)
- Derry Village Elementary School, 28 South Main St (T)
- East Derry Memorial Elementary School, 18 Dubeau Drive (T)
- South Range Elementary School, 1 Drury Lane (S, T)
- Veterans Hall,
- West Broadway (T)
- Marion Gerrish Community Center, 39 West Broadway (T)

Evacuation Routes

- Hampstead Road- E. Derry (S, T)
- Windham Road (T)
- Kendall Pond Road (F, T)
- Island Pond Road (F, S, T)
- North High Street (T)
- U.S. I-93 (T)
- NH Route 28 (F, S, T)
- NH Route 28 Bypass (F, S, T)
- NH Route 102 (F, T)
- NH Route 111 (T)

Derry Fire Department, 131 East Broadway

West Running Brook School,
1 West Running Brook Lane

Pinkerton Academy, 5 Pinkerton Street

Derry Village Elementary School,
28 South Main Street

Bridges
Bridges are shown on the Critical Facilities Map at the end of this section.

Hospitals/Ambulance
- Parkland Medical Center (T)
- Catholic Medical Center, Manchester
- Elliot Hospital, Manchester, Trauma Center
- Southern New Hampshire Medical Center, Nashua

Hazardous Materials Facilities
See separate listing at the end of this section.

Initial Response Spill Information
Southeast New Hampshire Hazardous Material Mutual Aid District

Wireless Communication Facilities (Cell Towers)
- 46 Floyd Road (T)
- 131 East Broadway (F, T)
- Kendall Pond Road (T)
- 10 Beacon Hill Road (T)
- Warden's Drive (S, T)
- 66 Kendall Pond Road (S, T)
- 78 Warner Hill Road (S, T)

Radio Towers
- Warner Hill – two, private and state owned (T)
- Radio Station WDER,
- 8 Lawrence Lane (T)

Emergency Communication Towers
- Gaita Drive (T)
- Kendall Pond Road (T)
- Heritage Lane (T)
- Pinkerton Academy (T)
- Parkland Medical Center (T)

Back-up Power Available At:
- Pinkerton Academy Field House, North Main Street, 437-5200 (T)
- Veterans Hall, 31 West Broadway (portable), 432-6136 (T)
- Derry Fire Department Headquarters, 131 East Broadway, 432-6121 (F, T)
- Derry Fire Dept. Station 2, 190 Warner Hill Road, 434-5738 (T)
- East Derry Fire Station 1, 74 Hampstead Road, 432-9559 (T)
- East Derry Fire Station 2, 1 English Range Road, 432-9559 (T)
- Derry Municipal Center, 14 Manning Street, 432-6100 (T)
- Derry Police Department, 1 Municipal Drive, 432-6111 (T)
- Derry Public Works Highway Garage, 40 Fordway, 432-6146 (S, T)
- Parkland Medical Center, 1 Parkland Drive, 432-1500 (T)
- Integrated Health Services, 8 Peabody Road, 434-1566 (T)
- Aurora Nursing Home, 20 Chester Road, 432-3801 (T)
- Beaver Lake Lodge, 38 North Shore Road (lights only), 434-5200 (T)
- West Running Brook School,
- 1 West Running Brook Lane (lights only), 432-1250 (T)

Areas at Risk

The following are emergency equipment or areas *not needed* to respond at the time of a natural disaster, but which could 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.

Public Water Systems

- Annie Oakley Mobile Home Park, Windham Depot Road (T)
- Autumn Woods, English Range Road (T)
- Barkland Acres Associates, Barkland Acres (T)
- Beaver Lake Mobile Home Park and Cottages
- Beaver Lake Avenue (F, T)
- Big W (The), Route 28 Bypass (T)
- Calvary Church & School, 145 Hampstead Road (T)
- Circle of Friends School, 49 South Main Street (T)
- Derry Water Dept., Route 28 (T)
- Drew Woods, Olson Road, East Derry (T)
- East Derry Memorial Elementary School, Dubeau Drive (T)
- Frost Residents Co-Op, 139 Rockingham Road (S, T)
- Hidden Valley Campground, 81 Damren Road (S, T)

Calvary Church and Bible School, 145 Hampstead Road

Circle of Friends School, 49 South Main Street

- Hillside Plaza, Route 28 (T)
- Hubbard Hill, Warner Hill Rd (S, T)
- Kershaws Quick Stop, 158 Rockingham Road (T)
- Maple Haven, Damren Road (T)
- Meadowbrook, Adams Pond Road (T)
- Morningside Drive Water Assoc., Morningside Drive (S, T)
- New Leis Garden, Route 28 (T)
- Old Coach Village, 3 Ezekiel Road (S, T)
- Over the Rainbow Preschool, 223 Rockingham Road (T)
- Peaceful Acres, 100 Rockingham Road (T)
- Peu/Farmstead Acres, Senter Cove Road (T)
- Peu/Maple Hill Acres, Bedard Ave/Route 28 (S, T)
- Peu/Oakwood Terrace, Fordway Extension (T)
- Promises to Keep, 199 Rockingham Road (T)
- Rand Shepard Hill, Londonderry Lane/Route 102 (T)
- Redfield Estates, Redfield Circle (T)
- Richardson Estates, Richardson Drive (T)
- Robert Frost Farm, Route 28 (S, T)
- Robert Frost Motor Inn, Route 28 (T)
- Willow Bend, Willow Street (S, T)
- Woodlands at Derry, Gervaise Drive (T)

Hidden Valley Campground, 81 Damren Road

Kershaw's Quick Stop, 158 Rockingham Road

Over the Rainbow Preschool, 223 Rockingham Road

Promises to Keep, 199 Rockingham Road

Sewer Pumping Stations

- Main Pump Station, Transfer Lane (S, T)
- Effluent Pump Station, Transfer Lane (S, T)
- A Street Pump Station, A Street (T)
- Beaver Lake Pump Station Number 1, Route 102 (F, T)
- Beaver Lake Pump Station Number 2, Orchard Drive (F, T)
- Beaver Lake Pump Station Number 3, North Shore Rd (F, T)
- Beaver Lake Pump Station Number 4, Pond Road (F, T)
- Derry Village Pump Station, East Broadway (T)

Private Pump Stations

- Aladdin Village Pump Station, Aladdin Circle (T)
- Kendall Pond Industrial Site, Kendall Pond Road (F, T)

Wastewater Treatment Plant

- 40 Fordway (S, T)

Electrical Power Substations

- Scobie Pond Road Substation (T)
- Ash Street Substation (F, X, T)

Major Highways/Roadways

- U.S. I-93 N.H. (T)
- Route 28 (F, S, T)
- NH Route 28 Bypass (F, S, T)
- NH Route 102 (F, T)
- NH Route 111 (T)
- NH Route 121 (T)

Schools

- Derry Village Elementary School, 28 South Main (T)

Robert Frost Farm Historic Site, Route 28

Robert Frost Motor Inn, Route 28


Wastewater Treatment Plant pond, Transfer Lane


Ash Street Substation

- East Derry Memorial Elementary School, 18 Dubeau Drive (T)

- Ernest P. Barka Elementary School, 21 Eastgate Road (T) 37 Highland Avenue (T)
- Gilbert H. Hood Middle School, 5 Hood Road (T)
- Grinnell Elementary School, 6 Grinnell Road (T)
- South Range Elementary School, 1 Drury Lane (S, T)
- West Running Brook Middle School, 1 West Running Brook Lane (T)
- Calvary Christian School, 145 Hampstead Road (T)
- St. Thomas Aquinas School, Crystal Avenue (T)
- Pinkerton Academy, 5 Pinkerton Street (T)

Child Care Centers

- At Home Learning Adventures, 23 Wentworth Lane (T)
- Circle of Friends School & Daycare, 49 South Main (T)
- Clubhouse Day Care, 13 Peabody Road (T)
- Creative Learning Childcare, 6 West Broadway, Unit S1 (T)
- Derry Boys and Girls Club, 40 Hampstead Road (T)
- Derry Head Start, 1 Hood Road (T)
- Derry Montessori, 65 East Broadway (T)
- Explore and Create Family Daycare, 6 Bedard Avenue (T)
- Goddard School, 12 Tsienneto Road (T)
- Kris's Daycare, 10 Windham Road (T)
- Over the Rainbow Preschool, 223 Rockingham Road (T)
- Riana's Sunshine Academy, 22 Crescent Street (T)
- Sonshine Preschool and Kindergarten, 53 North Main Street (T)
- Spread Your Wings Daycare, 9 Forest Street (T)
- Stepping Stones School, 1 Partridge Lane (T)
- Wonder Years Learning Center, 39 Birch Street (T)

East Derry Memorial Elementary School, 18 Dubeau Drive

Gilbert H. Hood Middle School, 5 Hood Road

Grinnell Elementary School, 6 Grinnell Road

Ernest P. Barka Elementary School, 21 Eastgate Rd

Derry Montessori, 65 East Broadway

Sonshine Pre-school & Kindergarten, 53 North Main Street

Derry Head Start, East Derry Road

Adult Day Care Centers

- Vintage Grace, 12 Peabody Rd (T)
- Birch Heights Retirement Community, 7 Kendall Pond Rd (T)

Churches

- Trinity Assembly of God, 53 North Main (T)
- First Baptist Church, 2 Crystal Avenue (T)
- Calvary Bible Church, 145 Hampstead Road (T)
- First Church of Christ Scientist, Boyd Road (T)
- LifeWay Community Church, 127 Rockingham Road (T)
- Central Congregational Church, 14 Crescent Street (T)
- First Parish Church, 47 East Derry Road (T)
- Church of Transfiguration, 1 Hood Road (T)
- Bethany Covenant Church, 1 Covenant Way (T)
- Derry Seventh Day Adventist Church, 7 Brook Road (F, T)
- St. Luke's United Methodist Church, 63 East Broadway (T)
- Holy Cross Church, Hampstead Road (T)

Trinity Assembly of God, 53 North Main

First Baptist Church, 2 Crystal Avenue

Central Congregation Church, 14 Crescent St.

Mormon Church, Adams Pond Road

- Mormon Church, Adams Pond Road (T)
- St. Thomas Aquinas Church, Crystal Avenue (T)

Nursing Homes

- Integrated Health Services at Derry, 8 Peabody Drive (T)
- Aurora Nursing Home, 20 Chester Road (T)
- Beaver Lake Lodge, 38 North Shore Road (F, T)

Elderly Housing	**# of Units**
• Derry House, 10 West Broadway (T)	22 units
• Derry Meadows, 1A Robin Court (T)	50 units
• Nutfield Heights, 3 Hood Road (T)	80 units
• Pillsbury Square, 12 West Broadway (T)	28 units
• Chase Mill Condominiums, 7 Chester Road (T, F)	36 units

Recreation Areas

- Beaver Lake Beach (F, T)
- Ohara Field, Town of Derry Recreation & Parks (F, S, T)
- Hood Park, Town of Derry Recreation & Parks (F, T)
- Grinnell Elementary School, Derry Coop. School District (T)
- Hood Middle School, Derry Cooperative School District (T)
- Buckley Field, Derry Cooperative School District (T)
- South Range School, Derry Cooperative School District (S, T)
- Derry Village School, Derry Cooperative School District (T)
- Ernest P. Barka Elementary School, 21 Eastgate Rd (T)

Aurora Nursing Home, 20 Chester Road

Beaver Lake Lodge, 38 North Shore Road

Nutfield Heights Senior Center, 3 Hood Road

Beaver Lake Beach

- Pinkerton Academy (T)
- Bastek Field, Town of Derry Recreation & Parks (T)
- Smith Field, Town of Derry Recreation & Parks (T)
- Hoodkroft Country Club (F, T)
- MacGregor Park, Town of Derry Recreation & Parks (T)
- Rockingham Recreation Trail, NH Dept. of Resources & Economic Development (F, S, T)
- Robert Frost Historic Site, NH Dept. of Resources & Economic Development (S, T)
- Derry Conservation Area A, Town of Derry (T)
- Derry Conservation Area B, Town of Derry (T)
- Ballard State Forest, N.H. Dept. of Resources & Economic Development (F, S, T)
- Beaver Lake, NH Dept. of Fish & Game (F, T)
- Escumbuit Campground (F, T)
- Hidden Valley Campground (T)
- Humphrey Road Fields, Town of Derry Recreation & Parks (S, T)
- Gallien's Town Beach, Town of Derry Recreation & Parks (F, T)
- Ryder Fields, Town of Derry Recreation & Parks (T)
- West Running Brook School, Derry Coop. School District (T)
- Veterans Memorial Hall, Town of Derry Recreation & Parks (T)
- Weber Memorial Forest (F, S, T)
- Veterans Field, Town of Derry Recreation & Parks (S, T)
- Albert W. Doolittle Conservation Area, Beaver Lake Area (T, F)

Pinkerton Academy, 5 Pinkerton Street

Hoodkroft Country Club, 121 East Broadway

Gallien's Town Beach

Weber Memorial Forest

- West Side Community Center, Town of Derry (F, T)
- Alexander-Carr Playground, Town of Derry Recreation & Parks (F, S, T)
- Hood Park, Town of Derry Recreation & Parks (F, T)
- Derry Railroad Bed, Town of Derry (F, S, T)
- Boys & Girls Club of Greater Derry (T)
- Ballard Road, Town Forest Town of Derry (S, T)

Unique or Historic Resources

The National Register of Historic Places lists the following structures and places in Derry:

- East Derry Historic District (T)
- Adams Memorial Building, West Broadway (T)
- Matthew Thornton House, 2 Thornton Street (T)
- Robert Frost Homestead (S, T)
- Upper Village Hall (vacant), 52 E Derry Road (T)

Other historic places include:

- First Parish Church, East Derry Road (T)
- Pinkerton Academy (T)
- Adams Female Academy (T)
- Taylor Mill at Ballard State Forest (F, T)
- Alan Shepard House, East Derry Road (T)
- Taylor Library, East Derry Road (T)

Boys & Girls Club of Greater Derry, 40 Hampstead Road

Matthew Thornton House, 2 Thornton Street

Taylor Mill at Ballard State Forest

Upper Village Hall, 52 E Derry Road

Lodges and Community Centers

- American Legion, L.W. Chase Post Number 9, 13 East Broadway (T)
- Veterans of Foreign War, 18 Railroad Avenue (T)
- Halcyon, 11 Central Street (T)
- Marion Gerrish Community Center, 39 West Broadway (T)

Solid Waste/Municipal Recycling Facility and Transfer Station

- Derry Transfer Station, 40 Fordway (S, T)

Incinerators

- Parkland Medical Center Infectious Waste, One Parkland Drive (T)

Adams Memorial Building, West Broadway

VFW Lodge, 18 Railroad Ave.

