

# **TOWN OF HOOKSETT NEW HAMPSHIRE**



*Hooksett Safety Center, Hooksett, New Hampshire*

## **HAZARD MITIGATION PLAN 2021**

# Town of Hooksett, New Hampshire

## Hazard Mitigation Plan

Update 2021

Prepared for the Town of Hooksett, New Hampshire,  
New Hampshire Homeland Security & Emergency Management  
(NHHSEM), and the Federal Emergency Management Agency  
(FEMA)

Prepared by The Southern New Hampshire Planning Commission  
with assistance from the Hooksett Hazard Mitigation Committee

2021

**DRAFT Plan**

## Acknowledgements

The Southern NH Planning Commission and the Town of Hooksett wish to thank the following individuals for serving on the Town's Hazard Mitigation Committee and for their assistance in the development of this Plan:

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## **Certificates of Adoption**

## Preface

Hazard mitigation planning is a relatively new field, spearheaded by the Federal Emergency Management Agency (FEMA) during the 1990s after Hurricane Andrew caused more than \$20 billion dollars in damage across several southern states. That event resulted in 54 fatalities and the disruption of millions of lives. Since that time many more natural disasters have caused great losses in the United States, including Hurricane Katrina and most recently, Hurricane Sandy. The Disaster Mitigation Act of 2000, developed by FEMA, was intended to help both communities and states prepare for, and deal with, such disasters. While New England normally does not have hurricanes of Andrew's magnitude, this area does experience many types of natural disasters that cost both lives and money.

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

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

A community's eligibility for hazard mitigation funding depends upon its having adopted a FEMA approved hazard mitigation plan. Mitigation measures contained within the *Hooksett Hazard Mitigation Plan Update 2021* may be sufficient to receive grant funding.

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

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## Executive Summary

The *Hooksett Hazard Mitigation Plan Update 2021* has been developed to help Hooksett become a disaster-resilient community by taking measures to reduce future losses from natural or man-made hazardous events before they occur. The Hooksett Hazard Mitigation Plan Committee, made up of community members and town officials, developed the plan.

**The plan addresses the following natural hazards:**

- Flooding
- Drought
- Earthquake
- Extreme Temperatures
- High Wind Events
- Infectious Disease
- Lightning
- Severe Winter Weather
- Solar Storms and Space Weather
- Tropical and Post Tropical Cyclones
- Wildfire

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

**Critical Facilities:**

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

**Areas at Risk:**

- Isolated Homes
- Dams
- Major Highways
- Electrical Power Substations
- Hazardous Material Facilities
- Above Ground Storage Tanks

- Recreation Areas
- Problem Culverts
- Hydro Power Plants
- Historic/Unique Resources
- Commercial/Economic Impact Areas
- Water and Wastewater Treatment Facilities
- Churches
- Elderly Housing
- Schools
- Day Care Centers
- Socio-Economic Impact Areas

### **Existing Hazard Mitigation Strategies**

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

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

### **New Hazard Mitigation Strategies**

The Hooksett Hazard Mitigation Plan Committee identified 27 hazard mitigation strategies as follows:

1. Retrofit and upgrade problem culverts.
2. Improve Storm Drain Maintenance.
3. Participate in Regional Preparedness Programs – SNHCPP and Greater Manchester Hazard Vulnerability Assessment.
4. Coordinate with Pan Am Railway for emergency notification and procedures.
5. Develop and coordinate local hazard mitigation outreach program (combine all public outreach efforts currently ongoing).
6. Evaluate and participate in FEMA CRS and appoint NFIP administrator.

7. Conduct an education and outreach program to businesses to mitigate impact from the use and transport of hazardous materials.
8. Organize outreach to vulnerable populations, including establishing and promoting accessible heating and cooling centers in community.
9. Examine critical infrastructure and/or facilities that would need lightning/surge protection and/or additional ground measures.
10. Create a wildfire prevention mitigation plan.
11. Increase public awareness on wildfire prevention.
12. Identify strategies to protect town infrastructure from wind damage.
13. Purchase additional backup generator for Town Library.
14. Create an inventory of structures in town that are especially vulnerable to damage from straight-line winds.
15. Work with all town departments in maintaining an adequate stock of PPE/sanitizer in preparation for future epidemic/pandemic.
16. Continue to work with and coordinate with schools on hazard risks and emergency procedures.
17. Examine steep slope areas in town and develop plan for landslide prevention.
18. Plan for and maintain adequate road and debris clearing capabilities during severe winter weather events.
19. Improve coordination with water precincts and NHDES on outreach and education to residents in areas with contaminated water sources.
20. Improve the emergency response plan and continuity of operations among all town departments in the event of a mass cyber-attack.
21. Create a water conservation and drought plan to increase public awareness
22. Implement a municipal building closure plan in the event town buildings and services must be suspended but are still able to serve residents.
23. Purchase flood prone properties in the SFHA.
24. Develop a sheltering plan for staffing, protocol, and outreach.
25. Maintain tree pruning around powerlines.
26. Maintain and improve coordination with Police and Town departments on active shooter drill trainings in municipal buildings.
27. Continue to identify fuel loads in forested areas to determine wildfire vulnerability hazard.

This Plan is scheduled to be reviewed and updated on an annual basis by the Hooksett Emergency Management Director in coordination with the Hooksett Town Council. The next review will be during 2025.

## I. Introduction

### Natural Hazards and Their Consequences

In the United States, millions of dollars are spent each year on disaster response and recovery<sup>1</sup>. In 1992, Hurricane Andrew caused an estimated \$25 billion in damage. The 1993 Midwest floods resulted in some \$12-\$16 billion in damage. The 1994 Northridge earthquake caused \$20 billion in damage, and the 2002 summer flooding in central Texas topped \$1 billion in damage. Hurricane Katrina in 2005 was the costliest storm on record, causing over 1,800 deaths and over \$100 billion in damage. In 2012, Hurricane Sandy caused almost 120 deaths and an estimated \$75 billion in damage. These types of natural disasters exacerbate the need for communities to adopt measures and activities to become better prepared and more resilient. By undertaking activities which reduce the impact of future disasters, known as hazard mitigation, local governments and the State can reduce the costs of New Hampshire's response and recovery costs as well as minimize the impacts of future disaster events<sup>2</sup>.



*Flooding, Hooksett, NH, May 2006*



*Windstorm Damage, Hooksett, NH February 2010*

Natural hazards such as floods, tornadoes, winter storms, hurricanes, earthquakes, and wildfires are part of the world around us. Their occurrence is inevitable. These events can wreak havoc on the natural environment by uprooting trees, eroding riverbanks and shorelines, carving new inlets, and blackening forests. Yet the natural environment is amazingly resilient, often recuperating in a matter of days or weeks.

When these events strike the man-made environment, however, the result is often more devastating. Disasters occur when a natural occurrence crosses paths with elements of the man-made environment such as buildings, roads, pipelines, or crops. When hurricanes tear roofs off houses, it is a disaster. When tornadoes ravage a town, it is a disaster. And when floods invade low-lying homes, it is a disaster. If only undeveloped wetlands and floodplains were flooded, rather than homes and businesses, we would hardly take notice. The natural environment takes care of itself. The man-made environment, in contrast, often needs some emergency assistance.

The following table details major hazard events in the last 10 years that affected the Town of Hooksett and Southern New Hampshire:

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<sup>1</sup> State of New Hampshire Multi-Hazard Mitigation Plan, 2018

<sup>2</sup> State of New Hampshire Multi-Hazard Mitigation Plan, 2018

Table 1: Federal Declared Disasters in NH 2010- 2021

Date	Event	Impacts
March 29th, 2010	Severe Winter Storm (FEMA-1892-DR):	extensive debris blocking roadways and causing damage to structures.
May 12th, 2010	Severe Storms and Flooding (FEMA-1913-DR):	Damage to roads and bridges
August 26 - September 6, 2011	New Hampshire Tropical Storm Irene (DR-4026-NH)	Heavy rain, damage to roads and bridges
October 29 <sup>th</sup> – 30 <sup>th</sup> , 2011	Severe storm and snowstorm (Halloween storm) (DR-4049-NH)	Heavy early snowstorm caused extensive power outages; costs associated with debris removal
October 26 <sup>th</sup> – November 8 <sup>th</sup> , 2012	Hurricane Sandy (DR-4095-NH)	Strong storm surge and heavy rains across New England, NYC, and New Jersey
February 8 <sup>th</sup> – February 10 <sup>th</sup> , 2013	Severe winter storm and snowstorm	Heavy snow caused damage and disruption to transportation network and infrastructure
January 26 <sup>th</sup> – 28 <sup>th</sup> , 2015	Severe winter storm and snowstorm	Heavy snow
October 29 – November 1, 2017	Severe storm and flooding (DR-435-NH)	Heavy rain
January 20 <sup>th</sup> , 2020 and continuing	New Hampshire Covid-19 Pandemic (DR-4516-NH)	Ongoing health and economic crisis

### What Is Hazard Mitigation?

**Hazard mitigation** is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards (44 CFR 201.2). Hazard mitigation activities may be implemented prior to, during, or after an event. However, it has been demonstrated that hazard mitigation is most effective when based on an inclusive, comprehensive, long-term plan that is developed before a disaster occurs.<sup>3</sup> It includes both structural interventions, such as flood control devices, and nonstructural measures, such as avoiding construction in the most flood-prone areas. Mitigation includes not only avoiding the development of vulnerable sections of the community, but also making existing development in hazard-prone areas safer. For example, a community could identify areas that are susceptible to damage from natural disasters and take steps to make these areas less vulnerable. It could also steer growth to less risky areas. Keeping buildings and people out of harm's way is the essence of mitigation.

Mitigation should not be an impediment to growth and development. On the contrary, incorporating mitigation into development decisions could result in a safer, more resilient community, one that is more attractive to new families and businesses.

### Why Develop a Mitigation Plan?

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

<sup>3</sup> FEMA Local Mitigation Plan Review Guide. October 1, 2011.

predictable locations. Others, such as floods, can occur any time of the year and almost anywhere in the state.

### **Benefits of Hazard Mitigation**

Hazard mitigation offers many benefits for a community. It can:

- **Save lives and property** - A community can save lives and reduce property damage from natural hazards by identifying risks and acting, such as elevating structures located in the floodplain.
- **Reduce vulnerability to future hazards** - By having a mitigation plan in place, a community is prepared to take steps that will permanently reduce the risk of future losses. This opportunity is often lost when we build our communities without regard to natural hazards or when we rebuild them after a disaster "just like they were before." While it is natural to want to return things to the way they were, it is important to remember that, in many cases, the disaster would not have been as severe if a mitigation plan had been implemented.
- **Facilitate post-disaster funding** - By identifying and ranking recovery projects before the next disaster, a community will be in a better position to obtain post-disaster funding because much of the background work necessary for applying for federal funding will already be done.
- **Speed recovery** – By developing a mitigation strategy, a community can identify post-disaster mitigation opportunities in advance of a disaster and be ready to respond quickly after a disaster.

### **Background: Hooksett Hazard Mitigation Planning**

The Federal Emergency Management Agency (FEMA) has mandated that all communities in the State of New Hampshire establish local hazard mitigation plans to reduce future losses from natural or man-made hazard events before they occur. In order to satisfy the planning requirements of the Disaster Mitigation Act (DMA) of 2000, the initial Plan was developed in 2002-2003, and has been updated and resubmitted to FEMA for approval every five years to reflect the most recent information for hazard mitigation in the Town.

### **Purpose**

The **Hooksett Hazard Mitigation Plan Update 2021** serves as a strategic planning tool for use by the Town of Hooksett in its efforts to reduce future losses from natural or man-made hazardous events before they occur. This plan may constitute a new section of the Hooksett Master Plan, in accordance with RSA 674:2.

### **Authority**

This Hazard Mitigation Plan Update 2021 was prepared in accordance with the Town of Hooksett's Emergency Operations Plan, effective in 2016, under the authority of the Planning Mandate of Section 409 of Public Law 93-288 as amended by Public Law 100-707, the Robert T. Stafford Act of 1988, and the Disaster Mitigation Act of 2000. The **Hooksett Hazard Mitigation Plan Update 2021** will be referred to as the "Plan." The Hooksett Town Council formally adopted this plan after a public hearing was held on (insert date). Documentation of the Town Council's adoption of the Plan is provided at the beginning of this plan.

### **Methodology**

In February 2020, the Hooksett Hazard Mitigation Plan Update Committee was formed to begin updating the plan. The Committee developed the contents of the Plan using the 10-step planning process set forth in the Hazard Mitigation Planning for New Hampshire

Communities handbook, along with the FEMA State and Local Mitigation Planning How-To Guides. Each section of the plan was reviewed and updated according to new information and the events of the past five years. The Update Committee consisted of representatives from various local agencies, including the Planning Department, Fire Department, Police Department, Public Works Department, IT Department, and Code Enforcement. The Committee held a total of four public meetings beginning February and June 2020 to collect information, compile the plan update, and review the plan. Tasks to complete the plan update were as follows:

**Task 1: Determine the Planning Area & Resources:** This task was conducted by Town staff and the Regional Planning Commission. Information from the previous plan was reviewed and revised. The results of this research can be found in Section II, "Community Profile".

**Task 2: Building the Planning Team:** This task was conducted by town staff and the Regional Planning Commission. Commission staff contacted department heads and land use board volunteers. Town staff made further inquiries and posted notices for residents and other stakeholders who might wish to volunteer their time and serve on a committee. The first committee meeting was held March 4<sup>th</sup>, 2020 at the Hooksett Town Offices to introduce the mitigation planning process to the committee. The Hooksett Hazard Mitigation Committee members are as followed:

- Nicholas Williams, Hooksett Town Planner
- Matthew Lavoi, Hooksett Code Enforcement
- Nicholas Germain, Hooksett Project Manager
- Kathy Lawrence, Hooksett Project Manager
- Earl Labonte, Hooskett Director of Department of Public Works
- Janet Bouchard, Hooskett Chief of Police
- Steve Colburn, Hooksett Assistant Fire Chief
- Justin Sargent, Hooksett Police Lieutenant

**Task 3: Create an Outreach Strategy:** This task was conducted by town staff and the Regional Planning Commission throughout the plan update. Together, multiple efforts were made to involve and educate the public regarding the process and input of the plan. Details of various outreach efforts can be found in this section of the plan.

**Task 4: Review Community Capabilities:** The Committee reviewed hazard types and the areas in Town that were most vulnerable. The committee updated previous year's past and potential hazards maps using the Statewide Asset Data Exchange System data and FEMA flood zones maps. Furthermore, the Committee identified and catalogued all the critical facilities and areas at risk within the town, see Section IV and maps "Critical Facilities," and "Areas at Risk."

**Task 5: Conduct a Risk Assessment:** The Committee conducted several assessments to help determine the gaps in coverage. These include Assessing the Probability, Severity, and Risk of natural, technological, and human-caused hazards (Section IV).

**Task 6: Develop a Mitigation Strategy:** The Committee reviewed all hazards and the existing mitigation strategies meant to address those hazards in **Section VIII**. Additionally, the Committee evaluated the effectiveness of the existing measures to identify where they can

be improved. Section IX summarizes the Committee's efforts in reviewing "complete", "completed and ongoing" or "deferred" action items from the 2015 Plan update as well as newly identified action items for the 2021 plan update. The Committee then evaluated all mitigation actions and prioritized them (Table 14: STAPLEE ranking matrix). The results can be found in The Community's action plan **(Section X)**, which outlines each action item's associated hazard, responsible party, anticipated cost, and anticipated timeframe for implementation.

**Task 7: Keep the Plan Current:** The Town of Hooksett understands the ramifications for ensuring that this plan be monitored and updated annually or after a presidentially declared disaster. Section XI addresses this issue.

**Task 8: Review & Adopt the Plan:** After acceptance by the Committee, the Plan was submitted to New Hampshire Homeland Security and Emergency Management (HSEM) and the Federal Emergency Management Agency (FEMA) Region 1 Office, for review. At a public meeting, the Town Council formally adopted the plan on **(date of Town Council approval)** **The plan was then granted formal approval by FEMA on (date of FEMA approval).**

**Task 9: Create a Safe & Resilient Community:** The committee discussed the mitigation actions in the Action Plan and the ways in which the implementation of the actions will be beneficial to the community. Annual reviews of the Action Plan by the committee are needed to maintain the timeframes identified for completion of activities. Incorporation of the plan into other land use plans and the Capital Improvement Plan may help ensure that the goals of this plan are met.

#### **Public Outreach Process and Public Committee Meetings**

The Hooksett Hazard Mitigation Plan Committee held four public meetings throughout the hazard mitigation plan update process. The first meeting was held March 4<sup>th</sup>, 2020 at the Hooksett Town Offices. Due to the State of Emergency declared by the Governor as a result of the COVID-19 pandemic and in accordance with the Governor's Emergency Order #12 pursuant to Executive Order 2020-04 April 4<sup>th</sup>, the following four meetings were held electronically on April 23<sup>rd</sup>, May 28<sup>th</sup>, and July 24<sup>th</sup>. Meeting access information, including instructions on how to log on to the electronic meetings were posted in two public places at least 24 hours in advance, as required by New Hampshire state law, RSA 91-A, including both the Town's and Commission's websites. Southern New Hampshire Planning Commission (SNHPC) staff facilitated each meeting and prepared an agenda, attendance sheet and minutes, which were distributed to the committee and made available for public review upon request. Although the public was noticed about the committee meetings, there was no public attendance or input received. Copies of the meeting agendas, minutes and attendance sheets are provided in Appendix F.

#### **Coordination with Other Agencies and Individuals**

The Hazard Mitigation Committee members and their respective town departments contributed to the contents and reviewed the Plan drafts. Additionally, meeting notices were sent to neighboring communities for their participation through the Southern New Hampshire Planning Commission Media Blast. Departments represented were:

- Town Council
- Emergency Management
- Department of Public Works
- Code Enforcement
- Planning Department

- Building Department
- Fire Department
- Police Department

## **Hazard Mitigation Goals and Objectives**

The Hooksett Hazard Mitigation Committee adopted the following goals, derived from the State of New Hampshire Multi-Hazard Mitigation Plan, 2018, for the Town of Hooksett at the March 4<sup>th</sup>, 2020 public meeting:

1. Minimize loss and disruption of human life, property, the environment, and the economy due to natural, technological, and human-caused hazards through a coordinated and collaborative effort between federal, State, and local authorities to implement appropriate hazard mitigation measures.
2. Enhance protection of the general population, citizens, and guests in the Town of Hooksett before, during, and after a hazard event through public education about disaster preparedness and resilience, and expanded awareness of the threats and hazards which face the Town and State.
3. Promote continued comprehensive hazard mitigation planning throughout the Town of Hooksett to identify, introduce, and implement cost effective hazard mitigation measures.
4. Address the challenges posed by climate change as they pertain to increasing the risk and impacts of the hazards identified within this plan.
5. Strengthen Continuity of Operations and Continuity of Government across the Town to ensure continuation of essential services.

## II. Community Profile

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

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

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

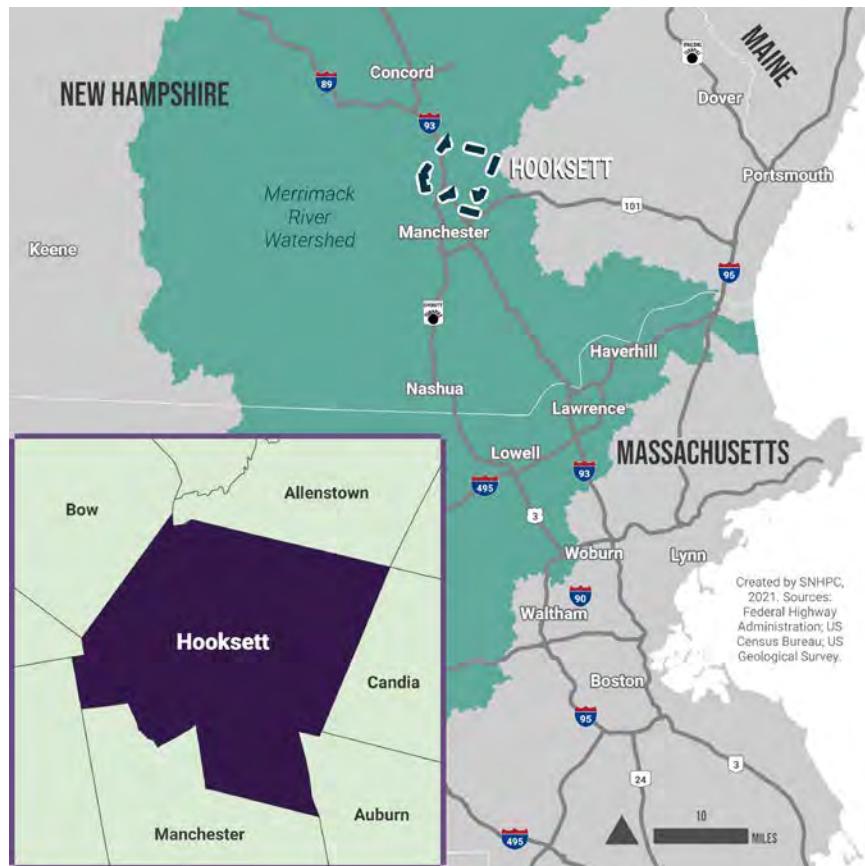


Figure 1: Location Map of Hooksett, New Hampshire

The principal watercourse within the Town of Hooksett is the Merrimack River. The Merrimack River floodplain ranges in width from 250 feet to 1,900 feet throughout the Town. The floodplain consists of agricultural areas along with residential and commercial development. The river flows through the western portion of Hooksett into

Manchester and into Massachusetts, where it turns northeast and empties into the Atlantic Ocean along the northeastern seaboard of Massachusetts.

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

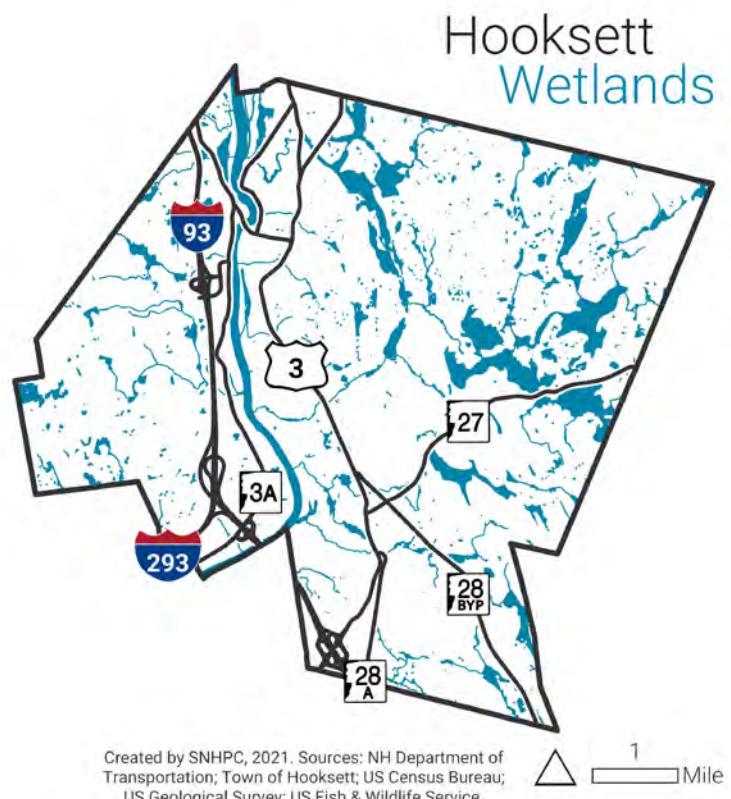


Figure 2: Hooksett Wetlands

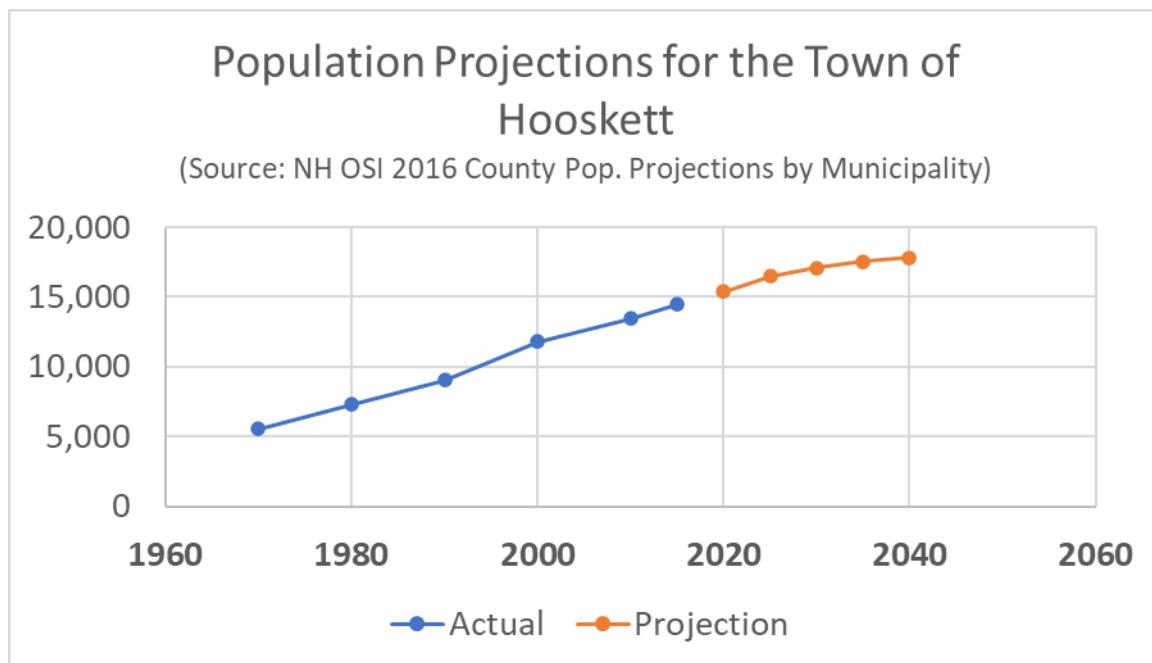
Hooksett is characterized as having rolling terrain with elevations ranging from 200 to 600 feet above sea level. The Town is underlain by granites, gneisses and schists. Those areas of land that are some distance away from the Merrimack River display a shallow depth to bedrock and frequent occurrence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

Average temperatures in July range from a high of 85 degrees to a low of 59. Average temperatures in January range from a high of 35 degrees to a low of -17 degrees Fahrenheit. Prolonged periods of severe cold are rare. Average annual precipitation is 40 inches.<sup>4</sup>

<sup>4</sup> Concord Climate Data for the Year 2012. National Weather Service. Gray, ME. Jan. 3, 2013. <http://www.nws.noaa.gov/climate/index.php?wfo=gyx>. 2013-10-15. Concord weather data is closest to Hooksett on record.

## Development and Population Trends

Since the mid-1960s, the Town of Hooksett has dealt with the pressure of significant population growth. From 1980 to 2010, the Town's population increased from 7,303 to 13,451, a growth rate of *over 84 percent* in 30 years. In 2016, the New Hampshire Office of Strategic Initiatives projected Hooskett's population to reach 17,823 by 2040. In order to accommodate this growth, nearly one acre of Hooksett's developable land per new resident has been converted to residential, commercial and industrial uses.



*Figure 3: Population Projections for the Town of Hooksett*

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

- The development of many subdivisions, driven in part by proximity to employment opportunities in the greater Manchester region, and improved transportation access provided by I-293 and I-93. Exit 10 added 250,000 square feet of space in 2003 and 2004.
- Economic development goals encourage significant commercial development to help ease the tax burden from residential owners.
- External forces, such as the real estate boom of the 1980s, the severe recession of the early 1990s and the great recession of 2007 to 2009 affect the Town and regional economy. In the last two years, the economic recovery led to a return of residential development.
- Development along NH Route 3 during the 1980s and 1990s, consisting mainly of commercial and retail uses, which has spurred the development of plans for

- alternate routes and improvements to NH Route 3 in order to relieve the severe traffic congestion along this corridor.
- As of 2009, the Town of Hooksett contained a ratio or percentage of residential land to industrial and commercial land in the order of 3:1. The increase in water supply made possible more intensive use of the lands in Hooksett, with smaller lots and higher densities.

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

- Pressure to build more housing with a tendency toward building single-family homes.
- The opening up to development of new areas of hilly, forested land that is beyond access to Town water and sewer.
- Many new housing units are being constructed in remote portions of Town, creating a greater burden on the Town to provide municipal services.
- Residential development slowed immensely during the 2007-2010 recession and was below pre-recession levels in 2015. From 2016-2019, residential development has been consistent with pre-recession levels. In 2019, the Town permitted 64 single-family units, a 77.8% increase from the 36 units permitted in 2018.

According to Moving Southern New Hampshire Forward there are areas in Hooksett which are considered fast growth areas such as east of NH Route 3 in the northern half and west of Route 3 in the southern half of Hooksett.<sup>5</sup> With this potential growth, the Town of Hooksett may be more vulnerable to some hazards such as flooding, wildfires and snow storms since there will be a larger population with more vulnerable development. The most significant obstacle to the expansion of commercial and industrial growth is the lack of municipal wastewater treatment services along NH Route 3A.

The Town of Hooksett's existing Zoning Ordinance, Floodplain Development Ordinance, Subdivision and Site Plan Review Regulations all work to minimize the impacts, if not eliminate any development in the hazard areas. The land outside of the Special Flood Hazard Areas and areas of steep slopes remain the preferred location of development in Hooksett, both by the Town and Developers. Extensive acreage of vacant developable land still exists outside of the Special Flood Hazard Areas and areas of steep slopes. The potential continuation of current rapid development trends may increase pressure to utilize these hazard areas, despite their inherent risks. Nonetheless, any proposed new developments or significant improvements in these zones would require variances from

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<sup>5</sup> Moving Southern NH Forward, 2015-2035 Regional Comprehensive Plan, SNHPC, 2015, page 44.

the Zoning Board of Adjustment and approval of the Planning Board. With these review opportunities and appropriate regulations, the Town will insist that any future growth in the hazard zones is constructed in a manner that creates no additional hazard risks.

Land use patterns in Hooksett has mainly remained consistent overall. However, since 2015, the Town has allowed development within the 1% annual chance flood zone. Specifically, there has been development along the west bank of the Merrimack River, adding to the risk of flooding for these properties.

### **Disaster Risk**

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

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

A record flood occurred in March 1936 and inundated much of the community. During this flood, Main Street in Hooksett was under 18 feet of water. A slightly smaller, but still damaging, flood occurred during the Hurricane of 1938. Discharges were not recorded for these unusual flood events but, based on records from other streams in the region, the return period for a flood comparable to the flood of 1936 exceeds 100 years.<sup>6</sup>

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

## **III. Determining How Much Will Be Affected**

### **Identifying Vulnerable Facilities**

It is important to determine which critical facilities are the most vulnerable and to estimate their potential loss. The first step is to identify the facilities most likely to be damaged in a hazard event. To do this, the location of critical facilities illustrated on Map 4 was compared to the location of various topographical elements, floodplains, roads, and water bodies using GIS (Geographic Information Systems). Vulnerable facilities were identified by comparing their location to possible hazard events. For example, all structures within the 100-year and 500-year floodplains were identified and used in conducting the potential loss analysis for flooding. The following discussion summarizes the potential loss estimates to structures (residential and non-residential) due to natural hazard events.

### **Flooding**

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<sup>6</sup> Flood Insurance Study, Town of Hooksett, NH, Federal Emergency Management Agency, April 19, 2010.

The estimation of flood risk was made following the Total Exposure in Floodplain (TEIF) methodology developed and conducted by FEMA for Region III. In this process, assessing data are joined with GIS building footprints. These building footprints are then overlayed with flood zones to determine the percentage of each in each flood zone. Financial exposure is then calculated proportionally based on the area in the floodplain as a percentage of the overall footprint. The TEIF procedure is typically used when significant data gaps exist that would inhibit more complex models.

Flood zone was determined using FEMA's National Flood Hazard Layer (NFHL), a GIS representation of the Flood Insurance Rate Maps (FIRM). GIS parcel and assessment data were received from the town in June 2020.

There are shortcomings with this procedure. First, it assumes all the value of a structure is located on its ground floor level. Second, building elevation and the expected elevation of a flood are not considered as building elevation data is not available in the assessing or GIS data. Lastly, indirect effects of damage to infrastructure or disruption of service are not evaluated. However, at a municipal scale it gives a useful baseline, ballpark estimate of a town's property value direct vulnerability to flooding events.

For Hooksett, approximately 966,900 square feet of structures' footprints are within FEMA flood zones. Around 233,300 square feet is in the 1% annual chance flood zone, and 733,600 square feet are within the .2% annual chance flood zone.

*Table 2: Building Exposure in Flood Zones*

Total Exposure in the Floodzone	Area of Structures (sq. ft)	Value of Structures	% of Total Assessed Value
1% Annual Chance of Flooding (100-year)	233,300	\$18,734,571	1.1%
0.2% Annual Chance of Flooding (500-year)	733,600	\$59,430,000	3.4%

### National Flood Insurance Program

Hooksett has been participating in the National Flood Insurance Program (NFIP) since April 2, 1979. The latest Flood Insurance Study is dated April 19, 2010. Flood Insurance Rate Maps and the Digital Flood Insurance Rate Maps (DFIRMS), all bearing the effective date of April 19, 2010, are used for flood insurance purposes and are on file with the Hooksett Planning Board. The Town of Hooksett also continues to implement and enforce its Floodplain Development Ordinance, which regulates all new construction and substantial improvements within the Special Flood Hazard Areas (SFHAs). In addition the town has implemented the following actions related to continued compliance with NFIP:

- Address NFIP monitoring and compliance activities
- Revise/adopt subdivision regulations, erosion control regulations, board of health regulations, etc. in order to improve floodplain management in the community
- Prepare, distribute or make available NFIP insurance and building codes explanatory pamphlets or booklets

- Identify and become knowledgeable of non-compliant structures in the community
- Identify cause of submit-to-rate structures and analyze how to prevent non-compliant structures in the future
- Require the use of elevation certificates
- Work with elected officials, the NH OEP, NH DOS HS – EM and FEMA to correct existing compliance issues and prevent any future NFIP compliance issues through continuous communications, training and education

As of November 30, 2020, the Town of Hooksett had 37 National Flood Insurance Program policies with 25 paid losses.<sup>7</sup> The town has five repetitive loss properties since 1978 with total losses paid at approximately \$1,091,606.58.<sup>8</sup> Repetitive loss *areas* are mapped on the Past Flood Hazards Map at the end of this chapter. The land uses within these areas are Low-density residential and Medium-density residential.

#### **Dam Breach or Failure**

Dam breach or failure could cause extensive flooding in Hooksett. Potential losses will depend on the extent and location of the dam failure or breach. The New Hampshire Department of Environmental Services categorizes dams into one of the following classifications: Non menace, low hazard, significant hazard and high hazard, which are differentiated by the degree of potential damages that a failure of the dam is expected to cause (NHDES.org). A complete description of the dam classifications can be found in section V “Past and Potential Hazards.”

The following is a list of dams in Hooksett and their hazard classification (Retrieved from the New Hampshire Department of Environmental Services, 2020):

*Table 3: Dams Hooksett NH*

Dam Name	River	Dam Owner	Hazard Classification	Status
HOOKSETT HYDRO DAM	MERRIMACK RIVER	CRP NH HOOKSETT LLC	Low Hazard	ACTIVE
DUBE POND DAM	MAPLE FALLS BROOK	MR ROBERT DUBE	Significant Hazard	ACTIVE
OLD BRICKYARD DAM	BRICKYARD BROOK	HOOKSETT VILLAGE WATER PRECINCT	Non-Menace Hazard	ACTIVE
GOLDFISH POND DAM	RAY BROOK	NH DOT	Low Hazard	ACTIVE
HACKETT HILL ESTATES FIRE POND	UNNAMED STREAM	ALPHA CONSTRUCTION	Non-Menace Hazard	ACTIVE
FIRE POND	UNNAMED STREAM	UNKNOWN	Non-Menace Hazard	ACTIVE

<sup>7</sup> NFIP Website data

<sup>8</sup> Data provided by FEMA

FIRE POND DAM	UNNAMED STREAM	MR DAVID T BRADY	N/A	EXEMPT
HACKET HILL ESTATES 2 DET POND	RUNOFF	101 REAL ESTATE INC	N/A	EXEMPT
HACKETT HILL ESTATES 1 DET POND	RUNOFF	101 REAL ESTATE INC	N/A	EXEMPT
DANA WOOD DETENTION POND	RUNOFF	MR CHARLES SOLMS mail ret	N/A	EXEMPT
DUBE POND NORTH DIKE	DUBE POND	DUBE FAMILY TRUST	N/A	EXEMPT
CARON DETENTION POND DAM	RUNOFF	GABRIEL CARON	N/A	EXEMPT
HEALTHSOURCE DET POND DAM	RUNOFF	NEWMARK KNIGHT FRANK GLOBAL CORP SERV	Low Hazard	ACTIVE
CENTRAL PARK PROJ DAM	RUNOFF	BROWNFIELDS PARTNERSHIP II	N/A	EXEMPT
DETENTION POND DAM	RUNOFF	TOWN OF HOOKSETT	N/A	EXEMPT
INTERSTATE MECHANICAL DET POND	RUNOFF	WILLOW POINT ASSN INC	N/A	EXEMPT
QUIMBY MOUNTAIN DET POND	RUNOFF	MR RODNEY S SHEHYN	Non-Menace Hazard	ACTIVE
KEHAS DETENTION POND	RUNOFF	MR STEPHEN KEHAS	N/A	EXEMPT
KINGSWOOD SUBDIVISION POND 1	RUNOFF	URDAC INC	Non-Menace Hazard	ACTIVE
KINGSWOOD SUBDIVISION POND 2	RUNOFF	URDAC INC	Non-Menace Hazard	ACTIVE
AWARE POND 1	RUNOFF	AWARE ret mail	Non-Menace Hazard	ACTIVE
AWARE POND 2	RUNOFF	AWARE ret mail	Non-Menace Hazard	ACTIVE
TOWN FIRE POND DAM	UNNAMED STREAM	TOWN OF HOOKSETT	N/A	EXEMPT
CANAD CINEMAS DET POND	RUNOFF	CANAD INC	Non-Menace Hazard	ACTIVE
LEDOUX DAM	UNNAMED BROOK	MS SHERRI THOMPSON	Low Hazard	ACTIVE
DETENTION BASIN DAM	RUNOFF	CBRE GLOBAL CORPORATE SERVICES	Non-Menace Hazard	ACTIVE

424 DETENTION POND DAM	RUNOFF	MR JEAN M GAGNON JR	N/A	EXEMPT
421 DETENTION BASIN DAM	RUNOFF	MR JOHN M GAGNON	N/A	EXEMPT
HOOKSETT MIDDLE SCHOOL DET POND	RUNOFF	HOOKSETT SCHOOL DISTRICT	Non-Menace Hazard	ACTIVE
PUBLIC PARK DAM	UNNAMED BROOK	3A DEVELOPMENT LLC	N/A	EXEMPT
UNIVERSITY CIRCLE DET POND DAM	RUNOFF	3A DEVELOPMENT LLC	Non-Menace Hazard	ACTIVE
COLLEGE PARK DRIVE EMBANKMENT DAM	RUNOFF	GREEN VIEW MANAGEMENT LLC	Low Hazard	ACTIVE
US 3 & RT 28 BYPASS DET POND DAM	RUNOFF	NH DOT	Non-Menace Hazard	ACTIVE
VERIZON WIRELESS DET POND DAM	RUNOFF	VERIZON WIRELESS	Non-Menace Hazard	ACTIVE
HOOKSETT #66 MARKET BASKET DET POND	RUNOFF	DSM REALTY	Low Hazard	ACTIVE
MARKET BASKET DET POND 2	RUNOFF	DSM REALTY	Non-Menace Hazard	ACTIVE
ELLIOT POND DAM	TR BRICKYARD BROOK	SHAUN TABITHA SCOTT AND JEFFREY ELLIOT	Non-Menace Hazard	ACTIVE

### **Hurricanes**

Hurricanes occur periodically in the Northeast, but most degrade to tropical storms by the time they reach inland communities such as Hooksett. These tropical storms can still cause significant damage to the community due to flooding and strong winds. The assessed value of all residential and commercial structures in Town as of 2021 is \$2,225,226,610.

