TOWN OF UNITY, NEW HAMPSHIRE

HAZARD MITIGATION PLAN

UPDATE 2014

September 2011

Prepared by the:

Town of Unity Hazard Mitigation Committee and the

Upper Valley Lake Sunapee Regional Planning Commission

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I. INTRODUCTION

A. BACKGROUND

The New Hampshire Homeland Security and Emergency Management (NH HSEM) has a goal for all communities within the State of New Hampshire to establish local hazard mitigation plans as a means to reduce future losses from natural or man-made hazard events before they occur. The NH HSEM has provided funding to the Town of Unity, to update their local Hazard Mitigation Plan. UVLSRPC wrote the first Unity Hazard Mitigation Plan that was approved in 2008. The *Unity Hazard Mitigation Plan Update 2014* serves as a strategic planning tool for use by the Town of Unity in its efforts to reduce future losses from natural and/or man-made hazard events before they occur. This *Plan* does *not* constitute a section of the Master Plan.

The Unity Hazard Mitigation Committee updated the *Unity Hazard Mitigation Plan* with the assistance and professional services of the Upper Valley Lake Sunapee Regional Planning Commission (UVLSRPC). After a public meeting held in the Unity Town Offices, the Unity Town Selectboard adopted the updated plan on September 29, 2014 as shown in Appendix F.

B. PURPOSE

The Unity Hazard Mitigation Plan Update 2014 is a planning tool for use by the Town of Unity in its efforts to reduce future losses from natural and/or man-made hazards. This plan does not constitute a section of the Town Master Plan, nor is it adopted as part of the Zoning Ordinance.

C. HISTORY

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

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

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

Why develop a Mitigation Plan?
Planning ahead to lessen or prevent a disaster will reduce the human, economic, and environmental costs. The State of NH is vulnerable to many types of hazards, including floods, hurricanes, winter storms, wildfires, wind events, and earthquakes. All of these types of events can have significant economic, environmental, and social impacts. The full cost of the damage resulting from the impact of natural hazards – personal suffering, loss of lives, disruption of the economy, and loss of tax base – is difficult to quantify and measure.

D. SCOPE OF THE PLAN

The scope of the *Unity Hazard Mitigation Plan Update 2014* includes the identification of natural hazards affecting the Town, as identified by the Unity Hazard Mitigation Committee. The hazards were reviewed under the following categories as outlined in the State of New Hampshire Hazard Mitigation Plan Update 2013:

- Dam Failure
- Flooding
- Hurricane
- Tornado & Downburst
- Thunderstorm/Lightning/Hail
- Severe Winter Weather
- Earthquake
- Drought
- Extreme Heat
- Erosion
- Landslide
- Wildfire
- Natural Contaminants
- Hazardous Materials Spill
- Terrorism

E. METHODOLOGY

Using Offices of neighboring towns to invite town officials. The individuals who attended the meetings included local officials and town the *Local Mitigation Planning Handbook by FEMA (2013)*, the Unity Hazard Mitigation Committee, in conjunction with the UVLSRPC, developed the content of the *Unity Hazard Mitigation Plan* Update 2014 by tailoring the nine-task process set forth in the handbook appropriate for the Town of Unity. Many FEMA resources and multiple State and Federal websites were also used as well. The Committee held a total of four posted meetings in 2013. All meetings were posted inviting the general public and notices were sent to the Town employees most of whom are residents of Unity. Though notices invited the general public to participate, no public attended the meetings.

Prior to the Town of Unity approving the updated Plan, a public meeting was held to gain additional input from the citizens of Unity and to raise awareness of the ongoing hazard mitigation planning process. No members of the public attended the committee meetings.

The following hazard mitigation meetings were vital to the development of this Plan:

March 27, 2013
April 3, 2013
April 18, 2013
May 1, 2013

To complete this updated Plan, the Hazard Mitigation Committee followed the following planning tasks to re-evaluate the plan sections of the existing 2008 plan and to update it to reflect current information and issues:

Task 1: Determine the Planning Area and Resource (March 2013)
Unity is a rural town and chose to continue their planning as process as a single town. The Town chose to work with the Upper Valley Lake Sunapee Regional Planning Commission to provide technical support.

Task 2: Build the Planning Team (March 2013)
Members of the Committee included all relevant personnel as well as any interested citizens. This included a Planning Board member and Selectboard member to represent municipal organizations with general and land use planning authority.

Task 3: Create an Outreach Strategy (March 2013)
The Committee chose to provide public notices to the public to encourage participation at the public meetings. They also put a notice on the town website. Notices were also sent to each of the neighboring towns to invite them to participate in the meetings, send comments, or request a final plan. The final plan will also be available for public review prior to adoption.

Task 4: Review Community Capabilities (March 2013)
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. A GIS-generated map was prepared to show critical facilities identified by the Unity Hazard Mitigation Committee. A summary listing of "Critical Facilities" is presented in Chapter IV. Costs were determined for losses for each type of hazard. Using information and activities in the handbook, the Committee and

UVLSRPC staff identified existing mitigation strategies which are already implemented in the Town related to relevant hazards. A summary chart and the results of this activity are presented in Chapter VI.

Task 5: Conduct a Risk Assessment (April 2013):

The Committee determined natural and human-made hazards affecting the Town and updated a description, location, and extent of those previous and potential hazards. Existing and future assets were updated to determine vulnerability to potential hazard events. Critical facilities needed during an emergency were identified and given values based on tax data. It was also determined if these facilities are in a hazard zone or not. Other facilities identified are those needed to continue the daily operation of the municipality and those that have dense populations or valued historical structures and vulnerable natural areas.

Task 6: Develop a Mitigation Strategy (April 2013):

The Committee evaluated the goals in the previous plan and determined they were still appropriate. They then determined actions that they could take to meet those goals to reduce their risk to hazard events. They discussed existing regulations, ordinances, and the Master Plan and how they could continue to incorporate hazard mitigation strategies into these documents to include hazard mitigation in land use planning. Committee members agreed to pursue this integration with appropriate municipal boards.

Task 7: Keep the Plan Current: (April 2013):

The plan will be reviewed after every major event to evaluate the effectiveness of the plan. It will also be updated at least every five years as required.

Task 8: Review and Adopt the Plan:

The Committee will incorporate any feedback from Committee members, municipal officials, residents, businesses and institutions, and neighboring communities. The plan will be assessed by using FEMA's Local Mitigation Plan Review Tool prior to sending to NH Homeland Security and Emergency Management for preliminary review. If HSEM considers the plan to meet the requirements, they will forward the draft plan to FEMA for their review. Once FEMA determines the plan meets requirements, the municipality will hold a public meeting to obtain further comments and review the final draft. If there are no major suggested changes, the municipal government will adopt the plan and the adoption form will be sent to HSEM and then to FEMA to receive a final approval of the plan.

Task 9: Create a Safe and Resilient Community:

The municipality will implement the plan by committing to task accomplishment as indicated in the plan. The municipality will take advantage of available funding opportunities such as FEMA's mitigation grant programs. The process for monitoring and updating the Plan can be found in Chapter IX.

UVLSRPC staff compiled the results of tasks one through nine in a draft document, as well as helpful and informative materials from the *State of New Hampshire Multi-Natural Hazard Mitigation Plan Update 2013*, which served as a resource for the *Unity Hazard Mitigation Plan Update 2014*.

F. HAZARD MITIGATION GOALS

The Unity Hazard Mitigation Committee reviewed the hazard mitigation goals set forth in the previous Hazard Mitigation Plan and revised them as follows:

1. To identify, introduce and implement cost effective Hazard Mitigation measures so as to accomplish the Town's goals and to raise awareness and acceptance of hazard mitigation opportunities generally.

2. To improve upon the protection of the general population, the citizens, and visitors of the Town of Unity from natural and human-made hazards.

3. To reduce the potential impact of natural and human-made disasters to:
   - the Town of Unity's Critical Support Services,
   - Critical Facilities in the Town of Unity,
   - the Town of Unity's infrastructure,
   - private property,
   - the Town's economy,
   - the Town's natural environment, and
   - the Town's specific historic treasures and interests.

4. To improve the Town's Disaster Response and Recovery capability as a hazard mitigation strategy to be prepared for emergencies and reduce their impact.

G. ACKNOWLEDGEMENTS

The following people participated in developing the update of this plan as the Hazard Mitigation Committee:

- Bruce Baker, Town of Unity Fire Chief
- Harold Booth, Town of Unity Highway Forman
- Tracy Decker, Town of Unity Selectmen's Secretary
- Ed Gregory, Town of Unity Selectman
- Rosemary Heino, Town of Unity Town Clerk/Tax Collector
- Jason Lemere, Town of Unity Emergency Management Director
- Bob Trabka, Town of Unity Planning Board Chair

- Elizabeth Lufkin, Field Representative, NH Homeland Security and Emergency Management
- Victoria Davis, Planner, Upper Valley Lake Sunapee Regional Planning Commission
- Adam Ricker, Assistant Planner, Upper Valley Lake Sunapee Regional Planning Commission

The Hazard Mitigation Committee was composed of local officials, citizens of Unity and a staff representative of the UVLSPRC for meeting facilitation and plan development. Neighboring communities were invited to participate, submit comments, and request copies of the final plan. They were provided with the dates of three meetings. The general public was invited to attend three meetings by public postings at the town office, the town hall, the Unity General Store, and on the town website. These were posted 10 days prior to the first posted meeting date and remained until the last meeting occurred. No surveys were requested town-wide due to a lack of broadband in Unity. No towns or other parties inquired about the update process or attended any of the meetings and no comments were submitted to be incorporated into the plan.

Historical information, relevant data and potential future mitigation strategies were contributed by all parties involved in the planning process. For a record of all meeting topics see Appendix C: Meeting Documentation. The staff representative of the UVLSRPC gathered all information from local officials, agency representatives and public input and compiled the information to develop the Plan.

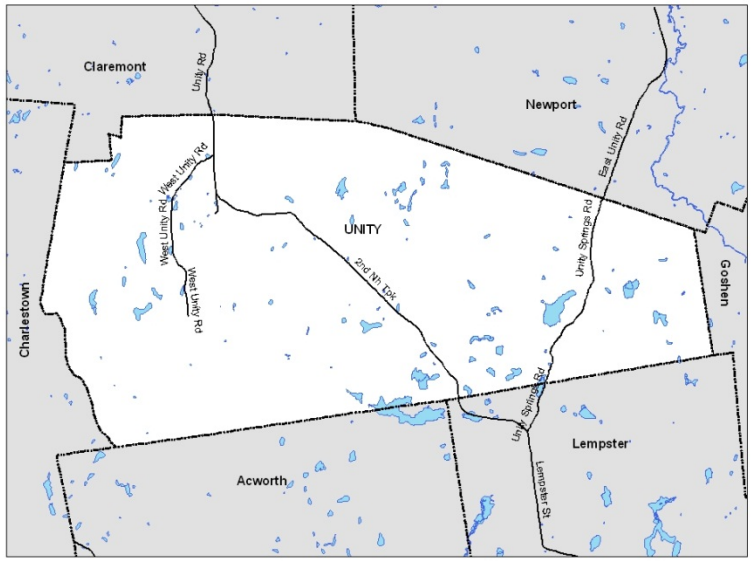
II. COMMUNITY PROFILE

A. INTRODUCTION[1]

The Town of Unity, New Hampshire is located in the southwestern corner of the state in Sullivan County. Unity is bordered by Charlestown to the west, Claremont and Newport to the north, Goshen to the east, and Acworth and Lempster to the south.

Unity is divided into three sub-watersheds, the Cold River, the Sugar River and Little Sugar River, all of which are within and linked to the larger Connecticut River watershed.

In the village of Unity, the Town Office, Police Department, Fire Department, Highway Garage and Unity Elementary School are all located within close proximity along the 2nd New Hampshire Turnpike.



There are about twelve miles of State roads in Unity. There are about 43 miles of Class V maintained roads and nine miles of Class VI (unmaintained) roads in Unity.

There are a total of approximately 22,940 acres within the town. Currently, there are a total of 16,855 acres of land in Current Use within the town of Unity.[2]

[1] Town of Unity Master Plan (1996)

[2] NH Department of Revenue Administration: Summary Inventory of Valuation Form MS-1 for 2012.

B. DEVELOPMENT TRENDS

Several factors have played, and will continue to play, an important role in the development of Unity. These include the existing development pattern and availability of land for future development; the present road network; physical factors such as steep slopes, soil conditions, wetlands, and aquifers; and, land set aside for conservation. These factors have an impact, both individually and cumulatively, on where and how development occurs.

There has been very little recent development in Unity and there are no known proposals for future development. In 2012 there were not any changes in current use status and only two changes in 2011 which are indicators for potential development of land. There have not been any subdivisions in the last year. Due to the lack of town wide development, there has not been any new development in areas prone to hazards or increased vulnerability. As shown in Table II-3, the population growth for Unity is anticipated to decrease drastically over the next few decades with less pressure for new housing.

Table II-1: AREA POPULATION TRENDS

Area	1970	1980	1990	2000	2010
Unity	**709**	**1,092**	**1,341**	**1,530**	**1,674**
Claremont	14,221	14,557	13,902	13,151	13,355
Newport	5,899	6,229	6,110	6,269	6,507
Goshen	395	549	718	744	810
Lempster	360	637	947	971	1,154
Acworth	459	590	776	836	891
Charlestown	3,274	4,417	4,630	4,749	5,114
Sullivan County	30,949	36,063	38,592	40,458	42,093
New Hampshire	737,578	920,475	1,109,252	1,235,786	1,315,000

Source: US Census

Table II-2: POPULATION GROWTH IN UNITY

	1970	1980	1990	2000	2010
Population	**709**	**1,092**	**1,341**	**1,530**	**1,674**
Decade Change in Population	-	54%	23%	14%	9%

Source: 1970 – 2010 US Census

Table II-3: POPULATION PROJECTIONS FOR UNITY

Area	2015	2020	2025	2030	2035	2040
Unity	**1,709**	**1,755**	**1,800**	**1,846**	**1,880**	**1,900**
Change in Population	2.1%	2.7%	2/6%	2.6%	1.8%	1.1%

Source: State of New Hampshire, Regional Planning Commissions, Office of Energy and Planning - County Population Projections, 2013

III. HAZARD IDENTIFICATION

The Unity Hazard Mitigation Committee reviewed the list of hazards provided in the *State of New Hampshire Multi-Hazard Mitigation Plan Update 2013* and some hazard history for the State of New Hampshire and Sullivan County in particular. A list of past hazard events in Unity, Sullivan County, and the State of New Hampshire can be found in the following discussion and tables. After reviewing this information and the Emergency Operations Plan, the Committee conducted a Risk Assessment. The resulting risk designations are provided in the heading of each hazard table below as well as a more detailed discussion further into this chapter.

A. WHAT ARE THE HAZARDS IN UNITY?

Unity is prone to a variety of natural and human-made hazards. The hazards that Unity is most vulnerable to were determined through gathering historical knowledge of long-time residents and town officials; research into the CRREL Ice Jam Database, FEMA and NOAA documented disasters, and local land use restrictions; and from the input of representatives from state agencies (NH HSEM). The hazards potentially affecting the Town of Unity are dam failure, flooding, hurricane, tornado & downburst, thunderstorm (including lightning and hail), severe winter weather, earthquake, drought, extreme heat, erosion, landslide, wildfire, natural contaminants, hazardous materials spills, and terrorism. Each of these hazards and the past occurrences of these hazards are described in the following sections. Hazards that were eliminated from assessment are those that have not had a direct impact on the Town of Unity and are not anticipated to have an impact as determined by the Hazard Mitigation Planning Committee, representatives from state agencies and citizens of the Town of Unity. Eliminated hazards include Land Subsidence, Expansive Soils, and Snow Avalanches.

B. DESCRIPTIONS OF HAZARDS

An assessment of each hazard relevant to Unity is provided below. An inventory of previous and potential hazards is provided. Past events are shown in the following tables and the potential for future events is then discussed. The "risk" designation for each hazard was determined after evaluations discussed later in this chapter.

- Dam Failure
- Flooding
- Hurricane
- Tornado & Downburst
- Thunderstorm/Lightning/Hail
- Severe Winter Weather
- Earthquake
- Drought
- Extreme Heat
- Erosion
- Landslide
- Wildfire
- Natural Contaminants
- Hazardous Materials Spill
- Terrorism

Dam Failure

Dam failure results in rapid loss of water that is normally held by the dam. These kinds of floods pose a significant threat to both life and property. Appendix D shows the location of active dams in Unity.

NH DES assigns a hazard designation to each dam in the state depending upon the potential damage it would cause if the dam failed:

- A "high hazard potential" is indicated if the dam is in a location and of a size that failure or misoperation of the dam would result in the following: major economic loss to structures or property; structural damage to roads; major environmental; or public health losses; and probable loss of human life.

- A "significant hazard potential" would mean the dam is in a location and of a size that failure or misoperation of the dam would result in any of the following: major economic loss to structures or property; structural damage to roads; major environmental or public health losses.

- A "low" hazard dam failure could cause some structural damage to buildings and roads.

- A "non-menace" dam failure would not cause any significant damage.

"High" and "Significant" hazard potential dam owners must provide NH DES with maps of the potential inundation area if the dam were to fail. It should be noted that there are some exemptions from this requirement such as lagoons.

Past Dam Failure Events

There have been no dam failures within the Town of Unity or outside the town that would have affected the town.

