For Selectmen Public Information Meeting

06-17-21

Town of Deering

New Hampshire

Hazard Mitigation Plan Update 2021

2020 Jun: Live Electrical Wire (Fire) from Windstorm on Cross Road

Adopted by the Deering Board of Selectmen

Month xx, 2021

NH HSEM/FEMA Approved Month xx, 2021

Cover photo courtesy of Brian Houghton, Highway Dept

Town of Deering

New Hampshire

Hazard Mitigation Plan Update 2021

Selectmen Adopted Month xx, 2021

NH HSEM/FEMA Approved Month xx, 2021

Town of Deering
762 Deering Center Road
Deering, NH 03244
Phone: (603) 464-3248
Fire Department Phone: (603) 738-0716
www.deering.nh.us

Central NH Regional Planning Commission (CNHRPC)
28 Commercial Street, Suite 3
Concord, NH 03301
Phone: (603) 226-6020
www.cnhrpc.org

NH Department of Safety (NHDOS)
NH Homeland Security and Emergency Management (NHHSEM)
33 Hazen Drive
Concord, NH 03305 *(Mailing Address)*

Incident Planning and Operations Center (IPOC)
110 Smokey Bear Blvd
Concord, NH 03301 *(Physical Address)*
Phone: (800) 852-3792 or (603) 271-2231
www.nh.gov/safety/divisions/hsem
https://apps.nh.gov/blogs/hsem

US Department of Homeland Security
Federal Emergency Management Agency (FEMA)
99 High Street, Sixth Floor
Boston, Massachusetts 02110
Phone: (617) 223-9540
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Table of Contents

1 PLANNING PROCESS

The Town's Hazard Mitigation Committee reformed to rewrite the Plan into a more concise format and to incorporate the newest material required by FEMA in addition to updating the Town's newest information since **2015**. This Planning Process Chapter contains information previously available in the Introduction Chapter of the **Plan Update 2015**. Expanded public participation steps were taken and a new plan development procedure was used as documented in the Methodology section.

Certificate of Adoption, 2021

Town of Deering, NH
Board of Selectmen
762 Deering Center Road
Deering, NH 03244

A Resolution Adopting the Deering Hazard Mitigation Plan Update 2021

WHEREAS, the Town of Deering has historically experienced severe damage from natural hazards and it continues to be vulnerable to the effects of the hazards profiled in the **Hazard Mitigation Plan Update 2021** including but not limited to flooding, high wind events, severe winter weather, and fire, resulting in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Town of Deering has developed and received conditional approval from the NH Homeland Security and Emergency Management (NHHSEM) for its **Hazard Mitigation Plan Update 2021** under the requirements of 44 CFR 201.6; and

WHEREAS, public and Committee meetings were held between **October 2020** through **June 2021** regarding the development and review of the **Hazard Mitigation Plan Update 2021**; and

WHEREAS, the **Plan** specifically addresses hazard mitigation strategies, and Plan maintenance procedures for the Town of Deering; and

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

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

RESOLVED by Town of Deering Board of Selectmen:

The **Hazard Mitigation Plan Update 2021** is hereby adopted as an official plan of the Town of Deering; The respective officials identified in the mitigation action plan of the Plan are hereby directed to pursue implementation of the recommended actions assigned to them;

Future revisions and Plan maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as a part of this resolution for a period of five (5) years from the date of this resolution; and

An annual report on the progress of the implementation elements of the Plan shall be presented to the Board of Selectmen by the Emergency Management Director or designee.

IN WITNESS WHEREOF, the undersigned have affixed their signature and the corporate seal of the Town of Deering this xxnd day of Month 2021.

ATTEST

Board of Selectmen

Bill Whisman, Chair date

Rebecca Mitchell, Selectwoman date

Roy Watson, Selectman date

SEAL

Town Clerk

Carol Baker, Town Clerk

Plan Process Acknowledgments

The Board of Selectmen-appointed Hazard Mitigation Committee was comprised of these individuals on behalf of their respective Departments, Boards or Committees who met between **October 2020** through **May 2021** to develop the **Deering Hazard Mitigation Plan Update 2021**:

- **Brian Houghton,** Deering Highway Department Road Agent
- **Russell McAllister**, Deering Town Administrator
- **Jeffrey LeBlanc**, Deering Fire and Rescue Department Chief/Acting Emergency Management Director
- **Mark Philibert,** Deering Police Department Chief

The following Central NH Regional Planning Commission (CNHRPC) staff contributed to the development of the Hazard Mitigation Plan Update:

- **Stephanie Alexander**, CNHRPC Senior Planner
- **Craig Tufts**, CNHRPC Principal Planner (GIS mapping)
- **Matthew Baronas,** CNHRPC Intern (GIS mapping)

Several other Town-affiliated individuals or other agency representatives attended one or more Committee meetings and/or contributed information to the content of the Plan. Members of the public* (**0**) participated as fully as appointed members in the Hazard Mitigation Committee meetings.

- **Daniel Gorman**, Deering Fire and Rescue Department Chief (former)
- **Kayla Henderson,** NH Homeland Security and Emergency Management Field Representative

* See *Member of the Public definition on Page 6*

Authority

In 2000, the President enacted the Disaster Mitigation Act 2000 (DMA) which requires states and municipalities to have local adopted and FEMA approved natural hazard mitigation plans in place to be eligible for disaster and mitigation funding programs such as the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Assistance (HMA) programs, including Hazard Mitigation Grant Program, Flood Mitigation Assistance Program, and Pre-Disaster Mitigation Program. New Hampshire is awarded funds based upon the completeness of its State Plan and the number of local plans.

As a result of the DMA, funding was provided to state offices of emergency management, including the New Hampshire Homeland Security and Emergency Management, to produce local (municipal) hazard mitigation plans. To remain in compliance with the DMA, the Town of Deering is required to submit for FEMA approval a revised **Hazard Mitigation Plan Update** every five years.

The New Hampshire Homeland Security and Emergency Management (NH HSEM) produced its latest approved ***State of New Hampshire Multi-Hazard Mitigation Plan 2018*** in **October 2018**. The development of the State's Plan allows for New Hampshire to receive funding programs to provide to communities in the event of disasters or for mitigation.

Prior versions of the Town's Hazard Mitigation Plan are noted in the **Final Plan Dates** section. A **2018** Pre-Disaster Mitigation (PDM) grant provided 75%/25% funding for the Town to update its prior Plan through the Central NH Regional Planning Commission. The 25% match required by the Town was provided by in-kind staff and volunteer time and labor.

This **Deering Hazard Mitigation Plan Update 2021** has been developed in accordance with the Disaster Mitigation Act of **2000** and the ***FEMA Local Mitigation Plan Review Guide, October 1, 2012*** and effective one year later. The most recent Plan development standards provided by FEMA Region I have also been incorporated. The planning effort of the Town is a regular process and this Plan is considered a "living document."

The new Deering Hazard Mitigation Committee was established by the Board of Selectmen to begin meeting **October 2021** and guided the development of the Plan. The Committee consisted of the Town's Emergency Management, Town Administration, Fire and Rescue Departments, Highway Department, and Police Department. Because of the COVID-19 pandemic, no public participants were active with Committee activities although advertised appropriately.

The attendees of the meeting process are noted in the **Acknowledgements**. The Central NH Regional Planning Commission, of which Deering is a member, contributed to the development of this Plan by facilitating the meeting and technical processes, working with the Committee and its members to obtain information, preparing the document, and handling the submissions to NH HSEM and FEMA.

Methodology

The **Deering Hazard Mitigation Plan Update 2021** was developed over a seven-month period with a group of Town staff members and volunteers, open to public participants, and the CNHRPC comprising the Hazard Mitigation Committee. The **2021** methodology for Plan development is summarized in this section. The **Hazard Mitigation Plan** is designed differently from the **2015 Plan** with the intent to better conform to the current approvable Central NH Region format and incorporating the new ***2018 State Multi-Hazard Mitigation Plan*** items, with the purpose of easier updating and implementation while meeting FEMA's requirements. The Plan roughly follows the ***FEMA Local Mitigation Planning Handbook, 2013*** by using its terminology and some of its tasks, ensuring **Deering's Plan Update 2021** begins to follow a standardized approach to Plan construction and content endorsed by FEMA. Many of the vital sections of the **2021 Plan Update** will be contained in the chapter **10 APPENDICES** for easier display, usage, sharing, and update.

MEETINGS AND DUTIES

The meetings and tasks of the Hazard Mitigation Committee were dictated by Agendas and how much the Committee was able to complete for each Agenda is displayed in **Table 1.** Work Sessions were designed to accomplish what could not be completed at meetings due to time constraints and additional information to process.

Table 1

Meeting Schedule and Agenda Activities

Meeting	Date	Agenda Activities – See APPENDIX C
Meeting 1 *Remotely held via Zoom*	10-20-20	Discuss Process and Schedule; Review Declared Disasters and Public Assistance Funding to Deering; Develop New Hazard Identification and Risk Assessment (HIRA), Begin to Identify Potential and Past Hazard Locations 2015-2021; Prepare for Maps 1-2 and Flood Map Revisions; Schedule Meetings
Work Session 1 *Remotely held via Zoom*	11-10-20	Finish Identifying Recent Past Hazard Events 2015-2021; Update Critical and Community Facilities Vulnerability Assessment and Develop Problem Statements; Revise Maps 1-2 and Update New Flood Hazards Map
Work Session 1.2 *Remotely held via Zoom*	11-18-20	Finish Identifying Recent Past Hazard Events 2015-2021; Update Critical and Community Facilities Vulnerability Assessment and Develop Problem Statements; Revise Maps 1-2 and Update New Flood Hazards Map
Work Session 1.3 *Remotely held via Zoom*	11-24-20	Update Critical and Community Facilities Vulnerability Assessment and Finish Problem Statements; Review and Update Goals and Objectives; Status of Maps 1-2 and New Flood Hazards Map

Meeting	Date	Agenda Activities – See APPENDIX C
Meeting 2 *Remotely held via Zoom*	12-08-20	Finalize Problem Statements and Identify Those to Utilize as NEW 2021 Mitigation Actions; Begin Department Roundtable- Review & Update of Capability Assessment
Work Session 2 *Remotely held via Zoom*	12-15-20	Complete Problem Statements and Identify Those to Utilize as NEW 2021 Mitigation Actions; Continue Department Roundtable- Review & Update of Capability Assessment
Work Session 2.2 *Remotely held via Zoom*	12-22-20	Complete Department Roundtable- Review & Update of Capability Assessment
Work Session 2.3 *Remotely held via Zoom*	01-12-21	Complete Department Roundtable- Review & Update of Capability Assessment
Meeting 3 *Remotely held via Zoom*	01-26-21	Determine Status of the 2015 Mitigation Actions; Begin to Develop Mitigation Action Plan 2021; Schedule New Meetings
Work Session 3 *Remotely held via Zoom*	02-09-21	Develop Mitigation Action Plan 2021; Begin to Prioritize Mitigation Action Ranking Scores for Action Achievability
Work Session 3.2 *Remotely held via Zoom*	03-02-21	Prioritize Mitigation Action Ranking Scores for Action Achievability; Overview of Meeting 4/Work Session 4 and Public Information Meeting
Meeting 4 *Remotely held via Zoom*	04-13-21	Review Draft Hazard Mitigation Plan Update 2021; Overview of Work Session 4 Tasks; Schedule Public Information Meeting
Work Session 4 *Remotely held via Zoom*	04-20-21	Review Draft Hazard Mitigation Plan Update 2021; Review Draft Community Survey for Haz Mit and Severe Weather Events; Interim Hazard Mitigation Plan Implementation 2022-2026; Prepare for Public Information Meeting; Review Plan Approval Process; Prepare for Board of Selectmen Adoption Meeting
Work Session 4.2 *Remotely held via Zoom*	05-04-21	Review Draft Hazard Mitigation Plan Update 2021; Interim Hazard Mitigation Plan Implementation 2022-2026; Prepare for Public Information Meeting; Review Plan Approval Process; Prepare for Board of Selectmen Adoption Meeting
Public Information Meeting *Remotely held via Zoom*	06-03-21	HMC members present sections of the Plan to the public in a brief question and answer format meeting. Describe hazards and mitigation Actions. Maps will be available.

Source: Deering Hazard Mitigation Committee Agendas, 2021

Who is a Member of the Public?

For the purposes of this Plan,
"**a member of the public**" or
"**the public**" or "**public participant**" means:

Anyone who is not a Town of Deering, School District, County, State, or federal government employee; anyone who is not paid for services by property tax dollars; anyone who is not a volunteer of the Town; and anyone who does not represent non-profit agencies and other Committees of which the Town is a member.

For all meetings, since the meetings were held remotely via Zoom, CNHRPC staff took a roll call during each meeting and completed a meeting match timesheet for participants documenting their time at the meetings. The Committee members worked to complete the Agendas, including developing the **Hazard Risk Assessment**, **Critical and Community Facilities Vulnerability Assessment**, **Capability Assessment**, and **Mitigation Action Plan**, completing the **Enhanced STAPLEE Action Prioritization**, etc. along with input from members of the public and guests. The agendas and attendance sheets are included in **APPENDIX C** of the Plan.

The specific meeting tasks are described in detail on the Agendas in **APPENDIX C** and in **Table 1**. CNHRPC staff facilitated the Committee Meetings and Work Sessions. Information needed on the Agenda Tasks indicated above was collected from any attendees present, including any members of the public, by CNHRPC, during discussions among attendees. The new and updated information was described in each Chapter under the **2021 Plan Update** section. Maps were reviewed and updated by the Committee and guests and revised in a Geographic Information System (GIS) by CNHRPC.

In between meetings, Town staff and volunteers and CNHRPC staff researched and collected information for the Chapters. CNHRPC updated and rewrote Chapters, tables, and sections as appropriate. The Chapters were also updated by revising the document to the current FEMA standards and the ***2018 State Multi-Hazard Mitigation Plan***.

Public Outreach Strategy

Many individuals were personally invited to attend and participate in the Deering Hazard Mitigation Plan Committee meetings. They included surrounding community Emergency Management Directors, Town Boards and Committees, Town Departments, Senior Center, Library & Historical Society, neighborhood representatives, NH Homeland Security and Emergency Management (NHHSEM) Representatives, and others, along with general email invitations through the Town's public notification email list.

The Hazard Mitigation Committee itself was comprised of Town Department staff and volunteers, including Emergency Management, Town Administration, Fire and Rescue Department, Highway Department, and Police Department. Other staff members or volunteers may have occasionally participated on behalf of their Departments.

The public process for this Plan included posting the meeting information on the Town's online calendar and website at https://www.deering.nh.us/. Meetings were held remotely via Zoom. For the first meeting, the Town advertised by sending a mass email to the Town's notification list and posting flyers and meeting announcements at the Town Hall. Because of the COVID-19 pandemic, between October 2020-April 2021 the Town Offices were closed to the public. Other than the outdoor Town bulletin board, no physical postings of the Agenda occurred as another result of the pandemic during this time. Copies of publicity for the Plan are included in **APPENDIX C.**

The Central NH Regional Planning Commission staff facilitated the Hazard Mitigation Committee meetings, guided the planning process, compiled new and old data, updated information, and prepared the 2021 Plan documents, Appendices, and Maps.

As a final attempt to obtain additional public input, a specially noticed Public Information Meeting was held on June 17, 2021 at a Board of Selectmen's meeting at which many members of the public participated. This meeting was publicly noticed on the Town website and calendar, and on the Board of Selectmen' Agenda. All documents were available for review on the Town's website in advance of the meeting. The attendees and publicity of the public planning process are noted in the **Acknowledgements**.

OPPORTUNITY FOR PUBLIC PARTICIPATION

Public Input from the Hazard Mitigation Committee Meetings

The public notification is described in the Public Outreach Strategy sidebar. Zero (**0**) members of the public attended the meetings as indicated in the **Acknowledgements** and by the Attendance Sheets in **APPENDIX C Meeting Information**, in addition to Public Information Meeting attendees. Members of the public would have assisted with completing the Agendas, including developing the **Hazard Identification Risk Assessment**, **Critical and Community Facilities Vulnerability Assessment**, **Capability Assessment**, and **Mitigation Action Plan**, completing the **Enhanced STAPLEE Action Prioritization**, etc. along with the Committee members. The general public had the opportunity to attend and participate in the **16** posted meetings or to contact the Town Administrator/Emergency Management Director for more information prior to the Board of Selectmen adoption of the Plan.

Public Input from the Public Information Meeting

The **Public Information Meeting (PIM)** was held on June 3, 2021. The Hazard Mitigation Committee members presented portions of the Plan and had the Maps available for display. The agenda and attendance sheet are included in **APPENDIX C**. Held during a scheduled Board of Selectmen meeting, the PIM involved **several** members of the public who listened to presentations, asked questions and had the opportunity to review the final draft Plan document, Appendices and Maps.

Deering Community Survey for Hazard Mitigation and Severe Weather Events

As a last attempt to obtain broad public input on hazard mitigation and severe weather events, an online community survey posted on Survey Monkey was developed in April 2021. Every person on the Town's public email distribution list received notification of the survey. Following the HIRA hazard list, the survey asked respondents seven questions:

- **Q1** On which road do you live? (This will help us understand where you have experienced severe weather or other hazard events.)
- **Q2** How concerned are you about the following natural hazards, severe weather events, or human/technological hazards impacting Deering? (on a 1-5 Importance scale)
- **Q3** Natural hazards can have a significant impact on a community but planning for or mitigating these events can help lessen the impacts. Planning may require Town funds as well as federal funds in addition to Town staff support and volunteer support. Please indicate how important you believe these mitigation planning priorities are for Deering: (on a 1-5 Importance scale)
- **Q4** Can you describe any hazard events or severe weather events you experienced in Deering? If yes, please provide brief comments on up to 2 events by describing what happened (What), the location (Where), the approximate month and year of the occurrence (When), and how bad the event was from 1 [not bad] to 5 [extremely bad] (Impact scale).

- **Q5** In your household, has anyone done any of the following preparedness or mitigation activities? Check all that apply.
- **Q6** What are the best ways for you to receive information about disasters and severe weather events in Deering? Please pick up to 3:
- **Q7** Please feel free to provide any other information related to severe weather and hazard mitigation in in the space below.

A total of **37** responses were received from the community at large. Respondents lived in all sections of Town and were most concerned about High Wind, Drought, Public Health, Long Term Utility Outage, and Severe Winter events. Mitigation planning priorities were Protecting/Reducing Damage to Utilities, Improving the Transportation Network, Enhancing Functions of Natural Features, and Limiting Development in Hazard Areas. People most frequently recalled the ice storms of 1998 and 2008, power/utility outages during these times, and more contemporary ice and snowstorms and power/utility outages. Most were judged a 4 or 5 on the Impact scale. Flooding was noted as the second most recalled event between 2006 to present in West Deering and along hilly roads. Regarding mitigation and preparedness, respondents most frequently chose Talked about What To Do In Case of Weather Emergency and Prepared Family Emergency Plans. Fewer than 1/3 of respondents had chosen Made a 72-hour Emergency Kit. Respondents preferred Internet News Media, Town Website, Town Email Distribution List, and Social Media as ways to receive severe weather and disaster information. Few respondents added comments, but those who did mentioned the need for tree removal along roads and drainage improvements. Many respondent write-in ideas are noted as Mitigation Action items or are standard Department policy. The summary of survey responses are provided in **APPENDIX F**.

Public Input from the Board of Selectmen Adoption Meeting

The Board of Selectmen meeting to adopt the **Hazard Mitigation Plan** was held on Month xx, 2021. Although the Plan's APA had been received, the Board permitted public comment prior to adoption although Plan changes could not be made at this time. Discussion was held prior to the unanimous adoption of the Plan by the Board.

COMPLETION OF THE PLAN STEPS AND DATES

On June 17, 2021, the Committee held a **Public Information Meeting.** The same extensive public notification described in the Public Outreach Strategy sidebar occurred to obtain review and comment from the public for the Plan. On Month xx, 2021, this Plan, Appendices and Maps were submitted to the NH Homeland Security and Emergency Management (NHHSEM) for compliance review and revision to apply for Approved Pending Adoption (APA) status, also known as conditional approval.

On Month xx, 2021, Deering received an **Approved Pending Adoption (APA)** notification from NHHSEM. The APA states the Plan will be approved by FEMA after proof of adoption by the local governing body, a Certificate of Adoption from the Board of Selectmen, is submitted.

On Month xx, 2021, the Board of Selectmen **adopted the Hazard Mitigation Plan Update** for the Town at a duly noticed public meeting. Copies had been made available at the Town Office and on the Town website for public review. The public notice and flyers are included in **APPENDIX C.** The signed Certificate of Adoption was sent to NHHSEM/FEMA.

On Month xx, 2021, Deering received a **Notification of Formal Approval** from NHHSEM, with the Plan approval granted effective that day. A **Letter of Formal Approval** from FEMA confirming the notification will be forthcoming. The next Hazard Mitigation Plan update is due five (5) years from this date of approval, on **Month xx, 2026**.

Final Plan Dates

The following is a summary of the required dates which guide the adoption and update of the **Deering Hazard Mitigation Plan**. Included is the history of the Plan approvals and lapsing dates as shown in **Table 2**.

Table 2
Deering's Hazard Mitigation Plan Adoption History

Year of FEMA-Approved Hazard Mitigation Plan	Adoption by Deering Board of Selectmen	NHHSEM/ FEMA's Formal Approval	Plan Lapse
Original 2004	12/17/03	03/24/04	**03/24/09**
Update 2009	10/19/09	12/07/09	**12/07/14**
Update 2015	11/18/15	12/07/15	**12/07/20**
Update 2021	**0x/xx/21**	**0x/xx/21**	**0x/xx/26**

Source: Plan Adoption History

2 COMMUNITY PROFILE

It has been over five years since the last Plan was written, with the newest decennial US Census beginning in 2021. The best available new data has been used in this Chapter to portray the population, housing, and overall demographic picture of present-day Deering. The former **Relation to Natural Hazards** section has been updated within **4 HAZARD RISK ASSESSMENT** as **Built Environment Changes.** The tables clearly identify the facilities in Town and which natural, human, and technological hazard events could most likely occur in those areas, as described in **5 COMMUNITY VULNERABILITY ASSESSMENT AND LOSS ESTIMATION**.

A simplified description of how the Town's population and housing have grown within the last four decades follows. Relationships of the locations of people and buildings to natural hazard events are generally explored. Examination of this information will allow the Town to better understand the land use and demographic trends within its borders and how emergency and preventative services can best serve the growing and changing population and landscape.

Geographic Context

The Town of Deering resides in northern portion of Hillsborough County in southwestern New Hampshire. It is bordered by the Towns of Hillsborough and Henniker to the north, the Town of Weare to the east, the Town of Antrim to the west, and the Towns of Bennington and Francestown to the south. The State's capital of Concord is more than **30** miles from the Town Hall of Deering traveling along NH 149 and NH 9/US 202. NH 149 bisects the community in a northwesterly-southeasterly direction. Numerous Class V Town roads connect to NH 149, and others connect to other local roads.

The topography of the Deering changes swiftly from high elevations to low-lying floodplains. The Town is an extremely rural, forested community with the **Contoocook River** flowing up along Long Woods Road alongside the western border and also with a short section of the **Piscataquog River** snaking in at the southeastern edge of Deering at NH 149 into Weare. High Hedgehog Mountain and other promontories are located between Long Woods Road and Old County Road, where to the east lies the lower Deering Reservoir, surrounded by steep hills.

The Town Center consists of the authentically renovated Town Hall, historic Deering Church, Highway Department, and a few residences. There are with virtually no commercial, industrial, or manufacturing activities in Town although a private airport is located on the floodplain. Three fire stations provide proximity coverage to sections of Town. Concentrations of population are found in Longwoods Manufactured Housing Park off of Long Woods Road and the Contoocook River, are found in the

adjacent Hedgehog Mountain Community Cooperative Manufactured Housing Park, in the year-round homes and seasonal cottages of Deering Reservoir (**Deering Lake**) community, and in north Deering within a mile radius of where NH 149 enters Deering. Other dwellings are dispersed throughout Deering along NH 149, paved and gravel Town roads and cul-de-sacs. Population density now stands at **63** people per square mile, up just slightly from **61** people in **2000**.

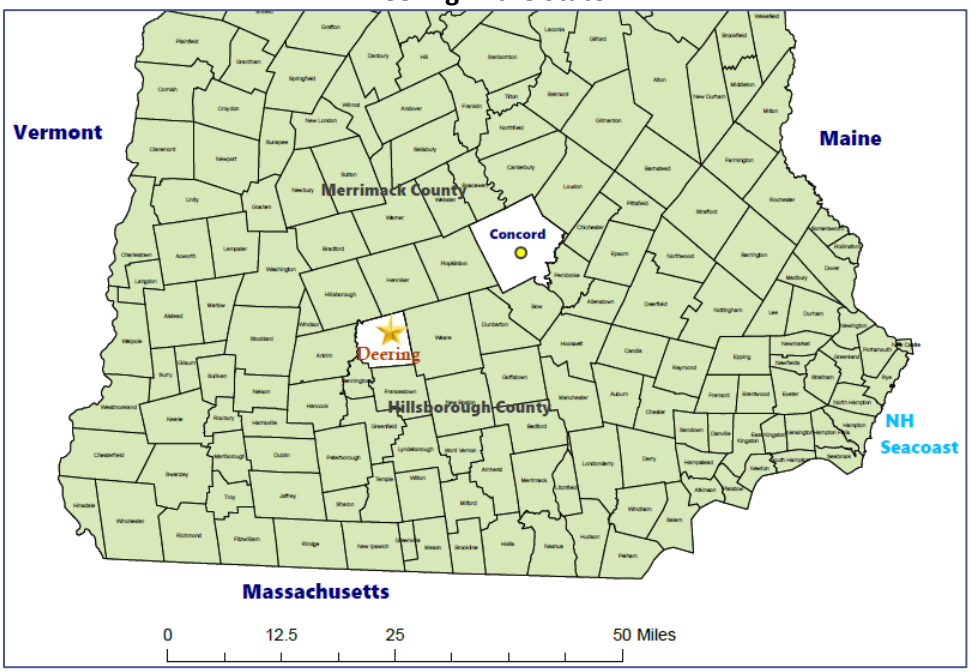
Deering Reservoir (Lake), Dudley Pond, Clifton Camp Pond, and Black Fox Pond are among the main standing bodies of water. The **Contoocook River**, **Piscataquog River**, Dudley Brook, Gerini Brook, Smith Brook, Patten Brook, Wilkens Brook, and Johnson Brook are the most prominent waters flowing in Town.

DEERING'S LOCATION IN NH

Hillsborough County borders Massachusetts and includes the cities of Manchester and Nashua. The county is the most populous in New Hampshire. The County contains **31** communities and major transportation corridors of US Route 3 and Interstates 93 and 293. Two communities in Hillsborough County along with the majority of communities in Merrimack County comprise the Central NH Planning Region.

Concord is located about **50** miles from the Massachusetts state border, the Vermont state border, the Maine state border, and the seacoast. New Hampshire's many Interstates, US Routes, NH Routes, and local roadways generally enable travel and commute from Central NH to most of these points in about one hour. Geographically, Deering is about **30** miles southwest of Concord and about **30** miles east of the Vermont state border, the mid-way point between Concord and Keene on NH 9/US 202. The Town of Deering's context within Hillsborough County and the State of New Hampshire is shown in **Figure 1**.

Figure 1
Deering in the State



Source: Central NH Regional Planning Commission

DEERING'S LOCATION IN CENTRAL NH

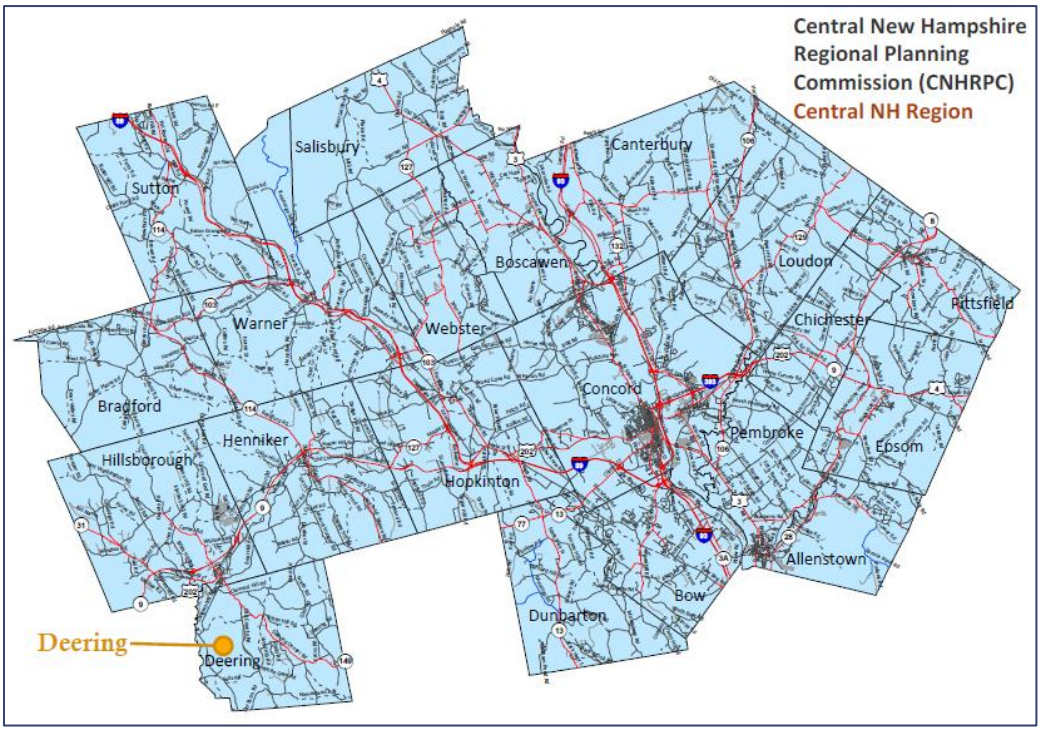
The Town is a voluntary member of the Central New Hampshire Regional Planning Commission. The **19** Towns and **1** City comprising the Central NH Region contain several major rivers and New Hampshire and Interstate highways. The Deering's historically rural identity, commuting difficulty, lack of services, and topographic challenges could ensure a minimal amount of future development within the community.

The **Blackwater River** (Salisbury, Webster, Hopkinton) and the **Warner River** (Bradford, Sutton, Warner, Webster, Hopkinton) flow south into the **Contoocook River**. The **Contoocook River** flows in a north-easterly direction through Hillsborough, Henniker, Hopkinton, Concord and Boscawen until its confluence with the **Merrimack River** in Boscawen/Penacook (Concord). The **Contoocook River** and the **Merrimack River** effectively bisect the region into three sections. The **Soucook River** flows south through Loudon along the Concord/Pembroke border and enters the **Merrimack River**. The **Suncook River** originates in Belknap County, flowing south through Pittsfield, Chichester, Epsom, Pembroke, and Allenstown until it too converges with the **Merrimack River** in Bow/Hooksett.

In the Central NH Region, Interstates 89, 93 and 393 stretch in north, northwest, east, and south directions, meeting in Concord and Bow. Major traffic routes of US 3 flow north-south and US 202 traverses in an east-west direction. Deering can be accessed via NH 149 from the Hillsborough NH 9/US 202 (west-east) corridor. NH 149 runs southeast into Weare. Dozens of NH state highways crisscross the

entire region. A map of the Central NH Region in which Deering is situated, with the region's major routes, is displayed in **Figure 2**.

Figure 2
Deering in the Central NH Region



Source: Central NH Regional Planning Commission

Population and Housing Growth

The latest Deering Master Plan was adopted by the Planning Board in July 2017. The goal for future updates is annual review and revision of a selection of Chapters. Chapters from the *2017 Master Plan* to update include Deering Today (Demographics), Deering Tomorrow (Vision), Implementation, Historical and Cultural Resources, Housing, Natural Features, Community and Recreational Facilities with Utilities, Transportation, Existing and Future Land Use, Regional Concerns. New future chapters to consider, in addition to the updated chapters, could include Economic Development and Energy. The **Hazard Mitigation Plan 2021** could be adopted as an appendix to the *2017 Master Plan* by the vote of the Planning Board. The Master Plan influences the Zoning Ordinance and the Subdivision and Site Plan Review Regulations along with the Capital Improvements Program. These documents are used by local land use boards and staff to guide growth and development of Deering.

POPULATION AND HOUSING TRENDS

The following tables contain the newest consistent data on housing and population growth which depict development trends over time. The **2020** Census figures were not yet available. Shown in **Table 3**, Deering's population and housing boomed during the **1970-1980** decade (**+80%** people, **+136%** homes) followed by another strong decade 1980-1990 (**+64%** people and **+64%** homes). Beginning with the **1990-2000** decade (**+10%** people and **+23%** homes), population and housing trends slowed dramatically. The **2000-2010** decade which included a series of significant natural disasters and an economic recession experienced a sharp decline (**+2%** people and **-0.1%** homes). The estimated **2019** population and housing unit figures, based off the initial **2010** Census, calculated **1,939** people and **949** housing units in **2019**, indicating an even slower growth over this current **2010-2021** decade than the **2000-2010** decade.

Table 3

Overall Population and Housing Growth Trends in Deering, 1970-2019

Growth	Population	Net Change #	Net Change %	Housing Units	Net Change #	Net Change %
1970 Census	578	N/A	0	195	N/A	0
1980 Census	1,041	463	80.1%	461	266	136.4%
1990 Census	1,707	666	64.0%	757	296	64.2%
2000 Census	1,875	168	9.8%	933	176	23.2%
2010 Census	1,912	37	2.0%	932	-1	-0.1%
Total Change from 1970 – 2010 Census	---	**1,334**	**230.8%**	---	**737**	**377.9%**
2019 Population & Housing Estimates*	1,939	27	1.4%	949	17	1.8%
49 Years of Increase	**+1,361 People**			**+754 Housing Units**		

*Sources: 1970-1990 US Census CPH-2-31 Table 9 Population and Housing Unit Counts; US Census 2000 & 2010 Data *includes all housing units, including vacant and seasonal and 2019 Group Quarters. NH Office of Strategic Initiatives (NHOSI) 2019 Population Estimates, Jan 2020, NHOSI Current Estimates and Housing Trends 2010-2019, Dec 2020*

Population and Housing Data

In total, the Town has grown by **+1,939** people and **+754** homes by confirmed Census counts from **1970-2010** and by estimates through **2019**. In **Table 3**, Deering's confirmed **2010** Census population of **1,912** shows an overall increase of about **+231%** in population over the previous four decades, up from only **578** people in **1970**. The confirmed **2010** Census housing units (**932**) displays an overall increase of about **+378%** (**737** units) since **1970**. After an early growth boom between **1970-1980**, the population and housing increases tapered off significantly. Between **2000-2010**, the Town's population increased by **+2%** (**+37** people) while during the same time housing units decreased by **-0.01%** (**-1** unit).

Overall growth trends seem to be slowly increasing over the current partial **2010-2019** decade, with a projected population growth of **+1.5%** (**+27** people) and **+1.8%** housing units growth (**+17** units) to date. Over the nearly five decade timeframe of **1970-2019**, this is by far the smallest amount of growth seen in Deering. The overall growth rate by percentage in Deering since **1970** is similar to other than the small-sized population communities in the Central NH region.

Over the **1970-2019** period, the number of people living in each housing unit has declined steadily from its high of **3.0** people per housing unit in **1970** to its new low of **2.0** people per housing unit in **2019**. Overall, these numbers are similar in comparison to other small-sized population Central NH Region towns and likely indicates an aging population living together or Group Quarters cohabitation.

Population Density

Another good measurement of community population and housing change is population density, or how many people live in a square mile of land area. Although Deering encompasses a total land area of **30.6** square miles (**19,571** acres), an additional **0.65** square miles (**417** acres) is water area (**31.2** total square miles). Between **1970-2019**, the data for population density is displayed in **Table 4**.

Table 4

Population Density in Deering, 1970-2019

Municipality Size		Persons per Square Mile					
Land Acreage	Land Area in Square Miles	1970	1980	1990	2000	2010	2019
19,571	30.6	19	34	56	61	62	63

*Sources: **Table 3**, NH Office of Strategic Initiatives GIS acreage calculations, 2013*

From **Table 4**, the overall population density between **1970** and **2019** increased **+235%,** from **19** people per square mile in **1970** to an estimated high of **63** people per square mile in **2019**. Deering is a geographically small-sized community in the Central NH Region at **31.2** square miles (including water acreage). Deering has a comparatively small number of people per square mile as compared to both other small-sized Central NH Region communities and communities statewide.

NEW CONSTRUCTION

Table 5 displays Deering's estimated new home and new building construction permits issued by the Building Inspector between **2015-2020**. During this **6**-year period, a total of **21** new construction permits for homes and housing units have been issued.

Table 5
New Construction Permits Issued by Building Type, 2015-2020

Building Type	2015	2016	2017	2018	2019	2020	6-Year Totals
Single Family Homes	3	2	2	6	1	7	**21**
Multi-family Homes	0	0	0	0	0	0	**0**
Manufactured Homes	-1	0	1	0	0	0	**0**
Non-Residential Buildings	--	--	--	--	--	--	**0**
Totals	**2**	**2**	**3**	**6**	**1**	**7**	**21**

Source: Source: 'NHOSI Current Estimates and Trends in Housing Supply, 2010-2019, 12-20, Town Report 2020

From Table 5, **21** permits were issued for new single family homes, with **0** permits for new multi-family homes, over the last **6** years. While **1** new construction permit for manufactured homes was issued during the period, **-1** manufactured home permit was rescinded, with a net of **0** permits. This period was not active for the construction of new non-residential buildings. The most active year was **2020** when a total of **7** new single family home permits were issued, while **2019** had the fewest number of overall permits, totaling **1** new single family housing permit.

It is important to note that the number of permits issued does not necessarily equate to buildings constructed. When using these figures, compared to most similar-sized Central NH region communities, Deering had less construction during **2015-2020**.

Land Use and Zoning

According to NH Office of Strategic Initiative's **2013** geographic information system (GIS) calculations, Deering has a total land area of **19,571** acres, or **3,065** square land miles. An additional **417** acres (about **0.65** square miles) is water area, to total **19,988** Town acreage. The GIS land acreage figure is about comparable to the most recent **MS-1 2020** assessing reporting calculation of **19,434** total acres for the Town. Certain acreages are often posted in more than one land use category for taxation purposes, and certain other land acreage is not displayed on MS-1 reports to the NH Department of Revenue Administration. Reviewing the assessing information closely should clarify the answer as to why this discrepancy exists. Small differences between the actual taxable land calculations from the assessing records and the acreage from the basic GIS calculations are often found and are not unusual.

For New Hampshire and specifically the Central NH Region, Deering is considered a geographically small-sized community in terms of land area and contains smaller than usual population and housing figures. Deering's proportion of residential land is smaller than most towns in the Central NH Region. The Town of Deering is highly rural, forested, has little commercial development but the Hawthorne-Feather Airpark, and contains little easily developable residential land to be built upon in the future.

LAND USE TYPES AND ACREAGE

Table 6 provides a snapshot of the Town's **2020** land use acreage from the Town's MS-1 reporting. Forested land use, both with and without stewardship, is the most extensive land use type, comprising **62.4%** of the Town's land area. Residential land use at **19.7%** is the next highest, followed by Wet (**6.4%**), then Farm Land (**4.3%**). The smallest land uses in **2020** were Exempt (**3.3%**), Unproductive (**1.5%**), Residential Vacant (**1.3%**), and Commercial (**1.0%**), the smallest land use in Deering.

Table 6
Land Use Acreage, 2020

Land Use Category 2020	Acres	% of Town
Residential	3,830	**19.7%**
Residential Vacant	260	**1.3%**
Commercial Improved	204	**1.0%**
Exempt	634	**3.3%**
Farm Land	835	**4.3%**
Forest Land	7,623	**39.2%**
Forest Land with Stewardship	4,515	**23.2%**
Unproductive	289	**1.5%**
Wet	1,244	**6.4%**
Total	**19,434**	**100.0%**

Source: Deering MS-1 December 2020, Assessing Database

DEERING ZONING

The perspective of the Town's Zoning Districts offers another way to view how the land is utilized within Deering in **Table 7**. Several tables of dimensional and density regulations pertaining to water and septic, lot frontages, setbacks, buffers and lot sizes, etc. are available within the Zoning Ordinance. The ordinance includes a table of uses for each district, indicating what types of facilities are permitted.

Table 7

Deering Zoning Districts, 2021

Zoning District
Agriculture/Residential
Airport Zoning
Zoning Overlay District
Historic District Overlay
National Floodplain Development Overlay
Shoreland Protection Overlay
Aquifer Protection Overlay
Watershed Protection Overlay
Other Zoning Ordinances pertaining to use of land
Open Space Subdivision
Growth Management
Large Wind Energy Systems
Wetlands
Airport Zoning

Source: Town of Deering Zoning Ordinance, March 2021

The overlay districts are superimposed upon the zoning districts so additional regulations shall apply. For any conflicting regulation, the more restrictive shall apply. The Zoning Ordinance has sections amended every year at the annual March Town Meeting and is used and applied by the Land Use Department, Building Inspector and Planning Board.

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3 GOALS AND OBJECTIVES

The overall purpose of this Plan is to reduce future losses to life and property from potential hazard events by identifying appropriate **Actions** to implement during the five-year span of this Plan.

Inspired by early ***State of New Hampshire Hazard Mitigation Plans***, the following Deering **Goals** were initially developed in the previous **Deering Hazard Mitigation Plans** and thus were reviewed and updated as applicable by the Hazard Mitigation Committee during a public meeting for the **2021 Plan**. While the hazard incidents have remained essentially the same as from the **2015 Plan** with a few disaster additions over the course of the last five years, it was important to reassess the continued relevancy of **Goals** and **Objectives** to influence the development of the best and most relevant hazard mitigation Actions. Lastly, with the most recent change in hazard types utilized in the ***State of New Hampshire Multi- Hazard Mitigation Plan 2018***, it was necessary to revise some of the main hazard groups for the **General Hazard Mitigation Objectives** identification.

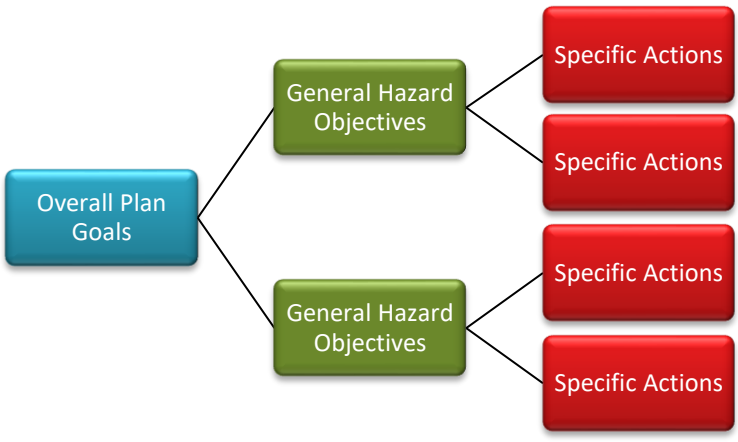
What Are Goals, Objectives and Actions

Goals, Objectives and Actions are used in the Hazard Mitigation Plan to define different levels of meaning. Their relationship is displayed in **Figure 3**.

The overall **Goals** provide a macro-level view of what emergency managers want to accomplish to keep the Town's life, property and infrastructure safer from natural disasters. Statements of overall **Goals**, beginning with "To", describe the desired vision of mitigation and safety for the community. **Goals** enable the development of thoughtful hazard **Objectives** designed to generally fulfill those **Goals**.

Figure 3

Relationship of Goals, Objectives and Actions



HAZARD CATEGORIES

From the **Hazard Identification and Risk Assessment**, the individual natural, technological and human hazards under consideration have been grouped into similar event types for simplification, entitled main hazard categories. **Objectives** begin to narrow down the focus of the overall **Goals** into hazard minimization statements and will use these categories. The main hazard categories of **Earth, Extreme Temperatures**, **Fire**, **Flood**, **Public Health**, **Solar Storms**, **Wind, Winter, Technological,** and **Human** guide the direction of mitigation efforts. These hazard **Objective** statements, beginning with "Minimize", state Town's desired outcome for each hazard category. The **Objectives** support the overall **Goals** by placing a focus on hazard mitigation or minimization. These hazard categories are displayed in **Table 8**.

Table 8

Main Hazard Categories and Specific Hazards

Main Hazard Category	Specific Hazards Included			
EARTH	DROUGHT	EARTHQUAKE		LANDSLIDE Soil, Rockslide or Excavation Areas
EXTREME TEMPERATURES	EXTREME TEMPERATURES Excessive Heat, Heat Wave, Cold or Wind Chill			
FIRE	WILDFIRE Brushfire, Outdoor Fires or Accidental		LIGHTNING	
FLOOD	INLAND FLOODING Rains, Snow Melt, or Flash Floods		RIVER HAZARDS Ice Jams, Scouring, Erosion, Channel Movement or Debris	
PUBLIC HEALTH	PUBLIC HEALTH Infectious Diseases, Air & Water Quality, Biological, Addiction, Arboviral or Tick-borne			
SOLAR STORMS	SOLAR STORMS AND SPACE WEATHER Solar Winds, Geomagnetic Storms (Aurora Borealis), Solar Radiation or Radio Blackout			
WIND	HIGH WIND EVENTS Wind, Thunderstorms, Hail, Downbursts, Tornadoes or Debris		TROPICAL AND POST-TROPICAL CYCLONES Hurricanes, Tropical Storms or Tree Debris	
WINTER	SEVERE WINTER WEATHER Snow, Ice, Blizzard or Nor'Easter		AVALANCHE *appears in 2018 State HMP but is not relevant to Deering's geography and development.*	
TECHNOLOGICAL	AGING INFRASTRUCTURE Bridges, Culverts, Roads, Pipes or Underground Lines	DAM FAILURE Water Overtop, Breach, Beaver, etc.	FIRE Vehicle, Structure, Arson or Conflagration	HAZARDOUS MATERIALS Haz Mat Spills, Brownfields or Trucking
	LONG TERM UTILITY OUTAGE Power, Water, Sewer, Gas, Internet, Communications or Live Wire Danger			
HUMAN	TRANSPORTATION CRASH Vehicle, Airplane, Helicopter, Rail, Interstate,	MASS CASUALTY INCIDENT As a result of any hazard event	TERRORISM/ VIOLENCE Active Shooter, Hostage, Public Harm, Civil	CYBER EVENT Municipal Computer Systems Attack, Cloud Data Breach, Identity

Main Hazard Category	Specific Hazards Included			
	Pedestrian or Bicycle		Disturbance/Unrest, Politically Motivated Attacks, Incendiary Devices, Sabotage or Vandalism	Theft, Phishing, Ransomware or Virus

Source: Deering Hazard Identification and Risk Assessment (HIRA)

Not all of these main natural hazard categories will be important for Deering to develop Plan **Objectives**, and these will be noted at the end of the **3 GOALS AND OBJECTIVES**.

Finally, **Actions** are the specific activities or projects which can be undertaken to accomplish an **Objective**. **Actions** begin with a verb to portray a direction for accomplishment. The **Action** is the target to reach to help mitigate hazards in the community. The completed **Action** fulfills the associated **Objectives**. The Actions will be listed and reviewed later in the **Potential Action Evaluation** and **Mitigation Action Plan** tables.

Overall Hazard Mitigation Plan Goals

The following **3** Goals for the **Hazard Mitigation Plan 2021** were developed by the Hazard Mitigation Committee as the vision for the community with respect to the declared disaster declarations, general hazard events, seasonal weather events and changing climate patterns resulting in unexpected events. Collectively, the **Goals** guided the formulation of **Objectives** for each of the main hazard categories. These **Goals** were revised from the **2015 Plan** to emphasize hazard mitigation instead of preparedness, response and recovery which are covered in the ***Emergency Operations Plan***. The **Hazard Mitigation Goals** are displayed in **Figure 4**.

Figure 4
Hazard Mitigation GOALS

1. **To reduce the risk of injury and the loss of life in the Town from all natural hazards, severe weather, and disasters and from impacts of secondary hazards (human and technological).**
2. **To reduce the risk of potential damages in Town to public and private property, critical facilities, infrastructure, historic resources and the natural environment from all natural hazards and disasters.**
3. **To enhance communication with and promote public awareness of and participation in hazard mitigation planning and activities to the Town's residents, Schools, visitors and businesses.**

Source: Deering Hazard Mitigation Committee

General Hazard Mitigation Objectives

Main hazard event categories of **Earth, Extreme Temperatures**, **Fire**, **Flood**, **Public Health**, **Solar Storms**, **Wind, Winter, Technological,** and **Human** are intended to encompass their respective full sub-hazards range described in this Plan. The **General Objectives** are developed by addressing the primary hazard events that could impact Deering. They focus on minimizing or mitigating the hazard events to support the overall **Goals** while driving the direction of **Action** development later in the Plan.

Although human and technological hazards are not natural disasters, many technological hazards are secondary to (are caused by) the natural and weather hazards. Nineteen (**19**) **General Hazard Mitigation Objectives** were crafted for the **Deering Hazard Mitigation Plan 2021** as displayed in **Figure 5**.

Figure 5
Hazard Mitigation OBJECTIVES

EARTH HAZARDS

1. **Minimize the threat of potential landslide or rockslide areas along local roads and excavation areas.**
2. **Engage in public awareness of local earthquake activity and safety precautions.**
3. **Minimize the impact of drought events to agricultural areas, private and municipal wells, and other locations through public awareness.**

EXTREME TEMPERATURE HAZARDS

4. **Minimize damages to life, property, and infrastructure due to temperature fluctuation resulting from climate change, including excessive heat events, heat waves, extreme cold events and wind chill.**

FIRE HAZARDS

5. **Minimize the damages to life, property, and infrastructure, including the conservation properties, from wildfires, brushfires, other outdoor fires, and lightning.**

Hazard Mitigation OBJECTIVES

FLOOD HAZARDS

6. **Minimize the damages to life, property, and infrastructure from floodwaters and floodplains of the Contoocook River, Piscataquog River, Gerini Brook, Dudley Brook, Smith Brook, Patten Brook, Wilkens Brook, and Johnson Brook, Deering Reservoir, Black Fox Pond, Spiller's Bog, Dudley Pond, Clifton Camp Pond, Lily Pond and other brooks, ponds, wetlands, and water bodies in Deering.**
7. **Minimize the damages to life, property, and infrastructure caused by snow-melt and precipitation resulting in erosion and flooded roads; river scouring and ice jams, culvert washouts, dam failures or debris (tree limbs, leafy material/ sediment), beaver dam breakage, etc.**

PUBLIC HEALTH HAZARDS

8. **Minimize the threat or impact of public health events to the public, including close-quarter infectious diseases (coronavirus, influenza, hepatitis, meningitis), air and water quality decline, biological infestations (milfoil, emerald ash borer), arboviral (mosquito) and tick-borne diseases, addiction, etc.**

SOLAR STORMS

9. **Minimize the impact to life, property and infrastructure from solar storms and space weather, including solar winds, geomagnetic storms, solar radiation, and radio blackout.**

WIND HAZARDS

10. **Minimize the damages to life, property and infrastructure from heavy wind events, thunderstorms, hail, downbursts, tornadoes, hurricanes, and tropical storms, including damages caused by resulting tree debris.**

WINTER HAZARDS

11. **Minimize the damages to life, property and infrastructure from winter weather events, including storms, snow, ice and minimize damages from utility failure, blocked transportation routes, and roof collapses.**

Hazard Mitigation OBJECTIVES

HUMAN HAZARDS

12. Minimize the risk of impacts and damages to life, property and infrastructure resulting from transportation crashes and fires involving transport trucks, vehicles, pedestrians, bicycles, airplanes, helicopters, drones, etc., along the Airpark, State roadways (NH 149) and local Deering roads, especially during severe weather events.

13. Minimize the risk of damages to life, property and infrastructure from human terrorism and violence threats, such as active threat incidents, hostage situations, civil disturbance/ riots, politically motivated attacks, incendiary devices, sabotage, vandalism or other public harm.

14. Minimize the risk and impact of mass casualty and any other hazard events to better protect Deering's citizens and guests.

TECHNOLOGICAL HAZARDS

15. Minimize the risk of cyber events, including overall systems takeover, takeover of the Town website, telecommunications rerouting, cloud data breach, phishing, malware, ransomware, virus installation, on Town computer systems to maintain essential operations, and provide education to minimize cyberattack risk to residents and businesses, including identity theft and telephone scams.

16. Minimize the damages from multiple hazards to the aging infrastructure of the community, including bridges, culverts, dams, local roads, lines, and seek to maintain operational efficiency.

17. Minimize the impact to Deering residents from the risks of various utility outages, such as live wire dangers and long-term outages in electrical power, internet and telecommunications services.

18. Minimize the impacts of fire conflagration and explosion, especially near densely populated areas or buildings, from fuel tanks, high tension power lines and vehicles.

19. Minimize the damages to life, property, and infrastructure from hazardous materials exposure, chemical spills, trucking accidents, and radiological materials incidents, including damages, impacts and exposures caused by brownfields sites, leaking underground storage tanks, and occupational sites.

Source: Deering Hazard Mitigation Committee

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4 HAZARD RISK ASSESSMENT

Natural disasters and technological, and human hazards that have occurred in Deering or have the potential to occur in the Town were assessed in a **Hazard Identification Risk Assessment (HIRA)** to determine their **Overall Risk** to the community. The major disasters declarations covering the Central NH Region (Hillsborough County and Merrimack County) were inventoried and additional hazard events occurring in Deering and the surrounding area have been described. FEMA Public Assistance funding to the Town is detailed for each disaster declaration. A review of climate variations is described for the region to provide perspective on how the weather may change over time.

The ***State of New Hampshire Multi-Hazard Mitigation Plan 2018*** recommends that municipalities examine multiple natural hazards, including several new hazards. Two hazards, avalanche and coastal flooding, are not discussed in Deering's Plan because they have no ascertained relevance to the Town. The former Human hazards of Civil Disturbance/ Public Unrest, Sabotage/ Vandalism, and Hostage Situation are absorbed into the **Terrorism/ Violence** hazard category. The opportunity was available to combine several of the former flood-related hazards into the new **Inland Flooding**. Likewise, several former wind-related hazards are compiled within **High Wind**. No natural hazards from the **2015 Plan** have been removed, only placed into other groupings for evaluation. Within the **Hazard Mitigation Plan 2021**, the **14** evaluated natural hazards and the **8** evaluated human or technological hazards have been incorporated under these basic categories, also displayed in **3 GOALS AND OBJECTIVES** **Table 8**:

- **Earth Hazards**
- **Extreme Temperature Hazards**
- **Fire Hazards**
- **Flood Hazards**
- **Public Health Hazards**
- **Solar Storm Hazards**
- **Wind Hazards**
- **Winter Hazards**
- **Human Hazards**
- **Technological Hazards**

Within these basic hazard categories are numerous related subcategories, all of which are detailed in the **Hazard Identification and Risk Assessment (HIRA).** This Assessment provides a measure of **Frequency (Probability of Occurrence)**, **Location Area**, **Severity of Impact to the Town**, **Hazard Magnitude**, and **Overall Risk** for each hazard in a numerical format as determined by the Hazard Mitigation Committee. Scale definitions and the process to define hazards are discussed.

Many of these examined hazards discussed may pose little threat to the Town. The Hazard Mitigation Committee wanted to acknowledge their possibility as opposed to simply focusing on a handful of top hazards which will certainly occur in the community. Using this broad vision allows Deering to contemplate the impact of a variety of hazards and to develop mitigation actions and design emergency planning programs as appropriate. Only the most predominant hazards, or even multiple hazards, will

have mitigation actions developed to try to reduce the hazards' impact. These are later discussed in **Potential Mitigation Actions** and prioritized in the **Mitigation Action Plan**.

Hazard Identification and Risk Assessment (HIRA) Ratings

Twenty-two (**22**) natural, technological, and human hazards are evaluated within this Plan. The **14** natural hazards are ranked within in the **Hazard Identification Risk Assessment**. Some hazards may be more likely to occur in the community than others based on past events and current conditions, and some hazards may have a greater impact than other hazards. How vulnerable Deering could be to natural hazards can be measured in terms of **Overall Risk**.

The location of where each hazard has occurred either in the past or may be prone to future hazard occurrences is noted in the **Hazard Locations in Town** column.

Knowing where events may be likely to occur, the **2021** Hazard Mitigation Committee examined each potential hazard for its **Probability of Occurrence in 10 Years** and its potential **Severity of Impact to the Town** affecting people, services/infrastructure and property based on past personal recollections and community hazard trends to determine the **Overall Risk** to the community.

HIRA RATINGS EXPLANATION

The Committee identified each hazard's **Probability of Occurrence in 10 Years** score on a **1-2-3-4** scale from **Unlikely/1** (**0-25%** chance of occurring in **10** years, which is two **Hazard Mitigation Plan** cycles) to **Highly Likely/4** (**76-100%** chance in **10** years) as shown below.

	Probability of Occurrence in 10 Years	
1	Unlikely	0 - 25% chance
2	Possible	25 - 50% chance
3	Likely	51 - 75% chance
4	Highly Likely	76 - 100% chance

The Committee determined the likely **Severity of Impact to the Town** of an event based on a **1-2-3-4** scale for **3 Impact** characteristics – Human Injuries, the length of time Essential Services/Infrastructure are shut down and resulting Property Damage or Economic Impact. Not all of these characteristics must be expected because each hazard differs. The scale runs from **Limited/1** to **Catastrophic/4** and the more specific definitions are described below.

The **Probability of Occurrence in 10 Years** score was multiplied by the average of each **Severity of Impact to the Town** (Human Injury, Essential Services or Infrastructure and Property Damage or Economic Impact) score to obtain the **Overall Risk** score.

The technological and human hazards were not scored to ensure the natural hazards retained the focus of the **Hazard Mitigation Plan Update 2021.** However, **Dam Failure** was also rated because of its close correlation to **Flooding**.

Severity of Impact to the Town

1	**Limited**	**Human:** Injuries treatable with first aid. **Essential Services/Infrastructure:** Minor "quality of life disturbance; Shutdown for 3 days or less. **Property Damage or Economic Impact:** Less than 10%.
2	**Significant**	**Human:** Significant injuries or illnesses result in no permanent disability. **Essential Services/Infrastructure:** Shutdown for up to 2 weeks. **Property Damage or Economic Impact:** 10% to 25%.
3	**Critical**	**Human:** Significant injuries or illnesses result in permanent disability. **Essential Services/Infrastructure:** Complete shutdown for at least 2 weeks. **Property Damage or Economic Impact:** 25% to 50%.
4	**Catastrophic**	**Human:** Death or multiple deaths. **Essential Services/Infrastructure:** Complete shutdown for 30 days or more. **Property Damage or Economic Impact:** Greater than 50%.

Concern Summary of HIRA Scores

A summarization of the scores is provided to ascertain at a glance the ***Probability of Occurrence***, ***Severity of Impact***, and ***Overall Risk*** using a **HIGH**, **MEDIUM** or **LOW Concern** designation for the numeric results. This summarization is also utilized in the following the **Description and Magnitude of Hazard Events** section.

Numeric of Probability and Severity	CONCERN SUMMARY	Numeric of Overall Risk Score
1	LOW	1 – 4
2	MEDIUM	5 - 7
3	HIGH	8 - 11
4	HIGH	12 - 16

OVERALL RISK ASSESSMENT SCORES

The highest possible **Overall Risk** score a natural hazard could be ranked using this **Hazard Identification Risk Assessment (HIRA)** system is **16** while the lowest score a hazard could be ranked is **1**. The **Overall Risk** numeric score is one which can help the community weigh the hazards against one another to determine which hazards are most detrimental to the community and which hazards should have the most Actions developed to try to mitigate those hazards. The **Overall Risk** is calculated simply by adding the two scores of **Probability of Occurrence in 10 Years** and **Severity of Impact to the Town**.

Out of the **14** ranked natural hazards, Deering's highest ranking hazards scored an **Overall Risk** between **10.7** – **8.0** (out of a possible score of **16**), displayed with calculated decimals in **Table 9**.

Table 9

Highest Overall Risk Hazards Scored in Deering

Hazard Event	Overall Risk 1 - 16	CONCERN	Hazard Events in the Last 5 Years? (See Table 12)
Severe Winter Weather	**10.7**	**HIGH**	**YES**
Drought **Inland Flooding** **Public Health** **Wildfire Events**	**9.3**	**HIGH**	**YES** **YES** **YES** **YES**
Extreme Temperatures	**8.0**	**HIGH**	**YES**
Dam Failure **Lightning** **River Hazards** **Tropical and Post Tropical Cyclones**	**6.7**	**MEDIUM**	**YES** **YES** **YES** **NO**
High Wind Events **Solar Storms and Space Weather**	**5.3**	**MEDIUM**	**YES** **NO**
Earthquake	**4.0**	**LOW**	**NO**
Landslide	**1.0**	**LOW**	**NO**

HAZARD IDENTIFICATION AND RISK ASSESSMENT RATINGS

Included with the **Table 10** **Hazard Identification Risk Assessment (HIRA)** is whether each hazard event occurred within the last **5** years in Deering. This is indicated by either ***Events(s) Within Last 5 Years*** or ***NO Event(s) Within Last 5 Years*** beneath each *Hazard Category*. Dates and descriptions of the new hazard impacts within the last **5** years are provided in a later table, **Table 12** **Local and Area Hazard Event and Disaster History (Sequential).** The existing potential hazard locations, or those locations in Deering which could be currently at present day susceptible to each of the hazard categories, are provided within **Table 10** since these locations contribute to the ***Severity of Impact*** ratings determinations of the Hazard Mitigation Committee. The **HIGH**, **MEDIUM** or **LOW Concern** summary for each rated natural hazard is provided within the ***Overall Risk*** column.

Table 10

Hazard Identification and Risk Assessment (HIRA)

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town *See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)*	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
DAM FAILURE Water Overtop, Breach, Beaver, etc. *Event(s) Within Last 5 Years*	✦ **1 High Hazard (H) dam**: 062.05 Deering Reservoir Dam (State) on Piscataquog River. **3 Low (L) Hazard dams**: 062.01 Dudley Pond Dam (Private) on Dudley Brook, 062.07 Oscar Young Dam (Private) on Gerini Brook, and 062.12 Black Fox Pond Dam (Private - Audubon) on Smith Brook. ✦ **Dams** in other Towns could have a serious downstream impact should they fail or release too much water. Should the High (H) Hazard Jackman Dam (Franklin Pierce Lake/Contoocook River) fail, or if the Jackman Dam and the downstream Contoocook River Dam in Bennington not coordinate their flows, inundation flooding is expected to occur along the Contoocook River floodplains and adjacent roadways (Long Woods Road, Bennington Depot Road, Second NH Tpke. ✦ Other recreation ponds, **Non-Menace dams** and regular beaver dams could breach and flood roadways. NM dams are found along a tributary of the Piscataquog River, on the Wildlife Ponds, and Dawson Recreation Pond, all of which are unlikely to flood but still have potential. (See **APPENDIX A** for list). ✦ **Beaver dams** carry a high probability of flooding and potential for breakage. Beaver dams are located throughout Deering, and depending on size and location, could cause significant damage to roads if the natural dams breach.	**4**	1	2	2	**6.7 MEDIUM**
DROUGHT *Event(s) Within Last 5 Years*	✦ **Entire Town, Deering Reservoir.** Areas susceptible to **drought** and dry conditions include farms and orchards, nurseries, and maple sugar operations: Driscoll Hill Farm (Driscoll Rd), PigBery Christmas Tree Farm (Deering Center Rd), 3 Crow Organic Farm – animals (Dickey Hill Rd), Oneill Hill Mini Farm (Dickey Hill Rd), Nazer's Christmas Tree Farm (Mountain View Lane), Dollar Shy Farm – farm stand with goats, pork, eggs, beef (Second NH Tpke), Winter Valley Farm – cows, chickens (Second NH Tpke), and others. ✦ Farm animals, hay fields, produce, vegetable gardens are negatively impacted by drought. When hayfields die off and wells go dry, livestock animals in Town cannot easily be locally fed or watered. Larger farms become economically impacted when their products are unable to grow.	**4**	1	3	3	**9.3 HIGH**

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town *See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)*	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
	✦ Water Supplies: Private water supplies for the entire Town and public water supplies serving 25+ people. ✦ Drought means increased risk of brush fire with dry vegetation (see **Wildfire**). Gravel roads can be affected because Town is unable to grade them when water is low. ✦ Fire ponds/ dry hydrant water supplies can run dangerously low; see **APPENDIX A** for a list of the dry hydrants and large cisterns. When fire ponds or dry hydrants are low, response time increases as the Department needs to draw from the Rivers, brooks, and ponds (see **Inland Flooding**).					
EARTHQUAKE ***NO Event(s) Within Last 5 Years***	✦ **Entire Town.** The Central NH Region is seismically active and **earthquakes** are regularly felt from area epicenters. Locations with high density population or potential gathering sites to evacuate include: Town Hall, Long Woods MHP, Oxbow Campgrounds, Robin Hill Farm, The Wilds Conference Center, His Mansion, NH 149 area. ✦ Damage to utility poles and wires, roadways and infrastructure could be significant. Aboveground poles, underground electric lines, underground telephone lines (Clement Hill Road, Longwoods Road, Holton Crossing Road, Quaker Street, Second NH Turnpike, Fisher Road, Wolf Hill Road) could be susceptible. ✦ Fuel storage locations such as the Hawthorne-Feather Park and other facilities store underground or aboveground fuel tanks which may be vulnerable during a strong earthquake. ✦ Areas with the old, historic buildings are particularly susceptible to **earthquake** including public and private buildings (historic homes), Town Hall, Deering Community Church, Deering Library (Old Schoolhouse), East Deering Schoolhouse, about 13 cemeteries throughout Town.	**4**	1	1	1	**4.0 LOW**
EXTREME TEMPERATURES **Excessive Heat, Heat Wave, or Cold, Wind Chill** ***Event(s) Within Last 5 Years***	✦ **Entire Town.** Groups most susceptible to **extreme heat or cold** include those located at: Deering Alternative School, Town Hall, Long Woods MHP, Hedgehog Mountain Cooperative HMP, Oxbow Campground, Robin Hill Farm, The Wilds Conference Center, His Mansion, and Deering Community Church. ✦ Elder residences or those dwellings without air conditioning are especially vulnerable to high heat events, and could include Long Woods MHP, Hedgehog Mountain Cooperative HMP; residents should be moved to air conditioned (cooling) or warming facilities such as the Town Hall first floor.	**4**	2	2	**2**	**8.0 HIGH**

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town *See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)*	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
	✦ **Extreme cold or heat** may be experienced by recreationalists in remote conservation lands, Deering Lake locations, Fish and Game Club, High Five Conservation Land Trails, John King Forest and Trails, Hedgehog Mountain Trails, NH Audubon Wildlife Sanctuary, and other outdoor places. ✦ Areas vulnerable to effects of **extreme heat or cold** include agriculture and farms (see list above in **Drought**) ✦ See **APPENDIX A** for the list of vulnerable facilities or groups.					
HIGH WIND EVENTS **Wind, Thunderstorms, Hail, Downbursts, Tornadoes, Debris** ***Event(s) Within Last 5 Years***	✦ **Entire Town.** Most **high wind** -vulnerable areas include populated buildings, high-density locations and aboveground utilities serving residents & businesses. ✦ **Utilities** at risk of failing during high wind events include telecomm towers; Eversource electric lines; transmission lines, TDS Telecom switching stations. ✦ **High density developed areas** can have greater impacts from **high winds**: Deering Alternative School, Town Hall, Long Woods MHP, Hedgehog Mountain Cooperative HMP, Oxbow Campground, Robin Hill Farm, The Wilds Conference Center, His Mansion, and Deering Community Church. ✦ **Construction, manufacturing, or industrial-like areas** like the Hawthorne-Feather Airpark, Deering Highway Garage and open land/excavation pits are collectively vulnerable to the effects of **high wind** events. ✦ Downbursts are occurring with greater regularity. The Town's **highest elevation points** (see ***Map 1 Potential Hazards***) may experience the greatest **high wind** impacts, including the steep slopes and hillsides (Hedgehog Mountain, Wolf Hill, Old Clement Hill, Gregg Hill, Tubbs Hill, Bartlett Hill, Codman Hill, others). Many town roads, private roads and Class VI roads (Hedgehog Mountain Rd, Wolf Hill Rd, Clement Hill Rd, Gregg Hill Rd, Tubbs Hill Rd, Bartlett Hill Rd, Codman Hill Rd, others) lead up and through these hills. ✦ Most of the Town is **wooded and forested** and sections would be difficult to access with trees and power lines down on the gravel, hilly residential roads. They could be difficult to access with treefall and power lines down from **high wind** events. Remote neighborhoods include manufactured housing parks and neighborhoods on roads with only one egress.	**4**	1	2	1	**5.3 MEDIUM**

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town *See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)*	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
	✦ **Outdoor recreation spots** such as Fish and Game Club, High Five Conservation Land Trails, John King Forest and Trails, Hedgehog Mountain Forest Trails, NH Audubon Wildlife Sanctuary and current use lands utilize large amounts of tree cover. During **high wind** events, people recreating in the State Park and its trail systems could experience unfavorable conditions during **high wind** events and may require rescue assistance in difficult to access locations. ✦**Agricultural** operations are vulnerable to damage from **High Winds** (see list above in **Drought**) ✦Older, or historical buildings are vulnerable to high wind damage include public and private buildings (historic homes), Town Hall, Deering Community Church, Deering Library (Old Schoolhouse), East Deering Schoolhouse, about 13 cemeteries throughout Town could be especially vulnerable to high winds. ✦ Floods are also possible with severe windstorm events (see **Inland Flooding**).					
INLAND FLOODING **Rains, Snow Melt or Flash Floods** ***Event(s) Within Last 5 Years***	✦ **Entire Town, Floodplains of the Contoocook River and Piscataquog River River**. Major watercourses include the Contoocook River, Piscataquog River, Dudley Brook, Gerini Brook, Smith Brook, Patten Brook, Wilkens Brook, and Johnson Brook are the most prominent waters flowing in Town. Major waterbodies include Deering Reservoir (Deering Lake), Dudley Pond, Clifton Camp Pond, and Black Fox Pond which are among the main standing bodies of water. ✦ Flooding could occur from breached **Dams** within and connected to Deering: High Hazard 062.05 Deering Reservoir Dam (Piscataquog River) & Low (L) Hazard dams: 062.01 Dudley Pond Dam (Dudley Brook), 062.07 Oscar Young Dam (Gerini Brook), and 062.12 Black Fox Pond Dam (Smith Brook). Other recreation ponds, Non-Menace dams and regular beaver dams can breach and flood roadways. See **Dam Failure** hazard above. ✦ Any of these waters could flood **local roads**, homes, buildings and waterfront properties of Long Woods Road, Bennington Depot Road, Hawthorne-Heather Airpark, Second NH Turnpike, Holton Crossing Road, and the NH 149/Weare Piscataquog River area. ✦ Runoff from roadways or **heavy rain** or **snowmelt** can cause floods and washouts over the Entire Town. Regular **washout locations** have	**4**	1	3	3	**9.3 HIGH**

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town *See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)*	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
	included Abbott's Corner culvert with Dudley Brook, Anna King Forest (area near 2nd NH Turnpike), Area between McAlister Farm and Green's Salvage Yard, Bartlett Hill Road, Bennington Depot Road, Cake Road, Dudley Pond Road, Gerini Brook culvert, Gove Road, Hazel's Pond on Clement Hill Road, Long Woods MHP, Longwoods Road, Mansonville Road culvert going towards Longwoods, McAlister Firehouse, North Road, Pond Road, NH 149 (Piscataquog River), Second (2nd) NH Turnpike, West Deering (low-lying area from Mill Street to the Bennington Town Line). Previous locations of washout were previously repaired. (See also **Aging Infrastructure**) ✦ Roads, bridges, drainage systems and related areas can flood, creating **flooded infrastructure** for many travelers. Although bridge flooding has not yet occurred, the state's NH 149 bridge, Deering Road bridge, Reservoir Road bridge, and Bartlett Hill Road bridge over the Piscataquog River have come close to flooding.					
LANDSLIDE Soil, Rockslide or Excavation Areas *NO Event(s) Within Last 5 Years*	✦ **Slopes greater than 20%,** which is much of the community (see Map 1) including roads with steep ditching or embankments are most vulnerable to **landslide**. The Town has numerous hills over 1,000' in elevation, many of them with roads or trails. ✦ Roads with steep ditching or embankments are most vulnerable to landslide. No roads were identified by the HMC as having landslide vulnerability. (see **Inland Flooding**). Landslide is an uncommon hazard but one that could have devastating effects, including property damage. The Glenn has ravine on 1 side, Class V road, gravel, narrow, curvy. ✦ The known excavation sites in Town (Town sandpit on Hedgehog Mtn Road & the commercial Daniels reclaimed sandpit on Deering Center Rd has no further excavation or selling from piles) may have with the potential of **landslide/ rockslide**. The Town is dotted with old historic, unmapped mines (graphite – Clement Rd, lead-Lead Mine Rd).	**1**	1	1	1	**1.0 LOW**
LIGHTNING *Event(s) Within Last 5 Years*	✦ **Entire Town.** Areas of particular concern to **lightning** include critical facilities, high density areas, high elevations including Hedgehog Mountain, Wolf Hill, Old Clement Hill, Gregg Hill, Tubbs Hill, Bartlett Hill, Codman Hill. ✦ The **Town Center** including Town Hall, Highway Garage, and Deering Community Church are tall	**4**	1	2	2	**6.7 MEDIUM**

