

# LEWIS COUNTY

New York

# Hazard Mitigation Plan

Volume I July 2020



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# TABLE OF CONTENTS

## VOLUME I

**SECTION 1 INTRODUCTION .....1-1**

**SECTION 2 PLAN ADOPTION.....2-1**

**SECTION 3 PLANNING PROCESS .....3-1**

**SECTION 4 COUNTY PROFILE .....4-1**

**SECTION 5 RISK ASSESSMENT .....5-1**

5.1 METHODOLOGY AND TOOLS ..... 5.1-1

5.2 IDENTIFICATION OF HAZARDS OF CONCERN ..... 5.2-1

5.3 HAZARD RANKING ..... 5.3-1

5.4 HAZARD PROFILES AND VULNERABILITY ASSESSMENT ..... 5.4-1

5.4.1 Agricultural Product Spill ..... 5.4.1-1

5.4.2 Drought ..... 5.4.2-1

5.4.3 Earthquake ..... 5.4.3-1

5.4.4 Extreme Temperature ..... 5.4.4-1

5.4.5 Flood ..... 5.4.5-1

5.4.6 Hazardous Materials ..... 5.4.6-1

5.4.7 Landslide ..... 5.4.7-1

5.4.8 Severe Storm ..... 5.4.8-1

5.4.9 Severe Winter Storm ..... 5.4.9-1

5.4.10 Wildfire ..... 5.4.10-1

**SECTION 6 MITIGATION STRATEGY .....6-1**

**SECTION 7 PLAN MAINTENANCE PROCEDURES .....7-1**

**ACRONYMS AND ABBREVIATIONS..... AC-1**

**REFERENCES..... R-1**

## APPENDICES

Appendix A Sample Adoption Resolution

Appendix B Meeting Documentation

Appendix C Public and Stakeholder Documentation

Appendix D Action Worksheet Template

Appendix E Plan Review Tools

Appendix F Participation Matrix

Appendix G Critical Facilities





**VOLUME II**

**SECTION 8 PLANNING PARTNERSHIP .....8-1**

**SECTION 9 JURISDICTIONAL ANNEXES .....9-1**

- 9.1 Lewis County ..... 9.1-1
- 9.2 Castorland, Village of ..... 9.2-1
- 9.3 Constableville, Village of ..... 9.3-1
- 9.4 Copenhagen, Village of ..... 9.4-1
- 9.5 Croghan, Town of ..... 9.5-1
- 9.6 Croghan, Village of ..... 9.6-1
- 9.7 Denmark, Town of ..... 9.7-1
- 9.8 Diana, Town of ..... 9.8-1
- 9.9 Greig, Town of ..... 9.9-1
- 9.10 Harrisburg, Town of ..... 9.10-1
- 9.11 Lewis, Town of ..... 9.11-1
- 9.12 Leyden, Town of ..... 9.12-1
- 9.13 Lowville, Town of ..... 9.13-1
- 9.14 Lowville, Village of ..... 9.14-1
- 9.15 Lyons Falls, Village of ..... 9.15-1
- 9.16 Lyonsdale, Town of ..... 9.16-1
- 9.17 Martinsburg, Town of ..... 9.17-1
- 9.18 Montague, Town of ..... 9.18-1
- 9.19 New Bremen, Town of ..... 9.19-1
- 9.20 Osceola, Town of ..... 9.20-1
- 9.21 Pinckney, Town of ..... 9.21-1
- 9.22 Port Leyden, Village of ..... 9.22-1
- 9.23 Turin, Town of ..... 9.23-1
- 9.24 Turin, Village of ..... 9.24-1
- 9.25 Watson, Town of ..... 9.25-1
- 9.26 West Turin, Town of ..... 9.26-1



# EXECUTIVE SUMMARY

The 2020 update to the Lewis County Hazard Mitigation Plan (HMP) was prepared in accordance with the Disaster Mitigation Act of 2000 (DMA 2000). DMA 2000 requires states and local governments to prepare HMPs to remain eligible to receive pre-disaster mitigation grant funds available in the wake of federally declared disasters. **To restate, municipalities that do not participate in this process and do not adopt the resulting HMP will not be eligible to receive future pre-disaster mitigation grant funding (Section 404 grant funds).** Importantly, pre-disaster mitigation grant funds are separate and distinct from federal and state funds available for direct post-disaster relief (i.e., Public Assistance [PA] and Individual Assistance [IA]). Availability of those funds remains unchanged: if a federally declared disaster occurs in Lewis County, affected municipalities may still receive immediate recovery assistance regardless of their participation in this HMP. However, DMA 2000 improves the disaster planning process by (1) increasing requirements for hazard mitigation planning, and (2) necessitating that participating municipalities document their hazard mitigation planning process and identify hazards, potential losses, and mitigation needs, goals, and strategies.

**Hazard Mitigation** is any sustained action taken to reduce or eliminate long-term risk and effects that can result from specific hazards.

FEMA defines a **Hazard Mitigation Plan** as documentation of a state or local government's evaluation of natural hazards and strategy to mitigate such hazards.

## Lewis County Multi-Jurisdictional Planning Process

Lewis County developed and adopted the Lewis County HMP in 2010. DMA 2000 regulations require that local plans be formally updated and adopted every five (5) years, reassessing risk and updating local strategies to manage and mitigate those risks. To comply, Lewis County and inclusive jurisdictions actively participated in the update of the HMP. Extensive outreach efforts by Lewis County Emergency Management resulted in full participation from all municipalities. Upon completion and approval of the HMP, participating jurisdictions will continue to address and implement the findings and recommendations of this HMP.

Table ES-1 lists local governments that actively participated in the HMP update process to achieve or maintain their compliance with DMA 2000 requirements.

Table ES-1. Participating Jurisdictions in the 2020 Lewis County HMP Update

Jurisdictions		
Lewis County	Harrisburg (T)	New Bremen (T)
Castorland (V)	Lewis (T)	Osceola (T)
Constableville (V)	Leyden (T)	Pinckney (T)
Copenhagen (V)	Lowville (T)	Port Leyden (V)
Croghan (T)	Lowville (V)	Turin (T)
Croghan (V)	Lyons Falls (V)	Turin (V)
Denmark (T)	Lyonsdale (T)	Watson (T)
Diana (T)	Martinsburg (T)	West Turin (T)
Greig (T)	Montague (T)	

During this HMP update process, Lewis County and the participating jurisdictions accomplished the following:

- Developed a Steering Committee and Planning Partnership
- Reviewed and updated the hazards of concern







- Profiled and prioritized these hazards
- Estimated inventory at risk and potential losses associated with these hazards
- Reviewed and updated hazard mitigation goals and objectives
- Reviewed and updated County and local mitigation strategies to address identified risks and vulnerabilities
- Updated and developed maintenance procedures to be executed upon approval of the HMP.

As required by DMA 2000, the participating jurisdictions and Lewis County have informed the public about HMP update efforts and have provided opportunities for public comment and input regarding the planning process. In addition, numerous agencies and stakeholders have participated as core or support members to provide input and expertise to the planning process. This HMP documents the process and outcomes of the jurisdictions’ mitigation planning efforts.

Lewis County and the participating jurisdictions incorporate mitigation planning as an integral component of daily government operations through existing processes and programs. Announcements regarding the planning process were publicized via public notice and on the Lewis County HMP website (<http://www.lewiscountyhmp.com/>). The website also offered the general public and stakeholder groups an opportunity to provide their input through a community survey. Updates to the HMP will be similarly announced after annual plan reviews and 5-year updates. The questionnaire asked quantifiable questions about citizen perception of risk, knowledge of mitigation, and support of community programs. The County HMP Coordinator at Lewis County Emergency Management and local planning partnership representatives will be responsible for receiving, tracking, and filing public comments regarding this HMP.

### Lewis County Hazard Mitigation Plan Adoption

Once the Federal Emergency Management Agency (FEMA) formally approves this HMP update, Lewis County and all participating jurisdictions will be required to formally adopt the updated HMP. A sample copy of an adoption resolution is in Appendix A.

### Lewis County Profile

According to 2010 U.S. Census data, Lewis County had an estimated population of 27,087. Lewis County is located in the northwestern portion of the center of New York State. The primary feature of Lewis County is the Black River Valley, which runs south-north through its center. The County Seat is located in the Town of Lowville.

Development increases population and structures; therefore, development can increase impacts of hazards on a community. For example, heavy development planned for a flood-prone area would likely increase the impact of a flood event in that area.

The HMP provides a general overview of current and anticipated population and land use within the county. This information provides a basis for decisions about types of mitigation approaches to consider and locations at which to apply these approaches. Anticipated population and land use information can also be used to support decisions regarding future development in vulnerable areas. The county and jurisdictions can plan ahead to mitigate increases in vulnerabilities early in the development process or can shift development to areas of lower risk. The Steering Committee will revisit the HMP regularly to: (1) ensure that mitigation actions support sustainability and minimize increased risk, and (2) support implementation and targeting of specific mitigation actions to address potential impacts of development over time.



### Risk Assessment

A key component of an HMP is accurate identification of risks posed by hazards and corresponding impacts on the community. The process of identifying hazards of concern, profiling hazard events, and conducting a vulnerability assessment is known as a risk assessment. The risk assessment portion of the mitigation planning process included the steps shown on Figure ES-1. Each step is summarized below.

*Step 1:* Identify hazards of concern. Lewis County considered the full range of natural and non-natural hazards that could impact the county, and then identified and ranked hazards of greatest concern. The following list of 10 hazards of concern was selected for further evaluation in the HMP:

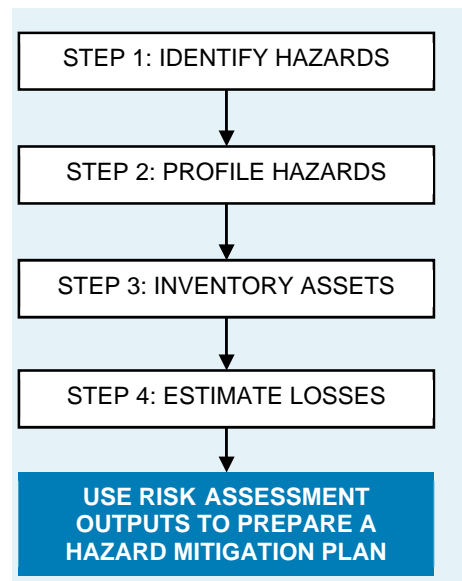
- Agricultural Product Spill
- Drought
- Earthquake
- Extreme Temperature
- Flood
- Hazardous Materials
- Landslide
- Severe Storm
- Severe Winter Storm
- Wildfire

*Step 2:* Prepare a profile of each hazard of concern. These profiles assist communities in evaluating and comparing hazards that can impact their areas. Each type of hazard has unique characteristics that vary from event to event. That is, impacts associated with a specific hazard can vary depending on the magnitude and location of each event (a hazard event is a specific, uninterrupted occurrence of a particular type of hazard). Further, probability of occurrence of a hazard at a given location affects the priority assigned to that hazard. Finally, each hazard impacts different communities in different ways, depending on geography, local development, population distribution, age of buildings, and mitigation measures already implemented.

*Steps 3 and 4:* Evaluate community assets and identify assets exposed or vulnerable to the identified hazards of concern. Hazard profile information combined with data regarding population, demographics, general building stock, and critical facilities at risk prepares the community to develop risk scenarios and estimate potential damages and losses from each hazard.

Overall vulnerability of Lewis County to the hazards of concern cannot be overestimated. Frequent severe storms result in wind damage and flooding that can affect residents, businesses, and government services. National Flood Insurance Program (NFIP) statistics for Lewis County, as of April 2018, identify approximately 72 NFIP policies in force and paid claims since 1978 of over \$600,000.

**Figure ES-1. Risk Assessment Process**





## Lewis County Mitigation Strategy

Outcomes of the risk assessment, supplemented by community input, provided a basis for reviewing past mitigation actions, future goals, and appropriate local mitigation actions.

### Mission Statement, Goals, and Objectives

The 2010 HMP specified 13 overarching mitigation goals that summarized hazard reduction outcomes Lewis County and participating jurisdictions want to achieve. The Steering Committee reviewed those 13 mitigation goals and elected to edit them to the three mitigation goals:

- Reduce the likelihood and impacts of hazards on life, property, and the environment.
- Protect life, property, critical infrastructure, the environment, and the economy from hazard impacts.
- Educate the public, officials, and other stakeholders about the hazards they face and what can be done to mitigate hazard impacts.

The mitigation strategy portion of the HMP includes:

- A summary of past and current mitigation efforts
- Local hazard mitigation goals and objectives
- Identification and analysis of mitigation measures and projects under consideration
- Multi-jurisdictional mitigation strategy (goals and objectives)
- Mitigation action plan (summary of specific actions)

After review of the 2010 plan, the Planning Partnership developed a set of nine objectives that align closely with the three updated goals.

### Capability Assessment

Capability assessments were prepared for Lewis County and each participating jurisdiction. A capability assessment is an inventory of a community’s missions, programs, and policies and an analysis of its capacity to implement them. This assessment is an integral part of the planning process. The capability assessment process includes identification, review, and analysis of current local and state programs, policies, regulations, funding, and practices that may either facilitate or hinder mitigation.

### Identification, Prioritization, Analysis, and Implementation of Mitigation Actions

As part of the planning process for this HMP update, all participating jurisdictions evaluated their risks and known or anticipated losses to the hazards of concern, assessed their capabilities to manage hazard risk, reviewed progress on past mitigation efforts, and identified a comprehensive range of mitigation alternatives and actions they endeavor to implement as resources are identified and available. The HMP identifies all proposed mitigation actions relevant to achievement of the goals and objectives presented above. Lewis County and participating jurisdictions have identified appropriate local mitigation actions along with hazards mitigated, goals and objectives met, lead agencies, estimated costs, potential funding sources, and proposed timeline. These actions are identified in Volume II, Section 9 for Lewis County and each participating jurisdiction.

### Plan Maintenance Procedures

Hazard mitigation planning is an ongoing process. Section 7 of this plan presents procedures for HMP maintenance and updates. The Steering Committee will continue ongoing mitigation efforts to implement the HMP and revise and update the HMP as necessary.





To monitor implementation of the HMP, Steering Committee members will meet annually to discuss the status of HMP implementation and will prepare a report summarizing the status of the HMP and any needed updates. The mitigation evaluation will address changes as new hazard events occur, as the area develops, and as more is learned about hazards and their impacts. The evaluation will include an assessment of whether the planning process and actions have been effective, whether development or other issues warrant changes to the HMP or its priorities, progress toward achievement of the communities' goals, and whether changes are warranted. The HMP will be updated at a minimum within the 5-year cycle specified by DMA 2000.

### **Point of Contact**

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To request information or provide comments regarding this HMP, please contact the Lewis County Department of Emergency Management:

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                                 Lowville, NY 13367

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E-mail Address:        robertmackenzie@lewiscounty.ny.gov

Telephone:             (315) 376-5303



# SECTION 1. INTRODUCTION

## 1.1 BACKGROUND

A Hazard Mitigation Plan is a living document that communities use to reduce their vulnerability to hazards. It forms the foundation for a community's long-term strategy to reduce disaster losses and creates a framework for decision making to reduce damages to lives, property, and the economy from future disasters. Examples of mitigation projects include home acquisitions or elevations to remove structures from high risk areas, upgrades to critical public facilities, and infrastructure improvements. Ultimately, these actions reduce vulnerability, and communities are able to recover more quickly from disasters

In response to the requirements of the Disaster Mitigation Act of 2000 (DMA 2000), Lewis County (and its towns and villages) developed this All-Hazard Mitigation Plan (HMP), which is an update of the 2010 Lewis County Multi-Jurisdictional HMP. DMA 2000 amends the Stafford Act and is designed to improve planning for, response to, and recovery from disasters by requiring state and local entities to implement pre-disaster mitigation planning, and develop HMPs. The Federal Emergency Management Agency (FEMA) has issued guidelines for HMPs, and the New York State Division of Homeland Security and Emergency Services (NYS DHSES) also supports plan development for jurisdictions in New York State.

**Hazard Mitigation** is any sustained action taken to reduce or eliminate the long-term risk and effects that can result from specific hazards.

FEMA defines a **Hazard Mitigation Plan** as the documentation of a state or local government evaluation of natural hazards and the strategies to mitigate such hazards.

Specifically, DMA 2000 requires that states, with support from local governmental agencies, update HMPs on a 5-year basis to prepare for and reduce the potential impacts of natural hazards. DMA 2000 is intended to facilitate cooperation between state and local authorities, prompting them to work together. This enhanced planning process will better enable local and state governments to convey their particular needs for mitigation, resulting in faster allocation of funding and more effective risk-reduction projects.

### 1.1.1 DMA 2000 Origins -The Robert T. Stafford Disaster Relief and Emergency Assistance Act

The **Federal Emergency Management Agency (FEMA)** estimates that for every dollar spent on damage prevention (mitigation), twice that amount is saved by not having to perform post-disaster repairs.

In the early 1990s, a new federal policy regarding disasters began to evolve. Rather than simply reacting whenever disasters strike communities, the federal government began encouraging communities to first assess their vulnerability to various disasters and proceed to take actions to reduce or eliminate potential risks. The policy is based on the logic that a disaster-resistant community can rebound from a natural disaster with less loss of property or human injury, incurring much lower cost, and consequently, in a shorter timeframe than a community that has not planned for a disaster. Moreover, other costs associated with disasters are minimized, such as the time lost from lack of productive activity by business and industries.

DMA 2000 provides an opportunity for states, tribes, and local governments to take a new and revitalized approach to mitigation planning. DMA 2000 amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act by repealing the previous mitigation planning provisions (Section 409) and replacing them with a new set of requirements (Section 322). Section 322 sets forth the requirements that communities evaluate natural hazards within their respective jurisdictions and develop an appropriate plan of





action to mitigate those hazards, while emphasizing the need for state, tribal, and local governments to closely coordinate mitigation planning and implementation.

The amended Stafford Act requires that each local jurisdiction identify potential natural hazards to the health, safety, and well-being of its residents, and identify and prioritize actions that can be taken by the community to mitigate those hazards before disaster strikes. For communities to remain eligible for hazard mitigation assistance from the federal government, they must first prepare, and then maintain and update an HMP.

Responsibility for fulfilling the requirements of Section 322 of the Stafford Act and administering the FEMA Hazard Mitigation Program has been delegated to the State of New York, specifically to NYS DHSES. FEMA also provides support through guidance, resources, and plan reviews.

### 1.1.2 Benefits of Mitigation Planning

The planning process will help prepare citizens and government agencies to better respond when disasters occur. In addition, mitigation planning allows Lewis County as a whole (as well as the participating towns and villages) to remain eligible for grant funding for mitigation projects that will reduce the monetary impact of future disaster events. The long-term benefits of mitigation planning include:

- An increased understanding of hazards faced by Lewis County communities
- Building a more sustainable and disaster-resistant community
- Increasing education and awareness of hazards and their threats, as well as their risks to residents, buildings, and infrastructure.
- Financial savings through partnerships that support planning and mitigation efforts
- Focused use of limited resources on hazards that may have the biggest impact on the community
- Reduced long-term impacts and damage to human health and structures, and, therefore, reduced repair costs

National Benefit-Cost Ratio (BCR) Per Peril <small>*BCR numbers in this study have been rounded</small>		Beyond Code Requirements	Federally Funded
<b>Overall Hazard Benefit-Cost Ratio</b>		<b>\$4:1</b>	<b>\$6:1</b>
<b>Riverine Flood</b>		\$5:1	\$7:1
<b>Hurricane Surge</b>		\$7:1	Too few grants
<b>Wind</b>		\$5:1	\$5:1
<b>Earthquake</b>		\$4:1	\$3:1
<b>Wildland-Urban Interface Fire</b>		\$4:1	\$3:1

Source: FEMA 2018; Federal Insurance Mitigation Administration 2018  
 Note: Natural hazard mitigation saves \$6 on average for every \$1 spent on federal mitigation grants.

### 1.1.3 Organizations Involved in the Mitigation Planning Effort

Lewis County and the participating jurisdictions intend to implement this HMP with full coordination and participation of county and local departments, organizations, and groups, as well as by coordinating with relevant state and federal entities. Coordination helps to ensure that stakeholders have established communication channels and relationships necessary to support mitigation planning and mitigation actions described in Section 6 (Mitigation Strategy) and in the jurisdictional annexes in Section 9 (Jurisdictional Annexes). In addition to Lewis County, all 26 local jurisdictions have participated in the planning process. Lewis County jurisdictions are listed in Table 1-1 and presented in Figure 1-1.

**Table 1-1. Participating Jurisdictions in Lewis County**

Jurisdictions		
Lewis County	Harrisburg (T)	New Bremen (T)
Castorland (V)	Lewis (T)	Osceola (T)

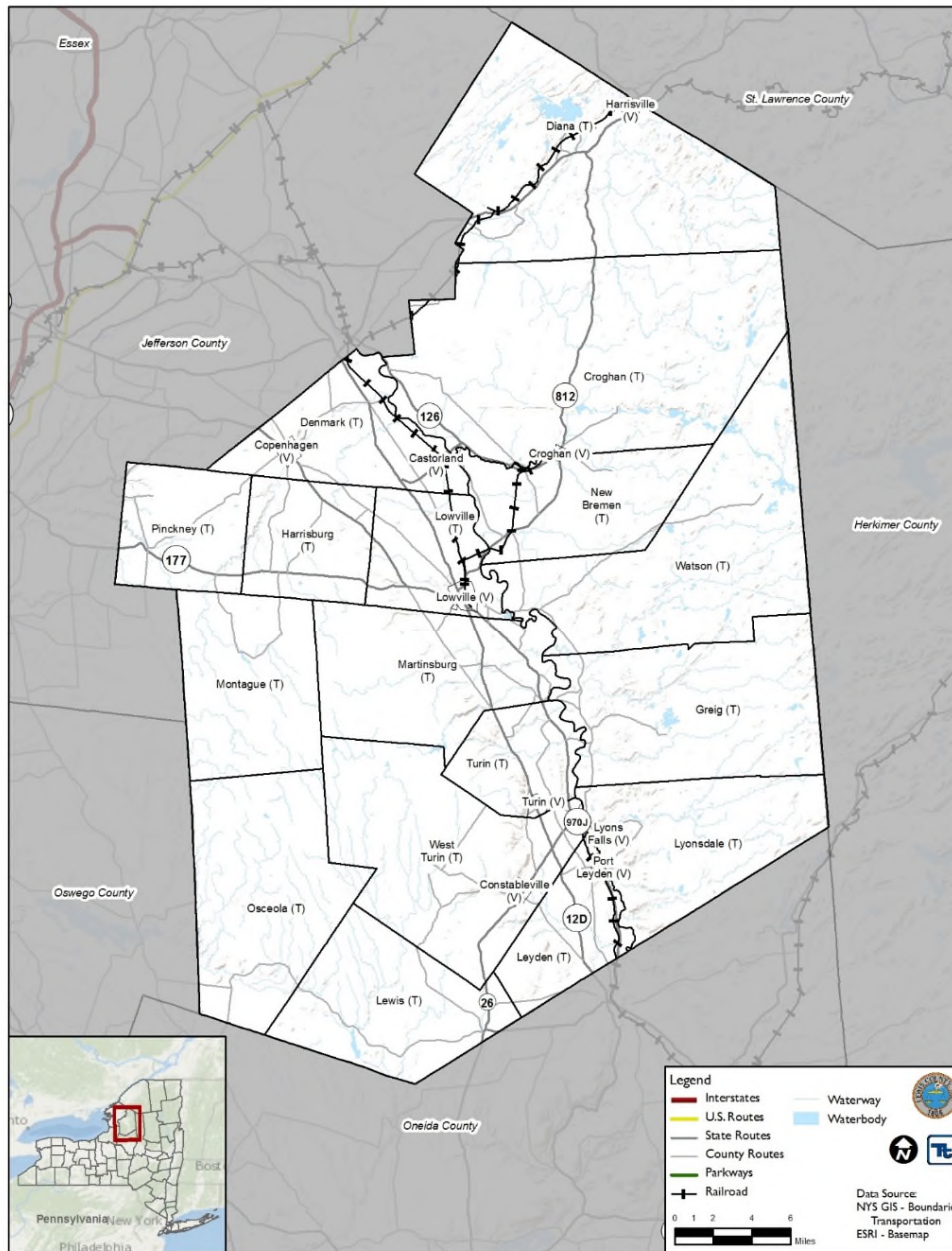






Jurisdictions		
Constableville (V)	Leyden (T)	Pinckney (T)
Copenhagen (V)	Lowville (T)	Port Leyden (V)
Croghan (T)	Lowville (V)	Turin (T)
Croghan (V)	Lyons Falls (V)	Turin (V)
Denmark (T)	Lyonsdale (T)	Watson (T)
Diana (T)	Martinsburg (T)	West Turin (T)
Greig (T)	Montague (T)	

Figure 1-1. Lewis County, New York, Mitigation Plan Area





### Multiple Agency Support for Hazard Mitigation

The primary responsibility for the development and implementation of mitigation strategies and policies lies with local governments. However, local governments do not work alone. Various partners and resources at the regional, state, and federal levels are available to assist communities in the development and implementation of mitigation strategies. Within New York State, NYS DHSES is the lead agency providing hazard mitigation planning assistance and guidance to local jurisdictions. In addition, FEMA provides grants, tools, guidance, and training to support mitigation planning.