Assuming 1% to 5% damage, a hurricane could result in \$22,252,266 to \$111,261,330 of structure damage.

### **Tornadoes / High Wind Events**

While tornadoes are relatively uncommon in New Hampshire, significant damage can occur depending on where the tornado strikes. New Hampshire is located within Zone 2 for Design Wind Speed for Community Shelters, which is 160 mph. The assessed value of all residential and commercial structures in Town as of 2021 is \$2,225,226,610. Assuming 1% to 5% damage, a hurricane could result in \$22,252,266 to \$111,261,330

### **Severe Winter Weather**

New Hampshire is periodically impacted by heavy snowstorms and Nor'easters during the months of January and February. The severity of these types of storms vary according to the amount of snow and ice that accumulates during the storm as well as wind velocity. Ice storms often cause widespread power outages and significant damage to trees and power

lines. The ice storm of 2008 caused \$15 million worth of damage to the State as a whole. The assessed value of all residential and commercial structures in Town as of is \$2,225,226,610. Assuming 1% to 5% damage, a hurricane could result in \$22,252,266 to \$111,261,330.

### **Wildfires**

The risk of fire varies depending on the location. Forest fires are more likely to occur during prolonged periods of drought. The entire town of Hooksett is susceptible to wildfire risk, especially isolated neighborhoods where access by emergency personnel may be more difficult. The assessed value of all residential and commercial structures in Town as of 2021 is \$2,225,226,610. Assuming 1% to 5% damage, a hurricane could result in \$22,252,266 to \$111,261,330.

### **Earthquakes**

New Hampshire is considered to be an area of moderate seismic hazard. This means that the State could experience large (6.5-7.0 magnitude) earthquakes, but they are not likely to occur as frequently as in a high hazard area like California. The State typically experiences one or two earthquakes per year registering magnitude 2.0 to 3.5 and numerous other smaller ones.<sup>9</sup> The entire Town of Hooksett is susceptible to structural damage from an earthquake. The assessed value of all residential and commercial structures in Town as of 2021 is \$2,225,226,610. Assuming 1% to 5% damage, a hurricane could result in \$22,252,266 to \$111,261,330.

### **Lightning**

The extent of lightning damage will vary according to the structure or area hit. The damage could range from a few thousand dollars to a million plus, depending on the severity of the event. No major lightning damage is known to have occurred in the Town.

### **Drought**

Prolonged periods of drought may increase the risk of wildfires in forested areas and impact town water supplies. The amount of damage incurred will depend on the length and severity of the drought. The Town of Hooksett, like the rest of the State was impacted by the drought that occurred the Summer of 2016 and experienced a drought in 2020.

### **Extreme Temperatures**

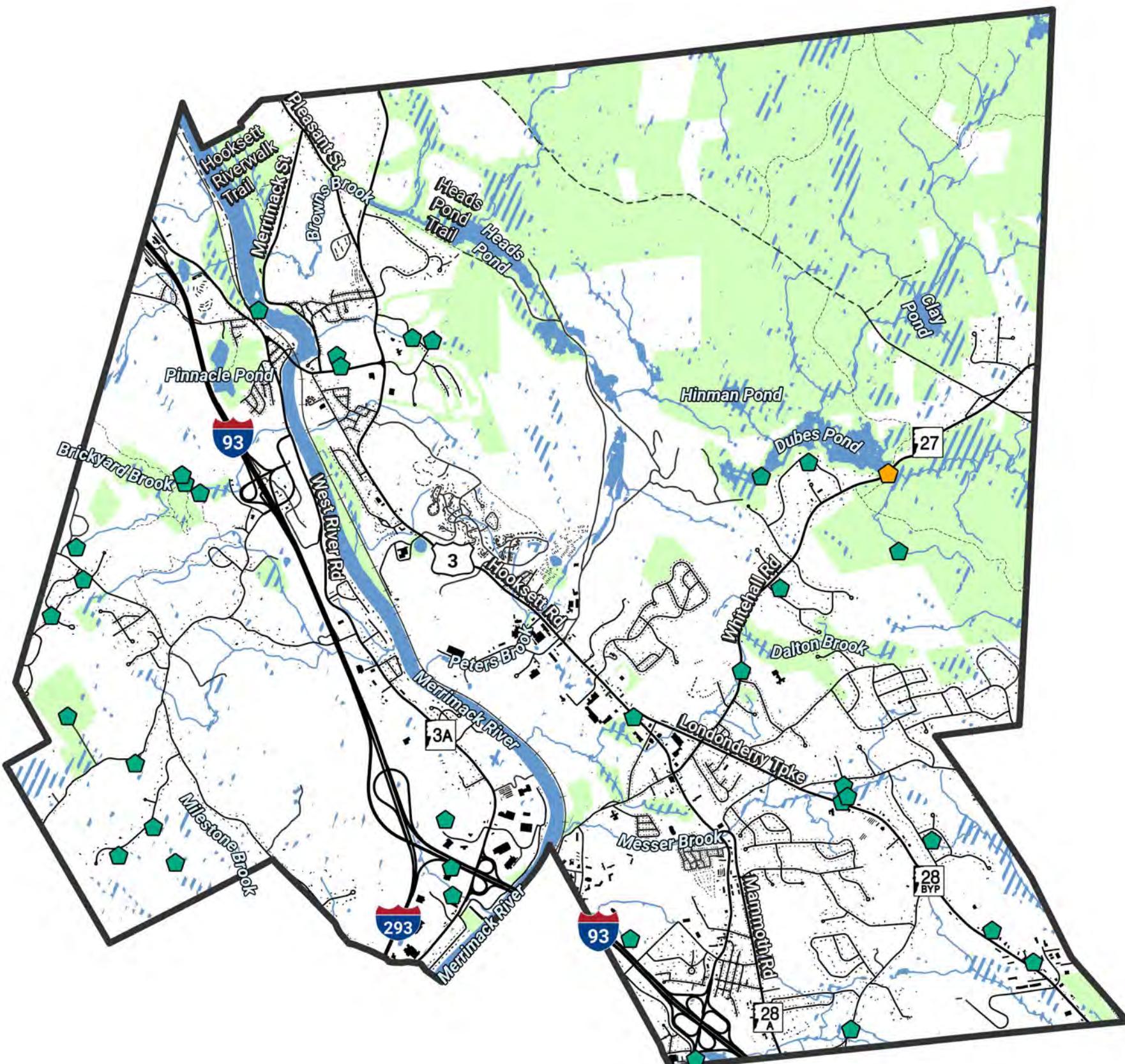
The entire Town of Hooksett is susceptible to damage from extreme temperatures. Periods of extreme heat could increase the risk of wildfires and periods of extreme cold might impact water pipes and other infrastructure. Vulnerable populations such as the elderly and homeless in Hooksett are more susceptible to the impacts of extreme temperatures. The amount of damage will vary depending on the hazard event.

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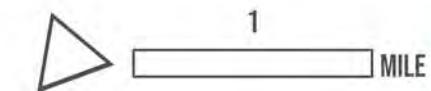
<sup>9</sup> State of New Hampshire Multi Hazard Mitigation Plan 2018

# HOOKSETT HAZARD MITIGATION PLAN

## Map 1: Dams



- Orange diamond: Significant Hazard
- Green diamond: Other Dams



Created by the Southern New Hampshire Planning Commission, 2021. Sources: Microsoft; NH Department of Environmental Services; NH Department of Transportation; Open Street Maps; Town of Hooksett; University of NH; US Census Bureau; US Geological Survey; US Fish & Wildlife Service.

## Assessing Probability, Severity and Risk

The Committee members completed a risk assessment for the following hazards: inland flooding, drought, earthquakes, extreme temperatures, High wind events, infectious disease, lightning, severe winter weather, solar storms and space weather, tropical and post tropical cyclones and wildfire. The process involved assigning Low, Medium, or High values (numerically 1, 2 or 3) to each hazard type for its possible impact to humans, property, and businesses. (A score of zero was given if the hazard was not applicable). To assess probability, a 1, 2, or 3 value was assigned to each hazard type with respect to the likelihood that the hazard would occur in the next 25 years. Severity was calculated by determining the average of the human, property, and business impacts. Risk was calculated by multiplying severity by probability and low, medium, or high risk was assigned accordingly.

	Human Impact	Property Impact	Business Impact	Probability	Severity	Relative Threat	Risk
	Probability of Death or Injury	Physical Losses and damages	Interruption of Service	Likelihood this will occur in 25 years	Avg. of Human/Property/Business	Severity x Probability	
<b>Natural Hazards</b>							
Inland Flooding	1	1	1	1	1.0	1	Med
Drought	2	1	2	3	1.7	5	Med
Earthquake	1	1	1	1	1.0	1	Low
Extreme Heat	2	1	1	3	1.3	4	Med
Extreme Cold	2	1	1	3	1.3	4	Med
Tornado	1	1	1	1	1.0	1	Low
Straight-line winds	1	3	3	3	2.5	7.5	Med-High
Infectious Diseases	3	1	1	3	1.7	5.0	Med
Lightning	1	2	2	2	1.7	3.3	Low-Med
Severe Winter Weather	2	2	2	2	2.0	4	Med
Solar Storms and Space Weather	1	1	1	1	1.0	1	Low
Tropical and Post Tropical Cyclones	2	2	2	2	2.0	4	Low
Wildfire	1	2	1	2	1.3	2.7	Low-Med
<b>Technological Hazards</b>							
Dam Failure	1	1	1	1	1.0	1.0	Low
Known and Emerging Contaminates	2	2	1	2	1.7	3.3	Low-Med
Long-term Utility Outage	1	1	1	1	1	1	Low-Med
<b>Human Caused Hazards</b>							
Cyber Events	1	1	3	3	1.7	5	Med
Mass Casualty Incident	3	2	2	2	2.3	4.7	Med
Terrorism/Violence	3	2	2	2	2.3	4.7	Med
Transport Accident	3	2	2	2	2.3	4.7	Med

## V. PROFILE OF PAST AND POTENTIAL HAZARDS

An important step in planning for natural hazard mitigation is to identify hazards that may affect the Town. Some communities are more susceptible to certain hazards (i.e., flooding near rivers, hurricanes on the seacoast, etc.). Due to topography and location as well as the history of hazard events that have impacted Hooksett, the following natural hazards were identified and analyzed as part of this plan update:

- Inland flooding
- Drought
- Earthquakes
- Extreme temperatures
- High wind events
- Infectious disease
- Lightning
- Severe winter weather
- Solar storms and space weather
- Tropical and post tropical cyclones
- Wildfire

Technological and human-caused hazards were also discussed as part of this plan update. These include the following:

- Aging infrastructure
- Conflagration
- Dam failure
- Known and emerging contaminants
- Long term utility outage
- Cyber events
- Mass casualty incidents
- Terrorism / violence and
- Transport accidents

Natural hazards that are included in the State of New Hampshire's 2018 Multi-Hazard Mitigation Plan but are not included in this plan update include avalanche, coastal flooding, and landslides. The Town of Hooksett has no record of landslides or avalanches and little chance of either occurring in Town. Therefore, they were left out of the 2021 plan update. Since Hooksett is not located on the seacoast, coastal flooding is not an applicable natural hazard.

The following section includes profiles of each of the identified hazards. The profiles include a description of the hazard, the geographic location of each natural hazard (if applicable), the extent of the natural hazard (e.g. magnitude or severity), probability, and past occurrences. Past occurrences of natural hazards were mapped if possible (Map 2: Past flooding hazards). A summary of natural hazard events having occurred since the 2015 Plan update is located at the end of this section.

## **Natural Hazards**

### **A. Inland Flooding**

**Description:** Inland flooding is generally defined as a high flow, overflow, or inundation by water, which causes or threatens damage<sup>10</sup>. Flooding results from the overflow of rivers, their tributaries, and streams throughout the State, primarily from high precipitation events (State of New Hampshire Multi-Hazard Mitigation Plan, 2018).

**Location:** In the Town of Hooksett, major floods occur on the Merrimack River during the spring, fall, and winter seasons. Some of the more severe flooding occurs in early spring as a result of snowmelt and heavy rains in conjunction with ice jams. Autumn is another critical season for flood danger because of heavy rainfall associated with storms of tropical origin. Minor flooding incidences in the Town Hooksett can occur at any time of the year, as even heavy thunderstorms can result in rapid runoff and flooding in the downstream portion of the small streams.<sup>11</sup> Known effects from flooding in Hooksett include wetlands increasing in size and structural damage. Flooding is associated with different weather events and patterns. Recent notable flooding includes the 2006 Mother's Day Flood, the 2007 flooding, and the February 2010 windstorm. The following areas have had flooding problems, including erosion and problem culverts.

**Table 4 – Past Flooding Areas in Hooksett**

<b>Area</b>	<b>Type of Damage and Description</b>	<b>Severity</b>	<b>2021 Update</b>
NH Route 3 near Hooksett Kawasaki (HK) Powersports at 1354 Hooksett Rd	Water flowing over the road, but road still passable	Moderate	Listed as common flood location in Aug 2011 Irene Operational Plan. Beaver Dam plugs drainage pipe (East side of PSNH property). Did not flood again between 2004 and 2009. Suggested mitigation strategy: install Beaver pipe
NH Route 3A/ West River Rd and Cross Rd area in floodplain west side of Merrimack River	Water flowing over the road on West River Rd, road closure on Cross Rd	Moderate	Flooding occurred at 263 West River Rd in 2007, nearby Cross Rd at I-93 closed during Hurricane Sandy 2012.
Scott Road / Meadowcrest Road	Water flowing over the road	Moderate	One-time incident. Adjacent to river
NH Route 27/ Whitehall Rd - Dube's Pond	Heavy erosion washes the road out/ covers road	Severe	Road washouts/ covered by water in Mother's Day 2006 flood and 2007 flooding, impedes traffic and coordination with Candia
Kimball Drive area	Road closed at #62 Kimball during Hurricane Sandy 2012	Moderate	Along river. Road closed at #62 Kimball during Hurricane Sandy

<sup>10</sup> <http://w1.weather.gov/glossary/index.php?letter=f>

<sup>11</sup> 2010 Flood Insurance Study, Town of Hooksett, NH, FEMA, p. 13

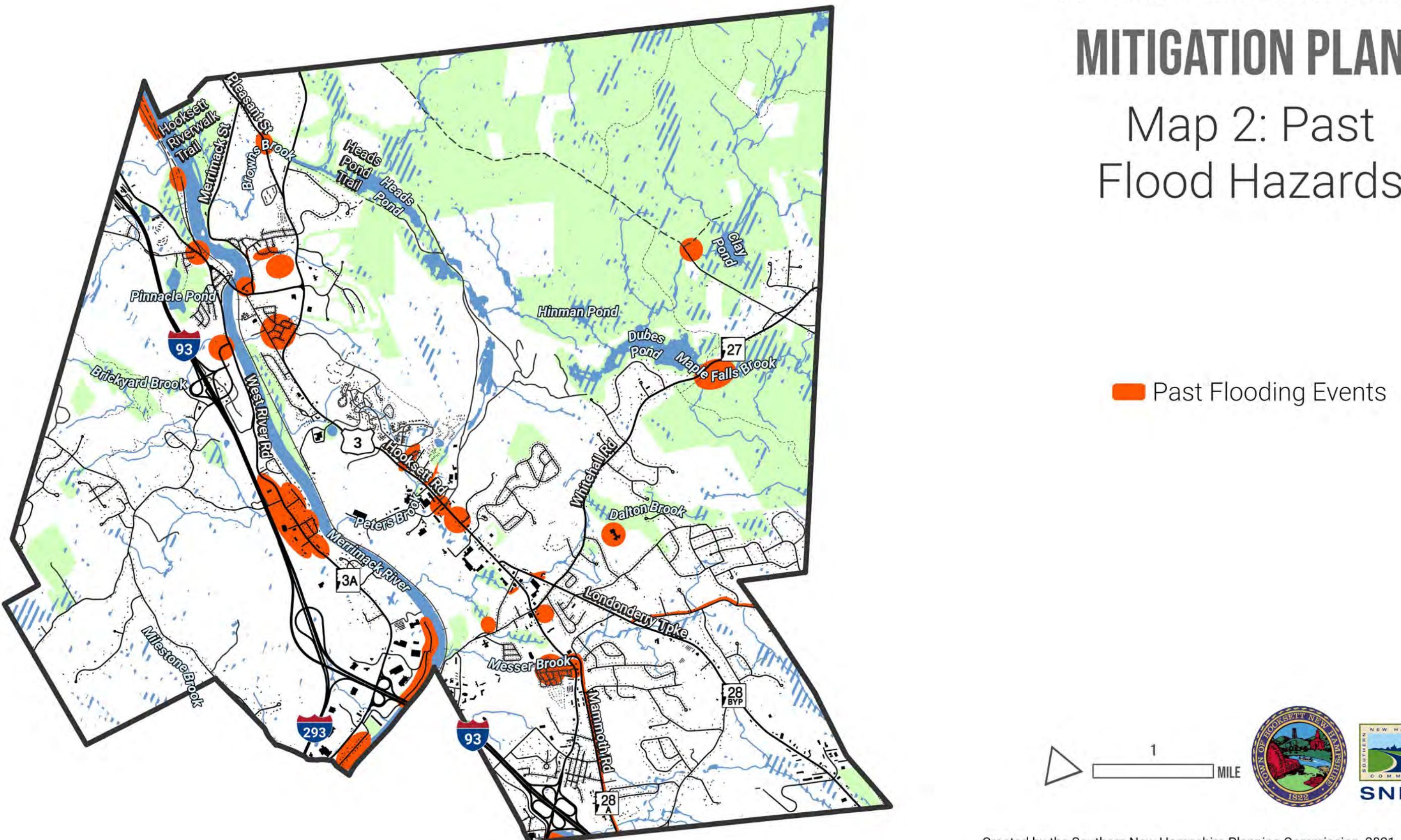
Area	Type of Damage and Description	Severity	2021 Update
			2012
Congregational Church, 5 Veterans Drive	Road damage/erosion	Low	Floods adjacent to river
Burgess Self Storage/ Manchester Manor Trailer Park, off Route 3 at 1180 Hooksett Rd	Flooding/erosion	Moderate	Listed as common flood location in Aug 2011 Irene Operational Plan. Still an issue - nearby brook causes flooding just with heavy rains. Privately owned subdivision
Goonan Rd	Road closed, erosion and flooding	Moderate	Floods adjacent to river
Pleasant St	Road tar washed out	Low	Tar washed out in Mother's Day flood; tar was replaced
Bullard Drive	Road closure, flooding and sinkhole	Low	Affected in Mother's Day flood, and road closed during major flooding (2007). Catch basins cannot handle the load distributed to them.
Edgewater Drive off 3A North of old Town Hall	Homes and road flooding	Moderate	State flood control dam above stream. Has not flooded recently, but potential problem area
Cawley MS, Whitehall Road	Heavy erosion washes the road out	Low	Wash outs in 2006 and/or 2007 flooding
Mammoth Road	Heavy erosion washes the road out, road closures at multiple points	Low	Wash outs in 2006 and/or 2007 flooding. Road closed at Rae Brook Rd, Hale Ave, and Silver Ave during Hurricane Sandy 2012
Auburn Rd	Multiples points of road closures	Moderate	Closed from Joanne to Sergeant during major flooding (2007) and at #80 Auburn during Hurricane Sandy 2012
NH Route 3/ Hooksett Rd near Peter's Brook	Water flowing over the road, but road still passable	Low-Moderate	In major flooding (2007) water flowing over the road, but road still passable
Kennedy Dr, Morgan Dr, Grant Dr, Pleasant View Dr, and Ray Dr area	Road closures	Low-Moderate	Road closures at intersections of the streets - major flooding (2007)
Rusty Road, Vindale Rd, Matthew Rd, and Embassy Ave area along Messer Brook	Road closures	Low-Moderate	The first three roads closed during major flooding (2007) and Embassy Ave closed after Buddy St during Hurricane Sandy 2012
Stevens Dr.	Road closure, sinkholes	Low	Road closed during major flooding (2007)

**Table 4 – Mitigated Flooding Areas in Hooksett** contains details on the type of damage and description, severity, and 2021 updates on flooding for each mitigated area.

<b>Area</b>	<b>Type of Damage and Description</b>	<b>Severity</b>	<b>2021 Update</b>
Kmart area (NH RT and RT 27/ 101B and Bypass 28/ Londonderry Turnpike)	Severe flooding before mitigation	Severe	Mitigated, no longer floods in heavy rain. Dalton brook was lowered through blasting, a large 9'x12' box culvert was installed, piping across Rt. 28 to Kmart was increased, a pipe across Rt. 3 down Rte. 3 and into Dalton Brook was installed, and a large retention pond was built
Chester Turnpike	Road washed out	Severe	Washed out in Mother's Day flood - a larger culvert/ pipe installed to mitigate future flooding
Benton Road	Severe flooding before mitigation	Severe	Mitigated as part of Kmart area mitigation efforts; seems to be resolved

# HOOKSETT HAZARD MITIGATION PLAN

## Map 2: Past Flood Hazards

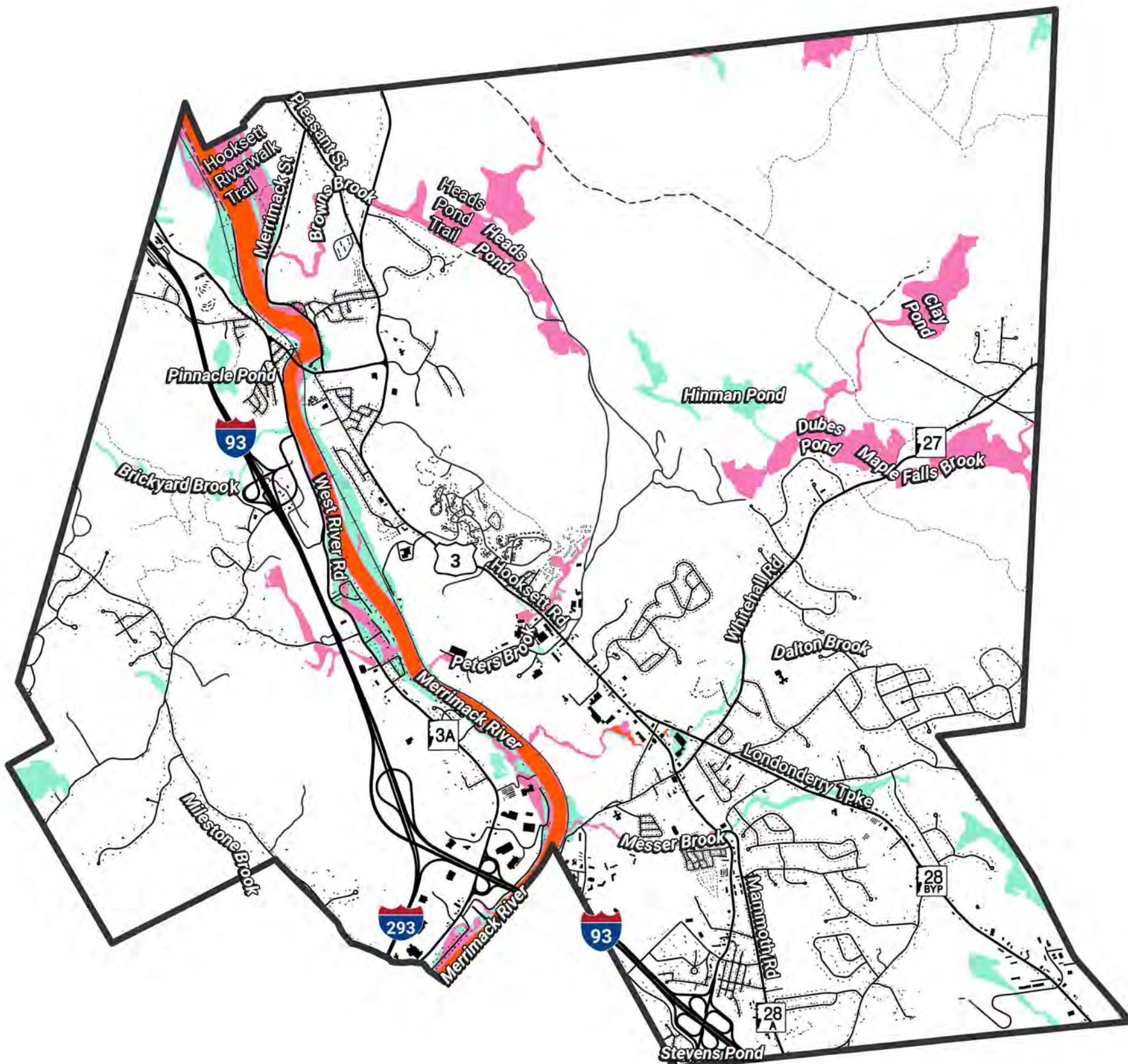


Created by the Southern New Hampshire Planning Commission, 2021. Sources: Microsoft; NH Department of Environmental Services; NH Department of Transportation; Open Street Maps; Town of Hooksett; University of NH; US Census Bureau; US Geological Survey; US Fish & Wildlife Service.

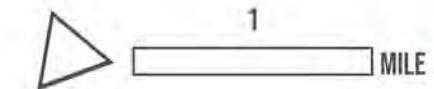


# HOOKSETT HAZARD MITIGATION PLAN

Map 3:  
Flood Zones



- Floodway
- 1% Annual Chance
- 0.2% Annual Chance



Created by the Southern New Hampshire Planning Commission, 2021. Sources: Microsoft; Federal Emergency Management Agency; NH Department of Transportation; Open Street Maps; US Census Bureau.

**All Special Flood Hazard Areas in the Town of Hooksett** are potentially at risk if a 100-year floodplain event occurs. Concern should be given to the above listed known problem locations as well as Lilac Bridge, Train Trestle, the PSNH Dam, Dube's Pond Dam and the Chester Turnpike area. Map 3 displays building footprints and development in Hooksett within the 100- and 500-year flood plains.

**Extent:** Where river gauges are present, the magnitude of flooding is ranked, and area-specific forecasts are created using a flood scale that ranges from the Action Stage to Major Flood Stage. The National Weather Service characterizes flood severity to communicate the impact of flooding more effectively as follows:

- Action Stage – Water source is rising, and actions must be taken in preparation for potential significant hydrologic activity. There are no impacts at this stage.
- Minor Flood Stage – Minimal or no property damage, but possibly some public threat (e.g., inundation of roads)
- Moderate Flooding – Some inundation of structures and roads near streams. Some evacuations of people and/or transfer of property to higher elevations
- Major Flooding – Extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations.

Areas that are not monitored by river gauges are not forecasted or measured using a specific scale; therefore, the best way to describe the extent of the hazard of flooding is its speed of onset (how quickly the floodwaters rise) and its duration (how long the area remains inundated with flood waters). Floods can happen slowly over time during a long duration event or they can happen very rapidly (flash flooding). The speed of onset and duration of an inland flooding event is influenced by the size of the channel and contributing watershed area, terrain of the contributing watershed area, intensity and duration of the rainfall or snowmelt, recent rainfall history, and other factors (State of New Hampshire Multi-Hazard Mitigation Plan, 2018).

### **Drought**

**Description:** A drought is the absence of water in a region that occurs slowly due to below-average precipitation over an extended period, resulting in low stream flows, low surface water, and low groundwater levels (State of New Hampshire Multi-Hazard Mitigation Plan, 2018).

New Hampshire breaks the State into five Drought Management Areas: one in the north; one across the central region; and three along the southern portion of the State. Federal agencies have coordinated to develop the National Drought Monitor which classifies the duration and severity of the drought using precipitation, stream flow, and soil moisture data coupled with information provided on a weekly basis from local officials. The New Hampshire Drought Management Team, whose efforts are coordinated by the NH DES, utilizes these maps to help determine which areas are hit the hardest. NH DES also maintains a "Situation Summary" where precipitation, stream flow, groundwater level, lake

level and fire danger data from all over the state can be accessed to assess if areas in New Hampshire are being impacted by drought.

**Location:** All areas in Hooksett have the potential to be impacted by a drought event. Droughts increase the risk of wildfire, especially in forested areas. In the drought of 2016-17, private wells throughout town were significantly compromised. the US Drought Monitor program classifies drought on a scale of none to D4 (Exceptional Drought). The first two maps in Figure 4 show the average number of weeks each year of D0 (Abnormally Dry) drought or worse (Mild or Worse) and D1 (Moderate Drought) or worse for 2000-2009. The bottom two maps show the same for the period of 2010-2019. In both instances, Southern New Hampshire and the rest of New England show an increase in the average number of weeks of drought each year compared to the previous decade.

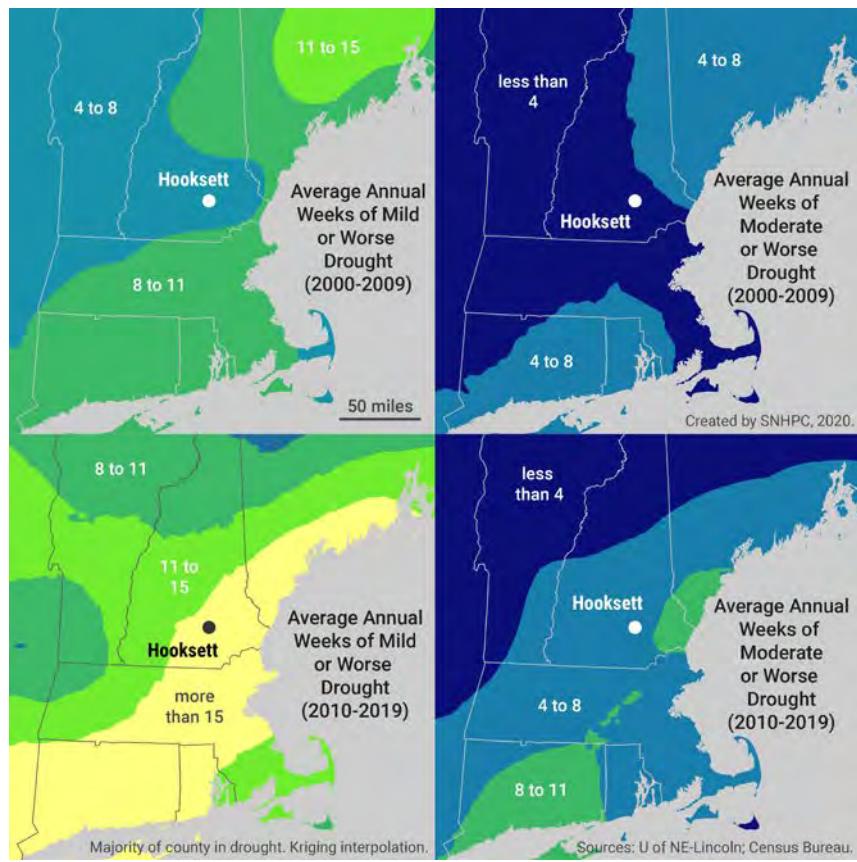


Figure 4: Average Annual Weeks of Mild or Worse and Moderate or Worse Drought 2000-2019

**Extent:** The severity of a drought is assessed using the US Drought Monitor's intensity scale.

	<b>WATCH</b> <b>D0</b> Abnormally Dry	<b>ALERT</b> <b>D1</b> Moderate	<b>WARNING</b> <b>D2</b> Severe	<b>EMERGENCY</b> <b>D3</b> Extreme	<b>DISASTER</b> <b>D4</b> Exceptional
<b>Conditions to be used by NH Drought Management Team as basis for recommendations to the US Drought Monitor</b>					
<b>PRECIPITATION</b> 1-month SPI 3-month SPI 6-month SPI 12-month SPI	<0.0 Not Applicable Not Applicable Not Applicable	Not Applicable <0.0 Not Applicable Not Applicable	Not Applicable <-1.0 Not Applicable Not Applicable	Not Applicable Not Applicable <-1.0 Not Applicable	Not Applicable Not Applicable Not Applicable <-1.0
<b>STREAMFLOW</b> 28-day streamflow 65% normal	Up to 1 Month	1-3 Months	3-6 Months	6-9 Months	>9 Months
<b>PALMER INDEX</b> PDSI	Not Applicable	<0.0	<-1.0	<-2.0	<-3.0
<b>GROUNDWATER</b>	Not Applicable	Monthly Levels Drop Below Mean	Monthly Levels Persist Below Monthly Mean	Not Quantified	

Figure 1: US Drought Monitor Intensity Scale

**Impacts:** Droughts can have severe economic, environmental, and social impacts on a community. Examples of potential impacts include<sup>12</sup>:

- Cost of irrigation and drilling new wells.
- Businesses that rely on farming, such as tractor and feed suppliers, may lose income.
- Loss or destruction of fish and wildlife habitat.
- More frequent wildfires.
- Health problems associated with increased dust and/or pollen.
- Health problems associated with poor water quality.

**Past Occurrences:** In 2016, an extreme drought was declared for the State of New Hampshire, which lasted 47 weeks and affected private wells and water systems in the Town of Hooksett. Additionally, as of October 2020, the State is experiencing a severe drought, which began in May (U.S. Drought Monitor, 2020). In 2020, the Central Hooksett Water Precinct implemented mandatory water restrictions.

### Earthquake

**Description:** The United States Geological Survey (USGS) defines an earthquake as a sudden slip on a fault. Tectonic plates are always slowly moving but can get stuck on edges due to friction. When the stress on the plates overcomes the friction, there is an earthquake that releases an energy wave that travels through the earth's crust<sup>13</sup>. The earthquake hazard is anything associated with an earthquake that may affect the normal activities of people, such as surface faulting, ground shaking, landslides, tsunamis, structural damage, etc.

New Hampshire is an area of moderate seismic hazard. This means that the State could experience large (6.5-7.0 magnitude) earthquakes, but they are not likely to occur as frequently as in a high hazard area like California. The State typically experiences one or two earthquakes per year registering magnitude 2.0 to 3.5 and numerous other smaller ones (State of New Hampshire Multi-Hazard Mitigation Plan 2018)

<sup>12</sup> State of New Hampshire Multi-Hazard Mitigation Plan 2018

<sup>13</sup> <https://www2.usgs.gov/faq/categories/9827/3343>

Location: All areas in Town have the potential to be affected by an earthquake. While earthquakes are generally mild and rare in New England, there is a relative hotspot of activity located in central New Hampshire which affects the Town of Hooksett (Figure 6). The risk posed by this hotspot is small, especially compared to other hazards, but its existence should be acknowledged in hazard mitigation planning.

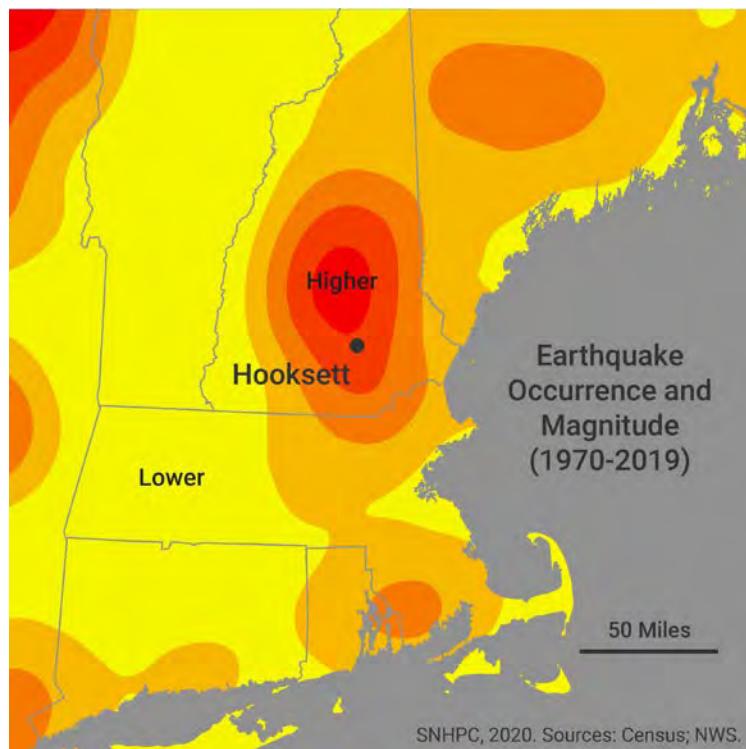


Figure 2: Earthquake Occurrence and Magnitude 1970-2019

Extent: There are two primary ways in which earthquakes are measured: magnitude (the size of the earthquake) and intensity (measure of the shaking and damage, which can vary from location to location). Magnitude is measured in the Moment Magnitude scale (based off the obsolete Richter scale). The Modified Mercalli Intensity (MMI) classifies the perceived feeling of the earthquake. One of New England's more notable seismic zones runs from the Ossipee Mountain area of New Hampshire, through the Auburn area, and continues south toward Boston, Massachusetts. This area has a mean return time of 408 years for a 6.0 Richter scale earthquake or a 39 percent probability of occurrence in 200 years.

Additionally, for a 6.5 Richter scale quake, there is a mean return time of 1,060 years or a 17 percent probability of occurrence in 200 years (Pulli). When New England is generalized for earthquake probability estimation, the risk increases from the specific hazard zone noted above. For New England there is an estimated return time of every 10 years for an earthquake with a 4.6 Richter scale magnitude and 1000 years for 7.0 magnitude<sup>14</sup>.

In the mid-1930s the Richter Scale, which measures earthquake magnitude, was developed, and adopted as a logarithmic scale based on the amplitude of the seismic waves as measured on a seismograph at a standard distance. In the 1970s the Richter Scale was replaced by the Moment Magnitude Scale which captures all different seismic waves from

<sup>14</sup> State of New Hampshire Multi-Hazard Mitigation Plan 2018

an earthquake which allows for more precise measurement. An increase of 1 on the magnitude scale represents an earthquake that has 10x the energy than an earthquake of the previous magnitude<sup>15</sup>

*Table 5: Modified Mercalli Intensity Scale*

Modified Mercalli Intensity Scale		
Magnitude	Value	Description
1.0 – 3.0	I	Not felt except by a very few under especially favorable conditions.
3.0-3.9	II	Felt only by a few persons at rest, especially on upper floors of buildings.
3.0-3.9	III	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations like the passing of a truck. Duration estimated.
4.0-4.9	IV	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
4.0-4.9	V	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
5.0-5.9	VI	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
5.0-5.9	VII	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
6.0 and higher	VIII	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
6.0 and higher	IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
7.0 and higher	X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.
7.0 and higher	XI	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
7.0 and higher	XII	Damage total. Lines of sight and level are distorted. Objects thrown into the air.

**Past Occurrences:** From 1728 to 1989, there were 270 earthquakes in New Hampshire. This is approximately one quake per year. There were six quakes over 4.0 on the Richter scale during the 1900s (Ibid 39-42). The most recent earthquake recorded in New Hampshire was on January 3, 2011, 20 miles NNW of Laconia, with a magnitude of 2.5 on the Richter scale (USGS Earthquake Hazards Program). There have been no earthquakes in the town of Hooksett since the last plan update.

