Town of Cornish, New Hampshire
Hazard Mitigation Plan

Town of Cornish
Hazard Mitigation
Committee

Upper Valley Lake Sunapee
Regional Planning
Commission

November 2010

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I. INTRODUCTION

A. BACKGROUND

The New Hampshire Homeland Security & 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 human-made hazard events before they occur. The NH has provided funding to the Upper Valley Lake Sunapee Regional Planning Commission (UVLSRPC), to create or update Hazard Mitigation Plans with several of its communities. UVLSRPC assisted the Town of Cornish in preparation of this plan. The UVLSRPC began drafting the Hazard Mitigation Plan in April of 2009. The *Cornish Hazard Mitigation Plan* will serve as a strategic planning tool for use by the Town of Cornish in its efforts to reduce future losses from natural and/or human-made hazard events before they occur. This Plan does not constitute a section of the Master Plan.

The Cornish Hazard Mitigation Committee prepared the *Cornish Hazard Mitigation Plan* with the assistance and professional services of the Upper Valley Lake Sunapee Regional Planning Commission (UVLSRPC) under contract with the New Hampshire Homeland Security & Emergency Management operating under the guidance of the Federal Emergency Management Agency (FEMA). After a public meeting held in the Cornish Town Offices, the Cornish Select Board adopted the plan. The adoption is provided in Appendix F.

B. PURPOSE

The Cornish Hazard Mitigation Plan is a planning tool for use by the Town of Cornish in its efforts to reduce future losses from natural and/or human-made hazards. This plan does not constitute a section of the Town Master Plan, nor is it adopted as part of any 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 Hazard Mitigation Grant Program (HMGP) project 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 *Cornish Hazard Mitigation Plan* includes the identification of natural hazards affecting the Town, as identified by the Cornish Hazard Mitigation Committee. The hazards were reviewed under the following categories as outlined in the State of New Hampshire Hazard Mitigation Plan:

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

E. METHODOLOGY

Using the *Guide to Hazard Mitigation Planning for New Hampshire Communities* (2002) developed by the Southwest Regional Planning Commission (SWRPC), the Cornish Hazard Mitigation Committee, in conjunction with the UVLSRPC, developed the content of the *Cornish Hazard Mitigation Plan* by tailoring the nine-step process set forth in the guidebook as appropriate for the Town of Cornish. Many FEMA resources and multiple State and Federal websites were also used as well. The Committee held a total of four meetings beginning in May 2009 and ending in July 2009. All meetings were posted at two public locations inviting the general public. Notices were sent to the Town Offices of neighboring towns to invite town officials. For the notices and meeting

agendas see Appendix C: Meeting Documentation. The Committee's final draft plan was provided to the Select Board for their review prior to sending it on for State and FEMA review.

The public will continue to be involved in future revisions as meetings will be posted publicly. The Cornish Board of Selectmen adopted the Plan as shown in Appendix F. Prior to the Town of Cornish approving the Plan, a public a meeting was held to gain additional input from the citizens of Cornish and to raise awareness of the ongoing hazard mitigation planning process.

There is an opportunity for partnerships between local boards, most notably the Conservation Commission and Planning Board, to implement the recommendations in this Plan.

- The Town of Cornish participates in a Mutual Aid Compact with neighboring communities for emergency response.
- Opportunities exist for partnership with the Connecticut River Watershed Conservation Council (MWCC), a non-profit organization made up of members from Mascoma Watershed communities including Cornish.
- UVLSRPC is working with other Mascoma Watershed communities to update local hazard mitigation plans, including Hanover, Lebanon, and Claremont.
- The office of the New Hampshire Homeland Security and Emergency Management had an opportunity to participate in and comment on this planning process, as well as review the draft plan.

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

1. May 19, 2009 2. June 2, 2009
3. June 16, 2009 4. July 7, 2009

To complete the update of this Plan, the Hazard Mitigation Committee revisited the following planning steps .Each section was reviewed and revised during the Committee meetings and by research of the various relevant departments of the Town.

Step 1: Identify and Map the Hazards (May - June 2009)
Committee members identified areas where damage from natural disasters had previously occurred, areas of potential damage, and human-made facilities and infrastructure that were at risk for property damage and other risk factors. A GIS-generated base map provided by the UVLSRPC was used in the process.

Step 2: Determine Potential Damage (May-June 2009)
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 Cornish Hazard Mitigation Committee. A summary listing of "Critical Facilities" is presented in Chapter IV. Costs were determined for losses for each type of hazard.

Step 3: Identify Mitigation Plans/Policies Already in Place (June 2009)
Using information and activities in the handbook, the Committee and UVLSRPC staff identified existing mitigation strategies that are already implemented in the Town related to relevant hazards. A summary chart and the results of this activity are presented in Chapter VI.

Step 4: Identify the Gaps in Protection/Mitigation (June 2009)
Existing strategies were then reviewed for coverage, effectiveness and implementation, as well as need for improvement. Some strategies are contained in the Emergency Action Plan reviewed as part of this step. The result of these activities is presented in Chapter VI.

Step 5: Determine Actions to be Taken (June 2009))
During an open brainstorming session, the Hazard Mitigation Committee developed a list of other possible hazard mitigation actions and strategies for the Town of Cornish. Ideas proposed included policies, planning, and public information. A list of potential mitigation strategies can be found in Chapter VII.

Step 6: Evaluate Feasible Options (May - June 2009)
The Hazard Mitigation Committee evaluated strategies based on eight criteria derived from the criteria listed in the evaluation chart found on page 27 of the *Guide to Hazard Mitigation Planning for New Hampshire Communities*. The eight criteria used for evaluation of potential mitigation strategies are listed in Chapter VII. Each strategy was rated (high (3), average (2), or low (1)) for its effectiveness in meeting each of the eight criteria (e.g., Does the mitigation strategy reduce disaster damage?). Strategies were ranked by overall score for preliminary prioritization then reviewed again under step eight. The ratings of the potential mitigation strategies can be found in Chapter VII.

Step 7: Coordinate with other Agencies/Entities (Ongoing)
UVLSRPC staff reviewed the Cornish Master Plan. This was done to determine if any conflicts existed or if there were any potential areas for cooperation. Town staff who will be involved in preparing an Emergency Operations Plan participated in the hazard mitigation meetings to avoid duplication and to share information.

Step 8: Determine Priorities (April - June 2009)
The Committee reviewed the preliminary prioritization list in order to make changes and determine a final prioritization for new hazard mitigation actions and existing protection strategy improvements identified in previous steps. UVLSRPC also presented recommendations for the Committee to review and prioritize. These are provided in Chapter VIII.

Step 9: Develop Implementation Strategy (June 2009)
Using the chart provided under step nine of the *Guide to Hazard Mitigation Planning for New Hampshire Communities*, the Committee created an implementation strategy which included person(s) responsible for implementation (who), a schedule for completion (when), and a funding source and/or technical assistance source (how) for each identified hazard mitigation action. The prioritized implementation schedule can be found in Chapter VIII.

Step 10: Adopt and Monitor the Plan
UVLSRPC staff compiled the results of steps one through nine in a draft document, as well as helpful and informative materials from the *State of New Hampshire Natural Hazard Mitigation Plan* (2004), which served as a resource for the *Cornish Hazard Mitigation Plan*. The process for monitoring and updating the Plan can be found in Chapter IX.

F. HAZARD MITIGATION GOALS

The Town of Cornish Hazard Mitigation Committee reviewed the hazard mitigation goals for the State of New Hampshire, and revised them for Cornish. The goals were reviewed again during the update of the plan and determined to remain valid.

They are as follows:

1. To improve upon the protection of the general population, the citizens and visitors of the Town of Cornish, from all natural and manmade hazards.

2. To reduce the potential impact of natural and manmade disasters on the Town of Cornish's Critical Support Services.

3. To reduce the potential impact of natural and manmade disasters on Critical Facilities in the Town of Cornish.

4. To reduce the potential impact of natural and manmade disasters on the Town of Cornish's infrastructure.

5. To improve Emergency Preparedness.

6. To improve the Town's Disaster Response and Recovery Capability.

7. To reduce the potential impact of natural and manmade disasters on private property.

8. To reduce the potential impact of natural and manmade disasters on the Town's economy.

9. To reduce the potential impact of natural and manmade disasters on the Town's natural environment.

10. To reduce the Town's liability with respect to natural and manmade hazards generally.

11. To reduce the potential impact of natural and manmade disasters on the Town's specific historic treasures and interests, as well as other tangible and intangible characteristics which add to the quality of life of the citizens and guests of the Town.

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

13. To raise public awareness of the Town of Cornish's limited resources and the need to prioritize funding and allocate resources accordingly.

14. To raise public awareness in Cornish of the relationship between natural hazard events and the importance of land use planning.

G. ACKNOWLEDGEMENTS

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

Jenny Schad, Emergency Planning Committee – Rescue Squad
Daniel Flynn, Department of Public Works
John Hammond, Selectman
E. Douglas Hackett, Chief of Police
Molly Wood, Fire Fighter
Mary E Lynch, School Nurse
Nate Cass, Fire Chief
Scott J. Reuthe, Asst. Fire Chief, Emergency Management Director
Leo Maslan, Firefighter
John Mather, Firefighter
Mary Bronge, Volunteer
Ben Rogers, Fire Fighter
Bill Hathorn, Firefighter
Paul Hatch, NH Homeland Security and Emergency Management Office
Patricia Crocker, Upper Valley Lake Sunapee Regional Planning Commission

The Hazard Mitigation Committee was composed of local officials, representatives from state agencies (NH HSEM), citizens of Cornish and staff representatives of the UVLSPRC for meeting facilitation and plan development. Neighboring communities, agencies, businesses, academia, non-profits and other interested parties were invited to participate through the public posting of meeting times and agendas or through invitation. 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]

Geographical Location and Information

Located in the New England upland region, Cornish is situated along the Connecticut River. Most of Cornish is composed of undulating topography where the highest points are between 1000 and 2300 feet above sea level. The highest point in Cornish is found on Croydon Mountain at approximately 2300 feet. The lowest point in Cornish is at the banks of the Connecticut River at approximately 280 feet. Mountains to note include Dingleton Hill (1300'), Wellmans Hill (1103'), Ironwood Hill (1100'), Kenyon Hill (1300'), Smith Hill (1309'), Parsonage Hill (1300'), Altai Hill (1300') Yatsevich Hill (1540'), Fernald Hill (1647'), and Spaulding Hill (1456').

Development Trends

The population growth experienced in Cornish and the region has resulted in land use changes. The current population estimate for the Town of Cornish indicates that the number of persons within the municipality has again reached the population peak that occurred in 1840. During Cornish's early development, population levels almost doubled during a fifty-year period in the early nineteenth century. This was the result of a growing agrarian economy. Over the next one hundred years, as the advantages of farming and sheep herding left the northeast, the population of Cornish declined until after World War II in 1940. Since that time, population levels have shown a modest increase. Population data from the past few decades shows Cornish's rate of growth behind the state and county trends and only negligible from 1990 to 2000.

The Master Plan describes the population trends based on statistical data periodically prepared by the New Hampshire Office of Energy and Planning (OEP), noting that an important consideration in OEP methodology is that town-level projections are controlled to county totals. In other words, they are based on the town's historical share of its respective county's growth and the assumption that established growth trends will remain about the same in the future. As with any data projections, particularly for smaller areas, actual circumstances and events can drastically alter these figures. Growth is expected to occur at an annual compound average rate of 1.3 percent per year between 2000 and 2025. This equals about 22 individuals per year or a total of 659 persons, which is a faster pace of growth than has occurred in the past decade. This pace of growth would result in about 1,050 additional acres being consumed for residential development. This is less than 4% of Cornish's total land area and most development has occurred along state and local roads.[1]

[1] Town of Cornish Master Plan (2009)

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Table II-1: AREA POPULATION TRENDS

Area	1970	1980	Avg. Annual Growth 70-80	1990	Avg. Annual Growth 80-90	2000	Avg. Annual Growth 90-00	30 Yr. Avg. Annual Rate
Cornish	1,268	1,390	1.0%	1,659	1.9%	1,661	0.01%	1.03%
Plainfield	1,323	1,749	3.2%	2,059	1.8%	2254	0.95%	2.35%
Lebanon	9,725	11,134	1.4%	12,191	0.9%	12,571	0.31%	0.98%
Grantham	366	704	9.2%	1,249	7.7%	2,180	7.45%	16.52%
Croydon	396	457	1.5%	628	3.7%	664	0.57%	2.26%
Claremont	14,221	14,557	0.2%	13,902	-0.4%	13,151	-0.54%	-0.25%
Sullivan County	30,949	36,063	1.7%	38,592	0.7%	40,458	0.48%	1.02%
New Hampshire	737,681	920,610	2.5%	1,109,252	2.0%	1,235,786	1.14%	2.25%

Source: US Census; NH Office of Energy Population Data

Table II-2: POPULATION PROJECTIONS FOR CORNISH

	1970	1980	1990	2000	2010	2020	2030
Population	1,268	1,390	1,639	1,667	1,900	2,120	2,270
Decade Change in Population		0.096	0.1791	0.0171	0.1398	0.1158	0.0708

Source: NH Office of Energy & Planning

Table II-3 : OCCUPIED HOUSING UNIT PROJECTIONS BY TYPE FOR CORNISH

	2000	2010	2020	2030
Single-Family Units (.87.3%)	605	636	709	722
Multi-Family Units (.26)	44	44	49	50
Mobile Home Units (0.002)	48	51	57	58
TOTAL OCCUPIED UNITS	*645*	*680*	*758*	*791*

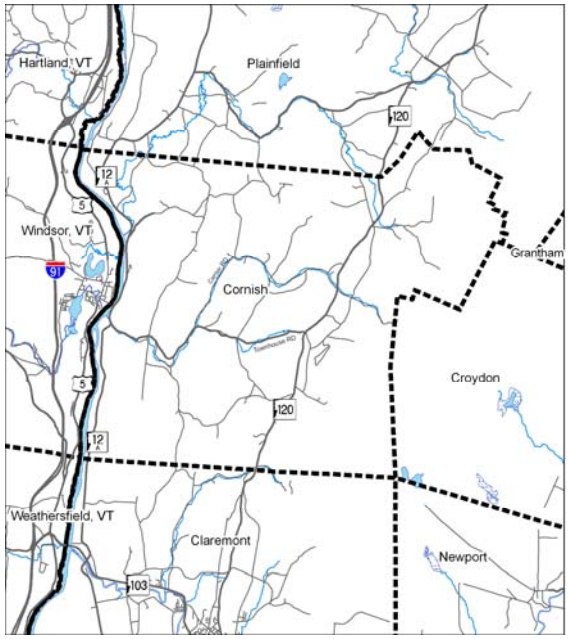
Source: US Census PHC 2-31Table 18 for unit type proportions in 2000; assumed all vacant units are single-family; projected totals based on persons/occupied unit (2.62)

Table II-4: TOTAL HOUSING UNIT PROJECTIONS BY OCCUPANCY FOR CORNISH

	2000	2010	2020	2030
Seasonal or Vacation Vacant (.05)	35	37	41	43
Other Vacant Units (.02)	17	15	16	17
Occupied Units (.93)	645	680	758	772
TOTAL ALL UNITS	*697*	*731*	*815*	*830*

Source: US Census PHC-1-31 Table 12 for 2000; total units projected as percentage of occupied units; other units projected in proportion of total in 2000.

Location Map



The Town of Cornish is a participating member of the National Flood Insurance Program. Updated maps for all towns within Sullivan County were finalized in May 2006. Most 100-Year Special Flood Areas in the town fall within the AE Zone, with base flood elevations determined. A small area is within the A Zone, with no base flood elevations determined. See Appendix D for a map showing these areas. Special Flood Hazard Areas are shown a map in Appendix D.

III. HAZARD IDENTIFICATION

The Cornish Hazard Mitigation Committee reviewed the list of hazards provided in the *State of New Hampshire Hazard Mitigation Plan*, and some hazard history for the State of New Hampshire and Sullivan County in particular. A list of past hazard events in Cornish, Sullivan County, and the State of New Hampshire can be found in the following discussion and tables. After reviewing this information, 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 CORNISH?