Derry Transfer Station, 40 Fordway

Active Dams (As of June 2013) See Appendix A for New Hampshire Dam Classification Schedule. (F,T)

Dam Name	River	Type	Owner	Dam Rating
Ballard Pond Mill Dam	Taylor Brook	Concrete	NH Water Division	S
Big Island Pond Outlet	Spickett River	Concrete	Big Island Pond Corporation	S
Hoods Pond	Shields Brook	Earth	Town of Derry	S
Sludge Treatment Lagoon	N/A	Concrete	Town of Derry	S
Waste Lagoon	N/A	Earth	Town of Derry	S
Adams Pond	Beaver Brook	Concrete	Jean M. Gagnon	L
Derry Meadows Shoppes	Unnamed	Earth	Mariner Derry Meadows LLC	L
Beaver Brook	Beaver Brook	Stone	Town of Derry	L
Holland Dam	Shields Brook	Earth	Industrial Container Corp.	L
Ballard Pond Upper Dam	Taylor Brook	Earth	DRED	L
East Derry Fire Precinct Pond	TR Cunningham Brook	Stone/Earth	Frederick Love	NM
Hidden Valley Camp Dam	Wilson Brook	Earth	Hidden Valley Camp	NM
Beacon Hill Estates Det Pond 1	Runoff	Earth	Abdallah Cons.	NM
Beacon Hill Estates Det	Runoff	Earth	Unknown	NM

Pond 2

Dam Name	River	Type	Owner	Dam Rating
Derry Middle School	Runoff	Earth	SAU 10	NM
Fire Pond	TR Cunningham Brook	concrete	Louis Bailey	NM
Fire Pond	TR Cunningham	Stone/Earth	E Derry Fire	NM
Fire Pond	TR W Running Brook	Earth	Edwin Simonsen	NM
Fire Pond	Natural Swale	Earth	Hidden Valley Camp	NM
Fire Pond	Natural Swale	Earth	William Geissenhainer	NM
Fire Pond	Natural Swale	Earth	Richard True	NM
Walgreens Det Pond	Runoff	Earth	Mark Investment, Inc.	NM

Commercial Economic Impact Areas

Organizations and businesses with more than 25 employees

Company Name	Address
• Hood Commons (T)	Route 28 & Crystal Avenue
• Pinkerton Academy (T)	5 Pinkerton Street
• Shaw's Supermarket (T)	50 Crystal Avenue
• Integrated Health Services (T)	8 Peabody Road
• Fireye Inc. (T)	3 Manchester Road
• Wal-Mart (T)	30 Manchester Road
• Merrimack Valley Wood Products (T)	B Street
• Illuminations So Much Fun (T)	1 Treasure Lane
• First Student Inc. (T)	33 Chester Road
• Gilbert H. Hood Middle School (T)	5 Hood Road
• Grinnell Elementary School (T)	6 Grinnell Road
• Aurora Nursing Home (T)	20 Chester Road
• Eastern Rainbow (T)	14 A Street
• Applebee's Neighborhood Grill (T)	14 Manchester Road
• Betley Chevrolet-Buick-Geo Inc. (T)	50 North Main Street
• Gentex Corp. (T)	5 Tinkham Avenue
• Derry Police Department (T)	1 Municipal Drive
• West Running Brook Middle School (T)	West Running Brook Lane
• Benson's Lumber & Hardware Inc. (T)	6 Martin Street
• Benson's Ski & Sport Shop (T)	6 Martin Street
• Derry Village Elementary School (T)	28 South Main Street
• Precision Tool & Die Inc. (T)	22 Manchester Road #10
• Residential Resources Inc. (T)	16 Manning Street #101
• Southeastern Regional Education Service (T)	11 Peabody Road
• Derry Fire Department (F, T)	131 East Broadway
• Calvary Christian School (T)	145 Hampstead Road
• Crotched Mountain Residential (T)	16 N.H. Route 111 #3
• Promises to Keep (T)	199 Rockingham Road
• South Range School (S, T)	1 Drury Lane
• East Derry School (T)	18 Dubeau Road
• Hawk Quality Products (S, T)	99 South Main Street
• Merrimac Tile Company (T)	7 Tsienneto Road
• U.S. Post Office (T)	24 Tsienneto Road
• T-Bones (T)	39 Crystal Avenue
• McDonald's (T)	93 Crystal Avenue
• Capitol Hill Cleaning (T)	91A Fordway Extension
• Merrimack Valley Wood Products (T)	Derry Industrial Park
• Derry Public Works Department (T)	14 Manning Street
• Allen Motors Inc. (T)	19 Manchester Road
• Biosen Laboratories (S, T)	8 Bowers Road

- Parkland Medical Center (T) 1 Parkland Drive
- Columbia Healthcare Corp. (T) 44 Birch Street #103
- Derry News (T) 46 West Broadway
- Essential Organics (S, T) 6 Bowers Road
- J & F Farms (T) 120 Chester Road
- Opechee Construction (T) 10 A Street
- Public Works Dept. Hwy. Garage (S, T) 40 Transfer Lane
- NH Boring (T) 40 Fordway Extension
- WNDS (T) 50 TV Place
- Business Cards Express (T) 22 Manchester Road
- Derry Adult Education Center (T) 5 Hood Road
- Parkland Eldercare (T) 1 Parkland Drive
- Pitcher Associate Inc. (T) 9 Tinkham Avenue
- Rockingham County Adult TTRL (T) 64 East Broadway
- Simpson's Painting Inc. (T) 131 Rockingham Road
- T & S Landscaping & Lawn Care (T) 253 Rockingham Road
- Dunkin' Donuts (T) 5 Crystal Avenue
- Derry Pizza & Restaurant (T) 111 W Broadway
- Bud Lundgren Construction (F, T) 57 Chester Road
- Sal's Just Pizza (T) 2 Lenox Road
- Trinity Assembly of God (T) 53 North Main Street
- Wendy's (T) 56 Crystal Avenue
- Rite Aid Pharmacy (T) 39 Birch Street
- Hess Gas Station (T) 50 Birch Street
- Birch Heights Retirement Community (T) 7 Kendall Pond Road
- River Bank (T) 51 Crystal Ave
- Ernest P. Barka Elementary School (T) 21 Eastgate Road
- Meadow Shoppes (T) 35 Manchester Road (Route 28)
- Irving Gas Station (T) 55 Bypass 28
- Overlook Medical Building (T) 6 Tsienneto Road
- CVS (T) 48 East Broadway
- Walgreens (T) 17 Crystal Avenue
- John Deere Supply (T) Route 28 / Rockingham Road

Hazardous Material Facilities in the Town of Derry

Above-ground Storage Tanks (T):

• FairPoint Communications	52 E Broadway
• Cedar Point Communications	16 Rte 111
• NH DOT PS 528	59 Kendall Pond Rd
• East Derry Fire Precinct	74 Hampstead Rd
• PSNH Ash Street Substation	5 Ash St
• PSNH High Street Substation	52 N High St
• Weber Auto & Truck Parts Inc.	133 Island Pond Rd
• NH Boring Inc. Fmr Derry DPW	40 Fordway
• PSNH Scobie Pond 12kv Substation	38 Scobie Pond Rd
• M-R Wood Recycling	29 Scobie Pond Rd
• First Student Inc. 20619	33 Chester Rd
• Scobie 115 KV Substation	Scobie Pond Rd
• Valvoline Instant Oil Change	50 Crystal Ave

Active Hazardous Waste Generators (T)[44]

• Allen Motors Inc.	19 Manchester Rd
• Automotive Custom & Collision LLC	241 Rockingham Rd
• Autoshop Svcs. And Second Car Inc.	181 Rockingham Rd
• Banister Family Dentistry	1 Birch St
• Betley Chevrolet Inc.	50 N Main St
• Birch Street Collision Inc.	34 Birch St
• Brooks Properties	16 Rte. 111
• Brothers Auto Body	1 Rockingham Rd
• Business Card Express	4 Tinkham Ave
• C & D Universal Finishes	3 Nutfield Ct
• Car Lot The	1a St
• CVS Pharmacy 0593	48 E Broadway
• Dave Allen Sales & Service	17 Manchester Rd
• Derry Marine	Rte. 28
• Derry Town Of	1 Transfer Station Ln
• Derry Transfer Station	43 Transfer Lane
• Difeo-Duston Oil	23 Central Ct
• East Derry Collision	46 E Derry
• East Derry Tire & Auto Inc.	46 E Derry Rd
• E Derry Village Improvement Soc.	52 E Derry Rd
• Express Auto Body & Collision	15 Central St
• Fireye Inc.	3 Manchester Rd
• First Student Inc. 20619	33 Chester Rd

[44] Active hazardous waste generators may include businesses that produce household hazardous waste, or treat and store or dispose of hazardous waste, or be a waste handler or used oil marketer (NH Department of Environmental Services).

• Getty Station 55211	6 Danforth Circle
• Gibbs Oil Gas Station	59 Crystal Ave
• Granite Industrial Gases	49 N High St
• Granite State Analytical	22 Manchester Rd
• Granite State Dock And Marine	238 Rockingham Rd
• Karl Gschwind Machine Wks Inc.	6 Tinkham Ave
• Hawk Quality Products Inc.	125 Rockingham Rd
• Huntsman International LLC	52 Kendall Pond Rd
• J & F Farms Inc.	120 Chester Rd
• Jakes Auto Body	80 Chester Rd
• James Collins Inc.	41 Windham Rd
• Julietts Cleaners & Alterations	158 Rockingham Rd
• Kb Imaging Service Inc.	24 N Shore Rd
• Lahey Center	6 Tsienneto Rd Unit 101
• Lincs Auto Body	35 Maple St
• Meineke Car Care	7 Crystal Ave
• Mobil 2537	2 S Main St
• N E Tanya Finishes Inc.	35 Maple St
• Nel-Pech Labs Inc.	4 Ash St Ext
• Parkland Medical Center	1 Parkland Dr.
• Pete's Garage	353 Island Pond Rd
• Pinkerton Academy	8 Pinkerton St
• Precision Tool & Die	22 Manchester Rd
• Professional Image Dry Cleaners	11 Manchester St
• PSNH	16 A St
• Rite Aid 10264	20 Crystal Ave
• Rite Aid 3310	52 Rockingham Rd
• Riverside Cleaners LLC	Crystal Ave
• RS Brakes N More	36 Scobie Pond Rd
• Sanmina Sci Corporation	6 Linlew Dr.
• Shaw's 7483	55 Crystal Ave
• Sherwin Williams 5611	121 W Broadway
• Spacetown Auto Body Inc.	66 Scobie Pond Rd
• Stevens Foreign Car	89 W Broadway
• The Body Shop Pelham	53 S Main St
• Tractor Supply Co 1372	55 Crystal Ave
• Valvoline Instant Oil Change	50 Crystal Ave
• Vincent's Auto Inc.	172 Rockingham St
• W E Auto Body	154 Rockingham Rd
• W P Realty	55 Crystal Ave
• Wal-Mart Supercenter 1753	11 Ashleigh Dr.
• Weber Auto & Truck Parts Inc.	135 Island Pond Rd

SECTION III - EXISTING MITIGATION STRATEGIES & PROPOSED IMPROVEMENTS

Description of Existing Programs
The Derry Hazard Mitigation Plan Committee identified the following regulations/strategies/equipment related to mitigation measures for five types of hazards:

A. Flooding
B. Wind
C. Wildfire
D. Ice and Snow Events
E. Earthquakes

The Town of Derry has already adopted several programs and ordinances relating to hazard mitigation. They are listed here.

Floodplain Development District (zoning)
The Floodplain Development District applies to all lands designated as Special Flood Hazard Areas by FEMA in its *Flood Insurance Study for the Town of Derry, NH*, together with the associated Flood Insurance Rate Maps dated May 17, 2005. The code enforcement officer shall review all building permit applications for new construction or substantial improvements to determine whether proposed building sites will be reasonably safe from flooding.

Conservation Corridor Overlay District (zoning)
The Conservation Corridor Overlay District regulates land use in important wetland and watershed areas to prevent the destruction of watersheds and wetlands. The District provides flood protection, recharge of groundwater supply, and augmentation of stream flow, and the protection of the community against the costs that may be incurred when unsuitable development occurs in swamps, marshes, along watercourses, or in areas subject to floods.

Wetlands Conservation Overlay District (zoning)
The Wetlands Conservation Overlay District regulates the uses allowed on lands subject to standing water or extended periods of a high water table. It applies to 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. The District includes areas of poorly drained soil that are 2,000 square feet or larger, and that exhibit a predominance of 50 percent or more wetland vegetation; all areas of very poorly drained soils; areas of any wetland of any size if contiguous to

surface waters such as lakes, ponds and streams; and areas designated as bogs regardless of size.

Groundwater Resource Conservation District (zoning)
The Groundwater Resource Conservation District was adopted 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 and pollutants to designated aquifers identified as being needed for present and future public and private water supplies. The District includes areas designated as having high and medium potential to yield groundwater as shown on the Town of Derry Groundwater Conservation District map on file with the Planning Board.

Earth Removal Regulations (zoning)
Earth Removal Regulations minimize safety hazards created by open excavations; safeguard the public health and welfare; preserve the natural assets of soil, water, forests and wildlife; maintain aesthetic features of the environment; prevent land and water pollution; and promote soil stabilization.

Manufactured Housing Park District (zoning)
The purpose of the Manufactured Housing Park District is to allow the use of manufactured housing units under conditions that are intended to enhance affordable housing opportunities.

Emergency Operations Plan
Derry maintains an Emergency Operations Plan. The latest update of this plan was during 2013 and describes the Town Department's responsibilities and outlines personnel and equipment available during an emergency.

Evacuation and Notification
The *Derry Emergency Operations Plan* addresses evacuation procedures for emergency notification and evacuation routes to be taken. State designated evacuation routes have been identified for I-93 in and around the Town of Derry with signage for guidance to motorists.

State Dam Program
Derry maintains Low and Significant hazard class dams in coordination with the State Dam Program.

Road Design Standards
Derry maintains road design regulations (NH Department of Transportation standards) as part of the Town's Subdivision Regulations. Land Development

Control Regulations control the peak rate of discharge of stormwater runoff from development under post-development conditions. The discharge shall not exceed that of the predevelopment condition unless it can be demonstrated that no off-site adverse impacts will result, or appropriate flowage easements have been secured.

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

Best Management Practices
The State has established Best Management Practices for erosion and sediment control. These BMPs are methods, measures or practices to prevent or reduce water pollution, including, but not limited to, structural and nonstructural controls, operation and maintenance procedures, and other requirements and scheduling and distribution of activities. Usually, BMPs are applied as a system of practices rather than a single practice. BMPs are selected based on site-specific conditions that reflect natural background conditions.

Back-Up Electrical Generators
Publicly owned back-up electrical generator locations are noted in Section II.

Town Radio System
The Town has developed a radio system with a goal of interoperability between all emergency responders.

Hazardous Materials Regulations
The Town of Derry enforces State regulations regarding hazardous materials. The town of Derry's Fire Department participates in the Southeastern NH HazMat District.

Regulation of Travel Trailers and Motor Homes
Travel trailers and motor homes can be stored on private property and only used on a temporary basis of 30 days for visiting relatives.

International Building Code and Local Building Code
The Town enforces the IBC and the local building code. These codes will regulate construction, setting a minimum standard of protection for building occupants.

Steep Slopes and Class VI Roads
Steep slopes and construction thereon are regulated by the Town's subdivision ordinance. The State has regulations for Class VI roads, which the Town enforces. The Town's regulations are set to prevent erosion, mudslides and other events.

Comprehensive Emergency Management Planning for Schools
Comprehensive Emergency Management Planning for Schools is available from the NH Division of Homeland Security and Emergency Management. CEMPS outlines training for schoolteachers, administrators and students on actions to be taken during an emergency at school. The school district will continue to implement this program.

Existing Protection Matrix
The Derry Hazard Mitigation Plan Committee has developed a summary matrix of existing strategies that support hazard mitigation efforts, which is presented on the following pages. 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 and/or enforcement of the strategy (Column 4), the identified improvements or changes needed (Column 5) and the most recent updates (Column 6).

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

TYPE OF EXISTING PROTECTION	DESCRIPTION	AREA OF TOWN COVERED	EFFECTIVENESS AND/OR ENFORCEMENT *(Rating definitions can be found below this table)*		IMPROVEMENTS OR CHANGES NEEDED **2015 Update**
Floodplain Development District (Zoning Ordinance)	Guides development in the floodplain 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 & Code Enforcement Planning Department Conservation Commission (CC)	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 prescribed.
Wetlands Conservation Overlay District (Zoning Ordinance)	Protects aquifers and wetlands and includes 150-foot wetlands buffer beyond the boundary of each prime wetland	All lands within the Wetlands Overlay District	Building & Code Enforcement Planning Board CC	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 prescribed.
Conservation Corridor Overlay District (Zoning Ordinance)	Regulates uses in wetland and watershed areas that are within the 100 year flood zone to minimize flood hazard and adverse effects of development on the environment	All lands within the CCOD	Building & Code Enforcement Planning Board CC	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 prescribed.

TYPE OF EXISTING PROTECTION	DESCRIPTION	AREA OF TOWN COVERED	EFFECTIVENESS AND/OR ENFORCEMENT *(Rating definitions can be found below this table)*		IMPROVEMENTS OR CHANGES NEEDED 2015 Update
Groundwater Resource Conservation District (Zoning Ordinance)	Protect groundwater supply and recharge areas from adverse development or depletion	Areas with high and medium potential to yield groundwater shown on the Derry Groundwater Conservation District Map	Planning Board Building, Code & Health Enforcement CC	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 prescribed.
Earth Removal Regulations	Minimize safety hazards created by open excavations	All areas of Town	Planning Board 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 prescribed.
Manufactured Housing Park District	Regulates MHPs and units within parks to minimize potential damage during a natural hazard event	All lands within the District	Planning Board Building & 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.

TYPE OF EXISTING PROTECTION	DESCRIPTION	AREA OF TOWN COVERED	EFFECTIVENESS AND/OR ENFORCEMENT *(Rating definitions can be found below this table)*		IMPROVEMENTS OR CHANGES NEEDED **2015 Update**
Emergency Operations Plan	Describes Town departmental & personnel duties & equipment available during an emergency	All areas of Town	Last updated during 2013	Excellent	Ordinance is working as prescribed. Plan meets all state/federal requirements Reviewed/updated Biannually – last update in 2013
Evacuation and notification	Evacuation procedures with emergency notification and routes to be taken	All areas of Town	Contained within *Emergency Operations Plan*, last updated 2013	Excellent	Plan meets all state/federal requirements Updated as needed within the EOP update process. EOP last updated in 2013. Now have a code Red System, a portable electronic Reader Board phone and a fixed Reader Phone. Also, have a portable radio-controlled sign, a hotline for issues with fire dispatchers, a well-check program, school system Emergency Evacuation Route on 93, Cable Access TV, and an AM radio station (1610)
NH State Dam Program	Maintenance of Low and Significant Hazard Class dams in coordination with the State Dam Program	All low and significant hazard class dams in Derry	Adequate	Good	Program meets all state/federal requirements. Program is working as described.