Additional input and support for this planning effort was obtained from a wide range of agencies as well as through public involvement (as discussed in Section 3). Under the project management of Lewis County Emergency Management, the Lewis County Hazard Mitigation Team, and the Planning Partnership provided oversight for the preparation of this plan. Details regarding the roles and responsibilities of the Steering Committee and Planning Partnership are further discussed in Section 3. The Steering Committee includes representatives from County Planning, Lewis County Emergency Management, the Lewis County Highway Department, the Lewis County Soil and Water Conservation District, and the Cornell Cooperative Extension. The Steering Committee has been formed as a leadership group to plan, guide, expedite, and implement the planning process. A list of Hazard Mitigation Team and Planning Partnership members is provided in Section 3.

This HMP was prepared in accordance with the following regulations and guidance:

- FEMA *Local Mitigation Planning Handbook*, March 2013.
- FEMA *Integrating Hazard Mitigation into Local Planning*, March 1, 2013.
- FEMA *Plan Integration: Linking Local Planning Efforts*, July 2015.
- *Local Mitigation Plan Review Guide*, October 1, 2011.
- DMA 2000 (Public Law 106-390, October 30, 2000).
- 44 Code of Federal Regulations (CFR) Parts 201 and 206 (including: Feb. 26, 2002, Oct. 1, 2002, Oct. 28, 2003, and Sept. 13, 2004 Interim Final Rules).
- FEMA *How-To Guide for Using HAZUS-MH for Risk Assessment* FEMA Document No. 433, February 2004.
- FEMA *Mitigation Planning How-to Series* (FEMA 386-1 through 4, 2002), available at: <http://www.fema.gov/fima/planhowto.shtm>.
- FEMA *Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards*, January 2013.
- NYS DHSES *Hazard Mitigation Planning Standard*, 2017.
- NYS DHSES *Hazard Mitigation Planning Standard Guide*, 2017.
- NYS Hazard Mitigation Plan, 2014.

Table 1-2 summarizes the requirements outlined in the DMA 2000 Interim Final Rule and lists the section in which each of these requirements is addressed in this HMP.

**Table 1-2. FEMA Local Mitigation Plan Review Crosswalk**

Plan Criteria	Primary Location in Plan
Prerequisites	
Adoption by the Local Governing Body: §201.6(c)(5)	Volume I, Section 2.0; Appendix A
Compliance with NYS DHSES Hazard Mitigation Planning Standards	Volume I, Section 1.0
Planning Process	
Documentation of the Planning Process: §201.6(b) and §201.6(c)(1)	Volume I, Section 3.0





Plan Criteria	Primary Location in Plan
<b>Risk Assessment</b>	
Identifying Hazards: §201.6(c)(2)(i)	Volume I, Section 5.2
Profiling Hazards: §201.6(c)(2)(i)	Volume I, Section 5.4
Assessing Vulnerability: Overview: §201.6(c)(2)(ii)	Volume I, Section 5.4
Assessing Vulnerability: Identifying Structures: §201.6(c)(2)(ii)(A)	Volume I, Sections 4.0 and 5.4
Assessing Vulnerability: Estimating Potential Losses: §201.6(c)(2)(ii)(B)	Volume I, Section 5.4
Assessing Vulnerability: Analyzing Development Trends: §201.6(c)(2)(ii)(C)	Volume I, Section 4.0; Section 9 Annexes
<b>Mitigation Strategy</b>	
Local Hazard Mitigation Goals: §201.6(c)(3)(i)	Volume I, Section 6.0; Volume II, Section 9 Annexes
Identification and Analysis of Mitigation Actions: §201.6(c)(3)(ii)	Volume I, Section 6.0; Volume II, Section 9 Annexes
Implementation of Mitigation Actions: §201.6(c)(3)(iii)	Volume I, Section 6.0; Volume II, Section 9 Annexes
Multi-Jurisdictional Mitigation Actions: §201.6(c)(3)(iv)	Volume I, Section 6.0; Volume II, Section 9 Annexes
<b>Plan Maintenance Process</b>	
Monitoring, Evaluating, and Updating the Plan: §201.6(c)(4)(i)	Volume I, Section 7.0
Incorporation into Existing Planning Mechanisms: §201.6(c)(4)(ii)	Volume I, Section 7.0; Volume II, Section 9 Annexes
Continued Public Involvement: §201.6(c)(4)(iii)	Volume I, Section 7.0

### 1.1.4 Organization

The Lewis County Hazard Mitigation Plan has been organized into two volumes to facilitate use of this plan as a resource. The plan provides a detailed review and analysis of each hazard of concern, resources, and demographics of Lewis County and participating municipalities. Volume I is intended for use as a resource for ongoing mitigation analysis. Volume II consists of annexes, which are dedicated to each participating jurisdiction. Each annex summarizes the jurisdiction’s legal, regulatory, and fiscal capabilities; describes vulnerabilities to natural hazards; presents status of past mitigation actions; and provides an individualized mitigation strategy. The annexes are intended to be used as an expedient resource for each jurisdiction when implementing mitigation projects and exploring future grant opportunities.

### Hazards of Concern

Lewis County and participating jurisdictions reviewed the natural and man-made hazards that caused measurable impacts in the planning area, and updated the list of hazards of concern based on events, losses, and information available since the 2010 plan. Lewis County and participating jurisdictions evaluated the risk and vulnerability to the assets of each participating jurisdiction presented by each hazard of concern. Although the resulting hazard risk rankings varied for each jurisdiction, the summary risk rankings corresponded with that of Lewis County and are indicated in each jurisdictional annex. The hazard risk rankings were used to focus and prioritize individual jurisdictional mitigation strategies.



## Goals and Objectives

### Lewis County HMP Goals:

- Goal 1 – Reduce the likelihood and impacts of hazards on life, property, and the environment.
- Goal 2 – Protect life, property, critical infrastructure, the environment, and the economy from hazard impacts.
- Goal 3 - Educate the public, officials, and other stakeholders about the hazards they face and what can be done to mitigate hazard impacts.

The planning process included a review and update of the prior mitigation goals and objectives as a basis for the planning process and to guide the selection of appropriate mitigation actions addressing all hazards of concern. Further, the goal development process considered the mitigation goals expressed in the New York State HMP, as well as other relevant county and local planning documents, as discussed in Section 6 (Mitigation Strategy).

## Plan Integration into Other Planning Mechanisms

Effective mitigation is achieved when hazard awareness and risk management approaches and strategies become an integral part of public activities and decision-making processes. Within the county, many existing plans and programs support hazard risk management. Therefore, it is critical that this hazard mitigation plan integrates and coordinates with and complements those mechanisms.

The “Capability Assessment” section of Section 6 (Mitigation Strategy) provides a summary and description of the existing plans, programs, and regulatory mechanisms at all levels of government (federal, state, county, and local) that support hazard mitigation within the County. Section 9, which consists of each jurisdictional annex, identifies ways in which the County and each participating jurisdiction have integrated hazard risk management into their existing planning, regulatory, and operational/administrative framework (“integration capabilities”), and provided the means by which they intend to promote this integration (“integration actions”).

Further summaries of these continued efforts to develop and promote a comprehensive and holistic approach to hazard risk management and mitigation is presented in Section 7 (Plan Maintenance) and Section 9 (Jurisdictional Annexes).

### 1.1.5 Implementation of the 2010 Plan

Section 6 (Mitigation Strategy) and Section 9 (Jurisdictional Annexes) of this plan update provide the status of the mitigation projects originally outlined in the 2010 HMP. Numerous projects and programs have already been implemented that have reduced asset vulnerability to hazards. The county and municipal annexes, as well as plan maintenance procedures in Section 7 (Plan Maintenance), were developed to include specific, implementable activities. Future actions include integrating hazard mitigation goals into comprehensive plan updates; reviewing the HMP during updates of codes, ordinances, zoning, and development; and ensuring a more thorough integration of hazard mitigation, with its related benefits, will be completed within the upcoming five-year planning period.

### 1.1.6 Implementation of the Planning Process

The planning process and findings are to be documented in local HMPs. To support the planning process in developing this HMP Update, Lewis County and the participating jurisdictions have accomplished the following tasks:

- Developed a Hazard Mitigation Team and Mitigation Planning Partnership (Planning Partnership)
- Reviewed the 2010 Lewis County Multi-Jurisdictional HMP
- Identified and reviewed hazards of greatest concern to the community (hazards of concern) to be included in the update







- Profiled hazards of concern
- Estimated the asset inventory at risk and potential losses associated with specific hazards
- Reviewed and updated the mitigation goals and objectives
- Reviewed mitigation strategy and actions outlined in the 2010 HMP to indicate progress
- Developed new mitigation actions to reduce the vulnerability of assets from hazards of concern
- Involved a wide range of stakeholders and the public in the plan update process
- Developed mitigation plan maintenance procedures to be executed after obtaining plan approval of the plan from NYS DHSES and FEMA

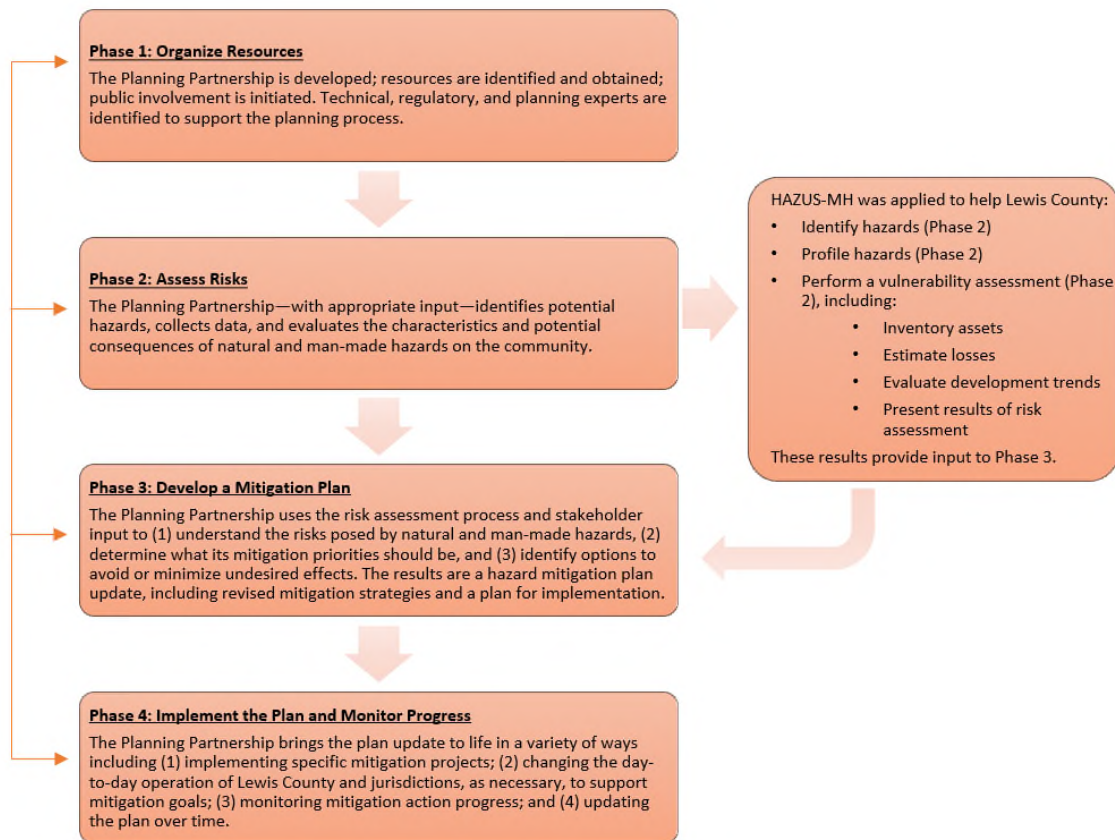
As required by DMA 2000, Lewis County and participating jurisdictions have informed the public and provided opportunities for public comment and input. In addition, numerous agencies and stakeholders have participated as core or support members, providing input and expertise throughout the planning process.

This HMP documents the process and outcomes of the mitigation efforts of Lewis County and its jurisdictions. Documentation indicating that the prerequisites for plan approval have been met is included in Section 2, Plan Adoption. Additional information on the plan update process is included in Section 3, Planning Process.

### 1.1.7 Organization of This Mitigation Plan

This HMP was organized in accordance with FEMA and NYS DHSES guidance. The structure of this plan follows the four-phase planning process recommended by FEMA, which is summarized in Figure 1-2.

Figure 1-2. Lewis County Hazard Mitigation Planning Process





This HMP is organized into two volumes: Volume I includes all information that applies to the entire planning area (Lewis County); and Volume II includes information specific to the participating jurisdictions within the County.

Volume I of this HMP includes the sections listed below.

**Section 1:** Introduction: Overview of participants and planning process

**Section 2:** Plan Adoption: Information regarding the adoption of the plan by Lewis County and each participating jurisdiction

**Section 3:** Planning Process: A description of the plan methodology and development process, Planning Partnership and stakeholder involvement efforts, and the methods used to incorporate this HMP into existing programs

**Section 4:** County Profile: An overview of Lewis County, including (1) general information, (2) economy, (3) land-use trends, (4) population and demographics, (5) general building stock inventory, and (6) critical facilities

**Section 5:** Risk Assessment: Documentation of the hazard identification and hazard risk ranking process, hazard profiles, and findings of the vulnerability assessment (estimates of the impact of hazard events on life, safety, and health; general building stock; critical facilities; and the economy). Also included in this section is a description of the status of local data and planned steps to improve local data to support mitigation planning.

**Section 6:** Mitigation Strategies: Information regarding the mitigation goals and objectives identified by Lewis County in response to priority hazards of concern

**Section 7:** Plan Maintenance Procedures: The system established by Lewis County to continue to monitor, evaluate, maintain, and update the HMP

**Appendix A:** Sample Resolution of Plan Adoption: Documentation that supports the plan approval signatures included in Section 2 of this plan

**Appendix B:** Meeting Documentation: Agendas, attendance sheets, minutes, and other documentation (as available and applicable) of planning meetings convened during the development of the plan

**Appendix C:** Public and Stakeholder Outreach Documentation: Documentation of the public and stakeholder outreach effort including webpages, informational materials, public and stakeholder meetings and presentations, surveys, and other methods used to receive and incorporate public and stakeholder comments, and use those comments in the plan update process

**Appendix D:** Action Worksheet Template and Instructions

**Appendix E:** Plan Review Tools: Examples of plan review templates available to support annual plan review, including the plan review document used for the 2010 Lewis County HMP review process, and example FEMA Guidance Worksheets (FEMA 386-4)

**Appendix F:** Participation Matrix

**Appendix G:** Critical Facilities: Includes an inventory of all critical facilities within the county, with name, address, and facility type





Volume II of this plan includes the following sections:

**Section 8:** Planning Partnership: Description of the planning partnership and jurisdictional annexes

**Section 9:** Jurisdictional Annexes: A jurisdiction-specific annex for each participating jurisdiction and Lewis County, containing their hazards of concern, hazard risk ranking, capability assessments, mitigation actions, action prioritization specific only to Lewis County or that jurisdiction, progress on 2010 mitigation actions, and an overview of 2010 plan integration into local planning processes

**1.2 THE PLAN UPDATE – WHAT IS DIFFERENT?**

Lewis County’s initial HMP was approved by FEMA and adopted by participating jurisdictions in 2010. The 2020 update builds on the 2010 plan and specifically includes the following changes and/or enhancements (Table 1-3). This plan differed from its predecessor for a variety of reasons:

- This plan was prepared in accordance with the 2017 NYS DHSES guidance which provided a framework for a more concise and focused mitigation plan.
- Updated data and tools provided for a more detailed and accurate risk assessment. The risk assessment was prepared to better support future grant applications by providing risk and vulnerability information that would directly support the measurement of “cost-effectiveness” required under FEMA mitigation grant programs.
- The plan identified implementable actions rather than strategies, with enough information to serve as the basis for policy and funding decisions and represent measurable impacts on resiliency and mitigation progress. Strategies provide direction, but actions are fundable under grant programs.

**Table 1-3. Plan Changes Crosswalk**

44 CFR Requirement	2010 Plan	2020 Updated Plan
<p><i>Requirement §201.6(b): In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:</i></p> <p>(1) <i>An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;</i></p> <p>(2) <i>An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and</i></p> <p>(3) <i>Review and incorporation, if appropriate, of existing plans, studies, reports and technical information.</i></p>	<p>The 2010 plan followed an outreach strategy utilizing multiple media developed and approved by the Steering Committee. This strategy involved the following:</p> <ul style="list-style-type: none"> <li>• Presentations to public meetings</li> <li>• Establishment of a HMP planning website</li> <li>• Development of a project fact sheet to distribute to the public</li> <li>• Press releases and news articles in local newspapers</li> </ul> <p>Stakeholders were identified and coordinated with throughout the process. A comprehensive review of relevant plans and programs was performed by the planning team.</p>	<p>The 2019 planning effort deployed a similar public engagement methodology. The plan included the following enhancements:</p> <ul style="list-style-type: none"> <li>• Using social media</li> <li>• Web-deployed survey</li> <li>• Informational brochure</li> </ul> <p>As with the 2010 plan, the 2020 planning process identified key stakeholders and coordinated with them throughout the process. A comprehensive review of relevant plans and programs was performed by the planning team.</p>
<p><i>§201.6(c)(2): The plan shall include a risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide</i></p>	<p>The 2010 plan included a risk assessment of the hazards of concern to Lewis County.</p>	<p>The 2020 risk assessment was enhanced to include vulnerable populations, general building stock, critical facilities, and new development. A Level 2 HAZUS-</p>



44 CFR Requirement	2010 Plan	2020 Updated Plan
<p>sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.</p>		<p>MH analysis was performed where appropriate (earthquake, flood, and severe storm).</p>
<p>§201.6(c)(2)(i): [The risk assessment] shall include a) description of the ... location and extent of all-natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.</p>	<p>The 2010 plan presented a risk assessment of each hazard of concern. Each section included the following:</p> <ul style="list-style-type: none"> <li>• Hazard profile, including a description of the hazard, maps of extent and location, previous occurrences, and probability of future occurrences.</li> <li>• Impact on property, critical facilities and infrastructure, historical resources, and population.</li> <li>• Estimated damages from hazards of concern.</li> <li>• Future growth and development</li> </ul>	<p>The same format, using new and updated data, was used for the 2020 plan update. However, each hazard of concern was a standalone section, having the vulnerability assessment immediately follow the hazard profile. Each section of the risk assessment includes the following:</p> <ul style="list-style-type: none"> <li>• Hazard profile, including maps of extent and location, previous occurrences, and probability of future events.</li> <li>• Climate change impacts on future probability using the best available data for New York State.</li> <li>• Vulnerability assessment includes: impact on life, safety, and health, general building stock, critical facilities, and the economy, as well as future changes that could impact vulnerability.</li> <li>• The vulnerability assessment also includes changes in vulnerability since the 2010 plan.</li> </ul>
<p>§201.6(c)(2)(ii): [The risk assessment] shall include a) description of the jurisdiction’s vulnerability to the hazards described in paragraph (c)(2)(i). This description shall include an overall summary of each hazard and its impact on the community.</p>	<p>The plan assessed vulnerability to various hazards within the limitations of the available data, where generally accepted measures of vulnerability were established. Parcel data included assessed values for land and total assessed values; assessed values for improvements were calculated by subtracting the land value from the total value. The plan presented an estimation of annual damages for each hazard.</p>	<p>A similar methodology was deployed for the 2020 plan update; however, HAZUS-MH was run for Lewis County, using new and updated data. Additionally hazards of concern include:</p> <ul style="list-style-type: none"> <li>• Agricultural Product Spill</li> <li>• Hazardous Material Incident</li> </ul>
<p>§201.6(c)(2)(ii): [The risk assessment] must also address National Flood Insurance Program insured structures that have been repetitively damaged floods.</p>	<p>A summary of NFIP insured properties including an analysis of repetitive loss property locations was included in the plan.</p>	<p>The same methodology was deployed for the 2020 plan update using new and updated data.</p>
<p>Requirement §201.6(c)(2)(ii)(A): The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure and critical facilities located in the identified hazard area.</p>	<p>A complete inventory of the numbers and types of buildings exposed was generated for each hazard of concern. The Steering Committee defined “critical facilities” for the planning area, and these were inventoried by exposure. Each hazard profile provides a discussion on future development trends.</p>	<p>The same methodology was deployed for the 2020 plan update using new and updated data.</p>



44 CFR Requirement	2010 Plan	2020 Updated Plan
<i>Requirement §201.6(c)(2)(ii)(B): [The plan should describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) and a description of the methodology used to prepare the estimate.</i>	The plan assessed vulnerability to various hazards within the limitations of the available data, where generally accepted measures of vulnerability were established. Parcel data included assessed values for land and total assessed values; assessed values for improvements were calculated by subtracting the land value from the total value. The plan presented an estimation of annual damages for each hazard.	A similar methodology was deployed for the 2020 plan update; however, HAZUS-MH was run for Lewis County, using new and updated data.
<i>Requirement §201.6(c)(2)(ii)(C): [The plan should describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.</i>	There is a summary of anticipated development discussed in the plan.	The same methodology was deployed for the 2020 plan update using new and updated data.
<i>§201.6(c)(3):[ The plan shall include a mitigation strategy that provides the jurisdiction’s blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.]</i>	The 2010 plan contained goals and actions. The goals were regional and covered all planning partners. Each planning partner identified actions that could be implemented within their capabilities. The actions were jurisdiction-specific and strove to meet multiple goals. Each planning partner completed an assessment of its planning, regulatory, technical, and financial capabilities.	The same methodology for setting goals, objectives, and actions was applied to the 2020 plan update. The Steering Committee reviewed and reconfirmed the mission statement, goals, and objectives for the plan. Each planning partner used the progress reporting from the plan maintenance and evaluated the status of actions identified in the 2010 plan. Actions that were completed or no longer considered to be feasible were removed. The balance of the actions was carried over to the 2020 plan, and in some cases, new actions were added to the action plan.
<i>Requirement §201.6(c)(3)(i): [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.</i>	The Steering Committee identified goals targeted specifically for this hazard mitigation plan. These planning components supported the actions identified in the plan.	The same methodology for setting goals, objectives, and actions was applied to the 2020 plan update. The Steering Committee reviewed and updated the goals, and objectives for the plan. This resulted in the finalization of three goals and nine objectives to frame the plan.
<i>Requirement §201.6(c)(3)(ii): [The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.</i>	The 2010 plan includes a process on how the hazards of concern were identified for Lewis County. Additionally, a table was developed to provide a range of types of mitigation actions that were considered by the Planning Group to address each of the hazards profiled in the plan.	The same methodology was deployed for the 2020 plan update using new and updated data.
<i>Requirement: §201.6(c)(3)(ii): [The mitigation strategy] must also address the jurisdiction’s participation in the National Flood Insurance Program, and continued</i>	All municipal planning partners that participate in the NFIP identified an action stating their commitment to maintain compliance and good standing under the program.	Ongoing participation in the NFIP for municipalities was included in ongoing capabilities.