Cornish is prone to a variety of natural and human-made hazards. The hazards that Cornish 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 affecting the Town of Cornish are flooding, erosion, dam failure, hurricane, tornado and downburst, thunderstorm (including lightning and hail), severe winter weather (including extreme cold and ice storms), earthquake, drought, wildfire, natural contaminants to air and water, and hazardous materials spills. 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 Cornish and are not anticipated to have an impact as determined by the Hazard Mitigation Committee, representatives from state agencies and citizens of the Town of Cornish.

Eliminated hazards include Subsidence and Snow Avalanches due to factors such as topography, soils, and location of development. Information from Natural Resource Conservation Service indicates that subsidence is not a concern in Cornish. Due to topography, snow avalanches are not a concern in Cornish.

Additional hazards are Erosion and Dam Failure that were broken out of the flooding category as erosion and dam failure can be separate events. Natural Contaminants was added to reflect radon as examined in the State Plan and also including other natural contaminants found in the State.

DESCRIPTIONS OF HAZARDS

An assessment of each hazard relevant to Cornish 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 and shown on a map in Appendix D. The "risk" designation for each hazard was determined after evaluations discussed later in this chapter.

- Flooding
- Natural Contaminants
- Hurricane
- Tornado & Downburst
- Thunderstorm/Lightning/Hail
- Erosion
- Severe Winter Weather
- Earthquake
- Drought
- Wildfire
- Dam Failure
- Hazardous Materials Spills
- Terrorism
- Public Health

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 is a map with the location of dams within Cornish none are considered high hazard and inundation areas are therefore not mapped. Appendix E contains maps of the inundation areas in Cornish from the Wilder, Cumerford, and Moore Dams. It should be noted that TransCanada will be updating their dam inundation maps along the Connecticut River tentatively to be completed in 2010. Currently the inundation mapping information is not available digitally which impedes interpretation of structures within the inundation area. The updated information will be digital.

Table III-1: DAMS

DAMS – POTENTIAL FAILURE: LOW/MEDIUM RISK									
Dam #	Class	Dam Name	Water Body	Owner	Status	Type	Impoundment Area in Acres	Height of Dam (Ft)	Drainage Area in Acres
053.22	NM	Wildlife Pond	Wine Brook	Sheridan Snyder	Active	Earth	0.340	11.00	.20
053.15	NM	Farm Pond	Natural Swale	Joan Queneau	Active	Earth	1.000	8.00	.02
053.03		Winston Churchill Dam	Blow-Me-Down Brook	Michael Barber	Ruins	Timbers	0.000	14.00	25.60
053.29	NM	Wildlife Pond	Natural Swale	Peter Burling	Active	Earth	0.800	10.00	0.12
053.06		Hartford Water Supply Dam	Blow-Me-Down Brook	Edward B. Burling	Breached	Concrete	0.000	6.00	0.01
053.37	NM	Austin Farm Pond II	NA	Peter Burling	Active	Earth	0.400	8.00	0.022
053.13	NM	Farm Pond	Natural Swale	Michael Yatsevitch	Active	Earth	0.370	11.00	0.03

DAMS – POTENTIAL FAILURE: LOW/MEDIUM RISK									
Dam #	Class	Dam Name	Water Body	Owner	Status	Type	Impoundment Area in Acres	Height of Dam (Ft)	Drainage Area in Acres
053.46	NM	Tetirick& Masters Fire Pond	Unnamed Stream	Ted Tetirick & Theresa Masters	Active	Earth	0.360	14.00	0.01
053.25	NM	Fire Pond	Natural Swale	Thomas Bleazard	Active	Earth	0.280	9.00	0.03
053.14	NM	Fire Pond	Blow-Me-Down Brook	Mr. M. Newbold	Active	Earth	0.300	11.00	0.53
053.16	NM	Water Supply	Natural Swale	Whitemore Littell	Active	Earth	0.300	5.00	0.02
053.01	NM	St. Gaudens	Blow-Me-Down Brook	National Park Serv.	Active	Concrete	6.00	18.00	28.00
053.02	-	Blow-Me-Down Sawmill	Blow-Me-Down Brook	Leonard R. Love	Ruins	Stone & Earth	0.000	24.00	3.60
053.35	NM	Farm Pond	Natural Swale	James R. Fitch	Active	Earth	0.300	16.00	0.03
053.08	NM	Blow-Me-Down Brook 3 Dam	Blow-Me-Down Brook	Town of Cornish	Active	Stone & Earth	0.250	9.50	4.84
053.18	NM	Fire Pond	Natural Swale	Frederick Hier	Active	Earth	0.400	7.00	0.07
053.34	NM	Recreation Pond	Unnamed Stream	Frederick Hier	Active	Earth	0.250	12.00	0.05
053.10	NM	Farm Pond	Blow-Me-Down Brook	Robert LaClair	Active	Earth	0.110	8.00	0.04
053.26	-	Libby Dam	Natural Swale	Allan Libby	Not Built	Earth	0.400	15.00	0.11
053.31	-	Redlands Pond	Natural Swale	Harry Redlands	Not Built	Earth	0.190	6.00	0.02
053.38	NM	Sullivan Stock Water Pond	NA	Fred Sullivan	Active	Earth	0.130	7.20	0.03
053.20	NM	Farm Pond	Natural Swale	Fred Sullivan	Active	Earth	0.690	15.00	0.09
053.04	NM	Dingleton Brook 1	Dingleton Farm Brook	J. Cheston & M. Newbold	Active	Concrete	0.700	18.00	0.10
053.17	-	Forest Farm Pond	Natural Swale	Paul Forest	Breached	Earth	0.090	11.00	0.01
053.05	NM	Dingleton Brook 2	Dingleton Farm Brook	J. Cheston & M. Newbold	Active	Concrete	0.300	7.50	0.05
053.07	NM	Tributary to Mill Brook Dam	Tributary to Mill Brook	Estate of Myron E.Quimby	Active	Concrete	.200	10.00	.30
053.32	NM	Fire Pond	Natural Swale	Mrs. Wm Bulkeley	Active	Earth	.800	5.00	0.01
053.30	NM	Fire Pond	Natural Swale	Mr. Donald Monette	Active	Earth	.300	16.00	0.01
053.33	NM	Pearson Dam	Unnamed Stream	Ms. Frances Hills	Active	Earth	0.150	13.00	0.05
053.39	NM	Storrs Recreation Pond	Adjacent to Brook	Peter Storrs	Active	Earth	0.500	10.00	0.00
053.28	NM	Wildlife Pond	Natural Swale	Isabell Barker	Active	Earth	0.250	11.00	0.08
053.12	-	Cornish Fair Fire	Natural Swale	Cornish School	Exempt	Earth	0.200	3.00	0.44

DAMS – POTENTIAL FAILURE: LOW/MEDIUM RISK									
Dam #	Class	Dam Name	Water Body	Owner	Status	Type	Impoundment Area in Acres	Height of Dam (Ft)	Drainage Area in Acres
		Pond		Dist.					
053.19	-	Tracy Dam	Tributary Mill Brook	Floyd A. Tracy	Ruins	Timbers/ Stone	0.010	3.00	4.49
053.42	NM	Blair Recreation Pond	Unnamed Stream	Steven R. Blair	Active	Earth	0.330	7.00	0.01
053.40	NM	Wildlife Pond	Unnamed Stream	Thomas Caselli	Active	Earth	0.250	12.00	2.00
053.23	NM	Wildlife Pond	Natural Swale	John DePalma	Active	Earth	0.66	9.00	0.01
053.21	NM	Farm Pond	Natural Swale	Christopher Tilghm	Active	Earth	0.290	10.00	0.01
053.43	NM	Dorris Recreation Pond	Unnamed Stream	Michael Dorris	Active	Earth	0.500	7.00	0.01
053.36	-	Liggett/Miller Dam	Natural Swale	James Ligget & Diane Miller	Not Built	Earth	0.420	20.00	0.03
053.27	NM	Recreation Pond	Natural Swale	M/M Cosseboom	Active	Earth	0.220	14.00	0.11
053.09	-	Whitewater Brook Reservoir	Whitewater Brook	City of Claremont	Breached	Earth	8.99	53.00	0.00
053.24	L	Davison Wildlife Pond Dam	Mill Brook	William Davison	Active	Earth	5.600	23.00	1.92
053.48	NM	Maslan Recreation Pond	NA	Leo Maslan	Active	Earth	0.220	10.00	0.00
053.11	NM	Water Supply	Natural Swale	Mrs. Hanford Lauten	Active	Earth	.320	10.00	0.03
053.44	NM	Meyette Wildlife Pond	Unnamed Stream	Joseph Meyette	Active Earth	Earth	0.500	15.00	0.01
053.45	NM	Meyette Wildlife Pond	Unnamed Stream	Joseph Meyette	Active Earth	Earth	0.500	15.00	0.01
053.47	NM	McSwain Recreation Pond	Unnamed Stream	James McSwain	Active	Earth	0.440	15.00	0.01

Source: Dam information provided by the NH Dam Bureau in 2007; Significant & High Hazard dams must have an emergency action plan. The State of New Hampshire classifies dams into the following four categories: Blank- Non-Active; NM – Non-menace; L – Low hazard; S – Significant hazard; H – High Hazard T/S-Timber and Stone

Past Dam Failure Events

There have been no dam failures in Cornish, or any surrounding towns, which had impact upon Cornish. Most dams are rated by the State as "non menace" or "low" hazard structures. This means there is no possibility for loss of life if any of these dams fail. A "low" hazard dam failure could cause some structural damage to buildings and roads though a "non menace" dam failure would not. There are forty-seven (47) non menace dams and one (1) low hazard dam. There are no dams rated as "significant" hazard. This means there is a significant hazard potential because the dam is in a location and of a size that failure or improper operation of the dam would result in any of the following: Major economic loss to structures or property; structural damage roads; major environmental or public health losses. The Committee identified only 1 dam that pose risk to residences, bridges or roadways. There are no inundation areas for dams within Cornish as shown on the map in Appendix D.

Several miles north of the Town of Cornish, the Wilder Dam in Hartford, Vermont; Comerford Dam in Monroe, NH and Barnet, VT; and the Moore Dam in Littleton, NH and Waterford, VT are "high" hazard dams and could potentially impact the town if there were a dam failure. The inundation area for each of these dams is depicted in Appendix E. Since the maps are not digital, but the areas appear to be similar to the 100-year flood areas along the river, it has been assumed that the structures within the inundation areas for the Connecticut River dams are the same as for the flood zones. There are an estimated twenty-eight (28) homes and two (2) small business facilities within the dam inundation area of the Wilder, Comerford and Moore Dams. No critical facilities are located within the inundation area.

Potential Future Dam Failure Events

According to the State's Mitigation Plan (2004), Sullivan County has a low risk of dam failure. The Committee determined dam failure is a Low risk in Cornish.

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 Cornish 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.

River Ice Jams Ice forming in riverbeds and against structures presents significant hazardous conditions when storm waters encounter these ice formations that may create temporary dams. These dams may create flooding conditions where none previously existed (i.e., 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.

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.

Past Flooding Events

Appendix D is a map, which shows the locally identified flood and erosion areas and the Special Flood Hazard Areas from Flood Insurance Rate Map. The following tables provide a list of floods in the State, County, and Town of Cornish. Much of the land exposed to flood potential is undeveloped and natural wetland.

Floodplains

There are approximately 1,506 acres of floodplain lands in Cornish *(Federal Emergency Management Agency)*. Floodplains are adjacent to rivers, streams and surface water bodies. Cornish's 100-year flood boundaries are generally associated with the Connecticut River and Mill Brook. These are areas susceptible to flooding during periods of excessive storm water runoff. Floodplains play an important role in that they accommodate excessive water during flooding thereby protecting adjacent properties and downstream areas. Floodplains also provide critical habitat to wildlife. Wetlands are often connected to floodplain areas. The Federal Emergency Management Agency (FEMA) has prepared Special Flood Hazard Area maps. The maps identify the 100-year flood areas. Areas in the 100-year floodplain may be eligible for federally subsidized flood insurance. The maps also serve as planning tools to establish districts that would limit certain land uses in these flood-prone areas. The town's zoning ordinance regulates activities in the floodplain areas.

Table III-2: FLOODING – FEMA DISASTER DECLARATIONS, LOCAL RECOLLECTIONS & CRREL ICE JAM INFORMATION

Hazard	Date	Location	Description of Areas Impacted	Damages
Flood	November 3-4, 1927	Statewide	Unknown	Unknown
Flood	March 11-21, 1936	NH State; Along Connecticut River and Route 12-A in Cornish	Damage to Road Network. Flooding caused by simultaneous heavy snowfall totals, heavy rains and warm weather. Run-off from melting snow with rain overflowed the rivers.	Unknown
Flood/Hurricane	September 21, 1938	Statewide	Flooding in several locations	Unknown
Flooding	June 15-16, 1943	Upper CT River	Intense rain exceeding four inches	Unknown
Flooding	August 1955	CT River Basin	Heavy rains caused extensive damage throughout basin	Unknown
Flood	June 1973	Localized flooding in Cornish	Flooding in several locations	Unknown
Flooding	April 1976	Connecticut River	Rain and snowmelt	Unknown
Flooding	July - August 1986	Statewide	Severe summer storms: heavy rains, tornados flash flood, and severe winds (FEMA DR-771-NH)	Unknown
Flood / Severe Storm	April 16, 1987	Cheshire, Carroll, Grafton, Hillsborough, Merrimack, Rockingham, & Sullivan Counties, NH	FEMA Disaster Declaration # 789-DR (Presidentially Declared Disaster). Flooding of low-lying areas along river	$4,888,889

Hazard	Date	Location	Description of Areas Impacted	Damages
			caused by snowmelt and intense rain.	
Flood	August 7-11, 1990	Belknap, Carroll, Cheshire, Coos, Grafton, Hillsborough, Merrimack & Sullivan Counties, NH	FEMA Disaster Declaration #876-DR. Flooding caused by a series of storm events with moderate to heavy rains.	$2,297,777
Flooding	August 19, 1991	Statewide	Hurricane Bob - effects felt statewide	Unknown
Flooding	October - Nov. 1995	North/West NH	Sullivan County Declared: FEMA DR-1144-NH	Unknown
Flood	October 29, 1996	Grafton, Hillsborough, Merrimack, Rockingham, Strafford & Sullivan Counties, NH	FEMA Disaster Declaration # 1144-DR. Flooding caused by heavy rains.	$2,341,273
Flood	October 26th 2005	Cheshire, Grafton, Merrimack, Sullivan, and Hillsborough Counties	FEMA Disaster Declaration #1610-DR. Severe storms and flooding.	$30,000,000 in damages.
Ice Jam	January 16, 2006	Connecticut River, Cornish	Freeze up	Frozen river from Cornish/Norwich bridge to Ompompanoosuc River
Flood	May 13 -17, 2006	Belknap, Carroll, Grafton, Hillsborough, Rockingham, Strafford Counties	FEMA Disaster Declaration #1643-DR	Unknown
Flood	April 16, 2007	All counties, NH	FEMA Disaster Declaration #1695. Severe storms and flooding.	$27,000,000 in damages; 2,005 home owners and renters applied for assistance in NH.

Table III-3: FEMA FLOOD INSURANCE RATE MAP SPECIAL FLOOD HAZARD AREAS

Location of Special Flood Hazard Area	Number of Structures in Area	Comments
NH Route 120, Cornish flat	5 Residences	
School Street	18 Residences	
Cornish Stage Road	5 Residences	
Leavitt Hill road	1 Residence	
Center Road	24 Residences	
Jonesville Road	5 Residences	
Clark Camp Road	2 Residences	
NH Route 12 A	2 Residences and 3 small businesses	Located within the Connecticut River Floodplain.

Town House Road	17 Residences	
Mill Village Road	8 Residences	
Tandy Brook Road	5 Residences	
Jackson road	6 Residences	
Tewksbury Road	1 Residence	

Potential Future Flooding Events

According to the State's Mitigation Plan, flooding is a high hazard risk in the county. The Committee determined flooding is a Medium/High risk in Cornish.