TYPE OF EXISTING PROTECTION	DESCRIPTION	AREA OF TOWN COVERED	EFFECTIVENESS AND/OR ENFORCEMENT *(Rating definitions can be found below this table)*		IMPROVEMENTS OR CHANGES NEEDED **2015 Update**
Road Design Standards	NH DOT Standards and Town standards	All new subdivisions	Planning Board Public Works	Excellent	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 and are working as prescribed. Paving and maintenance is on-going. New subdivisions required to create a granite curb for better drainage.
Shoreland and Water Quality Protection Act	Standards for use of all shorelands within 250 feet of public waters to protect streambanks and water quality from the adverse effects of development. Last updated in 2011.	All property within 250 feet of public waters	Planning Board CC Code Enforcement NH Dept. of Env. Services	Good	Regulation meets all state/federal requirements. Regulation is working as prescribed.
Best Management Practices	State guidelines for erosion and sediment control; protection of natural environment & prevention potential damage due to poor construction methods	All areas of Town	State of NH DPW (Town) CC Code Enforcement	Good	Program meets all state/federal requirements. Program is working as described

TYPE OF EXISTING PROTECTION	DESCRIPTION	AREA OF TOWN COVERED	EFFECTIVENESS AND/OR ENFORCEMENT *(Rating definitions can be found below this table)*		IMPROVEMENTS OR CHANGES NEEDED 2015 Update
Generators	Back-up power for schools and other emergency facilities	See Section II	Emergency Management	Excellent	Purchased portable emergency generator and have electrical switch wiring. West Running Brook complete in addition to Pinkerton Academy Gym complete and fully operational. Considering generators for major intersections in town and all water satellite systems have generators currently.
Town Radio System	Communications between fire, police, public works, emergency services	All areas of Town	Emergency Personnel	Good	Communications Center upgrade complete. Fire, Police and EOC radio communication system upgrade complete. Public Works is on a different bandwidth and communication is done mainly by cellphone contractors. No further changes planned at this time. It will cost an estimated $300,000 to fund portables.
Hazardous Materials Regulations	State regulations administered by Town; Derry Fire Department is a part of the Southeastern NH Haz-Mat District	Entire Town	Police Dept. Fire Depts.	Good	Completed the Regional Emergency Planning Committee (REPC) for the region. The Town of Derry is a Member.

TYPE OF EXISTING PROTECTION	DESCRIPTION	AREA OF TOWN COVERED	EFFECTIVENESS AND/OR ENFORCEMENT *(Rating definitions can be found below this table)*		IMPROVEMENTS OR CHANGES NEEDED **2015 Update**
Motor Homes/Travel Trailers	Allowed to be parked, but not used for dwelling per town regulations to protect the safety of residents	All areas of Town	Planning Board Building & 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 prescribed.
IBC and local building codes	Regulates construction of buildings to set a minimum standard of protection to building occupants	All areas of Town	Building & Code Enforcement Fire Dept.	Good	No further changes needed at this time as ordinance meets all state/federal requirements.
Comprehensive Emergency Management Planning for Schools (CEMPS)	Education for school teachers, administrators and children for emergency situations	All Schools in Derry	Derry School Department	Good	Continue to implement program (NH HSEM and Town budget) Ongoing, plans are executed and evaluated multiple times per year, including Pinkerton Academy. Joint training between town and schools.

TYPE OF EXISTING PROTECTION	DESCRIPTION	AREA OF TOWN COVERED	EFFECTIVENESS AND/OR ENFORCEMENT *(Rating definitions can be found below this table)*		IMPROVEMENTS OR CHANGES NEEDED **2015 Update**
Steep Slopes Regulations	Subdivision Regulations set standards to prevent erosion, mudslides, etc.	Slopes over 15% and Class VI roads	Town Council Planning Board Public Works	Good	Still considering adoption of Class VI Road Regulation standards.
Elevation Certificates	Required for Certificate of Occupancy for all new construction/substantial improvements in Special Flood Hazard Areas SFHAs	100 year Floodplain/ SFHA	Building & Code Enforcement	Good	Completed coordinating flood insurance rate maps with FEMA. Local authority is responsible for enforcing this ordinance. It is periodically reviewed and updated as required. Ordinance is working as prescribed.
HazMat Response Team	Continued dependence on mutual aid; Derry Fire Department is a part of the Southeastern NH HazMat District	All areas of Town	Southern New Hampshire HazMat Mutual Aid Team	Excellent	Plan meets all state/federal requirements. Program is working as described. It is a long-running and very active program.

TYPE OF EXISTING PROTECTION	DESCRIPTION	AREA OF TOWN COVERED	EFFECTIVENESS AND/OR ENFORCEMENT *(Rating definitions can be found below this table)*		IMPROVEMENTS OR CHANGES NEEDED **2015 Update**
GIS System	System for map production and data analysis for Town departments	All areas of Town	IT/GIS Dept. of Public Works	Excellent	Complete drainage system mapping - Mapping in progress and estimated completion within 5 years. Flyover is planned for Spring 2014. - Coordinate GIS with utility companies for circuits and poles as capability allows.
Telecommunication Overlay District (Zoning Ordinance)	Includes regulations for telecommunications towers, including height, material & design requirements	District-wide	Building & Code Enforcement Dept. of Public Works	Poor	Still need to complete update of ordinance through Planning subcommittee. Estimated completion within 2 years. Rated poor because there is a dead zone because of a limited cell tower so cell phones do not work everywhere.
Wellhead Protection Program	To protect underground water sources from contamination	Wellhead areas	NH DRED CC	Good	Wellhead Protection area updated every 3 years as required as well as distribution of educational mailings Program is working as described

TYPE OF EXISTING PROTECTION	DESCRIPTION	AREA OF TOWN COVERED	EFFECTIVENESS AND/OR ENFORCEMENT *(Rating definitions can be found below this table)*		IMPROVEMENTS OR CHANGES NEEDED **2015 Update**
Community Notification System	Allows Town to telephone residents regarding emergency and non-emergency situations	All parts of Town (for listed phone numbers only)	All Town Departments	Excellent	Consider switching to a web-based vendor Go beyond town's 911 and use Red Cross and AAA. Completed notification system and is working as described.

Rating Definitions:

Poor….The policy, plan or mutual aid system does not work as well as it should and often falls short of meeting its goals.
Fair….The policy, plan or mutual aid system does not work as well as it should and sometimes falls short of meeting its goals.
Good….The policy, plan or mutual aid system works very well and is achieving its goals.
Excellent….The policy, plan or mutual aid system works and often exceeds its goals.

Summary of Recommended Improvements to Existing Programs

The Derry Hazard Mitigation Plan Committee recommends the following improvements to existing Town programs related to hazard mitigation[45]:

1. **Generators**
   - Purchase additional portable back-up generators

   2015 Update: West Running Brook complete in addition to Pinkerton Academy Gym complete and fully operational. Considering generators for major intersections in town and all water satellite systems have generators currently.

2. **Steep Slopes Regulations**
   - Consider adoption of Class VI Road Regulation standards

   2015 Update: Consideration still needed

3. **GIS System**
   - Complete drainage system mapping

   2015 Update: Mapping in progress and estimated completion by 2019. Flyover is planned for Spring 2014. Coordinate GIS with utility companies for circuits and poles as capability allows.

4. **Telecommunication Overlay District**
   - Complete update of ordinance through Planning subcommittee

   2015 Update: Ordinance update still needed and estimated completion within in the 2016-2017 timeframe.

The following "2009 Prioritized Implementation Schedule with 2015 Updates" chart shows the progress in the local mitigation efforts:

[45] More specific details on each recommended improvement can be found in Section V "Prioritized Implementation Schedule and Funding Sources."

ACTION #	MITIGATION ACTION	COST/BENEFIT	PRIORITY POINTS	WHO (LEADERSHIP)	STATUS	HOW (FUNDING)	2015 UPDATE[46]
1	Enhance GIS coverage for mapping the floodplain & flood hazard areas	Initial expense, but can provide an easy way for public to access floodplain information.	42/42	Public Works, GIS, Con. Com., FEMA	Completed	Existing Budget, PDM	Completed
2	Prohibit construction in the floodplain during review & permitting process	Excellent way to save expenditures on flood damage, at little or no cost to Town.	41/42	Planning, Code Enf., Zoning	Deferred	Existing Budget	Lack of time and resources Included in 2015 Update Priority List.
3	Improve Emergency Communications by upgrading the DPW Radio system to have compatibility with Fire and Police	Will allow DPW to better communicate with others during an emergency.	41/42	Emergency Mgmt./Fire, Police	Deferred	FD - Existing Budget	Lack of time and resources Included in 2015 Update Priority List.
4	Improve drainage structures at: Folsom at N. High, Drew Rd at N. Shore Rd and Tsienneto Rd at Rt. 102	Will prevent future problems and expenditures with flooding in these areas	41/42	DPW	Deferred	Existing Budget, CIP	Drew Rd. at N. Shore Rd - complete. Temporary improvements made at Folsom and N. High. Improvements needed at Tsienneto and Rt. 102. Lack of time and resources. 2015 Update Priority List.
5	Upgrade Pinkerton Academy as an emergency shelter for the town	Initial expense, but will provide shelter in times of emergency and potentially save lives	41/42	Em. Mgt.	Deferred.	Existing Budget	Upgrade complete; plan testing and staffing plan needed. Lack of time and resources. On 2015 Update Priority List.

[46] Shaded rows deferred mitigation actions due to lack of time and resources. Actions that require additional implementation for effectiveness were added to the 2015 Plan update and prioritized along with newly identified mitigation actions for the 2015 update, Section IV and V.

6	Purchase an additional portable generator to be used at varying locations during an emergency	Provides emergency management with more resources and capabilities to help residents in an emergency	41/42	Police, Fire, Em. Mgt.	Deferred.	Existing Budget, EMPG	Identify specific requirements and funding source. Lack of time and resources. On 2015 Update Priority List.
7	Consider an ordinance requiring all residential units to have a carbon monoxide detector	No cost to the town and will save lives	41/42	Fire, Em. Mgt.	Completed	Town Council	Codes require new units to have a CO detector
8	Continue to implement a public awareness program for emergency management and hazard mitigation action plans and benefits to the community	Public awareness programs are inexpensive compared to the number of lives that can be saved during emergencies.	40/42	Fire, Police, Em. Mgt.	Deferred.	Fire, Police, Em Mgmt, Existing Budget	Lack of time & resources Local Access TV outreach, School outreach program, CERT outreach. Included on 2015 Update Priority List since this is a long-term, consistent work effort
9	Purchase fixed facility generators for potential emergency shelters with no existing backup power source	Adds the capability to house people during an emergency, no such facility currently exists.	40/42	Police, Fire, Em. Mgt.	Completed	Existing Budget, EMPG	Pinkerton has a generator, plans need testing and staffing outlined

10	Maintain current snow removal equipment and upgrade as needed to cope with snow emergencies	It is critical to maintain access throughout town during a snow event, especially for emergency vehicles.	40/42	Public Works	Deferred.	Existing Budget	Lack of time and resources. On 2015 Update Priority List.
11	Develop and adopt a local ordinance for fire protection systems in all new residential buildings	No cost to the town and will save lives	40/42	Fire	Deleted.	Town Council	Delete - State prohibited; developer can implement
12	Continue to identify and remove hazardous trees in the Right of Way	Could be accomplished by Town workers, DPW within existing budget	40/42	Public Works	Deferred.	Existing Budget	Lack of time & resources On 2015 Update Priority List.
13	Consider switching to a web-based vendor for the communications system as there are limitations with Emergency personnel cell phones	Initial expense, but emergency personnel will be better able to perform their jobs during emergencies	40/42	Fire, Police, Em. Mgt.,DPW	Completed	Existing Budget	Completed
14	Continue to implement culvert analysis for inventory and condition assessment	Will help prevent flooding by allowing a plan for repair and replacement of culverts as needed	39/42	DPW	Deferred.	Existing Budget	Lack of time & resources On 2015 Update Priority List.

15	Maintenance of existing cisterns and pursue implementation of sprinklers rather than cisterns	Sprinklers are more costly initially, but save lives and reduce damage to homes dramatically	39/42	Fire	Completed	Existing Budget, Town Council	FD inspects cisterns; sprinklers encouraged but not required
16	Continue to implement a culvert maintenance system	Will help prevent future flooding problems	38/42	DPW	Deferred.	Existing Budget	Lack of time and resources. On 2015 Update Priority List.
17	Purchase/lease emergency vehicles and equipment to update and expand existing supply	Vehicles are initially expensive, but can save lives during a hazard event.	38/42	Police, Fire	Deferred.	Existing Budget	Lack of time and resources. On 2015 Update Priority List.
18	Develop a debris management plan through DPW and include as an appendix to the Emergency Operations Plan	Minimal cost to town and will document town procedures for debris management for all existing and future DPW and emergency personnel to follow	37/42	DPW, Em. Mgt.	Completed.	Existing Budget	Complete

19	Continue to educate citizens on flood mitigation through the dissemination of information either in newspaper articles, mailings or local access television programming	Education programs are a cost-effective way to keep citizens informed.	37/42	Em. Mgt., Reverse 911	Deferred.	Fire Department	Lack of time & resources Combine with #8. On 2015 Priority List.
20	Consideration of minimum standards for maintenance of private roads	No cost to town and will greatly improve efficiency of emergency service to individuals on private roads	36/42	Town Council	Deleted.	Town Council	Delete – Town Council determined it is not enforceable
21	Complete the Regional Emergency Planning Commission (REPC) for the region	Regional emergency management coordination will greatly increase the resources for the town in the event of an emergency	36/42	Em. Mgt.	Completed	Em. Mgt.	Complete
22	Encourage property owners to elevate structures in the floodplain, especially insured and repetitive loss properties	Saves many thousands of dollars in flood damage repairs, especially repetitive loss properties.	35/42	Town Council	Deferred,	Town Budget, FMAP	Several structures were elevated since 2009 HMP; on 2015 Update Priority List since more structures need to be elevated. Lack of time and resources.

23	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 flood-prone properties, especially repetitive loss properties.	34/42	Town Council	Deferred.	Existing Budget, FMAP	Lack of time & resources Combine with #25. On 2015 Priority List.
24	Continue current plan to control the potential for waterborne illnesses to develop in standing water and disseminate information on these hazards	Addressing these hazards before they develop can save large amounts of health dollars.	33/42	Code Enforcement, DPW, Health Dept.	Deferred.	Existing Budget	Lack of time & resources Public health program and continued on 2015 Update Priority List because the waterborne illnesses need to be controlled.
25	Encourage the Conservation Commission to become active in acquiring flood-prone properties for conservation and preservation purposes	Similar to discouraging construction in the floodplain; saves large sums in expenditures for damage to flood-prone properties, especially repetitive loss properties.	33/42	Cons. Comm., Town Council	Deferred.	Existing Budget, FMAP	Lack of time & resources On 2015 Update Priority List.

26	Coordinate with other local conservation commissions in nearby towns to develop a river stewardship program	A watershed approach to developing a River Stewardship Program will work best in this area since Derry has no large streams or rivers within its borders.	32/42	Cons. Comm.	Completed.	Cons. Comm.	Beaver Lake Watershed Plan completed and approved - included representatives from Chester, Derry and Auburn - coordination from DES
27	Establish and provide continued support to a maintenance program for detention/retention ponds	Clogged ponds are expensive; less flooding occurs when they are properly maintained	32/42	Public Works, Cons. Comm.	Deferred,	Existing Budget	Lack of time & resources Mitigation measure includes outreach to private property owners. On 2015 Update Priority List since the maintenance of this program needs to continue.
28	Coordinate information gathering and analysis with the Town of Chester on the effects of Harantis Lake dam on Derry	Coordination is an inexpensive way to stay informed about changes to the dam and its operation.	32/42	Towns of Derry and Chester	Completed.	Existing Budget	Combine with 26 - Harantis Lake Association and Beaver Lake Association involved in planning. Continue to monitor.

29	Complete update of Telecommunication Overlay ordinance through Planning subcommittee	Update will help make locating communication facilities (including towers) easier in town, which is necessary for emergency services	32/42	Planning subcommittee	Deferred,	Planning subcommittee	Lack of time & resources In progress --- on 2015 Update Priority List.
30	Consider adoption of Class VI Road Regulation standards	Standards will help make it easier for emergency services to get to areas with Class VI roads	32/42	Town Council	Deferred.	Town Council	Lack of time & resources Continue to study feasibility of adopting standards. On 2015 Update Priority List.
31	Map and determine where blighted properties are in town for rehabilitation or removal in order to develop a plan	Mapping will aid in the development of a plan for rehabilitation or removal of blighted properties and reduce hazards associated with these	30/42	Em. Mgt., DPW, GIS Dept.	Deferred.	Existing Budget	Lack of time & resources Blighted Properties Ordinance in progress. On 2015 Update Priority List.

32	Consider relocating existing utilities underground when appropriate as is determined by current and past damage cause by natural hazards anticipated to re-occur	This is an expensive undertaking, but pays off when repair expenses due to ice, wind, snow, etc. are avoided by all utilities being underground.	30/42	Utilities	Deferred.	Private utility budgets	Lack of time & resources Town requires new developments/road construction to have underground utilities. May encourage same for redevelopment. On 2015 Update Priority List.
33	Continue to pursue coordination of data collection and analysis with the Town of Salem on the effects of the Spickett River Island Pond Dam on Salem	Very inexpensive method of keeping others aware of dam's condition during a potential emergency.	29/42	Town of Derry and Town of Salem	Deleted.	Existing budgets	Delete – Town no longer considers this an issue
34	Continue to research river gauges with transmitting capabilities, particularly at points of known repetitive flooding	Inexpensive way to stay aware of river/stream height, especially during impending flood event.	23/42	DPW, Em. Mgt.	Deferred.	Existing Budget	Lack of time & resources Researching feasibility. On 2015 Update Priority List.