Table III-1 - DAMS

Dam #	Class	Dam Name	Water Body	Owner (Now or Formerly)	Status	Impound-ment Area in Acres	Height of Dam (Ft)	Drainage Area in Square Miles
240.01	L	Gilman Pond Dam	Spring Brook	Town of Newport	Active	62	6	1.09
240.02	NM	Marshall Pond Dam	Meadow Brook	Sullivan County Home	Active	13	7.5	0.21
240.03	NM	Old Reservoir Dam	Unnamed Stream	Sullivan County Home	Active	0.5	12	0.4
240.04		Nameless Brook Dam	Unnamed Stream	Royce C Shute	Not Built		7	0.74
240.05	NM	Fire Pond Dam	Unnamed Stream	Frances Zubryd	Active	0.27	14	0.008
240.06		Farm Pond Dam	Unnamed Stream	Richard Lord	Not Built		13	
240.07	L	Wildlife/Fire Pond Dam	Unnamed Stream	Sullivan County Home	Active	0.93	15	0.027
240.08	NM	Topkins Farm Pond Dam	Unnamed Stream	Peter Tompkinds	Active	0.5	6	0.012
240.09	NM	Cox Farm Pond Dam	Unnamed Stream	Wilbur Cox	Active	0.32	10	
240.10		Agel Farm Pond Dam	Unnamed Stream	Stehpen Agel	Exempt	0.3	6	
240.11	NM	Farm Pond Dam	Natural Swale	Unknown	Active	0.3	6	
240.12		Farm Pond Dam	Unnamed Stream	Leopold Renz	Exempt	0.25		
240.13		Conservation Pond Dam	Unnamed Stream	Harold Hall Jr	Exempt	3	3	
240.14	NM	Wildlife Pond Dam	Unnamed Stream	Norwood Keeney	Active	0.3	8	0.1
240.15		Fire Pond Dam	Unnamed Stream	Donald Swinyer	Not Built			
240.16		Michard Farm Pond Dam	Unnamed Stream	Ray Michard	Not Built			
240.17	L	Spooner Pond Dam	Unnamed Stream	Mayland P Osgood	Active	0.6	11	0.07
240.18	NM	Old Miller Pond Dam	Trib S Branch Sugar R	Tracy Bragdon	Active	2	6	2.2
240.19	L	McDevitt Farm Pond Dam	TR Cold River	Robert McDevitt	Active	0.35	17	0.2
240.20		Fusscas Dam 1	Unnamed Stream	Ken Rockwell NE Forest Man	Exempt	1	3	2.5
240.21		Fusscas Dam 2	Unnamed Stream	Ken Rockwell NE Forest Man	Exempt	0.5	3	2.5
240.22	NM	Condon Pond Dam	Runoff	David Condon	Active	0.25	8	0.02
240.23	NM	Hill Dam	Runoff	Harvey Hill CPM INC	Active	0.5	22	
240.24	NM	Levanovich Pond Dam	Unnamed Stream	Scott Levanovich	Active	0.13	10	0.01
240.25	NM	Perron Recreation Pond Dam	Runoff	Ivan Perron	Active	0.22	10	0.01
240.26	L	Sullivan Co Home Fire Pond	Unnamed Stream	Sullivan County Home	Active	0.75	8	0.12
240.27	L	C E McDevitt Trust Pond Dam	Unnamed Stream	Caryl E McDevitt	Active	0.83	10	0.02

Class of potential hazard: NM – non-menace; L-low; S-significant; H-high *Source: NH DES*

Potential Future Dam Failure Damage

Although there are 27 dams in Unity (4 not built at time of inventory), there are no "high" or "significant" hazard dams within town. There are six "low hazard potential" dam: "Gilman Pond Dam" on Spring Brook; "Wildlife/Fire Pond Dam" on an Unnamed Stream; "Spooner Pond Dam" on an Unnamed Stream; "McDevitt Farm Pond Dam" on TR Cold River; "Sullivan County Home Fire Pond" on an Unnamed Stream and "C E McDevitt Trust Pond Dam" on an Unnamed Stream. All active dams are shown on a map in Appendix D.

Outside the Town of Unity, there are no dams that would affect the Town of Unity if they failed.

Although the NH DES dam categories indicate there is low risk to the Town of Unity for dam failures, the Committee is concerned about the Old Miller Pond Dam since its waters are at level with the road. The Committee determined that dam failure is a medium/high risk in Unity.

Flooding

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

Floods in the Unity area are most likely to occur in the spring due to the increase in rainfall and snowmelt; however, floods can occur at any time of the year. A sudden winter thaw or a major summer downpour can cause flooding. Floodplains indicate areas potentially affected by flooding. There are several types of flooding.

100-Year Floods The term "100-year flood" does not mean that flooding will occur once every 100 years, but is a statement of probability to describe how one flood compares to others that are likely to occur. What it actually means is that there is a one percent chance of a flood in any given year. These areas were mapped for all towns in New Hampshire by FEMA. Appendix D displays the "Special Flood Hazards Areas."

River Ice Jams Ice forming in riverbeds and against structures presents significant hazardous conditions storm waters encounter these ice formations which may create temporary dams. These dams may create flooding conditions where none previously existed (i.e., as a consequence of elevation in relation to normal floodplains). Additionally, there is the impact of the ice itself on structures such as

highway and railroad bridges. Large masses of ice may push on structures laterally and/or may lift structures not designed for such impacts. A search on the Cold Regions Research and Environmental Laboratory (CRREL) did not reveal any historical ice jams.
Rapid Snow Pack Melt Warm temperatures and heavy rains cause rapid snowmelt. Quickly melting snow coupled with moderate to heavy rains are prime conditions for flooding.

Severe Storms Flooding associated with severe storms can inflict heavy damage to property. Heavy rains during severe storms are a common cause of inland flooding.

Beaver Dams and Lodging Flooding associated with beaver dams and lodging can cause road flooding or damage to property.

Bank Erosion and Failure As development increases, changes occur that increase the rate and volume of runoff, and accelerate the natural geologic erosion process. Erosion typically occurs at the outside of river bends and sediment deposits in low velocity areas at the insides of bends. Resistance to erosion is dependent on the riverbank's protective cover, such as vegetation or rock riprap, or its soils and stability. Roads and bridges are also susceptible to erosion.

Past Flooding Events

The Committee determined there are no other flood areas in the town other than the FEMA designated flood zones. Appendix D shows the special flood hazard areas of Special Flood Hazard Areas. The following tables provide a list of floods in the State, County, and Unity. Other flooding issues are listed in the Erosion section—primarily for roads.

Table III-2: FLOODING

Hazard	Date	Location	Description of Areas Impacted	Damages
Flood / Severe Storm	April 16, 1987	Cheshire, Carroll, Grafton, Hillsborough, Merrimack, Rockingham, & Sullivan Counties	FEMA Disaster Declaration # 789- DR (Presidentially Declared Disaster). Flooding of low-lying areas along river caused by snowmelt and intense rain.	$4,888,889 in damage.
Flood	August 7-11, 1990	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack & Sullivan Counties, NH	FEMA Disaster Declaration # 876. Flooding caused by a series of storm events with moderate to heavy rains.	$2,297,777 in damage.
Flood (Ice Jam)	March 26, 1992	Cold River, Acworth	Ice jam (CRREL) which formed near a bend caused road flooding. Ice was removed by State equipment.	Unknown
Flood	October 29, 1996	Grafton, Hillsborough, Merrimack, Rockingham,	FEMA Disaster Declaration # 1144- DR. Flooding caused by heavy rains.	$2,341,273 in damage.

Hazard	Date	Location	Description of Areas Impacted	Damages
		Strafford & Sullivan Counties, NH		
Flood	October 7-18, 2005	Cheshire, Grafton, Merrimack, Sullivan, and Hillsborough Counties, NH	FEMA Disaster Declaration # 1610. Severe storms and flooding; major devastation in neighboring town of Acworth	$3,000,000 in damages.
Flood	October-November 2005	Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan counties	FEMA Disaster Declaration # DR-1144- NH	Unknown
Flood	April 16, 2007	All counties, NH	FEMA Disaster Declaration # 1695. Severe storms and flooding; 2,005 home owners and renters applied for assistance in NH.	$27,000,000 in damages
Flood	July 24, 2008	Central and Southern NH; Counties Declared: Belknap, Carroll, Merrimack, Rockingham, and Strafford	FEMA DR 1782	Severe storms, tornado, and flooding
Flood	August 14, 2008	Central Northern NH; Counties Declared: Belknap, Carroll, Coos, and Grafton	FEMA Disaster Declaration #1787	$3 million in public assistance; primary damage to roads
Flood	March 14-31, 2010	Statewide	FEMA DR-1913; severe storms & flooding; Declared Counties: Hillsborough and Rockingham Counties	75% federal match
Flood	May 26-30, 2011	Coos and Grafton Counties	FEMA-4006-DR Federal assistance for Coos and Grafton Counties and hazard mitigation statewide	$1.8 million in public assistance; primary impact to roads and bridges
Flood	May 29-31, 2012	Cheshire County	FEMA DR-4065; severe storm and flood event	
Flood	June 26-July 3, 2013	Grafton, Sullivan and Cheshire Counties	FEMA DR-4139; severe storms, flooding, and landslides	

Unity became a participating member of the National Flood Insurance Program on July 6, 2010. Updated maps and flood insurance studies for all municipalities within Sullivan County were finalized in May 23, 2006. There are currently five policies in the town with $786,400 of insurance. However, flood insurance purchase is not a reflection of the number of structures within the flood plain. Four of the five policies are for properties in the designated flood plain. No loss claims have been paid, so there are no repetitive loss claims in Unity. (Source: NH OEP office, 3/20/2013)

Unity's 100-Year Special Flood Areas are all located within the A Zone, with no base flood elevations determined. See Appendix D for a map showing all Special Flood Hazard Areas. There are no non-compliant structures in the Town of Unity according to the NH Floodplain Insurance Program State Coordinator (July 2014). The Town website provides a link to the FEMA Map Service Center for public use.

As an NFIP participant, the Town of Unity has a floodplain ordinance which restricts building within the special floodplains to protect the flow of flood waters and not increase the needed land area for those waters. The Town adopted the model ordinance provided by the NH Floodplain Management Office on October 3, 2009. This ordinance is reflected in the zoning ordinance, subdivision regulations, and site plan review regulations. The Town is in the process of updating its Town Master Plan and will incorporate information about the NFIP and the importance of protecting its floodplains into this document which reflects Town goals.

Potential Future Flooding Events

Future flooding is likely as noted in the above table based upon local knowledge of past flood events. There are currently 26 properties located within the FEMA determined 100-year flood areas. The total structural value of these properties is $3,142,460. The value was determined by the number of properties in the 100-year flood areas multiplied by the average structure value in Unity which was obtained from the MS-1 Report. See Table III-3 below. The Hazard Mitigation Committee will recommend to the Planning Board that the zoning ordinance be amended to prevent further new development within the 100 year flood plain.

There are a total of 10 state and town owned bridges within the 100 year flood plain.

According to the State's Mitigation Plan, Sullivan County has a high hazard risk for flooding. The Committee determined flooding is a medium/high risk in Unity.

Table III-3: STRUCTURE VALUES IN 100-YEAR FLOOD AREAS BY TYPE

Flood Zone	Properties	
	#	Value
Zone A	26	$3,142,460

Hurricane

A hurricane is an intense tropical weather system with a well-defined circulation and maximum sustained winds of 74 mph (64 knots) or higher. Hurricane winds blow in a large spiral around a relative calm center known as the "eye." The "eye" is generally 20 to 30 miles wide, and the storm may extend outward 400 miles. As a hurricane nears land, it can bring torrential rains, high winds, and storm surges. A single hurricane can last for more than 2 weeks over open waters and can run a path across the entire length of the eastern seaboard. August and September are peak months during the hurricane season that lasts from June 1 through November 30. Damage resulting from winds of this force can be substantial, especially considering the duration of the event, which may last for many hours (*NH Multi-Hazard Mitigation Plan Update 2013*; FEMA website).

The Saffir-Simpson Hurricane Wind Scale provides categories of sustained winds by miles per hour: 1 – 74-95 mph; 2 – 96-110 mph; 3 – 111-129 mph; 4 – 130 – 156 mph; and 5 – 157 mph or higher. Categories 3 -5 are considered to be major wind events that can cause devastating to catastrophic damage.

Past Hurricane Events

There have been several hurricanes over the years which have impacted New England and New Hampshire. These are listed below. The 1938 hurricane directly impacted Unity according to the Committee member recollections.

Table III-4: HURRICANES & TROPICAL STORMS

Hazard	Date	Location	Description of Areas Impacted	Damages
Hurricane	August, 1635	n/a		Unknown
Hurricane	October 18-19, 1778	n/a	Winds 40-75 mph	Unknown
Hurricane	October 9, 1804	n/a		Unknown
Gale	September 23, 1815	n/a	Winds > 50mph	Unknown
Hurricane	September 8, 1869	n/a		Unknown
Hurricane	September 21, 1938	Southern New England	Flooding caused damage to road network and structures. 13 deaths, 494 injured throughout NH. Disruption of electric and telephone services for weeks. 2 Billion feet of marketable lumber blown down. Total storm losses of $12,337,643 (1938 dollars). 186 mph maximum winds.	Unknown

Hazard	Date	Location	Description of Areas Impacted	Damages
Hurricane (Carol)	August 31, 1954	Southern New England	Category 3, winds 111-130 mph. Extensive tree and crop damage in NH, localized flooding	Unknown
Hurricane (Edna)	September 11, 1954	Southern New England	Category 3 in Massachusetts. This Hurricane moved off shore but still cost 21 lives and $40.5 million in damages throughout New England. Following so close to Carol it made recovery difficult for some areas. Heavy rain in NH	Unknown
Hurricane (Donna)	September 12, 1960	Southern and Central NH	Category 3 (Category 1 in NH). Heavy flooding in some parts of the State.	Unknown
Tropical Storm (Daisy)	October 7, 1962	Coastal NH	Heavy swell and flooding along the coast	Unknown
Tropical Storm (Doria)	August 28, 1971	New Hampshire	Center passed over NH resulting in heavy rain and damaging winds	Unknown
Hurricane (Belle)	August 10, 1976	Southern New England	Primarily rain with resulting flooding in New Hampshire. Category 1	Unknown
Hurricane (Gloria)	September, 1985	Southern New England	Category 2, winds 96-110 mph. Electric structures damaged; tree damages. This Hurricane fell apart upon striking Long Island with heavy rains, localized flooding, and minor wind damage in NH	Unknown
Hurricane (Bob)	August 19, 1991	Southern New England	Structural and electrical damage in region from fallen trees. 3 persons were killed and $2.5 million in damages were suffered along coastal New Hampshire. Federal Disaster FEMA-917-DR	Unknown
Hurricane (Edouard)	September 1, 1996	Southern New England	Winds in NH up to 38 mph and 1 inch of rain along the coast. Roads and electrical lines damaged	Unknown
Tropical Storm (Floyd)	September 16-18, 1999	Southern New England	FEMA DR-1305-NH. Heavy Rains	Unknown
Hurricane (Katrina)	August 29, 2005 & continuing	East Coast of US and more	FEMA-3258-EM. Heavy rains and flooding devastating SE US	Unknown

Hazard	Date	Location	Description of Areas Impacted	Damages
Tropical Storm (Tammy)	October 5-13, 2005	East Coast of US	Remnants of Tammy contributed to the October 2005 floods which dropped 20 inches of rain in some places in NH.	Unknown
Tropical Storm (Irene)	August 26 – September 6, 2011	East Coast of US	FEMA-4026-DR for Coos, Carroll, Grafton, Strafford, Belknap, Merrimack and Sullivan Counties; EM-3333 Hillsboro, Rockingham, and Cheshire Counties; there was little effect in Unity	$2 Million primarily for roads and bridges
Hurricane (Sandy)	October 26 – November 8, 2012	East Coast of US	FEMA-4095-DR-NH for Belknap, Carroll, Coos, Grafton and Sullivan Counties.	unknown

Potential Future Hurricane Damage

Hurricane events will affect the entire town. It is impossible to predict into the future what damage will occur in the town. According to the State's mitigation plan, Sullivan County has a medium/high risk for hurricanes. The Committee determined the hurricane risk to be medium in Unity.

Tornado & Downburst

"A tornado is a violent windstorm characterized by a twisting, funnel shaped cloud. These events are spawned by thunderstorms and, occasionally by hurricanes, and may occur singularly or in multiples. They develop when cool air overrides a layer of warm air, causing the warm air to rise rapidly. Most vortices remain suspended in the atmosphere. Should they touch down, they become a force of destruction." (*NH Multi-Hazard Mitigation Plan Update 2013*). The Fujita Scale is the standard scale for rating the severity of a tornado as measured by the damage it causes. Most tornadoes are in the F0 to F2 Class. Building structures to modern wind standards provides significant property protection from these hazard events. New Hampshire is located within Zone 2 for Design Wind Speed for Community Shelters, which suggests that buildings should be built to withstand 160 mph winds.

Significantly high winds occur especially during tornadoes, hurricanes, winter storms, and thunderstorms. Falling objects and downed power lines are dangerous risks associated with high winds. In addition, property damage and downed trees are common during severe wind occurrences. A downburst is a severe, localized wind blasting down from a thunderstorm. These "straight line" winds are distinguishable from tornadic activity by the pattern of destruction and debris. Downbursts fall into two categories: 1. Microburst, which covers an area less than 2.5 miles in diameter, and 2. Macroburst, which covers an area at least 2.5 miles in diameter. Most downbursts occur with thunderstorms, but they can be associated with showers too weak to produce thunder.

Past Tornado & Downburst Events

The following table displays tornadoes occurring in Sullivan County between 1950 and 1995 as provided by the "Tornado Project" (www.tornadoproject.com) and the *NH Multi-Hazard Mitigation Plan Update 2013*.

Table III-5: TORNADOES IN OR NEAR SULLIVAN COUNTY

TORNADOES & DOWNBURSTS – MEDIUM RISK			
Hazard	**Date**	**Fujita Scale**	**Damages**
Tornado	September 9, 1821	Most intense in NH	Killed 6 people; crossed Lake Sunapee
Tornado	July 14, 1963	F1	No deaths or injuries; costs unknown
Tornado	June 27, 1964	F0	No deaths or injuries; costs unknown
Tornado	August 11, 1966	F2	No deaths or injuries; costs unknown
Tornado	August 25, 1969	F1	No deaths or injuries; costs unknown
Tornado	May 31, 1972	F1	No deaths or injuries; costs unknown (Merrimack County)
Tornado	July 21, 1972	F1	No deaths or injuries; costs unknown
Tornado	May 11, 1973	F2	No deaths or injuries; costs unknown
Tornado	June 11, 1973	F0	No deaths or injuries; costs unknown
Tornado	August 15, 1976	F1	No deaths; 5 injuries; costs unknown (Merrimack County)
Downburst	Summer of 1995	N/A	Committee recalled a strong downburst, characterized by a straight line wind, coming from the west and all hillsides with western exposure were affected. The committee identified Britton Hill and Straw Hill as areas that were without electrical power due to this event.
Tornado	August 13, 1999	F1	No deaths or injuries; costs unknown
Tornado	July 6, 1999	F2	No deaths or injuries; costs unknown (Merrimack County); in New London two roofs blown off structures; power outages,; downed trees, utility pole, and wires
Tornado	Summer 2006	NA	Began in Barnet, VT and moved to Monroe, NH
Tornado	April 15, 2007	NA	Numerous trees were knocked down in Enfield, NH
Tornado	July 24, 2008	(EF 2)	DR 1799: Numerous trees and utility poles down and tearing down houses near Concord; 1 fatality and 2 injuries

Source: www.tornadoproject.com

Table III-6: FUJITA SCALE

Fujita Scale		
Scale	**Wind Strength (MPH)**	**Typical Damage**
F0	**<73**	**Light damage:** Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
F1	**73-112**	**Moderate damage:** Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
F2	**113-157**	**Considerable damage:** Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
F3	**158-206**	**Severe damage:** Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown
F4	**207-260**	**Devastating damage:** Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated
F5	**261-318**	**Incredible damage:** Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yds); trees debarked; incredible phenomena will occur.

