

Town of Chelsea, Vermont
2015 Local Hazard Mitigation Plan

***Prepared by the Two Rivers-Ottauquechee Regional Commission and
the Town of Chelsea***

November 3, 2015

Date of Town Adoption

November 20, 2015

Date of Final Approval by FEMA

CERTIFICATE OF ADOPTION
November 3, 2015
TOWN OF Chelsea, Vermont Selectboard
A RESOLUTION ADOPTING THE Chelsea, VT 2015 Local Hazard Mitigation Plan

WHEREAS, the Town of Chelsea has historically experienced severe damage from natural hazards and it continues to be vulnerable to the effects of the hazards profiled in the **Chelsea, Vermont 2015 Local Hazard Mitigation Plan**, which result in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Town of Chelsea has developed and received conditional approval from the Federal Emergency Management Agency (FEMA) for its **Chelsea, Vermont 2015 Local Hazard Mitigation Plan (Plan)** under the requirements of 44 CFR 201.6; and

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

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

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

RESOLVED by Town of Chelsea Selectboard:

1. The **Chelsea, Vermont 2015 Local Hazard Mitigation Plan** is hereby adopted as an official plan of the Town of Chelsea;
2. The respective officials identified in the mitigation action plan of the **Plan** are hereby directed to pursue implementation of the recommended actions assigned to them;
3. Future revisions and **Plan** maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as part of this resolution for a period of five (5) years from the date of this resolution; and
4. An annual report on the process of the implementation elements of the Plan will be presented to the Selectboard by the Emergency Management Director or Coordinator.

IN WITNESS WHEREOF, the undersigned have affixed their signature and the corporate seal of the Town of Chelsea this 3rd day of November, 2015.

Michael Burton
Selectboard Chair

Joan Goodrich
Selectboard Member

ATTEST

Karen J. Lathrop
Town Clerk



FEMA

DEC 02 2015

Carol Olsen, Chair
Selectboard
Town of Chelsea
P.O. Box 266
Chelsea, VT 05038

Dear Ms. Olsen:

Thank you for the opportunity to review the Town of Chelsea, Vermont 2015 Local Hazard Mitigation Plan. The Department of Homeland Security (DHS), Federal Emergency Management Agency (FEMA) Region I has evaluated the plan for compliance with 44 C.F.R. Pt. 201. The plan satisfactorily meets all of the mandatory requirements set forth by the regulations.

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

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

The Town of Chelsea, Vermont 2015 Local Hazard Mitigation Plan must be reviewed, revised as appropriate, and resubmitted to FEMA for approval within **five years of the plan approval date of November 20, 2015** in order to maintain eligibility for mitigation grant funding. We encourage the Town to continually update the plan's assessment of vulnerability, adhere to its maintenance schedule, and implement, when possible, the mitigation actions proposed in the plan.

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

Sincerely,



Paul F. Ford
Regional Administrator

PFF: mh

cc: Ray Doherty, Vermont State Hazard Mitigation Officer
Rob Evans, Vermont State NFIP Coordinator
Ben Rose, Recovery and Mitigation Section Chief, VT DEMHS
Lauren Oates, Hazard Mitigation Planner, VT DEMHS
Karen Lathrop, Town Clerk
Ellie Ray, Regional Planner, TRORC

Enclosure

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I. Introduction

Natural and human-caused hazards may affect a community at any time. Natural hazard events cannot be stopped; however, their impact on human life and property can be reduced through community planning. Accordingly, this Local Hazard Mitigation Plan (hereafter referred to simply as the Plan) seeks to provide an all-hazards mitigation strategy that will make the community of Chelsea more disaster resistant.

“Mitigation” is defined as any sustained action that reduces or eliminates long-term risk to people and property from natural and human-caused hazards and their effects. Previous Federal Emergency Management Agency (FEMA), State and Regional Project Impact efforts have demonstrated that it is less expensive to anticipate disasters than to repeatedly ignore a threat until the damage has already been done. While hazards cannot be eliminated entirely, it is possible to identify prospective hazards, anticipate which might be the most severe, and recognize local actions that can be taken ahead-of-time to reduce the damage. These actions, also known as ‘hazard mitigation strategies’ can (1) avert the hazards through redirecting impacts by means of a structure, land treatment, or land use pattern change (2) adapt to the hazard by modifying structures or standards or, (3) avoid the hazard through improved public education, relocation/removal of buildings in the flood zone, or ensuring development is disaster resistant.

II. Purpose of the Plan

The purpose of this Plan is to assist Chelsea in identifying all hazards facing the town, ranking them according to local vulnerabilities, and identifying strategies to reduce risks from vulnerabilities of highest concern. Implementation of this plan will make our community more resistant to harm and damages in the future. And reduce public costs.

The Town of Chelsea seeks to be in accordance with the strategies, goals, and objectives of the State Hazard Mitigation Plan.

The 2015 Chelsea Local Hazard Mitigation Plan is the first single jurisdiction mitigation plan drafted for the Town. Previously, the Town had a town-specific 2009 Annex in the Regional (multi-jurisdiction) Pre-Disaster Mitigation Plan. This new Plan has been reorganized and new sections have been added:

- Program eligibility subsequent to plan approval
- Authority for plan development
- Participating jurisdictions
- Funding for plan development
- Brief information about the community

Old assumptions have been challenged throughout, and new information has been added to make the plan stronger and more useful for the Chelsea town officials and residents who will implement the hazard mitigation strategies in the future.

III. Community Profile

Chelsea is located near the center of Orange County, and, in 1795, it was designated as the seat of county government, thus becoming the "Shire Town," to use an old English term. The courthouse that stands at the head of the South Common was built in 1847, on nearly the same site as the 1801 structure. In 2010, the population of Chelsea was 1,238, well below their historical high of 1,940 in the late 1800's. Between 1990-2010, the population grew by 6.2%; however, there has been a slight overall decrease of less than 0.2% since 2000, highlighting a largely stagnant level of population growth in the Town.

According to Vermont Housing data, there were 695 housing units in Chelsea in 2010, an increase of 5.8% from 2000 (equivalent to nearly 4 housing units being added to housing stock figures per year). Nearly 16.5% of the Town's housing stock is comprised of units for seasonal, recreational, or occasional use. While over 10.4% of housing units in Chelsea were built in the decade from 2000 to 2010, nearly 36% of Chelsea residences were built prior to 1939, according to U.S. Census 2010 information.

The Town lies within the service area of Green Mountain Power, which supplies electrical power to the sections of town located along the main roads in Chelsea. Washington Electric Coop supplies electric to the majority of residents located off the main roads.

Volunteer personnel and the equipment of the Fire District Number One provide fire protection for the Town. The Fire Station is located near the center of Chelsea Village on Rt. 110. All of the firefighting apparatuses are housed within this building, along with rented space used by First Branch Ambulance.

The Fire District has an agreement with the Town of Washington to respond to calls south of the height of land, and it also has a mutual assistance agreement with the Tunbridge Fire District. Further, the District is a member of the Capital Fire Mutual Aid System.

In 1995, the Municipal Water System was completed along with a very adequate fire hydrant system. In 1995, the Fire Department purchased an air compressor for breathable air. This gives the Fire Department the capability to refill the air bottles on the self-contained breathing apparatus used by firefighters. In 2001, the District approved the purchase of a 1,250-gallon tank/1,250 GPM pumper with the ability to accommodate five firefighters in full gear in the cab to replace a worn out 1966 vehicle. The Fire Station has a stand-by generator.

The Orange County Sheriff, Chief Deputy Sheriff and an Administrative Manager provide police services for Chelsea and 17 other towns. The Orange County Sheriff's Office and adjacent facility are located in Chelsea Village on Route 113 (Jail Street). The police facility consists of a set of four rooms for the office, a block of six cells to accommodate 12 detainees on the ground floor, and six cells on the second floor (of which only one is used). Detention is limited to 72 hours or to weekend prisoners. A dispatcher is on duty at this location 24 hours a day to accept calls and dispatch a Deputy if one is available. The Sheriff's office also provides a safe environment for victims of domestic violence, sexual violence. After hour court workers, Safeline, Clara Martin staff along with several different law enforcement agencies

use our facility after normal daytime hours. The Sheriff's office also can be used for emergency operations center if needed.

Since State Law does not provide for the County to tax residents for law enforcement expenses, including salaries and equipment, the Sheriff's Department operates under contract to towns desiring their patrolling and response services. In addition, the Department contracts for traffic control during road paving, utility construction, and other projects at a rate higher than that for contracted services. The difference allows the Sheriff to provide law enforcement to towns in addition to the contracted amount.

The Town of Chelsea also may elect a Constable annually who provides such services as requested by the Selectmen. The Constable has the same authority as the State Police only if they are certified by the Vermont Criminal Justice training counsel.

Chelsea is also served by the First Branch Rescue Squad, which provides service to Chelsea, Tunbridge, and surrounding towns. The closest hospital is Gifford Medical Center, located in Randolph. Medivac services are available by the DHART helicopter.

IV. The Planning Process

A. Plan Developers

Samantha Holcomb and Ellie Ray, both Land Use Planners at the Two Rivers-Ottawaquechee Regional Commission (TRORC), assisted the Town of Chelsea with updating its Local Hazard Mitigation Plan. Committee members who assisted with the revisions include:

This section of the Plan satisfies 44 CFR 201.6(b)(1) and 201.6(c)(1) (or, A3.a and A3.b of FEMA's Local Mitigation Plan Review Guide, 2011).

| Name | Role/Organization | How Participation Was Solicited |
|-----------------|---|--|
| David Farnham | Emergency Management Coordinator | <p>On 08/08/2014, Samantha Holcomb and Ellie Ray (TRORC staff) reached out to the Chelsea Selectboard, the Town Emergency Management Coordinator (David Farnham) and the Town Clerk (Karen Lathrop). TRORC staff coordinated with Chelsea town officials to set up an introductory meeting. The first meeting was scheduled for 10/02/2014. TRORC's staff attended that meeting, followed by many more meetings in which participants revised and developed the LHMP. See below for more meeting-specific details.</p> |
| John Upham | Fire Chief | |
| Kate Willard | Planning Commission member | |
| Rebecca Mattoon | School Board | |
| Linda Kuban | First Branch Ambulance | |
| Bill Bohnyak | Orange County Sheriff | |
| Carol Olsen | Selectboard Chair | |
| Rick Ackerman | Road Foreman | |
| Preston Bristow | Chelsea Zoning and Floodplain Administrator | |
| Marty Gratz | Resident | |
| Wendy Forbes | Resident | |
| Nolan LaFrancis | Chelsea Water/W.W. | |
| Jennifer Doyle | Owner, Riverbend Residential Care Home | |
| Karen Lathrop | Town Clerk | |

Additional Participants in the Process:

- Melissa Lathrop, Former Town Health Officer

B. Plan Development Process

The 2009 Chelsea Annex was originally part of the 2008 multi-jurisdictional Regional Hazard Mitigation Plan, drafted by Two Rivers-Ottawaquechee Regional Commission, and approved by FEMA on September 30, 2008 with its first local annex.

The Chelsea Annex received subsequent FEMA approval, but, since it was part of a larger plan, FEMA treats its start date as September 30, 2008, meaning the Chelsea Annex expired on September 30, 2013.

| |
|--|
| This section of the Plan satisfies the Element A: Planning Process requirements set out in 44 CFR 201.6. |
|--|

This Plan has been reconstructed now as a single jurisdiction, stand-alone Chelsea Local Hazard Mitigation Plan that will be submitted for individual approval to FEMA. As such, several sections have been added or updated to include all necessary information.

The changes to this Plan include:

- **General**
 - New sections: Plan Development Process, 2009 Mitigation Strategies Status Update chart, Existing Hazard Mitigation Programs, Projects & Activities, Plan Maintenance;
 - Data updates: New hazard incidents, emergency declarations, Census data;
 - Hazards have been reevaluated with the hazard ranking system used by the Vermont Division of Emergency Management and Homeland Security.
- **Hazards Analysis**
 - Hazardous Material Spills and Flash Flood/Flood/Fluvial Erosion remain on the list of “top hazards,” which reflect the local officials’ belief that the Town is still vulnerable to these hazards;
 - Extreme Cold/Snow/Ice Storm has been added to the list of “top hazards,” which reflects the intention/priorities of local officials to expand their analysis of hazards that the Town is or may be vulnerable to in the next five years;
 - Structural Fire has been removed from the list of “top hazards;”
 - For each hazard, a location/vulnerability/extent/impact/likelihood table has been added to summarize the hazard description.
- **Maps**
 - A map of the Town of Chelsea depicting critical facilities, town infrastructure, and the NFIP designated floodway, the 100-year and 500-year floodplain has been added.

The following represent the avenues taken to draft the Chelsea Local Hazard Mitigation Plan:

- **Activities and Public participation and involvement (44 CFR 201.6(b)(1))**

***Note: The meetings listed below were public sessions (the agenda was posted prior to the meeting).*

- 10/02/2014: Met with Chelsea LHMP committee members to introduce the update/plan development process, reviewed Chelsea’s existing Hazard Mitigation Plan (adopted in January 2009), considered the status of various mitigation actions, potential hazards, and the data collection/research process. The Chelsea committee also discussed and

ranked hazards to determine the “Top Hazards” in the Town that expose our greatest vulnerabilities. Explained to the committee what the next steps in the process are (draft plan, and then schedule a meeting to review and discuss it). The agenda for this meeting was posted in three places in Town. No public comments were received.