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town *See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)*	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
	buildings at the crest of Deering Center Road. (see also **High Wind**). ✦ Numerous **outdoor recreational and gathering** places such as Deering Reservoir, The Wilds, Fish and Game Club, and the various trails on conservation lands could be vulnerable to **lightning**. ✦ Other locations containing **large numbers of people** include Deering Alternative School, Town Hall, Long Woods MHP, Oxbow Campgrounds, Robin Hill Farm, The Wilds Conference Center, His Mansion, NH 149 area. **Lightning** and **Wildfire** and potential conflagration could result in these densely populated areas. ✦ **Businesses** with potentially hazardous materials onsite such as fuel, gasoline, used fluids (various automotive repair shops, Hawthorne-Feather Airpark, salvage yards could each be vulnerable to **lightning** and **fire**. ✦ The Town Highway Garage, Town Hall with Police Department, three Fire Stations and the Transfer Station could be vulnerable to **lightning**. ✦ Outdoor utilities and antennas would have high impacts should **lightning** strike, such as the telecommunications towers, high transmission lines, Eversource electric lines and switching stations. ✦ Old, historic or wooden structures and those structures without **lightning** rods would be more susceptible to damage from a strike than those buildings with the rods. Old wooden buildings at high elevations within forested areas could be vulnerable to **lightning**. ✦ Remote, forested areas, parks, public Town Forests, conservation areas, open recreation fields, points of higher elevation can be dangerous to people and property if struck by **lightning**, including the many conservation lands and trail systems.					
PUBLIC HEALTH Infectious Diseases, Air & Water Quality, Biological, Addiction, Arboviral, or Tick-borne	✦ **Entire Town**. Congregated populations and medical facilities can be more vulnerable to **infectious diseases**: Deering Alternative School, Town Hall, Deering Community Church, Long Woods MHP, Oxbow Campgrounds, Robin Hill Farm, The Wilds Conference Center, His Mansion. ✦ Local stores and eateries increase the risk of exposure to and transfer of **food-borne illness**, causing potential public health concerns. There are none in Deering. ✦ The Town's local Point of Dispensing (POD) is the Weare POD satellite located at the Weare	**4**	3	2	2	**9.3 HIGH**

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town *See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)*	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
Event(s) Within Last 5 Years	Middle School. Deering is a member of the Capital Area Public Health Network. ✦ The many forests, conservation areas, agriculture, wooded areas, and ponds can support **ticks (Tick-borne)** hosting bacterial diseases (Lyme, Anaplasmosis, Leptospirosis, more) and **mosquitos (Arboviral)** can host many bacteria (West Nile, EEE, Equine Infectious Anemia, etc) which transmit diseases. The conservation lands and trail systems attract people, which can also enable disease transmission. Lyme disease rates are increasing according to NH Health WISDOM, with no indication of decline. ✦ Waters and beaches susceptible to **high bacteria** counts in the summer include banks of the Contoocook River and Deering Lake, and any of the Ponds used as public or private beaches. Ponds especially are prone to high cyanobacteria (blue-green algae) counts that are harmful to people, or host e. coli counts from people or wildlife. ✦ Some of the largest sources of local **air pollution** are vehicular traffic of I-89. Air pollution regularly reaches the Central NH region from Canada or the US Midwest.					
RIVER HAZARDS **Ice Jams, Scouring, Erosion, Channel Movement or Debris** *Event(s) Within Last 5 Years*	✦ **Entire Town, Floodplains of the Contoocook River and Piscataquog River River**. Major watercourses include the Contoocook River, Piscataquog River, Dudley Brook, Gerini Brook, Smith Brook, Patten Brook, Wilkens Brook, and Johnson Brook are the most prominent waters flowing in Town. Major waterbodies include Deering Reservoir (Deering Lake), Dudley Pond, Clifton Camp Pond, and Black Fox Pond which are among the main standing bodies of water. ✦ **Erosion** of banks could occur along locations of the Piscataquog River (see ***Map 5 Fluvial Geomorphic Location 2015*** series). The Contoocook River is broad and slow moving in most locations. ✦ **Ice jams** could endanger the dams and nearby facilities and have the potential to recur. The West Deering Bridge is considered to have only a remote chance of an ice jam by the Contoocook River, which is very isolated there at 2nd NH Turnpike. Ice jams can endanger the bridges and travelers. ✦ Floating **debris** down the rivers and brooks can accumulate at bridges and dams.	**4**	1	2	2	**6.7 MEDIUM**

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town *See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)*	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
SEVERE WINTER WEATHER Snow, Ice, Blizzard or Nor'Easter *Event(s) Within Last 5 Years*	✦ **Entire Town.** Particular areas of concern during **winter weather** include high density areas as listed in **High Wind Events**. ✦ Utilities at risk of winter weather include aboveground poles, underground electric lines, underground telephone lines, and the switching station could be susceptible. Telecomm towers as well as Town Department antennas could receive significant impacts from **snow, ice, and blizzards**. ✦ The entire Deering road network is susceptible to winter conditions, including the state roads (NH 149). Local Town roads are also often difficult to travel. Many accidents occur on Deering Center Road and intersections during **storms**. Many local roads and the hilly gravel roads have sharp incline/ decline or cars have trouble traveling the road during winter conditions. ✦ Neighborhoods at higher elevation include the hilly roads which can be difficult to keep clear of **snow and tree fall**. ✦ Much of the Town is wooded and forested with most sections vulnerable to **snow, ice effects and power failure**. Homes would be difficult to access with trees and power lines down on the gravel, hilly residential roads. They could be difficult to access with treefall and power lines down from **winter storm** events. Remote housing could become isolated by treefall, especially those with only one egress. The manufactured housing parks have homes less capable of withstanding snowload. ✦ These roads and especially the one-egress roads are often blocked by fallen **trees or powerlines**, and residents cannot access their homes or leave their homes until the road is clear. ✦ Local government operations in the Deering Town Hall, Highway Garage, three Fire Stations and Transfer Station, conduct essential business and make decisions during **winter weather conditions** that keep residents safe. These vital personnel may not live in Town or may have commuting difficulties getting to work to perform these duties.	**4**	2	3	3	**10.7 HIGH**
SOLAR STORMS AND SPACE WEATHER Solar Winds, Geomagnetic Storms (Aurora	✦ **Entire Town.** Should a **solar event** impact the Region, it is likely most electrical and radio systems will become unavailable. The Town's critical facilities must be operational to support residents: Deering Town Hall, Highway Garage, three Fire Stations and Transfer Station, telecomm towers, Deering Alternative School, high tension power lines, telephone switching stations. The	**4**	1	2	1	**5.3 MEDIUM**

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town *See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)*	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
Borealis), Solar Radiation or Radio Blackout *NO Event(s) Within Last 5 Years**	aurora borealis is regularly seen on Mount Kearsarge to the north in Warner and could likely be spotted from nearby Pat's Peak (Henniker), indicating geomagnetic storms are present without noticeable effects. ✦ The Town's technology is most vulnerable to space weather, especially communications systems (internet, cable, cellular) and the electrical grid. Telecommunications Towers on Wolf Hill Road; the Eversource electric lines, and telephone switching stations. Private wells and private septic serve residents. Electricity (powerlines & substations) may be interrupted. ✦ Alternate support or communications systems available in the event of blackout or equipment failure include: Town Department back-up generators and resident generators can temporarily provide power alternatives, and the Capital Area Fire Mutual Aid Dispatch could provide regional communications, and local ham radio operators could provide assistance.					
TROPICAL AND POST-TROPICAL CYCLONES Hurricanes, Tropical Storms or Tree Debris *NO Event(s) Within Last 5 Years*	✦ **Entire Town.** Most Tropical Events would impact vulnerable areas including populated buildings, high-density locations, and utilities serving residents and business, antennas, and telecommunications towers (See listed under Earthquake & High Wind). ✦ Much of the Town is wooded and forested and sections would be difficult to access with trees and power lines down on the residential roads. They could be difficult to access with treefall and power lines down from Tropical events. Many of the remote neighborhoods could be difficult to access when tropical cyclone events occur. (See remote areas listed under High Wind). ✦ Agricultural areas are vulnerable to damage from Tropical Events: (See listed under Drought). ✦ Older, or historical buildings are vulnerable to Tropical wind damage.	**4**	1	2	2	**6.7 MEDIUM**
WILDFIRE Brushfire, Outdoor Fires or Accidental *Event(s) Within Last 5 Years*	✦ **Entire Town.** Locations most susceptible to Wildfire include vulnerable populations and buildings as identified in Lightning. Backyard burning without a permit is often the cause of brushfires throughout Town. The (closest) Mount Kearsarge fire tower in Warner is seasonally staffed. ✦ Remote, forested areas, parks, public Town Forests, conservation areas, open recreation fields, points of higher elevation than surrounding area can be dangerous to people and property during Wildfire.	**4**	1	3	3	**9.3 HIGH**

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town *See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)*	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
	✦ The public conservation lands and trail systems, Robin Hill Farm, His Mansion, Hedgehog Mountain, Deering Reservoir, The Wilds, Fish and Game Club could experience difficult to access **wildfires** on these lands, with people in proximity or possible danger. ✦ Much of the Town is wooded and forested and sections would be difficult to access in case of **wildfire**. There are dozens of backlot or undeveloped parcels in Town which are 50 acres or greater, indicating potentially difficult access by fire apparatus. Many of the high elevation roads could be difficult to evacuate should **wildfire** encroach. ✦ Several extremely large, undeveloped parcels are located around town (See **APPENDIX A**) ✦ Slash and brush are found on the ground on throughout Deering, a highly rural community. As people venture into the woods, potential wildfires are waiting to happen.					
SECONDARY TECHNOLOGICAL AND HUMAN HAZARDS						
AGING INFRASTRUCTURE **Bridges, Culverts, Roads, Pipes or Underground Lines** ***NO Event(s) Within Last 5 Years***	✦ **Entire Town.** Most dams, culverts, and bridges could experience impacts of **aging infrastructure**. Many bridges have been threatened (but not damaged) by high water debris or ice floes, such as West Deering Road bridge at 2nd NH Turnpike, Reservoir Road bridge, and Bartlett Hill Road bridge. ✦ NH 149 Bridge over Piscataquog River is the only state bridge and is not deficient. ✦ Many old or undersized culverts remain vulnerable, although the Highway Department replaces many annually. The main **washout** locations yet to be repaired include . ✦ The Town's roads are becoming more difficult to maintain and rehabilitate because of lack of funding and over many **miles of Town Class V roads**. Town roads with the highest maintenance priority include Second NH Turnpike. Weight limits need to be posted and enforced during the spring. ✦ **Underground electric utilities or telephone lines** are often old and subject to breakage during earthquake or **aging materials**. The Town has no municipal water, sewer or gas. See **Earthquake** for known roads over lines.	**not scored**	not scored	not scored	not scored	not scored

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town *See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)*	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
FIRE **Vehicle, Structure, Arson or Conflagration *Event(s) Within Last 5 Years***	✦**Several locations around Town** are potential sites for explosions and serious fires and numerous other sites that have the potential for prolonged burning. They include above ground fuel tanks, high tension power lines, Hawthorne-Feather Airpark, areas away from fire ponds or dry hydrants; vacant buildings, foreclosed homes or seasonal buildings; or buildings in densely populated areas. See **Drought** for an agricultural operation list. ✦ The Deering Lake homes, Deering Alternative School, Long Woods MHP, Oxbow Campground sites, Robin Hill Farm, The Wilds Conference Center, His Mansion, and other higher density areas could be subject to conflagration (see **Lightning**). ✦ Deering is home to very few commercial or industrial activities, mills, excavation, auto repair businesses and other flammable activities. School laboratories and facilities could catch fire through occupational event, accident, or arson. Other businesses could be vulnerable to fire and may utilize hazardous materials in their work. The Hawthorne-Feather Airpark contains perhaps the greatest risk for fire, crash, or explosion. See **APPENDIX A** for hazardous materials and business lists. ✦ Vehicle fires could occur anywhere, in parking lots, driveways, or roadways. NH 149 from Hillsborough to Weare is a highly traveled route as is Second NH Turnpike. The Deering Fire and Rescue Department has three Fire Stations placed around the community to responds to crashes. See also **APPENDIX A**. ✦ Perhaps the greatest concern for human-started fires is the forested and remote public trails and conservation lands such as those on Hedgehog Mountain which would be difficult for response. See **Lightning** and **High Wind** for other remote area lists.	**not scored**	not scored	not scored	not scored	not scored
HAZARDOUS MATERIALS **Haz Mat Spills, Brownfields or Trucking *Event(s) Within Last 5 Years***	✦ **Most likely** routes of vehicular traffic transport of **hazardous materials** include NH 149/Deering Center Road from Hillsborough to Weare and Long Woods Road/ Second NH Turnpike from Hillsborough to Francestown. Other local roads could have serious transportation accidents involving hazardous materials. ✦ Vulnerable areas for targeted **mass evacuation** from **hazardous materials spills** include Deering Lake, Town Hall, Long Woods MHP, Oxbow Campground sites, Robin Hill Farm, The Wilds	**not scored**	not scored	not scored	not scored	not scored

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town *See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)*	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
	Conference Center, His Mansion, Deering Alternative School, and residences around the Hawthorne-Feather Airpark. ✦ The largest or most dangerous stationary sites that store and/or handle haz mat on site (fertilizer, pesticides, fuel, etc) are listed in **APPENDIX A**. but include the Hawthorne-Feather Airpark (aviation fuel) and spills in Deering Lake. See also list of agriculture operations in **Drought**. **Occupational stationary haz mat** sites where spills could occur include schools, manufacturing, industry, of which there are few in Town. Key sites would include excavation sites, automotive businesses, construction businesses, and the Highway Department and Transfer Station. ✦ Possible **brownfields** sites to be aware of include any old mill sites along the Contoocook River and parcels with suspected old soil contamination with Class A sludge (Thomas parcels on Tubbs Hill/Old Rangeway Roads). There are also known to be properties with "illegal" long term, non-permitted junkyard use or salvage yard use occurring.					
LONG TERM UTILITY OUTAGE Power, Water, Sewer, Gas, Internet, Communications or Live Wire Danger *Event(s) Within Last 5 Years*	✦ **Entire Town.** Electrical outages are often town wide, but high density areas or vulnerable populations are of greatest concern: Long Woods MHP, Hedgehog Mountain Cooperative MHP, Oxbow Campground sites, Robin Hill Farm, His Mansion, Deering Alternative School. ✦ Power outages (Eversource) may last for several days in the most remote areas before service is restored from a large event. Systems failures could affect Town businesses and local government on an isolated scale. The internet Xfinity/Comcast or TDS enables alternative communication options, and many rely on VOIP for telephones. ✦ Communications failure would be worse if it occurred during a holiday or inhibited emergency dispatch and EOC operations. Some Town radios are interoperable, and they are used in more than one location. The single telecommunications towers located on Wolf Hill contains CAFMAC, County, State, and federal repeaters. Local antennas are located on Town Department buildings. ✦ The Town is serviced by the Capital Area Mutual Aid Fire Compact which handles all the Police, emergency medical service, and Fire dispatching. They have redundant capabilities and are regularly upgrading their systems.	**not scored**	not scored	not scored	not scored	not scored

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town *See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)*	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
	✦ Other utility systems, such as LP gas, generators, oil tanks, wood fuel and more, are used by residents as both back up and primary heating. See also **Aging Infrastructure** and **APPENDIX A**. ✦ Much of the Town is wooded and forested and sections would be difficult to access with excessive power lines down. See also **High Wind** for remote housing developments with large numbers of homes. ✦ The agricultural farms (feeding or dairy animals) should be monitored (See **Drought**) during extended utility outage.					
TRANSPORTATION CRASH **Vehicle, Airplane, Helicopter, Rail, Interstate, Pedestrian or Bicycle** ***Event(s) Within Last 5 Years***	✦ **NH 149 and Long Woods Road/Second NH Turnpike** are the main highways through Town and have the most reported **crashes**. Rerouting traffic can be dangerous resulting in other potentially severe **crashes**. Some of the more frequent crash locations occur along hilly intersections. ✦ **Crashes** also occur throughout the community at rural intersections, along hills and s-curves. All gravel roads have a 25 mph speed limit. Winter and summer months are of particular concern, especially with the extra summer traffic generated by Deering Lake. See also **MAPS 1-4**. ✦ **Crashes** increase during hazard events, winter weather, spring snow melt (washouts) and windstorms. Few areas in Town are suitable for safe bicycle and pedestrians use other than the trail system and would have the potential for serious crashes. ✦ The Town has alternative **crash** potential, such as air traffic. The Hawthorne-Feather Airpark is a private small airport with an average of 72 flights per week and a hangar with 15 single engine airplanes. The Manchester-Boston Regional Airport is nearby and supports large-engine plane traffic which have the potential of crashing in nearby communities. Other small nearby airports like Concord Municipal Airport and Concord's NH National Guard have regular small plane and helicopter traffic. Deering is in the flightpath of all of these facilities. ✦ Increased use of personal drones creates additional hazard for those on the ground.	**not scored**	not scored	not scored	not scored	not scored
MASS CASUALTY INCIDENT **As a result of**	✦ **Unlikely, but Possible.** A **mass casualty** event could occur as a possible secondary effect of a large scale event, such as **Terrorism/Violence**, **Public Health**, or **High Wind** Event. These could occur throughout the Town. A mass casualty event	**not scored**	not scored	not scored	not scored	not scored

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town *See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)*	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
any hazard event *NO Event(s) Within Last 5 Years*	could have municipal response staged at the Hawthorne-Feather airpark. ✦ Any **mass casualty** event could be localized to a certain event. Locations and occasions of potential public unrest include: Town Hall, Deering Alternative School, Fish and Game Club, Town & School Meetings, voting day, local board meetings, during visits from political candidates, large events such as Old Home Day, Veteran's Parade, School sports events, Fall Foliage Festival, political rallies. ✦ Deering is a member of the Capital Area Public Health Network (CAPHN) and other regional emergency groups. The Town's local primary shelter with CAPHN is located at the Hillsborough-Deering Middle School in Hillsborough with the American Red Cross and secondary informal shelter at Deering Town Hall. Deering Fire and Rescue could provide EMS and transport to a larger facility such as Concord Hospital in 30 minutes.					
TERRORISM/ VIOLENCE **Active Shooter, Hostage, Public Harm, Civil Disturbance/ Unrest, Politically Motivated Attacks, Incendiary Devices, Sabotage or Vandalism** *Events(s) Within Last 5 Years*	✦ **Possible. Terrorism/ violence** could possibly occur anywhere in **Entire Town** and could result in **mass casualty**. Most susceptible non-municipal sites could include Town Hall, Deering Alternative School, Fish and Game Club, Deering Lake homes, Deering Alternative School, Long Woods MHP, Hedgehog Mountain Cooperative MHP, Oxbow Campground sites, Robin Hill Farm, The Wilds Conference Center, His Mansion, Deering Community Church. ✦ All municipal facilities in Deering, Town Hall with Library and Police Station, the Highway Garage, three Fire & Rescue Stations, Transfer Station, have a risk of **terrorism or violence**. ✦ Private manufacturing or industrial businesses with large quantities of hazardous materials could be possible **terrorism** targets, especially the Hawthorne-Feather Airpark. ✦ **Sabotage** would be most likely to occur at Town, School, State park or governmental facilities to halt operations or computer systems, including the telecomm tower & antennas, switching stations, and the Town Hall computer systems, or the Hawthorne-Feather Airpark facilities. ✦ **Vandalism** could occur at dams, under bridges, wooden covered bridges, telecommunications or tower, cemeteries, vacant buildings, beaver dams, recreation areas, etc.	**not scored**	not scored	not scored	not scored	not scored

Natural, Technological, Human Hazard Categories	Potential/Susceptible (Existing) Hazard Locations in the Town *See also Appendix A. Critical Community and Facility Vulnerability Assessment (CCFVA)*	PROBABILITY of Occurrence in 10 Years	SEVERITY of Impact			OVERALL RISK (1-16)
			Human Injury Impact	Essential Services or Infrastructure Impact	Property Damage or Economic Impact	
	✦ **Hostage and active shooter** situations might most likely occur domestically anywhere in the Town, in municipal buildings, Churches, schools. ✦ Sites of local significance (Deering Community Church, Deering Lake) or other public places could become potential sites of **Terrorism/ Violence**.					
CYBER EVENT **Municipal Computer Systems Attack, Website Overtake, Cloud Data Breach, Telephone Rerouting, Identity Theft, Phishing, Ransomware, Virus or Phone Scams** ***NO Event(s) Within Last 5 Years***	✦ **Entire Town**. Cyberattack could target Town or School websites, computer systems, cloud data systems, archival records, email phishing, etc. Town Hall, Police Department, Fire & Rescue Stations, Transfer Station, Highway Department, Library and Historical Society records would be high-value targets. ✦ Email scams and identity theft are likely regular problems for residents and businesses. Towns often post known attempts on websites to inform residents. The large businesses in Deering (See **APPENDIX A**) would need to be aware of the risks. ✦ The Police Department receives phone calls from residents about internet and email scams and reports them to the appropriate authorities.	**not scored**	not scored	not scored	not scored	not scored

Source: Deering Hazard Mitigation Committee

Central NH Region Major Disaster Declarations, 1973-2021

The Central NH region, which encompasses parts of Merrimack County (**18** communities) and Hillsborough County (**2** communities), has been damaged by **30** presidentially-declared major disasters [DR-] and presidentially-declared emergencies [EM-] in the last **48** years between **1973-2021**.

Although a natural disaster typically befalls multiple counties in New Hampshire, only those presidentially-declared or emergency declarations within either Hillsborough County or Merrimack County were identified in this Plan.

Disaster declarations [DR-] within a county enable the ability to receive Public Assistance (PA) funding and Individual Assistance (IA) funding, Hazard Mitigation Grant Program (HMGP) *plan* funding is typically made available to all communities statewide, and for those towns with an active, approved Hazard Mitigation Plan, HMGP *project* funding becomes available. *Emergency declarations* [EM-] are often proclaimed for counties in New Hampshire to help communities receive funding for less serious hazard events that may have caused more damage in nearby declared declaration [DR-] counties or states. EM- declarations typically open Hazard Mitigation Grant Program (HMGP) plan and project funding for communities with an active hazard mitigation plan.

Over the last **16** years (**2005-2021**), the Central NH region containing communities within Merrimack and Hillsborough Counties experienced **17** presidentially- declared natural major disasters [DR-] or presidentially- declared emergency declarations [EM-] which differ between DR- or EM- depending on which county was declared. The earliest Central NH region declarations spanned **1973** to **2004** (**32** years) and yielded total **13** disasters of both [DR-] and [EM-].

PUBLIC ASSISTANCE GRANT FUNDING

Other than the global COVID-19 pandemic of **2020**- ongoing as the time of the writing of this Plan for which other grant funds were obtained, the last declared disaster in Hillsborough County in which Deering is located was the winter blizzard event in **January 2015** for which Deering applied for and received **$13,519** in federal Public Assistance funding. Details of Central NH region declared disasters and emergency declarations since **1973** and federal funding provided to the Town of Deering are displayed in **Table 11**. Most of these disasters will be described within the following **Past Disasters and Severe Weather Events** section.

GOVERNOR'S OFFICE FOR EMERGENCY RELIEF AND RECOVERY (GOFERR)

The NH Governor's Office for Emergency Relief and Recovery (GOFERR) at https://www.goferr.nh.gov/ provides transparent review and access to the state's CARES Act - Coronavirus Relief Fund allocations for the DR-4516 COVID-19 Pandemic. The US HR 748 Coronavirus Aid, Recovery, and Economic Security (CARES) Act enacted 3/27/20 provided **$1.25b** to the state and is one of several relief bills and funding pots for COVID-19. The GOFERR is making these funds available through various programs. Municipalities, businesses, and individuals can apply to several funding programs through GOEFRR.

Table 11

Central NH Region Major Disaster Declarations, 1973 to 2021

FEMA DR-	Local Disaster Name	Incident Period	FEMA Disaster Name	Includes County*		FEMA Public Assistance (PA) Funding To Deering**
				Merr	Hill	
	TOWN ADD NEW DISASTER ROWS HERE-					
4516	**2021** COVID-19 Pandemic	Apr 3, 2021 – TBD	COVID-19 Novel Coronavirus Pandemic (national, global)	M	H	No PA **$45,761 GOFERR $21,271 First Responder Stipend**
4355	**2017** Oct Wind and Rainstorm	Oct 28-20, **2017**	Severe Storm and Flooding from Tropical Storm Phillippe	M	---	$0
4209	**2015** January Blizzard	Jan 26-28, **2015**	Severe Winter Storm and Snowstorm	---	H	**$13,519**
4105	**2013** February Snowstorm	Feb 8-10, **2013**	Severe Winter Storm and Snowstorm	M	H	**$15,747**
4095 EM-3360	**2012** Hurricane Sandy Emergency	Oct 26-Nov 8, **2012**	Hurricane Sandy	EM- M	EM- H	**$9,770**
4049 EM-3344	**2011** Halloween Snowstorm Emergency	Oct 29-30, **2011**	Severe Storm and Snowstorm	EM- M	H	**$8,897**
4026 EM-3333	**2011** Tropical Storm Irene	Aug 26-Sep 6, **2011**	Tropical Storm Irene	M	EM-H	**$2,964**
1913	**2010** March Flooding & Winds	Mar 14-31, **2010**	Severe Storms and Flooding	M	H	$0
1892	**2010** Winter Storm	Feb 23-Mar 3, **2010**	High Winds, Rain, Snow	M	H	$0
1812	**2008** December Ice Storm	Dec 11-23, **2008**	Severe Winter Storm	M	H	**$42,455**
1799	**2008** September Flood	Sep 6-7, **2008**	Heavy Rains and Floods	M	H	$0
1782	**2008** July Tornado	Jul 24, **2008**	Tornado, Severe Winds, Heavy Rains	M	---	$0
1695	**2007** April Spring Flood	Apr 15-23, **2007**	Severe Storms and Flooding	M	H	**$150,394**
1643	**2006** Mother's Day Flood	May 12-23, **2006**	Severe Storms and Flooding	M	H	**$13,697**
1610	**2005** Columbus Day Flood	Oct 7-18, **2005**	Severe Storms and Flooding	M	H	**$2,300**

FEMA DR-	Local Disaster Name	Incident Period	FEMA Disaster Name	Includes County*		FEMA Public Assistance (PA) Funding To Deering**
				Merr	Hill	
EM-3211	**2005** Snow Emergency	March 11-12, **2005**	Snowstorm	---	EM-H	**$6,061**
EM-3207	**2005** Snow Emergency	Jan 22-23, **2005**	Snowstorm	M	H	**$6,751**
EM-3193	**2003** Snow Emergency	Dec 6-7, **2003**	Snowstorm	M	H	**$8,892**
EM-3177	**2003** Snow Emergency	Feb 17-18, **2003**	Snowstorm	M	H	**$6,667**
EM-3166	**2001** Snow Emergency	Mar 5-7, **2001**	Snowstorm	M	H	**$8,223**
1231	**1998** Flooding	Jun 12-Jul 2, **1998**	Severe Storms and Flooding	M	H	$0
1199	**1998** December Ice Storm	Jan 7-25, **1998**	Ice Storms	M	H	$0
1144	**1996** Storms and Flooding	Oct 20-23, **1996**	Severe Storms and Flooding	M	H	$0
1077	**1995** Flood	Oct 20-Nov 15, **1995**	Storms and Floods	M	---	$0
EM-3101	**1993** Blizzard	Mar 13-17, **1993**	Blizzards, High Winds and Record Snowfall	EM-M	EM-H	$0
917	**1991** Hurricane Bob	Aug 18-20, **1991**	Severe Storm	---	H	$0
876	**1990** Flooding and Severe Storm	Aug 7-11, **1990**	Flooding and Severe Storm	M	H	No data
789	**1987** Storms and Flooding	Mar 30-Apr 11, **1987**	Severe Storms and Flooding	M	H	No data
771	**1986** Storms and Flooding	Jul 29-Aug 10, **1986**	Severe Storms and Flooding	---	H	N/A
399	**1973** Storms and Flooding	Jul 11, **1973**	Severe Storms and Flooding	M	H	No data
Total Public Assistance (PA) FEMA Funding to Deering, 1993-2021** Does not include 2020 GOEFFR & First Responder Stipend $						**$296,338**

Source: http://www.fema.gov/disasters/grid/state/33?field_disaster_type_term_tid_1=All

*M = Hillsborough County (18 towns in CNH region) H = Hillsborough County (2 towns in CNH region)

** *Dollar figures are rounded to the nearest $100 and include only PA and HMGP. PA dataset available at https://www.fema.gov/openfema-dataset-public-assistance-funded-projects-details-v1.*

To help reclaim some of the costs these disasters wrought on town property and infrastructure and for additional staff time, Deering applied for and received FEMA Public Assistance (PA) funds, Categories A-G, a 75% grant and 25% match program for several declared Hillsborough County disasters. These PA funds have been used for overtime wages for Town employees, equipment rentals, snow removal, washout repair, road reconstruction, bridge repair, debris removal, and more.

The database where the Public Assistance funding information resides is available from **1993** to present (**2021**). Deering in Hillsborough County was eligible for reimbursement for up to a total of **23** disasters and emergency declarations. Disaster funding was sought for and received by Deering for **8** of the **14** [DR-] and for **7** of the **8** [EM-] during this period. All funding awarded to Deering appearing in the Public Assistance database between **1993-2015** totals **$296k**. This detail is displayed previously in **Table 11** and is summarized to $100/$1000 in the forthcoming **Table 12** for each disaster.

The most expensive disaster for Deering in terms of FEMA Public Assistance (PA) funds received for recovery was the **2007 April Flood a**fter which Deering received **$150k** for **24** applications for project funding to help repair local Town roads and several bridges. Additional monies for the 2020-2021 COVID-19 funding was provided by the Town and totals **$67k** to date.

Past Disasters and Severe Weather Events

The Town of Deering has been affected by several significant natural disasters within the last decade and applied for and received Public Assistance (PA) funding for many of these events. Severe natural hazard events have been occurring more frequently in Hillsborough County than in the past. While these events on occasion disrupted the flow of the community and isolated residents for days, the disaster impacts were relatively mild as few injuries were reported. FEMA provided Public Assistance funding to the Town for tasks such as cleanup, road repairs, tree and brush cutting, and culvert replacement.

The Hazard Mitigation Committee helped provide anecdotal descriptions of how the recently declared natural disasters or emergency declarations for the Central NH Region affected Deering and its residents. Public Assistance disaster funding opportunities open to communities when a disaster is declared within a county. The Town of Deering applied for and received this funding for several recently declared disasters.

Although New Hampshire experienced more disasters than those shown in **Table 12**, typically only those which occurred as declared disasters [DR-] or emergency declarations [EM-] in the Central NH region (Merrimack and Hillsborough Counties) were described. Sometimes a disaster occurring in a nearby county, such as Sullivan County in proximity to Deering, will be included. Refer to the ***State of New Hampshire Multi-Hazard Mitigation Plan 2018*** for a complete list of disasters which impacted the rest of New Hampshire.

Also identified were numerous past hazard events or severe weather events that occurred locally in the community and within the area that were impactful enough to note in **Table 12 Local and Area Hazard Event and Disaster History (Sequential)**. These past hazard events are listed consecutively with the newest events at the top of the table. If a specific category of event was not recorded in Deering in the last **5** years, this means the Hazard Mitigation Committee did not recall an event of significance since the **2015 Plan**.

COLOR KEY for Table 12:

Declared Disasters (DR-) or Emergency Declaration (EM-) in Hillsborough County or Merrimack County in Central NH Region M= Merrimack County H= Hillsborough County	PA Funding $ Received by Deering	Other Deering Local Hazard Event	Regional Hazard Event with Deering Impacts

Table 12

Local and Area Hazard Event and Disaster History (Sequential)

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
TOWN TO ADD NEW EVENT ROWS HERE								Deering Hazard Mitigation Committee
TOWN TO ADD NEW EVENT ROWS HERE								Deering Hazard Mitigation Committee
Hazard Events 2015-2021 (Since Last Plan)								
								Deering Hazard Mitigation Committee
COVID-19 Pandemic Apr 2021-TBD	**4516 M-H**	**2021**	**Apr 3 – TBD**	No PA **$45,761 GOFERR $21,271 First Responder Stipend**	The NH Governor issued social activities restrictions, minimal public meetings, remote meetings held, social distance practices in April 2020 for all counties. Cases closely tracked by NH Division of Health and Human Services and NH HSEM. The State EOC was activated.	Beginning in March 2021, the EOC activated for coronavirus. The Town follows the Governor's orders. To date nearly 50 people have tested positive in Deering. The Town Hall was closed to the public for several months through Oct 2020. A long period occurred with no meetings, then remote only meetings were held. As of Oct 2020, meetings are held in person, but are socially distanced.	Public Health, Pandemic, Infectious	Deering Hazard Mitigation Committee, CNHRPC, NH HSEM, NH DHHS
Deering Contoocook River Debris Summer 2016-2018-2020	No	2016, 2018	2020	N/A	The Contoocook River flows through Deering from Francestown north to Hillsborough on the western side of Deering.	About every two years (2016, 2018, 2018) - River tree debris floats on the Contoocook River to Hillsborough Jackman dam. Debris gets lodged in shallower sections of the River within Deering, on the side meanders, not suitable for kayak or boating.	Flood, River, Debris, Erosion/ Scouring	Deering Hazard Mitigation Committee, CNHRPC
West Deering Annual Road Flooding Apr 2017-2020	N/A	Apr 2017-	Apr 2020	N/A	N/A, although nearby Bennington likely experiences some flooding on Bennington Depot Road across the Contoocook River.	Bennington Depot Road in the Contoocook River floodplain floods annually (April) due to snow melt and rains. Beaver contribute by habituating near the culvert to cause water overtopping the road (depoplulation has not worked). In three of the past 5 years, Second NH	Flood, River, Winter, Debris, Aging Infrastructure, Biological (beaver), Dam	Deering Hazard Mitigation Committee, CNHRPC

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
						Tpke also experienced flooding due to beaver activity. Water backs up and inundates the gravel roads. People still try to drive through, even move the barriers instead of taking long detours. The culvert was upgraded in 2019. NH FG was called to trap the animals.		
Deering Wildfires and Lightning Strikes 2020	N/A	2020	Year	N/A	N/A	Fires increased during dry weather in 2020. A 2 alarm fire occurred on a large hill 200x200', not much burned. A smaller fire in Nov 2020 spread to a shed. Lots of illegal burns are tended by the Fire Dept. Several over 1/4 acre in size, one on an island (Deering Lake). Fire Dept is dispatched 15-20 times per year for lightning, lots of strikes on trees and poles. Reservoir Road, East Deering Rd, Second NH Tpke, Deering Center Road are hit more frequently.	Wildfire, Fire, Lightning, Drought, Human	Deering Hazard Mitigation Committee, CNHRPC
Deering Drought Impacts Aug 2020	N/A	2020	Aug	N/A	N/A, although drought is a regional issue.	Fire Dept water sources are low and have been depleted. Water supply at the Fire Station itself is low. Fire Dept has added 2 additional tankers to 1st alarm building response as a result of drought, which enables them to be used as local cisterns to fill the pumper trucks or can be brought on scene to the fires. Tankers can be filled in other communities or at the river. Gravel road surfaces are finer (dusty roads) during drought and roads are washed out when it rains instead of percolating in. When cutting brush along roadsides, Depts must take care not to start a fire with equipment (sparks).	Drought, Wildfire, Fire, Lightning, River	Deering Hazard Mitigation Committee, CNHRPC

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
Deering Emerald Ash Borer 2015-2020	N/A	2015-	2020	N/A	N/A, although Emerald Ash Borer is a regional and statewide issue.	Between 2015-2020, the Town lost most of its ash trees to the Emerald Ash Borer. Only a minority have not been infected. Active logging operations identify them. The problem has been increasing over the years.	Health (Biological)	Deering Hazard Mitigation Committee, CNHRPC
Deering Hawthorne-Feather Airpark Aircraft Incident Winter 2019	N/A	2019	Winter	N/A	N/A	In winter 2019, an airplane slid off the runway, but there were no injuries or damages. Fire and Rescue were called to the scene.	Crash, Haz Mat, Wildfire, Mass Casualty, Health (Water Quality)	Deering Hazard Mitigation Committee, CNHRPC
Deering Lake Haz Mat Spill Aug 2019	N/A	2019	Aug	N/A	N/A	In Aug 2019, a boat overturned in Deering Reservoir. Its full fuel tank leaked and left a sheen. Dikes were used with DES help to contain and absorb the spill. The Fire Dept has the materials in each fire truck.	Haz Mat, Health (Water Quality), Crash	Deering Hazard Mitigation Committee, CNHRPC
Severe Storm and Flooding Jul 2019	**4457 --**	**2019**	**Jul 11-12**	**N/A for Deering**	Declared disaster in Grafton County. Within the Central NH Region, it is likely communities experienced local flooding conditions, with wind blowing trees down, causing short power outages. Not a declared disaster in Merrimack or Hillsborough Counties.	**Deering could not apply for or receive PA funding.** The Town had likely experienced hard rains, localized flooding and culverts required cleaning to ensure road washouts did not occur. A few trees may have fallen on roads, but the storm was not particularly notable to Deering.	River, Wind, Storms, Debris, Flood, Utility, Aging Infrastructure	Deering Hazard Mitigation Committee, CNHRPC, NH HSEM
Capital Area Mutual Aid Fire Compact (CAMAFC) Communications Outage Apr 2019	No	2019	Apr 6	N/A	The dispatch center in Concord lost power because a tree fell on Unitil wires. The facility is protected by a large uninterruptible power supply (UPS) that protects computers, telephone & radio equipment. This UPS also is a power conditioner so it is always on, working in the power line entering the building insuring that incoming power is clean and on specification. The City	About 23 communities belong to the CAMARC and were similarly impacted by the radio dispatch outage, including Deering. Deering has not last comms in last 5 years. Redundancy systems are in place- comms batteries for radio. Wolfe Hill Tower backup generator wireless, radio. Verizon is cell provider.	Utility Failure, Communications Failure	Deering Hazard Mitigation Committee, CNHRPC, CAMAFC

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
					of Concord also has a diesel backup generator for power loss, the UPS is running in the incoming line so it powers CAMAFC equipment during the very brief period it takes the generator to start and the transfer switch to transfer. This all worked seamlessly, as it has many time before. CAMAFC ran on the generator without issue but when Unitil reenergized their lines and the generator transfer was switched, the UPS failed. Despite having a backup for the backup, power to equipment was lost, resulting in damage to additional equipment beyond the UPS. On-duty staff immediately started to implement the continuity of operation plan. Lakes Region began dispatching for CAMAFC but the Simulcast equipment at the dispatch center was down. Initially Lakes was dispatching on their antenna sites and the audio was poor and tones were not getting through. CAMAFC was able to get the radio system running again and Lakes Region was then able to dispatch calls over the Simulcast system. CAMAFC then sent 2 dispatchers to Lakes and called others back into the Concord center to work through the problems caused by the outage.			
Canterbury Epicenter Earthquake 2.3M (Mercalli III) Mar 2019	No	2019	Mar 16	N/A	Many local news outlets reported on this quake, which shook communities of Merrimack County at 9:23 PM. This was a widely felt earthquake (Concord, Webster,	Deering does not tend to feel or hear nearby earthquakes because of its topography and distance away from epicenter.	Earthquake, Earth	Deering Hazard Mitigation Committee, CNHRPC, wmur.com, unionleader.com,

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
					Hopkinton, Canterbury, Boscawen, Loudon, and more) although there were no reports of damage. USGS reported the epicenter was at Bryant Brook in Canterbury, just east of the Merrimack River. The depth was 4.2 km.			earthquake.usgs.gov, Hopkinton Dam USACE
Deering Holiday Power Outage Nov 2018	N/A	2018	Nov	N/A	N/A	During Thanksgiving 2018, a vehicle crash caused a 6-hour areal power outage on Glen Road, North Road, Tubbs Hill Road.	Crash, Utility (Power Outage)	Deering Hazard Mitigation Committee, CNHRPC
Regional Thunderstorm, Severe Winds, Tornado and Debris May 2018	No	2018	May 3-5	N/A	All across the northern Central NH region, the evening of May 4 experienced heavy downpours along with strong wind gusts, straight line winds (microbursts) and possible tornadic activity. Many communities suffered significant tree and structure damage. The National Weather Service determined an F-1 tornado blew 36 miles, about 300 yards across, through Bradford, Warner and Webster in the CNHRPC Region after originating in Charlestown (Sullivan County). About 41,000 customers lost power as a result of the storm.	The tornado did not travel through Deering. The winds accompanying this storm likely knocked down trees and power lines, blocked roads, and caused short-term power outages in Town. Downed limbs are common during windstorms and thunderstorms.	Wind, Tornado, Debris, Utility, Power Outage	Deering Hazard Mitigation Committee, CNHRPC, wmur.com, Concord Monitor
Severe Winter Storm and Snowstorm Mar 2018	**4371 --**	**2018**	**Mar 13-14**	**N/A for Deering**	Within the Central NH Region, it is likely communities experienced regular snowstorm conditions, with heavy snow and wind blowing trees and power lines down, causing short power outages. Not a declared disaster in Merrimack or Hillsborough Counties	**Deering could not apply for or receive PA funding.** In March, another Nor'easter threatened to close Town Meeting, but this time the vote went on as scheduled. The Highway Dept likely spent additional time cleaning roads and debris to ensure all could vote. This was not a notable occurrence to Deering.	Winter, Extreme Temps, Wind, Storms, Debris, Utility, Aging Infrastructure	Deering Hazard Mitigation Committee, CNHRPC, NH HSEM
Concord/ Hopkinton Epicenter	No	2018	Mar 7	N/A	A significant 2.4M earthquake was recorded by the USGS in March 2018 a little after	Deering residents reportedly hear few rumbles and do not usually experience the	Earthquake, Earth	Deering Hazard Mitigation Committee,

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
Earthquake 2.4M (Mercalli IV) **Mar 2018**					5:00am. Its epicenter indicated in Concord south of Warner Road at the Hopkinton town line on the Contoocook River at a depth of 3.2km. 90 citizen reports were filed to USGS. Weak to light shaking and a boom was heard as reported by a great number of people in Penacook, Deering, Dunbarton, Boscawen, Hopkinton, Webster, Salisbury, while its greatest intensity was felt in Warner and Concord. From Mar 2018, the Concord area had experienced 9 earthquakes in the past 365 days.	shaking of homes or sounds like a truck idling. No damages have been reported.		Earthquaketrack.com, CNHRPC, concordmonitor.com, earthquake.usgs.gov, Hopkinton Dam USACE
Severe Storm and Flooding **Mar 2018**	**4370** --	**2018**	**Mar 2 - 8**	**N/A for Deering**	Within the Central NH Region, it is likely communities experienced local flooding conditions, with wind blowing trees down, causing short power outages. Not a declared disaster in Merrimack or Hillsborough Counties	**Deering could not apply for or receive PA funding.** The Town likely experienced early spring rains that flooded culverts and caused a few washouts. A past Haz experienced every decade is snowmelt flooding and riverflow dependent on the Bennington & Hillsborough dam releases. McAlister Fire Station property had flooded near the building but did not reach the building or driveways.	River, Wind, Storms, Debris, Flood, Utility, Aging Infrastructure, Dam	Deering Hazard Mitigation Committee, CNHRPC, NH HSEM
Regional Flooding, Ice Storms, Snow Melts and Ice Jams **Jan 2018**	No	2018	Jan 13-23	N/A	During the month of January 2018 with several snowfall and melt periods, the region experienced high snow totals, flooding, and temperature fluctuations. Ice jams were common along the Contoocook and Warner Rivers.	In Jan 2018, Deering experienced lots of rain instead of snow. All 3 Departments deployed, and since staffing levels are low, the Town sometimes had difficulty in responding. Rivers and brooks were at total capacity. In the colder section of town (higher elevation) around Pond Road, North Road, Clement Hill Rd, the ground was frozen and water could not seep. In	River, Flood, Extreme Temp, Winter, Debris, Ice Jam	Deering Hazard Mitigation Committee, CNHRPC, nhpr.org

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
						the warmer section (lower elevation) around Second NH Turnpike and Bennington Depot Road, water soaked into roads, making them difficult to drive along. Roads were closed and barriers and signage erected, but drivers often do not want to take detours and try to drive through after moving the barriers; this usually does not end well for the vehicle or driver.		
Regional CAMAFC Radio Communications Disruptions by Solar Storms 2018-2021	No	2018-	2021	N/A	The Town is a member of the Capital Area Fire Mutual Aid Compact (CAFMAC) of about 23 member communities in 4 counties. Mutual aid is provided and received as needed. Area towns reported 2018-2021 geomagnetic storms affected radio transmissions. Reception has been better since CAFMAC transferred to the SimulCast system and has undergone upgrades. In June 2018, a minor G1 geomagnetic storm contributed to ending the Northeast drought. In late August (26-27) 2018, the aurora borealis was visible across the planet, including in NH at high elevations. This event was classified as a strong G3 geomagnetic storm. In May (16-17) 2021, a G2 moderate geomagnetic storm with aurora borealis was forecast for New Hampshire. From Aug 31- Sep 1 2021, a G2 storm was observed again impacting NH with a positive polarity coronal hole high speed stream influence with solar	Although Deering could have been impacted by solar / geomagnetic storms, it has not yet been affected. Wolfe Hill is the only cell tower and Tubbs Hill is a receiving station for Comcast. Fiber optic is available for many. The Town is a member of CAMAFC.	Solar Storms, Communications Interruption, Utility	Deering Hazard Mitigation Committee, CNHRPC, visibleearth.nasa.gov

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
					wind speeds of >800km/s.			
Deering Indoor Mold Health Hazard **Nov 2017**	No	2017	Nov	N/A	N/A	Possibly a result of the wind and rainstorm of October 2017, in Nov the Highway Dept experienced mold in the roof due to condensation between ceiling and metal roof. The problem was fixed.	Severe Storms, Health (Mold, Air Quality)	Deering Hazard Mitigation Committee, CNHRPC
Severe Windstorm and Flood **Oct 2017**	**4355 M**	**2017**	**Oct 28-30**	**N/A for Deering**	Merrimack and Hillsborough Counties experienced downed trees on powerlines, debris to clean up, and some flooding of drainage catch basins and culverts. The storm impacted northern NH, with 6 counties declared disasters. Power was out for an estimated 270,000 customers.	**Deering did not apply for or receive FEMA Public Assistance funding** for roads & bridges, debris removal, or protective measures. Instead, they handled the storm effects within their Dept budgets. No injuries were reported. Impacts included downed trees and power outages for at least 1-2 days along Tubbs Hill Rd, Glen Rd, Driscoll Hill Rd, Clement Hill Rd and Reservoir Road.	Wind, Storms, Debris, Tropical, Utility, Aging Infrastructure	Deering Hazard Mitigation Committee, CNHRPC
Severe Storms and Flooding **Jul 2017**	**4329 --**	**2017**	**Jul 1-2**	**N/A for Deering**	The entire State, North Country and Central NH region experienced severe storms with rain, wind, lightning, thunder and flooding. **Not** a declared disaster in Merrimack or Hillsborough counties.	**Deering could not apply for or receive federal PA funds.** The Town likely conducted debris clean up along roads but noted the storm was not out of the ordinary.	River, Wind, Storms, Flood, Lightning, Debris	Deering Hazard Mitigation Committee, FEMA CNHRPC, WMUR, NOAA
NH Geomagnetic Storm **May 2017**	No	2017	May	N/A	The aurora borealis (geomagnetic storm) likely reached all of NH although only those with equipment to capture the image likely knew it was occurring. In Warner, the Northern Lights were photographed overlooking Mount Kearsarge. No known effects from the storm.	Deering was likely subject to any potential geomagnetism or solar radiation. Radio communications (Capital Area Mutual Aid Fire Compact and local) interference could have occurred.	Solar Storms, Geomagnetic, Potential Communications failure	Warner Hazard Mitigation Committee, CNHRPC
April Fool's Snowstorm **Apr 2017**	No	2017	Apr 1-2	N/A	A spring snowstorm impacted New England, with 50,000 without power in NH alone and 180,000 in the NE. Massachusetts was buried in nearly 2 feet of snow. The Central NH	Deering may have received heavy snowfall, ice jams, power failures and road washouts because of trees down on roadways, and rapid melting the following the day with warmer	Winter, Extreme Temp Changes, Snow, Utility, Debris, Storms,	Deering Hazard Mitigation Committee, Hopkinton Dam USACE, wmur.com,

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
					Region experienced more snowfall than the rest of the state, with Henniker at 15", Deering and Concord at 13", and Pembroke at 12".	temperatures. Yet the storm was not notable to the Town.	Rain, Flood, Inundation	CNHRPC, USA Today
Severe Snowstorm-Town Meeting Blizzard Mar 2017	**4316 --**	**2017**	**Mar 14-15**	**N/A for Deering**	Many other NH towns had to choose whether to close or not to accommodate the blizzard, which became a legal issue to sort out. **Not** a declared disaster in Merrimack or Hillsborough counties.	**Deering could not apply for or receive federal PA funds.** A state-wide blizzard occurred during Town Meeting, (Election Day Storm).	Winter, Extreme Temp, Snow, Crash	Deering Hazard Mitigation Committee, CNHRPC
Webster Epicenter Earthquake 1.9M (Mercalli III) Feb 2017	No	2017	Feb 27	N/A	Residents of Contoocook, Webster and Warner in Central NH communities also felt this earthquake. Since it occurred overnight, there were fewer reports. The USGS reported its epicenter north of the Blackwater River in the hilly area between Battle Street and Clothespin Bridge Road at a depth of 8.9km.	The USACE registered this earthquake on their Hopkinton Dam monitoring equipment. No damages reported in Deering.	Earthquake, Earth	Deering Hazard Mitigation Committee, Earthquaketrack.com, CNHRPC, earthquake.usgs.gov, Hopkinton Dam USACE
Central NH Region and Deering Excessive Heat 2016-2017	No	2016	-2017	N/A	NH and the Central NH region experienced high heat records throughout 2016 and 2017.	In Deering, higher elevation dug wells likely went dry but the Fire Department was not specifically requested to make water provision. The Library was available for cooling some days.	Extreme Temp, Excessive Heat, Public Health	Deering Hazard Mitigation Committee, CNHRPC
Salisbury Epicenter Triple Earthquakes 1.8M/1.6M/ 1.3M Oct 2016	No	2016	Oct 31	N/A	Epicenters of three quakes in Salisbury occurred a few minutes apart, one 1.8M with a depth of 6.1 km, one with 1.6M with a 5.0km depth, and one with 1.3M with 5.0km depth. Three separate epicenters were located, the 2 first quakes south of West Salisbury Road and the last 1 north of the Blackwater River at Bay Road.	Deering likely felt some rattling from these small earthquakes, with its epicenters only about 20 miles from Town. No damage or injuries reported in Town.	Earth, Earthquake	Deering Hazard Mitigation Committee, Earthquaketrack.com, CNHRPC, earthquake.usgs.gov

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
NH Severe Wind Rain & Thunderstorm **Jul 2016**	No	2016	Jul 23	N/A	The entire region and the State experienced a severe storms with rain, wind, lightning and thunder. A possible microburst was reported. As many as 72,000 customers lost electricity. A similar storm earlier in the week brought several confirmed microbursts and also downed trees.	Deering likely experienced many of these conditions on their gravel roads. Washouts would have resulted along with downed trees and power lines.	Flood, Debris Impacted Infrastructure, Wind, Lightning, Rains, Utility, Power Outage, Washout	Deering Hazard Mitigation Committee Concord Patch, CNHRPC, WMUR, NOAA
Warner Epicenter Earthquake 2.8M (Mercalli IV) **Mar 2016**	No	2017	Mar 21	N/A	Epicenter in Warner on Schoodac Brook just south of I-89, with 2.8 magnitude at a depth of 7.3km. 124 citizen reports made to USGS. Felt in the Central NH Region and most of Merrimack County, light in Hillsborough County. Felt most strongly in Hopkinton, Allenstown, Warner, Webster, Salisbury, Franklin, Bradford, Concord, and Hillsborough. This quake was believed to have snapped one of the underground water lines in the Town of Warner, and people exited buildings onto Main Street wondering what happened.	With the epicenter to north of Deering, residents may have felt this large daytime quake or heard rattles. Rumbles or booms may have been heard and buildings may have rocked. No damage or injuries reported in Town.	Earth, Earthquake	Deering Hazard Mitigation Committee, Earthquakertrack.com, CNHRPC, earthquake.usgs.gov
Deering Opioid Epidemic Public Health **2016-2019**	No	2016-	-2019	N/A	The State experienced effects of the national "opioid crisis"	Increased calls for PD service as result of opioid usage in Town?	Public Health	Deering Hazard Mitigation Committee, CNHRPC
Deering Barn Fire **Circa 2015**	No	2015	Circa	N/A	N/A	Around 2015, a large barn fire occurred after burning weeds. The fire was fed by a gravel access ramp covered by pressure treated wood. The barn fully engulfed, vehicles and antiques lost.	Fire, Wildfire, Human, Drought, Debris	Deering Hazard Mitigation Committee, CNHRPC
Deering Fire on Hedgehog Mountain **Summer 2015**	No	2015	Sum	N/A	N/A	On Hedgehog Mountain fire was started by kids on slash on the ground on SPNHF property (had been informed by Town). This is a remote area along a Class VI road. The Fire Dept arrived using	Fire, Wildfire, Human, Drought, Debris	Deering Hazard Mitigation Committee, CNHRPC

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
						Hillsborough's Army 6-wheel drive tank truck. Had to drive a backhoe to location to fire break the site. Water not close by, had to be brought in. Despite the odds, this 1-2 acre fire was contained quickly.		
Tornado, Severe Thunderstorms Jul 2015	No	2015	Jul 31	N/A	In Warner, NWS confirmed an EF-0 tornado touched down in the evening. It had a maximum wind speed of 75 mph and was 100 yards wide. Town officials said the tornado ripped the roof off a barn, but there were no injuries reported.	The Town seemed to have escaped the brunt of this tornado, although heavy winds could have toppled trees and powerlines. No significant damages were reported.	Wind, Tornado, Debris, Utility	Deering Hazard Mitigation Committee, WMUR, CNHRPC
NH Geomagnetic Storm June 2015	No	2015	Jun	N/A	The aurora borealis (geomagnetic storm) likely reached all of NH although only those with equipment to capture the image likely knew it was occurring. In Warner, the Northern Lights were photographed overlooking Mount Kearsarge. No known effects from the storm.	Deering was likely subject to any potential geomagnetism or solar radiation. Radio communications (CAMAFC or local) interference could have occurred.	Solar Storms, Geomagnetic, Potential Communications failure	Deering & Warner Hazard Mitigation Committees, CNHRPC
Boscawen Epicenter Earthquake 2.3M (Mercalli III) May 2015	No	2015	May 24	N/A	Epicenter in lower Boscawen on Queen Street north of Flaghole Pond with 2.3M at a depth of 5km. 61 citizen reports were made at the USGS.	Boscawen is 40 miles from Deering. No damage or injuries reported in the Town. Nearby, the USACE registered this earthquake on their Hopkinton Dam monitoring equipment.	Earth, Earthquake	Deering Hazard Mitigation Committee Earthquaketrack.com, CNHRPC, earthquake.usgs.gov, Hopkinton Dam USACE
Contoocook Epicenter Earthquake 2.1M Apr 2015	No	2015	Apr 25	N/A	The US Geological Survey recorded the 2.1 magnitude tremor near Contoocook just before 6 AM. It was the second small earthquake in NH in as many days. A 2.3 magnitude earthquake was recorded near Sanbornton early Wednesday morning.	Deering residents may have felt a slight shaking or noise outside. Nearby, the USACE registered this earthquake on their Hopkinton Dam monitoring equipment	Earth, Earthquake	CNHRPC, nhpr.org, Hopkinton Dam USACE
Severe Winter Storm and	**4209 H**	**2015**	**Jan 26-28**	**$13,519**	Predicted at near blizzard conditions, the end of January 2015	**Deering applied for and received $13,515 in FEMA Public Assistance**	Winter, Extreme Temp,	Deering Hazard

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
Snowstorm - January Blizzard 2015					snowstorm's major declaration ended up having a Hillsborough County wide per capita impact of $3.88, making the storm a fairly expensive one at $3.3 million dollars in Public Assistance over three southern NH counties. Snow approached 30" in some areas with heavy snow and 50 mph whiteout wind conditions. The closest reporting weather station, Concord Airport (CON), had accumulated 29" of heavy snow, 50 mph whiteout wind conditions in the region. Not declared in Merrimack County.	**funding** for **protective measures and debris removal.** Predicted at near blizzard conditions, the end of January 2015 snowstorm's Major Declaration ended up having a Hillsborough County wide per capita impact of $3.88, making the storm a fairly expensive one at $3.3 million dollars in Public Assistance over three southern NH counties. Snow approached 30" in some areas with heavy snow and 50 mph whiteout wind conditions.	Utility, Winds, Debris, Snow	Mitigation Committee, CNHRPC, fema.gov, Boston Globe
Town/ Hillsborough County Drought Severe Emergency 2015-2018	No	2015	-2018	N/A	Severe Drought (D2), Moderate Drought (D1) and Abnormally Dry (D0) intensities were found in communities of Merrimack Country and Hillsborough in 2016. The State's counties had been experiencing levels of drought for over a year. The NH DES issued a series of statements and tips for homeowner water conservation. Residents and municipalities had been requested to voluntarily conserve water. Some communities or water precincts enacted water restrictions or bans for certain water usage.	The Severe Drought (D2) conditions caused some problems in Deering, including lower Contoocook & Piscataquog River levels, and dry-up of smaller brooks and fire ponds.	Drought, Extreme Temp, Increased Wildfire Risk	Deering Hazard Mitigation Committee, US Drought Monitor NH, NH DES, CNHRPC
Regional Lyme Disease Epidemic 2015 - 2018	No	2015-	2018	N/A	Likely experienced by other Central NH region communities during the same time period.	Central NH region residents are known to have been subjected to and tested for Lyme Disease; many are positive. Spring is particularly bad. Deering contains rural, forested developments and the conservation lands are used for outdoor recreation. Lyme Disease is not known to	Public Health (Epidemic), Tick-borne	CNHRPC, NH Dept of Environmental Services, Capital Area County Public Health Network, Deering Hazard Mitigation Committee

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
						be a significant local problem.		
Deering Milfoil Infestation 2015-2016	No	2015-	2016	N/A	N/A, but milfoil is invasive and can easily spread between waterbodies if not monitored and mitigated. Lake Massasecum in Bradford contains milfoil.	In 2015 and 2016, Deering Reservoir contained milfoil. Efforts to contain or eradicate the milfoil have included monitoring boat launches every day during the boating season (12 hours) to inspect each boat. An expendable trust fund remains available when needed and a volunteer monitor is available at he public boat launch.	Wildfire, Fire, Debris	Deering Hazard Mitigation Committee, CNHRPC,
Hazard Events 2005-2014								
Deering Lightning Strike at Highway Dept Summer 2014	No	2014	Summer	N/A	N/A	Late Summer 2014, lightning struck the Highway Dept's metal roof and destroyed the electronics in a couple of HD vehicles.	Lightning, Utility, Thunderstorms	Deering Hazard Mitigation Committee, CNHRPC
Regional Thanksgiving Day Snowstorm Nov 2014	No	2014	Nov 27	N/A	Large amount of snowfall fell in a very short period of time ahead of typical seasonal expectations. Power outages were prolific, with a peak of about 200,000 outages, from the Public Service of New Hampshire, Unitil (Concord area), and NH Electric Co-op. Nearby Concord and the towns on the eastern side of the Central NH region accumulated only 6-12" of snow according to PSNH, far less snow than southern and western NH. This was not a presidentially declared disaster in NH.	Deering experienced a large amount of snowfall in a very short period of time ahead of typical seasonal expectations. Power outages were prolific, but those reaching their Thanksgiving Day destinations in Deering often found their meal creatively cooking via more traditional means, such as by wood fire or turkey cooking in a outdoor deep fryer. Nearby Francestown had collected 11 inches of snow by 10:00 AM	Extreme Temp, Winter, Utility, Wind, Ice, Debris Impacted Infrastructure	Deering Hazard Mitigation Committee, Concord Monitor, CNHRPC, Eversource Thanksgiving Nor'easter 2015, PUC After Action Report
Deering Wildfire Apr 2014	No	2014	Apr	N/A	N/A	A two-acre brush acre on Deering Center Road required several forestry units to extinguish.	Wildfire, Fire, Debris	Deering Hazard Mitigation Committee, CNHRPC, *New England Wildfires Facebook 04-14-14*

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
Warner Epicenter Earthquake 2.6M (Mercalli IV) Oct 2013	No	2013	Oct 11	N/A	Epicenter in Warner along Warner River, north of Davisville Exit 7, 2.6 magnitude at a depth of 4.0km. Felt in the Central NH Region/ northern Hillsborough County, most strongly in Hopkinton, Deering, Bradford, Warner, Concord, Salisbury, Franklin. 124 citizen reports made to the USGS.	Deering residents may have heard a sonic boom or felt mild shaking, but typically any impacts are very mild. No injuries or damages reported.	Earthquake, Earth	Deering Hazard Mitigation Committee, CNHRPC, earthquake.usgs.gov
NH Severe Storms, Flooding and Landslide Jun-Jul 2013	**4139 --**	**2013**	**Jun 26 – Jul 3**	**N/A for Deering**	This declared disaster for Grafton, Sullivan and Cheshire Counties included landslides from the heavy rain. Public Assistance (PA) was available for these 3 Counties and Hazard Mitigation Assistance (HMA) became available statewide. Damage per capita was high – Grafton ($39.58), Sullivan ($24.48), and Cheshire ($21.46). Not declared in Merrimack or Hillsborough Counties.	**Deering could not apply for or receive PA funding**. Deering likely experienced heavy rains, road washouts during this event.	Landslide, Storms, Flood, Wind	FEMA, CNHRPC, Deering Hazard Mitigation Committee
Regional and Deering Communications Failure Apr 2013	No	2013	Apr 15	No	The bombing incident occurred in Boston during the Boston Marathon. Its effects were felt throughout New England and the country.	On Apr 15 after the Boston Marathon bombing, some Deering callers likely could not communicate because the lines and towers were overwhelmed. No local carriers were operational.	Terrorism/ Violence, Communications Failure	Regional Hazard Mitigation Committees, CNHRPC
Severe Winter Storm and Snowstorm - Winter Storm Feb 2013	**4105 M-H**	**2013**	**Feb 8-10**	**$15,747**	Winter Storm FEMA-3360-DR had blizzard conditions with wind gust of 50-60 MPH and over 20 inches snow fell on much of New Hampshire and the New England area. Disaster declarations received for emergency protective measures in eight counties of the State, including Merrimack and Hillsborough.	**Deering applied for and received $15,747 in FEMA Public Assistance funding** for snow removal. No specific recollection for Deering problems was available for this storm, although it was acknowledged to have affected the Town.	Winter, Extreme Temp, Wind, Snow, Debris	FEMA, Deering Hazard Mitigation Committee, CNHRPC
Hurricane Sandy Oct 2012	**4095 -- EM-3360 M-H**	**2012**	**Oct 26-Nov 8**	**$9,770**	Hillsborough County and Merrimack County received a disaster declaration for	**Deering received $2,964 in FEMA emergency funding** for emergency	Tropical, Wind, Flood, Debris,	Deering Hazard Mitigation Committee,

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
					Emergency Protective Measures. Five counties experienced severe damage from heavy winds and moderate flooding, 218,000 customers without power. Fallen trees and debris closed roads, building and vehicle damage.	protective measures and debris removal. Oct 29 - Getting ready for Hurricane Sandy, worked until midnight cleaning up downed trees. Oct 30 - back at 5 am to continue cleaning up downed trees.	Utility, Communications Failure	FEMA, Nashua Telegraph, CNHRPC
Earthquake 4.0M Hollis ME Epicenter Oct 2012	No	2012	16-Oct	N/A	With the epicenter near Hollis Center, Maine, a 4.0 earthquake was measured and felt not only in Central NH, but throughout New England. Reportedly sounding like a jumbo jet and lasting for 10 seconds, calls came in to local Fire Departments inquiring about the event. By two hours later, no calls reporting damages or injuries had been received.	Reports may have been made to the USGS from Deering with an earthquake of this magnitude as it was felt around the Central NH Region. Some residents in Deering felt the earthquake which had its epicenter in Hollis, Me. No damage was reported.	Earthquake, Earth	Concord Monitor, Earthquake--track.com, CNHRPC, Deering Hazard Mitigation Committee
NH Severe Storm and Flooding May 2012	**4065 --**	**2012**	**May 29-31**	**N/A for Deering**	This declared disaster for Cheshire County. Public Assistance (PA) was available and Hazard Mitigation Assistance (HMA) became available statewide. Damage per capita was high – Cheshire ($26.04). Not declared in Merrimack or Hillsborough Counties.	**Deering could not apply for or receive PA funding**. There were no specific issues in Town noted. Any flooding, treefall or other problems were handled as normal Dept response.	Flood, Storms, Wind, Debris	FEMA, CNHRPC
Deering Wildfires 2008-2012	No	2008-	2012	N/A	N/A, although surrounding communities could be impacted by fires along town borders.	On the Deering Town website, the Fire Department has archived files available. In 2012 – 1 brush fire, 2011 – no brush fires, 2010 – 2 brush fires, 2009 – 6 brush fires, 2008 -5 brush fires. Most calls for service to the Fire Department are for emergency medical services, motor vehicle accidents, mutual aid response, structure fires, indoor smoke investigation, or other.	Wildfire, Fire, Debris	Deering Hazard Mitigation Committee, CNHRPC

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
Halloween Snowstorm Oct 2011	**4049 H EM-3344 M**	**2011**	**Oct 29-30**	**$8,897**	FEMA-4049-DR. Towns in Central NH were impacted by this shocking, early severe snowstorm, although a major disaster declaration was not declared in Merrimack County. Halloween festivities were cancelled in most communities, to the heartbreak of young children. In Hillsborough County, damages were at the equivalent of $5.11 per capita (400,721 people in 2010). The storm was also declared in Rockingham County.	**Deering received $8,897 in FEMA Public Assistance funding** for debris removal, public buildings, and protective measures. Oct 29-30 - Heavy snow into the 30th: 20-30 inches of snow. Oct 31 – Pushing snow back, changed cutting edges on plows.	Winter, Extreme Temp, Snow	FEMA, Deering Hazard Mitigation Committee, CNHRPC
Tropical Storm- Irene Aug-Sep 2011	**4026 M EM-3333 H**	**2011**	**Aug 26-Sep 6**	**$2,964**	Carroll, Coos, Grafton, and Merrimack Counties suffered severe impacts to roads and bridges as a result of flooding from Tropical Storm Irene, which also caused power outages. Merrimack County reimbursement to towns was $4.29 per capita (146,455 people in 2010), a total of $11m was allocated. Major Disaster was not declared for Hillsborough County, but an Emergency Declaration.	**Deering received $2,964 in FEMA emergency funding** for emergency protective measures and debris removal. Slight damage in Deering, although fared better than surrounding towns.	Tropical Wind, Flood, Debris, Utility, Power Failure, Debris Impacted Infrastructure	FEMA, Deering Hazard Mitigation Committee, CNHRPC, NH State Climate Office 8/11 Summary
April Fool's Snowstorm Apr 2011	No	2011	Apr 1	N/A	A Nor'easter snowstorm impacted the State, causing over 30,000 power outages, most by PSNH. Snow fell in depths of up to 8" but stopped by noon. Although dozens of accidents were reported, no serious injuries were reported.	The snowstorm with heavy, wet snow likely brought down trees and powerlines in Town. Storm was not especially notable in Deering.	Extreme Temp, Snow, Wind Chill, Power Failure, Debris Impacted Infrastructure	CNHRPC, wmur.com, CNHRPC, cbsnews
Canterbury Earthquake Epicenter 3.2M (Mercalli V) Sep 2010	No	2010	Sep 26	N/A	"A magnitude 3.4 [sic] earthquake rattled buildings and nerves across much of New Hampshire Saturday night. The quake occurred at 11:28 p.m. and was centered about	Epicenter in Canterbury is about 50 miles to the northeast of Deering. Residents in Deering may have felt the earthquake as a very minor sensation. No damage was reported.	Earth, Earthquake	Deering Hazard Mitigation Committee, Union Leader, CNHRPC, earthquake.