Flooding events most likely to occur in Cornish are from small streams or run-off from steep slopes primarily occurring during the spring of each year or seasonal rain storms, with the exception of the Connecticut River area along route 12A.

The Town of Cornish has been a participant in the National Flood Insurance Program since April 18, 1983, and the current effective NFIP FIRM map is dated May 23, 2006. Ms. Jennifer Gilbert, New Hampshire NFIP Coordinator in the Governors Office of Energy & Planning was consulted on August 13, 2009 and confirmed that there are no repetitive loss properties listed for the town of Cornish in records dating back to 1978.

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 Natural Hazard Mitigation Plan*; FEMA website).

Past Hurricane Events

There have been several hurricanes over the years that have impacted New England and New Hampshire. These are listed below.

Table III-4: HURRICANES & TROPICAL STORMS

HURRICANES AND TROPICAL STORMS - HIGH RISK				
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
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

HURRICANES AND TROPICAL STORMS - HIGH RISK				
Hazard	**Date**	**Location**	**Description of Areas Impacted**	**Damages**
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; Cornish received damage	Unknown
Hurricane (Katrina)	August 29, 2005 & continuing	East Coast of US and more	FEMA-3258-EM. Heavy rains and flooding devastating SE US	Unknown
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

Potential Future Hurricane Events

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 low risk for hurricanes. The Committee determined the hurricane risk to be Medium in Cornish.

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 Natural Hazard Mitigation Plan*). 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 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, High Wind & 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 Natural Hazard Mitigation Plan*. The Cornish Hazard Mitigation Committee could recall one tornado event that impacted the Town of Cornish on August 18, 2007. This event occurred during the annual Cornish Fair and required evacuation of the fairground. Many swaths of trees were knocked down in Cornish as a result of this event. The Committee recalled a recent downburst/wind event that occurred on May 31, 2009. This event resulted in only minor tree damage and temporary loss of power, but no injuries or fatalities.

Table III-5: TORNADOES IN SULLIVAN COUNTY

TORNADOES & DOWNBURSTS – *HIGH* RISK			
	Date	**Fujita Scale**	**Damages**
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	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
Downburst	July 6, 1999	NA	Two roofs blown off structures; power outages; downed trees, utility poles, and wires
Tornado	August 13, 1999	F1	No deaths or injuries; costs unknown
Downburst	April 15, 2007	NA	Many swaths of trees were knocked down in Cornish and neighboring towns;
Tornado – Cornish	August 18, 2007	N/A	Fairground evacuated. Many swaths of trees were knocked down in Cornish and neighboring towns. Costs unknown.
High Winds	May 31, 2009	N/A	Minor tree damages and temporary loss of power.

Potential Future Tornado & Downburst Events

It is impossible to predict where a tornado or wind event will occur or what damage it will inflict. The FEMA website places the State of NH in the Zone 2 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 Medium/High risk for tornadoes and downbursts in Cornish.

Thunderstorms

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), or a 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.

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.

Past Thunderstorm Events

There have been lightning strikes in Cornish, but the Committee has recollection of little damage resulting from lightning alone.

Potential Future Thunderstorm Events

It is inevitable that thunderstorms will occur in Cornish's future. Lightning, hail, or wind from a thunderstorm could impact the entire 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 Medium/High risk in Cornish.

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. There are many areas of Hitchcock soils in Cornish. These soils are lacustrine or old lakebed materials typically found along the river. They are layered silt loams and fine sandy loams with uniform grains. The lacustrine soils including Hitchcock are very susceptible to erosion on steep banks and in construction areas where the soils are not protected. There can be "piping" or undercutting, and because of the uniformity of the grains, when they are eroded, they can almost "flow."

Past Erosion Events

Erosion is an ongoing problem in Cornish. Steep terrain is a major characteristic of the town's topography. There are many road washes that occur as a result of spring run-off from snow melt and from heavy rain storms, or a combination of the two. There are also several road washes associated with major storms. The Erosion areas are listed below with dates if these signify specific events.

Table III-6: EROSION AREAS

Date	Area	Description	Damages
September 2005	Bridge 151/1222 at Clark Camp Road	Cross Section road access between NH 120 and Center Road caused by seasonal run-off and rainfall	Destroyed Culvert; Bridge closed in 2008.
Spring 2006	Entire 4.5 Miles Center Road	Pavement breaking, sub-base continually eroded. Roadway collapsing into brook bank by seasonal run-off and rainfall	Roadway destabilized shoulder currently 16 inches below road.

Date	Area	Description	Damages
Ongoing	Entire 4.7 Miles Dingleton Hill Road	Continuous erosion of road sub-base due to seasonal run-off and rainfall.	Road destabilized pavement broken and heaved.
Ongoing	Entire 3.5 Miles of Platt Road	Continuous erosion of road sub-base due to seasonal run-off and rainfall.	Road destabilized pavement broken and heaved.
Ongoing	Entire 5 Miles of Jackson Road	Continuous erosion of road sub-base due to seasonal run-off and rainfall.	Roadway Washout and impassability.
Winter – Spring 1999-2000	Gap Road	Continuous erosion of road causing washout of gravel road due to seasonal run-off and rainfall on steep slope. Emergency Access Restricted.	Roadway Washout and impassability.
Ongoing.	St. Gaudens Road	Continuous erosion of road causing washout of gravel road due to seasonal run-off and rainfall on steep slope. Emergency Access Restricted.	Roadway Washout and impassability.

Potential Erosion Events

Due to the topography and types of soils 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. The Committee determined that erosion is a Medium/High risk in Cornish.

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 winter storm characterized by high winds, low temperatures, and driving snow. According to the official definition given in 1958 by the U.S. Weather Bureau, the winds must exceed 35 miles per hour and the temperatures must drop to 20°F (-7°C) or lower. 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 "super-cooled," they instantly refreeze upon contact with anything that that is at or below 0 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.

"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

Extreme winter weather events occur annually in Cornish but usually have minimal impacts on infrastructure and property. The following table provides a list of past extreme winter weather events in New Hampshire and Cornish.

Table III-7: EXTREME WINTER WEATHER

EXTREME WINTER WEATHER – *HIGH* RISK				
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 systems. Comparable to 1998 Ice Storm (see below)	Unknown
Ice Storm	Dec. 29-30, 1942	New Hampshire	Glaze storm; severe intensity	Unknown

EXTREME WINTER WEATHER – *HIGH* RISK				
Hazard	**Date**	**Location**	**Description of Areas Impacted**	**Damages**
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; ice storm took out power around Goose Pond Road for a week.	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; Rip Road in Cornish particularly hard hit.	Unknown
Blizzard	February 5-7, 1978	New Hampshire	New England-wide. Up to 25 inches of snow in central NH	Unknown
Ice Storm	January 8-25, 1979	New Hampshire	Major disruptions to power and transportation	Unknown
Snow Storm	February, 1979	New Hampshire	President's Day storm	Unknown
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

EXTREME WINTER WEATHER – *HIGH* RISK				
Hazard	**Date**	**Location**	**Description of Areas Impacted**	**Damages**
Ice Storm	March 3-6, 1991	New Hampshire	Numerous outages from ice-laden power lines in southern NH	Unknown
Snow Storm	1997	New Hampshire	Power outages throughout Cornish due to heavy snowfall	Unknown
Ice Storm	January 15, 1998	New Hampshire	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	March 5-7, 2001	Cornish	Heavy snow.	Unknown
Snow Storm	December 6-7, 2003	Cornish	Heavy snow. Federal Disaster Declaration FEMA-3193-NH	Unknown
Snow Storm	February 10-12, 2005	Cornish	Heavy snow. Federal Disaster Declaration FEMA-3208-NH	Unknown
Wind Storm	April 15, 2007	Cornish	Debris removal. Federal Disaster Declaration FEMA-1695-DR-NH	Unknown
Ice Storm	12/15/2008	Cornish	Entire Town	Widespread Electrical outages and broken pipes in many homes.

Potential Future Severe Winter Events

All areas of Cornish are at risk from ice storms and snow storms compounded by steep slopes in much of the town.

There is the potential for severe winter damage every year. Any 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 High risk in Cornish.

Earthquake

New England is considered a moderate risk earthquake zone. An earthquake is a rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. Earthquakes can cause buildings and bridges to collapse, disrupt gas, electric and phone

lines, and cause landslides, flash floods and fires. The magnitude and intensity of an earthquake is determined by the use of scales such as the Richter scale and the Mercalli scale.

Past Earthquake Events

The following is a list of earthquakes which impacted New England, New Hampshire, and Cornish.

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 Cornish. 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 in Cornish.

Table III-8: EARTHQUAKES

EARTHQUAKES – *LOW/MEDIUM* RISK			
Date	**Location**	**Magnitude**	**Damage**
1638	Central NH	Estimated 6.5-7	Unknown
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	Estimated 6.0	Much damage: cost unknown
1800s	Statewide	NA	Unknown
1900s	Statewide	NA	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 – *LOW/MEDIUM* RISK			
Date	**Location**	**Magnitude**	**Damage**
April 10, 1962	Middlebury, VT	4.2	Unknown
June 15, 1973	Near Quebec Border	4.8	Unknown
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
April 2002	Plattsburg, NY	5.1	Felt though no damage in Cornish: cost unknown

Drought

A drought is defined as a long period of abnormally low precipitation. 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. Costs can include loss of agricultural crops and livestock.

Past Drought Events

The following is a list of past drought events which impacted the State and Cornish.

Table III-9: DROUGHT

DROUGHT – *LOW/MEDIUM* RISK			
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
2001-2003	Statewide; Cornish	Affected residential wells and agricultural water sources	Unknown

Potential Future Drought Events

Drought will affect the entire Town. Incidents of drought have occurred at about ten-year intervals based on committee recollection. 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 drought to be a Medium/High risk in Cornish.

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 wildland fires 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 wildland fires. Advance planning and knowing how to protect buildings in these areas can lessen the devastation of a wildland fire. 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.

Past Wildfire Events

There have been very few wildfires in the Town of Cornish. There is strict enforcement of outside burning and fire permits. The greatest danger is weather driven during periods of drought, especially in spring before the grass has greened up. The Committee recalled that the most recent wildfire occurred on April 18, 2009. The fire destroyed over fifteen (15) acres of forest whose timber value is unknown. Thirteen Fire Departments in the Town's mutual aid compact were required to respond at a cost of more than $10,000 in unbudgeted compensation for fire fighters.

Potential Future Wildfire Events

There are many large, contiguous forest tracts in Cornish. Where development interfaces with the forested areas is called the "urban interface." These are the areas where structures could be impacted by a wildfire. The Committee considers all structures within Cornish to be in an urban interface, and wildfire could affect the entire Town in structural and timber loss. According to the State's mitigation plan, the county has a high probability of wildfire. Forested, high elevation areas in Cornish are particularly vulnerable to wildfire events. Prolonged drought increases the likelihood of such events. The entire town is heavily forested and includes a private 900-acre hunting preserve. The Committee determined that the risk of wildfire in Cornish is 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.

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 Cornish although there has been radon recorded in the area.

Table III-10: RADON

RADON					
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**

Source: Summary Table of Short-term Indoor Radon Test Results in NH's Radon Database 11/04/2003

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 Cornish, 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 a Low risk in Cornish.

Hazardous Materials Spills

Hazardous materials spills or releases can cause damage of loss to life and property. Short or long-term evacuation of local residents and businesses may be required, depending on the nature and extent of the incident.

Past Hazardous Waste Spill Events
The following past hazardous materials events were noted:

- 1975 Railroad Crossing – A fertilizer tank car derailed requiring emergency management until track repairs were performed and the car was returned to the line. There were no known impacts upon the town.
- 2003 Railroad Crossing – A propane tank car derailed. There were no known impacts upon the town resulting from this incident.

Potential Future Hazardous Waste Spill Events

There conceivably could be other spills near any home in Cornish due to home heating fuel delivery. The property owner is responsible for clean-up. The State oversees these reported spills.

The Cornish Emergency Planning Committee (CEPC) has developed a hazardous materials response plan and procedures for responding to hazardous materials incidents.

There are no known hazardous waste sights or industrial facilities in Cornish. The Committee determined that the risk of hazardous materials spills is a Low risk in Cornish.

Terrorism

Terrorism has been defined in many ways. The word terrorism is derived from the Latin term “terrere” which means to frighten. Under current United States law set forth in the US Patriot Act, acts of domestic terrorism are those which: "(A) involve acts dangerous to human life that are a violation of the criminal laws of the United States or of any State; (B) appear to be intended — (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 Cornish in the past.

Future Terrorism Events

There are no sites in Cornish that could conceivably be vulnerable to an act of terrorism. The Committee determined that terrorism is a Low risk in Cornish.

Public Health and Infectious Disease

Public Health concerns include contamination to drinking water, infectious diseases like meningitis, influenza, and insect-borne diseases. There are few large gathering places for people where diseases could be transferred outside of the elementary school and the annual Cornish Fair held each August. The elementary school is the town's largest employer. There are no major employers in Cornish and only a handful of small business and artisan shops.

Past Public Health & Infectious Disease Events

The H1N1 Influenza is the most recent incidence of public health or infectious disease events in the past 40 years or in the committee's historical recollections. There had been no documented cases of this recent strain of influenza virus at the time of this report's preparation.

Future Public Health & Infectious Disease Events

There is always the potential for public health issues such as infectious disease. As new strains of diseases are identified, the Town will always need to be prepared for new and known infectious diseases. The Committee determined that the risk for public health and infectious disease events is Low/Medium in Cornish in light of this most recent potential influenza threat.

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B. HAZARD RISK RATINGS

The Town of Cornish 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. The ratings were based on past occurrences of hazards affecting the State of New Hampshire, Sullivan County, and the Town of Cornish. Severe Winter Weather was ranked at a high risk in Cornish.

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 – Unlikely: may occur after 25 years
2 – Possible: may occur within 10-25 years
3 – Likely: 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." Finally, the Committee determined probability and the State determined probability were averaged for the final probability ranking. These figures are shown in Table III-11 and III-12.

Table III-11: PROBABILITY OF HAZARD 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.

The Committee determined vulnerabilities were then averaged with the "medium" vulnerability determined for Sullivan County in the *NH Natural Hazard Mitigation Plan.*

Table III-12: COMMITTEE ASSESSMENT OF VULNERABILITY

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
Severe Snow or Ice Storms	3	3	3	3
Flooding	2	3	3	2.6
Erosion	1.5	3	3	2.5
Hurricane	1.5	3	2	2.2
Thunderstorm/Lightning	2	3	1.5	2.1
Tornado, Wind Events & Down Bursts	2	3	1.5	2.1
Wildfire	2	2	1.5	1.8
Dam Failure (located in Cornish)	1.5	2	1	1.5
Drought	1	2	2	1.6
Earthquake	1	1	1	1
Natural Contaminants	1	1	1	1
HazMat Spills	1	1	1	1
Terrorism	1	1	1	1
Public Health	1	1	1	1

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. Table III-12 provides the result of this evaluation.

HIGH**:** (1) 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 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-13: RISK ASSESSMENT

Hazards	Probability based on Committee Review	Vulnerability based on Committee Review	Risk Rating (Probability x Vulnerability)	Risk
Severe Snow & Ice Storms	3.0	3.0	**9.0**	High
Flooding	3.0	2.6	**7.8**	Medium/High
Erosion	3.0	2.5	**7.5**	Medium/High
Drought	3.0	2.2	**6.6**	Medium/High
Thunderstorm/Lightning/Hail	3.0	2.1	**6.3**	Medium/High
Tornado/Wind /Downburst	3.0	2.1	**6.3**	Medium/High
Wildfire	3.0	1.8	**5.4**	Medium
Hurricane	2.0	1.7	**4.3**	Medium
Dam Failure (Cornish Dams)	1.0	1.5	**1.5**	Low
Earthquake	1.0	1	**1.0**	Low
Natural Contaminants	1.0	1	**1.0**	Low

Hazards	Probability based on Committee Review	Vulnerability based on Committee Review	Risk Rating (Probability x Vulnerability)	Risk
Hazardous Materials Spill	1.0	1	**1.0**	Low
Terrorism	1.0	1	**1.0**	Low
Public Health	3.0	1	**3.0**	Low/Medium
0-1.9 Low 2-3.9 Low/Med 4-5.9 Medium 6-7.9 Med/High 8-9 High				

IV. CRITICAL FACILITIES & LOCATIONS

The Critical Facilities list identified by the 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 Cornish. The third category contains facilities and structures that the Committee wishes to protect in the event of a disaster. All facilities could be subject to earthquakes. Most would be subject to hurricanes, and tornados or downbursts; the term "Wind Events" is used for the latter hazards in the following tables. Values were obtained from Town tax records using the "building market cost new" figures for main structures plus assessed value for accessory structures for 2009.