2009 Prioritized Implementation Schedule with 2015 updates and changed 'deadlines'.

SECTION IV- NEWLY IDENTIFIED MITIGATION STRATEGIES AND CRITICAL EVALUATION

Former Hazard Mitigation Strategies from 2009 Plan

These were the mitigation strategies from the 2009 Plan which were not moved onto the new list as continuing mitigation strategies for the 2015 HMP update.

- Complete GIS drainage system mapping
- Improve Emergency Communications
- Improve problem drainage structures
- Consider an ordinance requiring all residential units to have a carbon monoxide detector
- Purchase fixed facility generators for potential emergency shelters with no existing backup power source
- Develop and adopt a local ordinance for fire protection systems in all new residential buildings.
- Consider switching to a web-based vendor for communications system.
- Maintenance of existing cisterns and pursue implementation of sprinklers rather than cisterns
- Develop a debris management plan through DPW
- Continue to educate citizens on flood mitigation
- Consideration of minimum standards for maintenance of private roads
- Complete the Regional Emergency Planning Commission (REPC)
- Purchase flood-prone properties in the special flood hazard areas (SFHAs)
- Coordinate with other local conservation commissions in nearby towns to develop a river stewardship program
- Coordinate information gathering and analysis with the Town of Chester on the effects of the Harantis Lake Dam in Derry
- Continue to pursue coordination of data collection and analysis with the Town of Salem on the effects of the Spickett River Island Pond Dam in Salem
- Continue to research river gauges with transmitting capabilities

New Hazard Mitigation Strategies for Town of Derry Hazard Mitigation Plan Update 2015

The Derry Hazard Mitigation Plan Committee identified the following new and ongoing hazard mitigation strategies[47]:

- Continue to maintain current snow removal equipment and upgrade as needed to cope with snow emergencies
- Implement drills and exercises for emergencies with elected officials
- Encourage emergency management training and coordination between schools and Derry Bureau of Emergency Management (BEM), including drills, exercises and annual training
- Continue to prohibit construction in the floodplain during review & permitting process
- Continue to implement a public awareness program for emergency management and hazard mitigation action plans and benefits to the community
- Encourage locating utilities underground for redevelopment
- Continue to participate and comply with the NFIP and consider participation in the CRS
- Continue to purchase/lease emergency vehicles and equipment to update and expand existing supply (All Departments)
- Continue to identify and remove hazardous trees in the Right of Way
- Improve drainage structures at Folsom and N. High. Improvements also needed at Tsienneto and Rt. 102.
- Continue to implement culvert analysis for inventory and condition assessment
- Continue to implement a culvert maintenance system
- Identify specific requirements and funding source for possible purchase of an additional portable generator that can be used where needed in emergencies
- Continue maintenance program for detention/retention ponds
- Continue to encourage property owners to elevate structures in the floodplain, especially insured and repetitive loss properties
- Encourage the Conservation Commission to become active in acquiring flood-prone properties for conservation and preservation purposes
- Continue to pursue funding for the upgrade of the DPW Radio system to have compatibility with Fire and Police
- Test and develop staffing plan for Pinkerton Academy Emergency Shelter Operations
- Complete Blighted Properties Ordinance
- Continue to pursue GIS data for utility infrastructure such as electric poles/circuits in Town

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

- Continue current plan to control the potential for waterborne illnesses to develop in standing water and disseminate information on these hazards
- Complete update of Telecommunication Overlay ordinance through Planning subcommittee
- Install visual river gauges at points of known repetitive flooding
- Continue to evaluate feasibility of adoption of Class VI Road Regulation standards
- Implement public outreach campaign to property owners along flood-prone areas

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 Derry Hazard Mitigation Plan Update 2009 or that require continued implementation were included in the 2015 critical evaluation process.[48] In addition, the Derry Hazard Mitigation Committee reviewed each section of the FEMA guidance document *Mitigation Ideas*[49] and considered a comprehensive range of mitigation strategies and projects for each of the identified hazards that the Town is susceptible to. For example, Hurricanes was an identified hazard rated high for probability in Derry. 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:

- Implement drills and exercises for emergencies with elected officials
- Encourage emergency management training and coordination between schools and Derry Bureau of Emergency Management, including drills, exercises and annual training
- Continue to implement a public awareness program for emergency management and hazard mitigation action plans and benefits to the community
- Encourage locating utilities underground for redevelopment
- Continue to identify and remove hazardous trees in the Right of Way
- Test and develop staffing plan for Pinkerton Academy Emergency Shelter Operations
- Continue to pursue GIS data for utility infrastructure such as electric poles/circuits in Town

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

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

- Retrofit Multi-family Residential Buildings (such as Senior Housing) 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 Derry 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 actions and those improvements recommended in Column 6 of the Existing Protection Matrix summary chart were compiled and reviewed by each member of the committee using the STAPLEE process for prioritization. Using the following fourteen (14) criteria[50], rating scores were assigned to each criterion based on (1) for Poor; (2) for Average; and (3) for Good. Total scores can range from a minimum of 14 to a maximum of 42.

- ***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

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

Preliminary Prioritization

The Derry Hazard Mitigation Plan Committee assigned the following scores to each of the above strategies for their 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
Preventative		
34	Continue to prohibit construction in the floodplain during review and permitting process	Flood
34	Encourage emergency management training and coordination between schools and Derry BEM	All
32	Continue to identify and remove hazardous trees in the Right of Way	Snow/Wind
31	Continue to implement culvert analysis for inventory and condition assessment	Flood
31	Continue to implement a culvert maintenance system	Flood
29	Encourage the Conservation Commission to become active in acquiring flood-prone properties for conservation and preservation purposes	Flood
28	Continue to pursue GIS data for utility infrastructure such as electric poles/circuits in Town	All
28	Continue current plan to control potential for Waterborne illnesses to develop in standing water	Flood
27	Complete update of the Telecommunication Overlay District Ordinance	All
27	Evaluate feasibility of adoption of Class VI Road Regulation All standards	All
N/A	Implement Drills and exercises for emergencies with elected officials	All
Property Protection		
35	Continue to maintain snow removal equipment and upgrade as needed	Heavy snow
30	Maintenance program for detention/retention ponds	Flood
33	Continue to participate and comply with the NFIP and consider participation in the CRS	Flood
28	Complete Blighted Properties Ordinance	Fire
27	Install visual river gauges at points of known repetitive flooding	Flood

Score	Action	Hazard
Structural Projects		
33	Encourage locating existing utilities underground when appropriate	All
32	Improve drainage structures at: - Folsom at N. High - Tsienneto Rd at Rt. 102	Flood
29	Encourage property owners to elevate structures in the floodplain	Flood
Emergency Services		
32	Continue to purchase/lease emergency vehicles and equipment to update and expand existing supply	All
30	Purchase an additional portable generator	All
29	Test and develop staffing plan for Pinkerton Academy Emergency Shelter Operations	All
29	Continue to pursue funding for the upgrade of the DPW Radio system to have compatibility with Fire and Police	All
Public Information		
33	Continue to implement public awareness program for emergency management	All
26	Implement public outreach campaign to property owners along flood-prone areas	Flood

SECTION V - PRIORITIZED IMPLEMENTATION SCHEDULE AND FUNDING SOURCES

Implementation Strategy for Priority Mitigation Actions

The Derry Hazard Mitigation Plan Committee created the following prioritized schedule for implementation of new mitigation strategies. The cost of these strategies is minimal when compared with the savings in both property and lives. The timeframe begins when the plan is adopted.

Ranking and Priority Mitigation Actions

Rank	STAPLEE Score	Problem	Mitigation Action	Hazard & Party	Est. Cost & Funding	Timeframe
1	35	Maintain local roads during heavy snowstorm.	Continue to maintain current snow removal equipment and upgrade as needed to cope with snow emergencies	Heavy snow DPW	>$100,000 EMD Budget	Short Term
2	N/A	Maintain preparedness	Implement drills and exercises for emergencies with elected officials	All EMD, PD, FD	<$10,000 EMD Budget, grants	Medium Term
3	35	Maintain preparedness	Encourage emergency management training, exercises and coordination between schools and Derry BEM.	All EMD, PD, FD	<$10,000 > EMD Budget, grants	Medium Term
4	34	Improved floodplain management	Continue to prohibit construction in the floodplain during review & permitting process	Flood EMD, P&Z. CE	NC	Short Term
5	33	Improved EM information	Continue to implement a public awareness program for	All EMD, PD, FD, CERT	NC	Short Term

			emergency management and hazard mitigation			
6	33	Reduce power outages	Encourage locating utilities underground for redevelopment	All EMD, utilities, PB	NC	Short Term
7	33	Improved floodplain management	Continue to participate and comply with the NFIP and consider participation in the CRS	Flood CE, P&Z	<$10,000 CE Budget	Short Term
8	32	Improved EM response	Continue to purchase/lease emergency vehicles and equipment to update and expand existing supply (All Departments)	All EMD, PD, FD, DPW	$100,000> Town budgets	Short Term
9	32	Reduce power outages	Continue to identify and remove hazardous trees in the Right of Way	Snow and wind DPW	$10,000 to $50,000 DPW budget	Short Term
10	32	Reduce flooding conditions	Improve drainage structures Folsom and N. High. Also Tsienneto and NH Rt. 102.	Flood , DPW	$100,000 DPW budget	Long Term
11	31	Reduce flooding conditions	Continue to implement culvert analysis for inventory and condition assessment	Flood EMD, DPW	<$10,000 DPW Budget	Short Term
12	31	Reduce flooding conditions	Continue to implement a culvert maintenance system	Flood EMD, DPW	$10,000 to $50,000 DPW Budget	Short Term
13	30	Need for an additional portable	Identify funding source for an additional	All EMD, FD, PD	<$10,000	Long Term

		generator	portable generator that can be used in emergencies			
14	30	Reduce flooding conditions	Continue maintenance program for detention/retention ponds	Flood DPW, ConCom	<$10,000 DPW budget	Short Term
15	29	Reduce flood losses	Continue to encourage property owners to elevate structures in the floodplain, especially insured and repetitive loss properties	Flood CE, P&Z	<$10,000 Town, FMAP	Short Term
16	29	Reduce flooding conditions	Encourage ConCom Commission to become active in acquiring flood-prone properties	Flood Town Council ConCom	<$10,000 for information $100,000> for acquisition Land Use Change tax	Short Term
17	29	Improve communications among DPW, FD and PD	Continue to pursue funding for the upgrade of the DPW Radio system for compatibility with FD and PD	All EMD, DPW	$100,000> EM, DPW budget	Short Term
18	29	Maintain preparedness	Test and develop staffing plan for Pinkerton Academy Emg Shelter Ops	All EMD, CERT	<$10,000 EMD	Medium Term
19	28	Improve the housing stock	Complete Blighted Properties Ordinance	Fire GIS Dept, FD, CE	<$10,000 CE, FD budget	Medium Term
20	28	Improved information on location of Infrastructure	Continue to pursue GIS data for utility infrastructure such as electric poles/circuits in Town	All GIS Dept, EMD	<$10,000 EMD	Short Term
21	28	Information on waterborne illnesses	Continue current plan to control the potential for	Flood CE, DPW, Health Dept	<$10,000 EMD	Short Term

			waterborne illnesses from standing water; disseminate haz information			
22	27	Improved Telecom regulations	Complete update Telecom Overlay ordinance	All Planning subcommittee	<$10,000 EMD	Medium Term
23	27	Improved information on river heights during floods	Install visual river gauges at known points of repetitive floods	Flood EMD, DPW	<$10,000 EMD	Short Term
24	27	Town policy for management of Class VI roads	Continue to evaluate feasibility of adoption of Class VI Road Regs	All PB, Town Council	<$10,000 EMD	Medium Term
25	26	Public information for properties along flood prone areas	Implement public outreach campaign to property owners along flood-prone areas	Flood CE, EMD	<$10,000 EMD	Medium 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 Derry 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:

CE = Code Enforcement
CERT = Comprehensive Emergency Response Team
ConCom = Conservation Commission
CRS = Community Rating System
DPW= Department of Public Works
FD = Fire Department

EM = Emergency Management
EMD = Emergency Management Director
FEMA= Federal Emergency Management Agency
FMAP= Flood Mitigation Assistance Program (see Appendix F)
IT = Information Technology
PB = Planning Board
PD = Police Department
PDM= Pre-Disaster Mitigation Program (see Appendix F)
P&Z = Planning and Zoning
NH DOT = New Hampshire Department of Transportation
NH HSEM= New Hampshire Homeland Security and Emergency Management

Rank	Action		
	Leadership	***Time Frame***	***Funding***
	Statement of Benefits and Costs		
1	Continue to maintain current snow removal equipment and upgrade as needed to cope with snow emergencies		
	DPW	*Short term*	*Existing Budget*
	It is critical to maintain access throughout town during a snow event, especially for emergency vehicles.		
2	Implement drills and exercises for emergencies with elected officials		
	EM	*Medium term*	*Grants / Existing budget*
	Minor cost and major benefit for emergency preparedness		
3	Encourage emergency management training and coordination between schools and Derry Bureau of Emergency Management, including drills, exercises and annual training		
	EM	*Medium term*	*Grants / Existing budget*
	Minor cost and major benefit for emergency preparedness		
4	Continue to prohibit construction in the floodplain during review & permitting process		
	Planning, Code Enforcement, Zoning	*Short term*	*Existing Budget*
	Excellent way to save expenditures on flood damage, at little or no cost to Town.		
5	Continue to implement a public awareness program for emergency management and hazard mitigation action plans and benefits to the community		
	Fire, Police, EM, CERT	*Short term*	*Fire, Police, EM, Existing Budget*
	Public awareness programs are inexpensive compared to the number of lives that can be saved during emergencies.		
6	Encourage locating utilities underground for redevelopment		
	Utilities, Planning Board	*Short term*	*Private utility budgets*
	This is an expensive undertaking, but pays off when repair expenses due to ice, wind, snow, etc. are avoided by all utilities being underground.		

7	Continue to participate and comply with the NFIP and consider participation in the CRS		
	Code Enforcement	*Short term*	*Existing budget*
	Local guidance on floodplain boundaries and education on NFIP and FIRMs will help to educate residents on flooding issues and these resources. Participation in CRS increases preparedness and mitigation efforts and reduces insurance costs for residents with NFIP insurance		
8	Continue to purchase/lease emergency vehicles and equipment to update and expand existing supply for all Departments		
	Police, Fire, EM	*Short term*	*Existing Budget*
	Vehicles are initially expensive, but can save lives during a hazard event.		
9	Continue to identify and remove hazardous trees in the Right of Way		
	DPW	*Short term*	*Existing Budget*
	Mitigates hazards from downed trees, including power outages and cam be accomplished by Town workers, DPW within existing budget		
10	Improve drainage structures at Folsom and N. High. Improvements also needed at Tsienneto and Rt. 102.		
	DPW	*Long term*	*Existing Budget, CIP*
	Will prevent future problems and expenditures with flooding in these areas		
11	Continue to implement culvert analysis for inventory and condition assessment		
	DPW	*Short term*	*Existing Budget*
	Will help prevent future flooding problems		
12	Continue to implement a culvert maintenance system		
	DPW	*Short term*	*Existing Budget*
	Will help prevent future flooding problems		
13	Identify specific requirements and funding source for possible purchase of an additional portable generator that can be used where needed in emergencies		
	Police, Fire, EM	*Long term*	*Existing Budget, EMPG*
	Provides emergency management with more resources and capabilities to help residents in an emergency		
14	Continue maintenance program for detention/retention ponds		
	Public Works, Conservation Commission	*Short term*	*Existing Budget*
	Clogged ponds are expensive; less flooding occurs when they are properly maintained		
15	Continue to encourage property owners to elevate structures in the floodplain, especially insured and repetitive loss properties		
	Code Enforcement, Planning	*Short term*	*Town Budget, FMAP*
	Saves many thousands of dollars in flood damage repairs, especially repetitive loss properties.		
16	Encourage the Conservation Commission to become active in acquiring flood-prone properties for conservation and preservation purposes		
	Conservation Commission, Town Council	*Short term*	*Existing Budget, FMAP*

	Similar to discouraging construction in the floodplain; saves large sums in expenditures for damage to floodprone properties, especially repetitive loss properties.		
17	Continue to pursue funding for the upgrade of the DPW Radio system to have compatibility with Fire and Police		
	EM, DPW	*Short term*	*DPW, EM, EMPG*
	Will allow DPW to better communicate with others during an emergency.		
18	Test and develop staffing plan for Pinkerton Academy Emergency Shelter Operations		
	EM, CERT	*Medium term*	*Grants*
	Will provide shelter in times of emergency and potentially save lives		
19	Complete Blighted Properties Ordinance		
	GIS Dept., Fire, Code Enforcement	*Medium term*	*Existing Budget*
	Will reduce hazards and associated costs for these properties		
20	Continue to pursue GIS data for utility infrastructure such as electric poles/circuits in Town		
	EM, GIS Dept.	*Short term*	*Grants / Existing budget*
	Will require ongoing time investment to coordinate with utilities, but will increase efficiency in emergency response time		
21	Continue current plan to control the potential for waterborne illnesses to develop in standing water and disseminate information on these hazards		
	Code Enforcement, DPW, Health Dept.	*Short term*	*Existing Budget*
	Addressing these hazards before they develop can save large amounts of health dollars.		
22	Complete update of Telecommunication Overlay ordinance through Planning subcommittee		
	Planning subcommittee	*Medium term*	*Planning subcommittee*
	Update will help make locating communication facilities (including towers) easier in town, which is necessary for emergency services		
23	Install visual river gauges at points of known repetitive flooding		
	DPW, EM	*Short term*	*Existing Budget*
	This is an inexpensive way to stay aware of river/stream height, especially during impending flood event. It saves money in the long-run by being prepared for flood events.		
24.	Continue to evaluate feasibility of adoption of Class VI Road Regulation standards		
	Town Council	*Medium term*	*Town Council*
	Standards will help make it easier for emergency services to get to areas with Class VI roads		
25.	Implement public outreach campaign to property owners along flood-prone areas		
	Code Enforcement, EM,	*Medium term*	*Grants/ Existing Budget/ Volunteers*
	Minimal cost to town especially if there is a grant. Public awareness programs are inexpensive compared to the number of lives that can be saved during emergencies. The more educated the community is, the smoother the operations will be during the emergency.		