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
					10 miles north of Concord, according to the U.S. Geological Survey. State police said they received reports from residents across the state who reported what they thought was an explosion. The quake was felt in places like Fremont, Derry, Durham, Penacook and Raymond. There were no reports of damage." The quake was in fact felt all over the state, Southern ME and MA, but most reports were received from the Central NH region. Numerous area residents from across the state called WMUR's newsroom to report shaking and tremors in their home. Many said the quake felt like a "low rumbling" that rattled windows and shook homes for several seconds. Several residents also reported hearing a loud "boom" before feeling their homes shake. One emergency dispatcher with the town of Canterbury reported receiving 400 calls in 20 minutes. After study and analysis, USGS reported a 3.2M quake at a depth of 5.0 km and a total of 2,494 citizen reports. The epicenter was in Canterbury just east of I-93 and Cold Brook, north of Soapstone Road and south of Cogswell Road.			usgs.gov, wmur.com
Quebec-Ottawa Earthquake 5.0M (Mercalli VI-VII) **Jun 2010**	No	2010	Jun 23	N/A	Earthquake lasted about 30 seconds, epicenter in Val-de-Bois Quebec (Ottawa) at a depth of 22 km. The shaking that occurred in Ottawa was rated the strongest in 200 years. Damages occurred in	No known impacts to Deering specifically, but this large quake was felt regionwide.	Earthquake, Earth	CNHRPC, Geological Survey of Canada

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
					Ottawa. The tremors were felt in Central NH. 288 aftershocks were located.			
Canadian Wildfires Air Pollution May 2010	No	2010	May 31	N/A	The smoke from the wildfires was seen and smelled across Central NH. On Memorial Day weekend, brush fires from Canada impacted the air quality of New Hampshire Residents from more than 50 wildfires that are burning out of control in Quebec. Over 150,000 acres in central Quebec, north of Montreal and Quebec City, about 500 miles north of Manchester, reduced visibility to 1.75 miles in Concord. No air quality alert was issued, although people with respiratory issues were urged to remain indoors.	Deering likely experienced the effects of this smoke, smog, and fine particulate matter. High elevations would have been most susceptible, as would those who exercised outdoors.	Wildfire, Health (Air Quality)	Union Leader 2010, CNHRPC
Severe Storms and Flooding Mar 2010	**1913 M-H**	**2010**	**Mar 14-31**	**$0**	Severe storms and flooding occurred over two weeks and damaged roads and bridges. Merrimack County reimbursement to towns for repair was $0.28 per capita (146,455 people in 2010) and in Hillsborough County reimbursements were $1.80 per capita (400,721 people in 2010).	**Deering did not apply for or receive FEMA Public Assistance funding** for roads & bridges, debris removal, or protective measures. In March 2010, it is likely light, continued flooding occurred in the community, with debris clean up necessary, although the storm was not notable as a separate event.	Wind, Tropical, Flood, Utility, Debris	Deering Hazard Mitigation Committee, FEMA
Severe Winter Storm and Flooding Feb-March 2010	**1892 M-H**	**2010**	**Feb 23-Mar 3**	**$0**	This severe weather event included high winds, rain, and snow over a week-long period. The primary impact was debris removal and repair reimbursement for fallen trees and powerlines. In Merrimack County, the reimbursement to communities was the equivalent of $10.39	**Deering did not apply for or receive FEMA Public Assistance funding** for roads & bridges, debris removal, or protective measures. Feb 23- Prepare for storm. Feb 24-27- Snow/rain – plowed, salted and sanded. Mar 14- Northeaster, snow, rain (more rain than snow) wind, wash outs on 2nd NH Turnpike,	Extreme Temp, Snow, Wind, Flood, Debris, Aging Infrastructure	Deering Hazard Mitigation Committee, FEMA, Unitil, CNHRPC

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
					per capita (146,455 people in 2010), with Hillsborough County at $3.68 per capita (400,721 people in 2010). In the Concord area, 21,000 Unitil customers were out of power at the peak outage period.	Bennington Depot Road closed due to flooding.		
Vermont Yankee Tritium Contamination Jan 2010	No	2010	Jan 7	N/A	The Vermont Yankee Nuclear Power Plant notified the Vermont Department of Health that groundwater monitoring samples taken in November 2009 contained tritium. An investigation was launched, and a major source of leakage was found in steam pipes inside the Advanced Off-Gas (AOG) drain line to be clogged and corroded. The samples taken show the movement of the tritium contamination in the groundwater into the Connecticut River. Health risks are being investigated.	Deering may be affected in the future as groundwater sources are connected. The Connecticut River travels the NH / VT border.	Radiological, Health (Water Quality)	Vermont Department of Health 2012, CNHRPC
Severe Winter Storm – Dec 2008 Ice Storm	**1812 M-H**	**2008**	**Dec 11-23**	**$42,455**	Accumulating ice, snow, rain, and strong winds caused downed trees and power lines, with power outages and traffic accidents resulting. In Hillsborough County, debris removal and repair cost reimbursement FEMA the equivalent of $10.07 per capita (146,455 people in 2010). In Hillsborough County, debris removal costs were $6.35 per capita (400,721 people in 2010). The major disaster was declared in all 10 counties. New England was blanketed with ice and snow during the winter storm. Weight of ice caused branches to snap, and trees to	**Deering received $42,455 in FEMA Public Assistance funding** for debris removal, public buildings, and protective measures. The Ice Storm of December 11-12, 2008 caused significant power outages in Deering. No specific recollection for Deering winter problems was available for this storm, although it was acknowledged to have impacted the Town.	Winter, Extreme Temps, Cold, Wind, Utility, Debris, Communications Failure	Deering Hazard Mitigation Committee, FEMA, CNHRPC

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
					either snap or uproot, bringing down power lines and poles across the region. About 400,000 utility customers lost power during the event, with some customers without power for two weeks. Property damage across northern, central and southeastern NH was estimated at over $5m. Event was the largest power outage in NH history.			
Severe Storms and Flooding (Hurricane Hannah) – Sep Flood 2008	**1799 M-H**	**2008**	**Sep 6-7**	**$0**	Heavy rain from the remnants of tropical storm Hanna resulted in flooding on small rivers and streams in the Central NH area. The remains of tropical storm Hanna moved through eastern New England dumping 3 to 6 inches of rain in New Hampshire in about 8 hours causing rapid rises on area streams. In Merrimack County, damage to road systems totaled the equivalent of $1.48 per capita (146,455 people in 2010) for town reimbursement. Hillsborough County's damage was much higher at $6.90 per capita (400,721 people in 2010)	**Deering did not receive FEMA Public Assistance funding** for roads and bridges. Deering sustained damage to culverts ditches and roads, resulting in road closures. No specific recollections of this event were available.	Tropical, Flood, River, Wind, Storms, Debris, Aging Infrastructure	FEMA, Deering Hazard Mitigation Committee, CNHRPC
Severe Winds, Heavy Rains & Tornado July 2008	**1782 M**	**2008**	**Jul 24**	**N/A for Deering**	An EF3 tornado touched down in Rockingham County then proceeded into another county. Then in Merrimack County, the tornado was rated up to an F-3 and killed a woman in Deerfield trapped in a collapsed house. In the county, there was substantial damage totaled the equivalent of $1.12 per capita (146,455 people in 2010) for the towns' debris removal	**Deering was not eligible to apply for or receive FEMA Public Assistance funding** for debris removal, protective measures, roads and bridges. No particular or notable problems for Deering.	Wind, Tornado, Downburst, Storm, Debris, Power Outage	FEMA, Deering Hazard Mitigation Committee, CNHRPC

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
					reimbursement costs. A total of 123 residences statewide were affected, with 17 destroyed and another 37 suffering major damage. Damage was estimated to exceed $10 million. Not declared in Hillsborough County.			
Severe Storms and Flooding - Spring Flood April 2007	**1695 M-H**	**2007**	**Apr 15-23**	**$150,394**	Extensive flooding caused by severe storms impacted seven counties. In the Central NH region, Indirect peak discharge measurements on stream gages on the Suncook River at Short Falls Road in Epsom were 14,100 ft3, which was determined to be greater than 100-year flood discharge levels. The heavy rain combined with snow melt to cause small rivers and streams in much of New Hampshire to flood. Over land, the strong winds downed numerous trees. The downed trees caused widespread power outages, especially near the coast, and numerous road closures. The storm also brought heavy rain to the region which, when combined with snow melt, produced widespread flooding across much of the region.	**Deering received $150,394 in FEMA Public Assistance funding** for roads & bridges and protective measures. This was the most expensive disaster to impact Deering through 2020. Flooding was at this point considered normal in Deering. More localized flooding of the Contoocook River to Second NH Turnpike as well. Flood was a downpour with snowmelt that affected many different locations. Apr 16- 8-10 inches snow, heavy rains, 20 roads washed out. Apr 17- Hired 6 10-wheelers, 2 loaders, 2 graders and excavator – hauled gravel, removed broken pavement and filled with gravel.	Flood, River, Wind, Storms, Tropical, Debris, Erosion, Aging Infrastructure	FEMA, USGS Flood of 2007, Deering Hazard Mitigation Committee, CNHRPC, National Oceanic and Atmospheric Administration 2007, Epsom Hazard Mitigation Committee 2009 for regional information, USGS Flood of April 2007 in New Hampshire
Severe Storms and Flooding – Mother's Day Flood May 2006	**1643 M-H**	**2006**	**May 12-23**	**$13,697**	Extensive flooding caused by severe storms impacted seven counties including Merrimack and Hillsborough Counties. The USGS recorded the highest flows on record for several rivers including the Contoocook River in Davisville village, Soucook River in	**Deering received $13,697 in FEMA Public Assistance funding** for roads and bridges, recreational areas, and protective measures, for structures including culverts, ditches and roads (washouts). More localized flooding from Contoocook River to Second NH Turnpike, including washing out	Flood, River, Wind, Tropical, Storms, Debris, Erosion, Landslide, Aging Infrastructure	Deering Hazard Mitigation Committee, FEMA, USGS, CNHRPC, Epsom Hazard Mitigation Committee 2009 for

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
					Concord, and Piscataquog River in Goffstown. In Epsom, the Suncook River Avulsion occurred at Bear Island and the nearby excavation area. There were nine bridges / culverts washed out as well as dams breached. Epsom sustained flooding damage to the following areas: Northwood Lake Dam overtopped, damage to the Old Mill Dam (until the river changed direction), Kingstowne Mobile Home Park flooded, Webster Park Lane was underwater, Millhouse Road was flooded, Black Hall Road flooded, the Epsom Elementary School athletic fields flooded and the equipment hut was lost due to flooding, Center Hill Bridge washed out, Baker Road flooded, Swamp Road was under water. Damage, overtop & erosion to culverts of River Road, North Road, Blakes Brook, Mountain Road, Echo Valley Road, Griffin Road, NH 107, Old Richie Road, Mt Delight, as well as Leighton Brook culvert.	part of the gravel section, rather than in West Deering. Flooded over between salvage yard and McAllister Farm. May 14- Heavy rains, 10 to 12 inches. Hauled 2,000 yds of gravel which included outside trucking companies to Bartlett Hill Road, Pond Road, Dudley Pond Road, North Road, Gove Road.		regional information
Severe Storms and Flooding - Columbus Day Flood Oct 2005	**1610 M-H**	**2005**	**Oct 7-18**	**$2,300**	Extensive flooding caused by severe storms impacted five counties, including Merrimack and Hillsborough. Alstead experienced several fatalities as the result of dam failure. During October 7-18, 2005, the State of NH experienced two major rainfall events. According to USGS the bulk of rainfall occurred during two major rainfall events; one on October 8-9 and one on October 14-16. Rainfall volumes were generally	**Deering received $2,300 in FEMA Public Assistance funding** for protective measures. Longwoods Manufactured Housing Park was flooded and evacuated by the Contoocook River, which also flooded all of West Deering up to Mill Street to the Bennington Town Line. Oct 10- Heavy rains, some washouts, fared better than surrounding towns. Oct 11- Continuing rain – storm related grading. Oct 14- Contoocook River	Flood, River, Wind, Tropical, Storms, Debris, Erosion, Aging Infrastructure	Deering Hazard Mitigation Committee, FEMA, CNHRPC

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
					higher in the event of October 8-9 in southwestern NH, leading to major flooding in that region.	flooding over Longwoods Road but road still passable.		
Regional Thunder-storms and Lightning Jun 2005	No	2005	12-Jun	N/A	During a thunderstorm, lightning struck and severely damaged the historic Loudon Town Hall on Clough Hill Road. Winds from severe thunderstorm knocked down trees and power lines down in the towns of Warner, Hopkinton, Concord, Bow, Loudon, and Webster in Merrimack County.	Deering likely experienced many lightning strikes, power outages, and heavy rain downfalls. The lightning would have been especially noticeable from the higher elevations.	Thunderstorm, Lightning, Severe Winds	Deering Hazard Mitigation Committee, CNHRPC, Area Hazard Mitigation Committees
Snow Emergency Mar 2005	**EM-3211 H**	**2005**	**Mar 11-12**	**$6,061**	Cheshire, Hillsborough, Rockingham and Sullivan Counties were eligible for emergency protective measures under the Public Assistance program because of this severe winter snowstorm.	**Deering received $6,061 in FEMA Public Assistance funding** for snow removal and protective measures. In Deering, tree damage was likely severe on the higher elevation roads. The Town was likely without electricity for days. The Highway Department probably worked overtime to clear the roads for residents.	Winter, Extreme Temps, Snow, Debris	Deering Hazard Mitigation Committee, CNHRPC, FEMA
Snow Emergency Jan 2005	**EM-3207 M-H**	**2005**	**Jan 22-23**	**$6,751**	Record and near record snowstorm for 8 NH counties including Merrimack and Hillsborough. Emergency protective measures declared for reimbursement.	**Deering received $6,751 in FEMA Public Assistance funding** for snow removal. Record snows fell during this time period causing many closures. A transportation system shutdown likely occurred in Deering, and Town emergency services were delayed.	Winter, Extreme Temps, Snow, Debris	Deering Hazard Mitigation Committee, CNHRPC, FEMA
Hopkinton Earthquake 2.3M Epicenter Aug 2004	No	2004	Aug 28	N/A	An earthquake measuring 2.3 on the Richter Scale was centered in the Hopkinton area at Hopkinton Lake (Hopkinton-Everett Reservoir) east of Stumpfield Road at a depth of 5.8km Shaking and noise were reported, but no damage occurred.	Reports may have been made to the USGS by local residents feeling the earthquake as a rumble or loud noise. Hopkinton is within 15 miles of Deering. .	Earth, Earthquake	Earthquake Monitor, CNHRPC, earthquake.usgs.gov, Deering Hazard Mitigation Committee

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
Henniker-Hopkinton Earthquake 2.2M Epicenter Jan 2004	No	2004	Jan 20	N/A	An earthquake measuring 2.3 on the Richter Scale was centered in the Henniker- Hopkinton town line on Line Hill Road at a depth of 3.6km.	Residents may have felt the earthquake as a rumble or heard a loud noise. Hopkinton is within 15 miles of Deering.	Earth, Earthquake	Concord Monitor, January 2004, Earthquake Monitor, CNHRPC, earthquake.usgs.gov
Hazard Events 1973-2004								
Snow Emergency Dec 2003	**EM-3193 M-H**	**2003**	**Dec 6-7**	**$8,892**	Record snow fall event impacting much of New England. In NH, 8 counties received emergency protective measures, including Merrimack and Hillsborough.	**Deering received $8,892 in FEMA Public Assistance funding** for snow removal. Record snowfalls in the area, residents lost power due to winter snowstorm with high winds and falling trees. A transportation system shutdown likely occurred in Deering, and Town emergency services were delayed.	Winter, Extreme Temp	Deering Hazard Mitigation Committee, CNHRPC, FEMA
Snow Emergency Feb 2003	**EM-3177 M-H**	**2003**	**Feb 17-18**	**$6,667**	Record and near record snowstorm for 5 NH counties including Merrimack and Hillsborough. Emergency protective measures declared for reimbursement.	**Deering received $6,667 in FEMA Public Assistance funding** for snow removal. Record or near record snowfalls, residents lost power due to winter snowstorm with high winds and falling trees. A transportation system shutdown likely occurred in Deering, and Town emergency services were delayed.	Winter, Extreme Temp	Deering Hazard Mitigation Committee, CNHRPC, FEMA
NH Drought Emergency Aug 2002	No	2002	Aug	N/A	All counties in the State of NH except Coos County. One of the hottest Augusts on record in Concord along with drought conditions since March made for a high fire danger in New Hampshire. Numerous forest fires were reported, including a 30-acre blaze in New Durham.	Deering likely experienced loss of hay crops, lowering of the Contoocook River, Piscataquog River and other brooks. In March 2002, some residents of town had their wells go dry.	Drought, Extreme Temp, Earth, Increased Wildfire Risk	Deering Hazard Mitigation Committee, CNHRPC Concord Monitor 8/20/02, NHDES
Deering Airplane Crash Mar 2001	No	2001	Mar	N/A	N/A	A small plane crashed upon landing at Deering Airport, causing minor damage to the airplane but no injuries.	Fire, Wildfire, Haz Mat, Health (Water Quality)	Deering Hazard Mitigation Committee, CNHRPC
Snow Emergency Mar 2001	**EM-3166 M-H**	**2001**	**Mar 5-7**	**$8,223**	Record and near-record snowfall from late winter storm,	**Deering received $8,223 in FEMA Public Assistance funding** for	Winter, Extreme	Deering Hazard Mitigation

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
					emergency declaration was issued for protective measures. Merrimack, Hillsborough and 5 other counties declared eligible.	protective measures, including snow removal. Likely numerous power outages and blizzard-like conditions were probably experienced in Deering.	Temp, Wind	Committee, CNHRPC, FEMA
Regional Downbursts and Severe Winds Jul 1999	No	1999	6-Jul	N/A	Severe storms in July 1999 bring strong damaging winds and 3 downbursts. Two deaths occurred. The roof of the Ralph Pill building in Concord is blown off during a storm. The downburst was designated a macroburst (at least 2.5 miles in diameter). Other communities in the Central NH Region experienced damages	Deering likely experienced similar conditions and treefall. No historical perspectives were available for the event.	Severe Wind, Downburst	Concord Monitor, NH HSEM, CNHRPC, Deering Hazard Mitigation Committee
Concord Terrorism/ Bomb Threats Oct 1998	No	1998	Oct, Oct 27	N/A	On Oct 27, the lit fuse of a bomb left in the Concord Library stacks set off smoke alarms that may have saved the lives of many people. The individual allegedly responsible for the bomb scare left notes complaining about state government. A few days later, about a dozen buildings were evacuated after the New Hampshire Technical Institute in Concord received an anonymous call warning that three bombs had been placed on campus. This event followed the bomb scares at the Concord Library.	N/A, although Concord is one of the nearby employment and shopping hubs of the Central NH Region. Should any terrorism event have impacted Concord, Deering residents may have been impacted.	Terrorism, Incendiary, Sabotage	AP Online, 11/01/98, NH HSEM, CNHRPC
Severe Storms and Flooding Jun-Jul 1998	**1231 M-H**	**1998**	**Jun 12-Jul 2**	**$0**	Heavy flooding in six disaster declaration counties, including Merrimack and Hillsborough Counties. Damages of $3.4m for all counties.	**Deering did not apply for or receive FEMA Public Assistance funding.** In Deering, road washouts and lowland flooding are likely to have occurred.	Flood, Wind, Debris, Aging Infrastructure	FEMA, CNHRPC, Deering Hazard Mitigation Committee
Ice Storm of Jan 1998	**1199 M-H**	**1998**	**Jan 7-25**	**$0**	This ice storm was the first to test our statewide and local emergency management systems and utility providers.	**Deering did not apply for or receive FEMA Public Assistance funding**. In Deering, tree damage was likely	Extreme Temp, Ice, Winter, Utility, Debris	FEMA, US Army Corps of Engineers NH Storms database, Deering

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
					Tree and infrastructure damage was extensive and power failures lasted up to two weeks in some parts of the state. In the Central NH Region, many lost power for over a week. This ice storm had severe impacts throughout most of the State, with 52 communities impacted. FEMA Disaster Declaration #1199, Six injuries and one death resulted. Damage totaled $12,446,202. In addition, there were 20 major road closures, 67,586 people left without electricity, and 2,310 people without phone service.	severe on the higher elevation roads. The Town was likely without electricity for days.		Hazard Mitigation Committee, CNHRPC
NH Mass Casualty/ Terrorism Aug 1997	No	1997	Aug	N/A	Five people were left dead after a series of shootings which began in Bow by a man who was angered over long simmering land disputes. The individual was eventually apprehended in Colebrook, NH.	N/A for Deering specifically, but this tragedy occurred in the Central NH region.	Terrorism, Mass Casualty	NH HSEM, CNHRPC
Severe Storms and Flooding Oct 1996	**1144 M-H**	**1996**	**Oct 20-23**	**$0**	Heavy rains caused flooding in six counties, including Merrimack and Hillsborough Counties. Damage totaled $2.3m for all counties.	**Deering did not apply for or receive FEMA Public Assistance funding.** As Deering is within Hillsborough County, the Town likely experienced heavy rains and flooding of the Contoocook River.	Flood, Storms, Debris, Erosion	FEMA, NH HSEM, CNHRPC
Deering Lightning Strike 1996	No	1996	Unk	N/A	N/A	Lightning struck a pine tree on Clement Hill Road and a pulse of light traveled from the tree to the barn.	Lightning, Fire	Deering Hazard Mitigation Committee, CNHRPC
Storms and Floods Oct-Nov 1995	**1077 M**	**1995**	**Oct 20-Nov 15**	**N/A for Deering**	Four NH counties were damaged by excessive rain, high winds and flooding, including Merrimack County. Not declared in Hillsborough County.	**Deering did not apply for or receive FEMA Public Assistance funding**. It is likely several gravel roads were washed out in Deering.	Flood, Winds, Aging Infrastructure	FEMA, Federal Register, CNHRPC, Deering Hazard Mitigation Committee
Newbury Terrorism/	No	1993	Nov 1	N/A	A shooting at the Newbury Town Hall was ignited by tax and land	N/A for Deering specifically, but this tragedy occurred	Terrorism/ Violence, Mass	NH HSEM, CNHRPC

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
Active Shooter Nov 1993					disputes. Two town workers were killed, another was wounded, and the gunman shot and killed himself.	nearby. Newbury is about 40 miles north of Deering. All NH communities were impacted by this terrible event.	Casualty, Active Shooter	
Blizzard Mar 1993	**EM-3101 M-H**	**1993**	**Mar 13-17**	**$0**	Blizzards, High Winds and Record Snowfall. It is likely the Central NH Region experienced heavy snow, tree fall. Emergency declaration for Merrimack and Hillsborough Counties.	**Deering did not apply for or receive FEMA Public Assistance funding** for emergency snow plowing. Deering likely experienced power outages throughout town during this storm.	Winter, Extreme Temp, Wind, Utility	NH HSEM, CNHRPC, FEMA, Deering Hazard Mitigation Committee
Severe Storm- Hurricane Bob Aug 1991	**917 H**	**1991**	**Aug 18-20**	**No data available**	Public assistance was available for Hillsborough County and 2 other counties as a result of damages caused by Hurricane Bob. The 2 seacoast counties fared the worst. Not declared in Merrimack County.	As Deering is within Hillsborough County, it likely experienced heavy rains, wind gusts, tree debris, power outages and possibly some flooding.	Severe Winds, Hurricane	FEMA, CNHRPC
Deering Snowstorm March 1991	No	1991	Mar 3-6	N/A	It is likely the Central NH region experienced similar conditions.	Numerous outages from ice-laden power lines in southern New Hampshire occurred. Deering was hit hard by this storm.	Winter, Extreme Temp, Wind, Ice, Utility	Deering Hazard Mitigation Committee, CNHRPC
Flooding and Severe Storm Aug 1990	**876 M-H**	**1990**	**Aug 7-11**	**No data available**	Moderate to heavy rains caused flooding in eight counties, including Merrimack and Hillsborough Counties. Damage totaled $2.3m for all counties	As Deering is within Hillsborough County, the Town likely experienced heavy rains, tree debris, power outages and possibly some flooding.	Flood, Severe Winds	FEMA, NH HSEM, CNHRPC
Severe Storms and Flooding Mar-Apr 1987	**789 M-H**	**1987**	**Mar 30-Apr 11**	**No data available**	Flooding caused by snowmelt and intense rain was felt in seven counties, including Merrimack and Hillsborough Counties which were declared disaster areas. Nearly $5m in damages.	It is likely the flooding caused by snowmelt and intense rain was experienced in Deering. Several roads may have been damaged as a result of the flooding and washout.	Flood, Debris, Extreme Temps	Deering Hazard Mitigation Committee, CNHRPC FEMA, NH HSEM, US Army Corps of Engineers
Severe Storms and Flooding Jul-Aug 1986	**771 H**	**1986**	**Jul 29-Aug 10**	**No data available**	Severe summer storms with heavy rains, tornadoes, flash floods, and severe winds, damaged the road network statewide. Disaster declared in Cheshire, Sullivan and Hillsborough Counties. Not declared in Merrimack County.	Deering's gravel roads likely washout during these storms. Trees likely fall onto roads along with power lines.	Flood, Wind, Landslide, Erosion, Debris	FEMA, NH HSEM, CNHRPC, Deering Hazard Mitigation Committee

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
Deering Winter Storm **April Mid 1980s**	No	Circa Mid 1980s	Unk	N/A	N/A although it is likely the region experienced similar winter storm conditions.	An ice storm damaged power lines. Power was lost in outlying areas, such as Newmarket Road, for up to three days (anecdotal evidence from Town Librarian). In Deering, the ice storm took out power lines, causing power outages that lasted ten days in northern Deering. Heavy tree damage was also inflicted by the storm	Extreme Temperatures, Severe Snowstorms, Windchill, Power Failure	Deering Hazard Mitigation Committee, CNHRPC
Earthquake 4.5M Sanbornton **Jan 1982**	No	1982	Dec	N/A	An earthquake originating near in Sanbornton in Belknap County measured 4.5M and was felt in various locations throughout the State. The area it was felt includes all of northern Hillsborough County including the Concord area communities in Central NH. The earthquake was known to have cracked the original glass panes in one Warner resident's home.	A Sanbornton-centered earthquake could have caused some light physical damage in Deering. Sanbornton is about 50 miles to the northeast of Deering.	Earth, Earthquake	CNHRPC, Earthquake-track.com,
Deering Airplane Crash **Jun 1981**	No	1981	Jun	N/A	N/A	A Hawthorne College DC-3 1936 plane over laden with supplies attempted to take off at the Deering Airport but crash landed before it flew too far from the ground. The pilot and copilot were not injured, but the plane was destroyed by the impact and by fire. It was the most severe plane crash in Deering's history. A picture board in the Fire Department depicts the take off and subsequent crash chronology.	Fire, Wildfire, Haz Mat, Health (Water Quality)	Deering Hazard Mitigation Committee, CNHRPC
NH Blizzard of **Feb 1978**	No	1978	Feb 5-7	N/A	RSI Index of Category 5 (Extreme). This snowstorm is described as "a natural disaster of major proportions" and stunned all of New England. The storm was caused by an intense coastal	It is likely many of the same snow depths and effects occurred across Deering as occurred in Hillsborough County and New England. The entire Central NH Region was brought to a standstill.	Extreme Temperatures, Severe Snowstorms, Windchill, Power Failure, Debris	Deering Hazard Mitigation Committee; American Meteorological Society, Northeast States

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
					Nor'easter that produced winds in excess of hurricane force and very high snow totals. Most of southern New England received more than three feet of snow, 25-33" in NH and higher throughout New England. Abandoned cars along roadways immobilized infrastructure and blocked major interstates. For over a week, New England remained paralyzed by the storm. All of New Hampshire was impacted. Governor Meldrim Thomson Jr. declared a state of emergency.			Emergency Consortium, CNHRPC
Regional River Ice Jams Mar 1977	No	1977	Mar 14	N/A	In the Central NH region in March of 1977, ice break-up caused a major jam in the Suncook River, causing flooding both in Allenstown and Pembroke. Homes and roads were flooded. More than 100 buildings were evacuated in Allenstown and Pembroke combined. In the State, an ice jam caused major disruption to the road networks as a result of road washouts.	It is likely this event impacted Deering also on the Contoocook River, but there is no specific recollection by HMC members.	River, Ice Jam, Flood, Winter, Extreme Temps, Debris Impacted Infrastructure	US Army Corps of Engineers, CNHRPC
Severe Storms and Flooding Jul 1973	**399 M-H**	**1973**	**Jul 11**	**No data available**	All counties in the State of NH experienced storm damage and were declared disaster areas, including Merrimack and Hillsborough Counties.	Torrential downpours inundated the area, including Deering which likely experienced road washouts and lowland flooding.	Flood, Wind, Washout, Erosion	FEMA, CNHRPC, Deering Hazard Mitigation Committee
Quebec Earthquake 4.8M Jun 1973	No	1973	15-Jun	N/A	An earthquake originating near the Quebec border at a scale of 4.8 was felt in various locations throughout NH.	N/A, although some Deering residents may have felt the effects.	Earth, Earthquake	Northeast States Emergency Consortium, CNHRPC
Hazard Events Before 1973								
Regional Earthquake Dec 1970	No	1970	Dec 25	N/A	The origin and magnitude are unknown but likely	Some Deering residents may have felt the earthquake effects.	Earth, Earthquake	CNHRPC, Earthquake-track.com,

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
					impacted the Central NH Region.			Deering Hazard Mitigation Committee
Deering Winter Storm Feb-Mar 1969	No	1969	1970	N/A	N/A, although surrounding communities may have experienced similar winter conditions	Snow accumulations between 24-98 inches throughout the state with higher totals in western NH, according to the American Meteorological Society. According to the Deering Town History, winter storms during these two months rivaled the 1888 blizzard.	Winter, Extreme Temps, Debris Impacted Infrastructure	Deering Hazard Mitigation Committee, CNHRPC
Deering Downburst/ Tornado Aug 1968	No	1968	Aug 20	N/A	N/A, although surrounding towns likely were impacted by severe winds	The Deering Town History describes this tornado as "a freak twister, lasting only several minutes, ripped a crazy course through Deering with nightmarish terror and damage." This tornado inflicted severe tree damage in its path from Bear Hill to the Sodom area in Deering to Weare. It also lifted the roof off of a building where 17 girls were camping on East Deering Road. At the Peter Wood Farm, maples planted during the Civil War were uprooted and some automobiles had been picked up. The barn also went down and debris was scattered all over. A section of the barn was found later near the Weare Reservoir, a mile and a half away.	Winds, Debris, Tropical	Deering Hazard Mitigation Committee, CNHRPC
Older Hurricanes 1954-1991	No	1954	to 1991	N/A	Many older hurricanes have impacted New Hampshire including the 1954 – 1991 Hurricanes: Carol on August 31, 1954 (tree and crop damage), Edna on September 11, 1954, Donna on April 12, 1960 (heavy flooding), Dora on August 28, 1971, Bell on August 10, 1976, Gloria on September	Downed trees, wind damage, and flooding were likely experienced in Deering during many of these hurricanes. 1960- Hurricane Donna impacted Deering with heavy rain and some wind damage. 1954- Hurricane Carol, a category 2 storm, passed through the area resulting in heavy rain	Tropical, Wind, Flood, Debris	Deering Hazard Mitigation Committee, NH Homeland Security and Emergency Management, CNHRPC

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
					27, 1985, and Bob in 1991.	with increased wind. This resulted in extensive crop and tree damage.		
Regional Snowstorm and Rapid Snowpack Melt **Mar 1953**	No	1953	Mar	N/A	Similar rain or snow storms and rapid snowpack melt likely impacted the Central NH region. The highest level of water in the Blackwater Dam was measured, with the capacity at 93%. No flooding was reported. Uncertain as to exactly what type of storm caused this effect. A total of nearly 8" of precipitation in March 1953. The Hopkinton-Everett Flood Control Reservoir (1963) has not yet been constructed for this event. Contoocook River flooding was likely experienced	Local river flooding, including the Contoocook River and Piscataquog River in Deering, likely occurred.	Flood, Debris	FEMA, NH HSEM, US Army Corps of Engineers, CNHRPC
Deering Snowstorm **Winter 1943**	No	1943	Winter	N/A	It is likely the Central NH region experienced similar conditions.	Many residents were snowed in during a heavy snowstorm in 1943. One town historian remembers school being canceled for one month. There were 20 foot high drifts on the dam by the Deering Reservoir.	Winter, Extreme Temp, Wind, Ice, Utility , Snow, Debris Impacted Infrastructure	Deering Hazard Mitigation Committee, CNHRPC
Regional Earthquake **Dec 1940**	No	1940	Dec 20-24	N/A	The earthquake was reportedly felt in all of New Hampshire. The greatest earthquake felt in all of New Hampshire caused "a heavy rumble" and "was accompanied by the rattling of windows and the crashing of dishes" in the Central NH region.	Deering residents may have felt shaking or rattling and may have heard loud noises.	Earth, Earthquake	CNHRPC, Local Histories
10 Severe Snowstorms **1940-1978**	No	1940	to 1978	N/A	Ten severe snowstorms are documented in south-central NH during this time span, Feb 14-15, 1940 (depths over 30" and high winds), Feb 14-17, 1958 (20-33"), Mar 18-21, 1958 (22-24"), Mar 2-5, 1960 (up to 25"), Jan 18-20, 1961 (up to 25",	Although it is unknown precisely what Deering experienced, it is likely many of the same snow depths occurred, as well as debris on roads, difficulty traveling, crashes, and power outages.	Extreme Temp, Winter, Snowstorm, Utility, Power Outage, Debris Impacted Infrastructure	American Meteorological Society, CNHRPC

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
					blizzard conditions), Jan 11-14, 1964 (up to 12"), Jan 29-31, 1966 (up to 10"), Feb 22-28, 1969 (24-98", slow-moving storm), Dec 25-28, 1969 (12-18"), Jan 19-21, 1978 (up to 16").			
Regional & Deering Hurricane of Sep 1938	No	1938	Sep 21	N/A	Hurricane made landfall as a 3 on the Saffir-Simpson Scale, killed about 682 people and damaged or destroyed over 57,000 homes. Most deadly New England hurricane. Central New Hampshire was inundated with water. This was also the worst hurricane to ever strike New England, resulting in 564 deaths and over 1,700 injuries (Northeast States Emergency Consortium). Downed trees caused extensive damage to homes, businesses and community infrastructure. President Roosevelt ordered emergency aid be sent to NH, including Hillsborough County. Thirteen people died in New Hampshire.	In Deering, wind had a particularly devastating impact to farms. Damage to specific farms was listed in the Town History. Many farmers were destroyed by the hurricane, including the farm of one of the town historians' father. All of their chicken coops and chickens were blown away, and the roof of their barn was lifted off. Other farmers also lost their hen houses, including Stuart Michie, who according to the Town History, saw the hurricane pick up his henhouse and the hens sucked up into the trees. In addition, the barn opposite disintegrated; boards, shingles, and all kinds of debris were flying through the air. Ebenezer Locke's pigpen was carried away, but fortunately the pigs remained. There was also tree devastation in Deering, where most of the pines in Town were torn down. The Town History states, "Arthur Ellsworth wept bitter tears, realizing his great loss; he had counted on these prize trees, some virgin, to be his life's savings."	Tropical, Wind, Hurricane, Flood, Debris	CNHRPC, USGS 1938 report, Deering Hazard Mitigation Committee
Regional & Deering Flood of Mar 1936	No	1936	Mar 11-21	N/A	Simultaneous high snowfall totals, heavy rains, and warm weather combined to hit all of New England. Floods killed 24 people, caused $133,000,000 in damage, and made 77,000 people	The Contoocook River flooded an extensive area in West Deering. One of the worst natural disasters to hit Deering was the Flood of 1936; the Deering Town History describes the town as a disaster area.	Flood, River, Ice Jam, Winter, Rapid Snow Melt, Erosion, Scouring, Debris	Concord Monitor, Union Leader, Army Corps of Engineers Ice Jam Database, CNHRPC,

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
					homeless in New England. The great flooding of 1936 resulted from heavy rains and rapid snowpack melt. Snow north of Concord contributed to the higher waters in the Winnipesaukee, Contoocook and Pemigewassett Rivers that were largely responsible for the destruction in Concord and the surrounding area. NH issued boil water warnings to everyone.	According to one town historian, it rained heavily for days preceding the hurricane. The Deering Dam was breached and with 325 acres of water behind it, the water acted like a tidal wave roaring down the Piscataquog River, flooding fields, roads, taking down bridges, and tearing down trees and buildings. Town History states that the "damage was unbelievable". It was as if a tidal wave was roaring down the Piscataquog River, flooding fields, roads, taking out bridges, and tearing down trees and buildings. The volume of water washed out the Weare Dam. Roads were flooded, preventing access to the outside world, and shutting down the schools. The extensive flooding in Deering became vital factors in the future flood control measures taken in the State.	Impacted Infrastructure	USGS 1938 report, Deering Hazard Mitigation Committee, Epsom Town Historian for regional information
Deering Flood Jul 1921	No	1921	Jul 4	N/A	N/A, although this was likely a regional event with flooding in the Central NH area.	July 4, 1921 an unusually cold day for summer was also the day of heavy flooding in West Deering. There was a frost in the morning and the temperature did not reach above forty degrees.	Flood, Extreme Temps,	Deering Hazard Mitigation Committee, CNHRPC
Deering Downburst Feb 1920	No	1920	Feb	N/A	N/A, although surrounding towns likely were impacted by severe winds	. Large trees were blown down on the crossroad between the Deering Conference Center and East Deering.	Winds, Debris, Tropical	Deering Hazard Mitigation Committee, CNHRPC
Deering Sodom Hill Wildfire 1911	No	1911	Unk	N/A	N/A	This fire covered 500 acres and caused $24,000 in damage, destroying one home and endangering many others, causing some residents to pack up their belongings in case they had to flee their	Wildfire, Fire, Debris	Deering Hazard Mitigation Committee, CNHRPC

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
						homes. Residents fought this fire for 3 or 4 weeks before a light rain finally helped to put it out. The Town History states, "James Locke, Deering Fire Warden, was praised for the masterly manner in which he organized the plans, especially with the backfire by Dudley Pond, that culminated in stopping this fire that had seemed beyond all human control." The Deering Town History also describes this as an extremely dry year.		
Deering Wildfire Summer-Fall 1908	No	1900	Summer-Fall	N/A	N/A	Four forest fires burned a total of four hundred acres of woodland, causing $1,200 in damage and costing $450 to suppress. In October several forest fires burned around the reservoir and Hedgehog Mountain.	Wildfire, Fire, Debris	Deering Hazard Mitigation Committee, CNHRPC
Deering Downburst/ Tornado Dec 1900	No	1900	Dec 13	N/A	N/A, although surrounding towns likely were impacted by severe winds	According to the Deering Town History, a cyclone tore off the top of one resident's chimney, damaging a large part of the house.	Winds, Debris, Tropical	Deering Hazard Mitigation Committee, CNHRPC
Deering Downburst/ Tornado Jun 1892	No	1892	Jun 23	N/A	N/A, although surrounding towns likely were impacted by severe winds	According to the Deering Town History, a cyclone-like wind blew in the end of one resident's barn and part of the roof.	Winds, Debris, Tropical	Deering Hazard Mitigation Committee, CNHRPC
Deering Snowstorm Mar 1888	No	1888	Mar 11-14	N/A	It is likely the Central NH region experienced similar conditions.	Snow accumulations were between 36-40 inches. The Deering Town Meeting was canceled, there was no mail for 5 days, and trains were delayed for 2 days. Drifts were gigantic and sometimes covered small buildings. Deering was paralyzed.	Winter, Extreme Temp, Wind, Ice, Utility , Snow, Debris Impacted Infrastructure	Deering Hazard Mitigation Committee, CNHRPC
Deering "Great Freshet of 1852"	No	1852	Unk	N/A	N/A, although the freshet is thought to have impacted many communities in the Central NH region	In 1852, a great freshet damaged mills, roads, and bridges.	Flood, River Snowmelt, Erosion, Debris	Deering Hazard Mitigation Committee, CNHRPC
Merrimack County Earthquake	No	1884	Nov 23	N/A	The earthquake was reportedly felt in in an area of 14,000 square	It was unknown what effects Deering	Earth, Earthquake	CNHRPC, NH Homeland Security and

Event	Declared Disaster DR-	Year	Date	FEMA Public Assistance	Area Effects Surrounding Deering	Local Effects Occurring in Deering	Hazard Category	Source
Nov 1884					miles, in all of Merrimack County. Two moderate earthquakes shook the Merrimack County area, causing damages to foundations.	residents experienced, if any.		Emergency Management
Deering Severe Winds Jan 1810	No	1810	Jan 19	N/A	N/A, although nearby towns likely experienced similar conditions at least at the higher elevations.	According to the Deering Town History, there were gale force winds, but no snow.	Extreme Temps, Wind Chill, Wind	Deering Hazard Mitigation Committee, CNHRPC
Deering Earthquakes 1790-1944-1957	No	1790-	1957	N/A	N/A, although it is likely area communities experienced the tremors.	There have been a few earthquakes that have occurred in Deering, according to the Town History (1790, September 5, 1944, and 1957). The damage caused by these earthquakes is unknown. In addition, one town historian remembers a small tremor in the north Deering area that cracked some cement. A few small seismic lines are found throughout Town.	Earth, Earthquake	Deering Hazard Mitigation Committee, CNHRPC

Source: Compilation of Events by Deering Hazard Mitigation Committee; CNHRPC

Description and Magnitude of Hazards

A compilation of past hazards that have occurred in Deering and the Central NH Region area is provided in the prior Table of **Local and Area Hazard Events. Existing and Susceptible Hazard Locations in Town** are areas to watch, areas of particular susceptibility and may be vulnerable to future events. **Potential Future Hazards** are determined based on the past hazard events, possibilities, and existing issues in Town to provide focus to future potential problem areas and to help with mitigation action development and are provided in the **Potential Future Hazards** section.

Each hazard is generally described and then is noted how and where it could occur in Deering. For all hazards examined in this Plan, a table of the **Hazard Locations in Town** and the **Potential Future Hazards** is provided at the end of this Plan Chapter.

Cumulative hazard events were researched using a wide variety of sources for the **original Deering Hazard Mitigation Plan 2004** and the **2009** and **2015 Plan Updates** which were the basis for many of the past disaster events and then were updated to the present day. The **2015 Plan** provided recent information on many of the extreme disasters experienced between **2005-2008**. Sources and techniques included interviewing local townspeople, researching Town Histories and related documents, and collecting information from governmental or non-profit websites. Presidentially declared disasters or other significant hazard events are described for the surrounding area or Hillsborough County for the **Hazard Mitigation Plan Update 2021** and some of them may have affected the community. These disasters were also considered by the Committee when determining the risk evaluation.

Committee member experiences, knowledge, and recollections generally comprise the **Local and Area Hazard Events** and **Hazard Locations in Town.** While additional hazards might have occurred in Town, those events in the Plan are what the Committee chose to list, or were familiar with to list, to comprise the hazard events within the in Tables. The same is true for the **Potential Future Hazards** section.

Numeric of Probability and Severity	CONCERN SUMMARY	Numeric of Overall Risk Score
1	LOW	1 – 4
2	MEDIUM	5 - 7
3	HIGH	8 - 11
4	HIGH	12 - 16

EARTH HAZARDS

Earth hazards include geologic events such as the small earthquake NH residents experience. The Central NH area is seismically active and small earthquakes (less than **2.5** magnitude on the Richter Scale) occur about **1-2** times per year. Landslides can occur because of earthquakes, rain, flooding and result in erosion along roadways and watercourses.

Radon is a naturally occurring radioactive gas with carcinogenic properties. The gas is a common problem in many states, including New Hampshire, seeping into homes from basements. Radon may also enter homes dissolved in drinking water from drilled wells. High levels of radon in water from individual drilled wells is a common occurrence in New Hampshire. Radon is no longer being addressed by the ***State of New Hampshire Multi-Hazard Mitigation Plan 2018*** as no new studies have made specific data available. It is generally known that radon exists throughout in the State and in communities, including the Central NH Region. Arsenic is a new concern that often co-occurs with radon. Radon is known to be present throughout New Hampshire and is addressed on an individual basis, no longer addressed in the **Deering Hazard Mitigation Plan** because of the lack of State monitoring and available action.

There are several types of **EARTH** hazards examined in the **Hazard Identification and Risk Assessment**:

Main Hazard Category	Specific Hazards Included		
EARTH	**DROUGHT**	**EARTHQUAKE**	**LANDSLIDE** Soil, Rockslide or Excavation Areas

Drought

The overall ratings of **Drought** in Deering from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
DROUGHT	**4** **HIGH**	1 LOW	3 HIGH	3 HIGH	**9.2** **HIGH**

A drought is defined as a long period of abnormally low precipitation, especially one that adversely affects growing or living conditions. Droughts are becoming less rare in New Hampshire that they have been in the past. They have different, widespread damages compared with floods and are more difficult to define. The effect of droughts is indicated through measurements of soil moisture, groundwater levels, and streamflow. However, not all indicators will be minimal during a drought. For example, frequent minor rainstorms can replenish the soil moisture without raising ground-water levels or increasing streamflow. Low streamflow also correlates with low ground-water levels and commonly cause diminished water supply because ground water discharge to streams and rivers maintains streamflow during extended dry periods.

In the case of drought, residential (dug wells especially) and Town water supplies (fire ponds and cisterns) would be threatened. The Deering Lake Association can implement water restrictions during dry conditions. The remaining residences, non-residential buildings and Town facilities rely either on community water systems pumped from bedrock or on individual well water systems which are not easily replenished during periods of drought. During the **2015-2018** drought period, many residences notified the Town of their dug wells going dry. The residents either made private arrangements for potable water or they dug new bedrock wells. All farms, orchards, tree farms, and conservation areas in Town would be affected by drought. Additionally, wildfires have the potential of being more severe and commonplace during periods of drought, more difficult to contain. The Fire Department's fire ponds dry out and a larger water source like Deering Lake or the Contoocook River is used for pumping.

Magnitude of Drought

Table 13 displays overall drought magnitude as measured by the US Drought Monitor (USDM) and Palmer Hydrological Drought Index (PHDI), the extent of hydrological drought in the form of long-term, cumulative monthly moisture conditions. The weekly US Drought Monitor for NH can be accessed online. The Palmer indices are developed by algorithms taking into consideration precipitation, temperature data, and the local Available Water Content (AWC) of the soil.

Table 13

US Drought Monitor Intensity Scale

Category	Description	Description of Possible Impacts	Palmer Drought Severity Index (PDSI)
D0	**Abnormally Dry**	Going into drought: - Short-term dryness, slow planting, growth of crops or pastures Coming out of drought: - Some lingering water deficits - Pastures or crops not fully recovered	-1.0 to -1.9
D1	**Moderate Drought**	- Some damage to crops, pastures - Streams, reservoirs or wells low, some water shortages developing or imminent - Voluntary water use restrictions requested	-2.0 to -2.9
D2	**Severe Drought**	- Crop of pasture losses likely - Water shortages common - Water restrictions imposed	-3.0 to -3.9
D3	**Extreme Drought**	- Major crop/pasture losses - Widespread water shortages or restrictions	-4.0 to -4.9
D4	**Exceptional Drought**	- Exceptional and widespread crop/pasture losses - Shortages of water in reservoirs, streams and wells creating water emergencies	-5.0 or less

Source: https://droughtmonitor.unl.edu/AboutUSDM/AbouttheData/DroughtClassification.aspx
as compiled by CNHRPC, accessed 02-22-19

Earthquake

The overall ratings of **Earthquake** in Deering from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
EARTHQUAKE	**4 HIGH**	1 LOW	1 LOW	1 LOW	**4.0 LOW**

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 often cause **landslides**, **flash floods**, **fires**, and possibly snow avalanches, which are not considered relevant to Deering's geography. Larger earthquakes usually begin with slight tremors but rapidly take the form of one or more violent shocks, and end in vibrations of gradually diminishing force called aftershocks. The underground point of origin of an earthquake is called its focus; the point on the surface directly above the focus is the epicenter. The magnitude and intensity of an earthquake is determined by scales such as the Richter scale and Mercalli scale. Geologic events are often associated with California, but New England is considered a moderate risk earthquake zone. New Hampshire experiences regular, minor earthquakes with its bedrock geology.

Magnitude of Earthquake

Earthquake hazard magnitude can be measured by the Richter Scale as shown in **Table 14**, just as its intensity can be measured by the Modified Mercalli Instrumental Intensity (MMI) scale. The two scales do not correlate consistently among sources but utilizing a combination of scales and descriptions on USGS and NOAA sites, **Table 14** approximates the Richter to Mercalli comparison. For practical purposes, descriptions of potential impacts to people, furnishings, the built environment and the natural environment are provided to better place earthquake magnitude in perspective.

Table 14

Modified Mercalli and Richter Magnitude Scales

Approx Richter Magnitude Scale	Mercalli Instrumental Intensity Scale	Damage Category	Perceived Shaking	Potential Impacts			
				People's Reaction	Furnishings	Built Environment	Natural Environment
< 3	**I**	**Instrumental**	Not felt	Not felt.	N/A	Passing truck vibrations and noises	Changes in level and clarity of well water are occasionally associated with great earthquakes at distances beyond which the quakes are felt by people
3 – 3.4	**II**	**Just Perceptible**	Weak	Felt by a few.	Delicately suspended objects may swing.	N/A	Trees and bodies of water sway.
3.5 - 4	**III**	**Slight**	Weak	Felt by several. Vibrations like a truck passing.	Hanging objects may swing appreciably. Vehicles rocked slightly.	N/A	N/A
4.1 – 4.4	**IV**	**Moderate**	Light	Felt by many. Sensation like heavy truck striking building.	Dishes rattle. Vehicles rocked noticeably.	Walls creak, windows rattle.	N/A
4.5 – 4.8	**V**	**Rather Strong**	Moderate	Felt by nearly all. Frightens a few.	Pictures swing out of place; small objects move; a few objects fall from shelves within the community.	A few instances of cracked plaster and cracked windows in the community.	Trees and bushes shaken noticeably.
4.9 – 5.4	**VI**	**Strong**	Strong	Frightens many. People move unsteadily	Many objects fall from shelves.	A few instances of fallen plaster, broken windows and damaged chimneys within the community.	Some fall of tree limbs and tops, isolated rockfalls and landslides, and isolated liquefaction.
5.5 - 6	**VII**	**Very Strong**	Very strong	Frightens most. Some lose balance.	Heavy furniture overturned	Damage negligible in buildings of good design and construction but considerable in some historic, poorly built or badly designed structures; weak chimneys broken at roof line, fall of unbraced parapets.	Tree damage, rockfalls, landslides, and liquefaction are more severe and widespread with increasing intensity. Water is stirred and muddy.

Approx Richter Magni-tude Scale	Mercalli Instru-mental Intensity Scale	Damage Category	Perceived Shaking	Potential Impacts			
				People's Reaction	Furnishings	Built Environment	Natural Environment
6.1 – 6.5	**VIII**	**Destructive**	Severe	Many find it difficult to stand	Very heavy furniture moves conspicuously.	Damage slight in buildings designed to be earthquake resistant but severe in historic or some poorly built structures. Widespread fall of chimneys, walls and monuments. Powerlines fallen.	N/A
6.6 - 7	**IX**	**Ruinous**	Violent	Some forcibly thrown to the ground	N/A	Damage considerable in some buildings designed to be earthquake resistant; buildings shift off foundations if not bolted.	N/A
7.1 – 7.3	**X**	**Disastrous**	Extreme	N/A	N/A	Some well-built wooden structures destroyed. Most ordinary masonry structures collapse; damage moderate to severe in many buildings designed to be earthquake resistant. Dams destroyed.	N/A
7.4 – 8.1	**XI**	**Very Disastrous**	N/A	N/A	N/A	Few if any masonry structures remain standing. Bridges destroyed. Rails bent greatly. Wide cracks in ground. Pipelines break	Waves seen on the ground
> 8.1	**XII**	**Catastrophic**				Total damage. Lines of sight and level are distorted. Objects thrown into air.	Waves seen on the ground

Source: National Oceanic and Atmospheric Administration (NOAA), USGS and other sources compiled by CNHRPC Feb 2021

Landslide

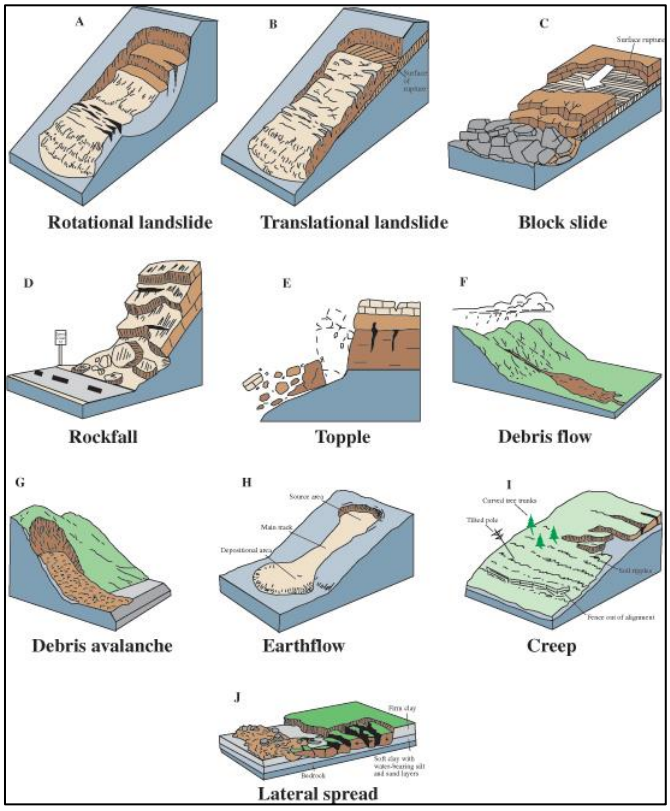
The overall ratings of **Landslide** in Deering from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
LANDSLIDE	**1 LOW**	1 LOW	1 LOW	1 LOW	**1.0 LOW**

A landslide is the downward or outward movement of slope-forming materials reacting under the force of gravity, including: mudflows, mudslides, debris flows, rockslides, debris avalanches, debris slides, and earth flows. Erosion of soil may also contribute to landslides. **Landslides** could damage or destroy roads (NH 149/Deering Center Road or Long Woods Road/Second NH Turnpike, and other local roads), electrical and telephone lines, buildings, sewers, bridges, dams, forests, parks, and farms and are also dangerous to people. A display of different types of landslides is shown in **Figure 6**.

Figure 6

Basic Types of Landslides



Source: US Geological Survey (USGS)

Magnitude of Landslide

There is no known standardized measurement of landslide magnitude available.

EXTREME TEMPERATURE HAZARDS

Extreme temperature hazards include diverse hazards such as severe cold or windchill, excessive heat, and heatwaves. Excessive heat or extreme cold can create other hazards such as public health issues, utility outages. The severity of these hazards is influenced by New Hampshire's changing climate and severe weather systems. This category is meant to encompass all the hazards which can be influenced by the extreme weather temperatures that New England, New Hampshire, the Central NH Region, and Deering are experiencing.

There are several types of **EXTREME TEMPERATURE** hazards examined in the **Hazard Identification and Risk Assessment**:

Main Hazard Category	Specific Hazards Included
EXTREME TEMPERATURES	EXTREME TEMPERATURES Excessive Heat, Heat Wave, Cold or Wind Chill

The environmental temperature spectrum is addressed under extreme temperatures, from very cold to very hot.

The overall ratings of **Extreme Temperatures** in Deering from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
EXTREME TEMPERATURES **Excessive Heat, Heat Wave, or Cold or Wind Chill**	**4** **HIGH**	2 MEDIUM	2 MEDIUM	2 MEDIUM	**8.0** **HIGH**

Extreme or Heatwave

A heat wave is a period of abnormally and uncomfortably hot and unusually humid weather that typically lasts two or more days. The National Weather Services' Heat Index is used to measure humidity against temperature to develop a "real feel" temperature. Heat disorders on the body are quick and can be deadly. These now normal hot temperatures in the summer are commonly known as **excessive heat**.

The National Weather Service categorizes a **Hot Day** when temperatures reach **90°** or warmer. An official **Heat Wave** is defined as three or more consecutive days with the temperature reaching or exceeding **90°**.

Extreme heat weather is forecasted with the following levels of high temperatures. **Excessive Heat Outlooks** are issued when the potential exists for an excessive heat event in the next **3-7** days. An Outlook provides information to those who need considerable lead-time to prepare for the event.

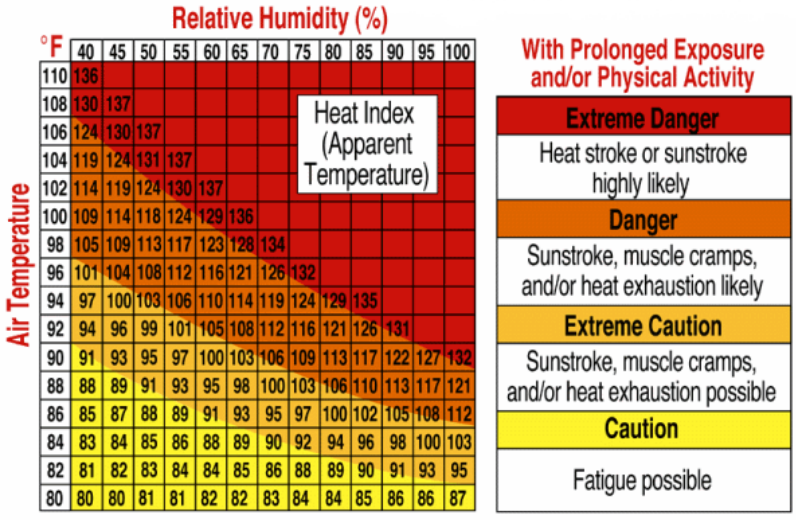
✦ **Excessive Heat Watch** BE PREPARED	A Heat Watch is issued when conditions are favorable for an excessive heat event in the next **24** to **72** hours. A Watch is used when the risk of a heat wave has increased but its occurrence and timing is still uncertain.
✦ **Excessive Heat Warning** BE AWARE	An Excessive Heat Warning is issued within **12** hours of the onset of extremely dangerous heat conditions. The general rule of thumb for this Warning is when the maximum heat index temperature is expected to be **105°** or higher for at least **2** days and night time air temperatures will not drop below **75°**; however, these criteria vary across the country, especially for areas not used to extreme heat conditions. If you don't take precautions immediately when conditions are extreme, you may become seriously ill or even die.
✦ **Heat Advisory** TAKE ACTION	A Heat Advisory is issued within **12** hours of the onset of extremely dangerous heat conditions. The general rule of thumb for this Advisory is when the maximum heat index temperature is expected to be **100°** or higher for at least 2 days, and night time air temperatures will not drop below **75°**; however, these criteria vary across the country, especially for areas that are not used to dangerous heat conditions. Take precautions to avoid heat illness. If you don't take precautions, you may become seriously ill or even die

Magnitude of Excessive Heat of Heat Wave

Excessive heat is measured by the NWS Heat Index and the NWS Excessive Heat Warning Classifications. As both the air temperature and the humidity rise, so will the danger level to people. Heat disorders will become more likely with prolonged exposure or strenuous activity as shown in **Figure 7**.

Figure 7

Heat Index (Temperature and Humidity)



Source: weather.gov

The **Caution** stage describes how fatigue is possible, while **Extreme Caution** temperatures can result in sunstroke, muscle cramps, or heat exhaustion. The **Danger** temperatures could cause sunstroke, while at the **Extreme Danger** temperatures, heatstroke or sunstroke is likely according to the humidity and temperature Heat Index. Since heat index values were devised for shady, light wind conditions, exposure to full sunshine can increase heat index values by up to **15°F**. Also, strong winds, particularly with very hot, dry air, can be extremely hazardous.

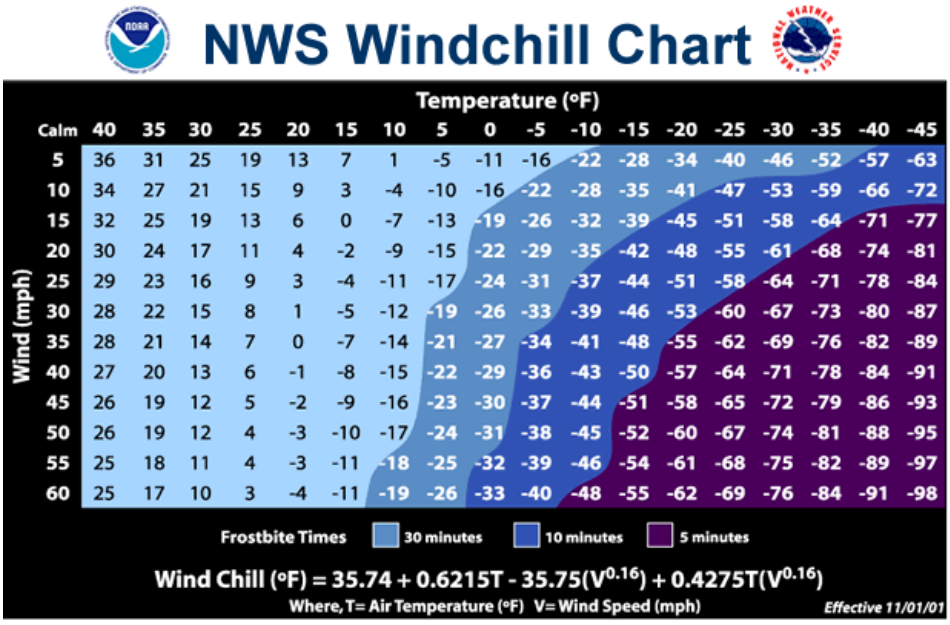
Extreme Cold or Wind Chill

Extreme cold temperatures are associated with continental Arctic air masses. The actual temperatures reached depend specifically on the nature of the cold air mass and where it originated. In general, those from the Arctic regions are the coldest. Though cold temperatures are dangerous, they become more so in conjunction with strong winds. The combination produces a wind-chill factor, which is heat loss measured in Watts per meter squared (Wm-2). A wind-chill factor of **1400** Wm-2 is equivalent to a temperature of **-40° F**. At **2700** Wm-2, exposed flesh freezes within a half-minute.

Magnitude of Extreme Cold or Wind Chill

Extreme cold magnitude can be measured for **windchill** using the **NWS Windchill Temperature (WCT) Index** as displayed in **Figure 8**, measuring the wind and temperature leading to how quickly frostbite can occur. The **extreme cold weather** warning stages describe the potential impacts of the weather.

Figure 8
Windchill Temperature (WCT) Index



Source: National Weather Service

Cold weather warnings incrementally warn people of the dangers of **extreme cold**. The National Weather Service provides watches, advisories, and warnings.

✦ **Wind Chill Watch** BE PREPARED	NWS issues a wind chill watch when dangerously cold wind chill values are possible. As with a warning, adjust your plans to avoid being outside during the coldest parts of the day. Make sure your car has at least a half tank of gas and update your winter survival kit.
✦ **Wind Chill Advisory** BE AWARE	NWS issues a wind chill advisory when seasonably cold wind chill values, but not extremely cold values, are expected or are occurring. Be sure you and your loved ones dress Appropriately and cover exposed skin when venturing outdoors. A **Wind Chill Advisory** is issued for New Hampshire when wind chill values are expected to be **-20°F** to **-29°F** and winds are greater than **5** mph.
✦ **Wind Chill Warning** TAKE ACTION	NWS issues a wind chill warning when dangerously cold wind chill values are expected or are occurring. A **Wind Chill Warning** is issued for New Hampshire when wind chill values are expected to be **-30°F** and winds are greater than **5** mph.

FIRE HAZARDS

Fire can be caused by several agents and can spread rapidly to consume property and endanger lives. This **2021 Plan** examines **lightning**, and **wildfire** (natural) fire sources and places other **fires (vehicles, structure, arson, explosions**) with **Technological Hazards**.

Wildfire is a significant concern and can quickly get out of control without good infrastructure, easily accessible forested backlots and practiced procedures. Lightning or human folly can cause wildfire. Locations of older narrow graveled roads, densely packed residential areas, cul-de-sacs, and roads or areas of Town with only **1** access/egress are among the most vulnerable locations for fire and wildfire hazards. Rural, forested areas of the community or recreation and conservation areas are often the most vulnerable to both **wildfire** and **lightning**.

There are several types of natural **FIRE** hazards examined in the **Hazard Identification and Risk Assessment**:

Main Hazard Category	Specific Hazards Included	
FIRE	WILDFIRE Brushfire, Outdoor Fires or Accidental	LIGHTNING

Wildfire

The overall ratings of **Wildfire** in Deering from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
WILDFIRE **Brushfire, Outdoor Fires or Accidental**	**4** **HIGH**	1 LOW	3 HIGH	3 HIGH	**9.3** **HIGH**

Wildfire is defined as any unwanted and unplanned fire burning in forest, shrub or grass. Wildfires are frequently referred to as forest fires, brush fires, shrub fires or grass fires, depending on their location and size. They often occur during drought and when woody debris on the forest floor is readily available to fuel the fire. The threat of wildfires is greatest where vegetation patterns have been altered by past land-use practices, fire suppression and fire exclusion. Because fire is a natural process, fire suppression can lead to more severe wildfires due to vegetation buildup. With Bear Brook State Park, **wildfire** seems particularly relevant.

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 and cultural and economic resources.

Magnitude of Wildfire

Although there are several potential indices, the current standard of measuring wildfire magnitude is utilizing the National Wildfire Coordinating Group (NWCG)'s wildfire classification scale. Table 15 displays the wildfire classification size per the number of acres burned.

Table 15
National Wildfire Coordinating Group Wildfire Classification Scale

Fire Class	Sizes in Acres
Class A	1/4 acre or less
Class B	> 1/4 acre to < 10 acres
Class C	10 acres to < 100 acres
Class D	100 acres to < 300 acres
Class E	300 acres to < 1,000 acres
Class F	1,000 acres to < 5,000 acres
Class G	5,000 acres or more

Source: National Wildfire Coordinating Group

The New Hampshire Department of Natural and Cultural Resources Division (NHDNCR) of Forest and Lands (DFL) helps to promote daily fire danger ratings which community members can readily understand. The Fire Department posts the information in a prominent location, at the Fire Station. The **fire danger ratings** are as follows:

✦ **Low** **GREEN**	Fire starts are unlikely. Weather and fuel conditions will lead to slow fire spread, low intensity and relatively easy control with light mop-up. Controlled burns can usually be executed with reasonable safety.
✦ **Moderate** **BLUE**	Some wildfires may be expected. Expect moderate flame length and rate of spread. Control is usually not difficult and light to moderate mop-up can be expected. Although controlled burning can be done without creating a hazard, routine caution should be taken.
✦ **High** **YELLOW**	Wildfires are likely. Fires in heavy, continuous fuel such as mature grassland, weed fields and forest litter, will be difficult to control under windy conditions. Control through direct attack may be difficult but possible and mop-up will be required. Outdoor burning should be restricted to early morning and late evening hours.
✦ **Very High** **ORANGE**	Fires start easily from all causes and may spread faster than suppression resources can travel. Flame lengths will be long with high intensity, making control very difficult. Both suppression and mop-up will require an extended and very thorough effort. Outdoor burning is not recommended.
✦ **Extreme** **RED**	Fires will start and spread rapidly. Every fire start has the potential to become large. Expect extreme, erratic fire behavior. NO OUTDOOR BURNING SHOULD TAKE PLACE IN AREAS WITH EXTREME FIRE DANGER.

Lightning

The overall ratings of **Lightning** in Deering from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
LIGHTNING	**4 HIGH**	1 LOW	2 MEDIUM	2 MEDIUM	**6.7 MEDIUM**

All thunderstorms contain lightning. During a lightning discharge, the sudden heating of the air causes it to expand rapidly. After the discharge, the air contracts quickly as it cools back to ambient temperatures. This rapid expansion and contraction of the air causes a shock wave that we hear as thunder, a shock wave that can damage building walls and break glass. Lightning strikes can cause death, injury, and property damage. Lightning is often referred to as the "underrated killer".

Magnitude of Lightning

Lightning can be measured to determine how likely it may be for starting fires. Using a Level system of **1** to **6** corresponding with storm development and the number of lightning strikes, the Lightning Activity Level (LAL) measures the magnitude of lightning strikes as displayed in **Table 16**.

Table 16

Lightning Activity Level (LAL)

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

Source: National Weather Service

FLOOD HAZARDS

Floods are defined as a 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/or inadequate local drainage. Floods can cause loss of life, property damage, crop/livestock damage, and water supply contamination. Floods can also disrupt travel routes on roads and bridges. However, floods can be beneficial to the low lying agricultural areas which are used for active farm ands by enriching the soil.

Floodplains are usually located in lowlands near rivers, and flood on a regular basis. The term ***100****-year flood* does not mean that a flood will occur once every **100** years. It is a statement of probability that scientists and engineers use to describe how one flood compares to others that are likely to occur. It is more accurate to use the phrase ***1%*** *annual chance flood*. This phrase means that there is a **1%** chance of a flood of that size happening in any single year. The **500**-year floods are phrased as **0.2%** annual chance of flood.

Inland floods are most likely to occur in the spring due to the increase in rainfall and melting of snow; however, floods can occur at any time of year. A sudden thaw during the winter or a major downpour in the summer can cause flooding because there is suddenly a lot of water in one place with nowhere to drain. Flooding is the most common natural disaster to affect New Hampshire, a common and costly hazard.

Dam Breach, Release or Failure has a close relationship with **Flood Hazards**, uses the NH DES Dam Hazard Classification categories, and has therefore been rated along with the natural hazards.

There are several types of **Flood Hazards** examined in the **Hazard Identification and Risk Assessment**:

Main Hazard Category	Specific Hazards Included	
FLOOD	INLAND FLOODING Rains, Snow Melt, or Flash Floods	RIVER HAZARDS Ice Jams, Scouring, Erosion, Channel Movement or Debris
TECHNOLOGICAL	DAM FAILURE Water Overtop, Breach, Beaver, etc.	

Inland Flooding

The overall ratings of **Inland Flooding** in Deering from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
INLAND FLOODING **Rains, Snow Melt or Flash Floods**	**4** **HIGH**	1 LOW	3 HIGH	3 HIGH	**9.3** **HIGH**

Inland flooding hazards from storms, spring temperatures, rains and more can be measured by Special Hazard Flood Areas (SFHAs) and river gage flood stage heights.

Magnitude of Inland Flooding

Flooding magnitude, or how severe flooding could occur in Deering, can be measured by the following SFHA Flood Zone scale in **Table 17**. "Flood" encompasses all types of flooding including **Rains, Snow Melt, Floods and Flash Floods** and is often the result of other natural hazards, such as **Tropical and Post Tropical**, **Severe Storms**, etc.

Special Flood Hazard Areas (SFHAs)

Base Flood Elevations (BFEs) are abundant within Central NH along the **Merrimack River**, **Contoocook River**, **Blackwater River**, **Warner River**, **Soucook River**, and **Suncook River** on the DFIRMs of **2009** (Hillsborough County) and **2010** (Merrimack County). In Deering (**330085**) New Hampshire (**33011C**), there are several DFIRMs identifying floodplains. DFIRM panels are not printed when floodplains are not present in an area.

DFIRMs illustrate the location of floodplains as a significant upgrade from the previous series of outdated paper maps, known as FIRMs. These new **2009** maps for Deering are now set on an aerial photography background that displays roads, buildings, forested areas, waterbodies and watercourses. Deering's Zoning Ordinance references the old 1979 maps as the official DFIRMS. The general Flood Zone types appear in **Table 17**.

Table 17
Special Flood Hazard Area (SFHA) Zones on 2009 DFIRMS

Special Flood Hazard Areas on Deering DFIRMs	
Zone A	**1% annual chance of flooding** • **100-year** floodplains *without* Base Flood Elevations (BFE)
Zone AE *(with or without floodways)*	**1% annual chance of flooding** • **100-year** floodplains *with* Base Flood Elevations (BFE) • some identified as **floodways** with stream channel and/or adjacent floodplain areas • areas must be kept free of encroachment so 1% annual chance of flood will not substantially increase flood height
Zone X	**0.2% annual chance of flooding** • **500-year** floodplain *without* Base Flood Elevations (BFE) • sheet flow flooding less than 1-foot deep • stream flooding where the contributing drainage area is less than 1 square mile • areas protected from 100-year floodplains by levees • OR areas determined to be outside the 0.2% annual chance of flood (see DFIRMs)

Sources: FEMA and NH Geographically Referenced Analysis and Transfer System (NH GRANIT) websites

Deering DFIRMs can be viewed online at and downloaded from the NH Geographically Referenced Analysis and Transfer System (NH GRANIT) website. Alternatively, the DFIRMs' respective paper FEMA **2009** Floodplain Maps in the Town Office could be consulted. Should the **Zone A** or **Zone X** or **Zone AE** flood to either the **100**-year or **500**-year level, the DFIRM areas will help **measure the location of the floodplain and potential magnitude of the flood.**

Rapid Snowpack Melt

Warm temperatures and heavy rains cause rapid snowmelt. The water cannot seep into the frozen ground in early spring and so it runs off into streets and waterways. Quickly melting snow coupled with moderate to heavy rains are prime conditions for flooding.

There is the possibility of damages from the rapid snowpack melt because of the flooding from the **Contoocook River** and **Piscataquog River** and the various brooks along the roads, roadside wetlands, and from the culverts directing the watercourses. Locations in Deering that may be vulnerable to rapid snowpack melt include undersized or unmaintained culverts, roads, driveways, slopes, yards or fields, or any of the Town's fast moving brooks or drainage areas. Damage to roads is expected.

Magnitude of Rapid Snowpack Melt

Rapid snowpack melt is a type of flooding. On its own, it has no known magnitude measurement. However, the hazard can share **Flooding's** Special Flood Hazard Areas (SFHAs) table or the list of road washouts found later in this **4 HAZARD RISK ASSESSMENT** chapter.

River Hazards

There are several types of **RIVER** hazards examined in the **Hazard Identification and Risk Assessment**:

Main Hazard Category	Specific Hazards Included
RIVER	RIVER HAZARDS Ice Jams, Scouring, Erosion, Channel Movement or Debris

River hazards are considered different from flooding in this **Hazard Mitigation Plan**. They include ice jams, scouring of banks and infrastructure, erosion of banks and shoreline, channel movement, and woody material debris. These types of incidents could occur on large brooks or other watercourses as well as rivers.

The overall ratings of **River Hazards** in Deering from the **HIRA** are:

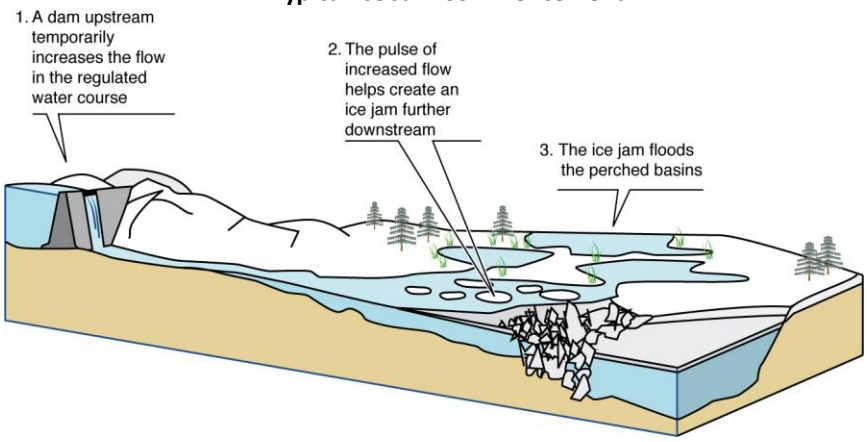
Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
RIVER HAZARDS Ice Jams, Scouring, Erosion, Channel Movement or Debris	**4 HIGH**	1 LOW	2 MEDIUM	2 MEDIUM	**6.7 MEDIUM**

River Ice Jams

Rising waters in early spring often break ice into chunks, which float downstream, pile up and cause flooding. Small rivers and streams pose special flooding risks because they are easily blocked by jams. Ice in riverbeds and against structures presents significant flooding threats to bridges, roads, and the surrounding lands. A visual of how ice jams often form is displayed in **Figure 19**.

Figure 9

Typical Ice Jam Commencement



Source: USGS, Internet Accessed May 2015

Magnitude of River Ice Jams

There is no known widely-used magnitude scale for **river ice jams**. River ice jams can cause debris impacted infrastructure when they apply pressure to bridges and dams.

The US Army Corps of Engineers (ACOE) maintains the Ice Jam Database, Bulletins & Surveys website which locates where known ice jams are presently occurring and where they have occurred in the past. Reports can be generated in various formats so emergency responders can identify the locations of prior ice jams and begin to mitigate the effects of future events.

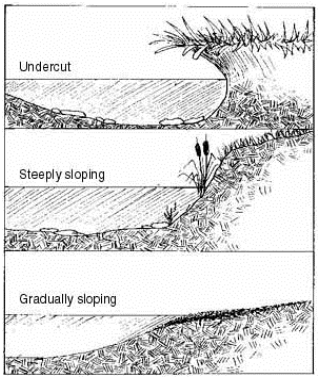
Fluvial Erosion, Bed Scouring and Channel Movement

Fluvial erosion is the wearing away of the river/stream bank and floodway. Bed scouring is the wearing away of the bed of the river or stream, typically shown as a pool type formation at downstream culvert outflows. Watercourses with high elevation change (stream gradient) are particularly prone to flash-flooding conditions and most vulnerable to erosion and scouring. During flooding or even high flow events, rivers can erode their banks and migrate into their floodplains. A migrating river, when channel movement is occurring, has the potential to impact nearby structures (berms, dams, buildings, etc.) or infrastructure such as river or stream crossings (culverts and bridges) or transportation features (roads, drainage structures, rail, etc.) in its migration path.

Fluvial geomorphology is the study of how processes of flowing water in rivers work to shape river channels and the land around them. Fluvial assessments are a collection of field data undertaken within designated river reaches. A **river reach** is a length of stream that has characteristics similar enough that condition data collected within that length is representative of the entire reach. Figure 10 displays visual bank erosion characteristics. In Deering, fluvial geomorphology is most pertinent to the **Contoocook River** and the **Piscataquog River**.

Figure 10

Bank Erosion Characteristics

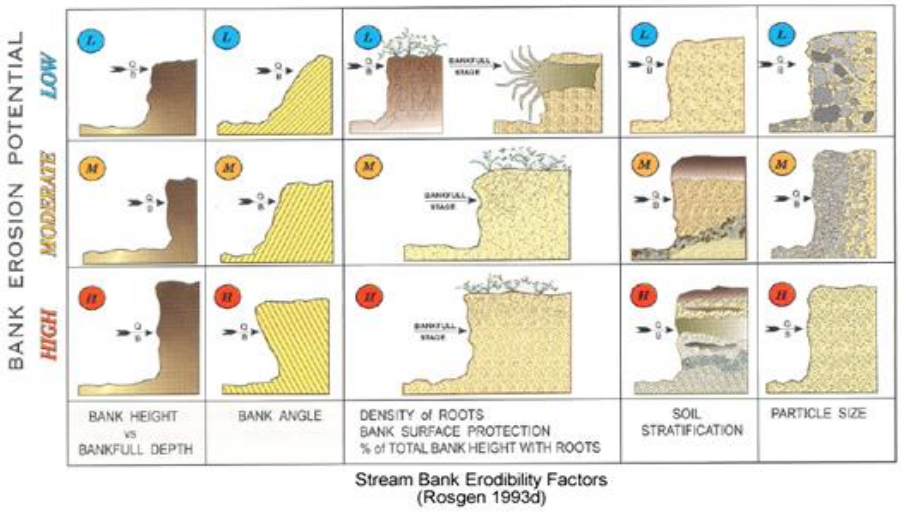


Source: US Geological Survey (USGS)

Magnitude of (Fluvial) Riverbank Erosion

River and streambank erosion magnitude can be measured by the US EPA Bank Erosion Prediction Index (BEHI), which is used with the Near Bank Stress (NBS) quantification. Taken into consideration for the BEHI are the bank height versus bankfull depth, bank angle, density of roots, soil stratification, and particle size at a river reach. Figure 11 displays the visual version of the index.

Figure 11
Bank Erosion Prediction Index (BEHI)



Source: US Environmental Protection Agency (US EPA)

Dam Failure

Dam breach and the resulting failure cause rapid loss of water that is normally impounded by the dam. These kinds of floods are extremely dangerous and pose a significant threat to both life and property as they are quick, unexpected, and if they occur during a flooding event, dam failures can overload an already burdened water channel.

The overall ratings of **Dam Failure** in Deering from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
DAM FAILURE Water Overtop, Breach, Beaver, etc.	**4 HIGH**	1 LOW	2 MEDIUM	2 MEDIUM	**6.7 MEDIUM**

Magnitude of Dam Failures

Although dam failure is considered a **Technological Hazard**, it is often a secondary hazard caused by flooding conditions and has been rated along with the natural hazards. Classifications of dams and their magnitude of failure can be measured by the NH DES Dam Hazard Classifications shown in **Table 18**.