44 CFR Requirement	2010 Plan	2020 Updated Plan
<i>compliance with the program's requirements, as appropriate.</i>		
<i>Requirement: §201.6(c)(3)(iii): [The mitigation strategy shall describe] how the actions identified in section (c)(3)(ii) will be prioritized, implemented and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.</i>	Each recommended action was prioritized using the STAPLEE criteria, in addition to whether or not the project can be implemented easily and quickly, and if it achieves multiple objectives.	A revised methodology based on the STAPLEE criteria and using new and updated data was used for the 2020 plan update.
<i>Requirement §201.6(c)(4)(i): [The plan maintenance process shall include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.</i>	The 2010 plan details a strategy for maintaining the plan and provides plain maintenance procedures.	The 2020 plan details a plan maintenance strategy similar to that of the initial plan.
<i>Requirement §201.6(c)(4)(ii): [The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.</i>	The 2010 plan details recommendations for incorporating the plan into other planning mechanisms.	The 2020 plan details recommendations for incorporating the plan into other planning mechanisms such as the following: <ul style="list-style-type: none"> <li>• Comprehensive Plan.</li> <li>• Emergency Response Plan.</li> <li>• Capital Improvement Programs.</li> <li>• Municipal Code.</li> </ul>
<i>Requirement §201.6(c)(4)(iii): [The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.</i>	The 2010 plan details a strategy for continuing public involvement.	The 2010 plan maintenance strategy was carried over to the 2020 plan. In addition, the County included additional mechanisms to ensure municipalities are integrating the HMP into local planning mechanisms.
<i>Requirement §201.6(c)(5): [The local hazard mitigation plan shall include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).</i>	20 planning partners participated in the 2010 planning process.	The 2020 plan achieves DMA compliance for 26 planning partners. Resolutions for each partner adopting the plan can be found in Appendix A of this volume.



# SECTION 2. PLAN ADOPTION

## 2.1 OVERVIEW

This section contains information regarding adoption of the Hazard Mitigation Plan (HMP) by Lewis County and each participating jurisdiction.

### 2.1.1 Plan Adoption by Local Governing Bodies

Adoption by the local governing bodies demonstrates the commitment of Lewis County and each participating jurisdiction to fulfill the mitigation goals and strategies outlined in the plan. Adoption legitimizes the HMP and authorizes responsible agencies to execute their responsibilities.

The County and all participating jurisdictions will proceed with formal adoption proceedings when the Federal Emergency Management Agency (FEMA) provides conditional approval of this HMP update, known as Approval Pending Adoption (APA).

Following adoption or formal action on the plan, the jurisdiction must submit a copy of the resolution or other legal instrument showing formal adoption (acceptance) of the plan to the Lewis County HMP Coordinator. Lewis County will then forward the adoption resolutions to New York State (NYS) Division of Homeland Security and Emergency Services (DHSES), after which they will be forwarded to FEMA for record. The jurisdictions understand that FEMA will transmit acknowledgement of verification of formal plan adoption and the official approval of the plan to the Lewis County HMP Coordinator.

The resolutions issued by each jurisdiction to support adoption of the plan will be included in Appendix A

In addition to being required by the Disaster Mitigation Act of 2000, adoption of the plan is necessary because:

- It lends authority to the plan to serve as a guiding document for all local and state government officials;
- It gives legal status to the plan in the event it is challenged in court;
- It certifies the program and grant administrators that the plan’s recommendations have been properly considered and approved by the governing authority and jurisdictions’ citizens; and
- It helps to ensure the continuity of mitigation programs and policies over time because elected officials, staff, and other community decision-makers can refer to the official document when making decisions about the community’s future.

Source: FEMA, 2003. “How to Series”-*Bringing the Plan to Life* (FEMA 386-4).



# SECTION 3. PLANNING PROCESS

## 3.1 INTRODUCTION

This section includes a description of the planning process used to update the 2010 Lewis County Hazard Mitigation Plan (HMP), including how it was prepared, who was involved in the process, and how the public was involved. To ensure that the plan meets requirements of the Disaster Mitigation Act (DMA) of 2000 and that the planning process would have the broad and effective support of the participating jurisdictions, regional and local stakeholders, and the public, an approach to the planning process and plan documentation was developed to achieve the following:

- The plan will be multi-jurisdictional, with the intention of including all municipalities in the county. Lewis County invited all the towns and villages, and a variety of stakeholders, to join with them in the planning process. To date, the county and all 25 local municipal governments in the county participated in the 2020 planning process as indicated in Table 3-1. The plan considers eight natural hazards and one non-natural hazard of concern facing the county, thereby satisfying the natural hazards mitigation planning requirements specified in DMA 2000.
- The plan was developed following the process outlined by the DMA 2000, Federal Emergency Management Agency (FEMA) regulations, prevailing FEMA guidance, and the 2017 New York State Division of Homeland Security and Emergency Services (NYS DHSES) hazard mitigation planning standard. Following this process ensured that all the requirements are met and support HMP review.

**Table 3-1. Participating Lewis County Jurisdictions**

Jurisdictions		
Lewis County	Harrisburg (T)	New Bremen (T)
Castorland (V)	Lewis (T)	Osceola (T)
Constableville (V)	Leyden (T)	Pinckney (T)
Copenhagen (V)	Lowville (T)	Port Leyden (V)
Croghan (T)	Lowville (V)	Turin (T)
Croghan (V)	Lyons Falls (V)	Turin (V)
Denmark (T)	Lyonsdale (T)	Watson (T)
Diana (T)	Martinsburg (T)	West Turin (T)
Greig (T)	Montague (T)	

Note: T = Town; V = Village

The Lewis County HMP was updated using the best available information obtained from a wide variety of sources. Throughout the HMP update process, a concerted effort was made to gather information from municipal and regional agencies and staff as well as stakeholders, federal and state agencies, and the residents of the county. The HMP Steering Committee solicited information from local agencies and individuals with specific knowledge of certain hazards and past historical events. In addition, the Steering Committee and Planning Partnership took into consideration planning and zoning codes, ordinances, and recent land use planning decisions. The hazard mitigation strategies identified in this HMP were developed through an extensive planning process involving local, county, and regional agencies, residents, and stakeholders.

This section of the plan describes the mitigation planning process, including (1) Organization of the Planning Process; (2) Stakeholder Outreach and Involvement; (3) Integration of Existing Data, Plans, and Technical Information; (4) Integration with Existing Planning Mechanisms and Programs; and (5) Continued Public Involvement.







## 3.2 ORGANIZATION OF THE PLANNING PROCESS

This section of the plan identifies how the planning process was organized with the many planning partners involved and outlines the major activities that were conducted in the development of this HMP update.

### 3.2.1 Organization of Planning Partnership

Lewis County applied for and was awarded a multi-jurisdictional planning grant under the FEMA Fiscal Year 2015 Pre-Disaster Mitigation Program, which supported the development of this multi-jurisdictional HMP update.

Project management and grant administration has been the responsibility of Lewis County Fire and Emergency Management. A contract planning consultant (Tetra Tech, Inc., referred herein as Tetra Tech) was selected to guide the county and participating jurisdictions through the HMP update process. A contract between Tetra Tech and Lewis County was executed in January 2018. Specifically, Tetra Tech was tasked with the following:

- Assisting with the organization of a Steering Committee and the Planning Partnership
- Assisting with the development and implementation of a public and stakeholder outreach program
- Data collection
- Facilitation and attendance at meetings (Steering Committee, Planning Partnership, municipal, stakeholder, public, and other)
- Review and update of the hazards of concern, hazard profiling, and risk assessment
- Assistance with the review and update of mitigation planning goals and objectives
- Assistance with the review of past mitigation strategies progress
- Assistance with the screening of mitigation actions and the identification of appropriate actions
- Assistance with the prioritization of mitigation actions
- Authoring of the draft and final plan documents

In March 2018, Lewis County notified all municipalities within the county of the pending planning process and invited them to formally participate. Jurisdictions were asked to identify planning points of contact (POC) for facilitating municipal participation and representing the interests of their respective communities.

To facilitate plan development, Lewis County developed a Steering Committee to provide guidance and direction to the HMP update effort and to ensure the resulting document will be embraced politically by the constituency within the planning area (refer to Table 3-2). Specifically, the Steering Committee was charged with the following:

- Providing guidance and oversight of the planning process on behalf of the general Planning Partnership
- Attending and participating in Steering Committee meetings
- Assisting with the development and completion of certain planning elements, including:
  - Reviewing and updating the hazards of concern
  - Developing a public and stakeholder outreach program
  - Assuring that the data and information used in the plan update process are the best available
  - Reviewing and updating the hazard mitigation goals
  - Identifying and screening of appropriate mitigation strategies and activities
- Reviewing and commenting on plan documents prior to submission to NYS DHSES and FEMA

The Steering Committee provided guidance and leadership, oversight of the planning process, and acted as the point of contact for all participating jurisdictions and the various interest groups in the county.



**Table 3-2. Lewis County Hazard Mitigation Steering Committee Members**

Affiliation	Name	Title
Lewis County Manager’s Office	Ryan Piche	Lewis County Manager
Lewis County Fire and Emergency Management	Robert MacKenzie, III	Director
	Jennifer Maracchion	Emergency Management Assistant
Lewis County Highway	David Becker	Superintendent
	Warren Shaw	Deputy Superintendent
Lewis County Planning	Frank Pace	Director
Lewis County Soil & Water Conservation District	Nichelle Billhardt	Director

Table 3-3 lists the current municipal members of the Planning Partnership at the time of this HMP’s publication. It is noted that the Steering Committee members also are part of the overall project Planning Partnership, fulfilling these responsibilities on behalf of Lewis County. This Planning Partnership was charged with the following:

- Representing their jurisdiction throughout the planning process
- Ensuring participation of all departments and functions within their jurisdiction that have a stake in mitigation (e.g., planning, engineering, code enforcement, police and emergency services, public works)
- Assisting in gathering information for inclusion in the HMP update, including the use of previously developed reports and data
- Supporting and promoting the public involvement process
- Reporting on progress of mitigation actions identified in prior or existing HMPs, as applicable
- Identifying, developing, and prioritizing appropriate mitigation initiatives
- Reporting on progress of integration of prior or existing HMPs into other planning processes and municipal operations
- Supporting and developing a jurisdictional annex for their jurisdiction
- Reviewing, amending, and approving all sections of the plan update
- Adopting, implementing, and maintaining the plan update

**Table 3-3. Lewis County Hazard Mitigation Planning Partnership Members**

Jurisdiction	Primary Point of Contact	Title	Alternate Point of Contact	Title
Lewis County	Robert A. MacKenzie	Director of Fire and Emergency Management	Jennifer Marachion	Emergency Management Assistant
Castorland (V)	Derek Mellnitz	Superintendent of Public Works	Robin Grunert	Clerk/Treasurer
Constableville (V)	Joseph Genter	Trustee	Mark Sullivan	Trustee
Copenhagen (V)	Kim Vogt	Village Trustee	Mark Souva	Village Trustee
Croghan (T)	Allan C. Shaw	Highway Superintendent	Roger Burriss	Town Supervisor
Croghan (V)	Michael Monnat	Mayor	Bruce Widrick	Deputy Mayor
Denmark (T)	Patrick Mahar	Superintendent of Highways	James Der	Supervisor
Diana (T)	David Parow	Town Supervisor	Janet Taylor	Town Clerk
Greig (T)	Marilyn Patterson	Town Supervisor	Thomas Gunn	Town Clerk
Harrisburg (T)	Stephen Bernat,	Supervisor	Not identified at time of plan update	
Lewis (T)	Dawn Zagurski	Supervisor	Heidi Fey Gerrard	Clerk
Leyden (T)	Rosalia White	Supervisor	Lois Compo	Town Board Member



Jurisdiction	Primary Point of Contact	Title	Alternate Point of Contact	Title
Lowville (T)	Randall Schell	Supervisor	Joseph Pfeiffer	Code Enforcement
Lowville (V)	Joseph G. Beagle	Mayor	Paul Denise	DPW Superintendent
Lyons Falls (V)	Anne Huntress	Mayor	Shane Rogers	DPW Supervisor
Lyonsdale (T)	Phil Boardman	Supervisor	Brian Ouellette	Councilman
Martinsburg (T)	Terry Thisse	Supervisor	Tyler Jones	Highway Superintendent
Montague (T)	Kurt Riordan	Supervisor	Tony Young	Highway Superintendent
New Bremen (T)	Jonathan M. Bush	Superintendent of Highways	Peter Keys	Town Supervisor
Osceola (T)	Richard Meagher	Highway Superintendent	Ginny Churchill	Town Clerk
Pinckney (T)	Donald Cook	Superintendent	Sherry Harmych	Supervisor
Port Leyden (V)	Heather Collins	Mayor	Joshua Mormon	DPW Supervisor
Turin (T)	Joanne D'Ambrosi	Supervisor	Jane Gillette	Council Member
Turin (V)	Josh Leviker	Mayor	Therese Dunn	Clerk
Watson (T)	Dennis Foster	Supervisor	Michael Hanno	Town Board member
West Turin (T)	Douglas Salmon	Highway Superintendent	Edward Hayes	Town Supervisor

Notes: T = Town; V = Village

The jurisdictions in Lewis County had differing levels of capabilities and resources available to apply to the plan update process, and further, have differing exposure and vulnerability to the hazards being considered in this plan. Lewis County’s intent was to encourage participation by all-inclusive jurisdictions and to accommodate their specific needs and limitations while still meeting the intents and purpose of plan update participation. Such accommodations have included the establishment of a Steering Committee, engaging a contract consultant to assume certain elements of the plan update process on behalf of the jurisdictions, and the provision of additional and alternative mechanisms to meet the purposes and intent of mitigation planning.

Ultimately, jurisdictional participation is evidenced by a completed municipal annex to the HMP (Section 9) wherein jurisdictions have individually identified their planning POCs; evaluated their risk to the hazards of concern; identified their capabilities to effect mitigation in their community; identified and prioritized an appropriate suite of mitigation initiatives, actions, and projects to mitigate their hazard risk; and eventually, adopted the updated plan via resolution.

Appendix F (Participation Matrix) identifies those individuals who represented the municipalities during this planning effort and indicates how they contributed to the planning process.

Of the 25 municipalities in Lewis County, 24 actively participate in the National Flood Insurance Program (NFIP) and have a designated NFIP Floodplain Administrator (FPA). The Town of Montague does not currently participate in the NFIP. All known FPAs were informed of the planning process, reviewed the plan documents, and provided direct input to the plan update. Local FPAs are identified in the Points of Contact and Administrative and Technical portions of the jurisdictional annexes in Section 9 (Jurisdictional Annexes).

### 3.2.2 Planning Activities

Members of the Planning Partnership (individually and as a whole), as well as key stakeholders, convened and/or communicated regularly to share information and participate in workshops to identify hazards; assess risks; review existing inventories of and identify new critical facilities; assist in updating and developing new mitigation goals and strategies; and provide continuity through the process to ensure that natural hazards vulnerability information and appropriate mitigation strategies were incorporated. All members of the Steering



Committee and Planning Partnership had the opportunity to review the draft plan and supported interaction with other stakeholders and assisted with public involvement efforts.

A summary of Steering Committee and Planning Partnership meetings held and key milestones met during the development of the HMP update is included in Table 3-4 that also identifies which DMA 2000 requirements the activities satisfy. Documentation of meetings (e.g., agendas, sign-in sheets, minutes) are in Appendix B (Meeting Documentation). Table 3-4 identifies only the formal meetings held during plan development and does not reflect the planning activities conducted by individuals and groups throughout the planning process. In addition to these meetings, there was a great deal of communication between the county, committee members, and the contract consultant through individual local meetings, electronic mail (email), and by phone.

After completion of the HMP update, implementation and ongoing maintenance will become a function of the Planning Partnership as described in Section 7 (Plan Maintenance). The Planning Partnership is responsible for reviewing the HMP and soliciting and considering public comment as part of the five-year mitigation plan update.

The table below summarizes a list of mitigation planning activities and meetings and their respective participants. A more detailed list of participants for each meeting is provided in Appendix F (Participation Matrix) and Appendix B (Meeting Documentation). Refer to DMA 2000 (Public Law 106-390) for details on each of the planning requirements (<https://www.fema.gov/media-library-data/20130726-1524-20490-1790/dma2000.pdf>).

**Table 3-4. Summary of Mitigation Planning Activities/Efforts**

Date	DMA 2000 Requirement	Description of Activity	Participants
March 8, 2018	1b, 2	Steering Committee Kick-Off Meeting [Data Collection, Review of Mission Statement and Goals, Hazards of Concern Identification, Public Outreach Strategy]	Lewis County Manager, Lewis County Fire and Emergency Management, Lewis County Highway, Lewis County Soil & Water Conservation District, Lewis County Planning
March 28, 2018	1b, 2	Planning Partnership Kick-Off Municipal Kick-Off Meeting and Planning Overview	Lewis County Manager, Fire and Emergency Management, Soil and Water Conservation District, Planning, Highway  Castorland (V); Constableville (V); Copenhagen (V); Croghan (T); Croghan (V); Denmark (T); Greig (T); Harrisburg (T); Lewis (T); Leyden (T); Lowville (T); Lowville (V); Lyons Falls (V); Lyonsdale (T); Martinsburg (T); New Bremen (T); Osceola (T); Pinckney (T); Port Leyden (V) Turin (T); Turin (V); Watson (T); West Turin (T)
November 13, 2018	1b, 2, 3a, 3b, 3c, 3d, 3e	Planning Partnership #2- Risk Assessment Presentation Presentation of risk assessment overview, development of hazard problem statements by community	Lewis County Manager, Legislator, Fire and Emergency Management, Soil and Water Conservation District, Public Health, General Hospital, Social Services  Constableville (V); Copenhagen (V); Croghan (V); Denmark (T); Greig (T); Harrisburg (T); Leyden (T); Lowville (T); Lowville (V); Lyons Falls (V); Lyonsdale (T); Martinsburg (T); Port Leyden (V); Turin (T); West Turin (T)



Date	DMA 2000 Requirement	Description of Activity	Participants
			American Red Cross, Lake of Pines Land Owner Association, Lowville Academy, Beaver River Central School District  NYS DEC, NYS DHSES
December 17, 2018	1b, 2, 4a, 4b, 4c	Mitigation Workshop	Lewis County Legislator, Fire and Emergency Management, Soil and Water Conservation District, Public Health  Constableville (V), Croghan (V), Denmark (T), Leyden (T), Lowville (T), Lyonsdale (T), West Turin (T)  South Lewis Central School District  NYS DHSES
December 18, 2018 – September 19, 2019	1b, 2, 3, 4, 5	Develop jurisdictional annexes with municipal representatives	Lewis County, Castorland (V), Constableville (V), Copenhagen (V), Croghan (T), Croghan (V), Denmark (T), Diana (T), Greig (T), Harrisburg (T), Lewis (T), Leyden (T), Lowville (T), Lowville (V), Lyons Falls (V), Lyonsdale (T), Martinsburg (T), Montague (T), New Bremen (T), Osceola (T), Pinckney (T), Port Leyden (V), Turin (T), Turin (V), Watson (T), West Turin (T)
September 19- October 20, 2019	1b, 2, 3, 4, 5	Public review of the updated draft	N/A
November 8, 2019	N/A	Submission of draft to NYS DHSES for formal review	Lewis County NYS DHSES
November 8, 2019 – March 31, 2020	1b, 2, 3, 4, 5	NYS DHSES Draft Plan Review	NYS DHSES
May 4, 2020	N/A	Revise draft and submit to FEMA Region II for formal review	Lewis County FEMA Region II
March 31 – May 21, 2020	1b, 2, 3, 4, 5	FEMA Review	FEMA Region II
May 21, 2020	1, 2, 3, 4, 5	Approvable Pending Adoption status granted	Lewis County FEMA Region II

Note: TBD = to be determined.

Each number in column 2 identifies specific DMA 2000 requirements, as follows:

- 1a – Prerequisite – Adoption by the Local Governing Body
- 1b – Public Participation
- 2 – Planning Process – Documentation of the Planning Process
- 3a – Risk Assessment – Identifying Hazards
- 3b – Risk Assessment – Profiling Hazard Events
- 3c – Risk Assessment – Assessing Vulnerability: Identifying Assets
- 3d – Risk Assessment – Assessing Vulnerability: Estimating Potential Losses
- 3e – Risk Assessment – Assessing Vulnerability: Analyzing Development Trends
- 4a – Mitigation Strategy – Local Hazard Mitigation Goals
- 4b – Mitigation Strategy – Identification and Analysis of Mitigation Measures
- 4c – Mitigation Strategy – Implementation of Mitigation Measures
- 5a – Plan Maintenance Procedures – Monitoring, Evaluating, and Updating the Plan
- 5b – Plan Maintenance Procedures – Implementation through Existing Programs
- 5c – Plan Maintenance Procedures – Continued Public Involvement

### 3.3 STAKEHOLDER OUTREACH AND INVOLVEMENT

Stakeholders are the individuals, agencies, and jurisdictions that have a vested interest in the recommendations of the HMP, including all planning partners.





Diligent efforts were made to ensure broad regional, county, and local representation in this planning process. To that end, a comprehensive list of stakeholders was developed with the support of the Steering Committee and Planning Partnership. Stakeholder outreach was performed early and throughout the planning process. This HMP includes information and input provided by these stakeholders where appropriate, as identified in the references.