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

Critical Facility	Hazard Vulnerability	Value	Comments
Old Town Hall	Flood Plain, All Hazards	$600,000.00	
Fire Station – Cornish Flat – NH 120 (1)	Flood Plain, All Hazards	$450,000.00	
Fire Station /Police Dept. Town House Rd.	Flood Plain, All Hazards	$500,000.00	
Rescue Station – Center Road	Flood Plain, All Hazards	$175,000.00	
Town Office Building	Flood Plain, All Hazards	$1,000,000.00	
Elementary School	Flood Plain, All Hazards	$4,500,000.00	

Table IV-2: NON-EMERGENCY RESPONSE FACILITIES AND SERVICES

Critical Facility	Hazard Vulnerability	Value	Comments
Bridges (1) Most critical – Evacuation Route	Windsor-Cornish Bridge	Unknown/State	
Evacuation Routes: 3 Bridges, Windsor Cornish, 12A Bridge, Town House Road Bridge.	Flooding	Unknown	
Town Garage (1)	All Hazards	$500,000.00	
Library	All Hazards	$1,000,000.00	
Trinity church	Flood Plain, All Hazards	$500,000.00	
Church in the Flats	Flood Plain, All Hazards	$500,000.00	
Old SM Office	All Hazards	$ 100.000.00	

Table IV-3: FACILITIES AND POPULATIONS TO PROTECT

Critical Facility	Hazard Vulnerability	Value	Comments
Fire Station – Cornish Flat – NH 120 (1)	Flood Plain, All Hazards	$450,000.00	
Fire Station /Police Dept. Town House Road	Flood Plain, All Hazards	$500,000.00	
Rescue Station – Center Road	Flood Plain, All Hazards	$175,000.00	
Town Office Building	Flood Plain, All Hazards	$1,000,000.00	
Cornish Elementary School	All Hazards	$4,500,000.00	
Old Town Hall	Flood Plain, All Hazards	$600,000.00	

HAZARD-PRONE AREAS AND THEIR DEVELOPMENT POTENTIAL

As stated in its master plan, Cornish's goal is to focus residential and commercial development around existing village centers; however, land availability is limited in these areas due to issues with drinking water availability, and other development constraints (i.e., steep slopes). Recent development has occurred along state and local roads and has predominantly consisted of single family residences, consistent with Zoning Ordinances limiting lot size and construction in flood prone areas. No major developments are projected or envisioned in any hazard-prone areas.

Table IV-4: HAZARD-PRONE AREAS AND THEIR DEVELOPMENT POTENTIAL

Vulnerable Area	Hazard Vulnerability	Development Trends/Potential	Comments
N/A	N/A	Development trends are low and limited to single-family residential housing. Village development patterns are settled and large scale growth and development have not been a trend and are not projected.	The Town of Cornish has exceptionally restrictive zoning regulations, minimum 5 acre residential lot size and restricts both residential and commercial development in flood-prone areas.

Table IV-5: BRIDGES BY STATE CONDITION CATEGORY

Bridge #	Owner	Road	Feature	Location	Year Built/ Reconstructed	Recom-mended Posting	Bridge Condition
137/099	State	Townhouse Road	Geer Brook	4.48 miles from Jct. 12-A	1940	E-2	Green
142/100	State	Townhouse Road	Geer Brook	.06 miles NW of Jct. 120	1940/1978	NPR	Green
146/100	State	NH 120	Geer Brook	3.68 miles S of Plainfield T/L	1933	NPR	Green
149/102	State	NH 120	Geer Brook	3.47 miles S of Plainfield T/L	1933	NPR	Green
089/082	Other	Tandy Brook Road	Mill Brook	2.1 miles from Claremont T/L	1955/1969	BRC	Red
081/095	Other	Root Hill Road	Mill Brook	1.3 miles NH 120	1883	06	Red
074/093	Other	Mill Village Road	Mill Brook	.03 miles from Stage Road	1969	E-2	Green
064/108	State	Cornish Toll Br. Rd	Connecticut River	Vermont S/L	1866/1989	10	Red
064/098	State	NH 12A	Mill Brook	2.8 miles from Claremont T/L	1937/1991	NPR	Yellow
092/077	Other	Chase Hill Road	Tandy Brook	1.8 miles from Claremont T/L	1979	NPR	Green
095/063	Other	Jackson Road	Tandy Brook	55 Ft. from Tandy Brook Rd.	1950/1979	E2	Green
097/091	Other	Fuchy Road	Mill Brook	5.0 miles Windsor T/L	1881/	BRC	Black
100/099	State	Town House Rd.	Mill Brook	2.4 miles from Jct. 12-A	1940	E1	Green
103/099	State	Town House Rd.	Geer Brook	2.5 miles from Jct. 12-A	1940/1982	E2	Green
115/093	Other	South Parsonage Rd.	Geer Brook	75 Ft. from Stage Road	1983	NPR	Green
124/094	State	Town House Rd.	Geer Brook	3.75 miles from Jct. 12-A	1981	E2	Green
126/043	State	NH 120	Redwater Brook	.04 miles from Claremont	1956	NPR	Green
156/119	State	NH 120	Mill Brook	2.63 miles S. Plainfield T/L	1933	NPR	Green

Bridge #	Owner	Road	Feature	Location	Year Built/ Reconstructed	Recom-mended Posting	Bridge Condition
144/123	Other	Center Road	Mill Brook	2.9 miles from Plainfield T/L	1981	E2	Green
151/122	Other	Clark Camp Road	Mill Brook	0.4 miles from NH 120	1985	CLOSED	Red
167/141	State	NH 120	Brook	1.12 miles S. Plainfield T/L	1933	NPR	Green
172/148	State	NH 120	Blow-Me-Down Brook	0.8 miles from Plainfield T/L	1933	E2	Green
175/143	Other	Leavitt Hill Road	Notch Brook	1.4 miles from Corbin Park	1950/1991	NPR	Green
182/144	Other	Leavitt Hill Road	Brook	1.1 miles from Corbin Park	1950/1992	E2	Green
190/146	Other	Leavitt Road	Brook	.75 miles from Corbin Park	1975	NPR	Green
071/139	State	NH 12-A	Blow-Me-Down Brook	1.6 miles from Plainfield T/L	1959	NPR	Green
070/155	Other	Platt Road	Blow-Me-Down Brook	0.9 miles from Plainfield T/L	1930	E2	Green
107/118	Other	Center Road	Mill Brook	3.5 miles N of NH 12-A	1950/1975	E2	Yellow
113/127	Other	Center Road	Mill Brook	.04 miles from Center Road	1940/1979	E2	Red
118/129	Other	Center Road	Mill Brook	.03 miles from N. Deering Road	1983	E2	Green
124/129	Other	Center Road	Mill Brook	.4 miles from Old Coach Road	1981	E2	Green
135/118	Other	Center Road	Mill Brook	.5 miles from Harrington Road	1981	E2	Green
076/168	Other	Thrasher Road	Blow-Me-Down Brook	0.2 miles from Plainfield T/L	1996	NPR	Yellow
071/168	Other	Squag City Road	Blow-Me-Down Brook	80 Ft. from Plainfield T/L	1877/2002	3P	Red

State Bridge Condition Category: Red – Red List priority for repair; Pink – Close to priority list; Yellow – Needs repair, non-priority; Green – Does not need repair; The E-2 designation is to exclude all combination and single unit certified (weights per NH RSA 266-18-b) vehicles from crossing a specific bridge.

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, wildfire prone areas, 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.

Table V-1: VULNERABILITY OF EXISTING STRUCTURES, INFRASTRUCTURE, AND NATURAL RESOURCES

Area	Hazard	Critical Facilities	Buildings	Infrastructure	Total Known Bldg Value
100 Year Floodplains	Flood, Erosion	Approximately 22 miles of local roadway subject to Erosion	103 Residences; 3 Small Businesses	Roads and bridges	$26,590,625.00 (structures) $10-20 Million Roadways
100 Year Floodplains	All Hazards	Cornish Flat Fire Station, NH 120	Wood frame	Emergency Equipment	$450,000.00
	All Hazards	Town Office Building	Brick Masonry	Emergency Shelter	$1,000,000.00
100 Year Floodplains	Flood Plain, All Hazards	Fire Station /Police Dept. Town House Rd.	Wood frame	EOC	$500,000.00
100 Year Floodplains	Flood Plain, All Hazards	Rescue Station – Center Road	Wood frame	Emergency Equipment	$175,000.00
	All Hazards	Elementary School	Wood frame	Emergency Shelter	$4,500,000.00
	Flood Plain, All Hazards	Old Town Hall	Wood frame	Emergency shelter	$600,000.00

Table V-2: VULNERABILITY OF POTENTIAL DEVELOPMENT

Area	Hazard	Critical Facilities	Projected Buildings	Projected Infrastructure	Projected Value
N/A	N/A	N/A	N/A	N/A	N/A

Note: As stated in its master plan, Cornish's goal is to focus residential and commercial development around existing village centers; however, land availability is limited in these areas due to issues with drinking water availability, and other development constraints (i.e., steep slopes). Recent development has occurred along state and local roads and has predominantly consisted of single family residences, consistent with Zoning Ordinances limiting lot size and construction in flood prone areas. No major developments are projected or envisioned in any hazard-prone areas.

B. IDENTIFYING VULNERABLE SPECIAL POPULATIONS

There is just one center of special populations in Cornish, the elementary school as identified in Table IV-3. The elderly and physically or mentally challenged residents are located throughout the community, but scattered throughout the Town in their homes. Town-wide programs will have to take this into account. Town officials having knowledge of its residents will assist in protection of those with special needs.

C. POTENTIAL LOSS ESTIMATES

This section identifies areas in the 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 – Low Risk – No Recorded Estimate or Cost
Assuming a 28% structural damage to the buildings valued at $7,023,912 million; the damage could total an estimated $1,966,695 million.

Erosion – Medium/High Risk - $10 to 20 Million Estimated Cost
More than 22 miles of roadway, including bridges and culverts have suffered erosion and scouring damage over a period of years. One bridge has been closed by the state and another roadway has significant damage including shoulders sinking below the road bed. Estimated costs for repairs depend upon the approaches to address these infrastructure challenges in the town of Cornish and whether reconstruction or limited repair methods are applied. Estimates of the cost of addressing these ongoing effects of this hazard can run from $10 million to more than $20 million dollars for long-term mitigation of damages to infrastructure.

Flooding – Medium/High Risk - $26,590,625 Million Estimated Cost
There are approximately one hundred-three (106) structures located within the FEMA designated Special Flood Hazard areas. The total value of the houses is about $26,590,625.00 The critical facilities within the floodplain include Cornish Flat Fire Station, Town House Road Station and Police Department, Town Office Building, Center Road Rescue Station, Old Town Hall, Elementary School, Trinity Church, and the Church-in the Flats. The value of these structures is $7,225,000.00. Assuming a 28% structural damage to the houses and non-residential structures, the damage would total close to $9,458,375.00 million.

Hurricane – Medium Risk – No Recorded or Estimated Cost
It is random which structures would be impacted and how much. There is no standard loss estimation available and no record of past costs.

Tornado & Downburst – High Risk – No Recorded or Estimated Cost
Tornadoes, downbursts, and microbursts are relatively uncommon natural hazards in New Hampshire, although a microburst in 2007 caused substantial tree 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 not possible. There is no standard loss estimation model available for tornadoes due to their random nature.

Thunderstorm/Lightning/Hail – Medium/High 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 – High 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). The U.S. average insurance claim was $1,325 for personal property, $1,980 for commercial property, and $1,371 for automobiles.

Earthquake – Low Risk – $18, 337,497.00 Million Estimated Cost (10% of total taxable property and infrastructure)
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 in Cornish 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 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 all buildings in Cornish were impacted by an earthquake, the estimated damage could be around $18,337,497.00

Drought – Medium/High Risk – No Recorded or Estimated Cost
A long drought would cause damage to crops and dry up wells. In 1999-2000 a number of homeowners that had relied on springs for water replaced these with dug wells. There is no cost estimate for this hazard in Cornish.

Wildfire –Medium Risk – No Recorded or Estimated Cost
The risk of fire is difficult to predict based on location. The largest contiguous concentration of land in Cornish in the northeast quadrant of the town is forest which represents 83% of the land area of the town. The next highest category of use, agriculture, represents 7% of the land area. Barren Lands are 4%; wetlands and water represent the remaining 3% of the area of Cornish. Developed land occupies approximately 3% of the town's land area. 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 Cornish interfaces with forest, all structures are potentially vulnerable to wildfire. The estimated value of these structures is approximately $183,374,973.00. According to the Sullivan County Forester, there are no reliable figures for the value of timber in New Hampshire; and excluding the last big fires of the early 1940s, the acres and timber values affected by fires would not be supportive of major investment in fire prevention in this region (v. fire-prone western regions).

Natural Contaminants Risk – Low– No Recorded or Estimated Cost
The cost of a natural contamination hazard would be the health of individuals exposed to the contaminant. No cost estimate is provided for this hazard.

Hazardous Material Spills – Low – 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, soil, and air 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 Cornish, so any spills would be from heating fuel delivery or transport of materials through the Town on Routes 12 and 120. These are major transportation routes in the area.

Terrorism Risk – Low - No Recorded or Estimated Cost
The cost of any terrorism event is unpredictable and not estimated in this document.

Infectious Diseases – Low/Medium - No recorded or Estimated Cost
The cost of any infectious disease event is unpredictable and not estimated in this document.

VI. EXISTING MITIGATION ACTIONS

The next step involves identifying existing mitigation actions for the hazards likely to affect the Town and evaluating their effectiveness. Table VI-1 is a list of current policies, regulations and programs in the Town of Cornish that protect people and property from natural and human-made hazards as well as effectiveness and proposed improvements.