The Town of Derry, as required to successfully implement the above mitigation actions, will research additional funding sources. Grants will be particularly researched on a project-by-project basis to search out the best-suited grant match.

Cost of Implementation

The following table compares rough estimated costs of implementing each of the above prioritized mitigation actions. The actual final project budgets may exceed or be lower than the estimated range, nonetheless; these figures are assumed to 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 Derry 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. Cost estimates pertain to town costs only.

AC = Annual Cost
NC = No Cost
TC = Total Cost

	Cost Range			
Project	**< $10,000**	**$10,000-$50,000**	**$50,000-$100,000**	**>$100,000**
1. Continue to maintain current snow removal equipment and upgrade as needed to cope with snow emergencies				AC
2. Implement drills and exercises for emergencies with elected officials	AC			
3. Encourage emergency management training and coordination between schools and Derry Bureau of Emergency Management, including drills, exercises and annual training	AC			
4. Continue to prohibit construction in the floodplain during review & permitting process	NC			
5. Continue to implement a public awareness program for emergency management and hazard mitigation action plans and benefits to the community	NC			
6. Encourage locating utilities underground for redevelopment	NC			
7. Continue to participate and comply with the NFIP and consider participation in the CRS	AC			
8. Continue to purchase/lease emergency vehicles and equipment to update and expand existing supply (All Departments)				AC
9. Continue to identify and remove hazardous trees in the Right of Way		AC		

Project	Cost Range			
	< $10,000	$10,000-$50,000	$50,000-$100,000	>$100,000
10. Improve drainage structures at Folsom and N. High. Improvements also needed at Tsienneto and Rt. 102.				TC
11. Continue to implement culvert analysis for inventory and condition assessment	AC			
12. Continue to implement a culvert maintenance system		AC		
13. Identify specific requirements and funding source for possible purchase of an additional portable generator that can be used where needed in emergencies	TC			
14. Continue maintenance program for detention/retention ponds	AC			
15. Continue to encourage property owners to elevate structures in the floodplain, especially insured and repetitive loss properties	AC			
16. Encourage the Conservation Commission to become active in acquiring flood-prone properties for conservation and preservation purposes	AC			TC (purchase)
17. Continue to pursue funding for the upgrade of the DPW Radio system to have compatibility with Fire and Police				TC
18. Test and develop staffing plan for Pinkerton Academy Emergency Shelter Operations	TC			
19. Complete Blighted Properties Ordinance	TC			
20. Continue to pursue GIS data for utility infrastructure such as electric poles/circuits in Town	TC			
21. Continue current plan to control the potential for waterborne illnesses to develop in standing water and disseminate information on these hazards	AC			
22. Complete update of Telecommunication Overlay ordinance through Planning subcommittee	AC			
23. Install visual river gauges at points of known repetitive flooding	TC			

Project	Cost Range			
	< $10,000	$10,000-$50,000	$50,000-$100,000	>$100,000
24. Continue to evaluate feasibility of adoption of Class VI Road Regulation standards	NC			
25. Implement public outreach campaign to property owners along flood-prone areas	AC			

SECTION VI - ADMINISTRATIVE PROCEDURES REGARDING ADOPTION, EVALUATION 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, FEMA

Adoption

Upon notification by FEMA of conditional approval pending adoption on September 25, 2015, the Derry Town Council held a public hearing and formally adopted the plan on December 1, 2015 as an official statement of Town policy. In the future, this plan may constitute a new section of the Derry Master Plan, in accordance with RSA 674:2. As required by FEMA, the public hearing shall be held two weeks before this *Plan* is voted on by the Derry 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 Derry Town Council is included in the *Plan* (see Appendix G).

Adoption of the Derry 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 disaster occurs.

Incorporation into other Planning Mechanisms

The 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 future Master Plan and Capital Improvement Program (CIP). The Derry CIP is presented to the Derry Planning Board for acceptance and then during the annual budget process the Derry Town Council adopts the CIP.

The Derry Hazard Mitigation Plan Update 2009 was incorporated by referral into the 2010 Derry Master Plan. During the next Master Plan update process, scheduled for 2018-2020, the most current Derry Hazard Mitigation Plan Update 2015 will also be incorporated by referral.

During the next Town of Derry budget process, which includes the CIP (FY 2015), scheduled for April 2014, the most current Derry Hazard Mitigation Plan will be referred to within project descriptions, as applicable, within the CIP document and the appropriate Department operating budgets for the Town

During the next Derry Emergency Operations Plan update, scheduled for 2018, the most current Derry Hazard Mitigation Plan will be reviewed and referred to within the document, as appropriate.

Monitoring, Evaluating and Updates: Continued Public Involvement

The ***Derry Hazard Mitigation Plan Update 2015*** shall be reviewed and updated annually by the Derry Hazard Mitigation Committee (DHMC) to track progress in implementing the mitigation strategies and actions as well as updating the goals and objectives of the *Plan*. The Derry Emergency Management Director (EMD) shall then report to the Planning Board and Town Council with recommendations. The 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). Review and approval of Hazard Mitigation recommendations from the DHMC and EMD shall be incorporated into the CIP approval process that takes place annually.

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 posted at least 24 hours in advance in a minimum of two locations such as the Town Hall and Library. The meetings will also be publicized on the local access television station or 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. Regarding adoption of the ***Derry Hazard Mitigation Plan Update 2015***, a public hearing to receive comment on the *Plan* maintenance and updating shall be held during the annual review period, and the final product will be to be adopted by the Town Council.

The ***Derry 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 emergency medical services, law enforcement, electric generators, and emergency shelters.

Emergency Management Plan: A jurisdiction's emergency management plan is 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 in Durham, N.H.

Hazard Mitigation: 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 Division of Homeland Security and 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 Energy and 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. *Flood Hazard Mitigation Planning: A Community Guide*; The Commonwealth of Massachusetts, Department of Environmental Management, Flood Hazard Management Program; June 1997

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

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

6. 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.

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

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

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

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

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

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

13. 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.

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

15. *State, power companies explore ice storm response*; Margo Sullivan. Eagle Tribune; December 29, 2008.

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

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

18. *State of New Hampshire 2010 Multi-Hazard Mitigation Plan*. 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.

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) http://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 http://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 http://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) http://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) http://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 http://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 http://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 http://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) http://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) http://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) http://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 http://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 Program*

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 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?

The Derry Hazard Mitigation Committee (HMC) met on June 5, 2013 and reviewed the proposed mitigation projects according the STAPLEE process.

Brainstorming Alternatives – (*from the June 5, 2013 HMC meeting)*
Newly identified mitigation strategies identified in the brainstorming session will be included in the prioritized implementation schedule for the updated plan. Ms. Jillian Harris described the STAPLEE process that would be used to prioritize mitigation strategies and to consider costs and benefits of each.

These aspects of each strategy are considered for each mitigation strategy and an average score is given for each. All members of the DHMC scored the strategies using this technique and score sheets were averaged to determine a final prioritization score. SNHPC staff totaled and averaged the scores and produced the following.

Hazard Mitigation Actions Evaluation

List of Actions Identified during the June 5, 2013 Hazard Mitigation Committee Meeting

SCORING:
1- Poor
2- Average
3- Good

		S		T		A		P		L		E		E		
		Social		Technical		Administrative		Political		Legal		Economic		Environmental		
	Project	Socially Acceptable (by community)	Effect on segment of population	Technically Feasible/ Potentially Successful	Is it a long-term solution?	Administratively Feasible- Staffing and Maintenance	Is there funding allocated for this project?	Politically Acceptable- has support	Does it help achieve other community objectives	Conforms to State & local law	Low Potential to be legally challenged	Economically Beneficial- Benefits outweigh Costs	Does the project reduce future disaster damages?	Environmental impacts on land, water, animal, plants is slight or none	Conforms to State, Local, & Federal Regs	**Total Average Score**
1	Continue to prohibit construction in the floodplain during review & permitting process	2.7	1.7	2.7	2.7	2	1.6	2	2.7	2.6	2.3	1.7	3	2.6	2.6	**33.67**
2	Continue to pursue funding for the upgrade of the DPW Radio system to have compatibility with Fire and Police	2	2.3	2.4	2.3	2.4	1.3	2	2.3	2.3	2.4	2	2	1.3	2	**29**
3	Improve drainage structures at Folsom and N. High. Improvements also needed at Tsienneto and Rt. 102.	2	2	2.7	2.3	2.3	1.6	2	2.3	2.4	2.3	2.4	2.7	2.3	2.4	**31.67**
4	Test and develop staffing plan for Pinkerton Academy Emergency Shelter Operations	2.7	2	2	2.3	1.6	1	2	2.3	2.6	2.6	2	1.6	2	2.3	**29**
5	Identify specific requirements and funding source for possible purchase of an additional portable generator that can be used where needed in emergencies	2.3	2.6	2.6	2.4	2	1	2.4	2.4	2.6	2.6	1.7	1.7	2	2	**30.33**
6	Continue to implement a public awareness program for emergency management and hazard mitigation action plans and benefits to the community	2	2.4	2.3	2.3	2.3	2	2.7	2.6	2.6	2.3	2.3	2.3	2.6	2.6	**33.33**
7	Continue to maintain current snow removal equipment and upgrade as needed to cope with snow emergencies	2.4	2.6	2.6	2.7	2.6	2	2.4	2.3	2.4	2.3	3	2.4	2.3	2.6	**34.67**
8	Continue to identify and remove hazardous trees in the Right of Way	2	2.3	2.6	2.7	2.4	1.6	2	2.6	2.3	2	2.4	2.6	2	2.3	**32**
9	Continue to implement culvert analysis for inventory and condition assessment	2.3	2	2.3	2.4	2.3	2	2	2.4	2.3	2.4	2.3	2.4	2	2	**31**
10	Continue to implement a culvert maintenance system	2.3	2	2.4	2.3	2.4	2	2	2.3	2.4	2.3	2.4	2.3	2	2	**31**
	Continue to purchase/lease															

13	Continue current plan to control the potential for waterborne illnesses to develop in standing water and disseminate information on these hazards	2.3	1.6	1.7	1.6	1.7	2	2	2	2	2.3	2	2	2	2	**27.67**
14	Encourage the Conservation Commission to become active in acquiring flood-prone properties for conservation and preservation purposes	2	1.3	1.7	2.3	2	2	1.6	2.3	2.6	2.7	1.7	2.6	2.7	2.6	**29.33**
15	Continue maintenance program for detention/retention ponds	2.3	1.4	2	2.6	2	1.6	2	2.3	2.7	2	2.3	2.3	2.4	2.3	**30.33**
16	Complete update of Telecommunication Overlay ordinance through Planning subcommittee	2	1.3	2	2	2.3	2.3	1.6	2	2	1.6	2	2	2	2	**27.33**
17	Continue to evaluate feasibility of adoption of Class VI Road Regulation standards	2	1.3	1.4	2	2.3	2	1.6	2	2.7	1.6	1.6	2	2.3	2	**27**
18	Complete Blighted Properties Ordinance	2.3	1.4	2	1.6	2.3	1.3	2	2.3	2.4	1.3	2	2	2.3	2	**28.33**
19	Encourage locating utilities underground for redevelopment	2	2.3	2.6	2.6	2.4	2.3	2.6	2	2.3	2	2.6	2.7	2	2.3	**33**
20	Continue to research feasibility of obtaining river gauges with transmitting capabilities, particularly at points of known repetitive flooding	2.3	1.6	2	2	2	1	1.6	2	2	2.6	2	1.3	2	2.7	**27.33**
21	Implement public outreach campaign to property owners along floodprone areas	2	1.3	1.6	2	1.7	1.4	1.6	1.7	1.6	2.3	1.7	2	2	2.3	**26**
22	Continue to pursue GIS data for utility infrastructure such as electric poles/circuits in Town	1.6	1.7	2	2.3	1.7	1.3	1.7	2	2.4	2.3	1.6	2	2.4	2.3	**28**
23	Encourage emergency management training and coordination between schools and Derry Bureau of Emergency Management, including drills and exercises	2.6	2.7	2.3	2.4	2	1.7	2	2.3	2.7	2.6	2.7	2.6	2.7	2.7	**34**
24	Continue to participate and comply with the NFIP and consider participation on the CRS	2.3	2	2.4	2	2.4	1.6	2.3	2.3	2.7	2.6	2	2.6	2.7	2.6	**33**

M. Lheureux Hazard Mitigation Actions Evaluation

List of Actions Identified during the June 5, 2013 Hazard Mitigation Committee Meeting

SCORING: 1- Poor 2- Average 3- Good

		S		T		A		P		L		E		E		
		Social		Technical		Administrative		Political		Legal		Economic		Environmental		
	Project	Socially Acceptable (by community)	Effect on segment of population	Technically Feasible/ Potentially Successful	Is it a long-term solution?	Administratively Feasible- Staffing and Maintenance	Is there funding allocated for this project?	Politically Acceptable- has support	Does it help achieve other community objectives	Conforms to State & local law	Low Potential to be legally challenged	Economically Beneficial- Benefits outweigh Costs	Does the project reduce future disaster damages?	Environmental impacts on land, water, animal, plants is slight or none	Conforms to State, Local, & Federal Regs	**Total Average Score**
1	Continue to prohibit construction in the floodplain during review & permitting process	3	1	2	2	2	1	2	2	2	3	2	3	2	2	**2.071**
2	Continue to pursue funding for the upgrade of the DPW Radio system to have compatibility with Fire and Police	2	2	2	2	2	1	2	2	2	2	2	2	1	2	**1.857**
3	Improve drainage structures at Folsom and N. High. Improvements also needed at Tsienneto and Rt. 102.	2	2	3	2	3	1	2	2	2	2	2	3	2	2	**2.143**
4	Test and develop staffing plan for Pinkerton Academy Emergency Shelter Operations	2	2	2	2	2	1	2	2	2	2	2	1	1	2	**1.786**
5	Identify specific requirements and funding source for possible purchase of an additional portable generator that can be used where needed in emergencies	2	2	2	2	2	1	2	1	2	2	1	1	2	2	**1.714**
6	Continue to implement a public awareness program for emergency management and hazard mitigation action plans and benefits to the community	2	2	2	2	2	2	2	2	2	2	2	1	2	2	**1.929**
7	Continue to maintain current snow removal equipment and upgrade as needed to cope with snow emergencies	2	3	3	3	3	3	3	2	2	2	3	2	2	2	**2.5**
8	Continue to identify and remove hazardous trees in the Right of Way	2	2	2	3	3	2	2	2	2	2	2	2	2	2	**2.143**
9	Continue to implement culvert analysis for inventory and condition assessment	2	2	2	2	2	2	2	2	2	2	2	2	2	2	**2**
10	Continue to implement a culvert maintenance system	2	2	2	2	2	2	2	2	2	2	2	2	2	2	**2**
11	Continue to purchase/lease emergency vehicles and equipment to update and expand existing supply	2	2	2	2	2	2	2	2	2	2	2	2	2	2	**2**
12	Continue to encourage property owners to elevate structures in the floodplain, especially insured and repetitive loss properties	2	1	2	2	2	1	2	1	2	2	1	2	2	2	**1.714**
13	Continue current plan to control the potential for waterborne illnesses to develop in standing water and disseminate information on these hazards	2	1	1	1	1	2	2	1	2	2	2	1	2	2	**1.571**