- October 2014: A notice was placed in the Two Rivers-Ottauquechee Regional Planning Commission Newsletter alerting recipients that Chelsea was engaging in hazard mitigation planning and updating their Local Hazard Mitigation Plan. Contact information was provided in the notice to allow those interested in Chelsea’s efforts to receive more information and how to find out about upcoming meetings. No comments were received.
 - 01/22/2015: Met with committee to discuss first draft. The entire draft was reviewed in detail, with TRORC staff making note of any comments or errors.
 - February 2015: A notice was placed in the Two Rivers-Ottauquechee Regional Planning Commission Newsletter alerting recipients that Chelsea was engaging in hazard mitigation planning and updating their Local Hazard Mitigation Plan. Contact information was provided in the notice to allow those interested in Chelsea’s efforts to receive more information and how to find out about upcoming meetings. No comments were received.
 - 04/23/2015: Met with town officials to discuss and develop hazard mitigation strategies for each hazard identified in the Plan. No comments from the public were received.
- **Governmental participation and involvement (44 CFR 201.6(b)(2))**
 - Sent revised draft to the Selectboard Chair and provided contact information for receiving comments via email/hard copy—05/14/2015
 - No comments were received.
 - Sent revised draft to Planning Commission Chair and provided contact information for receiving comments via email/hard copy—05/14/2015
 - No comments were received.
 - Sent revised final draft to Division of Emergency Management and Homeland Security—7/7/2015
 - Plan sent to FEMA
 - Note: Town officials were given the opportunity to review, provide feedback and approve the changes that were made through the Plan revision and FEMA review process.
 - **Neighboring community participation and involvement (44 CFR 201.6(b)(2))**
 - October 2014: A notice was placed in the Two Rivers-Ottauquechee Regional Planning Commission Newsletter alerting recipients that Chelsea was engaging in hazard mitigation planning and updating their Local Hazard Mitigation Plan. Contact information was provided in the notice to allow those interested in Chelsea’s efforts to receive more information and how to find out about upcoming meetings. No comments were received.

- Posted a notice in four local papers alerting the public to the hazard mitigation planning process that was taking place. Contact information was provided in the notice to allow those interested in Chelsea’s efforts to receive more information and how to find out about upcoming meetings. No comments were received.
 - Valley News—ran 01/15/2015
 - The Herald of Randolph— ran 01/15/2015
 - Journal Opinion— ran 01/15/2015
 - Vermont Standard— ran 01/15/2015
- February 2015: A notice was placed in the Two Rivers-Ottawquechee Regional Planning Commission Newsletter alerting recipients that Chelsea was engaging in hazard mitigation planning and updating their Local Hazard Mitigation Plan. Contact information was provided in the notice to allow those interested in Chelsea’s efforts to receive more information and how to find out about upcoming meetings. No comments were received.
- Sent revised draft to neighboring towns’ Selectboards for comment and provided contact information for receiving comments via email/hard copy—05/14/2015
 - Towns of: Washington; Vershire; Tunbridge and Brookfield.
 - No comments were received.
- **Review of existing plans, studies, reports, and technical information (44 CFR 201.6(b)(3))**
 - State of Vermont Hazard Mitigation Plan, 2013
 - Chelsea Hazard Mitigation Plan (Adopted 01/20/2009)
 - This Plan was referenced extensively during the plan development process, especially in regard to the worst threats and mitigation action strategies identified in 2009.
 - Chelsea Town Plan (Adopted 09/26/2014)
 - The Town Plan provided TRORC’s staff with background information on the community, as well as more detail on their emergency services.
 - Chelsea, Vermont Zoning Bylaw (Adopted 03/03/2009)
 - The Zoning Bylaws were referenced for general knowledge and for Chelsea’s Flood Hazard Regulations.
 - Chelsea Local Emergency Operations Plan (LEOP) (Adopted 05/06/2014)
 - The Chelsea LEOP was referenced for general knowledge regarding the Town’s emergency operations.
 - Source Protection Plan
 - The Source Protection Plan provided information that was incorporated into the Hazardous Material Spills section.
 - First Branch White River Corridor Plan (7/17/2014)
 - The First Branch White River Corridor Plan provided information about a critical waterbody within the Town of Chelsea. The First Branch begins in the Town of Chelsea. The Corridor Plan was referenced when drafting the Flash Flood/Flood/Fluvial Erosion and Severe Weather section of this Local Hazard

This section of the Plan satisfies 44 CFR 201.6(b)(3) (or, A4.a and A4.b of FEMA’s Local Mitigation Plan Review Guide, 2011).

Mitigation Plan. The information from the Corridor Plan was also incorporated into the mapping/GIS components of this Plan; specifically in determining the number of structures that are vulnerable to fluvial erosion hazards.

- Flood Insurance Study: Town of Chelsea, Vermont (February 1980)
 - The Flood Insurance Study was referenced for general knowledge of Chelsea's water bodies, Jail Brook, South Washington Brook and the First Branch of the White River and for historic flooding information.
 - Relevant peak discharge information for Jail Brook, South Washington Brook and the First Branch of the White River can be found on page 7.
 - The Town's FIS noted that although Chelsea had not "sustained unduly large or frequently recurring flood losses" it had experienced, "infrequent intervals" of "unusually" high flood stages with relatively severe flood damage (page 4-5). While not predictive of future flooding events, the Town of Chelsea was also spared from severe damage during Tropical Storm Irene as well.

C. Status Update on Mitigation Actions Identified in 2009

The following table outlines the mitigation actions that were proposed in Chelsea’s 2009 All-Hazard Pre-Disaster Mitigation Plan for the Town of Chelsea (adopted on January 20, 2009 as an appendix to the Two Rivers-Ottawaquechee Regional Commission’s multi-jurisdictional Pre-Disaster Mitigation Plan).

This section of the Plan satisfies the requirements of 44 CFR 201.6(d)(3).

Participants in the new Plan update process reviewed these actions and reported on the status of each (in order of 2009 priority). Actions related to long-term mitigation of natural hazards are so noted.

| Mitigation Action | Who (Leadership) | When (Timeframe) | How (Funding/Support) | 2015 – Status of Mitigation Actions |
|---|----------------------------------|------------------|---------------------------------------|---|
| <u>ALL HAZARDS</u> | | | | |
| 1. Ensure that the Rapid Response Plan (RRP) is current. | Selectboard | Yearly | With TRORC assistance | The newest iteration of the RRP is the Local Emergency Operations Plan (LEOP). The Chelsea LEOP undergoes an annual update of this document and it was last updated and approved on 04/21/2015. |
| 2. Use Pre-Disaster Mitigation (PDM) plan for Hazard Identification and Mapping. | Emergency Management Coordinator | Ongoing | With TRORC assistance | Not complete, but the Town is looking to use this information in the Town Plan. |
| 3. Re-write and update existing Emergency Operations Plan. | Emergency Management Coordinator | Yearly | With TRORC assistance | The newest iteration of the RRP is the Local Emergency Operations Plan (LEOP). The Chelsea LEOP undergoes an annual update of this document and it was last updated and approved on 04/21/2015. |
| 4. Improve interoperability of emergency communications equipment. | Emergency Management Coordinator | ongoing | Local resources | Complete. All radio frequencies are kept up-to-date and are shared. |
| <u>FLOOD</u> | | | | |
| 5. Continue the planned road maintenance program and update existing culvert inventory. Upgrade culverts and ditching. (Mitigation) | Highway Department | Ongoing | Local resources | The Town consistently upgrades culverts. The fully inclusive culvert inventory has not been completed since 2006. This action has been carried over into the 2015 Plan. |
| 6. Revise flood hazard regulations. (Mitigation) | Planning Commission/ Selectboard | 2009 | Local resources with TRORC assistance | This is not yet complete, but the Town Plan addresses the need to revise the flood hazard regulations and the Planning Commission is reviewing language to include. This action has been carried over into the 2015 Plan. |

| Mitigation Action | Who (Leadership) | When (Timeframe) | How (Funding/Support) | 2015 – Status of Mitigation Actions |
|--|----------------------------------|------------------|---|---|
| 7. Study potential well-head protection area improvements. | Emergency Management Coordinator | Ongoing | Local resources | This action is ongoing, and is done with the statutory requirement to update the Source Protection Plan every three years. |
| 8. Investigate ways to lessen ice jamming on Jail Brook. (Mitigation) | Emergency Management Coordinator | 2008 | Vermont Agency of Transportation (VTrans) and Flood Management Assistance funds | The Town's Emergency Management Coordinator has completed some research/outreach regarding the ice jams on Jail Brook but this ongoing. This action has been carried over into the 2015 Plan, in the action that addresses Jail Brook. |
| 9. Realign Vermont Rte. 110 box culvert that crosses Jail Brook (#B10). (Mitigation) | Highway Department | 2009 | VTrans | This is a state-owned structure and the action is not complete. This action has been carried over into the 2015 Plan. |
| 10. Replace Maple Avenue bridge (#B45). (Mitigation) | Highway Department | 2009 | HMGP or PDM-c funding | This action has not been completed due to lack of funding. This bridge is severely undersized and is the only way to access the senior housing facility, making this area of Town vulnerable to flooding. This action has been carried over into the 2015 Plan. |
| 11. Stabilize stream banks and landslides along Corinth Road (in northeast Chelsea). (Mitigation) | Highway Department | 2010 | HMGP or PDM-c funding | A box culvert on Corinth Road was installed and the surrounding stream banks were stabilized during/after that project; but the landslides have not been stabilized. |
| 12. Stabilize bank failures along Edwards Road (between Route 110 and Williamstown Rd). (Mitigation) | Highway Department | 2010 | HMGP or PDM-c funding | This action has been completed. |
| <u>HAZMAT</u> 13. Pursue HAZMAT training for Fire Department. | Fire Department | 2009 | Funded by Fire Service Training Academy | Most Fire Department members are certified to the Awareness level; and this training/recertification remains ongoing. |
| <u>FIRE</u> 14. Develop additional dry hydrant sites in rural locations. | Fire Department | Ongoing | Local resources, George Aiken RC&D | Each year the Fire Department makes an attempt to develop additional dry hydrants sites, but it is difficult due to the Town's terrain. Three to four dry hydrants have been installed since 2009. |

There is relatively minimal development occurring in the Town of Chelsea. In 2013, 34 permits were issued, and 30 permits were issued in 2014, but many of the permits are for smaller, accessory projects. In 2013, one permit was issued for a new residence and about 17 permits were issued for additions to existing structures, decks, and garages. Of the 30 permits issued through 2014, approximately 10 were for additions to existing structures, decks, and garages. Some of the “larger” development projects in the Town of Chelsea include the conversion of a barn to a store on Route 110, the construction of a “sugarhouse,” which is really a maple processing facility, on Route 110 and a new town highway facility (garage, salt shed, brine tank, diesel tank, and sand pile) at 25 East Randolph Road. The development pattern for commercial development tends to be within the Village or along the Route 110 corridor outside of the Village. There are no plans for large-scale development on the horizon.

Depending on the location, new development in the Town of Chelsea may be vulnerable to flood or fluvial erosion hazards or to landslides, mudslides, or rockslides; fortunately, the town’s slow growth rate and interest in pursuing options for reducing flood risks help reduce these risks. The Town’s Zoning Bylaw, which includes the Flood Hazard Overlay District, regulates new development within the Special Flood Hazard Area, which would help reduce threats to structures built near flood hazards. However, the areas vulnerable to flood hazards and fluvial erosion hazards are not necessarily analogous; therefore, the Town’s Flood Hazard Overlay District may not protect new development from fluvial erosion hazards. The desire to focus development and growth within the Village of Chelsea in the face of vulnerability to flooding represents not only a land use challenge, but also design and character challenge as this area is also a historic district. These challenges are currently being experienced in towns throughout Vermont. The Town of Chelsea is currently in the review/approval process for Hazard Mitigation Grant Program funds to acquire some properties in the Village and elevate others. The Chelsea Planning Commission also plans to revise the Zoning Bylaw and Flood Hazard Overlay District to help provide some clarity on these issues.

D. Town Capabilities for Implementing the Mitigation Strategy (Existing Hazard Mitigation Programs, Projects & Activities)

This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(3).