## Extreme Temperatures

<sup>15</sup> <https://www.des.nh.gov/organization/commissioner/pip/factsheets/geo/documents/geo-3.pdf>

## 1. Extreme Heat

Description: Extreme heat events occur because of above normal temperatures, which often coincide with high relative humidity, that increase the likelihood of heat disorders with prolonged exposure or strenuous activity. This risk comes from the heat and humidity preventing the human body from adequately cooling itself using natural methods; this can result in heat disorders and, if untreated, unconsciousness and eventually death. Heat-related disorders include heat cramps, heat exhaustion, and heat stroke<sup>16</sup>. Populations at risk, such as the young and elderly, are more likely to experience a heat-related disorder during a heat event<sup>17</sup>. NOAA's National Weather Service has prepared the following Heat Index identifying likelihood of heat disorders under prolonged exposure or strenuous activity:

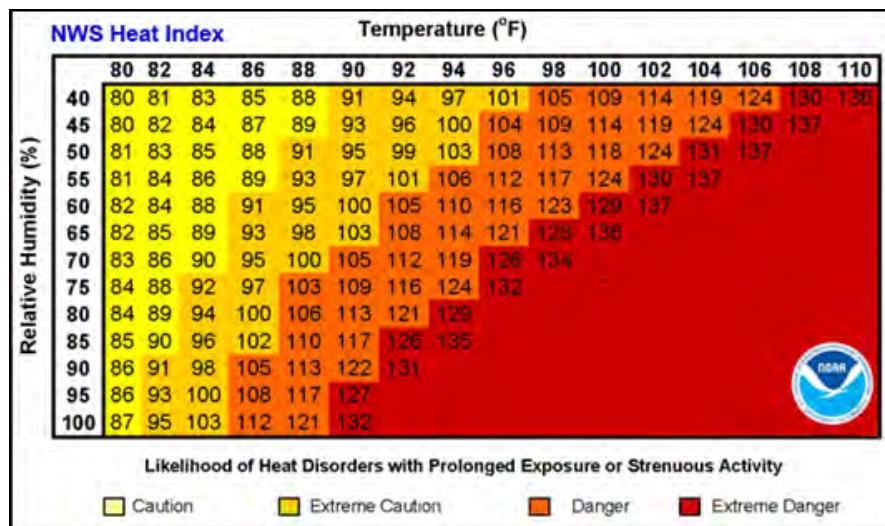


Figure 3: National Weather Service Heat Index

Location: All areas in Town would be affected by an extreme heat event. Those most at risk would be elderly residents. Areas and populations at greater risk are:

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

Over time, Hooksett and the State of New Hampshire have experienced an increase in the average number of hot days (80°F and 90°F) per year. The following graph shows the increase in hot days from 1940 to 2017 (source: NOAA). An increase in extreme heat over time will have significant impacts on the State such as an increased likelihood for drought and increased risk of wildfire.

<sup>16</sup> [http://www.nws.noaa.gov/om/heat/heat\\_index.shtml](http://www.nws.noaa.gov/om/heat/heat_index.shtml)

<sup>17</sup> State of New Hampshire Multi-Hazard Mitigation Plan 2018

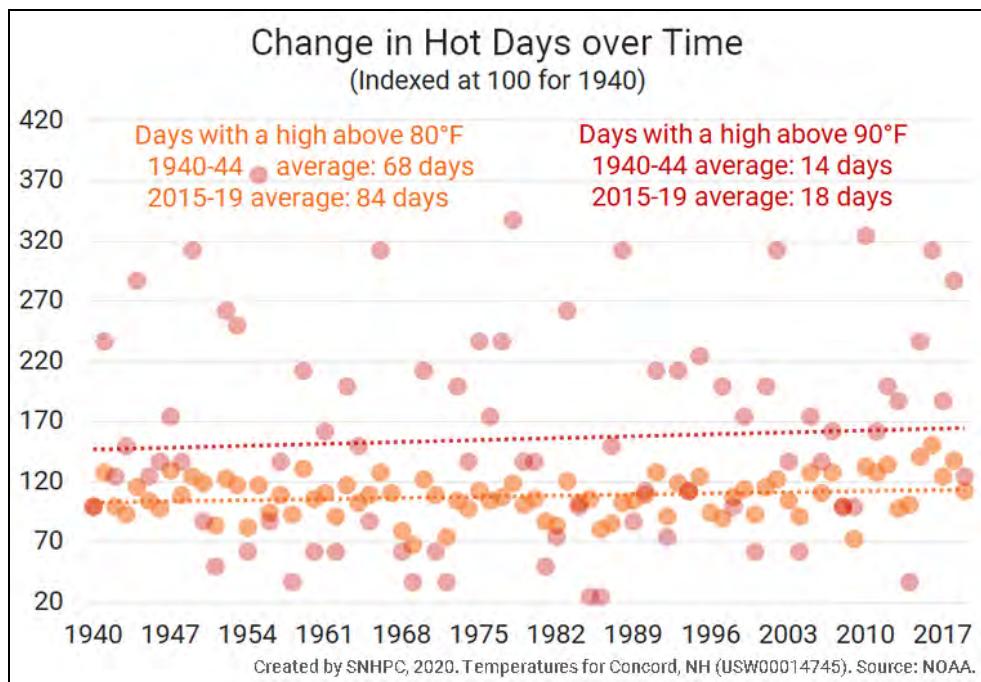


Figure 4: Change in Hot Days Over Time in NH

Extent: Severity/magnitude of extreme heat events relates to how extreme the temperature is, how long it is expected to remain at an extreme, and any exacerbating factors (such as humidity or wind). The National Weather Service has created charts and alert criteria to signal when temperatures are extreme. The following alert criteria was derived from the National Weather Service for extreme heat:

- Heat Advisory—Two or more consecutive hours of Heat Index values of 95-99 degrees Fahrenheit for two or more days OR any duration of Heat Index values of 100-104 degrees Fahrenheit. A Heat Advisory is issued within 12 hours of the onset of extremely dangerous heat conditions.
- Excessive Heat Warning—Two or more hours with Heat Index values of 105 degrees Fahrenheit or greater. An Excessive Heat Warning is issued within 12 hours of the onset of extremely dangerous heat conditions.
- Excessive Heat Watches—Heat watches are 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 Outlooks—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 (State of New Hampshire Multi-Hazard Mitigation Plan 2018).

## 2. Extreme Cold

Description: Extreme Cold events occur during meteorological cold waves, also known as cold snaps, that are caused by the southern transport of arctic airmasses into the Northeast. These events are most common in winter months and increase the likelihood of cold disorders in humans and animals that have prolonged exposure to low ambient temperatures. This effect is exacerbated when there are winds present that effectively lower the temperature that is perceived by the human body, known as the wind chill. The risk comes from when the body is losing heat faster than it can produce it. Wind acts to carry

heat away from the body, therefore amplifying the perceived temperature by the human body and reducing the body's core temperature. Cold disorders can include frostbite and hypothermia<sup>18</sup>. NOAA's National Weather Service has prepared the following windchill chart for calculating the dangers from winter winds and freezing temperature:

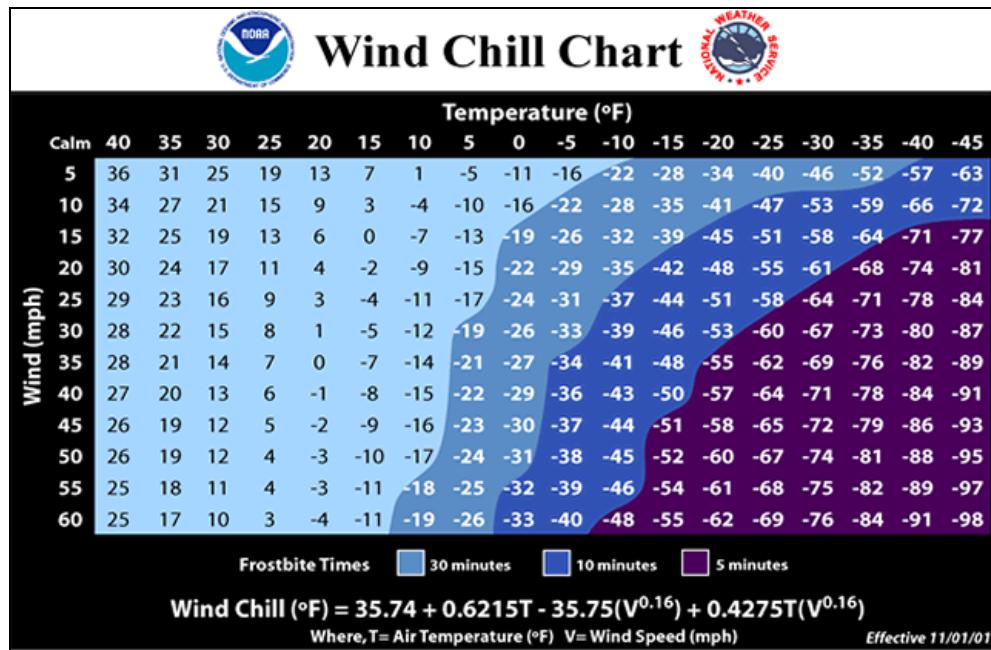


Figure 5: National Weather Service Wind Chill Chart

Location: All areas of Town would be affected by extreme cold.

Extent: Severity/magnitude of extreme temperature events relates to how extreme the temperature is, how long it is expected to remain at an extreme, and any exacerbating factors (such as humidity or wind). The National Weather Service has created charts and alert criteria to signal when temperatures are extreme (State of NH Multi-Hazard Mitigation Plan, 2018). The following alert criteria was derived from the National Weather Service for extreme cold<sup>19</sup>:

- Wind Chill Watch: 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 a tank of gas and update your winter survival kit.
- Wind Chill Advisory: NWS issues a wind chill advisory when seasonably cold wind chill values, but not extremely cold values are expected or occurring. Be sure you and your loved one's dress appropriately and cover exposed skin when venturing outdoors. A Wind Chill Advisory is issued for New Hampshire if wind chill values are expected to be -20°F to -29°F and winds are greater than 5 mph.
- Wind Chill Warning: NWS issues a wind chill warning when dangerously cold wind chill values are expected or occurring. A Wind Chill Advisory is issued for New

<sup>18</sup> State of New Hampshire Multi-Hazard Mitigation Plan 2018

<sup>19</sup> <http://www.nws.noaa.gov/om/cold/ww.shtml>

Hampshire is wind chill values are expected to be -30°F and winds are greater than 5 mph.

- Freeze Watch: NWS issues a freeze watch when there is a potential for significant, widespread freezing temperatures within the next 24-36 hours. A freeze watch is issued in the autumn until the end of the growing season and in the spring at the start of the growing season.
- Frost Advisory: Be Aware: A frost advisory means areas of frost are expected or occurring, posing a threat to sensitive vegetation. Freeze Warning: When temperatures are forecasted to go below 32°F for a long period of time, NWS issues a freeze warning. This temperature threshold kills some types of commercial crops and residential plants.
- Hard Freeze Warning: NWS issues a hard freeze warning when temperatures are expected to drop below 28°F for an extended period of time, killing most types of commercial crops and residential plants.

Past Occurrences: All extreme temperature events having impacted the Town of Hooksett and the State since 2015 can be found in Table 6:

## High Wind Events

### Description:

The State of New Hampshire experiences two types of high wind events that may result from other severe storms and may occur at any time of the year:

- *Tornadoes:* A tornado is a narrow, violently rotating column of air that extends from the base of a thunderstorm to the ground. Because wind is invisible, it is hard to see a tornado unless it forms a condensation funnel made up of water droplets, dust, and debris. Tornadoes are the most violent of all atmospheric storms<sup>20</sup>.
- *Straight-line winds:* This term describes any thunderstorm wind that is not associated with rotation and is usually used to differentiate from tornadic winds. There are several sub types of straight-line winds.<sup>21</sup>
  - *Downdraft* – small-scale column of air that rapidly sinks towards the ground
  - *Downburst* – result of a downdraft, referred to as a macroburst when the area affected is greater than 2.5 miles and microburst when less than 2.5 miles.
  - *Gust Front* – leading edge of rain-cooled air that clashes with warmer thunderstorm inflow. Characterized by wind shift, temperature drop, and gusty winds in front of a thunderstorm
  - *Derecho* – widespread, long-lived windstorm that is associated with a band of rapidly moving showers or thunderstorms. A typical derecho consists of numerous microbursts, downbursts, and downburst clusters. If the wind damage swath extends more than 240 miles and includes wind gusts of at least 58 mph or greater along most of its length, then the event may be classified as a derecho<sup>22</sup>.

Location: All areas in Town are at risk for high wind events. The town has experienced high concentrated winds in the past.

Extent: Tornadoes are measured based on the 3 second gust wind speed of the rotational winds. The Fujita Scale was developed at the University of Chicago in 1971 by Tetsuya

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<sup>20</sup> <http://www.nssl.noaa.gov/education/svrwx101/tornadoes/>

<sup>21</sup> <http://www.nssl.noaa.gov/education/svrwx101/wind/types/>

<sup>22</sup> State of New Hampshire Multi-Hazard Mitigation Plan 2018

Theodore Fujita in coordination with what is now known as NOAA's Storm Prediction Center to categorize each tornado by its intensity and estimated wind speeds. the scale was updated in 2007 to what is now known as the Enhanced Fujita Scale (EF-Scale). The EF-Scale is now the standard scale for measuring tornadoes in the United States and in Canada.<sup>23</sup>

Enhanced Fujita Scale	
EF Number	3 Second Gust (MPH)
0	65-85
1	86-110
2	111-135
3	136-165
4	166-200
5	Over 200

Figure 6: Enhanced Fujita Scale

Downbursts are primarily based on their size, but consideration is also given to duration and wind speed (State of New Hampshire Multi-Hazard Mitigation Plan 2018).

Downbursts		
	Microburst	Macroburst
Size	Less than 2.5 Miles	Greater than 2.5 Miles
Duration	5-15 Minutes	5-30 Minutes
Wind speed (3 second gust - MPH)	up to 168 miles per hour	Damaging winds causing widespread damage, possibly as high as 134 mph <sup>123</sup>

Figure 7: Downburst Scale

**Past Occurrences:** Although not typically thought of as an area that is susceptible to tornadic activity, the State experiences at least one confirmed tornado annually and numerous straight-line wind events each year (State of New Hampshire Multi-Hazard Mitigation Plan, 2018). The most recent recorded high wind event was a microburst that caused damage to trees and homes in Gilmanton in 2018. There have been no significant recorded high wind events in the Town of Hooksett since the 2015 Plan update.

### Infectious Diseases

**Description:** Infectious diseases are illnesses caused by organisms—such as bacteria, viruses, fungi, or parasites. Many organisms live in and on our bodies. They are normally harmless or even helpful, but under certain conditions, some organisms may cause disease. Some infectious diseases can be passed from person to person, some are transmitted by bites from insects or animals, and others are acquired by ingesting contaminated food or water or being exposed to organisms in the environment. Signs and symptoms vary depending on the organism causing the infection, but often include fever and fatigue. Mild infections get better on their own without treatment, while some life-threatening infections may require hospitalization.<sup>24</sup>

**Location:** All areas and residents in Hooksett are susceptible to an infectious disease outbreak.

<sup>23</sup> <http://www.spc.noaa.gov/efscale/>

<sup>24</sup> <http://www.mayoclinic.org/diseases-conditions/infectious-diseases/home/ovc-20168649>

Extent: The magnitude and severity of infectious diseases is 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 infectious diseases relates to the disease occurrence.<sup>25</sup>

- *Endemic* – 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
- *Cluster* – 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
- *Outbreak* – The same as epidemic, but over a much smaller geographical area
- *Pandemic* – Epidemic that has spread over several countries or continents, usually affecting many people (State of New Hampshire Multi-Hazard Mitigation Plan 2018).

Past Occurrences: Every year, New Hampshire experiences a variety of outbreaks, some of which lead to an epidemic (State of New Hampshire Multi-Hazard Mitigation Plan, 2018). Foodborne outbreaks, gastrointestinal, respiratory, and other types of illness occur regularly throughout the State. In 2017-2018, the State experienced a particularly virulent flu season. The current COVID-19 pandemic of 2020 (DR-4516) is having a significant impact on the Town's departments and residents. Town department buildings are open to the public but limited in how many people may access the buildings.

### **Lightning**

Description: Lightning is a visible electric discharge produced by a thunderstorm. The discharge may occur within or between clouds, between a cloud and the air, between a cloud and the ground, or between the ground and a cloud.<sup>26</sup>

Location: All structures, forested areas and recreational areas in Town are susceptible to lightning damage. The northeast part of Town is the most vulnerable. The treatment plant, the tall white pines at Beaver Lake, the cell tower at Central Fire Station, the Police Station communication towers, and the Warner Hill tower may be especially susceptible to lightning damage.

Extent: 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 Figure 11, Lightning Activity Level (LAL).<sup>27</sup>

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

<sup>25</sup> <https://www.cdc.gov/ophss/csels/dsepd/ss1978/lesson1/section11.html>

<sup>26</sup> [http://www.lightningsafety.noaa.gov/science/science\\_thunder.htm](http://www.lightningsafety.noaa.gov/science/science_thunder.htm)

<sup>27</sup> State of New Hampshire Multi-Hazard Mitigation Plan 2018

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

Figure 8: Lightning Activity Level (LAL)

**Past Occurrences:** Lightning storms in New Hampshire occur annually and frequently result in minor power outages/surges, strikes near and to buildings which can result in isolated fires, electrical damage, damage to powerlines and transformers, and have started several wildfires in the state (State of New Hampshire Multi-Hazard Mitigation Plan, 2018). In 2018, lightning struck a residential home, causing property damage to the home (Concord Monitor, 2018).

### **Severe Winter Weather**

**Description:** The State of New Hampshire experiences four types of severe weather during the winter months:

- ***Heavy Snow***  
In forecasts, the amount of snow that is expected to fall is expressed as a range of values, such as 10-12". There can be considerable uncertainty regarding snowfall values during heavy snowstorms and phrases such as "...up to 20 inches" or "...12 inches or more" can be utilized. Heavy snow is generally defined as<sup>28</sup>:
  - Snowfall accumulating to 4" or more in depth in 12 hours or less; or
  - Snowfall accumulating to 6" or more in depth in 24 hours or less.
- ***Blizzard***  
A blizzard is a snowstorm with the following conditions that is expected to prevail for a period of 3 hours or longer<sup>29</sup>:
  - Sustained wind or frequent gusts to 35mph or greater; AND,
  - Considerable falling and/or blowing snow that frequently reduces visibility to less than 1/4 mile
- ***Nor'easter***  
A Nor'easter is a large cyclonic storm that tracks north/northeastward along the East Coast of North America. It is so named due to the northeasterly prevailing wind direction that occurs during the storm. While these storms may occur at any time of the year, they are most frequent and severe during the months of September through April. Nor'easters usually develop off the east coast between Georgia and New Jersey, travel

<sup>28</sup> <http://forecast.weather.gov/glossary.php?word=HEAVY%20SNOW>

<sup>29</sup> <http://w1.weather.gov/glossary/index.php?letter=b>

northeastward, and intensify in the New England region. Nor'easters nearly always bring precipitation in the form of heavy rain and/or snow, as well as gale force winds, rough seas, and coastal flooding<sup>30</sup>.

- **Ice Storm**

Ice storms occur due to persistent freezing rain, which may form thick layers of ice on the Earth's surface.

**Location:** All areas in Hooksett are susceptible to damage from severe winter weather events. Recent severe winter weather event declarations can be found in Table 6 at the end of this section.

**Extent:** NOAA has developed the Regional Snowfall Index (RSI) which is a snowfall scale that uses area of snowfall amount of snowfall, and population to attempt to quantify the societal impacts of a snowstorm<sup>31</sup>. This RSI scale can assist in the severity rating of blizzards as well.

Category	RSI Value	Description	Approximate % of Storms
0	0-1	N/A	54%
1	1-3	Notable	25%
2	3-6	Significant	13%
3	6-10	Major	5%
4	10-18	Crippling	2%
5	18+	Extreme	1%

Figure 9: NOAA Regional Snowfall Index (RSI)

**Past Occurrences:** A list of major disaster declarations for severe winter weather can be found in table 7 at the end of the section. While the Town usually experiences severe winter weather events annually, it has not been significantly impacted by such an event since the 2015 plan update. The Town's maintenance, highway and public works departments are adequately prepared for severe winter weather and work to prevent damage to structures, roads, and residents during these types of storm events.

### **Solar storms and space weather**

**Description:** The term space weather is relatively new and describes the dynamic conditions in the Earth's outer space environment, like how the terms "climate" and "weather" refer to the conditions in the Earth's lower atmosphere. Space weather includes all conditions and events on the sun, in the solar wind, in near-Earth space, and in our upper atmosphere that can affect space-borne and ground based technological systems<sup>32</sup>.

**Location:** While no significant damage has occurred from solar storms or space weather in Town, areas that would be most susceptible to damage would be those with heavy reliance on technological communication, radio operations and GPS. These would be the Town's emergency management, fire, and police departments.

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<sup>30</sup> <http://www.nws.noaa.gov/om/winter/noreaster.shtml>

<sup>31</sup> <https://www.ncdc.noaa.gov/snow-and-ice/rsi/overview>

<sup>32</sup> [https://www.nasa.gov/mission\\_pages/sunearth/spaceweather/index.html#q12](https://www.nasa.gov/mission_pages/sunearth/spaceweather/index.html#q12)

**Extent:**  
**Geomagnetic Storms**

Scale	Description	Effect	Physical Measure	Average Frequency (1 cycle = 11 years)
G 5	Extreme	<p><b>Power systems:</b> Widespread voltage control problems and protective system problems can occur, some grid systems may experience complete collapse or blackouts. Transformers may experience damage.</p> <p><b>Spacecraft operations:</b> May experience extensive surface charging, problems with orientation, uplink/downlink and tracking satellites.</p> <p><b>Other systems:</b> 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.).</p>	Kp = 9	4 per cycle (4 days per cycle)
G 4	Severe	<p><b>Power systems:</b> Possible widespread voltage control problems and some protective systems will mistakenly trip out key assets from the grid.</p> <p><b>Spacecraft operations:</b> May experience surface charging and tracking problems, corrections may be needed for orientation problems.</p> <p><b>Other systems:</b> 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.).</p>	Kp = 8, including a 9-	100 per cycle (60 days per cycle)
G 3	Strong	<p><b>Power systems:</b> Voltage corrections may be required, false alarms triggered on some protection devices.</p> <p><b>Spacecraft operations:</b> Surface charging may occur on satellite components, drag may increase on low-Earth-orbit satellites, and corrections may be needed for orientation problems.</p> <p><b>Other systems:</b> 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.).</p>	Kp = 7	200 per cycle (130 days per cycle)
G 2	Moderate	<p><b>Power systems:</b> High-latitude power systems may experience voltage alarms, long-duration storms may cause transformer damage.</p> <p><b>Spacecraft operations:</b> Corrective actions to orientation may be required by ground control; possible changes in drag affect orbit predictions.</p> <p><b>Other systems:</b> HF radio propagation can fade at higher latitudes, and aurora has been seen as low as New York and Idaho (typically 55° geomagnetic lat.).</p>	Kp = 6	600 per cycle (360 days per cycle)
G 1	Minor	<p><b>Power systems:</b> Weak power grid fluctuations can occur.</p> <p><b>Spacecraft operations:</b> Minor impact on satellite operations possible.</p> <p><b>Other systems:</b> Migratory animals are affected at this and higher levels; aurora is commonly visible at high latitudes (northern Michigan and Maine).</p>	Kp = 5	1700 per cycle (900 days per cycle)

Figure 14: Geomagnetic Storm Scale

## Solar Radiation Storms

Scale	Description	Effect	Physical measure (Flux level of $\geq 10$ MeV particles)	Average Frequency (1 cycle = 11 years)
S 5	Extreme	<p><b>Biological:</b> 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.</p> <p><b>Satellite operations:</b> 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.</p> <p><b>Other systems:</b> Complete blackout of HF (high frequency) communications possible through the polar regions, and position errors make navigation operations extremely difficult.</p>	$10^5$	Fewer than 1 per cycle
S 4	Severe	<p><b>Biological:</b> Unavoidable radiation hazard to astronauts on EVA; passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk.</p> <p><b>Satellite operations:</b> May experience memory device problems and noise on imaging systems; star-tracker problems may cause orientation problems, and solar panel efficiency can be degraded.</p> <p><b>Other systems:</b> Blackout of HF radio communications through the polar regions and increased navigation errors over several days are likely.</p>	$10^4$	3 per cycle
S 3	Strong	<p><b>Biological:</b> Radiation hazard avoidance recommended for astronauts on EVA; passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk.</p> <p><b>Satellite operations:</b> Single-event upsets, noise in imaging systems, and slight reduction of efficiency in solar panel are likely.</p> <p><b>Other systems:</b> Degraded HF radio propagation through the polar regions and navigation position errors likely.</p>	$10^3$	10 per cycle
S 2	Moderate	<p><b>Biological:</b> Passengers and crew in high-flying aircraft at high latitudes may be exposed to elevated radiation risk.</p> <p><b>Satellite operations:</b> Infrequent single-event upsets possible.</p> <p><b>Other systems:</b> Small effects on HF propagation through the polar regions and navigation at polar cap locations possibly affected.</p>	$10^2$	25 per cycle
S 1	Minor	<p><b>Biological:</b> None.</p> <p><b>Satellite operations:</b> None.</p> <p><b>Other systems:</b> Minor impacts on HF radio in the polar regions.</p>	10	50 per cycle

Figure 15: Solar Radiation Storm Scale

## Radio Blackout

Scale	Description	Effect	Physical measure	Average Frequency (1 cycle = 11 years)
R 5	Extreme	<p><b>HF Radio:</b> 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.</p> <p><b>Navigation:</b> 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.</p>	X20 ( $2 \times 10^{-3}$ )	Less than 1 per cycle
R 4	Severe	<p><b>HF Radio:</b> HF radio communication blackout on most of the sunlit side of Earth for one to two hours. HF radio contact lost during this time.</p> <p><b>Navigation:</b> 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.</p>	X10 ( $10^{-3}$ )	8 per cycle (8 days per cycle)
R 3	Strong	<p><b>HF Radio:</b> Wide area blackout of HF radio communication, loss of radio contact for about an hour on sunlit side of Earth.</p> <p><b>Navigation:</b> Low-frequency navigation signals degraded for about an hour.</p>	X1 ( $10^{-4}$ )	175 per cycle (140 days per cycle)
R 2	Moderate	<p><b>HF Radio:</b> Limited blackout of HF radio communication on sunlit side, loss of radio contact for tens of minutes.</p> <p><b>Navigation:</b> Degradation of low-frequency navigation signals for tens of minutes.</p>	M5 ( $5 \times 10^{-5}$ )	350 per cycle (300 days per cycle)
R 1	Minor	<p><b>HF Radio:</b> Weak or minor degradation of HF radio communication on sunlit side, occasional loss of radio contact.</p> <p><b>Navigation:</b> Low-frequency navigation signals degraded for brief intervals.</p>	M1 ( $10^{-5}$ )	2000 per cycle (950 days per cycle)

Figure 16: Radio Blackout Scale

## 2. Tropical and Post-Tropical Cyclones

**Description:** A tropical cyclone is the generic term for a non-frontal synoptic scale low-pressure system over tropical or sub-tropical waters with organized convection (i.e. thunderstorm activity) and defined cyclonic surface wind circulation. Once formed, a tropical cyclone is maintained by the extraction of heat energy from the ocean at high temperature and heat export at the low temperatures of the upper troposphere<sup>33</sup>.

<sup>33</sup> [https://courseware.e-education.psu.edu/courses/meteo241/Images/Section1/tropical\\_cyclones0103.html](https://courseware.e-education.psu.edu/courses/meteo241/Images/Section1/tropical_cyclones0103.html)

Location: All areas in Town are at risk for damage from a tropical and post tropical cyclone. Inland communities such as Hooksett are less susceptible to hurricanes and other tropical storm systems than coastal areas. However, as Tropical Storm Irene and Hurricane Sandy demonstrated in 2011 and 2012, cyclones can have significant impacts inland due to high rainfall and flash flooding. The following figure demonstrates lower hurricane activity in Hooksett from 1990 – 2019.

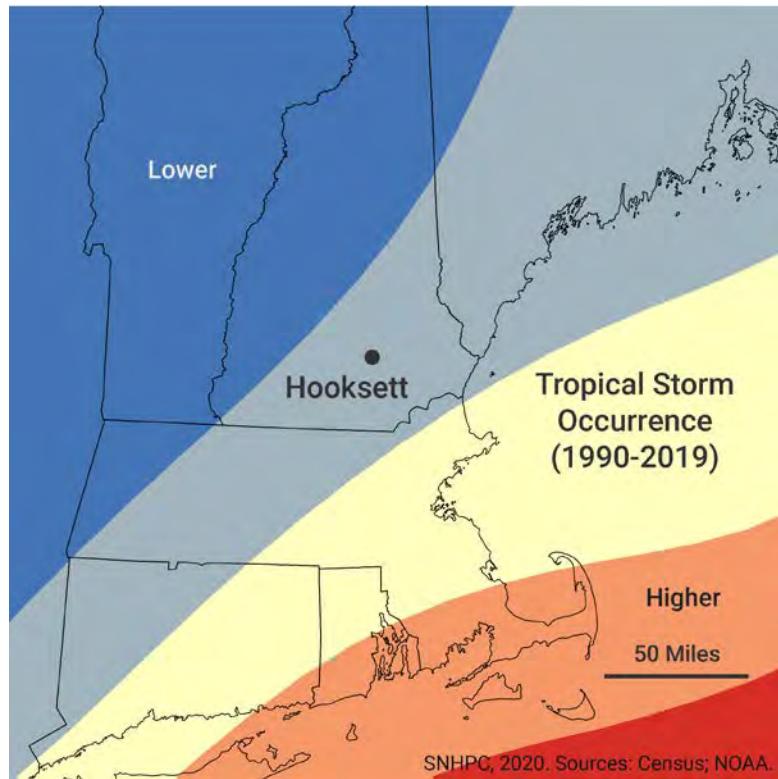


Figure 10: Tropical Storm Occurrence 1990-2019

Extent: The Saffir-Simpson Hurricane Wind Scale is a 1 to 5 rating based on a hurricane's sustained wind speed. This scale estimates potential property damage. Hurricanes reaching Category 3 and higher are considered major hurricanes because of their potential for significant loss of life and damage. Category 1 and 2 storms are still dangerous, however, and require preventative measures<sup>34</sup>

Category	Definition	Effects
1	Winds 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	Winds 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

<sup>34</sup> <http://www.nhc.noaa.gov/aboutsshws.php>

		expected with outages that could last from several days to weeks.
3	Winds 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	Winds 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	Winds greater than 157 mph	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.

*Figure 18: The Saffir-Simpson Hurricane Wind Scale*

Past Occurrences: Tropical Storm Irene and Hurricane Sandy were the last cyclone events to impact the Town of Hooksett. There have been no impacts from Tropical or Post-Tropical Cyclones since the 2015 plan update.

### **Wildfire**

Description: A wildfire is any non-structural fire, other than prescribed fire, that occurs in the Wildland. Wildland here is defined as consisting of vegetation or natural fuels<sup>35</sup>. Wildfires can be referred to as brushfires, wildland fires, or grass fires depending on the location and what is burning.<sup>36</sup>

Location: Several areas of the Town of Hooksett are especially susceptible to wildfires. The following areas sustained damage from wildfires in the past 10 years and are susceptible to them again in the future:

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

Extent: Currently, there is not a universally adopted scale for measuring wildfires within the State of New Hampshire. There are numerous factors that can be used to describe the severity and complexity of a wildfire:

- Acreage of the fire (size)
- Topography and landscape

<sup>35</sup> [https://www.nwcg.gov/glossary/a-z#letter\\_w](https://www.nwcg.gov/glossary/a-z#letter_w)

<sup>36</sup> State of New Hampshire Multi-Hazard Mitigation Plan 2018

- Amount of time required to extinguish the fire
- Environmental factors (drought or wind)
- Damages to urban infrastructure along the WUI, damages to utility infrastructure, or other severe environmental damages (State of New Hampshire Multi-Hazard Mitigation Plan 2018).

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

*Figure 11: National Wildfire Coordinating Group (NWCG) Fire Size Classification*

#### Isolated Homes

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

There are two areas in Hooksett with isolated residential areas including Hall Mountain and Wiggin/Mountain Road.

Past Occurrences: There have been no significant wildfire events in Hooksett since the 2015 plan update.

## **F. Technological Hazards**

#### **Aging Infrastructure**

Definition: The continued regression of the State's physical systems including, but not limited to roads and bridges, culverts, utilities, water, and sewage.<sup>37</sup>

Like states throughout the Nation, New Hampshire suffers from aging infrastructure. The American Society of Civil Engineers released its 2017 report card bestowing the State with a C – rating overall.<sup>38</sup> The report further identifies that the increase in annual number of vehicle miles traveled has led to more rapid deterioration of roads and bridges. The average lifespan for a bridge is around fifty years, and the current average age of state-owned bridges in New Hampshire is 52-56 years (State of New Hampshire Multi-Hazard Mitigation Plan 2018).

#### **Dam failure**

Definition: Dam failure is defined as the sudden, rapid, and uncontrolled release of impounded water.<sup>39</sup> Within the State of New Hampshire dams are categorized into one of

<sup>37</sup> State of New Hampshire Multi-Hazard Mitigation Plan 2018

<sup>38</sup> <https://www.infrastructurereportcard.org/state-item/new-hampshire/>

<sup>39</sup> National Oceanic and Atmospheric Administration (NOAA), Hydrological Terminology (2014)

four classifications, which are differentiated by the degree of potential damages that a failure of the dam is expected to cause. The classifications are designated as Non-Menace, Low Hazard, Significant Hazard, and High Hazard (State of New Hampshire Multi-Hazard Mitigation Plan 2018).

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

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

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

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

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

- No probable loss of lives.
- Major economic loss to structures or property.
- Structural damage to a Class I or Class II road that could render the road impassable or otherwise interrupt public safety services.
- Major environmental or public health losses, including one or more of the following:
- Damage to a public water system, as defined by RSA 485:1-a, XV, which will take longer than 48 hours to repair.
- The release of liquid industrial, agricultural, or commercial wastes, septage, sewage, or contaminated sediments if the storage capacity is 2 acre-feet or more.
- Damage to an environmentally sensitive site that does not meet the definition of reversible environmental losses (State of New Hampshire Multi-Hazard Mitigation Plan 2018).

**Location:** The Town of Hooksett has fifteen Class NM “Non-menace” dams, six Class L “low hazard potential” dams, one Class S “significant hazard potential” dam, and no Class H “high hazard potential” dams.

**Extent:** There have been no recorded events of dam failure in Town since the 2015 Plan update.

### **Conflagration**

**Description:** A large and destructive fire that threatens human life, animal life, health, and/or property. It may also be described as a blaze or simply a (large) fire. A conflagration can begin accidentally, be naturally caused (wildfire), or intentionally created (arson).<sup>40</sup>

**Location:** Due to the relatively low density of Hooksett's downtown, the hazard mitigation committee rated the threat of conflagration as having low probability to occur and cause damage in Town.

### **Known and Emerging Contaminants**

**Description:** Contaminants in drinking water include naturally occurring contaminants associated with the geology in each region and known man-made contaminants associated with nearby land use activities. Some contaminants are considered emerging contaminants. Emerging contaminants are chemicals that historically have not been monitored in drinking water due to the lack of laboratory capabilities to detect the compounds or a lack of knowledge about the use of certain compounds and their potential to cause human health impacts. Emerging contaminants are particularly concerning to the public because the potential health impacts of these are sometimes uncertain.<sup>41</sup>

### **Long-term Utility Outage**

**Description:** A long-term utility outage is defined as a prolonged absence of any type of public utility that is caused by infrastructure failure, cyber-attack, supply depletion, distribution disruption, water source contamination, or a natural, human-caused or technological disaster (State of New Hampshire Multi-Hazard Mitigation Plan 2018). The State of New Hampshire considers a long-term utility outage as one lasting a month or more.

## **Human-caused Hazards**

### **Cyber Events**

**Description:** The Department of Homeland Security (DHS) defines a cyber incident as an event occurring on or conducted through a computer network that actually or imminently jeopardizes the confidentiality, integrity, or availability of computers, information or communications systems or networks, physical or virtual infrastructure controlled by computers or information systems, or information resident thereon.<sup>42</sup>

The State of New Hampshire continues to increase its reliance on computers and the internet. With this upturn in dependence comes the escalated risk for a cyber event to occur. Potential cyber event targets include but are not limited to: critical infrastructure; the public and private sector; and New Hampshire citizens via cyberattacks such as security breaches, spear phishing, and social media fraud (State of New Hampshire Multi-Hazard Mitigation Plan 2018).

### **Mass Casualty Incident**

**Description:** Any large number of casualties produced in a relatively short period of time, usually as the result of a single incident such as a military aircraft accident, hurricane, flood, earthquake, or armed attack that exceeds local logistic support capabilities.<sup>43</sup>

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<sup>40</sup> State of New Hampshire Multi-Hazard Mitigation Plan, 2018

<sup>41</sup> State of New Hampshire Multi-Hazard Mitigation Plan 2018

<sup>42</sup> [https://www.us-cert.gov/sites/default/files/ncirp/National\\_Cyber\\_Incident\\_Response\\_Plan.pdf](https://www.us-cert.gov/sites/default/files/ncirp/National_Cyber_Incident_Response_Plan.pdf)

<sup>43</sup> <https://apps.usfa.fema.gov/thesaurus/main/termDetail?id=1530&letter=M>

## Terrorism/Violence

Description: Premeditated, politically motivated violence perpetrated against noncombatant targets by subnational groups or clandestine agent.<sup>44</sup>

According to the Federal Bureau of Investigation (FBI), the term terrorism can be subcategorized into two categories:

- *International Terrorism:* Perpetrated by individuals and/or groups inspired by or associated with designated foreign terrorist organizations or nations (state-sponsored).
- *Domestic Terrorism:* Perpetrated by individuals and/or groups inspired by or associated with primarily U.S.-based movements that espouse extremist ideologies of a political, religious, social, racial, or environmental nature.<sup>45</sup>

## Transport Accident

Description: A transport accident is any accident that occurs during transportation. Specifically, for this Plan, it refers to an aviation, rail, shipping, tractor trailer, or vehicle accident.<sup>46</sup>

The Town participates in planning for this type of hazard due to Hooksett's proximity to the Manchester-Boston Regional Airport. An Aircraft Emergency Mitigation Plan has been developed and is being utilized by the airport for aircraft emergencies. A regional response plan is needed so surrounding towns can work with the airport to plan for aircraft emergencies that might affect them.