Source: http://www.spc.noaa.gov

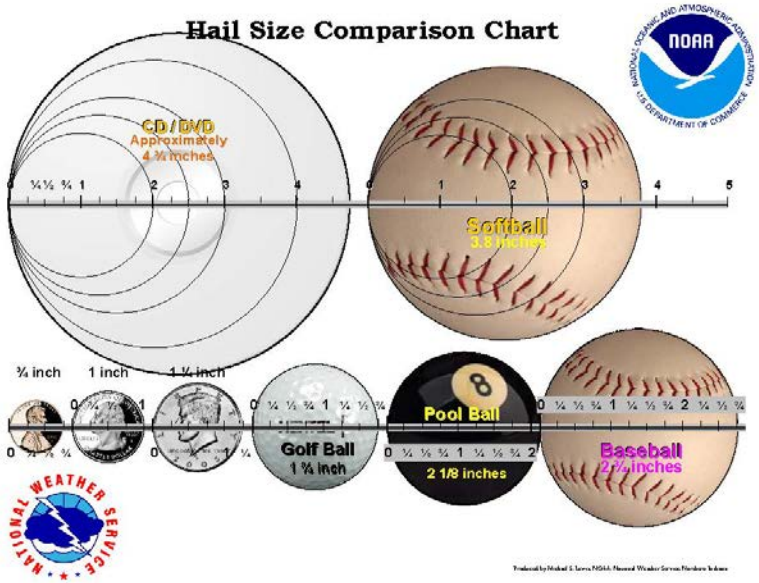
Potential Future Tornado and Downburst Damage

It is impossible to predict where a tornado or downburst will occur or what damage it will inflict. The Unity Committee does not recall tornadoes or downbursts in Unity. The FEMA website places the State of NH in the Zone II Wind Zone which provides that a community shelter should be built to a 160 mph "design wind speed." According to the State's mitigation plan, Sullivan County has a medium risk for tornadoes. The Committee determined there is a low/medium risk for tornadoes and downbursts in Unity.

Thunderstorms/Lightning/Hail

A thunderstorm is a rain shower during which you hear thunder. Since thunder comes from lightning, all thunderstorms have lightning. A thunderstorm is classified as "severe" when it contains one or more of the following: hail three-quarter inch or greater, winds gusting in excess of 50 knots (57.5 mph), tornado. Hail is a form of precipitation that occurs when updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere where they freeze into ice. When the hail particle becomes heavy enough to resist the updraft, it falls to the ground. The resulting wind and hail can cause death, injury, and property damage. Below is a comparison charge for the various sizes of hail.

Figure III-1: HAIL SIZE COMPARISON CHART



An average thunderstorm is 15 miles in diameter and lasts an average of 30 minutes. Winter thunderstorms are rare because the air is more stable, strong updrafts cannot form because the surface temperatures during the winter are colder.

Lightning is a giant spark of electricity that occurs within the atmosphere or between the atmosphere and the ground. As lightning passes through the air, it heats the air to a temperature of about 50,000 degrees Fahrenheit, considerably hotter than the surface of the sun. Fires are a likely result of lightning strikes, and lightning strikes can cause death, injury, and property damage. It is impossible to predict where lightning will strike. There have probably been lightning strikes throughout Unity, but there is no record of damage.

A lightning activity level has been developed by the National Weather Service and is shown below:

Table III-7: LIGHTNING ACTIVITY LEVEL

Lightning Activity Level	Description
1	No thunderstorms
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.
3	Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud to ground strikes in a 5 minute period.
4	Scattered thunderstorms. Moderate rain is commonly produced. Lightning is frequent, 11 to 15 cloud to ground strikes in a 5 minute period.
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.
6	Dry lightning (same as LAL3, 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.

Source: http://graphical.weather.gov/definitions/defineLAL.html

Past Thunderstorm Events

There have been lightning strikes in Unity, but none were noteworthy according to the Committee. A thunderstorm with lightning or hail could impact the entire town, although lightning is more likely in isolated areas.

Potential Future Thunderstorm Damage

It is inevitable that thunderstorms will occur in Unity's future. Lightning, hail, or wind from a thunderstorm could impact anywhere in town. It is not possible to estimate possible damage. According to the State's mitigation plan, Sullivan County has a medium risk of a lightning hazard. The risk for future thunderstorm damage was determined by the Committee to be low/med risk in Unity.

Table III-8: THUNDERSTORM/LIGHTNING/HAIL

Thunderstorms/Lightning/Hail				
Hazard	**Date**	**Location**	**Description of Areas Impacted**	**Damages**
Hail	June 16, 2007	Unity	A severe thunderstorm produced large hail (.75 in) in southwestern New Hampshire.	unknown
Hail	August 3, 2007	Unity	An isolated thunderstorm produced large hail in Sullivan County with .75 inch hail in Unity.	unknown
Thunderstorm	August 25, 2007	Unity	A severe thunderstorm downed several trees on Glidden Road in west Unity.	unknown
Hail	July 19, 2008	Unity	A severe thunderstorm produces hail of .75 inch near Unity.	unknown

Severe Winter Weather

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

Heavy Snow Storms A heavy snowstorm is generally considered to be one which deposits four or more inches of snow in a twelve-hour period. A blizzard is a sustained wind or frequent gusts greater than or equal to 35 miles per hour accompanied by falling and/or blowing snow, frequently reducing visibility to less than ¼ mile for three hours or more (NOAA National Weather Service). Therefore, intense Nor'easters, which occur in the winter months, are often referred to as blizzards. The definition includes the conditions under which dry snow, which has previously fallen, is whipped into the air and diminishes visual range. Such conditions, when extreme enough, are called "white outs."

Ice Storms Freezing rain occurs when snowflakes descend into a warmer layer of air and melt completely. When these liquid water drops fall through another thin layer of freezing air just above the surface, they don't have enough time to refreeze before reaching the ground. Because they are "supercooled," they instantly refreeze upon contact with anything that is at or below O degrees C, creating a glaze of ice on the ground, trees, power lines, or other objects. A significant accumulation of freezing rain lasting several hours or more is called an ice storm. This condition may strain branches of trees, power lines and even transmission towers to the breaking point and often creates treacherous conditions for highway travel and aviation. Debris impacted roads make emergency access, repair and cleanup extremely difficult.

The National Weather Service has developed a Scaled Predictive Ice Storm Aftermath (SPIA) Index. The potential impacts are scaled from 0 to 5 and suggest potential electrical outage coverage and duration. Current ice storm warnings are based on forecast of ice accumulation only. SPIA reports on the combined effects of the predicted ice and wind. Below is a chart of the SPIA index levels.

Table III-9: SCALED PREDICTIVE ICE STORM AFTERMATH INDEX

Ice & Wind: Average Ice in Inches and Wind in Miles per hour	**<15 mph**	**15-25 mph**	**25-35 mph**	**≥35 mph**
0.10 – 0.25 inches	0	1	2	3
0.25 – 0.50 inches	1	2	3	4
0.50 – 0.75 inches	2	3	4	5
0.75 – 1.00 inches	3	4	5	5
1.00 – 1.50 inches	4	5	5	5
>1.50 inches	5	5	5	5

"Nor'easters" Nor'easters can occur in the eastern United States any time between October and April, when moisture and cold air are plentiful. They are known for dumping heavy amounts of rain and snow, producing hurricane-force winds, and creating high surfs that cause severe beach erosion and coastal flooding. A Nor'easter is named for the winds that blow in from the northeast and drive the storm up the east coast along the Gulf Stream, a band of warm water that lies off the Atlantic coast.

There are two main components to a Nor'easter: Gulf Stream low-pressure system (counter-clockwise winds) generate off the coast of Florida. The air above the Gulf Stream warms and spawns a low-pressure system. This low circulates off the southeastern U.S. coast, gathering warm air and moisture from the Atlantic. Strong northeasterly winds at the leading edge of the storm pull it up the east coast. As the strong northeasterly winds pull the storm up the east coast, it meets with cold Arctic high-pressure system (clockwise winds) blowing down from Canada. When the two systems collide, the moisture and cold air produce a mix of precipitation.

Winter conditions make Nor'easters a normal occurrence, but only a handful actually gather the force and power to cause problems inland. The resulting precipitation depends on how close you are to the converging point of the two storms. Nor'easter events which occur toward the end of a winter season may exacerbate the spring flooding conditions by depositing significant snow pack at a time of the season when spring rains are poised to initiate rapid snow pack melting.

Past Extreme Winter Weather Events

The following table provides a list of past extreme winter weather events in New Hampshire and Unity.

Table III-10: SEVERE WINTER WEATHER

SEVERE WINTER WEATHER/ICE STORMS				
Hazard	**Date**	**Location**	**Description of Areas Impacted**	**Damages**
Ice Storm	December 17-20, 1929	New Hampshire	Unprecedented disruption and damage to telephone, telegraph and power system. Comparable to 1998 Ice Storm (see below)	Unknown
Blizzard	February 14-17, 1958	New Hampshire	20-30 inches of snow in parts of New Hampshire	Unknown
Snow Storm	March 18-21, 1958	New Hampshire	Up to 22 inches of snow in south central NH	Unknown
Snow Storm	December 10-13, 1960	New Hampshire	Up to 17 inches of snow in southern NH	Unknown
Snow Storm	January 18-20, 1961	New Hampshire	Up to 25 inches of snow in southern NH	Unknown
Snow Storm	February 2-5, 1961	New Hampshire	Up to 18 inches of snow in southern NH	Unknown
Snow Storm	January 11-16, 1964	New Hampshire	Up to 12 inches of snow in southern NH	Unknown
Blizzard	January 29-31, 1966	New Hampshire	Third and most severe storm of 3 that occurred over a 10-day period. Up to 10 inches of snow across central NH	Unknown
Snow Storm	December 26-28, 1969	New Hampshire	Up to 41 inches of snow in west central NH	Unknown
Snow Storm	February 18-20, 1972	New Hampshire	Up to 19 inches of snow in southern NH	Unknown
Snow Storm	January 19-21, 1978	New Hampshire	Up to 16 inches of snow in southern NH	Unknown
Blizzard	February 5-7, 1978	New Hampshire	New England-wide. Up to 25 inches of snow in central NH	Unknown
Snow Storm	February, 1979	New Hampshire	President’s Day storm	Unknown
Ice Storm	January 8-25, 1979	New Hampshire	Major disruptions to power and transportation	Unknown

SEVERE WINTER WEATHER/ICE STORMS				
Hazard	**Date**	**Location**	**Description of Areas Impacted**	**Damages**
Snow Storm	April 5-7, 1982	New Hampshire	Up to 18 inches of snow in southern NH	Unknown
Ice Storm	February 14, 1986	New Hampshire	Fiercest ice storm in 30 yrs in the higher elevations in the Monadnock region. It covered a swath about 10 miles wide from the MA border to New London NH	Unknown
Extreme Cold	November-December, 1988	New Hampshire	Temperature was below 0 degrees F for a month	Unknown
Ice Storm	March 3-6, 1991	New Hampshire	Numerous outages from ice-laden power lines in southern NH	Unknown
Snow Storm	1996	Regional	Two major storms with five feet of snow in a week	Unknown
Snow Storm	1997	New Hampshire	Power outages throughout region due to heavy snowfall	Unknown
Ice Storm	January 15, 1998	New Hampshire; Substantial power outages in Unity	Federal disaster declaration DR-1199-NH, 20 major road closures, 67,586 without electricity, 2,310 without phone service, $17+ million in damages to Public Service of NH alone	Unknown
Snow Storm	2000	Regional	Heavy snow	Unknown
Snow Storm	March 5-7, 2001	New Hampshire	Heavy snow.	Unknown
Snow Storm	December 6-7, 2003	New Hampshire	Heavy snow. Federal Disaster Declaration FEMA-3193-NH	Unknown
Snow Storm	February 10-12, 2005	New Hampshire	Heavy snow. Federal Disaster Declaration FEMA-3208-NH	Unknown
Ice Storm	December 2008	New Hampshire	Debris removal. FEMA DR-1812; power outages in Unity for up to 10 days; downed trees blocked roads and damaged utility lines	$15 Million
Wind Storm	February 23 – March 3, 2010	New Hampshire	FEMA DR-1892; Federal funding to Grafton, Hillsborough, Merrimack, Rockingham, Strafford, and Sullivan Counties; power loss	$2 Million
Snow Storm	October 29-30, 2011	Statewide	EM-3344; FEMA-4049 Hillsborough & Rockingham Counties	Unknown
Ice Storm	January 27, 2012	Region	Isolated power outages in Unity; several limbs down	Unknown

SEVERE WINTER WEATHER/ICE STORMS				
Hazard	**Date**	**Location**	**Description of Areas Impacted**	**Damages**
Snow Storm	February 8-10, 2013	New Hampshire	Heavy Snow. FEMA DR-4105	Unknown

Potential Future Severe Winter Damage:

There is the potential for severe winter damage every year. An event would affect the entire town. According to the State's mitigation plan, Sullivan County has a high risk for severe winter weather. The Committee determined severe winter weather to be a medium risk in Unity.

Earthquake

The following is a list of earthquakes which have impacted New England, New Hampshire, and potentially Unity.

Table III-11: EARTHQUAKES

EARTHQUAKES			
Date	**Location**	**Magnitude**	**Damage**
1638	Central NH	6.5-7	
October 29, 1727	Off NH/MA coast	NA	Widespread damage Massachusetts to Maine: cost unknown
December 29, 1727	Off NH/MA coast	NA	Widespread damage Massachusetts to Maine: cost unknown
November 18, 1755	Cape Ann, MA	6.0	Much damage: cost unknown
1800s	Statewide	83 felt earthquake in NH	Unknown
1900s	Statewide	200 felt earthquake in NH	Unknown
March 18, 1926	Manchester, NH	Felt in Hillsborough Co	Unknown
Dec 20, 1940	Ossipee, NH	Both earthquakes 5.5	Damage to homes, water main rupture: cost unknown.
December 24, 1940	Ossipee, NH	NA	Unknown
December 28, 1947	Dover-Foxcroft, ME	4.5	Unknown
June 10, 1951	Kingston, RI	4.6	Unknown
April 26, 1957	Portland, ME	4.7	Unknown

EARTHQUAKES			
Date	**Location**	**Magnitude**	**Damage**
April 10, 1962	Middlebury, VT	4.2	Unknown
June 15, 1973	Near Quebec Border	4.8	Unknown
Summer 1977-1978*	Centered in Franklin	NA	Committee recalls feeling earthquake in Unity
January 19, 1982	West of Laconia	4.5	Structure damage 15 miles away in Concord: cost unknown
October 20, 1988	Near Berlin, NH	4	Unknown
September 26, 2010	New Hampshire	3.4	Centered in Boscawen, NH
August 23, 2011	Central Virginia, East Coast	5.8	Felt in Unity

Source: earthquake.usgs.gov/earthquakes/states/new_hampshire/history.php for earthquakes through 1964. NH Multi-Hazard Mitigation Plan, 2010 for 1973-1982; earthquake.usgs.gov/earthquakes (12/13/11)
**Committee recollection*

Table III-12: RICHTER SCALE and MERCALLI INTENSITY

Richter Scale and Mercalli Intensity		
Richter Scale	**Modified Mercalli Intensity**	**Average Earthquake Effects**
1.0-3.0	I	**I** – Not felt except by a very few under especially favorable conditions.
3.0-3.9	II-III	**II** – Felt only by a few persons at rest, especially on upper floors of buildings. **III** – Felt quite noticeably by persons indoors. Standing motor cars may rock slightly.
4.0-4.9	IV-V	**IV** – Felt indoors by many, outdoors by few during the day. Dishes, windows, doors disturbed; walls make cracking sound. V – Felt by nearly everyone; many awakened. Some dishes, windows broken.
5.0-5.9	VI-VII	**VI** – Felt by all. Some heavy furniture moved; a few instances of fallen plaster. **VII** – Damage negligible in buildings of good design and construction, considerable damage in poorly built or badly designed structures; some chimneys broken.
6.0-6.9	VII-IX	**IX** – Damage considerable in specially designed structures; damage great is substantial buildings, with partial collapse.
7.0 and higher	VIII or higher	**VIII** and higher: damage slight in specially designed structures. Fall of chimneys, factory stacks, columns, monuments, walls. **X** – Some well-built wooden structures destroyed, most masonry and frame structures destroyed with foundations. **XI** – Few if any masonry structures remain standing. Bridges destroyed. **XII** – Total damage. Lines of sight and level are distorted. Objects thrown in air.

Potential Future Earthquake Damage:

A United States Geographic Survey mapping tool on the web (geohazards.cr.usgs.gov/ projects) projects a 5 – 6 peak ground acceleration (pga) with 10% probability of exceedance in 50 years for the Town of Unity. This pga rating is equivalent to a Modified Mercalli Intensity of "V" with moderate perceived shaking and very light potential damage. An earthquake event would impact the entire town. According to the State's mitigation plan, Sullivan County has a medium risk for earthquakes. The Committee determined the risk to be low/medium in Unity.