The Town of Chelsea is currently engaged in the following hazard mitigation programs, projects and activities:

| | Type of Existing Authority / Policy / Program / Action | Resources: Staffing & Funding | Ability to Expand/Improve on |
|--|--|---|--|
| Community Preparedness Activities | Program—Annual update of Chelsea’s Local Emergency Operations Plan (LEOP). Last updated and approved on 05/06/2014. | Volunteer time from the Emergency Management Director/ Coordinator; assistance from TRORC. Funding from Vermont DEMHS. | This document is reviewed and updated each year to ensure that the contact information of emergency response personnel is up-to-date. This information is then sent to Vermont Emergency Management for their records. Current program works well, no need to expand or improve on. |
| | Program—Participation in LEPC #12 | Volunteer time from Emergency Management Director/Coordinator and sometimes the Fire Chief. Funding from LEPC #12 and assistance from TRORC. | The Town’s current participation in the LEPC #12 is satisfactory. Therefore, there is currently no need to expand or improve on this program. |
| | Participation in Citizens’ Emergency Response Team (CERT) | Staff time from the Town Clerk | The Town feels that this would be a beneficial if there were enough people interested. |
| | Action— Designation of Red Cross Shelter Training in 2001. | Staff/volunteer time from the Town Clerk, Emergency Management Director/ Coordinator. Funding from American Red Cross. | This is a one-time action. However, the training was in 2001, and Town officials would like to complete a refresher training. |
| Insurance Programs | Authority/ Program— participation in National Flood Insurance Program (NFIP) [Note: This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(3)(ii).] | The Chelsea Zoning Administrator serves as the NFIP Administrator. Assistance from TRORC and Vermont ANR. Funding from local resources— annual town budget. | The Town’s initial Flood Insurance Rate Map (FIRM) was dated 08/15/80. The Town’s current Flood Insurance Rate Map (FIRM) was dated 08/05/91. The Town continues its participation in the NFIP by administering and enforcing its “Flood Hazard Overlay” zoning district. The Town of Chelsea adopted its most current Zoning Bylaw (which includes its “Flood Hazard Overlay District”) on 03/03/2009. This zoning district regulates new construction in the Special Flood Hazard Area. The Town employs an NFIP Administrator that is a Certified Floodplain Manager and enforces the “Flood Hazard Overlay District” based on the 08/05/1991 FIRMs. The Town would like to request map revisions from FEMA. The town has the authority and intends to consider strengthening the Flood Bylaw in the next planning cycle. |

| | Type of Existing Authority / Policy / Program / Action | Resources: Staffing & Funding | Ability to Expand/Improve on |
|--|--|---|--|
| Land Use Planning | Policy/Program— Chelsea Municipal Plan Adopted on 09/26/2014, includes a “Flood Hazard Area” discussion within the “Land Use Plan” element’s “Future Land Use” section. | Volunteer time from Planning Commission, and assistance from TRORC and other state agencies on specific subject matter. Funding from Municipal Planning Grants. | The Town Plan is updated every five years, as required by statute. The Planning Commission may expand or improve on any section it deems necessary, or that is required by changes in state statute. |
| | Completed Authority— Chelsea Vermont Zoning Bylaw Adopted on 03/03/2009, includes a “Flood Hazard Overlay District” zoning district | Volunteer time from the Planning Commission, and assistance from TRORC. Funding from Municipal Planning Grants. | During the Town Plan review/update period, the Zoning Ordinance is also reviewed and updated if needed. The Planning Commission intends to work on the Zoning Bylaw after the Flood Bylaw is updated. |
| | Policy/Program—Chelsea Hazard Mitigation Plan Adopted on 01/22/2009. | Volunteer time from Town officials; assistance from TRORC and Vermont DEMHS. Funding from FEMA; Vermont DEMHS; TRORC. | The 2015 Chelsea Local Hazard Mitigation Plan will replace the 2011 Plan. The 2015 LHMP has evolved from the 2009 Plan and has greatly expanded and improved upon it. Future iterations of the Town’s LHMP will be updated by the Town at least every five years. |
| Hazard Control & Protection of Critical Infrastructure & Facilities | Policy/Program—Chelsea Hazard Mitigation Plan Adopted on 01/20/2009 | Volunteer time from Town officials; assistance from TRORC and Vermont DEMHS. Funding from FEMA; Vermont DEMHS; TRORC. | The 2015 Chelsea Local Hazard Mitigation Plan will replace the 2009 Plan. The 2015 LHMP has evolved from the 2009 Plan and has greatly expanded and improved upon it. Future iterations of the Town’s LHMP will be updated by the Town at least every five years. |
| | Program—Town-wide Class III road inventory and capital budget planning Completed in 2012 | Staff time from the Town Road Foreman; and assistance from TRORC. Funding from VTran’s Better Backroad grant program. | The Town is currently using the road inventory to improve its class III roads, and seeking funding through the Better Backroads grant program for implementation projects. |
| | Program— Culvert inventory completed with TRORC assistance in 2006. | Staff time from Town Road Foreman; assistance from TRORC. Funding from VTrans; local personnel time and funding. | The Town is currently using the culvert inventory to further its culvert improvement program, and seeking funding through for implementation projects. However, a full update to the culvert inventory, with georeferenced culvert locations and a prioritized list of mitigation improvement projects, would be beneficial to the Town. |
| Education/ Public Outreach | Action— Designation of Red Cross Shelter Training in 2001. | Staff/volunteer time from the Town Clerk, Emergency Management Director/ Coordinator. Funding from American Red Cross. | This is a one-time action. However, the training was in 2001, and Town officials would like to complete a refresher training. |

| | Type of Existing Authority / Policy / Program / Action | Resources: Staffing & Funding | Ability to Expand/Improve on |
|--|--|--|--|
| | Ongoing Action— the Fire Department distributes fire prevention fliers at the school | Time from the Volunteer Fire Department and funding from Fire Department budget. | This is an ongoing action and there is no need to expand upon it at this time. |
| | Ongoing Action— the Town places emergency-related information in the Annual Report and on the Town’s website (when active) | Staff time from Town Office personnel and funding from the Town’s budget. | This is an ongoing action and there is no need to expand upon it at this time. |

E. Plan Maintenance

This Plan (the Chelsea Local Hazard Mitigation Plan) will be updated and evaluated, by discussing its effectiveness and making note to incorporate any necessary revisions in the update process, annually at an April Selectboard meeting, along with the review of their Local Emergency Operations Plan (LEOP). At this meeting, the Selectboard will monitor the implementation of the hazard mitigation strategies outlined in this Plan, by noting those that have been completed and any comments from local officials and the public will be incorporated when relevant. This meeting will constitute an opportunity for the public and other town officials to hear about the town's progress in implementing mitigation strategies and to give input on future activities and Plan revisions. The public will be given the opportunity to comment at this meeting.

Updates and evaluation of this Plan by the Selectboard and the local Emergency Coordinator/Director will also occur within three months after every federal disaster declaration directly impacting the Town of Chelsea. The Town will monitor, evaluate and update this Local Hazard Mitigation Plan at an April Selectboard meeting and after every federally declared disaster directly impacting the Town according to the graphic on page 43. The Town shall reference the Local Hazard Mitigation Plan when working on Town Plan amendments or changes to the Town's bylaws.

| |
|--|
| This section of the Plan satisfies 44 CFR and 201.6(c)(4)(i), 201.6(c)(4)(ii), and 201.6(c)(4)(iii). |
|--|

At least one year before the Plan expires, the update process will begin (through annual updates, monitoring of progress and evaluation that will occur at the April Selectboard meeting). For this next Plan update, the Two Rivers-Ottawaquechee Regional Commission (TRORC) will help with Plan updates if assistance is requested by the Town of Chelsea and if funding is available. If TRORC is unable to assist the Town, then Chelsea's Town Clerk, Administrative Assistant, or Selectboard will update the Plan, or the Selectboard may appoint a committee of interested citizens (including the current local Emergency Coordinator/Director) to draft changes. Ultimately, it will be the Town's responsibility to update their Local Hazard Mitigation Plan.

The process of evaluating and updating the plan will include continued public participation through public notices posted on the municipal website (if active), notice within the municipal building, and notice in The Herald of Randolph and the TRORC newsletter and blog, inviting the public to the scheduled Selectboard (or specially scheduled) meeting. The public will be given the opportunity to comment during this process. Additional stakeholders may be invited to the meeting these include: First Branch Ambulance, VTrans, and the Vermont Agency of Natural Resources (VT ANR). VT ANR may be invited because they can provide assistance with NFIP outreach activities in the community, models for stricter floodplain zoning regulations, delineation of fluvial erosion hazard areas, and other applicable initiatives. These efforts will be coordinated by the Town Clerk.

Updates will address changes in community mitigation strategies; new town bylaws, zoning and planning strategies if appropriate; progress on the implementation of initiatives and projects;

effectiveness of implemented projects or initiatives; and evaluation of challenges and opportunities including overall effectiveness of plan goals and actions in reducing vulnerabilities. If new actions are identified in the interim period, the plan can be amended without formal re-adoption during regularly scheduled Selectboard meetings.

Chelsea shall also incorporate mitigation planning into their long-term land use and development planning documents. The 2013 Vermont Legislature passed a law requiring all towns to incorporate flood resiliency elements into their town plans as of July 2014. To do so, flood hazard and fluvial erosion hazards will be identified, and strategies and recommendations will be provided to mitigate risks to public safety, critical infrastructure, historic structures and public investments. This Local Hazard Mitigation Plan will help the town to comply with the new community flood resiliency requirement for town plans adopted after July 2014.

It is also recommended that the process work both ways and the Town review and incorporate elements of the Local Hazard Mitigation Plan into updates for the municipal plan, zoning regulations, and flood hazard/ fluvial erosion hazards (FEH) bylaws. The incorporation of the goals and strategies listed in the Local Hazard Mitigation Plan into the municipal plan, zoning regulations and flood hazard/FEH bylaws will also be considered after declared or local disasters. The Town shall also consider reviewing any future TRORC planning documents for ideas on future mitigation projects and hazard areas.

V. Community Vulnerability by Hazard

A. Hazard Identification

Mitigation efforts must be grounded in the rational evaluation of hazards to the area and the risks these hazards pose. This is done through a process, which in essence asks and answers three basic questions:

- What bad things can happen, given the town’s vulnerabilities?
- How likely are they to occur?
- How bad could they be?

This process, which is laid out in the table below, is an attempt to inventory the known hazards, establish the likelihood of them occurring in the future, and then assess the community’s potential vulnerability to each. In performing this analysis, we are then able to prioritize actions that are designed to mitigate the effects of each of these disaster types and ultimately make Chelsea a safer place.

It is important that we learn from the past in order to avoid the same disasters and their outcomes. Disasters that have occurred within the Town of Chelsea, the larger region, and the State of Vermont can give us good information about what types of disasters we can expect in the future and what kinds of damage they might cause. However, while this historical data can inform our perspective of what might happen in the future, it is by no means a prophecy. While Chelsea might not have been impacted by a specific hazard in the past, this does not necessarily mean it will never be affected in the future. Indeed, the advance of climate change means that old weather patterns may not hold. For instance, in recent years, Vermonters have seen an increase in the number and severity of storms, especially rainfall events. Armed with historical data and a healthy respect for climate change and the unknown, we have tried our best to identify hazards and prepare for the future.

The following table reflects the hazards that we believe can be expected, or are at least possible, in the central Vermont area. We have considered factors such as frequency of occurrence, warning time and potential community impact to rank each and determine which hazards pose the greatest threats to life and property in Chelsea.¹ The worst threats (bolded in the table, below) are then followed-up with discussion and mitigation strategies throughout the rest of this Plan.² It should be noted that hazards assigned with the same “Hazard Score” are not in order and their placement in the table should not be assumed to reflect their potential to create hazards for the town.

¹ The ranking methodology used in this Plan (see Appendix A) is closely modeled on that which is used by the Vermont Division of Emergency Management & Homeland Security (VDEMHS). The only changes made were intended to reflect the more limited geographical scope of this analysis, which is focused on a small, rural town rather than the entire State of Vermont (which is the focus of VDEMHS).

² It’s important to note that those hazards which were not found to pose the greatest threats may still occur in Chelsea’s future; however, they are not the focus of this Plan.

| Hazard | Frequency of Occurrence | Warning Time | Potential Impact | Hazard Score |
|--|-------------------------|---------------------|-------------------------|--------------|
| <i>Ice Jams</i> | <i>Highly Likely</i> | <i>None-minimal</i> | <i>Moderate</i> | <i>11</i> |
| <i>Hazardous Material Spill</i> | <i>Likely</i> | <i>None-minimal</i> | <i>Major</i> | <i>11</i> |
| Structural Fire | Highly Likely | None-minimal | Minor | 10 |
| <i>Flash Flood/Flood/Fluvial Erosion</i> | <i>Likely</i> | <i>None-minimal</i> | <i>Minor - Moderate</i> | <i>9.5</i> |
| <i>Extreme Cold/Snow/Ice Storm</i> | <i>Highly Likely</i> | <i>12+ hours</i> | <i>Major</i> | <i>9</i> |
| Severe Weather (Thunderstorm, Lightning, High Wind, Hail, and Flooding) *Note: We have defined "Severe Weather" to include two or more of the above hazards | Likely | 3-6 hours | Minor | 8 |
| Landslides/Mudslides/Rockslides | Likely | None-minimal | Negligible | 8 |
| Earthquake | Likely | None-minimal | Negligible | 8 |
| Hail Storms | Occasionally | None-minimal | Negligible | 7 |
| Hurricanes/Tropical Storms | Occasionally | 12+ hours | Major | 7 |
| Water Supply Contamination | Occasionally | None-minimal | Negligible | 7 |
| Invasive Species/Infestation | Highly Likely | 12+ hours | Minor | 7 |
| Wildfire | Unlikely | None-minimal | Negligible | 6 |
| Tornado | Unlikely | None-minimal | Negligible | 6 |
| Drought | Occasionally | 12+ hours | Negligible | 4 |
| Extreme Heat | Unlikely | 12+ hours | Minor | 4 |
| Dam Failure (There are no high hazard dams in the Town of Chelsea or upstream, and the committee decided to remove this from the ranking activity.) | Unlikely | None | Negligible/Minor | N/A |

The Chelsea LHMP committee discussed the results of the hazard ranking activity and decided to focus on hazards that had the potential to impact the Town on a town-wide scale and/or had the potential to occur frequently. While the hazard of *Structure Fire* received a score of “10” in the hazard ranking/risk assessment activity, decided not to analyze it further in this Plan. After considerable discussion, it was decided that while structure fires were “highly likely” to occur, their potential impact would be “minor”

overall. High winds from severe summer weather occur with some frequency, but their impact on power loss and other damages is overshadowed by the impact of heavy wet snows in winter. Accordingly, severe summer weather is not profiled in the plan. The Chelsea LHMP committee decided to reserve the in-depth discussion of hazards in their Plan to those hazards which could have an impact on a greater scale. The committee also decided to remove *Severe Weather* from further analysis because, frequently, the most damage caused by severe weather is flooding and fluvial erosion, and the Town's vulnerability to flooding would be adequately addressed in the *Flash Flood/Flood/Fluvial Erosion* hazard profile. Refer to Appendix A for definitions of the hazard ranking terms used in the above chart.