### Summary of Past Occurrences:

*The following table lists all the natural hazard events having occurred and impacted the Town of Hooksett since the 2015 hazard mitigation plan update:*

*Table 6: Summary of Natural Hazard Past Occurrences*

Hazard Type	Significant Natural Hazards impacting Hooksett since 2015 Plan Update	Notes
Avalanche	None	No significant, recorded avalanche events in Town.
Dam Failure	None	There have been no recorded events of dam failure in Town since the 2015 Plan update.
Drought	2016 – 2017, 2020	Extreme drought declared throughout the State; noticeable impact to residents' private wells in the Town of Hooksett. As of October 2020, the State is experiencing a severe drought.
Earthquake	None	No recorded earthquakes from 2014 – 2020 in Town
Extreme Heat	September 2017	High temperature records set across New Hampshire; no significant impact to the Town of Hooksett.
	One Day winter heat wave, February 2018	High temperature records set across New Hampshire; the Town implemented cooling stations for its residents at municipal buildings- otherwise, no significant impact to the Town.
Extreme Cold	December 2017	Record low temperatures set across New Hampshire; the Town implemented warming stations in municipal

<sup>44</sup> Title 22 of the US Code, Section 2656f(d):

<sup>45</sup> <https://www.fbi.gov/investigate/terrorism>

<sup>46</sup> State of New Hampshire Multi-Hazard Mitigation Plan 2018

		buildings but otherwise, no significant impact to the Town.
<b>High Wind Events</b>	None	No significant recorded high wind events in town since the 2015 plan update.
<b>Infectious Diseases</b>	2017 – 2018, 2020	<ul style="list-style-type: none"> <li>• A particularly virulent flu season impacted the State of New Hampshire. 63 adult influenza-related deaths were identified in 2017-18</li> <li>• New Hampshire Covid-19 Pandemic (DR-4516) Incident period: January 20, 2020 and continuing <i>Major Disaster Declaration declared on April 03, 2020</i></li> </ul>
<b>Inland Flood</b>	None	Previous significant flooding events were mapped if possible; see Map 2: Past Flooding Hazards. No significant flooding events have occurred and caused damage in Hooksett since the 2015 plan update.
<b>Landslide</b>	None	There have been no recorded landslides in Hooksett since the 2015 plan update.
<b>Lightning</b>	2018	Lightning struck a residential home on Sandy Lane, causing a fire to start on the second floor of the structure.
<b>Severe Storm and Flooding</b>	October 29, 2017 - November 1, 2017	DR-4355-NH; Severe Storm and Flooding; major Disaster Declaration declared on January 2, 2018.
<b>Severe winter weather</b>	January 2 – 3, 2014	Heavy snowfall across the State; minor impact to the Town (applies to all following winter weather events). The town has not been significantly affected by a severe winter weather event since the 2015 plan update. The Town's maintenance, highway and public works departments are adequately prepared for severe winter weather and work to prevent damage to structures, roads, and residents during storm events.
	February 5, 2014	Heavy snowfall across the State; minor impact to the Town
	January 26 – 29, 2015	DR-4209; Heavy snowfall across the State
	February 14, 2015	Heavy snowfall across the State
	December 29, 2016	Heavy snowfall across the State
	February 9, 2017	Heavy snowfall across the State
	March 14, 2017	DR-4316; Heavy snowfall across the State
	January 4, 2018	Heavy snowfall across the State
	March 1 – 9, 2018	DR-4370; Heavy snow and coastal flooding
	March 13, 2018	Heavy snowfall across the State
<b>Solar storms and space weather</b>	None	There have been no significant solar storms or space weather events in the Town of Hooksett.
<b>Tropical and post tropical cyclones</b>	None	The Town has not been significantly impacted by tropical or post-tropical cyclone activity since the 2015 plan update.
<b>Wildfire</b>	None	The Town has not experienced a significant wildfire since the 2015 plan update.

## VI. CLIMATE CHANGE IN SOUTHERN NEW HAMPSHIRE

As stated in FEMA's 2017 Incorporating Climate Change into State Hazard Mitigation Planning, Region I Phase I Report: "The scientific evidence is clear: The Earth's climate is warming. It is also very clear that the effects of climate change pose real and significant threats to community safety, resilience, and quality of life. Determining how climate change and, more specifically, future temperature and precipitation trends will affect the probability, frequency, and nature of various natural hazards is a critical step toward effective resiliency planning and hazard risk reduction across the United States.<sup>47</sup>"

Climate change in New Hampshire will have profound impacts on the State's environment, economy, infrastructure, natural resources, and public health. Many of these impacts are already being seen with an increased frequency of flooding events caused by extreme precipitation as well as an increase in average annual temperatures. Future changes associated with climate change are inevitable and will affect New Hampshire in a variety of ways. The following discussion outlines the types of natural hazard events anticipated to increase in frequency with a changing climate and how these events could impact Southern New Hampshire.

### Extreme Precipitation and Inland Flooding

Inland flooding associated with major rainfall is the most common weather event threatening Southern New Hampshire's infrastructure and property.<sup>48</sup> Figure 20 illustrates the U.S. observed increase in the frequency and intensity of heavy rainfall from 1958 - 2012, where the Northeast has had the greatest increase in very heavy precipitation. Furthermore, over the last 25 years, New England has averaged approximately four major disasters per year and nine out of ten of these disasters were caused by flooding (Regional Vulnerability Assessment for the Southern New Hampshire Planning Commission, 2020). Figure 21 shows the major disaster declarations over the past 25 years and their associated costs to the State of New Hampshire.

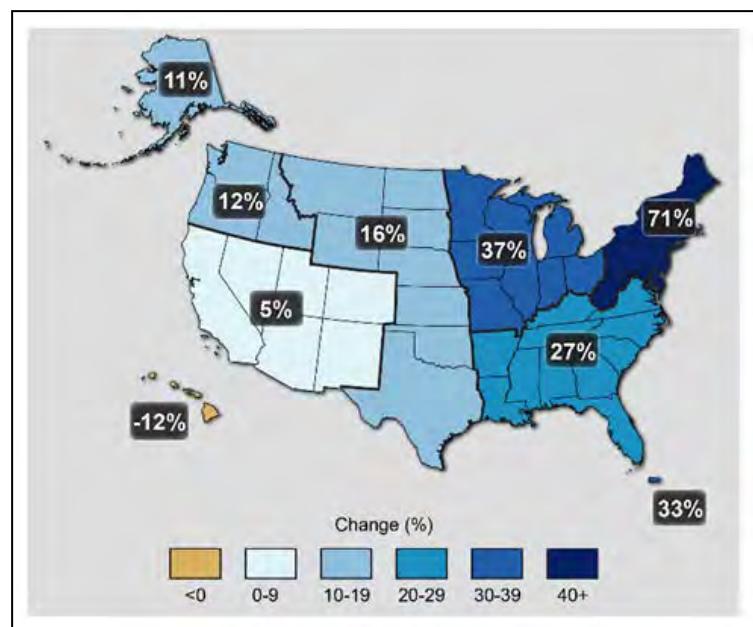


Figure 12: Observed Increase in Very Heavy Precipitation\*

<sup>47</sup> State of New Hampshire Multi-Hazard Mitigation Plan 2018

<sup>48</sup> 2020 Regional Vulnerability Assessment: For the Southern New Hampshire Planning Commission

\*Note: Observation time range for Figure 3 is 1958 to 2012. Very Heavy Precipitation is defined as the heaviest 1% of all daily events. Figure sourced from the Climate Change Impacts in the United States: The Third National Climate Assessment report. Figure updated from Karl et al. 2009

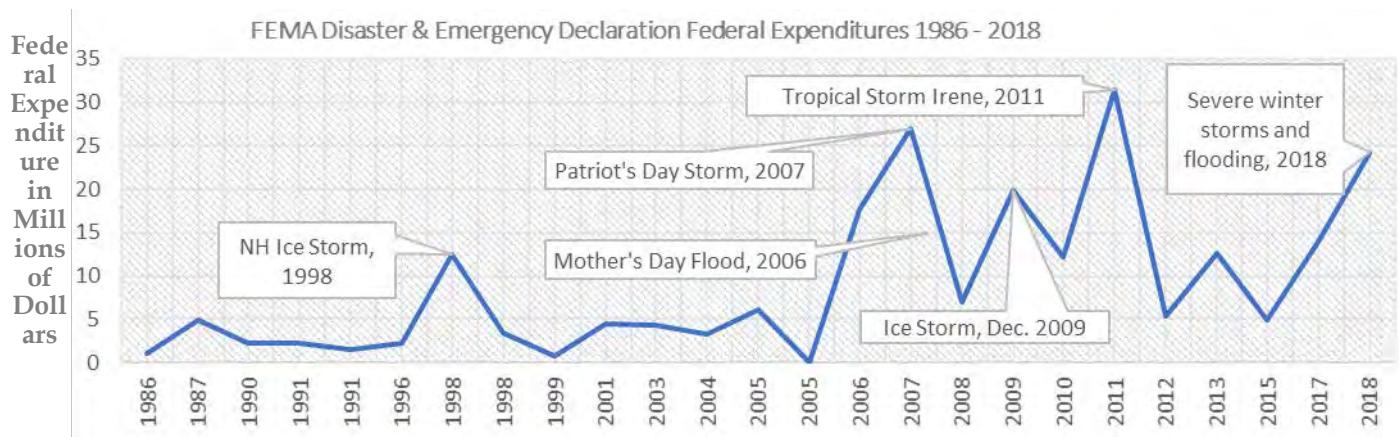


Figure 13: FEMA Disaster & Emergency Declaration, Federal Expenditures 1986-2018

This illustrates that extreme precipitation events have increased in frequency, intensity, and cost over time. This further exacerbates the need to increase community mitigation efforts in order to save money, protect the community and reduce disruption to services.

### Extreme Temperatures

Climate change will also affect extreme temperature trends across the region and throughout the state. While the number of hot days has increased only slightly across southern NH since 1960, the number of cold days has decreased and temperature on the coldest day of the year has increased significantly, reflecting the greater warming the region has experienced during the winter compared to other seasons.<sup>49</sup> The NOAA State climate summary states that even in a scenario with lower GHG emissions that the present day, average annual temperatures are projected to exceed historical record levels by the middle of the 21st century (State of NH Multi-Hazard Mitigation Plan, 2018). The following graphs illustrate the increase in maximum and minimum daily temperatures in New Hampshire for both winter and summer from 1940 – 2019 (source: NOAA).

An increase in extreme temperature events will have profound impacts on the region and state's residents, natural resources, and economy. Prolonged periods of extreme heat will increase the frequency and magnitude of heat waves and increase the risk of drought. This affects the agriculture sector by lengthening growing seasons and affecting livestock. While a lengthier growing season might seem beneficial, it is possible that a significant change in the length of a growing season could alter the ecology of the landscape across New Hampshire.<sup>50</sup> With an increase in the number of hot days, the state is also experiencing shorter, warmer winters. This affects communities that rely on winter tourism such as skiing and other winter recreational activities for economic activity.

<sup>49</sup> Climate Change in Southern New Hampshire: Past Present, and Future 2016

<sup>50</sup> Huntington, T. G. (2004) Climate change, growing season length, and transpiration: plant response could alter hydrologic regime

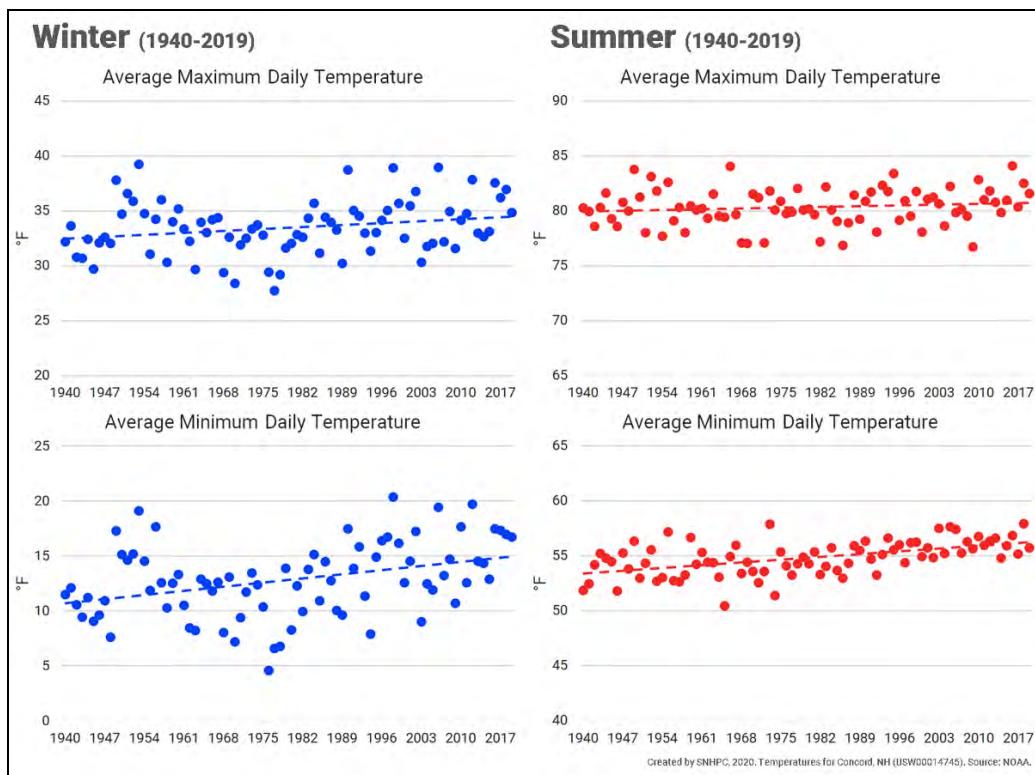


Figure 14: Maximum and Minimum Daily Temperatures Record for Winter and Summer

The state's vulnerable populations such as the homeless and an increasing elderly population are most susceptible to an increase in extreme temperatures. These sensitive populations, including those with access and functional needs, often have limited mobility and would be unable to seek out cooler environments in a climate scenario that brings a significant increase in the number of days with extreme heat<sup>51</sup>.

The projected changes in the climate of southern New Hampshire over the next century will continue to impact our environment, ecosystem services, economy, and society in a myriad of ways.<sup>52</sup> The inevitability of these impacts due to a changing climate accentuates the need for communities to adopt and enforce local decision-making tools to prepare for and reduce the impacts associated with a changing climate. Along with its multi-hazard mitigation plan, the Town of Hooksett has been proactive in planning for future climate events through several initiatives including the following:

- Developing a Stormwater Management Program that includes a stormwater ordinance to improve the quality of stormwater runoff and control the effects of runoff due to increased development

<sup>51</sup> State of New Hampshire Multi-Hazard Mitigation Plan, 2018

<sup>52</sup> Climate Change in Southern New Hampshire: Past Present, and Future 2016

## VII. Critical Facilities

A critical facility is defined as a building, structure, or location which:

- Is vital to the hazard response effort,
- Maintains an existing level of protection from hazards for the community,
- Would create a secondary disaster if a hazard were to impact it.

The Critical Facilities List for the Town of Hooksett has been identified using the following three categories:

**Category 1 - Emergency Response Facilities & Services:** The Town has identified the Emergency Response Facilities and Services as the highest priority regarding protection from natural and man-made hazards.

**Category 2 - Non-Emergency Response Facilities & Areas at Risk:** The town has identified these facilities and areas, which are not needed to respond at the time of a natural disaster but could be threatened if a natural disaster were to occur. These are also considered essential for the everyday operation of Hooksett.

**Category 3 – Commercial Economic Impact Areas:** Includes people and facilities that need to be protected in event of a disaster and those organizations and businesses with more than 25 employees.

Type of Facility/Service	Address
<b>CATEGORY 1 - Emergency Response Facilities and Services</b>	
<b>Emergency Fuel Facilities</b>	Village Fire Station, 1 Riverside Drive
	DOT Highway Garage, Exit 11 Route 93, Hackett Hill Road
	James Oliver Safety Center, 15 Legends Drive
	Transfer Station, 210 W River Rd
	DOT Site, Rt 101 Exit 1
	I-93 (F, S, T)
<b>Evacuation Routes</b>	Route 3/28 (F, S, T)
	Route 3-A (F, S, T)
	Route 27 (F, T)
	Route 28-A (T)
	Route 28 Bypass (F, S, T)
	Hooksett Fire/Rescue 63 – Ambulance 1, 2 and 3, The Elliot 20 Chambers Drive Ste 1200, Hooksett Internal Medicine 11 Kimball Drive, CMC Internal Care Hooksett 27 Londonderry Turnpike
<b>Hospitals/Ambulances</b>	35 Main Street
<b>Hooksett Municipal Building</b>	1328 Hooksett Road

<b>Post Office</b>	Highway Department, 210 West River Road
<b>Public Works Garage</b>	Memorial School, 5 Memorial Drive (T)
<b>Shelters</b>	Underhill School, 2 Sherwood Drive (T)
	Town Office Building, 35 Main Street (T)
	Cawley Middle School, 89 Whitehall Road (F,T)
	Emergency communications tower in Bow.
<b>Radio Towers</b>	Map 18 Lot 48, off Route 3 next to Brox Industries (S, T)
<b>Wireless Communication Facilities</b>	Map 29 Lot 2, off Gosselin Ave., (S, T)
	Map 19 Lot 7, private on Oak Hill Road (T)
	Map 25 Lot 80-1, Safety Center (T)
	Map 2 Lot 10-1, on Pembroke water tower in Hooksett (S, T)
	Map 12 Lot 11, private, Pike property, Hackett Hill Rd (S, T)
	Map 49 Lot 1-4, 85 Londonderry Turnpike (T) – Verizon
	S Bow Rd, owned by Hooksett

Type of Facility / Service	Address
<b>CATEGORY 2: Non-Emergency Response Facilities &amp; Areas at Risk</b>	
Child Care Centers	Above and Beyond Child Care 1461 Hooksett Rd 627-4161 (S, T)
	Children's Country Learning Center 625-2912 (S, T) 4 West Stearns Avenue
	Colorful Apples Learning Center, 1249 Hooksett Road, 603-206-5420
	Happy Bears Daycare Learning Center, 647-8788, 16 John's Dr. (T)
	Little Angels Learning Center 1701 Hooksett Road (T)
	Little Apples Day Care Learning Center, 625-2273, 1166 Hooksett Road (T)
	Lots of Love Family Childcare, 323 Hackett Hill Road, 603-682-3480
	Mary-Go-Round Day Care 13 Morgan Drive, 485-3254 (T)
	Merrill Johnson Early Childhood Program, 198 Londonderry Turnpike, 603-935-8260
	Miss Stephanie's Family Childcare, 147 Whitehall Road, 603-622-0028
	New Morning Before and After School Programs @ Fred Underhill, 2 Sherwood Drive, (603) 669-3591
	Polka Dots Child Care Center, 11 Kimball Drive, Suite 103, 603-772-0822
	Stand By Me Child Care And Enrichment Center, 167 Londonderry Turnpike, 603-647-5736
	Tic-Tac-Tots Preschool, 641-8687 145 Londonderry Tpk.
Churches	Bethel Advent Christian Church 206 Whitehall Road, 669-6712
	Church of The Nazarene 627-2971 7 Silver Avenue
	Congregational Church 5 Veterans Drive, 485-9009

	Emmanuel Baptist Church 14 Mammoth Road, 668-6473
	Harvest Baptist Church 361 Hackett Hill Road, 627-2633
	Heritage Baptist Church, 161 Londonderry Tpk. 641-4921
	Holy Rosary Church 21 Main Street 485-8567
	Trinity Full Gospel Church 16 Highland Street 485-2772
Elderly Housing	Holly Berry, 319 Londonderry Tpke, 44 units
	Westview Terrace, Campbell Road, 30 Units
	Jensen's Brook Ridge, 3 Mailhouse Road, 92 units
	Berry Hill Estates, Berry Hill Road, 107 units
	Stonigate, 34 Mammoth Road, 34 units
	River Village, Lafond Avenue, 20 units
	Webster Woods, Hooksett Road, 40 units
Electrical Power Substation(s)	Hooksett Hydro Station 57 Merrimack St (F, T)
	Pinehill Transmission Substation Legends Dr. (T)
Isolated Homes	Wiggin/Mountain Rd area (On Hall Mt.)
Lodges	American Legion VFW, Riverside Street
	Grange Hall, Riverside St
Major Highways/Roadways	US I-93 (F, S, T)
	US I-293 (T)
	NH Route 3 (F, S, T)
	NH Route 3-A (F, S, T)
	NH Route 28 (F, S, T)
	NH Route 28 Bypass (F, S, T)
	NH Route 27 (F, T)
Recreational Areas	Fraser Memorial Field, K Avenue, south off Alice Avenue
	Donati Memorial Field, Main Street next to Village Elementary School
	Hooksett Memorial Middle School, Hooksett Road
	Underhill School, Sherwood Drive
	Jacob Square, Veterans Drive, off Merrimack Street
	Riverside Park, Merrimack St
	Town Hall, Main Street
	Town Boat Ramp, at Lambert Park
	29th Skeet & Sportsman Club, off Goffstown Road
	Bear Brook State Park, northeast corner of Town
	Lambert Park
	Legends Golf & Family Recreation, 18 Legends Drive
	Hooksett Space Center, corner of Route 3 and Zapora Drive
	Petersbrook Fields, Industrial Drive
	Heads Pond Recreational Trail, Route 3
	Hooksett Riverwalk trail, Merrimack Street
Schools	Fred C. Underhill School 2 Sherwood Drive 623-7233 (T)

	<p>Hooksett/Candia School District (SAU 15), 90 Farmer Road 622-3731 (T)</p> <p>Hooksett Memorial Middle School (T) 1550 Hooksett Road 485-9959</p> <p>David H. Cawley Middle School 85 Whitehall Rd (T)</p> <p>Southern New Hampshire University (F, T) 2500 North River Road</p>
Sewer Pumping Stations:	<p>Main St by Hooksett Village Water Precinct (T)</p> <p>Veterans Drive (F, T)</p> <p>Kmart shopping plaza (F, T)</p> <p>Depot Rd (T)</p> <p>Golden Gate Drive (T)</p>
Socio-Economic Impact Areas	<p>Southern New Hampshire University, 2500 River Road</p> <p>General Electric, 31 Industrial Park Road</p> <p>Hooksett Falls in Hooksett Village as an historic resource for Hooksett.</p> <p>The Merrimack River is being considered for designation by the National Parks Service as a wild and scenic river from its origin at the confluence of the Pemigewasset and Winnipesaukee Rivers in Franklin, New Hampshire, to the backwater impoundment at Hooksett Dam.</p> <p>Other historic properties include Lilac Bridge crossing the Merrimack River, one of only three span Pratt truss bridges left in New Hampshire, and the Arah Library, 18 Main Street, Robie's Country Store Old Town Hall</p>
Solid Waste/Municipal Recycling Facility/Transfer Station	<p>Town of Hooksett Transfer and Recycling Center, 210 W River Rd</p> <p>Pinard Waste Systems Inc. 32 West River Road</p> <p>Hooksett Recycling &amp; Processing Center, 34 Industrial Park Drive</p> <p>Outdoor World, 24 LeHoux Dr.</p> <p>Wastewater treatment plant at GE</p>
Wastewater Treatment Plant:	Egawes Drive (S, T)
Unique or Historic Resources	<p>Robie's Country Store, 8 Riverside Street, listed 8/31/2000; site is listed on the National Register of Historic Places</p> <p>Hooksett Town Hall</p>
Water Systems	<p>Central Hooksett Water Precinct River Road (F, T)</p> <p>Hooksett Village Water Precinct 2 Main Street (T) System Type: Community</p> <p>Manchester Water Works</p> <p>Pennichuck Water Works</p> <p>Pembroke Water Works</p> <p>A Brighter Future Day Care Center, 167 Londonderry Tpk. (T) System Type: Transient, Non-Community</p> <p>Peu/Smythe Woods Joanne Drive (T) System Type: Community</p> <p>Poultry Products 11 Bemis Savoie Road (F, S, T) System Type: Non-Transient, Non-Community</p> <p>Tic-Tac-Tots Preschool 145 Londonderry Turnpike (T) System Type: Non-Transient, Non-Community</p> <p>Well House - Wesco 16 Springer Road (T) System Type: Community</p>

	West River Road Irving Mainway 86 West River Rd, Rte. 3-A System Type: Non-Community, Transient
	the New Hampshire Canal System at the A.J. Lambert Town Park (The New Hampshire Division of Historical Resources)

Name	Address
<b>CATEGORY 3: Commercial Economic Impact Areas</b>	
Name	Address
99 Restaurant and Pub	1308 Hooksett Road
A Due Pyle Inc.	40 Londonderry Tpke
Advanced Power and Controls	5 Eastpoint Drive
Albach North America	35 Londonderry Tpke
Amazon	400 Quality Drive
Applebee's Restaurant	1272 Hooksett Road
Auto Wholesalers of Hooksett	1338 Hooksett Road
Aviation Technology Inc	45 Londonderry Tpke STE 5
Bass Pro Shops	2 Commerce Drive
Cigna (closing)	2 College Park Drive
Cinemagic	38 Cinemagic Way
Cocci Computer Services Inc.	1558 Hooksett Road
Cummings Printing Co.	4 Peters Brook Drive
Dollar Tree	1271 Hooksett Road
	103 Quality Drive
Dunkin Donuts	1284 Hooksett Road, 6 Bell Ave. 1326 Hooksett Road
Eastpoint Lasers LLC	5 Eastpoint Drive #1
Eckhardt & Johnson, LLC	6 Eastpoint Drive
Fred C. Underhill Elementary School	2 Sherwood Drive
Galaxy Glass & Aluminum Inc.	114 Londonderry Turnpike
General Electric Co.	31 Industrial Park Drive
Granite State Marketplace	1328 Hooksett Road
Home Depot	300 Quality Drive
Hooksett Crushed Stone	37 Hackett Hill Road
Hooksett Fire Dept.	15 Legend Dr., 1 Riverside Dr.
Hooksett Memorial School	5 Memorial Drive
Hooksett Town Offices	35 Main Street
Jeff Daigle Plumbing Heating & Cooling	5 Eastpoint Drive
JP Noonan Transportation Inc.	240 Londonderry Turnpike
Kawasaki Polaris	1354 Hooksett Drive
Kohls	200 Quality Drive
Market Basket	30 Market Drive

Manchester Sand & Gravel Co.	1355 Hooksett Road.
McDonald's	1262 Hooksett Road
Merchants Automotive Group	1278 Hooksett Road
New England Brace Co.	10 Brace Avenue
New Hampshire Liquor Store	24 Springer Road,
	140 Bicentennial Dr.
	1271 Hooksett Rd,
	530 West River Rd
<b>National Guard Field Maintenance Shop</b>	
Ocean State Job Lot	1328 Hooksett Road
Osborne's Agway	16 Cinemagic Way
Outdoor World	24 LeHoux Drive
Pinard Waste Systems Inc.	32 West River Rd.
Proactive Comfort	183 Londonderry Tpke
Ran-All Metal Technology Inc.	7 Eastpoint Drive
Regal Hooksett	100 Technology Drive
R.G. Tombs Door Co.	38 W River Road
Soil-Away Cleaning and Restoration Services	5 Eastpoint Drive
SNHU	15 W Alice Avenue
Superior Excavating	4 Hummingbird Lane
Target	100 Quality Drive
TRB Development Group Inc.	36 Londonderry Turnpike
TZS Contracting Services Inc	5 Eastpoint Drive
Wal-Mart	3 Commerce Drive
Wendy's	1323 Hooksett Road
Whatever Wear	2 Brookside West

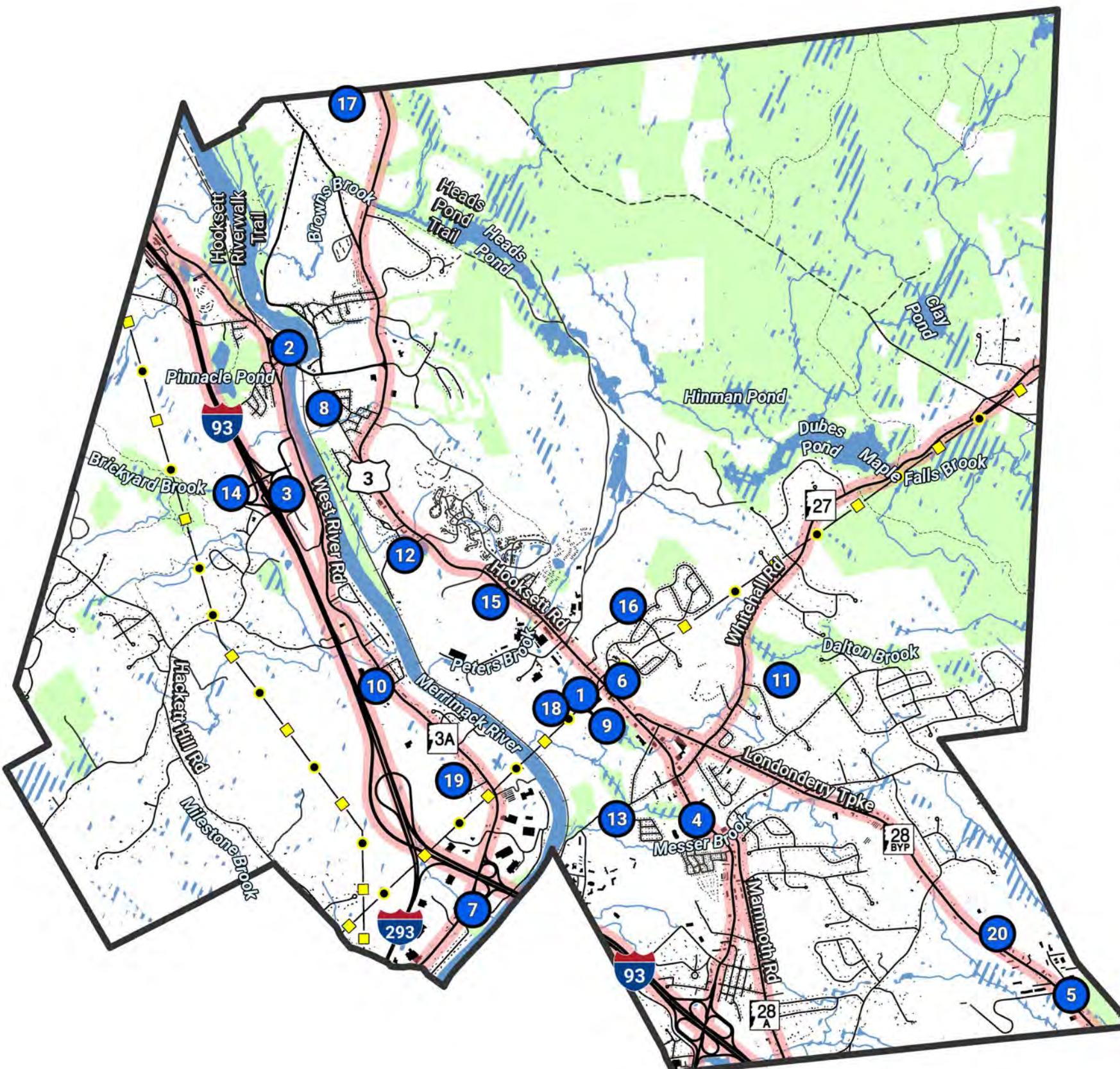
#### Hazardous Materials Facilities in the Town of Hooksett

Name	Address
Asphalt Plant (to be built in next 10 years)	38 Hackett Hill Road
Al Terry Plumbing, Heating and AC	1776 Hooksett Road
Anchor Fuels, Inc.	220 Whitehall Road, Building B
Browning Ferris Industries	34 Industrial Park Drive
Brox Industries	1363 Hooksett Road
Brox Paving Materials Inc.	1500 Hooksett Road
Eastern Propane	78 Londonderry Turnpike
Eversource Transmission Sub Station	Legends Drive

Extra Care Auto Repair	6 Marlette Ave
G.E. Aviation	31 Industrial Park Drive
Grimard's Auto Sales and Service	4 Londonderry Tpke
Hooksett Transfer/Highway	210 W. River Road
Hooksett WWTP	1 Egawes Drive
Irving Oil	6 Bell Ave
Irving Oil	86 W River Road
	25 Springer Road
	530 W River Road
J.P. Noonan Transportation	240 Londonderry Turnpike
Liberty Utilities	Londonderry Turnpike
Lowe's	Rt. 3A
Manchester Sand and Gravel Co.	1355 Hooksett Road
Massabesic Circle Quick Lube	78 Lodonderry Tpke
Monroe Auto Service and Tire Center	1323 Hooksett Road
NH National Guard	Hooksett Road
Old Castle Lawn & Garden	24 Lehoux Drive
Pike Industries Inc.	38 Hackett Hill Road
PSNH Pine Hill Substation	7 Legends Drive
Plourde Sand & Gravel	219 W. River Road
PSNH Transmission Facility	13 Legends Drive
PSNH General Const. & Maint. Div.	1250 Hooksett Rd
Resource Construction Service	34 Industrial Park Drive
Tennessee Pipeline	
Tire Warehouse	1369 Hooksett Road
Waste Systems International	117 Londonderry Turnpike
Hooksett Safety Center	15 Legends Dr.
Verizon Wireless	85 Londonderry Turnpike
Valvoline Instant Oil Change	1246 Hooksett Road
Walmart Supercenter	3 Commerce Drive

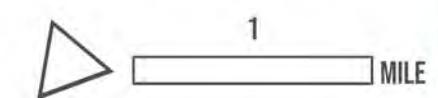
# HOOKSETT HAZARD MITIGATION PLAN

## Map 4: Critical Facilities



- 1. James Oliver Safety Center
- 2. Village Fire Station
- 3. NHDOT Highway Garage
- 4. ClearChoiceMD-CMC Urgent Care
- 5. CMC Primary Care - Lakeview Internal Medicine
- 6. Elliot Family Medicine
- 7. Hooksett Internal Medicine
- 8. Hooksett Municipal Building
- 9. US Post Office
- 10. Highway Department
- 11. Cawley Middle School
- 12. Memorial School
- 13. Underhill School
- 14. Map 12 Lot 11 Wireless Tower
- 15. Map 18 Lot 48 Wireless Tower
- 16. Map 19 Lot 7 Wireless Tower
- 17. Map 2 Lot 10-1 Wireless Tower
- 18. Map 25-80-1 Wireless Tower
- 19. Map 29 Lot 2 Wireless Tower
- 20. Map 49 Lot 1-4 Wireless Tower

Evacuation Routes  
High-Voltage Transmission Lines



Created by the Southern New Hampshire Planning Commission, 2021. Sources: Google Maps; Microsoft; NH Department of Transportation; Open Street Maps; Town of Hooksett; University of NH; US Census Bureau; US Geological Survey; US Fish & Wildlife Service.

## **SECTION VIII - EXISTING MITIGATION STRATEGIES & PROPOSED IMPROVEMENTS**

### **Description of Existing Programs**

The Hooksett Hazard Mitigation Committee identified existing strategies that support hazard mitigation efforts, which is presented in Existing Protection Matrix at the end of this section. This matrix includes the existing protection program, the area of town affected, the enforcing department or agency, the effectiveness of the existing program and the identified improvements or changes needed for the program.

### **Floodplain Development Ordinance**

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

### **Elevation Certificates**

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

### **Wetlands Conservation Overlay District (zoning)**

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

### **Groundwater Resource Conservation District (zoning)**

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

### **Emergency Operations Plan**

Hooksett maintains an Emergency Operations Plan. This Plan was revised in 2016.

### **Evacuation and Notification**

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

### **State Dam Program**

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

### **Road Design Standards**

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

### **Shoreland Protection Act**

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

### **Best Management Practices (BMPs)**

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

### **Electrical Back-Up Generators**

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

### **Town Radio System**

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

### **Hazardous Materials Regulations**

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

### **International Building Code, Local Building Code, and Fire Codes**

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

### **Steep Slopes and Class VI Roads**

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

### **Comprehensive Emergency Management Planning for Schools (CEMPS)**

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

### **HazMat Response Team**

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

### **Merrimack Riverfront Conservation Preserve Project**

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

### **National Flood Insurance Program (NFIP)**

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

### **Public Outreach Program**

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

### **Existing Protection Matrix**

The Hooksett Hazard Mitigation Plan Committee has developed a summary matrix of existing strategies that support hazard mitigation efforts, which is presented on the following pages. This matrix, a summary of the preceding information, includes the type of existing protection (Column 1), a description of the existing protection (Column 2), the area of town affected (Column 3), the effectiveness and/or enforcement of the strategy (Columns 4 & 5), and the identified improvements or changes needed (Column 6).

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

Table 7: Existing Protection Matrix for the Town of Hooksett

TYPE OF EXISTING PROTECTION	DESCRIPTION	AREA OF TOWN COVERED	Enforcement	Effectiveness	IMPROVEMENTS OR CHANGES NEEDED 2021 Update
Floodplain Development Ordinances	Guides development in floodplains to minimize or prevent any increased risk to existing properties in the Special Flood Hazard Areas	All lands designated as special flood hazard areas by FEMA	Building Inspector, Planning Board	Good	Educate public about hazard mitigation programs, including GIS maps. The online GIS application now has a Flood Map layer, which is available to the public.
Elevation Certificates	Required for Certificate of Occupancy for all new construction/ substantial improvements in SFHAs	100-year Floodplain-SFHA	Building Inspector, NHDES	Good	Ordinance meets Floodplain Management Regulation Requirements. FEMA flood map updates completed as of April 2010
Wetland Conservation Overlay District	Protects aquifers and wetlands and includes 75' wetlands buffer beyond the boundary of each prime wetland	All lands within the wetland overlay district	Building Inspector, Planning Board, Conservation Commission, NHDES	Good	Educate the public about wetlands and their unique importance. Merrimack Riverfront Conservation Preserve Project being implemented by the Conservation Commission, along with public outreach.
Groundwater Resource Conservation District	Protects groundwater supply and recharge areas from adverse development or depletion	Areas with high and medium potential to yield groundwater shown on the Hooksett Groundwater Conservation District Map	Planning Board, Health Officer, Code Enforcement, Conservation Commission	Good	Educate the public regarding the importance of groundwater recharge; enhance GIS capability. An online GIS Groundwater Resources layer is now available to the public.
Emergency Operations Plan (EOP)	Describes duties of Town personnel during an emergency	All areas of Town	Emergency Management	Good	Plan meets all state/federal requirements. Last updated in 2016
Evacuation and Notification	Evacuation procedures with emergency notification and routes to be taken	All areas of Town	Emergency Management	Good	Plan meets all state/federal requirements. Contained within EOP, which was last updated in 2013. State "CityWatch" emergency notification system is in place (instead of "Code Red" system). The CityWatch database is currently being updated. State Reverse 911 program implementation needed.

TYPE OF EXISTING PROTECTION	DESCRIPTION	AREA OF TOWN COVERED	Enforcement	Effectiveness	IMPROVEMENTS OR CHANGES NEEDED 2021 Update
NH State Dam Program	Maintenance of Class L and S Dams in coordination with the State Dam Program	All Class L and S Dams in Hooksett	NH State Dam Program	Good	More information should be available State led program is working as described.
Road Design Standards	NH DOT Standards and Town Standards.	All new subdivisions	Planning Board	Good	Regulations and standards meet all state/federal requirements Local authority is responsible for enforcing these regulations/standards. They are periodically reviewed and updated as required. Regulations/standards are working as prescribed.
Shoreland Protection Act	Standards for use of all shorelands within 250 ft. of state public waters to protect streambanks and water quality from the adverse effects of development	All property within 250 feet of state public waters	Planning Board NH Department of Environmental Services	Good	Educate property owners about land clearing procedures. Integrate into comprehensive outreach program
Best Management Practices (BMP's)	State guidelines for erosion and sediment control; protection of the natural environment & prevention of potential damage due to poor construction methods	All areas of Town	State of NH DPW (Town/ Highway)	Good	Program meets all state/federal requirements Program is working as described.
Generators	One at each fire station, one at each school, and one at Town Hall for sheltering purposes	All areas of Town	Fire Dept. School District DPW (Maintenance)	Good	Purchase additional mobile back-up generator(s). Town Hall, Underhill School and library needs a generator
Town Radio System	Communications between fire, police, emergency services	All areas of Town	Emergency Personnel Police Department	Good	Capitol Compact Area dispatches (Concord FD) for Hooksett Fire: Hooksett Police dispatch for themselves and DPW utilizes their own radio system. These Town agencies can communicate with each other through each radio system.