Table 18

New Hampshire Dam Hazard Classifications

Dam Classification		
NON-MENACE Structure		**Inspection**
NM	Means a dam that is not a menace because it is in a location and of a size that failure or misoperation of the dam would not result in probable loss of life or loss to property, provided the dam is: *if certain criteria are met	Every 6 years *
	❍ Less than six feet in height if it has a storage capacity greater than 50 acre-feet; ❍ Less than 25 feet in height if it has a storage capacity of 15 to 50 acre-feet.	
LOW Hazard Structure		**Inspection**
L	Means a dam that has a low hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following:	Every 6 years
	❍ No possible loss of life. ❍ Low economic loss to structures or property. ❍ Structural damage to a town/city road or private road accessing property other than the dam owner's that could render the road impassable or interrupt public safety services. ❍ The release of liquid industrial, agricultural, or commercial wastes, septage, or contaminated sediment if the storage capacity is less than two-acre-feet and is located more than 250 feet from a water body or water course. ❍ Reversible environmental losses to environmentally-sensitive sites.	
SIGNIFICANT Hazard Structure		**Inspection**
S	Means a dam that has a significant hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in any of the following:	Every 4 years
	❍ No probable loss of lives. ❍ Major economic loss to structures or property. ❍ Structural damage to a Class I or Class II road that could render the road impassable or otherwise interrupt public safety services. ❍ Major environmental or public health losses, including one or more of the following: ♦ Damage to a public water system, as defined by RSA 485:1-a, XV, which will take longer than 48 hours to repair. ♦ The release of liquid industrial, agricultural, or commercial wastes, septage, sewage, or contaminated sediments if the storage capacity is 2 acre-feet or more. ♦ Damage to an environmentally-sensitive site that does not meet the definition of reversible environmental losses.	
HIGH Hazard Structure		**Inspection**
H	Means a dam that has a high hazard potential because it is in a location and of a size that failure or misoperation of the dam would result in probable loss of human life from:	Every 2 years
	❍ Water levels and velocities causing structural failure of a foundation of a habitable residential, commercial, or industrial structure, which is occupied under normal conditions. ❍ Water levels rising above the first floor elevation of a habitable residential, commercial, or industrial structure, which is occupied under normal conditions when the rise due to dam failure is greater than one foot. ❍ Structural damage to an interstate highway, which could render the roadway impassable or otherwise interrupt public safety services. ❍ The release of a quantity and concentration of material, which qualify as "hazardous waste" as defined by RSA 147-A:2 VII. ❍ Any other circumstance that would more likely than not cause one or more deaths.	

Source: NH Department of Environmental Services (NHDES) Dams Bureau Fact Sheet WD-DB-15, 2012

PUBLIC HEALTH HAZARDS

Public health issues can be measured in many ways. Students and the elderly are vulnerable to seasonal health outbreaks as they tend to congregate in large numbers and in shared environments where physical contact is common. Large groups can make bioterrorism more effective.

It is difficult to predict where an epidemic would occur due to human, mosquito and wildlife mobility. Commonly occurring epidemics following extreme heat or cold can include **influenza**, norovirus, rhinovirus (viruses), Lyme disease, Anaplasmosis and Babesiosis, Borrelia miyamotoi or Powassan (tickborne diseases), Eastern Equine Encephalitis (EEE), West Nile, Jamestown Canyon Virus or Zika (arboviral, mosquito-borne diseases) and any could occur in Deering. The Town has swampy areas around its rivers, wetlands and brooks which are prime breeding ground for **mosquitoes**. Large deer herds that roam can carry **deer ticks** in the Town's heavily forested sections and into State Forests. The **coronavirus** global pandemic is contagious between humans in aerosol /droplet form and is much more contagious and deadly than influenza.

Other wide-spread public health hazards include **water quality degradation** (failing septic systems, flooding, pipes breaking, runoff, haz mat spills) that could sicken residents using the public water supplies (those serving over 25 people), dug wells or bedrock wells, or could cause aquatic and wildlife deaths. Epidemics could result from water quality issues.

Air quality could decline from ground-level ozone or fine particulates and is monitored by the NH Department of Environmental Services. Air Quality Action Days are announced when monitoring sites report poor breathing air.

Food-borne illnesses could result from improperly handled or cooked food, either at home or at restaurants, cafeterias, or from markets or farms.

There are several types of **PUBLIC HEALTH** hazards examined in the **Hazard Identification and Risk Assessment**:

Main Hazard Category	Specific Hazards Included
PUBLIC HEALTH	PUBLIC HEALTH Infectious Diseases, Air & Water Quality, Biological, Addiction, Arboviral or Tick-borne

Most of these diseases can cause epidemics transmitted through food, water, environment, or personal contact. An epidemic could also result from bioterrorism, whereby an infectious agent is released into a susceptible population. Drug addiction is reportedly high in New Hampshire and is considered a public health hazard. There are many facets public health hazards could take in Deering. The Town of Deering is an active member of the Capital Area Public Health Network and has a designated Point of Dispensing (POD) location at the Weare Middle School.

The overall ratings of **Public Health** in Deering from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
PUBLIC HEALTH Infectious Diseases, Air & Water Quality, Biological, Addiction, Arboviral, or Tick-borne	**4 HIGH**	3 HIGH	2 MEDIUM	2 MEDIUM	**9.3 HIGH**

Coronavirus

Coronaviruses are a large family of viruses, but only several types are known to commonly cause infections in people, with these common human coronaviruses usually causing mild to moderate respiratory illness (like the common cold). Newer human coronaviruses, like Severe Acute Respiratory Syndrome (SARS), Middle Eastern Respiratory Syndrome (MERS), and the COVID-19 can cause more severe symptoms. The COVID-19 is originally thought to have spread from animals to humans, but now person-to-person spread is occurring. The virus is spread through the air by coughing and sneezing; by close personal contact, such as touching or shaking hands; and by touching an object or surface with the virus on it, then touching mouth, nose, or eyes before washing hands.

The NH Department of Health and Human Services maintains a COVID-19 dashboard website with current information, statistics, legislation, and testing locations, and resources. Social distancing (staying at least **6** feet away from people outside of one's household), wearing cloth facial masks, sanitizing hands, monitoring for symptoms, working from home, remote schooling, and staying at home when possible are the ways to fight the COVID-19. Yet, one year into the pandemic (**Mar 2020-Mar 2021**), NH residents are feeling stifled and as restrictions ease, a surge of new cases occurs even as vaccines are administered.

Within the last **14** days (**March 15-29, 2021**), **1-4** Town of Deering residents have tested positive for the deadly respiratory coronavirus COVID-19. During this same time, **784** Hillsborough County residents (plus Nashua with **334** additional cases) have tested positive. In New Hampshire, new cases total **4,473** within the last **14** days. Since **March 2, 2020**, a total of **83,340** NH residents have tested positive for COVID-19. Of these, **13,709** cases are Hillsborough County residents (plus Nashua with **6,943** additional cases). A grand total of **46** Town of Deering residents to date have tested positive for COVID-19. Although vaccinations began in **December 2020** over a planned phasing process for New Hampshire residents, only **15%** of the state's population is fully vaccinated as of **March 29, 2021**. See **Figure 12** for case details.

To date as of **March 29, 2021**, with over **30 million** positive cases in our country, over **550,000** people have died in the United States alone from COVID-19 complications. Globally, nearly **128 million** people have tested positive and nearly **2.8 million** have died to date per the Johns Hopkins Coronavirus Resource Center. The pandemic is ongoing as of the writing of this **Plan** and is considered to be a serious long-term problem for humans, especially as new variants in the coronavirus emerge.

Figure 12

Current New 14 Days NH COVID-19 Cases and Cumulative (Total) NH COVID-19 Cases through 03-29-21

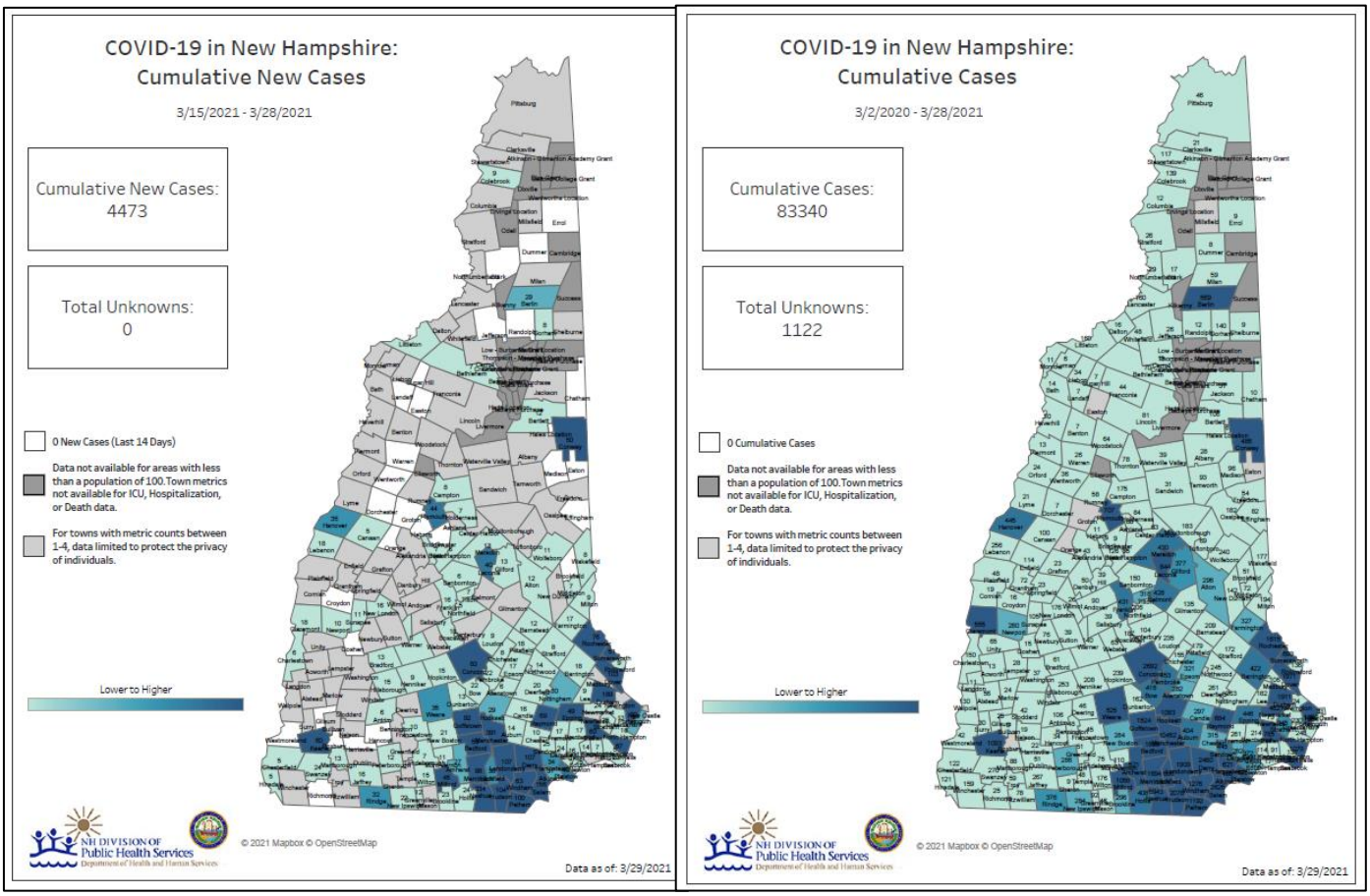
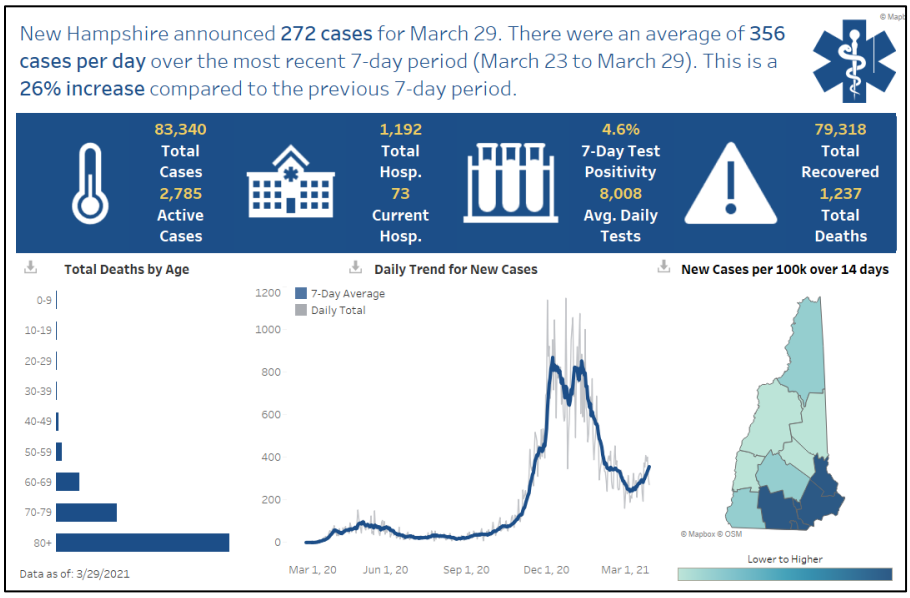


Figure 13

NH COVID-19 Statistics Overview



Source for Figures: NH Division of Health and Human Services Dashboard COVID-19 https://www.nh.gov/covid19/

Influenza

A magnitude scales for **Pandemic Severity Index (PSI) for Influenza** and resulting Community Mitigation Strategies is available from the US Center for Disease Control (US CDC). The State of New Hampshire Influenza Pandemic Public Health Preparedness and Response Plan 2007 included the **PSI for Influenza** classification system and the Community Strategies. As a growing college community, Deering may be particularly vulnerable to influenza.

Arboviral Transmission

New Hampshire developed guidelines for phased response to the arboviruses (mosquito-borne) Eastern Equine Encephalitis (EEE) and West Nile Virus (WNV) and Jamestown Canyon Virus (JCV). Annually, the NH DHHS publishes the State of New Hampshire Arboviral Illness Surveillance, Prevention, and Response Plan 2018 and its associated Arboviral Risk Map 2018. Risk Categories **1** through **5** determine human illness probability and the recommended response to outbreaks.

The new State of New Hampshire Zika Virus Response Plan 2018 describes Response Phases **0** to **3** and is written like an Emergency Operations Plan Annex for emergency responders to follow.

The NH DHHS and the Capital Area Public Health Network should be notified of all public health emergencies, no matter the type of threat.

Tick-borne Transmission

Tick-borne diseases are increasing in New Hampshire, and now include Lyme Disease, Anaplasmosis, Babesiosis, Powassan Virus, and more. These are all carried by the black legged tick in New Hampshire. The State has currently stopped producing annual maps and updates of tick-borne disease locations, but they have other resources available. Check back here at the NH Department of Health and Human Services for future updates: https://www.dhhs.nh.gov/dphs/cdcs/lyme/index.htm. No increase in Lyme Disease in Deering residents has been noted.

Air and Water Quality

The NH DES Drinking Water and Groundwater Bureau administers the federal Safe Drinking Water Act and NH statutes to protect public water systems, drinking water sources and groundwater supplies to help maintain safe **water quality** for drinking. NHDES currently is encouraging municipalities to refine the potable water definition in NH municipal building codes.

Water quality hazards such as radon, arsenic, uranium Per- and polyfluoroalkyl substances (PFAS) industrial chemicals, cyanobacteria, coliform bacteria, lead and copper in public water systems, are constantly being tested for and when found, monitored. Once these enter the groundwater (aquifers) system, they are extremely difficult to mitigate. The Climate Change Resilience Plan 2015 describes the

NHDES efforts understand how damage to infrastructure from natural hazards such as **Inland Flooding** and spring **snow melt** runoff can occur to create more resilient water systems.

Air quality is a particular danger to the young, elderly people, and those with Chronic Obstructive Pulmonary Diseases (COPD), asthma and other breathing diseases. Ground level ozone and particle pollution are monitored, reported and forecasted for New Hampshire counties. The Map of Current Air Quality changes daily and is coded to US EPA's Air Quality Index. Air Quality Action Days are announced when the air quality becomes Moderate, Unhealthy or Hazardous. Transportation such as I-89 and I-93, large local industries such as Merrimack Station and Wheelabrator contribute to Central NH Region air pollution, but New Hampshire is impacted by industries and wildfires across the United States and Canada. Greenhouse gases from industrial pollution and manufacturing contributes to poor **air quality**.

The NH DHHS maintains NH Health WISDOM, a database of public health data for air quality, childhood lead, cancer, asthma, tickborne disease, radon, and more. Many public health threats in New Hampshire have indices, monitoring, and data recording. The NH Department of Health and Human Services (NH DHHS) https://www.dhhs.nh.gov/ is a good resource to determine what diseases are most prominent.

Biological

A biological pest, the **Emerald Ash Borer**, has consumed most of the Town's ash trees. Only a minority have not been infected. Active logging operations are asked to identify them. The problem has been increasing over the years.

Deering Reservoir (Lake) does not have a current **milfoil** infestation. The DES Volunteer RAP and NH Lakes Association have boat ramp checks at the public launch to ensure boats carry in no milfoil. The Town maintains an active expendable trust fund in case milfoil or other invasive is found.

Magnitude of Public Health

The ***2018 State Multi-Hazard Mitigation Plan*** includes **Infectious Diseases** as a natural hazard. From this resource, the definition and extent of the potential magnitude of public health threats are identified as follows. These disease levels are described at the US Center for Disease Control.

The magnitude and severity of infectious diseases are described by its speed of onset (how quickly people become sick or cases are reported) and how widespread the infection is. Some infectious diseases are inherently more dangerous and deadly than others, but the best way to describe the extent of diseases relates to the disease occurrence:

✦ **Sporadic**	Disease that occurs infrequently and irregularly.
✦ **Endemic**	(Baseline) Constant presence and/or usual prevalence of a disease or infection agent in a population within a geographic area.

✦ **Hyperendemic**	The persistent, high levels of disease occurrence in the area.
✦ **Cluster**	The aggregation of cases grouped in place and time that are suspected to be greater than the number expected, even though the expected number may not be known.
✦ **Epidemic**	An increase, usually sudden, in the number of cases of a disease above what is normally expected in the population of the area.
✦ **Outbreak**	The same as epidemic, but over a much smaller geographical area.
✦ **Pandemic**	An epidemic that has spread over several countries or continents, usually affecting many people.

SOLAR STORMS HAZARDS

Solar storms and space weather is a new addition to the **Hazard Mitigation Plan** and can refer to solar flares, coronal mass ejections, high-speed solar wind, or geomagnetic storms. Solar activity can occur for as short a duration as a few minutes to several hours and create resulting effects on the Earth for weeks. When a geomagnetic storm occurs, high speed solar winds penetrate the Earth's magnetosphere and can decrease the Earth's magnetic field for several hours.

There are several types of **SOLAR STORMS** hazards examined in the **Hazard Identification and Risk Assessment**:

Main Hazard Category	Specific Hazards Included
SOLAR STORMS	SOLAR STORMS AND SPACE WEATHER Solar Winds, Geomagnetic Storms (Aurora Borealis), Solar Radiation or Radio Blackout

A significant danger from solar storms is the potential communications and electronics disruption. Satellites, vehicles, radios, airplanes, cell phones, computers, power lines and the internet have the capability for temporary cessation because of solar winds. Solar radiation can become a personal radiation hazard the closer one is to the stratosphere, especially on planes. Satellites, navigation, and electricity are sensitive to geomagnetic storms, which can cause electrical current surges in power lines, interference in the broadcast of radio, television, and telephone signals, and problems with defense communications.

The overall ratings of **Solar Storms** in Deering from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
SOLAR STORMS AND SPACE WEATHER **Solar Winds, Geomagnetic Storms (Aurora Borealis), Solar Radiation or Radio Blackout**	**4** **HIGH**	1 LOW	2 MEDIUM	1 LOW	**5.3** **MEDIUM**

Magnitude of Solar Storms

Many in residents in the Central NH region enjoy the aurora borealis viewed from Mount Kearsarge, visible to Deering in the north, although when this phenomenon occurs a geomagnetic storm is reaching New Hampshire. Emergency response personnel could monitor these storms from the Mount Kearsarge Fire Tower in Warner or from Pat's Peak in Henniker. NOAA's Space Weather Prediction Service https://www.swpc.noaa.gov/ provides 3-day outlooks on solar storms. Magnitude scales for **Radio Blackout (R)**, **Geomagnetic Storms (G)** and **Solar Radiation Storms (S)** are provided in **Table 19**.

Table 19

Solar Storms Magnitude Scales

Magnitude Scale	Description	Effect of Space Storm	Average Frequency (1 cycle = 11 years)
GEOMAGNETIC STORM (G)			
G1 Geomagnetic	**Minor**	✦ Power systems: Weak power grid fluctuations can occur. ✦ Spacecraft operations: Minor impact on satellite operations possible. ✦ Other systems: Migratory animals are affected at this and higher levels; aurora is commonly visible at high latitudes (northern Michigan and Maine).	1700 per cycle (900 days per cycle)
G2 Geomagnetic	**Moderate**	✦ Power systems: High-latitude power systems may experience voltage alarms, long-duration storms may cause transformer damage. ✦ Spacecraft operations: Corrective actions to orientation may be required by ground control; possible changes in drag affect orbit predictions. ✦ Other systems: HF radio propagation can fade at higher latitudes, and aurora has been seen as low as New York and Idaho (typically 55° geomagnetic lat.).	600 per cycle (360 days per cycle)
G3 Geomagnetic	**Strong**	✦ Power systems: Voltage corrections may be required, false alarms triggered on some protection devices. ✦ Spacecraft operations: Surface charging may occur on satellite components, drag may increase on low-Earth-orbit satellites, and corrections may be needed for orientation problems. ✦ Other systems: Intermittent satellite navigation and low-frequency radio navigation problems may occur, HF radio may be intermittent, and aurora has been seen as low as Illinois and Oregon (typically 50° geomagnetic lat.).	200 per cycle (130 days per cycle)
G4 Geomagnetic	**Severe**	✦ Power systems: Possible widespread voltage control problems and some protective systems will mistakenly trip out key assets from the grid. ✦ Spacecraft operations: May experience surface charging and tracking problems, corrections may be needed for orientation problems. ✦ Other systems: Induced pipeline currents affect preventive measures, HF radio propagation sporadic, satellite navigation degraded for hours, low-frequency radio navigation disrupted, and aurora has been seen as low as Alabama and northern California (typically 45° geomagnetic lat.).	100 per cycle (60 days per cycle)
G5 Geomagnetic	**Extreme**	✦ Power systems: Widespread voltage control problems and protective system problems can occur, some grid systems may experience complete collapse or blackouts. Transformers may experience damage. ✦ Spacecraft operations: May experience extensive surface charging, problems with orientation, uplink/downlink and tracking satellites. ✦ Other systems: Pipeline currents can reach hundreds of amps, HF (high frequency) radio propagation may be impossible in many areas for one to two days, satellite navigation may be degraded for days, low-frequency radio navigation can be out for hours, and aurora has been seen as low as Florida and southern Texas (typically 40° geomagnetic lat.).	4 per cycle (4 days per cycle)
SOLAR RADIATION (S)			
S1 Solar Radiation	**Minor**	✦ Biological: None. ✦Satellite operations: None. ✦Other systems: Minor impacts on HF radio in the polar regions.	50 per cycle
S2 Solar Radiation	**Moderate**	✦ Biological: Passengers and crew in high-flying aircraft at high latitudes may be exposed to elevated radiation risk. ✦ Satellite operations: Infrequent single-event upsets possible. ✦ Other systems: Small effects on HF propagation through the polar regions and navigation at polar cap locations possibly affected.	25 per cycle
S3	**Strong**	✦ Biological: Radiation hazard avoidance recommended for astronauts on EVA; passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk.	10 per cycle

Magnitude Scale	Description	Effect of Space Storm	Average Frequency (1 cycle = 11 years)
Solar Radiation		✦ Satellite operations: Single-event upsets, noise in imaging systems, and slight reduction of efficiency in solar panel are likely. ✦ Other systems: Degraded HF radio propagation through the polar regions and navigation position errors likely.	
S4 Solar Radiation	**Severe**	✦ Biological: Unavoidable radiation hazard to astronauts on EVA; passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk. ✦ Satellite operations: May experience memory device problems and noise on imaging systems; star-tracker problems may cause orientation problems, and solar panel efficiency can be degraded. ✦ Other systems: Blackout of HF radio communications through the polar regions and increased navigation errors over several days are likely.	3 per cycle
S5 Solar Radiation	**Extreme**	✦ Biological: Unavoidable high radiation hazard to astronauts on EVA (extra-vehicular activity); passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk. ✦ Satellite operations: Satellites may be rendered useless, memory impacts can cause loss of control, may cause serious noise in image data, star-trackers may be unable to locate sources; permanent damage to solar panels possible. ✦ Other systems: Complete blackout of HF (high frequency) communications possible through the polar regions, and position errors make navigation operations extremely difficult.	Fewer than 1 per cycle
RADIO BLACKOUT (R)			
R1 Radio Blackouts	**Minor**	✦ HF Radio: Complete HF (high frequency) radio blackout on the entire sunlit side of the Earth lasting for a number of hours. This results in no HF radio contact with mariners and en route aviators in this sector. ✦ Navigation: Low-frequency navigation signals used by maritime and general aviation systems experience outages on the sunlit side of the Earth for many hours, causing loss in positioning. Increased satellite navigation errors in positioning for several hours on the sunlit side of Earth, which may spread into the night side.	2000 per cycle (950 days per cycle)
R2 Radio Blackouts	**Moderate**	✦ HF Radio: HF radio communication blackout on most of the sunlit side of Earth for one to two hours. HF radio contact lost during this time. ✦ Navigation: Outages of low-frequency navigation signals cause increased error in positioning for one to two hours. Minor disruptions of satellite navigation possible on the sunlit side of Earth.	350 per cycle (300 days per cycle)
R3 Radio Blackouts	**Strong**	✦ HF Radio: Wide area blackout of HF radio communication, loss of radio contact for about an hour on sunlit side of Earth. ✦ Navigation: Low-frequency navigation signals degraded for about an hour.	175 per cycle (140 days per cycle)
R4 Radio Blackouts	**Severe**	✦ HF Radio: HF radio communication blackout on most of the sunlit side of Earth for one to two hours. HF radio contact lost during this time. ✦ Navigation: Outages of low-frequency navigation signals cause increased error in positioning for one to two hours. Minor disruptions of satellite navigation possible on the sunlit side of Earth.	8 per cycle (8 days per cycle)
R5 Radio Blackouts	**Extreme**	✦ HF Radio: Complete HF (high frequency) radio blackout on the entire sunlit side of the Earth lasting for a number of hours. This results in no HF radio contact with mariners and en route aviators in this sector. ✦ Navigation: Low-frequency navigation signals used by maritime and general aviation systems experience outages on the sunlit side of the Earth for many hours, causing loss in positioning. Increased satellite navigation errors in positioning for several hours on the sunlit side of Earth, which may spread into the night side.	Less than 1 per cycle

Source: https://www.swpc.noaa.gov/noaa-scales-explanation

WIND HAZARDS

Severe wind is likely to occur throughout all seasons. Significantly high winds occur especially during hurricanes, tornadoes, downbursts, winter storms, and thunderstorms any time of the year. Falling objects and downed power lines are dangerous risks associated with high winds. Property damage and downed trees are common during high wind occurrences. All utilities, including power lines, are at risk and their damage or destruction would create a hazard to the Town. A communications interruption or failure resulting from damage to telecommunications towers could affect the capabilities of emergency personnel to respond to the hazard event. Often with wind events, precipitation accompanies, increasing the danger of the hazard.

There are several types of **WIND** hazards examined in the **Hazard Identification and Risk Assessment**:

Main Hazard Category	Specific Hazards Included	
WIND	HIGH WIND EVENTS Wind, Thunderstorms, Hail, Downbursts, Tornadoes or Debris	TROPICAL AND POST-TROPICAL CYCLONES Hurricanes, Tropical Storms or Tree Debris

High Wind Events

High wind events can take the form of severe winds, rainstorms, thunderstorms, tornadoes, and downbursts.

The overall ratings of **High Wind Events** in Deering from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
HIGH WIND EVENTS **Wind, Thunderstorms, Hail, Downbursts, Tornadoes or Debris**	**4** **HIGH**	1 LOW	2 MEDIUM	1 LOW	**5.3** **MEDIUM**

Severe Wind, Rainstorms and Thunderstorms

More commonly experienced are **severe windstorms**, **rainstorms** and **thunderstorms**. The severe windstorms occur during all months of the year while the thunderstorms tend to erupt during periods of humidity. On occasion, precipitation in the form of rain or hail is experienced during these storms. Rainstorms bring can flooding and high winds. **Thunderstorms** can also bring lightning and hail hazards in addition to severe winds and flooding.

Magnitude of Severe Wind and Thunderstorms

Many of the severe wind events Deering experiences are not hurricanes but are severe windstorms or thunderstorms. Thunderstorms are common in New Hampshire, particularly during the hot weather months. The Thunderstorm Category Criteria scale in **Table 20** measures the magnitude of thunderstorms with their various weather components, including rain, wind, hail, tornado, and lightning. The result of windstorms includes tree debris fallen on roads, powerlines, homes, and vehicles.

Table 20

Thunderstorm Criteria Scale

Thunderstorm Categories	Rainfall Inches per hour	Wind Gust max mph	Hail Size inch	Tornado Potential Highest Category	Lightning Frequency per 5 minutes	Darkness Aspect	Overall Thunderstorm Impact
T-1 **Weak Thunderstorms** or **Thundershowers**	0.03" to 0.10"	< 25 mph	None	**None**	Few strikes during entire storm	**Slightly Dark** Sunlight may be seen after storm	1. No damage. 2. Gusty winds at times.
T-2 **Moderate Thunderstorms**	0.10" to 0.25"	25-40 mph	None	**None**	Occasional 1 to 10 strikes/ 5 min	**Moderately Dark** Heavy downpours might cause the need for car headlights	1. Heavy downpours. 2. Occasional lightning. 3. Gusty winds. 4. Very little damage. 5. Small tree branches might break. 6. Lawn furniture moved around. 7. Power outages are possible.
T-3 **Heavy Thunderstorms** 1. Singular or lines of storms	0.25" to 0.55"	40-57 mph	1/4" to 3/4"	**EF0**	Occasional to Frequent 10 to 20 strikes/ 5 min	**Dark** Car headlights used. Visibility low in heavy rains. Cars might pull off the road.	1. Minor damage. 2. Downpours produce some flooding on streets. 3. Frequent lightning could cause house fires. 4. Hail occurs with the downpours. 5. Small tree branches are broken. 6. Shingles are blown off roofs. 7. Power outages are likely.
T-4 **Intense Thunderstorms** 1.Weaker supercells 2. Bow echoes or lines of storms	0.55" to 1.25"	58-70 mph	1" to 1.5"	**EF0 to EF2**	Frequent 20 to 30 strikes/ 5 min	**Very Dark** Car headlights used. Some streetlights turn on.	1. Moderate damage. 2. Heavy rains can cause flooding to streams and roadway flooding occurs. 3. Hail can cause dents on cars and cause crop damage. 4. Tornado damage. 5. Power outages will occur.
T-5 **Extreme Thunderstorms** 1. Supercells with family of tornadoes 2. Derecho Windstorms	1.25" to 4"	> 70 mph	1.5" to 4"	**EF3 to EF5**	Frequent to Continuous > 30 strikes/ 5 min	**Pitch Black** Street lights turn on. House lights might be used.	1. Severe damage to trees and property. Damage is widespread. 2. Flooding rains. 3. Damaging hail. 4. Damaging wind gusts to trees and buildings. 5. Tornadoes EF3 to EF5 or family of tornadoes can occur. Tornadoes cause total devastation. 6. Widespread power outages.

Source: Adapted from Accuweather.com, Henry Margusity, Senior Meteorologist

Incidentally, hail can accompany **thunderstorms**. Hailstones are formed when raindrops are carried upward by thunderstorm updrafts into extremely cold areas of the atmosphere and freeze. Hail falls when it becomes heavy enough to overcome the strength of the thunderstorm updraft and is pulled toward the earth by gravity. They can have a damaging effect on property.

The **Hail Size Descriptions** in **Table 21** describes the potential size of hail during a hurricane or severe storm event, which could occur anywhere in Deering. The Table is shown below along with a **Hail Size Comparison Chart** which is a visual representation of some of the relative sizes of hail (note this chart image is not shown to scale). The **Table 21** hail size description and **Figure 14** size comparison scales measure the magnitude of hailstones that could fall on Deering during severe storm events.

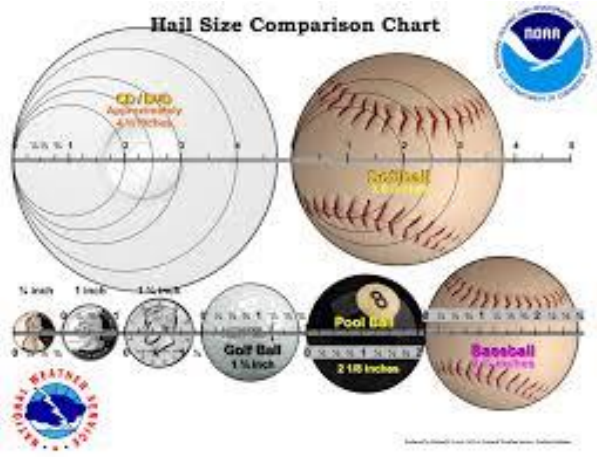
Table 21

Hail Size Description

Hailstone Diameter (inches)	Size Description
< 1/4	bb
1/4	**Pea Size**
1/2	Mothball Size
3/4	Penny Size
7/8	Nickel Size
Severe Criteria 1	**Quarter Size**
1 1/4	Half Dollar Size
1 1/2	Walnut or Ping Pong Ball
1 3/4	Golf Ball Size
2	**Hen Egg Size**
2 1/2	Tennis Ball Size
2 3/4	Baseball Size
3	**Teacup Size**
3 4/5	Softball Size
4	**Grapefruit Size**

Figure 14

Visual Hail Size Comparison



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

Tornadoes

Significantly high winds that occur especially during hurricanes, winter storms, and thunderstorms, but can also exist independent of other storms. Falling objects and downed power lines are dangerous risks associated with high winds. In addition, property damage and downed trees are common during high wind occurrences.

A tornado is a violent windstorm characterized by a twisting, funnel shaped cloud. They develop when cool air overrides a layer of warm air, causing the warm air to rise rapidly. The atmospheric conditions required for the formation of a tornado include great thermal instability, high humidity, and the convergence of warm, moist air at low levels with cooler, drier air aloft. Most tornadoes remain suspended in the atmosphere, but if they touch down, they become a force of destruction.

Tornadoes produce the most violent winds on earth, at speeds of **200** mph or more. In addition, tornadoes can travel at a forward speed of up to 70 mph. Damage paths can be in excess of one-mile wide and **50** miles long. Violent winds and debris slamming into buildings cause the most structural damage.

Magnitude of Tornadoes

A tornado occurring in Deering would cause considerable damage. Roofs could be torn off frame houses; dams could be damaged; large trees snapped or uprooted; and light object missiles would be generated by an **EF-2** Tornado. Tornado magnitude is measured by the Enhanced Fujita (EF) Scale, a 2007 update from the original F-scale (Fujita Scale) and is provided in **Table 22**.

Table 22
Enhanced Fujita (EF) Scale

EF Rating	3-Second Gust mph
EF0	65-85 mph
EF1	86-110 mph
EF2	111-135 mph
EF3	136-165 mph
EF4	166-200 mph
EF5	over 200 mph

Source: National Oceanic and Atmospheric Administration (NOAA) Storm Prediction Center
https://www.weather.gov/oun/efscale

The entire Town is forested and its Class V and Class VI gravel roads run the risk of isolation through **debris impacted infrastructure** (trees down on roads and powerlines) after a **tornado**, resulting in **power failure** with little emergency access until the way is cleared. Wooded and forested sections of Town are vulnerable to tree fall. One-egress roads and remote neighborhoods are especially at risk to the impacts of high wind events, including tornadoes.

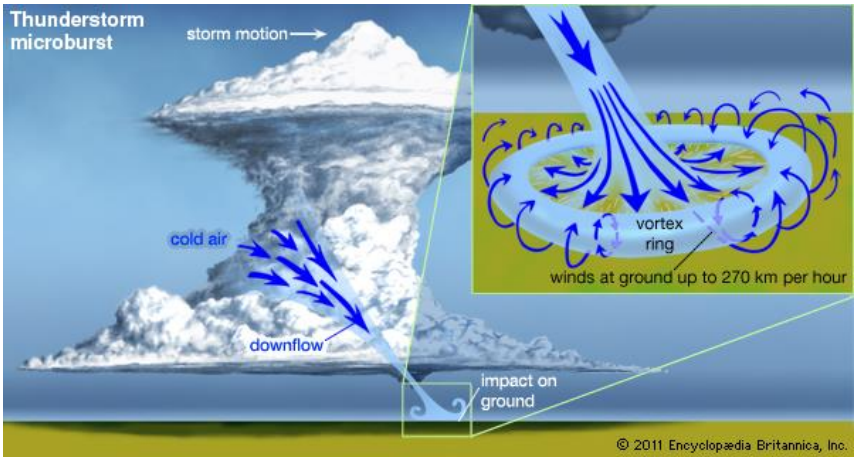
Downbursts

A downburst is a severe localized wind blasting down from a thunderstorm. These "straight line" winds are distinguishable from tornadic activity by the pattern of destruction and debris. Downbursts are capable of producing winds of up to **175** mph and are life threatening. Downbursts are quite common during Central NH's hot weather months. Microbursts and macrobursts have been known to occur here in the region.

Downbursts of both sizes can produce strong wind shear, large changes in wind speed and direction over a short distance. Trees are regularly snapped off in a singular direction by a macroburst or microburst. Downbursts typically originate from thunderstorm clouds, with air moving in a downward motion until it hits the ground level and then spreads outward in all directions. In fact, the wind pattern of a downburst is the opposite of a tornado's wind pattern, shown in **Figure 15**.

Figure 15

Microburst Forming from Thunderstorm Clouds



Source: Internet (Encyclopedia Brittanica)

Magnitude of Downbursts

Downburst magnitude is rated on the same **Enhanced Fujita (EF)** scale as tornadoes. In addition, downbursts fall into two categories:

- microburst, which covers an area less than **2.5** miles in diameter and
- macroburst, which covers an area equal to or greater than **2.5** miles in diameter.

Debris Impacted Infrastructure

The immediate result of severe wind events becomes another hazard, **debris impacted infrastructure**. The infrastructure could include roads, culverts, powerlines, utility lines, water towers, bridges or dams. Infrastructure could also be the natural infrastructure, such as rivers, ponds, lakes and brooks.

Typically, trees and woody material and debris are blown down from **severe wind events** causing **debris impacted infrastructure**. Watercourses, including the rivers, brooks, intermittent streams, and ditches alongside roads, and stationary waterbodies such as lakes, ponds, wetlands, swamps, bogs, and wet meadows receive trees, leafy material and other debris and can then **flood** their banks, **overflow culverts**, or cause **road washouts** during certain conditions. Trees and limbs falling on power lines, substations, or communications towers cause **power failure** and **live wire danger**. Trees and limbs falling onto roadways can **road blockages** and **transportation crashes**. Debris from wind could include roofs, siding, shingles, and more from buildings which can cause potential human injury as well as **road blockages**, **power failure** and **live wire danger**.

These features inventoried in **APPENDIX A Critical and Community Vulnerability Assessment** are those which should be watched carefully before and after storms and should be checked and maintained regularly to reduce the risk of significant **debris impacted infrastructure** events**. Erosion** along the rivers can cause scouring to infrastructure such as bridge abutments, and woody debris can flow downstream to become hazards to the landowners who have shoreland frontage.

Most dams and bridges could experience **debris impacted infrastructure**. Debris generated during storms and winds could continue for many years. This woody material debris is a concern during and after storm events. For emergency removal, the Town could contact the NH Department of Environmental Services and remove the trees right away, obtaining a “retroactive permit” during emergency situations.

Bridges vulnerable to debris dislodged during storm events may be eligible for NH Bridge Aid funding to help rehabilitate these bridges. All outlying roads are susceptible to tree fall and downed powerlines from **severe wind events**.

Magnitude of Debris Impacted Infrastructure

There is no standardized scientific scale for debris impacted infrastructure. However, the US Federal Highway Administration rates the potential for river/brook debris delivery to the infrastructure site and for river/brook accumulation across an infrastructure span. These can be utilized for hydrologic debris impacted infrastructure measurements.

Tropical and Post-Tropical Cyclones

Hurricane season begins on June 1 and continues through the end of November. August and September are the most active hurricane months. It is not uncommon for New England to be impacted by a hurricane more than once in a season. River and flooding due to heavy rains is a risk to Deering during hurricanes. Numerous hurricane events in recent history have occurred in the State, region, and the local area surrounding Deering that may have also had an impact on the Town.

The overall ratings of **Tropical and Post Tropical Cyclones** in Deering from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
TROPICAL AND POST-TROPICAL CYCLONES Hurricanes, Tropical Storms or Tree Debris	**4 HIGH**	1 LOW	2 MEDIUM	2 MEDIUM	**6.7 LOW**

A hurricane is a tropical cyclone in which winds reach speeds of **74** miles per hour or more and blow in a large spiral around a relatively calm center. Flooding is often caused from the coastal storm surge of the ocean and torrential rains, both of which accompany the storm. The floods and high winds can result in loss of life and property. Hurricanes, high wind and rain events, and thunderstorms can damage Deering just like any other community in Central New Hampshire. Forested lands and trees along the transportation infrastructure can be blown down across roads; the above-ground powerlines along the sides of the road can be snapped either by trees or high winds and fall onto the roads or nearby objects; and runoff flooding and stream/brook and river flooding can occur because of hurricanes and severe storms.

Magnitude of Hurricanes and Tropical Storms

The Saffir-Simpson Hurricane Wind Scale **measures the magnitude of wind event** on a **1** through **5** rating basis. The definitions of Category **1** through **5**'s sustained wind miles per hour and their respective threats to people, different types of homes, shopping centers, trees, power lines, water, and more are displayed in **Table 23**.

Table 23

Saffir-Simpson Hurricane Wind Scale

Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	74-95 mph	**Very dangerous winds will produce some damage:** Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110 mph	**Extremely dangerous winds will cause extensive damage:** Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 *major*	111-129 mph	**Devastating damage will occur:** Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4 *major*	130-156 mph	**Catastrophic damage will occur:** Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5 *major*	157 mph or higher	**Catastrophic damage will occur:** A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Source: National Oceanic and Atmospheric Administration (NOAA)

WINTER HAZARDS

Ice and snow events typically occur during the winter months and can cause loss of life, property damage, and tree damage. Severe winter storms, including Nor'easters, typically occur during January and February. However, winter storms can occur from late September through late May. Numerous severe winter events in recent history have occurred in the State, region, and the local area surrounding Deering that may have also had an impact on the Town. Unlike the relatively infrequent hurricane, New Hampshire generally experiences at least several Nor'easters each year with varying degrees of severity. They form along the East coast as warm air from the Atlantic Ocean collides with cold arctic winds to the north and west. A hurricane, the nor'easter's warm-weather counterpart, differs in that it has a narrow range of strong winds around a warm, low-pressure core—nor'easter winds are more dispersed around a cold, low-pressure center.

There are several types of **WINTER** hazards examined in the **Hazard Identification and Risk Assessment**:

Main Hazard Category	Specific Hazards Included
WINTER	SEVERE WINTER WEATHER Snow, Ice, Blizzard or Nor'Easter

Although avalanche appears in the ***State of New Hampshire Multi-Hazard Mitigation Plan 2018***, this winter hazard is not believed relevant to Deering's geography and development.

The overall ratings of **Severe Winter Weather** in Deering from the **HIRA** are:

Natural, Technological, Human Hazard Categories	Probability of Occurrence in 10 Years (1-4)	Human Injury Impact (1-4)	Essential Services or Infrastructure Impact (1-4)	Property Damage or Economic Impact (1-4)	OVERALL RISK (1-16)
SEVERE WINTER WEATHER Snow, Ice, Blizzard or Nor'Easter	**4** **HIGH**	2 MEDIUM	3 HIGH	3 HIGH	**10.7** **HIGH**

Severe Winter Storms

A winter storm can range from moderate snow to blizzard conditions. Blizzard conditions are considered blinding, wind-driven snow over 35 mph that lasts several days. A severe winter storm deposits four or more inches of snow during a 12-hour period or six inches of snow during a 24-hour period.

An ice storm involves rain, which freezes upon impact. Ice coating at least one-fourth inch in thickness is heavy enough to damage trees, overhead wires, and similar objects. Ice storms also often produce widespread power outages.

A Nor'easter is a large weather system traveling from South to North, passing along or near the seacoast. As the storm approaches New England and its intensity becomes increasingly apparent, the resulting counterclockwise cyclonic winds impact the coast and inland areas from a Northeasterly direction. In the winter months, oftentimes blizzard conditions accompany these events. The added impact of the masses

of snow and/or ice upon infrastructure often affects transportation and the delivery of goods and services for extended periods.

Extreme cold temperatures are associated with continental Arctic air masses. The actual temperatures reached depend specifically on the nature of the cold air mass and where it originated. In general, those from the Arctic regions are the coldest. Though cold temperatures are dangerous, they become more so in conjunction with strong winds. The combination produces a wind-chill factor – heat loss measured in Watts per meter squared (Wm-2). A wind-chill factor of 1400 Wm-2 is equivalent to a temperature of -40 degrees F. At 2700 Wm-2, exposed flesh freezes within a half-minute.

Recent Severe Winter Weather in New Hampshire

In March **2018**, New Hampshire was hit by 4 cyclonic Nor'easters in a row over a 2- week period because of the changing climate, in a recurring snow-and-melt cycle. These storms have the potential to inflict more damage than many hurricanes because the high storm surge and high winds can last from 12 hours to 3 days, while the duration of hurricanes ranges from 6 to 12 hours.

- March 2-3, 2018 – Seacoast flooding, Concord wind gusts 36 mph, about 1"
- March 7-8, 2018 – Concord 11"
- March 12-14, 2018 – Concord 11", Epsom 23"
- March 22, 2018 – Concord 3"

All winter storms make walking and driving extremely dangerous. The elderly and very young are at high risk during winter storms and may be affected by hypothermia and isolation. During winter storms, there is an increased risk of **fire** because people experience **power failure** and use candles, portable gas stoves, generators, and flammable sources of heat and light.

Magnitude of Severe Winter Weather

Severe Winter Weather magnitude in can be measured for, ice accumulation and snowfall using several different scales and indices including the Sperry-Piltz Ice Accumulation Index (SPIA) and NCDC Regional Snowfall Index (RSI) for the Northeast.

Table 24 displays the Sperry-Piltz Ice Accumulation Index (SPIA) which measure the magnitude of ice damage from severe winter weather. The index is compared to the tornado and hurricane scales note above. Storm total rainfall converted to ice accumulation, wind, and temperatures during the storm period are used to develop SPIA.

Table 24

Sperry-Piltz Ice Accumulation Index (SPIA)

Ice Damage Index	Average NWS Ice Amount *in Inches*	Wind Speed *mph*	Ice Damage and Impact Descriptions
0	< 0.25	< 15	Minimal risk of damage to exposed utility systems. No alerts or advisories needed for crews, few outages.
1	0.10 to 0.25	15 to 25	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges might become slick and hazardous.
	0.25 to 0.50	> 15	
2	0.10 to 0.25	25-35	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions might be extremely hazardous due to ice accumulation.
	0.25 to 0.50	15-25	
	0.50 to 0.75	< 15	
3	0.10 to 0.25	> = 35	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1-5 days. Warming sites needed.
	0.25 to 0.50	25 - 35	
	0.50 to 0.75	15 - 25	
	0.75 to 1.00	< 15	
4	0.25 to 0.50	> = 35	Prolonged and widespread utility interruptions with extensive damage to main distribution feeder lines and some high voltage transmission lines/structures. Outages lasting 5-10 days. Shelters or warming sites needed.
	0.50 to 0.75	25 - 35	
	0.75 to 1.00	15 - 25	
	1.00 to 1.50	< 15	
5	0.50 to 0.75	> = 35	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.
	0.75 to 1.00	> = 25	
	1.00 to 1.50	> = 15	
	> 1.50	Any	

Source: www.spia-index.com (adapted by CNHRPC)

The Regional Snowfall Index (RSI) for the Northeast is used to categorize significant snowstorms. The RSI ranks snowstorm effects on a scale from **1** to **5**, similar to the Enhanced Fujita Scale for tornadoes or the Saffir-Simpson Hurricane Wind Scale for hurricanes. The RSI differs from these other indices because it includes population, a social component. The RSI is based on the spatial extent of the storm, the amount of snowfall, and the juxtaposition of these elements with population. The Regional Snowfall Index (RSI) displayed in **Table 25** is a measurement of the magnitude of a snowstorm in the Northeast, which includes New Hampshire.

Table 25
Regional Snowfall Index (RSI) for the Northeast

Storm Category	RSI Value	Snow Description
1	1–3	Notable
2	3–6	Significant
3	6–10	Major
4	10–18	Crippling
5	18.0+	Extreme

Source: www.ncdc.noaa.gov/snow-and-ice/rsi/ (adapted by CNHRPC)

TECHNOLOGICAL HAZARDS

Many technological hazards could be construed as secondary hazards, as they often occur as the result of a primary (natural) hazard. For example, **power failure** or **transportation accidents** (technological) can result from severe winter weather (natural). Scientific measures of magnitude are generally not available for individual technological hazards, but they are provided for **debris impacted infrastructure** and **dam failure** which are closely related to **flooding** and for **hazardous materials spills** and **radiological incident**.

One of the technological hazards has been rated along with the natural hazards within the **Hazard Identification and Risk Assessment**. There are several specific hazards of the **TECHNOLOGICAL** hazard category examined in the **HIRA**:

Main Hazard Category	Specific Hazards Included			
TECHNOLOGICAL	AGING INFRASTRUCTURE Bridges, Culverts, Roads, Pipes or Underground Lines	DAM FAILURE Water Overtop, Breach, Beaver, etc.	FIRE Vehicle, Structure, Arson or Conflagration	HAZARDOUS MATERIALS Haz Mat Spills, Brownfields or Trucking
	LONG TERM UTILITY OUTAGE Power, Water, Sewer, Gas, Internet, Communications or Live Wire Danger			

Magnitude of Technological Events

The magnitudes of technological hazards are not addressed in this Plan. Technological events could have rating systems within their sphere of influence, but these are outside the scope of this **Hazard Mitigation Plan**. More information is provided for reference as needed for some of these technological hazards.

Aging Infrastructure

Infrastructure of a community includes its roads, sidewalks, bridges, culverts, water lines, sewer lines. Those components such as electric lines, telecommunications towers and dams are not considered in this section because they are not usually municipal-owned. The State of New Hampshire maintains responsibility for NH 49 in Deering. The Town is responsible for miles of local Class V gravel and paved roadways and any sidewalks, as well as the bridges and culverts. Communities in New Hampshire are faced with the dilemma of poor conditioned infrastructure with not enough funding to pay for rehabilitation, even with grants from the NH Department of Transportation (NHDOT) for roads and bridges and revolving loans from the NH Department of Environmental Services for water infrastructure.

Aging infrastructure creates hazards to people, through **transportation crashes**, **public health water quality crisis**, weakened bridges during **flooding** events, undersized culverts unable to accommodate storm water, and more.

Bridges, Culverts, Roads

Debris impacted infrastructure regularly occurs along the Central NH Region's rivers and streams and also along roadways. Rivers or brooks flowing under bridges or through culverts could get clogged or damaged by woody material or leaves in the watercourse. Culvert maintenance is particularly important before and during heavy rainfall and floods. Tree limbs falling onto power lines and onto roadways, disrupting both electricity and the roadway, occur during wind or winter storms.

Many of the local Town roads in Deering are constructed using ditching instead of storm drains. Most of the Town maintained roads are gravel, enabling easier maintenance and washout. Bridges and dams are described in the **APPENDIX A Critical and Community Vulnerability Assessment**.

Fire (Arson, Vehicle, Structure)

Fires which are not natural hazards are often associated with vehicles, structures or hazardous materials spills, or sometimes an explosion. These are considered **Technological Hazards**. Arson, the deliberate setting of a fire as an act of sabotage or mischief, is a **Human Hazard** but is contained in this section for convenience. No magnitude scales were defined for these types of non-natural fires.

Hazardous Materials

Hazardous materials and hazardous wastes contain properties that make them potentially dangerous or harmful to humans. They can be liquids, solids, contained gases or sludge. Hazardous wastes can be the by-product of manufacturing, as well as discarded commercial products. Most households contain cleaning agents that become hazardous waste when disposed of improperly. Chemicals have numerous benefits but can also cause hazards during their production, storage, transportation, use or disposal. Hazardous materials can have adverse health related effects and may even cause death in certain cases.

In addition, hazardous materials may damage homes, businesses and other property, as well as natural ecosystems. Chemical accidents in plants or chemical spills during transportation may often release hazardous chemicals.

The risk from hazardous materials spills or releases into groundwater is present if consumers and homeowners make irresponsible decisions regarding the disposal of household chemicals. These household chemicals can contaminate drinking water in wells and cause damage to various ecosystems. Most people contaminate without being aware that they are doing so. Further education may be needed to reduce hazardous waste contamination. The necessity for holding municipal Household Hazard Waste (HHW) collection days is crucial to helping to maintain a healthy environmental for Deering's residents.

Long Term Utility Outage

Utilities systems exist everywhere and are subject to damage from construction work, accidents and extreme weather. Many utilities are protected by back-up generators to prevent failure, whatever the cause may be. Nuclear power plants produce roughly **20%** of the nation's power, they exist in nearly all states and 3 million Americans live within **10** miles of a nuclear power plant. The greatest risk to life resulting from a nuclear power plant failure is radiation contamination resulting from radiation release into the environment. People in the immediate vicinity are at greatest risk of radiation contamination. Another common source of energy, coal, can be potentially hazardous because coal power plants emit chemicals such as mercury and sulfur dioxide.

Any service-providing businesses in Town (gas station, bank, fast food, convenience, etc.) would rely on electricity provided by powerlines, and in many cases, enterprise comes to a standstill during disaster events. Aging, vulnerable populations are at greatest risk in rural Deering from the effects of **power/utility failure** and **communications failure**. A few individuals in Town require oxygen and power failure and the likely accompanying communications systems failure would comprise the most vulnerable populations. The Fire and Rescue Department and Police Department conduct welfare checks for many residents known to be in need.

As a rule of thumb, all residents should be able to shelter in place in their homes for up to **3** days or **72** hours, gathering needed supplies and water ahead of time. **Power failure** can cause inconvenience, loss of economy, extra Town expenditures and staffing, and could restrict emergency response because the typical power failure is a secondary hazard caused by natural weather event. This problem is applicable to the **High Wind Events** and **Winter Weather** hazard events described earlier as well as **Debris Impacted Infrastructure** and **Transportation Crash** hazard events in the following sections.

Electricity

New Hampshire contains nuclear, coal and natural gas power plants. There is only one (**1**) coal power plant in New Hampshire, the Merrimack Station in Bow, currently owned by Granite Shore Power, formerly owned by Eversource and Public Service of New Hampshire. As of **2018**, the Merrimack Station is partially decommissioned, only operating when there is a need for additional kilowatt hours in the area. The Station requires **24** hours to become operational, then ceases firing when there is no additional electrical demand. The Merrimack Station is the largest coal-fired electrical generating station and when it was operating around the clock, supplied power to **190,000** households. Coal fuel generated only **7%** of the State's electricity in **2016**. Much of the State's electricity (**56%** in **2016**) is provided by the Seabrook nuclear power reactor.

In the harsh environment that New Hampshire residents are subjected to, power and utility failures on an isolated level are commonplace. During nearly every heavy snowstorm, ice storm, or other severe weather event, customers can easily lose power and/or other utilities. Deering is served by Eversource.

Communications Systems Failure

Communications systems, like utilities, are found everywhere and are subject to damage by construction work, severe weather and traffic accidents. Because communications systems depend on electricity, any power outage may cause an interruption in a communications system. In addition, many communications systems have buried cables which are particularly vulnerable to being cut. Communications systems interruptions can negatively impact a region, town, neighborhood or household in the case of a natural disaster, catastrophe or other emergency. Power lines often share cables and poles with communications systems. When power fails, cable, telephone and radio services frequently fail as well.

Telecommunications towers often carry local, regional, county, state and sometimes federal antennas that relay emergency communications. In addition, personal cellular communications are often co-located at the same tower. When a major communications tower is out of service, its impacts are widespread. In some Central NH Regional municipalities, the existing towers do not provide coverage to the entire community and create dead zones. This is particularly dangerous to people without landlines or when emergency services are necessary. Regional and state communications are often co-located on the tower upon which Town's emergency communications are based.

HUMAN HAZARDS

Events of human nature include terrorism (ecological, cyber and chemical), sabotage/vandalism, hostage situations, and civil unrest. These are often "behind the scenes" hazards that local Police Departments handle on a regular basis. These events are all caused by direct human action. Mass casualty incidents, caused by any number of hazards, would also be addressed as a human hazard. Cyber events, while a technological hazard, are considered another type of artificial, human-developed hazard.

There are several types of **HUMAN** hazards examined in the **Hazard Identification and Risk Assessment**:

Main Hazard Category	Specific Hazards Included			
HUMAN	TRANSPORTATION CRASH Vehicle, Airplane, Helicopter, Rail, Interstate, Pedestrian or Bicycle	MASS CASUALTY INCIDENT As a result of any hazard event	TERRORISM/ VIOLENCE Active Shooter, Hostage, Public Harm, Civil Disturbance/Unrest, Politically Motivated Attacks, Incendiary Devices, Sabotage or Vandalism	CYBER EVENT Municipal Computer Systems Attack, Cloud Data Breach, Identity Theft, Phishing, Ransomware or Virus

Human Hazards are examined by descriptions of the types of hazards and in the **Potential Future Hazards**. Scientific measures of magnitude are not available for individual human hazards.

Transportation Crashes

Automobile crashes could occur on any roadway in the Central NH region. A major accident would have the greatest impact for travelers on Interstates 93, 393 or 89; on US Route 202, US Route 4/202 or US Route 3; on NH Route 3A, NH Route 9, NH Route 13, NH Route 28, NH Route 31 NH Route 49, NH Route 77, NH 103, NH Route 106, NH Route 107, NH 114, NH Route 127, NH Route 129 and NH Route 132 or on their bypasses, interchanges, Exits and on/off ramps. These are high speed corridors with high traffic volumes. Many local roads allow for residential and commuter vehicles at low speeds. A vehicle-pedestrian or vehicle-bicycle crash has a greater casualty rate on the local and state roads as different road users use the same limited space.

In the region, the railroad lines along the Merrimack River create the potential for a (railcar) transportation accident. Trains could potentially derail, causing injuries or fatalities and hazardous materials spills. In the Central NH Region, the Concord-Lincoln Line runs **73** miles between Concord and Lincoln. The New Hampshire Maine Line runs between Concord, Nashua and Lowell, MA. Several communities through which these lines travel have expressed the concern about hazardous material spills due to transportation crashes or sabotage. Concord Municipal Airport is the major airport in the Central NH region but Manchester-Boston Regional Airport (MHT) can be accessed via NH 28 or US 3 in about 30

minutes. Air traffic can also be hazardous to the region's citizens. Small local airstrips such as the Hawthorne-Feather Airpark in Deering increase the chances for a possible aviation crash, especially in the higher elevations around Mount Kearsarge. With the technological prominence of personal drones that can be flown within site of the user, possibilities for drone crashes with people or vehicles increase.

Mass Casualty Incident

Mass casualty is the situation for which local, regional, state and national personnel train for treating large numbers of people who are injured from any natural, human or technological disaster. The Central NH Region has many partners for mass casualty training and preparation. Capital Area Public Health Network (CAPHN) works to promote, protect, and improve the health and well-being of communities within the Capital Area of New Hampshire through the proactive, coordinated, and comprehensive delivery of essential public health services. These include substance misuse prevention, suicide prevention, public health emergency preparedness, vaccinations, and more. The staff works with area emergency management directors. Across New Hampshire, there are **13** regional public health networks.

Concord Hospital is a **295**-licensed beds (plus **238** staffed beds) facility and the only trauma center in the Central NH Region. New London Hospital (**25** critical access beds, **58** long term care beds) and Franklin Regional Hospital (**25** critical access beds) are smaller hospitals in Merrimack County. In Laconia, the Lakes Region General Hospital (**137** beds) has a trauma center. The Dartmouth-Hitchcock Medical Center (**396** beds) in Lebanon has a trauma center and is New Hampshire's only and teaching hospital. The closest hospital to Deering is the private Monadnock Community Hospital in Peterborough. Mass casualty preparedness is a situation regularly trained for by hospital employees.

The New Hampshire Hospital Association provides leadership through advocacy, education and information in support of its member hospitals and health care delivery systems. The NHHA has an encourages its members to develop hospital emergency plans and staffs an Emergency Preparedness Coordinator position to plan for such events. **Mass casualties** of the magnitude that can be expected with a disaster related to terrorism or other incidents demand an expanded role for hospitals. They must be supported by their communities as they attempt to protect the facility, its patients and personnel while attending to the victims of a disaster. The NHHA has a mutual aid network designed to work together during times of crisis.

Terrorism/Violence

The use of force or violence against people to create fear, cause physical harm and/or intimidation or for reasons of ransom. Terrorists often make threats to create fear and change public opinion. Cyber terrorism consists of hackers who threaten the economy by attacking the intricate computer infrastructure, affecting business and communication. Biological and chemical terrorism refers to those infectious microbes or toxins used to produce illness or death in people or animals. Large groups or close quarters of people can make bioterrorism more effective. Terrorists may contaminate food or water, thus

threatening an unprotected civilian population. Eco-terrorism refers to the destruction of property by persons who are generally opposed to the destruction of the environment or to make a visible argument against forms of technology that may be destructive to the environment.

Sabotage/Vandalism

Sabotage is a deliberate action aimed at someone or some institution to weaken that person's or institution's integrity and reputation through subversion, destruction, obstruction, or disruption. Sabotage may occur in war, a workplace, in the natural environment, as a crime, in politics or as a direct attack against an individual. Vandalism is the willful defacement or destruction of property.

Hostage Situation

A **hostage situation** is an incident where innocent civilian(s) are held by someone or some group of persons demanding something from third party not related to the individual(s) being held hostage to ensure the fulfillment of certain terms. Often, a hostage situation results from a domestic dispute.

Civil Disturbance/Public Unrest

This hazard refers to types of disturbances that are caused by a group of people, often in protest against major socio-political problems including sit-ins or protests against wars and any general and public expression of outrage against a political establishment or policy. Many instances of **civil disturbance** and public unrest are quelled by a use of force from police. Participants may be victims of personal injury in severe cases. The most probable locations of larger civil disturbance and/or protest in New Hampshire are at the State House in Concord and at the universities and colleges. They have also occurred at political locations, such as feminist health centers or political party headquarters.

Bioterrorism

Biological hazards can also be caused by bioterrorism, the deliberate release of viruses, bacteria, or other germs (agents) used to cause illness or death in people, animals, or plants. The US Center for Disease Control (US CDC) has categorized the bioterrorism agents into 3 priority Categories **A**, **B** or **C**, indicating how easily they can be spread and the severity of illness or death they cause. The bioterrorism Categories measure the risk of transmission of infectious organisms, germs, or pathogens but does not include chemicals.

Cyber Event

While **cyber events** could be considered technological hazards, they are deliberately initiated by a person or group of people, thus falling into the human hazard category. Cyberattacks are malicious attempts to access or damage a computer system. These events are socially- or politically- motivated attacks carried out primarily through the Internet. Cyberattacks target the general public or national and corporate organizations and are carried out through the spread of malicious programs (viruses), unauthorized web access, fake websites, and other means of stealing personal or institutional information from targets of

attacks, causing far-reaching damage. **Cyberattacks** are oriented toward organizations, services, and individuals to obtain private, technical, and institutional information, and other intellectual assets for the purpose of vandalism or monetary gain.

As computer crimes, they can cause serious consequences to those against which this threat is used. The cyber events range from more harmless such as website hacking, to personally harmful such as identity theft to more dangerous, such as those that cripple critical infrastructure. Cyber events cause harm to people or property and can generate fear. Much of the infrastructure upon which the State of NH relies is automated and could be subject to cyberattacks. These could include the government, military, communications systems, utilities, fuel, electrical systems, nuclear power plants, transportation systems, financial systems, emergency medical services and more.

On a municipal level, computer systems data storage, transmission of emergency communications, daily operations and monitoring or financial information, could be disrupted or be redirected to the perpetrators. Information Technology (IT) **cybersecurity** is paramount, as is employee training, to reduce the incidence of malware, phishing, SQL injection, man-in-the-middle attack, zero-day exploit, and other techniques to gain access to systems. With our society's increasing reliance on electronic devices and computers, Deering's local government and residents should be prepared to address **cyber events** in the various and growing forms they take.

Potential Future Hazards

After the inventory of hazards types and past hazards in Town, a list of hazards which currently exist or need to be monitored in Deering has been completed along with potential future hazards that could occur in the same or other areas. This unique listing of **Potential Future Hazards** was compiled so the Town can be aware of areas that might need to be watched for recurring hazardous problems or that may experience some of these hazards for the first time. The listing was developed by knowledge of the Hazard Mitigation Committee and past experiences of hazards. Past locations of hazard events, where they exist for each hazard, are listed under the individual hazard narratives in the previous section. The existing and susceptible hazard locations are taken from the **Hazard Identification and Risk Assessment (HIRA)**. With this existing and potential future knowledge listed side by side, it becomes easier for a community to plan mitigation measures for the most prominent hazard events in Town.

Potential future hazards in **Table 26** indicate locations in the community where a hazard event could occur and how that hazard could impact the Town. The **Overall Risk** score between **1-16** for the **15** rated hazards from the **HIRA** is provided to understand the scale of risk to Deering from all natural hazards. Also from the **HIRA** is whether or not each hazard event occurred within the last **5** years in Deering, indicated by either ***Events(s) Within Last 5 Years*** or ***NO Event(s) Within Last 5 Years*** beneath each *Hazard Category*. The magnitude or extent scale where available from previous **4 HAZARD RISK ASSESSMENT** descriptions enable possible effect measurement of the noted Deering locations.