The following is a list of the various stakeholders that were invited to participate in the development of this plan, along with a summary of how these stakeholders participated and contributed. This summary listing does not represent the total of stakeholders that were aware of and contributed to this HMP update, as outreach efforts were being made, both formally and informally, throughout the process by the many planning partners involved in the effort, and documentation of all such efforts is impossible. Instead, this summary is intended to demonstrate the scope and breadth of the stakeholder outreach efforts made during the plan update process.

### 3.3.1 Federal Agencies

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**FEMA Region II:** Provided updated planning guidance, provided summary and detailed data from the NFIP (including repetitive loss information), and conducted plan review.

Information regarding hazard identification and the risk assessment for this HMP update was requested and received or incorporated by reference from the following agencies and organizations:

- National Centers for Environmental Information (NCEI)
- National Hurricane Center (NHC)
- National Oceanic and Atmospheric Administration (NOAA)
- National Weather Service (NWS)
- Storm Prediction Center (SPC)
- U.S. Army Corps of Engineers (USACE)
- U.S. Census Bureau

### 3.3.2 State Agencies

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**NYS DHSES:** Administered planning grant and facilitated FEMA review, provided updated planning guidance, and provided review of draft and final HMP.

**New York State Department of Environmental Conservation (NYSDEC):** Provided data and information.

### 3.3.3 Lewis County Departments

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Several county departments were represented on the Steering Committee and involved in the HMP update planning process. Appendix F (Participation Matrix) provides further details regarding regional and local stakeholder agencies.

**Lewis County Manager:** The Lewis County Manager served on the Steering Committee and provided his support throughout the planning process. He attended the Planning Partnership Kick-off Meeting and the Risk Assessment Review Meeting, providing information about the hazards that affect the county. He encouraged participation by county departments and other stakeholders.

**Lewis County Legislators:** A County Legislator attended the Risk Assessment Review Meeting and Mitigation Strategy Workshop, providing information on the hazards that affect the county and helping to identify mitigation projects for addressing those hazards.





**Lewis County Fire and Emergency Management:** Lewis County Fire and Emergency Management consists of the director and an assistant. The Director provided leadership of the planning process, acting as chair of the Steering Committee, providing data, and facilitating communication with plan participants as well as public outreach. He was identified as the ongoing Lewis County HMP Coordinator in Section 7 (Plan Maintenance) and served in this role throughout the planning process. The Emergency Management Assistant coordinated with county departments and municipal officials to distribute and collect information related to the planning process and worked with the towns and villages to identify mitigation actions and complete their jurisdictional annexes.

**Lewis County Planning Department:** The Lewis County Planning Department was represented on the HMP Steering Committee by its director. In addition, Planning provided critical data, assisted with the update of events and losses in the county, updated the previous mitigation strategy, facilitated outreach to jurisdictions and stakeholders, contributed to the county's capability assessment and updated mitigation strategy, and reviewed draft sections of the HMP.

**Lewis County Public Health:** Planners from Lewis County Public Health attended the Risk Assessment Review Meeting and the Mitigation Strategy Meeting. They reviewed and provided information regarding the hazards that can affect Lewis County and the potential health impacts of those hazards.

**Lewis County Social Services:** The Commissioner of Social Services attended the Risk Assessment Review Meeting. She provided information regarding the impacts of hazards on vulnerable populations in the county.

**Lewis County Soil and Water Conservation District:** The Director of the Lewis County Soil and Water Conservation District served on the HMP Steering Committee and was heavily involved in the planning process. The director attended all meetings of the Planning Partnership, provided critical GIS and other data, assisted with the update of events and losses in the county, updated the previous mitigation strategy, facilitated outreach to jurisdictions and stakeholders, contributed to the county's capability assessment (including how the county provides floodplain administration services to several jurisdictions) and updated mitigation strategy, and reviewed draft sections of the HMP.

**Lewis County Highway Department:** The Lewis County Highway Department maintains roads and bridges owned by the County. The Superintendent served on the Steering Committee, participated in meetings, provided input on the mitigation strategy and mitigation actions, and reviewed sections of the plan.

**Lewis County General Hospital:** The Director of Facilities Management at the hospital attended the Risk Assessment Review Meeting. He reviewed and provided information regarding the hazards that can affect Lewis County and the potential impacts of those hazards on the hospital and the provision of medical care in the county.

### 3.3.4 Regional and Local Stakeholders

Appendix F (Participation Matrix) provides further details regarding regional and local stakeholder agencies. The stakeholders listed below were directly contacted by Lewis County to provide information, identify specific mitigation strategies, and/or review the draft HMP. Results of information gathering surveys are in Appendix C (Public and Stakeholder Outreach). Feedback was reviewed by the Steering Committee and Planning Partnership and integrated where appropriate in the plan.

#### Academia

All school districts in the county were invited via email to provide input and attend meetings in March 2018, November 2018, and December 2018, and were notified of the draft HMP review period. Lowville Academy, the South Lewis Central School District, and the Beaver River Central School District were represented at the



risk assessment review meeting in November 2018. The South Lewis Central School District was also represented at the mitigation strategy workshop in December 2018.

### **Business and Commercial Interests**

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Businesses and commercial industries in Lewis County were invited to provide input on the draft HMP. No such organizations provided input.

### **Emergency Services**

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All state, county, and local emergency service providers (police, fire, EMS) were notified of the planning process and invited to attend meetings in March 2018, November 2018, and December 2018, and provide input on the draft HMP. Response organizations were contacted via email and telephone by Lewis County Fire and Emergency Management.

### **Hospitals and Healthcare Facilities**

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The Lewis County General Hospital is a county department and is listed above.

### **Highway and Public Works**

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All local highway and public works departments were invited to provide input on the draft HMP and attend all planning meetings. In addition, many of the participating municipalities had representatives from their highway and public works departments representing them on the Planning Partnership.

### **Additional Stakeholders**

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The Lake of Pines Land Owner Association provided a representative to the risk assessment review meeting in November 2018.

## **3.3.5 Adjacent Counties**

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Lewis County has tried to keep surrounding counties and municipalities apprised of the project and allowed the opportunity to provide input to this planning process. Specifically, the following adjoining and nearby county representatives were contacted via email in March 2018 and November 2018 to inform them about the availability of the project website, draft plan documents, and surveys, and to invite them to attend planning meetings or otherwise provide input to the planning process.

- Herkimer County, New York
- Jefferson County, New York
- Oswego County, New York
- Oneida County, New York
- St. Lawrence County, New York

No information was received from these counties.

## **3.3.6 Public Outreach**

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The Steering Committee and Planning Partnership made the following efforts toward public participation in the development and review of the HMP:

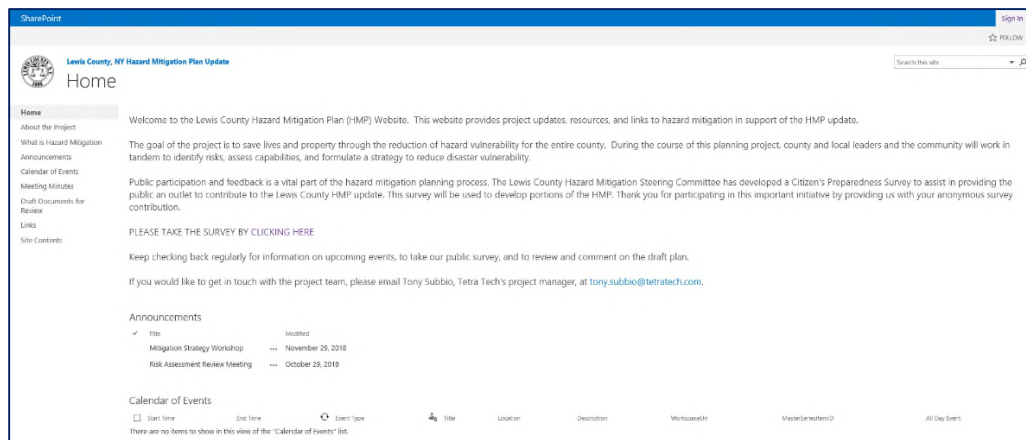
- A public project website was developed and is being maintained to facilitate communication between the Steering Committee, Planning Partnership, public, and stakeholders. The public website provided



a project overview, county and local contact information, access to the citizen's survey, and sections of the HMP for public review and comment. Figure 3-1 provides a screenshot of the current website homepage. (<http://www.lewiscountyhmp.com>).

- All hazard mitigation planning meetings that were open to the public were advertised on the Lewis County Fire and Emergency Services website, the project website, and in the *Watertown Daily Times*.
- An online hazard preparedness citizen survey was developed to gauge household preparedness relevant to hazards in Lewis County and to assess the level of knowledge of tools and techniques to assist in reducing risk and loss of those hazards. The questionnaire asked quantifiable questions about citizen perception of risk, knowledge of mitigation, and support of community programs, as well as several demographic questions to help analyze trends. The questionnaire was posted on the project’s public website in March 2018 and was available for over one year to facilitate public input, but only garnered two responses. The survey results were sorted by municipality and provided to the Steering Committee and Planning Partnership members to use to identify vulnerabilities and develop mitigation strategies. A summary of survey results is provided in Appendix C (Public and Stakeholder Outreach).
- All participating municipalities were encouraged to post the links to the project webpage and citizen and stakeholder surveys. In addition, all participating municipalities were requested to advertise the availability of the project website via local homepage links, and other available public announcement methods (e.g., Facebook, Twitter, email blasts).
- Starting in October 2018, draft sections of the plan were posted on the project website for public review and comment. In addition, links were provided to the participating jurisdictions to post on their respective websites.
- Once approved by NYS DHSES/FEMA, the final HMP will be available on the county and municipal websites.

Figure 3-1. Lewis County HMP Website Homepage



### 3.4 INCORPORATION OF EXISTING PLANS, STUDIES, REPORTS AND TECHNICAL INFORMATION

The Lewis County HMP strives to use the best available technical information, plans, studies, and reports throughout the planning process to support hazard profiling; risk and vulnerability assessment; review and evaluation of mitigation capabilities; and the identification, development, and prioritization of county and local mitigation strategies.

The asset and inventory data used for the risk and vulnerability assessments are presented in the County Profile (Section 4). Details of the source of this data, along with technical information on how the data was used to





develop the risk and vulnerability assessment, are presented in the Hazard Profiling and Risk Assessment Section (Section 5), specifically within Section 5.3 (Data and Methodology) as well as throughout the hazard profiles in Section 5.4 (Hazard Profiles). Further, the source of technical data and information used can be found within Volume I under *References*.

Plans, reports, and other technical information were identified and provided directly by the county, participating jurisdictions, and numerous stakeholders involved in the planning effort as well as through independent research by the planning consultant. The county and participating jurisdictions were tasked with updating the inventory of their planning and regulatory capabilities in Section 9 (Jurisdictional Annexes) and providing relevant planning and regulatory documents, as applicable. Relevant documents, including plans, reports, and ordinances were reviewed to identify the following:

- Existing municipal capabilities
- Needs and opportunities to develop or enhance capabilities, which may be identified within the county or local mitigation strategies
- Mitigation-related goals or objectives considered in the review and update of the overall Goals [and Objectives] in Section 6 (Mitigation Strategy)
- Proposed, in-progress, or potential mitigation projects, actions, and initiatives to be incorporated into the updated county and local mitigation strategies

The following local regulations, codes, ordinances, and plans were reviewed during this process to develop mitigation planning goals, objectives, and strategies that are consistent across local and regional planning and regulatory mechanisms to accomplish complementary and mutually supportive strategies:

- New York State Standard Multi-Hazard Mitigation Plan 2014 and 2019
- Lewis County Comprehensive Emergency Management Plan (CEMP)
- Lewis County Survey of the Community 2017
- Croghan Microgrid Study (Development Authority of North Country 2016)
- Local plans and regulations (Section 9 includes a list and description of the local documents reviewed for each jurisdiction)
  - Comprehensive/Master Plans
  - Building Codes
  - Zoning and Subdivision Ordinances
  - NFIP Flood Damage Prevention Ordinances
  - Site Plan Requirements
  - Local Waterfront Revitalization Plans
  - Stormwater Management Plans
  - Emergency Management and Response Plans
  - Land Use and Open Space Plans
  - Capital Plans

### 3.5 INTEGRATION WITH EXISTING PLANNING MECHANISMS AND PROGRAMS

Effective mitigation is achieved when hazard awareness and risk management approaches and strategies become an integral part of public activities and decision-making. Within Lewis County, there are many existing plans and programs that support hazard risk management, and thus it is critical that this HMP integrate, coordinate with, and complement, those existing plans and programs.



The Capability Assessment section of Section 6 (Mitigation Strategy) provides a summary and description of the existing plans, programs, and regulatory mechanisms at all levels of government (federal, state, county, and local) that support hazard mitigation within the county. Within each jurisdictional annex in Section 9 (Jurisdictional Annexes), the county and each participating jurisdiction identified how they integrated hazard risk management into their existing planning, regulatory, and operational/administrative framework (*integration capabilities*) and how they intend to promote this integration (*integration actions*).

A further summary of these continued efforts to develop and promote a comprehensive and holistic approach to hazard risk management and mitigation is presented in Section 7 (Plan Maintenance).

### 3.6 CONTINUED PUBLIC INVOLVEMENT

Lewis County and participating jurisdictions are committed to the continued involvement of the public in the hazard mitigation process. This HMP update will be posted online at <https://www.lewiscounty.org/emergency-management> and municipalities will be encouraged to maintain links to the plan website. Further, the county will make hard copies of the HMP available for review at public locations as identified on the website.

A notice regarding annual updates of the plan and the location of plan copies will be publicized annually after the Planning Partnership's annual evaluation and posted on the public website at <https://www.lewiscounty.org/emergency-management>.

Each jurisdiction's governing body shall be responsible for receiving, tracking, and filing public comments regarding this plan.

The public will have an opportunity to comment on the plan as a part of the annual mitigation planning evaluation process and the next five-year mitigation plan update. The HMP Coordinator is responsible for coordinating the plan evaluation portion of the meeting, soliciting feedback, collecting and reviewing the comments, and ensuring their incorporation in the five-year plan update as appropriate; however, members of the Planning Partnership will assist the HMP Coordinator. Additional meetings may be held as deemed necessary by the Planning Committee to provide the public an opportunity to express concerns, opinions, and ideas about the plan.

Further details regarding continued public involvement are provided in Section 7 (Plan Maintenance).

After completion of this plan, implementation and ongoing maintenance will continue to be a function of the Planning Partnership. The Planning Partnership will review the plan and accept public comments as part of an annual review and as part of five-year mitigation plan updates.

A notice regarding annual updates of the plan and the location of plan copies will be publicized annually after the HMP Committee's annual evaluation and posted on the public website.

Mr. Robert MacKenzie is identified as the Lewis County HMP Coordinator in Section 7 (Plan Maintenance) and is responsible for receiving, tracking, and filing public comments regarding this plan. Contact information is:

Robert A. MacKenzie, III,  
Director of Fire and Emergency Management  
Lewis County Emergency Management  
(315) 376-5303  
5252 Outer Stowe St., Lowville, NY 13367  
Email: [robertmackenzie@lewiscounty.ny.gov](mailto:robertmackenzie@lewiscounty.ny.gov)



## SECTION 4 COUNTY PROFILE

Lewis County profile information is presented in the plan and analyzed to develop an understanding of a study area, including the economic, structural, and population assets at risk and the particular concerns that may be present related to hazards analyzed later in this plan (e.g., low-lying areas prone to flooding or a high percentage of vulnerable persons in an area). This profile provides general information for Lewis County (physical setting, population and demographics, general building stock, and land use and population trends) and critical facilities located within the County.

### 4.1 GENERAL INFORMATION

#### 4.1.1 Physical Setting

This section presents the physical setting of the County, including: location, hydrography and hydrology, topography and geology, climate, and land use/land cover.

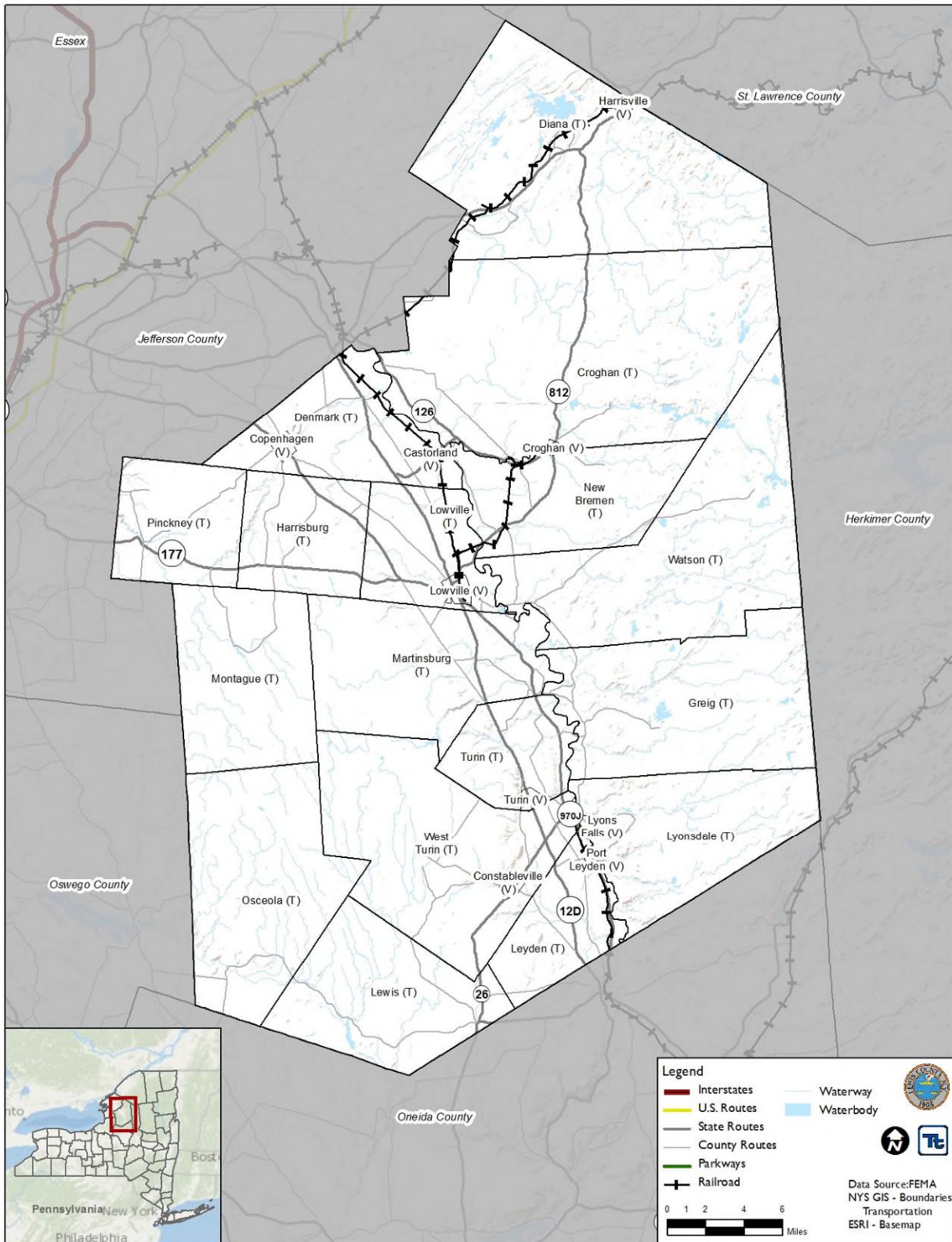
##### **Location**

Lewis County is located in northwestern portion of the center of New York State. The County is bordered to the north by St. Lawrence County, to the east by Herkimer County, to the south by Oneida County, to the southwest by Oswego County, and to the northwest by Jefferson County. Lewis County is made up of 26 municipalities (towns and villages) and encompasses an area of approximately 1,290 square miles (Lewis County HMP, 2010). Figure 4-1 illustrates the County and its municipalities.





Figure 4-1. Lewis County, New York



Source: Lewis County, 2012

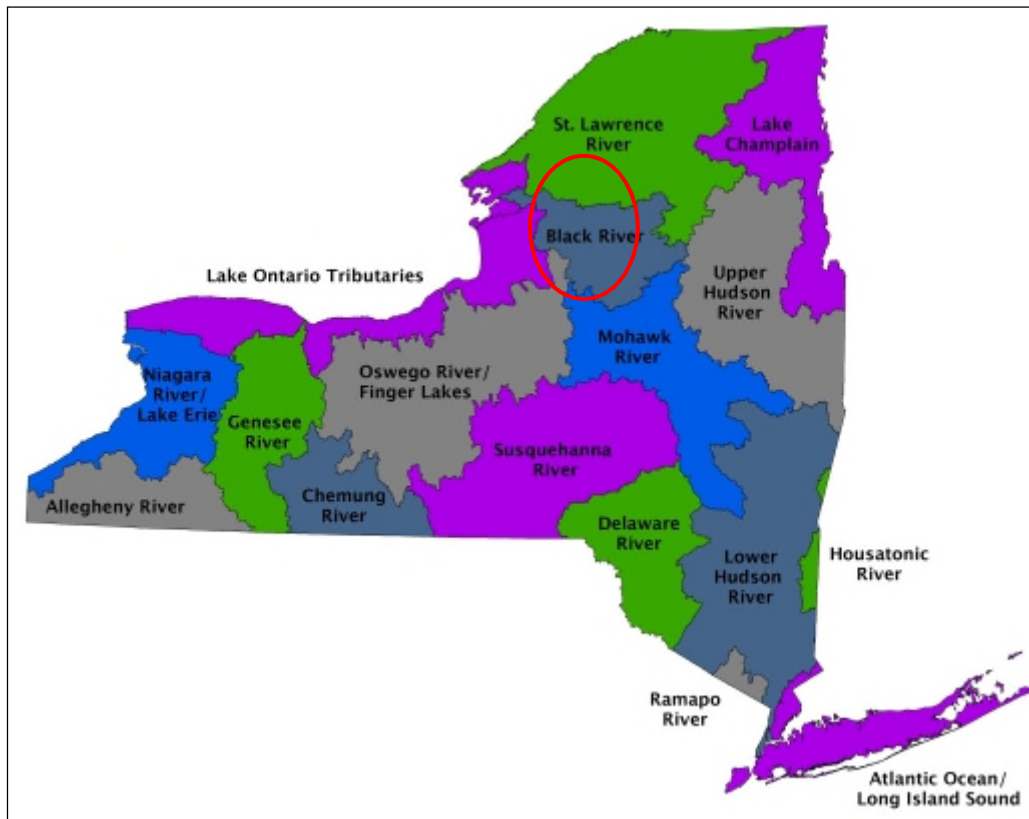




### Hydrography and Hydrology

Numerous ponds, lakes, creeks, and rivers make up the waterscape of Lewis County, which lies within several major drainage basins (St. Lawrence River Basin, Black River Basin, Mohawk River, Oswego River/Finger Lakes Basin, Lake Ontario Tributaries Basin) and numerous sub-basins. The major rivers within the County include the Black River and its tributaries, Beaver River, Douglas Creek, House Falls Creek, Independence River, Moose River, North Branch Sugar River, Oswegatchie River, and South Sandy Creek. Major lakes in Lewis County include Beavery Lake, Lake Bonaparte, Brantingham Lake, Francis Lake, High Falls Pond, Long Pond, Pine Lake, Potash Creek, and Stony Lake. Figure 4-2 depicts the 17 drainage basins found in New York State and Figure 4-3 depicts the various watersheds in Lewis County.