TYPE OF EXISTING PROTECTION	DESCRIPTION	AREA OF TOWN COVERED	Enforcement	Effectiveness	IMPROVEMENTS OR CHANGES NEEDED 2021 Update
Hazardous Materials Regulations	State regulations administered by Town	All areas of Town	Police, Fire Depts.	Good.	Certified to Operations level. Recognition of emergency, basic mitigation in place. Part of South East Hazardous Mutual Aid Program, of which 13 towns are a part of. Take care of companies Tier2 Program submittal and there needs to be a better, more stream-lined approached to make it easier. So, it could be improved. Educate the public and town government about transport of hazardous materials. Integrate into comprehensive outreach program. Maybe on website.
IBC, Local Building Codes, and Fire Codes	Regulates construction of buildings to set a minimum standard of protection to building occupants	All areas of Town	Building Inspector Code Enforcement	Good	Ordinance meets all state/federal requirements. Local authority is responsible for enforcing this ordinance. It is periodically reviewed and updated as required. Ordinance is working as described.
Comp Emergency Management Planning for Schools (CEMPS)	Education for schoolteachers, administrators and children about emergency situations	All schools	Emergency Planning personnel	Good	Plan is working as intended. In progress, exercises held regularly, and school plans updated annually. Training with state, doing fire drills and practicing evacuations.
Steep Slopes & Class VI Roads Regulations	Subdivision Regulations: set standards to prevent erosion, mudslides, etc.	Slopes over 15% and Class VI Roads	Highway Dept./ Public Works	Good.	Ordinance meets all state/federal requirements. Local authority is responsible for enforcing this ordinance. It is periodically reviewed and updated as required. Ordinance is working as described.
HazMat Response Team	Continued dependence on mutual aid within the Town's District		Fire Department	Excellent	Plan meets all state/federal requirements. Plan is working as described.
Merrimack Riverfront Conservation Preserve Project	Aims to conserve more than 135 acres and almost 4,000 feet of riverfront on the Merrimack River	Areas of Town along Merrimack River	Hooksett Conservation Commission Planning Department	Good	More land needs to be conserved in order to meet the goal. In July 2013, 6.21 acres and 333.83 feet of riverfront were acquired for conservation purposes. The Conservation Commission continues to pursue conservation lands for this project.
National Flood Insurance Program (NFIP)	Provides flood insurance and guidance for multiple flood hazard mitigation actions, regulations, and outreach related to continued compliance with NFIP	Areas delineated in Flood Insurance Rate Maps, Flood Boundary and Floodway Map, and the Special Flood Hazard Areas as regulated by the Floodplain Development Ordinance	The Town enforces the Floodplain Development Ordinance DPW Planning Department	Good	The Town has online access to updated Flood Insurance Maps (2010). Evaluate and participate in FEMA Community Rating System and appoint a point person as the NFIP administrator

TYPE OF EXISTING PROTECTION	DESCRIPTION	AREA OF TOWN COVERED	Enforcement	Effectiveness	IMPROVEMENTS OR CHANGES NEEDED 2021 Update
Public Outreach Program	Public outreach efforts include education on hazard mitigation programs, the importance of wetlands and (separately) groundwater recharge, land clearing procedures, transport of hazardous materials	All areas of Town	Emergency Management Fire Department Police Department Public Works Department Planning Department	Good	<p>Need to combine various Town public outreach efforts into a single program.</p> <p>Various public outreach initiatives exist, but some are not established, and they are not yet combined into a single program. Area of improvement could be National Fire/EMS Week.</p>

## IX. SUMMARY OF MITIGATION STRATEGIES AND PRIORITIZATION

The following mitigation strategies are aimed at reducing the potential impact of significant hazard events on the community and its infrastructure. The Hooksett Hazard Mitigation Committee reviewed all mitigation strategies from the 2015 plan, identified whether they were completed, ongoing, or should be deferred. New mitigation action strategies were then identified. A summary of existing and new strategies can be found in the following matrix:

Mitigation Action	Status since 2015 Plan	Explanation of Status
Continue to work and coordinate with schools on hazard risks and emergency procedures.	Completed	Ongoing; PD does active shooter trainings in schools in coordination with school resource officer.
Continue program to identify fuel loads in forested areas to determine wildfire vulnerability hazard.	Completed	Ongoing; Fire Dept. maintains program as needed but program is currently stalled due to COVID19 pandemic.
Continue initiatives to purchase flood prone properties in the SFHA.	Deferred	Town has not implemented action to its knowledge but is looking to do so in the future.
Retrofit and upgrade problem culverts.	Completed	Ongoing; culverts are replaced as needed in accordance with Town budget.
Improve Storm Drain maintenance.	Completed	Ongoing; Town routinely monitors storm drains for necessary improvements.
Develop a sheltering plan for staffing, protocol, and outreach.	Completed	Ongoing in coordinating with the Red Cross.
Establish tree pruning / maintenance program; purchase bucket truck and necessary equipment.	Completed	Ongoing in coordination with Eversource utilities; bucket truck has not been purchased but plans are in place to do so. Other equipment purchased as needed.
Participate in Regional Preparedness Programs – SNHCPP and Greater Manchester Hazard Vulnerability Assessment.	Deferred	Need for improved coordination with SNHCPP and Greater Manchester Hazard Vulnerability Assessment.
Coordinate with Pan Am Railway for emergency notification and procedures.	Completed	Ongoing in coordination with fire and police depts.
Inventory school buildings for structural resistance to earthquake hazards and incorporate analysis into school emergency planning efforts.	Deleted	No progress completed for this action item; town does not anticipate implementing action and does not rate earthquakes as high-risk.
Develop and coordinate local hazard mitigation outreach program.	Deferred	Improvement needed on outreach and education for hazard mitigation programs (all outreach and awareness actions combined)
Evaluate and participate in FEMA CRS and appoint NFIP administrator.	Deferred	Town is not part of CRS but is looking in to joining; NFIP administrator has not been appointed yet.
A formalized education and outreach program to businesses will mitigate potential hazards from the use and	Deferred	Deferred; Action has not been implemented and is now stalled due to COVID19 pandemic, but Fire Dept. is

transport of hazardous materials.		looking to implement in the future.
Purchase additional backup generator (s) for Underhill School and Town Library	Completed	Backup generator purchased for Underhill School; Town is looking at purchasing generator for Library (new action item).
Organize outreach to vulnerable populations, including accessible heating and cooling centers in community.	Completed	Ongoing; Town currently implements heating and cooling centers at Library and school gymnasiums.
Examine critical infrastructure and/or facilities that would need lightning/surge protection and/or additional ground measures.	Deferred	no progress made since 2015 update but Town plans on making efforts to identify vulnerable infrastructure.
Create a wildfire prevention mitigation plan.	Deferred	Action has not been completed and is now stalled due to COVID19 Pandemic, but Fire Dept. hopes to implement in the future.
Increase public awareness on wildfire prevention.	Completed	Ongoing in coordination with fire dept.
Planning Board and town should examine methods to protect town infrastructure from wind damage.	Completed	Ongoing; action is implemented by Eversource and DPW (not planning board) wording changed for 2021 plan update
Work on water conservation and drought plan to increase public awareness.	Completed	Ongoing; need for improved coordination with the four water precincts that serve the Town
Evaluate and consider utilizing culvert GIS-based hydraulic capacity model to determine culvert vulnerabilities.	Deleted	Wording changed for 2021 plan; no progress on GIS-based hydraulic capacity model, but Town has identified vulnerable culverts with SNHPC vulnerability assessment (Appendix E)
Examine steep slope areas in town and develop plan for landslide prevention.	Deferred	No progress made but Town will make effort to examine steep slope areas in Town for 2021 plan update.
Purchase additional backup generator for Town Library.	New	
Create an inventory of structures in town that are especially vulnerable to damage from straight-line winds.	New	
Implement a municipal building closure plan in the event town buildings and services must be suspended but are still able to serve residents.	New	
Work with all town departments in maintaining an adequate stock of PPE/sanitizer in preparation for future epidemic/pandemic.	New	
Plan for and maintain adequate road and debris clearing capabilities during severe winter weather events.	New	
Improve coordination with water precincts and NHDES on outreach and	New	

education to residents in areas with contaminated water sources.		
Maintain and improve coordination with Police and Town departments on active shooter drill trainings in municipal buildings.	New	
Improve the emergency response plan and continuity of operations among all town departments in the event of a mass cyber-attack.	New	

## Prioritization of Mitigation Strategies

The goal of each mitigation strategy identified in the previous table is to reduce the severity of damage caused by significant hazard events. To determine the effectiveness of each strategy in accomplishing this goal, a set of criteria known as the STAPLEE, was applied to evaluate each strategy. The STAPLEE method analyzes the Social, Technical, Administrative, Political, Legal, Economic and Environmental aspects of a project and is commonly used by public administration officials and planners for making planning decisions. The following questions were asked about the proposed mitigation strategies and discussed in the table below:

- **Social:** Is the proposed strategy socially acceptable to the community? Are there equity issues involved that would mean that one segment of the community is treated unfairly?
- **Technical:** Will the proposed strategy work? Will it create more problems than it solves?
- **Administrative:** Can the community implement the strategy? Is there someone to coordinate and lead the effort?
- **Political:** Is the strategy politically acceptable? Is there public support both to implement and to maintain the project?
- **Legal:** Is the community authorized to implement the proposed strategy? Is there a clear legal basis or precedent for this activity?
- **Economic:** What are the costs and benefits of this strategy? Does the cost seem reasonable for the size of the problem and the likely benefits?
- **Environmental:** How will the strategy impact the environment? Will the strategy need environmental regulatory approvals?

Each mitigation strategy was evaluated and assigned a score (Good = 3, Average = 2, Poor = 1) based on the above criteria. An evaluation of each strategy can be found in the table below. Each strategy was evaluated and prioritized according to the final score. The highest scoring strategies were determined to be of most importance, economically, socially, environmentally, and politically. Upon completing the STAPLEE exercise, action items were organized from highest rank to lowest.

		STAPLEE Chart							Total Score
		Is it socially acceptable?	Is it technically feasible & potentially successful?	Is it administratively workable?	Is it politically acceptable?	Is there legal authority to implement?	Is it economically beneficial?	Is it environmentally beneficial?	
1. Retrofit and upgrade problem culverts.	3	3	3	3	3	3	3	3	21
2. Improve Storm Drain Maintenance	3	3	3	3	3	3	3	3	21
3. Participate in Regional Preparedness Programs – SNHCPP and Greater Manchester Hazard Vulnerability Assessment	3	3	3	3	3	3	3	3	21
4. Coordinate with Pan Am Railway for emergency notification and procedures	3	3	3	3	3	3	3	3	21
5. Develop and coordinate local hazard mitigation outreach program (combine all public outreach efforts currently ongoing)	3	3	3	3	3	3	3	3	21
6. Evaluate and participate in FEMA CRS and appoint NFIP administrator	3	3	3	3	3	3	3	3	21
7. Conduct an education and outreach program to businesses to mitigate impact from the use and transport of hazardous materials	3	3	3	3	3	3	3	3	21
8. Organize outreach to vulnerable populations, including establishing and promoting accessible heating and cooling centers in community.	3	3	3	3	3	3	3	3	21
9. Examine critical infrastructure and/or facilities that would need lightning/surge protection and/or additional ground measures.	3	3	3	3	3	3	3	3	21
10. Create a wildfire prevention mitigation plan.	3	3	3	3	3	3	3	3	21
11. Increase public awareness on wildfire prevention.	3	3	3	3	3	3	3	3	21
12. Identify strategies to protect town infrastructure from wind damage.	3	3	3	3	3	3	3	3	21
13. Purchase additional backup generator for Town Library	3	3	3	3	3	3	3	3	21
14. Create an inventory of structures in town that are especially vulnerable to damage from straight-line	3	3	3	3	3	3	3	3	21

winds								
15. Work with all town departments in maintaining an adequate stock of PPE/sanitizer in preparation for future epidemic/pandemic.	3	3	3	3	3	3	3	21
16. Improve coordination with schools on hazard risks and emergency procedures.	3	3	3	3	3	3	2	20
17. Examine steep slope areas in town and develop plan for landslide prevention.	3	3	2	3	3	3	3	20
18. Plan for and maintain adequate road and debris clearing capabilities during severe winter weather events	3	3	3	3	3	2	3	20
19. Improve coordination with water precincts and NHDES on outreach and education to residents in areas with contaminated water sources	3	3	2	3	3	3	3	20
20. Improve the emergency response plan and continuity of operations among all town departments in the event of a mass cyber attack	3	3	3	3	3	3	2	20
21. Create a water conservation and drought plan to increase public awareness	3	3	2	3	2	3	3	19
22. Implement a municipal building closure plan in the event town buildings and services must be suspended but are still able to serve residents.	3	3	2	2	3	3	3	19
23. Purchase flood prone properties in the SFHA.	2	3	2	2	3	3	3	18
24. Develop a sheltering plan for staffing, protocol, and outreach	3	2	3	3	3	2	0	16
25. Maintain tree pruning around powerlines	2	2	2	2	2	3	3	16
26. Maintain and improve coordination with Police and Town departments on active shooter drill trainings in municipal buildings	3	3	3	3	3	0	0	15
27. Identify fuel loads in forested areas to determine wildfire vulnerability hazard	2	2	2	2	2	2	2	14

## **X. PRIORITIZED IMPLEMENTATION SCHEDULE AND ACTION PLAN**

The Hooksett Hazard Mitigation Committee created an implementation schedule for the new and existing mitigation strategies utilizing the following questions as a guiding framework:

**WHO?** Who will lead the implementation efforts? Who will put together funding requests and applications?

**WHEN?** When will these actions be implemented, and in what order?

**HOW?** How will the community fund these projects? How will the community implement these projects? What resources will be needed to implement these projects?

As additional information becomes available regarding project leadership, timeline, funding sources, and/or cost estimates, the Plan will be reviewed and amended accordingly.

**Implementation and Action Plan (following page):**

Table 8: Town of Hooksett Implementation and Action Plan

Mitigation Action	Hazard Addressed	Who (Leadership)	When (Timeframe)	Cost/Funding source	Status
1. Retrofit and upgrade problem culverts.	Flooding	DPW	Long term	High Cost, FEMA, NHHSEM, DPW Budget	Ongoing; culverts are replaced as needed in accordance with Town budget
2. Improve Storm Drain Maintenance	Flooding	DPW	Short term	Low cost; town budget	Completed and ongoing as needed
3. Participate in Regional Preparedness Programs – SNHCPP and Greater Manchester Hazard Vulnerability Assessment	All	EMD, FD	Short term	Low cost; town budget	Deferred; action has not been implemented; need for improved coordination
4. Coordinate with Pan Am Railway for emergency notification and procedures	Hazardous materials	EMD, NHHSEM	Short term	No cost; town budget	Completed and ongoing in coordination with fire and police depts.
5. Develop and coordinate local hazard mitigation outreach program (combine all public outreach efforts currently ongoing)	All	EMD, FD	Long term	No cost; staff time	Deferred; improvement needed on outreach and education for hazard mitigation programs
6. Evaluate and participate in FEMA CRS and appoint NFIP administrator	Flooding	EMD	Short term	Low cost; town budget	Deferred; town is not part of CRS but is looking in to joining, no NFIP admin has been appointed
7. Conduct an education and outreach program to businesses to mitigate impact from the use and transport of hazardous materials	Hazardous materials	EMD	Medium term	Low cost; town budget	Deferred; action has not been implemented
8. Organize outreach to vulnerable populations, including establishing and promoting accessible heating and cooling centers in community.	All	EMD	Medium term	Medium cost; town budget	Completed and ongoing as needed with extreme temperature events

9. Examine critical infrastructure and/or facilities that would need lightning/surge protection and/or additional ground measures.	Lightning	DPW, EMD	Medium term	Low cost; town budget	Deferred; action has not been implemented to the Committee's knowledge
10. Create a wildfire prevention mitigation plan.	Fire	FD	Medium term	Low cost; town budget & staff time	Deferred; Action has not been completed and is now stalled due to COVID19 Pandemic.
11. Increase public awareness on wildfire prevention.	Fire	FD	Medium term	Low cost; staff time	Completed and ongoing in coordination with Fire Dept.
12. Identify strategies to protect town infrastructure from wind damage.	High wind events	DPW, Eversource	Medium term	Low cost; town budget, staff time	Completed and ongoing in coordination with Eversource Utilities and DPW.
13. Purchase additional backup generator for Town Library	All	EMD	Medium term	Medium cost; town budget	New
14. Create an inventory of structures in town that are especially vulnerable to damage from straight-line winds	Straight-line winds	DPW	Med term	No cost; staff time	New
15. Work with all town departments in maintaining an adequate stock of PPE/sanitizer in preparation for future epidemic/pandemic.	Infectious Disease	All Town Departments	Long term	Medium cost; town budget	New
16. Continue to work with and coordinate with schools on hazard risks and emergency procedures.	All	EMD, PD, FD	Short term	Low cost; EMD Budget	Completed and ongoing as needed.
17. Examine steep slope areas in town and develop plan for landslide prevention.	Landslides	DPW, Planning dept	Short term	Low cost; staff time	Deferred; action has not been implemented.
18. Plan for and maintain adequate road and debris clearing capabilities during severe winter weather events.	Severe winter weather	DPW	Long term	High cost; town budget	New

19. Improve coordination with water precincts and NHDES on outreach and education to residents in areas with contaminated water sources	Known and Emerging Contaminants	Town Administration, Planning Dept., NHDES, four water precincts	Short term	Medium cost; town budget	New
20. Improve the emergency response plan and continuity of operations among all town departments in the event of a mass cyber attack	Cyber event	DPW, all town depts.	Long term	Low cost; town budget	New
21. Create a water conservation and drought plan to increase public awareness	Drought	Four water precincts	Medium term	Low cost; staff time	Deferred; action has not been implemented. Need for increased coordination with four water precincts.
22. Implement a municipal building closure plan in the event town buildings and services must be suspended but are still able to serve residents.	Infectious Disease	Town Administration	Med term	No cost; staff time	New
23. Purchase flood prone properties in the SFHA.	Flooding	EMD, PD	Long term	High cost, land use change tax	Deferred; Town has not implemented action to its knowledge.
24. Develop a sheltering plan for staffing, protocol, and outreach	All	DPW, Red Cross	Short term	Low cost; town budget	Completed and ongoing in coordination with the Red Cross.
25. Maintain tree pruning around powerlines	High wind events/ severe winter weather	DPW	Short term	Medium cost; Eversource, DPW budget	Completed and Ongoing in coordination with Eversource utilities.
26. Maintain and improve coordination with Police and Town departments on active shooter drill trainings in municipal buildings	MCI	All town departments, PD	Short term	Low cost; PD budget	New
27. Continue to identify fuel loads in forested areas to determine wildfire vulnerability hazard	Fire	FD	Short term	No Cost	Completed and ongoing as needed with identification of new fuel loads.

**Timeframe Key:**

Short term – 1 year or less

Medium term – 2 to 4 years

Long term – 5 years or longer

**Cost Key:**

Low cost - < \$10,000

Medium cost - \$10,000 - \$100,000

High cost - \$100,000 or greater

**Summary of Acronyms in the Prioritized Implementation Schedule:**

- CE = Code Enforcement
- CERT = Comprehensive Emergency Response Team
- ConCom = Conservation Commission
- CRS = Community Rating System
- DPW= Department of Public Works
- FD = Fire Department
- EM = Emergency Management
- EMD = Emergency Management Director
- FEMA= Federal Emergency Management Agency
- FMAP= Flood Mitigation Assistance Program
- IT = Information Technology
- PB = Planning Board
- PD = Police Department
- PDM= Pre-Disaster Mitigation Program (see Appendix F)
- P&Z = Planning and Zoning
- NH DOT = New Hampshire Department of Transportation
- NHHSEM= New Hampshire Homeland Security and Emergency Management

## XI. Administrative Procedures Regarding Adoption, Evaluation and Monitoring of the Plan

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

—Michael J. Armstrong  
Associate Director for Mitigation, FEMA

### Incorporating the Plan into Existing Planning Mechanisms

Upon completion and approval by FEMA and the State of New Hampshire, the Plan will be adopted as a standalone document for the Town and as an appendix in the Town's Emergency Operations Plan (EOP). An update of the EOP is ongoing; future updates to the EOP will incorporate this Plan as a referenced appendix, but the two plans will always be printed as separated documents. The EOP is subject to annual review.

The Town has utilized the Hazard Mitigation Plan in the past by citing emergency operations requests within the Capital Improvement Program (CIP), specifically as it relates to mitigation strategies within the Plan, annual updates to the Emergency Operations Plan, and budget requests by Town departments such as highway, police, fire, and community development. The Plan will continue to be consulted when town departments submit their request for inclusion in the CIP. The Capital Improvements Committee is responsible for updating the CIP annually, presenting the document to the Planning Board for adoption, and forwarding it to the Town Council for inclusion in their annual budget process. The Town Council, in conjunction with Hooksett Emergency Management will determine which items can and should be added to the annual budget based on the inclusion in the CIP, the Town's annual budget and other possible sources of funding. Portions of this Plan should be referenced when updating the Town's Master Plan. Considerations about future land use and proximity to current and potential hazard areas need to be inherently part of the planning process. NH RSA 674:2 (d) gives towns the authority to include a natural hazards section, which documents the physical characteristics, severity, and extent of any potential natural hazards to the community, within the framework of a Master Plan.

### Monitoring, Evaluating and Updating the Plan

#### Adoption

Upon notification that NHHSEM has conditionally approved this Plan, a public hearing will be held, and the Hooksett Town Council will formally adopt the Hooksett Hazard Mitigation Plan as an official statement of town policy. In the future, this Plan may constitute a new section of the Hooksett Master Plan, in accordance with RSA 674:2. The public hearing shall be properly posted and advertised by the Town in accordance with New Hampshire state law. Documentation that the Hooksett Town Council have formally adopted can be found at the beginning of the Plan.

Adoption of the Hooksett Hazard Mitigation Plan demonstrates the Town's commitment to hazard mitigation. It also qualifies the municipality for federal, state, and local funding and prepares the public for what is expected of the community before and after a natural hazard event occurs.

Following adoption, the Hazard Mitigation Committee and the Town Council shall seek to incorporate the mitigation actions identified in the Prioritized Implementation Schedule of Section VIII of the Plan into other planning mechanisms, including the Town's Master Plan.

### **Monitoring, Evaluating and Updates**

The Hooksett Hazard Mitigation Plan shall be monitored and evaluated annually to track progress in implementing the mitigation strategies and actions as well as updating the goals and objectives of the Plan. The Hooksett Town Council's administrative assistant shall be responsible for initiating this review and scheduling an annual meeting of the Hazard Mitigation Committee. The Hooksett Emergency Management Director shall be responsible for ensuring that the Plan is updated for FEMA approval at least every 5 years. In addition to reviewing Hazard Mitigation Committee members' progress on projects, the strategy for the following year will be reviewed and new projects will be selected for implementation at the annual meeting.

The Hooksett Town Council's administrative assistant will conduct updates in coordination with the Hazard Mitigation Committee and Hooksett Town Council. Updates should be made to the Plan every three to five years<sup>53</sup> to accommodate actions that have failed or are not considered feasible after a review for their consistency with STAPLEE, the timeframe, the community's priorities, and funding resources. Priorities that were not ranked high, but identified as potential mitigation strategies, should be reviewed as well during the monitoring and update of this Plan to determine feasibility of future implementation. At that time, any other items identified during the annual meetings will be updated in the Plan, including, but not limited to, goals, objectives, identification of past hazard events, and the inventory of town assets vulnerable to hazards.

Keeping with the process of adopting the Hooksett Hazard Mitigation Plan, a public hearing to receive comment on the Plan maintenance and updating shall be held during the review period, and the Town Council will adopt the final product.

During the budget process each year, department heads shall be responsible for considering hazard mitigation actions that need to be implemented as well as forwarding new actions that might be necessary to the Town Council's administrative assistant for inclusion in the annual plan review. The plan will be considered for incorporation into the community's Town Operating Budget, capital improvement plan considerations, and/or other planning mechanisms.

### **Continued Public Involvement**

The public will continue to be invited and encouraged to be involved during this process at monitoring, evaluation, and update meetings. All meetings involving implementation or updates of the Plan shall be open to the public as is required by RSA 91-A and notices of the meetings will be posted at least 24 hours in advance in a minimum of two locations, such as the town offices and library. To gain additional public involvement, draft copies of the amended Hazard Mitigation Plan will be made available at two public locations for review and comment. The document should be left for a minimum of two weeks and then all comments will be considered in drafting final revisions.

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<sup>53</sup> FEMA Disaster Mitigation Act of 2000 44 CFR Part 201.6(d)(3) mandates "Plans must be reviewed, revised if appropriate, and resubmitted for approval within five years to continue to be eligible for HMGP project grant funding." (Federal Register Vol. 36, No. 38, Feb 26, 2002, Rules and Regulations, p8852)

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### Agencies:

<b>New Hampshire Homeland Security and Emergency Management</b>		(603) 271-2231
<b>Federal Emergency Management Agency</b>		1-877-336-2734
<b>NH Regional Planning Commissions:</b>		
	Central NH Regional Planning Commission	226-6020
	Lakes Region Planning Commission	279-8171
	Nashua Regional Planning Commission	424-2240
	North Country Council	444-6303
	Rockingham Planning Commission	778-0885
	Southern New Hampshire Planning Commission	669-4664
	Southwest Region Planning Commission	357-0557
	Strafford Regional Planning Commission	742-2523
	Upper Valley Lake Sunapee Regional Planning Commission	448-1680
<b>NH Executive Department:</b>		
	New Hampshire Office of Energy and Planning	(603) 271-2155
<b>NH Department of Cultural Resources</b>		(603) 271-2392

	Division of Historical Resources	603-271-3483
<b>NH Department of Environmental Services</b>		(603) 271-3503
	Air Resources	271-1386
	Waste Management	271-2925
	Water Conservation	271-0659
	Dam Safety & Maintenance	271-3406
<b>NH Fish and Game Department</b>		(603) 271-3421
<b>NH Department of Resources and Economic Development</b>		(603) 271-2411
	Division of Economic Development	(603) 271-2591
	Division of Forests and Lands	(603) 271-2214
	Division of Parks and Recreation	(603) 271-3556
<b>NH Department of Transportation</b>		(603) 271-3734
<b>U.S. Department of Commerce</b>		(202) 482-2000
	National Oceanic and Atmospheric Administration	1-301-713-1208
	National Weather Service; Gray, Maine	207-688-3216
<b>U.S. Department of the Interior</b>		
	U.S. Fish and Wildlife Service	1-800-344-9453
	U.S. Geological Survey	1-888-275-8747
<b>U.S. Department of Agriculture</b>		

## APPENDIX D - TECHNICAL AND FINANCIAL ASSISTANCE FOR HAZARD MITIGATION

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

Agency	Office/ Directorate	Program	Purpose	Funding Beneficiaries
Programs to prepare the Nation to address the consequences of natural and man-made disasters and emergencies.				
Department of Homeland Security	<i>Border and Transportation Security Directorate</i>	State Homeland Security Grant Program <a href="http://www.ojp.usdoj.gov">www.ojp.usdoj.gov</a>	This core assistance program provides funds to build capabilities at the state and local levels and to implement the goals and objectives included in state homeland security strategies and initiatives in the State Preparedness Report.	State governments
	<i>Emergency Preparedness and Response Directorate</i>	Emergency Management Performance Grants <a href="http://www.fema.gov">www.fema.gov</a> <a href="http://www.fema.gov/government/grant/index.shtm">http://www.fema.gov/government/grant/index.shtm</a>	To assist State and local governments in enhancing and sustaining all-hazards emergency management capabilities.	States with pass through to local emergency management organizations
	<i>Emergency Preparedness and Response Directorate</i>	Assistance to Firefighters Grant Program <a href="http://www.usfa.fema.gov/grants">www.usfa.fema.gov/grants</a> <a href="http://www.firegrantsupport.com/afg/">http://www.firegrantsupport.com/afg/</a>	The primary goal of the Assistance to Firefighters Grants (AFG) is to meet the firefighting and emergency response needs of fire departments and nonaffiliated emergency medical services organizations.	Local, State, and Regional Fire Departments and agencies.
	<i>Emergency Preparedness and Response Directorate</i>	State and Local Emergency Operation Centers (EOCs) <a href="http://www.fema.gov">www.fema.gov</a> <a href="http://www.fema.gov/government/grant/index.shtm">http://www.fema.gov/government/grant/index.shtm</a>	To improve emergency management and preparedness capabilities by supporting flexible, sustainable, secure, and interoperable Emergency Operations Centers (EOCs) with a focus on addressing identified deficiencies and needs.	States; local governments may be sub-grantees of the State
	<i>Emergency Preparedness and Response Directorate</i>	Citizen Corps <a href="http://www.citizencorps.gov">www.citizencorps.gov</a>	To bring community and government leaders together to coordinate community involvement in emergency preparedness, planning, mitigation, response and recovery.	States with a pass through to local governments
Department of Homeland Security	<i>Emergency Preparedness and Response Directorate</i>	National Fire Academy Training Grants <a href="http://www.fema.gov">www.fema.gov</a>	To provide financial assistance to State Fire Training Systems for the delivery of a variety of National Fire Academy courses/programs.	State fire training organizations

Agency	Office/ Directorate	Program	Purpose	Funding Beneficiaries
	<i>Emergency Preparedness and Response Directorate</i>	Emergency Management Institute Training Assistance <a href="http://www.fema.gov">www.fema.gov</a>	To defray travel and per diem expenses of State, local and tribal emergency management personnel who attend training courses conducted by the Emergency Management Institute, at the Emmitsburg, Maryland facility; Bluemont, Virginia facility; and selected off-site locations. Its purpose is to improve emergency management practices among State, local and tribal government managers, in response to emergencies and disasters. Programs embody the Comprehensive Emergency Management System by unifying the elements of management common to all emergencies: planning, preparedness, mitigation, response, and recovery.	State, local, and tribal emergency managers
	<i>Emergency Preparedness and Response Directorate</i>	Hazardous Materials Assistance Program (CERCLA Implementation)	Provide technical and financial assistance through the States to support State, local and tribal governments in oil and hazardous materials emergency planning and exercising. To support the Comprehensive Hazardous Materials (HAZMAT) Emergency Response – Capability Assessment Program (CHER-CAP) activities.	State, local, and tribal governments, state emergency response committees, local emergency planning commissions
	<i>Emergency Preparedness and Response Directorate</i>	Interoperable Communications Equipment Grant <a href="http://www.fema.gov/government/grant/index.shtm">http://www.fema.gov/government/grant/index.shtm</a>	To provide governance, planning, training and exercise, and equipment funding to States, Territories, and local and tribal governments to carry out initiatives to improve interoperable emergency communications, including communications in collective response to natural disasters, acts of terrorism, and other man-made disasters.	N/A
Department of Homeland Security	<i>Emergency Preparedness and Response Directorate</i>	Chemical Stockpile Emergency Preparedness Program <a href="http://www.fema.gov">www.fema.gov</a>	A cooperative agreement to enhance emergency preparedness capabilities of the States and local communities at each of the eight chemical agent stockpile storage facilities. The purpose of the program is to assist States and local communities in efforts to improve their capacity to plan for and respond to accidents associated with the storage of chemical warfare materials.	State and local governments and the general public in the vicinity of the eight chemical agent stockpile storage facilities.

Agency	Office/ Directorate	Program	Purpose	Funding Beneficiaries
	<i>National Preparedness Directorate</i>	<b>Metropolitan Medical Response System</b> <a href="http://www.fema.gov/mmrs">http://www.fema.gov/mmrs</a>	To provide contractual funding to the 124 largest metropolitan jurisdictions to sustain and enhance the integrated medical response plans to a WMD terrorist attack.	Local governments
<b>Department of Justice</b>	<i>Office of Domestic Preparedness</i>	State Domestic Preparedness Equipment Support Program <a href="http://www.ojp.usdoj.gov/odp/equipment.htm">http://www.ojp.usdoj.gov/odp/equipment.htm</a>	Funding will be provided to enhance first responder capabilities, and to provide for equipment purchases and exercise planning activities for response to Weapons of Mass Destruction (WMD) domestic terrorist incidents.	State and local governments
	<i>Office of Community Oriented Police Services (COPS)</i>	COPS Interoperable Communications Technology Program <a href="http://www.cops.usdoj.gov">www.cops.usdoj.gov</a>	To facilitate communications interoperability public safety responders at the state and local level.	Tribal, State, and local law enforcement agencies
<b>Department of Health and Human Services</b>		Public Health and Social Services Emergency Fund <a href="http://www.hhs.gov">www.hhs.gov</a>	To continue to prepare our nation's public health system and hospitals for possible mass casualty events, and to accelerate research into new treatments and diagnostic tools to cope with possible bioterrorism incidents.	Individuals, families, Federal, State, and local government agencies and emergency health care providers
	<i>Health Resources and Services Administration</i>	State Rural Hospital Flexibility Program <a href="http://www.ruralhealth.hrsa.gov">www.ruralhealth.hrsa.gov</a>	To help States work with rural communities and hospitals to develop and implement a rural health plan, designate critical access hospitals (CAHs), develop integrated networks of care, improve emergency medical services and improve quality, service and organizational performance.	States with at least one hospital in a non-metropolitan region
<b>Department of Health and Human Services</b>	<i>Health Resources and Services Administration</i>	EMS for Children <a href="http://www.hrsa.gov">www.hrsa.gov</a>	To support demonstration projects for the expansion and improvement of emergency medical services for children who need treatment for trauma or critical care. It is expected that maximum distribution of projects among the States will be made and that priority will be given to projects targeted toward populations with special needs, including Native Americans, minorities, and the disabled.	State governments and schools of medicine

Agency	Office/ Directorate	Program	Purpose	Funding Beneficiaries
	<i>National Institute of Health</i>	Superfund Hazardous Substances Basic Research and Education <a href="http://www.nih.gov">www.nih.gov</a>	To establish and support an innovative program of basic research and training consisting of multi-project, interdisciplinary efforts that may include each of the following: (1) Methods and technologies to detect hazardous substances in the environment; (2) advance techniques for the detection, assessment, and evaluation of the effects of hazardous substances on humans; (3) methods to assess the risks to human health presented by hazardous substances; and (4) and basic biological, chemical, and physical methods to reduce the amount and toxicity of hazardous substances.	Any public or private entity involved in the detection, assessment, evaluation, and treatment of hazardous substances; and State and local governments
	<i>Centers for Disease Control</i>	Immunization Research, Demonstration, Public Information and Education <a href="http://www.cdc.gov">www.cdc.gov</a>	To assist States, political subdivisions of States, and other public and private nonprofit entities to conduct research, demonstrations, projects, and provide public information on vaccine-preventable diseases and conditions.	States and nonprofits organizations
	Centers for Disease Control	Surveillance of Hazardous Substance Emergency Events <a href="http://www.atsdr.cdc.gov">www.atsdr.cdc.gov</a>	To assist State health departments in developing a State-based surveillance system for monitoring hazardous substance emergency events. This surveillance system will allow the State health department to better understand the public health impact of hazardous substance emergencies by developing, implementing, and evaluating a State-based surveillance system.	State, local, territorial, and tribal public health departments
Department of Health and Human Services	<i>Centers for Disease Control</i>	Human Health Studies, Applied Research and Development <a href="http://www.atsdr.cdc.gov">www.atsdr.cdc.gov</a>	To solicit scientific proposals designed to answer public health questions arising from situations commonly encountered at hazardous waste sites. The objective of this research program is to fill gaps in knowledge regarding human health effects of hazardous substances identified during the conduct of ATSDR's health assessments, consultations, toxicological profiles, and health studies, including but not limited to those health conditions prioritized by ATSDR.	State health departments

Agency	Office/ Directorate	Program	Purpose	Funding Beneficiaries
Department of Education	Office of Safe and Drug free Schools (OSDFS)	Readiness and Emergency Management for Schools <a href="http://www.ed.gov/programs/dvpemergencyresponse/index.html/">http://www.ed.gov/programs/dvpemergencyresponse/index.html/</a>	This grant program supports efforts by LEAs to improve and strengthen their school emergency management plans, including training school personnel and students in emergency management procedures; communicating with parents about emergency plans and procedures; and coordinating with local law enforcement, public safety, public health, and mental health agencies.	School Districts
Department of Transportation	<i>Pipeline and Hazardous Materials Safety Administration (PHMSA)</i>	Hazardous Materials Emergency Preparedness Training and Planning Grants <a href="http://phmsa.dot.gov/hazmat/grants">http://phmsa.dot.gov/hazmat/grants</a>	Increase state, local, territorial, and Native American tribal effectiveness to safely and efficiently handle HazMat accidents and incidents; enhance implementation of the Emergency Planning and Community Right-to-Know Act of 1986; and encourage a comprehensive approach to emergency planning and training by incorporating response to transportation standards.	States, local, territorial, tribal governments.
<b>Programs to coordinate Federal response efforts and to assist states, localities, and tribes in responding to disasters and emergencies.</b>				
Department of Homeland Security	<i>Emergency Preparedness and Response Directorate</i>	Urban Search and Rescue <a href="http://www.fema.gov">www.fema.gov</a>	To expand the capabilities of existing Urban Search and Rescue Task Forces.	28 existing US&R Task Forces
<b>Programs to provide assistance to States, localities, tribes, and the public to alleviate suffering and hardship resulting from Presidentially declared disasters and emergencies caused by all types of hazards.</b>				
Department of Homeland Security	<i>Emergency Preparedness and Response Directorate</i>	Individuals and Households Program <a href="http://www.fema.gov/assistance/process/guide.shtm">http://www.fema.gov/assistance/process/guide.shtm</a>	To provide assistance to individuals and families who have been affected by natural or man-made Presidentially declared disasters. Funding provided from the Disaster Relief Fund.	Individuals and Families
	<i>Emergency Preparedness and Response Directorate</i>	Public Assistance <a href="http://www.fema.gov/government/grant/pa/index.shtm">http://www.fema.gov/government/grant/pa/index.shtm</a>	To provide assistance to states, localities, tribes, and certain non-profit organizations affected by natural or man-made Presidentially declared disasters. Funding provided from the Disaster Relief Fund	State, local and tribal governments; private non-profit organizations
	<i>Emergency Preparedness and Response Directorate</i>	Fire Management Assistance Grant Program <a href="http://www.fema.gov/government/grant/fmagp/index.shtm">http://www.fema.gov/government/grant/fmagp/index.shtm</a>	Provide funds to States, local, and tribal governments for the mitigation, management, and control of wildland fires posing serious threats to improved property.	State, local and tribal governments
Small Business Administration	<i>Office of Disaster Assistance</i>	Disaster Loan Program <a href="http://www.sba.gov/services/disasterassistance/">http://www.sba.gov/services/disasterassistance/</a>	To offer financial assistance to those who are trying to rebuild their homes and businesses in the aftermath of a disaster.	Individuals, families, private sector

Agency	Office/ Directorate	Program	Purpose	Funding Beneficiaries
Department of Justice	<i>Office for Victims of Crime</i>	Antiterrorism and Emergency Assistance Program <a href="http://www.ojp.usdoj.gov/ovc/publications/infoterrorism/">http://www.ojp.usdoj.gov/ovc/publications/infoterrorism/</a>	To provide assistance programs for victims of mass violence and terrorism occurring within and outside the United States and a compensation program for victims of international terrorism.	Public and private nonprofit victim assistance agencies
<b>Programs to reduce or eliminate future risk to lives and property from disasters.</b>				
Department of Homeland Security	<i>Emergency Preparedness and Response Directorate</i>	Hazard Mitigation Grant Program <a href="http://www.fema.gov/government/grant/hmgp/index.shtm">http://www.fema.gov/government/grant/hmgp/index.shtm</a>	To provide assistance to states, localities, and tribes to fund projects that will reduce the loss of lives and property in future disasters. Funding is provided from the Disaster Relief Fund and administered by the states according to their own priorities.	State, local, and tribal governments
	<i>Emergency Preparedness and Response Directorate</i>	Pre-Disaster Mitigation Program <a href="http://www.fema.gov/government/grant/pdm/index.shtm">http://www.fema.gov/government/grant/pdm/index.shtm</a>	This program provides funding for mitigation activities before disaster strikes. In recent years it has provided assistance for mitigation planning. In FY03, Congress passes a competitive pre-disaster mitigation grant program that will include project funding.	State, local, and tribal governments
Department of Homeland Security	<i>Emergency Preparedness and Response Directorate</i>	Flood Mitigation Assistance Program (FMA) <a href="http://www.fema.gov/government/grant/fma/index.shtm">http://www.fema.gov/government/grant/fma/index.shtm</a>	The FMA program was created as part of the National Flood Insurance Reform Act (NFIRA) of 1994 (42 U.S.C. 4101) with the goal of reducing or eliminating claims under the <u>National Flood Insurance Program</u> (NFIP).FEMA provides FMA funds to assist States and communities implement measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the National Flood Insurance Program.	State, local and tribal governments
	<i>Emergency Preparedness and Response Directorate</i>	Repetitive Flood Claims Program (RFC) <a href="http://www.fema.gov/government/grant/rfc/index.shtm">http://www.fema.gov/government/grant/rfc/index.shtm</a>	The Repetitive Flood Claims (RFC) grant program was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004 (P.L. 108-264), which amended the National Flood Insurance Act (NFIA) of 1968 (42 U.S.C. 4001, et al). Up to \$10 million is available annually for FEMA to provide RFC funds to assist States and communities reduce flood damages to insured properties that have had one or more claims to the National Flood Insurance Program (NFIP).	State, local and tribal governments

Agency	Office/ Directorate	Program	Purpose	Funding Beneficiaries
	<i>Emergency Preparedness and Response Directorate</i>	Severe Repetitive Loss Program (SRL) <a href="http://www.fema.gov/government/grant/srl/index.shtm">http://www.fema.gov/government/grant/srl/index.shtm</a>	The Severe Repetitive Loss (SRL) grant program was authorized by the Bunning-Bereuter-Blumenauer Flood Insurance Reform Act of 2004, which amended the National Flood Insurance Act of 1968 to provide funding to reduce or eliminate the long-term risk of flood damage to severe repetitive loss (SRL) structures insured under the National Flood Insurance Program (NFIP).	State, local and tribal governments
	<i>Emergency Preparedness and Response Directorate</i>	Map Modernization <a href="http://www.fema.gov/plan/prevent/fhm/mm_main.shtm">http://www.fema.gov/plan/prevent/fhm/mm_main.shtm</a>	This funding provides assistance to develop digital flood maps, support flood-mapping activities and expand the Cooperating Technical Partners Program to communities and regional entities.	State, local and tribal governments
<b>Programs to interdict potentially hazardous events from occurring</b>				
Department of Health and Human Services	<i>Centers for Disease Control</i>	Immunization Grants <a href="http://www.cdc.gov">www.cdc.gov</a>	To assist States and communities in establishing and maintaining preventive health service programs to immunize individuals against vaccine-preventable diseases.	States
<b>Other</b>				
Department of Housing and Urban Development	<i>NH Office of Energy and Planning</i>	Community Development Block Grant (CDBG) Program <a href="http://www.hud.gov/offices/cpd/communitydevelopment/programs/">http://www.hud.gov/offices/cpd/communitydevelopment/programs/</a>	HUD provides flexible grants to help cities, counties, and States recover from Presidential declared disasters, especially in low-income areas, subject to availability of supplemental appropriations.	State, local and tribal governments

### **Mitigation Programs of Other NH State Agencies**

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

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

## Appendix C Minutes and Attendance Sheets

# Hooksett Hazard Mitigation Committee Meeting

## AGENDA: Meeting #1

March 4th, 2020  
*Hooksett Town Offices*  
35 Main Street  
Hooksett, NH 03106

- 1. Introductions**
- 2. Overview of the Hazard Mitigation Planning Process**
  - a. Elect Chair, minute taker
  - b. Review of materials
  - c. Scope of work to be completed
- 3. Discuss Development Trends, NFIP**
- 4. Hazard Identification and Risk Assessment**
  - a. Assessing Probability Severity and Risk (handout)
  - b. Update Past and Potential Hazards
    - i. Add any hazard events that have occurred *since last plan update*, add new hazard types from 2018 State Hazard Mitigation Plan with any past occurrences
- 5. Critical Facilities and Areas at Risk**
  - a. Review and update Critical Facilities in existing plan
  - b. Review and update existing mitigation strategies matrix (if time)
- 6. Next Meeting Schedule \_\_\_\_\_ and Adjournment**

**Hazard Mitigation Committee:**

Madeleine Dilonno - Southern NH Planning Commission

**Nicholas Williams Town Planner – Committee Chair**

Janet Bouchard HPD Chief

Justin Sargent HPD

Matthew Lavoie Hooksett Code Enforcement Officer

Earl Labonte DPW Director

Nick Germain Administration Project Coordinator

Kathy Lawrence Admin Assistant – Minutes

**Overview of the Hazard Mitigation Planning Process:**

Maddie - The Hooksett Hazard Mitigation Plan is required to be updated every 5 years. Hooksett's last plan was completed 2015. The committee will need to have minimum of 3 public hearings, meetings will need to be posted in 2 locations. Starting next meeting the agenda will be posted in advance of the meeting and open to the public. The committee is charged with identifying the risk assessment of natural hazards and their impact. FEMA Pre-disaster grant funding is based on town population with 75% federal share – 25% town share. Funding for the town portion can be matched based on participation. Employee hourly rate calculated through participation in meetings, training and public event participation. Deadline update is 12/31/2020 – 2022.