Table VI-1: EXISTING MITIGATION ACTIONS

Existing Mitigation Action	Description	Hazard Type/Service Area	Responsible Local Agent	Effectiveness (Low, Average, High)	Proposed Improvements
NFIP Member	Provides flood insurance program info to residents	Flood/Entire Town	Zoning Board	Average	Participate in NFIP training offered by the State and/or FEMA (or in other training) that addresses flood hazard planning and management. Work with elected officials, the state and FEMA to review compliance and prevent any potential NFIP non-compliance issues through continuous communications, training and education.
Conservation Commission/Fund	Development review for wetlands protection; acquisition and conservation of wetlands	Flood/Entire Town	Conservation Commission	Average	None/None
Shoreland Protection Act	Restricts development near water bodies	Flooding/ Connecticut River; Mill Brook;	NH DES and Zoning Board	Average	None/Revised State Law
Roadway Maintenance	Routine Roadway Maintenance	Erosion	Highway Department	Average	Creation of a capital improvement plan to take action on roadways subject to significant erosion.
Dam EAPs	Require determination of dam failure impact	Dam Failure/Entire Town	NH DES;	Average	None/None
Dam Maintenance	Regular maintenance of Town Dams	Dam Failure/Inundation Areas	Highway Department	Average	None/None

Existing Mitigation Action	Description	Hazard Type/Service Area	Responsible Local Agent	Effectiveness (Low, Average, High)	Proposed Improvements
Dam Breach Exercises	Exercises and Drills in Process	Dam Failure/Inundation Areas	Public Works, Emergency Management Director	Average	Subscribe to "Code Red" system to contact all people within inundation areas.
Drought Mitigation Plan	Encourage replacement of spring fed systems with dug wells.	Drought/Entire Town	Selectboard, Conservation Commission	High	None/None
Regular Tree Maintenance	Remove damaged and hazardous trees	Wind Events, Wildfire/Entire Town	PSNH and Town Highway Dept.	High Town/Average PSNH	None/None
Storm water Management	Regular culvert maintenance	Flooding/Entire Town	Public Works	Average	Infrastructure assessment.
Subdivision Requirements		Wind Events/Entire Town	Zoning Board	High	None/None
	Construction is prohibited within the 100 year flood zones; Wetland setbacks	Flood/Entire Town	Zoning Board	High	None/None
Mutual Aid	Fire, Police, Dispatch and sharing services among 37 surrounding and nearby towns.	All Hazards/Entire Town	Police, Rescue Squads & Fire Chiefs	High	None/None
Emergency Operations Plan	Determines actions in event of emergencies	All Hazards/Entire Town	EMD	Average	Development of an EOP has commenced and completion is expected by end of calendar year 2009.
Emergency Operations Center	Site for emergency communications	All Hazards/Entire Town	EMD	Average	Need equipment and supplies including generator for emergency power source.
Town Master Plan	Includes Hazard Mitigation strategies	All Hazards/Entire Town	Planning and Select Boards	High	None/None
Public Works Winter Operations Plan	Maintenance standards and policies	Winter/Entire Town	Public Works/Highway Dept.	High	None
Emergency Shelter	Various Town Offices and Elementary School	All Hazards/Entire Town	EMD	Average	Need generator, equipment and supplies including cots, bedding, and replenishment of water and food stock; emergency generator available at

Existing Mitigation Action	Description	Hazard Type/Service Area	Responsible Local Agent	Effectiveness (Low, Average, High)	Proposed Improvements
					elementary school.
HazMat Plan	Preparation for spill clean up and/or evacuation.	Substance Spill or Release/Entire Town	EMD	Average	Drill currently included in fire rescue exercises.
All Hazards	Reviews all types of hazards	All Hazards/Entire Town	EMD	Average	None
Infectious Disease Exercises	Preparation for actual disease outbreak using table top exercises and flu shot clinics	Public Health/Entire Town	EMD	Average	Ongoing, member of Mascoma Valley Health Initiative

Table VI-2 examines the proposed improvements and evaluates them as 1: Low; 2: Average; and 3: High for effectiveness looking at several criteria as shown in the table. The totals are then ranked to prioritize the improvements to help the Committee focus on the most effective strategy improvements.

Table VI-2: PRIORITIZING EXISTING MITIGATION STRATEGY IMPROVEMENTS

Rank	Strategy Improvement	Reduce Damage	Community Objectives	Existing Regulations	Quickly Implemente	Socially Acceptable	Technically Feasible	Admin Possible	Benefit - Cost	TOTAL SCORE	Mitigate Existing or New Dev
1	Erosion & Flooding - Regular culvert maintenance to control storm water. Infrastructure Assessment.	3	3	3	3	3	3	3	3	24	Both
2	Wind Events – Remove damaged and hazardous trees working with PSNH	3	3	3	3	3	3	2	2	22	Both
3	Completion of EOP plan by end of calendar year 2010.	1	3	3	2	3	2	3	3	20	New
3	EOC – Obtain additional equipment and supplies including generators.	1	3	3	2	3	3	2	2	20	New
4	Erosion & Flooding – Development of capital improvement plan to address to take action on roadways subject to significant erosion, educational materials for residents, training of local officials, communications with State HSEM.	2	3	2	1	2	3	3	3	19	New

Rank	**Strategy Improvement**	Reduce Damage	Community Objectives	Existing Regulations	Quickly Implemente	Socially Acceptable	Technically Feasible	Admin Possible	Benefit - Cost	TOTAL SCORE	Mitigate Existing or New Dev
5	Emergency Shelter – Equipment and supplies including cots, bedding and replenishment of water and food stocks and purchase of two additional generators.	1	3	3	2	3	3	1	2	18	Both
5	HazMat – Continue regular drills in fire rescue exercises.	2	2	3	2	3	3	2	2	18	Both
5	All Hazards - Update Master Plan to reference to HazMit Plan	1	3	3	1	3	2	1	2	18	Both
6	Dam Breach – Subscribe to "Code Red" to contact all people within inundation areas, continue breach exercise.	1	3	2	1	3	2	2	2	16	Both

VII. GOALS AND NEWLY IDENTIFIED MITIGATION ACTIONS

A. GOALS & OBJECTIVES

The Cornish Hazard Mitigation Committee reviewed its goals and developed objectives to meet these goals. The goals and objectives were re-evaluated during the updating of the plan to insure they remain valid and effective.

Goals

1. To improve upon the protection of the general population, the citizens and visitors of the Town of Cornish, from all natural and man-made hazards.
2. To reduce the potential impact of natural and man-made disasters on the Town of Cornish's Critical Support Services.
3. To reduce the potential impact of natural and man-made disasters on Critical Facilities in the Town of Cornish.
4. To reduce the potential impact of natural and man-made disasters on the Town of Cornish's infrastructure.
5. To improve Emergency Preparedness.
6. To improve the Town's Disaster Response and Recovery Capability.
7. To reduce the potential impact of natural and man-made disasters on private property.
8. To reduce the potential impact of natural and man-made disaster's on the Town's economy.
9. To reduce the potential impact of natural and man-made disasters on the Town's natural environment.
10. To reduce the Town's liability with respect to natural and man-made hazards generally.
11. To reduce the potential impact of natural and man-made disasters on the Town's specific historic treasures and interests, as well as other tangible and intangible characteristics that add to the quality of life of the citizens and guests of the Town.
12. To identify, introduce and implement cost effective Hazard Mitigation measures so as to accomplish the Town's goals and objectives and to raise awareness and acceptance of hazard mitigation opportunities generally.
13. To raise public awareness of the Town of Cornish's limited resources and the need to prioritize funding and allocate resources accordingly.
14. To raise public awareness in Cornish of the relationship between natural hazard events and the importance of land use planning.

Objectives

- Protect structures and roads in known flood areas.
- Amend the master plan to address natural and human-made hazards and support land use regulations.
- Protect houses in the wildland – urban interface from wildfire.
- Educate the public to prepare for all hazard emergencies.
- Provide emergency communication to effectively deal with mitigation and emergency management

B. POTENTIAL MITIGATION ACTIONS

Summary of New Strategies

The Cornish Hazard Mitigation Committee brainstormed potential mitigation actions at a meeting. The proposed measures are organized by the type of hazard event that the mitigation action is expected to mitigate. Some actions have been moved to the existing actions table as noted in that table. Other items have been deleted as they are no longer deemed appropriate, e.g. proposed actions for infrastructure not in control of Cornish.

Multi-Hazard

- Provide educational information for the public on how to prepare for a hazard event such as a severe winter storms to be available on the town website or distributed by mail.
- Subscribe to "Code Red" for alert to homes located in dam inundation areas and for all emergency purposes.
- Creation of an Emergency Operations Plan with target completion date of December 2010.
- Obtain a generator for Emergency Operations Center and Town Police/Fire Departments (currently generator only available at the elementary school.)
- Purchase generator, equipment, and supplies for EOC and for Emergency Shelter including costs, bedding and consumable stock replenishment including food and water.
- Continue 37-town police, fire and dispatch services mutual aid agreements.
- Update Town Master Plan to reflect goals and objectives of Hazard Mitigation Plan.

Flooding

- Replace red-listed, closed bridge No. 141/122 at Clark Camp Road due to aged and inadequate culvert. Needs replacement with larger culvert and reconstruction of adjacent roadway.
- Rehabilitate 4.5 miles of Center Road including destabilized sections where shoulders are now 16-18 inches below road bed.

- Rehabilitate 4.7 miles of Dingleton Hill Road where sub-base continues to be eroded by seasonal run-off and rainfall and pavement is broken and heaved.
- Rehabilitate 3.5 Miles of Platt Road where sub-base continues to be eroded by seasonal run-off and rainfall and pavement is broken and heaved.
- Rehabilitate 5 Miles of Jackson Road where sub-base continues to be eroded by seasonal run-off and rainfall and pavement is broken and heaved and washouts leave road impassible for periods.
- Rehabilitate Gap Road where continues erosion causes seasonal washout of gravel and road surface and leaves road impassible.
- Rehabilitate St. Gaudens Road where continuous erosion causes seasonal washout of gravel and road surface and leaves road impassible.
- Continue regulations of prohibiting any construction in 100-year flood plains.
- Prepare, distribute or make available NFIP, insurance and building codes explanatory pamphlets.
- Work with elected officials, the state and FEMA to review compliance and prevent any potential NFIP non-compliance issues through continuous communications, training and education.
- Participate in NFIP training offered by the State and/or FEMA (or in other training) that addresses flood hazard planning and management.

Erosion

- Conduct an infrastructure assessment to evaluate conditions, needs and consider feasible, long term solutions such as reconstruction of affected roadways and bridges.
- Develop a capital improvement plan to identify needs, develop plans and financial strategies to systematically address infrastructure problems.
- Maintain regular schedule of culvert maintenance.
- Work with elected officials, the state and FEMA to review infrastructure damage due to rain and snow run-off erosion.
- Seek and attend training on effective mitigation strategies and road, culvert and bridge construction and maintenance methods to reduce repetitive damage.

Infectious Diseases

- Maintain membership in the Mascoma Valley Health Initiative and continue table top exercises and flu shot clinics.

Wind Events/Downburst/Tornado

- Continue regular removal of damaged and hazardous trees in cooperation with PSNH.

C. SUMMARY OF CRITICAL EVALUATION

The Cornish 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.

Table VII-1: PRIORITIZING PROPOSED MITIGATION STRATEGIES

Rank	Strategy	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	Erosion & Flooding - Regular culvert maintenance to control storm water. Infrastructure Assessment.	3	3	3	3	3	3	3	3	24	Both
2	Wind Events – Remove damaged and hazardous trees working with PSNH	3	3	3	3	3	3	2	2	22	Both
3	Completion of EOP plan by end of calendar year 2009.	1	3	3	2	3	2	3	3	20	New
3	EOC – Obtain additional equipment and supplies including a generator	1	3	3	2	3	3	2	2	20	New
4	Erosion & Flooding – Development of capital improvement plan to take action on roadways subject to significant erosion and to identify best methods for long-term roadway reconstruction, rehabilitation, or repair.	2	3	2	1	2	3	3	3	19	New
5	Emergency Shelter – Equipment and supplies including cots, bedding and replenishment of water and food stocks.	1	3	3	2	3	3	1	2	18	Both
5	HazMat – Continue regular drills in fire rescue exercises.	2	2	3	2	3	3	2	2	18	Both
5	All Hazards - Update Master Plan to reference to HazMit Plan	1	3	3	1	3	2	1	2	18	Both
6	Dam Breach - Explore use of Reverse 911 to contact all people within inundation areas, continue breach exercise.	1	3	2	1	3	2	2	2	16	Both

The Cornish 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.

VIII. PRIORITIZED IMPLEMENTATION SCHEDULE

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

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

Mitigation Action	Who (Leadership)	When (Fiscal Year)	How (Funding Sources)	Cost (Estimated)
Erosion & Flooding - Regular culvert maintenance to control storm water. Infrastructure Assessment.	Highway Department/ Select Board	FY2010	Taxes or Grants	$5,000.00
Wind Events – Remove damaged and hazardous trees working with PSNH	Highway Dept. & PSNH	FY 2010	Taxes	$5,000.00
Completion of EOP plan by end of calendar year 2010	Fire & Police Chiefs	FY 2010	Grants & In-kind	$5,000.00
EOC – Obtain additional equipment and supplies including a generator	EMD	FY2011	Taxes, Grants	$35,000.00
Erosion & Flooding – Development of capital improvement plan to take action on roadways subject to significant erosion and to identify best methods for long-term roadway reconstruction, rehabilitation, or repair. May require consulting engineer.	Highway Department, Selectboard	FY2011	Grants, Taxes	$5,000.00
Emergency Shelter – Generator, equipment and supplies including cots, bedding and replenishment of water and food stocks.	EMD	FY2011	Taxes, Grants	$20,000.00
HazMat – Continue regular drills in fire rescue exercises.	EMD	Ongoing	Taxes	$1,000.00
All Hazards - Update Master Plan to reference to HazMit Plan; Subscribe to "code red" to contact residents in all emergencies.	Selectboard, Planning Committee	FY 2010	Grants	N/A; See Below
Dam Breach – Subscribe to "code red" to contact all people within inundation areas, continue breach exercise.	EMD, Selectboard	FY 2010	Taxes	$250.00 Annually

Table VIII-2: IMPLEMENTATION SCHEDULE FOR PROPOSED MITIGATION ACTIONS

Mitigation Action	Who (Leadership)	When (Deadline)	How (Funding Source)	Cost
Erosion & Flooding – Infrastructure Assessment	Highway Department Select Board	March 31, 2010	Taxes or Grants	$5,000.00
Wind Events – Remove damaged and hazardous trees working with PSNH	Highway Dept. & PSNH	June 30, 2010	Taxes	$5,000.00
Completion of EOP plan by end of calendar year 2009.	Fire & Police Chiefs	December 31, 2009	Grants & In-kind	$5,000.00
EOC – Obtain additional equipment and supplies including a generator for Police & Fire Department on Town House Road.	EMD/Selectboard	FY2011	Taxes, Grants	$35,000
EOC – Obtain additional equipment and supplies including a generator for Route 120 Fire Station.	EMD/Selectboard	FY2012	Taxes, Grants	$35,000
Emergency Shelter – Generator for Old Town Hall	EMD	FY2012	Taxes, Grants	$10,000
Erosion & Flooding – Development of capital improvement plan to take action on roadways subject to significant erosion and to identify best methods for long-term roadway reconstruction or repair.	Highway Department, Selectboard	FY2011	Grants, Taxes	$5,000.00
Emergency Shelters – Equipment and supplies including cots, bedding and replenishment of water and food stocks.	EMD	FY2011	Taxes, Grants	$20,000.00
HazMat – Continue regular drills in fire rescue exercises.	EMD	Ongoing	Taxes	N/A
All Hazards - Update Master Plan to reference to HazMit Plan	Selectboard, Planning Committee	FY 2010	Grants	N/A
Subscribe to "Code Red" to contact all people within inundation areas in the event of Dam Breach and to alert to all other hazards via phone and internet.	EMD, Selectboard	FY 2011	Taxes, Grants	$250.00 Annual Fee

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 Cornish will revisit the Hazard Mitigation Plan annually, or after a hazard event. The Cornish 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 new Emergency Operations Plan (EOP), and it will be updated annually along with the EOP. In addition, the Board of Selectmen will review and include any proposed structural projects outlined in this plan. As other Town documents are updated, they will include hazard risks and mitigation strategies from this plan. This would include the Town Master Plan.