14	Encourage the Conservation Commission to become active in acquiring flood-prone properties for conservation and preservation purposes	2	1	1	2	1	1	2	1	2	2	1	2	2	2	**1.571**
15	Continue maintenance program for detention/retention ponds	2	1	2	2	1	1	2	1	2	2	2	2	2	2	**1.714**
16	Complete update of Telecommunication Overlay ordinance through Planning subcommittee	1	1	2	1	2	2	1	1	1	1	2	2	2	2	**1.5**
17	Continue to evaluate feasibility of adoption of Class VI Road Regulation standards	1	1	1	1	1	1	1	1	2	1	1	1	2	1	**1.143**
18	Complete Blighted Properties Ordinance	2	1	1	2	2	1	2	1	1	1	1	1	2	1	**1.357**
19	Encourage locating utilities underground for redevelopment	2	2	3	3	2	2	3	1	2	2	3	3	2	2	**2.286**
20	Continue to research feasibility of obtaining river gauges with transmitting capabilities, particularly at points of known repetitive flooding	2	2	2	2	2	1	2	1	1	2	2	1	2	2	**1.714**
21	Implement public outreach campaign to property owners along floodprone areas	2	1	2	2	1	1	2	1	1	2	1	1	2	2	**1.5**
22	Continue to pursue GIS data for utility infrastructure such as electric poles/circuits in Town	2	1	1	2	1	1	1	1	2	2	1	1	2	2	**1.429**
23	Encourage emergency management training and coordination between schools and Derry Bureau of Emergency Management, including drills and exercises	2	2	2	2	2	1	2	2	2	2	2	2	2	2	**1.929**
24	Continue to participate and comply with the NFIP and consider participation on the CRS	2	2	2	2	2	1	2	1	2	2	1	2	2	2	**1.786**

R. Brown Hazard Mitigation Actions Evaluation

List of Actions Identified during the June 5, 2013 Hazard Mitigation Committee Meeting

SCORING: 1- Poor 2- Average 3- Good

		S		T		A		P		L		E		E		
		Social		Technical		Administrative		Political		Legal		Economic		Environmental		
	Project	Socially Acceptable (by community)	Effect on segment of population	Technically Feasible/ Potentially Successful	Is it a long-term solution?	Administratively Feasible- Staffing and Maintenance	Is there funding allocated for this project?	Politically Acceptable- has support	Does it help achieve other community objectives	Conforms to State & local law	Low Potential to be legally challenged	Economically Beneficial- Benefits outweigh Costs	Does the project reduce future disaster damages?	Environmental impacts on land, water, animal, plants is slight or none	Conforms to State, Local, & Federal Regs	**Total Average Score**
1	Continue to prohibit construction in the floodplain during review & permitting process	2	2	3	3	2	2	2	3	3	2	3	3	3	3	**2.571**
2	Continue to pursue funding for the upgrade of the DPW Radio system to have compatibility with Fire and Police	2	2	2	2	2	2	2	2	2	2	2	2	2	2	**2**
3	Improve drainage structures at Folsom and N. High. Improvements also needed at Tsienneto and Rt. 102.	2	2	2	2	2	2	2	2	2	2	2	2	2	2	**2**
4	Test and develop staffing plan for Pinkerton Academy Emergency Shelter Operations	3	2	2	2	2	1	3	2	3	3	2	2	2	3	**2.286**
5	Identify specific requirements and funding source for possible purchase of an additional portable generator that can be used where needed in emergencies	3	3	3	3	2	1	3	3	3	3	2	2	2	2	**2.5**
6	Continue to implement a public awareness program for emergency management and hazard mitigation action plans and benefits to the community	2	2	2	2	2	2	3	3	3	2	3	3	3	3	**2.5**
7	Continue to maintain current snow removal equipment and upgrade as needed to cope with snow emergencies	2	2	2	2	2	1	2	2	2	2	3	3	3	3	**2.214**
8	Continue to identify and remove hazardous trees in the Right of Way	2	3	3	2	2	1	2	3	2	2	3	3	2	2	**2.286**
9	Continue to implement culvert analysis for inventory and condition assessment	2	2	2	2	2	2	2	2	2	2	2	2	2	2	**2**
10	Continue to implement a culvert maintenance system	2	2	2	2	2	2	2	2	2	2	2	2	2	2	**2**
11	Continue to purchase/lease emergency vehicles and equipment to update and expand existing supply	3	3	3	2	2	1	2	2	2	2	2	3	2	2	**2.214**
12	Continue to encourage property owners to elevate structures in the floodplain, especially insured and repetitive loss properties	2	2	2	2	2	2	2	2	2	2	2	2	2	2	**2**
13	Continue current plan to control the potential for waterborne illnesses to develop in standing water and disseminate information on these hazards	2	2	2	2	2	2	2	2	2	2	2	2	2	2	**2**

14	Encourage the Conservation Commission to become active in acquiring flood-prone properties for conservation and preservation purposes	2	2	2	2	2	2	2	3	3	3	2	3	3	3	**2.429**
15	Continue maintenance program for detention/retention ponds	2	2	2	3	2	1	2	3	3	2	3	3	3	3	**2.429**
16	Complete update of Telecommunication Overlay ordinance through Planning subcommittee	2	2	2	2	2	2	2	2	2	2	2	2	2	2	**2**
17	Continue to evaluate feasibility of adoption of Class VI Road Regulation standards	2	2	2	2	2	2	2	2	3	2	2	3	3	3	**2.286**
18	Complete Blighted Properties Ordinance	3	2	2	3	2	1	2	3	3	1	3	3	3	3	**2.429**
19	Encourage locating utilities underground for redevelopment	2	2	2	2	2	2	2	2	2	2	2	2	2	2	**2**
20	Continue to research feasibility of obtaining river gauges with transmitting capabilities, particularly at points of known repetitive flooding	3	2	2	2	2	1	2	3	3	3	2	1	2	3	**2.214**
21	Implement public outreach campaign to property owners along floodprone areas	2	2	2	2	2	2	2	2	2	2	2	2	2	2	**2**
22	Continue to pursue GIS data for utility infrastructure such as electric poles/circuits in Town	2	2	2	2	2	2	2	2	2	2	2	2	2	2	**2**
23	Encourage emergency management training and coordination between schools and Derry Bureau of Emergency Management, including drills and exercises	3	3	2	2	2	2	2	2	3	3	3	3	3	3	**2.571**
24	Continue to participate and comply with the NFIP and consider participation on the CRS	3	2	3	2	3	2	3	3	3	3	3	3	3	3	**2.786**

E. Robidoux Hazard Mitigation Actions Evaluation

List of Actions Identified during the June 5, 2013 Hazard Mitigation Committee Meeting

SCORING: 1- Poor 2- Average 3- Good

		S		T		A		P		L		E		E		
		Social		Technical		Administrative		Political		Legal		Economic		Environmental		
	Project	Socially Acceptable (by community)	Effect on segment of population	Technically Feasible/ Potentially Successful	Is it a long-term solution?	Administratively Feasible- Staffing and Maintenance	Is there funding allocated for this project?	Politically Acceptable- has support	Does it help achieve other community objectives	Conforms to State & local law	Low Potential to be legally challenged	Economically Beneficial- Benefits outweigh Costs	Does the project reduce future disaster damages?	Environmental impacts on land, water, animal, plants is slight or none	Conforms to State, Local, & Federal Regs	**Total Average Score**
1	Continue to prohibit construction in the floodplain during review & permitting process	3	2	3	3	2	2	3	3	3	2	1	3	3	3	**2.571**
2	Continue to pursue funding for the upgrade of the DPW Radio system to have compatibility with Fire and Police	2	3	3	3	3	1	2	3	3	3	2	2	1	2	**2.357**
3	Improve drainage structures at Folsom and N. High. Improvements also needed at Tsienneto and Rt. 102.	2	2	3	3	2	2	2	3	3	3	3	3	3	3	**2.643**
4	Test and develop staffing plan for Pinkerton Academy Emergency Shelter Operations	3	2	2	3	1	1	1	3	3	3	2	2	1	3	**2.143**
5	Identify specific requirements and funding source for possible purchase of an additional portable generator that can be used where needed in emergencies	2	3	3	2	2	1	2	3	3	3	2	2	2	2	**2.286**
6	Continue to implement a public awareness program for emergency management and hazard mitigation action plans and benefits to the community	2	3	3	3	3	2	2	3	3	3	2	3	3	3	**2.714**
7	Continue to maintain current snow removal equipment and upgrade as needed to cope with snow emergencies	3	3	3	3	3	2	2	3	3	3	3	2	2	3	**2.714**
8	Continue to identify and remove hazardous trees in the Right of Way	2	2	3	3	2	2	2	3	3	2	2	3	2	3	**2.429**
9	Continue to implement culvert analysis for inventory and condition assessment	3	2	3	3	3	2	2	3	3	3	3	3	2	2	**2.643**
10	Continue to implement a culvert maintenance system	3	2	3	3	3	2	2	3	3	3	3	3	2	2	**2.643**
11	Continue to purchase/lease emergency vehicles and equipment to update and expand existing supply	3	3	3	3	3	2	2	3	3	3	3	2	2	3	**2.714**
12	Continue to encourage property owners to elevate structures in the floodplain, especially insured and repetitive loss properties	3	2	3	3	2	2	3	3	3	2	1	3	3	3	**2.571**
13	Continue current plan to control the potential for waterborne illnesses to develop in standing water and disseminate information on these hazards	3	2	2	2	2	2	2	3	3	3	2	3	2	2	**2.357**

14	Encourage the Conservation Commission to become active in acquiring flood-prone properties for conservation and preservation purposes	2	1	2	3	2	1	1	3	3	3	2	3	3	3	**2.286**
15	Continue maintenance program for detention/retention ponds	3	1	2	3	3	3	2	3	3	2	2	2	2	2	**2.357**
16	Complete update of Telecommunication Overlay ordinance through Planning subcommittee	3	1	2	3	3	3	2	3	3	2	2	2	2	2	**2.357**
17	Continue to evaluate feasibility of adoption of Class VI Road Regulation standards	3	1	2	3	3	3	2	3	3	2	2	2	2	2	**2.357**
18	Complete Blighted Properties Ordinance	2	1	3	3	3	2	2	3	3	2	2	2	2	2	**2.286**
19	Encourage locating utilities underground for redevelopment	2	3	3	3	3	3	3	3	3	2	3	3	2	3	**2.786**
20	Continue to research feasibility of obtaining river gauges with transmitting capabilities, particularly at points of known repetitive flooding	2	1	2	2	2	1	1	2	2	3	2	2	2	3	**1.929**
21	Implement public outreach campaign to property owners along floodprone areas	2	1	2	2	2	1	2	3	2	3	2	2	2	3	**2.071**
22	Continue to pursue GIS data for utility infrastructure such as electric poles/circuits in Town	3	2	3	3	2	1	2	3	3	3	2	3	3	3	**2.571**
23	Encourage emergency management training and coordination between schools and Derry Bureau of Emergency Management, including drills and exercises	3	3	3	3	2	2	2	3	3	3	3	3	3	3	**2.786**
24	Continue to participate and comply with the NFIP and consider participation on the CRS	2	2	3	2	2	2	2	3	3	3	2	3	3	3	**2.5**

APPENDIX F - DHMPC MEETING AGENDAS, MINUTES AND ATTENDANCE SHEETS

Derry Hazard Mitigation Committee Meeting

Meeting Number 1
April 4, 2013
10:00 am

Derry Town Offices
14 Manning Street
Derry, NH 03038

AGENDA

1. **Call to Order**

2. **Overview of the Hazard Mitigation Planning Process**
   a. Scope of work to be completed

3. **Identify/Update Past and Potential Hazards**
   a. Identify past hazard events in Derry
   b. Map past hazard events and other areas of concern

4. **Identify/Update Critical Facilities**
   a. Definition of Critical Facilities, Areas at Risk, Commercial Economic Impact Areas and Hazardous Waste Sites
   b. Review Critical Facilities in current plan and identify those that are not listed or those that have changed

5. **Agree on Next Committee Meeting Date, Time, Location**

6. **Questions?**

7. **Adjournment**

Town of Derry, New Hampshire

Hazard Mitigation Committee Meeting #1

April 4, 2013
10:00 AM

Derry Town Offices
14 Manning St
Derry, NH 03038

ATTENDANCE SHEET

Name	Position Title/ Department Affiliation	E-mail & Phone
Ray Brown	Asst Emerg Mgt Dir	432 6751 raybrown@derry.
Mark L'Heureux	Derry DPW	432-6144 mark.lheureux@ci.derry.nh.us
Bob Mackey	Derry Building	bobmackey@derrynh.org
Alan Cote	Supt. of Operations	alancote@derrynh.org
Elizabeth Robidoux	Planning Assistant	elizabethrobidoux@derrynh.org
[illegible]	IT/GIS Mgr.	[illegible]
Vern Thomas	Derry PD	vthomas@derrynhpolice.com

Derry Hazard Mitigation Committee Meeting
Thursday, April 4, 2013 - 10:00 AM
Derry Town Offices
14 Manning St, Derry, NH 03038

Derry Hazard Mitigation Committee (DHMC) members present:

- Ray Brown – Asst. EMD
- Mark L'Heureux – Derry DPW
- Bob Mackey – Derry Building
- Alan Coté – Superintendent of Operations
- Elizabeth Robidoux – Planning Assistant
- Doug Rathburn – IT/GIS Manager
- Vern Thomas – Derry Police Dept.
- Jillian Harris – SNHPC

1. **Call to Order**

   Ms. Harris called the April 4, 2013 meeting of the Derry Hazard Mitigation Committee (DHMC) to order at 10:00 AM.

2. **Overview of the Hazard Mitigation Planning Process**

   Ms. Harris gave an overview of the Hazard Mitigation Planning Process and the Plan update process. The meeting schedule was also reviewed, along with what the FEMA review process expectations would be. DHMC members were asked to keep track of their time spent on the plan outside of meetings (tracking sheet distributed) for the in-kind match that is required of the grant which has been provided by NH HSEM for updating the plan.

3. **Identify/Update Past and Potential Hazards**

   DHMC members reviewed the Past and Potential Hazards section of the plan and discussed updates to the hazard areas identified in the past. DHMC members updated the maps with revisions and additional hazard areas that were identified. Ms. Harris will make updates to the plan per DHMC members input and distribute for review.

4. **Identify/Update Critical Facilities**

   DHMC members reviewed the critical facilities identified in the plan and made suggestions for updates. Ms. Harris asked that committee members review the Critical Facilities section of the plan in between meetings for any further updates that might need to be made.

5. **Next Meeting –** May 9, 2013 – 10 AM – Derry Town Offices, Rm. 207

6. **Adjourn** – 11:15 AM

Derry Hazard Mitigation Committee Meeting

Meeting Number 2
May 9, 2013
10:00 am

Derry Town Offices
14 Manning Street
Derry, NH 03038

AGENDA

1. **Call to Order**

2. **Approve the Minutes of the April 4, 2013 meeting**

3. **Review Past and Potential Hazards Draft**
   a. Insert any missing information
   b. Questions, comments, suggested revisions

4. **Review Critical Facilities in Derry**
   a. Insert Updates or revisions
   b. Move to appendix

5. **Review Goals and Objectives**
   a. Revise Goals and Objectives as needed for plan update

6. **Mitigation Strategy**
   a. Review Existing Mitigation Strategies, Matrix and summary
   b. Review Newly Identified Mitigation Strategies

7. **Questions?**

8. **Set next meeting date**

9. **Adjournment**

Town of Derry, New Hampshire

2013 Hazard Mitigation Committee Meeting #2

May 9, 2013
10:00 AM

Derry Town Offices
14 Manning St
Derry, NH 03038

ATTENDANCE SHEET

Name	Position Title/ Department Affiliation	E-mail & Phone
Vern Thomas	Derry Police	vthomas@derrynhpolice.com
Ray Brown	Derry EMD	raybrown@derry.ci.nh.
George Sioras	Derry Planning	georgesioras@derry.nh.org
Mark L'Heureux	DPW	marklheureux@ci.derry.nh.us
George Klauber	EM / Fire Chief	georgeklauber@derrynh.org
Doug Rathburn	IT/GIS MGR.	dougrathburn@derrynh.org

Derry Hazard Mitigation Committee Meeting
Thursday, May 9, 2013 - 10:00 AM
Derry Town Offices
14 Manning St, Derry, NH 03038

Derry Hazard Mitigation Committee (DHMC) members present:

- George Klauber – EM/Fire Chief
- Ray Brown – Asst. EMD
- Mark L'Heureux – Derry DPW
- George Sioras – Planning Dept.
- Doug Rathburn – IT/GIS Manager
- Vern Thomas – Derry Police Dept.
- Jillian Harris – SNHPC

1. Call to Order

Ms. Harris called the May 9, 2013 meeting of the Derry Hazard Mitigation Committee (DHMC) to order at 10:00 AM.

2. Minutes

Mr. Brown made a motion to approve the minutes if the April 4, 2013 DHMC Meeting, Mr. Thomas seconded. Motion passes, with one abstention from Mr. Klauber.

3. Review Past and Potential Hazards Draft

DHMC members reviewed the Past and Potential Hazards draft of the plan and Ms. Harris went through questions on certain sections that needed clarification from the committee, such as the most recent debris-impact event in 2006 (updated from a 1996 event cited in the plan currently). Other revisions included, adding the nearby 2008 tornado in Deerfield to the Tornado section and updating the recent nor'easters list to include the October 2011 event and the February 2013 event.