Figure 4-2. Drainage Basins of New York State

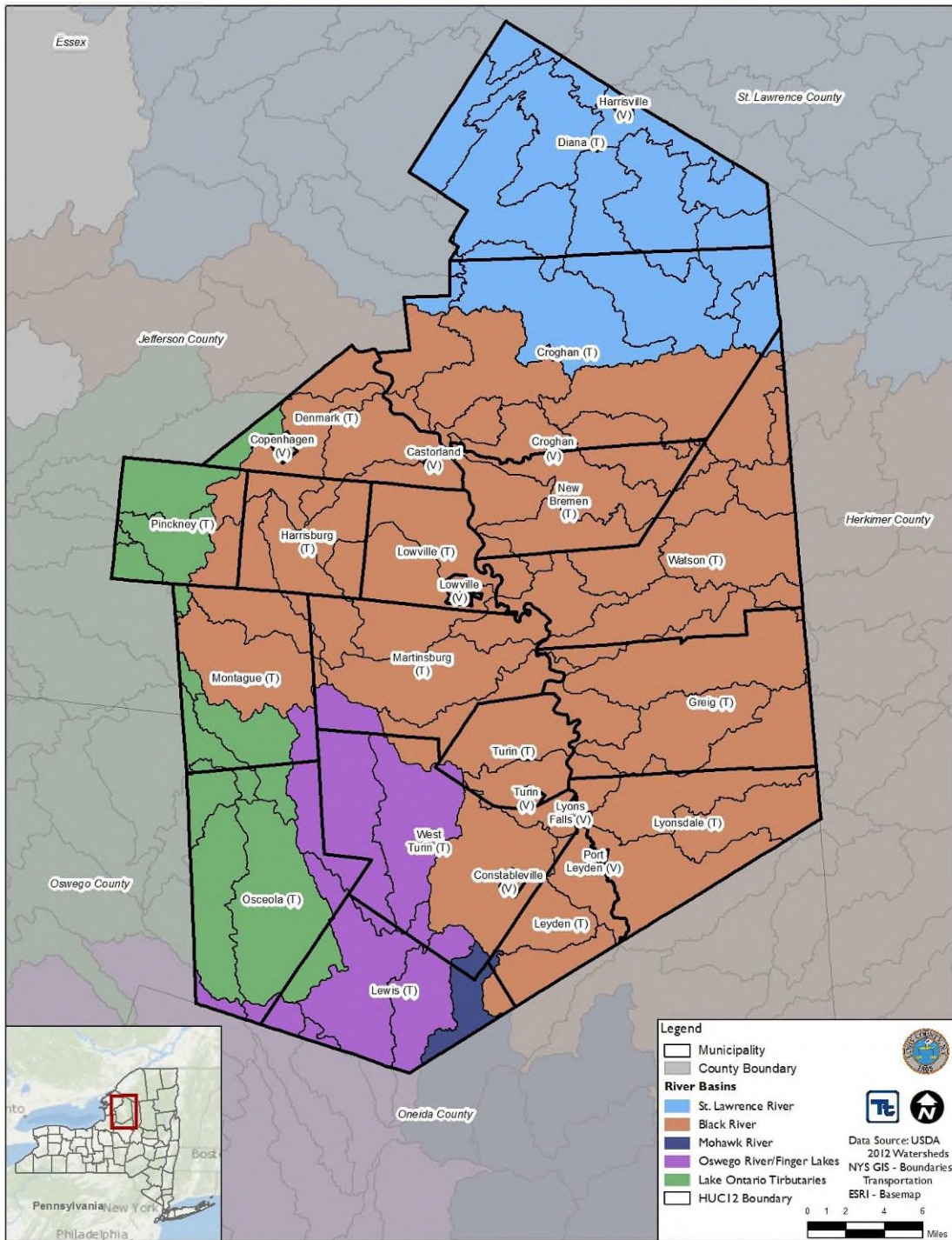


Source: NYSDEC, Date Unknown  
Note: The circle indicates the approximate location of Lewis County.





Figure 4-3. Watersheds and River Basins in Lewis County



Source: USDA 2012





## The Black River Basin

The Black River Basin is the dominant basin in Lewis County. The Black River drains 1,920 square miles of land, predominantly at the western slope of the Adirondack Mountains and the eastern edge of the Tug Hill Plateau. The majority of the basin is undeveloped and sparsely populated, covering portions of Lewis, Jefferson, and Herkimer Counties as well as smaller portions of west Hamilton and northern Oneida Counties. The Black River flows north and west, draining into Lake Ontario. In total, the watershed encompasses 3,910 miles of freshwater rivers and streams (NYSDEC 2018).

The population of Lewis County has been concentrated in the Black River Valley from the earliest days of European settlement, a pattern which is not expected to change significantly in the foreseeable future. The Black River Valley has historically provided the primary transportation corridor through Lewis County, particularly the Black River Canal system that connected local communities to the Erie Canal. In addition to commerce and transport, the Black River has provided opportunities for hydropower in certain locations, and the fertile floodplain offered prime agricultural land. These historic and environmental factors have made the Black River Valley the most densely populated area of the County (Lewis County HMP 2010). Figure 4-3 illustrates the Black River Watersheds (HUC 10 and HUC 12) and major riverine reaches in Lewis County.

## Topography and Geology

The primary feature of Lewis County is the Black River Valley, which runs south-north through its center. The Black River Valley is flanked by the Tug Hill Plateau to the west and the Adirondack Foothills to the east. Eastern portions of five of the towns in Lewis County are also within the Adirondack Park Blue-Line boundary (Lewis County Comprehensive Plan 2009).

The Black River flows 114 miles from the western Adirondacks, through the county along the edge of the Tug Hill Plateau and into Lake Ontario. The 42-mile flatwater section through Lewis County from Lyons Falls to Carthage is known locally as the “Black River Flats.” The river drops only approximately 15 feet over the 42-mile distance. The river is in a broad open valley that is between two and five miles in width. The Black River was a connection point for the Erie Canal at Lyons Falls via the Black River Canal. Periodic flooding of the river valley has resulted in the presence of high-quality soils, which contributes to the dominance of agricultural land uses in the valley (Lewis County Comprehensive Plan 2009).

The Tug Hill Plateau is one of the few examples in the eastern United States of a distinct, large plateau at 2,100 square miles. It lies between Lake Ontario, the Black River, and Oneida Lake. It encompasses towns and villages scattered in a vast acreage of forest and farm land. At the core of the plateau is more than 800 square miles of remote forest land and the headwaters of several major rivers. The plateau’s location on the eastern end of Lake Ontario makes it the most substantial lake-effect snow location in the country (Lewis County Comprehensive Plan 2009).

Lewis County contains a portion of the western foothills of the Adirondack Mountains. The Adirondack Park was created in 1892 by the State of New York amid concerns for the water and timber resources of the mountainous region. Today, the park is the largest publicly protected area in the contiguous United States, greater in size than Yellowstone, Everglades, Glacier, and Grand Canyon National Parks combined. The boundary of the park encompasses approximately 6 million acres, nearly half of which belongs to all the people of New York State and is constitutionally protected to remain “forever wild” forest preserve. The remaining half of the park is private land which includes settlements, farms, timber lands, businesses, homes, and camps. The wild forest, water, wildlife, and aesthetic resources of the park along with its open space character provide an outdoor recreational experience of national and international significance (Lewis County Comprehensive Plan 2009).



### Climate

The climate of New York State is similar to most of the Northeast U.S. and is classified as Humid Continental. Differences in latitude, character of topography, and proximity to large bodies of water all have an effect on the climate across New York State. Precipitation during the warm, growing season (April through September) is characterized by convective storms that generally form in advance of an eastward-moving cold front or during periods of local atmospheric instability. Occasionally, tropical cyclones will move up from southern coastal areas and produce large quantities of rain. Both types of storms typically are characterized by relatively short periods of intense precipitation that produce large amounts of surface runoff and little recharge.

The cool season (October through March) is characterized by large, low-pressure systems that move northeastward along the Atlantic coast or the western side of the Appalachian Mountains. Storms that form in these systems are characterized by long periods of steady precipitation in the form of rain, snow, or ice, and tend to produce less surface runoff and more recharge than the summer storms because they have a longer duration and occasionally result in snowmelt.

Lewis County generally experiences seasonable weather patterns characteristic of the northeastern U.S. Summer temperatures typically range from about 69°F to 78°F (Fahrenheit). Winter high temperatures usually range from 26°F to 38°F (Fahrenheit). Lewis County averages 41.35 inches of annual precipitation with 119 inches of annual snowfall (U. S. Climate Data, 2018).

### Land Use and Land Cover

Lewis County is dominated by farmland and forest with dairy farming and wood products being harvested. Fort Drum is a United States Army Base which covers 27 square miles along the northern edge of the county (Lewis County Comprehensive Plan 2009).

Table 4-1 below shows the land use categories and their total square miles and percentages. Figure 4-4 shows the distribution of land use throughout Lewis County.

**Table 4-1. Land Use (2011) in Lewis County**

Land Use	Total Area (sq. mi.)	Percent of County (%)
Agricultural	185.5	14.4%
Barren Land	0.4	< 1%
Developed	12.6	1.0%
Forest	925.8	71.7%
Water	26.2	2.0%
Wetlands	140.7	10.9%
<b>Lewis County:</b>	<b>1,291.3</b>	<b>100.0%</b>

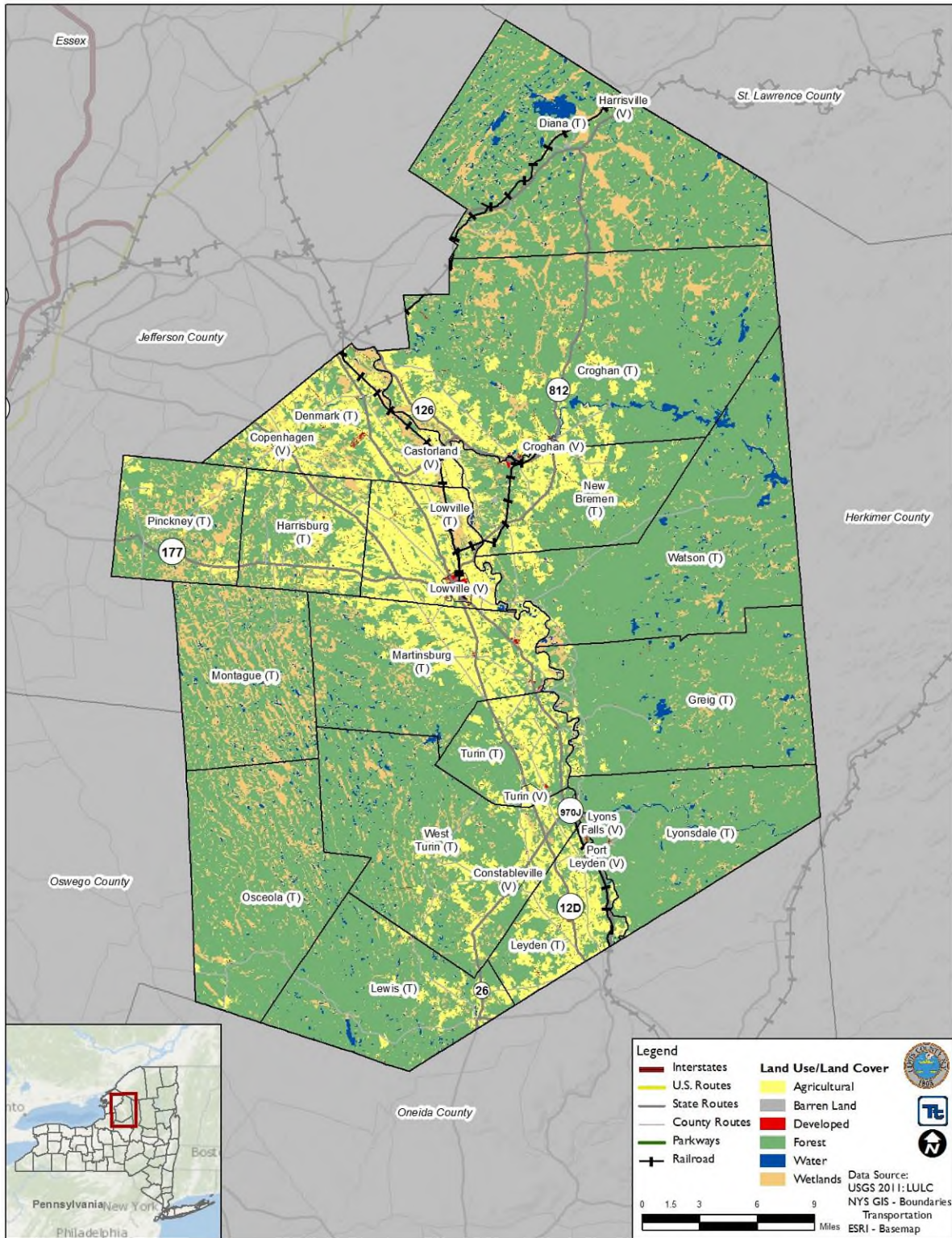
Source: USGS, 2011

Note: sq. mi. = square miles





Figure 4-4. Land Use in Lewis County



Source: USGS, 2011 (2006 National Land Cover Database)







## 4.2 POPULATION AND DEMOGRAPHICS

According to the 2010 U.S. Census, Lewis County had a population of 27,087 people. As noted in Section 5 (Methodology) of this plan, modeling of the impacts of natural hazards on the population was performed using the Federal Emergency Management Agency’s (FEMA) Hazards U.S. Multi-Hazard (HAZUS-MH) in which the available population information includes the 2010 U.S. Census. Table 4-2 presents the population statistics for Lewis County based on the 2010 U.S. Census data. Figure 4-5 shows the distribution of the 2010 U.S. Census general population density (persons per square mile) by Census block. However, more current data, according to U.S. Census Bureau, 2017 American Community Survey 5 Year Estimate, indicates a population of approximately 26,845 in the County, or a slight decrease in population. Both sets of statistics are provided for context, but for the purposes of this plan, the data available in HAZUS-MH v4.2 are used (representing 2010 data) to support the analysis as the more recent data does not significantly skew the analysis.

DMA 2000 requires that HMPs consider socially vulnerable populations. These populations can be more susceptible to hazard events, based on a number of factors including their physical and financial ability to react or respond during a hazard and the location and construction quality of their housing. For the purposes of this study, vulnerable populations shall include (1) the elderly (persons aged 65 and over) and (2) those living in low-income households.

**Table 4-2. Lewis County Population Statistics 2010 (Census) and 2017 (American Community Survey 2013-2017 Estimates)**

Jurisdiction	U.S. Census 2010						
	Total	Pop. 65+	% Pop. 65+	Population Under 5	% Under 5	Low-Income Pop.**	% Low-Income Pop.
Castorland (V)	351	56	15.95%	41	11.68%	15	4.30%
Constableville (V)	242	42	17.36%	18	7.44%	15	6.20%
Copenhagen (V)	801	87	10.86%	60	7.49%	46	5.70%
Croghan (T)	2,751	355	12.90%	186	6.76%	114	4.10%
Croghan (V)	618	126	20.39%	36	5.83%	39	6.30%
Denmark (T)	1,708	202	11.83%	121	7.08%	67	3.90%
Diana (T)	1,709	283	16.56%	101	5.91%	107	6.26%
Greig (T)	1,199	227	18.93%	59	4.92%	115	9.60%
Harrisburg (T)	437	53	12.13%	31	7.09%	15	3.40%
Lewis (T)	854	104	12.18%	73	8.55%	52	6.10%
Leyden (T)	1,303	172	13.20%	85	6.52%	124	9.50%
Lowville (T)	1,512	397	26.26%	108	7.14%	73	4.80%
Lowville (V)	3,470	604	17.41%	219	6.31%	406	11.70%
Lyons Falls (V)	566	96	16.96%	46	8.13%	58	10.20%
Lyonsdale (T)	982	138	14.05%	57	5.80%	78	7.90%
Martinsburg (T)	1,433	165	11.51%	96	6.70%	113	7.90%
Montague (T)	78	7	8.97%	3	3.85%	8	10.30%



Jurisdiction	U.S. Census 2010						
	Total	Pop. 65+	% Pop. 65+	Population Under 5	% Under 5	Low-Income Pop.**	% Low-Income Pop.
New Bremen (T)	2,430	322	13.25%	150	6.17%	114	4.70%
Osceola (T)	229	36	15.72%	11	4.80%	18	7.90%
Pinckney (T)	329	33	10.03%	18	5.47%	17	5.20%
Port Leyden (V)	672	107	15.92%	43	6.40%	73	10.90%
Turin (T)	529	62	11.72%	39	7.37%	33	6.20%
Turin (V)	232	40	17.24%	13	5.60%	18	7.80%
Watson (T)	1,881	257	13.66%	119	6.33%	127	6.80%
West Turin (T)	771	105	13.62%	43	5.58%	38	4.90%
<b>Lewis County</b>	<b>27,087</b>	<b>4,076</b>	<b>15.00%</b>	<b>1,776</b>	<b>6.56%</b>	<b>1,883</b>	<b>7.00%</b>

Jurisdiction	American Community Survey 2013 - 2017						
	Total	Pop. 65+*	% Pop. 65+	Population Under 5	% Under 5	Pop in Poverty	% Low-Income Pop.
Castorland (V)	324	61	18.8%	27	8.3%	79	24.4%
Constableville (V)	267	28	10.5%	29	10.9%	42	15.7%
Copenhagen (V)	803	117	14.6%	47	5.9%	65	8.1%
Croghan (T)*	3,080	597	19.4%	190	6.2%	308	10.0%
Croghan (V)	631	166	26.3%	53	8.4%	58	9.2%
Denmark (T)	1,714	188	11.0%	70	4.1%	226	13.2%
Diana (T)	1,650	281	17.0%	47	4.0%	342	20.8%
Greig (T)	1,294	287	22.2%	49	3.8%	129	10.0%
Harrisburg (T)	484	58	12.0%	48	9.9%	58	12.0%
Lewis (T)	782	76	9.7%	57	7.3%	156	19.9%
Leyden (T)*	1,808	300	16.6%	134	7.4%	237	13.1%
Lowville (T)	1,708	345	20.2%	163	9.5%	451	26.4%
Lowville (V)	3,180	591	18.6%	216	6.8%	477	15.0%
Lyons Falls (V)	613	155	25.3%	20	3.3%	80	13.1%
Lyonsdale (T)*	1,139	218	19.1%	48	4.2%	256	22.5%
Martinsburg (T)	1,479	185	12.5%	77	5.2%	206	13.9%
Montague (T)	40	12	30.0%	0	0.0%	2	5.0%
New Bremen (T)*	2,685	372	13.9%	252	9.4%	327	12.2%
Osceola (T)	235	48	20.4%	2	0.9%	32	13.6%
Pinckney (T)	337	35	10.4%	9	2.7%	81	24.0%
Port Leyden (V)	688	111	16.1%	69	10.0%	118	17.2%
Turin (T)	420	70	16.7%	15	3.6%	6	1.4%



Jurisdiction	American Community Survey 2013 - 2017						
	Total	Pop. 65+*	% Pop. 65+	Population Under 5	% Under 5	Pop in Poverty	% Low-Income Pop.
Turin (V)	200	37	18.5%	24	12.0%	18	9.0%
Watson (T)	1,864	331	17.8%	96	5.2%	153	8.2%
West Turin (T)*	1,619	266	16.4%	70	4.3%	141	8.7%
<b>Lewis County</b>	<b>26,845</b>	<b>4,475</b>	<b>16.7%</b>	<b>1,660</b>	<b>6.2%</b>	<b>3,750</b>	<b>14.0%</b>

Source: U.S. Census Bureau 2010, 2013-2017 American Community Survey 5-Year Estimates

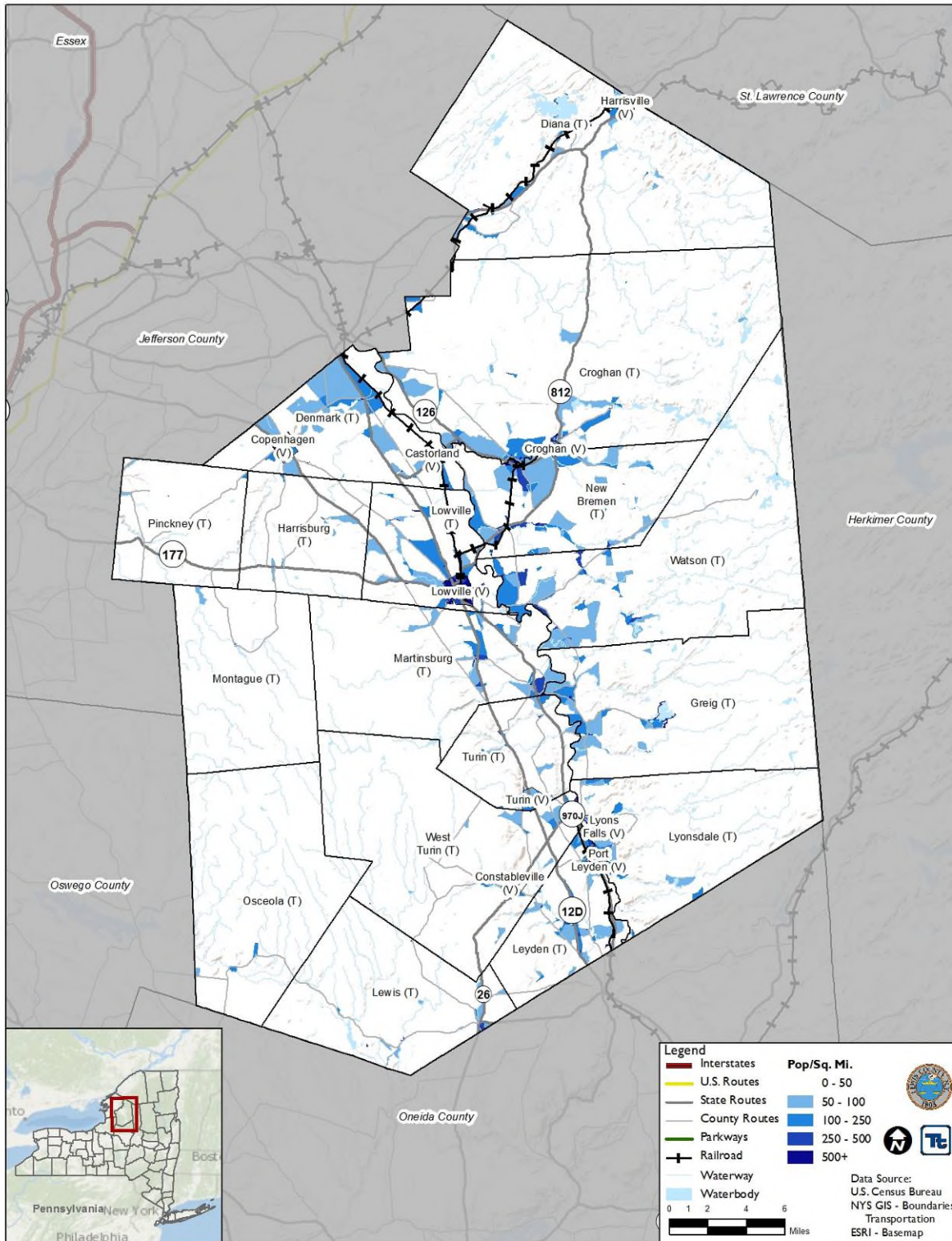
Notes: Pop. = population; \* Individuals below poverty level; Statistics for the Village of Harrisville were combined into the Town of Diana.