After engaging in discussions using their best available knowledge, the Town of Chelsea identified the following "top hazards" (based on frequency of occurrence and potential impact) that they believe their community is most vulnerable to:

- Ice Jams
- Hazardous Material Spills
- Flash Flood/Flood/Fluvial Erosion
- Extreme Cold/Snow/Ice Storm

The impact of a loss of services is a common element of the hazards discussed in this Plan. These include not only large scale services such as the loss of transportation and communication ability, but also the loss of services more directly associated with basic needs such as water, food preparation, and heat. Loss of power for an extended period of time has the potential to greatly impact households who are entirely reliant on a functional power supply in order to prepare food, heat the household, and ensure that the water supply is available. While many residences in Chelsea utilize a variety of methods to ensure these basic needs, it is important to be aware that a number of households rely on electricity alone for all of these functions. In addition to the plans described in the Chelsea LEOP, it is important to reinforce the need for adequate generators in this Plan, so that the town is prepared to ameliorate the effects of a sustained power loss in Chelsea. Included in this would be an adequate supply of fuel for these generators.

A further focus that is important to address in this Plan includes the awareness of the population demographics of Chelsea. This includes a comprehensive idea regarding the number of individuals in the town who may require assistance in the event of a severe weather incident. Age and ability should be factors taken into account, and as discussed in the LEOP, there should be individuals responsible for creating and updating such a list, including members of the ambulance service, town offices, the health officer, and service officer.

Each of these "top hazards" will be discussed in the following sections. Within each section, previous occurrences of each hazard will be listed, including the County-wide FEMA Disaster Declarations (DR-#), where applicable. Hazards information was gathered from local sources (ex., town history book), the National Climatic Data Center's (NCDC's) Storm Events Database (1950-2012 and 2006-2012), the Spatial Hazard Events and Losses Database for the United States (SHELDUS) 1960-2012, and Special Reports produced by the National Weather Service in Burlington, Vermont. This section also includes a

description of each “top hazard” and a hazard matrix that will also include the following information (please see each hazard profile for a hazard-specific matrix):

| Hazard | Location | Vulnerability | Extent | Observed Impact | Likelihood/Probability |
|-----------------|--|--|---|--|---|
| Type of hazard. | General areas in community that may be vulnerable to the hazard. | Community structures affected by hazard. | The strength or magnitude and details of the most notable event(s). | Dollar value or percentage of damages. | <u>Occasionally</u> : 1–10% probability of occurrence per year, or at least one chance in next 100 years <u>Likely</u> : >10% but <100% probability per year, at least 1 chance in next 10 years <u>Highly Likely</u> : 100% probable in a year |

B. Hazard Profiles for Hazards Posing Highest Vulnerabilities

1. Ice Jams

Ice jam events are a serious concern throughout the State of Vermont, owing to the vast number of waterways within the state’s footprint. Such events can occur with little to no warning and quickly escalate into life-threatening situations, thereby increasing the impact of such events when they happen.

This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(2)(i), 201.6(c)(2)(ii), and 201.6(c)(2)(iii) for **Ice Jams**.

Ice jams are most prone to occur when heavy rains and rising temperatures cause rapid snow melt. Rivers, as a consequence, swell and ice layers begin to break, which then flow downstream and create obstructions around natural and man-made barriers. The majority of ice jams happen between the months of January and March, and the lead time for an ice jam or flow can range anywhere from a few hours to only one hour. The flows can cause water to rise by multiple feet per hour or even multiple feet within minutes. This can mean that there is insufficient time to prepare for rising water and ice levels.

While flooding from ice jams is not often major, it has the possibility to be catastrophic, particularly in places that have an historic pattern of growth along waterways. Ice jams can have a disastrous impact on waterways and surrounding structures and infrastructure, and they can cause severe erosional issues along with endangering local fish and wildlife populations. There are no known state buildings or facilities in Chelsea that may be immediately endangered by ice jams; however, basic infrastructure and private property are at high risk.

History of Occurrences:

| Date | Event | Location | Extent and Impacts |
|--|----------------------|------------------------------|---|
| 03/09/ 2008 | Ice Jam | White River, along Route 110 | VT State Highway Dept. reported an ice jam forming along the First Branch of the White River along Route 110 in the S. Royalton, Tunbridge, and Chelsea areas. No reports of flooding confirmed in this instance |
| 03/15/2007 | Ice Jam | White River, along Route 110 | VEM reported an ice jam formation in a large culvert/bridge on Rt. 110. Ultimately impacted 10 residences, 3 commercial buildings, and mostly caused basement flooding. Fire Dept. was on the scene to pump water out of buildings. Also caused some driveway/sidewalk erosion. |
| 03/21/2003 | Ice Jam | First Branch | According to the NWS, a breakup ice jam was reported on the First Branch of the White River just south of Chelsea. |
| 03/11/1992— 03/18/1992 (DR-938 VT) | Ice Jam, Flooding | White River | Approximately \$43,000 in damage to Town roads—Town Highways #1-11—caused by heavy rain, ice jams and flooding. |

South Village Bridge (B9) is vulnerable to ice jams because the level of the banks above the bridge are lower than at the bridge itself so their bank full capacity overflows before it gets to the bridge and ice jams at the box culvert (B10) over Jail Brook have caused water to overtop VT Route 100. However, no significant property damage has been reported as a result of these overflows.

In order to prepare for the possibility of ice jams, Town officials monitor the weather conditions that contribute to ice jams. Town officials are also continuing to look into how to lessen ice jam risk on Jail Brook and work with the State of Vermont to address sizing/positioning issues of state-owned structures.

| Hazard | Location | Vulnerability | Extent | Estimated/Potential Impact | Likelihood/Probability |
|----------|--|--|--|--|------------------------|
| Ice Jams | First Branch of the White River, other Town waterways. | All property and infrastructure adjacent to Town waterways | Incident-specific, depends upon how quickly ice breaks up, temperature combined with snow melt/runoff. | Dollar value or percentage of damages not known because of a lack of historical data. Minor damage is anticipated. | Highly Likely |

2. Hazardous Material Spill

Based on available VT Tier II data, there are four sites in town that have sufficient types and/or quantities of hazardous materials to require reporting.

Chelsea's Village is predominantly located along Vermont Routes 110 and 113 along the First Branch of the White River and Jail Brook. No major, functioning interstate highways or railways run through or near the Town. There are 30 critical

facilities in the Town of Chelsea, including four hazardous material storage facilities. There are 311 residential and 84 commercial, industrial or public buildings within 1,000 feet of a potential HAZMAT spill on major roads, such as Routes 110 and 113. This includes the Town Clerk's Office, the Town Hall, the Fire Department, the Chelsea Public School, the Orange County Sheriff, and the Orange County Superior Court. In the event that 5% of these structures were involved in a HAZMAT incident, the estimated damage would be \$3,105,777.

This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(2)(i), 201.6(c)(2)(ii), and 201.6(c)(2)(iii) for **Hazardous Materials Spill**.

It should also be noted that the State of Vermont currently has one fully-trained HAZMAT response team, with vehicles located in Essex Junction, Brandon, and Windsor. The HAZMAT crew chief is available within minutes of a call for the team but on-scene response would be a matter of hours. In the event of a serious accident in Town, there would be little time for evacuation and response would be difficult.

The following data was retrieved from the Vermont Department of Environmental Conservation's Spill List and by searching the archives of local newspapers. The table above is used to illustrate the ease with which trucks and the day-to-day activities in the Town have the potential to create a hazardous material spill and dangerous conditions for emergency responders and town residents.

History of Occurrences:

| Date | Event | Location | Extent and Impacts |
|------------|--------------------------|-----------------------------|---|
| 07/01/2011 | Diesel Spill | VT Route 110 | Delivery truck ruptured diesel tank upon entering driveway. Approximately 35 gallons of diesel released. 39 tons of contaminated soil was excavated and disposed of. |
| 01/29/2009 | Diesel Spill | Hayward Cross Road | An above-ground storage tank was hit during snow removal. Approximately 100 gallons of diesel released. |
| 07/15/2008 | Diesel and Milk Spill | East Randolph Road | Milk truck rolled over, released unknown quantity of milk and approximately 70 gallons of diesel fuel. Stream was located 300 feet away from location of spill. |
| 12/30/2008 | Propane Spill | Pepper Road | Propane truck rolled over. Spill was originally reported to be diesel, but was later determined to be liquid propane. Hazardous material was flowing into a tributary of the White River. |
| 12/15/2003 | Hazardous Material Spill | Route 113 and Densmore Road | Small release from dome covers-- two gallons of oil or diesel released. |
| 12/11/1995 | Hazardous Material Spill | Wellspring School | Approximately 400 gallons of fuel (specifics unknown) released due to a line blowing during delivery. |

While only a small number of large hazardous material spills have occurred in the Town of Chelsea, the potential for a major spill exists. Routes 110 and 113, particularly at their point of intersection, pose constant threats to the Town of Chelsea. These routes serve as the main thoroughfares for trucks and other motor vehicles transporting a wide-range of goods, including a wide range of hazardous materials, within the confines of Chelsea. A truck accident and a resulting hazardous material spill could be exceedingly disastrous for the Town and its residents as these two routes intersect in the Village. Route 110 in Chelsea, and in the Village, is located in close proximity to the First Branch of the White River, while Route 113 parallels Jail Brook. As a result, additional water contamination issues could be created if a hazardous material spill were to occur along either of these major routes.

A hazardous material spill in the Village, in addition to impacting residents, businesses and surface waters, may also impact the Village water supply. The Chelsea Water System serves a population less than 500 and 138 connections, including residential, a nursing home, a health care facility, two schools, two service stations and a number of businesses in the village. There have been instances of groundwater contamination in the past, with one source being particularly vulnerable to contamination due to its location in a shallow, unconfined aquifer. Contamination of the water sources is possible and discussed in the Chelsea Water System’s Source Protection Plan. The potential sources of contamination that are currently located in the Town and that are sedentary—the Chelsea Town Garage, two automotive repair shops, the Chelsea Town Hall and Common, and residential and commercial properties—are evaluated in the Source Protection Plan. Mobile sources of contamination are not addressed in the Source Protection Plan. The Source Protection Plan also includes a management plan for reducing the potential risk of contamination to the Chelsea Water System and a contingency plan for addressing the contamination of the water system.

In order to prepare for hazardous material spills in Chelsea, most members of the Chelsea Fire Department are trained to the HAZMAT Awareness level.

| Hazard | Location | Vulnerability | Extent | Impact | Likelihood/Probability |
|---------------------------|--|--|---|--|-------------------------------|
| Hazardous Materials Spill | Vermont Routes 110 and 113, and local roads. | Road infrastructure, nearby structures (Town Clerk’s Office, the Town Hall, the Fire Department, the Chelsea Public School, the Orange County Sheriff, and the Orange County Superior Court) and the First Branch of the White River and Jail Brook. | Initially, local impacts only; but depending on material spilled, extent of damage may spread (ex. into groundwater). | There are 311 residential and 84 commercial, industrial or public buildings within 1,000 feet of a potential HAZMAT spill on major roads (Vermont Routes 110 and 113). In the event that 5% of these structures were involved in a HAZMAT incident, the estimated damage would be \$3,105,777. | Likely |

3. Flash Flood/Flood/Fluvial Erosion

Flooding is one of the worst threats to Chelsea’s residents and infrastructure. Past instances of flooding in Chelsea have included rain and/or snowmelt events that cause flooding in the major rivers’ floodplains and intense rainstorms over a small area that cause localized flash-flooding. Both kinds of events can be worsened by the build-up of ice or debris, which can contribute to the failure of important infrastructure (such as culverts, bridges, and dams). Please see the separate Ice Jams hazard profile in this Plan for more specific information on ice jams in the Town of Chelsea.

This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(2)(i), 201.6(c)(2)(ii), and 201.6(c)(2)(iii) for **Flash Flood/Flood/Fluvial Erosion**.