Table 26

Potential Future Hazards

Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
DAM FAILURE Water Overtop, Breach, Beaver, etc. *Event(s) Within Last 5 Years*	6.7 MED-IUM	• There are few constructed dams in Deering with potential for future flooding damage if breached or failed. The **High Hazard (H)** Deering Reservoir Dam (State) on Piscataquog River and the 3 **Low (L) Hazard** Dudley Pond Dam (Private) on Dudley Brook, Oscar Young Dam (Private) on Gerini Brook, and Black Fox Pond Dam (Audubon) on Smith Brook, may be unlikely to flood but still have the potential during a strong flooding event. Several **Non-Menace** dams are located on are found along a tributary of the Piscataquog River, on the Wildlife Ponds, and Dawson Recreation Pond. No significant dam breach issues have occurred in the community or upstream. • A potential future breach of the High (H) Hazard Jackman Dam (Franklin Pierce Lake/Contoocook River) in Hillsborough upstream, or if the Jackman Dam and the downstream Contoocook River Dam in Bennington do not coordinate their flows, inundation flooding is expected to occur along the Contoocook River floodplains and adjacent roadways (Long Woods Road, Bennington Depot Road, Second NH Turnpike. • Beaver dams carry a high probability of flooding and potential for breakage. Beaver dams are located throughout the Town and depending on size and location, could cause significant damage to roads if the natural dams breach. The Highway Department regularly breaks up smaller, temporary dams.	✦ NHDES Dam Classifications
DROUGHT *Event(s) Within Last 5 Years*	9.3 HIGH	• During future **drought** events, agricultural farms, orchards, nurseries tree farms run the risk of high damage from droughts which also brings economic consequences. Some farms are homestead farms which provide food and income for owners. Crop and livestock loss are consequences of **droughts** in these locations. In Deering, agricultural operations include multiple farms, orchards, nurseries, livestock, including Driscoll Hill Farm (Driscoll Rd), PigBery Christmas Tree Farm (Deering Center Rd), 3 Crow Organic Farm – animals (Dickey Hill Rd), Oneill Hill Mini Farm (Dickey Hill Rd), Nazer's Christmas Tree Farm (Mountain View Lane), Dollar Shy Farm – farm stand with goats, pork, eggs, beef (Second NH Tpke), Winter Valley Farm – cows, chickens (Second NH Tpke), and others. When hayfields die off, livestock animals in Town cannot easily be locally fed. See **APPENDIX A** for the list. • In future drought conditions, private homeowner wells will continue to go dry especially at the higher elevations. When this occurs, the owners typically have a new well dug. Town fire ponds and dry hydrants are found throughout the community, but over time they may dry up from drought. The Fire Department needs to seek an alternate source of water such as the Contoocook River and Deering Lake.. • Homeowners in the Deering Lake Association might need to follow voluntary or required water restrictions to conserve the supply. This area is located within the Watershed Protection Overlay District to help reduce the impact of different threats to Deering Lake.	✦ US Drought (D-scale) Monitor Intensity Scale ✦ Palmer Drought Index (PHDI)

Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
EARTHQUAKE ***NO Event(s) Within Last 5 Years***	**4.0 LOW**	• Since Deering is located within an active but mild seismic region, residents are expected to feel the larger future **earthquakes,** but any damages should be minor. • Locations to watch include: Town Hall, Long Woods MHP, Hedgehog Mountain Community HMP, Oxbow Campgrounds, Robin Hill Farm, The Wilds Conference Center, His Mansion, NH 149 area, the Hawthorne-Feather Airpark, Deering Community Church, Deering Library (Old Schoolhouse), East Deering Schoolhouse, and essential Town facilities. Although the buildings may receive little damage from **earthquakes**, they should be carefully monitored because the buildings are structurally larger, typically contain numerous people, may contain vulnerable populations, and are critical to the Town's operations and culture. • Damage to utility poles and wires, roadways and infrastructure could be significant. Aboveground poles, underground electric lines, underground telephone lines (Clement Hill Road, Longwoods Road, Holton Crossing Road, Quaker Street, Second NH Turnpike, Fisher Road, Wolf Hill Road) could be susceptible.	✦ Richter Magnitude Scale ✦ Modified Mercalli Intensity Scale
EXTREME TEMPERATURES **Excessive Heat, Heat Wave, or Cold, Wind Chill** ***Event(s) Within Last 5 Years***	**8.0 HIGH**	• Excessive heat and extreme cold will continue being problematic for Deering residents. There are many group facilities (Robin Hill Farm, The Wilds Conference Center, His Mansion) manufactured housing parks (Long Woods MHP, Hedgehog Mountain Community HMP), and seasonal campgrounds (Oxbow Campground), and the Deering Alternative School containing seniors, children, vulnerable and/or marginalized populations. The Fire & Rescue and Police Departments will continue to check on at-risk residents when possible. • Should the temperature remain high (or low), the Community Center could be opened as a temporary cooling (or warming) centers. The Town Hall first floor is the secondary Town shelter (Hillsborough-Deering Middle School is the official, primary shelter) and could be opened for warming and cooling purposes without formal School District, Red Cross, and/or Capital Area Public Health Network assistance.	✦ NWS Windchill Index ✦ NWS Heat Index
HIGH WIND EVENTS **Wind, Thunderstorms, Hail, Downbursts, Tornadoes, Debris** ***Event(s) Within Last 5 Years***	**5.3 MEDIUM**	• All of Deering will experience future severe wind, rainstorms, and thunderstorms often with lightning, particularly common in the summer months. In addition, tornadoes and downbursts are anticipated in the future based on past areal events. Flooding, debris, and property damage will accompany these events. Electrical power (Eversource) is disrupted during most wind-related events. The telecommunications tower and antennas on Wolf Hill, Eversource electric lines and substations, transmission lines could be damaged by **High Wind** events. • The whole Town could be impacted by a tornado or downburst. Long Woods MHP, Hedgehog Mountain Cooperative MHP, Hawthorne-feather Airpark and Robin Hill Farm are either alongside the Contoocook River or their roads are accessed from the corridor (Long Woods Road, Second NH Turnpike), as tornadoes travel through flat areas and valleys. Similarly, residents along Deering Lake could be impacted by a tornado or downburst because of the flat water surface. The Deering Alternative School, Town Hall, Oxbow Campground, The Wilds Conference Center,	✦ Enhanced Fujita (EF) Tornado Scale ✦ Accuweather Thunderstorm Criteria Scale ✦ Hail Size Scale

Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
		His Mansion, and Deering Community Church in the north and/or western section of Town hold a large number of vulnerable people, but many other Town facilities would be at risk. • Future high wind events will likely endanger roadways and utility lines from falling trees and limbs. NH 149 / Deering Center Road from Hillsborough to Weare heads in a southeasterly direction. Long Woods Road/ Second NH Turnpike is critical local route that leads to hundreds of residences. Other Class V town roads may be suitable for temporary commuter detour traveling but most of them are gravel and hilly and are in danger of tree fall during high wind events. These steep slopes and hillsides (Hedgehog Mountain, Wolf Hill, Old Clement Hill, Gregg Hill, Tubbs Hill, Bartlett Hill, Codman Hill, others) are accessed by many town roads, private roads and Class VI roads (Hedgehog Mountain Rd, Wolf Hill Rd, Clement Hill Rd, Gregg Hill Rd, Tubbs Hill Rd, Bartlett Hill Rd, Codman Hill Rd, others) leading to homes. • The entire Town is wooded and forested with no defined Town Center area, but the historic Town Hall and adjacent Deering Community Church could serve. Sections would be difficult to access with trees and power lines down on the residential roads. Should a downburst or tornado run through the recreational areas of the Fish and Game Club, High Five Conservation Land Trails, John King Forest and Trails, Hedgehog Mountain Forest Trails, NH Audubon Wildlife Sanctuary and current use lands, recreationalists would likely need assistance if a severe weather event was unexpected. • Older historic or wooden buildings include public and private buildings (historic homes), Town Hall, Deering Community Church, Deering Library (Old Schoolhouse), East Deering Schoolhouse, about 13 cemeteries throughout Town may be more vulnerable to wind damage because of their age and type of construction.	
INLAND FLOODING **Rains, Snow Melt or Flash Floods** ***Event(s) Within Last 5 Years***	**9.3** **HIGH**	• Future flooding is expected in Deering, whether from storm events or snowpack melt. The Contoocook River Piscataquog River, Dudley Brook, Gerini Brook, Smith Brook, Patten Brook, Wilkens Brook, and Johnson Brook have the potential to flood their banks. Long Woods Manufactured Home Park currently has 92 units, most of which are old and do not meet current codes, and the park has room for 97 units. The entire West Deering area starting at Mill Street, down to Long Woods Road, Second NH Turnpike, Bennington Depot Road, and Holton Crossing Road, the Hawthorne-Feather Airpark area, and the NH 149/Weare Piscataquog River area may be impacted. • Some of the Town's roads have steep slopes and tend to washout during storm events. The community has unnamed brooks that flow under roads that would become impassible during heavy rainfall and resultant flooding conditions. Regularly washout locations have included Abbott's Corner culvert with Dudley Brook, Anna King Forest (area near 2nd NH Turnpike), area between McAlister Farm and Green's Salvage Yard, Bartlett Hill Road, Bennington Depot Road, Cake Road, Dudley Pond Road, Gerini Brook culvert, Gove Road, Hazel's Pond on Clement Hill Road, Long Woods MHP, Longwoods Road, Mansonville Road culvert	✦ Special Flood Hazard Areas (SFHAs) on 2010 Digital Flood Rate Insurance Maps (Zones A, AE, X) ✦ Flood Action Stages

Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
		going towards Longwoods, McAlister Firehouse, North Road, Pond Road, NH 149 (Piscataquog River), Second (2nd) NH Turnpike, and West Deering (low-lying area from Mill Street to the Bennington townline), are anticipated to do so in the future from spring snow melts or heavy rainfall at least until repaired. • The McAlister Fire Station on Second NH Turnpike regularly experiences areal flooding during heavy rain events. While the station itself is built upon a small crest, trying to access or leave the station may be difficult during flooding events. • Rain events are concurrent with beaver dam events and culvert washouts, a compounded problem. The Town has done a lot of culvert work since 2014 - Turtle ladder at Longwoods MHP/River & raised profile, larger culvert; Second NH Tpke, Longwoods road, Cross Road, East Deering Road culvert upgrades of corrugated alum to corrugated PVC- all replaced, reset at angle, riprap, elevation raise, most same size but some upsized. The Donovan Fire Station culvert was replaced & repaved, slopes down to Rt 149. Still, these locations and others continue to flood during heavy inland flooding events. • Although bridge flooding has not yet occurred, the state's NH 149 bridge, Deering Road bridge, Reservoir Road bridge, and Bartlett Hill Road bridge over the Piscataquog River have come close to flooding, with water flowing just underneath the decking. Bridges are elevated from the banks, so flooding would have to be significant. See also the **Special Flood Hazard Areas** (floodplains), **Waterbodies**, and **Road Washouts** sections for details. The SFHAs and road washout areas are anticipated to flood in the future during extreme events.	
LANDSLIDE **Soil, Rockslide or Excavation Areas** ***NO Event(s) Within Last 5 Years***	**1.0** **LOW**	• Generally, vegetation and best operational practices of excavation sites in Deering are good at preventing landslides or rockslides. Sites include the Town sandpit on Hedgehog Mtn Road and the commercial, reclaimed Daniels sandpit on Deering Center Rd with no further excavation or selling from piles. Potential future landslides are not expected to occur at the excavation sites in Town, although slides are possible under the right conditions. The Town is dotted with old historic, unmapped mines (graphite – Clement Rd, lead- Lead Mine Rd) on private land which are not made public and should be inaccessible. • The Town has numerous hills over 800' in elevation or on slopes greater than 15%, most of them with roadways leading to homes. • Roads with steep ditching or embankments will remain vulnerable to landslide in the future. Road washouts and flash-flooding could cause landslides. The Class V gravel Glen Rd has a ravine on one side and is narrow and curvy. Gravel roads with ditching in Deering could be subject to landslide conditions (see **Inland Flooding**). Long Woods Road, adjacent to Hedgehog Mountain could be vulnerable to a landslide (small rocks land on the roadway occasionally). Landslide is an uncommon hazard but one that could cause property damage, otherwise the Town is not particularly susceptible.	✦ No known widely-used scale measuring the magnitude of landslides

Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
LIGHTNING *Event(s) Within Last 5 Years*	**6.7 MEDIUM**	• Future lightning strikes may cause the damage at the Town Hall, Deering Community Church, and Highway Garage on Deering Center Road. The three Fire Stations, Deering Alternative School Long Woods MHP, Hedgehog Mountain Cooperative MHP, Oxbow Campgrounds, Robin Hill Farm, The Wilds Conference Center, His Mansion, and tax exempt facilities and buildings without lightning rods may be susceptible on the high hills. Conflagration could start at these facilities as a result of lightning strike and be most dangerous. • Other structures and homes located in the populated areas would be most vulnerable to the power surges and outages caused by these strikes, especially those high density populations in proximity to wooded and forested areas: NH 149 area, Long Woods MHP, Hedgehog Mountain Cooperative MHP. The potential for resulting wildfire and conflagration is high in these densely populated areas. • Town essential facilities buildings, construction/lumber businesses, and the fuel businesses (businesses with potentially hazardous materials onsite such as fuel, gasoline,) and used fluids (various automotive repair shops, could each be vulnerable to lightning and fire. The Town Highway Garage, Transfer Station, Old Meetinghouse, Hawthorne-Feather Airpark could be vulnerable to lightning strike. • The higher elevations including Hedgehog Mountain, Wolf Hill, Old Clement Hill, Gregg Hill, Tubbs Hill, Bartlett Hill, Codman Hill may be most susceptible to lightning. • Outdoor utilities and antennas are highly vulnerable to future lightning strike, such as the Wolf Hill telecommunications tower, Eversource electric lines, and TDS switching stations, repeaters, and other equipment. • Forested areas and open recreation fields can be dangerous to people and property. Trees are constantly struck. These include the public Town lands and State Forests, conservation areas, and points of higher elevation which can be dangerous to people and property if struck by lightning, Numerous outdoor recreational and gathering places such as Fish and Game Club, High Five Conservation Land Trails, John King Forest and Trails, Hedgehog Mountain Forest Trails, NH Audubon Wildlife Sanctuary, and the Deering Lake Canoe Access could be vulnerable to **lightning**. Some locations cannot be easily accessed by emergency vehicles, whether to fight the fire or remove people from harm's way.	✦ Lightning Activity Level (LAL)
PUBLIC HEALTH **Infectious Diseases, Air & Water Quality, Biological, Addiction, Arboviral, or Tick-borne** *Event(s) Within Last 5 Years*	**9.3 HIGH**	• Public health issues may occur in the community in the future during warm or cold months. For indoor contamination, the highest risk facilities for pick-up or transfer of viruses and bacteria can include the: Deering Alternative School, Deering Community Church, Town Hall. There are no health services or dedicated senior housing facilities. Food-borne illness can be transferred at eateries, but there are no public food places in Deering. All winter long, people of Deering in close quarters get sick from different viruses.	✦ No known widely-used scale measuring the magnitude of public health incidents

Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
		• Outdoor susceptibility to arboviral and tickborne diseases is expected to grow. Deering is a highly rural community with many waterbodies, wetlands, and other swampy areas for these arthropods to thrive. Deering Lake, NH Fish and Game Club, and the many public trails on conservation lands can also enable transmission. • Air quality warnings from Canadian fires and drifting smog do little to prevent particulate inhalation by Deering's more vulnerable populations and outdoor enthusiasts. • Deering Lake, banks of the Contoocook River and the short section of the Piscataquog River, and any of the Ponds used as beaches may expose people to cyanobacteria. The public Deering Lake canoe launches/ beaches can be shut down in the future due to high cyanobacteria levels, and this situation is one to watch during the warm season in July-August. Also, Deering Lake needs to be monitored regularly and boats inspected for invasive aquatic species like milfoil. • Situated on an aquifer in the low-lying area, environmental damage to water quality by Greene's salvage yard and Airpark fuel spills is a risk. Long Woods MHP residents (about 200 people) and others obtain water from this aquifer. • The Town's local Point of Dispensing (POD) is located at the Weare Middle School. Deering is a member of the Capital Area Public Health Network, which will assist the Town in times of public health crisis.	
RIVER HAZARDS **Ice Jams, Scouring, Erosion, Channel Movement or Debris** ***Event(s) Within Last 5 Years***	**6.7 MEDIUM**	• Future ice jams in the Contoocook River could be expected and if this event were to occur, would cause some infrastructure damage, possibly at the West Deering Bridge or along the Piscataquog River at the NH 149 bridge. Roads within the Rivers' floodplain areas could in the future be subject to ice jam damage. Riverine floodplain flooding of the Contoocook River into West Deering is a likely future hazard. Roads to be impacted include Long Woods Road, Second NH Turnpike, Bennington Depot Road which are the access roads to hundreds of homes. In addition, riverine flooding or channel movement could have a serious impact on the isolated Long Woods MHP homes in which 92 older units are located. • Erosion/washout of certain Town roads along the River is anticipated to continue due to flooding and heavy rains. • Because of water high volumes and swift moving water during future flooding events, the Contoocook and Piscataquog Rivers' meanders may be at risk, and bank erosion and channel movement could be future hazards of concern. • Floating debris down the River can accumulate at bridges and dams during future flooding events. The West Deering bridge over the Contoocook River is low-lying. The other Town bridges could be subject to debris, Reservoir Road, Bartlett Hill, Pleasant Pond Road, and Cake Road.	✦ EPA Bank Erosion Risk Index

Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
SEVERE WINTER WEATHER **Snow, Ice, Blizzard or Nor'Easter** ***Event(s) Within Last 5 Years***	**10.7 HIGH**	• It is extremely likely that Deering will be impacted by severe winter weather in the future. Damage and serious conditions can result in all areas of the community. Areas above 800 feet (See ***Map 1***), the remote, forested and difficult to access areas and Hedgehog Mountain, Wolf Hill, Old Clement Hill, Gregg Hill, Tubbs Hill, Bartlett Hill, Codman Hill are among the most vulnerable areas to ice and snow conditions. • As **severe winter conditions** are expected to continue in the future and to increase in severity, concerns remain regarding safety on NH 129/ Deering Center Road, especially in narrow, straight areas and at intersections. Many local roads have a sharp incline/decline and cars have trouble traveling the roads during winter conditions, especially when icy. Difficult roads include Baldwin Rd, Barnes Rd, Cake Rd, Campbill Rd, Cellar Hole Road, Codman Rd, Donovan Rd, Ellsworth Rd, Fish and Game Rd, Hedgehog Mtn Rd, Johnson Rd, Kayla Lane, Lake Shore Drive, Long Woods MHP, Lost Lane, Old Range Way, Parleys Way, Range Way, Wolf Hill, and Zoski Road (totaling over 200 homes). The Highway Department keeps up with the snowfall on the Town roads, but ice storms require more time and resources to keep the roads safe. During the winter months, the crew sees regular severe warming and snowmelt which then freezes to ice. With the changing climate, this situation is anticipated to grow in the future. • Particular areas of concern during **winter weather** include the more highly traveled roads – Long Woods Road/ Second NH Turnpike and NH 149/ Deering Center Road – and the group facilities (Robin Hill Farm, The Wilds Conference Center, His Mansion), manufactured housing parks (Long Woods MHP, Hedgehog Mountain Community MHP), and seasonal campgrounds (Oxbow Campground), the Deering Alternative School, and the Deering Lake residences that use these roads. Power outages and isolation may occur from heavy **snow loads** and **downed trees** on roads. • The Town facilities buildings, Town Hall with Library and Police Department, Highway Garage, Transfer Station, and three Fire Stations must be able to function during **severe winter events**. Personnel driving to and from these facilities must travel on the main roads. • During future storms, some historic buildings or Town facilities with large or flat roofs, barns or sheds, and older manufactured homes may be vulnerable to **heavy snow loads** or other events that could cause the roof to collapse. Flat roofs can be a problem with snow-loading. • The Wolf Hill telecommunications tower and its antennas, Eversource electric lines, and TDS switching stations as well as Department building antennas could be highly impacted from future **snow, ice, and blizzards**.	✦ Sperry-Piltz Ice Accumulation (SPIA) ✦ NCDC Regional Snowfall Index (RSI) for Northeast
SOLAR STORMS AND SPACE WEATHER **Solar Winds, Geomagnetic Storms (Aurora**	**5.3 MEDIUM**	• The aurora borealis has been photographed on nearby Mount Kearsarge in Warner 20 miles to the north due to geomagnetic storms. These types of events are likely to recur. At this time, the Town is aware of potential impacts to its communications and electrical systems to its Town and School facilities but has rated the hazard unlikely to cause damages.	✦ NOAA Geomagnetic Storms Scale ✦ NOAA Solar Radiation Storms Scale

Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
Borealis), Solar Radiation or Radio Blackout *NO Event(s) Within Last 5 Years**		• The telecommunications array on the Wolfe tower, high tension power lines or switching stations could be impacted in the future by a geomagnetic event as could Town Department radios, base station, cellular phones, and VOIP that use emergency communications.	✦ NOAA Radio Blackouts Scale
TROPICAL AND POST-TROPICAL CYCLONES Hurricanes, Tropical Storms or Tree Debris *NO Event(s) Within Last 5 Years*	**6.7 MEDIUM**	• The last tropical and post tropical storm to impact Deering was Hurricane Sandy in 2012. There will be future tropical cyclones to impact Deering. Although the vulnerable areas are spread all over Town instead of more site- specific, the facilities and locations at greatest risk are shared with **High Wind Events** and **Inland Flooding** above.	✦ Saffir-Simpson Hurricane Wind Scale
WILDFIRE Brushfire, Outdoor Fires or Accidental *Event(s) Within Last 5 Years*	**9.3 HIGH**	• Although few substantial **wildfires** have impacted Deering since the last Plan, the potential exists for large fires in remote or difficult to access locations in the future. Drier foliage, slash on the ground, one-egress roadways, in the conservation lands and in private woodlots could mean both future severe fires and difficulty accessing these fires should the need arise. As a member of the Concord Area Fire Mutual Aid Compact, the Town regularly provides other communities with mutual aid for wildfires and would receive aid in turn. • The public conservation lands and trail systems and Robin Hill Farm, His Mansion, Hedgehog Mountain, Deering Reservoir, The Wilds, Fish and Game Club are heavily used and may be the primary concern for future **wildfires**. Oxbow Campground with nearly 120 sites is surrounded by woods and has only one access route. The Town is dotted with cul-de-sac and one-egress residential roads (Class V, Class VI and private) in the Wildland Urban Interface which have limited emergency access. Hedgehog Mountain Road, Codman Hill Road, Falls Road and Old Henniker Road are particularly remote areas. • Deering is heavily wooded, with difficult, remote areas and many slopes. 2020 land use indicates the Town is over 64% forested, but additional lands are residential with wooded unbuilt area. Any residential area within Town could be particularly prone to **wildfire** since all are situated in rural and wooded locations. Most new subdivisions which are approved occur on sloped wooded areas, but most are required to have an adequate water supply for firefighting. A lot of slash remains on the ground. An **aircraft crash** at or around the wooded Hawthorne-Feather Airpark could result in a **wildfire**. • Some of the lots on private roads or Class VI unmaintained roads could be particularly vulnerable to **wildfire** as they might not be readily accessible for fire apparatus, either not maintained or not constructed to town road standards. With three Fire Stations, the Town may be as prepared as they can be, although stations are not usually staffed (volunteer) until needed. • See also **Lightning**.	✦ NWCG Wildfire Classification

Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
SECONDARY TECHNOLOGICAL AND HUMAN HAZARDS			
AGING INFRASTRUCTURE **Bridges, Culverts, Roads, Pipes or Underground Lines** ***NO Event(s) Within Last 5 Years***	not scored	• Most of the Town's infrastructure is aging and only able to be replaced on a priority basis. Therefore, any future natural hazard could render the culverts, ditching, and drainage systems vulnerable. NH 149 Bridge over Piscataquog River is the only state bridge and is not deficient. The five Town bridges also not deficient, but all are aging and could be subject to future floods, ice, transportation crashes or debris impacted infrastructure. • There is no municipal water, wastewater, or natural gas service. Future hazard events such as earthquakes, floods, severe freezing and continued aging infrastructure will make the problem worse. • See list of **Road Washouts** for a list of culverts susceptible to future floods, ice jams, debris, and other hazards. • The Town's roads often difficult to maintain and rehabilitate because of lack of funding versus the need. The future will bring further lack of maintenance because the Town Highway Budget will only stretch to the immediate priorities, while **flooding events** and **severe winter weather** are anticipated to increase and impact multiple roads during each event.	N/A
FIRE **Vehicle, Structure, Arson or Conflagration** ***Event(s) Within Last 5 Years***	not scored	• The previously noted higher density areas including Town Hall, Deering Community Church, and Highway Garage on Deering Center Road. The three Fire Stations, Deering Alternative School Long Woods MHP, Hedgehog Mountain Cooperative MHP, Oxbow Campgrounds, Robin Hill Farm, The Wilds Conference Center, and His Mansion could be subject to future **conflagration** which would have devastating effects on the entire community. • Future **vehicular fires** resulting from crashes could occur, especially on NH 149 or Second NH Turnpike, where Deering's first responders would arrive on scene before State authorities. • The few construction, excavation, lumber, automotive and fuel businesses in Town could be subject to potential explosions or **fires** in the future (see **APPENDIX A** for the list). The biggest risk remains the private Hawthorne-Feather Airpark with 15 small single engine places onsite that logs about 72 flights per week. • Vacant structures, vacant housing units, housing run by absentee landlords, or other unmaintained housing runs a greater risk of arson in the future than occupied or well-kept premises. The conservation areas and public trails may carry the greatest risks and damages of any future **arson** or **accidental fire**.	N/A
HAZARDOUS MATERIALS **Haz Mat Spills, Brownfields or Trucking** ***Event(s) Within Last 5 Years***	not scored	• Transportation of hazardous materials on NH 149 or Second NH Turnpike could be an everyday occurrence. In the future, trucks could rollover and spill their contents (fuel, liquids, propane, solids, etc) onto these significant roadways. • Should a future haz mat spill occur in West Deering, not only could the contents of the spill reach the adjacent Contoocook River, hundreds of	N/A

Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
		residences, one Fire Station, and Hawthorne-Feather Airpark would need to be immediately evacuated or the decision to either shelter in place would need to be made and conveyed to occupants. • Several occupational facilities in Town handle, store, or use hazardous materials. Any of these facilities could have a spill at their site or during transport which could result in a spill. Key sites include any fuel stations, auto repair shops, excavation sites, construction businesses, and the Highway Garage, Transfer Station, and Hawthorne-Feather Airpark. See **APPENDIX A** for the full list. • Existing and future potential brownfields sites such as old mills along the Contoocook River, suspected old soil contamination with Class A sludge (Thomas parcels on Tubbs Hill/Old Rangeway Roads), salvage yards and illegal junkyards may exist and pose future danger to new property owners or river users in the area. The Town should be aware of and inventory these locations.	
LONG TERM UTILITY OUTAGE **Power, Water, Sewer, Gas, Internet, Communications or Live Wire Danger** ***Event(s) Within Last 5 Years***	not scored	• Aboveground electric lines in Deering make the Town particularly vulnerable to outage during future disaster events. High tension transmission lines run through the Town. Utilities (Eversource, TDS, Comcast, internet, cable) may be restored to the most critical areas first, the Town facilities, before the more remote locations in Deering have utilities restored. •The Deering Town Hall has an (1,500 gallon LPG underground tank) backup generator when electricity fails. •There are no underground water, gas, or sewer lines in Deering from which a strategic break could isolate all those connections at the far end of the line. • Long-term electricity outages may impact the residents of Long Woods MHP, Hedgehog Mountain Cooperative MHP, Oxbow Campground sites, Robin Hill Farm, His Mansion, Deering Alternative School hardest. Many Deering residences own generators for their homes or have solar panels and are prepared for several days of no utilities to their homes during future storms. • The single telecommunications towers located on Wolf Hill contains CAFMAC, County, State, and federal repeaters. Local antennas are located on Town Department buildings may be disrupted during future storm events. Essential communications may be paused until redundant capabilities are reestablished in the region.	N/A
TRANSPORTATION CRASH **Vehicle, Airplane, Helicopter, Rail, Interstate, Pedestrian or Bicycle** ***Event(s) Within Last 5 Years***	not scored	• With NH 149 and Long Woods Road/Second NH Turnpike running through Deering, the Town's Fire and Rescue and Police Departments are often the first to respond to the vehicle crashes experienced on these main State and local roadways. These routes are used heavily by commuters as they travel through Deering to their destinations. Crashes may increase over time, especially when conditions become icy from winter snow melt for the fast highways and greater numbers of vehicles use the roads.	N/A

Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
		• The Town maintained roads, Class VI unmaintained roads and private roads can have elevation changes that will continue to make travel difficult in the future in snowy, icy, flooded, or debris blockage conditions. See **Winter Hazards** for the list. Any time of year, dangerous intersections become more difficult to navigate with heavy winds, rain, treefall, or flooding hazards. • Few areas in Town are suitable for safe bicycle and pedestrians use other than the trail system and would have the potential for serious crashes with vehicles. • The Town also has alternative future **crash** potentials, such as airplanes, helicopters, and drones. The Hawthorne-Feather Airpark on Second NH Turnpike is a private small airport with an average of 72 flights per week and a hangar with 15 single engine airplanes. The Manchester-Boston Regional Airport is nearby and supports large-engine plane traffic which have the potential of crashing in nearby communities. With the increased usage of private drones for personal or commercial use, the future potential for their crashing in populated areas or causing vehicular crashes is anticipated to rise.	
MASS CASUALTY INCIDENT **As a result of any hazard event** ***NO Event(s) Within Last 5 Years***	not scored	• Large groups of people are located at the Town Hall, Deering Community Church, Deering Alternative School, Fish and Game Club, which may be where a future mass casualty event (incidents involving 4 or more people, the number beyond the ambulance capacity) could occur because of any other type of hazard event. • Deering is a vibrant community with active groups and social calendars. Events such as political candidate visits, Hillsborough-Deering School District sporting events, Town Meeting, Old Home Day, Veteran's Parades, Church events, and other community gatherings could set the location for future mass casualty incidents. • Concord Hospital is 30 minutes from Deering and is the closest hospital with a trauma center. Supporting medical facilities closer to Deering include the Robin Hill Farm and His Mansion (both provide private, specialized congregate patient care) in Town and Monadnock Community Hospital in Peterborough. There are no private practice doctors and dentists in Town to assist with mass casualty incidents. • During times of mass casualty, it is likely the communications network will be overloaded. Residents may not be able to telephone and emergency responders could have difficulty reaching assistance. The Town Hall, Fire and Rescue Department, and Police Department phone lines could be jammed with callers. During this time, the Town website should be updated regularly.	N/A
TERRORISM/ VIOLENCE **Active Shooter, Hostage, Public Harm, Civil Disturbance/ Unrest, Politically**	not scored	• It is possible the Town could be the target of an act of terrorism based on current trends. Possible susceptible non-municipal targets could include Town Hall, Deering Alternative School, Fish and Game Club, Deering Lake homes, Deering Alternative School, Long Woods MHP, Hedgehog Mountain Cooperative MHP, Oxbow Campground sites, Robin Hill Farm, The Wilds Conference Center, His Mansion, Deering Community Church or especially the Hawthorne-Feather Airpark.	N/A

Hazard Risk Assessment Hazards	Overall Risk	Potential Future Hazards – Locations and Impacts	Magnitude/ Extent Measurement Scales
Motivated Attacks, Incendiary Devices, Sabotage or Vandalism ***Events(s) Within Last 5 Years***		• The municipal facilities in Deering, Town Hall with Library and Police Station, the Highway Garage, three Fire & Rescue Stations, Transfer Station, have a risk of **terrorism or violence.** Vandalism of Town cemeteries, Appleton Cemetery most recently, may recur. • Future hostage situations are isolated events and are nearly impossible to predict. The sites where this potential exists could include those listed above under terrorism, the high density housing neighborhoods (see **Severe Winter Weather**) and everyday domestic situations. Isolated incidents of violence could occur in the remote forested areas and trails of those Forests, state lands, and conservation lands listed in the **Lightning** section. •Large scale incidents of civil disturbance and public unrest are possible in Deering, but unlikely based upon the local facilities. However, the Town's participation in the Central NH Special Operations Unit enables Deering's mutual aid assistance where needed. • Bomb threats are a possibility for the Alternative School based on current attitudes and trends. The bridges could be subject to terrorist threats or bombs that disrupt major travel routes. • Any future sabotage of local utilities, Eversource lines, high tension power lines, the telecommunications tower, telephone and internet substations, or the local High and Low Hazard dams could cause an immense amount of damage in Deering.	
CYBER EVENT **Municipal Computer Systems Attack, Website Overtake, Cloud Data Breach, Telephone Rerouting, Identity Theft, Phishing, Ransomware, Virus or Phone Scams** ***NO Event(s) Within Last 5 Years***	not scored	• The entire Town – residents, businesses, municipal, School District, and state facilities- could be subject to future cyber events. Cyberattacks could target their websites, computer systems, cloud data systems, archival records, or use email phishing or related techniques to install ransomware, etc. The Town Hall, Police Department, Fire and Rescue Department, Transfer Station, Highway Department, Library, Historical Society records, Deering Alternative School, the Elementary, Middle and High Schools outside the Town, Deering Community Church, and any technology businesses would be high-value targets for their software and their archival systems. • Email scams, phone scams, door-to-door canvassing, and identity theft are likely to continue in the future, causing regular problems for residents and businesses. These scams are more likely to impact the Town's senior residents. Significant future damage could be done to municipal and School systems, in addition to tech businesses and other facilities located in Town. Private businesses targeted could create a negative economic impact on the community.	N/A

Source: Deering Hazard Mitigation Committee

Although there are many potential hazards in Deering's future, the community is knowledgeable about where some of the worst occurrences might result with this descriptive **Potential Future Hazards**

inventory. A comprehensive, specific community facility inventory that indicates each site's ***Primary Hazard Vulnerabilities*** is found next in **5 COMMUNITY VULNERABILITY ASSESSMENT**.

INLAND FLOODING

Flooding is a more easily locatable hazard as waterbodies can be used to approximate the range of future potential flooding areas. The Special Flood Hazard Areas, waterbodies, and road washout locations are listed in detail below for Deering.

Special Flood Hazard Areas (SFHA)

There are active **14** Digital Flood Insurance Rate Maps (DFIRMs) in Deering from the **September 2009** updated set. Base Flood Elevations (BFEs) are abundant along the **Contoocook River** and **Piscataquog River** on the DFIRMs. There are **11** primary DFIRMs identifying floodplains in Deering along these Rivers and **Deering Lake**, **Lily Pond**, and unnamed wetlands. The DFIRMs include regular BFEs along their span through Town and include SHFA **Zone AE** (**1%** annual risk of flooding with floodways): (**33011C**) **#0131**, **#0132**, **#0133**, **#0134**, **#0142**, **#0141**, **#0153**, **#0154**, **#0162**, **#0165**, and **#0166**. The DFIRM panels are described and highlighted gray in **Table 27**.

Three (**3**) DFIRMs, **#0152**, **#0156**, **#0158,** and provide other SHFA **Zone A** (**1%** annual risk of flooding) locations for **Dudley Pond**, **Dudley Brook**, **Patten Brook**, **Smith Brook**, and unnamed wetlands and brooks. The last (**1**) DFIRM (**#151**) has no SFHAs present.

The other named ponds and brooks in Town do not appear on these DFIRMs nor are located in SFHAs. The **Zone A** (**1%** annual risk of flooding) and/or **Zone X** (**0.2%** annual risk of flooding) floodplain panels are displayed in the white rows of **Table 27**.

Table 27

Locations of Deering Special Flood Hazard Areas (SFHA) on 2009 DFIRMS

Panel NH (33011C)	Flood Zones in Deering (330085)	Base Flood Elevations (BFEs)	Water Body Areas in Floodplains	Community of Deering Geographic Location
#0141	AE with floodway, X	600, 601, 602	Contoocook River to Bennington	Southeastern edge – short section across from Antrim down into Bennington.
#0142	AE, X	600, 601	Contoocook River, unnamed brooks	Southwestern corner – Contoocook River west of Second NH Turnpike, on Hawthorne Feather Airpark.
#0134	AE, X	600	Contoocook River	West central - Contoocook River west of Second NH Turnpike.
#0133	AE with floodway, X	595, 596, 597, 598, 599	Contoocook River	West central – Contoocook River from Hillsborough, along Longwoods Road to Holt Road to Second NH Turnpike Road. Shares centerline with Antrim.

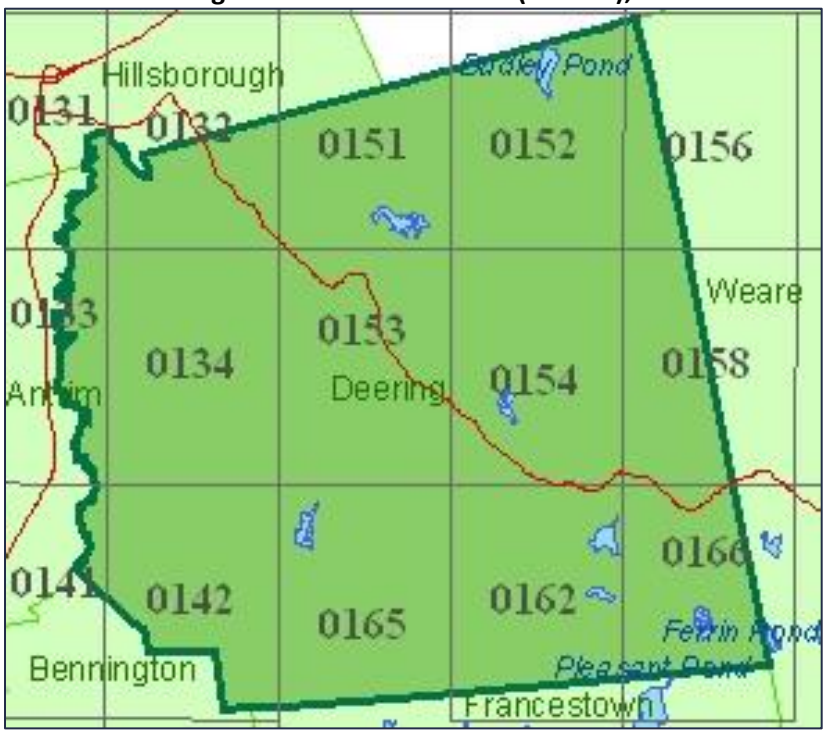
Panel NH (33011C)	Flood Zones in Deering (330085)	Base Flood Elevations (BFEs)	Water Body Areas in Floodplains	Community of Deering Geographic Location
#0132	A, AE, AE with floodway, X	594, 595	Contoocook River meander, unnamed brooks and wetlands	Northwest top – River meander tip from Hillsborough into unnamed streams and wetlands.
#0131	AE with floodway, X	594, 595	Contoocook River	Northwestern corner – Contoocook River out of Hillsborough at Antrim/Deering town lines. Shares centerline with Antrim.
#0165	AE	920	Deering Reservoir, nearby wetland	South central west – Deering Reservoir side section, north of White Gate Rd.
#0153	AE	920	Deering Reservoir, nearby wetland	Central – Deering Reservoir top section.
#0162	AE with floodway, X	920, 890, 850, 842, 794, 750 (range)	Deering Reservoir, Piscataquog River, nearby wetland	South central east – Deering Reservoir bottom section, dam, Piscataquog River to dam south Route 149.
#0154	AE	744, dam, 741, 740, 739, 738, 736	Piscataquog River, dam	Central west – Piscataquog River dam south Route 149.
#0166	A, AE with floodway, X	725, 705, 693, 681, 674, 672, 669, 664 (range)	Piscataquog River, Lily Pond, unnamed brooks, surrounding wetlands	Southeastern corner - Piscataquog River east to Weare. Lily Pond east of Bartlett Hill Road, unnamed brooks travel southwest and southeast into Francestown.
#0151	N/A	N/A	Unnamed wetlands	Clement Hill Road, Dickey Hill Road, North Road. To Town of Hillsborough
#0152	A	N/A	Dudley Pond, Dudley Brook Patten Brook, Smith Brook, unnamed brooks, surrounding wetlands	Northeast – Dudley Pond south of Henniker town line, Dudley Brook flows from southeast. Patten Brook meets Dudley Brook at Dudley Pond mouth. Smith Brook travels southeast from same source as Patten Brook.
#0156	A	N/A	Dudley Book, unnamed brook	Northeastern edge - Dudley Book south east to Weare.
#0158	A	N/A	Dudley Book, Tributary B, unnamed wetlands	Eastern center edge - Dudley Book south east to Weare. Tributary B from Dudley Brook in Weare west into Deering south of East Deering Road.

Sources: FEMA and NH Geographically Referenced Analysis and Transfer System (NH GRANIT) websites

Figure 16 displays the relative location of each of the DFIRM panels in the community used in Table 27. This set of DFIRMs is excerpted from the *Hillsborough County Flood Insurance Study (FIS) of 2009*. The graphic illustrates the numbering system of the DFIRMs, how they are not consecutive.

Figure 16

Deering DFIRM Panel Locations (330085), 2009



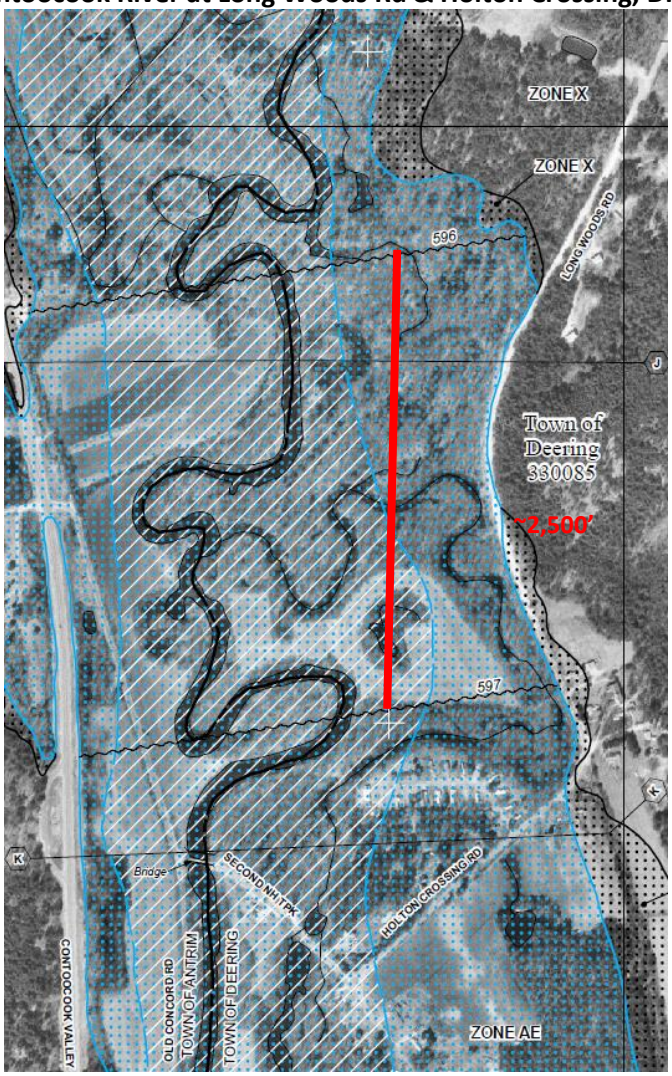
Source: Deering DFIRMS can be downloaded at https://granit.unh.edu/dfirms/d-DFIRMzips/Deering.zip, last accessed 03-21

Figure 17 displays an example of a DFIRM's zoomed-in view of the Contoocook River displaying its meanders along Long Woods Road, Holton Crossing, and Second NH Turnpike in Deering. The river has multiple classifications based on location, depth, and elevation. Within this vulnerable area of Town, the River is designated as **Zone AE** (**1%** annual chance with BFEs), **Zone AE with Floodway** (**1%** annual chance, channelized), and **Zone X** (**0.2%** annual chance).

Knowing the Base Flood Elevations (BFE) can help understand a river's possible inundation area. For instance, the Contoocook River flows north and on Panel **#0133** the measured BFE just north of Holton Crossing Road is **597'**, while measured on Long Woods Road the BFE is **596'**. The river's elevation declines only **1'** within about **2,500'** linear feet. This examination enables the Town to learn where the most severe inundation flooding could occur within the community.

Figure 17

Zoom View of Contoocook River at Long Woods Rd & Holton Crossing, DFIRM Panel #0133



Source: FEMA DFIRM 2009 Panel #33011C-330085-0133 for Deering, NH

Waterbodies

These rivers, brooks, ponds and wetlands in Deering will contribute to future potential flooding in these and other areas:

- **Watercourses:** **Contoocook River**, **Piscataquog River**, Dudley Brook, Gerini Brook, Smith Brook, Patten Brook, Wilkens Brook, and Johnson Brook, and several unnamed brooks and intermittent streams.

- **Waterbodies:** **Deering Reservoir** (**Deering Lake**), Dudley Pond, Clifton Camp Pond, and Black Fox Pond; recreation/farm ponds and unofficial fire ponds; and additional drainage ponds, unnamed ponds and wetlands.

Road Washouts

- Most of the local, gravel Town Class V maintained roads in Deering are constructed using ditching; storm drains are found along the densely developed paved roads. About 48 miles of the Town maintained (Class V) roads are located throughout the Town, some of which are gravel roads that may facilitate greater washout damage during future flooding events and heavy rains. West Deering Area (flat area from Mill Street to the Bennington Town Line) encompasses many of these road. Regular road washouts currently include:

- Abbott's Corner culvert with Dudley Brook
- Anna King Forest near Second NH Turnpike
- Second NH Turnpike between McAlister Farm and Green's Salvage Yard
- Bartlett Hill Road at the Bridge
- Bennington Depot Road
- Cake Road
- Dudley Pond Road
- Gerini Brook culvert at 2nd NH Turnpike
- Gove Road at the beginning
- Hazel's Pond on Clement Hill Road
- Longwoods Manufactured Housing Park
- Longwoods Road
- Second NH Turnpike leading up to McAlister Fire Station, but not station itself
- North Road
- Pond Road
- Route 149 at Piscataquog River
- Second NH Turnpike between Antrim town line and Holton Crossing Road
- Camp Road at Piscataquog River culvert

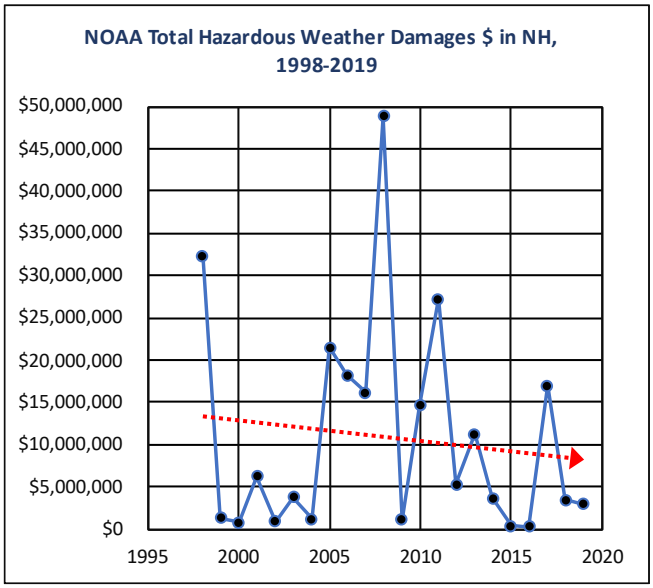
Local Climate and Extreme Weather

In the State and the Central NH Region, like any other areas, exist our own "micro-climate" areas that can be analyzed for future susceptibility to disasters and hazard events. New Hampshire has obtained high costs of damage over time due to hazardous weather and declared disasters. A review of the state and area history can provide a perspective on what Deering can expect to see in terms of extreme weather in the future.

Table 28

Summary of Hazardous Weather Fatalities, Injuries, and Damage Costs in NH, 1998-2019

Year	Fatalities	Injuries	Total Damages $ in Million
2019	0	0	**$2.98**
2018	2	9	**$3.4**
2017	0	0	**$17.0**
2016	1	1	**$0.27**
2015	2	34	**$0.37**
2015	0	2	**$3.7**
2013	0	30	**$11.3**
2012	1	4	**$5.28**
2011	1	2	**$27.3**
2010	1	6	**$14.63**
2009	1	0	**$1.13**
2008	2	5	**$48.9**
2007	0	3	**$16.15**
2006	1	9	**$18.2**
2005	4	9	**$21.5**
2004	0	11	**$1.2**
2003	2	29	**$3.8**
2002	0	7	**$0.9**
2001	0	2	**$6.2**
2000	2	6	**$8.0**
1999	3	17	**$1.3**
1998	1	23	**$32.4**



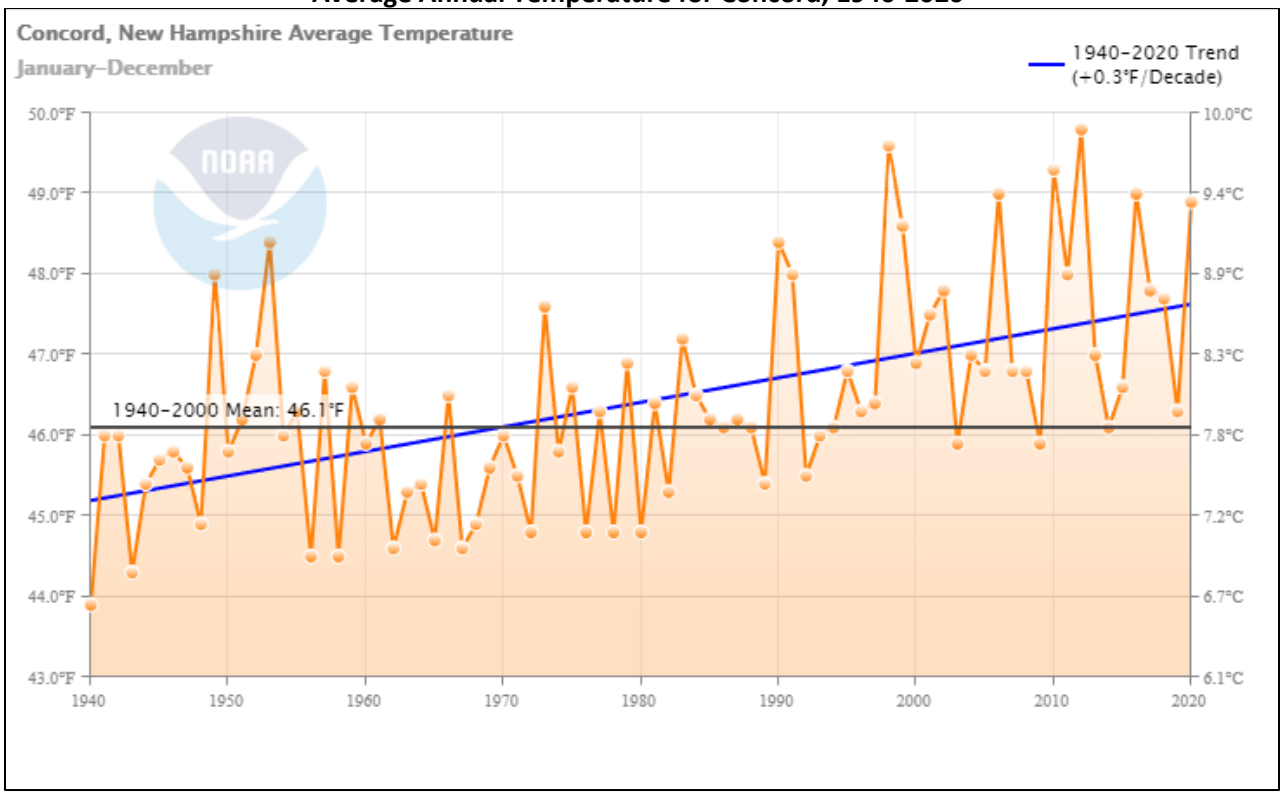
Source: National Oceanic and Atmospheric Administration, last accessed 03/21.
Adjusted for inflation [Consumer Price Index CPI)]
https://www.weather.gov/hazstat/

Injuries to people and the costs of damages in New Hampshire have slightly decreased from hazardous weather over the last **20** years according to the trendline displayed in the associated chart for **Table 28**. Between **1998-2008**, this slight decline in injuries and damages can be generally applied to the major disasters declared in the State. The highest damage costs correlate to the **1998** (**$32m**) and **2008** (**$49m**) ice storms. The number of injuries and fatalities have a less distinct association, with the highest casualties shown in **2015** (**36**), **2013** (**30**) and **2003** (**31**). However, the single greatest number of fatalities during this time period occurred in **2005** (**4**), likely during the time of the **Oct 2005 Columbus Day Floods** that struck the southwestern section of the State very hard.

The Central NH Region's weather history is summarized to provide a view of the trends around the Concord area where some weather measurements have been taken at the Concord Airport since **1868**. Although Deering is geographically close to the City of Concord (within **30** miles) and these measurements should have some reasonable basis in Deering, small unique microsystems are found throughout the region, particularly at higher elevations. As the closest large and longest active weather station, and for CNHRPC region continuity, the Concord measurements will be used for Deering.

Figure 18 displays Concord's average annual temperature (Jan-Dec) between **1940** (**43.7°F**) and **2020** (**48.9° F**) with a mean temperature over the **1940-2020** period of **46.1° F**. The warmest years were **2012** with a **3.7° F** departure from normal, **1998** at **3.5° F** departure, **2010** at **3.2° F** departure, followed by **2016** at **2.9° F** departure from the normal mean **46.1° F**. As with typical New Hampshire weather, the seasonal temperatures can vary year after year and without obtaining an average, changes are difficult to see. The coolest years were **1940** at **43.9 ° F**, **1943** at **44.3 ° F**, **1956** and **1958** at **44.5 ° F**, followed by **1962** and **1967** tied at **44.6 ° F**. The displayed trend line allows a definitive way of averaging all temperatures and illustrates an average **+0.3°F** temperature increase trend per decade and the increase of about **2.4 ° F** total during this **80**-year period in Concord.

Figure 18
Average Annual Temperature for Concord, 1940-2020



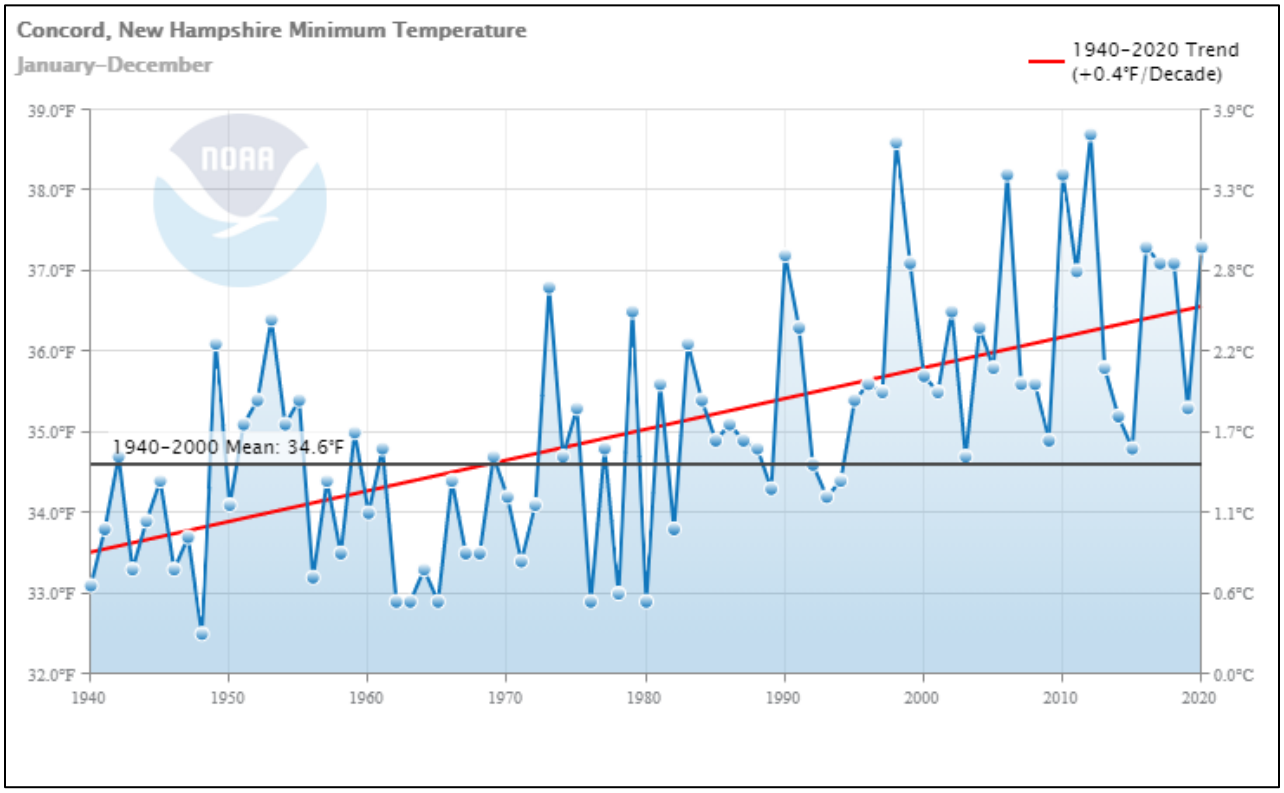
Source: National Oceanic and Atmospheric Administration, last accessed online 03-31-21
https://www.ncdc.noaa.gov/cag/city/time-series/USW00014745/tavg/12/12/1940-2020?base_prd=true&begbaseyear=1901&endbaseyear=2000&trend=true&trend_base=10&begtrendyear=1895&endtrendyear=2021

Another way to evaluate how the temperatures is to measure the minimum annual temperatures and maximum annual temperatures are changing. Both the coldest and the hottest temperatures are growing warmer in the Central NH region, which includes Deering.

Figure 19 displays the *minimum* average temperatures for Concord, with a mean (average) of **34.6° F** for **1940-2020**. In **2020**, the *minimum* average temperature was **37.3° F**, as compared to the **1940** *minimum* average temperature of **33.1° F**. Within this 80-year period, the *lowest* minimum was **32.5° F** in **1948**, followed by **32.9° F** (**1962, 1963, 1965, 1976, 1980**), **33.07° F** (**1978**), followed by **33.1° F** (**1940**). The *highest* minimums were in **2012** (**38.7° F**), **1998** (**38.6° F**), tied in **2006** and **2010** (**38.2° F**), followed by **2016** and **2020** (**37.3 ° F**). In fact, the top **10** highest *minimums* have occurred since **1990** during the nearly **80-**year data span, indicating the coldest temperatures are growing warmer. The trend line indicates a **+0.4° F** increase per decade between **1940-2020**, about a **+3.2° F** increase in minimum average temperatures.

Figure 19

Minimum Average Temperatures for Concord, 1940-2020

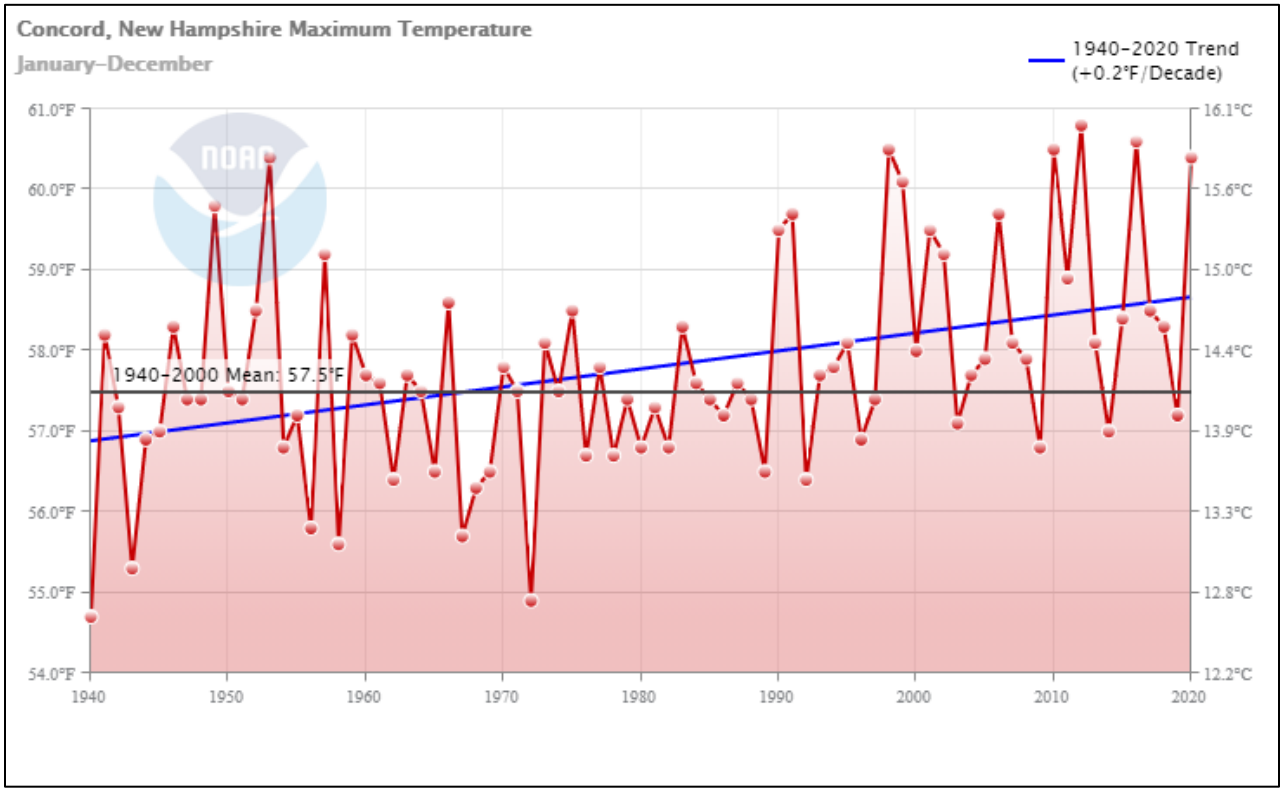


Source: National Oceanic and Atmospheric Administration, last accessed online 03-31-21

Figure 20 displays the *maximum* average temperatures between **1940-2020**, with a mean (average) of **57.5° F** annually. In **1940**, highest *maximum* average temperature was **54.7° F** while in **2020** the highest *maximum* was **60.4° F**. The lowest *maximums* were **54.7° F** in **1940**, **54.9° F in 1972**, **55.3° F** in **1943**, **55.6° F** in **1958**, **55.7° F**. in **1967** followed by **55.8° F** in **1956**. The highest *maximums* in Concord were **60.8° F** in **2012, 60.6° F** in **2016, 60.5° F** in **1998** and **2010**, **60.4° F** in **1953** and **2020**, followed by **60.1° F** in **1999**. Eight (**8**) of the top **10** highest *maximums* have occurred since **1990** during the **80-**year data span. These numbers indicate the hottest temperatures in the Central NH Region are growing warmer. The **+0.2° F** trendline per decade results in a **+1.6° F** increase in the maximum average temperatures.

Figure 20

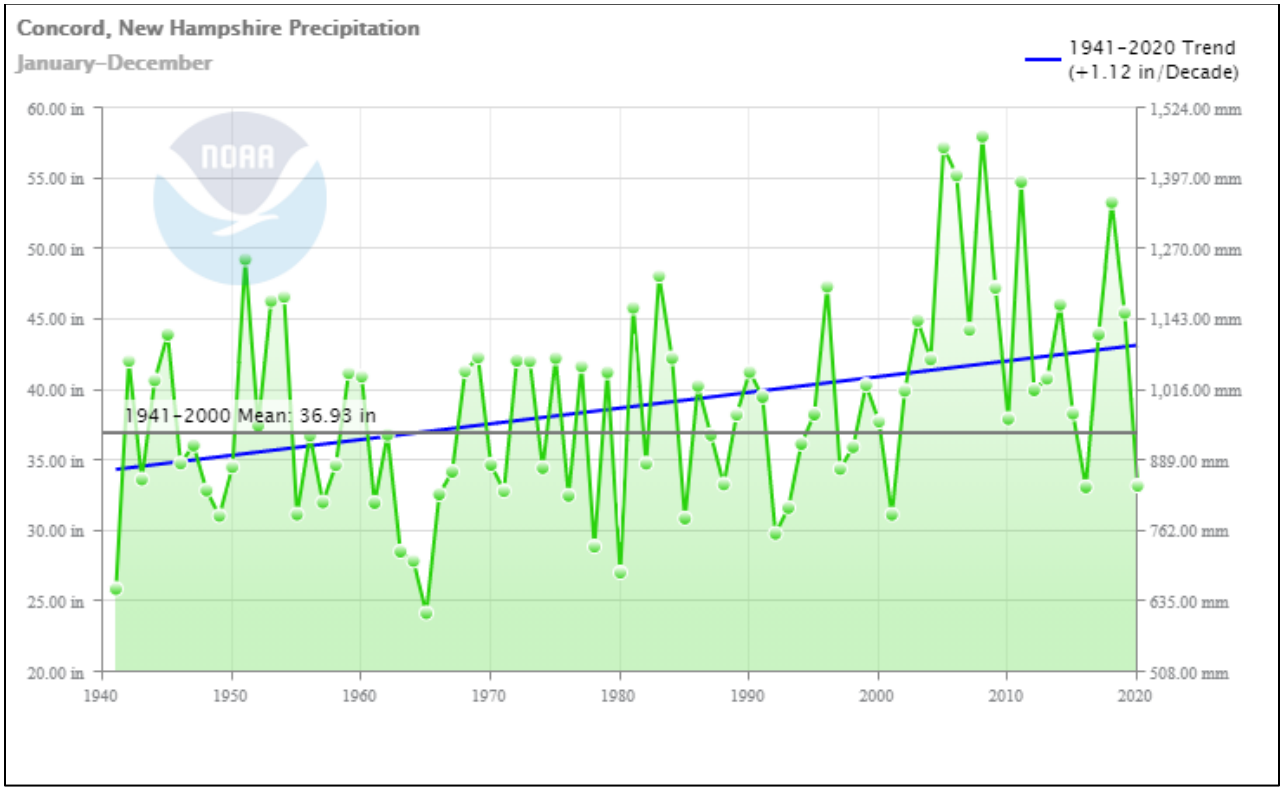
Maximum Average Temperatures for Concord, 1940-2020



Source: National Oceanic and Atmospheric Administration, last accessed 03-31-21

For precipitation (rain) changes, Figure 21 displays Concord's average annual Jan-Dec precipitation rates between **1941** and **2020**. Varying seasonal rainfall amounts continue over the decades. The mean annual precipitation during this period is **36.93"** annually. In **1941**, the amount of precipitation was **25.91"** while in **2020** the precipitation totaled **33.23"**. The wettest year in Concord was **2008** at **58.00"**, **2005** at **57.22"** and **2006** at **55.24**", **2011** at **54.78"**, **2018** at **53.33"**, followed by **1951** at **49.29"**. The years with the least amount of rainfall were **1965** at **24.19"**, **1941** at **25.91"**, **1980** at **27.07"**, **1964** at **27.90"**, **1963** at **28.56"**, followed by **1978** at **28.91"**. The trend line serves the same purpose to illustrate an increase of **1.12"** in precipitation per decade, or about a **+8.9"** increase in the annual average precipitation during this **80**-year period from **1941-2020** in Concord. Deering will have experienced similar conditions.

Figure 21
Average Annual Precipitation for Concord, 1941-2020

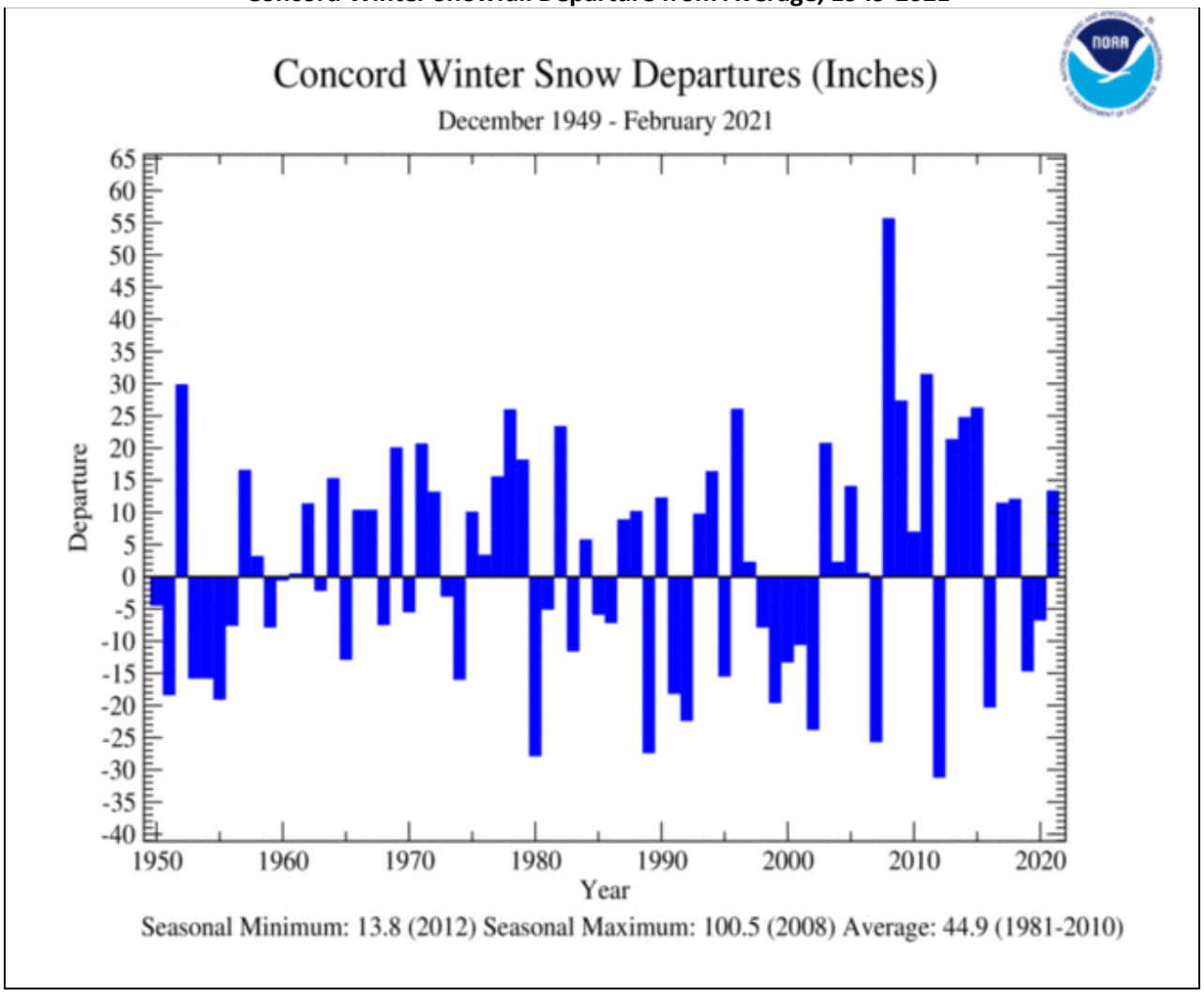


Source: National Oceanic and Atmospheric Administration, last accessed 03-31-21

Displayed in **Figure 22** is the departure from normal snowfall instead of actual inches per year, using a "**30-**year normal" period as the baseline, which for **1981-2010** is **44.9"** of snowfall annually in Concord.

The amount of recent annual snowfall has significant departures from normal. From **Jan-Dec 2020**, **58.2"** of snowfall occurred, which is **13.3"** higher than what normally falls (**44.9"**). Since **1949**, the year with the highest amount of snowfall was **2008** with **100.5"** and the lowest snowfall was **13.8"** in **2012**.

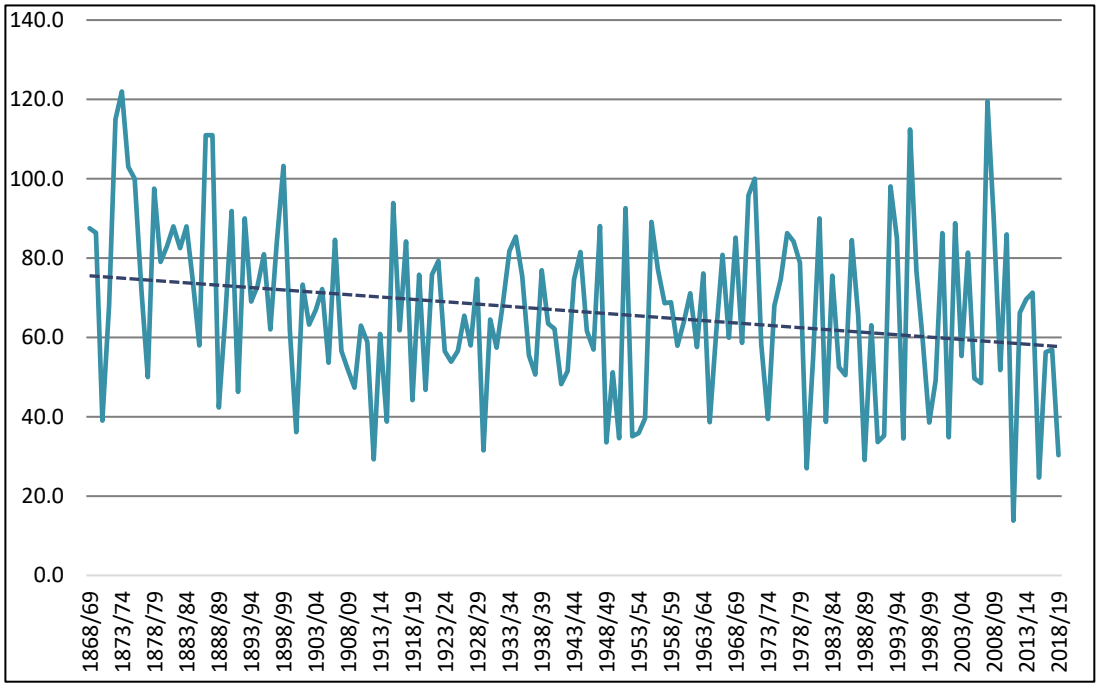
Figure 22
Concord Winter Snowfall Departure from Average, 1949-2021



Source: National Oceanic and Atmospheric Administration, National Climate Report February 2021
https://www.ncdc.noaa.gov/sotc/national/202102/supplemental/page-5
https://www.ncdc.noaa.gov/monitoring-content/sotc/national/2021/feb/Concord.gif last accessed 03-31-21

The National Oceanic and Atmospheric Administration (NOAA) seasonal snowfall totals were compiled by CNHRPC for Concord, where snowfall data gathering began in **1868**. Figure 23 displays the snowfall every **5** years and includes a trendline that indicate annual seasonal snowfall has decreased by nearly **20"** since **1868**. The years with the highest snowfall accumulations were **1873/74** (**122.0"**), **2007/08** (**119.5"**), **1872/73** (**115.0"**) and **1995/96** (**112.4"**). The years of lowest accumulations were **2011/12** (**13.8"**), **2015/16** (**24.7"**), **1979/80** (**27.0"**), and **1988/89** (**29.1"**).

Figure 23
Seasonal Snowfall Totals for Concord, 1868-2019



Source: National Oceanic and Atmospheric Administration Data as compiled by CNHRPC, 03-19

Five (**5**) of the top **10** lowest snow accumulations occurred since **1990**. The **2018/19** season ended with **30.3"**, ranking **6th** out of **151** years of records. Deering is geographically close to Concord (**30** miles) and likely shares similar snowfall accumulation trends over time.

IMPACTS OF CLIMATE CHANGES IN SOUTHERN NEW HAMPSHIRE

This climate data may certainly be relevant to the entire Central NH Region which includes the Town of Deering. The Central NH region climate summation is that the **temperature is getting warmer**, the **precipitation is increasing**, and the **snowfall is decreasing** according to the National Oceanic and Atmospheric Administration's data collection at the Concord airport. There are no indications to see these trend lines reverse in the future.

The Southern NH Climate Change Assessment, formally entitled ***Climate Change in Southern New Hampshire: Past, Present, and Future, 2015*** by Climate Change Solutions of New England under the University of New Hampshire, reviewed current climate conditions and projected future conditions of Southern New Hampshire under potential low and high emission scenarios. The Central NH Region and the Town of Deering are within southern New Hampshire. The past and future Southern NH climate overview is illustrated in **Figure 24**.

As a result of anticipated extreme weather continuing and climate changes in Central NH and Deering, consideration should be given for potential impacts to the community. Several new issues are considered, including public health, natural environment disruption, declining forest health, fewer recreational opportunities, risks to the built environment, transportation system maintenance, aging stormwater infrastructure, decreasing water resources and changing food and agriculture, which may result from climate change. For more information on these topics, refer to the ***Central NH Regional Plan 2015***.

Figure 24

Southern NH Climate Assessment Projections

Past Data and Future Climate Overview

SOUTHERN NH CLIMATE ASSESSMENT Projections

TEMPERATURE

What have we seen since 1970?

- → Average maximum temperatures have warmed by 2.0°F (spring, fall and summer) and 2.9°F (winter)
- → Average minimum temperatures have warmed by 3.2°F (spring, fall and summer) and 6.1°F (winter)

What can we expect in the future?

- → Summers will be hotter: 16-47 days above 90°F
- → Winters will be warmer: 20-45 fewer days below 32°F

RAINFALL

What have we seen since 1970?

- → Annual precipitation has increased by 8-22%
- → Frequency and magnitude of extreme events

What can we expect in the future?

- → Precipitation annual average will increase: 15-20%
- → More frequent and severe flooding

SNOW

What have we seen since 1970?

- → Fewer days with snow cover
- → Lake ice-out dates occurring earlier

What can we expect in the future?

- → Significant decrease of 20-50% in number of snow covered days

Source: UNH Climate Solutions of New England, 2015

More Human Health Emergency Events

- ☞ Illnesses such as heatstroke, fainting, and heat exhaustion.
- ☞ Excess heat especially dangerous for the aging population and residents without air conditioning.
- ☞ Increase in greenhouse gas emission, energy demand, and air conditioning use and cost.
- ☞ More favorable conditions for insects carrying viruses and diseases, such as West Nile Virus.
- ☞ Increases risk of waterborne illnesses caused by pollutants entering the town's water supply, commonly through stormwater runoff and sewage overflow.
- ☞ Infrastructure failure by adding additional stress, leading to potential injury or loss of life.
- ☞ More air pollution, leading to asthma and breathing disorders.
- ☞ Vulnerable populations require more assistance.

Natural Environment Disruption

- ☞ Too much water and/or lack of water can disrupt trees and plants natural growing cycle, potential leading the tree, plant, and surrounding area to die.
- ☞ Additional water and drought conditions affect wetland discharge, stream flow, and water quality, affecting the habitat's quality of life and species' health within the area.
- ☞ Debris will be a result of harsh flooding, including trash and downed trees, polluting waters, harming habitats, and damaging property and infrastructure.

Declining Forest Health

- ☞ Large weather events such as heat stress, drought, and periods of winter thaw followed by intense cold can lead to loss of trees.
- ☞ Become susceptible to invasive species and diseases, such as the Hemlock Wooly Adelgid.
- ☞ Loss of trees can have a direct impact on portions of the region's economic components, including declining tourism.

Fewer Recreation Opportunities

- ☞ Weather Impacts on Recreational Trails such as debris, flooding and erosion.
- ☞ Snowmobiling, ice fishing, snow shoeing, skiing and snowboarding provide numerous sources of winter recreation and winter tourism, enhancing the quality of life and economy, will be affected with shorter seasons.

Risks to the Built Environment

- ☞ Critical infrastructure such as roads, bridges, culverts, stormwater drainage systems, water and wastewater treatment facilities, natural gas lines, electric lines and poles might be at risk of severe damage or failure if the anticipated extreme weather events occur.
- ☞ Damaged infrastructure cannot provide services to homes and businesses, disrupting the economy and may endanger public health.
- ☞ Culverts are at risk to extreme precipitation events, including rain, snow, and ice.
- ☞ Residents who experience damage with flooding to their homes and personal belonging may lack proper flooding insurance, placing the resident in financial hardship.
- ☞ Dams with High Hazard and Significant Hazard classifications are the most likely to cause the largest amount of damage or loss of life. Dam operators may quickly release water without notification to municipalities.

Increasing Municipal Transportation Systems Maintenance Needs

- ☞ Volume of flooding is expected to increase, potentially closing roads and increasing the travel time for drivers and increasing the cost and energy use.
- ☞ Flooding can also cause damage to pavement and embankments, increasing maintenance, repair, and replacement costs to municipalities.
- ☞ Extreme precipitation will also increase erosion, decreasing certain infrastructure components design life span.

Aging and Inadequate Stormwater Infrastructure

- ☞ Stormwater infrastructure such as catch basins, pipes, discharge points, and culverts that redirect stormwater runoff can impacted by flooding and cannot perform their function.
- ☞ Blocking of water can lead to flooding of the area and roadways, potential leading to the closure of nearby roads.
- ☞ Components of stormwater infrastructure are outdated, and increased flows are added stress to the system, more money to maintain and higher replacement costs.
- ☞ Increased development with increased amounts of impervious surface adds the volume of stormwater runoff within more urban area.

Decreasing Water Resources

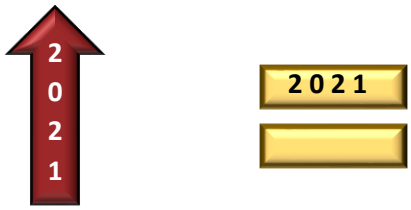
- ☞ Water quality and quantity are both threatened by projected changing weather events, with threats of flooding, drought, erosion and stormwater runoff.
- ☞ By preventing groundwater from replenishing, additional runoff and sediments can lead to intensify flows in rivers and streams with higher contamination levels of unwanted nutrients and pathogens.

- Additional water treatment may be necessary, potentially overloading treatment systems.
- Contamination can pollute sewage, threatening the performance of wastewater treatment facilities.
- Increased occurrences in flooding can also intensify flows, causing overloading of treatment system.
- When the ground is frozen, rapid snow melt from warm days or intense rain is not able to infiltrate the ground, leading to drought conditions.

Changing Food and Agriculture Production

- Hillsborough County is the top county in the State for agriculture sales of higher temperatures will promote a longer growing season for most crops, benefiting a larger number of local crops.
- Negative impacts can potentially alter the region to a climate not suitable for growing valuable local crops such as apples and blueberries.
- Temperature are expected to slow weight gain and lower the volume of milk produced by dairy cows.
- Higher overnight temperatures are anticipated to prevent the dairy cows and cattle from recovering from heat stress.
- Warmer temperatures and increase in carbon dioxide in the air creates a more ideal environment for pests and weeds, potentially increasing the use of herbicides and pesticides on crop.

This is a sampling of how changing climate and severe weather impacts can affect communities in New Hampshire, in the Central NH Region and in Deering. Consideration should be given to applicable items during the development and update of the **Hazard Mitigation Plan**, as Actions are completed, and as new Actions are developed for the **Mitigation Action Plan**.