**Development Trends:**

Nicholas – the trends are moving toward more Mixed Use with both Medium-Density and Low-Density Residential expanding. We have a TIF on 3A with sewer expansion by 2025. Increased density is expected in that area which includes exit 10 through to exit 11. There is a subdivision approved on the northeast end of route 3 near the Allenstown line that could potentially add 400+ new sf homes. Maddie asked about National Flood Zones.

Matthew – If anything the FEMA maps have been adjusted to lower levels.

Maddie a community rating system could result in reduced flood insurance. Maddie asked Nicholas to confirm that Hooksett's Master Plan was in the process of being updated, Nicholas did confirm it was.

**Hazard Identification and Risk Assessment:**

- The committee was provided with a handout to update the Assessment of Probability, Severity and Risk.
- Update Past and Potential Hazards.
- Add any hazard events that have occurred since last plan update
- Add new hazard types

All were reviewed and updated.

Meeting adjourned @ 11:30

Next meeting April 23<sup>rd</sup> @ 9:30am Location TBD

# **Hooksett Hazard Mitigation Committee Meeting**

## **AGENDA: Meeting # 2**

April 23<sup>rd</sup>, 2020

9:30

*(Meeting held online via “Zoom”)*

- 1. Introductions**
- 2. Review and finalize “Hazard Identification and Probability” Exercise from Meeting #1**
  - a. Add any missing information
  - b. Questions, comments, suggested revisions
- 4. Review and Update “Critical Facilities” and “Areas at Risk”**
  - a. Provide updates and revisions to critical facilities and areas at risk identified in 2015 Plan
- 5. Review and Update “Existing Mitigation Strategies and Proposed Improvements”  
(Section III of 2015 Plan)**
  - a. Review existing mitigation strategies identified in 2015 Plan and summary matrix
  - b. Provide revisions and Identify any new mitigation strategies
- 6. Next Meeting Schedule\_\_\_\_\_ and Adjournment**

## **HOOKSETT HAZARD MITIGATION COMMITTEE MEETING**

**Agenda: Meeting #2**  
**April 23rd, 2020 9:30am**  
*(Meeting held via "Zoom")*

Hazard Mitigation Committee:

Madeleine Dilonno - Southern NH Planning Commission  
Nicholas Williams Town Planner – Committee Chair  
Janet Bouchard HPD Chief  
Matthew Lavoie Hooksett Code Enforcement Officer  
Earl Labonte DPW Director  
Nick Germain Administration Project Coordinator  
Kathy Lawrence Admin Assistant – Minutes

### **Introductions -9:30**

**1. Minutes approval of March 4<sup>th</sup> adopted by the committee – no changes, all in favor.**

### **2. Review and finalize “Hazard Identification and Probability” Exercise from Meeting #1**

Maddie D. reviewed the handout (#1) with the changes from the review of the March 4<sup>th</sup> meeting “Assessing Probability, Severity and Risk”

**\*The committee reviewed and approved the addition of:**

***Assessing Probability, Severity and Risk to Town of Hooksett, Hazard Mitigation Plan Update 2020***

### **4. Review and Update “Critical Facilities” and “Areas at Risk”**

a. Provide updates and revisions to critical facilities and areas at risk identified in 2015 Plan

**The committee reviewed the list and provided updated locations and address**

**Hooksett Municipal Locations:**

Hooksett Library address corrected: 31 Mount Saint Mary's Way

Merrimack County Court House: 101 Merrimack Street

**Wireless Communication Facilities - 1 additional:**

14 Mammoth Road

**Areas at risk**

Matt advised that the daycare list was complete.

Nicholas advised he would update the list of 55 and older communities.

Elk Lodge to be removed from Londonderry Tpk

**Recreation areas:**

**Earl suggested a sub section for trails.**

**Lilac Bridge is no longer a vehicle bridge. It was replaced by walking bridge a suggestion to add to trails**

**Pinnacle Trail, Merrimack River Walk Trail, Heads Pond Trail, Lilac Pedestrian Bridge**

**Sewer Pumping Stations:**

**There has been approval for a Pump Station on 3A, located at 311 West River Road**

**Unique or Historic Resources:**

Add Old Town Hall, Main Street

**Water Systems:**

this category is divided into 2 section. There is a recommendation to combine them and have the water tank locations added.

**Commercial impact areas:**

Cigna Building, 2 College Park Drive, is now vacant. Osborn's Agway is now located at 16 Cinemagic Way. Cinemagic Cinemas 7 Cinemagic Way, Urgent Care, 38 Cinemagic Way, National Guard Maintenance Facility, 1227 Hooksett

Road, Amazon, 400 Quality Drive, A. Due Pyle, 40 Londonderry Tpk, Fasadex Designs LLC, 36 Londonderry tpk. Market basket, 30 Market Drive, East Point Drive Industrial Park, Londonderry Tpk, Hooksett Village Shops Plaza, 1328 Hooksett Road, Target Plaza, 100 Quality Drive. Kohls, 200 Quality Drive, Home Depot, 300 Quality Drive.

**Hazard Material Facilities:**

Pike Liquid Asphalt Plant at 40 Hackett Hill has been approved for construction but no construction has begun as of 5/1/2020.

To be Removed: Pollock Oil Co., Chris Compos Auto Tech, change to Auto Renuzit, Delta Mech Corp change to Brandit

Maddie asked for a list of gas stations in Hooksett

**Existing Protection:**

**The committee reviewed for update:**

**Matt: the first 3 are enforced by NHDES**

**Nicholas** The Ground Water Resource Conservation District encompasses about 90 percent of our commercial development I don't think its effective and needs to be researched by NHDES. **Matt** have you ever had anyone come before ZBA that didn't get the relief? How effective is it? I may deter those that don't want to go the extra step of going to ZBA.

**The committee agree to leave as is, NHDES provided the boundaries.**

**Maddie Emergency Operations Plan asked when was the last time the manual was updated?**

**Nick G 2013 may have had a minor update with chief Burkush**

**Maddie who would we connect with?**

**State Dams: No changes**

**Road Design: No changes**

**Shoreland Protection: No changes**

**Generators: Earl DPW and RT station should be added to the list**

**Maddie asked if the Library or Underhill School had generators.**

**Town Radio System – Emergency personnel: No changes**

**Maddie asked if any changes to local building and fire code?**

**Local Building Code: 2015 IBC per state requirements**

**Assistant Fire Chief Steve Colburn reviews Fire Code**

**Emergency Management Planning for Schools: Hooksett Police provides Emergency drills and active shooter drills.**

**Steep Slopes & Class VI Road, Responsible Department: Town Engineer**

**Hazmat Response Team: Hooksett Fire**

**Merrimack Riverfront Conservation Preserve Project has had no additional acreage added since reporting July 2013.**

Maddie asked for any other comments or updates will make changes of notes made and will send for review.

**5. Review and Update “Existing Mitigation Strategies and Proposed Improvements” (Section III of 2015 Plan) a.**

Review existing mitigation strategies identified in 2015 Plan and summary matrix

b. Provide revisions and Identify any new mitigation strategies

**6. Next Meeting Schedule May 28<sup>th</sup> @ 9:30 at the Safety Center and Chief Bouchard will reserve the room.**

# **Hooksett Hazard Mitigation Committee Meeting**

## **AGENDA: Meeting # 3**

May 28<sup>th</sup>, 2020

9:30am

*(Meeting held online via “Zoom”)*

### **1. Introductions**

### **2. Review 2015 Mitigation Action Plan**

- a. Review 2015 Action Plan and determine status of existing action items
- b. Add any missing information
- c. Questions, comments, suggested revisions

### **3. Identify new mitigation actions for 2020 action plan**

- a. Brainstorm action items for natural hazards identified in 2020 risk assessment
- b. For each action item, identify corresponding leadership, timeframe, and estimated cost/funding source (template handout)

### **4. STAPLEE Process**

- a. Rank new and existing mitigation actions using STAPLEE ranking matrix (handout)

### **5. Next Meeting Schedule\_\_\_\_\_ and Adjournment**

## HOOKSETT HAZARD MITIGATION COMMITTEE MEETING

**Agenda: Meeting #3**

**May 28th, 2020 9:30am**

*(Meeting held via "Zoom")*

Hazard Mitigation Committee:

Madeleine Dilonno - Southern NH Planning Commission

Nicholas Williams Town Planner – Committee Chair

Janet Bouchard HPD Chief-9:45

Matthew Lavoie Hooksett Code Enforcement Officer

Earl Labonte DPW Director

Nick Germain Administration Project Coordinator

Kathy Lawrence Admin Assistant – Minutes

### **1. Introductions -9:30**

### **2. Minutes approval of April 23rd adopted, with no changes, by the committee all in favor**

Review of 2015 Mitigation Action Plan

Maddie started the review by asking the committee to go over each action item (1-22) and determine if they should stay as is or revise the information for the 2020 update.

**Action #1** – HPD has ongoing training with schools and teachers – active shooter. The committee asked that HFD (Assistant Chief Steve Colburn) review and comment on actions #1 **#2** . **#3**- The hazard zone has stayed the same, carry over as is, **#4 - #5** on-going, carry over as is. **#6** HFD is in coordination with Red Cross and their involvement. **#7** In an emergency situation it is the responsibility of the Power Company. The hazard may be road blocking so that should be acknowledged. **#8** No information to provide what has been completed. Nicholas W I think it is important and we should improve the possibility of coordination. **#9** Stay the same. **#10**-We are not in a earthquake zone, the committee asked to have that removed. **#11** Remain as is. **#12**-Is Hooksett part of the Community Rating System? (remove from plan). **#13** HFD is coordinator for outreach, action should stay in. **#14** Leave in, in the event the Library does get one. **#15 - #16** leave in. **#17 - #18** Requires comments from HFD. **#19** Remove Planning Board from dept column. **#20** All 4 Hooksett Water Precincts should be on Dept list 1) Hooksett Village Water precinct, 2) Central Water Precinct, 3) Manchester Water, 4) Pennichuck Water Works. **#21** Leave as is. **#22** Matt L. commented that when site plans are created, they identify slopes. Is this for town property and if a land slide could affect town property? Leave in and change time frame to Long Term

Identify new mitigation actions for 2020

Create action Items that have Med or High risk

**#23 New - Straight-line Winds:**

Matt L. The hazard would be limbs blocking traffic and roads.

Nicholas W. we could categorize structures that may be the most vulnerable.

Matt L. the plan would be more specifically for town property not private property.

**#24 New - Infectious Diseases:**

Nicholas W with the limitations that we are seeing right now I think we should have a closure plan in place for town buildings.

Maddie there are other infectious diseases like Lyme. Do you have a location on your web site for the public to go to for information?

Kathy L Maintain a stock of PPE for all departments.

**#25 New - Severe weather:**

Matt L We close town facilities during extreme winter weather.

DPW has a Snow Plan.

Long term utility Outage-Eversource

**# 26 New - Mass Casualty:**

All municipal buildings have received Active Shooter Training

**# 27 New - Cyber Events:**

Nick G We have an Emergency response plan that will need more coordination with all depts. Improving continuity of operations. The response would come from Administration.

STAPLEE Process **See attached notes**

Next meeting: Maddie will send out a *Doodle Poll*, TBD

Minutes taken by Kathy Lawrence

# **Hooksett Hazard Mitigation Committee Meeting**

## **AGENDA: Meeting # 4**

July 14<sup>th</sup>, 2020

1:00pm

*(Meeting held online via “Zoom”)*

**1. Introductions**

**2. Review 2020 Action Plan Items**

- a. Review and/or amend action items discussed at May meeting for 2020 Action Plan
- b. Add any missing information
- c. Questions, comments, suggested revisions

**4. Review Hazard Mitigation Plan Maps (SNHPC GIS Analyst)**

**5. Discuss Monitoring, Updating and Adoption of Plan**

- a. Final edits by SNHPC staff
- b. Final review by Derry Hazard Mitigation Committee
- c. Plan Submittal to NHHSEM
- d. Plan adoption by Hooksett Board of Selectmen

**6. Next Meeting Schedule \_\_\_\_\_ and Adjournment**

## HOOKSETT HAZARD MITIGATION COMMITTEE MEETING MINUTES

### Meeting #4

July 14, 2020, 1pm

(Meeting held via "Zoom")

Hazard Mitigation Committee:

Madeleine Dilonno - Southern NH Planning Commission

Nicholas Williams Town Planner – Committee Chair

Justin Sargent HPD

Matthew Lavoie Hooksett Code Enforcement Officer

Earl Labonte DPW Director

Nick Germain Administration Project Coordinator

Kathy Lawrence Admin Assistant – Minutes

### 1. Minutes approval of May 28<sup>th</sup>. Motion made by, 2<sup>nd</sup> by, adopted by the committee all in favor

### 2. Review 2020 Action Plan Items

a. Review and /or amend action items discussed at May meeting for 2020 Action Plan

Maddie asked the group if anyone had any additional comments or changes for the Plan. No changes from the committee. She will reach out to HFD for comments on their portion and continue working on updates.

b. Add any missing information

None

c. Questions, comments, suggested revisions

None

### 4. Review Hazard Mitigation Plan Maps (SNHPC GIS Analyst)

Maddie introduced Zachary Swick who would be providing a series of Maps for the Plan update

Bridges and Culverts 1<sup>st</sup> map for review:

No comments or questions

#2 Damns: No Comments or questions

#3 Hookset Critical Facilities:

Matt how currant is the data?

Maddie, I coordinated with town departments.

Matt noted the list was missing 14 Mammoth Rd and the Urgent Care at 7 Cinemagic Way

Matt is water considered critical.

Zach this has been discussed lately and found to take up too much of the map if water is highlighted.

Matt maybe the tanks and reservoirs?

Maddie that is up to the committee if you want it added.

Maddie we can add that to a different map too

**Zachary Swick: Presentation and discussion of Maps with historical and present data that will be a part of the Hazard Mitigation Plan**

Zach these maps are self-explanatory and taken from historic data.

Matt felt it was complete

Flood zone Map:

No comments or questions

Building Flood Map

No comments or questions

Flood Risk Map:

No Questions

Map of potential Hazard:

Comes from DES & EPA

Zach DES & EPA asked what are the generators for determining?

Steep Slopes:

Zach does the town have an ordinance when it comes to Steep Slopes

Matt only when it comes to gravel permits.

High Density and Wildfire from the NH forest Services, plus a variety of other maps were presented for the report that will be provided for review

Zach provided historical data of drought, rainfall data, tropical storm events, damaging storms, earthquake risk, average daily temps provided through Concord. Non recorded for Hooksett. And Changes in average temps.

Maddie asked for comments or feedback be sent to her and those maps will be in the plan

## **5. Discuss Monitoring, Updating and Adoption of Plan**

a. Final edits will be completed by SNHPC staff

the final draft, and once the committee reviews and approves, will go to TC for final approval then to FEMA

b. final review by Hazard Mitigation Committee

c. Plan Submittal to NHHSEM

d. Plan adoption by Hooksett Town Council

Questions or Comments:

Matt would like to have a chance to review the maps more and will get back if he has comments

Minutes by: Kathy Lawrence, Hooksett Community Development Admin Assistant.

## Appendix D: Documentation of Outreach for Planning Process

# Hooksett Hazard Mitigation Committee Meeting

Wednesday, March 4th, 10am Hooksett Town Offices

POSTED ON FEBRUARY 6, 2020 - 3:49PM

The Southern NH Planning Commission will be working with the Town of Hooksett to update its Hazard Mitigation Plan as required by the Federal Emergency Management Agency (FEMA). A Hazard Mitigation Plan Update Committee must be established and host at least three public meetings to collaborate on the updated plan.

The Town's first scheduled meeting will be Wednesday, March 4th 10am at the Hooksett Town Offices (35 Main Street).

Attachment	Size
<a href="#">agenda.pdf</a>	167.91 KB



# Hooksett Hazard Mitigation Plan Update Committee Meeting

**Event Date:** Thursday, April 23, 2020 - 9:30am to 11:00am

The Town of Hooksett's second committee meeting update the 2015 Hazard Mitigation Plan will be held Thursday, April 23rd at 9:30am. The meeting will be held online. Please see meeting access instructions below:

Join Zoom Meeting

<https://zoom.us/j/96124538254?pwd=a2UwZVJwN1Q2azhkWkpXaXVZOUpGQT09>

Meeting ID: 961 2453 8254

Password: 028178

One tap mobile

+13126266799,,96124538254#,#028178# US (Chicago)

+19294362866,,96124538254#,#028178# US (New York)

Dial by your location

+1 312 626 6799 US (Chicago)

+1 929 436 2866 US (New York)

+1 346 248 7799 US (Houston)

+1 669 900 6833 US (San Jose)

+1 253 215 8782 US

+1 301 715 8592 US

877 852 5247 US Toll free

# Hooksett Hazard Mitigation Committee Meeting

**Event Date:** Thursday, May 28, 2020 - 9:30am to 11:00am

The hazard mitigation committee for the Town of Hooksett will meet Thursday, May 28th at 9:30am. The meeting will be held online via Zoom. Meeting access information can be found below:

*Join Zoom Meeting*

<https://us02web.zoom.us/j/85059734092?pwd=cnlvc1NKTTZZQ211eXB6bjA5Qmdtdz09>

*Meeting ID: 850 5973 4092*

*Password: 032336*

*One tap mobile*

*+19294362866,,85059734092#, 1#,032336# US (New York)*

*+13017158592,,85059734092#, 1#,032336# US (Germantown)*

For questions about this public meeting please contact Madeleine Dilonno at  
[mdiionno@snhpc.org](mailto:mdiionno@snhpc.org).

[agenda\\_5-28-20.pdf](#)

Appendix E: SNHPC 2020 Vulnerability Assessment: A Decision-Making Tool to Plan

# EXECUTIVE SUMMARY

## VULNERABILITY ASSESSMENT ACTIVITY

In September 2018, Southern New Hampshire Planning Commission (SNHPC) set out to analyze the risks to the road network associated with extreme weather within the SNHPC region. Historically, the most common and destructive type of risk to the region is inland flooding. Inland flooding is typically caused by heavy rainfall events. Over time, heavy rainfall events have increased in frequency. Today, inland flooding continues to threaten damage to the region's road network.

This vulnerability assessment explores the risk posed to ***culverts and small bridges, which are referred to as "stream crossings"*** throughout the report. Vulnerability assessment activity included engagement of road agents and public works staff to identify risk factors and to consider potential adaptation and mitigation options.

In summary the vulnerability assessment project encompassed the following tasks:

- *Stakeholder outreach and engagement*
- *Empirical climate and asset data collection*
- *Scoring and prioritization of risk*
- *Identification of high-priority stream crossings*
- *Identification of possible impacts at crossings*
- *Adaptation and mitigation recommendation*

SNHPC staff and collaborators conducted these tasks with an intent to provide communities and regional agencies with a decision-making tool that can assist in selecting adaptation and mitigation strategies for stream crossings. The assessment used available data and resources to provide an online [Stream Crossing GIS Map](#) for the region. Communities can use this map to share information, increase coordination around emergency events, and consider their reliance on the road network.

As part of the process of understanding vulnerability issues, SNHPC staff sought guidance from staff at New Hampshire Geological Survey (NHGS) within New Hampshire Department of Environmental Services (NHDES). Communication identified inter-departmental coordination opportunities. NHGS provided direction and encouraged SNHPC staff to contribute to the statewide analysis of stream crossings already underway. NHGS staff also provided SNHPC with direction on gathering data from the [Statewide Stream Crossing Map](#) managed by the UNH Technology Transfer (T2) in the Statewide Asset Data Exchange System (SADES). Input from NHGS helped focus the work of the vulnerability assessment on improving local knowledge around the concepts of [hydraulic vulnerability](#), [geomorphic compatibility](#), and [flooding impacts](#) at stream crossings. This collaboration is reflected in the regional and local prioritization of stream crossings and through the documentation of high-priority stream crossings found in [Appendix E](#) of this report.

Observations of trends in weather patterns and a summary of projected climate change over the remainder of this century is also included in this report. The climate data in this report was sourced from [National Oceanic and Atmospheric Administration's National Centers For Environmental Information](#), Cornell University via [Precip.net](#), and the University of New Hampshire [Sustainability Institute](#). The sourced climate data utilized two commonly referenced climate scenarios (high carbon emissions and low carbon emissions) from the Global Circulation Model. The climate scenarios project a range of possible climate outcomes over the remainder of the century. The [Climate Projections](#) section of the report highlights the dramatic changes in intensity and frequency of major rainfall events Southern New Hampshire can anticipate for the timespan between year 2020 and 2099.

## **VULNERABILITY ASSESSMENT SCALE AND OUTCOMES**

Municipalities in the region have undertaken various levels of planning to address and identify vulnerability of high priority stream crossings. Yet, local asset managers still expressed a desire to adopt a broader scale assessment methodology into their decision-making, their existing maintenance activities, and as a resource to supplement documentation for stream crossing capital investment requests. The result was the creation of a methodology for prioritization of stream crossings utilizing existing data and input from municipal staff.

Details about the criterion for prioritization are found in the [Stream Crossing Prioritization](#) section of this report. Prioritization results were documented both region-wide and individually for each municipality. Statistical data, prioritization results, and high-priority stream crossings for each municipality are in [Appendix E: Scoring Summary and Detail Sheets](#) at the end of the report.

The work of this vulnerability assessment increased coordination and communication among relevant agencies. Assessment activities sought to build new opportunities for coordination of state and local agencies in anticipation of future emergency events. The work also considered impacts of increased frequency and intensity of precipitation on the function of the road network. By working together to address infrastructure vulnerabilities, the region can improve the ability to mitigate the occurrence of stream crossing failures brought about by more intense rainfall events.

## **RECOMMENDATIONS FOR ADAPTATION AND MITIGATION**

Literature review, asset and climate data research, local interviews, and the findings of the prioritization model provide a well-rounded body of research and analysis including a foundation for making recommendations for action.

Recommendations for action to mitigate and adapt to known vulnerabilities include:

- *Improve access and function of stream crossing inventory maps and data.*
- *Increase coordination between NHDOT and local public works departments.*
- *Revisit local, regional, and state funding mechanisms to prioritize at-risk stream crossings.*
- *Include vulnerability assessment information in municipal Hazard Mitigation plans.*
- *Implement mitigation efforts before climate change is projected to accelerate.*

At the request of the region's municipalities, SNHPC developed an [online map of prioritized stream crossings](#) including a filter function to limit data by municipality, crossing ownership (state, local, private, or unknown), and stream crossing size (upstream horizontal open width measured in feet). The online map includes a video tutorial to illustrate the filter functions and how to switch between the ownership and prioritization layers. The online inventory and scoring of stream crossings were made available to communities and the public at-large in the spring of 2020. SNHPC also conducted field assessments to fill in gaps in data for high priority stream crossings. SNHPC will continue field assessments in support of NHGS during the summer of 2020 and in future years to improve the completeness of the region's stream crossing inventory in SADES.

To build support for adaptation and mitigation across different levels of government, SNHPC will work with stakeholders in developing outreach activities. It is the Commission's goal to ensure community leaders across the region are aware of the risks posed to public roads and stream crossings by increased frequency and intensity of rainfall events. With the resources presented in this report, SNHPC will illustrate available data on the existing conditions of stream crossings, the risks associated with those crossings, and criteria used to determine the level of risk posed to the road network. Public awareness activities will engage local stakeholders and state partners in efforts to improve the resiliency of the region's road network.

## Prioritization Score Statistical Summary: Town of Hooksett

Traffic Volumes	
Count	Totals
AADT>=30,000	3
AADT<30,000	3
AADT<20,000	13
AADT<10,000	12
AADT<5,000	11
AADT<1,000	32
TOTAL: 74	

10-Yr Vulnerability	
Category	Count
Overtop	7
Vulnerable	6
Unknown	44
Pass	7
Not Applicable	10
TOTAL: 74	

Beaver Activity	Count
Yes	3
No	71
TOTAL: 74	

Total Crossings	
Region	1514
Town	74

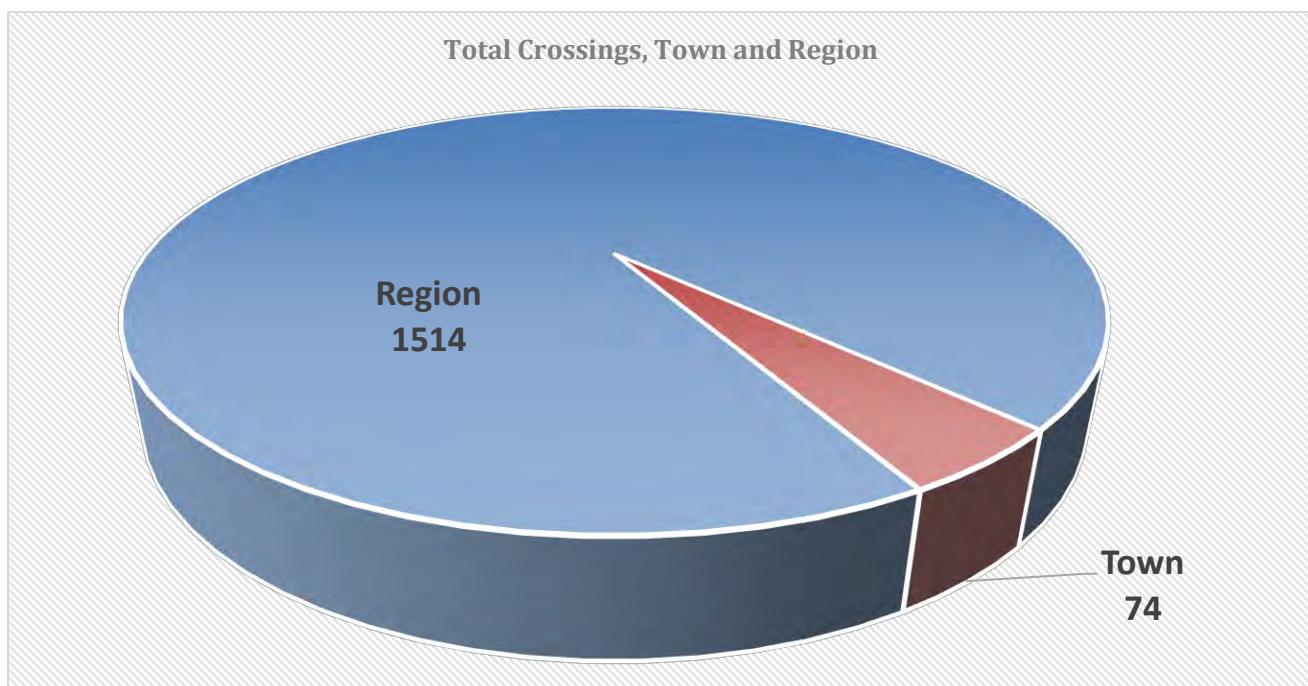
Flood Zone	
Count	Totals
Floodway	7
100-Year Flood Zone	22
500-Year Flood Zone	11
Minimal Hazard	34
TOTAL: 74	

Structure Material	
Material	Count
Metal	5
Not Metal	69
TOTAL: 74	

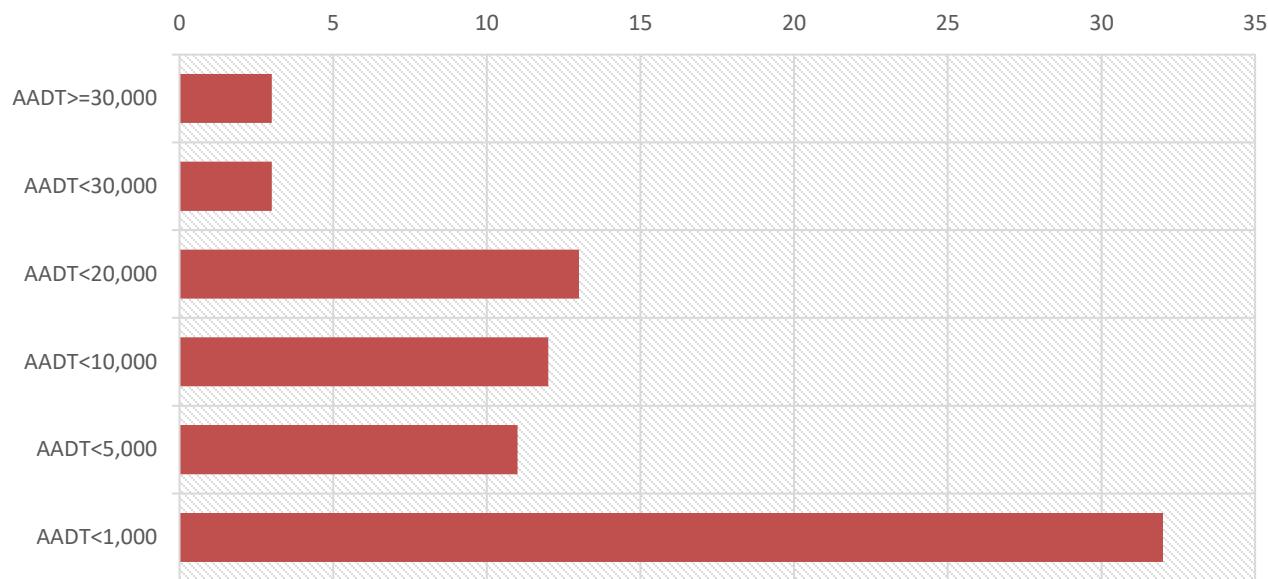
Flood Hazard	
Hazard	Count
ID'd	25
Not ID'd	49
TOTAL: 74	

Culvert Condition	
Condition	Count
Poor	5
Fair	31
Good	10
Unknown	28
TOTAL: 74	

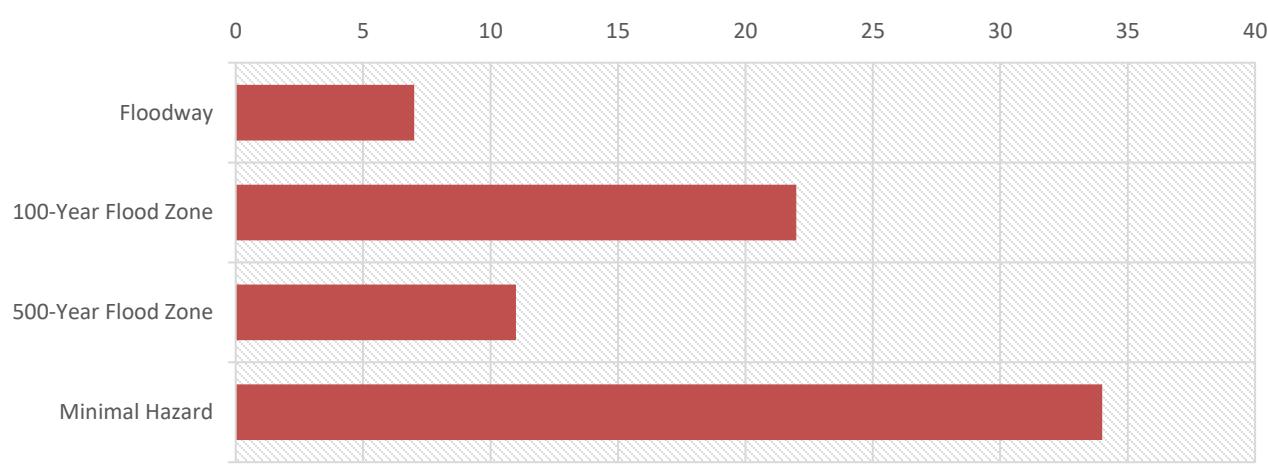
Asset Manager	
Manager	Count
ID'd	3
Not ID'd	71
TOTAL: 74	