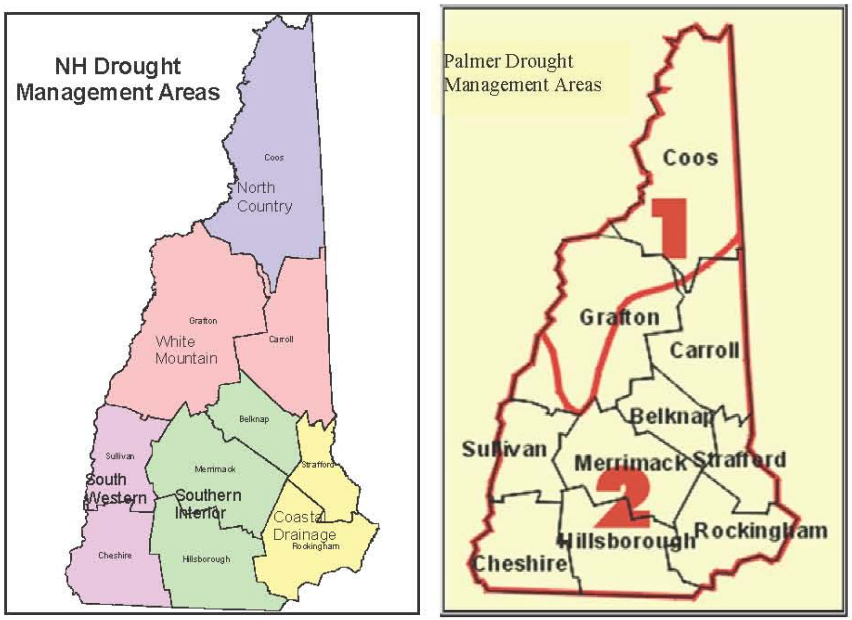
Drought

Droughts or abnormally low precipitation are generally not as damaging or disruptive as floods, but are more difficult to define. A drought is a natural hazard that evolves over months or even years and can last as long as several years or only a few months. Fortunately, droughts are rare in New Hampshire. The severity of the water deficit if gauged by the degree of moisture deficiency, its duration, and the size of the area affected. The effects of drought are indicated through measurements of soil moisture, groundwater levels and stream flow; however, not all of these indicators will be low during a drought. Not all of these indicators will be minimal during a particular drought. For example, frequent minor rainstorms can replenish the soil moisture without raising ground water levels or increasing stream flow.

Low stream flow correlates with low ground water level because it is ground water discharge to streams and rivers that maintain stream flow during extended dry periods. Low stream flow and low ground water levels commonly cause diminished water supply.

New Hampshire breaks the State into five Drought Management Areas, with one in the north, one across the central region, and three along the southern portion of the State. The National Oceanic and Atmospheric Administration (NOAA) and the US government use the Palmer Drought Survey Index for conditions of the nation. The Palmer Drought Management areas divide the State into two areas and use the Palmer Drought Severity Index which is based on rainfall, temperature, and historic data. The Town of Unity is in Area 2. The NH Drought Management Team, coordinated by the NH Department of Environmental Services Dam Bureau, use these maps to help determine which areas are hardest hit.

Figure III-2: DROUGHT MAPS



Past Drought Events

Around 2001-2002, Unity and other nearby towns had drought issues. This occurred again in 2010.

Table III-13: DROUGHT

Date	Location	Description	Damages
1929-1936	Statewide	Regional. Recurrence Interval 10 to > 25 years	Unknown
1939-1944	Statewide	Severe in southeast and moderate elsewhere. Recurrence Interval 10 to > 25 years	Unknown
1947-1950	Statewide	Moderate. Recurrence Interval 10 to > 25 years	Unknown
1960-1969	Statewide	Regional longest recorded continuous spell of less than normal precipitation. Encompassed most of the Northeastern US. Recurrence Interval > 25 years	Unknown

Date	Location	Description	Damages
2001-2002	Statewide	Affected residential wells and agricultural water sources; third worst drought on record, exceeded only by the drought of 1956-1966 and 1941-1942; recurrence level not determined yet	Unknown
2010	Mostly southern counties	Affected dug wells and those in hillsides; affected Unity and surrounding towns.	Unknown

Source: NH DES through 2002; Concord Monitor August 22, 2010

Potential Future Drought Damage

Drought will affect the entire town. The damage will depend upon the crops being grown at the time of the drought. No cost has been assigned to residential wells going dry though new wells may have to be dug or drilled. According to the State's mitigation plan, Sullivan County has a medium risk for drought. The Committee determined that drought is a low risk in Unity.

Extreme Heat

Extreme heat is characterized by abnormally high temperatures and/or longer than average time periods of high temperatures. These event conditions may impact the health of both humans and livestock. The National Weather Service developed a heat index based upon temperature and relative humidity. This is shown below.

Table III-14: HEAT INDEX

NOAA's National Weather Service

Heat Index

Temperature (°F)

Relative Humidity (%)	80	82	84	86	88	90	92	94	96	98	100	102	104	106	108	110
40	80	81	83	85	88	91	94	97	101	105	109	114	119	124	130	136
45	80	82	84	87	89	93	96	100	104	109	114	119	124	130	137	
50	81	83	85	88	91	95	99	103	108	113	118	124	131	137		
55	81	84	86	89	93	97	101	106	112	117	124	130	137			
60	82	84	88	91	95	100	105	110	116	123	129	137				
65	82	85	89	93	98	103	108	114	121	128	136					
70	83	86	90	95	100	105	112	119	126	134						
75	84	88	92	97	103	109	116	124	132							
80	84	89	94	100	106	113	121	129								
85	85	90	96	102	110	117	126	135								
90	86	91	98	105	113	122	131									
95	86	93	100	108	117	127										
100	87	95	103	112	121	132										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution Extreme Caution Danger Extreme Danger

Past Extreme Heat Events

The following table lists the extreme heat events in the past which included the Northeast and New Hampshire.

Table III-15: EXTREME HEAT

Date	Location	Description	Damage
July, 1911	New England	11-day heat wave in New Hampshire	Unknown
Late June to September, 1936	North America	Temps to mid 90s in the northeast	Unknown
June - August, 1999	Northeast	Mean temperatures well above long-term average	Unknown
Early August, 2001	New Hampshire	Mid 90s and high humidity	Unknown
August 2-4, 2006	New Hampshire	Regional heat wave and severe storms	Unknown
July 2010	Northeast	Regional heat wave	Unknown

Potential Future Extreme Heat Events

Extreme heat would impact the entire town though those with air conditioning in their homes would have less impact. The costs of extreme heat are most likely to be in human life. The elderly are especially susceptible to extreme heat. The State did not develop a county risk factor for extreme heat in its *NH Multi-Hazard Mitigation Plan Update 2013.* The Committee determined extreme heat to be a low/medium risk in Unity.

Erosion

Soil erosion, although a natural process, can be greatly accelerated by improper construction practices. Because of the climate in New Hampshire and the general nature of our topography, eroded soils can be quickly transported to a wetland, stream, or lake. The New Hampshire Department of Environmental Services (DES) regulates major construction activities to minimize impacts upon these resources. A properly conducted construction project should not cause significant soil erosion.

Soil becomes vulnerable to erosion when construction activity removes or disturbs the vegetative cover. Vegetative cover and its root system play an extremely important role in preventing erosion by: (1) Shielding the soil surface from the impact of falling rain drops; (2) Reducing the velocity of runoff; (3) Maintaining the soil's capacity to absorb water, and (4) Holding soil particles in place.

Because of the vegetation's ability to minimize erosion, limiting its removal can significantly reduce soil erosion. In addition, decreasing the area and duration of exposure of disturbed soils is also effective in limiting soil erosion. The designer must give special consideration to the phasing of a project so that only those areas actively under construction have exposed soils. Other factors influencing soil erosion are: (1) Soil types, (2) Land slope, (3) Amount of water flowing onto the site from up-slope, and (4) Time of year of disturbance.

Past Erosion Events

There are about twelve miles of State roads, 43 miles of Class V roads (maintained town roads), and nine miles of Class VI roads (unmaintained town roads) in Unity. The Committee identified spots along Stage Road which have been mitigated for erosion problems.

Potential Erosion Events

Due to the topography of the town, there is always potential for erosion. As properties are developed there will be less vegetative buffer to protect the town from erosion during rainstorms. There are additional spots along Stage Road that have been identified as potential erosion sights in the future. The Committee determined there was a low/medium risk for erosion damage.

Landslide

A landslide is the downward or outward movement of slope-forming materials reacting under the force of gravity, including mudslides, debris flows, and rockslides. Formations of sedimentary deposits along rivers also create potential landslide conditions. Landslides can damage or destroy roads, railroads, electrical and phone lines, and other structures.

Past Landslide Events:

There is one area in town where a landslide has occurred. This site is located at the intersection of Cold Pond Road and Copeland Brook Road. The landslide occurred in 2005, and the repairs were completed in 2006.

Potential Future Landslide Events:

The best predictor of future landslides is past landslides. If any landslide events were to occur, they would be most likely in areas of very steep slope. The Committee determined there is a low/medium risk for landslide damage.

Wildfire

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

Increased severity over recent years has decreased capability to extinguish wildfires. Wildfires are unpredictable and usually destructive, causing both personal property damage and damage to community infrastructure, cultural and economic resources.

Negative short term effects of wildfires include destruction of timber, forage, wildlife habitats, scenic vistas and watersheds. Some long term effects include erosion and lowered water quality.

There are many types and causes of fires. Wildfires, arson, accidental fires and others all pose a unique danger to communities and individuals. Since 1985, approximately 9,000 homes have been lost to urban/wild land interface fires across the United States (Northeast States Emergency Consortium: www.nesec.org). The majority of wildfires usually occur in April and May, when home owners are cleaning up from the winter months, and when the majority of vegetation is void of any appreciable moisture making them highly flammable.

The threat of wildfires for people living near wildland areas or using recreational facilities in wilderness areas is real. Dry conditions at various times of the year and in various parts of the United States greatly increase the potential for wildfires. Advance planning and knowing how to protect buildings in these areas can lessen the devastation of a wildfire. To reduce the risk to wildfire, it is necessary to consider the fire resistance of structures, the topography of property and the nature of the vegetation in the area.

According to the National Wildfire Coordination Group, there are categories of wildfire based upon size: Class A - one-fourth acre or less; Class B - more than one-fourth 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.

Past Wildfire Events

There have been no significant wildfire events in Unity.

Potential Future Wildfire Events

There are many large, contiguous forest tracts in Unity. Where development interfaces with the forested areas is called the “urban interface.” These are the areas where structures could be impacted by a wildfire; these areas are scattered throughout the town. The most likely areas for wildfire are where ice storm impact downs trees and branches providing provide fuel for a fire. According to the State’s mitigation plan, Sullivan County has substantial debris to fuel a wildfire remaining from the ice storm of 1998 and 2008 and heavy forest cover. The plan gives the county a high risk of wildfire. The Committee did not feel that wildfire is a significant potential hazard in Unity and determined that the risk of wildfire in Unity is low/medium.

Natural Water & Air Contaminants

Radium, radon and uranium are grouped together because they are radionuclides, unstable elements that emit ionizing radiation. These three particular substances are a health risk only if taken into the body by ingestion or inhalation. They occur naturally in the environment, uranium and radium as solids in rock while radon exists as a gas. Radionuclides are undetectable by taste, odor, or color, so only analytical testing can determine if they are present in water. Because they are associated with rock, wells drilled into bedrock are more likely to contain elevated levels of radionuclides than shallow or dug wells.

Radon gas can also be found in the soil. Openings between the soil and buildings, such as foundation cracks and where pipes enter, provide conduits for radon to move into structures. The difference in air pressure, caused by heated indoor air moving up and out of buildings, results in a flow of soil gas toward the indoors, allowing radon to potentially accumulate in structures. Air quality in a home can also be tested for radon. Following is a map of New Hampshire by the U.S. EPA to show radon zones.

There are many other natural contaminants which can render drinking water unsafe such as arsenic. The Drinking Water and Groundwater Bureau of the NH Department of Environmental Services has several fact sheets available to address these natural materials and suggests which materials to be included in testing. See their list of fact sheets at http://www.des.state.nh.us/dwg.htm.

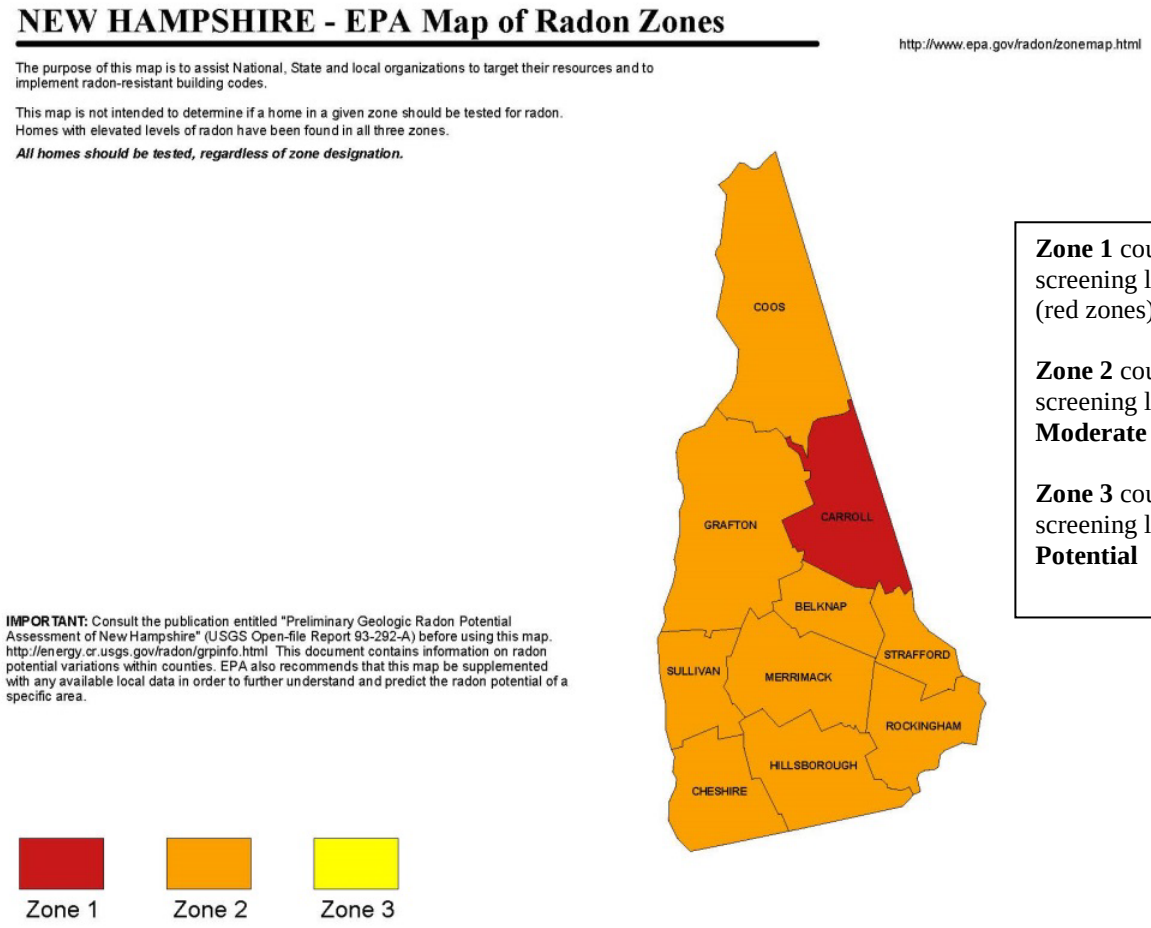
Past Natural Water & Air Contaminant Events

There have been no known events related to natural water and air contamination in Unity although uranium is a known water contaminant in neighboring towns. Uranium was found when constructing I-89 to the east and northeast of Unity. It is also anticipated that although no one is aware of any radon contamination, given that we are in the "Granite State," it is likely that some homes are affected by radon.

Table III-16: RADON – LOW/MEDIUM RISK

RADON					
Summary Table of Short-term Indoor Radon Test Results in NH's Radon Database 11/04/2003)					
County	**# Tests**	**G. Mean**	**Maximum**	**% > 4.0 pCi/l**	**% > 12.0 pCi/l**
Belknap	744	1.3	22.3	14.4	1.3
Carroll	1042	3.5	478.9	45.4	18
Cheshire	964	1.3	131.2	15.6	2.3
Coos	1072	3.2	261.5	41	17
Grafton	1286	2.0	174.3	23.2	5.2
Hillsborough	2741	2.1	202.3	29.6	6.8
Merrimack	1961	2.0	152.8	25.2	6
Rockingham	3909	3.0	155.3	40	9.5
Strafford	1645	3.4	122.8	44	13
Sullivan	**466**	**1.4**	**29.4**	**15.7**	**2.1**
STATEWIDE	**15860**	**2.4 pCi/L**	**478.9 pCi/L**	**32.4**	**8.6**

Figure III-3: MAP OF RADON ZONES



Zone 1 counties have a predicted average indoor radon screening level greater than 4 pCI/L (picocuries per liter) (red zones) **Highest Potential**

Zone 2 counties have a predicted average indoor radon screening level between 2 and 4 pCi/L (orange zones) **Moderate Potential**

Zone 3 counties have a predicted average indoor radon screening level less than 2 pCi/L (yellow zones) **Low Potential**

Potential Future Natural Air & Water Contaminant Damage:

Although there are no known records of illness that can be attributed to radium, radon, or uranium or other contaminants in Unity, residents should be aware that they are present. Houses with granite and dirt cellars are at increased risk to radon gas infiltration. According to the table above, Sullivan County radon levels are below average for the State. According to the State's mitigation plan, Sullivan County has a medium probability of a radon related hazard.

In addition radium, radon, and uranium as well as other natural materials can be present in drinking water. Residents, especially with bedrock wells, should be aware of the possibility of water contamination and the availability of testing and remediation. The Committee determined that the risk of natural contaminants is low.

Hazardous Materials Spills

Hazardous materials spills or releases can cause loss of life and damage to property. Short or long-term evacuation of local residents and businesses may be required, depending on the nature and extent of the incident. The spills may occur on-site at hazardous waste generators or in transport through town.

In Unity, there are 12 potential hazardous waste generators listed on the NH Department of Environmental Services (DES) "one-stop" list. Ten of these are inactive at the moment and the two active sites (Sid Brown's Auto Body and Unity Transfer Station) probably only produce small amounts of hazardous waste.

Past Hazardous Waste Spill Events

No known significant spills have occurred in Unity, and there are no large hazardous waste generators in the Town.

Potential Future Hazardous Waste Spill Damage

Although there have not been any significant spills in Unity, hazardous materials spills could occur along the 2nd NH Turnpike. In addition, heating fuel is delivered to homes on many of the town's roads: spills could occur at storage tanks during the filling of the tanks. There conceivably could be spills near any home in Unity due to home heating fuel delivery. The property owner is responsible for clean-up. The State oversees these reported spills.

The State did not determine county risk for hazardous waste spills in the *NH Multi-Hazard Mitigation Plan Update 2013*. The Committee determined a hazardous waste spill is a low/medium risk.