Deering's Hazard Vulnerability Changes Since the 2015 Plan

The locations of where people and buildings are concentrated now or where new lands may be developed have been considered as compared to the changing locations of potential natural hazards in order to best mitigate potential property damage, personal injury or loss of life. These factors assist the community with determining whether Deering's vulnerability to natural hazard events has changed in any way since the **2015 Plan**. Facilities and their locations with vulnerabilities to specific natural hazards are listed in **APPENDIX A Critical and Community Facilities Vulnerability Assessment**.

There have been slight population and housing increases over the last **5** years from **2 COMMUNITY PROFILE**, but aging citizens and individuals with limited access and functional needs require more services and attention. Traffic continues to increase within Town because of the NH 149 commuter route through Deering. The need for volunteers increases annually as younger people are not joining Town Boards and Committees and few new people volunteer to serve. Membership in the Capital Area Mutual Aid Fire Compact (CAMAFC) Dispatch has enabled for faster emergency response for Fire and Rescue needs. The Town has access to the Central NH Hazardous Materials Response Team and the Central NH Special Operation Unit for special incidents, which creates more training opportunities available. Membership in the Capital Area Public Health Network enables organized public health assistance while membership in the NH Public Works Mutual Aid program enables shared Highway Department labor and vehicles from across the State during times of need.

THE TOWN'S STATEMENTS OF VULNERABILITY CHANGE

Natural Disasters Vulnerability The Town's overall vulnerability, with its steady population growth and aging population, to natural disasters **is believed to BE LESS than the previous 5 years**, the changing climate and weather impacts, and continuing disasters and hazard events, and offset by less road flooding, debris and damage repair, regular and good preparation and mitigation to date.

Changing Climate

2021

The Town is experiencing increasing temperatures, more rain, less snow, and storms are bigger. The frequency of torrential downpours has increased which impacts waterbodies and the Contoocook River, brooks, and waterways, often wash out or erode portions of gravel roads, ditches, and drainage systems. Yet floods have not recently reached the 100-year storm event level. The rain that is unable to run off in the cold months or during the torrential downpours washes out some of the **48** miles of Town maintained roads. Increased traffic accidents result from the weather and road conditions.

More rain is coming more quickly, good roads now, opportunity to washout remains the same. Tree debris remains the same because of Eversource activity. The Town upgraded culverts in roads, but now experiencing more drought conditions as opposed to flooding.

As a forested community, a significant future concern to Deering is the large die-off of trees which hold the water supply, serve as carbon storage, maintain a healthy local hydrologic cycle (tree transpiration), and guard against erosion on the hills to the roads.

When the normal 4- season climate varies, Deering's small recreational economy (Oxbow Campgrounds, Deering Lake, trail systems) would be negatively impacted if there were businesses. Issues with Deering Lake could increase (algae blooms, aquatic invasive species) could occur with more traffic. The unpredictable weather **has not since the last Plan** brought more rain and washouts, more significant or damaging weather events to an infrastructure (road and Town services) which is expensive and aging, unable to keep pace with maintenance and population growth service demands and cannot be replaced or improved without increased funding.

Town Demographics and Housing Changes

The Town is at greater risk from not only the natural hazards, but also from the changing population characteristics in Deering. The affordable housing in manufactured housing parks attracts people because of its location to quiet streets and nearby services, but these are located in the floodplain and are often populated by those with fewer discretionary resources. There is a low inventory of homes for sale in Town. The younger generation leaves the local school system for college and greater employment opportunities and does not often return to the Town after completing their college degrees. In-migration of college-educated professionals are moving back to Deering because of pandemic-related issues, encouraged by proximity to Concord and Manchester (30-minutes). There are few jobs in Deering and Hillsborough available for highly educated young people. While population has increased marginally, additional homes have been built to fulfill housing needs.

The townspeople are aging and the need for services increases, although trends have been noted that people who have lived in Deering for decades are moving out for assisted living services. Senior programs are available at the Deering Community Church and Greater Hillsborough Senior Services. The Town offers emergency medical services and Police services seven days per week and with on-call, 24 hours per day availability. Deering continues to have a strong volunteer ethic for Town Committees and Boards and organizations. The older volunteers of the Town, when they retire, are being replaced with younger volunteers. Existing volunteers typically continue their services for many years.

Class VI gravel roads and conservation land trails are used for bicycling and walking. Bike races are often held during the warm weather weeks.

Economic Changes

Years when the economy is good, housing growth will occur as may home business development. In the Town are virtually no active commercial and industrial uses except for home businesses, the Hawthorne-Feather Airpark, an electrician, contractors, and salvage yards. Home businesses are encouraged in the community. The lack of a diverse tax base complicates funding for long-term mitigation planning projects.

Deering residents commute to work 30 minutes outside of Town, telecommute, or own a home business. There are few employment opportunities available in Deering. Most commute using NH 149
Plymouth, or greater Bo

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Infrastructure Changes

With an older population, the Town of Deering may be challenged to raise taxes for mitigation projects. **The ability of the infrastructure to meet the Town's remains difficult**. For instance, there has not been enough funding available to adequately upgrade the Town's paved road (**20** miles), 40 miles of gravel roads seem to be more easily maintained. Mitigation Actions were developed for many aspects of Town infrastructure, yet over the last **5** years, there was not enough funding or the staffing capability to see many of the projects through to completion.

The Town Hall is modernized to fulfill Department operational needs. The three Fire Stations, the Highway Department (with LED lighting and solar panels) require some facility upgrades. For all Departments, budgets are extremely limited for infrastructure upgrades. Each Department has their own Capital Reserve Funds (CRFs) and Expendable Trust Funds (ETFs) and the Town maintains an active CIP, but the funding is limited to make the required improvements and residents vote at annual Town Meetings to approve funding for these accounts.

The burden on the Town's aging infrastructure is increasing with no end in sight. Deering has no Town red listed bridges, but the high upkeep and rehabilitation costs of Town roads, buildings, and the services provided by Departments are too high to be sustainable. Not enough funding through taxation is available to repair the existing infrastructure, and grant funds are competitive and require staff management and completion time, and thus the Town is unable to be proactive. Most of Deering's paved road infrastructure and bridges age **5** years with every **Plan**.
{SA – what was Webster's bridge grant?]

Overall Natural Hazards Vulnerability

Despite these risks, **Deering is also better protected from natural hazards now than in the past**. These protections arise from select infrastructure and service improvements to past vulnerable areas which were identified and mitigated where feasible by the Highway Department, Emergency Management, Police Department, Fire and Rescue Department, and Town Administration. The Town was assisted by the State of New Hampshire and memberships agreements with organizations and neighboring towns for aid. Balancing the changing climate and potential for hazard events, the overall vulnerability is judged to **have DECREASED over the last 5 years**.

2021

Human and Technological Disasters Vulnerability The Town's overall vulnerability to human and technological incidents **is believed to have INCREASED over the last 5 years** with the potential for great escalation in the future. Although the Town **is better protected than in the past** through partnerships and best practices, SOPs, regular Information Technology improvements to combat human hazards, and tightened informational technology services and updates protecting data, the Town has an ongoing struggle to contain the many facets of human and technological hazards.

Human Hazards Vulnerability

Human hazards are unpredictable to a large degree, but preparedness can enable faster, more appropriate emergency response. The School District conduct active threat drills (2x per year) fire drills (10x year), and bus evacuation drills periodically during normal operation years. The District likely reviews its Emergency Operations Plan and procedures annually. The Town emergency response (Emergency Management, Fire, Rescue & Police) often participates in municipal drills and the School drills. All emergency response personnel regularly participates in the newest training related to human hazards, at least during non-pandemic years.

The Fire and Rescue Department call volume and Police Department call volume have increased since **2015**. More human hazards have been experienced in the Town, but none that are especially alarming. At the Hillsborough-Deering Schools, the increased use of social media is believed to increase the volatile situations and bullying handled by emergency response personnel by an increase in [mental health calls] responding to younger residents. Concealed carry and revolver permits issued have increased, but concealed carry permits people to travel; however, the pistol permit was eliminated in the State (can be issued by local police).

Stress on the general Deering population has increased as noticed by Departments and the School District. Mental health and substance abuse issues need to be addressed.

Higher stress can result in serious human hazard events such as active threat, kidnapping, hostage situations, civil disturbance, or public harm.

Technological Hazards Vulnerability

The Town core financial business software operates "in the cloud" with multiple redundant backups available as a safeguard. Most Department files are saved to a local server and backed up to the cloud. A contracted IT company is responsible for maintaining the Town's local server. The files, email, internet, website, in the cloud are maintained by software provider. The Town system is fairly safe from cyber-attack because their technology is automated under highly secure software and hardware.

While the Town and School cybersecurity has increased like phishing and malware installation, new technological hazards will continue to be developed and utilized and may be directed toward Deering, which is not anticipated to be able to keep pace with advanced, changing technological risk. Valid concerns include Town database and website hacking, although Departments have redundant back-up systems to the cloud by using outside software providers. While use of technology increases efficiency, the increased reliance on cell phones, electronics, electricity and technology also makes Deering's population and Schools more vulnerable to the effects of cyberattacks.

Overall Human and Technological Hazards Vulnerability

The Town itself is **better protected** from human hazards by partnerships among Town Department, Hillsborough-Deering School District, mutual aid agreements, and emergency response and membership with the Capital Area Mutual Aid Fire Compact (CAMACF). However, with all factors considered, the Town's **vulnerability to these hazards have INCREASED** and is anticipated to continue increasing to **2026**.

FUTURE DEVELOPMENT IN DEERING

Most of the Town's roads and homes are located in remote locations, but few were newly constructed since the **2015 Plan**. Deering is accessible via the primary NH 149 and local roads such as Long Woods Road, Second NH Turnpike, and connector roads. Residents are aging, and most employed adults either work from home or commute along NH 149 to Concord, Hillsborough, Manchester, or Lebanon or points within or beyond. Since much of the easily developable land in Town has already been built or subdivided, future developments will be built on backlands, near **wetlands** or **steep slopes**. **Floods**, **landslides**, **erosion**, and **fires** could occur in these potential residential areas. **Severe winter weather**, **storms** and **wind events** on these hilly locations will bring trees down on roadways, interrupt **power and communication** services and will **flood** ditches and **wash out** roads.

No large businesses are located in Deering and few new subdivisions are anticipated. Infill development between existing built areas could guide residential and light commercial development in the community.

About 1/3 of Deering's land is permanently protected from development. The town is so remote, **large-scale housing** developments are not expected to occur in Deering. Some multi-unit housing infill development may be seen on NH 149/Deering Center Road and along Mill Street close to Hillsborough.

The risk of **Contoocook River flooding** is always present. The most remote locations are sometimes protected with dry hydrants (maintenance needed) against severe impacts of **wildfire** and **lightning**, and all housing could be vulnerable to **severe winter weather**, **storms**, and **flooding of local roads.** There remains the potential for subdivisions in the future when the lots change hands to younger generations ("legacy parcels") if the largest parcels are not placed under conservation. Conservation land is highly preferrable by the Town.

When developments come before the Planning Board, potential hazards including **flooding**, **fire**, **traffic accidents**, and **evacuation** are regularly considered. Developers and the Board try to solve the problem before a project is approved. The existing roads and bridges experiencing **erosion** and **flooding** will need to be upgraded for additional usage. The Town will continue to slow grow and change over time, and attention should be focused on the hazards any new development could face during the consideration process. Techniques to mitigate identified hazards could be undertaken before the facilities are sited and constructed.

The main natural hazards for this rural, forested community remain **earthquakes, wildfire**, **flood**, **severe wind events**, **severe winter weather**, **debris impacted infrastructure** (trees down on powerlines and trees/powerlines down on roads), **aging infrastructure** and **utility failures**. The Town will need to ensure Town services are not eclipsed by the needs of new development. Any future development in Town could be vulnerable to the various natural hazards identified previously. A few agricultural operations are present. New (or replacement) buildings and infrastructure and potential future development appear in **APPENDIX A Critical and Community Facility Vulnerability Assessment**.

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5 COMMUNITY VULNERABILITY ASSESSMENT AND LOSS ESTIMATION

The Hazard Mitigation Committee developed and/or updated as needed each of the assets tables within this Chapter. Sites were added or removed, and contact information was revised. Modifications were made to the ***Primary Hazard Vulnerability*** column to reflect changes over the last five years. Revisions were made to the future development section, which now includes a clear table. The Plan's maps were also updated from the **Deering Hazard Mitigation Plan 2015**.

The identification of Critical and Community Facilities within Deering is integral to determining what facilities may be at risk from a natural disaster. Every Critical and Community Facility can be damaged by multiple hazards listed in **4 HAZARD RISK ASSESSMENT**. A tabular inventory of facilities in Deering is provided in **APPENDIX A Critical and Community Facilities Vulnerability Assessment**. The ***911 Street Address*** and ***Phone*** number of each facility is supplied, the assessed ***Structure Replacement Value $***, and the ***Primary Hazard Vulnerabilities*** to which the facility is most susceptible are listed. The hazards identified are primarily natural disasters but regularly include the technological (and secondary disasters) such as power failure and communications systems failure as well as human hazards such as vandalism/ sabotage.

Most sites appear on ***Map 3: Critical and Community Facilities*** and ***Map 4: Potential Hazards and Losses.***

Potential dollar losses for each of the facilities' ***Structure Replacement Value $*** (not land) have been obtained through the Feb 2021 assessing software and the 2020 MS-1 Summary of Inventory Valuation to provide a starting point of the financial loss possible should these structures become damaged or require replacement. These community facility losses are estimated for the value of structure and does not include land (unless indicated), contents, or infrastructure.

Problem Statements were then generated for each type of facility when issues were identified by the Hazard Mitigation Committee during discussion of the facility characteristics and ***Primary Hazard Vulnerabilities.*** These **Problem Statements** are listed here.

Potential dollar losses to buildings in the Deering from flooding and other natural hazards are provided using the methods described in the chapter. The Town's participation in the National Flood Insurance Program (NFIP) offers a way for individuals to obtain insurance coverage for flooding. The Town's history with NFIP claims and repetitive losses are examined.

The Chapter provides an inventory of the **Community Facilities** and **Critical Facilities** and the most prevalent hazards to which they are vulnerable. Potential structure damage loss is also provided. The detailed information is available in **APPENDIX A Critical and Community Facilities Vulnerability Assessment**:

Facility Name	Street Address (911)	Phone	Structure Replacement Value* $	Primary Hazard Vulnerabilities

Critical Facilities

Critical Facilities are categorized as those Town or State buildings or services that are first-responders in a disaster or that are required to keep the community running during a disaster. The personnel in the Deering Town Department facilities, the Town Offices, Fire and Rescue Department, Police Department, Highway Department, and Transfer Station, provide the services necessary for coordinating everyday activities and for emergency response. Other critical partners such as the Schools District provide essential services. Many staffed and unstaffed support facilities are located in Deering, such as Historical Society, Library, Old Meetinghouse, and more. Maintained roads, dams, and bridges are required for safe operation during both normal times and hazard events. Utilities or utility features such as cisterns, culverts, dry hydrants, telecommunications towers, phone and internet switching stations, and electric transmission lines are included because of the essential communication and utility services provided, and their significant impact on Deering residents when they fail. Other **Critical Facilities** would include educational facilities, medical facilities, and emergency shelters.

Many critical facilities are located in Deering. The assessed structure/building only value is provided for each facility where available, otherwise estimates are provided to help ascertain the financial impact a disaster can have on the community. However, the assessed structure valuation does not reflect actual structure replacement (rebuilding) which would likely far exceed the valuations in many cases. To view the detailed **Critical Facilities** sites and tables, see **APPENDIX A**. Most of these facilities appear on ***Map 3: Community and Critical Facilities***.

Essential Facilities include: Town Hall (office), Police Department, Fire and Rescue Department (EOC), Highway Department, Transfer Station, Murdough Fire Station, Donovan Fire Station, McAlister Fire Station. **Assessed structure (only) valuation for these essential facilities total $1.1m.**

Utilities include: His Mansion Community Water Supplies (private), Longwood's Community Water Supply (private), Hedgehog Mountain Co-op Public Water Supply, Town Hall Cistern (suppression of TH), Dry Hydrant: Oxbow Road (not permitted to use it), Dry Hydrant: Gregg Hill Road (not in service), Dry Hydrant: West Farm (not in service), Fire Pond: Deering Reservoir, Fire Pond: Ferrells, Fire Pond: Camp Road, Fire Pond: Driftwood Beach, Fire Pond: Littles Site, Fire Pond: Fulton Pond, Fire Pond: Hunters Pond Site, Fire Pond: Connors Fire Pond/Edwards House, Fire Pond: Longwoods Site, Fire Pond: Fish and Game Pond, Fire Pond: Canal Site, Fire Pond: Robin Hill Farm, Fire Pond: Second NH Turnpike Site, Fire Pond: Bennington Depot Site, Fire Pond: Piscataquog River Site, Fire Pond: Bartlett Hill Rd Bridge Site, Fire Pond: Clement Hill Road Site, Fire Pond: Pond Road. Fire Pond: Cemetery Pond, Wolf Hill Road Telecomm Tower (Verizon), Tubbs Hill Comcast Receiver, Eversource High Transmission Lines, TDS/Granite State Communications. **Assessed values for these utility structures (without electric or towers) in Town was not available.**

Dams include: **1** High Hazard (**H**) Dams- 062.05 Deering Reservoir Dam (State) on Piscataquog River, **3** Low Hazard (**L**) Dams- 062.01 Dudley Pond Dam (Private) on Dudley Brook, 062.07 Oscar Young Dam (Private) on Gerini Brook, 062.12 Black Fox Pond Dam (Private - Audubon) on Smith Brook. Non-Menace (**NM**) Dams- 062.06 Branch Piscataquog River (Private) from a Piscataquog River tributary, 062.08 Wildlife Pond (Private) on a natural swale, 062.09 Wildlife Pond Dam (Private) on Johnson Brook, 062.13 Dawson Recreation Pond (Private) on an unnamed stream. **Estimated structure (only) repair values for these dams total $4.5m**.

Bridges include: **5** TOWN BRIDGES: 032/101 West Deering Road over Contoocook River, 103/053 Reservoir Road over Piscataquog Suncook River, 124/044 Pleasant Pond Road over Piscataquog River, 142/117 East Deering Road over Dudley Brook, 147/057 Bartlett Hill Road over Piscataquog River. **1** STATE BRIDGE: 150/062 NH 149 over Piscataquog River. **Estimated structure (only) rehabilitation values for these bridges total $5.3m**.

Shelters, Schools, and Medical Facilities include: Hillsborough-Deering High School (Deering Town Shelter), Town Hall Auditorium First Floor [200 capacity] with Backup generator, kitchen and bathroom facilities. **Assessed structure (only) valuation for these schools, medical facilities and shelters (Town Office only) total $700k.**

PROBLEM STATEMENTS AND EVALUATION

During discussion of these **Critical Facilities**, the Hazard Mitigation Committee identified specific issues or problems that could be further evaluated. **Problem Statements** were developed after ascertaining the ***Primary Hazard Vulnerabilities*** to the sites and known existing issues. These potential hazards were typically those from the **Hazard Risk Assessment**. The Committee also evaluated these statements to determine whether mitigation actions could be developed.

Essential Facilities Table

- Lighting could strike at the Highway Dept and Town Hall. Neither locations have lighting rods and are potential lightning targets.
- McAlister Station experiences areal flooding during heavy rain events. While the station itself is built upon a small crest, trying to access or leave the station may be difficult during flooding events.

Utilities Table

- The three dry hydrants in Town no longer function and would require upgrade and/or landowner permission to prove useful to the Fire Department.

- Buried, abandoned telephone lines, now owned by TDS, have no permits and license to operate. These illegal underground lines are found under short sections of Class V town roads: Clement Hill Road, Longwoods Road, Holton Crossing Road, Quaker Street, Second NH Turnpike, Fisher Road, Wolf Hill Road. They are often encountered by Highway Dept personnel during roadwork.
- The numerous fire ponds around Deering dry up almost completely during drought conditions but replenish with normal rains. Deering Reservoir and the two rivers remain a constant water source for fire suppression.

Dams Table

- *INFO:* The concrete Low Hazard Black Fox Pond Dam has been renovated & repaired by NH Audubon. The beaver deceiver device placed at the dam is working well to repel the beaver from creating a new lodge.
- *INFO:* The Low Hazard privately owned Dudley Brook and Gerini Brook dams are constructed of permanent stone/ rock embankments. Neither low water levels which naturally fluctuate based on rain and snow melt. Neither dam requires maintenance.
- *INFO:* High Haz Deering Reservoir Dam on Deering Reservoir. If a breach occurred, the water would be absorbed by the wetlands across the road and would cause lowland flooding little damage.

Bridges Table

- *INFO:* During large floods or snow melt events, the level of the Piscataquog River often reaches the bottom of the West Deering Road bridge, Reservoir Road bridge, and Bartlett Hill Road bridge but the water does not flood over the bridges. Bridges are elevated from the banks, lowlands would flood first. For the remaining bridges, the water never reaches that high.
- *INFO:* No bridges in Deering are redlisted. The Town has not recently repaired any of its five bridges. Bridge structure is good. The State inspects all bridges and provides reports to the Town. Stolen signs is the most common issue.
- *INFO:* The State bridge over the Piscataquog is situated in a low-lying area. Beaver issues are addressed at this location. No regular flooding occurs during snowmelt.

Shelters, Schools and Medical Facilities Table

- The Deering ambulance must transport patients 20-30 minutes away to Concord Hospital, which is the nearest medical facility. More than two people injured (ambulance capacity) becomes a mass casualty. Mutual aid will be called in this instance.
- Although the Town Hall auditorium can be set up as a temporary warming or cooling shelter for residents, the public is unaware of this function or when it is available. The Deering Town Hall has an (1,500 gallon LPG underground tank) backup generator when electricity fails.

- In 2020, solar panels were installed on Town Hall (80 panels @ 400+ kw) and the Highway Dept (72 panels @ 400+ kw), but currently there are no storage batteries for the Town. The installer was ReVision Energy. The panels provide discounted electricity rates for the Town who may purchase the installation after 5 years.

Many of these problem statements were developed into Actions discussed later in **7 PRIOR ACTION STATUS** and **8 MITIGATION ACTION PLAN**.

CULVERT UPGRADES

A table of culverts in need of upgrade could appear in multiple sections, such as the **Critical and Community Facility Vulnerability Assessment** (**APPENDIX A**) or with the **Aging Infrastructure** technological hazard. Instead, as critical facilities, they are included here once within this section and also appear within the **Mitigation Action Plan 2021**. Culverts (including box culverts, often considered "almost bridges") are responsible for carrying large volumes of water safely under roadways, and with the prior severe flooding events it is necessary to keep Town infrastructure in good condition.

Like most communities, the Town of Deering has hundreds of culverts and is not known to have a mapped inventory. The Highway Department maintains multiple Town culverts daily (debris removal, clearing, repairs) and attempts to keep pace with culvert upgrades. Yet upgrading all culverts that require this action in the next 5 years would be unrealistic. A prioritization of the culverts in greatest need of upgrade is necessary.

Table 29 displays Deering's initial listing of culverts in need of most urgent upgrade and approximately when the upgrades should occur. The intent is to upgrade all of these failing culverts with either open box culverts or appropriately-sized PVC culverts, respectively. The estimated cost for these projects reaches well over **$300k** for materials, permitting, study and design. Labor for the smaller projects is performed by Town staff and is usually considered an in-kind cost. For larger projects, contracted engineering, design and permitting may need to occur and would be included in the respective cost estimates. The optimal timeframe for these upgrades to protect the Town from **Inland Flooding**, **River Hazards** and **Aging Infrastructure** is between **2021-2026** which is within the span of this **2021 Plan**.

Table 29

Town-Owned Culverts in Need of Upgrade

Action #	Location of Culvert(s) to Upgrade	# of Culverts	Intersecting Water	Issue(s) with the Culvert(s)	Upgrade Diameter *Inches*	Estimated Upgrade Year	Total Approx $ Cost for All
N/A, *Stream Crossing Assessment 2015 HMP*	**Camp Road @ 106 Camp**	1	Piscataquog River	Steel-corrugated, 36" round. Upstream - low bank erosion. Downstream- evidence of erosion. Approach - sharp bend.	36+	N/A	**N/A**
N/A, *Stream Crossing Assessment 2015 HMP*	**Zoski Road (2015)**	1	Piscataquog River	Plastic-corrugated, 36" round. Upstream - low bank erosion, evidence of aggradation. Downstream- low bank erosion, evidence of aggradation and erosion. Approach - sharp bend.	36+	N/A	**N/A**
N/A, *Stream Crossing Assessment 2015 HMP*	**E Deering Road @ Becca Lane (2015)**	1	Unknown	Concrete, 36" round. Upstream - evidence of erosion. Downstream- low downstream erosion, evidence of aggradation. Approach - sharp bend. Faster velocity than stream. Old.	36+	N/A	**N/A**
N/A, *Stream Crossing Assessment 2015 HMP*	**Fisher Road (2015)**	1	Unknown	Steel-corrugated, 36" round. Downstream- evidence of aggradation, culvert undermining. Approach - sharp bend. Collapsing.	36+	N/A	**N/A**
#3 -2009	**Pond Road (2015)**	3	Patten Brook	Unknown material, 36" round. Main access route road washes out every few years. Upgrade with one box culvert	box	2026	**$250,000**
#60- 2021	**Longwoods Road Culverts to Holton Crossing**	5 total, 3 completed	Wetlands	1.5 miles of road, five culverts replaced with two remaining. Replace rusted, collapsed corrugated 28" steel with 36" plastic corrugated.	36	2021-2022	**$5,000**
#61- 2021	**Second NH Turnpike from Holton Crossing to Bennington Depot Road**	4	Wetlands, Brooks	Culverts are old, road has subsided. Asphalt needs to be ground and more stone added to raise the road a bit and replace the culverts.		2021-2022	**$20,000**
#62- 2021	**Bennington Depot Road**	1	Wetlands, Brooks	Raise in several locations where the low areas appear, about 3,500 feet. Water accumulates and drains into the road causing muddy, icy conditions for travelers and requires additional road maintenance.		2025-2026	**$25,000**
#63- 2021	**Second NH Turnpike**	1	Wetlands, Brooks	Culvert is old aluminum, improperly installed. Water	36		**$5,000**

Action #	Location of Culvert(s) to Upgrade	# of Culverts	Intersecting Water	Issue(s) with the Culvert(s)	Upgrade Diameter *Inches*	Estimated Upgrade Year	Total Approx $ Cost for All
	Beyond the Bennington Depot Road			pools on the side of the road and erodes the road, washing out the gravel. Replace with 36" black corrugated culvert.			
	Totals						**$305,500+**

Source: Deering 2021 Mitigation Action Plan, Highway Department Road Agent Mar 2021, Deering HMP 2015 with Stream Crossing Assessment for the Piscataquog River Watershed, Trout Unlimited and NH Geological Survey 2014

This table can help the Town develop a formalized culvert upgrade and maintenance planning document. Mapped drainage facilities permit data to be collected and is easily revised and updated. Instant access to culvert and drainage information can be of valuable assistance during **flooding** events, such as **run-off**, **overtop flooding conditions** and **road washouts**. On an annual basis, a culvert maintenance plan can help guide the Town's decisions of priority replacement, maintenance, and monitoring of culverts and drainage facilities. Budgeting is clearer and may be more successful at Town Meeting with such a plan.

Some of the culverts listed in **Table 29** have been developed into **Mitigation Action Plan** items in **8 MITIGATION ACTION PLAN**.

Like all communities, the Town owns and maintains hundreds of culverts. Most of the culverts are maintained (debris removal) on a regular basis and are upgraded when a specific need arises, such as a flood event which causes road erosion or washout. A comprehensive inventory of culverts and culvert conditions was conducted. The Town is currently working to transcribe these notebook-written locations into an editable Excel document, with the goal of developing a Culvert Maintenance Plan.

MOST VULNERABLE ROADS AND NEIGHBORHOODS

The Town of Deering has over **76 total** miles of roadway including **48** miles of Town maintained Class V (both paved and unpaved roads), unmaintained Class VI roads, private roads and State highways. Many of these roads are remote, have significant elevation changes, or are dead-end roads or cul-de-sacs with only one way in and one way out. Deering residents reside in clusters, such as the Mill Street area, Longwoods Road area, Second NH Turnpike corridor, NH 149 corridor, and within cul-de-sacs. When trees and powerlines fall onto roads or floods or wildfire hazards are occurring, evacuation of most of these neighborhoods would be difficult. The Town's road mileage, classification, and surface type are displayed in **Table 30**.

Table 30

Town Road Length and Classification

Deering Roads Classification	Total Length in Miles	Total Length in Feet	Miles Paved	Miles Unpaved
Class I (State Primary)	0.000	0.0	---	---
Class II (State Secondary)	6.876	36,030.2	N/A	N/A
Class III (State Recreational)	0.000	0.0	---	---
Class V (Town Maintained)	48.263	252,898.1	N/A	N/A
Class VI (Town Unmaintained)	14.006	73,391.4	N/A	N/A
Class VI (Federal)	0.000	0.0	---	---
Private	7.335	38,435.4	N/A	N/A
Road Length Totals	76.480	400,755.2	N/A	N/A

Source: NHDOT Mileage by Town and Legislative Class, released 2021

The Town of Deering is responsible for **48** miles of Town owned roads, some of which are paved and most of which are unpaved. Compared to other small-sized Central NH region communities, the Town of Deering hosts greater than average roadway miles, especially for its small population size.

ONE-EGRESS ROADS

The Town of Deering has about **7** miles of roadway, including Town maintained Class V, unmaintained Class VI and private roads, that are dead-end roads or cul-de-sacs with only one way in and one way out. Hundreds of people live in approximately **434** homes - about **900** people, which is half of Deering's population - along roads which have no secondary means of egress. Awareness of potential vulnerabilities may help with evacuation and other emergency planning as well as long term mitigation projects in these areas. Evacuation of many of these neighborhoods, most of which are forested, would be difficult. All identified one-egress roads are displayed in **Table 31**.

Table 31

One-Egress Roads and Cul-de-Sacs

One-Egress (One Access/ Exit) Road Name	Road Class (Class V, Class VI or Private)	Specific Hazard Concerns	Condition (Good, Fair or Poor)	Approx. Length in Feet	Approx. # of Homes on Rd
Baldwin Road	Private	Winter	Fair		6
Barnes Road	Private	Winter	Fair		9
Bartlett Hill Rd	Class V		Good		5
Blueberry Hill Road	Class V		Fair		17
Cake Road	Class VI	Winter	Fair		3
Campbell Road	Private	Winter	Fair		10
Cellar Hole Road	Private	Winter	Fair		5
Clement Hill Road	Class V		Good		8
Codman Hill Road	Class VI	Winter	Fair		6
Donovan Road	Class V	Winter	Good		7

One-Egress (One Access/ Exit) Road Name	Road Class (Class V, Class VI or Private)	Specific Hazard Concerns	Condition (Good, Fair or Poor)	Approx. Length in Feet	Approx. # of Homes on Rd
Ellsworth Road	Private	Winter	Fair		6
Falls Road	Class VI		Fair		7
Falls Road	Class V		Good		2
Fish & Game	Private	Winter	Fair		8
Frances Town Road	Class V		Good		2
Gregg Hill	Class V		Good		1
Hedgehog Mountain Rd	Class V		Good		9
Hedgehog Mountain Road	Class VI	Winter	Fair		1
Homestead Road	Class V		Good		6
Johnson Road	Private	Winter	Good		19
Kayla Lane	Private	Winter	Fair		3
Lake Shore Drive	Private	Winter	Fair		15
Locke Farm Road	Private		Good		2
Long Wood Trl Park	Private	Winter	Fair		95
Lost Lane	Private	Winter	Fair		1
Old Range Way	Class VI	Winter	Good		1
Parleys Way	Private	Winter	Fair		2
Pierce Road	Class V		Good		1
Pine Knoll	Class V		Good		2
Quaker Road	Class V		Good		5
Range Way	Private	Winter	Fair		2
Ridge View Road	Class V		Good		5
Tubbs Hill	Class V		Good		22
Wolf Hill	Class VI	Winter	Fair		1
Zoski Road	Private	Winter	Fair		13
Zoski Road	Class V		Good		25
Total Homes on One Egress Roads in Deering					**430**
Total Feet One-Egress Roads				**N/A**	feet
Total Miles One-Egress Roads				**N/A**	miles

Source: Deering Highway Department Road Agent, Mar 2021

Community Facilities

The **Community Facilities** inventoried in **APPENDIX A** are generally vulnerable to disasters and in need of careful consideration. Some facilities contain vulnerable populations, other community facilities are neighborhoods, roads with many homes or roads with only one access, places where people gather, the economic assets of the community, buildings or sites that contain the history of the town, or facilities which could release hazardous materials during hazard or disaster events. While **Critical Facilities** are strong with emergency preparedness and mitigation measures, **Community Facilities** are typically not as well attuned to these issues and would require more emergency services, and perhaps the first check, during a hazard event disaster.

Vulnerable Populations include: Hillsboro-Deering Alternative School Program, Longwoods Manufactured Housing Park [92 lots], Hedgehog Community Cooperative Manufactured Housing Park [18 units], Oxbow Campground [115 sites] (Owner-Occupied, Seasonal), His Mansion [24 beds] (Religious Substance Abuse Rehabilitation, Year-Round), Robin Hill Farm [43 beds] (Traumatic Brain Injury Rehabilitation), The Wilds of New England Christian Camp and Conference Center (Seasonal with Year-Round Staff). See also Shelters, Schools and Medical Facilities. **Assessed structure (only) valuation for these vulnerable population facilities total $8.6m**.

Economic Assets include those **businesses and services** that employ a large number of people or contribute to the local economy: Hawthorne-Feather Airpark 8B1 (Rymes), Christenson Plumbing & Heating LLC, Abracadabra Electric, Abbey Salon. AGRICULTURAL: Driscoll Hill Farm (Driscoll Rd), PigBery Christmas Tree Farm (Deering Center Rd), 3 Crow Organic Farm – animals (Dickey Hill Rd), Oneill Hill Mini Farm (Dickey Hill Rd), Nazer's Christmas Tree Farm (Mountain View Lane), Dollar Shy Farm – farm stand with goats, pork, eggs, beef (Second NH Tpke), Winter Valley Farm – cows, chickens (Second NH Tpke), and others. See also **Hazardous Materials** facilities. Only some structure valuations were available (no agricultural). **Assessed structure (only) valuation for these economic asset facilities total $1.1m+**.

Hazardous Materials Facilities include: Airport Runway, Charlie Kelley Junkyard, Scott's (Gerini) Auto Body Repairs, Greene's Garage and Junkyard. See also **Economic Asset** facilities. Only some structure valuations were available. **Assessed structure (only) valuation for these hazardous material facilities total $300k**.

Cemeteries and Churches include: CHURCHES: Deering Community Church (Sherwood Hall). CEMETERIES: Appleton Cemetery, Bartlett Cemetery, Butler Cemetery, Reservoir Rd Cemetery, East Deering Cemetery, East Deering Church, Family Cemetery, Goodale Cemetery, Gove Cemetery, Patten/Potter Cemetery, Poling Family Cemetery, West Deering Cemetery, Wilkins Cemetery. **Assessed structure (only) valuation for church facilities and headstone replacement estimates for cemeteries ($50k each) total $1.3m**.

Historic Sites and Buildings include: Deering Conference Center (The Wilds), Deering Historic Society (E Deering Church), Deering Library (Old Schoolhouse), East Deering School House, First House in Deering (Vogelien), House of First Selectman (Young), House of One of First Settlers (Lefevre), Long House at His Mansion, Old Bowen School House, Old Brick House (Hagstrom), Old Colonial House (Craven), Old Colonial House (Dawson), Old Colonial House (Huggard), Old House – Builder of 2 Churches (David), Old House (Carter/Phinney), Old House (Copadis), Old House (Mora), Old House (Walmsley), Old House (Waters), Old House (Winokur), Old Kiblin House (Kilbin), One of the Oldest Homes (Bartlett). Only some structure valuations were available. See also **Recreational and Gathering Sites**. **Assessed structure (only) valuation for these historic facilities total $4.2m+**.

Recreational and Gathering Sites of both land and buildings include: Boat Launch at Lake Shore Dr, Boat Launch at Deering Lake (NH DES), Fish and Game Club, High Five Conservation Land and Trails, John King Forest and Trails, Hedgehog Mountain Trails, NH Audubon Wildlife Sanctuary. Some of these sites can be **Economic Assets** to the Town even if the land is untaxable. Only some structure valuations were available. **Assessed structure (only) valuations for the recreational facilities total $92k+**.

Future Development includes mostly residential development potential as most of the land in Deering is rural. FUTURE DEVELOPMENTS As of **11-20**, there are several approved but unbuilt developments or potential developments according to the Planning Board: Shepard's Crossing (late 1960s).
LEGACY PARCELS, Thomas Parcel (218 acres), Thomas Parcel (221 acres), Morris Parcel (150 acres), Tuite Parcel (133 acres), Dawson Parcel (225 acres), Robin Hill Real Estate Parcel (337 acres), Meadowsend Timberlands Ltd Parcel (243 acres), Dumas Trust Parcel (248 acres). There are many more large family legacy parcels which could be identified with an inventory. LARGE-SIZED LOTS IN DEERING FOR SALE **11-20**: lots for sale during this snapshot include Fisher Road Lot (54 acres), Reservoir Road Lot (10 acres), Tubbs Hill Road Lot (10 acres). **Assessed valuation for the Potential/Approved PB Developments (LAND) Legacy Parcels (LAND) and Lots for Sale properties (LAND) only totals $850k**.

PROBLEM STATEMENTS AND EVALUATION

During discussion of these Community Facilities, the Hazard Mitigation Committee identified specific issues or problems that could be further evaluated. **Problem Statements** were developed after ascertaining the ***Primary Hazard Vulnerabilities*** to the sites and known existing issues. These potential hazards were typically those from the **Hazard Risk Assessment**. The Committee also evaluated these statements to determine whether mitigation actions could be developed.

Vulnerable Populations Table

- Manufactured housing parks are vulnerable from high wind events, tree fall, floods, and winter weather. Longwoods Manufactured Housing Park may experience further lowland flooding and inundation; it resides along the Contoocook River and experienced severe flooding in the 2000s. The

park has one egress for 92 housing units but has one unofficial unmaintained egress which leads to Fish and Game facility. Many of the manufactured homes are old and not updated to comply with current building and life safety codes but these are grandfathered from requirements. Homes that are replaced must meet the new codes. Many people in the older homes are elderly and cannot afford updates.

- The Hedgehog Cooperative Community property floods, but to date the 18 elevated homes have not flooded. The park is situated on the Contoocook River and has one egress.
- Oxbow Campground has one egress to serve the 115 seasonal camp sites. Severe wind events, tropical storms, heavy rains could create tree debris or cause unanchored objects (tanks, awnings, tents) to fly, becoming a potential injury to other campers.
- Evacuating Robin Hill Farm residents would be difficult because there is only one Town ambulance. The facility has two handicap-ramp entrance special needs vans, four regular, non-accessible minivans to transport people, two SUVs and two work trucks. Some residents are non-ambulatory and need basic assistance for mobility. Hazards to the facility include fire, wind, tropical, violence/human hazards, winter storms (on a hill), trees down on wires, but they have generators. 63 Donovan has 8 beds while 55 Donovan has 16 beds in 2 wings (6 beds on left & 10 beds on right). The facility has one egress.
- Deering Lake is densely populated on a seasonal basis with some people living in the vicinity year-round. Thirteen seasonal island residences populate the Driftwood Isle, which recently experienced a fire at one of its homes.

Economic Assets Table

- Power outages from wind, and winter storm and terrorism will stop the limited economy in Town, including travel to out of town employers.
- *INFO:* The Hawthorne-Feather Airpark could become a landing zone to facilitate triage and evacuate for mass casualty for the community. The facility could be used to stage response for large wildfires. The hangar could be used to serve meals and serve as a warming shelter. The Airpark could serve as a launch site drones to monitor civil disobedience or wildfire.
- The Airpark in the 100-year floodplain experienced inundation flooding during the severe flooding in the 2000s. It is situated between two High Hazard low-lying dams (Jackman Dam and the Dam in Bennington) that release water during snow melt and heavy rain events.
- *INFO:* According to airnav.com, fltplan.com and NHDOT Aeronautics at www.nh.gov/dot/org/aerorailtransit/aeronautics/documents.htm: The Airpark has one runway, Runway 2-20 which is 3,260' long and 75' wide, and a smaller parallel access runway. Marking are poor and the runway is surrounded by groves of trees. Asphalt surface is uneven with large open cracks. About 15 single engine airplanes are based at the Airpark, averaging 72 flight operations per

week. There one corrugated hangar, and there is no active Airpark website. Past minor airplane crashes have occurred at the Airpark.

- *INFO:* McAlister Station is situated next door to the Airpark and is prepared to respond to aviation fuel spills and mass casualty crashes.

Hazardous Materials Table

- Situated on an aquifer in the low-lying area, environmental damage by Greene's salvage yard and the Airpark to water quality is a risk. Aviation fuel spills from a single engine plane may not be a significant problem as it evaporates quickly. Longwoods Manufactured Housing Park residents (about 200 people) and others obtain water from this aquifer. [rename CCVFA junkyards to salvage yards]. New NHDES rule for "salvage yards," opening grant funding to enable concrete pads beneath the items. Agency conducts ground soil sampling.
- *INFO:* The Fire Dept reports a recent drill on hose inspection, ladder inspection then have a drill on aircraft off the runway. No employees at Airpark, so Fire Department responds only when a rural bystander, nearby resident or pilot calls the FD. FD has specialized equipment on trucks to respond to events.

Cemeteries & Churches Table

- Broken headstones have occurred at some of the old historic cemeteries (Appleton most recently). Vandalism needs to be discouraged.
- Trees can fall down onto gravestones and break them during severe ice storms, or wind events and rainstorms. The oldest stones are from the Revolutionary War. Those stones set near the edge of the tree line are particularly vulnerable. Tree trimming could be done along the edges of the cemeteries to reduce the number of downed limbs and broken stones.

Historic Sites & Buildings Table

- The Town's oldest homes are situated on remote ridgelines which could be subject to wildfire and lightning. Aside from the private home loss, the Town's history and culture would be lessened if the buildings were lost. Fire Warden issues online burn permits and protocols in place for issuance. Mount Kearsarge fire tower is seasonally staffed.
- *INFO:* The Deering Town Hall used to serve as the original church before the Deering Community Church was constructed across the road. Now serving as offices for town administration, police, emergency management, Library, and boards and committees, the Town Hall remains the most important historical and functional building in Town.

Recreation & Gathering Sites Table

- Nearly 1/3 of the land area in Deering is under permanent conservation, much of which is publicly accessible. Evacuation of conservation land trails would be difficult if wildfire, lightning strike, heavy wind, or earthquake occurs, although the telecommunications situation is very good in Deering. Most publicly visited lands could include High Five (360 degree view), Hedgehog Mountain Trail, Clark's Summit, all of which have trailheads.
- Invasive aquatic species in Deering Lake need to be regularly monitored. Boats are inspected by the volunteer NH Lake Hosts (NH Lakes Association), Lake has an active NHDES Water testing program, water monitoring program. but currently there are no active programs in place to inspect for milfoil and other aquatic invasives. Water quality and related public health is good at Deering Lake, no cyanobacterial blooms have been reported. As a safeguard, Town has an exotic weed control EFT in which funds are allocated annually in the event of an invasive problem.

Future Development Table

- Because of logging practice, remediation included Class A sludge reposited on the Thomas parcels (Tubbs Hill/Old Rangeway Roads) in the 1970s. The 500-acre site is on a hill with wetlands and water connectivity and could be developed in the future at high cost. The cost of road building and clean up would be enormous with the proper permits. (Development could be scattered and premature)
- *INFO:* Development trends are no longer single family homes in the rural areas, which is what Deering would support. Road construction costs, wetland mitigation and permitting would be borne by developer, resulting in expensive, high-end single family homes. New subdivisions may be scattered and premature if any of the large parcels were developed. Developers would need to follow a phased development approach and pay impact fees for building out capacity for schools, police, highway, fire, and rescue.

Many of these problem statements were developed into Actions discussed later in **7 PRIOR ACTION STATUS** and **8 MITIGATION ACTION PLAN**.

Potential Losses from Natural Disasters

Natural disasters, including floods, wind events, severe winter storms and ice storms, secondary disasters as a result of the natural disasters (such as power loss) and to a lesser degree, human and technological hazards as documented in **4 HAZARD RISK ASSESSMENT** have occurred in Deering This section estimates Town-wide structure/building damage in Town from natural hazard events. It is difficult to ascertain the amount of damage caused by a hazard because the damage will depend on the hazard's location and magnitude, making each hazard event somewhat unique. Human and technological hazards are typically even more incalculable. Human loss of life was not included in the potential loss estimates for natural hazards, but could be expected to occur, depending on the severity of the hazard.

While this Plan focuses on being pro-active in those geographic areas of Deering most prone to recurring hazards (like flooding), some initial estimates of measurable property damage and building damage have been discussed by utilizing simple techniques such as the numbers of structures and assessed valuation. This two-dimensional approach of calculating dollar losses from tangible structures offers a basic yet insightful tool to begin further loss estimation analyses.

TOOLS FOR COMMUNITIES WITH GIS

For gauging more three-dimensional estimation of damages, FEMA has developed a software program entitled HAZUS-MH (for multi-hazard), which is a powerful risk assessment software program for analyzing potential losses from floods, hurricane winds and earthquakes. In HAZUS-MH, current scientific and engineering knowledge is coupled with the latest Geographic Information Systems (GIS) technology to produce estimates of hazard related damage before, or after, a disaster occurs. Developed for ARCGIS which produced the ***Maps*** for this Plan, HAZUS-MH takes into account various effects of a hazard event such as:

- Physical damage: damage to residential and commercial buildings, schools, critical facilities, and infrastructure;
- Economic loss: lost jobs, business interruptions, repair and reconstruction costs; and
- Social impacts: impacts to people, including requirements for shelters and medical aid.

Federal, State and local government agencies and the private sector can order HAZUS-MH free-of-charge from the FEMA Distribution Center. Deering should first ascertain whether a municipal geographic information system (GIS) of hardware and software is appropriate, and if so, consider training staff to perform models. With many Town existing and under-development infrastructure GIS data layers available, HAZUS-MH could prove very helpful for estimating losses for the community on a disaster-specific basis. However, much staff time is necessary to train staff and maintain a GIS system. Official map generation is typically subcontracted out to other agencies now, including the mapping and appraisal companies used by the Town and the Central NH Regional Planning Commission who developed the ***Maps*** for this **Hazard Mitigation Plan**.

METHODS OF POTENTIAL DOLLAR LOSSES BY NATURAL HAZARDS

A more manageable technique was used for loss estimation for the purposes of this **Hazard Mitigation Plan Update**. Natural hazard losses are calculated based on dollar damage ranges over the entire community, or in the case of flooding, buildings in the Special Flood Hazard Areas (SFHAs) are counted and their value is collected. The number of total parcels in the community as of **February 2021** is **1,463**. Using Deering's MS-1 **2020** valuation data, **the total assessed value of all residential and non-residential structures ONLY in Deering (\$145,046,800) is the basis for loss estimation calculations.** ***Land and utilities are not included here.***

Potential Building Dollar Losses by SFHA Flooding

Using geographic information system (GIS) technology, parcels with buildings within the floodplain were identified using Deering's online digital tax maps developed by AxisGIS in **February 2021** that contained assessing data, and geospatially overlaid this data with the **2009** FEMA Digital Flood Insurance Rate Maps (DFIRMs) digital map. An intersection operation identified all the parcels with buildings in the SFHAs, although this evaluation does not determine whether the building itself is situated within floodplain boundaries. ***Building Type*** was characterized into one of four categories, single-family homes, multi-family homes, manufactured homes, and non-residential buildings. Building number and value were excerpted from the assessing database. **Table 32** summarizes this data, identifying **211** primary buildings by address in the SFHA. ***Land value, building contents value and infrastructure were not considered in these calculations.*** Deering parcels and assessing data can be found at www.axisgis.com/Deeringnh.

Table 32

Building Value in the Special Flood Hazard Areas (SFHAs)

Building Type	Number of Buildings	Total Value of Buildings in SFHA	Average Replacement Value
Single Family Homes	77	$11,612,400	$150,810
Multi-family Homes	0	$0	$0
Manufactured Homes	128	$3,080,200	$24,064
Non-Residential Buildings	6	$977,800	$162,967
Totals	**211**	**$15,670,400**	-----

Sources: AxisGIS Town Assessing, Feb 2021

In **Table 32**, digital analysis and human interpretation identified **77** single family residential homes, **0** multi-family homes, **128** manufactured homes, and **6** non-residential buildings are situated within the Special Flood Hazard Areas (SFHAs). As the Town's total number of **2021** housing units is estimated at **949**, about **21%** of Deering's residences seem to be located in a floodplain area. The average replacement value is **\$151k** for a single-family home or **\$163k** for a multi-family home, **\$24k** for a manufactured home, or **\$163k** for a non-residential building in the SFHA. The total value of all buildings in the Special Flood Hazard Areas from this analysis is about **\$15.7m**.

There are alternative ways to calculate potential SFHA losses. In the following tables, the average building replacement value was calculated by adding the assessed values of all structures in the special flood hazard areas and dividing by the number of structures. The Federal Emergency Management Agency (FEMA) has developed a process to calculate potential loss for structures during flooding. The potential loss was calculated by multiplying the average replacement value by the percent of damage expected from the hazard event, and then by multiplying that figure by the number of structures.

The costs for repairing or replacing infrastructure such as bridges, railroads, power lines, roads, drainage systems, telephone lines, or natural gas pipelines, land destruction, and the contents of structures are not included in these building damage estimates.

Table 33 represents the **worst case scenario of *all*** single-family homes, multi-family homes, manufactured homes, and non-residential buildings within the Special Flood Hazard Area that are damaged by a flood hazard event.

Table 33

Dollar Damage Ranges for Total Buildings in Special Flood Hazard Areas (SFHA)

Building Type	Total Value of Buildings in SFHA	Total Value of Potential Damages in SFHAs by Respective Building Type		
		Eight-Foot Flood 49% Damage	Four-Foot Flood 28% Damage	Two-Foot Flood 20% Damage
Single Family Homes	**$11,612,400**	$5,690,076	$3,251,472	$2,322,480
Multi-Family Homes	**$0**	$0	$0	$0
Manufactured Homes	**$3,080,200**	$1,509,298	$862,456	$616,040
Non-Residential Buildings	**$977,800**	$479,122	$273,784	$195,560

*Sources: See **Table 32**; FEMA*

If all **77** single family homes were damaged by a ***Two-Foot Flood (20% Damage)***, the dollar damage to the *buildings* could be **$2.3m** while an ***Eight-Foot Flood (49% Damage)*** could cause **$5.6m** in *building* damage. If all the **128** manufactured homes identified in the SFHA were damaged by a ***Two-Foot Flood (20% Damage)*** , the damage could be **$616k** for *buildings* only, while an ***Eight-Foot Flood*** could cause **$1.5m** in *building* damage. If all **6** nonresidential buildings in the SFHA were damaged by a ***Two-Foot Flood***, the dollar damage to the *buildings* only could be **$196k**, while an ***Eight-Foot Flood*** could cause **$480k** in *building* damage. There were **0** multi-family buildings located in the floodplains. Dollar damage estimations vary according to the standard percentages of damage levels associated with flooding levels set by FEMA.

Table 33 also represents the **worst case scenario, but of *individual*** single-family homes, multi-family homes, manufactured houses, and non-residential buildings within the Special Flood Hazard Area that are damaged by a flood hazard event.

Table 34

Dollar Damage Ranges for Individual Buildings in Special Flood Hazard Areas (SFHA)

Building Type	Average Value of Individual Buildings in SFHA	Individual Value of Potential Damages in SFHAs by Respective Building Type		
		Eight-Foot Flood 49% Damage	Four-Foot Flood 28% Damage	Two-Foot Flood 20% Damage
Single Family Homes	**$150,810**	$73,897	$42,227	$30,162
Multi-Family Homes	**$0**	$0	$0	$0
Manufactured Homes	**$24,064**	$11,791	$6,738	$4,813
Non-Residential Buildings	**$162,967**	$79,854	$45,631	$32,593

Sources: See Table 32; FEMA

One (**1**) single family home averages **$30k** when damaged by a ***Two-Foot Flood*** while an ***Eight-Foot Flood*** could cause **$74k** in *building* damages only. One (**1**) manufactured home compares at **$5k** for a ***Two-Foot Flood*** in *building* damages only and at **$12k** for an ***Eight-Foot Flood***. One (**1**) non-residential building in the SFHA is could have **$33k** in *building* damages for a ***Two-Foot Flood***, while experiencing **$80k** in *building* only damages for an ***Eight-Foot Flood***.

Although not an accurate assessment, these dollar damage ranges for **Inland Flooding** in the designated floodplains (SFHAs) provide a general sense of the scale of potential disaster and financial need in the community during flooding events.

Potential Building Dollar Losses by Other Natural Hazards

Flooding is often associated with heavy rains and flash floods, hurricanes, ice jams, rapid snow melting in the spring, and culvert washouts. These are all types of flooding hazards discussed or evaluated previously but can also occur outside of the SFHAs.

Building damage by natural disasters in New Hampshire is not limited to SFHA flooding alone, which is easier to quantify and predict. Simple calculations can be made based upon generalizations of a disaster impacting a certain percentage of the number of buildings in the Town. **The MS-1 2020 assessed value of all residential, commercial, and industrial structures in Deering is $145,046,800 (no land) on 1,463 parcels.** Disaster damages are often illustrated in the following section utilizing a percentage range of town-wide building damage. At **949** housing units in Deering estimated from the **2019** NH Office of Strategic Initiatives (NH OSI) housing estimates, any type of disaster impacting **10%** of Deering housing units would yield **95** damaged homes.

The inventory of Town sites or buildings in **APPENDIX A Critical and Community Facilities Vulnerability Assessment** indicates which hazards each site is most susceptible to and provides its assessed valuation. This dollar value can be used as a damage estimate from the natural hazard events listed below. Yet the potential losses discussed in this section involve all buildings across the community to provide a more distinct portrait of potential losses using the assessed valuation of all town buildings.

Damages from natural hazards to anything other than buildings, such as infrastructure, land, humans or building contents, are not examined here. Specific individual studies would be needed to assess more detailed scenarios. Following are potential building-only dollar damages from select natural hazards.

Drought

Drought is often declared on state-wide or region-wide basis, and sometimes by individual town. Dollar damage caused by drought would be difficult to quantify but would most likely impact the agricultural and economic base of a community. Although everyone could be charged to conserve water, agriculture and forestry operations would be most affected and the risk of wildfire increases.

As physical damage is usually isolated to specific locations, the effects of potential disasters at certain facilities could be researched utilizing the Town's assessor's database for valuation on targeted land. Agricultural and forested lands may be among the most affected by drought. Many farm operations have been inventoried in Deering. People who rely on private well water have found their dug wells running dry in **2015-2016** and again in **2018** and **2020** and have needed to dig bedrock wells Agricultural operations run the risk of high damage from **drought** which also brings economic consequences. In Deering, these areas include maple tree crops, livestock, produce, orchards, tree farms and hay fields. Conservation land forests in Town are also susceptible to loss and fire during **drought** conditions.

These lands could be vulnerable to **droughts** and physically and may become economically damaged by these long-term droughts. A dollar estimate is incalculable.

Earthquake or Landslide

Earthquakes can cause buildings and bridges to collapse, disrupt water supplies, electricity and phone lines and are often associated with **landslides** and **flash floods**. Buildings that are not built to a high seismic design level or are large in size could be susceptible to structural damage. Large facilities or historic buildings including the Town Hall and Deering Community Church the manufactured housing parks, and the numerous historical homes and densely populated locations are particularly at risk because of building sizes, building age, and/or their large numbers of people contained within. NH 149 and Long Woods Road/ Second NH Turnpike travel through the Town over several bridges and the Contoocook River and Piscataquog River and serve as local highways for a great number of people.

Loss of infrastructure or other community buildings or highways could result in fewer services available to residents or reduce the ability to evacuate. Buildings which are located on or near the sides of river and stream banks or that are located on a hill over **15%** could be subject to **landslide** triggered by rains or **erosion**. The Central NH Region area of Boscawen, Webster, Hopkinton (Contoocook), Henniker, Hillsborough, Salisbury, and Warner (Davisville) hosts frequent epicenters of deep earthquakes.

With a scenario range of **0.5%** to **1%** of buildings damaged throughout the Town, an **earthquake** or **landslide** could potentially cause up to **$725k** to **$1.5m** in building-only damage costs, not including contents, infrastructure, or land.

Extreme Temperatures

Excessive heat and **extreme cold** can harm property, such as landscaping and agriculture, or infrastructure. People will draw more water from their wells to help alleviate these conditions. Extreme heat can sicken people, causing sunstroke, heat exhaustion and dehydration if the environment is not cool enough or water intake is too low. Conversely, extreme cold can cause hypothermic conditions. In this manner, neither extreme heat nor cold is measurable for dollar damage. Deering has many vulnerable populations, including Deering Alternative School, Long Woods and Hedgehog Community manufactured housing parks, remote neighborhoods, and more. There is no senior center or designated senior housing in Deering. A detailed inventory of ***Vulnerable Populations*** can be undertaken by the Town and regularly updated which can be used by emergency responders to ensure susceptible people remain healthy. Dollar damage estimates are not feasible for **extreme temperature** hazards.

High Wind Events or Tropical and Post-Tropical Events

The high wind event storms include the **wind events**, **flooding** and **lightning**, but can also just be simply severe winds, downbursts, tornadoes, or hurricanes. When summer **rainstorms** or **thunderstorms** occur, they are often regional in nature, but could just as commonly be localized in some areas, easily identifiable when one section of a roadway is dry and another section of the same road is wet. Sometimes **hail** accompanies these storms. **Thunderstorms** and **rainstorms** are more likely to damage trees, powerlines or crops than buildings, which are more readily damaged by downbursts, tornadoes and hurricanes. These storms typically cover most of, if not the entire, Town, as **winds** and **storms** are large enough and blow through to impact multiple New Hampshire counties. High wind events could be particularly fierce in areas along Deering Lake and the West Deering corridor between the Contoocook River and high elevations.

With a scenario range of **1%** to **5%** of buildings damaged by wind events throughout the Town, a wind event could potentially cause up to **$1.5m (for more localized downburst, high winds** and **hail, or tornadoes)** to **$7.3m (for more damaging and widespread tropical storms and hurricanes)** in building-only damage costs, not including contents, infrastructure, or land.

Lightning

Damage caused by **lightning** would not be Town-wide because it typically strikes in smaller areas. Few places in Deering are at specific risk but lightning strikes can cause fires. Damages will vary according to the value of the structure and home and the contents inside, and dollar amounts would depend on if the hazard hit an area with a high density of buildings. Specific sites which would cause the greatest impact if struck by **lightning** include conflagrations in Mill Street area, Long Woods and Hedgehog Community

manufactured housing parks, cul-de-sac neighborhoods; high elevations; densely populated buildings including the Deering Alternative School; historic buildings like the Town Hall and Deering Community Church, private homes; and Hawthorne-Feather Airpark and more. Town Facilities like the Highway Department Garage, Town Hall & Police Department, Transfer Station and the three Fire and Rescue Stations are necessary for governmental function and provision of basic services.

The Town's utilities, including powerlines, high tension powerlines, telecommunications tower, switching stations, telephone lines and broadband cable internet service, and the water and wastewater facilities, as well as the municipal and School computer systems, are vulnerable to **lightning strike**. Tall buildings like those found in the Deering Town Hall or at the high elevations could be vulnerable without lightning rods.

With a scenario of **0.5%** of buildings damaged throughout the Town, a **lightning strike** could potentially cause up to **$1.1m** in building-only damage costs alone, not including contents, infrastructure, land, or additional damage through fire spreading.

Public Health

Dollar damage estimates are not feasible for public health hazards, with such a variety of potential issues, locations, and populations.

River Hazards

Ice jams on the **Contoocook River**, **Piscataquog River** or one of the brooks would be a major cause of **flooding** which could recur in the future. Woody material causing **debris impacted infrastructure** may be more likely to impact bridges than ice jams, especially any the structurally deficient State or Town bridges. Several bridges or roads span across the rivers, Patten Brook, Wilkens Brook, Manselville Brook, Dudley Brook, Gerini Brook, Smith Brook, Patten Brook, Wilkens Brook, Johnson Brook, other named brooks and many unnamed brooks. Small brooks culverts and drainage systems offer additional opportunity for ice jams, debris blockage, and more. The ***2023-2032 NH Department of Transportation Ten Year Plan (TYP)*** provides many examples of basic cost estimates bridge replacement and rehabilitation.

This average figure of **$750,000** can be used for one (**1**) local bridge *replacement* in Deering due to the physical damage caused by **river ice jams** or **debris impacted infrastructure**. The same bridge damaged by **ice** or **debris** which only requires *rehabilitation* could cost **$500,000**.

Another way to view potential **river hazard** damages is if half (**39**) of the **77** single family homes in the floodplain were damaged by **Two-Foot Flooding *(20% Damage)*** resulting from **river ice jams** or **debris impacted infrastructure**, there could be up to **$1.2m** in *building* damage costs.

Winter Weather

Heavy **snow loads**, **icy conditions**, **extreme cold**, **wind chill**, and the secondary hazards (including **power failure**, **transportation accidents** and **debris impacted infrastructure**) are result of **winter storms**. Storms with these conditions have been felt in Deering in the past. These hazards and secondary impacts are a risk to the community, including isolation, more falls and personal injury (especially by the older residents), and the potential for roof collapse. The most remote locations in Deering, wooded and forested sections vulnerable to tree fall, include the entire Town. Damage caused by this type of hazard varies according to wind velocity, snow accumulation, tree/limb fall and duration.

With a scenario range of **1%** to **5%** of buildings damaged throughout the Town, **severe winter storms** could potentially cause up to **$1.5m** to **$7.3m** in building-only damage costs.

Solar Storms and Space Weather

Dollar damages to structures are not measurable from solar winds, radio blackout, or geomagnetic storms. These hazards impact utilities such as communication systems and technology. The Town, School and repeater state and county technology is vulnerable to **solar storms**, such as computer systems, emergency response dispatch systems, electricity, internet, satellite dishes, and software programming interruption that upkeeps essential functions. Although a potential natural hazard, dollar damage estimates are not feasible for solar storms and space weather.

Wildfire

The risk of **wildfire** is difficult to predict based on location. Forest fires are more likely to occur during years of **drought**. In addition, areas and structures that are surrounded by dry vegetation that has not been suitably cleared are at high risk. Humans can contribute by accidents in the woods or dry fields, or by the deliberate setting of **fire** in a structure. The heavily forested woodlands of Town are often remote locations and difficult to access by emergency vehicles. Subdivisions in remote hilltop locations and on private, cul-de-sac or non-Town maintained roads are especially vulnerable.

The public access conservation lands and their trails offer wonderful recreational opportunities for residents and visitors. Forests and woodlands are particularly vulnerable to **wildfire** because accidental human-caused fires could occur. Remote fires might not be reported until they become large enough to be spotted. Dollar damage would depend on the extent of the fire, the number and type of buildings burned, and the amount of contents destroyed within the buildings.

With a scenario of **1.0%** of buildings damaged in the Town, a **wildfire** could potentially cause up to **$1.5m** in *building*-only damage costs, not including contents, infrastructure, or land.

National Flood Insurance Program (NFIP)

In 1968, Congress created the National Flood Insurance Program (NFIP) to help provide a means for property owners to financially protect themselves. The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the NFIP. Participating communities such as Deering agree to adopt and enforce ordinances that meet or exceed FEMA requirements to reduce the risk of flooding. For more information on the National Flood Insurance Program, visit https://www.floodsmart.gov/why/why-buy-flood-insurance.

The initial identification of Deering's Flood Hazard Boundary Maps was produced on **March 15, 1974,** and later the first Flood Insurance Rate Maps (FIRM) were developed on **August 1, 1979** and included the Special Flood Hazard Areas (SFHAs). The Town entered the regular phase of NFIP membership on **this date**. Deering's first Flood Insurance Study (FIS) was produced in **February 1979**. No amended FIS or FIRMs were developed for the Town until over four decades later, consistent with other Central NH Region communities.

In the present day, Deering's effective FIRMs are digital (DFIRMs) dated **September 9, 2009** as is the Hillsborough County Flood Insurance Study (FIS) which includes Deering (community **#330085**); individual community FIS are no longer being developed. These **2009** newest documents were adopted by the Board of Selectmen, supercede all previous NFIP documentation, and are placed into the Town Zoning Ordinance. **Table 35** summarizes the historical background of the Town's NFIP effective dates.

Table 35

NFIP History of Deering – Effective Dates

Version	Flood Insurance Study (FIS)	Flood Insurance Rate Maps
Original	February 1979	August 1, 1979
Current	September 5, 2009	September 5, 2009

Source: FEMA Hillsborough County Flood Insurance Study (FIS) Table 9 & Bibliography, 2009

DEERING'S NFIP STATISTICS

In Table 36 is a cumulative history of the trends and overall totals of flood insurance policies and losses of those property owners utilizing the NFIP insurance in Town. Four snapshots in time, one from each of Deering's **Hazard Mitigation Plan** versions, display the number of NFIP policies in force and paid loss statistics between **December 2002 – February 2021**.

Table 36

History of NFIP Policy and Paid Loss Statistics

Report Date	Policies in Force	Insurance in Force	Number of Paid Losses Since 1979	Total Losses Paid Since 1979
Dec 2002	12	$1,220,900	6	$10,592
Nov 2008	30	$3,194,400	10	$31,787
Sep 2014	18	$2,246,900	10	$31,787
Jan 2018	17	$1,853,100	---	---
Feb 2021	N/A	N/A	10	$31,787

Source: Deering Hazard Mitigation Plans, FEMA last accessed 02-21; Policies in Force Data no longer publicly available by Town https://www.fema.gov/about/openfema/data-sets#nfip

From Table 36, in **Dec 2002** prior the severe flooding event period of **2005-2008**, **12** properties in Deering were covered by NFIP flood insurance and **6** claims had been paid since **1979**. By **Nov 2008** after the flooding period, the number of policies nearly tripled to **30** with **10** losses paid. By **Sep 2014**, policies had decreased again to **18** while the paid losses remained the same (**10**). By **Jan 2018**, the latest available data for policies, Deering property owners had only **17** policies in place and by **Feb 2021** the total of **10** paid losses remained the same.

As noted, since **Sep 2014**, the number of properties (policies) covered by flood insurance fell by nearly **50%** to total only **18** policies in the community. Normally, the number of policies would fluctuate, influenced by the number of current severe flooding events, recent changes in flood insurance regulation, the higher cost of insurance, uncertainty about exact floodplain location, mortgage requirements, the changing real estate market, and assumptions that flood insurance is unnecessary if one's property is outside of the floodplain. Since there has been no recent severe flooding, significant fluctuation did occur in Deering and is remaining consistent.

Table 36 also illustrates that while the property owners anywhere in the entire Town of Deering are eligible to purchase flood insurance for their property, only **17** properties out of the **1,463** total parcels in the entire community are insured against flooding. As described previously, a total of **211** parcels with homes and non-residential buildings seem to be at least partially situated in the Special Flood Hazard Areas (SFHA).

*Assuming the **17** NFIP policy properties are within the SFHA, then **8.1%** of buildings in the floodplain are insured against flooding.*

Virtually all of Deering's buildings and properties are uninsured for when the next flooding event occurs. **Inland Flooding** conditions can occur anywhere in the community due to runoff, debris impacted infrastructure (culverts), drainage overflow, rapid snowpack melt, road washouts, beaver dam breaks, heavy rains, etc which are not limited to the floodplain (SFHAs) areas and are not covered by homeowner's insurance or any other insurance than National Flood Insurance Program (NFIP) flood insurance. Buildings are also vulnerable to **Riverine Flooding** from the **Contoocook** and **Piscataquog Rivers**.

REPETITIVE LOSS PROPERTIES

A specific target group of properties is identified and serviced separately from other NFIP policies when repetitive losses occur on the same properties. The group includes every NFIP-insured property that, since **1979** and regardless of any change(s) of ownership during that period, has experienced four or more paid flood losses of more than $5,000 each or two or more separate claim payments (building payments only) where the total of the exceeds the current value of the property. Two of the claim payments must have occurred within 10 years of each other. The loss history includes all flood claims paid on an insured property, regardless of any changes of ownership, since the building's construction or back to **1979**.

As of **April 2018**, Deering had a total of **0** repetitive loss properties according to records kept by the Federal Emergency Management Agency and supplied by the NH Office of Strategic Initiative (NH OSI). This is despite many buildings are situated within the floodplains. **Table 37** displays the general repetitive loss data:

Table 37

Number of Repetitive Loss Properties

Building Type	Number of Repetitive Loss Properties
Single Family	0
Multi-Family	0
Non-Residential	0
Total Properties	**0**

Source: NH Office of Strategic Initiatives (NH OSI) on behalf of FEMA, April 2018

These RPL data records are confidential for the property-specific information they contain. Repetitive losses are determined by any repetitive damage claims on those properties that hold flood insurance through the NFIP. Should repetitive losses occur, the Town could consider participating in voluntary property acquisition ("buyouts") which would eliminate the threat to several homes by incorporating newly vacant land into the Town's flood storage capacity.

FLOODPLAIN ORDINANCE

A major objective for floodplain management is to continue participation in the National Flood Insurance Program. Communities that agree to manage Special Flood Hazard Areas shown on NFIP maps participate in the NFIP by adopting minimum standards. The minimum requirements are the adoption of the Floodplain Ordinance and Subdivision Regulation / Site Plan Review requirements for land designated as Special Flood Hazard Areas (SFHAs). Flood insurance is available to any property owner located in a community participating in the NFIP.

Community Assistance Visits in Deering

A Community Assistance Visit (CAV) is a process required by the National Flood Insurance Program (NFIP) as a way of reviewing a town's compliance with established floodplain regulations to be sure that they meet NFIP requirements. If the Town is not in compliance with regulations in any way, the officials that conduct the CAV provide assistance and guidance to assist with correcting any violations.

Since the NH Office of Strategic Initiatives (NH OSI) does not identify Deering as a repetitive loss community, which is based upon **Table 37** data, Deering is classified as a Tier 2 community. For a Tier 1 community that has experienced repetitive losses, a new CAV will be undertaken every five years or if there is a severe flooding event. For towns without any repetitive losses, they are classified as Tier 2 where a telephone call may be made to the Town every 5-10 years or otherwise as needed when so classified.

The last Community Assistance Visit (CAV) was conducted for review and education on NFIP policies in **2002**. Any minor problems with the floodplain management regulations or process was rectified. When the next severe flood occurs, a CAV should be made by NH OSI to request a review of zoning compliance procedures and the contents of the Floodplain Development Ordinance, Subdivision Regulations and Site Plan Review Regulations.

Floodplain Ordinance Amendments

The Town of Deering has a Floodplain Ordinance that currently contains the required FEMA regulations to remain eligible for the NFIP. The Town of Deering approved their first Floodplain Ordinance at Town Meeting in **March 1979** prior to becoming a NFIP member on **August 1, 1979**. In **March 1991**, Deering adopted their National Floodplain Development Ordinance.

Updates to the floodplain ordinance were approved at Town Meeting in **1988**, **1994**, **1997**, and **2003** to comply with the federal NFIP floodplain regulations.

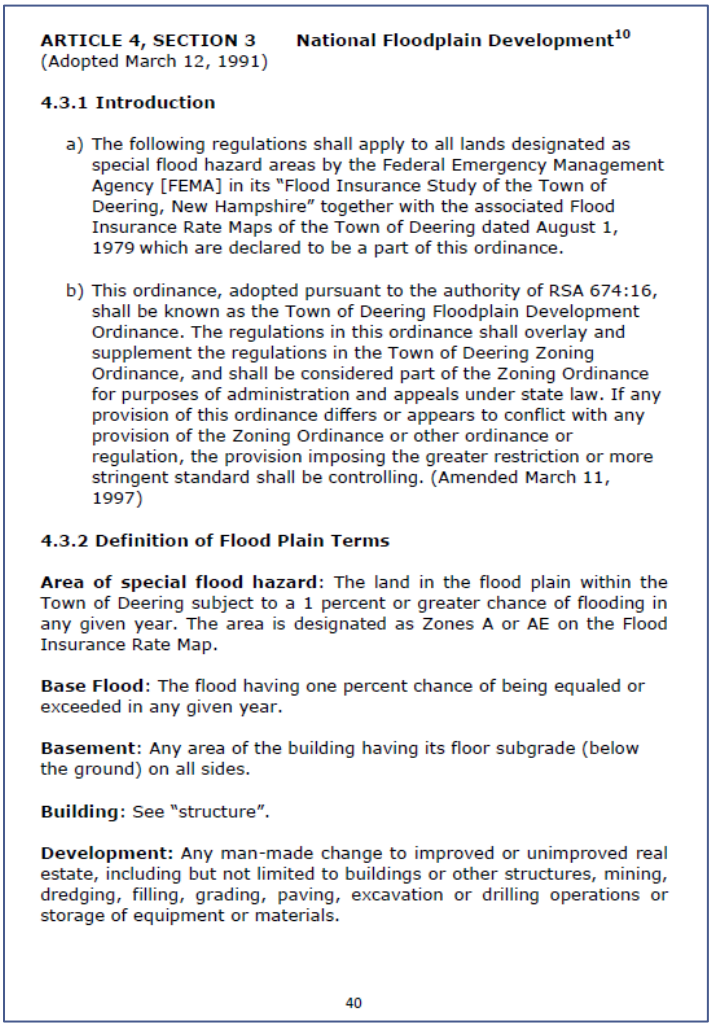
In **March 2007**, Deering adopted a proactive amendment to the Zoning Ordinance changing the dates of the effective forthcoming Flood Insurance Rate Maps (FIRMS) and Hillsborough County Flood Insurance Study (FIS) to **September 25, 2009**.

In **March 2008**, Deering updated the Floodplain Ordinance to comply with recent changes to the NFIP program.

On **August 17, 2009**, the Board of Selectmen adopted the new **September 25, 2009** Flood Insurance Rate Maps (FIRMS) and Hillsborough County Flood Insurance Study (FIS).

The **2017** Deering Floodplain Development Zoning Ordinance contains the elements requested to date by FEMA and the NH Office of Strategic Initiative's Floodplain Management Program. A Floodplain Overlay District guides development in this area of Deering using the Ordinance. An excerpt of the Floodplain Ordinance is displayed in **Figure 25**.