The worst flood disaster to hit the Town of Chelsea, as well as the overarching region and the State of Vermont, occurred on November 3, 1927. This event was caused by up to 10 inches of heavy rain from the remnants of a tropical storm that fell on frozen ground. Eighty-four Vermonters, including the Lieutenant Governor, were killed. The flooding in the White River valley was particularly violent, with an estimated 120,000 to 140,000 cubic feet/second (cfs) flowing out of the White River at West Hartford, Vermont. Like many towns in the region, the Town of Chelsea received heavy precipitation, seeing roughly 7-8 inches of rainfall over the storm period.

A more recent flooding event that devastated the region and the state was the result of Tropical Storm Irene, which occurred on August 28, 2011. Record flooding was reported across the state and was responsible for several deaths, as well as hundreds of millions of dollars of home, road and infrastructure damage. Due to the strong winds, 50,000 Vermont residents were initially without power, and many did not have electricity restored to their homes and businesses for over a week. Despite the damage wrought, the flooding caused by Tropical Storm Irene is considered to be the second greatest natural disaster in 20th and 21st century Vermont, second only to the Flood of 1927.

The Town of Chelsea suffered some damage to property and infrastructure during Tropical Storm Irene, and no lives were lost. It is estimated that Tropical Storm Irene dropped 5-6 inches of rain over the Town of Chelsea in a very short span of time, some of the highest precipitation totals in Orange County (which averaged 5-7+ inches over its land area). A few of Chelsea’s roads were damaged by the storm, including parts of: Vermont Routes 110 and 113. The county-wide damage for Orange County totaled \$5 million. As luck would have it, the Town of Chelsea received little damage during Tropical Storm Irene (approximately \$6,500 according to FEMA’s PA database). However, this was likely due in large part to localized variability of rainfall and the path of the tropical storm than the Town’s invulnerability to flooding.

Unfortunately, flooding is very common across the region, with many events impacting the Town of Chelsea specifically, and Chelsea has been hit hard by other flooding events that pre-date Tropical Storm Irene. As such, flooding is one of the worst threats to Chelsea’s residents and infrastructure. The following list indicates the history of occurrence with regard to this hazard in Orange County (given the small population of Chelsea, town-specific data is limited); an asterisk “*” denotes the instances in which town-specific data is available, and federal disaster numbers are listed where appropriate.

History of Occurrences:

| Date | Event | Location | Extent and Impacts |
|--|----------------------------|----------------------|---|
| Period from 06/25/2013—07/11/2013 (DR-4140)* | Severe Storms and Flooding | County-; region-wide | Severe storms caused flooding throughout the region, causing damage to some infrastructure and facilities. No damage was claimed in the Town of Chelsea. |
| 08/28/2011 (DR-4022, TS Irene)* | Tropical Storm | Chelsea, County-wide | Widespread rainfall amounts of 3-5 inches occurred across Vermont with 5 to 7+ inches across much of southern, central Vermont. Devastating flash flooding occurred across much of central and southern Vermont mountain valleys with substantial and some record breaking flood stages on larger rivers. This flood event will likely rank second to the November 1927 flood in the scope of meteorological and hydrological conditions/impacts as well as loss of life (84 in 1927), but likely first in monetary damage ((approx. \$500. million statewide vs \$350. million (1927 in 2010 dollars)). There were nearly 2400 roads, 800 homes/businesses, 300 bridges and a half dozen railroad tracks destroyed or damaged from the flooding caused by Irene. According to spotter's reports, Chelsea received over 5" of rain. Routes 110 and 113 were damaged in Chelsea during Irene. \$6,540.17 in damage total for Chelsea according to FEMA's Public Assistance database (captures at least 70% of total damage)—three roads damaged and embankment damage. |
| 07/21/2010* | Flash Flooding | Chelsea; County-wide | Several storms strengthened into super cells that produced widespread wind damage to trees, power poles and structures as well as large hail in excess of golf ball size in diameter. Very heavy localized rains caused some temporary problems in many communities. In Chelsea, the second in a series of severe thunderstorms with torrential rains washed out several culverts, lower portions of Kennedy Drive and partial shoulder washouts along Upper Village road. Approximately \$100,000 in damage. |
| 08/21/2009* | Flash Flooding | Chelsea; County-wide | Thunderstorms produced torrential downpours in Chelsea. An official NWS Cooperative Observer reported a rainfall total of 2.79 inches, and other unofficial reports of 4 inches of rain within 2 hours were common. Flash Flooding resulted, and the town center of Chelsea was the hardest hit. The First Branch of the White left its banks and rushed down Route 110 in the middle of the Village. Route 113 east of Chelsea was also closed near Densmore road due to high water. Jail Brook forced the evacuation of the Orange Co. Sheriff office. Approx. \$280,000 in damage in Chelsea. |
| 08/07/2008* (Part of DR-1790 VT) | Flash Flooding | Chelsea; County-wide | Thunderstorms with heavy rainfall in a moist atmosphere moved through central and southern Vermont during the afternoon and evening hours. Flash flooding in Chelsea reported on Route 110 north of Chelsea Village. Approximately \$93,000 in damage to Town roads and embankment slides. |
| 01/1998* (DR-1201 VT) | Flooding | Chelsea; County-wide | Approximately \$20,000 in damage to Town roads. |
| 03/1992* (DR-938 VT) | Flooding | Chelsea; County-wide | Approximately \$43,000 in damage to Town roads—Town Highways #1-11—caused by heavy rain, ice jams and flooding. |
| 10/02/1989* (DR-840 VT) | Flooding | Chelsea, County-wide | Approximately \$33,000 in damage to Town roads. |
| 06/28/1973—06/30/1973 (DR-397) | Flooding | County-wide | Rainfall as much as 6 inches in 24 hours in some locations. State declared disaster area. Deaths, 3; damage, \$64 million. |

| Date | Event | Location | Extent and Impacts |
|---|----------|-----------------|--|
| 11/02/1927— 11/04/1927 ("Flood of 1927") | Flooding | County- wide | Considered to be one of VT's most devastating events, the flood took out 1285 bridges, miles of roads and railways, and countless homes and buildings. 84 people were killed, including Lt. Gov. S. Hollister Jackson. Rainfall totaled 4-9" statewide, following a month with 150% the normal amount of rain. |

The Town of Chelsea has standalone flood hazard regulations; the flood hazard regulations are not included within the Town's Zoning Ordinance and the applicant is required to receive a separate flood permit for any proposed development in the Chelsea Flood Hazard Overlay District. Development in the floodway is prohibited and restrictions are placed on development in the "areas of special flood hazard." The Chelsea Flood Hazard Area Bylaw has not been updated since 1990, but the Planning Commission intends to begin working on revisions in 2015.

There are 96 residential (including 83 single family dwellings, 5 multi-family dwellings, and 5 mobile homes) and 38 commercial/industrial/public structures in the 500-year floodplain. If all of the residential and commercial/industrial/public properties were damaged/destroyed in a severe flooding event, the damage would equal \$21,153,308. There are five critical facilities located in the 500-year floodplain, including the fire station, and three public water supply wells. The fire station is located in the Special Flood Hazard Area.

Across Vermont, most child and elder care facilities are not registered with the State. Most child day care in Chelsea is likely private in-home care, but there are also two licensed childcare providers and three registered childcare homes. Due to their location, two of these facilities are at moderate risk of flood damage. There is one elder care facility in the Town of Chelsea. This facility is at risk for flood damage. There is also senior housing facility that is accessed only by Maple Avenue and it would be isolated if the Maple Avenue Bridge was flooded/washed out. Finally, low income housing is not registered with the State. There are currently no mobile home parks located in Chelsea that are registered with the state, but there is a low income housing unit north of the village.

Recent studies have shown that the majority of flooding in Vermont is occurring along upland streams, as well as along road drainage systems that fail to convey the amount of water they are receiving. These areas are often not recognized as being flood prone, and property owners in these areas are not typically required to have flood insurance (DHCA, 1998). It should be noted that, while small, mountainous streams may not be mapped by FEMA in NFIP FIRMs (Flood Insurance Rate Maps), flooding along these streams is possible, and should be expected and planned for. Flash flooding in these reaches can be extremely erosive, causing damage to road infrastructure and to topographic features including stream beds and the sides of hills and mountains. The presence of undersized or blocked culverts can lead to further erosion and stream bank/mountainside undercutting. Furthermore, precipitation trend analysis suggests that intense, local storms are occurring more frequently. According to Vermont Agency of Natural Resources' river corridor³ maps issued in late 2014, there are 96

³ River corridors encompass an area around the present channel for fluvial erosion, channel evolution and down-valley meander migration are most likely to occur. River corridor widths are calculated to represent the narrowest band of valley bottom and riparian land to accommodate the least erosive channel and floodplain geometry (i.e.

structures in Chelsea that are located in the river corridor area, but *not* located in FEMA's Special Flood Hazard Area. This number includes 12 commercial structures, 1 government structure, 9 mobile homes, 9 multi-family dwellings, and 62 single family dwellings.

There are five highway bridges in Chelsea village that are undersized and contribute to the risk and severity of flooding. Three bridges are on VT Route 110, and are the responsibility of the state. These include the South Village Bridge (B9) over the First Branch, a box culvert (B10) over Jail Brook in the center of the village, and the North Village Bridge (B11) over the First Branch. The Vermont Agency of Transportation (VTTrans) plans to replace the deck of the South and North Village bridges in 2017. The replacement of the South Village Bridge (B9) will address hydraulics by making the beams on the new bridge shallower and changing the I-Beam construction to a different Beam construction so debris will have nothing to "catch" on. This will help minimize the potential for debris to cause inundation flooding issues upstream of the bridge. Additionally, the Town maintains the Maple Avenue Bridge (B45) over First Branch and the Court Street Bridge (B43) over Jail Brook. Bridge inspections rate the Court Street Bridge as Very Good, and the Maple Avenue Bridge as Fair-Satisfactory and there are no plans for their replacement. Debris jams on the South Village Bridge (B9) have caused flooding of adjacent downstream properties due to river bank overflow, and ice jams at the box culvert (B10) over Jail Brook have caused water to overtop VT Route 100. However, no significant property damage has been reported as a result of these overflows.

Chelsea has engaged in culvert upgrading since the 2009 Chelsea Annex was drafted, and the Town is continuously upgrading culverts to allow additional floodwaters to pass through the structure. Approximately 29 culverts have been upgraded town-wide since Tropical Storm Irene occurred in 2011. In addition, the Town's last comprehensive culvert inventory was completed in 2006, but a Class III road inventory was completed in 2013 which included upgrade projects.

Currently, a vacant building in the Village is being converted into an apartment that may be vulnerable to flooding, as much of the Village is vulnerable to flooding. However, the owner of the building plans to use the first floor for storage and the second floor for living space. There is one repetitive loss property, a residence, in the Town of Chelsea, with three claims, according to FEMA's NFIP list.

equilibrium conditions) that would be created and maintained naturally within a given valley setting. Vermont DEC Flood Hazard Area and River Corridor Protection Procedures; Draft October 06, 2014; pages 6-7.

| Hazard | Location | Vulnerability | Extent | Observed Impact | Likelihood/ Probability |
|---|---|---|---|---|----------------------------|
| Flash Flood/ Flood/ Fluvial Erosion | Chelsea Village; properties along the First Branch of the White River; Route 110 and 113. | Culverts, bridges, road infrastructure, public and private infrastructure. There are 96 residential (including 83 single family dwellings, 5 multi-family dwellings, and 5 mobile homes) and 38 commercial/industrial/public structures in the 500-year floodplain. If all of the residential and commercial/industrial/public properties were damaged/destroyed in a severe flooding event, the damage would equal \$21,153,308. | Tropical Storm Irene—4-7” across county (5+” in Chelsea). | \$6,540.17 in damage total for Chelsea according to FEMA’s Public Assistance database (captures at least 70% of total damage). The storms that occurred on 07/21/2010 and 08/21/2009, while exact figures are not clear, caused significantly more damage in Chelsea. | Likely |

4. Extreme Cold/Snow/Ice Storm

Winter storms are a regular occurrence in Vermont. However, severe winter storms can cause serious damage, including collapse of buildings due to overloading with snow or ice, brutal wind chills, downed trees and power lines, and stranded vehicles. People can be at risk of freezing in extended power outages if they lack wood heat or backup power, and individuals shoveling large accumulations of snow can also be at risk from frostbite, hypothermia, and heart attacks caused by cold and overexertion. While snow removal from the transportation system is standard fare in Vermont winters, extreme snow or ice can close rail and road systems, further jeopardizing any stranded persons that are in danger of freezing or needing medical assistance.

This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(2)(i), 201.6(c)(2)(ii), and 201.6(c)(2)(iii) for **Extreme Cold/Snow/Ice Storm**.

Severe winter storms include a blizzard on February 15-17 in 1958, which dumped over 30 inches and resulted in 26 deaths in New England. On December 26-27 in 1969, another blizzard left 18-36 inches of snow in northwestern Vermont and a whopping 45 inches in nearby Waitsfield. A string of storms in March 2001 hit the state, beginning with 15-30 inches on March 5-6th (later declared a federal disaster), 10-30 inches on the 22nd, and 10-20 inches on the 30th. Recent years have seen wet snow storms that have toppled trees and caused widespread power outages.