4. Review Critical Facilities in Derry

DHMC members reviewed the critical facilities identified in the plan and made suggestions for updates, including the addition of Emergency Communication Towers on Gator Drive, Kendall Pond Road and Heritage Lane. In the updated plan the critical facilities section will be moved to the appendices.

5. Review Goals and Objectives

DHMC members reviewed the current goals and objectives stated in the plan that were adapted from the 2007 New Hampshire Hazard Mitigation Plan. DHMC members agreed to update them to those stated in the 2010 New Hampshire Hazard Mitigation Plan and to also include "pre-notification" as an addition to the first goal which states "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."

6. **Mitigation Strategy**

   DHMC members reviewed Section III: Existing Mitigation Strategy and Proposed Improvements. Updates included changing the year of the latest EOP to 2013 and noting the current status of each type of existing protection in the matrix on pages 59-64.

7. **Questions**

   DHMC members discussed communications and cell coverage in the Town of Derry and possible hazards associated with not having complete coverage and communication connections. "Dark zones" in cell coverage were noted as Beaver Lake and 102, Bypass 28 from Auburn town line to Eastgate and from Manchester Rd to 102. Mr. Sioras noted that there are limitations from zoning as to where cell towers can be constructed, but variances may be possible for areas with low coverage.

8. **Next Meeting** – June 5, 2013 – 10 AM – Derry Town Offices, Rm. 207

9. **Adjourn** – 11:30 AM

Derry Hazard Mitigation Committee Meeting

Meeting Number 3
June 5, 2013
10:00 am

Derry Town Offices
14 Manning Street
Derry, NH 03038

AGENDA

1. **Call to Order**

2. **Approve the Minutes of the May 9, 2013 meeting**

3. **Updates to:**
   a. **Section IV: Newly Identified Mitigation Strategies and Critical Evaluation**
   b. **Section V: Prioritized Implementation Schedule and Funding Sources**

4. **Identify Gaps in Hazard Mitigation and Set Objectives for Future Mitigation Efforts**
   - **What hazards is Derry particularly vulnerable to that could use additional mitigation efforts?**
   - **Were there events in the past 5 years that uncovered new or different hazards that need to be mitigated and planned for?**

5. **Brainstorming Alternatives**
   a. **Brainstorm any new mitigation strategies that can be added**

6. **NFIP**
   a. **Identify, analyze and prioritize actions related to continued compliance with NFIP**

7. **Questions?**

8. **Schedule meeting #4**

9. **Adjournment**

Town of Derry, New Hampshire

2013 Hazard Mitigation Committee Meeting #3

June 5, 2013
10:00 AM

Derry Town Offices
14 Manning St
Derry, NH 03038

ATTENDANCE SHEET

Name	Position Title/ Department Affiliation	E-mail & Phone
Elizabeth Robidoux	Planning	on file
Dave Blanchard for Mark L'Heureux	D.P.W.	
Vern Thomas	Derry P.D.	vthomas@derrynhpolice.com
Ray Brown	Derry EMS	on file
Cornelio Sierra	Planning	on file
Bob Mackey	Code Enforcement	on file

Derry Hazard Mitigation Committee Meeting
Thursday, June 5, 2013 - 10:00 AM
Derry Town Offices
14 Manning St, Derry, NH 03038

Derry Hazard Mitigation Committee (DHMC) members present:

- Ray Brown – Asst. EMD
- Dave Blanchard – Derry DPW
- George Sioras – Planning Dept.
- Elizabeth Robidoux – Planning Dept.
- Bob Mackey – Code Enforcement
- Vern Thomas – Derry Police Dept.
- Jillian Harris – SNHPC

1. Call to Order

Ms. Harris called the June 5, 2013 meeting of the Derry Hazard Mitigation Committee (DHMC) to order at 10:00 AM.

2. Minutes

Mr. Sioras made a motion to approve the minutes if the May 9, 2013 DHMC Meeting, Mr. Brown seconded. Motion passes, with an abstention from Ms. Robidoux and Mr. Blanchard.

3. Updates to Section IV and Section V

DHMC members reviewed Sections IV and V of the 2009 Derry Hazard Mitigation Plan. Updates to the Newly Identified Mitigation Strategies and Prioritized Implementation Schedule were made based on the current status of the strategies and their implementation. Ms. Harris will make updates to the plan and any ongoing or incomplete mitigation items will be added to the updated plan as ongoing strategies to be prioritized and addressed.

4. Identify Gaps in Hazard Mitigation and Set Objectives for Future Mitigation Efforts

DHMC members reviewed ongoing mitigation strategies and considered new mitigation strategies for addressing the hazard mitigation goals of the town. DHMC members reviewed mitigation ideas in the FEMA publication "Mitigation Ideas" published January 2013. Many of the ideas were already being implemented in the town. Newly identified mitigation strategies include:

- Implement public outreach campaign to property owners along flood prone areas
- Continue to pursue GIS data for utility infrastructure such as electric poles/circuits in Town

- Encourage emergency management training and coordination between schools and Derry Bureau of Emergency Management, including drills and exercises
- Continue to participate and comply with the NFIP and consider participation on the CRS

5. **Brainstorming Alternatives**

Newly identified mitigation strategies identified in the brainstorming session will be included in the prioritized implementation schedule for the updated plan. Ms. Harris described the STAPLEE process that would be used to prioritize mitigation strategies and to consider costs and benefits of each. STAPLEE stands for:

- Social
- Technical
- Administrative
- Political
- Legal
- Economic
- Environmental

These aspects of each strategy are considered for each mitigation strategy and an average score is given for each. All members of the DHMC will score the strategies using this technique and score sheets will be averaged to determine a final prioritization score. Ms. Harris will present the prioritized list to the DHMC at the next meeting for review and discussion.

6. **NFIP**

The DHMC identified and analyzed actions for continued compliance with the National Flood Insurance Program (NFIP). Ms. Harris went through a checklist with the committee to determine if they were meeting the actions listed for continued compliance and the Town is currently meeting all items suggested. This information will be included in the NFIP section of the plan update.

7. **Questions**

No questions discussed.

8. **Next Meeting** – August 7, 2013 – 10 AM – Derry Town Offices, Rm. 207

9. **Adjourn** – 11:30 AM

Derry Hazard Mitigation Committee Meeting

Meeting Number 4
August 7, 2013
10:00 am

Derry Town Offices
14 Manning Street
Derry, NH 03038

AGENDA

1. **Call to Order**

2. **Approve the Minutes of the June 5, 2013 meeting**

3. **Review**
   a. **STAPLEE results for updated mitigation strategies**

4. **Determine Cost estimates and implementation for mitigation strategies**

5. **Review and update Adoption, Evaluation and Monitoring section**

6. **Schedule meeting #5**

Town of Derry, New Hampshire

2013 Hazard Mitigation Committee Meeting #4

August 7, 2013
10:00 AM

Derry Town Offices
14 Manning St
Derry, NH 03038

ATTENDANCE SHEET

Name	Position Title/ Department Affiliation	E-mail & Phone
Alan Côté	Supt of Operations Public Works	alancote@derrynh.org
George Sioras	Planning Director	[illegible]
Elizabeth Robidoux	Planning Assistant	
Bob Mackey	Code Enforcement	bobmackey@derrynh.org 432-8148
George Klauber	EM	georgeklauber@derrynh.org
Dave Blanchard	Eng. Tech. - DPW	daveblanchard@derrynh.org
Vern Thomas	Derry PD	vthomas@derrynhpolice.com

Derry Hazard Mitigation Committee Meeting
Thursday, August 7, 2013 - 10:00 AM
Derry Town Offices
14 Manning St, Derry, NH 03038

Derry Hazard Mitigation Committee (DHMC) members present:

- Alan Cote – Derry DPW
- Dave Blanchard – Derry DPW
- George Sioras – Planning Dept.
- Elizabeth Robidoux – Planning Dept.
- Bob Mackey – Code Enforcement
- Vern Thomas – Derry Police Dept.
- George Klauber - EMD
- Jillian Harris – SNHPC

1. Call to Order

Ms. Harris called the August 7, 2013 meeting of the Derry Hazard Mitigation Committee (DHMC) to order at 10:00 AM.

2. Minutes

Mr. Sioras made a motion to approve the minutes of the June 5, 2013 DHMC Meeting, Ms. Robidoux seconded. Motion passes.

3. Review STAPLEE results for updated mitigation strategies

Ms. Harris reviewed the results of the STAPLEE exercise with DHMC members for prioritizing mitigation strategies. DHMC members suggested minor changes to the prioritization including:

- Move #2 down to become #3 and add, "Include elected officials in exercises and drills" as a new #2
- Change wording on #22 to read "install visual river gauges at points of known repetitive flooding"

4. Determine Cost estimates and implementation for mitigation strategies

DHMC members discussed cost estimates for the proposed mitigation strategies along with leadership, deadline and funding for implementation of the strategies. DHMC members suggested minor revisions to the implementation for ongoing strategies developed during the last plan update.

DHMC members discussed ongoing mitigation strategies such as coordination with utilities and obtaining GIS/mapping data. It was noted that Liberty utilities has this data available for the town but other utilities did not have it readily available for town use during emergencies or for planning purposes.

DHMC members noted that new portable emergency message signs were obtained for town use. Resources available from private entities should be inventoried for the possibility of using them during emergencies (items such as signs, barriers, etc…)

5. **Review and update Adoption, Evaluation and Monitoring section**

   DHMC members reviewed Section VI and did not make any changes.

6. **Next Meeting** – September 12, 2013 – 10 AM – Derry Town Offices, Rm. 207

7. **Adjourn** – 11:30 AM

Derry Hazard Mitigation Committee Meeting

Meeting Number 5
October 23, 2013
1:30 PM

Derry Town Offices
14 Manning Street
Derry, NH 03038

AGENDA

1. **Call to Order**
2. **Approve the Minutes of the August 7, 2013 meeting**
3. **Review Section II: Vulnerability Assessment**
4. **Review Section IV: Newly Identified Mitigation Strategies & Critical Evaluation**
5. **Review Section V: Prioritized Implementation Schedule and Funding Sources**
6. **Review Section VI: Administrative Procedures Regarding Adoption and Monitoring of the Plan**
7. **Next Steps**

Town of Derry, New Hampshire

2013 Hazard Mitigation Committee Meeting #5

October 23, 2013
1:30 PM

Derry Town Offices
14 Manning St
Derry, NH 03038

ATTENDANCE SHEET

Name	Position Title/ Department Affiliation	E-mail & Phone
Elizabeth Robidoux	Planning	
Ray Brown	Emergency MGT	
Alan R Cote	D.P.W.	
Brenda Sioras	Planning	
Bob Mackey	Code Enforcement	
George Hunter	EM/Fire	
Vern Thomas	Derry PD	

Derry Hazard Mitigation Committee Meeting
Thursday, October 23, 2013 – 1:30 PM
Derry Town Offices
14 Manning St, Derry, NH 03038

Derry Hazard Mitigation Committee (DHMC) members present:

- Alan Cote – Derry DPW
- George Sioras – Planning Dept.
- Elizabeth Robidoux – Planning Dept.
- Bob Mackey – Code Enforcement
- Vern Thomas – Derry Police Dept.
- George Klauber - EMD
- Ray Brown – Emergency Mgt.
- Jillian Harris – SNHPC

1. Call to Order

Ms. Harris called the October 23, 2013 meeting of the Derry Hazard Mitigation Committee (DHMC) to order at 1:35 PM.

2. Minutes

Mr. Sioras made a motion to approve the minutes of the August 7, 2013 DHMC Meeting, Ms. Robidoux seconded. Motion passes.

3. Review Section II: Vulnerability Assessment

Ms. Harris reviewed Section II and described the process for undertaking the Vulnerability Assessment. FEMA's HAZUS software was used to model flooding scenarios and determine estimates for economic loss from flooding in the town. Economic loss for both a 100-year flood event and a 500-year flood event were estimated and included in the assessment. DHMC members reviewed a map which pictures the areas of town that could potentially have the highest economic impacts from flooding. Ms. Harris explained that the rest of the vulnerability assessment for other hazards identified in the plan was done using worksheets from the publication *Understanding Your Risks: Identifying Hazards and Estimating Losses* (FEMA, August 2001). This is the same methodology used for the vulnerability assessment in the last update of the plan. Ms. Harris will work with Mr. Klauber and Mr. Cote to model a severe wind event using the HAZUS software and compare it to the estimate produced for this hazard to determine which methodology to use.

4. Review Section IV: Newly Identified Mitigation Strategies & Critical Evaluation

Ms. Harris gave an overview of Section IV, which includes the methodology for prioritizing mitigation actions. No changes were made to the updates included in this section.

5. **Review Section V: Prioritized Implementation Schedule and Funding Sources**

   Ms. Harris gave an overview of the results of the mitigation action prioritization included in Section V. The word "ongoing" in the timeframe column will be replaced with 2014-2019, the next plan cycle, to specify the time period those actions will need to be addressed within. Ms. Robidoux recommends defining the acronym "CRS" in the list of acronyms at the end of the table.

   DHMC members reviewed the cost of implementation section and asked that there be a clarification that the costs pertain to "Town costs" only.

6. **Review Section VI: Administrative Procedures Regarding Adoption and Monitoring of the Plan**

   DHMC members reviewed Section VI and offered suggestions for updates. For the monitoring, evaluating and updating description it should include, "The Derry EMD shall then report to the Planning Board and Town Council with the recommendations." The text should be revised to describe the plan review and update as part of the annual CIP process for review and approval. Ms. Harris will update the text and ask DHMC members to review and approve at the next meeting.

7. **Next Meeting** – TBD – Derry Town Offices, Rm. 207

   Adjourn – 2:30 PM

Derry Hazard Mitigation Committee Meeting

Meeting Number 6
June 9, 2014
2:30 PM

Derry Town Offices
14 Manning Street
Derry, NH 03038

AGENDA

1. **Call to Order**
2. **Approve the Minutes of the October 10, 2013 meeting**
3. **Review Chart for Mitigation Assessment**
4. **Next Steps**

Town of Derry, New Hampshire

2013 Hazard Mitigation Committee Meeting #6

June 9, 2014
2:30 PM

Derry Town Offices
14 Manning St
Derry, NH 03038

ATTENDANCE SHEET

Name	Position Title/ Department Affiliation	E-mail & Phone
Karen Mattar	Senior Planner	KMattar@snhpc.org
Parker Moore	HSEM / Hazmit Planner	parker.moore@dos.nh.gov 223-3661
George Klauber	EM - Town of Derry	georgeklauber@derrynh.org
JULIA CHASE	HSEM - FIELD REP	432-6751 julia.chase@dos.nh.gov

Derry Hazard Mitigation Committee Meeting
Monday, June 9, 2014 – 2:30 PM
Derry Town Offices
14 Manning St, Derry, NH 03038

Derry Hazard Mitigation Committee (DHMC) members present:

- Julia Chase, Department of Safety, Homeland Security and Emergency Management.
- George Klauber – Fire Chief and EMD
- Parker Moore, State Hazard Mitigation Planner
- Karen Mattor – SNHPC

1. **Introduction** - Mr. Klauber explained how the committee had disbanded after the last meeting and the plan is almost complete. Ms. Mattor explained that the state required revisions had to be made and the Sections C and D from the "Local Mitigation Plan Review Tool" still had to be completed which requires input from the town. Mr. Moore reaffirmed this and so the "Existing Protection Policies, Programs and Proposed Improvements for the Town of Derry" were worked on together.

2. **Review Existing Protection, Programs and proposed Improvement for the Town of Derry** – Ms. Mattor explained that the state recommended that the "Effectiveness and/or Enforcement" column needs to be made into two columns so one side can show the assessment rating of poor, good or excellent It was discussed that poor would be defined as 'inadequate' or 'not currently being done'; good would be defined as 'currently in place and effective'; and, excellent would be defined as 'exceeding standards and doing a great job.' Mr. Klauber said he will check with the appropriate town departments to make sure the assessment is of the "Type of Existing Protection" is correct but the meeting attendees made the following determinations.

    - Floodplain Development District- Good but will check with Building Department.
    - Wetlands Conservation Overlay District – Good but will confirm with Conservation Commission (CC)
    - Conservation Corridor Overlay District- Good but will confirm with CC.
    - Groundwater Resource Conservation District – Good but will confirm with CC.
    - Earth Removal Regulations – Good but will check with Building Department.
    - Manufactured Housing Park District – Good but will check with Planning Department.
    - Emergency Operations Plan – Excellent
    - Evacuation and Notification – Excellent
    - NH State Dam Program – Good
    - Road Design Standards – Excellent
    - Shoreland and Water Quality Protection Act – Good
    - Best Management Practices – Good

- Generators – Excellent
- Town Radio System – Good
- Hazardous Materials Regulations – Good
- Motor Homes/Travel Trailers – Good
- IBC and local building codes – Good
- Comprehensive Emergency Management Planning for Schools (CEMPS) – Good
- Steep Slope Regulations – Good
- Elevation Certificates – Good
- Haz-Mat Responses – Excellent
- GIS System – Excellent
- Telecommunications Overlay District – Poor
- Well-head Protection Program – Good
- Community Notification System - Excellent

3. **Next Steps** – There will be no more meetings but Ms. Mattor will make the necessary changes and then they will be reviewed and approved by Fire Chief Klauber. Then, the final draft will be sent to Mr. Moore for his approval and then on to FEMA. The deadline is September 18, 2014 so this process will need to go as fast as possible.