Terrorism

Terrorism has been defined in many ways. The word terrorism is derived from the Latin term "terrere" which means to frighten. Section 802 of the USA Patriot Act expanded the definition of terrorism to cover "domestic," as opposed to international terrorism. A

person engages in domestic terrorism if they do an act "dangerous to human life" that is a violation of the criminal laws of a state or the United States, if the act appears to be intended to: (i) to intimidate or coerce a civilian population; (ii) to influence the policy of a government by intimidation or coercion; or (iii) to affect the conduct of a government by mass destruction, assassination, or kidnapping; and (C) occur primarily within the territorial jurisdiction of the United States."

Past Terrorism Events

There have been no terrorism events within Unity in the past.

Future Terrorism Events

Terrorism is not considered a major risk, although vandalism is an occasional problem. The Committee determined that the risk of terrorism is a low/medium risk in Unity.

C. HAZARD RISK RATINGS

The Town of Unity Hazard Mitigation Committee reviewed each potential hazard and rated the probability of occurrence and vulnerability (cost if the hazard actually occurs) to come up with an overall risk rating. These ratings were reevaluated and changed in 2013. The ratings were based on past occurrences of hazards affecting the State of New Hampshire, Sullivan County, and the Town of Unity. The two highest risks in Unity were determined to be Dam Failure and Flooding.

Assessing Probability

The process involved assigning a number to each hazard type based on its potential of occurring determined using the committee's knowledge of past events:

1 – Low: may occur after 25 years
2 – Medium: may occur within 10-25 years
3 – High: may occur within 10 years

An n/a score was given if there was insufficient evidence to make a decision. To ensure some balance with a more scientific measurement, the plan also identifies the probability of occurrence from the State Hazard Plan as shown in Table III-10. For

comparative purposes the Low rating was given a designation of "1," the Medium rating a designation of "2," and the High rating a designation of "3." These figures are shown in Table III-17 and III-18.

Table III-17: PROBABILITY OF HAZARD

Probability of Hazard Occurring in Sullivan County from State Plan											
Flood	**Dam Failure**	**Drought**	**Wildfire**	**Earth-quake**	**Land-slide**	**Radon**	**Tornado**	**Hurricane**	**Lightning**	**Severe Winter**	**Avalanche**
H	L	M	H	M	M	M	M	M	M	H	L

Assessing Vulnerability

A relative scale of 1 to 3 was used to determine the impact and cost for human death and injury, property losses and damages, and business/agricultural impact: 1 – limited damage and cost; 2 - moderate amount of damage and cost, and 3 – high damage and cost.

Table III-18: VULNERABILITY OF EXISTING DEVELOPED AREAS

Committee Assessment of Vulnerability	**Human Impact**	**Property Impact**	**Economic Impact**	**Vulnerability**
	Probability of death or injury	**Physical losses and damages**	**Cottage businesses & agriculture**	**Avg. of human/ property/ business impact**
Dam Failure	1	3	2	2.00
Flooding	1	3	3	2.33
Hurricane	1	2	2	1.67
Tornado & Downburst	2	2	1	1.67
Thunderstorm/Lightning/Hail	1	1	1	1.00
Severe Winter/Ice Storms	1	2	2	1.67
Earthquake	3	3	3	3.00
Drought	1	1	1	1.00
Extreme Heat	1	1	1	1.00
Erosion	1	2	1	1.33
Landslide	1	2	1	1.33
Wildfire	1	2	1	1.33
Natural Contaminants	1	1	1	1.00

Committee Assessment of Vulnerability	Human Impact	Property Impact	Economic Impact	Vulnerability
	Probability of death or injury	Physical losses and damages	Cottage businesses & agriculture	Avg. of human/ property/ business impact
HazMat Spills	1	3	2	2.00
Terrorism	3	2	1	2.00

Assessing Risk

The averages of each vulnerability and probability were multiplied to arrive at the overall risk the hazard has on the community. The overall risk or threat posed by a hazard over the next 25 years was determined to be high, medium, or low.

HIGH**:** There is strong potential for a disaster of major proportions during the next 25 years; or (2) history suggests the occurrence of multiple disasters of moderate proportions during the next 25 years. The threat is significant enough to warrant major program effort to prepare for, respond to, recover from, and mitigate against this hazard. This hazard should be a major focus of the town's emergency management training and exercise program.

MEDIUM: There is moderate potential for a disaster of less than major proportions during the next 25 years. The threat is great enough to warrant modest effort to prepare for, respond to, recover from, and mitigate this hazard. This hazard should be included in the town's emergency management training and exercise program.

LOW**:** There is little potential for a disaster during the next 25 years. The threat is such as to warrant no special effort to prepare for, respond to, recover from, or mitigate this hazard. This hazard need not be specifically addressed in the town's emergency management training and exercise program except as generally dealt with during hazard awareness training.

Table III-19: RISK ASSESSMENT

Risk Assessment 0-1.9 Low 2-3.9 Low/Med 4-5.9 Med 6-7.9 Med-High 8-9 High				
Hazards	**Probability based on Committee Review**	**Vulnerability based on Committee Review**	**Risk Rating (Probability x Vulnerability)**	**Risk**
Dam Failure	3	2.00	6	Med/High
Flooding	3	2.33	6.99	Med/High
Hurricane	3	1.67	5.01	Med
Tornado & Downburst	2	1.67	3.34	Low/Med
Thunderstorm/Lightning/Hail	3	1.00	3.00	Low/Med
Severe Winter	3	1.67	5.01	Med
Earthquake	1	3.00	3.00	Low/Med
Drought	1	1.00	1.00	Low
Extreme Heat	3	1.00	3.00	Low/Med
Erosion	3	1.33	3.99	Low/Med
Landslide	3	1.33	3.99	Low/Med
Wildfire	3	1.33	3.99	Low/Med
Natural Contaminants	1	1.00	1.00	Low
HazMat	1	2.00	2.00	Low/Med
Terrorism	1	2.00	2.00	Low/Med

IV. CRITICAL FACILITIES/LOCATIONS

The Critical Facilities list, identified by the Unity Hazard Mitigation Committee, is divided into three categories. The first category contains facilities needed for emergency response in the event of a disaster. The second category contains non-emergency response facilities that are not required in an event, but that are considered essential for the everyday operation of the Town of Unity. The third category contains facilities/populations that the Committee wishes to protect in the event of a disaster. Values for all buildings in this document were obtained from town tax records for main structures plus accessory structures for 2012. The equalization to current values is very close to 100%.

Table IV-1: EMERGENCY RESPONSE FACILITIES, SERVICES & STRUCTURES

Critical Facility	Hazard Vulnerability	Value
Fire Department	No site specific risks	$133,940
Police Department/Town Office	No site specific risks	$307,660
Highway Department	No site specific risks	$25,120
Ahern Building (included in County Complex Assessment)	No site specific risks	N/A
Unity Elementary School	No site specific risks	$571,930

Table IV-2: NON-EMERGENCY RESPONSE FACILITIES & STRUCTURES

Critical Facility	Hazard Vulnerability	Value
Transfer Station	No site specific risks	$24,280

Table IV-3: FACILITIES & POPULATIONS TO PROTECT

Critical Facility	Hazard Vulnerability	Value
Sullivan County Complex (Nursing Home, County Jail, Water Treatment Plant)	No site specific risks	$9,445,810
Town Hall	No site specific risks	$139,000

V. DETERMINING HOW MUCH WILL BE AFFECTED

A. IDENTIFYING VULNERABLE FACILITIES

It is important to determine which critical facilities and other structures are the most vulnerable and to estimate potential losses. The first step is to identify the facilities most likely to be damaged in a hazard event. To do this, the locations of critical facilities were compared to the location of past and potential hazard events. Facilities and structures located in federally and locally determined flood areas, dam inundation areas, etc. were identified and included in the analysis. There is neither large land areas slated for potential development nor large development projects in the works, so vulnerability of undeveloped land was not analyzed except to note logical future development areas.

Table V-1: VULNERABILITY OF EXISTING DEVELOPED AREAS

Area	Hazard	Critical Facilities	Buildings (residential & non-residential)	Infrastructure	Natural Resources	Total Known Building Value
A Flood Zone	Flooding	None	$3,142,460	Unknown	Unknown	$3,142,460

Table V-2: VULNERABILITY OF POTENTIAL DEVELOPMENT

Area	Hazard	Critical Facilities	Projected Buildings	Projected Infrastructure	Projected Value
None Known	All Hazards	None	N/A	N/A	N/A

B. IDENTIFYING VULNERABLE SPECIAL POPULATIONS

There are few centers of special populations in town including such as the regional elementary school, the town offices, the town hall during special meetings, and the library. The elderly and physically or mentally impaired residents are also residing throughout the town in their homes.

C. POTENTIAL LOSS ESTIMATES

This section identifies areas in town that are most vulnerable to hazard events and estimates potential losses from these events. It is difficult to ascertain the amount of damage caused by a natural hazard because the damage will depend on the hazard's extent and

severity, making each hazard event quite unique. In addition, human loss of life was not included in the potential loss estimates, but could be expected to occur. FEMA's *Understanding Your Risks: Identifying Hazards and Estimating Losses* (August 2001) was used in estimating loss evaluations. The value of structures was determined by using town records. The Town's tax maps were used to determine number of units within each hazard area. The land damage cost, structure content loss costs, and function loss cost were not determined.

Dam Failure – Medium/High Risk – Unknown cost

Even though there are no dams designated as "significant" or "high" hazard potential either within Unity or areas upstream in a position to impact Unity in the event of dam failure, the committee felt the Old Miller Pond Dam poses a likely threat to overflow and damage to downstream infrastructure.

Flooding – Medium/High Risk - $880,000 Estimated Cost (not including roads, bridges)

There are approximately 26 homes located within the FEMA designated Special Flood Hazard areas. These areas are all "Zone A" meaning they have no base flood elevation. The total value of the buildings (including residential and non-residential) is $3,142,460. Assuming a 28 % structural damage to the buildings, the damage would total close to $880,000. There are 10 town and state bridges and several sections of road in these flood areas. No value estimate has been done for these structures. No estimate for contents of buildings was done.

Hurricane – Medium Risk – $7.7 Million Estimated Cost

Damage caused by hurricanes can be severe and expensive. Unity has been impacted in the past by both wind and flooding damage as a result of hurricanes. The total assessed value of all structures within Unity is approximately $77 million. It is random which structures would be impacted and how much. There is no standard loss estimation available and no record of past costs. If 10% of the buildings received 10% damage, the damage cost would be about $7.7 million.

Tornado & Downburst – Low/Medium Risk – No Recorded or Estimated Cost

Tornadoes, downbursts, and microbursts are relatively uncommon natural hazards in New Hampshire, although microbursts in 2007 caused substantial damage. On average, about six tornado events strike each year. In the State of NH, the average annual cost of tornadoes between 1950 and 1995 was $197,000 (The Disaster Center). These wind events occur in specific areas, so calculating potential town-wide losses is difficult. There is no standard loss estimation model available for tornadoes due to their random nature.

Thunderstorm/Lightning/Hail – Low/Medium Risk – No Recorded or Estimated Cost

According to the Federal Alliance for Safe Homes, in an average year, hail causes more than $1.6 billion worth of damage to residential roofs in the United States, making it, year in and year out, one of the most costly natural disasters. Lightning is one of the most underrated severe weather hazards, yet it ranks as the second-leading weather killer in the United States. More deadly than

hurricanes or tornadoes, lightning strikes in America each year killing an average of 73 people and injuring 300 others, according to the National Weather Service. There is no cost estimation model for thunderstorms due to their random nature.

Severe Winter Weather – Medium Risk – No Recorded or Estimated Cost
Ice storms often cause widespread power outages by downing power lines, and these storms can also cause severe damage to trees. New England usually experiences at least one or two severe snowstorms, with varying degrees of severity, each year. All of these impacts are a risk to the community and put all residents, especially the elderly, at risk.

According to a study done for the Institute for Catastrophic Loss Reduction (Canada) and the Institute for Business and Home Safety (U.S.), the 1998 Ice Storm inflicted $1.2 billion (U.S.) worth of damage in the U.S. and Canada. In New Hampshire alone, over 67,000 people were without power (http://www.meteo.mcgill.ca/extreme/Research_Paper_No_1.pdf). U.S. average insurance claim was $1,325 for personal property, $1,980 for commercial property, and $1,371 for automobiles.

Earthquake – Low/Medium Risk - $7.7 million Estimated Cost if All Buildings Impacted
Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric and phone lines, and precipitate landslide and flash flood events. Four earthquakes in NH between 1924 and 1989 had a magnitude of 4.2 or more. Two of these occurred in Ossipee, one west of Laconia, and one near the Quebec border. Buildings have not been subject to any seismic design level requirement for construction and would be susceptible to structural damage. The dams, bridges, and roads would be vulnerable to a sizable earthquake event.

FEMA's *Understanding Your Risks: Identifying Hazards and Estimating Costs*, August 2001 provides that an earthquake with a 5% peak ground acceleration (as determined by the US Geologic Survey for the area) could cause damage to single family residences by around 10% of the structural value. If 10% of buildings in Unity were impacted by an earthquake, the estimated damage could be around $7.7 million.

Drought – Low Risk – No Recorded or Estimated Cost
A long drought would cause damage to crops and dry up wells. There is no cost estimate for this hazard in Unity.

Extreme Heat – Low/Medium Risk – No Recorded or Estimated Cost
Excessive heat kills more people in the U.S. than tornadoes, hurricanes, floods, and lightning combined. The elderly, very young, obese and those who work outdoors or have substance abuse problems are most at risk from succumbing to heat. Additionally, people in urban areas are more susceptible as asphalt and cement tend to hold in heat throughout the night (Federal Alliance of Safe Homes website). The costs for this hazard are in terms of human suffering. It is not anticipated that there would be any structural or infrastructure costs.

Erosion – Low/Medium Risk – No Recorded or Estimated Cost
Development on steep slopes can cause substantial erosion in the adjacent area. This can impact the adjacent roads in the area by making them more susceptible to erosion and washout. Construction itself can cause erosion if best management practices are not used to control run-off from disturbed soils, and the rooftops of buildings displace water which would have gone into the ground. This is then exacerbated by the steep slopes where the run-off moves more quickly and can cause more damage**.**

Landslide – Low/Medium Risk – No Recorded or Estimated Cost
There are not any areas in Unity that the Committee identified as potential sites of landslides.

Wildfire – Low/Medium Risk – $385,000 Estimated Cost
The risk of fire is difficult to predict based on location. Forest fires are more likely to occur during drought years. In addition, areas and structures that are surrounded by dry vegetation that has not been suitably cleared are at high risk. Fire danger is generally universal, however, and can occur practically at any time. Dollar damage would depend on the extent of the fire and the number and type of buildings burned. Since the entire developed area of Unity interfaces with forest, all structures are potentially vulnerable to wildfire. The estimated value of all structures in the Town is approximately $77 million. If 1% of the structures received 50% damage, the total estimated cost would be about $385,000.

According to the Sullivan County Forester, big wildfires are uncommon in Sullivan County as the weather here is generally not favorable for a high probability of ignition and rapid spread. Additionally, there are enough roads and people in the county that fires are generally spotted and addressed before they are too large. Occasionally weather conditions are more favorable as was seen in the 1950s on Croydon Mountain.

Natural Contaminants – Low Risk – No Recorded or Estimated Cost

The cost of a radon hazard would be the health of individuals exposed to radon. No cost estimate is provided for this hazard.

Hazardous Material Spills – Low/Medium Risk – No Recorded or Estimated Cost

The cost of a hazardous material spill would depend upon the extent of the spill, the location of the spill in relation to population, structures, infrastructure, and natural resources, as well as the type of hazardous material. The cost of any clean-up would be imposed upon the owner of the material. However, other less tangible costs such as loss of water quality might be borne by the community. No cost estimate has been provided for this possible hazard. There are no significant hazardous waste generators in Unity—so any spills would likely be from heating fuel delivery or transport of materials through the town on the major routes.

Terrorism – Low/Medium Risk – No Recorded or Estimated Cost

The cost of any terrorism event is unpredictable and not estimated in this document. The Committee does not feel that terrorism is a substantial threat in Unity.

VI. EXISTING MITIGATION ACTIONS

The following table provides the existing mitigation actions in Unity. The fifth column lists if there were recommendations for improvement in the previous hazard mitigation plan and if those recommendations were put into action or not and if not, why. The final column provides either an update of the mitigation action or proposed improvements that are currently being recommended for the future. The latter are provided in red and they will be evaluated further in upcoming chapters of this plan.

The "Effectiveness" column ranks each program as one of the following: "high" – the existing program works as intended and meets its goals; "average" – the existing program works though there is room for improvement; and "low" – the existing program does not work as intended or falls short of its goals.

Table VI-1: EXISTING MITIGATION ACTIONS

Existing Mitigation Action & Description	Hazard Type/ Service Area	Responsible Local Agent	Effectiveness (Low, Average, High)	Recommendations in Previous Hazard Mitigation Plan/*Actions Taken to Meet Recommendations or Not Met*	Update/Future Proposed Improvements
National Flood Insurance Program - Provides insurance program for homes in the FEMA determined flood zones or anywhere else	Flooding/Entire Town	Town Selectboard	High	No recommendation in previous plan	There have been no claims to date; the town will continue to participate in the program in compliance with NFIP. The Town has a link to the flood maps on the town web site. See Zoning Ordinance recommendation below.
Town Master Plan - Most recent version is 1996; provides a vision for the town with goals to achieve that vision	All Hazards/Entire Town	Planning Board	Low	No recommendation in previous plan	Currently working on update/ Will mention Hazard Mitigation Plan and Local Emergency Operations Plan in Master Plan.
Local Emergency Operations Plan - Describes the preparation and response necessary for the Town to address emergency situations	All Hazards/Entire Town	EMD & Selectboard	Average	Update Plan using State format/ DEFERRED: *Was not completed due to lack of resources*	Update the plan within the next 5 years.