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 meeting) to inform and educate members of the public and to take public comment for incorporation into any updates of the plan. Additionally information will be posted on the Town website. The public has been involved in hazard mitigation planning through public hearings and the town meeting when explaining programs and expenses. Copies of future updated Hazard Mitigation Plans will be sent to the following parties for review and comment:

- Emergency Management Directors, neighboring towns
- Field Representative, NH Homeland Security & Emergency Management
- Cornish Board of Selectmen
- Cornish Planning Committee
- Cornish Emergency Management Committee
- Cornish Public Works Department
- Upper Valley Lake Sunapee Regional Planning Commission

RESOURCES USED IN THE PREPARATION OF THIS PLAN

Guide to Hazard Mitigation Planning for New Hampshire Communities, prepared for NH Bureau of Emergency Management (now NH Homeland Security & Emergency Management) by the Southwest Regional Planning Commission (October 2002)

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)

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) www.meteo.mcgill.ca/extreme/Related_Info.htm#disname

Lucey, Bernie, P.E. NH Department of Environmental Services, Drinking Water & Groundwater Bureau, Phone Discussion 01/29/08

Town of Cornish Emergency Operations Plan (2005)

Town of Cornish Master Plan (2003)

NH Department of Environmental Services, Drinking Water & Groundwater Bureau Fact Sheets: *ARD-EHP-22 Radium, Radon, and Uranium: Health Information Summary (2007); WD-WSEB-3-11 Dissolved Mineral Radioactivity In Drinking Water (2004); WD-WSEB-2-1 Suggested Water Quality Testing for Private Wells (2003)*

NH Bureau of Emergency Management (now NH Homeland Security & Emergency Management)'s *State of New Hampshire Natural Hazard Mitigation Plan* (2004)

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: **Meeting Documentation**

Appendix C: **Map of Past and Potential Hazard Event Areas and Critical Facilities**

Appendix D: **Hazard Mitigation Grants**

Appendix E: **Maps of Comerford and Moore Dams Inundation Areas**

Appendix F: **Plan Approval Process and Documents**

APPENDIX A:

TECHNICAL RESOURCES

1) Agencies

New Hampshire Homeland Security & Emergency Management 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 & Emergency Management
406 Public Assistance and Hazard Mitigation .....NH Homeland Security & Emergency Management
Community Development Block Grant (CDBG).....NH Homeland Security, NH OEP, also refer to RPC
Dam Safety Program ..... NH Department of Environmental Services
Disaster Preparedness Improvement Grant (DPIG) .....NH Homeland Security & Emergency Management
Emergency Generators Program by NESEC‡ .....NH Homeland Security & Emergency Management
Emergency Watershed Protection (EWP) Program .....USDA, Natural Resources Conservation Service
Flood Mitigation Assistance Program (FMAP) .....NH Homeland Security & Emergency Management
Flood Plain Management Services (FPMS) ..... US Army Corps of Engineers
Mitigation Assistance Planning (MAP) .....NH Homeland Security & 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 & Emergency Management
Project Impact.....NH Homeland Security & 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

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 that are participating in the National Flood Insurance Program (NFIP).

The HMA grant assistance includes four programs:

1. *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.

2. *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.

3. *The Repetitive Flood Claims (RFC) program*: This program provides funding to reduce of eliminate the long-term risk of flood damage to structures insured by NFIP that have had one or more claim payments for flood damages. The long-term goal of the RFC program is to reduce or eliminate claims under the NFIP through mitigation activities that are in the best interest of the NFIP.

4. *The Severe Repetitive Loss (SRL) program*: This program provides funding to reduce or eliminate the long-term risk of flood damage to severe repetitive loss residential structures insured under the NFIP.

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

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

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

RFC – www.fema.gov/government/grant/rfc

SRL – www.fema.gov/government/grant/srl

Mitigation Project:	PDM	FMA	RFC	SRL
1. Property Acquisition and Demolition or Relocation Project				
Property Elevation	**X**	**X**	**X**	**X**
2. Construction Type Projects				
Property Elevation	**X**	**X**	**X**	**X**
Mitigation Reconstruction[1]				**X**
Localized Minor Flood Reduction Projects	**X**	**X**	**X**	**X**
Dry Flood proofing of Residential Property[2]		**X**		**X**
Dry Flood proofing of Non-residential Structures		**X**	**X**	
Storm water Management	**X**	**X**		
Infrastructure Protection Measure	**X**			
Vegetative Management/Soil Stabilization	**X**			
Retrofitting Existing Buildings and Facilities (Wind/Earthquake)	**X**			
Safe room construction	**X**			
3. Non-construction Type Projects				
All Hazard/Flood Mitigation Planning	**X**	**X**		

1. The SLR Program allows Mitigation Reconstruction projects located outside the regulatory floodway or Zone V as identified on the effective Flood Insurance Rate Map (FIRM), or the mapped limit of the 1.5-foot breaking wave zone. Mitigation Reconstruction is only permitted if traditional elevation cannot be implemented.
2. The residential structure must meet the definition of "Historic Structure" in 44 CFR§59.1.

Source: "Hazard Mitigation Assistance Program Guidance," FEMA, June 19, 2008

Appendix C

Meeting Documentation

AGENDAS:

Meeting # 1: May 19, 2009 7-9PM (2 hours)

- Discuss reasons for Hazard Mitigation Planning
- Membership of Hazard Mitigation Committee
- Determine town personnel to obtain updated information for recent hazard events and value of structures within hazard areas
- Identify and map past/potential hazards
- Identify areas all structures which could be damaged within above areas
- Identify critical facilities

Meeting #2 June 2, 2009 7-9PM (2 hours)

- Follow-up on Information Collection / May 19, 2009 Meeting
- Potential development areas in town (especially in hazard areas) follow up
- Identify hazard mitigation efforts, if any, already in place
- Identify gaps in the current mitigation efforts/programs
- Determine vulnerability and probability of each hazard

Meeting #3 June 16, 2009 7-9PM (2 hours)

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

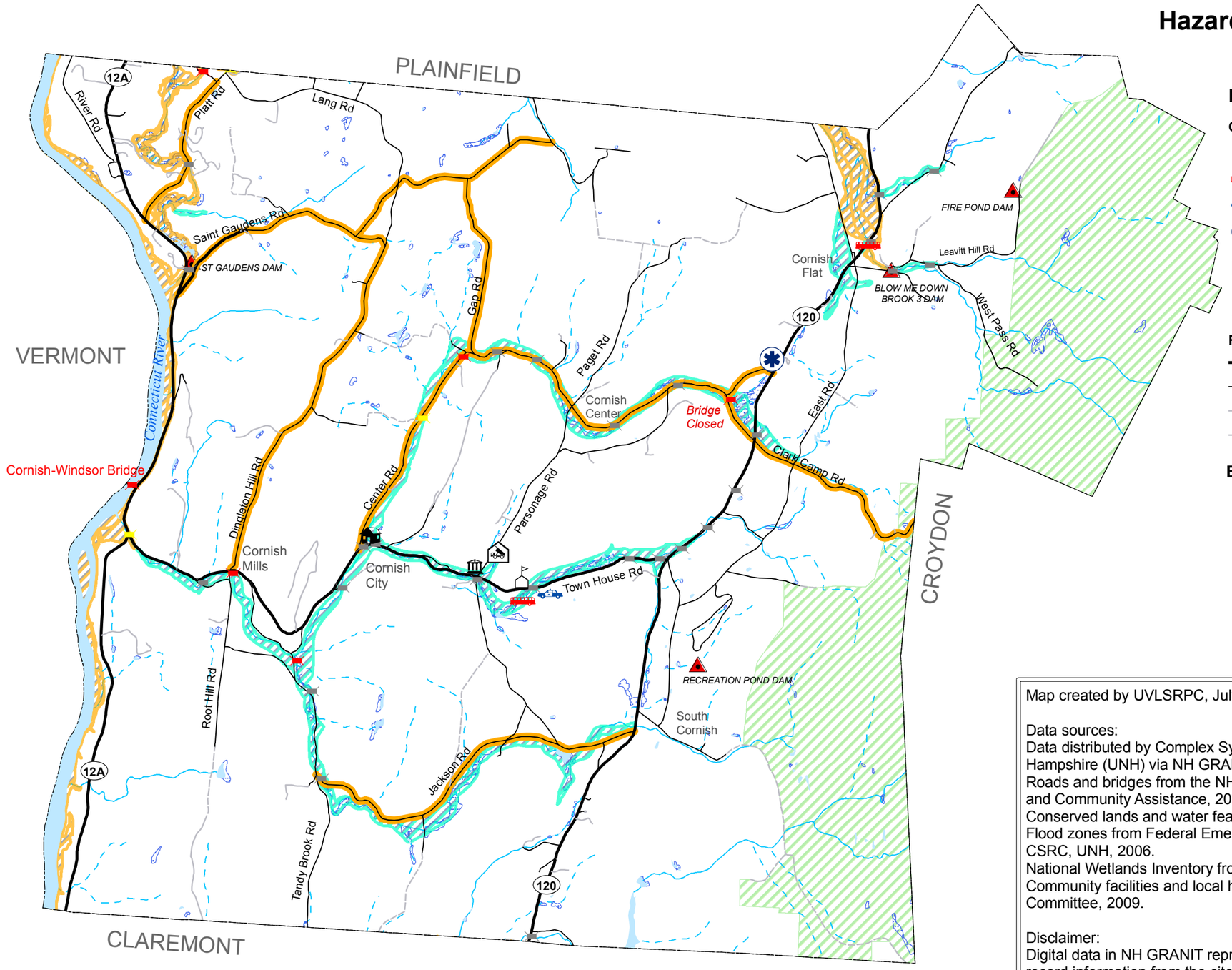
Meeting #4 July 7, 2009 7-9PM (2 hours)

- Review and revise draft plan

APPENDIX D

Map of Hazard Areas and Critical Facilities

Hazard Areas and Critical Facilities
Cornish, NH



Legend

Community Facilties
- Elementary School
- Fire Department
- Police Department
- Rescue Squad
- Town Garage
- Town Hall
- Town Offices

Roadways
- State
- Local
- Not Maintained
- Private

- Roads affected by Erosion
- Dams Identified as Hazards
- Waterbodies
- 100-Year Floodplain

Special Flood Hazard Areas
- Zone A
- Zone AE

- Wetlands
- Intermittent Streams
- Perennial Streams
- Corbin Park

Bridges by Condition
- Red List: More Frequent Inspection Required
- Structurally Deficient or Functionally Obsolete
- Other Bridges

N

1:50,000

0 0.5 1 1.5 2 Miles

Upper Valley Lake Sunapee Regional Planning Commission

Map created by UVLSRPC, July 2009.

Data sources:
Data distributed by Complex Systems Research Center (CSRC), University of New Hampshire (UNH) via NH GRANIT.
Roads and bridges from the NH Department of Transportation, Bureau of Planning and Community Assistance, 2008.
Conserved lands and water features from CSRC, UNH, 1:24,000 scale, 2006.
Flood zones from Federal Emergency Management Agency, distributed by CSRC, UNH, 2006.
National Wetlands Inventory from the US Fish and Wildlife Service, 2001.
Community facilities and local hazard areas defined by Cornish Hazard Mitigation Committee, 2009.

Disclaimer:
Digital data in NH GRANIT represent the efforts of the contributing agencies to record information from the cited source materials. Complex Systems Research Center (CSRC), under contract to the Office of Energy and Planning (OEP), and in consultation with cooperating agencies, maintains a continuing program to identify and correct errors in these data. OEP, CSRC, and the cooperating agencies make no claim as to the validity or reliability or to any implied uses of these data.

Appendix E

Maps of Wilder, Comerford, and Moore Dams Inundation Areas

See Sheet 3

Hartland

Connecticut River

Plainfield

Windsor

Cornish

31. Hartland		84 Miles
	Sunny Day	PMF
Arrival Time:	1.3 Hrs.	0.5 Hrs.
Peak Flood Time:	4.1 Hrs.	3 Hrs.
Peak Elevation:	326.2 Ft.	365.4 Ft.

Central Vermont Railway

River Rd

Freeman Rd

Wilson Rd

91

5

12A

31

See Sheet 5

Wilder Development

- Dams
- Bridges
- Cross Section
- Roads
- Powerlines
- Railroads
- Streams
- Town Lines
- Structures
- Water
- Sunny Day
- PMF
- Towns

The inundated areas shown on this map reflect events of an extremely remote nature. These results are not in any way intended to reflect upon the integrity of the Connecticut River Projects.

N

0.25 0 0.25 Miles

PG&E Generating

TERRA-MAP
Lebanon, New Hampshire
(603)442-9300

See Sheet 4

Windsor

Cornish

Connecticut River

Central Vermont Railway

Wilson Rd

Juniper Hill Rd

Hunt Rd

State St

Ascutney Rd

Main St

Cornish Covered Bridge

Dingleton Hill Rd

Town House Rd

Birch Heights Rd

Chase Rd

Root Hill Rd

32. Windsor	Sunny Day	88.3 Miles PMF
Arrival Time:	1.7 Hrs.	0.7 Hrs.
Peak Flood Time:	5.7 Hrs.	3.8 Hrs.
Peak Elevation:	315 Ft.	360 Ft.

See Sheet 6

Wilder Development

- Dams
- Bridges
- Cross Section
- Roads
- Powerlines
- Railroads
- Streams
- Town Lines
- Structures
- Water
- Sunny Day
- PMF
- Towns

The inundated areas shown on this map reflect events of an extremely remote nature. These results are not in any way intended to reflect upon the integrity of the Connecticut River Projects.

N

0.25 0 0.25 Miles

Sheet 5 of 8

PG&E Generating

TERRA-MAP
Lebanon, New Hampshire
(603)442-9300

See Sheet 5

Root Hill Rd

Chase Rd

91

5

Claremont

12A

Thrasher Rd

Punkshire Hill Rd

Weathersfield

33. Route 103 Bridge 93.1 Miles

	Sunny Day	PMF
Arrival Time:	2.3 Hrs.	1 Hrs.
Peak Flood Time:	6.7 Hrs.	4.3 Hrs.
Peak Elevation:	309.5 Ft.	352.9 Ft.

33

Route 103 Bridge

131

12

5

91

Jarvis Hill Rd

West Rd

12

See Sheet 7

Wilder Development

- Dams
- Bridges
- Cross Section
- Roads
- Powerlines
- Railroads
- Streams
- Town Lines
- Structures
- Water
- Sunny Day
- PMF
- Towns

The inundated areas shown on this map reflect events of an extremely remote nature. These results are not in any way intended to reflect upon the integrity of the Connecticut River Projects.

N

0.25 0 0.25 Miles

Sheet 6 of 8

PG&E Generating

TERRA-MAP
Lebanon, New Hampshire
(603)442-9300

See Sheet 15

Hartland

Plainfield

River Rd

Central Vermont Railway

91

5

12

31. Hartland — 84 Miles

	Sunny Day	PMF
Arrival Time:	0 Hrs.	15 Hrs.
Peak Flood Time:	0 Hrs.	30.2 Hrs.
Peak Elevation:	0 Ft.	348.3 Ft.

Plainfield

Hartland

Connecticut River

Freeman Rd

Cornish

River Rd

Wilson Rd

Windsor

See Sheet 17

Comerford Development

- Dams
- Bridges
- Cross Section
- Roads
- Powerlines
- Railroads
- Streams
- Town Lines
- Water
- Structures
- Sunny Day
- PMF
- Towns

The inundated areas shown on this map reflect events of an extremely remote nature. These results are not in any way intended to reflect upon the integrity of the Connecticut River Projects.

N

0.25 0 0.25 Miles

PG&E Generating

TERRA-MAP
Lebanon, New Hampshire
(603)442-9300

See Sheet 16

Connecticut River

Windsor

Cornish

Central Vermont Railway

5

12

91

Ascutney Rd

Union St

Cornish Covered Bridge

Town House Rd

Chase Rd

Mill Brook

32. Windsor		88.3 Miles
	Sunny Day	PMF
Arrival Time:	0 Hrs.	17 Hrs.
Peak Flood Time:	0 Hrs.	31.2 Hrs.
Peak Elevation:	0 Ft.	341.7 Ft.

See Sheet 18

Comerford Development

- Dams
- Bridges
- Cross Section
- Roads
- Powerlines
- Railroads
- Streams
- Town Lines
- Water
- Structures
- Sunny Day
- PMF
- Towns

The inundated areas shown on this map reflect events of an extremely remote nature. These results are not in any way intended to reflect upon the integrity of the Connecticut River Projects.

N

0.25 0 0.25 Miles

PG&E Generating

TERRA-MAP
Lebanon, New Hampshire
(603)442-9300

See Sheet 17

Windsor

Cornish

Claremont

Weathersfield

Chase Rd

Thrasher Rd

Walker Brook

Connecticut River

Route 103 Bridge

33. Route 103 Bridge		93.1 Miles
	Sunny Day	PMF
Arrival Time:	0 Hrs.	17.6 Hrs.
Peak Flood Time:	0 Hrs.	32.8 Hrs.
Peak Elevation:	0 Ft.	335.5 Ft.