Figure 25
Latest National Floodplain Development Zoning Ordinance



ARTICLE 4, SECTION 3 **National Floodplain Development**[10]
(Adopted March 12, 1991)

4.3.1 Introduction

a) The following regulations shall apply to all lands designated as special flood hazard areas by the Federal Emergency Management Agency [FEMA] in its "Flood Insurance Study of the Town of Deering, New Hampshire" together with the associated Flood Insurance Rate Maps of the Town of Deering dated August 1, 1979 which are declared to be a part of this ordinance.

b) This ordinance, adopted pursuant to the authority of RSA 674:16, shall be known as the Town of Deering Floodplain Development Ordinance. The regulations in this ordinance shall overlay and supplement the regulations in the Town of Deering Zoning Ordinance, and shall be considered part of the Zoning Ordinance for purposes of administration and appeals under state law. If any provision of this ordinance differs or appears to conflict with any provision of the Zoning Ordinance or other ordinance or regulation, the provision imposing the greater restriction or more stringent standard shall be controlling. (Amended March 11, 1997)

4.3.2 Definition of Flood Plain Terms

Area of special flood hazard: The land in the flood plain within the Town of Deering subject to a 1 percent or greater chance of flooding in any given year. The area is designated as Zones A or AE on the Flood Insurance Rate Map.

Base Flood: The flood having one percent chance of being equaled or exceeded in any given year.

Basement: Any area of the building having its floor subgrade (below the ground) on all sides.

Building: See "structure".

Development: Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials.

40

Source: Section of Deering Zoning Ordinance March 2017

NFIP Familiarity in Deering

According to NFIP policies, when an applicant files a request for a building permit in the floodplain, the applicant must include an elevation certificate in order to be in compliance. In addition, if an applicant intends to fill onsite, a letter of map of revision must be submitted along with the application. According to NFIP requirements in the Floodplain Ordinance, building permits should be reviewed to assure sites are reasonably safe from flooding and require anchoring to prevent flotation, collapse, or lateral movement and construction out of flood resistant materials.

Ongoing attention and familiarity with the NFIP will keep Town staff and volunteers in top form. In order to reduce flood risks, the Building Inspector, Town Assessor, Town Administrator, Town Planner, volunteer Planning Board members, and other Ton staff whose duties include review/inspection of development or construction, should be familiar with the Floodplain Ordinance and the NFIP.

Because of their unique position to ensure development conforms with ordinances prior to approval, the Planning Board should be familiar with NFIP policies, especially those regulations that are required to be incorporated into the Subdivision and Site Plan Review regulations. A workshop sponsored by the NH Homeland Security and Emergency Management (NHHSEM) or the NH Office of Strategic Initiatives (NHOSI) would be appropriate to educate current staff and volunteers. New online courses by FEMA for floodplain management, mapping, elevation certificates and more are available at no charge. For online training taken at the convenience of the individual, see the ***FEMA Emergency Management Institute's*** current training course index for flooding: https://training.fema.gov/is/searchis.aspx?search=NFIP.

An essential step in mitigating flood damage is Town and property owner participation in the NFIP. Deering should work to consistently enforce NFIP compliant policies to continue its participation in this program. Town staff field property owners asking for assistance because their mortgage lenders are requiring proof that the properties in question are not located in a Special Flood Hazard Area to determine whether NFIP flood insurance is required. The only way to rectify this issue is to have a survey completed of the property to complete a Certificate of Elevation to keep on file at the Town Office. If the property is shown to be located out of the floodplain, a Letter of Map Amendment should be completed by the owner or by the Town to ensure future flood maps are corrected.

When possible, Town staff should try to promote flood insurance to property owners in Town; only **18** properties out of the **1,463** parcels in Deering are protected by flood insurance and currently take advantage of the NFIP insurance opportunity. Informational links for the public on flood topics could be located on the Town's website at https://www.deering.nh.us/.

6 CAPABILITY ASSESSMENT

Local mitigation capabilities are existing authorities, plans, ordinances, policies, mutual aid, programs, staffing, technical skills and assets, funding, outreach, public education, and resources that reduce hazard impacts or that could be used to help implement hazard mitigation activities. These capabilities were inventoried for the **Deering Hazard Mitigation Plan Update 2021.**

The **Capability Assessment** contains an inventory of locally-important existing mitigation support activities, or capabilities, which have a positive impact on the way hazard events are handled within the community. Most capabilities are not hazard mitigation Actions but support the Action Plan and help decrease the community's hazard risk. These community-strengthening capabilities are not STAPLEE-rated (Social Technical Administrative Political Legal Environmental and Economics questions) like the Actions**,** but instead the capabilities serve to sustain and assist the community to maintain and accomplish its hazard mitigation Actions and priorities. Selected ***Future Improvements*** (mitigation-oriented) to some of these capabilities have the potential to be considered as Actions in **7 POTENTIAL ACTION EVALUATION** and **8 MITIGATION ACTION PLAN**.

CAPABILITY ASSESSMENT TABLES

Planning & Regulatory
- **Plans and Planning Documents**
- **Building Codes, Permitting, Inspections**
- **Land Use Ordinances, Regulations**

Administrative and Technical
- **Administrative Programs, Policies, Mutual Aid Agreements, Partnerships, Operations, Procedures**
- **Technical Skills, Training, Drills**
- **Assets, Security, Resources (Specialized Equipment)**

Financial Resources
- **Financial Programs or Funding Resource for Hazard Mitigation Projects**

Education and Outreach
- **Public Outreach Program, Educational Activity, Notifications**

There are four overall Capabilities considered for which an inventory of mitigation support items was identified by the Hazard Mitigation Committee, **Planning & Regulatory**, **Administrative and Technical**, **Financial Resources**, and **Education and Outreach**.

Each Capability had inventoried the latest version or adoption Date; a Description of the item; the location of the capability in Town; the Level of Effectiveness of the Capability; which Department, Board or other has Responsibility for the capability; what Changes were made to the capability since the **2015 Hazard Mitigation Plan**; and Future Improvements to the Capability.

Town Capabilities

A summary of the items within the four Capability tables is provided here to offer a portrait of resources Deering has at hand to assist with mitigation. Careful consideration of each Capability's ***Level of Effectiveness*** helped the Departments to determine any clear ***Future Improvements*** to undertake. Many of the Town's Capabilities involved existing plans, procedures, reports, policies, regulations, and resource documents from individual Departments. These plans and documents were reviewed and incorporated into the **Capability Assessment**. ***Future Improvements*** to these documents were identified and many later became Action items in **8 MITIGATION ACTION PLAN**. Capabilities of all Town Departments and the School District as related to hazard mitigation are detailed within the following tables.

Level of Effectiveness	Description
High	Capability is working well and is regularly followed
Moderate	Capability could use some revisions but is followed
Low	Capability is not working and needs revisions

DEPARTMENT ABBREVIATION KEY:

BI	Building Inspector
BOS	Board of Selectmen
CC	Conservation Commission
EM	**Emergency Management**
FD	**Fire & Rescue Department**
HD	**Highway Department**
LU	Land Use Department
PB	**Planning Board**
PD	**Police Department**
SD	School District
TA	Town Administration

Primary Mitigation Department

PLANNING AND REGULATORY CAPABILITIES

The planning and regulatory capabilities displayed in Table 38 are the plans, policies, codes, and ordinances that reduce the risks or impacts of hazards. There are 3 categories: ***Plans and Planning Documents***; ***Building Codes, Permitting, and Inspections***; and ***Land Use Ordinances, Regulations, and Town Ordinances***. Most of the documents listed below are the Town's documents, but others are School, local, regional, state and federal which support the Town's the hazard mitigation goals, objectives, and/or Actions.

Table 38

Planning and Regulatory Capabilities

Latest Adoption or Version Date	Capability Assessment: Planning and Regulatory Resources	Description Related to hazard mitigation planning and coordination	Location of Capability Entire Town or Selected Areas	Level of Effective-ness	Respons-ibility	Changes Since Last Haz Mit Plan (2015)	Future Improvements to Capability
Deering PLANS AND PLANNING DOCUMENTS							
Dec 2015	**EM Deering Hazard Mitigation Plan 2015**	Last updated in 2015, the Plan include stream crossing assessments for Piscataquog River watershed. New update in 2020 for 2021 approval.	Entire Town	High	Emergency Mgt	Completed several actions, including the culvert upgrades.	Update the HMP in 2021 to current standards.
May 2009	**EM Emergency Operations Plan 2009**	In May 2009, the last EOP was developed and adopted. The document is need of update.	Entire Town	Moderate	Emergency Mgt	No changes, and no emergency where EOP was referenced.	Seek EMPG funding to update EOP to current standards with CNHRPC.
2016	**HD Culvert Maintenance Plan 2016**	The number of culverts which have been replaced is decreasing because most of the culverts in Town are now adequately functioning. The Highway Department has a culvert maintenance plan to Upgrade those most in need first. The State has also been replacing culverts.	Culverts beneath Roadways	Low	Highway Dept	Plan was updated in 2016.	Revise to ensure the worst culverts are replaced first before the older culverts in good shape.
2017	**PB Master Plan 2017**	Developed by the Planning Board, includes Community Facilities, Transportation, Natural Resources, Utilities, Land Use, etc. Previous version was 2004.	Entire Town	High	Planning Board	Updated the 2004 MP in 2017.	Boards and Departments should review their list of recommendations. PB should review some chapters

Latest Adoption or Version Date	Capability Assessment: Planning and Regulatory Resources	Description Related to hazard mitigation planning and coordination	Location of Capability Entire Town or Selected Areas	Level of Effective-ness	Respons-ibility	Changes Since Last Haz Mit Plan (2015)	Future Improvements to Capability
							annually for update.
2019	**PB Capital Improvements Program 2019-2024**	Strategic 6-year long term planning for improvement of Town equipment over $50,000 Put funding away. Several Capital Reserve Funds, sometimes take out funding intended for another project.	Entire Town	**High**	Planning Board	CIP updated in 2018 for 2018-2019.	Continue to update annually and place funding into CRFs for respective hazard mitigation projects.
Deering BUILDING CODES, PERMITTING, INSPECTIONS							
2015 (State)	**BI NFPA 101 Life Safety Codes Occupancy Inspections**	Contains 15 types of occupancies that may be inspected by Fire Departments **- Places of Assembly** - Mercantile - Business - Health Care - Ambulatory Health Care - Residential Board and Care **- Day Care** **- Educational** - Apartment Buildings - Lodging or Rooming Housing - Hotel or Dormitory - 1 and 2 Family Dwellings - Industrial - Storage - Detention and correctional	The Wilds of New England, Residential Board and Care (His Mansion and Robin Hill), Church, Residential Homes	**High**	Building Inspector	Continued inspections for these types of buildings, and state adopted new 2015 codes	Would like to see the State adopt the current version, consider adoption of requirement for sprinklers for all new residential and places of assembly
2015 (State)	**FD NFPA 1 Fire Codes Permitting**	Section 1:12, and Table 1.12.7a specifically outline instances when permits are required	All New structures	**High**	Fire Dept	Continued to issue permits for all new and remodeled structures, and the state adopted new 2015 codes	Would like to see the State adopt the current version
2015	**BI State Building Codes**	The State has adopted statewide requirements for compliance of 2015 residential and	Entire Town	**High**	Building Inspector	State adopted the most recent & current	Would like to see the State adopt the current version

Latest Adoption or Version Date	Capability Assessment: Planning and Regulatory Resources	Description Related to hazard mitigation planning and coordination	Location of Capability Entire Town or Selected Areas	Level of Effective-ness	Respons-ibility	Changes Since Last Haz Mit Plan (2015)	Future Improvements to Capability
		commercial building codes.				editions of the building codes, as did the Town.	
2009	**BI NFIP Participant**	Enrolled in program. The Town is required to have a Floodplain Ordinance and provisions in the Subdivision Regulations. The Floodplain Ordinance was just updated 2010 to the specifications of the State. New DFIRMS were being digitized for Hillsborough County and adopted by the Town in 2009. In 2009, a revised Zoning Ordinance includes the Floodplain Ordinance.	Floodplains	High	Planning Board	Building Inspector uses AxisGIS info which has the most current floodplain information on the Town. Included as well as wildlife action plan, conservation lands, hydric soils, bedrock geology.	Continue to seek improvements to floodplain maps, including accurate digital elevation maps.
2020	**HD Bridge Inspections**	The State conducts annual inspections of all bridges and they are kept on file at the Highway Dept. HD will conducts routine inspections of the Town-owned bridges in Deering and reviews the State items after the inspection sheets are provided. HD will also regularly look at condition of guardrail, signage, deck, abutments, embankments, visual.	Town-owned Bridges	High	Highway Dept	Continued to perform inspections of bridges and abutments and followed State inspection sheets.	Develop a written policy of HD bridge inspection. Continue to inspect bridges for repairs and replacement.
Deering LAND USE ORDINANCES, REGULATIONS							
Mar 2006	**PB Subdivision Regulations 2006**	Contain minimum specifications for roads, lot sizes, infrastructure, drainage, buffers, easements, noise, erosion control, underground utilities,	New Subdivisions	High	Planning Board	Used by PB when reviewing applications.	Add a development phasing requirement. Revise the Subdivision application

Latest Adoption or Version Date	Capability Assessment: Planning and Regulatory Resources	Description Related to hazard mitigation planning and coordination	Location of Capability Entire Town or Selected Areas	Level of Effective-ness	Respons-ibility	Changes Since Last Haz Mit Plan (2015)	Future Improvements to Capability
		dams, etc for new residential development.					process to streamline review.
Apr 2004	**PB Site Plan Review Regulations 2004**	Contain minimum specifications for roads, lot sizes, infrastructure, impervious surfaces, buffers, landscaping, parks, erosion, egress, etc for non-residential or multi-family dwelling development	New Subdivisions	High	Planning Board	Used by PB when reviewing applications.	Revise the Site Plan application process to streamline review
Mar 2020	**PB Zoning Ordinance 2020**	Constantly updated, they are considered current. Include drainage and infrastructure provisions. Currently undergoing review as a result of work on the Master Plan. In 2020, a revised Zoning Ordinance includes the Floodplain Ordinance.	Entire Town	High	Planning Board	Added Large Wind Energy Systems Ordinance	Revise the Watershed Protection Overlay District for 2021. Consider a Renewable Energy Systems Ordinance with small wind, solar, and outdoor wood hydronic heaters.
Mar 2003	**PB Aquifer Protection Overlay Zoning Ordinance 2003**	Stratified Drift Aquifer Protection District protects groundwater from contamination by regulated substances to preserve and maintain existing and potential drinking water supplies. The Aquifer Protection Overlay Zone Ordinance was adopted on 03-13-90 and updated in 2003.	Stratified Drift Aquifer area	High	Planning Board	PB used the Aquifer Ordinance when reviewing applications.	Review ordinance to ensure compliance with current state statutes and best practices and revise as needed.
Mar 2008	**PB National Floodplain Development Zoning Ordinance 2008**	Floodplain District reduces the damage of floods, based on FIRM map dated April 19, 2010. Floodplain ordinance was last amended in 2008 with the new floodplain map date references of 2009, and the Board of Selectmen adopted the Hillsborough County	Floodplains	High	Planning Board	No changes to ordinance. Applicants follow the ordinance and the building inspector enforces.	Periodically revise and update the ordinance to maintain compliance with FEMA requirements and enhance to fit Deering's needs.

Latest Adoption or Version Date	Capability Assessment: Planning and Regulatory Resources	Description Related to hazard mitigation planning and coordination	Location of Capability Entire Town or Selected Areas	Level of Effective-ness	Respons-ibility	Changes Since Last Haz Mit Plan (2015)	Future Improvements to Capability
		Maps in 2009. Initially adopted in 1991. Had previously Revised Floodplain District Design Standards to require new construction and substantial improvements be built at least two feet above the base flood elevation.					
Mar 2015	**PB Watershed Protection Overlay District 2015**	Sets a buffer of 75' for structures and 100' septic systems from the Lake, wetlands and tributaries. Updated regularly Adopted 03-08-05, and last updated 2015.	Watershed Protection area, Deering Lake and buffers	High	Planning Board	PB used the Wetlands Ordinance when reviewing applications and found the admin to be difficult.	Revise the Watershed Protection Overlay District for 2021 to clarify the administration component, add an application and instructions, identify structures (sheds, trash bins) eligible for impervious surface coverage and modify run-off regulations
Mar 2005	**PB Wetlands Ordinance 2005**	Wetlands Ordinance protects surface waters and wetlands contiguous to surface waters. For all structures, 50' setback from wetlands, no more than 50% cut of basal area. Adopted 03-03-88. Amended 03-08-03.	Wetlands and water bodies	High	Planning Board	PB used the Wetlands Ordinance when reviewing applications. BI enforced the ordinance.	Update ordinance in response to legal and scientific changes and to fit Deering's conservation needs.
Mar 2008	**PB Shoreland Protection Ordinance 2008**	The Zoning Ordinance now might not reflect new the State Shoreland Water Quality Protection Act (SWQPA). Last amended 03-15-08.	Contoocook River, Piscataquog River, Deering Lake, large waterbodies	High	Planning Board	None, will review 2021 with CNHRPC Circuit Rider	Review and update the zoning ordinance to ensure compliance with NH SWQPA.

Russ - PB

Latest Adoption or Version Date	Capability Assessment: Planning and Regulatory Resources	Description Related to hazard mitigation planning and coordination	Location of Capability Entire Town or Selected Areas	Level of Effective-ness	Respons-ibility	Changes Since Last Haz Mit Plan (2015)	Future Improvements to Capability
Mon 2001~~xx~~	**PB Excavation and Reclamation Ordinance**	The Town has a materials excavation and reclamation ordinance which provides operational and reclamation standards.	Excavation Areas	**High**	Planning Board	None	Continue to review the regulation and update as necessary to fit Deering's changing needs.
Mon 2000~~xx~~	**PB Telecommunications Zoning Ordinance**	A new telecommunications tower on ___ Hill/Road will improve reception in Town. A repeater could additionally be placed upon the tower. The PB revised the Zoning Ordinance to relax some of the regulations.	Entire Town	**High**	Planning Board	None	
Mon 2005~~xx~~	**PB Buildable Land Requirement Zoning Ordinance**	Buildable Land Requirement ensures that all developed sites have adequate area to support improvements outside areas of special hazards	Entire Town, Deering District	**High**	Planning Board	Changed buildable land requirement because of Mixed Use District.	Review minimum standards and update as necessary.
Mon 20xx	**PB Soils Erosion and Sediment Control Plan Requirement (Subdivision & Site Plan)**	Erosion Plan – major subdivisions and site plans must provide an engineered erosion & sedimentation control plan. Some individual house lots have bonds to cover their culverts.	Entire Town (New Developments)	**Moderate**	Planning Board	Revised for stormwater engineering in 2015	Continue to review the regulation and update as necessary to fit Deering's changing needs.
Mon 2006~~x~~x	**PB Drainage and Grading Plan Requirement (Subdivision & Site Plan)**	Engineered Drainage and Grading Plan ensures that storm drainage is infiltrated on site and does not cause erosion.	Entire Town (New Developments)	**Moderate**	Planning Board	Continued to use the Drainage and Grading Plan regulations when reviewing development applications	Periodically update in response to emerging technology.
Mon 2006~~xx~~	**PB Fire Suppression Requirement (Subdivision & Site Plan)**	For subdivisions or site plans that include 12 residential lots, a Fire Department approved fire Suppression/Water Supply, is required, such as a cistern or sprinkler system.	Entire Town (not on municipal water supply)	**High**	Planning Board w/ Fire Dept	Continued to use the Fire Suppression regulations when reviewing development applications.	Continue to review the regulation and update as necessary to fit Deering's changing needs.

Latest Adoption or Version Date	Capability Assessment: Planning and Regulatory Resources	Description Related to hazard mitigation planning and coordination	Location of Capability Entire Town or Selected Areas	Level of Effective-ness	Respons-ibility	Changes Since Last Haz Mit Plan (2015)	Future Improvements to Capability
Mon 2006~~xx~~	**PB Subdivision Road Limitations**	Road Access – can only have a maximum of 12 lots on single access. Limit dead end roads or attempt to connect.	Entire Town (New Developments)	Moderate	Planning Board	Continued to use the Fire Suppression regulations when reviewing development applications.	Attempt to interconnect the dozens of dead end roads in Town if possible.
Mon 2006~~xx~~	**PB Road Design and Construction Standards (Subdivision /Site Plan Regulations)**	Road design and construction provide specifications for building new & private Town roads and driveways. PB updated documents recently. Engineer contracted for application to follow the standards	Entire Town (New Developments)	High	Planning Board, with Public Works Dept	Increased pavement requirements from 3" to 4" total height.	Continue to review the regulation and update as necessary to fit Deering's changing needs.

Source: Deering Hazard Mitigation Committee

ADMINISTRATIVE AND TECHNICAL CAPABILITIES

The administrative and technical capabilities in Table 39 include policies, mutual aid agreements, partnerships, standard operating procedures, training, skills and tools that can be used for mitigation planning and to implement specific mitigation actions. Smaller jurisdictions without local staff resources often rely on public or shared resources. There are **3** categories: ***Administrative Programs, Policies, and Partnerships; Technical Skills, Training and Drills;*** and ***Assets, Security and Resources***.

Table 39

Administrative and Technical Capabilities

Latest Adoption or Version Date	Capability Assessment: Administrative and Technical	Description Related to hazard mitigation planning and coordination	Location of Capability Entire Town or Selected Areas	Level of Effectiveness	Responsibility	Changes Since Last Haz Mit Plan (2015)	Future Improvements to Capability
Deering ADMINISTRATIVE PROGRAMS, POLICIES, MUTUAL AID AGREEMENTS, PARTNERSHIPS, OPERATIONS, PROCEDURES							
2016	**BOS Class VI/ Private Road Acknowledgement Policy**	Homeowners on Class VI or private road have signed off to obtain building permit. Road Agent will bring updates to the Selectmen as needed. The Town of Deering has adopted a Class VI Road Policy.	Class VI Roads	High	Board of Selectmen with Planning Board	Homeowners on Class VI or private road have signed off to obtain building permit	Review and revise as necessary to remain consistent with changes in legislation.
1994	**BOS 9-11 Numbering Ordinance 1994**	Town ordinance for emergency services and also facilitates the building permit process. Information on number posting is submitted as part of Town Report. The Town of Deering has completed 911 mapping in compliance and conjunction with Department of Safety.	Entire Town	High	Board of Selectmen	E-911 locations and numbering is online for all houses. Contacted the state when building new homes. Starts the way for utilities. Updated for new construction. Enforced local ordinance for compliance.	Remain consistent with state regulations and procedures.
2020	**BOS Personnel Policies**	Govern the roles and responsibilities of both the town employee and employer. Constantly updated with new requirements.	Entire Town (employees can work in the field)	Moderate	Board of Selectmen	Updated portions as needed. Federal motor vehicle driver testing requirements (blood, breathalyzers, etc).	Continue to enhance oversight and flexibility of the policies.

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2020	**CC Cons Commission Easement Program**	The Town owns ___ acres of open space without conservation easements and __ acres with conservation easements. Commission has developed criteria for acquisition of Conservation Land. The Cons Comm receives 100% of the land use change tax.	Entire Town	High	Conservation Comm	Purchased 1 acre on Hedgehog Mtn Road for transfer to SPNHF stewardship. Much of the land is already conserved.	Construct more trails with better accessibility for users. Locate grant funding for kiosks with grant funding at trailheads.
Jan 2021	**HO Capital Area Public Health Network Participation**	The network created a plan to address mass casualty, health epidemics, etc. The Town is a member of the network and has participated in the group to develop the plan. Drills and training has been conducted.	Entire Town	High	Health Officer	Reviewed daily briefs from CAPHN related to COVID-19 in 2020/2021. Dues paid annually	Enhance training and capacity development for the Town, by including other personnel.
2020	**FD Standard Operating Guidelines (SOGs) 2020**	Written guidelines include how to handle structure fires, chimney fires, hazardous materials, vehicle accidents. The SOGs were last fully updated in 2020, but the Dept updates 5-6 sections each year.	Entire Town	Moderate	Fire Dept	FD updates 5-6 sections annually. In 2020, updated Disciplinary Policy, & added Use of Command Vehicle, Fire Response Policy, & EMS Response Policy (Code Purple), response to COVID-19, address.	Update and improve all of the SOGs continuously, including response and level of care.
May 2020	**FD General Orders**	Includes job descriptions for positions, info about Dept, command structure, phone numbers and facilities. First developed in 2011.	Entire Town	Moderate	Fire Dept	Updated the Deputy Chief position	Increase clarity of the general orders. Review and update each of the components.

Russ - CC

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Jan 2020	**FD Capital Area Fire Mutual Aid Compact (CAFMAC)**	Deering is a member of Capital Area Fire Mutual Aid Compact with 21 towns in the greater Concord area. All towns required to have MAA drills in each community at least every other year.	Capital Area, including Deering	High	Fire Dept	FD participated in 2018 water supply drill at airpark, included a crash into hanger. Five area towns joined.	Radio improvements still need to be done, sometimes Wolf Hill or Henniker (Pat's Peak) Tower goes down and CAFMAC has difficulty hearing Deering
Nov 2020	**FD CAFMAC Mutual Aid Agreement for Paramedic Intercept**	MAA for paramedics to provide service to Deering if there is an emergency. Deering can reciprocate.	Capital Area, including Deering	High		Was revised in November related to COVID. Dept has to sign.	If can hire more paramedics in Town, would be able to drop the MAA. Costs $500-$600 per call.
Dec 2020	**FD/EMS Staffing**	Fire Fighter 1 - 10 Fire Fighter 2 - 8 EMT – 7 Advanced EMT - 6 Paramedic - 2	Entire Town	Moderate	Fire Dept	Began a per diem program in 2017 which provided daytime coverage for ambulance. Hired 12-15 per diem personnel to supplement call force. Improved call response greatly.	Per diem & stipend for call members enables weekend coverage. After COVID, consider extending hours into the evening and weekend depending on call volume.
2019	**FD Policy for Staffing Fire Stations 2009**	Three fire stations in Deering – McAlister, Murdough, and Donovan provide coverage throughout the rural community.	Deering Center Road, Old County Road, Second NH Turnpike	Moderate	Fire Department	Updated policy for a more consistent location for day per diem staff (in 1 location)	Ensure consistent staffing 24 hours per day.
2019	**FD Rescue Department Standard Operating Guidelines (SOGs)**	Written guidelines include procedural/ personnel procedures including who should respond to which type of call and how the response should take	Entire Town	High	Rescue Dept	Significantly overhauled in 2019 related to staffing and level of care, including resources from	Review and update Rescue SOGs annually to ensure they remain current.

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		place, how to safely dress per call, etc. Reviewed annually. 2012 original document.				other towns (ALS).	
2020	**FD Call "Response Cards"**	Call "Response Cards" indicate who responds to which emergencies or disasters within the Mutual Aid (MAA) Compact. Town has 4 primary zones and target areas for MAA towns coming in.	Entire Town	**High**	Fire Dept	Updated in 2020 to change capabilities to reflect adding a new fire pumper-tanker truck.	Reevaluate the effectiveness of the 4 protection zones and target areas as Deering grows.
2004	**HD Inclement Weather Policy 2004**	States the priority of which roads are maintained first, which are last. Highest priority are bus routes and high traffic counts, last are gravel roads and low house counts. Maintain fire and police channels and response to call.	Town Maintained Roads	**High**	Highway Dept	Utilized to policy during bad weather events as stated.	Vary the equipment usage to ensure the miles are fewer and to save on the more expensive equipment.
Jan 2015	**HD Informal Mutual Aid with Surrounding Towns**	Unwritten informal assistance provided among the surrounding towns. Permission granted by BOS during emergency situations.	Entire Town	**Low**	Highway Dept	Provided assistance to Henniker in 2015 when their Highway Dept garage was destroyed by fire. Communicated with surrounding HDs during emergencies.	Research the formal NH Public Works Mutual Aid network to see if it would be beneficial for Deering.
2016	**HD Informal Job Descriptions**	The Highway Department has informal procedures and guidelines which are not written. Employees typically act as required for the situation that arises, and requirements are written into job descriptions.	Entire Town	**High**	Highway Dept	Staff is cross trained to undertake all necessary Highway Dept jobs.	Adopt better job descriptions and guidelines for after-hours & storm work.
Dec 2020	**TA Joint Loss Management (Safety) Committee**	Topics include employee and facility safety, first aid equipment, etc. meetings are held monthly.	Town Buildings and Facilities	**High**	Town Administrator	Met quarterly over the last five years. Determined a safety issue at	Follow the necessary regulations for compliance

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						the Town Hall parking lot – was paved.	with current laws.
Dec 2020	**PD School District Resource Officer Response Program**	School Resource Officer SRO (Hillsborough) works with district officials to ensure the safety, security and welfare of students, staff, and visitors. Mutual Aid is used from Deering to cover issues. Town pays into school district, which funds SRO program.	Alternative School	**High**	Police Dept/ Hillsborough Police Dept District Superintendent	Police Dept no longer participates in the SRO program for the School District. PD provided services to Alternative School in Deering when requested.	Obtain funding through appropriation at the School District Meeting to continue the School Resource Officer.
May 2020	**PD Standard Operating Procedures (SOPs)**	The SOPs include installed security fences, Alarm Systems, Patrol, Media Relations, Firearms, Pursuits, Roadblocks, Search and Seizure, Training, Critical Incident Management, Facility & Emergency, Holding & Confinement, Uniform & Appearance, Death & Injury Notification.	Entire Town	**High**	Police Dept	Continued revisions, including Duty Status Policy, Personnel Policies, Use of Force Policies.	Continue updating Standard Operating Procedures to maintain compliance and uphold safety, including Harassment in the Workplace
May 2020	**PD Mutual Aid Agreements With Surrounding Towns and County**	Must be resigned when Dept Chiefs change. Have agreements with Hillsborough County, Francestown, Antrim, Hillsborough, Weare, and Henniker.	Hillsborough County, Francestown, Antrim, Hillsborough, Weare, and Henniker	**High**	Police Dept	Agreements were resigned in May 2020 when a new Deering PD Chief was employed.	Adapt and adhere to incoming Hillsborough policy regarding use of body cameras
Dec 2020	**PD Traffic Surveys**	Traffic surveys are completed during the commuting hours during morning and evening to influence the driving habits. Numbers are uses to obtain NHDOS Safe Commute, Click It or Ticket grants.	Town and NH 149	**High**	Police Dept	Police Dept regularly conducted surveys to influence driving habits.	Increase the number of patrol officers on the roadways.
Mar 2020	**PD Explorer Post**	For age 14-21 young adults interested in law enforcement, Deering	Entire Town	**High**	Police Dept	Program on hold due to COVID.	Include other Depts within Explorer Post,

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		Police Explorer Post provides training. Purpose is for young adults to provide support in times of need to PD: Parking and traffic control, public relations and notification, organizing food, and general support during disasters. Members would never be assigned to anything dangerous.				Currently only 2 Explorer Post members.	such as Fire and Rescue.
2020	**SD Standard Operating Procedure: Run, Hide & Fight**	Adopted a Lockdown SOP and post posters describing actions	Deering Central, Middle School & High School	**High (Untested in Deering)**	School District	Conduct annual drills at the three schools, and teachers are trained. (Alternative School may not be included)	Train collectively with Fire and Police Depts on warm and hot zones and where to gather at mass casualty incident (MCI) sites and medical staging.
Deering TECHNICAL SKILLS, TRAINING, AND DRILLS							
2020	**FD IED Training**	Fire Dept personnel received training from HSEM/Fire Academy on IED awareness. Members are not a technical team but awareness is an important skill for FD.	Entire Town	**Moderate**	Fire Dept	Trained on IED awareness.	Ensure a greater working knowledge of evolving primary and secondary IED threats are maintained within FD personnel.
2020	**HO Capital Area Public Health Network Training**	Point of Dispensing (POD) for Deering is at the Weare Middle School for distribution of vaccines or pharmaceuticals for communicable disease, human, biological problems, exposure to chemicals, etc.	Entire Town	**High**	Health Officer	Participated in health officer COVID-19 online training. Made recommendations related to interrupting transmission of	Invite other Depts to participate in trainings.

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						virus to Town Hall staff.	
Jan 2021	**FD Fire & Rescue Department Weekly In-Service Training**	Hold weekly in-service training sessions. Members have to be recertified in certain areas annually and some are water rescue specialists. NFPA 1001 is followed, along with specialized training.	Entire Town	**High**	Fire & Rescue Dept	Underwent emergency vehicle operations, NIMS compliance, leadership training in Jan 2021. Held weekly trainings sessions on various topics.	Hold weekly in-service trainings in addition to specialized training at the state and national Fire Academy and utilize online resources.
1 FT Chief 9 per diem 20 call staff	**FD Fire Academy Training**	Fire Department personnel have undergone required training at the Fire Academy. Specialized courses in EMS, fire inspection, leadership, and specialized rescue training.	Entire Town	**High**	Fire and Rescue Dept	Increased skill levels for many members. Took specialized courses in EMS, fire inspection, leadership, and specialized rescue training.	Encourage more in-person training opportunities.
Dec 2020	**FD EMS Mass Casualty Incident (MCI) Training**	Training occurs on a regular basis for annual, continuing accreditation. FD must continue to keep its accreditation by training and volunteers take a 48-hour refresher course every 2 years.	Entire Town	**High**	Fire Dept	Personnel obtained their MCI recertifications.	Ensure compliance with scope of practice consistent with licensure or certification.
2019	**HD Highway Dept Training**	Regular training is undertaken, including annual chainsaw safety course, traffic control course, winter operations, downed power lines, fall protection, hoisting, culvert installation & maintaining (2 staff), etc. Entire crew takes all the mandatory courses (safety oriented.)	Entire Town	**Moderate**	Highway Dept	All full-time staff undertook the mandatory chainsaw safety training (includes downed powerlines), flagger safety.	Aim for crew members to attend more training opportunities (time) in addition to the required certifications. Classes are often scheduled when staff are unavailable.
1 staff, 2019	**HD Training, Road Agent**	This is a consistent effort to improve service delivery through	Entire Town	**High**	High Dept	Took refresher courses to maintain	Ensure all Highway Department

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	Certified as a Master Roads Scholar and Master Safety Officer	education acquired by participating in online training activities and program offered through the UNH T2.				master certifications.	staff are involved in the T2 program for certification.
Dec 2020	**PD Police Department Training**	Training has been provided for firearm and use of force is yearly (includes taser, baton, pepper spray, soft hand control). Training obtained for active threats and other situations when opportunity permits. The two full-time and two part-time officers are trained annually.	Entire Town	**High**	Police Dept	Due to COVID, monthly in-service training was paused. Two PD members received firearms instructor recertifications.	Attend CPR training for all PD staff. Add a third part-time officer. Monthly in-service training to recommence in January 2020.
Aug 2019	**PD Training Drills**	Police Dept partners for active threat drills using vacant buildings (usually Hillsborough), not just schools. Only one officer is certified to SWAT level 1.	Entire Town	**Moderate**	Police Dept	One officer had received SWAT level 1 during a drill, but later retired.	Encourage other officers to get certified in SWAT 1. (If all mutual aid officers are trained to a certain level, response is consistent)
2021	**PD Explorer Post**	The Explorer Post gives experience of community and volunteering to 15-21 year old young adults. The Police Department gets assistance and the teens may one day join the Police Department, or establish a career, as a result of their positive experience. Currently have 2 cadets.	Entire Town	**High (2020 is an exception)**	Fire Dept	Have only 2 Cadets, but schools are shut down and program is on pause. One meeting held in November related to parking (elections) in 2020.	Change training programs to encompass Fire, Rescue and Highway Dept functions.
Jan 2021	**TA Attendance at Seminars by Town Officials**	Seminars by NH HSEM, NH Municipal Association, Primex, others attended by Town Admin, Selectmen, Health Officer, Planning Board. Regularly attend as workshops come up.	Entire	**High**	Town Administrator	Attended COVID-19 virtual informational briefings, NHMA annual conference via Zoom.	Attend harassment, ethics training. workshops. Provide additional time and funding for

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							more Town officials and staff to attend.
2020	**SD Regular School Drills**	Each school in District is required to conduct 10 drills per year, including fire drills, lockdown, active threat, bus evacuation for a time.	Elementary School, Middle School & High School, the Alternative School	**High**	School Principals	Schools conducted fire drills but no active threat drills in 2020. Schools in 2020 have alternated between in-person and remote learning, so drills are currently uncommon due to COVID-19.	Involve the Fire and Police Depts of Hillsborough & Deering in the schools' drills.
Deering ASSETS, SECURITY, AND RESOURCES (SPECIALIZED EQUIPMENT)							
2016	**EM Emergency Operations Center**	The EOC is located at the Town Hall, normally the Library & conference room. The base radio was removed by HSEM and a Geiger counter was provided. The antenna remains, but currently no base radio is in Town Hall. The EOC/Library contains one phone line but no dedicated phone, internet VOIP and wifi connection in Town Hall. The EOC accommodates only 15 people and has no equipment until it is brought inside.	Entire Town	**Low**	Emergency Mgt	Base radio was removed by HSEM and a Geiger counter was provided.	Purchase or obtain a new base radio and other EOC equipment including a laptop for the EMD.
2020	**EM Emergency Shelters and Warming Center**	Cooling/Warming centers designated at and Deering Town Hall first floor and Deering Community Church. No Red Cross shelter in Town. Middle School in Hillsborough is the local	Town Hall First Floor, Community Church	**High**	Emergency Mgt	In Town, no shelters have been activated, but in Hillsborough, the Middle School may have been	Coordinate cooling/ warming shelter agreements with Deering Community Church, the

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		shelter to serve people who lost heat.				opened as a shelter.	Wilds, His Mansion.
Mon 20xx	**FD Water Rescue Capabilities**	The Town has a boat to use for water rescue in response to extreme flooding and Deering Lake emergencies. More equipment was obtained to facilitate rescue during flooding conditions: trailer, ice rescue suits, ropes, personal flotation devices, and water rescue helmets	Contoocook River, Deering Lake, Water bodies	High	Fire Dept	Practiced skills on real scenarios, examined resources & serviced them for readiness.	Continue to locate and take training related to water rescue, which is not easy to find or coordinate with volunteer schedules.
Dec 2020	**HD/FD & RD/EM/PD Wolf Hill Tower Communications Array**	Repeater on the tower as coordinated and owned by Hillsborough County Sheriff's Dept (has equipment room with switching equipment). Also used by Deering PD, FD, and RD, EM, services the community. Electricity is provided by Eversource. Generator on site, owner [Castle Towers] of tower is responsible for its operation.	Wolf Hill and Entire Town	High	Hillsborough County Sheriff's Dept	Used daily by Deering emergency responders. Maintained by owner. Repeater is responsibility of Sheriff.	Encourage 5G technology placement to Wolf Hill tower.
Nov 2014	**HD Culvert Replacement: Longwoods Road Box Culvert**	Project phased (I). This area floods annually, shutting down and isolating West Deering residents, including a large trailer park. Fire and Rescue are unable to access West Deering when this area floods. Phase 2 to Nov 2014 is to raise elevation of Longwoods Road. Sliplined a 6' plastic culvert with a turtle bridge.	Longwoods Road	High	Highway Dept	Highway Dept staff regularly checked culvert and removed accumulated brush from beavers. Previously completed project. HD inspected the culverts to ensure proper operations.	Conduct regular check of culvert and remove accumulated brush and debris from beaver. Will not need replacement for at least 20-30 years.
Apr 2014	**HD Culvert Replacement: Second NH Turnpike**	Upgraded three sets of existing culverts on Second NH Turnpike with three-sided bottomless box culverts. Previously completed project. HD	Second NH Turnpike	High	Highway Dept	2020- HD replaced grates on two culverts (previously installed were smaller). HD	Build larger grates to place in front of the culverts that can be lifted out with the

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		inspected the culverts to ensure proper operations.				has noticed issues with beavers. Must clean out the dams once every two months. Very active in spring and mid fall.	backhoe to clean. Debris clogs the front of the grates. Will replace all grates on Second NH Turnpike, not just these 3.
Nov 2014	**HD Culvert Replacement: Longwoods Road "Turtle Bridge" Elevation Profile of Raised**	Project phased (II). Only two ways to reach West Deering: Mountain Road and Longwoods Road. This area floods annually, shutting down and isolating West Deering residents, including a large mobile home community. Fire and Rescue are unable to access West Deering when this area floods. A bridge culvert was recently upgraded on Longwoods Road. HD raised the elevation profile of Longwoods Road was Phase II, to slipline and grout 6' Longwoods Road Culvert with Box Culvert (Phase I completed November 2012) to eliminate isolation during floods. Previously completed project. HD inspected the road to ensure functionality.	Longwoods Road	High	Highway Dept	2014- Turtle ladders were placed so they do not have to crawl through culvert. HD Inspects the culverts every two months to clean the ladders. Rock face of slipline was grouted.	No improvements to culverts or turtle ladders.
1 base monitor, 5 portables, 2 mobiles	**PD Radio Equipment**	PD owns limited radio equipment. Old and outdated, not always compliant with the newer systems used by mutual aid.	Entire Town	Moderate	Police Dept	Purchased 1 new portable radio equip in Dec 2020	Would like to have 5 new portables to be interoperable with other towns.
Jul 2020	**PD & TA Town Hall Generator**	Roughly 30kw generator in Town Hall and Police Department were purchased through a FEMA grant. This will	Town Hall with Police Dept and Emergency Mgt	High	Emergency Mgt	Maintained every spring and fall. Tested weekly on Fridays when	Consider upgrading using the solar panel capacity and installing

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		keep emergency operations functioning during a disaster event. Propane, underground, and about 1,500 gallons. Should power Town Hall for about 1 day at least. Purchased in 2004-2005.				Town Hall is closed.	a battery bank.
May 2020	**PD Pepperball Gun**	Nonlethal weapon used for subduing violent individuals. Purchased around 2016.	Entire Town	**High**	Police Dept	Deployed for use in Antrim by mutual aid. Maintained annually.	Renew pepperballs for those expired ones.
Nov 2020	**TA Town Hall Fire Alarm System and Town Clerk Alarm**	The Town Hall has fire alarm system which is routinely tested and maintained by an alarm company. Town Clerk, Admin Assistant employees have panic buttons.	Town Hall	**High**	Town Administrator	Alarm maintained annually by company. Mounted buttons tested annually and batteries changed by vendor.	Install security cameras outside and inside Town Hall, with monitor in Town Admin office.
2017	**TA Town Hall Interior Security Measures**	Locking doors and half doors are inaccessible to the public. Fire extinguishers, panic buttons (to dispatch), cell phones for admin staff.	Town Hall	**High**	Town Administrator	Added new doors and windows for safety. Annual testing and inspection fire extinguishers and sprinklers.	Add Google Nest video surveillance cameras and subscriptions at Town Hall and Highway Dept Garage and Salt Shed.
Summer 2017	**SD Hillsboro-Deering School Security Features**	All schools have a buzz-in lock system. Cameras have been installed at the main entrances. Visitors are required to sign-in.	Elementary School, Middle School & High School	**High**	School Principals	Upgraded camera system and increased the number of cameras. Teacher have access badges with time stamps.	Update security to current technologies to fit the needs of the schools.

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Brian – fill in these 2							
AFTER UPDATING THE ABOVE CAPABILITIES TO 2021 STANDARDS, 1) ADD NEW CAPABILITIES 2015 – PRESENT DAY WHICH ARE NOT YET LISTED and 2) SEE EXAMPLES BELOW IN GREEN HIGHLIGHT (from other local Towns) WHICH MIGHT APPLY TO Deering!							
Examples Month 20xx	**Review these below to see if any could fit Deering**	**EXAMPLES BELOW. DO ANY APPLY TO Deering? ARE THEY SIMILAR TO WHAT Deering IS USING? IF YES, REVISE AS APPROPRIATE.**	**Examples**	**Examples**	Examples	Examples	Examples
20~~xx~~ barricades + 35~~xx~~ cones + 36 FD cones + 16 PD smaller cones	**HD Barricades and Cones**	Plastic barricades, some have been vandalized, not enough. Barricades shared among all Depts. Some cones in PD 8" cruisers and Fire trucks 24". Shared among all Depts. Also have about 12 barrels reflective at HD.	Highway Garage	**High**	Highway Dept	Purchased about a dozen cones in 2018, get stolen.	Add about 24 large 32" cones to have on hand when trees are down.
100 new sandbags as of Apr 2021	**HD Sandbags**	Stored at Highway Garage. Can be filled at Highway Garage. Deploy during emergencies as needed for residents or Depts. Would use at West Deering Fire Station also if flooded.	Highway Garage	**Low**	Emergency Mgt	Brand new sandbags purchased in 2021. Still backordered from earlier in the year.	Need to fill when obtained. Need a hopper to fill the sandbags and tie them.

Source: Deering Hazard Mitigation Committee

FINANCIAL CAPABILITIES

The financial resources in Table 40 available for hazard mitigation projects are those the Town has access to, has used in the past, or may be eligible to use in the future for hazard mitigation projects. These often include FEMA Public Assistance Grants (Disaster Recovery Costs), Warrant Articles, Town Capital Improvements Program (CIP) 2021 Project Funding, Department Operating Budgets, Bonds and FEMA and NH Department of Transportation grants. There are **2** categories, ***Financial Programs or Funding Resources***; and ***Potential Funding Programs*** for hazard mitigation projects.

Table 40

Financial Capabilities

Latest Adoption or Version Date	Capability Assessment: Financial	Description Related to hazard mitigation planning and coordination	Location of Capability Entire Town or Selected Areas	Level of Effective-ness	Respons-ibility	Changes Since Last Haz Mit Plan (2015)	Future Improvements to Capability
Deering FINANCIAL PROGRAM OR FUNDING RESOURCE FOR HAZARD MITIGATION PROJECTS							
Jan 2015	**BOS FEMA Public Assistance Grants (Disaster Recovery Costs)**	Public Assistance Categories A-G may become available when disasters are declared if the community has an unexpired approved Haz Mit Plan. Continue to utilize the FEMA funding to help recover from declared disasters. (January 2015 Blizzard #4209)	Entire Town	**High**	Town Admin with EM	Used for PA-B Protective Measures	Utilize the FEMA PA program to help with disaster costs for each eligible disaster.
Mar 2021	**BOS NH Department of Transportation (NH DOT) Bridge Program**	The bridge program is an 80/20 funding opportunity, with only 20% required by towns. Using the CIP Capital Reserve Funds, communities can set aside money for the several years it takes for the state to undertake the local bridge project. Have a bridge ETF $20,000 now.	Town Bridges - East Deering Road Bridge over Dudley Brook (between Peter Wood Hill and Quaker St)	**Medium**	Town Admin	2016- Added funding into bridge expendable trust fund. Waiting for a bridge to require improvement.	Plan within the CIP for the bridge reple3acemen t including engineering costs. Add annual contributions to Bridge EFT $20,000. By 2026, apply for Bridge Funding at DOT.
2021	**CC Conservatio n Easement Fund**	The Conservation Easement Fund protects water supplies through purchase of conservation easements. to turtle ladder culvert. Drains into	Priority locations	**High**	Conservati on Comm	2021- Transferring a parcel along Longwoods Road (with turtles), a	Consider obtaining parcels which are waterfront property on the

Latest Adoption or Version Date	Capability Assessment: Financial	Description Related to hazard mitigation planning and coordination	Location of Capability Entire Town or Selected Areas	Level of Effective-ness	Respons-ibility	Changes Since Last Haz Mit Plan (2015)	Future Improvements to Capability
		a waterbody that is connected to Contoocook river. Transferring parcel to Piscataquog Land Trust (PLT). 100% is transferred to Conservation Fund. Snakes and trees are deterrents to public use of the Contoocook.				riverfront parcel. Deposited to Cons Fund when current use land converted to developable land.	Contoocook or Piscataquog for flood capacity and water quality protection.
Mar 2021	**EM Emergency Management Operating Budget**	Budget can contain funding for outreach programs, mitigation projects (includes staffing). About $100 in operating budget. Town obtained a Geiger counter but took the Town's base radio.	Entire Town	Low	Emergency Mgt	2021- Added $100 per year at annual meeting as a placeholder for budget line	Add $1,000 annually funding to use Emergency Management Operating Budget to finance future hazard mitigation improvements
~~{check date}~~2018	**PB Town Capital Improvements Program (CIP) 2021 Project Funding**	Sets aside funds for large equipment/ projects.	Entire Town	High	Planning Board	Updated CIP since last Plan. Used by Departments for projefs. Not yet adopted by PB	CIP could include expensive or long-term hazard mitigation projects

Source: Deering Hazard Mitigation Committee

EDUCATION AND OUTREACH CAPABILITIES

Russ – TA, EM

In Table 41, identifying Town Departments have ***Public Outreach Programs***, ***Educational Activities and Notification*** methods already in place or those which could be implemented can supplement or encourage mitigation activities and communicate hazard-related information to residents, businesses and the general public.

Mark – PD

Table 41

Education and Outreach Capabilities

Latest Adoption or Version Date	Capability Assessment: Education and Outreach Programs	Description Related to hazard mitigation planning and coordination	Location of Capability Entire Town or Selected Areas	Level of Effective-ness	Respons-ibility	Changes Since Last Haz Mit Plan (2015)	Future Improvements to Capability
Deering PUBLIC OUTREACH PROGRAM, EDUCATIONAL ACTIVITY, NOTIFICATIONS							
DATE LAST DONE ↧	**NAME OF PROGRAM ↴**	**DESCRIBE/UPDATE**	**WHERE**	**UPDATE**	**WHO**	**What was done over last 5 years?**	**IDENTIFY Future Improvements to Capability**
Oct 2020	**FD Public Safety Day**	FD holds many public outreach events: Open houses, participate in community functions, Fire Prevention Week, tours for school children, fire inspections, etc.	Entire Town	High	Fire Dept	Held the program annually. During COVID years, had to be creative.	Continue to expand and add new outreach programs.
Month 2021~~xx~~	**PD Drug Take Back Box & Drug Day**	People can drop off narcotics or whatever people have with immunity and also unused prescription medication. Getting people to turn their medicine in is difficult. Deering, Washington and Windsor residents can use box	Hillsborough Police Station	High	Police Dept	Uses Hillsboro PD program.	
Jan 2021	**TA Town Website Information and Notification**	Updated website. Town email notification distribution list to send out public notices.	Town Administrator	High	Town Administrator	none	
	Other??						

Latest Adoption or Version Date	Capability Assessment: Education and Outreach Programs	Description Related to hazard mitigation planning and coordination	Location of Capability Entire Town or Selected Areas	Level of Effective-ness	Respons-ibility	Changes Since Last Haz Mit Plan (2015)	Future Improvements to Capability
Brian - HD					Mark – PD, SD		
Russ – EM, CC					Jeff - FD		
AFTER UPDATING THE ABOVE CAPABILITIES TO 2021 STANDARDS, 1) ADD NEW CAPABILITIES 2015 – PRESENT DAY WHICH ARE NOT YET LISTED and 2) SEE EXAMPLES BELOW IN GREEN HIGHLIGHT (from other local Towns) WHICH MIGHT APPLY TO Deering!							
Examples	Review these below to see if any could fit Deering	EXAMPLES BELOW. DO ANY APPLY TO Deering? IF YES, REVISES AS APPROPRIATE.	Examples	Examples	Examples	Examples	Examples
~~Month 20xx~~	~~**EM Functional/ Medical Needs Survey for Residents**~~	~~Development of Functional Needs Survey- distributed to town residents. Incorporated into computer database. Created and implemented Functional/Medical Needs database based upon responses from residents.~~	~~Entire Town~~	~~**High**~~	~~Emergency Mgt~~		~~Annual update of information, expansion of database capabilities.~~
Month 2021~~xx~~	**HD Educated Homeowners on Private Culvert Maintenance**	Educate homeowners about private culvert maintenance. Developed information packet for homeowners in June 2008 so they can try to fix their own drainage issues.	Entire Town	**High**	Public Works Dept	~~Developed information packet for homeowners in June 2008~~Will Develop this year	Continue to educate homeowners and provide information packets
Month 2021~~xx~~	**EM NH Alert**	People choose to receive notification calls from NH Alert, a statewide app. Town has advertised for people to join, used by Police, Highway, and Fire Departments	Entire Town, General Public	**Low**	Fire Dept	Use Code Red and list it on FD Facebook page	Publicize better to ensure more people are connected. Consider a Twitter feed
Month 2021~~xx~~	**SD School District Automated Calling System**	Used only for emergencies. Automated phone, text, email service to parents for alert. Used for snow	Entire Town	**High**	Deering School District	Already Extant. SAU is lead	Update regularly when parents require notification

Latest Adoption or Version Date	Capability Assessment: Education and Outreach Programs	Description Related to hazard mitigation planning and coordination	Location of Capability Entire Town or Selected Areas	Level of Effectiveness	Responsibility	Changes Since Last Haz Mit Plan (2015)	Future Improvements to Capability
		delays and snow days. A new version is being tested - text, then audio from Department. Through_____					
Month 2020~~xx~~	**CC Conservation and Wetland Monitoring**	Conservation Commission monitors open space and conservation lands and wetlands through data collection. The data includes Class VI Roads. This project helps mitigate the effects of natural disaster events	Entire Town	**High**	Conservation Comm	none	
	Other??						

Source: Deering Hazard Mitigation Committee

Review of Existing Plans

As described above, during the Hazard Mitigation process and the identification of existing mitigation **Capabilities**, the Hazard Mitigation Committee used their knowledge of the existing plans, policies, procedures and other documents utilized for their Department duties to develop Capability ***Future Improvements***. However, several additional documents not listed in the **Capability Assessment** are also utilized by the community and have a positive relationship to the **Hazard Mitigation Plan 2021**. Most of the documents below are not the Town's documents, but the hazard mitigation goals, objectives, and/or Actions in this Plan are supported by the **Mitigation Support and Resource Documents** listed below in **Table 42**.

Table 42

Mitigation Support and Resource Documents

Latest Adoption or Version Date	Mitigation Support and Resource Documents Not Listed within Capability Assessment Tables
Feb 2007	NH DHHS NH Influenza Pandemic Public Health Preparedness & Response Plan 2007
2008	USGS Flood of April 2007 in NH
2007	USGS Flood of May 2006 in NH
Sep 2009	FEMA Flood Insurance Study for Hillsborough County 2008
2010	NWS Thunderstorms, Tornadoes, Lightning. Preparedness Guide
Apr 2010	NH Hospital Mutual Aid Network MOU
2011	NH DES Management of Collected Debris Following Severe Storm Events Fact Sheet
Dec 2011	NH DHHS Disaster Behavioral Health Response Plan
Feb 2012	NH DHHS Child Care Center Emergency Preparedness Guide
2015	NFPA 101 Life Safety Code 2015
2015	NFPA 1 Fire Code 2015
Feb 2015	Central NH Regional Plan 2015
Mar 2015	NH State of NH Tickborne Disease Plan 2015
Jul 2015	NH DOS Statewide Fire Mobilization Implementation Master Plan 2015
Jul 2015	American Red Cross of NH Strategic Plan – Humanitarian Services FY 2015-2021
Jul 2015	NHHSEM NH Recovery Plan with RSFs 2015
Sep 2015	NH DOS Bureau of Emergency Management Services EMS Provider Manual 2015
Jan 2016	Eversource Energy Electric Operations Response Plan
Oct 2016	CNHREPC Central New Hampshire Regional Emergency Planning Committee Regional Hazardous Materials Emergency Plan 2016
2016	Capital Area Public Health Network Public Health Emergency Preparedness and Response Plan

Latest Adoption or Version Date	Mitigation Support and Resource Documents Not Listed within Capability Assessment Tables
Jul 2017	NH DHHS NH Arboviral Illness Surveillance, Prevention and Response Plan & Map 2017
As provided	NHDES Dam Emergency Action Plans for High, Significant & Low Hazard Dams
Mar 2018	NH DOT Recommendations for the Ten-Year Transportation Improvement Plan (Projects) 2021-2028
2018	USGS Preliminary Stage and Streamflow Data at Selected Stream Gages for Flood of Oct 2017
Oct 2018	State of NH Multi-Hazard Mitigation Plan Update 2018

Source: Deering Hazard Mitigation Committee, CNHRPC

7 PRIOR ACTION STATUS

The **Hazard Mitigation Plan Update 2015** provided a basis to begin Action development, many of which originated from prior **Plans**. A review of the **2015** Actions is provided by the Hazard Mitigation Committee, determining which Actions have been **Completed**, **Deleted**, or **Deferred** to the **2021 Plan**.

Action Status Determination

The status of all Hazard Mitigation Plan Actions varies. Priorities over the previous five years can change, budgets are uncertain, and staff are allocated time for certain tasks. Actions developed, evaluated and implemented across Hazard Mitigation Plans accommodate existing, new, and future development (buildings and infrastructure). To accommodate the **2015 Plan's deferred** Actions in addition to the **New** Actions from the **2021 Plan**, there are four designated Action types to describe the detailed Actions following within the **7 PRIOR ACTION STATUS** and/or **8 MITIGATION ACTION PLAN**:

- **Completed**
- **Deleted**
- **Deferred**

Actions which were **Completed** from the **2015 Plan** are listed in **Table 44** along with completion dates.

Actions which were **Deleted** from the **2015 Plan** might have been no longer necessary or a priority to the Town, no longer relevant to the Town's situation or objectives, could not realistically be undertaken, were not financially feasible, were modified and incorporated into other existing Actions, or duplicated existing efforts of Deering's activities. Deleted Actions are listed in **Table 45.**

Actions which were **Deferred** from the **2015 Plan** are still important to the Town but were not completed because they did not have the staff capability or the funding to undertake them, other Actions took higher priority, more time was required for completion, or they may need to be repeated to be effective. These **Deferred** Actions are in **Table 46** and have been re-prioritized with the **New** Actions in the **Mitigation Action Plan.**

Changes in priority of the **Deferred 2015** Actions occurred over the last five years. The **2015 Plan** used the **12-36 Priority Score enhanced STAPLEE** system while the **2021 Plan** included both a ***Ranking Score*** and an ***Action Timeframe*** to determine priorities with a more useful **15-75 Priority Score enhanced STAPLEE** system. Both methods are described.

New Actions are described later in **8 MITIGATION ACTION PLAN**.

DEFINITIONS

The following definitions were used to ascertain which Actions should be considered *mitigation* Actions versus which should be considered *preparedness* Actions more suitable for incorporation into the ***Town Emergency Operations Plan***. The mitigation Actions are those which are carried forth in this **2021 Plan** into the **Mitigation Action Plan**.

Action Type	Duration	Definition or Characteristics
Mitigation	**Long Term**	**Action supports sustained risk prevention or reduces long-term risk to people, property and infrastructure.** ↪ Best suited for *Town Hazard Mitigation Plan*.
Preparedness	**Short Term**	Action assists or supports planning, protective activities, public education, training and exercise. ↪ Best suited for ***Town Emergency Operations Plan***.
Response, Recovery, Other Related	**Short Term**	Action supports preventative, response, recovery-related, repeated or deferred maintenance activities. ↪ Best suited for ***Town Emergency Operations Plan***.

HAZARDS CONSIDERED

With **23** individual hazards evaluated in this Plan, it is not always practical to list each one when describing location vulnerabilities or solutions. In many cases, listing the more encompassing main hazard categories from chapters **3 GOALS AND OBJECTIVES** and **4 HAZARD RISK ASSESSMENT,** which are **Flood**, **Wind**, **Fire**, **Extreme Temperature**, **Earth**, **Technological** and **Human**, should accurately define the issues of most of the identified Actions or locations. Using these hazard categories would often better accommodate the situation in their broadness. The categorized hazards have also been used in the **APPENDIX A Critical and Community Facilities Vulnerability Assessment** but tailored when necessary.

In some cases, further hazard detail at a specific location or to describe an Action is necessary. When needed, the specific hazards addressed in this **Hazard Mitigation Plan** could be utilized, such as **Erosion** from the ***River Hazards*** category, **Storm** (generally applying to warm weather, all-encompassing storms) or **Tree Debris** from the ***Wind*** category, **Excessive Heat** from the ***Extreme Temperature*** category, or **Communications** from the ***Long Term Utility Outage***, to provide the specific information needed to understand certain issues in Deering.

Therefore, when the main hazard categories of **Flood**, **Wind**, **Fire**, **Extreme Temperature**, **Earth**, **Technological** and **Human** are not precise enough, one or more of the specific **23** hazards evaluated may be utilized for greater accuracy.

Review of 2015 Actions

The **2015 Hazard Mitigation Plan** was written in a different format and its content had to comply with less specific review guidelines before the ***Local Hazard Mitigation Review Guidebook (FEMA), 2011*** became standardized and tailored by each FEMA Region over the years.

Deering's mitigation Actions from the **2015 Plan**, which included Actions from the Town's previous Plans, were allocated **Action Numbers** and each **Project**'s status was determined by the Hazard Mitigation Committee as either **Completed**, **Deleted** or **Deferred**. Over the previous Plans, the Actions numbers denoted by years were recorded as such. Actions from **2004** which were **Completed** or **Deleted** and identified as such in the **2015 Plan** were not given numerical identifiers (**#NA**).

HMP	Action # Range	
2004 Plan	#NA	#NA
2009 Plan	#1- 2009 to	#25- 2009
2015 Plan	#26- 2015 to	#51-2015
2021 Plan	#52- 2021 to	#73- 2021

A total of **21** mitigation Actions have been **Completed** from the previous **Hazard Mitigation Plans** as shown in **Table 43**. This includes **15** Actions completed since the **2015 Plan**.

Table 43
Completed Mitigation Actions

Priority Score (2015)	Action Number	Action	Completed By Date	Who is Responsible	Approx $ Cost	Natural Hazards Addressed
COMPLETED BY 2015 PLAN						
36	#NA	**Develop Policy for Manning of Fire Stations**	Jun 2009	Fire and Rescue Department	$0	Fire, Wildfire, Lightning, Drought, Crash, Haz Mat
31	#NA	**Promote Fire Prevention Program Improvements**	Oct 2010	Fire & Rescue Department	$500	Fire, Wildfire, Lightning, Drought, Crash, Haz Mat
34	#NA	**Upgrade 8' Longwoods Road Culvert with Box Culvert Phase I**	Phase I Nov 2012	Highway Department	$750,000	Flood, Scouring & Erosion, Wind, Winter, Debris, Tropical, River, Ice Jam, Aging Infrastructure
32	#NA	**Update the 1997 Fire Department SOPs**	May 2013	Fire & Rescue Department	$0	Fire, Wildfire, Lightning, Drought, Crash, Haz Mat
35	#NA	**Upgrade Three Sets of Existing Culverts on Second NH Turnpike with Three-Sided Bottomless Box Culverts**	April 2014	Highway Department	$500,000	Flood, Scouring & Erosion, Wind, Winter, Debris, Tropical, River, Ice Jam, Aging Infrastructure

Priority Score (2015)	Action Number	Action	Completed By Date	Who is Responsible	Approx $ Cost	Natural Hazards Addressed
35	#NA	Raise Elevation Profile of Longwoods Road to Improve Access to West Deering #27-2015	Nov 2014	Highway Department	$250,000	Flood, Scouring & Erosion, Wind, Winter, Debris, Tropical, River, Ice Jam, Aging Infrastructure
COMPLETED BY 2021 PLAN						
35	#3 - 2009	Upgrade Three 36" Culverts with One Box Culvert on Pond Road at Patten Brook	Jun 2020	Highway Department	$250,000	Flood, Scouring & Erosion, Wind, Winter, Debris, Tropical, River, Ice Jam, Aging Infrastructure
36	#28-2015	Upgrade County Road Culverts Across Wilkens Brook	Jun 2019	Highway Department	$20,000	Flood, Scouring & Erosion, Wind, Winter, Debris, Tropical, River, Ice Jam, Aging Infrastructure
35	#29-2015	Upgrade Clement Hill Road Culvert Drainage to Black Fox Pond	May 2018	Highway Department	$5,000	Flood, Scouring & Erosion, Wind, Winter, Debris, Tropical, River, Ice Jam, Aging Infrastructure
36	#30-2015	Continue Upgrading Culverts According to the Culvert Replacement Plan	2018-Clement Hill Road, Cross Rd - 2019, 2020-Longwoods Road to Holton Crossing	Highway Department	$5.000+ each	Flood, Scouring & Erosion, Wind, Winter, Debris, Tropical, River, Ice Jam, Aging Infrastructure
34	#18-2009	Establish an Elderly Communication Program for Severe Weather Events	Jun 2017 - Code Red	Emergency Management Director	$0	Extreme Temps, Earthquake, Drought, Flood, Scouring & Erosion, Wind, Winter, Wildfire, Public Health, Debris, Tropical, River, Ice Jam, Aging Infrastructure
36	#26-2015	Enhance Special Education Fire Prevention Program for Students	Oct 2020 (annually)	Fire and Rescue Departments	$0	Fire, Wildfire, Lightning, Drought, Crash, Haz Mat, Human
34	#40-2015	Educate Students, Staff and Visitors on School Security	Dec 2020 (regular drills & security escorts/ passes)	School District Representatives/ Principals	$0	Active Threat (Human)
36	#41-2015	Develop & Disseminate Public Education Materials for Emergency Supplies and Sheltering	2019	Emergency Management Director	$0	Drought, Earthquake, Landslide, Extreme Temps, Lightning, Wildfire, Inland Flooding, River Haz, Wind/Tropical, Winter, Public Health, Aging Infrastructure, Utility, Crash, Haz Mat

Priority Score (2015)	Action Number	Action	Completed By Date	Who is Responsible	Approx $ Cost	Natural Hazards Addressed
36	#12-2009	Update the Zoning Ordinance to Comply with State SWQPA	2016	Planning Board	$1,000	Flood, Scouring & Erosion, Storms, River, Ice Jam, Health (Water Quality)
33	#33-2015	Develop Vulnerability Assessment of Town Infrastructure (FGA)	2017	Highway Department	$500	Drought, Earthquake, Landslide, Extreme Temps, Lightning, Wildfire, Inland Flooding, River Haz, Wind/Tropical, Winter, Public Health, Aging Infrastructure, Utility, Crash, Haz Mat, Cyber
34	#34-2015	Maintain an Updated Culvert and Bridge Database (FGA)	Apr 2016	Town Administrator	$1,000	Flood, Scouring & Erosion, Wind, Winter, Debris, Tropical, River, Ice Jam, Aging Infrastructure
35	#47-2015	Adopt Town Hall Safety Plan	Aug 2016	Board of Selectmen	$200	Fire, Utility, Active Threat
36	#48-2015	Update 2004 Master Plan	2015	Planning Board	$25,000	Drought, Earthquake, Landslide, Extreme Temps, Lightning, Wildfire, Inland Flooding, River Haz, Wind/Tropical, Winter, Public Health, Aging Infrastructure, Utility, Crash, Haz Mat, Cyber
36	#49-2015	Complete Culvert Inventory to Cover the Entire Town of Deering (FGA)	Apr 2016	Highway Department	$0	Flood, Scouring & Erosion, Wind, Winter, Debris, Tropical, River, Ice Jam, Aging Infrastructure
36	#50-2015	Update 2007 Capital Improvements Program (CIP)	2017	Planning Board	$0	Drought, Earthquake, Landslide, Extreme Temps, Lightning, Wildfire, Inland Flooding, River Haz, Wind/Tropical, Winter, Public Health, Aging Infrastructure, Utility, Crash, Haz Mat, Cyber
COMPLETED AFTER 2021 PLAN (from CHAPTER 8)						
		See Chapter 8 – Add completed Actions				

Source: Deering Hazard Mitigation Committee

P = *Project Partially Completed – Appears in 2021 Mitigation Action Plan*

The pink highlighted rows indicate the **28** total **Deleted** Actions in Table 44 from previous **Hazard Mitigation Plans** which will not be incorporated into the **2021 Plan** as **Deferred** Actions. Many of the recent Actions were **Deleted** because they were preparedness, response or recovery items and more appropriately belonged in the Town's ***Emergency Operations Plan***.

Table 44

Deleted Mitigation Actions

Priority Score (2015)	Action Number	Action	Deleted Date	Who is Responsible	Approx $ Cost	Why Deleted? The Action…
DELETED FROM 2015 PLAN						
34	#NA	Install Box Culvert on Second NH Turnpike South of Junction with Bennington Depot Road	Nov 2013	Emergency Management Director	$250,000	Was incorporated into another activity (Action)
29	#NA	Identify Shelters in Area Towns	Nov 2013	Emergency Management Director	$0	Was incorporated into another activity (Action)
30	#NA	Increase Wetlands Setback Outside of Deering Lake Watershed	Nov 2013	Highway Department	$500	Duplicates existing efforts
31	#NA	Obtain Encapsulated B- Level Hazardous Materials Suits	Dec 2014	Highway Department	$2,250	Was no longer necessary
DELETED FROM 2021 PLAN						
36	#2-2009	Acquire Fireproof Storage of Town Records	Jan 2021	Board of Selectmen	$4,500	Was no longer necessary
34	#11-2009	Obtain Roadside Chipper Truck for Hanging Branches	Jan 2021	Highway Department	$100,000	Was unrealistic to accomplish
36	#31-2015	Install a Dry Hydrant on Fish and Game Road between Manselville Brook and Holton Crossing	Jan 2021	Fire Department	$5,000	Was unrealistic to accomplish - landownership issues
33	#32-2015	Purchase Panic Buttons that Feed to Video	Jan 2021	Joint Safety Committee	$2,000	Was unrealistic to accomplish - no bandwidth
35	#14-2009	Maintain Public Road Access During Severe Weather	Jan 2021	Highway Department	$4,350	Was a preparedness, response or recovery activity
35	#15-2009	Seek Funding for Explorer Post Program Equipment Purchase	Jan 2021	Police Dept	$4,500	Was a preparedness, response or recovery activity
36	#16-2009	Purchase Digital Programmable Radios for Highway Department	Jan 2021	Emergency Management Director	$12,500	Was a preparedness, response or recovery activity
36	#17-2009	Upgrade Fire Fighting Capabilities to Aircraft	Jan 2021	Fire and Rescue Department	$3,000	Was a preparedness,

Priority Score (2015)	Action Number	Action	Deleted Date	Who is Responsible	Approx $ Cost	Why Deleted? The Action…
		Rescue Fire Fighting (ARFF) for Deering Airport Events				response or recovery activity
36	#35-2015	Explore Capital Area Public Health Network Participation	Jan 2021	Emergency Management Director	$0	Was a preparedness, response or recovery activity
35	#36-2015	Upgrade Three Fire Engine Generators to 8,000Kw	Jan 2021	Fire and Rescue Department	$15,000	Was a preparedness, response or recovery activity
36	#37-2015	Obtain Annual Funding to Continue the School District Resource Officer Position	Jan 2021	Board of Selectmen/ Police Department	$12,000	Was a preparedness, response or recovery activity
35	#38-2015	Purchase 6,500 Kw Generator for Highway Department	Jan 2021	Highway Department	$12,000	Was a preparedness, response or recovery activity
36	#39-2015	Promote Public Education for Radon / Arsenic Testing	Jan 2021	Health Officer	$0	Was unrealistic to accomplish
34	#21-2009	Encourage Fire and Rescue Department Member Certification	Jan 2021	Fire and Rescue Department	$3,000	Was a preparedness, response or recovery activity
36	#22-2009	Retain and Upgrade Hazardous Materials and DCON Training Levels	Jan 2021	Fire and Rescue Department	$6,000 (training) + $3,000 (suits)	Was a preparedness, response or recovery activity
34	#23-2009	Add Personnel for Advanced Life Support Ambulance	Jan 2021	Fire and Rescue Department	$2,000	Was a preparedness, response or recovery activity
36	#24-2009	Recruit Different Levels of Volunteer Medical Personnel	Jan 2021	Fire and Rescue Department	$1,500	Was a preparedness, response or recovery activity
36	#42-2015	Enhance Highway Department Education for Employees	Jan 2021	Highway Department	$0	Was a preparedness, response or recovery activity
36	#44-2015	Provide Additional Time and Funding for Town Officials and Staff Seminar Attendance	Jan 2021	Town Administrator	$1,000	Was a preparedness, response or recovery activity
36	#45-2015	Hold Annual Evacuation Plan Exercise with Hillsborough-Deering Elementary, Middle, and High Schools and the Alternative School	Jan 2021	Emergency Management Director, with School Principals	$0	Was a preparedness, response or recovery activity
36	#46-2015	Attend Conflict Management Training	Jan 2021	Town Administrator	$0	Was a preparedness, response or recovery activity

Priority Score (2015)	Action Number	Action	Deleted Date	Who is Responsible	Approx $ Cost	Why Deleted? The Action…
33	#13-2009	Develop Residential Sprinkler Ordinances	Jan 2021	Planning Board	$1,000	Was unrealistic to accomplish
35	#25-2009	Improve Road Maintenance Program	Jan 2021	Highway Department	$500,000+ annually	Was incorporated into another activity
34	#43-2015	Evaluate 100-Year Flood Design Scenarios for Infrastructure Capacity (FGA)	Jan 2021	Emergency Management Director	$0	Was a Was unrealistic to accomplish
DELETED AFTER 2021 PLAN (from CHAPTER 8)						
		See Chapter 8 – Add deleted Actions				

Source: Deering Hazard Mitigation Committee

The tan highlighted rows in Table 45 indicate the 11 **Deferred** mitigation Actions from the **2015 Plan** which also appear in the forthcoming **2021 Plan**'s **Mitigation Action Plan**. Many ***Action*** titles were revised to update the Action and to reflect the new focus on mitigation although the principle for each remains the same. The ***Approximate Cost*** may rise. They will all be reevaluated to accommodate **2021** standards in later sections.