It is noted that the census data for household income provided in HAZUS-MH includes two ranges (\$0-10,000 and \$10,000-\$20,000/year) that were totaled to provide the “low-income” data used in this study. This does not correspond exactly with the “poverty” thresholds established by the U.S. Census Bureau, which identifies households with an annual household income below \$15,000 per year as “low-income” for this region. This difference is not believed to be significant for this planning effort.

The 2013-2017 American Community Survey data has identified that there are 1,146 households in the County that have an annual income of less than \$15,000. The 2010 U.S. Census data indicates a total of 3,750 persons living in households below the poverty level (14%). Figure 4-6 shows the distribution of persons over age 65 in Lewis County, while Figure 4-7 shows the distribution of low-income persons.



Figure 4-5. Distribution of General Population for Lewis County, New York



Source: HAZUS-MH 4.2





### 4.3 VULNERABLE POPULATIONS

Identifying concentrations of vulnerable populations can assist communities in targeting preparedness, response, and mitigation actions. Populations with a higher level of vulnerability may be more seriously affected during the course of an emergency or disaster. Vulnerable populations have unique needs that need to be taken into consideration by public officials to help ensure the safety of demographics with a higher level of risk. For this planning process, vulnerable populations in Lewis County include children, elderly, low-income, the physically or mentally disabled, and non-English speakers.

#### Age

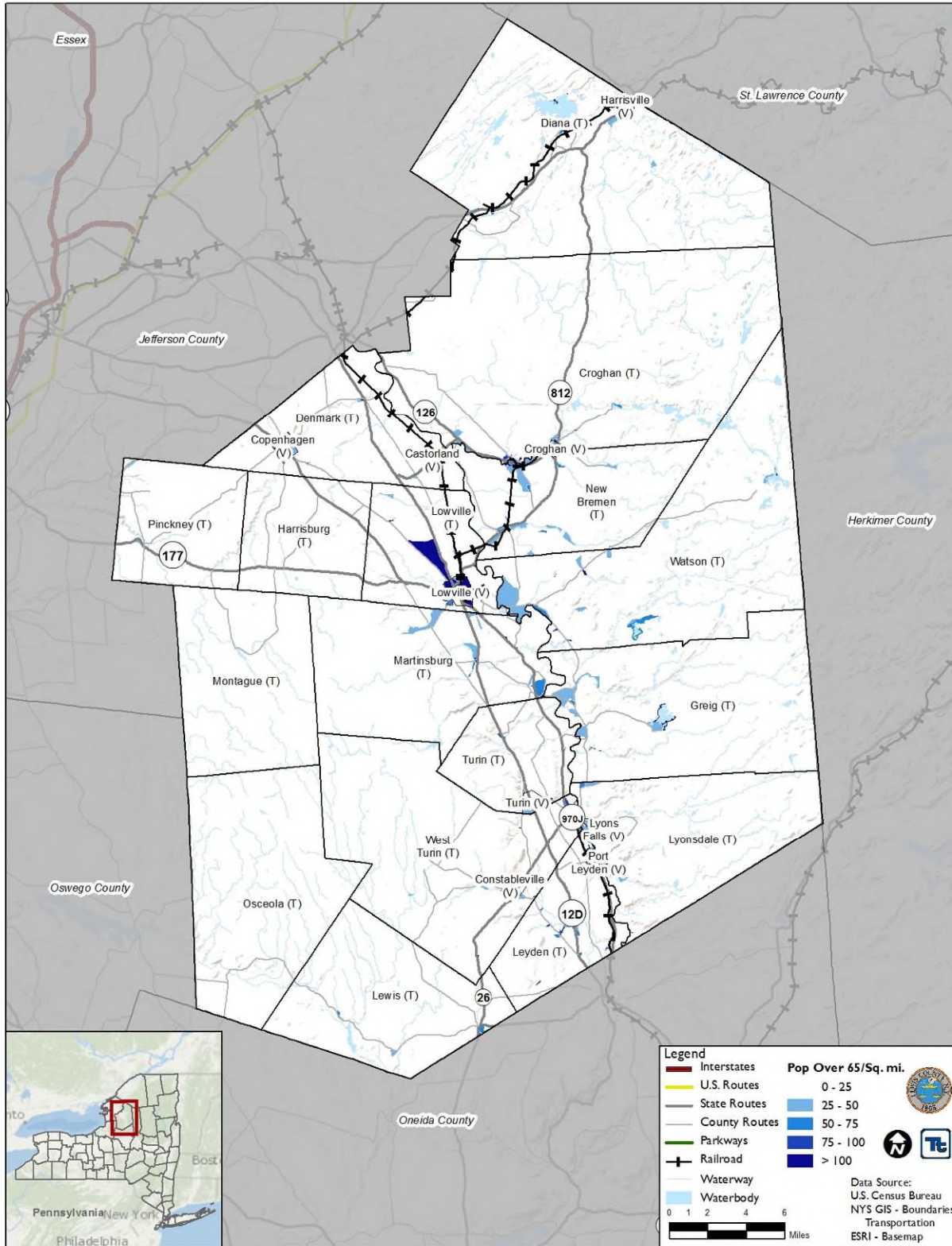
Children are considered vulnerable to hazard events because they are dependent on others to safely access resources during emergencies and may experience increased health risks from hazard exposure. The elderly are more apt to lack the physical and economic resources necessary for response to hazard events and are more likely to suffer health-related consequences. Those living on their own may have more difficulty evacuating their homes. The elderly are also more likely to live in senior care and living facilities (described in Section 4.4.1) where emergency preparedness occurs at the discretion of facility operators.

According to the 2013-2017 American Community Survey 5-Year Estimates, the median age in Lewis County was 41.8 years. HAZUS-MH reports 24.7 percent of the 2010 Lewis County population is under the age 16. Of the 2017 population, 16.7 percent of the County's population is age 65 and older. Figure 4-6 shows the distribution of persons over age 65.





Figure 4-6. Distribution of Persons over the Age of 65 in Lewis County, New York



Source: HAZUS-MH 4.2







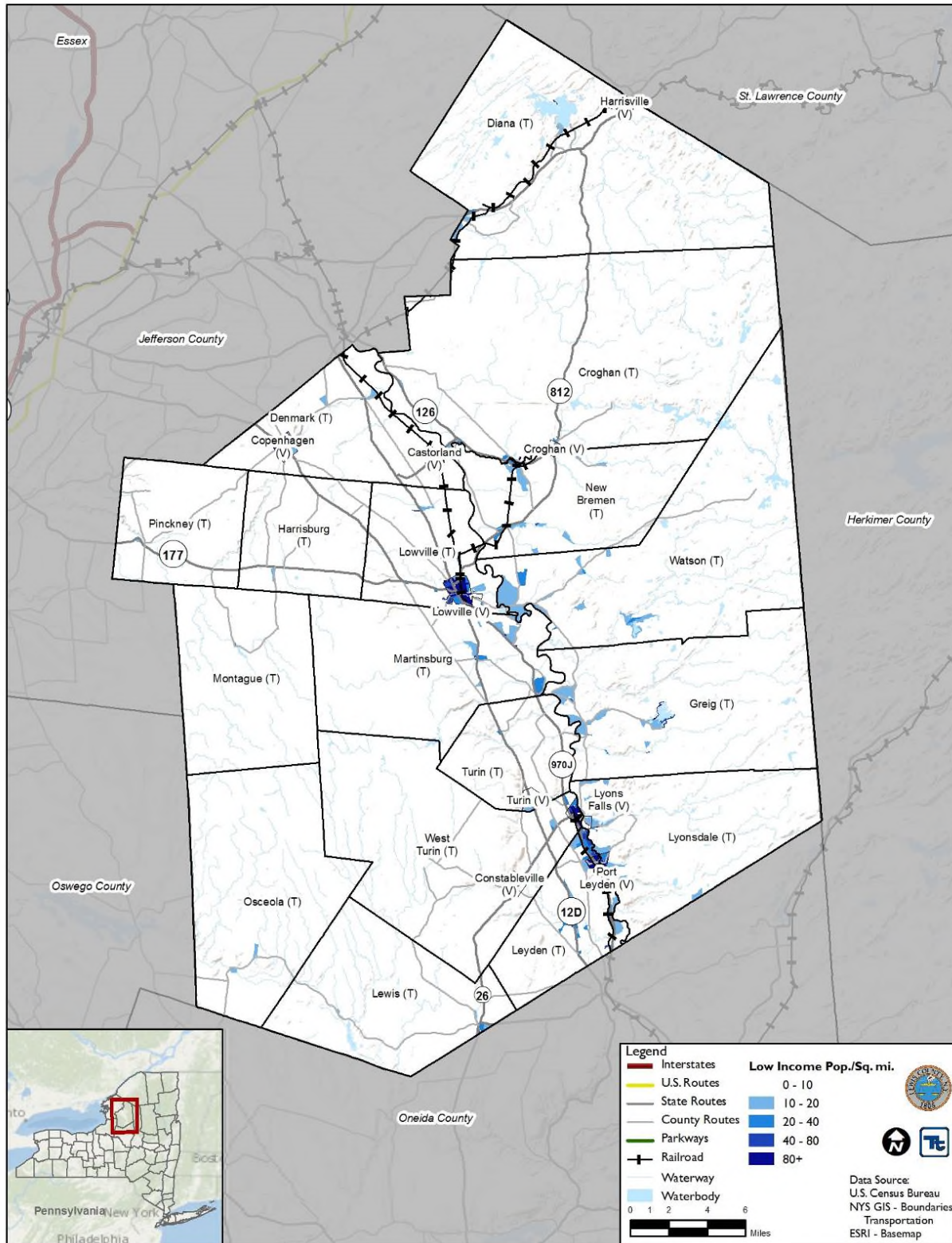
## Income

The 2013-2017 American Community Survey 5-Year Estimates find that the median household income in Lewis County was \$51,475, and the per capita income was \$25,779. The U.S. Census Bureau identifies households with two adults and two children with an annual household income below \$24,339 per year as “low-income” (U.S. Census 2016). The 2013-2017 American Community Survey 5-Year Estimates indicates a total of 14.2 percent persons below the poverty level within the County.

It is noted that the spatial U.S. Census data for household income provided in HAZUS-MH includes two ranges (less than \$10,000 and \$10,000-\$20,000/year) that were totaled to provide the “low-income” data used in this study. This does not correspond exactly with the “poverty” thresholds established by the 2016 U.S. Census Bureau data. This difference is not believed to be significant for this planning effort; therefore, for the exposure and loss estimations in the risk assessment, the 2010 U.S. Census data in HAZUS-MH is reported. Refer to Figure 4-7 below, which illustrates the low-income population density in Lewis County.



Figure 4-7. Distribution of Low-Income Population in Lewis County, New York



Source: HAZUS-MH 4.2

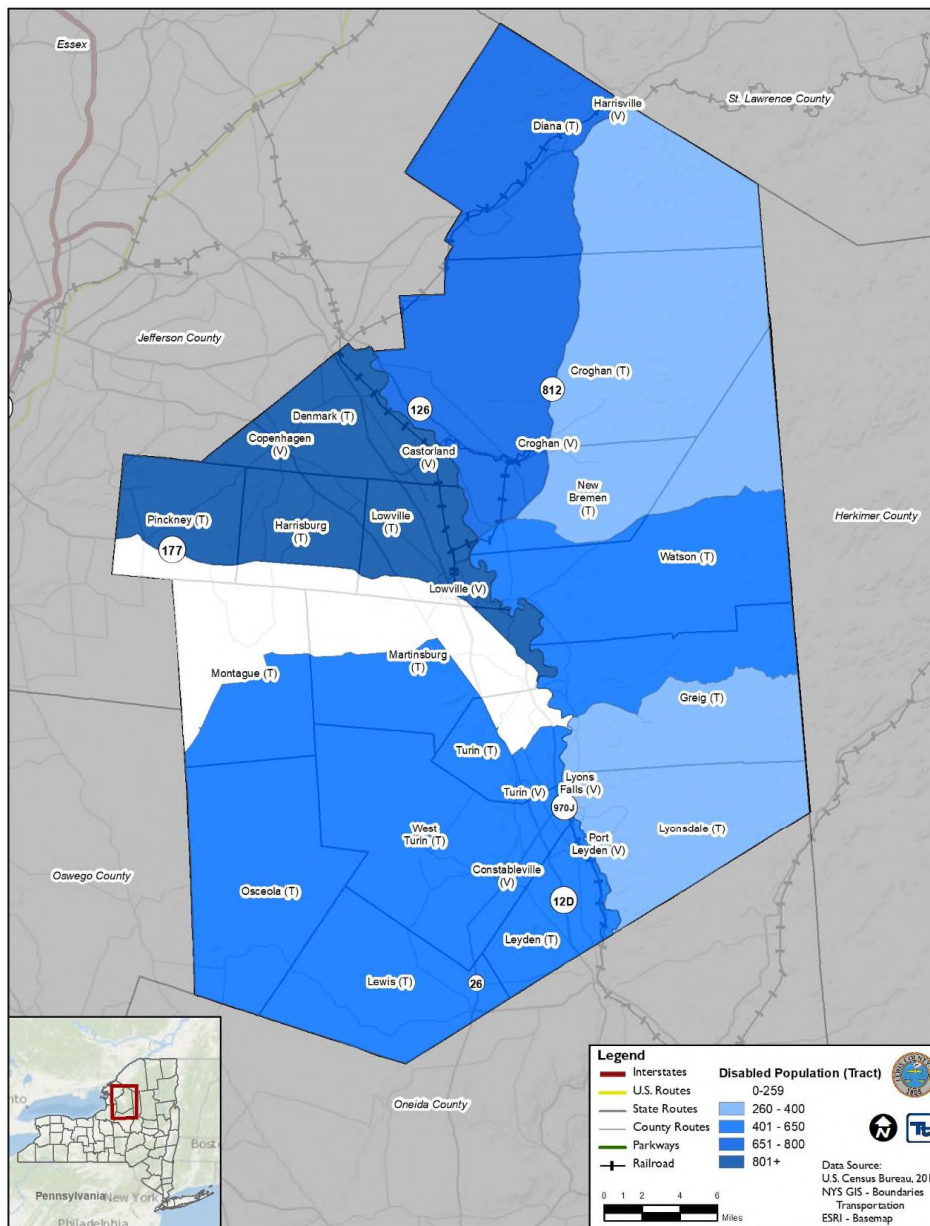




### Physically or Mentally Disabled

Persons with a disability include those who have physical, sensory, or cognitive impairment that might limit a major life activity (Center for Disease Control, 2015). These impairments may increase the level of difficulty that individuals may face during an emergency. Cognitive impairments may reduce an individual’s capacity to receive, process, and respond to emergency information or warnings. Individuals with a physical or sensory disability may face issues of mobility, sight, hearing, or reliance on specialized medical equipment. According to the 2013-2017 American Community Survey, 13.9 percent residents of Lewis County are living with a disability. Figure 4-8 shows the geographic distribution of disabled individuals throughout Lewis County, it includes individuals with: hearing, vision, cognitive, ambulatory, self-care, and independent living difficulties.

**Figure 4-8. Distribution of Persons with a Disability in Lewis County, New York**



Source: United States Census Bureau, 2012-2016 American Community Survey; New York GIS Clearinghouse  
Note: The figure indicates distribution based on Census Tract designations.



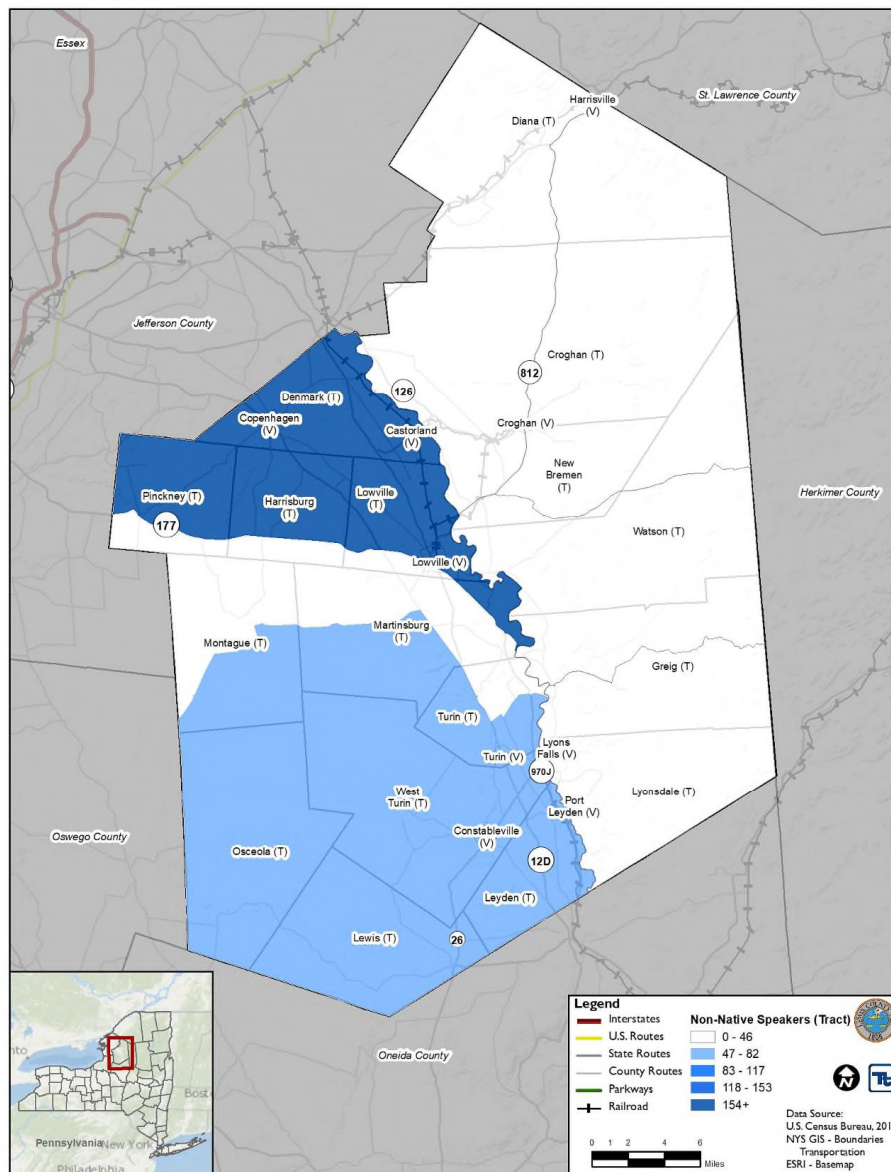




### Non-English Speakers

Individuals who are not fluent or working proficiency in English are vulnerable because they may have difficulty with understanding information being conveyed to them. Cultural differences can also add complexity to how information is being conveyed to populations with limited proficiency of English (Centers for Disease Control, 2015). According to the 2013-2017 American Community Survey, 2.4 percent of the County’s population over the age of 5 primarily speaks a language other than English at home; 235 individuals are reported to speak English less than “very well.” Of the County’s population, 0.9 percent speak Spanish, 1.2 percent speak other Indo-European languages, 0.3 percent speak Asian and Pacific Island languages, and 0.1 percent speak other languages. Figure 4-9 shows the geographic distribution of individuals who speak English less than “very well.”

**Figure 4-9. Distribution of Persons Who Speak a Language Other than English in Lewis County, New York**



Source: United States Census Bureau, 2012-2016 American Community Survey; New York GIS Clearinghouse  
 Note: The figure indicates distribution based on Census Tract designations.





## 4.4 GENERAL BUILDING STOCK

The 2010 U.S. Census data identifies 10,307 households in Lewis County. The U.S. Census data identified 15,287 housing units in Lewis County in 2010. U.S. Census defines household as all the persons who occupy a housing unit, and a housing unit as a house, an apartment, a mobile home, a group of rooms, or a single room that is occupied (or if vacant, is intended for occupancy) as separate living quarters. Therefore, you may have more than one household per housing unit. The median price of a single-family home in Lewis County was estimated at \$121,700 in 2010 (U.S. Census Bureau, 2017).

The data in HAZUS-MH estimates that there are nearly 15,000 structures in Lewis County, with a total building replacement value (structure and content) of greater than \$2.8 billion. Approximately 96 percent of the buildings and 79 percent of the building stock structural value are associated with residential housing. Table 4-3 presents Building Stock Statistics by municipality while Table 4-4 presents Building Stock Statistics by Occupancy Class for Lewis County, based on HAZUS-MH provided data.

**Table 4-3. Building Stock Count and Replacement Value by Municipality**

Municipality	All Occupancies			
	Count	Estimated Structure RCV	Estimated Contents RCV	Total (Structure + Contents)
Castorland (V)	125	\$22,462,000	\$11,572,000	\$34,034,000
Constableville (V)	134	\$26,662,000	\$15,020,000	\$41,682,000
Copenhagen (V)	366	\$84,901,000	\$55,816,000	\$140,717,000
Croghan (T)	1,432	\$231,805,000	\$143,151,000	\$374,956,000
Croghan (V)	309	\$47,864,000	\$27,148,000	\$75,012,000
Denmark (T)	676	\$125,171,000	\$80,375,000	\$205,546,000
Diana (T)	1,223	\$207,260,000	\$127,183,000	\$334,443,000
Greig (T)	1,199	\$176,943,000	\$92,799,000	\$269,742,000
Harrisburg (T)	233	\$44,902,000	\$26,808,000	\$71,710,000
Lewis (T)	455	\$68,099,000	\$41,302,000	\$109,401,000
Leyden (T)	575	\$86,128,000	\$44,381,000	\$130,509,000
Lowville (T)	490	\$131,115,000	\$79,040,000	\$210,155,000
Lowville (V)	1,499	\$543,968,000	\$475,602,000	\$1,019,570,000
Lyons Falls (V)	254	\$43,833,000	\$26,773,000	\$70,606,000
Lyonsdale (T)	597	\$97,731,000	\$59,968,000	\$157,699,000
Martinsburg (T)	625	\$123,192,000	\$70,010,000	\$193,202,000
Montague (T)	246	\$33,916,000	\$16,969,000	\$50,885,000
New Bremen (T)	983	\$141,478,000	\$74,793,000	\$216,271,000
Osceola (T)	423	\$56,564,000	\$28,299,000	\$84,863,000
Pinckney (T)	244	\$47,767,000	\$29,047,000	\$76,814,000
Port Leyden (V)	272	\$42,678,000	\$21,925,000	\$64,603,000
Turin (T)	307	\$65,271,000	\$39,246,000	\$104,517,000



Municipality	All Occupancies			
	Count	Estimated Structure RCV	Estimated Contents RCV	Total (Structure + Contents)
Turin (V)	117	\$21,176,000	\$11,030,000	\$32,206,000
Watson (T)	1,380	\$199,951,000	\$111,243,000	\$311,194,000
West Turin (T)	582	\$111,375,000	\$75,876,000	\$187,251,000
<b>Lewis County</b>	<b>14,746</b>	<b>\$2,782,212,000</b>	<b>\$1,785,376,000</b>	<b>\$4,567,588,000</b>

Source: HAZUS-MH 4.2, Lewis County 2016

Note(s):

T = Town

V = Village

Notes: RCV = Replacement cost value. Statistics for the Village of Harrisville were combined into the Town of Diana.