Existing Mitigation Action & Description	Hazard Type/ Service Area	Responsible Local Agent	Effectiveness (Low, Average, High)	Recommendations in Previous Hazard Mitigation Plan/*Actions Taken to Meet Recommendations or Not Met*	Update/Future Proposed Improvements
Unity Elementary School Emergency Plan – Addresses hazards, deficiencies, evacuation, relocation, drills, lockdown	All Hazards/ Unity Elementary School	School Superintendent/EMD	High	No recommendation in previous plan	Obtain a copy of plan and work with the school.
Emergency Shelter – Unity Elementary School, Ahern Building and Fire Station.	All Hazards/Entire Town	EMD	High	Acquire generators/COMPLETED: *Acquired permanent generator at the school in 2013 and a portable generator at the Fire Station in 2010, and a generator is in place at the county's Ahern building.*	Obtain written agreement with Sullivan County for use of Ahern Building.
Emergency Power – Provide power for town facilities.	All Hazards/Entire town	EMD	High	No recommendation in previous plan	Obtain a permanent generator to power Fire, Highway and Town Office building.
Haz/Mat Program – Provides emergency response to hazardous materials spills; Member of Southwest Fire and Mutual Aid who dispatches the State Haz/Mat Team.	HazMat Spills/Entire Town	Fire Chief	High	No recommendation in previous plan	Continue to participate as members of the Southwest Fire and Mutual Aid.
Unity Volunteer Fire Department and FAST Squad – Participate in ongoing training	Fire, HazMat/Entire Town	Fire Chief	High	Ongoing training for fire and emergency services personnel; update fire equipment annually 2014-2019. */COMPLETED: Constantly participating in training and have upgraded equipment.*	Replace the Forestry Truck and install 10-12 dry hydrants at fire ponds.
Fire Supression – Major subdivision requires cistern or pond. New elementary school will have a cistern with additional water.	Fire/Entire Town	Fire Chief	High	No recommendation in previous plan	Install dry hydrants at 10-12 fire ponds.
Police Support – County Sheriff's Department	All hazards/ Entire town	Selectboard/ Contract with Sheriff's Dept.	Average	No recommendation in previous plan	Will continue contract.

Existing Mitigation Action & Description	**Hazard Type/ Service Area**	**Responsible Local Agent**	**Effectiveness (Low, Average, High)**	**Recommendations in Previous Hazard Mitigation Plan/*Actions Taken to Meet Recommendations or Not Met***	**Update/Future Proposed Improvements**
Mutual Aid – Fire – Agreement with Southwestern Fire Mutual Aid	Fire/Entire Town	Fire Chief	High	No recommendation in previous plan	Continue with Southwest Fire and Mutual Aid.
Class VI Road Policy – Provides emergency personnel access to remote areas of town No subdivision allowed; although single residences are.	All hazards/Entire town	Highway Agent/ Selectboard	Average	No recommendation in previous plan	Will continue policy as is.
Conservation Commission – Advises the Town Boards about conservation concerns; reviews State wetlands applications	Fire & Recreational/ Entire Town	Committee Chair	Average	DELETED: Previous recommendation was inappropriate for Conservation Commission and was moved to "Zoning Ordinance"	N/A; to be removed in next Plan update.
Zoning Ordinance – Regulates land use	All Hazards/Entire Town	Planning Board	Average	Amend zoning ordinance to prevent structures on steep slopes; develop overlay districts. / DEFERRED: *Not done as contracted Tax Mapper has not provided maps.*	Amend zoning ordinance to prevent new structures in the flood plain and on steep slopes.
Floodplain Ordinance – Restricts floodplain development	Flooding, Erosion/Entire Town	Planning Board; Town Selectboard	Average	Adopt Floodplain ordinance/ COMPLETED: *Adopted in 2010*	No residents have used the program to date; there are no proposed improvements.
Subdivision Regulations – Regulates division of land	Flooding/Entire Town	Planning Board	Average	No recommendation in previous plan	Latest subdivision regulations adopted in 2010; driveways restricted from sloped areas of 8% or greater; no buildings or structures on slopes of 25% or greater.
Driveway Regulations – Subdivision regulations restrict driveway grade.	All Hazards/Entire Town	Planning Board	Average	No recommendation in previous plan	No plans for change.

Existing Mitigation Action & Description	**Hazard Type/ Service Area**	**Responsible Local Agent**	**Effectiveness (Low, Average, High)**	**Recommendations in Previous Hazard Mitigation Plan/*Actions Taken to Meet Recommendations or Not Met***	**Update/Future Proposed Improvements**
Site Plan Review Regulations – regulates non-residential and multi-family development	Erosion/Entire Town	Planning Board	Average	No recommendation in previous plan	No plans for change.
Building Code Standards	Entire Town	Selectboard	Average	Update building codes for strong winds and earthquakes/COMPLETED: *Adopted State Codes in 2002*	No plans for change.
Hazard tree trimming - Program for cutting hazardous branches and trees as necessary;	All Hazards/Entire Town	Highway Agent; Selectboard	High	No recommendation in previous plan	No plans to change.
911 Numbering - Town has ordinance to post 911 numbers at building	All Hazards/Entire town	Selectbaord; EMD	High	No recommendation in previous plan	Done
Emergency Communication – emergency dispatch serves the Town	All Hazards/Entire town	SW Mutual Aid for Fire and Ambulance; Sheriff's Dept. or State Troop C for Police	High	No recommendation in previous plan	No plans to change.
Winter Road Maintenance Policy – Prioritization of roads; 3 routes, bus routes cleaned first.	All Hazards/Entire Town	Highway Agent	High	No recommendations in previous plan	No plans for change.
Hazard Signage – Public warning signs for roadways.	Severe Weather/Entire Town	Highway Agent	High	Get signage/ COMPLETETED in 2010: *Have signage for tree cutting and roadwork.*	No plans for change.
Public Education & Outreach – natural hazard preparation and mitigation	All hazards/Entire Town	Selectboard	Average	Increase education and outreach and publish periodic article in the Town Newsletter / DEFERRED: *No longer have newsletter, will use website now.*	Selectboard office will make a webpage for Hazard Mitigation. See table of educational topics below.
Highway Department – Upgrade highway equipment	All hazards/Entire Town	Highway Agent	Average	Upgrade highway equipment/ COMPLETED in 2012: *Purchased several pieces of equipment; including chipper and grader.*	In the process of upgrading to a new dump truck and backhoe.

Existing Mitigation Action & Description	**Hazard Type/ Service Area**	**Responsible Local Agent**	**Effectiveness (Low, Average, High)**	**Recommendations in Previous Hazard Mitigation Plan/*Actions Taken to Meet Recommendations or Not Met***	**Update/Future Proposed Improvements**
Road & Bridge Improvements - Mitigate problem areas to prevent substantial future damage from natural hazards	All hazards/Entire Town	Highway Agent	Average	See below for specific road & bridge improvement	See below.
	Center Road	Highway Agent		Replace culvert to increase capacity/*completed in 2012*	
	Gilman Pond Road	Highway Agent		Replace culvert to prevent future flooding events /*completed in 2012*	No plans for further improvements at this site
	Coon Brook Road and Old Cheshire County Road	Highway Agent		Increase culvert sizes along the roads to mitigate flooding events. / *COMPLETED several culvert replacements; one box culvert in 2013*	No plans for further improvements at this site
	Cold Pond Road	Highway Agent		Stabilize the bank along the road to protect infrastructure in the event of a landslide. / *COMPLETED in 2006*	No plans for further improvements at this site
	Old Miller Pond Dam	Highway Agent		No recommendation in previous plan for this site.	Lower water level at the dam to prevent flooding.
	Stage Road	Highway Agent		No recommendation in previous plan for this site.	Replace culvert to meet capacity needs.
	Old Cheshire County Road	Highway Agent		No recommendation in previous plan for this site.	Replace culvert to meet the 100-Year Floodplain.
	Stage Road	Highway Agent		No recommendation in previous plan for this site.	Place Stone embankment along road to resist erosion; Completed one section in 2012 / have one more section to complete
	Cold Pond Rd and Center Road	Highway Agent		No recommendation in previous plan for this site.	Replace culvert at the intersection to meet capacity needs.

Existing Mitigation Action & Description	Hazard Type/ Service Area	Responsible Local Agent	Effectiveness (Low, Average, High)	Recommendations in Previous Hazard Mitigation Plan/*Actions Taken to Meet Recommendations or Not Met*	Update/Future Proposed Improvements
	Copeland Brook Road	Highway Agent		Place stone along brook embankment to resist erosion. / *DEFERRED done due to lack of resources.*	Place stone along brook embankment to resist erosion
	Slack Road	Highway Agent		No recommendation in previous plan for this site.	Replace deck and retaining wall of bridge to meet 100-Yr Floodplain.
Communications – Radio between municipal vehicles	All Hazards/Entire Town	Selectboard, Highway Agent & Fire Chief	Average	No recommendations in previous plan.	Maintain communication system in municipal vehicles.

The Town of Unity will provide a public education and outreach program by using brochures and the town website to reach their citizens. There will also be one-on-one outreach as appropriate. Below is a table showing the potential topics and outreach methods. Dam failure is not included as this is performed by the State Dam bureau in their assessment of all dams in the State. Landslide is also not included as there is only one possible site in town.

Table VI-2: PUBLIC EDUCATION AND OUTREACH TOPICS

Natural Hazard	Educational Topics	Outreach Methods
Multi-Hazard	Shelters; evacuation routes; proper evacuation procedures; emergency kits and family plans	Town web site Town meeting display
Flooding	National Flood Insurance Program participation; building in a floodplain; stormwater runoff; driving on flooded roads; protecting natural systems which provide flood mitigation; securing property items such as propane tanks prior to a flood	Town web site Brochures
Wind Events (Hurricane, Tornado,	Wind retrofits such as shutters, hurricane	Town web site

Natural Hazard	Educational Topics	Outreach Methods
Downburst	clips; school and town official sheltering basics; resident and business sheltering basics; window coverings	
Severe Winter Weather	Installation of carbon monoxide monitor and alarms; ventilation of fuel-burning equipment; protecting water pipes	Town web site
Thunderstorms/Lightning/Hail	Taking cover; staying inside when it thunders	Town web site
Earthquake	Structural and non-structural home retrofitting; securing furnishings	Town web site
Drought	Water-saving measures; crop insurance; soil and water conservation practices by farmers	Town web site
Extreme Heat	Preparing for extreme heat; air conditioning; cooling shelters	Town web site
Erosion	High risk areas; stormwater management; bank stabilization; water body buffers	Town web site
Wildfire	Most vulnerable areas; reducing fuel for fires such as dry brush	Town web site; Fire Department and Fire Warden interactions
Natural Contaminants	Testing for contaminants in air and water	Town web site
Hazardous Materials Spills	What to do if there's a fuel delivery spill	Town web site

VII. GOALS AND NEWLY IDENTIFIED MITIGATION ACTIONS

A. GOALS & OBJECTIVES

The Unity Hazard Mitigation Committee reviewed its goals and developed objectives to meet these goals.

Goals

1. To identify, introduce and implement cost effective Hazard Mitigation measures so as to accomplish the Town's goals and to raise awareness and acceptance of hazard mitigation opportunities generally.

2. To improve upon the protection of the general population, the citizens, and visitors of the Town of Unity from natural and human-made hazards.

3. To reduce the potential impact of natural and human-made disasters to:
   - the Town of Unity's Critical Support Services,
   - Critical Facilities in the Town of Unity,
   - the Town of Unity's infrastructure,
   - private property,
   - the Town's economy,
   - the Town's natural environment, and
   - the Town's specific historic treasures and interests.

4. To improve the Town's Disaster Response and Recovery capability as a hazard mitigation strategy to be prepared for emergencies and reduce their impact.

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B. NEW PROPOSED MITIGATION ACTIONS

The Unity Hazard Mitigation Committee brainstormed potential mitigation actions. The proposed new measures are organized by the type(s) of hazard event that the mitigation action is expected to mitigate. The Committee reviewed all of the hazards which could impact the town to determine a list of potential mitigation strategies. Several "new" actions are for existing programs and are shown

as improvements to existing programs in another table. Information about most hazards will be provided through an education and outreach effort.

Several mitigation strategies were discussed and determined to be inappropriate or unlikely to garner support in town. This primarily included more regulations such as special building codes for example, earthquakes or wind events. It was decided that the most appropriate way to address all the potential hazards was to educate the public.

Table VII-1: PROPOSED NEW MITIGATION ACTIONS

Proposed New Mitigation Action Description	Hazard Type/Service Area	Responsible Local Agent	If Recommended in Previous Plan, why was it not put into place?
Unity Elementary School Emergency Plan – Obtain a copy of the plan and work with the school; will improve readiness and response time to disasters to reduce damage.	All hazards/ Unity Elementary School	School Supt./EMD	Was not in previous plan.
Emergency Power – Obtain a permanent generator to power Fire, Highway and Town Office building to reduce damage and provide services during an emergency.	All Hazards/Entire Town	EMD	Was not in previous plan

C. SUMMARY OF CRITICAL EVALUATION

The Unity Hazard Mitigation Committee reviewed each of the newly identified mitigation strategies using the following factors:

- Does it reduce disaster damage?
- Does it contribute to community objectives?
- Does it meet existing regulations?
- Can it be quickly implemented?
- Is it socially acceptable?
- Is it technically feasible?
- Is it administratively possible?
- Does the action offer reasonable benefits compared to cost of implementation?

Each mitigation strategy was evaluated and assigned a score (High – 3; Average – 2; and Low – 1) based on the criteria.

The Unity Hazard Mitigation Committee assigned the following scores to each strategy for its effectiveness related to the critical evaluation factors listed above, and actions had the following scores, with the highest scores suggesting the highest priority.

Table VII-2: PRIORITIZING PROPOSED IMPROVMENTS TO EXISTING STRATEGIES AND NEW MITIGATION STRATEGIES

Rank	Strategy Improvement	Reduce Damage	Community Objectives	Existing Regulations	Quickly Implemented	Socially Acceptable	Technically Feasible	Administration Possible	Benefit - Cost	TOTAL SCORE	Mitigate Existing or New Development or Both
1	**Old Miller Pond Dam –** Lower Water Level and install culvert.	3	3	3	2	3	3	3	3	23	Both
1	**Old Cheshire County Road –** Upgrade culvert to meet the 100-Year Floodplain	3	3	3	2	3	3	3	3	23	Both
1	**Fire Department –** Replace Forestry Truck	2	3	3	3	3	3	3	3	23	Both
1	**Fire Department –** Install 10-12 dry hydrants	3	3	3	2	3	3	3	3	23	Both
1	**Emergency Power –** Obtain a permanent generator to power Fire, Highway and Town Office building to reduce damage and provide services during an emergency.	2	3	3	3	3	3	3	3	23	Both
2	**Emergency Shelter –** Acquire written agreement for use of the Ahern Building	1	3	3	3	3	3	3	3	22	Both
2	**Stage Road –** Complete stone embankment in area prone to erosion	3	3	2	2	3	3	3	3	22	Both
2	**Cold Pond Road and Center Road –**Upgrade culvert at intersection to increase capacity	3	3	2	2	2	3	3	3	22	Both
2	**Copeland Brook Road –** Place stone along brook embankment to resist erosion	3	3	2	2	2	3	3	3	22	Both
2	**Slack Road –** Replace deck and retaining walls on bridge.	3	3	3	2	3	3	3	2	22	Both
2	**Unity Elementary School Emergency Plan –** Obtain a copy of the plan and work with the school; will improve readiness and response time to disasters to reduce damage.	1	3	3	3	3	3	3	3	22	Both
3	**Emergency Operations Plan –** Update the plan within the next 5 years.	1	3	3	2	3	3	3	3	21	Both
3	**Public Education & Outreach –** The selectboard office will make a webpage for Hazard Mitigation.	2	3	3	2	3	3	3	2	21	Both
3	**Town Master Plan** - Reference Hazard Mitigation Plan, Emergency Operations Plan, and the importance of hazard mitigation in appropriate Master Plan sections	1	3	3	2	3	3	3	3	21	Both
3	**Upgrade Highway Equipment** - truck and backhoe	1	3	3	2	3	3	3	3	21	Both
4	**Zoning Ordinance –** Amend the zoning ordinance to prevent new structures in the floodplain and steep slopes; develop overlay districts.	2	2	3	1	2	3	3	3	19	Both

VIII. PRIORITIZED IMPLEMENTATION SCHEDULE

The Unity Hazard Mitigation Committee created the following action plan for implementation of priority mitigation strategies:

Table VIII-1: PRIORITIZED IMPLEMENTATION SCHEDULE FOR EXISTING PROGRAM IMPROVEMENTS

Location: Mitigation Action	Who (Leadership)	When (Start)	How (Funding Sources)	Cost (Estimated)
Old Miller Pond Dam – Lower Water Level and replace culvert.	Highway Agent	Spring 2018	Taxes/HMPG	$140,000
Fire Department – Replace Forestry Truck	Fire Chief	2015	Taxes/Grants/Donations	$90,000
Fire Department – Install 10-12 dry hydrants at fire ponds.	Fire Chief	2014-2018	Taxes/HMPG	$60,000
Emergency Shelter – Acquire written agreement for use of the Ahern Building	EMD	Winter 2014	N/A	$0 - Staff Time
Stage Road – Complete stone embankment in area prone to erosion	Highway Agent	Summer 2018	Taxes/HMPG	$400,000
Cold Pond Road and Center Road – replace culvert at intersection to increase capacity	Highway Agent	Fall 2014	Taxes/HMPG	$25,000
Copeland Brook Road – Place stone along brook embankment to resist erosion	Highway Agent	Summer 2018	Taxes/HMPG	$350,000
Emergency Operations Plan – Update the plan within the next 5 years.	EMD & Selectboard	Summer 2018	N/A	$0 - Staff Time

Location: Mitigation Action	Who (Leadership)	When (Start)	How (Funding Sources)	Cost (Estimated)
Public Education & Outreach – The selectboard office will make a webpage for Hazard Mitigation.	Selectboard	Summer 2014	N/A	$0 - Staff Time
Town Master Plan - Reference Hazard Mitigation Plan, Emergency Operations Plan, and the importance of hazard mitigation in appropriate Master Plan sections	Planning Board	Spring 2015	Taxes/Volunteer	$2,000
Upgrade Highway Equipment – Truck and Backhoe	Highway Agent	Summer 2014	Taxes	$180,000
Zoning Ordinance – Amend the zoning ordinance to prevent new structures in the floodplain and steep slopes; develop overlay districts.	Planning Board	Spring 2016	N/A	$0 - Planning Board Time

Table VIII-2: PRIORITIZED IMPLEMENTATION SCHEDULE FOR PROPOSED PROGRAMS

Location: Mitigation Action	Who (Leadership)	When (Start)	How (Funding Sources)	Cost (Estimated)
Emergency Power – Obtain a permanent generator to power Fire Department, Highway Garage and Town Office buildings.	EMD	Spring 2013	Taxes/HMPG	$100,000
Unity Elementary School Emergency Plan – Obtain a copy of the plan and work with the school.	School Supt. & EMD	Spring 2013	NA	$0 - Staff Time

IX. ADOPTION & IMPLEMENTATION OF THE PLAN

A good plan needs to provide for periodic monitoring and evaluation of its successes and challenges, and to allow for updates of the Plan where necessary. In order to track progress and update the Mitigation Strategies identified in the Plan, the Town of Unity will revisit the Hazard Mitigation Plan *annually, or after a hazard event*. The Unity Emergency Management Director will initiate this review and should consult with the Hazard Mitigation Committee. Changes will be made to the plan to accommodate for projects that have failed, or that are not considered feasible after a review for their consistency with the evaluation criteria, the timeframe, the community's priorities, and funding resources. Priorities that were not ranked highest, but that were identified as potential mitigation strategies, will be reviewed as well during the monitoring and update of this plan, to determine feasibility for future implementation. The plan will be updated and submitted for FEMA approval at a minimum every five years as required by the Disaster Mitigation Act 2000.