Table 45

Deferred Mitigation Actions

Priority Score (2015)	Action Number	Action	Deferred Date	Who is Responsible	Approx $ Cost	Why Deferred? Because…	Hazards Addressed
34	#1-2009	**Update the Zoning Ordinance to Comply with NFIP Requirements**	Jan 2021	Planning Board	$0	Action needs to be repeated regularly	Flood, Scouring & Erosion, Wind/Tropical, Winter, River Ice Jam
34	#4 - 2009	**Install Dry Hydrant off of Farrell Hill Road on Map 235, Lot 2**	Jan 2021	Fire Department	$5,000	Neither staff nor volunteers were available for the task	Lightning, Wildfire, Drought, Hazardous Materials, Fire
35	#5-2009	**Install Dry Hydrant at Johnson Pond off of Clement Hill Road on Map 215, Lot 4 and Map 216, Lot 5**	Jan 2021	Fire Department	$5,000	Neither staff nor volunteers were available for the task	Lightning, Wildfire, Drought, Hazardous Materials, Fire
35	#6-2009	**Install Dry Hydrant off of Second NH Turnpike on Map 220, Lot 27**	Jan 2021	Fire Department	$5,000	Neither staff nor volunteers were available for the task	Lightning, Wildfire, Drought, Hazardous Materials, Fire
35	#7-2009	**Install Dry Hydrant at Fulton Pond off of Reservoir Hill Road on Map 240, Lot 23**	Jan 2021	Fire Department	$5,000	Neither staff nor volunteers were available for the task	Lightning, Wildfire, Drought, Hazardous Materials, Fire
34	#8-2009	**Install Dry Hydrant at Clifton Camp Pond off of Second NH Turnpike on Map 242, Lot 21**	Jan 2021	Fire Department	$5,000	Neither staff nor volunteers were available for the task	Lightning, Wildfire, Drought, Hazardous Materials, Fire
31	#9-2009	**Install Dry Hydrant at Piscataquog Tributary on Map 227, Lot 36**	Jan 2021	Fire Department	$5,000	Neither staff nor volunteers were available for the task	Lightning, Wildfire, Drought, Hazardous Materials, Fire
35	#10-2009	**Install Dry Hydrant on Longwoods Road at the Manselville Brook/ Contoocook River**	Jan 2021	Fire Department	$5,000	Neither staff nor volunteers were available for the task	Lightning, Wildfire, Drought, Hazardous Materials, Fire

Priority Score (2015)	Action Number	Action	Deferred Date	Who is Responsible	Approx $ Cost	Why Deferred? Because…	Hazards Addressed
34	#19-2009	**Investigate Starting a Citizens Response Team (CERT)**	Jan 2021	Emergency Management Director	$5,000	Neither staff nor volunteers were available for the task	Human, Health, Mass Casualty, Utility, Extreme Temps, Secondary to Natural Haz Events
36	#20-2009	**Participate in National Flood Insurance (NFIP) Training**	Jan 2021	Planning Board	$0	Action needs to be repeated regularly	Flood, Scouring & Erosion, Wind/Tropical, Winter, River, Ice Jam
34	#51-2015	**Develop Town Roads and Drainage Improvement Plan (FGA)**	Jan 2021	Highway Department	$500	More time is necessary to work on the action.	Flood, Erosion, Wind/Tropical, Winter, River Ice Jam

Source: Deering Hazard Mitigation Committee

P = *Project Partially Completed – Appears in **2021 Mitigation Action Plan***

8 MITIGATION ACTION PLAN

The Chapter provides a summary discussion of the Actions the community can consider completing to help mitigate the effects of hazard events.

The **Mitigation Action Plan** is the culmination of the work of the previous Assessments, inventories, and evaluations from the previous Chapters. Actions to help Deering mitigate the damages caused by disasters have been developed and prioritized by Hazard Mitigation Committee consensus in consideration of both existing and new development.

SOURCES OF ACTIONS

After determining the status of the existing Actions, **New** Actions can be determined. **New** Actions were evaluated by Hazard Mitigation Committee the using the **Problem Statements** determined during discussion of critical facility and community facility sites' potential vulnerability to hazards in the **Critical Facility and Community Vulnerability Assessment**. Many of these problems were further evaluated and developed into **New** mitigation Actions.

The **Capability Assessment** yielded a wealth of information from the ***Future Improvements*** of the plans, programs, ordinances, policies, agreements, technical skills, financial resources, and other resources the Town Departments, School District, and Stakeholders had available. These activities are important to the community. They assist Departments with the procedures, training, regional coordination, mutual aid, planning and purchases needed to perform their duties effectively. These activities in turn increase the capability for mitigating hazard events. For the **2021 Plan**, most of the **Capability Assessment's *Future Improvements*** activities were not utilized as Actions since they are more appropriate for the Town's ***Emergency Operations Plan*** recommendations.

Other community ideas were introduced to or by the Hazard Mitigation Committee as a result of Department, Board, Commission or Town discussions. Where appropriate, supported activities were introduced as New mitigation Actions.

Mitigation Actions developed emphasize both new and existing buildings and infrastructure to better protect populations of Deering.

Several uncompleted **Deferred** (2015) Deering mitigation Actions have been carried forward into the **2021 Plan** with the updates to the evaluation, cost, prioritization, etc.

ACTION MATRIX

A listing of **11 Deferred** mitigation Actions from **2015** and **22 New** mitigation Actions from **2021** important to the Town of Deering was developed for evaluation. Each Action identifies at least one ***Hazard Mitigated*** which correlates to **3 GOALS AND OBJECTIVES**, describing how it can mitigate these identified natural hazard objectives. A short ***Description and Evaluation*** is provided and the ***Affected Location*** is listed to ensure easier understanding and reassessment of the Actions in the future during implementation.

The Actions are numbered for easier tracking over the years with this practice beginning in this **2021 Plan**. The **2021** Actions begin where the prior Actions left off, **#52- 2021** through **#73- 2021**. Over time, the Actions can be tracked to see which have been **Deferred** and to organize the **Completed** or **Deleted** Actions. For those with funding needs, the ability to reference an Action within the Capital Improvements Program or in a Warrant Article can alleviate confusion and further support the mitigation Actions.

Each Action is sorted into one of these four mitigation Action categories, although it might identify with several:

Local Planning and Regulation
Structure and Infrastructure Projects
Natural Systems Protection
Education and Awareness

Within the **Mitigation Action Plan**, the **Deferred 2015** Actions and the **New 2021** Actions are evaluated by the relative ease of completion using a numeric ***Ranking Score*** generated by the enhanced STAPLEE prioritization, by the ***Action Timeframe*** by which the Hazard Mitigation Committee would like to see the Action implemented, and by a basic **Cost to Benefit Analysis** as contained within the STAPLEE.

The ***Responsible Department*** is indicated for each Action as the party who will ensure the Action gets completed. An ***Approximate Cost*** is provided, although no definitive cost estimates or quotes have been obtained now. Ways the Action can be ***Funded*** is identified and offered as an avenue to explore during implementation. The purpose is to offer an idea of how much funding is provided for each Action and how it may be paid for.

Deering's Mitigation Action Plan 2021

At the meetings, the Hazard Mitigation Committee identified by consensus these mitigation Actions from the various **Assessments** and evaluations conducted. The process for Action development has been described in previous Chapters and sections. Combined with the visual ***Maps 1-4*** of the **Hazard Mitigation Plan 2021**, the **Mitigation Action Plan** shown in **Table 46** ***Planning and Regulatory***; **Table 47** ***Structure and Infrastructure***; **Table 48** ***Natural Systems Protection;*** and **Table 49** ***Education and Outreach*** should be able to guide future hazard mitigation efforts in the Town through an annual implementation process.

Eleven (**11**) **Deferred** Actions from **2015** and **22** **New** Actions from **2021** combine to develop the **33** Actions of the **2021** **Mitigation Action Plan**. The **Deferred** Actions' cells are highlighted in tan.

Table 46

Local Planning and Regulation Actions

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
#1-2009	**Update the Zoning Ordinance to Comply with NFIP Requirements to Reduce the Impact of Flood & River Hazards**	Short Term 1-2 Years then Ongoing	62	Planning Board	$1,500	The Zoning Ordinance needs to be updated as new requirements to the National Flood Insurance Program are necessary for retention of NFIP participation. The Floodplain Ordinance protects life and property by regulating distance of structures to flood hazard areas, regulating elevation, clarifying definitions, regulating new structures and encroachments, stating duties of the Code Enforcement Officer, etc. The new September 25, 2009 DFIRM maps were adopted by the Board of Selectmen on August 19, 2009.	Flood, Scouring & Erosion, Wind/Tropical, Winter, River Ice Jam	Floodplains	Cost is for 2 hours of legal review, GIS mapping & website incorporation, and public noticing.	Legal Budget, Technology Budget
#20-2009	**Participate in National Flood Insurance (NFIP) Training to Increase the Understanding and Application of Floodplain Regulations**	Long Term 4-5 Years	71	Planning Board	$300	In order for Planning Board members and the Building Inspector to remain current with NFIP procedures and policies, regular training must be taken. Workshops are offered the State and/or FEMA (or in other training) and addresses flood hazard planning and management. Consider NHOSI annual conference in May, or online free FEMA or NHOSI webinars.	Flood, Scouring & Erosion, Wind/Tropical, Winter, River, Ice Jam	Floodplains	Cost is for 3 people to attend one $100 workshop.	Planning Board Budget
#51-2015	**Develop a Town Roads and Drainage Improvement Plan (Fluvial Geomorphic**	Long Term 4-5 Years	69	Highway Department	$3,500	Develop a Roads and Drainage Improvement Plan to minimize and mitigate the road washouts experienced. Drainage structures	Flood, Erosion, Wind/Tropical	Town Roadways	Cost is for $500 GPS unit and $2,000 of special staff	Highway Dept Budget,

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
	Assessment of Piscataquog) to Reduce the Impact of Floods and Erosion					will be located via global positioning system (GPS) and placed into the AxisGIS database by Cartographic Associates. Emergency responders, all Departments, and the Highway Department will have the same knowledge about where vulnerabilities are located.	, Winter, River Ice Jam		time or consult time, and $1,000 to install into AxisGIS.	Technology Budget
#52-2021	**Update the Subdivision Regulations for Phasing of Major Developments to Reduce the Long-Term Impact of Stormwater, Flood, Wildfire, Treefall, and Service Overload**	Long Term 4-5 Years	70	Planning Board	$2,000	Available capacity is the problem. The Town would not have the available Highway and Fire Department services in the event of several major subdivisions without the use of phasing to acquire additional personnel, equipment, and materials to properly maintain roads.	Lightning, Wildfire, Inland Flooding, Wind/Tropical, Winter, Aging Infrastructure, Utility, Crash, Haz Mat	New Developments	Cost is to hire a consultant to write the regulation.	Advertising and Regional Associations Budget
#53-2021	**Update the Subdivision Regulations and Site Plan Review Regulations to Add Requirements for Secondary Egress to Certain High Density Neighborhoods to Minimize the Impact of Flood, Severe Wind, Winter, Debrs, and Wildfire Events**	Long Term 4-5 Years	61	Planning Board	$2,000	Serving as an example, the Hedgehog Cooperative Community property floods, but to date the 18 elevated homes have not flooded. The park is situated on the Contoocook River and has one egress. In the 2000s, Longwoods Road (now elevated) flooded and residents were stranded.	Lightning, Wildfire, Inland Flooding, Wind/Tropical, Winter, Aging Infrastructure, Utility, Crash, Haz Mat	New Developments	Cost is to hire a consultant to write the regulation.	Advertising and Regional Associations Budget
#54-2021	**Obtain the Dam Emergency Action Plans from NH DES for Emergency Management to**	Short Term 1-2 Years	71	Emergency Management Director	$0	The Low Hazard privately owned Dudley Brook and Gerini Brook dams are constructed of permanent stone/ rock embankments. Neither low	Flood, Scouring & Erosion, Debris, Tropical,	Low Hazard Dams	Cost is $0 for in-kind staff and/or volunteer labor conducted	N/A

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
	Minimize the Impact of Flooding Events in Low-Lying Areas					water levels which naturally fluctuate based on rain and snow melt. Neither dam requires maintenance.	River, Ice Jam, Aging Infrastructure		during normal duties to fulfill this Action.	
#55-2021	**Obtain the Robin Hill Farm Evacuation Plan to Reduce the Risk of Isolation During Severe Weather Events**	Short Term 1-2 Years	69	Emergency Management Director	$0	Evacuating Robin Hill Farm residents would be difficult because there is only one Town ambulance and the facility is located on a remote campus on top of a hill. The facility has two handicap-ramp entrance special needs vans, four regular, non-accessible minivans to transport people, two SUVs and two work trucks. Some residents are non-ambulatory and need basic assistance for mobility. Hazards to the facility include fire, wind, tropical, violence/human hazards, winter storms (on a hill), trees down on wires, but they have generators. Good example of public private partnerships.	Lightning, Wildfire, Inland Flooding, Wind/Tropical, Winter, Health, Aging Infrastructure, Utility, Crash, Haz Mat, Debris, Solar	Robin Hill Farm	Cost is $0 for in-kind staff and/or volunteer labor conducted during normal duties to fulfill this Action.	N/A
#56-2021	**Incorporate the Deering Lake Emergency Response Plan into the Fire Department SOGs to Reduce the Impact of Wildfire and Flood**	Short Term 1-2 Years	70	Fire Department	$0	Deering Lake is densely populated on a seasonal basis with some people living in the vicinity year-round. Thirteen seasonal island residences populate the Driftwood Isle, which recently experienced a fire at one of its homes. The current response plan is a verbal agreement between Deering Lake Association and the FIre Dept. The Island currently has some fire equipment on site under an existing MOU.	Lightning, Wildfire, Flood, Wind/Tropical, Winter, Utility, Haz Mat, Fire, Water Rescue	Deering Lake area	Cost is $0 for in-kind staff and/or volunteer labor conducted during normal duties to fulfill this Action.	N/A

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
#57-2021	**Establish a Policy for Town Response to Aquatic Invasive Species to Improve Water Quality and Public Health**	Long Term 4-5 Years	73	Conservation Commission	$2,500	Invasive aquatic species in Deering Lake need to be regularly monitored. Boats are inspected by the volunteer NH Lake Hosts (NH Lakes Association), Lake has an active NHDES Water testing program, water monitoring program. but currently there are no active programs in place to inspect for milfoil and other aquatic invasives. Water quality and related public health is good at Deering Lake, no cyanobacterial blooms have been reported. As a safeguard, Town has an exotic weed control EFT in which funds are allocated annually in the event of an invasive problem. Currently a Lake Host and water sampling handled by Conservation Commission.	Health (Water Quality)	Deering Lake area	Cost is $2.500 for a consultant to help the Cons Comm write the policy.	NH Lakes Association and NHDES, Town Expendable Trust Fund

Source: Deering Hazard Mitigation Committee

Table 47

Structure and Infrastructure Projects

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
#4-2009	**Install Dry Hydrant off of Farrell Hill Road on Map 235, Lot 2 to Provide Water Supply for Rural Fire Suppression**	Medium Term 3-4 Years	71	Fire Department	$10,000	This existing unnamed pond requires a dry hydrant next to it. There is no other water source close by. Up to thirty homes are on this road and the adjacent Reservoir Road. The dry hydrant would be installed in the Town right-of-way. The Highway Department might be able to help the Fire Department install the dry hydrants.	Lightning, Wildfire, Drought, Hazardous Materials, Fire	Farrell Hill Road	Cost is for materials, connections, strainers, labor for the contractor, and NHDES permitting installation of the dry hydrants. Cost has increased in the last few years.	USDA Fire Grant, Town Dry Hydrant Expendable Trust Fund
#5-2009	**Install Dry Hydrant at Johnson Pond off of Clement Hill Road on Map 215, Lot 4 and Map 216, Lot 5 to Provide Water Supply for Rural Fire Suppression**	Short Term 1-2 Years	72	Fire Department	$10,000	There is no other water source in the area. This dry hydrant would serve about two dozen homes and would be installed in the Town right-of-way. The Highway Department could help the Fire Department install the dry hydrants.	Lightning, Wildfire, Drought, Hazardous Materials, Fire	Johnson Pond / Clement Hill Rd	Cost is for materials, connections, strainers, labor for the contractor, and NHDES permitting installation of the dry hydrants.	USDA Fire Grant, Town Dry Hydrant Expendable Trust Fund
#6-2009	**Install Dry Hydrant off of Second NH Turnpike on Map 220, Lot 27 to Provide Water Supply for Rural Fire Suppression**	Long Term 4-5 Years	67	Fire Department	$10,000	High value areas without water suppression. There is no other water source in the area except for this unnamed deep ponded area. This dry hydrant would serve about two dozen homes and would be installed in the Town right-of-way. The location would be close to one of the	Lightning, Wildfire, Drought, Hazardous Materials, Fire	Second NH Turnpike	Cost is for materials, connections, strainers, labor for the contractor, and NHDES permitting installation of	USDA Fire Grant, Town Dry Hydrant Expendable Trust Fund

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
						smaller mobile home parks on Second NH Turnpike. The Highway Department could help the Fire Department install the dry hydrants.			the dry hydrants.	
#7-2009	**Install Dry Hydrant at Fulton Pond off of Reservoir Hill Road on Map 240, Lot 23 to Provide Water Supply for Rural Fire Suppression**	Medium Term 3-4 Years	68	Fire Department	$10,000	This existing pond requires a dry hydrant next to it. There is no other dry hydrant in this proximity. Up to fifty homes are on this road. The dry hydrant would be installed in the Town right-of-way. The Highway Department could help the Fire Department install the dry hydrants.	Lightning, Wildfire, Drought, Hazardous Materials, Fire	Fulton Pond/ Reservoir Hill Rd	Cost is for materials, connections, strainers, labor for the contractor, and NHDES permitting installation of the dry hydrants.	USDA Fire Grant, Town Dry Hydrant Expendable Trust Fund
#8-2009	**Install Dry Hydrant at Clifton Camp Pond off of Second NH Turnpike on Map 242, Lot 21 to Provide Water Supply for Rural Fire Suppression**	Medium Term 3-4 Years	67	Fire Department	$10,000	This existing seasonal pond requires a dry hydrant next to it. There is no other dry hydrant in this proximity. This dry hydrant would serve about thirty homes. The placement would require an easement from the property owner. Getting to the water is difficult. The Highway Department could help the Fire Department install the dry hydrants.	Lightning, Wildfire, Drought, Hazardous Materials, Fire	Clifton Camp Pond	Cost is for materials, connections, strainers, labor for the contractor, and NHDES permitting installation of the dry hydrants.	USDA Fire Grant, Town Dry Hydrant Expendable Trust Fund
#9-2009	**Install Dry Hydrant at Piscataquog Tributary on Deering Center Road on Map 227, Lot 36 to Provide Water Supply for Rural Fire Suppression**	Short Term 1-2 Years	68	Fire Department	$10,000	There is no other dry hydrant in this proximity near The Wilds. This dry hydrant would serve about two dozen homes and would be installed in the Town right-of-way. The Highway Department could help the Fire Department install the dry hydrants.	Lightning, Wildfire, Drought, Hazardous Materials, Fire	Piscataquog Tributary on Deering Center Road	Cost is for materials, connections, strainers, labor for the contractor, and NHDES permitting installation of	USDA Fire Grant, Town Dry Hydrant Expendable Trust Fund

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
									the dry hydrants.	
#10-2009	**Install Dry Hydrant on Longwoods Road at the Manselville Brook/ Contoocook River to Provide Water Supply for Rural Fire Suppression**	**Medium Term 3-4 Years**	**66**	Fire Department	$10,000	There is no other dry hydrant in this proximity. It would be placed at a far bend in the River (long length and ice problems). This dry hydrant would serve over 120 homes and would be installed in the Town right-of-way. The location would be close to the largest mobile home park in Deering. The Highway Department could help the Fire Department install the dry hydrants. Cost is for the materials and labor for the installation of the dry hydrant.	Lightning, Wildfire, Drought, Hazardous Materials, Fire	Longwoods Road	Cost is for materials, connections, strainers, labor for the contractor, and NHDES permitting installation of the dry hydrants.	USDA Fire Grant, Town Dry Hydrant Expendable Trust Fund
#58-2021	**Evaluate and Install Lightning Rods and Grounding Systems at the Town Hall and Highway Department to Reduce the Impact of Lightning Strike and Minimize the Risk of Fire and Operations Disruption**	**Short Term 1-2 Years**	**73**	Board of Selectmen	$8,000	The Town Hall contains some ground equipment, but it may not be connected. Lighting could strike at the Highway Dept and Town Hall, two high nearby buildings covered with solar array equipment. Neither locations have lighting rods and are potential lightning targets.	Lightning, Fire, Communications, Utility, Solar	Town Hall, Highway Department	Cost is for lightning rods, electrical surge panels, grounding wire, installation, etc for 2 buildings @ $4,000 each.	Buildings and Maintenance Expendable Trust Fund
#59-2021	**Develop a Licensing and Permitting Policy for Underground Utilities to Minimize Risk of Electrical Shock and**	**Medium Term 3-4 Years**	**71**	Board of Selectmen	$3,500	Buried, abandoned telephone lines, now owned by TDS, have no permits and license to operate. These illegal underground lines are found under short sections of Class V town roads: Clement Hill Road,	Lighting, Flood, Communications, Utility	Class V town roads: Clement Hill Road, Longwoods Road,	Cost is for legal review and drafting of policy document.	Legal Budget

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
	Communications Disruption					Longwoods Road, Holton Crossing Road, Quaker Street, Second NH Turnpike, Fisher Road, Wolf Hill Road. They are often encountered by Highway Dept personnel during roadwork. Include new forms, consult with Town Counsel to ensure compliance with existing state law. Policy will include an enforcement mechanism.		Holton Crossing Road, Quaker Street, Second NH Turnpike, Fisher Road, Wolf Hill Road and others		
#60-2021	**Upgrade the Longwoods Road Culverts to Holton Crossing to Reduce the Impact of Flood Conditions**	Short Term 1-2 Years	75	Highway Department	$5,000	1.5 miles, five culverts replaced with two remaining. Plastic ribbed, 36". Will replace rusted, collapsed corrugated 28" steel.	Flood, Scouring & Erosion, Wind/Tropical, Winter, Debris, River Ice Jam, Aging Infrastructure	Longwoods Road to Holton Crossing	Cost is for 2 plastic ribbed culverts, 36".	Highway Dept Budget, Road Reconstruction Expendable Trust Fund
#61-2021	**Upgrade the Second NH Turnpike Culverts (4) from Holton Crossing to Bennington Depot Road to Reduce the Impact of Flood Conditions**	Short Term 1-2 Years	71	Highway Department	$20,000	Culverts are old, road has subsided. Asphalt needs to be ground and more stone added to raise the road a bit and replace the culverts.	Flood, Scouring & Erosion, Wind/Tropical, Winter, Debris, River Ice Jam, Aging Infrastructure		Cost is for pipes and for hiring of installation of culverts.	Highway Dept Budget, Road Reconstruction Expendable Trust Fund
#62-2021	**Raise the Road Profile of Bennington Depot Road and Upgrade the Culvert to Reduce the Impact of Flood Conditions and Erosion**	Long Term 4-5 Years	68	Highway Department	$25,000	Raise in several locations where the low areas appear, 3,500 feet long. Water accumulates and drains in to the road causing m7uddy, icy conditions for travelers and requires additional road maintenance.	Flood, Scouring & Erosion, Wind/Tropical, Winter, Debris, River Ice Jam, Aging Infrastructure		Cost is for materials, gravel, culvert pipes and for hiring of contracted labor.	Highway Dept Budget, Road Reconstruction Expendab

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
										le Trust Fund
#63-2021	**Upgrade the Culvert on Second NH Turnpike Beyond the Bennington Depot Road to Reduce the Impact of Flood Conditions and Erosion**	Short Term 1-2 Years	72	Highway Department	$5,000	Culvert is old aluminum, improperly installed. Water pools on the side of the road and erodes the road, washing out the gravel. 36", replace with 36" black corrugated culvert.	Flood, Scouring & Erosion, Wind/Tropical, Winter, Debris, River Ice Jam, Aging Infrastructure		Cost is for pipes and for hiring of installation of culverts.	Highway Dept Budget, Road Reconstruction Expendable Trust Fund

Source: Deering Hazard Mitigation Committee

Table 48

Natural Systems Protection Actions

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
#64-2021	**Establish a Memorandum of Understanding with Hawthorne-Feather Airpark for Staging Community Response to Flooding, Wildfire and Other Disasters**	Medium Term 3-4 Years	74	Fire Department	$0	The Hawthorne-Feather Airpark could become a landing zone to facilitate triage and evacuate for mass casualty for the community. The facility could be used to stage response for large wildfires. The hangar could be used to serve meals and serve as a warming shelter. The Airpark could serve as a launch site drones to monitor civil disobedience or wildfire and preposition fire apparatus at the Airpark prior to the flooding event.	Drought, Earthquake, Temperature, Wind/Tropical, Flood, Landslide, Lightning, Health, River, Winter, Solar, Wildfire, Haz Mat, Utility, Cyber, Human, Mass Casualty, Crash, Evacuation	Hawthorne-Feather Airpark area, Floodplains	Cost is $0 for in-kind staff and/or volunteer labor conducted during normal duties to fulfill this Action.	N/A
#65-2021	**Upgrade Town Hall and Highway Department Solar Array to Support Solar Batteries which Reduces the Risk of Essential Facilities Disruption During Severe Wind or Winter Events or Utility Failure**	Long Term 4-5 Years	70	Board of Selectmen	$20,000	During winter storms or severe rain/windstorms, adding solar battery storage to the existing panel array would enable stable electrical supply to the Town Hall and Highway Department operations when power is down.	Wind/Tropical, Winter, Solar, Utility	Town Hall and Highway Department	Cost is for wiring, installation, panel for power transfer, and battery panels for Town Hall and Highway Dept.	Solar Energy Expendable Trust Fund
#66-2021	**Encourage Longwoods Manufactured Home Park Homeowners and Renters to Form a Cooperative and Upgrade the Private Roads and Facilities**	Long Term 4-5 Years	52	Board of Selectmen with Emergency Management Director, Fire Department	$0	Manufactured housing parks are vulnerable from high wind events, tree fall, floods, and winter weather. Longwoods Manufactured Housing Park may experience further lowland flooding and inundation; it resides along the Contoocook	Flood, Erosion, Wind/Tropical, Winter, River Ice Jam, Wildfire, Lightning,	Longwoods MHP	Cost is $0 for in-kind staff and/or volunteer labor conducted during normal duties to fulfill this Action.	N/A

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
	to Reduce the Risk of Injury from Flood, Fire, Lightning, and River Hazards					River and experienced severe flooding in the 2000s. The park has one egress for 92 housing units, but has one unofficial unmaintained egress which leads to the private Fish and Game facility. Most of the manufactured homes are old and not updated to comply with current building and life safety codes, but these older homes are grandfathered from requirements. Homes that are replaced must meet the new codes. Many people in the older homes are elderly and cannot afford updates. Upgrades will ensure better roadways, infrastructure, emergency access and egress, and will ensure homes are better able to meet fire codes. Ownership turnover may be necessary before action could be completed.	Earthquake, Evacuation			
#67-2021	**Ensure the Town is Informed about the Water Release Schedules between the Hillsborough and Bennington High Hazard Dams on the Contoocook River to Minimize Lowland Flooding in Deering**	Short Term 1-2 Years	71	Board of Selectmen	$0	The Airpark in the 100-year floodplain experienced inundation flooding during the severe flooding in the 2000s. It is situated between two High Hazard low-lying dams (Jackman Dam and the Dam in Bennington) that release water during snow melt and heavy rain events.	Flood, Erosion, Drought, Wind/Tropical, Winter, River Ice Jam, Earthquake	Longwoods Road and Second NH Turnpike areas	Cost is $0 for in-kind staff and/or volunteer labor conducted during normal duties to fulfill this Action.	N/A
#68-2021	**Ensure Absorbents Material is Available Onsite at the Airpark**	Short Term 1-2 Years	71	Fire Department	$0	No employees work at the Airpark, so Fire Department responds to crashes or fires only	Crash, Haz Mat, Health (Water	Hawthorne-Feather Airpark	Cost is $0 for in-kind staff and/or	N/A

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
	to Reduce the Risk of Fire and Groundwater Contamination During Crashes					when a rural bystander, nearby resident or pilot calls the FD. FD has specialized equipment on trucks to respond to events. However, the FD requires absorbents material (Speedy Dry, pellets) for dry decontamination on hand at the Hawthorne Feather Airpark in case of plane crash. The Fire Department should work with the owner of the facility to ensure materials are onsite in accordance with FAA requirements.	Quality), Fire, Wildfire, Solar		volunteer labor conducted during normal duties to fulfill this Action.	
#69-2021	**Inspect the Cemeteries for Rotting or Overhanging Trees to Identify for a Hazardous Tree Cutting Program to Reduce the Risk of Damage During Wind/Tropical or Winter Events**	**Short Term 1-2 Years**	**75**	Cemetery Trustees	$0	Trees can fall down onto gravestones and break them during severe ice storms, or wind events and rainstorms. The oldest stones are from the Revolutionary War. Those stones set near the edge of the tree line are particularly vulnerable. Tree trimming could be done along the edges of the cemeteries to reduce the number of downed limbs and broken stones.	Wind/Tropical, Winter	Town Cemeteries	Cost is in-kind with annual inspections and maintenance included with cemetery upkeep.	Cemetery Maintenance Expendable Trust Fund
#64-2021	**Establish a Memorandum of Understanding with Hawthorne-Feather Airpark for Staging Community Response to Flooding, Wildfire and Other Disasters**	**Medium Term 3-4 Years**	**74**	Fire Department	$0	The Hawthorne-Feather Airpark could become a landing zone to facilitate triage and evacuate for mass casualty for the community. The facility could be used to stage response for large wildfires. The hangar could be used to serve meals and serve as a warming shelter. The Airpark could serve as a launch site drones to monitor civil	Drought, Earthquake, Temperature, Wind/Tropical, Flood, Landslide, Lightning, Health, River, Winter, Solar, Wildfire, Haz Mat, Utility,	Hawthorne-Feather Airpark area, Floodplains	Cost is $0 for in-kind staff and/or volunteer labor conducted during normal duties to fulfill this Action.	N/A

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
						disobedience or wildfire and preposition fire apparatus at the Airpark prior to the flooding event.	Cyber, Human, Mass Casualty, Crash, Evacuation			

Source: Deering Hazard Mitigation Committee

Table 49

Education and Awareness Actions

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
#19-2009	**Investigate Joining the Regional Citizens Emergency Response Team (CERT) with the Assistance of the CAPHN to Improve Community Outreach and Participation and Increase Public Safety from Hazard Events**	Long Term 4-5 Years	69	Emergency Management Director	$0	Utilization of civilian volunteers in an emergency can be extremely beneficial especially if they are trained and organized properly. Significant training is necessary for the citizens who join. Future costs are to be identified for equipment to be provided to CERT members, office supplies, and training. A Regional CERT is supported by and recommended by the Capital Area Public Health Network and can be supported by the local American Red Cross.	Human, Health, Mass Casualty, Utility, Extreme Temps, Secondary to Natural Haz Events	Entire Town, Regional	Cost is $0 for in-kind staff and/or volunteer labor conducted during normal duties to fulfill this Action.	N/A
#70-2021	**Develop a Public Education Program about the Operating Hours and Rules of the Temporary Warming and Cooling Shelter at Town Hall Auditorium to Improve Public Safety from Wind, Winter, Flood, Tropical and Other Hazard Events**	Medium Term 3-4 Years	75	Emergency Management Director	$500	Although the Town Hall auditorium can be set up as a temporary warming or cooling shelter for residents, the public is unaware of this function or when it is available. The Deering Town Hall has an (1,500 gallon LPG underground tank) backup generator when electricity fails.	Temperature, Wind/Tropical, Flood, Landslide, Lightning, Health, River, Winter, Solar, Wildfire	Town Hall	Cost is for in-kind staff and volunteer labor for newspaper advertising, website, CodeRed and for writing up the rules.	Town Budget - Advertising and Public Notice
#71-2021	**Work with Oxbow Campground to Identify Potential Life Safety Improvements during Wind, Winter, Fire, and Flood Events**	Long Term 4-5 Years	68	Building Inspector, with Emergency Management Director	$0	Oxbow Campground has one egress to serve the 115 seasonal camp sites. Severe wind events, tropical storms, heavy rains could create tree debris or cause unanchored objects (tanks, awnings, tents) to fly, becoming	Flood, Wind/Tropical, Storms, Debris, Lightning, Human, Utility, Evacuation	Oxbow Campground	Cost is $0 for in-kind staff and/or volunteer labor conducted during normal duties to fulfill this Action.	N/A

Action Number	Action	Action Timeframe	Ranking Score	Who is Responsible	Approx Cost to Town	Description and Evaluation of Action	Hazards Mitigated?	Affected Location in Town	What Cost Will Pay For	How Funded
						a potential injury to other campers.				
#72-2021	**Encourage the Owners of Conservation Lands to Install Trail Kiosks at Trailheads with Maps and Information on Prevention of and What to Do During Natural Disasters**	**Long Term 4-5 Years**	**59**	Conservation Commission	$0	Nearly 1/3 of the land area in Deering is under permanent conservation, much of which is publicly accessible. Evacuation of conservation land trails would be difficult if wildfire, lightning strike, heavy wind, or earthquake occurs, although the telecommunications situation is very good in Deering. Most publicly visited lands could include High Five (360 degree view), Hedgehog Mountain Trail, Clark's Summit, all of which have trailheads. Audubon and SPNHF are the primary owners and easement holders.	Earthquake, Temperature, Wind/Tropical, Flood, Landslide, Lightning, Health, River, Winter, Wildfire	Remote Conservation Lands	Cost is $0 for in-kind staff and/or volunteer labor conducted during normal duties to fulfill this Action.	N/A
#73-2021	**Offer Educational Opportunities During Open House and Community Events that Promote Fire Prevention and Life Safety to Reduce the Risk of Fire and Wildfire**	**Short Term 1-2 Years then Ongoing**	**75**	Fire Department	$300	The Fire Dept will continue its ongoing program to provide fire prevention education. The Town must pay for the outreach and educational materials, but some Smokey Bear materials are free.	Lightning, Wildfire, Drought, Hazardous Materials, Fire	Entire Town	Cost is for paper materials, is $0 for in-kind staff and/or volunteer labor conducted during normal duties to fulfill this Action..	Fire Prevention Line Item, or Grant

Source: Deering Hazard Mitigation Committee

Great Projects… And the Realities of Project Implementation in New Hampshire

These important but costly and/or time-consuming mitigation projects identified in the **Mitigation Action Plan** represent the best case scenarios (or to some, "wish-list" items) for completion. There are many barriers to successful implementation of any project which is outside the typical duties of a Town staff member or volunteer. The annual struggle to obtain municipal funding at Town Meetings and the uncertainty of political & local support needed for hazard mitigation projects, the limited staff time available to administer and complete the projects, and dwindling volunteer support to help locate grants and work on the Action Plan items all reduce the Town's ability to complete successful hazard mitigation projects within the Plan's **5**-year lifespan. Town staff and volunteers are usually required to be reactive to their numerous daily duties or annual processes and have little availability to be proactive. This is especially true for the Central NH region's smaller communities that rely on voter support for staff hiring and/or hazard mitigation project budget funding, which is **19** out of **20** municipalities (excludes the City of Concord).

Therefore, mitigation and other projects are generally completed on an "as-needed basis" or on an "as-available basis" despite the different ways of evaluation and prioritization shown within the **Hazard Mitigation Plan 2021**. Small New Hampshire communities do the best they can with the resources available to them to make ends meet, particularly in times of economic duress or hardship and our State's aging population. Town Meeting voters decide whether to approve new zoning ordinances which can help mitigate hazards, vote to approve Department Budgets which usually are sustainable and do not allow enough flexibility to plan ahead, and vote to approve Warrant Articles for a hazard mitigation project. Town volunteers are relied upon to do much of the hazard mitigation work as Town staff are already engaged in real-time, constant public engagement issues and have little additional time available for planning. Few younger people are stepping up to the plate of community volunteering when our existing volunteers are retiring. Indeed, many staff or volunteers have dual or triple roles in the community to fill vacancies, such as a Town Administrator serving as Health Officer and Human Services Officer and a volunteer Fire Chief serving as volunteer Emergency Management Director. Town staff try to accomplish their priority hazard mitigation projects in between their normal duties, but the reactive nature of New Hampshire municipal operations does not provide the necessary support unless there is an urgent need.

Our State's communities, including Deering, are used to "toughing it out" and will try to accomplish all they can with the time, funding, and resources available to them. However, many of these **2021** Actions may end up **Deferred** to **2026** simply because of the unique nature of our independent State and community cultures.

Action Evaluation and Prioritization Methods

A variety of methods were utilized to evaluate and prioritize the Actions. These methods include the enhanced STAPLEE (Social Technical Administrative Political Legal Environmental and Economics) criteria, designating the Action to be completed within a certain timeframe, and completing a basic **Cost to Benefits Analysis**, a later section. These prioritization methods are meant to enable the community to better identify which Actions are more important and are more feasible than others.

ENHANCED STAPLEE METHOD

An enhanced provided a better methodology for prioritization the Actions against one another. The Hazard Mitigation Committee ranked each of the mitigation Actions derived from the evaluation process. The total ***Ranking Score*** serves as a guide to the **relative** ease of Action completion by scoring numerous **societal and ethical impact questions** and does not represent the Town's Action *importance* priority. Instead, the STAPLEE process evaluates each Action and attempts to identify some potential barriers to its success. As revised in **2021**, a score of **75** would indicate that the mitigation strategy, or Action, would be relatively among the easiest Actions to achieve from a social and ethical standpoint.

The previous Plans including the **2015 Plan** had answered the same questions, except the three new questions regarding funding, staffing, and historic preservation, on a scale of **1-3**, with "**1**" indicating a **NO** response, "**2**" indicating a **MAYBE** response, and "**3**" indicating a **YES** response, for a possible highest ranking total score of **36**.

There is more latitude in the **2021 Plan**'s enhanced STAPLEE scores to more easily identify the relatively easiest Action projects for completion. All enhanced STAPLEE answers are subjective and depend on the opinions of the Committee members discussing them. The Committee answered these **15** questions with a numeric score of "**1**" indicating a **NO** response, "**2**" indicating an **UNCERTAIN** response, "**3**" indicating a **MAYBE** response, "**4**" indicating a **LIKELY** response or "**5**" indicating a **YES** response, about whether the Action can fulfill the criteria:

- Does the action reduce damage and human losses?
- Does the action contribute to community objectives?
- Does the action meet existing regulations?
- Does the action protect historic structures?
- Can the action be implemented quickly?
- Is the action socially acceptable?
- Is the action technically feasible?
- Is the action administratively possible?
- Is the action politically acceptable?

Action Completion	
RANKING	SCORE
Excellent	75 - 60
Good	45 - 59
Fair	44 - 30
Poor	29 - 15

- Does the action offer reasonable benefits compared to its cost in implementing?
- Is the action legal?
- Is the action support or protect the environment?
- Does the action have the funding necessary for completion?
- Does the action have the necessary staff or volunteers to undertake?
- Does the action support historic preservation?

The enhanced STAPLEE scores can range from a low of **15** to a high **75**, the highest possible ranking. Deering's **Mitigation Action Plan** STAPLEE rating is shown in **Figure 26** and includes a basic benefit-cost ranking as shown in yellow.

Figure 26

Enhanced STAPLEE Ranking of Mitigation Actions

Action Number	Does the Action..... or Is the Action..... ACTION	Reduce Damage? (or Injury)	Contribute to Town Objectives? (Supported by Master Plan or current thinking?)	Meet Regulations ? (If there are any)	Protect Sensitive Structures? (Buildings, roads, culverts, human-made things?)	Implemented Quickly? (See also Action Plan for Timeframe)	Socially Acceptable ? (People like project)	Politically Acceptable ? (Public Officials like project)	Administratively Realistic? (Have admin skills or time for paperwork)	Technically Feasible? (Have tech skills or special equipment)	Have a Reasonable Cost to Benefits Gained? (Will project save $$ in long term?)	Legal? (Or will be legal upon completion)	Support or Protect the Environment ? (Natural resources?)	Have the Funding? (Can funding be obtained?)	Have Necessary Staff or Volunteers ?	Support Historic Preservation? (Sites, neighborhoods, culture?)	Ranking Score 15-75
#1- 2009	Update the Zoning Ordinance to Comply with NFIP Requirements to Reduce the Impact of Flood & River Hazards	3	4	5	4	2	3	5	5	5	5	5	5	5	5	1	62
#20- 2009	Participate in National Flood Insurance (NFIP) Training to Increase the Understanding and Application of Floodplain Regulations	5	5	5	5	5	5	5	5	5	5	5	5	5	5	1	71
#51- 2015	Develop a Town Roads and Drainage Improvement Plan (Fluvial Geormorphic Assessment of Piscataquog) to Reduce the Impact of Floods and Erosion	5	5	5	5	3	5	5	5	5	5	5	5	3	4	4	69
#52- 2021	Update the Subdivision Regulations for Phasing of Major Developments to Reduce the Long-Term Impact of Stormwater, Flood, Wildfire, Treefall, and Service Overload	5	5	5	5	3	5	5	5	5	5	5	5	5	5	2	70
#53- 2021	Update the Subdivision Regulations and Site Plan Review Regulations to Add Requirements for Secondary Egress to Certain High Density Neighborhoods to Minimize the Impact of Flood, Severe Wind, Winter, Debris, and Wildfire Events	4	4	5	5	3	4	4	5	5	3	5	5	4	4	1	61
#54- 2021	Obtain the Dam Emergency Action Plans from NH DES for Emergency Management to Minimize the Impact of Flooding Events in Low-Lying Areas	5	5	5	5	5	5	5	5	5	5	5	5	5	5	1	71
#55- 2021	Obtain the Robin Hill Farm Evacuation Plan to Reduce the Risk of Isolation During Severe Weather Events	5	5	5	5	5	5	5	5	5	5	5	3	5	5	1	69
#56- 2021	Incorporate the Deering Lake Emergency Response Plan into the Fire Department SOGs to Reduce the Impact of Wildfire and Flood	5	5	5	5	4	5	5	5	5	5	5	5	5	5	1	70
#57- 2021	Establish a Policy for Town Response to Aquatic Invasive Species to Improve Water Quality and Public Health	5	5	5	5	5	5	5	5	5	5	5	5	5	5	3	73
#4- 2009	Install Dry Hydrant off of Farrell Hill Road on Map 235, Lot 2 to Provide Water Supply for Rural Fire Suppression	5	5	5	5	3	4	5	5	5	5	5	5	5	5	4	71
#5- 2009	Install Dry Hydrant at Johnson Pond off of Clement Hill Road on Map 215, Lot 4 and Map 216, Lot 5 to Provide Water Supply for Rural Fire Suppression	5	5	5	5	4	4	5	5	5	5	5	5	5	5	4	72
#6- 2009	Install Dry Hydrant off of Second NH Turnpike on Map 220, Lot 27 to Provide Water Supply for Rural Fire Suppression	5	5	5	5	2	4	5	5	5	5	5	5	5	5	1	67
#7- 2009	Install Dry Hydrant at Fulton Pond off of Reservoir Hill Road on Map 240, Lot 23 to Provide Water Supply for Rural Fire Suppression	5	5	5	5	2	4	5	5	4	5	5	5	5	5	3	68
#8- 2009	Install Dry Hydrant at Clifton Camp Pond off of Second NH Turnpike on Map 242, Lot 21 to Provide Water Supply for Rural Fire Suppression	5	5	5	5	3	4	5	5	4	5	5	5	5	5	1	67
#9- 2009	Install Dry Hydrant at Piscataquog Tributary on Deering Center Road on Map 227, Lot 36 to Provide Water Supply for Rural Fire Suppression	5	5	5	5	4	4	5	5	4	5	5	5	5	5	1	68

Action Number	Does the Action..... or Is the Action..... ACTION	Reduce Damage? (or Injury)	Contribute to Town Objectives? (Supported by Master Plan or current thinking?)	Meet Regulations ? (If there are any)	Protect Sensitive Structures? (Buildings, roads, culverts, human-made things?)	Implemented Quickly? (See also Action Plan for Timeframe)	Socially Acceptable ? (People like project)	Politically Acceptable ? (Public Officials like project)	Administratively Realistic? (Have admin skills or time for paperwork)	Technically Feasible? (Have tech skills or special equipment)	Have a Reasonable Cost to Benefits Gained? (Will project save $$ in long term?)	Legal? (Or will be legal upon completion)	Support or Protect the Environment ? (Natural resources?)	Have the Funding? (Can funding be obtained?)	Have Necessary Staff or Volunteers ?	Support Historic Preservation? (Sites, neighborhoods, culture?)	Ranking Score 15-75
#10-2009	Install Dry Hydrant on Longwoods Road at the Manselville Brook/ Contoocook River to Provide Water Supply for Rural Fire Suppression	5	5	5	5	3	4	5	5	3	5	5	5	5	5	1	66
#58-2021	Evaluate and Install Lightning Rods and Grounding Systems at the Town Hall and Highway Department to Reduce the Impact of Lightning Strike and Minimize the Risk of Fire and Operations Disruption	5	5	5	5	3	5	5	5	5	5	5	5	5	5	5	73
#59-2021	Develop a Licensing and Permitting Policy for Underground Utilities to Minimize Risk of Electrical Shock and Communications Disruption	5	5	5	5	4	5	5	5	5	5	5	5	5	5	2	71
#60-2021	Upgrade the Longwoods Road Culverts to Holton Crossing to Reduce the Impact of Flood Conditions	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#61-2021	Upgrade the Second NH Turnpike Culverts (4) from Holton Crossing to Bennington Depot Road to Reduce the Impact of Flood Conditions	5	5	5	5	5	5	5	5	5	5	5	5	5	5	1	71
#62-2021	Raise the Road Profile of Bennington Depot Road and Upgrade the Culvert to Reduce the Impact of Flood Conditions and Erosion	5	5	5	5	2	5	5	5	5	5	5	5	5	5	1	68
#63-2021	Upgrade the Culvert on Second NH Turnpike Beyond the Bennington Depot Road to Reduce the Impact of Flood Conditions and Erosion	5	5	5	5	5	5	5	5	5	5	5	5	5	5	2	72
#64-2021	Establish a Memorandum of Understanding with Hawthorne-Feather Airpark for Staging Community Response to Flooding, Wildfire and Other Disasters	5	5	5	5	5	5	5	5	5	5	5	5	5	5	4	74
#65-2021	Upgrade Town Hall and Highway Department Solar Array to Support Solar Batteries which Reduces the Risk of Essential Facilities Disruption During Severe Wind or Winter Events or Utility Failure	5	5	4	5	3	4	4	5	5	5	5	5	5	5	5	70
#66-2021	Encourage Longwoods Manufactured Home Park Homeowners and Renters to Form a Cooperative and Upgrade the Private Roads and Facilities to Reduce the Risk of Injury from Flood, Fire, Lightning, and River Hazards	5	5	5	5	2	3	2	2	3	3	5	5	3	3	1	52
#67-2021	Ensure the Town is Informed about the Water Release Schedules between the Hillsborough and Bennington High Hazard Dams on the Contoocook River to Minimize Lowland Flooding in Deering	5	5	5	5	5	5	5	5	5	5	5	5	5	5	1	71
#68-2021	Ensure Absorbents Material is Available Onsite at the Airpark to Reduce the Risk of Fire and Groundwater Contamination During Crashes	5	5	5	5	5	5	5	5	5	5	5	5	5	5	1	71
#69-2021	Inspect the Cemeteries for Rotting or Overhanging Trees to Identify for a Hazardous Tree Cutting Program to Reduce the Risk of Damage During Wind/Tropical or Winter Events	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#19-2009	Investigate Joining the Regional Citizens Emergency Response Team (CERT) with the Assistance of the CAPHN to Improve Community Outreach and Participation and Increase Public Safety from Hazard Events	5	5	5	3	5	5	5	3	5	5	5	5	5	5	3	69
#70-2021	Develop a Public Education Program about the Operating Hours and Rules of the Temporary Warming and Cooling Shelter at Town Hall Auditorium to Improve Public Safety from Wind, Winter, Flood, Tropical and Other Hazard Events	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75
#71-2021	Work with Oxbow Campground to Identify Potential Life Safety Improvements during Wind, Winter, Fire, and Flood Events	5	5	5	5	3	5	5	5	4	5	5	5	5	5	1	68
#72-2021	Encourage the Owners of Conservation Lands to Install Trail Kiosks at Trailheads with Maps and Information on Prevention of and What to Do During Natural Disasters	2	3	5	1	2	5	5	5	5	5	5	5	5	5	1	59
#73-2021	Offer Educational Opportunities During Open House and Community Events that Promote Fire Prevention and Life Safety to Reduce the Risk of Fire and Wildfire	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	75

Source: Deering Hazard Mitigation Committee

ACTION TIMEFRAMES

The Actions are also prioritized by an estimated ***Action Timeframe*** for completion based upon the other Town activities (hazard mitigation-related or not), funding potential for the Action, the need for the Action project, and possible staff time and volunteers available to complete the Action. This **relative** Action importance priority is measured by the **time indicated for project completion**. All Action projects within the **Mitigation Action Plan** have been assigned an ***Action Timeframe***.

Those projects which are designated as **Ongoing** mean the Action should be undertaken on a regular basis throughout the five-year lifespan of the Plan. Actions that could qualify as **Ongoing** include public education, zoning ordinance or regulation revisions, essential mitigation maintenance and more. However, even **Ongoing** Actions are completed once before repetition. As a result, those Actions with an **Ongoing** ***Action Timeframe*** also include a duration (**Short**, **Medium** or **Long Term**) included.

Action Timeframe	Description of Timeframe
Ongoing	Action undertaken throughout the life of the 5-year Plan
Short Term	Action should be undertaken during Years 1-2 of the Plan
Medium Term	Action should be undertaken during Years 3-4 of the Plan
Long Term	Action should be undertaken during Years 4-5 of the Plan

Short Term projects are those which are the more important Actions and should be undertaken during **Years 1-2** of the Plan's lifespan if possible. **Medium Term** Actions are recommended by the Hazard Mitigation Committee to be undertaken during **Years 3-4** of the Plan's lifespan, while **Long Term** Actions are those which should wait until last, with suggested implementation undertaken during Plan **Years 4-5**. It is important to remember the ***Action Timeframes*** are relative to each other and are another an indication of Action importance. If an Action cannot be completed within the ***Action Timeframe***, it may still be a higher priority than other Actions but was unable to be implemented for some reason.

Both the ***Action Timeframe*** and the ***Ranking Score*** are incorporated into the **Mitigation Action Plan** to assist the Town with implementing the hazard mitigation Actions. The Actions can be sorted within their Action Category by either priority for easy display of the desired characteristic; Actions can also be sorted by **Responsible Department** to keep them all together for ease of completion.

COST TO BENEFIT ANALYSIS

A simple **Cost to Benefit Analysis** ranking is contained within the enhanced STAPLEE criteria as displayed in the previous **Figure**.

Natural Hazards Evaluated for Which Specific Actions Were Not Identified

The Hazard Mitigation Committee assessed each of hazards and made determinations whether to specifically develop mitigation Actions for all natural hazards. Nearly all the potential Actions can be applied to multiple natural or other hazards based upon the generality of the Action's effect. Still, there could be no solutions or mitigation Actions developed for some of the more difficult to mitigate natural hazards. Many possible reasons are considered such as feasibility, prohibitive cost, jurisdiction, staff availability to develop and administer the project, lack of local support, unrealistic favorable outcome for the effort and more, all resulting in the point that for some natural hazards, potential Actions would not have worked for the Town.

Many Actions are general in nature and have the capacity to mitigate multiple types of natural hazards. From **4 HAZARD RISK ASSESSMENT**, those natural hazards rated a **LOW *Concern*** may not have been considered for an Action because their priority was not as important as other hazards. The **MEDIUM** and **HIGH *Concern*** hazards either have generalized or targeted Actions associated with them in the **Mitigation Action Plan** or the reason why no specific or feasible Action was developed for the highest ***Concerns*** is described in **Table 50**.

Table 50

Committee Assessment of Natural Hazards with Mitigation Actions

CONCERN	Natural Hazard	Committee Assessment of Actions
MEDIUM	Dam Breach, Release or Failure	See Actions related to Dams and overall Severe Storms.
HIGH	Drought	See Actions related to Drought, Lightning, and Fire.
LOW	Earthquake	Not a priority. See Actions related to general natural disasters.
HIGH	Extreme Temperatures	See Actions related to general natural disasters.
MEDIUM	High Wind Events	See Actions related to overall Severe Weather Storms.
HIGH	Inland Flooding	See Actions related to culverts and Flood projects.
LOW	Landslide	Not a priority. Related to general natural disasters.
MEDIUM	Lightning	See Actions for constructed and regulatory projects.
HIGH	Public Health	See Actions related to Public Health (water quality) and general natural disaster.
MEDIUM	River Hazards	See Actions related to overall Severe Weather Storms.
HIGH	Severe Winter Weather	See Actions related to overall Severe Weather Storms.
MEDIUM	Solar Storms and Space Weather	See Actions related to natural and technological hazards.
MEDIUM	Tropical and Post-Tropical Storms	See Actions related to overall Severe Weather Storms.
HIGH	Wildfire	See Actions for constructed and regulatory projects.

Source: Deering Hazard Mitigation Committee

9 ANNUAL IMPLEMENTATION AND EVALUATION

The Town received FEMA approval for the prior **Hazard Mitigation Plan** in **September 2015.** The completion of a planning document is merely the first step in its life as an evolving tool. The **Hazard Mitigation Plan Update** is a dynamic document that should be considered by all Town Departments, Boards, and Committees within their normal working environments. While evaluating the effectiveness of Actions in its everyday implementation, everyone should be able to contribute to the relevancy and usefulness of the Plan and to communicate with the Hazard Mitigation Committee where changes should be made. An annual effort will be undertaken to complete Actions and add new Actions as old tasks are completed and new situations arise. This Chapter will discuss the methods by which the Town of Deering will review, monitor, and update its new **Deering Hazard Mitigation Plan Update 2021**.

Annual Monitoring and Update of the Mitigation Action Plan

The Board of Selectmen should vote to establish a permanent Hazard Mitigation Committee within **3 months** of receiving the FEMA **Letter of Formal Approval** as indicated in **1 PLANNING PROCESS**. The purpose is to meet on a regular basis to ensure the **Hazard Mitigation Plan's** Actions are being actively worked on and the Plan is evaluated and revised to fit the changing priorities of the Town.

The Emergency Management Director or other Board of Selectmen designee should continue to serve as Chair of the Committee for Hazard Mitigation meetings and should be officially appointed to such a capacity by the Board. Current Hazard Mitigation Committee members can be appointed to continue to participate as members of the permanent Committee. More information is provided in **APPENDIX B**.

Committee membership should include:

- ✓ Emergency Management Director
- ✓ Deputy Emergency Management Director
- ✓ Town Administration
- ✓ Fire Chief or designee
- ✓ Police Chief or designee
- ✓ Road Agent or designee
- ✓ Building Inspector/ Zoning Compl. Off.
- ✓ Welfare Officer/Health Officer
- ✓ Transfer Station Supervisor
- ✓ Town Planner (if position is open)
- ✓ 1 Board of Selectmen member
- ✓ 1 Planning Board member
- ✓ 1 Budget Advisory Committee member
- ✓ 1 Deering School District Representative
- ✓ 1 Library Representative
- ✓ 1 Historical Society member
- ✓ 1 Conservation Comm Representative
- ✓ 1 Parks and Recreation Comm Representative
- ✓ Community (Stakeholders) at Large

Stakeholders who should be solicited to attend meetings and to participate equitably in the Plan development process include representatives from Hillsborough-Deering School District, NH Audubon or Society for the Protection of NH Forests (SPNHF), Library, Historical Society, Deering Community Church, Deering Lake Association, neighborhoods like Hedgehog Mountain Community MHP or Long Woods MHP, local State Representatives, agricultural/farming operations, trails groups, local non-profits including the Capital Area Public Health Network, area emergency management directors, local, State or Federal agency representatives (such as NH HSEM), and other members of the public. This composition provides a wide spectrum of potential interests and opportunities for partnership to develop and accomplish Actions.

This Committee will **aim to meet up to 4 times per year** to follow these potential future meeting activities to update the **Mitigation Action Plan** and complete the Plan's annual evaluation as displayed in **Table 51**.

Table 51

Hazard Mitigation Committee Preliminary Annual Future Meeting Activities

Meeting or Activity Month	Preliminary HMC Interim Meeting Agenda Items and Activities
JANUARY **HMC Meeting** *Budget determined*	**Town operating budgets are determined for the next year.** HMC assists Board of Selectmen and Budget HMC with getting their mitigation projects funded and written into budgets. Action implementation continues. HMC provides a **Progress Report #2** for all Actions to responsible parties for response by beginning of February along with the **Action Status Tracking Sheet** to display Action progress and request updates. HMC continues update to the **Action Status Tracking Sheet** using the **Department Mitigation Action Progress Reports.**
February	HMC staff continues update to the **Mitigation Action Plan** using **Department Mitigation Action Progress Reports** and an updated **Action Status Tracking sheet.** HMC staff provides revised copies to Department Heads, keeps original Word and Excel files accessible on Town computer system.
APRIL **HMC Meeting** *$ available*	**Annual funding is received from Town Meeting.** HMC completes annual update of the **Mitigation Action Plan and the associated Plan Chapter and sections (CHAPTER 8)** with **Progress Reports #3**. HMC determines Action Plan items to pursue for this year, including $0 cost items.
April – June	**HMC staff & members present a plan for mitigation actions for the next year to the Board of Selectmen for their support to proceed. HMC members ensure Department Heads are provided with information to work on their Actions.** HMC members meets with Department Heads to inform about the Action priorities and requests attention to **Short Term (1-2 Years)** Actions. Departments begin working on Actions.
JUNE **HMC Meeting** *Infrastructure projects underway*	**Infrastructure projects will be underway.** HMC provides a **Progress Report #1** for all Actions to responsible Depts/Boards for response by beginning of July. HMC reviews **Annual Evaluation of the Plan (CHAPTER 9)**. HMC works with the CIP Committee to get certain projects placed into CIP. Depts to begin placement of next year's high-cost Action Plan items into the CIP.

Meeting or Activity Month	Preliminary HMC Interim Meeting Agenda Items and Activities
August - December	HMC assists Department Heads with their budget requests to include **Action Plan** items, and to determine which Actions should have warrant articles. HMC staff continues assistance to Departments for **Action Plan** items. HMC staff begins to update the **Action Status Tracking Sheet.** HMC staff & members ensure Haz Mit Actions are added into the CIP.
SEPTEMBER HMC Meeting	HMC will identify projects to accomplish (including $0) for the upcoming year. HMC attends Board of Selectmen budget meetings and suggests warrant articles for Action Plan items. HMC attends Budget Committee meetings scheduled through January to champion Action item funding.

Sources: Deering Hazard Mitigation Committee

Annually and independent of the Town's budget cycle, the simpler, rolling list of the Hazard Mitigation Committee's main tasks to update and Implement the Plan should include:

- **Document New Hazard Events that Occurred in Town.**
  - Hazard Identification and Risk Assessment (**CHAPTER 4** table).
  - Local and Area History of Disaster and Hazard Events (**CHAPTER 4** table).
- **Coordinate Completion of Annual Mitigation Actions by Assigning to Departments.**
  - Appendix B Mitigation Action **Progress Report.**
- **Seek and Help Departments Acquire Funding for Actions & Fill in Tracking File.**
  - Appendix B Mitigation **Action/Project Status Tracking.**
- **Evaluate Effectiveness of the Plan and Its Actions Yearly.**
  - Appendix B Plan **Evaluation Worksheet**.
- **Obtain Semi-Annual Progress Reports (2/year) from Departments & Update the Tracking File.**
  - Appendix B Mitigation **Action/Project Status Tracking.**
- **Update & Reprioritize Mitigation Action Plan and Update Supporting Plan Document Sections.**
  - Mitigation Action Plan (**CHAPTER 8** table).
  - Enhanced STAPLEE Prioritization (**CHAPTER 8** table).
  - **Hazard Mitigation Plan Update 2021** sections as needed.
  - Make note of the new information added/changed for the **2026 Plan** update!
  - Remember to invite the Stakeholders and public to all meetings and take minutes as needed.
- **Repeat.**

For each of the Hazard Mitigation Committee implementation meetings, the Emergency Management Director (or Staff Coordinator) will invite other Department members, Board and Committee members, Town Staff, Hillsborough-Deering School District representatives, stakeholders, and participants of the **2021 Plan** Committee meetings. Identified and general members of the public will also be invited as indicated previously. Their purpose is to attend and participate in the meetings as full participants, providing input and assisting with decision making. Public notice will be given as press releases in local papers, will be posted in the public places in Deering, and will be posted on the Town of Deering website at https://www.deering.nh.us/.

The **Hazard Mitigation Plan's Mitigation Action Plan** will be updated and evaluated annually generally following the suggestions outlined within the Chapter. All publicity information, Agendas, and Attendance Sheets, should be retained and compiled for inclusion into **APPENDIX C**.

The Emergency Management Director and Department heads will work with the Board of Selectmen to discuss the funding of Action projects as part of the budget process cycle in the fall of each year. The projects identified will be placed into the following fiscal year's budget request if needed, including the Capital Improvements Program (CIP), Town Operating Budgets, and other funding methods.

Implementing the Plan through Existing Programs

In addition to work by the Hazard Mitigation Committee and Town Departments, several other mechanisms exist which will ensure that the **Deering Hazard Mitigation Plan Update 2021** receives the attention it requires for optimum benefit. Incorporating Actions from the Plan is often the most common way the Hazard Mitigation Plan can be integrated into other existing municipal programs, as described below.

OVERALL IMPLEMENTATION PROGRESS THROUGH LOCAL PLANNING MECHANISMS SINCE THE 2015 PLAN

As a successful, growing community, the Town of Deering has a comprehensive network of plans, processes, champions, regulations, and budgets to ensure its local objectives, projects and budgets are fulfilled. The **Deering Hazard Mitigation Plan 2021** is a tool for community betterment which works most effectively when partnering with existing planning mechanisms. Since the original **2004 Plan**, the overall integration and importance of the **Deering Hazard Mitigation Plan** into existing Town planning mechanisms continues to grow.

Although the **2015 Plan** was not adopted into Planning Board's latest **Master Plan 2017**, the opportunity exists now for incorporation of the **2021 Plan**. The **Capital Improvements Program 2019-2024** has been recently updated and its projects influence new funding for Departments, including the Highway Department funding that previously upgraded culverts in the **Mitigation Action Plan**. The **Zoning Ordinance** was revised annually since **2015** and continues to encourage natural systems protection – the Watershed Protection Overlay District was amended in **2021**. The **Subdivision and Site Plan Review Regulations** are in need of review and update between **2021-2026**. These regulations indirectly support hazard mitigation planning principles (such as excavation regulations, fire and emergency access, driveway standards, drainage, landscaping, erosion, etc.) that support all versions of the **Plan**. Annual budgets for Emergency Management have been very small but may be able to increase to consider the **Hazard Mitigation Plan** findings. By necessity of the overall tax dollars available as determined by voters, the Town budget limits funding for larger hazard mitigation projects such as box culvert upgrades or infrastructure inventories. The individual Town departmental budgets supported hazard mitigation planning where feasible or supported by voters, such as Capital Reserve Funds for Bridge Repair, Highway, Infrastructure improvements, Town Facility Upgrade, Dry Hydrant, etc. Drainage upgrades and culvert upgrades are a priority of the Highway Department and are important mitigation projects in Deering.

Moving forward, Town Boards and Departments have room for further improvement of the **Hazard Mitigation Plan's** incorporation into existing planning mechanisms. For several of these planning

programs, a summary of the ***Process to Incorporate Actions*** as noted below offers ways for the **2021 Plan** to be utilized.

MASTER PLAN

The latest Deering Master Plan was adopted by the Planning Board in **2017**. The goal for future updates is annual review and revision of a selection of Chapters. Chapters from the ***2017 Master Plan*** to update include Deering Today (Demographics), Deering Tomorrow (Vision), Implementation, Historical and Cultural Resources, Housing, Natural Features, Community and Recreational Facilities with Utilities, Transportation, Existing and Future Land Use, Regional Concerns. New future chapters to consider, in addition to the updated chapters, could include Economic Development and Energy.

To support mitigation efforts, the Planning Board should consider adopting the ***Hazard Mitigation Plan 2021*** *as a separate Chapter to its Master Plan in accordance with* ***RSA 674:2.II(e)****.*

The **Hazard Mitigation Plan** should be presented to the Planning Board after FEMA's **Formal Approval**. The Plan can be considered for adoption after a duly noticed public hearing, just as any typical Chapter of a Master Plan. In addition, Actions and concerns from the Plan can be integrated into the Master Plan.

Process to Incorporate Actions

The Hazard Mitigation Committee will present the approved **Hazard Mitigation Plan** to the Planning Board within **6** months after FEMA's **Letter of Formal Approval** is received for the Board's consideration and adoption into the Master Plan after a duly noticed public hearing. This is the same process used to adopt other components of the Master Plan. The NH State law supporting the development of a natural hazard mitigation plan as a component of a community Master Plan is **RSA 674:2-III(e).** The Hazard Mitigation Committee will oversee the process to begin working with the Planning Board to ensure that the relevant **Hazard Mitigation Plan** Actions are incorporated into the Master Plan.

CAPITAL IMPROVEMENTS PROGRAM

Deering's last adopted **Capital Improvements Program (CIP)** is **2019-2024** as adopted in **2018**. The goal is to ensure the CIP is reviewed and updated each year by the CIP Committee. The HMC would like to ensure Actions requiring capital improvements funding from the **Hazard Mitigation Plan Update** will be inserted into the Capital Improvements Program for funding during the CIP's next update with

specific projects and equipment replacement identified as addressing needs cited in the Update. Depending on the Town's funding needs, Capital Reserve Funds for such items as road & bridge improvements should be identified where appropriate as addressing projects in the **Hazard Mitigation Plan Update**.

Process to Incorporate Actions

The Hazard Mitigation Committee (HMC)'s representative to the Planning Board will oversee the process to begin working with the Planning Board's CIP Committee to incorporate the various Hazard Mitigation Plan projects into the updated CIP. As the CIP is amended, the representative from the Hazard Mitigation Committee should be appointed to sit on the CIP Committee or the HMC should submit a CIP Project Application to ensure the mitigation projects are addressed as part of the CIP update process.

TOWN MEETING

In Deering, the annual Town Meeting is held in March where the voters of the Town vote to raise money for capital projects and approve the annual operating budget of the Town. This is a good, revolving opportunity to explain the importance of the mitigation actions of the **2021 Plan Update** **and how the funding of specific capital projects simultaneously responds to these mitigation projects.**

Process to Incorporate Actions

The Hazard Mitigation Committee (HMC)'s Town Department members will work with the Town Administrator, Budget Advisory Committee and Board of Selectmen to develop a capital budget and warrant article language for appropriate Actions for **Town Meeting vote**. The HMC members may also request deposits to appropriate Capital Reserve Funds for some of the larger projects. A representative from the Hazard Mitigation Committee will provide a copy of the current **Mitigation Action Plan** to both the Budget Advisory Committee and Board of Selectmen annually and validate the need for funding at the annual Town Meeting to accomplish the projects. The representative will work with Town Administration to write warrant article language for approval Action items if needed or to get the items placed into Department Operating Budgets.

OPERATING AND CAPITAL BUDGETS

Many of the Actions will not require specific funding but are identified as requiring in-kind Staff labor to perform the work required to undertake the Actions. Town Departments and Staff have rigorous job functions that demand their undivided attention to the tasks required to run their respective Departments. Additions to the workload to accommodate the Actions can put a strain on their ability to serve the public during performance of their normal job duties. When possible, Deering Departments and staff will be able to prioritize their tasks to work on **Hazard Mitigation Plan Update 2021** Actions. The in-kind work performed is subtracted from the Operating Budget for that particular Department.

Process to Incorporate Actions

With obtaining assistance from the HMC, the Department or Board is given the responsibility to ensure their Actions are completed, either by working on the Actions allocated to him/her when their normal job duties permit or by delegating the Action to another person. The funding for the Actions comes out of the Department's operating budget as work is undertaken by the Staff person on an as-time-permits basis unless the Action is a component of the Town staff members' normal work duties. Staff or volunteers will attempt to follow the **Action Time frame** as a guideline for completion. A yearly review of the **Mitigation Action Plan** by the Hazard Mitigation Committee will re-prioritize the Actions, and the members can report on their progress, asking for assistance or more time as needed. **By connecting planned Town of Deering improvement projects to specific projects and objectives of the Hazard Mitigation Plan Update 2021, the Departments can utilize their resources more effectively.**

Continued Public Involvement

On behalf of the Hazard Mitigation Committee, the Emergency Management Director and the Staff Coordinator, under direction of the Town Administration, will be responsible for ensuring that Town Departments and the public have adequate opportunity to participate in the planning process. Administrative staff should again be utilized to assist with the public involvement process.

For each interim meeting in the annual update process, and for the **5**-year update process procedures that will be utilized for public involvement include:

- Provide personal invitations to Town volunteer Board and Committee Chairs, Budget Advisory Committee members, and Town Department heads;
- Provide personal invitations to abutting community emergency management directors of neighboring Towns;
- Provide personal invitations to the businesses, agencies, neighborhoods, non-profits, and other entities listed previously in **9 ANNUAL IMPLEMENTATION AND EVALUATION**;
- Post public meeting notice flyers and press releases on the Town's website at https://www.deering.nh.us/, on the Town's online calendar on the same site, and place agendas and meeting materials on a Hazard Mitigation Committee webpage (off the Emergency Management section).
- Post meeting notices in the Deering Town Hall, outside on the Town Bulletin Board, at the Deering Community Church, at Fire Station, at local schools, and at local business(es);
- Submit media releases to the Concord Monitor (a paid, regional daily newspaper serving over **40** communities around the Concord area) and The Messenger and/or The Villager (free, regional weekly newspapers serving regional southwestern NH communities).

In addition to previous suggestions for invitations to Hazard Mitigation Committee update meetings, review **APPENDIX A Critical and Community Facilities Vulnerability Assessment** Tables: Vulnerable Populations, Economic Assets and Recreational and Gathering Sites for further stakeholder opportunities. The NH Homeland Security and Emergency Management Field Representative for Deering will be invited. The Town will provide the Central NH Regional Planning Commission with Agendas, minutes and other materials for archiving, to be used when the **5-year** update again becomes necessary (email to salexander@cnhrpc.org). Any State, regional or federal interest in Deering should be considered for direct invitation for MITIGATION, which is a transparent process. EMERGENCY OPERATIONS planning should have a more selective working group.

A new section of the Town website dedicated to Hazard Mitigation Committee activities and the **2021 Plan** should be kept updated with meeting notices and materials used by the Hazard Mitigation Committee. This online location would be an optimal place to post the final **2021 Plan** and its ***Maps*** and

Appendices and to continue adding materials for annual Plan updates. Additional pages should be added for resources, information, and links to other websites for the public. Several Action Plan items which will be undertaken relate to public education and involvement and the Town website would be an exemplary method of getting the word out.

Implementation and Evaluation of the Plan

During the Committee's annual review of the **Mitigation Action Plan,** the Actions are evaluated as to whether they have been **Completed, Deleted**, or **Deferred.** Those Action types are placed into their respective Tables. Any **New** Actions will be added as necessary. Each of the Actions within the updated **Mitigation Action Plan** will undergo the enhanced STAPLEE ranking as discussed in **8 MITIGATION ACTION PLAN.**

A set of comprehensive **Annual Interim Plan Evaluation and Implementation Worksheets** is available to assist the community with Plan implementation in **APPENDIX B**. These worksheets are to be used during the Hazard Mitigation Committee basic meeting schedule outlined previously in **Table 51**.

The worksheets include administrative and organizational documents, those that are used with the Appendices spreadsheets developed, and two Agendas to get started with HMC Interim Update meetings:

COMMITTEE ORGANIZATION AND PUBLICITY DOCUMENTS

- Board of Selectmen's Organization of Permanent Hazard Mitigation Committee
- Appointed Committee Information and Stakeholder Invitation Contact Information
- Meeting Publicity (Press Releases and Public Notice Meeting Posters) and Tracking Sheet

MEETINGS & WORKING WITH THE ACTIONS

- Example Agenda for Interim Meeting 1 (for minimal Plan update)
- Example Agenda for Interim Meeting 2 (for minimal Plan update)
- Interim Meeting Attendance Sheet
- Mitigation Action Status Tracking Sheet
- Mitigation Action Progress Report for Departments
- Annual Hazard Mitigation Plan Evaluation Worksheet

The **5-year** full Plan update will evaluate the Actions in the same manner in addition to fulfilling a complete update of the **Hazard Mitigation Plan** to then-current guidelines and standards.

10 APPENDICES

The following **APPENDICES A-E** are included under a separate electronic or paper document to maintain the relative brevity of this **Hazard Mitigation Plan Update**.

Listing of Deering Hazard Mitigation Plan Update 2021 Appendices

Some of these documents should be updated annually as part of the interim Action implementation and Plan evaluation process*. The remaining **APPENDICES** could be amended with the new or revised annual information, but they are optional. It is necessary to establish a Town digital storage location for placing any new or updated hazard, Action, meeting, or Plan data over the **5-year** interim until the Plan is ready to be fully updated again. Systematic organization will facilitate annual updates and prepare for next **5-year** Plan development in **2026**.

- **A Critical and Community Facilities Vulnerability Assessment**
- **B Annual Plan Evaluation and Implementation Worksheets ***
- **C Meeting Information ***
- **D Plan Approval Documentation**
- **E Photographic History of Hazard Events ***

Documents should be updated annually *. It is also highly recommended to update **4 HAZARD RISK ASSESSMENT Table 12 Local and Area Hazard Event and Disaster History** to maintain a record of the disasters, hazards, and impacts to Deering.

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11 MAPS

Four (**4**) detailed Maps were created during the development of the **Deering Hazard Mitigation Plan 2021**. Data from the previous Plan maps were used, new standardized data layers were available, and Hazard Mitigation Committee members added their own knowledge of sites and hazard events.

Plan Update 2021 Maps

Map 1 Potential Hazards illustrates potential hazard event locations in Deering that have the possibility of damaging the community in the future. The ***Map 1*** legend includes (technology) infrastructure hazards such as dams, bridges, electric transmission lines and evacuation routes. Natural hazards are displayed such as Special Flood Hazard Areas (SFHAs), locations of potential flooding/ washout, fire/wildfire, bridge washout, ice and snow, steep slopes (**>15%**) and more.

Map 2 Past Hazards illustrates the locations of where hazard events have occurred in Deering in the past, including areas of SFHA, flooding/washout, snowmelt, dam breach, fire/wildfire, wind damage, ice damage, and more.

Map 3 Critical and Community Facilities includes the infrastructure included in ***Map 1 Potential Hazards*** on a background of aerial photography and the SFHAs to give viewers a better, real world perspective. The locations of all critical facilities and community facilities as recorded in the **APPENDIX A Critical and Community Facilities Vulnerability Assessment** are displayed on the Map. Each of these sites is numbered on a key listing the names of each facility.

Map 4 Potential Hazards and Losses utilizes all the features of ***Map 3*** on an aerial photography background and includes the ***Map 1 Potential Hazards*** and any realistic ***Map 2 Past Hazards*** locations where hazard events can occur again in Deering.

- **Map 1 - Potential Hazards**
- **Map 2 - Past Hazards**
- **Map 3 - Critical and Community Facilities**
- **Map 4 - Potential Hazards and Losses**