**Table 4-4. Number of Buildings and Replacement Cost Value by Occupancy Class**

Municipality	Residential		Commercial		Industrial	
	Count	Total (Structure + Contents)	Count	Total (Structure + Contents)	Count	Total (Structure + Contents)
Castorland (V)	124	\$32,690,000	1	\$1,344,000	0	\$0
Constableville (V)	128	\$35,519,000	2	\$1,820,000	1	\$1,372,000
Copenhagen (V)	344	\$98,463,000	9	\$11,290,000	3	\$2,656,000
Croghan (T)	1,374	\$293,041,000	19	\$18,860,000	24	\$49,256,000
Croghan (V)	297	\$64,239,000	8	\$8,378,000	3	\$1,593,000
Denmark (T)	620	\$142,597,000	33	\$41,648,000	8	\$4,065,000
Diana (T)	1,167	\$250,324,000	30	\$26,376,000	13	\$23,902,000
Greig (T)	1,174	\$252,464,000	17	\$12,445,000	4	\$1,841,000
Harrisburg (T)	218	\$56,954,000	8	\$10,798,000	3	\$1,270,000
Lewis (T)	434	\$87,341,000	9	\$7,032,000	4	\$2,468,000
Leyden (T)	571	\$127,135,000	0	\$0	2	\$1,473,000
Lowville (T)	454	\$168,148,000	20	\$22,424,000	8	\$11,912,000
Lowville (V)	1,307	\$400,973,000	117	\$364,073,000	36	\$124,557,000
Lyons Falls (V)	241	\$57,686,000	2	\$970,000	10	\$11,682,000
Lyonsdale (T)	560	\$118,492,000	22	\$18,548,000	9	\$12,114,000
Martinsburg (T)	607	\$165,292,000	8	\$6,838,000	3	\$1,503,000
Montague (T)	246	\$50,885,000	0	\$0	0	\$0
New Bremen (T)	957	\$202,216,000	7	\$3,104,000	10	\$5,541,000
Osceola (T)	423	\$84,863,000	0	\$0	0	\$0
Pinckney (T)	231	\$58,911,000	8	\$8,636,000	2	\$1,385,000
Port Leyden	267	\$61,633,000	2	\$1,382,000	2	\$688,000
Turin (T)	286	\$84,307,000	8	\$8,910,000	4	\$2,106,000
Turin (V)	114	\$29,528,000	2	\$1,278,000	0	\$0
Watson (T)	1,353	\$275,255,000	18	\$15,246,000	2	\$1,801,000





Municipality	Residential		Commercial		Industrial	
	Count	Total (Structure + Contents)	Count	Total (Structure + Contents)	Count	Total (Structure + Contents)
West Turin (T)	545	\$129,178,000	12	\$9,628,000	7	\$4,145,000
<b>Lewis County</b>	<b>14,042</b>	<b>\$3,328,134,000</b>	<b>362</b>	<b>\$601,028,000</b>	<b>158</b>	<b>\$267,330,000</b>

Source: HAZUS-MH 4.2, Lewis County 2016

Note(s):

T = Town

V = Village

Notes: RCV = Replacement cost value. Statistics for the Village of Harrisville were combined into the Town of Diana.

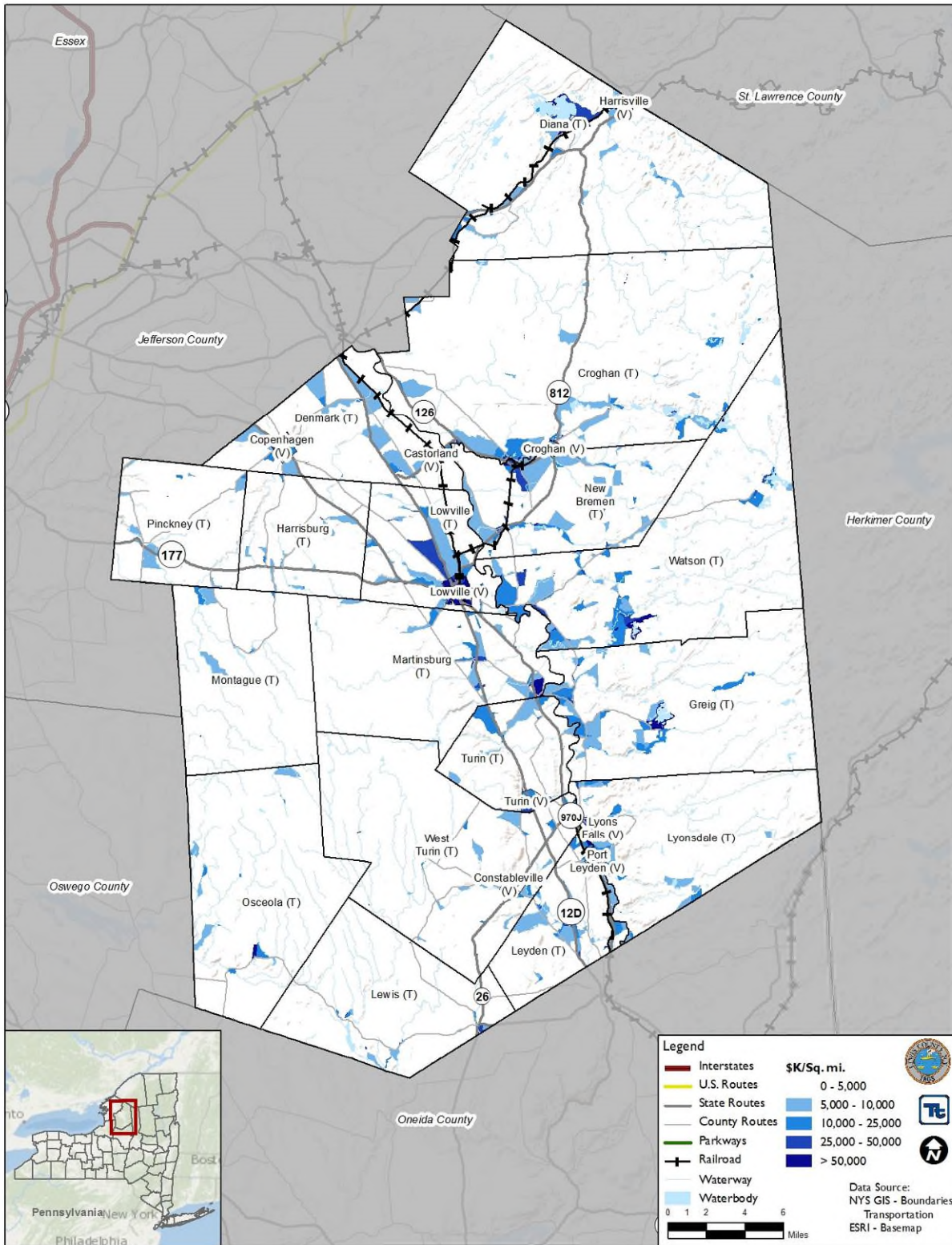
The 2013-2017 American Community Survey data identify that the majority of housing units (78.6%) in Lewis County are single-family detached units. The U.S. Census Bureau’s County Quick Facts data identified 538 business establishments employing 4,812 people in Lewis County (U.S. Census Bureau 2012).

Figure 4-10 through Figure 4-12 show the distribution and exposure density of residential, commercial, and industrial buildings in Lewis County. Exposure density is the dollar value of structures per unit area, including building content value. Generally, contents for residential structures are valued at about 50 percent of the building’s value. For commercial facilities, the value of the content is generally about equal to the building’s structural value. The densities are shown in units of \$1,000 (\$K) per square mile.

Viewing exposure distribution maps such as Figure 4-10 through Figure 4-12 can assist communities in visualizing areas of high exposure and in evaluating aspects of the study area in relation to the specific hazard risks.



Figure 4-10. Distribution of Residential Building Stock and Value Density in Lewis County



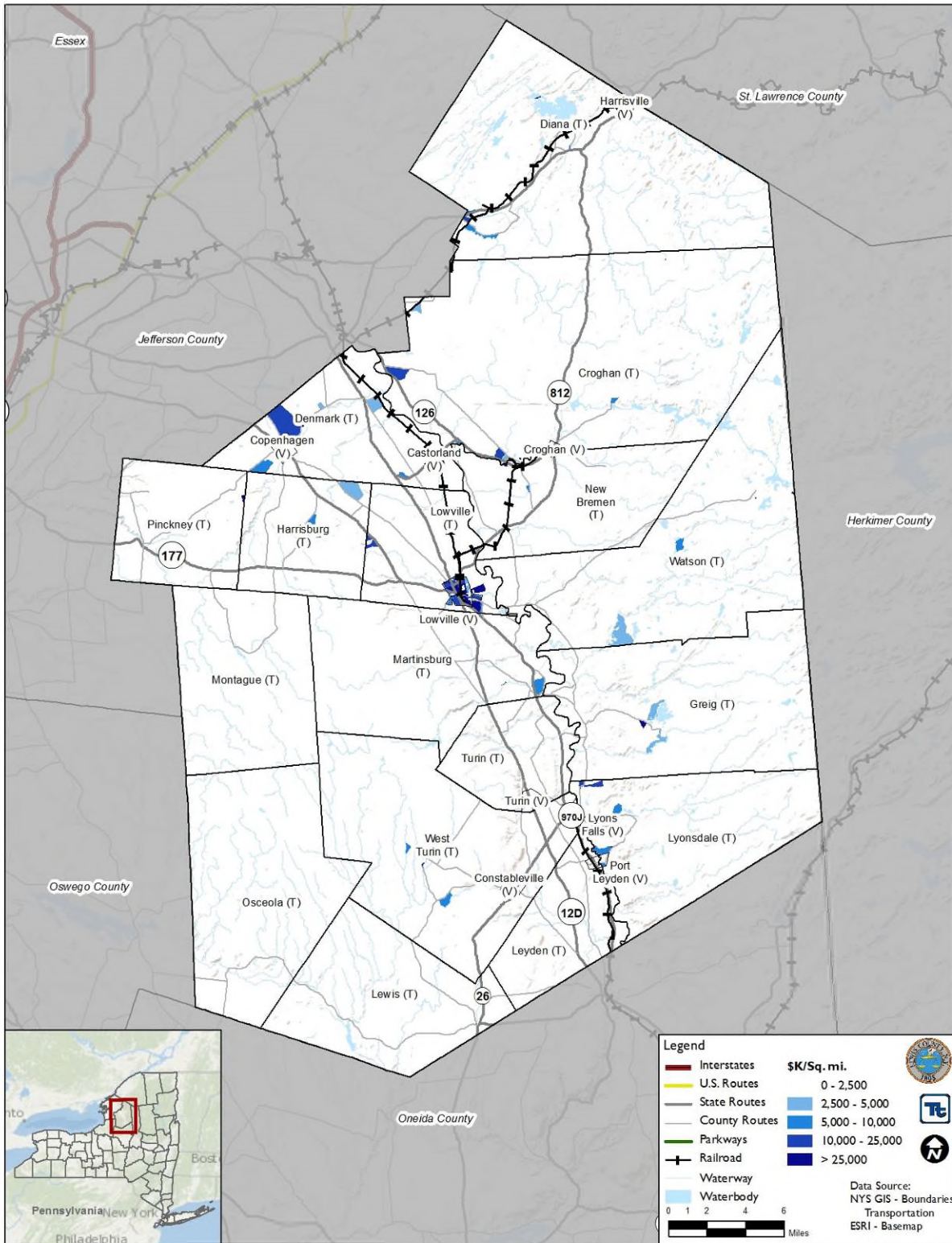
Source: HAZUS-MH 4.2







Figure 4-11. Distribution of Commercial Building Stock and Exposure Density in Lewis County

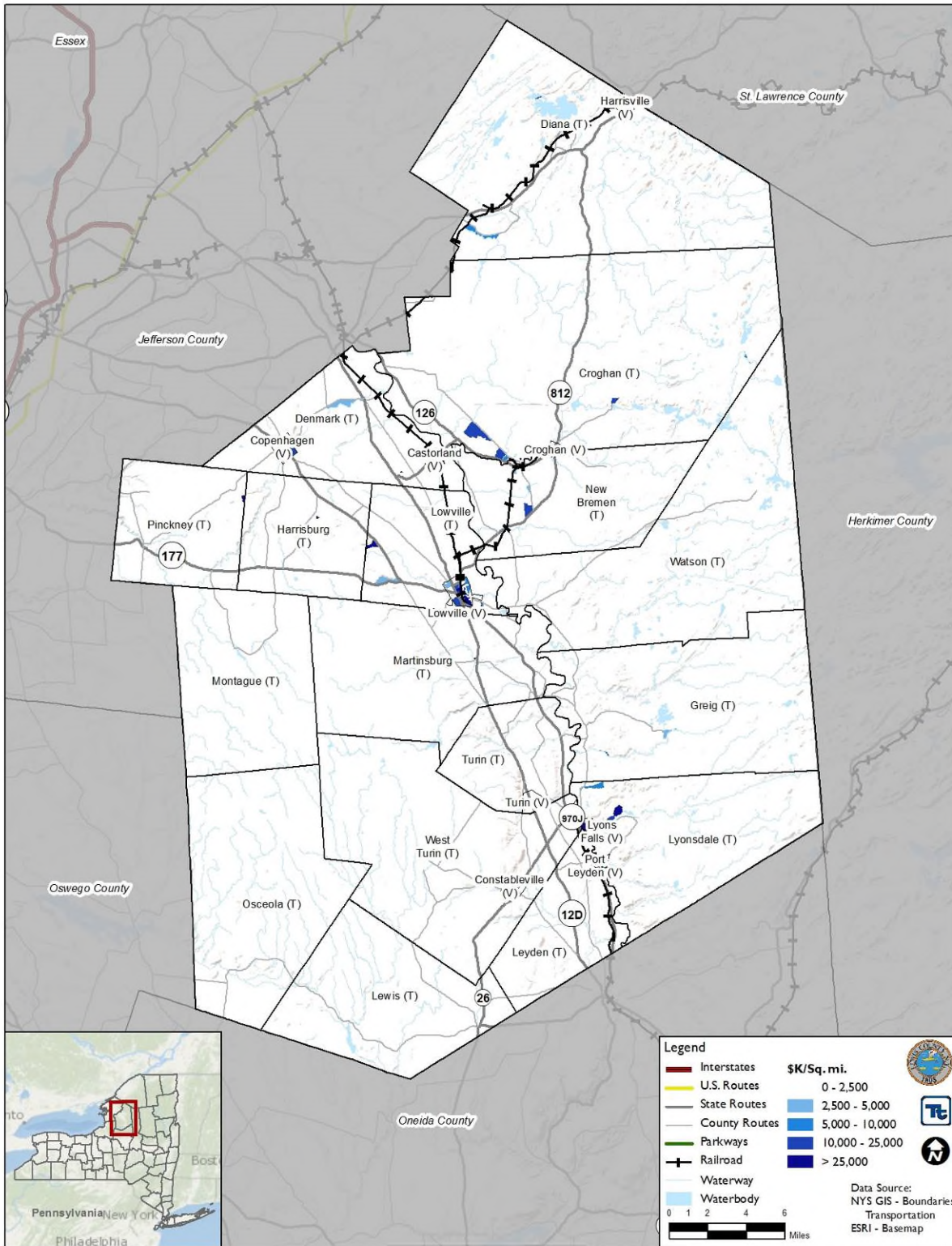


Source: HAZUS-MH 4.2





Figure 4-12. Distribution of Industrial Building Stock and Value Density in Lewis County



Source: HAZUS-MH 4.2







## 4.5 LAND USE AND POPULATION TRENDS

Land use regulatory authority is vested in New York State’s towns, villages, and cities. However, many development and preservation issues transcend location political boundaries. DMA 2000 requires that communities consider land use trends, which can impact the need for, and priority of, mitigation options over time. Land use trends significantly impact exposure and vulnerability to various hazards. For example, significant development in a hazard area increases the building stock and population exposed to that hazard.

This plan provides a general overview of population and land use and types of development occurring within the study area. An understanding of these development trends can assist in planning for further development and ensuring that appropriate mitigation, planning, and preparedness measures are in place to protect human health and community infrastructure.

### 4.5.1 Land Use Trends

The following sections present an overview of the County’s economy and agriculture.

#### Economy

The following sections present an overview of the County economy including: agriculture, retail trade, tourism, industrial, government, leisure and hospitality, and manufacturing.

The economic census provides a detailed portrait of the nation’s economy once every 5 years, from the national to the local level. The 2012 Economic Census was conducted for Lewis County and the information is presented in Table 4-5.

Table 4-5. 2012 Economic Census for Lewis County, New York

Industry	Number of Establishments	Total Sales (\$1,000)	Number of Employees*
Accommodation and food services	64	19,061	480
Administrative and support and waste management and remediation services	16	D	b
Arts, entertainment, and recreation (all establishments)	18	D	b
Educational services	1	D	a
Finance and insurance	19	N	b
Health care and social assistance	49	83,241	1,071
Information	13	N	44
Manufacturing	25	532,658	1,371
Other services (except public administration)	43	21,090	164
Professional, scientific, and technical services	23	9,477	82
Real estate and rental and leasing	12	D	b
Retail trade	74	258,687	792
Transportation and warehousing	27	D	c
Wholesale trade	7	D	b

Source: U.S. Census, 2012

\* = This number only includes paid employees

D = Withheld to avoid disclosing data of individual companies; data are included in higher level totals

E = 250-499 employees

H = 2

N = Not available

Q = 20 to 29 percent estimated

X = Not applicable

a = 0 to 19 employees

b = 20 to 99 employees

c = 100 to 249 employees







The County Business Pattern is provided by the U.S. Census Bureau and is an annual series that presents sub-national economic data by industry. County Business Patterns covers most of the country’s economic activity (U.S. Census Bureau, 2016). According to the 2016 Lewis County Business Pattern, the County had a total of 532 business establishments. The retail trade industry had the highest number of establishments in the County, making up 15.2 percent of all businesses. Following retail trade is accommodation and food services, making up 12.6 percent of all business. The third highest industry in 2016 was construction, making up 12.0 percent of all businesses. Table 4-6 provides 2016 industry and employment information in Lewis County.

Table 4-6. 2016 Lewis County Business Patterns

Industry	Number of Establishments	Number of Employees
Accommodation and food services	67	505
Administrative and Support and Waste Management and Remediation Services	14	31
Arts, entertainment, and recreation	17	55
Construction	64	170
Educational services	3	10
Finance and insurance	22	85
Forestry, fishing, hunting, and Agriculture Support	24	98
Health care and social assistance	48	1,119
Information	14	45
Manufacturing	22	1,138
Mining, quarrying, and oil and gas extraction	2	N
Other services (except public administration)	76	288
Professional, scientific, and technical services	23	85
Real estate and rental and leasing	11	42
Retail trade	81	848
Transportation and warehousing	24	99
Utilities	12	61
Wholesale trade	7	94
<b>Total</b>	<b>532</b>	<b>4,812</b>

Source: U.S. Census Bureau, 2016

Note: Number of employees only includes number of paid employees

N = Not available

The 11<sup>th</sup> Annual Lewis County Survey of the Community noted that Fort Drum was a vital part of the economy in the North Country, providing many quality jobs for the area. The survey also noted an increased outlook on the economy including areas such as the cost of energy, real estate taxes, the overall state of the local economy, and the availability of good jobs (SUNY Jefferson 2013).

### Agriculture

In 2012, there were 634 farms in the County, with a total land area of 181,741 acres. The average size of a farm was 287 acres. According to the 2012 Census of Agriculture, approximately 383 farm operators reported farming as their primary occupation. The market value of agricultural products sold from County farms totaled over \$137 million, with total sales averaging \$216,152 per farm. Crop sales accounted for \$23.6 million (17%) of total sales and livestock sales accounted for \$113.4 million (83%) of total sales. The lead agricultural products sold were milk and other dairy products from cows (\$100.7 million), cattle and calves (\$12.1 million), and other crops and hay (\$9 million) (USDA, 2012).



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### Retail Trade

Lewis County has very few big-box retail locations. Most locations are located in neighboring counties. The 11th Annual Lewis County Survey of the Community noted that Fort Drum enhances the available retail opportunities for all Lewis County residents.

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### Tourism

A 2011 Strategic Tourism Report noted that tourism in Lewis County is focused primarily during the winter season (snowmobiling, cross-country skiing, maple sugaring, etc.). Goals were established to expand tourism opportunities to include the remaining three seasons. An inventory of tourism attractions included 66 accommodations facilities including bed and breakfasts, motels, and campgrounds; 40 food service facilities, including full service and part-serve; 12 museums, attractions, historical societies, and wineries; and 33 recreational activities. Reporting from the 2006 Northern New York Travel and Tourism Research Center and the Davidson Peterson Associates study found that total visitor expenditures in Lewis County were around \$37 million (Lewis County Legislature, 2011). The County operates a Recreation, Forestry, and Parks Department, which is responsible for the County's popular ATV Trail System. The 11<sup>th</sup> Annual Lewis County Survey of the Community noted that 66% of adult respondents in the County felt that tourism was very important in Lewis County and 83% of adult respondents felt the County should financially support marketing and promotions to increase the local tourism economic impact (SUNY Jefferson 2017).

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### Government

Lewis County is made up of 17 towns and 9 villages. The County is governed by 10 elected legislators who represent equally divided districts. They manage the County alongside the County Legislative Clerk and the County Manager. The County has a hospital but does not have a nursing home, airport. They also do not own or manage any public sewer or water systems. There is a County Jail and a County Sheriff's road patrol (Lewis County, 2018).

Home rule is strong in New York State; thus, each town and village has its own governing body. Towns are made up of a Town Board and Supervisor. The villages all have a Mayor and a Board of Trustees. Along with town and village roads, any public water and sewer systems are operated by the local municipality. Each municipality has charge over its own planning and zoning and uses the County personnel as a resource.

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### Manufacturing

Although manufacturing was once important to Lewis County, manufacturing has dwindled in the County in recent decades with few manufacturing focusing industries remaining (Lewis County Comprehensive Plan 2009).

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## 4.5.2 Population Trends

Over the last 50 years, Lewis County has experienced slow population growth. The population of Lewis County is distributed among 17 towns and 9 villages.

The U.S. Census Bureau states that Lewis County's 2010 population is 27,087 persons, which is a 0.5 percent increase from the 2000 Census population of 26,944. Between 1950 and 2010, the County has seen slow but continual growth in population. Growth was fastest from 1970 to 1990. Growth over the last two decades has slowed.