A. IMPLEMENTATION THROUGH EXISTING PROGRAMS

The Plan will be adopted locally as an Annex to the recently updated Emergency Operations Plan (EOP), and it will be updated annually along with the EOP. The Town had not incorporated hazard mitigation into other Town documents in the past. In addition, the Town Selectboard, during the Capital Improvement Process, will review and include any proposed structural projects outlined in this plan. Reference Hazard Mitigation Plan and Local Emergency Operations Plan as well as importance of hazard mitigation in appropriate Master Plan sections. The town will also add hazard mitigation information to town web site.

B. CONTINUED PUBLIC INVOLVEMENT

The public will continue to be involved in the hazard mitigation planning process. In future years, a public meeting will be held (separate from the adoption hearing) to inform and educate members of the public. Additionally, a press release will be distributed, and information will be posted on the Town website.

Copies of the Hazard Mitigation Plan have been or will be sent to the following parties for review and comment:

- Select Board Offices in neighboring towns
- NH Homeland Security & Emergency Management
- Unity Select Board, Conservation Commission, and Planning Board
- Upper Valley Lake Sunapee Regional Planning Commission

RESOURCES USED IN THE PREPARATION OF THIS PLAN

FEMA *Multi-Hazard Mitigation Planning Guidance Under the Disaster Mitigation Act of 2000,* March 2004, Last Revised June 2007

FEMA 386-1 *Getting Started: Building Support for Mitigation Planning*, September 2002

FEMA 386-2 *Understanding Your Risks: Identifying Hazards and Estimating Costs,* August 2001

FEMA 386-3 *Developing the Mitigation Plan: Identifying Mitigation Actions and Implementation Strategies*, April 2003

FEMA *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*, January 2013

FEAM *Local Mitigation Planning Handbook,* March 2013

Ice Storm '98 by Eugene L. Lecomte et al for the Institute for Catastrophic Loss Reduction (Canada) and the Institute for Business & Home Safety (U.S.), December 1998

Town of Unity Emergency Operations Plan, 1992

Town of Unity Master Plan, 1996

NH HSEM's *State of New Hampshire Multi-Hazard Mitigation Plan Update 2013*

www.fema.gov/news/disasters.fema: Website for FEMA's Disaster List
www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms: Website for National Oceanic & Atmospheric Administration Disaster List

www.tornadoproject.com: Website for The Tornado Project

www.crrel.usace.army.mil/: Website for Cold Regions Research and Engineering Laboratory Website (CRREL)

www.nesec.org: Website for Northeast States Emergency Consortium

http://earthquake.usgs.gov/research/hazmaps/products_data/2002/ceus2002.php: Website for area earthquake information

APPENDICES

Appendix A: **Technical Resources**

Appendix B: **Hazard Mitigation Assistance Grants**

Appendix C: **Meeting Documentation**

Appendix D: **Map of Hazard Areas and Critical Facilities**

Appendix E: **Town Adoption & FEMA Approvals of Hazard Mitigation Plan**

APPENDIX A:

Technical Resources

APPENDIX A: TECHNICAL RESOURCES

1) Agencies

New Hampshire Homeland Security and Emergency Management
Hazard Mitigation Section 271-2231
Federal Emergency Management Agency ..... (617) 223-4175
NH Regional Planning Commissions:
Upper Valley Lake Sunapee Regional Planning Commission 448-1680
NH Executive Department:
Governor's Office of Energy and Community Services 271-2611
New Hampshire Office of State Planning 271-2155
NH Department of Cultural Affairs: 271-2540
Division of Historical Resources 271-3483
NH Department of Environmental Services: 271-3503
Air Resources 271-1370
Waste Management 271-2900
Water Resources 271-3406
Water Supply and Pollution Control 271-3504
Rivers Management and Protection Program 271-1152
NH Office of Energy and Planning 271-2155
NH Municipal Association 224-7447
NH Fish and Game Department 271-3421
NH Department of Resources and Economic Development: 271-2411
Natural Heritage Inventory 271-3623
Division of Forests and Lands 271-2214
Division of Parks and Recreation 271-3255
NH Department of Transportation 271-3734
Northeast States Emergency Consortium, Inc. (NESEC) ..... (781) 224-9876
US Department of Commerce:
National Oceanic and Atmospheric Administration:
National Weather Service; Gray, Maine 207-688-3216

US Department of the Interior:
US Fish and Wildlife Service 225-1411
US Geological Survey 225-4681
US Army Corps of Engineers..... (978) 318-8087
US Department of Agriculture:
Natural Resource Conservation Service 868-7581

2) Mitigation Funding Resources

404 Hazard Mitigation Grant Program (HMGP) ..... NH Homeland Security and Emergency Management
406 Public Assistance and Hazard Mitigation ..... NH Homeland Security and Emergency Management
Community Development Block Grant (CDBG)..... NH HSEM, NH OEP, also refer to RPC
Dam Safety Program ..... NH Department of Environmental Services
Disaster Preparedness Improvement Grant (DPIG) ..... NH Homeland Security and Emergency Management
Emergency Generators Program by NESEC‡ ..... NH Homeland Security and Emergency Management
Emergency Watershed Protection (EWP) Program ..... USDA, Natural Resources Conservation Service
Flood Mitigation Assistance Program (FMAP) ..... NH Homeland Security and Emergency Management
Flood Plain Management Services (FPMS) ..... US Army Corps of Engineers
Mitigation Assistance Planning (MAP) ..... NH Homeland Security and Emergency Management
Mutual Aid for Public Works..... NH Municipal Association
National Flood Insurance Program (NFIP) † ..... NH Office of Energy and Planning
Power of Prevention Grant by NESEC‡ ..... NH Homeland Security and Emergency Management
Project Impact..... NH Homeland Security and Emergency Management
Roadway Repair & Maintenance Program(s) ..... NH Department of Transportation
Section 14 Emergency Stream Bank Erosion & Shoreline Protection..... US Army Corps of Engineers
Section 103 Beach Erosion..... US Army Corps of Engineers
Section 205 Flood Damage Reduction..... US Army Corps of Engineers
Section 208 Snagging and Clearing ..... US Army Corps of Engineers
Shoreland Protection Program..... NH Department of Environmental Services
Various Forest and Lands Program(s)..... NH Department of Resources and Economic Development
Wetlands Programs..... ….NH Department of Environmental Services

‡NESEC – Northeast States Emergency Consortium, Inc. is a 501(c)(3), not-for-profit natural disaster, multi-hazard mitigation and emergency management organization located in Wakefield, Massachusetts. Please, contact NH OEM for more information.

† Note regarding National Flood Insurance Program (NFIP) and Community Rating System (CRS):
The National Flood Insurance Program has developed suggested floodplain management activities for those communities who wish to more thoroughly manage or reduce the impact of flooding in their jurisdiction. Through use of a rating system (CRS rating), a community's floodplain management efforts can be evaluated for effectiveness. The rating, which indicates an above average floodplain management effort, is then factored into the premium cost for flood insurance policies sold in the community. The higher the rating achieved in that community, the greater the reduction in flood insurance premium costs for local property owners. The NH Office of State Planning can provide additional information regarding participation in the NFIP-CRS Program.

3) Websites

Sponsor	Internet Address	Summary of Contents
Natural Hazards Research Center, U. of Colorado	http://www.colorado.edu/litbase/hazards/	Searchable database of references and links to many disaster-related websites.
Atlantic Hurricane Tracking Data by Year	http://wxp.eas.purdue.edu/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://ltpwww.gsfc.nasa.gov/ndrd/main/html	Searchable database of worldwide natural disasters.
U.S. State & 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 Hydrologic Data	http://h20.usgs.gov/public/realtime.html	Provisional hydrological data
Dartmouth Flood Observatory	http://www.dartmouth.edu/artsci/geog/floods/	Observations of flooding situations.
FEMA, National Flood Insurance Program, Community Status Book	http://www.fema.gov/fema/csb.htm	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

Sponsor	Internet Address	Summary of Contents
National Lightning Safety Institute	http://lightningsafety.com/	Information and listing of appropriate publications regarding lightning safety.
NASA Optical Transient Detector	http://www.ghcc.msfc.nasa.gov/otd.html	Space-based sensor of lightning strikes
LLNL Geologic & Atmospheric Hazards	http://wwwep.es.llnl.gov/wwwep/ghp.html	General hazard information developed for the Dept. of Energy.
The Tornado Project Online	http://www.tornadoroject.com/	Information on tornadoes, including details of recent impacts.
National Severe Storms Laboratory	http://www.nssl.uoknor.edu/	Information about and tracking of severe storms.
Independent Insurance Agents of America IIAA Natural Disaster Risk Map	http://www.iiaa.iix.com/ndcmap.htm	A multi-disaster risk map.
Earth Satellite Corporation	http://www.earthsat.com/	Flood risk maps searchable by state.
USDA Forest Service Web	http://www.fs.fed.us/land	Information on forest fires and land management.

APPENDIX B:

Hazard Mitigation Assistance Grants

APPENDIX B:
HAZARD MITIGATION ASSISTANCE GRANTS

Hazard Mitigation Assistance (HMA) grant programs of the Department of Homeland Security (DHS) Federal Emergency Management Agency (FEMA), presents a critical opportunity to protect individuals and property from natural hazards while simultaneously reducing reliance on Federal disaster funds. The HMA programs provide pre-disaster mitigation grants annually to local communities. The statutory origins of the programs differ, but all share the common goal of reducing the loss of life and property due to natural hazards. Eligible applicants include State-level agencies including State institutions; Federally recognized Indian Tribal governments; Public or Tribal colleges or universities (PDM only); and Local jurisdictions.

All subapplicants for Flood Mitigation Assistance Program (FMA) must currently be participating in the National Flood Insurance Program (NFIP) to be eligible to apply for this grant. Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) mitigation project subapplications for projects sited within a special flood hazard area are eligible only if the jurisdiction in which the project is located is participating in the NFIP. There is no NFIP participation requirement for HMGP and PDM project subapplications located outside the special flood hazard area. Properties included in a project subapplication for FMA funding must be NFIP-insured at the time of the application submittal. Flood insurance must be maintained at least through completion of the mitigation activity.

The HMA grant assistance includes three programs:

1. *Hazard Mitigation Grant Program (HMGP*): This program assists in the implementation of long-term hazard mitigation measures following a major disaster.

2. *The Pre-Disaster Mitigation (PDM) program*: This provides funds for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. PDM grants are awarded on a competitive basis.

3. *The Flood Mitigation Assistance (FMA) program*: This provides funds so that cost-effective measures can be taken to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insured under the NFIP. The long-term goal of FMA is to reduce or eliminate claims under the NFIP through mitigation activities.

Potential eligible projects are shown in the following table by grant program. For further information on these programs visit the following FEMA websites:

HMGP - http://www.fema.gov/hazard-mitigation-grant-program

PDM – www.fema.gov/government/grant/pdm/

FMA – www.fema.gov/government/grant/fma

Mitigation Project:	HMPG	PDM	FMA
1. Mitigation Projects	**X**	**X**	**X**
Property Acquisition and Structure Demolition	**X**	**X**	**X**
Property Acquisition and Structure Relocation	**X**	**X**	**X**
Structure Elevation	**X**	**X**	**X**
Mitigation Reconstruction			**X**
Dry Floodproofing of Historic Residential Structures	**X**	**X**	**X**
Dry Floodproofing of Non-residential Structures	**X**	**X**	**X**
Minor Localized Flood Reduction Projects	**X**	**X**	**X**
Structural Retrofitting of Existing Buildings	**X**	**X**	
Non-structural Retrofitting of Existing Buildings and Facilities	**X**	**X**	**X**
Safe Room Construction	**X**	**X**	
Wind Retrofit for One- and Two-Family Residences	**X**	**X**	
Infrastructure Retrofit	**X**	**X**	**X**
Soil Stabilization	**X**	**X**	**X**
Wildfire Mitigation	**X**	**X**	
Post-Disaster Code Enforcement	**X**		
Generators	**X**	**X**	
5% Initiative Projects	**X**		
Advance Assistance	**X**		
2. Hazard Mitigation Planning	**X**	**X**	**X**
3. Management Costs	**X**	**X**	**X**

OTHER HAZARD MITIGATION ASSISTANCE FUNDING

Environmental Protection Agency

The EPA makes available funds for water management and wetlands protection programs that help mitigate against future costs associated with hazard damage.

Mitigation Funding Sources Program	Details	Notes
Clean Water Act Section 319 Grants	Grants for water source management programs including technical assistance, financial assistance, education, training, technology transfer, demonstration projects, and regulation. http://www.epa.gov/OWOW/NPS/cwact.html	Funds are provided only to designated state and tribal agencies
Clean Water State Revolving Funds	State grants to capitalize loan funds. States make loans to communities, individuals, and others for high-priority water-quality activities. http://www.epa.gov/owow/wetlands/initiative/srf.html	States and Puerto Rico
Wetland Program Development Grants	Funds for projects that promote research, investigations, experiments, training, demonstrations, surveys, and studies relating to the causes, effects, extent, prevention, reduction, and elimination of water pollution. http://www.epa.gov/owow/wetlands/initiative/#financial	See website

National Oceanic and Atmosphere Administration (NOAA)

NOAA is the major source for mitigation funding related to coastal zone management and other coastal protection projects.

Mitigation Funding Sources Program	Details	Notes
Coastal Services Center Cooperative Agreements	Funds for coastal wetlands management and protection, natural hazards management, public access improvement, reduction of marine debris, special area management planning, and ocean resource planning. http://www.csc.noaa.gov/funding/	May only be used to implement and enhance the states' approved Coastal Zone Management programs
Coastal Services Center Grant Opportunities	Formula and program enhancement grants for implementing and enhancing Coastal Zone Management programs that have been approved by the Secretary of Commerce. http://www.csc.noaa.gov/funding/	Formula grants require non-federal match
Coastal Zone Management Program	The Office of Ocean and Coastal Resource Management (OCRM) provides federal funding and technical assistance to better manage our coastal resources. http://coastalmanagement.noaa.gov/funding/welcome.html	Funding is reserved for the nation's 34 state and territory Coastal Zone Management Programs
Marine and Coastal Habitat Restoration	Funding for habitat restoration, including wetland restoration and dam removal. http://www.nmfs.noaa.gov/habitat/recovery/	Funding available for state, local and tribal governments and for- and non-profit organizations.

Floodplain, Wetland and Watershed Protection Programs

USACE and the U.S. Fish and Wildlife Service offer funding and technical support for programs designed to protect floodplains, wetlands, and watersheds.

Funding and Technical Assistance for Wetlands and Floodplains Program	Details	Notes
USACE Planning Assistance to States (PAS)	Fund plans for the development and conservation of water resources, dam safety, flood damage reduction and floodplain management. http://www.lre.usace.army.mil/planning/assist.html	50 percent non-federal match
USACE Flood Plain Management Services (FPMS)	Technical support for effective floodplain management. http://www.lrl.usace.army.mil/p3md-o/article.asp?id=9&MyCategory=126	See website
USACE Environmental Laboratory	Guidance for implementing environmental programs such as ecosystem restoration and reuse of dredged materials. http://el.erdc.usace.army.mil/index.cfm	See website
U.S. Fish & Wildlife Service Coastal Wetlands Conservation Grant Program	Matching grants to states for acquisition, restoration, management or enhancement of coastal wetlands. http://ecos.fws.gov/coastal_grants/viewContent.do?viewPage=home	States only. 50 percent federal share
U.S. Fish & Wildlife Service Partners for Fish and Wildlife Program	Program that provides financial and technical assistance to private landowners interested in restoring degraded wildlife habitat. http://ecos.fws.gov/partners/viewContent.do?viewPage=home	Funding for volunteer-based programs

Housing and Urban Development

The Community Development Block Grants (CDBG) administered by HUD can be used to fund hazard mitigation projects.

Mitigation Funding Sources Program	Details	Notes
Community Development Block Grants (CDBG)	Grants to develop viable communities, principally for low and moderate income persons. CDBG funds available through Disaster Recovery Initiative. http://www.hud.gov/offices/cpd/communitydevelopment/programs/	Disaster funds contingent upon Presidential disaster declaration
Disaster Recovery Assistance	Disaster relief and recovery assistance in the form of special mortgage financing for rehabilitation of impacted homes. http://www.hud.gov/offices/cpd/communitydevelopment/programs/dri/assistance.cfm	Individuals
Neighborhood Stabilization Program	Funding for the purchase and rehabilitation of foreclosed and vacant property in order to renew neighborhoods devastated by the economic crisis. http://www.hud.gov/offices/cpd/communitydevelopment/programs/neighborhoodspg/	State and local governments and non-profits

Bureau of Land Management

The Bureau of Land Management (BLM) has two technical assistance programs focused on fire mitigation strategies at the community level.

Mitigation Funding Sources Program	Details	Notes
Community Assistance and Protection Program	Focuses on mitigation/prevention, education, and outreach. National Fire Prevention and Education teams are sent to areas across the country at-risk for wildland fire to work with local residents. http://www.blm.gov/nifc/st/en/prog/fire/community_assistance.html	See website
Firewise Communities Program	Effort to involve homeowners, community leaders, planners, developers, and others in the effort to protect people, property, and natural resources from the risk of wildland fire before a fire starts. http://www.firewise.org/	See website

U.S. Department of Agriculture

There are multiple mitigation funding and technical assistance opportunities available from the USDA and its various sub-agencies: the Farm Service Agency, Forest Service, and Natural Resources Conservation Service.