Adjourn – 3:40 PM

TOWN OF DERRY

Town Council
Derry Municipal Center

November 17, 2015
Tuesday - 7:30 PM

6:30 PM **Consultation with legal counsel** – *Not open to the public*

7:30 PM Call to order

Pledge of Allegiance, warning of fire exits, handicap access, & turn off all cell phones

Roll Call

Consent Agenda –

15-149 Approve Non-Public Minutes – October 26, 2015
15-150 Approve Special Meeting Minutes – October 26, 2015
15-151 Approve Minutes – Special Public Hearing – October 27, 2015
15-152 Approve Non-Public Minutes – November 3, 2015 – **minutes sealed**
15-153 Approve Minutes – November 3, 2015
15-154 Schedule Public Hearing – December 1, 2015 – 2015 Hazardous Mitigation Plan
15-155 Schedule Public Hearing – December 1, 2015 – Approval of NH Department of Transportation Memorandum of Agreement, Exit 4-A
15-156 Schedule Public Hearing – December 1, 2015 - Exit 4-A Supplemental Appropriation – Amendment #6
15-157 Schedule Public Hearing – December 1, 2015 - Demolition 19 Elm Street and Supplemental Appropriation

Chairman's Report –

Town Administrator's Report –

Public Forum - **30 Minutes**

Public Hearing –

15-133 1st Public Hearing – Disposition of Town owned properties

New Business –

15-158 Inter-municipal Agreement – Fire/EMS Dispatch Service – Town of Windham

Council Requests / Open Discussion

Adjournment

The Town Council may, during any public meeting, elect to move in to a non-public meeting in compliance with RSA 91A:3 Section II. A motion to do so will be made in public session and the motion will cite the applicable subsection of the law. Further, in compliance with RSA 91A:3 Section I, the Town Council may recess a public meeting for a period of time in order to excuse itself for the purpose of discussing matters not subject to the definition of a meeting.

Posted: 11/13/15
Derry Municipal Center
Derry Public Library
Taylor Library
Website

TOWN OF DERRY

Town Council — **December 1, 2015**
Derry Municipal Center — **Tuesday - 7:30 PM**

6:30 PM **Consultation with legal counsel** – *Not open to the public*

7:30 PM Call to order

Pledge of Allegiance, warning of fire exits, handicap access, & turn off all cell phones

Roll Call

Consent Agenda –
15-159 Approve Minutes – November 17, 2015
15-160 Schedule Public Hearing – December 15, 2015 – NH Highway Safety Agency DWI Enforcement Patrol Grant

Chairman's Report –

Town Administrator's Report –

Public Forum - **30 Minutes**

Public Hearings –
15-133 2nd Public Hearing – Disposition of Town owned properties
15-154 Hazardous Mitigation Plan
15-155 Approval of NH Department of Transportation Memorandum of Agreement, Exit 4-A
15-156 Exit 4-A Supplemental Appropriation – Amendment #6
15-157 Demolition 19 Elm Street and Supplemental Appropriation

New Business –
15-161 Economic Development Committee
15-162 3 Nutfield Court – ZBA

Council Requests / Open Discussion

Adjournment

The Town Council may, during any public meeting, elect to move in to a non-public meeting in compliance with RSA 91A:3 Section II. A motion to do so will be made in public session and the motion will cite the applicable subsection of the law. Further, in compliance with RSA 91A:3 Section I, the Town Council may recess a public meeting for a period of time in order to excuse itself for the purpose of discussing matters not subject to the definition of a meeting.

Posted: **11/25/15**
Derry Municipal Center
Derry Public Library
Taylor Library
Website

APPENDIX G - DOCUMENTATION OF PLAN ADOPTION

DOCUMENTATION OF PLAN ADOPTION

Town of Derry, New Hampshire
Derry Town Council
Certificate of Adoption

WHEREAS, the Town of Derry has historically experienced severe damage from natural hazards and continues to be vulnerable to the effects of the natural hazards profiled in the plan resulting in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Town of Derry, has developed and received conditional approval from the Federal Emergency Management Agency (FEMA) for its Hazard Mitigation Plan under the requirements of 44 CFR 201.6; and

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 Derry in the preparation of the Derry Hazard Mitigation Plan Update 2015; and

WHEREAS, six public planning meetings were held between April 2013 and June 2014 regarding the development and review of the Derry Hazard Mitigation Plan Update 2015; and

WHEREAS, the Plan specifically addresses hazard mitigation strategies and Plan maintenance
procedure for the Town of Derry; and

WHEREAS, the Plan recommends several hazard mitigation actions/projects that will provide
mitigation for specific natural hazards that impact the Town of Derry, with the effect of protecting people and property from loss associated with those hazards; and

WHEREAS, adoption of this Plan will make the Town of Derry eligible for funding to alleviate the impacts of future hazards; now therefore be it

WHEREAS, a public hearing was held by the Derry Town Council on December 1, 2015 to formally approve and adopt the Derry Hazard Mitigation Plan Update 2015.

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

1. The Plan is hereby adopted as an official plan of the Town of Derry.
2. The respective officials identified in the mitigation strategy of the Plan are hereby directed to pursue implementation of the recommended actions assigned to them;
3. Future revisions and Plan maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as a part of this resolution for a period of five (5) years from the date of this resolution.
4. An annual report on the progress of the implementation elements shall be presented to the Town Council by July 1st of each year.

Derry Hazard Mitigation Plan Update 2015

APPROVED and SIGNED this 1st day of December, 2015.

Derry Town Council

G. Thomas Cardon, Chair _____

Mark Osborne, _____

Joshua Bourdon, _____

Phyllis Katsakiores, _____

Richard P. Tripp, _____

Albert Dimmock, _____

David N. Fischer, _____

APPENDIX H - PAST PRIORITIZED IMPLEMENTATION SCHEDULES

2004 Prioritized Implementation Schedule

ACTION #	MITIGATION ACTION	COST/BENEFIT	PRIORITY POINTS	WHO (LEADERSHIP)	WHEN (DEADLINE)	HOW (FUNDING)	2009 UPDATE
1	Elevate structures in the floodplain, especially insured and repetitive loss properties	Saves many thousands of dollars in flood damage repairs, especially repetitive loss properties	42	Town Council	Ongoing	Town Budget, FMAP	Town has not implemented, as responsibility rests with individual and private properties
2	Develop website for floodplain information, both general and town based info	A website is inexpensive to develop and can provide critical information	42	Police, Planning	Ongoing	Existing Budget	Complete
3	Discourage construction in the floodplain during review and permitting process	Excellent way to save expenditures on flood damage, at little or no cost to Town	42	Planning, Code Enf., Zoning	Ongoing	Existing Budget	Complete
4	Purchase emergency vehicles and equipment to update & expand existing supply	Vehicles are initially expensive, but can save lives during a hazard event	42	Police, Fire	Ongoing	Existing Budget	Ongoing
5	Establish early warning system for floodplain residents	Initial costs outweighed by ability to warn residents early and save lives	42	Fire, Reverse 911	Ongoing	Existing Budget, FMAP	Completed and ongoing

ACTION #	MITIGATION ACTION	COST/BENEFIT	PRIORITY POINTS	WHO (LEADERSHIP)	WHEN (DEADLINE)	HOW (FUNDING)	2009 UPDATE
6	Establish and provide continued support to a maintenance program for detention/retention ponds	Clogged ponds are expensive; less flooding occurs when they are properly maintained	42	Public Works, Cons. Comm.	Ongoing	Existing Budget	Ongoing
7	Purchase fixed facility generators for potential emergency shelters with no existing backup power source	Adds the capability to house people during an emergency, no such facility exists	42	Police, Fire, Emerg. Mgmt.	2003-2004	Existing Budget, EMPG	Incomplete due to lack of funding, but continue to pursue
8	Purchase generator(s) for the Derry school system to provide backup power allowing schools to be used as emergency shelters	Adds the capability to house people during an emergency, no such facility currently exists	42	Police, Fire, Emerg. Mgmt.	2003-2004	Existing Budget, PDM	Incomplete, action is to be deleted as action #7 will accomplish what is needed

ACTION #	MITIGATION ACTION	COST/BENEFIT	PRIORITY POINTS	WHO (LEADERSHIP)	WHEN (DEADLINE)	HOW (FUNDING)	2009 UPDATE
9	Plan for new cisterns and maintenance of existing cisterns	Planning for, construction of, and regular maintenance of cisterns will keep them in good operational condition while saving future maintenance expenses	42	Derry Fire	2003	Existing Budget, PDM	Ongoing, pursue implementation of sprinklers rather than cisterns
10	Upgrade Fire Department, Dispatch Center, and Emergency Management Communications Center	Police Department communications are being upgraded; will allow Fire Department to better communicate with others during and emergency	42	Emergency Mgmt., Fire	Ongoing	Fire Department	Complete

ACTION #	MITIGATION ACTION	COST/BENEFIT	PRIORITY POINTS	WHO (LEADERSHIP)	WHEN (DEADLINE)	HOW (FUNDING)	2009 UPDATE
11	Educate citizens on flood mitigation through the dissemination of information either in newspaper articles, mailings or local access television programming	Education programs are a cost-effective way to keep citizens informed	42	Emergency Mgmt., Reverse 911	Ongoing	Fire Department	Ongoing, continue to pursue
12	Enhance GIS coverages for mapping the floodplain & Flood hazard areas	Initial expense, but can provide an easy way for public to access floodplain information	40	Public Works, GIS, Con. Comm., FEMA	Ongoing	Existing Budget, PDM	Complete
13	Update Flood Insurance Rate Maps to reflect the most current flood risks and Special Flood Hazard Areas, most current FIRMS are dated April 1982; 22 years ago	Initial Expense, but can provide and easy way for public to access floodplain information	40	Pub. Works, GIS, Cons. Comm.	Ongoing	Existing Budget, FEMA	Complete

ACTION #	MITIGATION ACTION	COST/BENEFIT	PRIORITY POINTS	WHO (LEADERSHIP)	WHEN (DEADLINE)	HOW (FUNDING)	2009 UPDATE
14	Develop Comprehensive Emergency Management for Public Schools	CEMPS provides training for school personnel to prepare for an emergency. There is no cost to the local school district for this service	39	Derry School District	2003	NH Homeland Security and Emerg. Mgmt.	Complete and ongoing
15	Purchase additional snow removal equipment to cope with snow emergencies	It is critical to maintain access throughout town during a snow event, especially for emergency vehicles	39	Public Works	Ongoing	Grant Funding	Ongoing, maintain current equipment and upgrade as needed
16	Address potential for West Nile Virus to develop in detention ponds in the review of permits and during site/construction inspections	Addressing this problem before it develops can save large amounts of health dollars	38	Code Enforcement	Ongoing	Existing Budget	Ongoing, address waterborne illnesses, opposed to specifically West Nile Virus

ACTION #	MITIGATION ACTION	COST/BENEFIT	PRIORITY POINTS	WHO (LEADERSHIP)	WHEN (DEADLINE)	HOW (FUNDING)	2009 UPDATE
17	Coordinate information gathering and analysis with the Town of Chester on the effects of Harantis Lake dam in Derry	Coordination is an inexpensive way to stay informed about changes to the dam and its operation	38	Towns of Derry and Chester	Ongoing	Existing Budget	Ongoing, continue to pursue
18	Develop a tree maintenance program, minimize risk of unhealthy trees being blown over in wind events or swept by floods or landslides and creating damage to public utilities, homes and other structures	Could be accomplished by Town workers, DPW within existing budget	37	Public Works	Ongoing	Existing Budget	Ongoing, continue to identify and remove hazardous trees in the ROW instead of developing maintenance program
19	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 flood-prone properties, especially repetitive loss properties	37	Town Council	Ongoing	Existing Budget, FMAP	Incomplete due to funding issues, continue to pursue

ACTION #	MITIGATION ACTION	COST/BENEFIT	PRIORITY POINTS	WHO (LEADERSHIP)	WHEN (DEADLINE)	HOW (FUNDING)	2009 UPDATE
20	Encourage the Conservation Commission to become active in acquiring flood-prone properties for conservation and preservation purposes	Similar to discouraging construction in the floodplain; saves large sums in expenditures for damage to flood-prone properties, especially repetitive loss properties	37	Cons. Comm., Town Council	Ongoing	Existing Budget, FMAP	Incomplete due to funding issues, continue to pursue
21	Coordinate hazard mitigation and disaster related operations with the Derry and East Derry Fire Chiefs	Coordination of efforts between both fire departments will better serve the Towns of Derry and residents of the East Derry Fire Precinct	35	Derry and East Derry Fire Chiefs	Ongoing	Existing Budget	East Derry Fire has been combined into Derry Fire and this is no longer an issue

ACTION #	MITIGATION ACTION	COST/BENEFIT	PRIORITY POINTS	WHO (LEADERSHIP)	WHEN (DEADLINE)	HOW (FUNDING)	2009 UPDATE
22	Coordinate with other local conservation commissions in nearby towns to develop a river stewardship program	A watershed approach to developing a River Stewardship Program will work best in this area since Derry has no large streams or rivers within its borders	35	Fire Dept., Emergency Mgmt	2003-2004	Emergency Management	Ongoing, continue to pursue
23	Develop public awareness program for emergency management and hazard mitigation action plans and benefits to the community	Public awareness programs are inexpensive compared to the number of lives that can be saved during emergencies	35	Fire Dept., Emergency Management	2003-2004	Emergency Management	Ongoing, continue to pursue
24	Develop stormwater drainage maps for GIS applications	This is a large undertaking, but will save much time and money when developed	34	Public Works, GIS	Ongoing	Existing Budget	Incomplete, continue to pursue

ACTION #	MITIGATION ACTION	COST/BENEFIT	PRIORITY POINTS	WHO (LEADERSHIP)	WHEN (DEADLINE)	HOW (FUNDING)	2009 UPDATE
25	Implement culvert analysis for inventory and condition assessment	Inventory of culverts for existing condition will save time and money and flooding potential	34	Public Works, GIS	Ongoing	Existing Budget	Ongoing
26	Develop culvert maintenance system	Maintaining culverts will save money and reduce flooding potential	34	Public Works, GIS	Ongoing	Existing Budget	Ongoing
27	Purchase portable generators to be used at varying locations during and emergency	Initially expensive, but costs are outweighed by usefulness during emergency situations	28	Town Depts., Schools, Emerg. Mgmt.	Ongoing	Existing Budget	Completed, but pursue an additional portable generator
28	Hire and use an enforcement officer for compliance and construction inspection in the Wetlands Conservation Overlay District	Would increase wetlands compliance and potentially reduce flooding while allowing for the natural use of wetlands	28	Code Enforcement, Cons. Comm.	Ongoing	Existing Budget, Grants	Completed

ACTION #	MITIGATION ACTION	COST/BENEFIT	PRIORITY POINTS	WHO (LEADERSHIP)	WHEN (DEADLINE)	HOW (FUNDING)	2009 UPDATE
29	Relocate existing utilities underground when appropriate as is determined by current and past damage caused by natural hazards anticipated to re-occur	This is an expensive undertaking, but pays off when repair expenses due to ice, wind, snow, etc. are avoided by all utilities being underground	26	Town, Utility Companies, Fire Pub. Works	Ongoing	Grant Funding	New construction locates utilities underground. Existing will be relocated if it is not cost prohibitive, but it is currently unrealistic to do so. Consider relocating, as appropriate
30	Coordinate data collection and analysis with the Town of Salem on the effects of the Spickett River Island Pond Dam on Salem	Very inexpensive method of keeping others aware of dam's condition during a potential emergency	23	Towns of Derry and Salem	Ongoing	Existing Budget	Ongoing, continue to pursue
31	Coordinate Town activities and research with private dam associations	Increased communications between these agencies may help determine a dam's potential effect on the Town	23	Town of Derry, private dam assoc's	Ongoing	Existing Budget	State program existing, no longer a town responsibility

ACTION #	MITIGATION ACTION	COST/BENEFIT	PRIORITY POINTS	WHO (LEADERSHIP)	WHEN (DEADLINE)	HOW (FUNDING)	2009 UPDATE
32	Purchase and install river gauges with transmitting capabilities, particularly at points of known repetitive flooding	Inexpensive way to stay aware of river/stream height, especially during impending flood event	14	Public Works, Code Enf., Cons. Comm.	Ongoing	Existing Budget	Incomplete, but continue to research
33	Improve Victory Supermarket area culvert	Initial expense will prevent years of flooding and damage	14	Public Works, Road Agent	Ongoing	Public Works, Grant	Complete
34	Improve Wal-Mart area culvert	Initial expense will prevent years of flooding and damage	14	Public Works, Road Agent	Ongoing	Public Works, Grant	Complete