See Sheet 19

Comerford Development

- Dams
- Bridges
- Cross Section
- Roads
- Powerlines
- Railroads
- Streams
- Town Lines
- Water
- Structures
- Sunny Day
- PMF
- Towns

The inundated areas shown on this map reflect events of an extremely remote nature. These results are not in any way intended to reflect upon the integrity of the Connecticut River Projects.

N

0.25 0 0.25 Miles

Sheet 18 of 23

PG&E Generating

TERRA-MAP
Lebanon, New Hampshire
(603)442-9300

See Sheet 15

Hartland

Plainfield

Cornish

Windsor

Central Vermont Railway

River Rd

Freeman Rd

Clay Brook

Wilson Rd

Platt Rd

Connecticut River

5

91

12A

31. Hartland — 84 Miles

	Sunny Day	PMF
Arrival Time:	8.3 Hrs.	10.3 Hrs.
Peak Flood Time:	23.9 Hrs.	26 Hrs.
Peak Elevation:	333.3 Ft.	357.6 Ft.

See Sheet 17

Moore Development

- Dams
- Bridges
- Cross Section
- Roads
- Powerlines
- Railroads
- Streams
- Town Lines
- Structures
- Water
- Sunny Day
- PMF
- Towns

The inundated areas shown on this map reflect events of an extremely remote nature. These results are not in any way intended to reflect upon the integrity of the Connecticut River Projects.

N

0.25 0 0.25 Miles

PG&E Generating

TERRA-MAP
Lebanon, New Hampshire
(603)442-9300

See Sheet 16

Wilson Rd
St Gaudens Rd
Central Vermont Railway
Juniper Hill Rd
Cornish
5
Connecticut River
State St
State St
12A
Windsor
91
Main St
Cornish Covered Bridge
Dingleton Hill Rd
Town House Rd
Ascutney St
Birch Heights Rd
5
Chase Rd

32. Windsor — 88.3 Miles

	Sunny Day	PMF
Arrival Time:	9.2 Hrs.	11 Hrs.
Peak Flood Time:	24.9 Hrs.	27.2 Hrs.
Peak Elevation:	323.3 Ft.	351.4 Ft.

See Sheet 18

Moore Development

- Dams
- Bridges
- Cross Section
- Roads
- Powerlines
- Railroads
- Streams
- Town Lines
- Structures
- Water
- Sunny Day
- PMF
- Towns

The inundated areas shown on this map reflect events of an extremely remote nature. These results are not in any way intended to reflect upon the integrity of the Connecticut River Projects.

N

0.25 0 0.25 Miles

PG&E Generating

TERRA-MAP
Lebanon, New Hampshire
(603)442-9300

See Sheet 17

Windsor

Cornish

Claremont

Weathersfield

Connecticut River

Thrasher Rd

Punkshire Hill Rd

Walker Brook

Clasie Rd

Route 103 Bridge

33. Route 103 Bridge		93.1 Miles
	Sunny Day	PMF
Arrival Time:	9.7 Hrs.	12.2 Hrs.
Peak Flood Time:	25.6 Hrs.	28 Hrs.
Peak Elevation:	317.6 Ft.	344.9 Ft.

See Sheet 19

Moore Development

- Dams
- Bridges
- Cross Section
- Roads
- Powerlines
- Railroads
- Streams
- Town Lines
- Structures
- Water
- Sunny Day
- PMF
- Towns

The inundated areas shown on this map reflect events of an extremely remote nature. These results are not in any way intended to reflect upon the integrity of the Connecticut River Projects.

N

0.25 0 0.25 Miles

PG&E Generating

TERRA-MAP
Lebanon, New Hampshire
(603)442-9300

Appendix F

Plan Approval Process and Documentation

From: Lance D. Harbour
To: Christine Walker; Vickie Davis;
Subject: Conditional Approvals
Date: Friday, June 04, 2010 10:10:52 AM

Good Morning,

The City of Lebanon and the Towns of Cornish and Washington have been conditionally approved by FEMA. Please contact these communities and have them adopt their plans. Send a copy of the signed certificate to me and I will submit for final approval.

Thanks,

Lance D. Harbour
Hazard Mitigation Planner
NH Homeland Security and Emergency Management
33 Hazen Drive
Concord, NH 03305
Office: (603) 223-3633
Cell: (603) 419-0313
Fax: (603) 223-3609
Toll-Free: 1-800-852-3792

RECEIVED NOV 18 2010

Town of CORNISH, New Hampshire
Board of Selectmen
A Resolution Approving the CORNISH Hazard Mitigation Plan

WHEREAS, the Town of CORNISH 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 plan; and

WHEREAS, several planning meetings to develop the hazard mitigation plan were held between May and June 2009 and then presented to the Board of Selectmen for review and discussion on Nov 15, 2010; and

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

WHEREAS, the Board of Selectmen held a public meeting on Nov 15, 2010 to formally approve and adopt the CORNISH Hazard Mitigation Plan.

NOW, THEREFORE BE IT RESOLVED that the CORNISH Board of Selectmen approve the CORNISH Hazard Mitigation Plan.

APPROVED and SIGNED this 15th day of Nov., 2010.

TOWN OF CORNISH
BOARD OF SELECTMEN

John S. Hammond
Chairman

(seal)

ATTEST:
Paula R. Hartman

LOCAL MITIGATION PLAN REVIEW CROSSWALK

INSTRUCTIONS FOR USING THE PLAN REVIEW CROSSWALK FOR REVIEW OF LOCAL MITIGATION PLANS

Attached is a Plan Review Crosswalk based on the ***Local Multi-Hazard Mitigation Planning Guidance***, published by FEMA in July, 2008. This Plan Review Crosswalk is consistent with the *Robert T. Stafford Disaster Relief and Emergency Assistance Act* (Stafford Act), as amended by Section 322 of the *Disaster Mitigation Act of 2000* (P.L. 106-390), the *National Flood Insurance Act of 1968,* as amended by the *National Flood Insurance Reform Act of 2004* (P.L. 108-264) and *44 Code of Federal Regulations (CFR) Part 201 – Mitigation Planning,* inclusive of all amendments through October 31, 2007.

SCORING SYSTEM
N – Needs Improvement: The plan does not meet the minimum for the requirement. Reviewer's comments must be provided.
S – Satisfactory: The plan meets the minimum for the requirement. Reviewer's comments are encouraged, but not required.

Each requirement includes separate elements. All elements of a requirement must be rated "Satisfactory" in order for the requirement to be fulfilled and receive a summary score of "Satisfactory." A "Needs Improvement" score on elements shaded in gray (recommended but not required) will not preclude the plan from passing.

When reviewing single jurisdiction plans, reviewers may want to put an N/A in the boxes for multi-jurisdictional plan requirements. When reviewing multi-jurisdictional plans, however, all elements apply. States that have additional requirements can add them in the appropriate sections of the *Local Multi-Hazard Mitigation Planning Guidance* or create a new section and modify this Plan Review Crosswalk to record the score for those requirements. Optional matrices for assisting in the review of sections on profiling hazards, assessing vulnerability, and identifying and analyzing mitigation actions are found at the end of the Plan Review Crosswalk.

The example below illustrates how to fill in the Plan Review Crosswalk.:

Assessing Vulnerability: Overview

Requirement §201.6(c)(2)(ii): *[The risk assessment **shall** include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description **shall** include an overall summary of each hazard and its impact on the community.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan include an **overall summary** description of the jurisdiction's **vulnerability** to each hazard?	Section II, pp. 4-10	The plan describes the types of assets that are located within geographically defined hazard areas as well as those that would be affected by winter storms.		□
B. Does the **new or updated** plan address the **impact** of each hazard on the jurisdiction?	Section II, pp. 10-20	The plan does not address the impact of two of the five hazards addressed in the plan. **Required Revisions:** • Include a description of the impact of floods and earthquakes on the assets. **Recommended Revisions:** This information can be presented in terms of dollar value or percentages of damage.	□	
		SUMMARY SCORE	□	

LOCAL MITIGATION PLAN REVIEW SUMMARY

The plan cannot be approved if the plan has not been formally adopted. Each requirement includes separate elements. All elements of the requirement must be rated "Satisfactory" in order for the requirement to be fulfilled and receive a score of "Satisfactory." Elements of each requirement are listed on the following pages of the Plan Review Crosswalk. A "Needs Improvement" score on elements shaded in gray (recommended but not required) will not preclude the plan from passing. Reviewer's comments must be provided for requirements receiving a **"Needs Improvement"** score.

Prerequisite(s) (Check Applicable Box)	**NOT MET**	**MET**
1. Adoption by the Local Governing Body: §201.6(c)(5) OR		
2. Multi-Jurisdictional Plan Adoption: §201.6(c)(5) **AND**		
3. Multi-Jurisdictional Planning Participation: §201.6(a)(3)		

Planning Process	**N**	**S**
4. Documentation of the Planning Process: §201.6(b) and §201.6(c)(1)		

Risk Assessment	**N**	**S**
5. Identifying Hazards: §201.6(c)(2)(i)		
6. Profiling Hazards: §201.6(c)(2)(i)		
7. Assessing Vulnerability: Overview: §201.6(c)(2)(ii)		
8. Assessing Vulnerability: Addressing Repetitive Loss Properties. §201.6(c)(2)(ii)		
9. Assessing Vulnerability: Identifying Structures, Infrastructure, and Critical Facilities: §201.6(c)(2)(ii)(B)		
10. Assessing Vulnerability: Estimating Potential Losses: §201.6(c)(2)(ii)(B)		
11. Assessing Vulnerability: Analyzing Development Trends: §201.6(c)(2)(ii)(C)		
12. Multi-Jurisdictional Risk Assessment: §201.6(c)(2)(iii)		

*States that have additional requirements can add them in the appropriate sections of the *Local Multi-Hazard Mitigation Planning Guidance* or create a new section and modify this Plan Review Crosswalk to record the score for those requirements.

SCORING SYSTEM

Please check one of the following for each requirement.

N – Needs Improvement: The plan does not meet the minimum for the requirement. Reviewer's comments must be provided.

S – Satisfactory: The plan meets the minimum for the requirement. Reviewer's comments are encouraged, but not required.

Mitigation Strategy	**N**	**S**
13. Local Hazard Mitigation Goals: §201.6(c)(3)(i)		
14. Identification and Analysis of Mitigation Actions: §201.6(c)(3)(ii)		
15. Identification and Analysis of Mitigation Actions: NFIP Compliance. §201.6(c)(3)(ii)		
16. Implementation of Mitigation Actions: §201.6(c)(3)(iii)		
17. Multi-Jurisdictional Mitigation Actions: §201.6(c)(3)(iv)		

Plan Maintenance Process	**N**	**S**
18. Monitoring, Evaluating, and Updating the Plan: §201.6(c)(4)(ii)		
19. Incorporation into Existing Planning Mechanisms: §201.6(c)(4)(ii)		
20. Continued Public Involvement: §201.6(c)(4)(iii)		

Additional State Requirements*	**N**	**S**
Insert State Requirement		
Insert State Requirement		
Insert State Requirement		

LOCAL MITIGATION PLAN APPROVAL STATUS

PLAN NOT APPROVED	
See Reviewer's Comments	
PLAN APPROVED	

LOCAL MITIGATION PLAN REVIEW CROSSWALK

Local Mitigation Plan Review and Approval Status

Jurisdiction: Town of Cornish New Hampshire	**Title of Plan:** Hazard Mitigation Plan	**Date of Plan:** July 31, 2009
Local Point of Contact: Patricia C. Crocker	**Address:** 30 Bank Street Lebanon, NH 03766	
Title: Planner		
Agency: Upper Valley Lake Sunapee Regional Planning Commission		
Phone Number: 603-448-1680	**E-Mail: pcrocker@uvlsrpc.org**	

State Reviewer:	**Title:**	**Date:**

FEMA Reviewer:	**Title:**	**Date:**
Date Received in FEMA Region [Insert #]		
Plan Not Approved		
Plan Approved		
Date Approved		

Jurisdiction:	**DFIRM**		**NFIP Status***			
	In Plan	**NOT in Plan**	**Y**	**N**	**N/A**	**CRS Class**
1. Town of Cornish, NH Current Firm 2/20/08	Y		Y			
2.						
3.						
4.						
5. [ATTACH PAGE(S) WITH ADDITIONAL JURISDICTIONS]						

*** Notes:** **Y = Participating** **N = Not Participating** **N/A = Not Mapped**

LOCAL MITIGATION PLAN REVIEW CROSSWALK

PREREQUISITE(S)

1. Adoption by the Local Governing Body

***Requirement §201.6(c)(5)*:** *[The local hazard mitigation plan **shall** include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE	
			NOT MET	MET
A. Has the local governing body adopted **new or updated** plan?	Section IX, p. 62, Appendix F, Adoption Docs	Adoption Pending		
B. Is supporting documentation, such as a resolution, included?	Appendix F, Adoption Docs.	Adoption Pending		
		SUMMARY SCORE		

2. Multi-Jurisdictional Plan Adoption

***Requirement §201.6(c)(5)*:** *For multi-jurisdictional plans, each jurisdiction requesting approval of the plan **must** document that it has been formally adopted.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE	
			NOT MET	MET
A. Does the **new or updated** plan indicate the specific jurisdictions represented in the plan?	N/A			
B. For each jurisdiction, has the local governing body adopted the **new or updated** plan?	N/A			
C. Is supporting documentation, such as a resolution, included for each participating jurisdiction?	N/A			
		SUMMARY SCORE		

3. Multi-Jurisdictional Planning Participation

***Requirement §201.6(a)(3)*:** *Multi-jurisdictional plans (e.g., watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process … Statewide plans will not be accepted as multi-jurisdictional plans.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE	
			NOT MET	MET
A. Does the **new or updated** plan describe **how** each jurisdiction participated in the plan's development?	N/A			
B. Does the updated plan identify all participating jurisdictions, including new, continuing, and the jurisdictions that no longer participate in the plan?	N/A			

SUMMARY SCORE		

PLANNING PROCESS: *§201.6(b): An open public involvement process is essential to the development of an effective plan.*

4. Documentation of the Planning Process

Requirement §201.6(b): *In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process **shall** include:*
(1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;
(2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and
(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

Requirement §201.6(c)(1): *[The plan **shall** document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the plan provide a narrative description of the process followed to prepare the **new or updated** plan?	Section 1			
B. Does the **new or updated** plan indicate who was involved in the **current** planning process? (For example, who led the development at the staff level and were there any external contributors such as contractors? Who participated on the plan committee, provided information, reviewed drafts, *etc*.?)	Section 1, G. p.11			
C. Does the **new or updated** plan indicate how the public was involved? (Was the public provided an opportunity to comment on the plan during the drafting stage and prior to the plan approval?)	Section 1, p. 1-7			
D. **Does the new or updated plan discuss the** opportunity for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to be involved in the planning process?	Section 1, p. 6-7			
E. Does the planning process describe the review and incorporation, if appropriate, of existing plans, studies, reports, and technical information?	Section 1, p 6-7			
F. Does the updated plan document how the planning team reviewed and analyzed each section of the plan and whether each section was revised as part of the update process?	Section 1, p. 8-9			
		SUMMARY SCORE		

RISK ASSESSMENT: *§201.6(c)(2): The plan shall include a risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.*

5. Identifying Hazards

Requirement §201.6(c)(2)(i): *[The risk assessment **shall** include a] description of the type … of all natural hazards that can affect the jurisdiction.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan include **a description** of the types of **all natural hazards** that affect the jurisdiction?	Section III, p 15-38			
		SUMMARY SCORE		