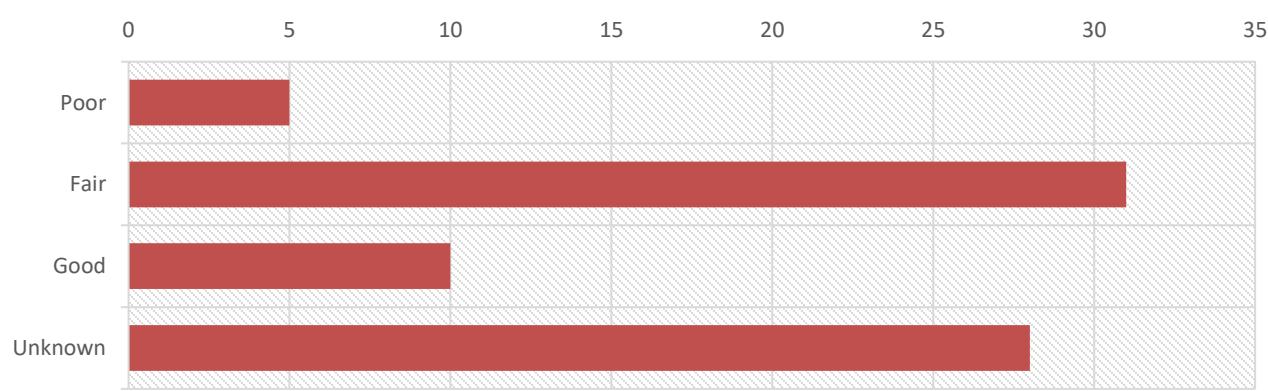
### MUNI. COUNT BY TRAFFIC VOLUME CATEGORY



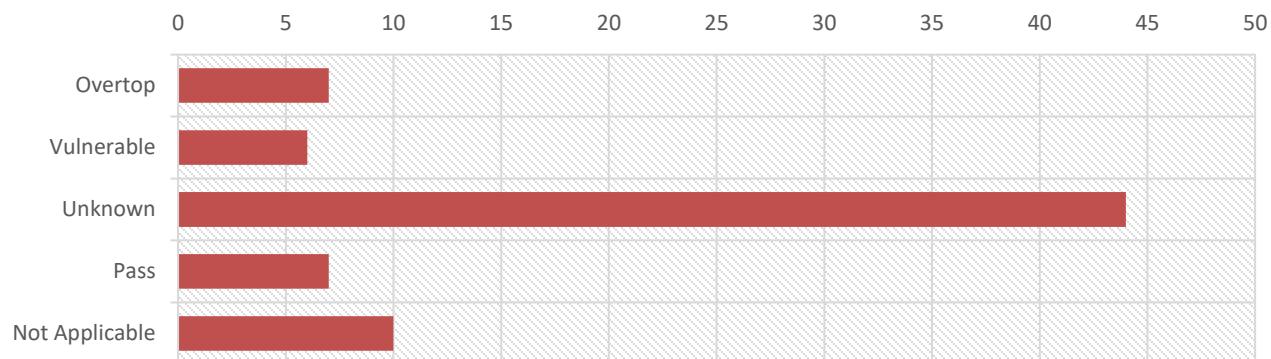
### MUNI. COUNT BY FEMA FLOOD ZONE CATEGOREY



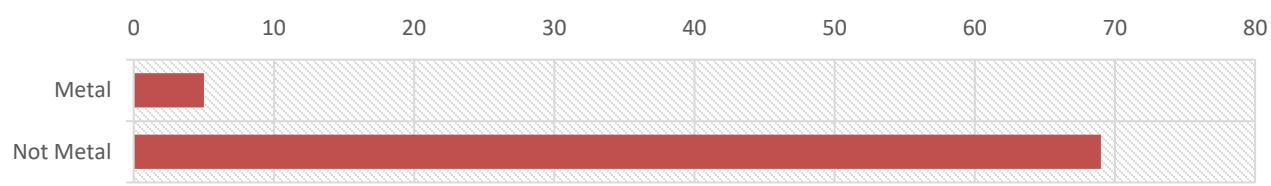
### MUNI. COUNT BY STREAM CROSSING CONDITION



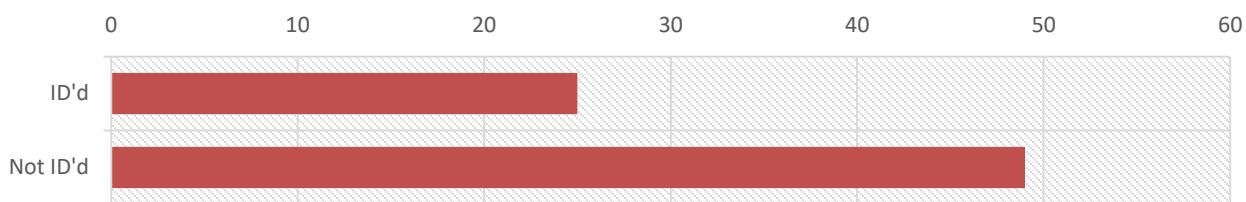
### MUNI. COUNT BY 10-YR VULNERABILITY



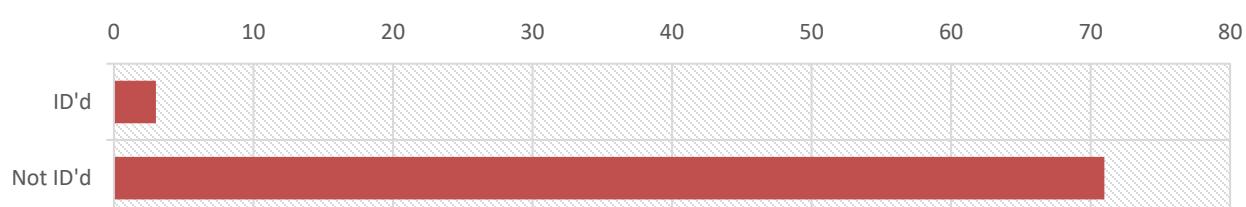
### MUNI. COUNT BY STRUCTURE MATERIAL



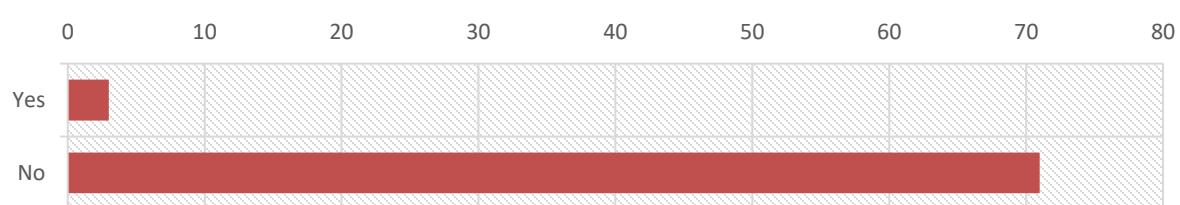
### MUNI. COUNT BY IDENTIFIED FLOOD HAZARD HISTORY



### MUNI. COUNT BY ASSET MANAGER IDENTIFICATION



### TOTAL REGION COUNT BY BEAVER ACTIVITY



# Region-Wide Stream Crossing Statistical Summary

SNHPC Region	
Traffic Volume	
Count	Totals
AADT>=30,000	17
AADT<30,000	46
AADT<20,000	95
AADT<10,000	142
AADT<5,000	240
AADT<1,000	1048
TOTAL: 1588	

Flood Zone	
Floodway	201
100-Yr Flood Zone	425
500-Yr Flood Zone	53
Minimal Hazard	909
TOTAL: 1588	

Culvert Condition	
Poor	119
Fair	188
Good	1086
Unknown	195
TOTAL: 1588	

10-Yr Vulnerability	
Category	Count
Overtop	74
Vulnerable	84
Unknown	977
Pass	99
Not Applicable	354
TOTAL: 1588	

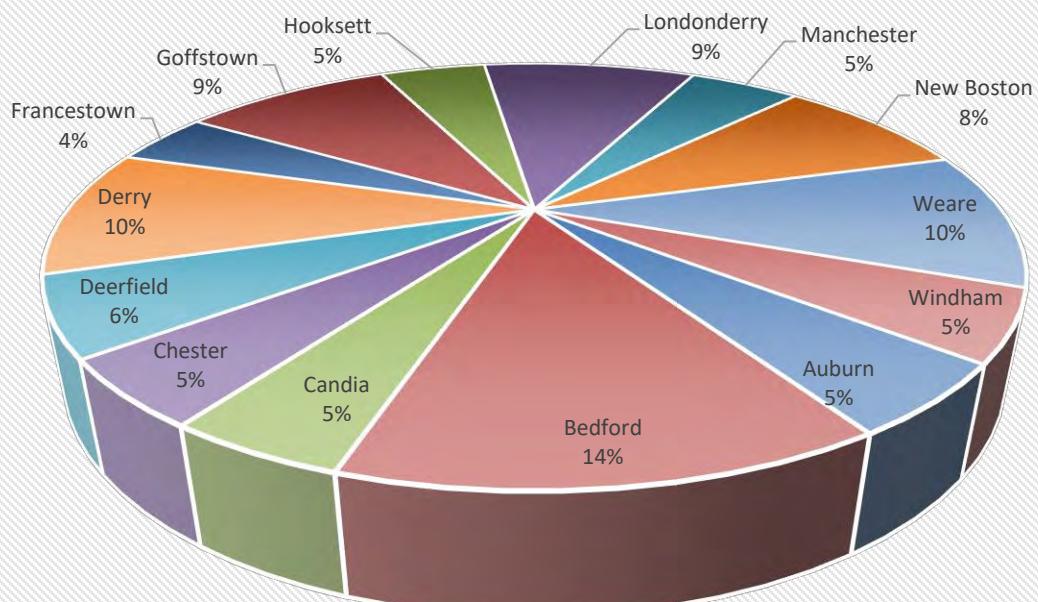
Culvert Material	
Material	Count
Metal	317
Not Metal	1271
TOTAL: 1588	

Flood Hazard	
ID'd	Count
ID'd	368
Not ID'd	1220
TOTAL: 1588	

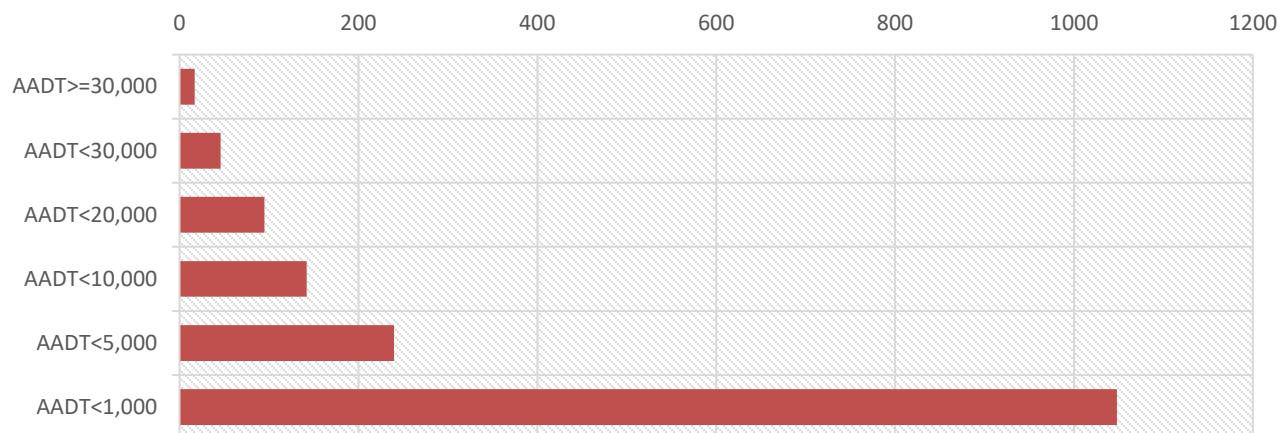
Crossing Count By Town	
Municipality	Count
Auburn	81
Bedford	216
Candia	73
Chester	76
Deerfield	93
Derry	155
Francestown	66
Goffstown	145
Hooksett	74
Londonderry	150
Manchester	77
New Boston	133
Weare	166
Windham	83
TOTAL: 1588	

Beaver Activity	
Yes	Count
Yes	90
No	1498
TOTAL: 1588	

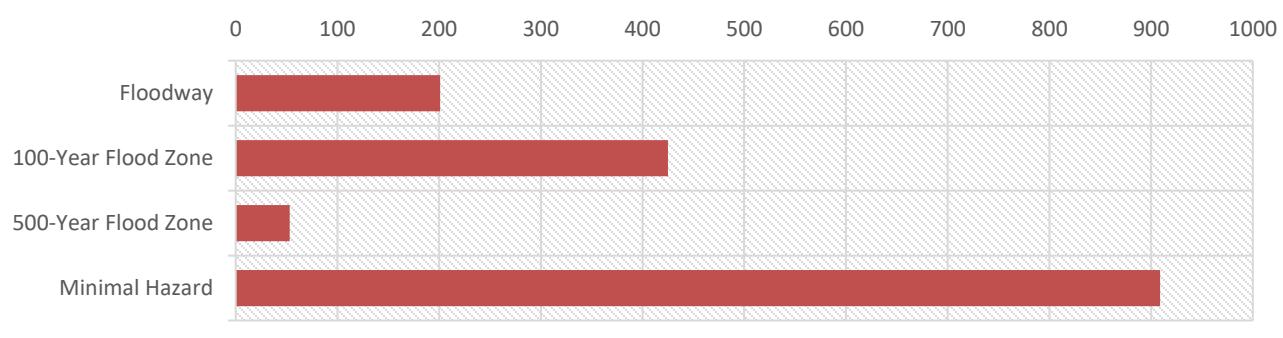
## Percent of Total Crossings By Municipality



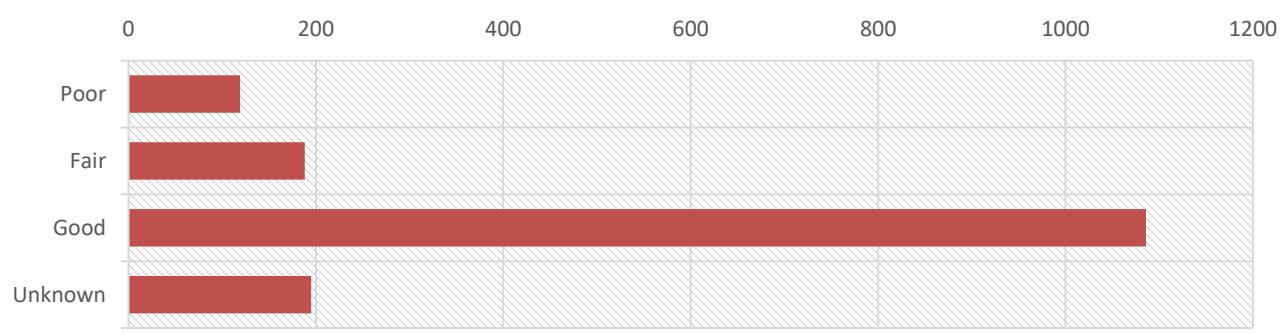
### TOTAL REGION COUNT BY TRAFFIC VOL. CATEGORY



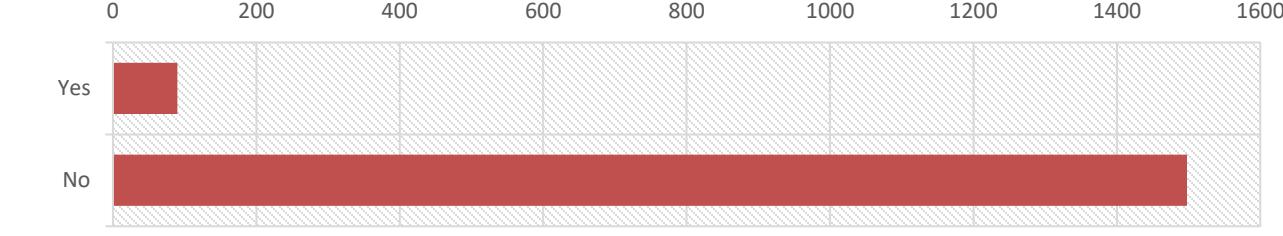
### TOTAL REGION COUNT BY FLOOD ZONE CATEGOREY



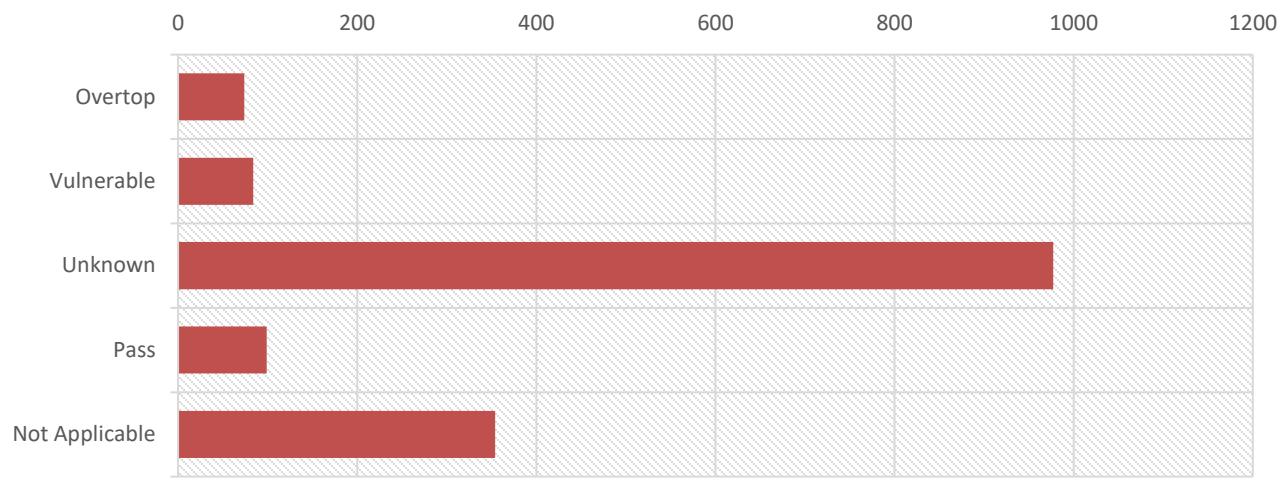
### TOTAL REGION COUNT BY CONDITION



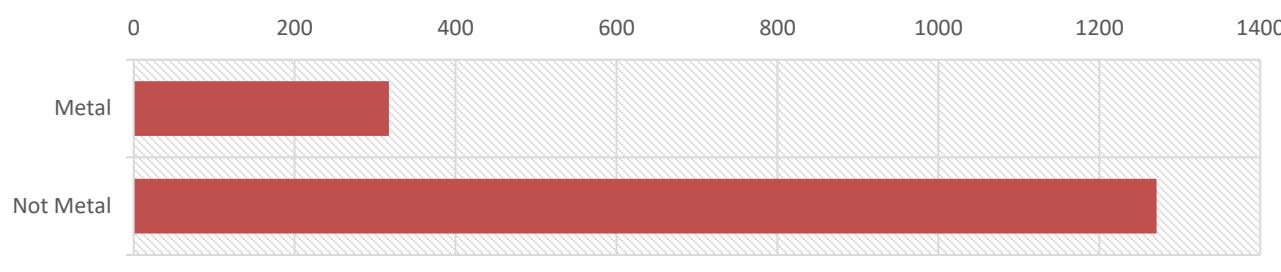
### TOTAL REGION COUNT BY BEAVER ACTIVITY



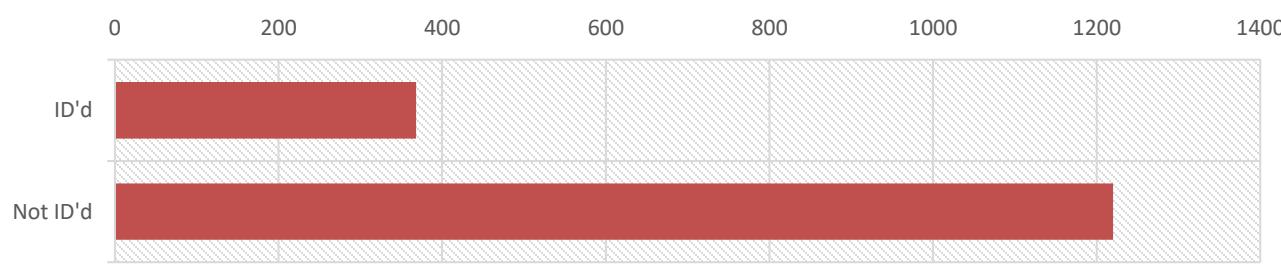
### TOTAL REGION COUNT BY 10-YR VULNERABILITY



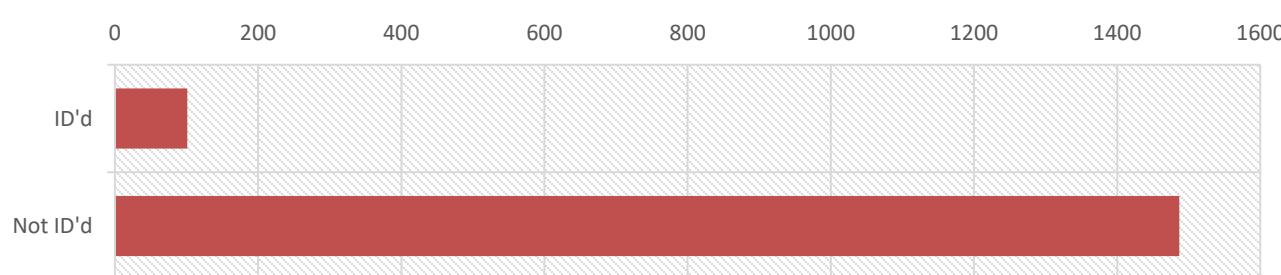
### TOTAL REGION COUNT BY CROSSING MATERIAL



### TOTAL REGION COUNT BY ID'D FLOOD HAZARD HISTORY

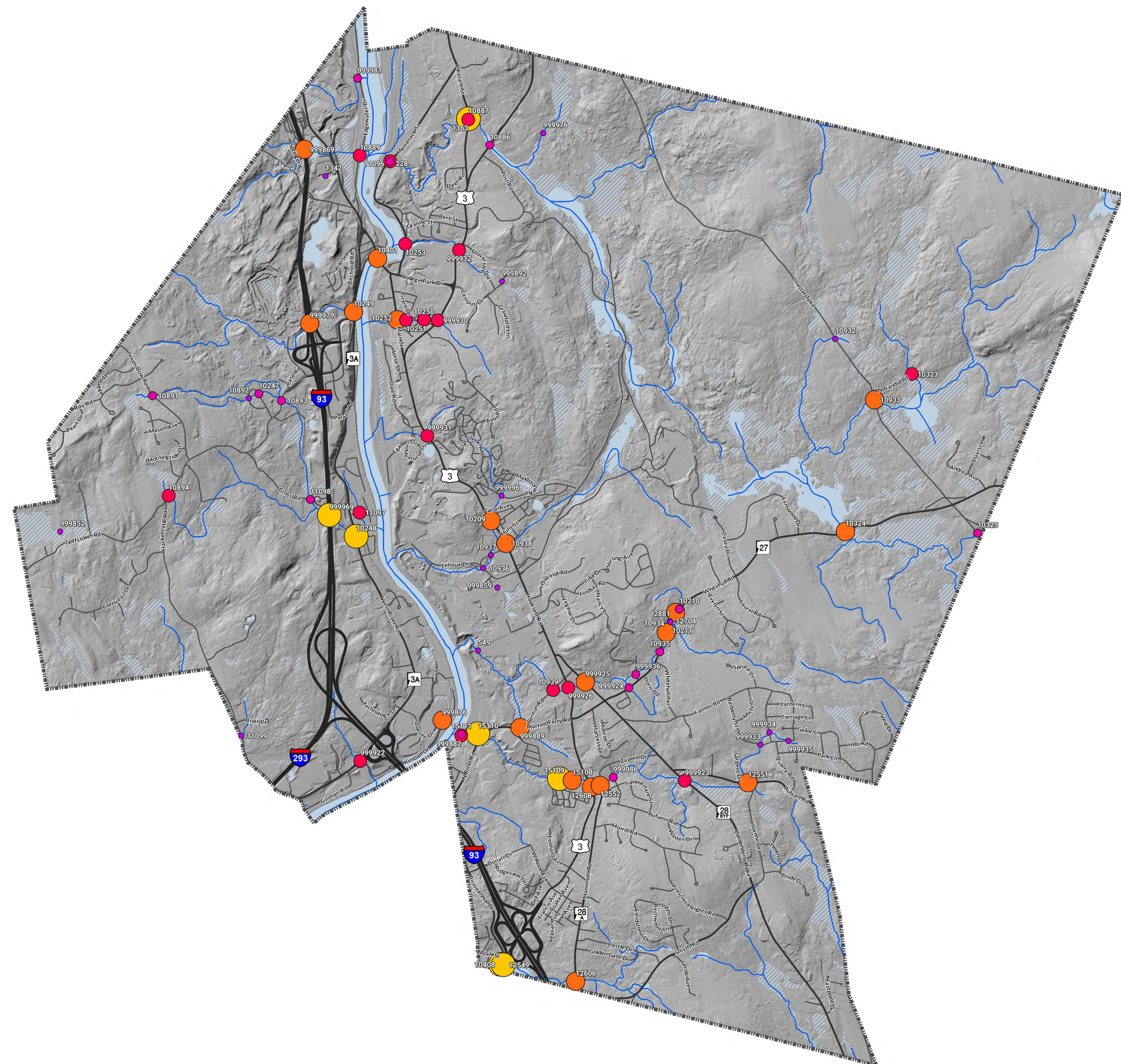


### TOTAL REGION COUNT BY ASSET MANAGER ID



SADES ID	Annual Avg. Daily Trips (AADT)	AADT Score	Asset	Asset	History		Flood Zone Category (FEMA)	Zone Score	Culvert Condition	Condition Score	10yr Hydraulic Vulnerability	Vuln. Score (10yr)	Culvert Material	Metal Score	Beaver Activity	Beaver Score	Total Score
			Mgr ID'd Crossing	Mgr ID	Hazard	Hazard Score											
15109	AADT<1,000	0	Yes	► 10	Yes	► 5	100-Year Flood Zone	4	Fair	5	Vulnerable	4	Not Metal	0	No	0	28
999969	AADT>=30,000	10	No	0	Yes	► 5	100-Year Flood Zone	4	Unknown	5	Unknown	3	Not Metal	0	No	0	27
10248	AADT<30,000	8	No	0	Yes	► 5	100-Year Flood Zone	4	Fair	5	Overtop	5	Not Metal	0	No	0	27
15110	AADT<20,000	6	Yes	► 10	No	0	100-Year Flood Zone	4	Fair	5	Pass	0	Not Metal	0	No	0	25
10887	AADT<5,000	2	No	0	Yes	► 5	100-Year Flood Zone	4	Poor	10	Vulnerable	4	Not Metal	0	No	0	25
12549	AADT<30,000	8	No	0	Yes	► 5	500-Year Flood Zone	3	Fair	5	Unknown	3	Not Metal	0	No	0	24
10408	AADT<30,000	8	No	0	Yes	► 5	500-Year Flood Zone	3	Unknown	5	Unknown	3	Not Metal	0	No	0	24
12608	AADT<20,000	6	No	0	Yes	► 5	500-Year Flood Zone	3	Fair	5	Unknown	3	Not Metal	0	No	0	22
10209	AADT<20,000	6	No	0	Yes	► 5	500-Year Flood Zone	3	Fair	5	Unknown	3	Not Metal	0	No	0	22
999925	AADT<10,000	4	No	0	Yes	► 5	Floodway	5	Unknown	5	Unknown	3	Not Metal	0	No	0	22
10249	AADT<20,000	6	No	0	Yes	► 5	Floodway	5	Fair	5	Pass	0	Not Metal	0	No	0	21
10933	AADT<1,000	0	No	0	Yes	► 5	100-Year Flood Zone	4	Poor	10	Not Applicable	0	Not Metal	0	Yes	► 2	21
10938	AADT<20,000	6	No	0	Yes	► 5	100-Year Flood Zone	4	Fair	5	Pass	0	Not Metal	0	No	0	20
10252	AADT<10,000	4	No	0	Yes	► 5	Minimal Hazard	0	Fair	5	Vulnerable	4	Metal	► 2	No	0	20
999889	AADT<20,000	6	No	0	Yes	► 5	Minimal Hazard	0	Unknown	5	Unknown	3	Not Metal	0	No	0	19
10401	AADT<20,000	6	No	0	No	0	Floodway	5	Unknown	5	Unknown	3	Not Metal	0	No	0	19
12606	AADT<10,000	4	No	0	Yes	► 5	Minimal Hazard	0	Fair	5	Unknown	3	Metal	► 2	No	0	19
12552	AADT<5,000	2	No	0	Yes	► 5	500-Year Flood Zone	3	Fair	5	Vulnerable	4	Not Metal	0	No	0	19
10324	AADT<5,000	2	No	0	Yes	► 5	100-Year Flood Zone	4	Fair	5	Unknown	3	Not Metal	0	No	0	19
15108	AADT<1,000	0	Yes	► 10	Yes	► 5	100-Year Flood Zone	4	Good	0	Pass	0	Not Metal	0	No	0	19
999979	AADT>=30,000	10	No	0	No	0	Minimal Hazard	0	Unknown	5	Unknown	3	Not Metal	0	No	0	18
999869	AADT>=30,000	10	No	0	No	0	Minimal Hazard	0	Unknown	5	Unknown	3	Not Metal	0	No	0	18
12704	AADT<10,000	4	No	0	No	0	Minimal Hazard	0	Poor	10	Unknown	3	Not Metal	0	No	0	17
10211	AADT<10,000	4	No	0	No	0	500-Year Flood Zone	3	Fair	5	Overtop	5	Not Metal	0	No	0	17
12551	AADT<5,000	2	No	0	Yes	► 5	Minimal Hazard	0	Fair	5	Overtop	5	Not Metal	0	No	0	17
999876	AADT<1,000	0	No	0	Yes	► 5	100-Year Flood Zone	4	Unknown	5	Unknown	3	Not Metal	0	No	0	17
228	AADT<5,000	2	No	0	No	0	100-Year Flood Zone	4	Fair	5	Unknown	3	Not Metal	0	Yes	► 2	16
999923	AADT<10,000	4	No	0	No	0	500-Year Flood Zone	3	Unknown	5	Unknown	3	Not Metal	0	No	0	15
10894	AADT<5,000	2	No	0	No	0	500-Year Flood Zone	3	Fair	5	Overtop	5	Not Metal	0	No	0	15
10889	AADT<1,000	0	No	0	No	0	Floodway	5	Fair	5	Overtop	5	Not Metal	0	No	0	15
10251	AADT<1,000	0	No	0	Yes	► 5	Minimal Hazard	0	Fair	5	Unknown	3	Metal	► 2	No	0	15
999932	AADT<20,000	6	No	0	No	0	Minimal Hazard	0	Unknown	5	Unknown	3	Not Metal	0	No	0	14
999931	AADT<20,000	6	No	0	No	0	Minimal Hazard	0	Unknown	5	Unknown	3	Not Metal	0	No	0	14
999930	AADT<20,000	6	No	0	No	0	Minimal Hazard	0	Unknown	5	Unknown	3	Not Metal	0	No	0	14
999926	AADT<20,000	6	No	0	No	0	Minimal Hazard	0	Unknown	5	Unknown	3	Not Metal	0	No	0	14
999922	AADT<20,000	6	No	0	No	0	Minimal Hazard	0	Unknown	5	Unknown	3	Not Metal	0	No	0	14
1363	AADT<5,000	2	No	0	Yes	► 5	100-Year Flood Zone	4	Good	0	Unknown	3	Not Metal	0	No	0	14
11097	AADT<1,000	0	No	0	Yes	► 5	100-Year Flood Zone	4	Fair	5	Not Applicable	0	Not Metal	0	No	0	14
10253	AADT<5,000	2	No	0	No	0	100-Year Flood Zone	4	Fair	5	Pass	0	Metal	► 2	No	0	13
999882	AADT<1,000	0	No	0	No	0	Floodway	5	Unknown	5	Unknown	3	Not Metal	0	No	0	13
10939	AADT<1,000	0	No	0	Yes	► 5	Floodway	5	Good	0	Unknown	3	Not Metal	0	No	0	13
10323	AADT<1,000	0	No	0	No	0	Minimal Hazard	0	Poor	10	Unknown	3	Not Metal	0	No	0	13
10250	AADT<1,000	0	No	0	Yes	► 5	Minimal Hazard	0	Fair	5	Unknown	3	Not Metal	0	No	0	13
10886	AADT<20,000	6	No	0	No	0	100-Year Flood Zone	4	Good	0	Not Applicable	0	Not Metal	0	Yes	► 2	12

SADES ID	Annual Avg. Daily Trips (AADT)	AADT Score	Asset		History		Flood Zone Category (FEMA)	Zone Score	Culvert Condition	Condition Score	10yr Hydraulic Vulnerability	Vuln. Score (10yr)		Culvert Material	Metal Score	Beaver Activity	Beaver Score	Total Score
			Mgr ID'd Crossing	Mgr ID Score	of Flood Hazard	Hazard Score												
999924	AADT<10,000	4	No	0	No	0	Minimal Hazard	0	Unknown	5	Unknown	3	Not Metal	0	No	0	12	
10935	AADT<10,000	4	No	0	No	0	500-Year Flood Zone	3	Good	0	Overtop	5	Not Metal	0	No	0	12	
10210	AADT<10,000	4	No	0	No	0	Minimal Hazard	0	Fair	5	Unknown	3	Not Metal	0	No	0	12	
999981	AADT<1,000	0	No	0	No	0	100-Year Flood Zone	4	Unknown	5	Unknown	3	Not Metal	0	No	0	12	
10325	AADT<1,000	0	No	0	No	0	100-Year Flood Zone	4	Fair	5	Unknown	3	Not Metal	0	No	0	12	
11098	AADT<5,000	2	No	0	No	0	100-Year Flood Zone	4	Fair	5	Not Applicable	0	Not Metal	0	No	0	11	
11096	AADT<5,000	2	No	0	No	0	100-Year Flood Zone	4	Fair	5	Pass	0	Not Metal	0	No	0	11	
10893	AADT<5,000	2	No	0	No	0	Minimal Hazard	0	Fair	5	Vulnerable	4	Not Metal	0	No	0	11	
999986	AADT<1,000	0	No	0	No	0	500-Year Flood Zone	3	Unknown	5	Unknown	3	Not Metal	0	No	0	11	
999936	AADT<1,000	0	No	0	No	0	500-Year Flood Zone	3	Unknown	5	Unknown	3	Not Metal	0	No	0	11	
15111	AADT<1,000	0	No	0	No	0	Floodway	5	Unknown	5	Not Applicable	0	Not Metal	0	No	0	10	
10891	AADT<1,000	0	No	0	No	0	Minimal Hazard	0	Poor	10	Not Applicable	0	Not Metal	0	No	0	10	
10247	AADT<1,000	0	No	0	No	0	Minimal Hazard	0	Fair	5	Overtop	5	Not Metal	0	No	0	10	
10934	AADT<10,000	4	No	0	No	0	Minimal Hazard	0	Fair	5	Not Applicable	0	Not Metal	0	No	0	9	
10937	AADT<1,000	0	No	0	No	0	100-Year Flood Zone	4	Fair	5	Pass	0	Not Metal	0	No	0	9	
10936	AADT<1,000	0	No	0	No	0	100-Year Flood Zone	4	Fair	5	Not Applicable	0	Not Metal	0	No	0	9	
11099	AADT<10,000	4	No	0	No	0	Minimal Hazard	0	Good	0	Vulnerable	4	Not Metal	0	No	0	8	
999996	AADT<1,000	0	No	0	No	0	Minimal Hazard	0	Unknown	5	Unknown	3	Not Metal	0	No	0	8	
999976	AADT<1,000	0	No	0	No	0	Minimal Hazard	0	Unknown	5	Unknown	3	Not Metal	0	No	0	8	
999935	AADT<1,000	0	No	0	No	0	Minimal Hazard	0	Unknown	5	Unknown	3	Not Metal	0	No	0	8	
999934	AADT<1,000	0	No	0	No	0	Minimal Hazard	0	Unknown	5	Unknown	3	Not Metal	0	No	0	8	
999933	AADT<1,000	0	No	0	No	0	Minimal Hazard	0	Unknown	5	Unknown	3	Not Metal	0	No	0	8	
999892	AADT<1,000	0	No	0	No	0	Minimal Hazard	0	Unknown	5	Unknown	3	Not Metal	0	No	0	8	
999859	AADT<1,000	0	No	0	No	0	Minimal Hazard	0	Unknown	5	Unknown	3	Not Metal	0	No	0	8	
999852	AADT<1,000	0	No	0	No	0	Minimal Hazard	0	Unknown	5	Unknown	3	Not Metal	0	No	0	8	
10932	AADT<1,000	0	No	0	No	0	Minimal Hazard	0	Fair	5	Not Applicable	0	Metal 🚧	2	No	0	7	
549	AADT<1,000	0	No	0	No	0	100-Year Flood Zone	4	Good	0	Unknown	3	Not Metal	0	No	0	7	
2881	AADT<10,000	4	No	0	No	0	Minimal Hazard	0	Good	0	Not Applicable	0	Not Metal	0	No	0	4	
10892	AADT<1,000	0	No	0	No	0	Minimal Hazard	0	Good	0	Unknown	3	Not Metal	0	No	0	3	
1342	AADT<1,000	0	No	0	No	0	Minimal Hazard	0	Good	0	Unknown	3	Not Metal	0	No	0	3	



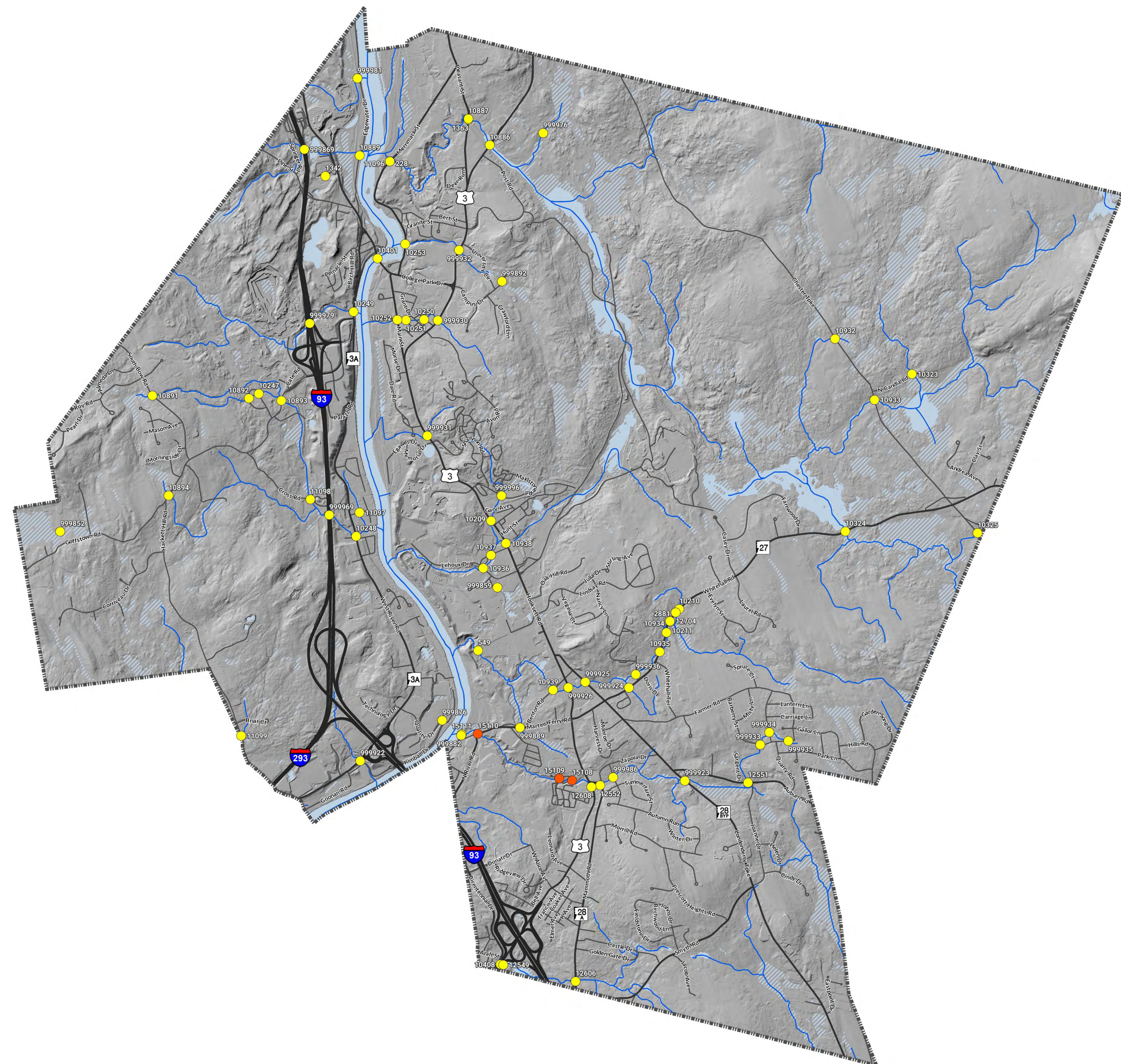
# Scored Stream Crossings: Hooksett

Created by SNHPC, 2020. Sources: NH Department of Environmental Services; NH Department of Transportation; Town of Hooksett; University of New Hampshire; US Census Bureau; US Fish and Wildlife Service; US Geological Survey.

- 0 - 9
- 10 - 12
- 13 - 16



A horizontal scale bar representing distance in miles. The bar is divided into segments: a black segment from 0 to 0.25, a white segment from 0.25 to 0.5, a black segment from 0.5 to 1, a white segment from 1 to 1.5, and a black segment from 1.5 to 2. The word "Miles" is written in black text to the right of the scale bar. A small black north arrow is located at the end of the scale bar pointing upwards.