The worst winter storm in terms of damage to hit the state recently was not a snow storm, but an ice storm. In January of 1998, just the right combination of precipitation and temperature led to more than three inches of ice in spots, closing roads, downing power lines, and snapping thousands of trees. This storm was estimated as a 200-500 year event. Power was out up to 10 days in some areas, and 700,000 acres in of forest were damaged in Vermont. Amazingly, there were no fatalities in Vermont, unlike Quebec where 3 million people lost power and 28 were killed. The Town of Chelsea was impacted by this ice storm.

The most recent winter storm to hit Vermont began on December 9th, 2014 and lasted until December 11th, 2014. During this period of time, much of the state of Vermont was hit was heavy, wet snow that ranged from accumulation totals anywhere from a few inches to almost two feet along parts of the Green Mountains. The heavy, wet snow stuck to tree limbs and power lines which led to widespread power outages and significant damage to the state's power infrastructure. Over 100,000 customers were without power statewide, some for multiple days, and the damage to power infrastructure caused by the storm surpassed that which was incurred as a result of the 1998 ice storm or Tropical Storm Irene. In addition to damage to power infrastructure, towns hit by the storm had significant amounts of debris clean up and removal to contend with in the spring of 2015.

Over the past few winters, Chelsea has received numerous snow storms that have dropped significant amounts of snow over a day or two day period. However, the details of these events and the damage they caused are overshadowed by winter weather events of the past. This is not to say such extreme events will not repeat themselves. It should be assumed that extreme winter weather events will occur at some point in the future. The following table documents the occurrence of extreme cold/snow/ice storms in the Town of Chelsea and in Orange County.

History of Occurrences:

| Date | Event | Location | Extent and Impacts |
|--|-------------------------------|---------------------------------|--|
| Period from 12/09/2014—12/12/2014 (DR-4207 VT) | Snow/Winter Storm | Chelsea; County-; region-wide | A powerful prolonged heavy, wet snow event from December 9th through December 11 th . Snowfall totals ranged from a few inches to almost 2' near Warren, VT. The snow to liquid ratios ranged from 5-7" of snow to 1" of rain, which lead to the snow sticking to trees and power lines. Approximately 5-8" in Chelsea, with approximately \$3,000 in overtime for the road crew. |
| Period from 03/12/2014—03/13/2014 | Snow Storm | County-; region-wide | A major snowstorm with near blizzard conditions at times impacted portions of northern New York on March 12th and lingered into the morning hours of March 13 th . Numerous motor vehicle accidents, school and business closures resulted due to the storm on both March 12th and 13th. Snowfall totals across Orange county were generally 15 to 20+ inches. |
| Period from 02/13/2014—02/14/2014 | Winter Storm | County-; region-wide | A Winter storm, responsible for record ice and snow across the southeast United States on February 12th, moved and redeveloped off the southeast United states coastline on February 13th. Snowfall across Orange county was 12 to 18 inches. |
| 02/05/2014 | Snow Storm | County-; region-wide | Snowfall was at its peak during both the morning and afternoon/evening commutes causing hazardous travel. Eight to twelve inches of snow fell across Orange county. |
| Period from 12/29/2014—12/30/2014 | Winter Storm | County-; region-wide | A wet, heavy 5 to 10 inches of snow fell across Orange county. |
| Period from 12/14/2014—12/15/2014 | Snow Storm | County-; region-wide | The first widespread snowfall of the 2013-14 winter season. The typical impacts associated with this storm were the numerous vehicle accidents, especially being the first storm of the season. A widespread 10 to 15 inches of snow fell across Orange county. |
| Period from 02/27/2008—02/28/2008 | Snow Storm | Chelsea; County-wide; statewide | Storm totals ranged from 3 to 6 inches in the St. Lawrence River Valley, 5 to 10 inches across northern New York and 6 to 12 inches across Vermont with the heaviest along those favored northwest slopes of the northern Green Mountains as well as some higher elevations in south central Vermont. 10" reported in Chelsea. |
| 02/01/2008 | "Mixed" Winter Storm | Chelsea; County-wide; statewide | Snowfall reports were generally 2 to 5 inches with localized amounts up to 7 inches. In addition, one quarter to one half of ice accumulation (accretion) occurred as well. Finally, strong south to southeast winds around 3000 feet and above transferred to a few hilltops along the western slopes and produced wind gusts in excess of 50 mph. Numerous reports of motor vehicle accidents throughout the region. 2" reported in Chelsea. |
| 12/31/2007 | Snow Storm | Chelsea; County-wide; statewide | Snow began to overspread New York and Vermont around Midnight Monday (31st) with snowfall rates rapidly increasing to near an inch per hour at times, but this was a quick-hit storm with steady accumulating snowfall ending across much of Vermont and northern New York by mid-morning. Contributed to Burlington's 4 th snowiest December. 5.5" reported in Chelsea. |
| Period from 12/16/2007—12/17/2007 | Snow Storm with Freezing Rain | Chelsea; County-wide; statewide | Snowfall totals from this pre-winter storm ranged from 6 to 12 inches in southern Vermont, where a prolonged period of sleet and/or freezing rain occurred, to a rather uniform 12 to 18 inches across the rest of Vermont and northern New York. 10" reported in Chelsea. |
| Period from 04/15/2007—04/16/2007 | Winter/Snow Storm | Chelsea; County-wide; statewide | Snowfall totals were generally 4 to 7 inches in the valleys with locally up to a foot along the east-facing slopes of the higher elevations of the Green mountains. This was a heavy, wet snow that caused numerous power outages, as well as extremely slick and treacherous roads that resulted in numerous vehicle accidents. 6" reported in Chelsea. |

| Date | Event | Location | Extent and Impacts |
|-----------------------------------|------------|---------------------------------|--|
| Period from 04/04/2007—04/05/2007 | Snow Storm | Chelsea; County-wide; statewide | Rain mixed with and then changed to sleet and snow across Vermont during the afternoon of the 4th and continued through midday on the 5th. Combined snow and sleet accumulations ranged from 4 to 12 inches with the higher amounts in the higher elevations. This caused some hazardous travel as well as some scattered power outages due to fallen tree limbs and branches. 8” reported in Chelsea. |
| 03/17/2007 | Snow Storm | Chelsea; County-wide; statewide | Heavy snow started in southern Vermont by late evening and reached the rest of the region by Midnight Saturday (17th) with snowfall rates of 1 to 2 inches per hour at times. 10” reported in Chelsea. |
| 02/14/2007 | Snow Storm | Chelsea; County-wide; statewide | 19.0” reported in Chelsea. |
| 12/15/2003 | Snow Storm | Chelsea; County-wide; statewide | Snow developed Sunday afternoon, December 14th, and became heavy Sunday night into Monday morning, December 15th. 11” reported in Chelsea. |
| 01/03/2003 | Snow Storm | Chelsea; County-; state-wide | A storm system over Virginia Friday morning (1/3/03) moved to coastal New Jersey Friday evening and then to near Cape Cod Saturday morning (1/4/03). Snow spread across the area late Friday afternoon, and became heavy at times late Friday night into Saturday morning. 11.5’ reported in Chelsea. |

The Town of Chelsea is no stranger to winter weather and the hazards that it brings. Depending on the event, though especially with heavy, wet snow or ice, and sometimes in combination with high winds, electricity may be knocked out for a few hours or days. The utility company currently serving the Town of Chelsea, Green Mountain Power and Washington Electric Coop, have followed a regular tree-trimming schedule. Chelsea town officials believe this is satisfactory to mitigate damage and the power outages caused by downed trees and tree limbs during a heavy, wet snow or ice event. In the event of an extended power outage, the Town would open its emergency shelter. More often, those without power would seek accommodations with friends or relatives.

Another complication of falling utility poles is the potential loss of the telephone line. If the landlines are impacted, the possibility presents itself that there is no reliable means of communication in the affected parts of Town as cell reception can be spotty. If the power is out, an internet connection is unlikely to be available.

Heavy, wet snow or large quantities of snow may also leave structures vulnerable to roof collapse. Roof collapse occurs when the structural components of a roof can no longer hold the weight of snow. Flat roofs are most vulnerable to collapse because they do not drain well and the snow on the roof soaks up water like a sponge, increasing the weight that the roof must bear. More common, it seems, is the collapse of barns commonly used for livestock sheltering and other agricultural purposes. Unfortunately, livestock in the barn are often killed, and equipment stored in the barn may be damaged or ruined. It is difficult to determine whether a residential structure or a barn would be rebuilt after a roof collapse because the decision to rebuild would likely depend on the extent of damage. The collapse of a barn roof is likely to be a total loss, and the collapse of a house roof may be a 50% loss.

In general, winter weather is most hazardous to travelers. Icy and snow-covered roads present multiple examples of dangerous driving conditions and situations. In Chelsea, the mountainous terrain, steep slopes, and remoteness of some roads further complicate travel. The Town relies on Travel Advisories issued by the State of Vermont Department of Emergency Management Homeland Security and the National Weather Service to alert residents of dangerous travel weather. Despite this, it is difficult to prohibit people from driving during winter weather events. As a result, emergency services personnel must always be prepared to provide assistance to stranded drivers or to those who have been in an accident.

| Hazard | Location | Vulnerability | Extent | Observed Impact | Likelihood/Probability |
|-------------------------------------|-----------------|---|---|---|-------------------------------|
| Extreme Cold/ Snow/ Ice Storm | Town wide | The entire Town is vulnerable, including road infrastructure, town and privately owned buildings, utility infrastructure. | Snow fall has varied, from a few inches to over a foot or more. Heavy snow and wind downed trees and power lines. Snow/ice contributed to hazardous driving conditions. | From DR-4207; approximately \$3,000 in overtime costs for the Town of Chelsea, with potential additional costs for debris removal. For car crashes due to poor driving conditions: minimal damage to vehicle to totaled vehicle. Health impacts could vary significantly. | Highly likely |

C. Vulnerability Summary

As a result of the above profile of hazards, the town believes the following vulnerabilities to be of highest concern because of their potentially severe consequences and potential likelihood:

- **Ice Jams:** A major jam on Jail Brook could be catastrophic to the village. Inadequate bridge design contributes to the threat;
- **Hazardous Materials:** A truck traffic accident on Routes 110 and 113, especially at their intersection, could cause a major spill. This could threaten the village water supply and contaminate the White River and/or Jail Brook;
- **Flooding:** One of the worst threats, flooding impacts roads and the village, especially facilities for children, elders, and low income housing. Under-sized bridges and culverts factor into the threat, as do outdated flood hazard mapping. Furthermore, flood hazard mapping (Special Flood Hazard Areas) does not adequately encompass all areas that could be flooded, thus potentially making some residents too complacent in regard to the threat. In addition, the town's current flood bylaw does not address fluvial erosion that is a threat at higher elevations, especially along roadways. In addition, the fire station and three wells in the floodplain could be impaired by a major flood event.
- **Severe Winter Weather:** Another threat to the town is from heavy snow loads that can down power lines, communications, and collapse roofs. Prolonged power outages can interrupt public and business services.

VI. Mitigation

A. Mitigation Goals

- To reduce injury and losses, including loss of life and to infrastructure, structures and businesses, from the natural hazard of ice jams.
- To reduce injury and losses, including loss of life and to infrastructure, structures and businesses, from the hazard of hazardous material spill(s).
- To reduce injury and losses, including loss of life and to infrastructure, structures and businesses, from the natural hazard of flash flooding, flooding and fluvial erosion
- To reduce injury and losses, including loss of life and to infrastructure, structures and businesses, from the natural hazard of extreme cold/snow/ice storms.

B. Excerpted Town Plan Goals & Objectives Supporting Local Hazard Mitigation

- It is the policy of the Town to provide for reasonable zoning standards enabling home occupations and home businesses to be developed or to continue (page 16).
- It is the policy of the town to work with the Two Rivers-Ottawaquechee Regional Commission to properly plan for hazard events (page 47).
- The Selectboard should adopt a Hazard Mitigation Plan with assistance from the Two Rivers-Ottawaquechee Regional Commission (page 47).
- It is the policy of the Town that preservation of the natural state of streams should be encouraged by protection of mapped wetlands and maintenance of existing stream bank and buffer vegetation including trees (page 49).
- To enhance and maintain use of flood hazard areas as open space, greenways, non-commercial recreation and/or agricultural land (page 55).
- It is the policy of the Town that new or replacement utilities or facilities serving existing development (e.g. water lines, electrical service, waste disposal systems, roads, and bridges) may be located within these areas only when off-site options are not feasible and provided that these utilities or facilities meet the flood proofing requirements in Chelsea's Unified Bylaw (page 55).
- To protect the citizens of Chelsea by using good planning practices within designated Flood Hazard Areas and Fluvial Erosion Hazard Areas (page 71).
- To provide and maintain a safe, energy efficient, and cost effective transportation system integrating all modes of travel (auto, pedestrian, bicycle, and mass transit) and meeting the needs of the public in a manner consistent with the other goals, policies and recommendations of this Town Plan (page 79).

The Chelsea Municipal Plan was updated and adopted on 09/26/2014, and has a 5 year lifespan.