Mitigation Funding Sources Agency Program	Details	Notes
USDA Smith-Lever Special Needs Funding	Grants to State Extension Services at 1862 Land-Grant Institutions to support education-based approaches to addressing emergency preparedness and disasters. http://www.csrees.usda.gov/funding/rfas/smith_lever.html	Population under 20,000
USDA Community Facilities Guaranteed Loan Program	This program provides an incentive for commercial lending that will develop essential community facilities, such as fire stations, police stations, and other public buildings. http://www.rurdev.usda.gov/rhs/cf/cp.htm	Population under 20,000
USDA Community Facilities Direct Loans	Loans for essential community facilities. http://www.rurdev.usda.gov/rhs/cf/cp.htm	Population of less than 20,000
USDA Community Facilities Direct Grants	Grants to develop essential community facilities. http://www.rurdev.usda.gov/rhs/cf/cp.htm	Population of less than 20,000
USDA Farm Service Agency Disaster Assistance Programs	Emergency funding and technical assistance for farmers and ranchers to rehabilitate farmland and livestock damaged by natural disasters. http://www.fsa.usda.gov/	Farmers and ranchers
USDA Forest Service National Fire Plan	Funding for organizing, training, and equipping fire districts through Volunteer, State and Rural Fire Assistance programs. Technical assistance for fire related mitigation. http://www.forestsandrangelands.gov/	See website
USDA Forest Service Economic Action Program	Funds for preparation of Fire Safe plans to reduce fire hazards and utilize byproducts of fuels management activities in a value-added fashion. http://www.fs.fed.us/spf/coop/programs/eap/	80% of total cost of project may be covered
USDA Natural Resources Conservation Service Emergency Watershed Protection Support Services	Funds for implementing emergency measures in watersheds in order to relieve imminent hazards to life and property created by a natural disaster. http://www.nrcs.usda.gov/programs/ewp/	See website

Mitigation Funding Sources Agency Program	Details	Notes
USDA Natural Resources Conservation Service Watershed Protection and Flood Prevention	Funds for soil conservation; flood prevention; conservation, development, utilization and disposal of water; and conservation and proper utilization of land. http://www.nrcs.usda.gov/programs/watershed/index.html	See website

Health and Economic Agencies

Alternative mitigation programs can be found through health and economic agencies that provide loans and grants aimed primarily at disaster relief.

Federal Loans and Grants for Disaster Relief Agency Program	Details	Notes
Department of Health & Human Services Disaster Assistance for State Units on Aging (SUAs)	Provide disaster relief funds to those SUAs and tribal organizations who are currently receiving a grant under Title VI of the Older Americans Act. http://www.aoa.gov/doingbus/fundopp/fundopp.asp	Areas designated in a Disaster Declaration issued by the President
Economic Development Administration (EDA) Economic Development Administration Investment Programs	Grants that support public works, economic adjustment assistance, and planning. Certain funds allocated for locations recently hit by major disasters. http://www.eda.gov/AboutEDA/Programs.xml	The maximum investment rate shall not exceed 50 percent of the project cost
U.S. Small Business Administration Small Business Administration Loan Program	Low-interest, fixed rate loans to small businesses for the purpose of implementing mitigation measures. Also available for disaster damaged property. http://www.sba.gov/services/financialassistance/index.html	Must meet SBA approved credit rating

Research Agencies

The United States Geological Survey (USGS) and the National Science Foundation (NSF) provide grant money for hazard mitigation-related research efforts.

Hazard Mitigation Research Grants Agency Program	Details	Notes
National Science Foundation (NSF) Decision, Risk, and Management Sciences Program (DRMS)	Grants for small-scale, exploratory, high-risk research having a severe urgency with regard to natural or anthropogenic disasters and similar unanticipated events. http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5423&org=SES	See website
U.S. Geological Survey (USGS) National Earthquake Hazards Reduction Program	The purpose of NEHRP is to provide products for earthquake loss reduction to the public and private sectors by carrying out research on earthquake occurrence and effects. http://www.usgs.gov/contracts/nehrp/	Community with a population under 20,000

APPENDIX C:

Meeting Documentation

Work Plan

Meeting #1: Wednesday, March 20, 2013 4:00 – 6:00 PM (2 hours)

- General discussion of requirements and in-kind match process
- Review goals of hazard mitigation plan and revise (hand out)
- Review hazards (see poster – Add hazards? Remove hazards?)
- Identify and map past/potential hazards (update map & lists in Chapter 2)
- Flooding – Are there any non-FEMA flood areas?
- Specific past and potential events of hazards not in 2008 plan (recent events)
- Potential development areas in town (compare with list in 2008 plan)
- Identify critical facilities (update map and list)
- Determine Vulnerability to Hazards for Town
- Determine Probability of Hazards for Town
- Review Critical Facilities & hazard vulnerability
- Discuss future meetings, public notice, stakeholders to be notified, notices to abutting towns

Meeting #2 Wednesday, April 3, 2013 – 4:00 – 6:00 PM (2 hours)

- Review previously determined potential mitigation efforts (were they implemented? If not, why not and are they still on the table to be implemented?)
- Brainstorm improvements to existing mitigation efforts
- Brainstorm potential new mitigation efforts

Meeting #3 Thursday, April 18, 2013 – 4:00 – 6:00 PM (2 hours)

- Evaluate the past and potential mitigation efforts
- Develop a prioritized implementation schedule and discuss the adoption and monitoring of the plan

Meeting #4 Wednesday, May 1, 2013 - 4:00 – 5:00 PM (1 hour)

- Review and revise draft plan

Unity Hazard Mitigation Meeting 03-27-13

Victoria Davis	UVLSRPC
Tracy Decker	Selectman's Secretary
Jason LeMay	EMD
Ed Gregory	Unity Selectman
Harold Both	Unity Highway Foreman
Bob Trabka	Unity Planning Board Chair
Adam Ricker	UVLSRPC
Liz Lufkin	NH HSEM
Rosemary Heino	Unity

Unity Hazard Mitigation Meeting - April 3, 2013	
Name	**Position**
Adam Dicker	UVLSRPC
Victoria Davis	"
Harold R. Booth	
Jim S. LeZotte	EMD
Bob Trabka	Planning Board Chair
Rosemary Heino	Town Clerk/Tax collector

Unity Hazard Mitigation Plan Committee Meeting - 4/18/13		
Name	**Organization**	**Position**
Harold H. Boots	Town of Unity	Highway Road Agent
Rosemary Heino	Town of Unity	Town Clerk
Adam Baker	UVLSRPC	
Jim D. LeBrun	unity EMD	
Edward A. Gregory	Unity Selectmen (Town of Unity)	
Tracy Decker	Secretary to Selectmen	
Bruce Baker	Unity Volunteer Fire Dept	Chief
Bob Trabka	Unity Planning Bd	Chairman
Liz Lufkin	HSEM	Field Rep.

Unity Hazard Mitigation

5/1/13

Name	Organization
Adam Ricker	UVLSRPC
Harold Boodt	
Liz Lufkin	
Tracy Decker	HSEM
Ed. Gregory	- Unity Selectmen Unity
Bob Trabka	Planning Board

Vickie Davis

From: Vickie Davis
Sent: Thursday, March 21, 2013 9:06 AM
To: Town of Newport (clerk@newportnh.net); David Edkins (dedkins@charlestown-nh.gov); 'Doree Russell'; selectmen@goshennh.org; lempster@myfairpoint.net; townoff@sover.net
Subject: Town of Unity Hazard Mitigation Plan Meetings

Hello,

This notice is to invite you to participate in Unity's hazard mitigation plan update process as required by NH HSEM. The Town of Unity will be updating their 2008 hazard mitigation plan beginning at a meeting on March 27th at 4:00 pm at the town offices.

Since natural hazards do not recognize town boundaries, this is your opportunity to work together for shared hazard mitigation.

If anyone interested in attending is unable to attend, written comments will be reviewed at the meetings. You can also request to view the draft plan when it is completed. If you would like to know future meeting dates, please just let me know.

Thank you.

Vickie Davis

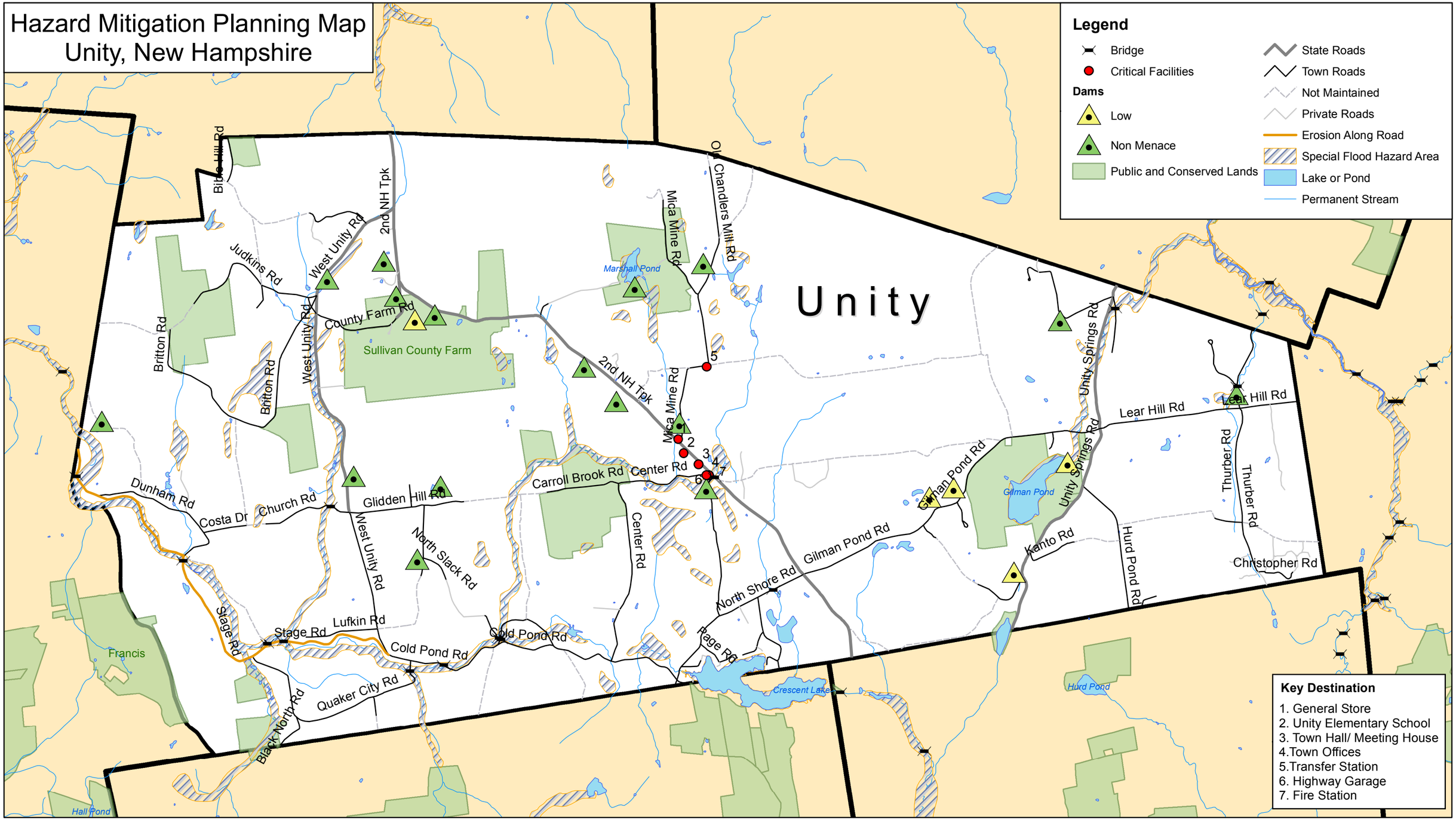
Victoria Davis
Upper Valley Lake Sunapee Regional Planning Commission
10 Water Street, Suite 225
Lebanon, NH 03766
603-448-1680
603-448-0170 fax

"Find us on Facebook"

APPENDIX D:

Map of Hazard Areas and Critical Facilities

Hazard Mitigation Planning Map
Unity, New Hampshire



Map created by Upper Valley Lake Sunapee Regional Planning Commission, for the Town of Unity New Hampshire, March 2013. Special Flood Hazard Area from digital Flood Insurance Rate Maps published by Federal Emergency Management Agency, 2006. Roads and bridges from NH Department of Transportation Bureau of Planning and Community Assistance, 1:24,000-scale, distributed by NH GRANIT, 2011. Town boundaries from USGS 1:24000 scale Digital Line Graphs, distributed by NH GRANIT, 1992. NH Public/Conservation Lands database distributed by NH GRANIT, 2012. UVLSRPC, NH GRANIT and data contributors make no claim as to the accuracy or validity of any data sources. For planning purposes only.

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UVLSRPC
UPPER VALLEY LAKE SUNAPEE
REGIONAL PLANNING COMMISSION

0 0.5 1 2 Miles

APPENDIX E:

FEMA Approvals and Town Adoption of Hazard Mitigation Plan

Vickie Davis

From: Hazard Mitigation Planning <HazardMitigationPlanning@dos.nh.gov>
Sent: Thursday, August 07, 2014 8:00 AM
To: 'Ndikum-Nyada, Brigitte'
Cc: Peck, Elizabeth; Beaulac, Craig; Lufkin, Elizabeth; Vickie Davis
Subject: RE: Unity, NH HM Plan ready for APA

Good Morning Brigitte!
The planner has been advised of the required changes to the adoption resolution.

Thank you!
-Parker

Hazard Mitigation Planning
NH Homeland Security and Emergency Management
33 Hazen Drive
Concord, NH 03301
603-223-3661
603-223-3609 (fax)

From: Ndikum-Nyada, Brigitte [mailto:Brigitte.Ndikum-Nyada@fema.dhs.gov]
Sent: Wednesday, August 06, 2014 3:41 PM
To: Moore, Parker; Peck, Elizabeth; Hazard Mitigation Planning
Cc: Hilliard, Marilyn; Verville, Richard
Subject: Unity, NH HM Plan ready for APA

Greetings All,

I am recommending the Town of Unity, NH. Hazard Mitigation Plan Update 2014, for Approval Pending Adoption. An official APA email will be forthcoming.

Parker, please have the Town of Unity's Hazard Mitigation Planner correct the following (Adoption Resolution heading and the last paragraph) prior to the Plan's adoption: ***"Town of Unity, New Hampshire - Board of Selectmen - A Resolution Approving the Unity Hazard Mitigation Plan Update 2014." "NOW, THEREFORE BE IT RESOLVED that the Unity Board of Selectmen approve the Unity Hazard Mitigation Plan Update 2014."***

It should be corrected to: "Town of Unity, New Hampshire - Board of Selectmen - A Resolution Adopting the Unity Hazard Mitigation Plan Update 2014" ***and*** "NOW, THEREFORE BE IT RESOLVED that the Unity Board of Selectmen adopt the Unity Hazard Mitigation Plan Update 2014." I trust this will be corrected. The local communities adopt the plans and FEMA formally approves the HM Plans.

Please do not hesitate to contact me if you have any questions or comments.

Best regards!

~Brigitte

~~~~~~~~~~~~~~~~~~~~~~~~~~

Brigitte.Ndikum-Nyada
brigitte.ndikum-nyada@fema.dhs.gov
FEMA Region I – Mitigation, Risk Analysis/Planning
99 High Street, 6th Floor
Boston, MA 02110
(617) 956-7614 desk
(617) 378-7951 BB/cell
(617) 956-7574 fax
***Mitigation**. Sustained actions taken to reduce or eliminate long-term risk to life and property from hazards*
~~~~~~~~~~~~~~~~~~~~~~~~~~

Town of Unity, New Hampshire
Board of Selectmen
A Resolution Adopting the Unity Hazard Mitigation Plan Update 2014

WHEREAS, the Town of Unity received assistance from the Upper Valley Lake Sunapee Regional Planning Commission through funding from the NH Homeland Security and Emergency Management to prepare a hazard mitigation updated plan; and

WHEREAS, several planning meetings to develop the hazard mitigation plan update were held in March through May 2013 and then presented to the Board of Selectmen for review and discussion on 9-29, 2014; and

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

WHEREAS, the Board of Selectmen held a public meeting on 9-29, 2014 to formally approve and adopt the Unity Hazard Mitigation Plan.

NOW, THEREFORE BE IT RESOLVED that the Unity Board of Selectmen adopt the Unity Hazard Mitigation Plan Update 2014.

APPROVED and SIGNED this 29 day of September, 2014.

TOWN OF UNITY
BOARD OF SELECTMEN

Edward A. Gregory
Chair

(seal)

ATTEST:
Rosemary Keene
Com. Expires 06-19-2018

U.S. Department of Homeland Security
FEMA Region I
99 High Street, Sixth Floor
Boston, MA 02110-2132

FEMA

OCT 16 2014

Edward A. Gregory, Chair
Town of Unity Board of Selectmen
Town of Unity
13 Center Road, Unit 3
Charlestown, NH 03603

Dear Mr. Gregory:

Thank you for the opportunity to review the Town of Unity, New Hampshire Hazard Mitigation Plan Update 2014. The Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA) Region I has evaluated the plan for compliance with 44 C.F.R. Pt. 201. The plan satisfactorily meets all of the mandatory requirements set forth by the regulations.

With this plan approval, the Town of Unity is eligible to apply to New Hampshire Homeland Security and Emergency Management for mitigation grants administered by FEMA. Requests for mitigation funding will be evaluated individually according to the specific eligibility requirements identified for each of these programs. A specific mitigation activity or project identified in your community's plan may not meet the eligibility requirements for FEMA funding; even eligible mitigation activities or projects are not automatically approved.

Approved mitigation plans are eligible for points under the National Flood Insurance Program's Community Rating System (CRS). Complete information regarding the CRS can be found at ***www.fema.gov/business/nfip/crs.shtm***, or through your local floodplain administrator.

The Town of Unity, New Hampshire Hazard Mitigation Plan Update 2014 must be reviewed, revised as appropriate, and resubmitted to FEMA for approval within **five years of the plan approval date of October 7, 2014** in order to maintain eligibility for mitigation grant funding. We encourage the Town to continually update the plan's assessment of vulnerability, adhere to its maintenance schedule, and implement, when possible, the mitigation actions proposed in the plan.

OCT 16 2014

Once again, thank you for your continued dedication to public service demonstrated by preparing and adopting a strategy for reducing future disaster losses. Should you have any questions, please do not hesitate to contact Marilyn Hilliard at (617) 956-7536.

Sincerely,

Paul F. Ford
Acting Regional Administrator

PFF:mh

cc: Beth Peck, New Hampshire State Hazard Mitigation Officer
Jennifer Gilbert, Asst. New Hampshire State NFIP Coordinator
Parker Moore, New Hampshire Hazard Mitigation Program Assistant
Tracy Decker, Secretary to Selectmen, Unity
Victoria Davis, Planner, UVLSRPC

Enclosure