6. Profiling Hazards

Requirement §201.6(c)(2)(i): *[The risk assessment **shall** include a] description of the … location and extent of all natural hazards that can affect the jurisdiction. The plan **shall** include information on previous occurrences of hazard events and on the probability of future hazard events.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the risk assessment identify the **location** (*i.e.*, geographic area affected) of each natural hazard addressed in the **new or updated** plan?	Throughout Sections III; and IV			
B. Does the risk assessment identify the **extent** (*i.e.*, magnitude or severity) of each hazard addressed in the **new or updated** plan?	Throughout Sections III; and IV			
C. Does the plan provide information on **previous occurrences** of each hazard addressed in the **new or updated** plan?	Throughout Sections III; and IV			
D. Does the plan include the **probability of future events** (*i.e.*, chance of occurrence) for each hazard addressed in the **new or updated** plan?	Section III, p.40			
		SUMMARY SCORE		

7. Assessing Vulnerability: Overview

Requirement §201.6(c)(2)(ii): *[The risk assessment **shall** include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description **shall** include an overall summary of each hazard and its impact on the community.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan include an **overall summary** description of the jurisdiction's **vulnerability** to each hazard?	Section III, p. 41			
B. Does the **new or updated** plan address the **impact** of each hazard on the jurisdiction?	Section III, p. 42; Section IV, p. 43-52			
		SUMMARY SCORE		

8. Assessing Vulnerability: Addressing Repetitive Loss Properties

Requirement §201.6(c)(2)(ii): *[The risk assessment] **must** also address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged floods.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the new or updated plan describe vulnerability in terms of the types and numbers of *repetitive loss properties* located in the identified hazard areas?	Section III, p. 23	***Note: This requirement becomes effective for all local plans approved after October 1, 2008.***		
		SUMMARY SCORE		

9. Assessing Vulnerability: Identifying Structures

Requirement §201.6(c)(2)(ii)(A): *The plan **should** describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard area … .*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan describe vulnerability in terms of the **types and numbers** of **existing** buildings, infrastructure, and critical facilities located in the identified hazard areas?	Section III, p.15-39; p.40, 41, Section IV, p.43-45	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***		
B. Does the **new or updated** plan describe vulnerability in terms of the **types and numbers** of **future** buildings, infrastructure, and critical facilities located in the identified hazard areas?	Section IV, p.45	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***		

SUMMARY SCORE		

10. Assessing Vulnerability: Estimating Potential Losses

Requirement §201.6(c)(2)(ii)(B): *[The plan **should** describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate … .*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan estimate **potential dollar losses** to vulnerable structures?	Section IV, p.43-45	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***		
B. Does the **new or updated** plan describe the **methodology** used to prepare the estimate?	Section IV, p. 43	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***		
		SUMMARY SCORE		

11. Assessing Vulnerability: Analyzing Development Trends

Requirement §201.6(c)(2)(ii)(C): *[The plan **should** describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan describe land uses and development trends?	Section II, p. 12-14	***Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.***		
		SUMMARY SCORE		

12. Multi-Jurisdictional Risk Assessment

Requirement §201.6(c)(2)(iii): *For multi-jurisdictional plans, the risk assessment **must** assess each jurisdiction's risks where they vary from the risks facing the entire planning area.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan include a risk assessment for each participating jurisdiction as needed to reflect unique or varied risks?	Section II, p. 15 and p. 16-39			
		SUMMARY SCORE		

LOCAL MITIGATION PLAN REVIEW CROSSWALK

MITIGATION STRATEGY: *§201.6(c)(3): The plan shall include a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.*

13. Local Hazard Mitigation Goals

Requirement §201.6(c)(3)(i): *[The hazard mitigation strategy **shall** include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A Does the **new or updated** plan include a description of mitigation **goals** to reduce or avoid long-term vulnerabilities to the identified hazards?	Section VII, p. 56-57			
		SUMMARY SCORE		

14. Identification and Analysis of Mitigation Actions

Requirement §201.6(c)(3)(ii): *[The mitigation strategy **shall** include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan identify and analyze a **comprehensive range** of specific mitigation actions and projects for each hazard?	Section VII, p. 57-60			
B Do the identified actions and projects address reducing the effects of hazards on **new** buildings and infrastructure?	Section VII, p 57-59			
C. Do the identified actions and projects address reducing the effects of hazards on **existing** buildings and infrastructure?	Section VI, p. 57-59			
		SUMMARY SCORE		

15. Identification and Analysis of Mitigation Actions: National Flood Insurance Program (NFIP) Compliance

Requirement: §201.6(c)(3)(ii): *[The mitigation strategy] must also address the jurisdiction's participation in the National Flood Insurance Program (NFIP), and continued compliance with NFIP requirements, as appropriate.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the new or updated plan describe the jurisdiction (s) participation in the NFIP?	Section III, p. 23	***Note: This requirement becomes effective for all local mitigation plans approved after October 1, 2008.***		
B. Does the mitigation strategy identify, analyze and prioritize actions related to continued compliance with the NFIP?	Section V, p. 48-49 Section VI, p.53, Section VII , p. 55, 58- 59	***Note: This requirement becomes effective for all local mitigation plans approved after October 1, 2008.***		
		SUMMARY SCORE		

16. Implementation of Mitigation Actions

Requirement: §201.6(c)(3)(iii): *[The mitigation strategy section **shall** include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization **shall** include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** mitigation strategy include how the actions are **prioritized**? (For example, is there a discussion of the process and criteria used?)	Section VII, p. 59-60			
B. Does the **new or updated** mitigation strategy address how the actions will be implemented and administered, including the responsible department , existing and potential resources and the timeframe to complete each action?	Section VII, p. 60-61			
C. Does the **new or updated** prioritization process include an emphasis on the use of a **cost-benefit review** to maximize benefits?	Section VII, p. 59			
D. Does the **updated** plan identify the completed, deleted or deferred mitigation actions as a benchmark for progress, and if activities are unchanged (*i.e.*, deferred), does the updated plan describe why no changes occurred?	N/A			
		SUMMARY SCORE		

17. Multi-Jurisdictional Mitigation Actions

Requirement §201.6(c)(3)(iv): *For multi-jurisdictional plans, there **must** be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A Does the **new or updated** plan include identifiable **action items** for each jurisdiction requesting FEMA approval of the plan?	N/A			
B. Does the **updated** plan identify the completed, deleted or deferred mitigation actions as a benchmark for progress, and if activities are unchanged (*i.e.*, deferred), does the updated plan describe why no changes occurred?	N/A			
		SUMMARY SCORE		

PLAN MAINTENANCE PROCESS

18. Monitoring, Evaluating, and Updating the Plan

Requirement §201.6(c)(4)(i): *[The plan maintenance process **shall** include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan describe the method and schedule for **monitoring** the plan, including the responsible department?	Section IX, p.62			
B. Does the **new or updated** plan describe the method and schedule for **evaluating** the plan, including how, when and by whom (*i.e.* the responsible department)?	Section IX, p. 62			
C. Does the **new or updated** plan describe the method and schedule for **updating** the plan within the five-year cycle?	Section IX, p. 62			
		SUMMARY SCORE		

19. Incorporation into Existing Planning Mechanisms

Requirement §201.6(c)(4)(ii): *[The plan **shall** include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan identify other local planning mechanisms available for incorporating the mitigation requirements of the mitigation plan?	Section IX, p. 62			
B. Does the **new or updated** plan include a process by which the local government will incorporate the mitigation strategy and other information contained in the plan (*e.g.*, risk assessment) into other planning mechanisms, when appropriate?	Section IX, p. 62			
C. Does the **updated** plan explain how the local government incorporated the mitigation strategy and other information contained in the plan (*e.g.*, risk assessment) into other planning mechanisms, when appropriate?	Section IX, p. 62			
		SUMMARY SCORE		

Continued Public Involvement

Requirement §201.6(c)(4)(iii): *[The plan maintenance process **shall** include a] discussion on how the community will continue public participation in the plan maintenance process.*

Element	**Location in the Plan** (section or annex and page #)	Reviewer's Comments	SCORE N	SCORE S
A. Does the **new or updated** plan explain how **continued public participation** will be obtained? (For example, will there be public notices, an on-going mitigation plan committee, or annual review meetings with stakeholders?)	Section IX, p. 62			
		SUMMARY SCORE		

MATRIX A: PROFILING HAZARDS

This matrix can assist FEMA and the State in scoring each hazard. Local jurisdictions may find the matrix useful to ensure that their plan addresses each natural hazard that can affect the jurisdiction. **Completing the matrix is not required**.

Note: First, check which hazards are identified in requirement §201.6(c)(2)(i). Then, place a checkmark in either the N or S box for each** applicable **hazard. An "N" for any element of any identified hazard will result in a "Needs Improvement" score for this requirement. List the hazard and its related shortcoming in the comments section of the Plan Review Crosswalk.

Hazard Type	Hazards Identified Per Requirement §201.6(c)(2)(i)	A. Location		B. Extent		C. Previous Occurrences		D. Probability of Future Events	
	Yes	N	S	N	S	N	S	N	S
Avalanche	☐	☐	☐	☐	☐	☐	☐	☐	☐
Coastal Erosion	☐	☐	☐	☐	☐	☐	☐	☐	☐
Coastal Storm	☐	☐	☐	☐	☐	☐	☐	☐	☐
Dam Failure	☒	☐	☐	☐	☐	☐	☐	☐	☐
Drought	☒	☐	☐	☐	☐	☐	☐	☐	☐
Earthquake	☒	☐	☐	☐	☐	☐	☐	☐	☐
Expansive Soils	☐	☐	☐	☐	☐	☐	☐	☐	☐
Levee Failure	☐	☐	☐	☐	☐	☐	☐	☐	☐
Flood - Erosion	☒	☐	☐	☐	☐	☐	☐	☐	☐
Hailstorm	☒	☐	☐	☐	☐	☐	☐	☐	☐
Hurricane	☒	☐	☐	☐	☐	☐	☐	☐	☐
Land Subsidence	☐	☐	☐	☐	☐	☐	☐	☐	☐
Landslide	☐	☐	☐	☐	☐	☐	☐	☐	☐
Severe Winter Storm	☒	☐	☐	☐	☐	☐	☐	☐	☐
Tornado	☒	☐	☐	☐	☐	☐	☐	☐	☐
Tsunami	☐	☐	☐	☐	☐	☐	☐	☐	☐
Volcano	☐	☐	☐	☐	☐	☐	☐	☐	☐
Wildfire	☒	☐	☐	☐	☐	☐	☐	☐	☐
Windstorm	☒	☐	☐	☐	☐	☐	☐	☐	☐
Terrorism	☒	☐	☐	☐	☐	☐	☐	☐	☐
Public Health Event	☒	☐	☐	☐	☐	☐	☐	☐	☐
Hazardous Materials Radon	☒	☐	☐	☐	☐	☐	☐	☐	☐

To check boxes, double click on the box and change the default value to "checked."

Legend:

§201.6(c)(2)(i) Profiling Hazards
A. Does the risk assessment identify the location (*i.e.*, geographic area affected) of each hazard addressed in the **new or updated** plan?
B. Does the risk assessment identify the extent (*i.e.*, magnitude or severity) of each hazard addressed in the **new or updated** plan?
C. Does the plan provide information on previous occurrences of each natural hazard addressed in the **new or updated** plan?

D. Does the plan include the probability of future events (*i.e.*, chance of occurrence) for each hazard addressed in the plan?

MATRIX B: ASSESSING VULNERABILITY

This matrix can assist FEMA and the State in scoring each hazard. Local jurisdictions may find the matrix useful to ensure that the new or updated plan addresses each requirement. **Completing the matrix is not required**.

*Note: First, check which hazards are identified in requirement §201.6(c)(2)(i). Then, place a checkmark in either the N or S box for each **applicable** hazard. An "N" for any element of any identified hazard will result in a "Needs Improvement" score for this requirement. List the hazard and its related shortcoming in the comments section of the Plan Review Crosswalk. Note: Receiving an N in the shaded columns will not preclude the plan from passing.*

To check boxes, double click on the box and change the default value to "checked."

Hazard Type	Hazards Identified Per Requirement §201.6(c)(2)(i)	§201.6(c)(2)(ii) Assessing Vulnerability: Overview					§201.6(c)(2)(ii) Assessing Vulnerability: Identifying Structures				§201.6(c)(2)(ii) Assessing Vulnerability: Estimating Potential Losses					
		A. Overall Summary Description of Vulnerability		B. Hazard Impact			A. Types and Number of Existing Structures in Hazard Area (Estimate)		B. Types and Number of Future Structures in Hazard Area (Estimate)		A. Loss Estimate		B. Methodology			
	Yes	N	S	N	S		N	S	N	S	N	S	N	S		
Avalanche	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Coastal Erosion	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Coastal Storm	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Dam Failure	☒	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Drought	☒	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Earthquake	☒	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Expansive Soils	☒	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Levee Failure	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Flood	☒	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Hailstorm	☒	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Hurricane	☒	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Land Subsidence	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Landslide	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Severe Winter Storm	☒	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Tornado	☒	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Tsunami	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Volcano	☐	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Wildfire	☒	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Windstorm	☒	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Terrorism	☒	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Public Health Event	☒	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		
Hazardous Materials Radon	☒	☐	☐	☐	☐		☐	☐	☐	☐	☐	☐	☐	☐		

Legend:

§201.6(c)(2)(ii) Assessing Vulnerability: Overview

A. Does the **new or updated** plan include an overall summary description of the jurisdiction's vulnerability to each hazard?

B. Does the **new or updated** plan address the impact of each hazard on the jurisdiction?

§201.6(c)(2)(ii)(A) Assessing Vulnerability: Identifying Structures

A. Does the **new or updated** plan describe vulnerability in terms of the types and numbers of

B. Does the **new or updated** plan describe vulnerability in terms of the types and numbers of future buildings, infrastructure, and critical facilities located in the identified hazard areas?

§201.6(c)(2)(ii)(B) Assessing Vulnerability: Estimating Potential Losses

A. Does the **new or updated** plan estimate potential dollar losses to vulnerable structures?

B. Does the **new or updated** plan describe the methodology used to prepare the estimate?

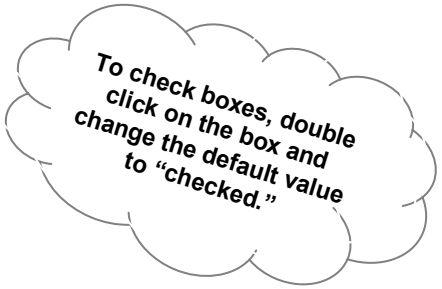
existing buildings, infrastructure, and critical facilities located in the identified hazard areas?

MATRIX C: IDENTIFICATION AND ANALYSIS OF MITIGATION ACTIONS

This matrix can assist FEMA and the State in scoring each hazard. Local jurisdictions may find the matrix useful to ensure consideration of a range of actions for each hazard. **Completing the matrix is not required.**

*Note: First, check which hazards are identified in requirement §201.6(c)(2)(i). Then, place a checkmark in either the N or S box for each **applicable** hazard. An "N" for any identified hazard will result in a "Needs Improvement" score for this requirement. List the hazard and its related shortcoming in the comments section of the Plan Review Crosswalk.*

Hazard Type	Hazards Identified Per Requirement §201.6(c)(2)(i)	A. Comprehensive Range of Actions and Projects	
	Yes	N	S
Avalanche	☐	☐	☐
Coastal Erosion	☐	☐	☐
Coastal Storm	☐	☐	☐
Dam Failure	☒	☐	☐
Drought	☒	☐	☐
Earthquake	☒	☐	☐
Expansive Soils	☐	☐	☐
Levee Failure	☐	☐	☐
Flood - Erosion	☒	☐	☐
Hailstorm	☒	☐	☐
Hurricane	☐	☐	☐
Land Subsidence	☐	☐	☐
Landslide	☐	☐	☐
Severe Winter Storm	☒	☐	☐
Tornado	☒	☐	☐
Tsunami	☐	☐	☐
Volcano	☐	☐	☐
Wildfire	☒	☐	☐
Windstorm	☒	☐	☐
Terrorism	☒	☐	☐
Public Health Event	☒	☐	☐
Hazardous Materials	☒	☐	☐



Legend:
§201.6(c)(3)(ii) Identification and Analysis of Mitigation Actions
A. Does the **new or updated** plan identify and analyze a comprehensive range of specific mitigation actions and projects for each hazard?