B. Hazard Mitigation Strategies: Programs, Projects & Activities

Vermont’s Division of Emergency Management & Homeland Security encourages a collaborative approach to achieving mitigation at the local level through partnerships with Vermont Agency of Natural Resources, VTrans, Vermont Agency of Commerce and Community Development, Regional Planning Commissions, FEMA Region 1 and others. That said, these agencies and organizations can work together to provide assistance and resources to towns interested in pursuing hazard mitigation projects.

This section of the Plan satisfies the requirements of 44 CFR 201.6(c)(3)(ii), 201.6(c)(3)(iii) and 201.6(c)(3)(iv).

With each mitigation strategy, general details about the following are provided: local leadership, possible resources, implementation tools, and prioritization. The prioritization category is based upon the economic impact of the action, Chelsea’s need to address the issue, the cost of implementing the strategy, and the availability of potential funding. The cost of the strategy was evaluated in relation to its benefit as outlined in the STAPLEE guidelines (includes economic, political, environmental, technical, social, administrative, and legal criteria). A range of mitigation strategies was vetted by the committee, and those that were determined to be feasible are included in the table below.

Strategies given a “High” prioritization indicate they are either critical or potential funding is readily available, and should have a timeframe of implementation of less than two years. A “Medium” prioritization indicates that a strategy is less critical or the potential funding is not readily available, and has a timeframe for implementation of more than two years but less than four. A “Low” prioritization indicates that the timeframe for implementation of the action, given the action’s cost, availability of funding, and the community’s need to address the issue, is more than four years.

The Town of Chelsea understands that, in order to apply for FEMA funding for mitigation projects, a project must meet more formal FEMA benefit cost criteria. A project seeking FEMA funds would undergo a full benefit-cost assessment in the FEMA-approved format. The Town must have a FEMA-approved Local Hazard Mitigation Plan as well.

The following strategies will be incorporated into the Town of Chelsea’s long-term land use and development planning documents. In addition, the Town will review and incorporate elements of this Local Hazard Mitigation Plan into updates for the municipal plan, zoning regulations, and flood hazard/ fluvial erosion hazards (FEH) bylaws. The incorporation of the goals and strategies listed in the Local Hazard Mitigation Plan into the municipal plan, zoning regulations and flood hazard/FEH bylaws will also be considered after declared or local disasters. The Town shall also consider reviewing any future TRORC planning documents for ideas on future mitigation projects and hazard areas.

| Hazard(s) Mitigated | Mitigation and Preparedness Actions | Local Leadership | Prioritization (Mitigation Plan Status)** | Possible Resources* | Time Frame |
|---|---|---|--|--|---|
| All Hazards | <i>Ensure that Chelsea's Local Emergency Operations Plan (LEOP) is kept up-to-date and identifies vulnerable areas and references this Plan.</i> | Emergency Management Coordinator/ Selectboard | High | Vermont Division of Emergency Management and Homeland Security (VT DEMHS); TRORC; local resources | 1 year from date of Plan Approval |
| | <i>Develop a methodology to consistently document infrastructure damage after weather events.</i> | Road Foreman/ Town Administrator | Medium | TRORC; local resources; National Weather Service; VTrans | 2 years from date of Plan Approval |
| | <i>Provide information at Town Meeting about VT Alert and encourage residents to sign up.</i> | Town Clerk | High | Vermont Division of Emergency Management and Homeland Security (VT DEMHS); VT Alert; local resources | 1 year from date of Plan Approval |
| Hazardous Material Spill | <i>Ensure that all emergency response and management personnel continue to receive HAZMAT Awareness training at a minimum.</i> | Chelsea Fire Department | High | Vermont Fire Academy; Chelsea Fire Department resources | 1 year from date of Plan Approval |
| | <i>Continuously stock gear to help contain small spills when they occur (booms, absorbent materials, etc.).</i> | Chelsea Fire Department | High | Chelsea Fire Department resources | 1 year from date of Plan Approval/as needed |
| Ice Jams// Flash Flood/Flood/ Fluvial Erosion | <i>Upgrade the South Village Bridge (B9) to improve the structure's ability to pass ice and flood waters. This is a state-owned structure. (Mitigation)</i> | Selectboard | High (new) | VTrans; local resources | January to December 2017 |
| | <i>Update box culvert (B10) through which Jail Brook flows to improve the structure's ability to pass ice and flood waters. This is a state-owned structure. (Mitigation)</i> | Selectboard | High (3 rd and 4 th priority of 7 natural hazard mitigation projects in 2009 Plan) | VTrans; local resources | 5 years from date of Plan Approval |

| Hazard(s) Mitigated | Mitigation and Preparedness Actions | Local Leadership | Prioritization (Mitigation Plan Status)** | Possible Resources* | Time Frame |
|---|--|------------------------------|--|---|--------------------------------------|
| Flash Flood/ Flood/ Fluvial Erosion | <i>Develop a schedule and capital budgeting program to replace undersized culverts. (Mitigation)</i> | Selectboard/ Road Foreman | High (1 st priority of 7 natural hazard mitigation projects in 2009 Plan) | TRORC; local resources | 1-2 years from date of Plan Approval |
| | <i>Upgrade the North Village Bridge (B11), which is undersized and contributes to the risk and severity of flooding. This is a state-owned structure. (Mitigation)</i> | Selectboard | High (new) | VTrans; local resources | January to December 2017 |
| | <i>Upgrade the town-owned Court Street Bridge, as it is undersized. (Mitigation)</i> | Selectboard | Low (new) | VTrans Structures grants; FEMA HMGP/PDM grants; local resources | 5 years from date of Plan Approval |
| | <i>Upgrade the town-owned Maple Avenue Bridge, as it is undersized. (Mitigation)</i> | Selectboard | Low(5 th priority of 7 natural hazard mitigation projects in 2009 Plan) | VTrans Structures grants; FEMA HMGP/PDM grants; local resources | 5 years from date of Plan Approval |
| | <i>Complete an up-to-date geo-referenced culvert inventory, which will identify priority upgrade projects. (Mitigation)</i> | Road Foreman/ Selectboard | Medium (1 st priority of 7 natural hazard mitigation projects in 2009 Plan) | Better Backroads grants; TRORC; local resources | 2-3 years from date of Plan Approval |
| | <i>Update Chelsea's flood hazard area regulations to ensure that they are compliant and consistent with state and federal guidelines and statutes. (Mitigation)</i> | Planning Commission | High (2 nd priority of 7 natural hazard mitigation projects in 2009 Plan) | Municipal Planning Grant; TRORC; local resources | 1 year from date of Plan Approval |

| Hazard(s) Mitigated | Mitigation and Preparedness Actions | Local Leadership | Prioritization (Mitigation Plan Status)** | Possible Resources* | Time Frame |
|---|---|--|--|---|--------------------------------------|
| Flash Flood/ Flood/ Fluvial Erosion | <i>Support town or conservation organization assistance to landowner(s) of property(ies) in Chelsea on the NFIP's repetitive and severe repetitive loss list to reduce flood damages, through elevation, floodproofing, acquisition or relocation, or an infrastructure project if one is found to address the source of flooding. (Mitigation)</i> | Selectboard | Low (new) | FEMA HMGP/PDM grants; local resources | 5 years from date of Plan Approval |
| | <i>Support projects to protect or restore, including riparian planting, strategic areas of floodplain to provide areas for flood storage, which will help alleviate peak flood flows. (Mitigation)</i> | Selectboard/ Planning Commission | Medium (new) | White River Partnership; Chelsea Fish and Game Club; local resources | 1-5 years from date of Plan Approval |
| | <i>Elevate property located at 285 Vermont Route 110. (Mitigation)</i> | Selectboard/ Town Clerk | Medium-High (new) | FEMA HMGP grants; Vermont DEMHS; TRORC; local resources | 1-3 years from date of Plan Approval |
| | <i>Elevation property located at 307 Vermont Route 110. (Mitigation)</i> | Selectboard/ Town Clerk | Medium-High (new) | FEMA HMGP grants; Vermont DEMHS; TRORC; local resources | 1-3 years from date of Plan Approval |
| | <i>Acquire/buyout property located at 12 Maple Avenue. (Mitigation)</i> | Selectboard/ Town Clerk | Medium-High (new) | FEMA HMGP grants; Vermont DEMHS; TRORC; local resources | 1-3 years from date of Plan Approval |
| | <i>Acquire/buyout property located at 266 Vermont Route 110. (Mitigation)</i> | Selectboard/ Town Clerk | Medium-High (new) | FEMA HMGP grants; Vermont DEMHS; TRORC; local resources | 1-3 years from date of Plan Approval |
| | <i>Acquire/buyout property located at 349 Vermont Route 110. (Mitigation)</i> | Selectboard/ Town Clerk | Medium-High (new) | FEMA HMGP grants; Vermont DEMHS; TRORC; local resources | 1-3 years from date of Plan Approval |
| | <i>Acquire/buyout property located at 361 Vermont Route 110. (Mitigation)</i> | Selectboard/ Town Clerk | Medium-High (new) | FEMA HMGP grants; Vermont DEMHS; TRORC; local resources | 1-3 years from date of Plan Approval |

| Hazard(s) Mitigated | Mitigation and Preparedness Actions | Local Leadership | Prioritization (Mitigation Plan Status)** | Possible Resources* | Time Frame |
|---|---|--|--|---|--------------------------------------|
| Flash Flood/ Flood/ Fluvial Erosion | <i>Acquire/buyout the Town Garage located 287 Vermont Route 110. (Mitigation)</i> | Selectboard/ Town Clerk | Medium-High (new) | FEMA HMGP grants; Vermont DEMHS; TRORC; local resources | 1-3 years from date of Plan Approval |
| Extreme Cold/Snow/ Ice Storm | <i>Develop a program to plan for, budget and maintain roads for safe winter travel. (Mitigation)</i> | Selectboard | High (new) | Local resources | 1 year from date of Plan Approval |
| | <i>Develop a periodic program to clear tree limbs and maintain town road rights-of-way, and work with local utilities to ensure that utility corridors are cleared and maintained. (Mitigation)</i> | Selectboard | High (new) | Green Mountain Power; Washington Electric; local resources | 1 year from date of Plan Approval |
| | <i>Identify populations that are vulnerable to extreme cold and create a plan to assist them, if necessary, in the event that it occurs.</i> | Chelsea Fire Department/ First Branch Ambulance | High | Chelsea Fire Department resources; First Branch Ambulance resources | 1 year from date of Plan Approval |

*Depending on the mitigation action, local resources may include the following: personnel/staff time; volunteer time; budget line items, donations, cash from capital campaigns, among others.

** The 2009 project to stabilize stream banks along Corinth Road is only partially complete (priority #6 in former plan). The town has installed a box culvert but has no current plan to stabilize streambanks further at this time, being a lesser priority to the current slate of projects.

CERTIFICATE OF ADOPTION
November 3, 2015
TOWN OF Chelsea, Vermont Selectboard
A RESOLUTION ADOPTING THE Chelsea, VT 2015 Local Hazard Mitigation Plan

WHEREAS, the Town of Chelsea has historically experienced severe damage from natural hazards and it continues to be vulnerable to the effects of the hazards profiled in the **Chelsea, Vermont 2015 Local Hazard Mitigation Plan**, which result in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Town of Chelsea has developed and received conditional approval from the Federal Emergency Management Agency (FEMA) for its **Chelsea, Vermont 2015 Local Hazard Mitigation Plan (Plan)** under the requirements of 44 CFR 201.6; and

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

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

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

RESOLVED by Town of Chelsea Selectboard:

1. The **Chelsea, Vermont 2015 Local Hazard Mitigation Plan** is hereby adopted as an official plan of the Town of Chelsea;
2. The respective officials identified in the mitigation action plan of the **Plan** are hereby directed to pursue implementation of the recommended actions assigned to them;
3. Future revisions and **Plan** maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as part of this resolution for a period of five (5) years from the date of this resolution; and
4. An annual report on the process of the implementation elements of the Plan will be presented to the Selectboard by the Emergency Management Director or Coordinator.

IN WITNESS WHEREOF, the undersigned have affixed their signature and the corporate seal of the Town of Chelsea this 3rd day of November, 2015.