#### Stream Crossings: Hooksett

Created by SNHPC, 2020. Sources: NH Department of Environmental Services; NH Department of Transportation; Town of Hooksett; University of New Hampshire; US Census Bureau; US Fish and Wildlife Service; US Geological Survey.

Identified by  
asset  
managers

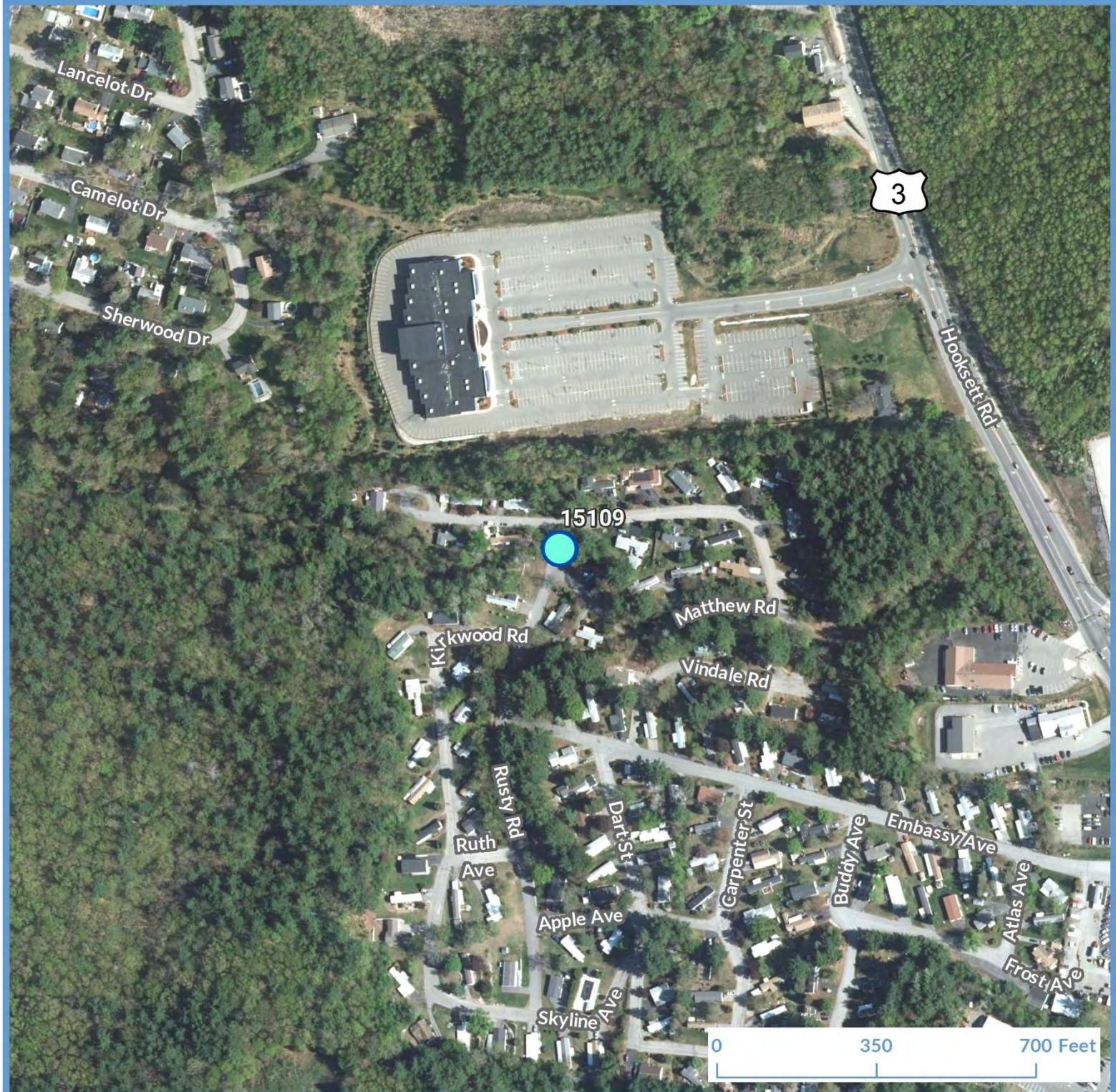


0 0.25 0.5 1 1.5 2 Miles ↑

# LOCAL ASSET MANAGER INPUT

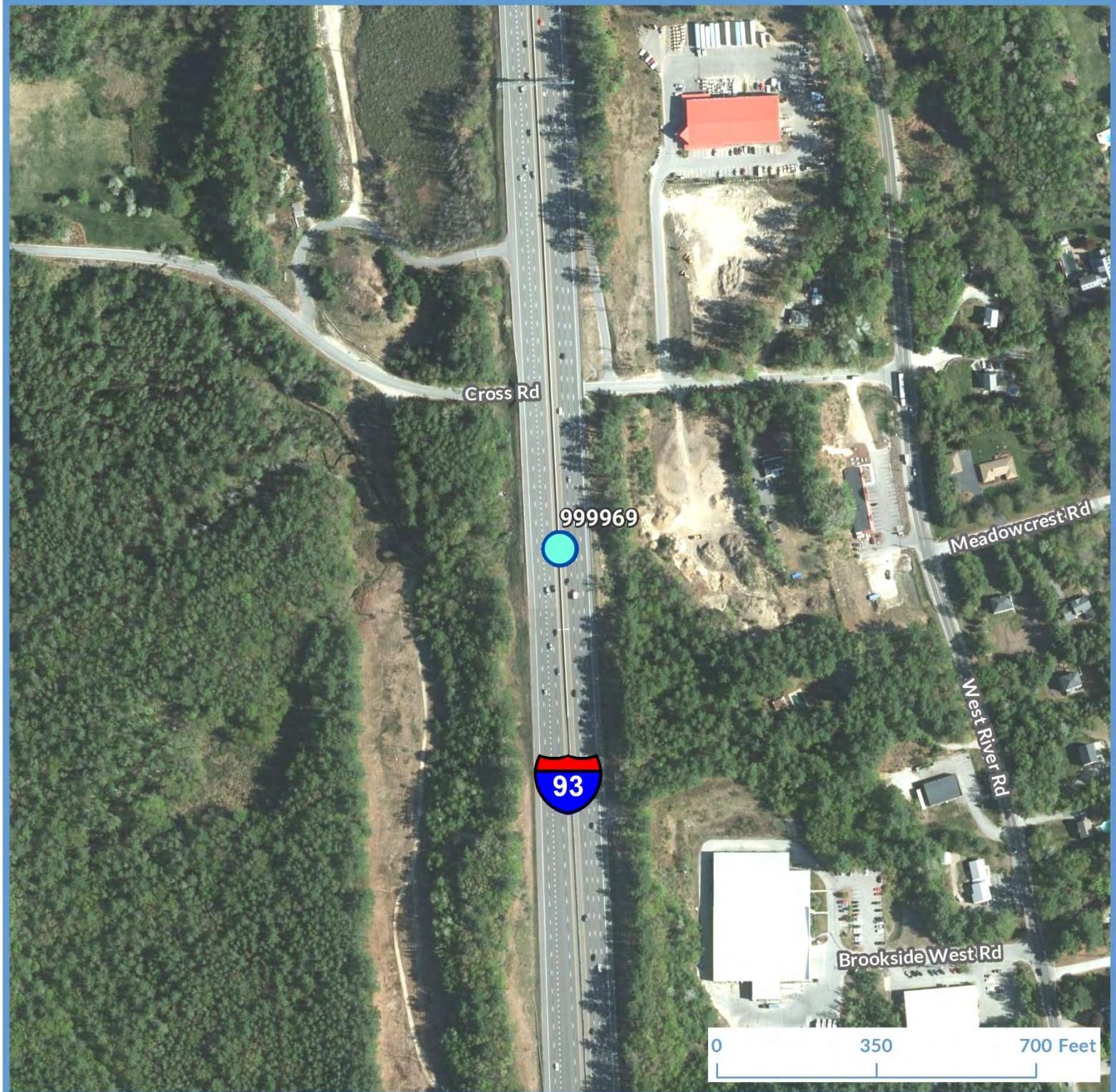
## TOWN OF HOOKSETT

Crossing ID	Town	Road Name	State Route	Stream Name	Manager Comment	Assessment Action
562	Hooksett	Benton Rd		Dalton Brook	New Culvert installed recently; Current assessment incomplete	Notify Shane C. at DES
10325	Hooksett	Chester Tpke		Moose Meadow Brook	Washout in 2006; Culvert replaced	Determine Last Assessment
<b>999922</b>	Hooksett	W River Rd (Rt 3A)	<b>X</b>	Intermittent (No Name)	Culvert Missing from SADES; 200ft west of Market Dr	Add to SADES
<b>999923</b>	Hooksett	Londonderry Tpke (Rt 28)	<b>X</b>	Messer Brook	Culvert Missing from SADES; 500ft south of Auburn Rd	Add to SADES
<b>999924</b>	Hooksett	Whitehall Rd (Rt 27)	<b>X</b>	Intermittent (No Name)	Culvert Missing from SADES; 800ft north of Rt 28	Add to SADES
<b>999927</b>	Hooksett	Martins Ferry Rd		Messer Brook	Culvert Missing from SADES; Site identified by Asset Manager	Add to SADES
<b>999928</b>	Hooksett	Rusty Rd		Messer Brook	Culvert Missing from SADES; Site identified by Asset Manager	Add to SADES
<b>999929</b>	Hooksett	Vindale Rd		Messer Brook	Culvert Missing from SADES; Site identified by Asset Manager	Add to SADES
<b>999930</b>	Hooksett	Hooksett Rd (Rt 3 & 128)	<b>X</b>	Intermittent (No Name)	Culvert Missing from SADES; 300ft north of Pleasant View Drive	Add to SADES
<b>999931</b>	Hooksett	Hooksett Rd (Rt 3 & 128)	<b>X</b>	Intermittent (No Name)	Culvert Missing from SADES; 300ft north of Shannon Rd	Add to SADES
<b>999932</b>	Hooksett	Hooksett Rd (Rt 3 & 128)	<b>X</b>	Intermittent (No Name)	Culvert Missing from SADES; 300ft south of University Circle	Add to SADES
<b>999925</b>	Hooksett	Londonderry Tpke (Rt 28)	<b>X</b>	Dalton Brook	New Culvert installed 2017; Not measurable	Notify Shane C. at DES
<b>999926</b>	Hooksett	Hooksett Rd (Rt 3)	<b>X</b>	Dalton Brook	Culvert Missing from SADES; Not measurable	Notify Shane C. at DES
<b>999933</b>	Hooksett	Barberry St		Messer Brook	Culvert Missing from SADES	Notify Shane C. at DES
<b>999934</b>	Hooksett	Heritage Dr		Messer Brook	Culvert Missing from SADES	Notify Shane C. at DES
<b>999935</b>	Hooksett	Garian Ln		Messer Brook	Culvert Missing from SADES	Notify Shane C. at DES
<b>999936</b>	Hooksett	Berry Hill Rd		Dalton Brook	Culvert Missing from SADES	Notify Shane C. at DES



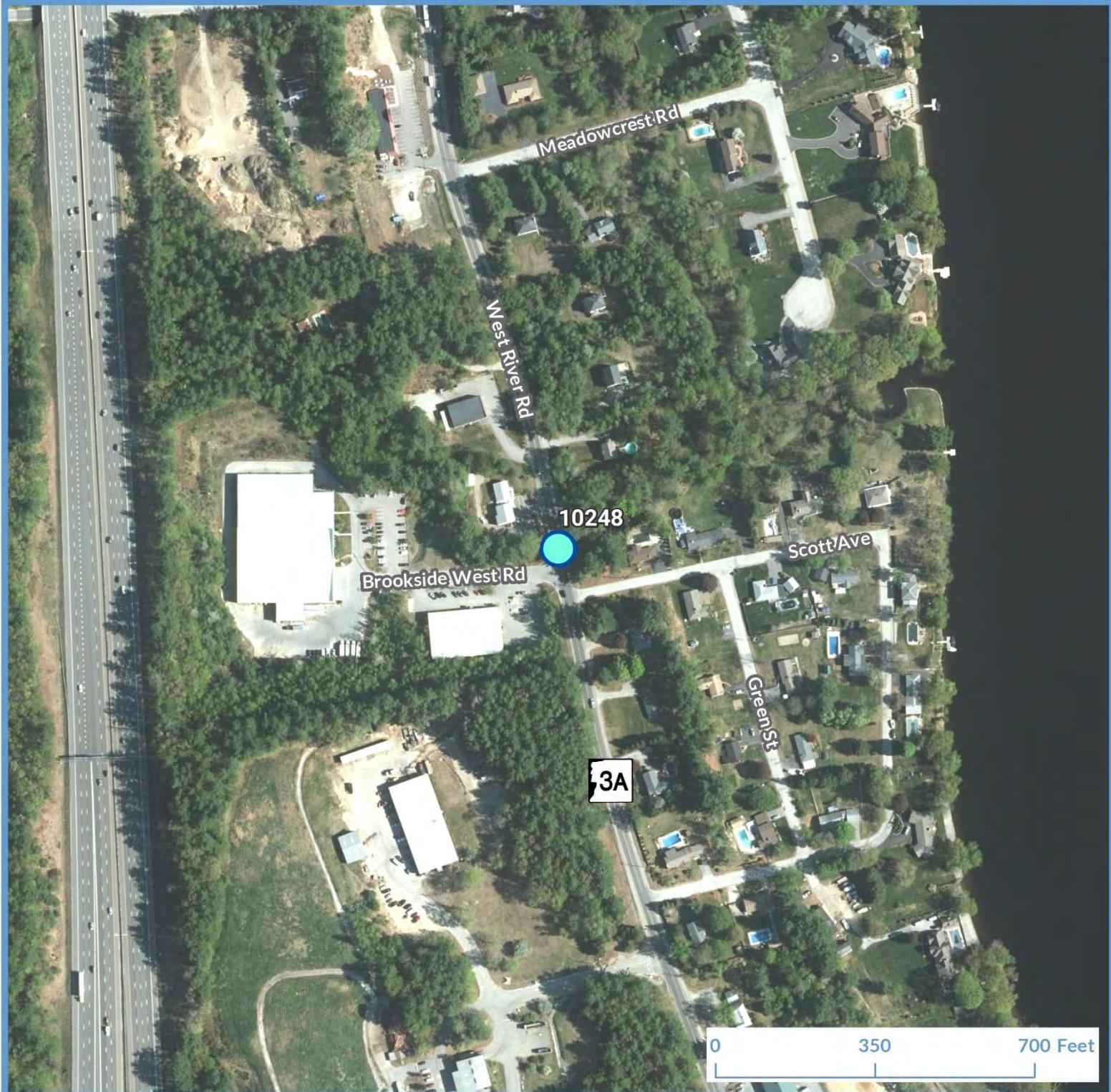
Created by SNHPC, 2020. Sources: NH Department of Environmental Services; NH Department of Transportation; University of New Hampshire.

Hooksett, NH		Stream Crossing Detail Sheet			SADES ID 15109
Prioritization Score	28	Traffic Volume	<1,000	Crossing Type	Stream
 <b>SNHPC</b> Detail Sheet Created: January 17, 2020	Asset Manager ID'd	Yes	Road Name	Vindale Road	
	Flood Hazard ID'd	Yes	Stream Name	No Data	
	Flood Zone Category	100-Yr Flood Zone	Structure Type	Concrete Round Culvert	
	Culvert Condition	Fair	Crossing Width	4.30'	
	10-Yr Hydraulic Vuln.	Vulnerable	Open Height	4.30'	
	Crossing Material	Not Metal	Obstruction	Wood	
	Beaver Activity	No	Assessment Date	07/26/2019	



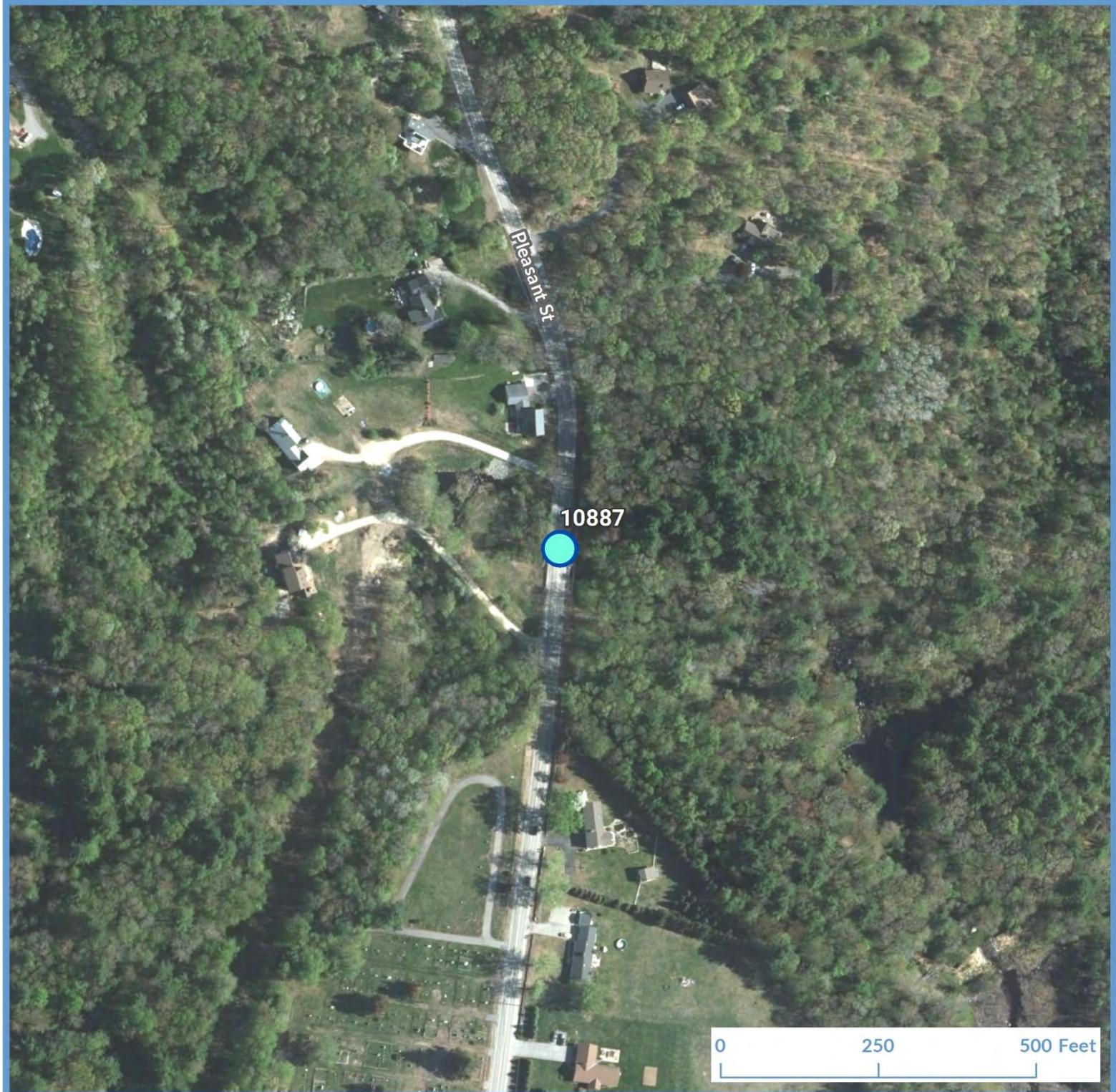
Created by SNHPC, 2020. Sources: NH Department of Transportation; University of New Hampshire.

Hooksett, NH		Stream Crossing Detail Sheet			SADES ID 999969
Prioritization Score	27	Traffic Volume	<30,000	Crossing Type	No Data
 <b>SNHPC</b> Detail Sheet Created: January 17, 2020	Asset Manager ID'd	No	Road Name	Interstate 93	
	Flood Hazard ID'd	Yes	Stream Name	No Data	
	Flood Zone Category	100-Yr Flood Zone	Structure Type	No Data	
	Culvert Condition	Unknown	Crossing Width	No Data	
	10-Yr Hydraulic Vuln.	Unknown	Open Height	No Data	
	Crossing Material	Not Metal	Obstruction	No Data	
	Beaver Activity	No	Assessment Date	No Yet Surveyed	



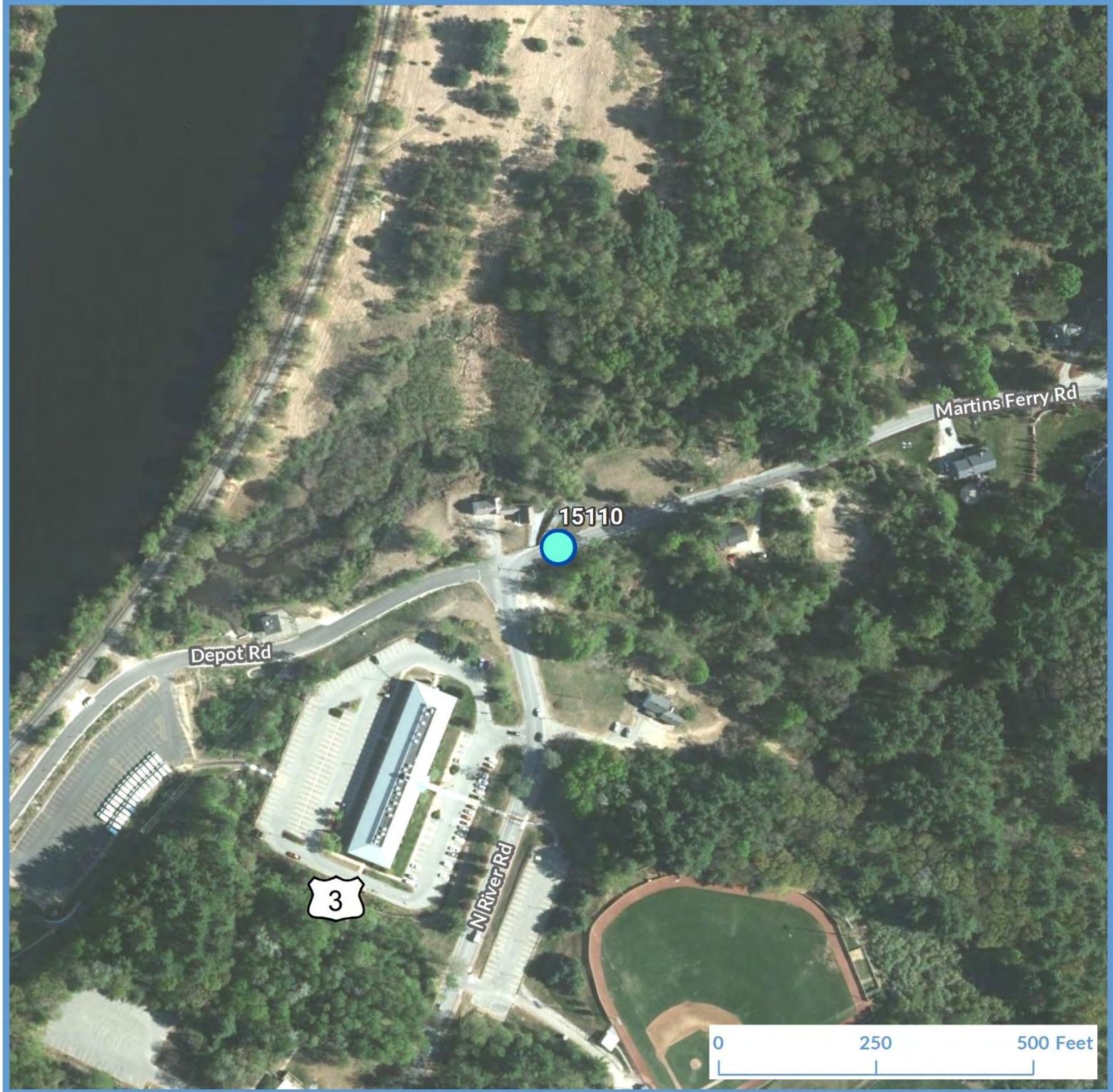
Created by SNHPC, 2020. Sources: NH Department of Environmental Services; NH Department of Transportation; University of New Hampshire.

Hooksett, NH		Stream Crossing Detail Sheet			SADES ID 10248
Prioritization Score	27	Traffic Volume	<30,000	Crossing Type	Stream
 <b>SNHPC</b> Detail Sheet Created: January 17, 2020	Asset Manager ID'd	No	Road Name	Route 3A (West River Road)	
	Flood Hazard ID'd	Yes	Stream Name	No Data	
	Flood Zone Category	100-Yr Flood Zone	Structure Type	Concrete Round Culvert	
	Culvert Condition	Fair	Crossing Width	4.00'	
	10-Yr Hydraulic Vuln.	Overtop	Open Height	4.00'	
	Crossing Material	Not Metal	Obstruction	None	
	Beaver Activity	No	Assessment Date	12/04/2017	



Created by SNHPC, 2020. Sources: NH Department of Environmental Services; NH Department of Transportation; University of New Hampshire.

Hooksett, NH		Stream Crossing Detail Sheet			SADES ID 10887
Prioritization Score	25	Traffic Volume	<5,000	Crossing Type	Stream
 <b>SNHPC</b> Detail Sheet Created: January 17, 2020	Asset Manager ID'd	No	Road Name	Pleasant Street	
	Flood Hazard ID'd	Yes	Stream Name	No Data	
	Flood Zone Category	100-Yr Flood Zone	Structure Type	Concrete Box Culvert	
	Culvert Condition	Poor	Crossing Width	5.00'	
	10-Yr Hydraulic Vuln.	Vulnerable	Open Height	No Data	
	Crossing Material	Not Metal	Obstruction	None	
	Beaver Activity	No	Assessment Date	05/30/2018	

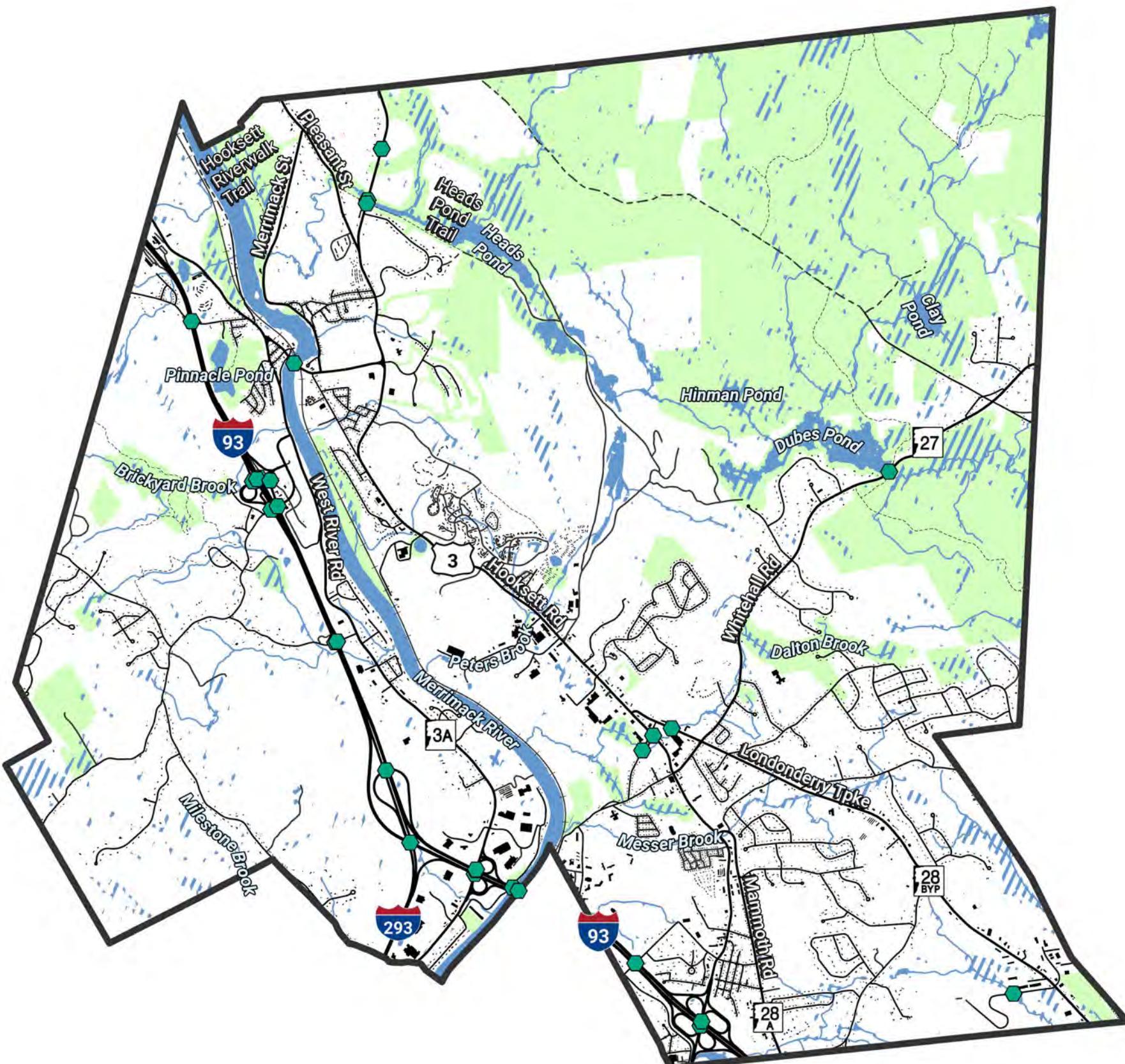


Created by SNHPC, 2020. Sources: NH Department of Environmental Services; NH Department of Transportation; University of New Hampshire.

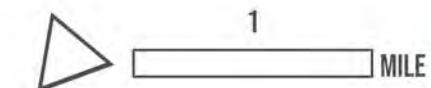
Hooksett, NH		Stream Crossing Detail Sheet			SADES ID 15110
Prioritization Score	25	Traffic Volume	<20,000	Crossing Type	Stream
 <b>SNHPC</b> Detail Sheet Created: January 17, 2020	Asset Manager ID'd	Yes	Road Name	Martins Ferry Road	
	Flood Hazard ID'd	No	Stream Name	No Data	
	Flood Zone Category	100-Yr Flood Zone	Structure Type	Stone and Concrete Box Culvert	
	Culvert Condition	Fair	Crossing Width	7.50'	
	10-Yr Hydraulic Vuln.	Pass	Open Height	9.60'	
	Crossing Material	Not Metal	Obstruction	None	
	Beaver Activity	No	Assessment Date	07/26/2019	

# HOOKSETT HAZARD MITIGATION PLAN

## Map 5: Bridges



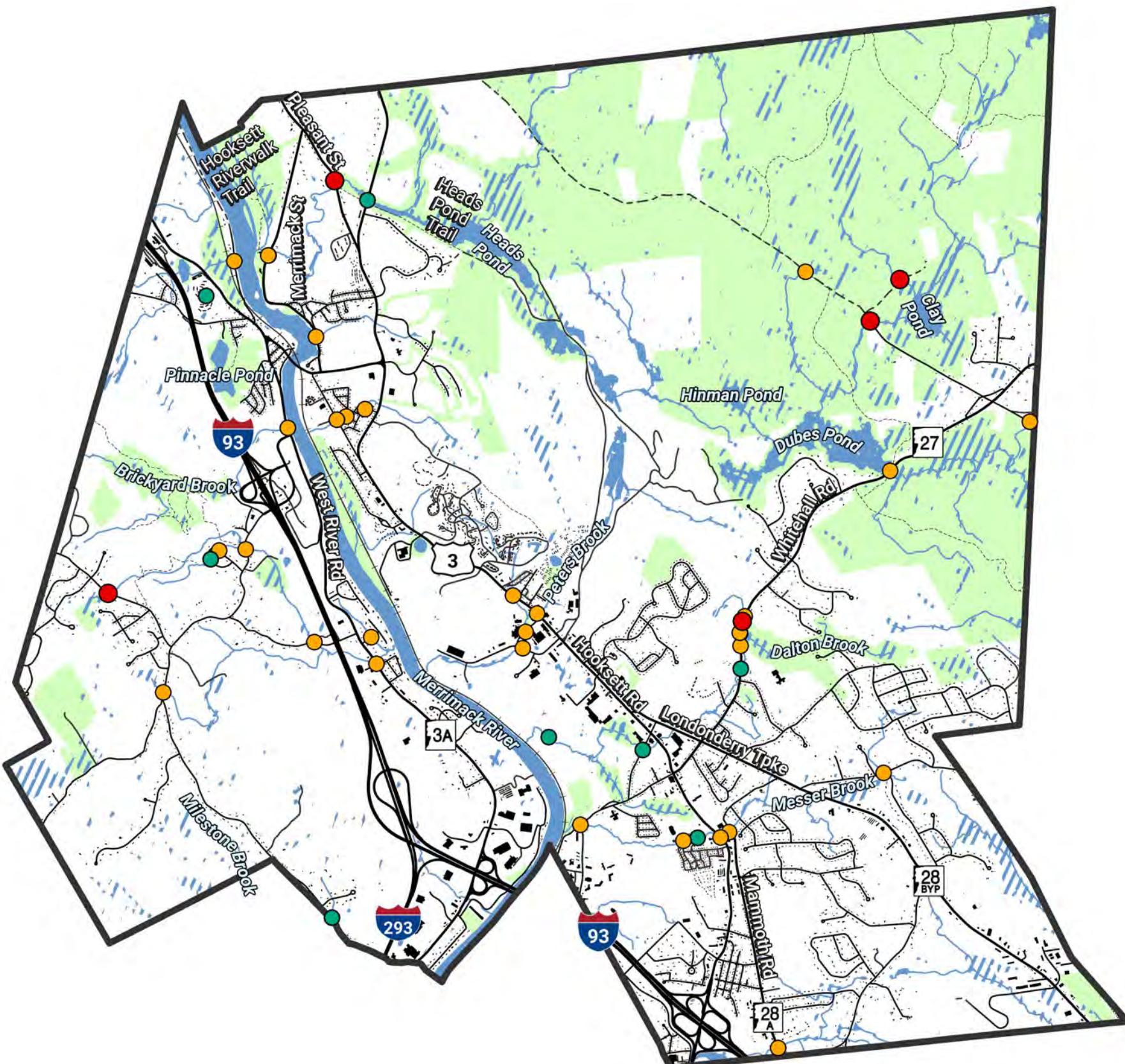
- Municipal Redlist
- Not on the Redlist



Created by the Southern New Hampshire Planning Commission, 2021. Sources: Microsoft; NH Department of Transportation; Open Street Maps; Town of Hooksett; University of NH; US Census Bureau; US Geological Survey; US Fish & Wildlife Service.

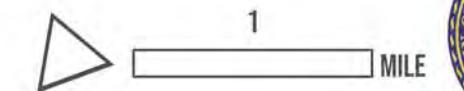
# HOOKSETT HAZARD MITIGATION PLAN

## Map 6: Culverts



### Structural Condition

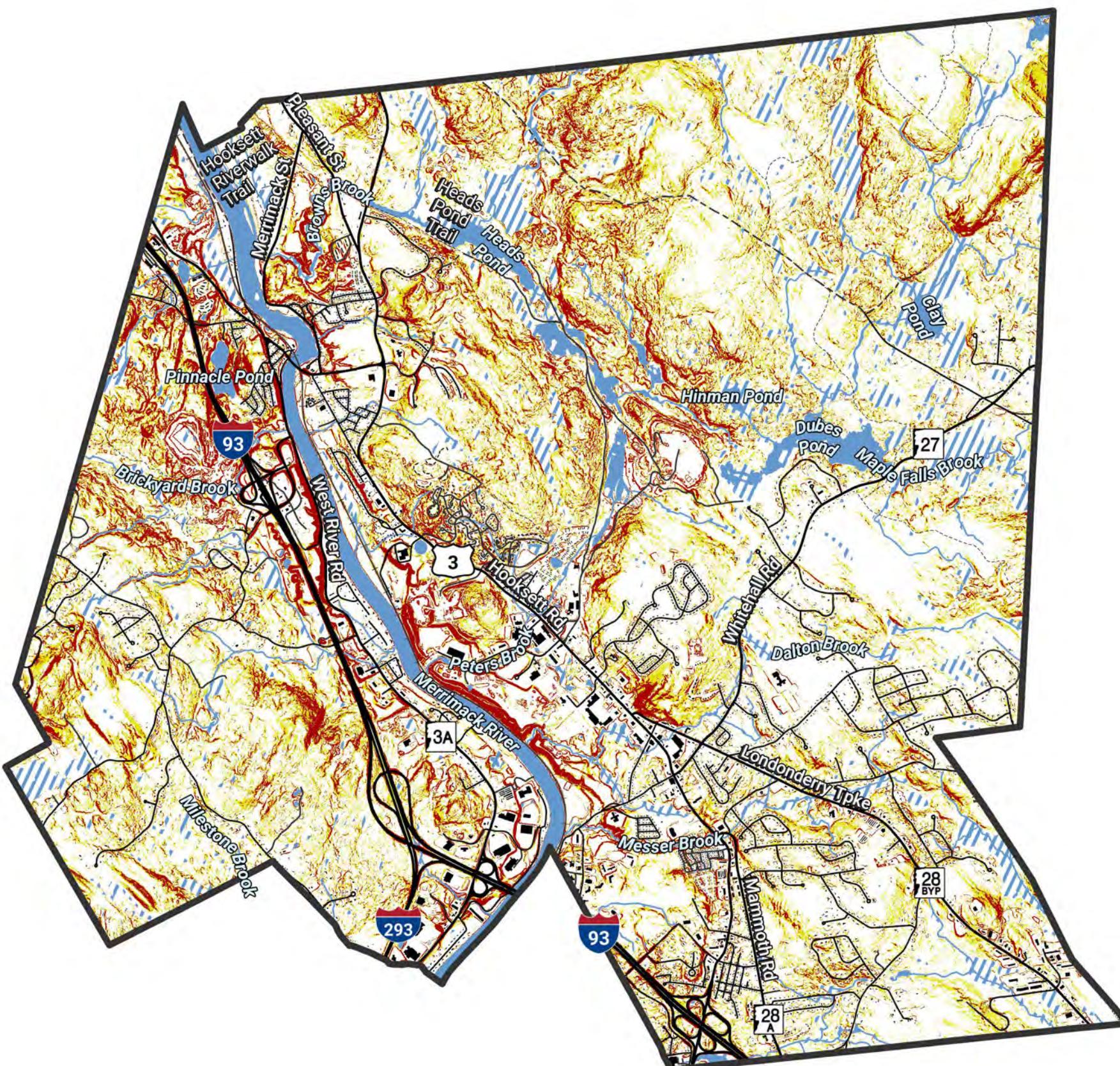
- Good
- Fair
- Poor



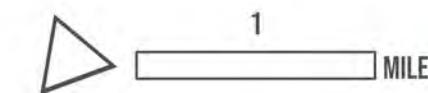
Created by the Southern New Hampshire Planning Commission, 2021. Sources: Microsoft; NH Department of Environmental Services; NH Department of Transportation; Open Street Maps; Town of Hooksett; University of NH; US Census Bureau; US Geological Survey; US Fish & Wildlife Service.

# HOOKSETT HAZARD MITIGATION PLAN

## Map 7: Steep Slopes



Rise over Run  
15 to 25%  
25% or Greater



Created by the Southern New Hampshire Planning Commission, 2021. Sources: Microsoft; NH Department of Transportation; Open Street Maps; University of NH; US Census Bureau; US Geological Survey; US Fish & Wildlife Service.