Selectboard Chair

Selectboard Member

ATTEST

Town Clerk

Appendices

Appendix A: Hazard Ranking Methodology

| <u>Frequency of Occurrence</u> Probability | <u>Warning Time</u> Amount of time generally given to alert people to hazard | <u>Potential Impact</u> Note: Severity of damage and disruption generally correlates with magnitude (extent) of event |
|--|--|---|
| <p>1 = <i>Unlikely</i> <1% probability of occurrence in the next 100 years</p> <p>2 = <i>Occasionally</i> 1–10% probability of occurrence per year, or at least one chance in next 100 years</p> <p>3 = <i>Likely</i> >10% but <100% probability per year, at least 1 chance in next 10 years</p> <p>4 = <i>Highly Likely</i> 100% probable in a year</p> | <p>1 = More than 12 hours</p> <p>2 = 6–12 hours</p> <p>3 = 3–6 hours</p> <p>4 = None–Minimal</p> | <p>1 = <i>Negligible</i> Isolated occurrences of minor property damage, minor disruption of critical facilities and infrastructure, and potential for minor injuries</p> <p>2 = <i>Minor</i> Isolated occurrences of moderate to severe property damage, brief disruption of critical facilities and infrastructure, and potential for injuries</p> <p>3 = <i>Moderate</i> Severe property damage on a neighborhood scale, temporary shutdown of critical facilities, and/or injuries or fatalities</p> <p>4 = <i>Major</i> Severe property damage on a metropolitan or regional scale, shutdown of critical facilities, and/or multiple injuries or fatalities</p> |

Appendix B: Critical Stream Crossings

Critical crossings group one includes stream crossing structures on town highways that cross third order streams or larger. Headwater streams generally include first through third order. Third order was included as these headwater streams will have larger drainage areas and may have larger structures that are more difficult to replace and have a larger impact on the road network. Most of these are bridges.

| road_descr | town_highw | local_id | latitude | longitude | culvert_ty | culvert_ma | height | width | length |
|------------------|------------|----------|----------------|-----------------|------------|--------------------|--------|-------|--------|
| BOBBINSHOP RD | 4 | 29 | 44.00608791530 | -72.46852077170 | Round | Concrete Sectional | 36 | 36 | 50 |
| CORINTH RD | 22 | 6 | 44.01440350790 | -72.42468039210 | Round | Steel Corrugated | 48 | 48 | 30 |
| BEACON HL | 43 | 1 | 43.99473937150 | -72.48811824780 | Round | Steel Corrugated | 144 | 144 | 60 |
| BROOK RD | 3 | 1 | 43.97122945330 | -72.47989557890 | Round | Steel Corrugated | 120 | 120 | 50 |
| BROOK RD | 3 | 39 | 44.00249358740 | -72.49075485670 | Round | Steel Corrugated | 72 | 72 | 40 |
| BROOK RD | 3 | 30 | 43.99616263910 | -72.48879831590 | Round | Steel Corrugated | 120 | 120 | 30 |
| BLACKHAWK RD | 26 | 2 | 43.99421675120 | -72.42807740770 | Round | Steel Corrugated | 36 | 36 | 25 |
| HALL RD | 58 | 1 | 43.97111273370 | -72.43251805980 | Round | Steel Corrugated | 144 | 144 | 30 |
| CORINTH RD | 22 | 13 | 44.01256682760 | -72.41725302580 | Round | Steel Corrugated | 48 | 48 | 35 |
| E RANDOLPH RD | 1 | 4 | 43.96330444780 | -72.47223172040 | Round | Steel Corrugated | 120 | 120 | 80 |
| E RANDOLPH RD | 1 | 13 | 43.97137863290 | -72.48234686790 | Round | Steel Corrugated | 72 | 72 | 80 |
| WASHINGTON TPKE | 15 | 9 | 44.01665935190 | -72.44146845110 | Round | Pipe, Metal | 48 | 48 | 25 |
| UPPER VILLAGE RD | 2 | 13 | 44.00711702220 | -72.43766157620 | Round | Steel Corrugated | 144 | 144 | 60 |
| DOYLE RD | 15 | 3 | 44.03158371540 | -72.45605667240 | Round | Pipe, Metal | 48 | 48 | 20 |
| HOLT HILL RD | 70 | 5 | 43.94960092440 | -72.44505661030 | Round | Steel Corrugated | 36 | 36 | 15 |

Critical crossings group two includes significantly undersized structures, usually culverts, were identified from the ANR-DEC stream geomorphic assessment survey with openness ratios less than 50%. This measure refers to when structure's width is less than half of the stream bankfull width. Several of these structures may have been damaged during TS Irene or other events and may have been replaced. The town, at some point, should look at these sites and assess their status and need for repair/upgrades.

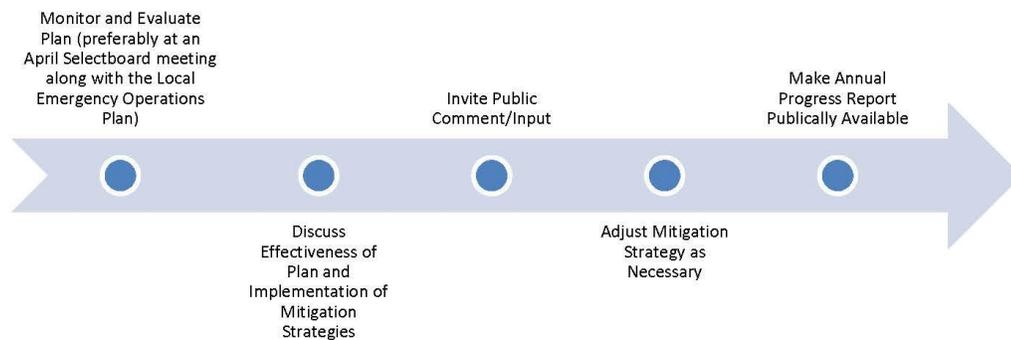
| Latitude | Longitude | CATEGORY | RDFLNAME | GNIS_NAME | ChannelWid | CUL_LEN | CUL_HEIGHT | CUL_WIDTH | GROUP_TWO |
|-----------|------------|----------|-----------------|---------------------------|------------|-----------|------------|-----------|-----------|
| 43.990310 | -72.463250 | C | BEACON HILL | | 6.000000 | 31.000000 | 1.500000 | 1.583333 | Y |
| 44.049820 | -72.517620 | C | WILLIAMSTOWN RD | Tributary to First Branch | 10.000000 | 53.000000 | 1.916667 | 3.000000 | Y |
| 44.024850 | -72.494130 | C | DODGE RD | | 5.000000 | 33.000000 | 1.916667 | 2.083333 | Y |
| 44.037830 | -72.481650 | C | EDWARDS RD | Tributary to First Branch | 6.000000 | 44.000000 | 2.500000 | 2.500000 | Y |
| 44.009000 | -72.489750 | C | PENT RD | | 6.000000 | 37.000000 | 2.666667 | 2.000000 | Y |
| 43.988720 | -72.462190 | C | BEACON HILL | | 3.000000 | 25.000000 | 2.000000 | 2.000000 | Y |
| 44.003810 | -72.445970 | C | BARAW HILL RD | Tributary to First Branch | 6.000000 | 33.000000 | 2.833333 | 3.000000 | Y |
| 43.986160 | -72.462520 | C | BEACON HILL | | 6.000000 | 29.000000 | 3.083333 | 2.666667 | Y |
| 43.963230 | -72.470850 | C | E RANDOLPH RD | | 3.000000 | 36.000000 | 3.666667 | 3.500000 | Y |
| 43.994160 | -72.428070 | C | BLACKHAWK RD | | 11.000000 | 29.000000 | 2.916667 | 4.000000 | Y |
| 44.012650 | -72.506670 | C | BROOK RD | | 8.000000 | 30.000000 | 3.666667 | 3.333333 | Y |
| 44.033170 | -72.454960 | C | DOYLE RD | Hart Hollow | 8.000000 | 24.000000 | 3.000000 | 3.583333 | Y |
| 43.971860 | -72.501390 | C | E RANDOLPH RD | | 13.000000 | 76.000000 | 5.833333 | 6.000000 | Y |
| 44.007330 | -72.499330 | C | BROOK RD | | 4.000000 | 51.000000 | 4.166667 | 5.833333 | Y |
| 44.004480 | -72.494680 | C | BROOK RD | Cram Brook | 17.000000 | 50.000000 | 4.000000 | 6.000000 | Y |

Appendix C: Five-Year Review and Maintenance Plan

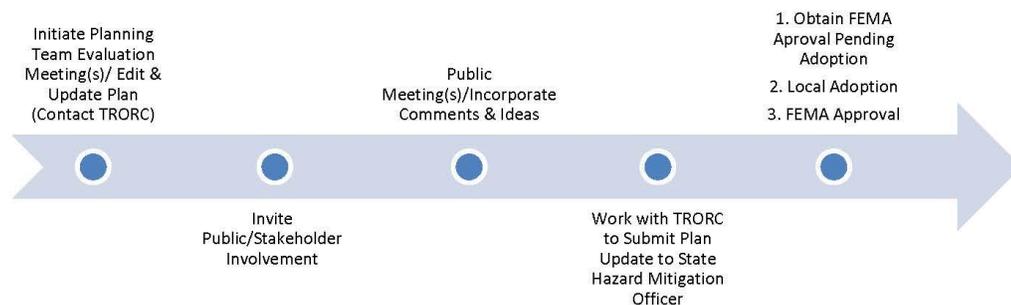
Five-Year Local Hazard Mitigation Plan Review/Maintenance



After Plan Adoption—Annually Implement & Evaluate

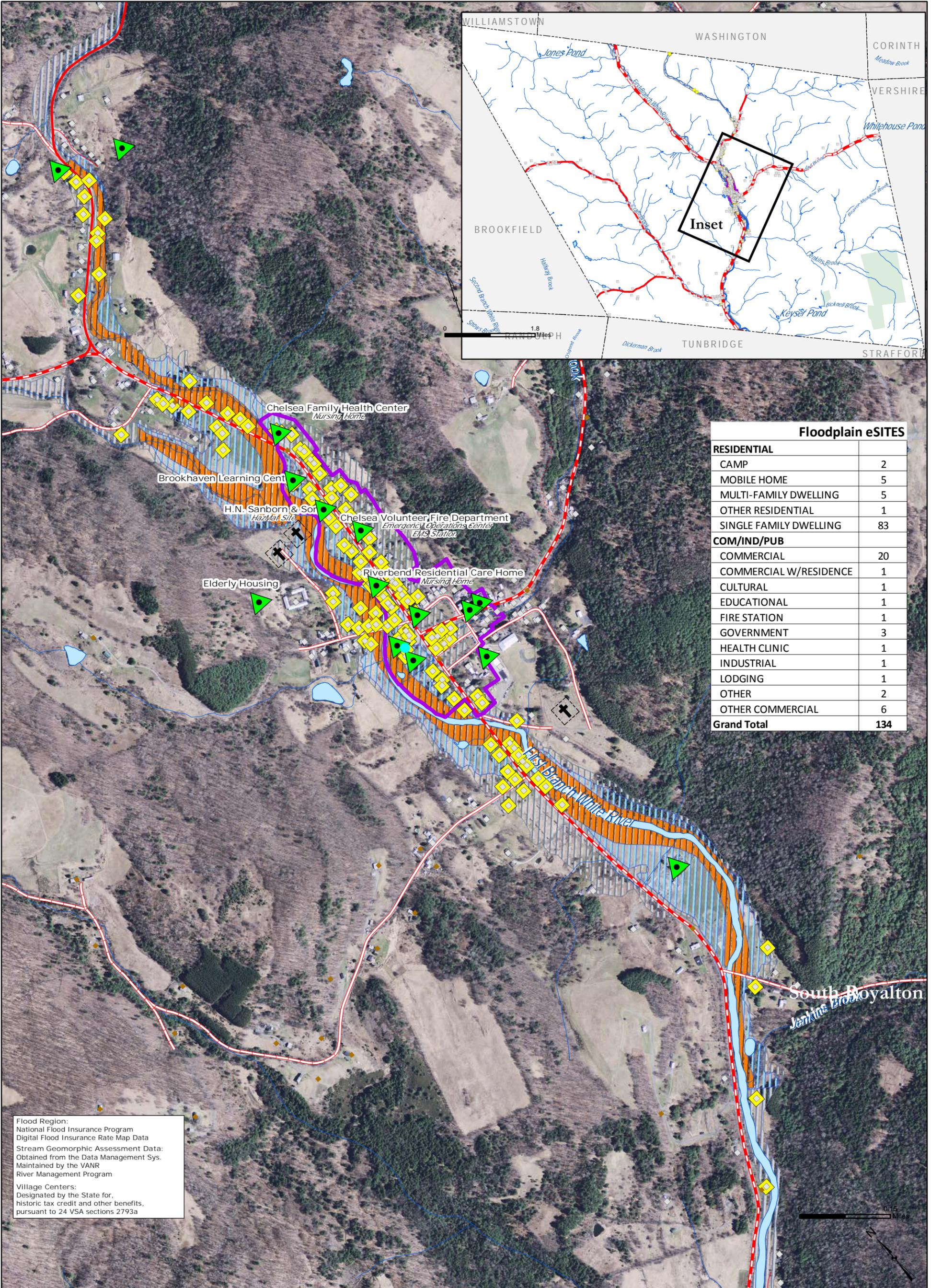


Fifth Year, and After a Major or Federally Declared Disaster Directly Impacting the Town Evaluate & Revise



Attachments

Attachment A: Map of the Town of Chelsea



**Hazard Mitigation Plan
Essential Services Map
Chelsea, Vermont**

- TH cls 1 (village VT rt)
- TH cls 2
- TH cls 2 gravel
- TH cls 3
- TH cls 3 gravel
- TH cls 4 impassable
- VT forest hwy
- trail
- private
- VT route
- US route
- US interstate
- TH cls 4 gravel
- TH cls 4 primitive
- Electrical Transmission

- Critical Facility
- Critical Stream Crossing
- Church
- Cemetery
- Significantly Undersized Structure
- Culvert Data Outdated
- Bridge
- Conserved Public Land
- Electric Substation

- e911 in Floodplain
- e911 Within 1000' of Major Route
- e911 Address
- Designated Village
- Floodway
- 100 Year
- 100 Year, No BFE
- 500 Year