**Table 4-7. Lewis County Population Trends, 1950 to 2010**

Year	Population	Change in Population	Percent (%) Population Change
1950	22,521	-	-
1960	23,249	+728	3.2%
1970	23,644	+395	1.7%
1980	25,035	+1,391	5.9%
1990	26,796	+1,761	7.0%
2000	26,944	+148	0.6%
2010	27,087	+143	0.5%

Source: U.S. Census Bureau, 2012

Note: Change in population and percent in population change was calculated from available data

### 4.5.3 Future Growth and Development

Development planned within Lewis County is provided in the table below. Municipalities not indicated have not identified any significant residential/commercial, or infrastructure development within the next 5 years. Locations of development are indicated on the Hazard Area Extent and Location Maps located in the Jurisdictional Annexes (Section 9) of this plan.

**Table 4-8. New Development/Potential Development by Municipality**

New Development/Potential Development by Municipality						
Municipality	Property Name	Type (Residential or Commercial)	Number of Units/ Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/ Status of Development
Castorland (V)	None					
Constableville (V)	None					
Copenhagen (V)	Water Treatment Plant	Commercial	1 building	Stoddard Road	Wells prone to drought	Under construction
Copenhagen (V)	Old Water Treatment Plant	Commercial	1 building	Woodbattle Road	Wells prone to drought	Looking into rehabbing the facility.
Croghan (T)	None					
Croghan (V)	Columbus Midtown Properties Dollar General	Commercial	1	9688 State Route 812		Construction completed in 2017
Denmark (T)	Johnson Lumber	Commercial	1	10972 State Route 26 Carthage, NY	None	Complete
Denmark (T)	Wind and Solar	Commercial	Information unavailable	Information unavailable	Information unavailable	Information unavailable
Diana (T)	None					
Greig (T)	Hiawatha Lake	Residential	10 Lots	246.04-01-66.000	Zone C	Under construction
Greig (T)	Buck Ridge	Residential	26 Lots	290.00-01-03.110	Zone C	Under construction
Greig (T)	Lyons Falls Road Pominville	Residential	15 Lots	276.00-02-21.116	Zone C	Under construction



New Development/Potential Development by Municipality						
Municipality	Property Name	Type (Residential or Commercial)	Number of Units/ Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/ Status of Development
Greig (T)	Linda Place	Residential	9 Lots	290.00-05-(1-8)	Zone C	Under construction
Harrisburg (T)	#3 Windfarm	Commercial	25-30	#3 Road; varies roads	None Known	Planning stages
Harrisburg (T)	Deer River Wind	Commercial	9	West of Wood Battle Road	None Known	Planning stages
Lewis (T)	None					
Leyden (T)	Barrett Paving Materials	Commercial	N/A	Route 12, Port Leyden, NY	Mining (Hazmat)	Operational
Leyden (T)	Glider Oil Company	Commercial	1	Route 12, Port Leyden, NY	Fuel Storage (Hazmat)	Fuel Storage Tanks/Operational
Lowville (T)	Nolt's Country Store	Commercial	1	7189 State Route 812	No	Complete
Lowville (T)	Maple Run Homes	Residential	Several	Various	No	Some Complete, Ongoing
Lowville (T)	Brookside Redevelopment	Residential	12	Various	No	Complete
Lowville (T)	Miller Spraying	Commercial	1	8624 St Route 26	No	Complete
Lowville (T)	Ridgeview Restaurant & Banquet Hall	Commercial	1	6912 Bardo Road	No	Complete
Lowville (T)	Roggie's Flooring	Commercial	1	5809 #4 Road	No	Complete
Lowville (T)	VS Virkler Solar	Commercial	1	7398 Rice Road	No	Complete
Lowville (T)	Colleen Farney/The Blue Bird	Commercial	1	8311 State Route 26	No	Complete
Lowville (T)	Miller Time Express: Ridgeview Lodge	Commercial	Various	7491 State Route 12	No	Complete
Lowville (T)	Bakstan Properties: Ridgeview Electric	Commercial	1	7974 State Route 26	No	Complete
Lowville (T)	Roes	Commercial	1	4792 Shack Road	No	Complete
Lowville (T)	Farney	Commercial	1	7881 State Route 26	No	Complete
Lowville (T)	Lewis County/JCC Extension	Commercial/Assembly	Unknown	East Road	No	Complete
Lowville (T)	Brookside Redevelopment	Residential	Unknown	Various	No	Discussions for expansion
Lowville (T)	Number Three Wind	Commercial	Unknown	Various	No	Permit processing



New Development/Potential Development by Municipality						
Municipality	Property Name	Type (Residential or Commercial)	Number of Units/ Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/ Status of Development
Lowville (T)	LCIDA Commerce Park	Commercial	Unknown	State Route 26	No	Under construction
Lowville (T)	Nolt's Country Store	Commercial	1	7819 State Route 812	No	Plans for expansion
Lowville (T)	Maple Run Homes	Residential	Several	Various	No	Ongoing development
Lowville (V)	Kraft-Heinz	Commercial	Structure addition	Utica Boulevard	None	Under construction
Lyons Falls	UCP Housing	Residential	1	338.12-01-06.100	None	6 bed Cerebral Palsy Housing facility
Lyons Falls	LCDC-Mill site redevelopment	Commercial	N/A	322.19-07-04.100	Eliminating hazardous materials and structure to make way for new development	Demolition to be completed upon acquisition of needed funds
Lyons Falls	Roger Abbey Realty	Residential	6	338.08-02-13.100	None	Anticipated
Lyons Falls	North Brook Hydroelectric Plan	Utility	N/A	322.19-07-06.000	Flood	Discussed
Lyons Falls	Fire Hall/DPW	Public	1	322.19-04-14.100	None	Plans to increase hardened infrastructure and provide site for future shelter
Lyonsdale (T)	None					
Martinsburg (T)	Town of Martinsburg Municipal Building	Government	1	5405 Cemetery Road	None	Complete
Martinsburg (T)	Marks Farm	Commercial	12	Williams Road	Flood zone	Ongoing
Martinsburg (T)	Demko Farms	Commercial	8	Lee Road	None	Ongoing
Martinsburg (T)	Town of Martinsburg Sewer Upgrade	Government	1	Main Street	Sewage	Complete
Martinsburg (T)	Roaring Brookwind	Commercial	Unknown	Tug Hill	None	Planned completion in 2019
Martinsburg (T)	Town of Martinsburg Water Upgrade	Government	2	Glensfield	None	Planned completion in summer 2019
Montague (T)	None					
New Bremen (T)	Zehrs Landscaping	Commercial	1	Vanamber Road 145.00-01-13.400	None	Complete





New Development/Potential Development by Municipality						
Municipality	Property Name	Type (Residential or Commercial)	Number of Units/ Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/ Status of Development
New Bremen (T)	Adirondacks Steel Works	Commercial	1	Cutoff Road 163.00-01-05.210	None	Complete
New Bremen (T)	Wolfs Body Shop	Commercial	1	State Route 812 146.00-01-14.300	None	Complete
New Bremen (T)	CMC Storage	Commercial	1	State Route 812 147.00-01-03.120	None	Complete
Osceola (T)	None					
Pinckney (T)	Arangrid	Wind Turbines	Poss: 28	Town wide	None	Beginning/Planning Stage
Port Leyden	None					
Turin (T)	Christian Community Center	Church	1	4269 East Road Turin, NY 13473	None	Community Center/Church
Turin (T)	Possible solar project	Commercial	TBD	TBD	TBD	In discussion phase
Turin (V)	None					
Watson (T)	Town of Watson	Residential & Commercial	323	Various	N/A	Municipal Water, engineering
West Turin (T)	Verizon	Cell Tower	1	Adam Road	None	Cell Tower

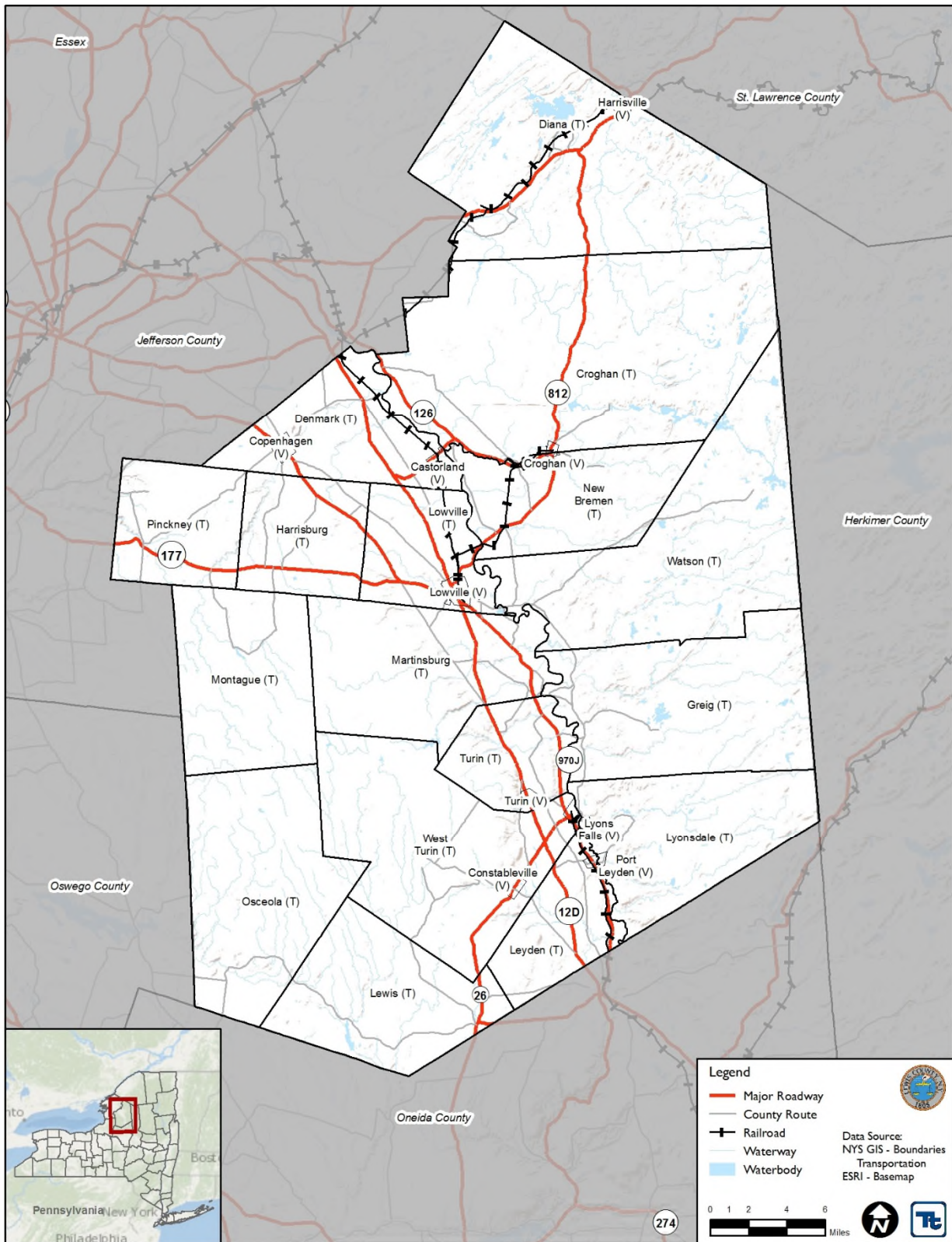
#### 4.5.4 Evacuation Routes, Sheltering, Temporary and Long-Term Housing

##### Evacuation Routes

The primary roads and highways are the evacuation routes for Lewis County. The route used depends on the location of the incident. The County assists with the coordination and communication of evacuation routing as necessitated by the execution of local municipal emergency operation plans. Figure 4-13 displays the evacuation routes in Lewis County.



Figure 4-13. Evacuation Routes in Lewis County





## **Shelters**

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Due to the variable nature of hazard events and associated sheltering needs within the county, Lewis County relies on real-time outreach methods to inform the public of pending and active evacuations and available sheltering resources. Outreach methods includes variable message sign boards, media (radio, television, newspapers), and social media.

With support and cooperation of the American Red Cross and local jurisdictions, the county maintains an inventory of suitable shelter locations and can assist with the coordination and communication of shelter availability, as necessitated by the execution of local municipal emergency operation plans. In addition to sheltering through the American Red Cross, municipalities in Lewis County have identified potential shelters (Table 4-9).



Table 4-9. Shelters in Lewis County

Site Name	Address	Jurisdiction	Capacity	Accommodate Pets?	ADA Compliant?	Backup Power?	Types of Medical Services Provided	Other Services Provided	Identified by:
Constableville Fire Department	3000 Main Street	Constableville (V)	60	Unknown	Unknown	Yes	EMS	Unknown	Constableville (V)
Copenhagen Central School	3020 Mechanic Street	Copenhagen (V)	Unknown	Yes	Yes	Yes	Unknown	Unknown	Copenhagen (V)
Copenhagen Fire Department	9950 Main Street	Copenhagen (V)	150	Yes		Yes	Unknown	Unknown	Copenhagen (V), Denmark (T)
Copenhagen Fire Department	9932 NY-12	Copenhagen (V)	50-100	Yes	-	Yes	EMT	Bathroom, kitchen	Harrisburg (T)
Croghan Fire Department	6860 Fire Hall St.	Croghan (T)	150	Yes	Yes	Yes	None	Kitchen and Bathroom	Croghan (T)
Croghan Free Library	9794 NY-812	Croghan (T)	10	Yes	Yes	No	None	Bathroom	Croghan (T)
St. Stephen's Parish	9748 Main St.	Croghan (T)	100	Yes	Yes	No	None	Kitchen and Bathroom	Croghan (T)
Steepleview Court	6926 George St.	Croghan (T)	20	Yes	Yes	Yes	None	Kitchen and Bathroom	Croghan (T)
Croghan Fire Department	6860 Fire Hall St.	Croghan (V)	150	Yes	Yes	Yes	None	Kitchen and Bathroom	Croghan (V)
Croghan Free Library	9794 NY-812	Croghan (V)	10	Yes	Yes	No	None	Bathroom	Croghan (V)
St. Stephen's Parish	9748 Main St.	Croghan (V)	100	Yes	Yes	No	None	Kitchen and Bathroom	Croghan (V)
Steepleview Court	6926 George St.	Croghan (V)	20	Yes	Yes	Yes	None	Kitchen and Bathroom	Croghan (V)
South Lewis Central School	5960 Main Street	Glenfield	500	Yes	Yes	Yes	As Needed	As Needed	Turin (V)
Brantingham Fire House	5505 Partidgeville Road	Greig (T)	15	Unknown	Yes	Yes	Unknown	Unknown	Greig (T)
Brantingham Golf Course	8046 Brantingham Road	Greig (T)	50	Unknown	Unknown	Unknown	Unknown	Unknown	Greig (T)
Brantingham Snowmobile Club	7761 Brantingham Road	Greig (T)	25	Unknown	Unknown	Unknown	Unknown	Unknown	Greig (T)
Camp Aldersgate	7955 Brantingham Road	Greig (T)	250	Unknown	Yes	Unknown	Unknown	Food and lodging	Greig (T)
Greig Town Hall	5216 Greig Road	Greig (T)	25	Unknown	Yes	Yes	Unknown	Unknown	Greig (T)
Town Hall	7886 Cobb Rd.	Harrisburg (T)	25	Yes	Yes	Yes	None	Bathroom, kitchen	Harrisburg (T)
Harrisville Volunteer Fire Dept.	14226 Church St	Harrisville	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	Diana (T)
Lowville Fire Dept.	5409 The Parkway	Lowville	50-100	Yes	-	Yes	None	Bathroom, kitchen	Harrisburg (T)
New Bremen Fire Department	8154 Route 812	Lowville	Unknown	Unknown	Unknown	Yes	Unknown	Unknown	New Bremen (T)



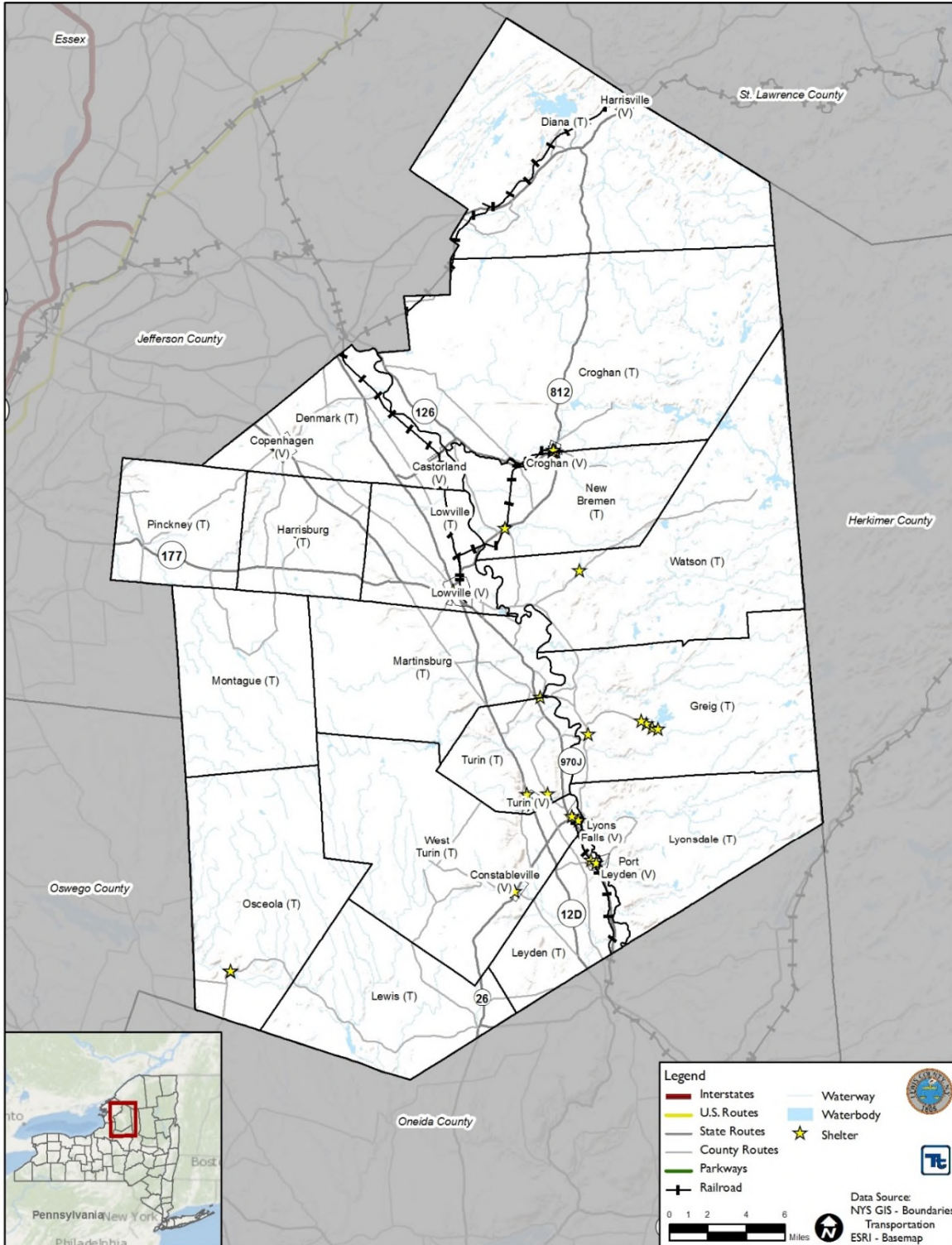
Site Name	Address	Jurisdiction	Capacity	Accommodate Pets?	ADA Compliant?	Backup Power?	Types of Medical Services Provided	Other Services Provided	Identified by:
Fire Hall/DPW	3907 High Street	Lyons Falls (V)	150	No	No	Yes	None	Food	Lyons Falls (V)
Village offices	4059 Cherry Street	Lyons Falls (V)	25	No	Yes	No	None	N/A	Lyons Falls (V)
Community Center	1426 Osceola Road	Osceola (T)	68	Unknown	Yes	Yes	AED	Unknown	Osceola (T)
Highway Town Barn	2009 Church Street	Osceola (T)	50	Yes	Yes	Yes	AED	Unknown	Osceola (T)
Port Leyden Elementary School	3336 Lincoln St	Port Leyden (V)	Unknown	None	Yes	Yes	RN on hand During School Hrs.	Cafeteria Staff	Leyden (T)
Port Leyden Fire Hall	3387 Douglas St	Port Leyden (V)	130	None	Yes	Yes	EMS personnel on hand	Auxiliary furnishes and food	Leyden (T); Port Leyden (V)
South Lewis Central School	4264 East Rd.	Turin (T)	1,000	Yes (if crated)	Yes	Yes	School Nurse/PA	Food	Turin (T)
Turin Municipal Building	6312 E. Main St.	Turin (T)	Roughly 50	No	Yes	Yes	N/A	None	Turin (T)
Turin Vol. Fire Company	4239 State Rt. 26	Turin (T)	20-25	Yes (if crated)	Yes	Yes	Ambulance/EMT	Food	Turin (T)
Turin Fire Hall	4391-4399 State Route 26	Turin (V)	50	Yes	Yes	Yes	As Needed	As Needed	Turin (V)
Town Barn	6971 Number Four Road	Watson (T)	50	Unknown	Yes	Yes	First Aid	Kitchen	Watson (T)





Figure 4-14 displays the shelters throughout the county. Please refer to each municipality's capability assessment in Section 9 (Jurisdictional Annexes) for further information on evacuation, sheltering, temporary, and long-term housing provisions within Lewis County.

Figure 4-14. Shelters in Lewis County





### **Temporary Housing**

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In order to identify potential sites for temporary housing and relocation, each municipality provided possible locations suitable for the placement of temporary housing for residents displaced by disaster including sites to accommodate relocation of houses out of the floodplain or for the construction of new replacement developments. In addition, farming fields, parks, and rural locations could be used for space for temporary housing though proper utility access would need to be addressed. Campgrounds may be able to be utilized for temporary housing as well and are more likely to have access to utilities than other open space locations. Capacity of campgrounds would be dependent on time of year and available vacancies in campsites. These locations are indicated in Table 4-10 and are located on the map in Figure 4-15 below.



**Table 4-10. Potential Temporary Housing Locations in Lewis County**

Site Name	Address	Jurisdiction	Infrastructure / Utilities Available	Capacity	Type	Identified By:
Constableville Fire House	3000 Main Street	Constableville (V)		50 sites	Parking Lot	Constableville (V)
Flywheels & Pulleys	2966 State Route 26	Constableville (V)		50 sites	Open Space	Constableville (V)
Tuggers Grill Bar and Campgrounds	544 NY-177	Copenhagen (V)	RV hookups, cabins, restrooms, and showers	50 Sites, 10 Cabins	Campground	Lewis County
Twin Ponds Campground		Copenhagen (V)	RV hookups	50 Sites	Campground	Lewis County
Croghan Recreational Park	9578 Park Drive	Croghan (V)		35 Sites	Mixed Use	Croghan (V)
Brantingham Snowmobile Club	7761 Brantingham Road	Greig (T)	need installation of sewage, electric service, and water service	10 sites	Open Space	Greig (T)
Camp Aldersgate	7955 Brantingham Road	Greig (T)	need installation of sewage, electric service, and water service	100 sites	Open Space	Greig (T)
Greig Town Park	6920 Park Road	Greig (T)	need installation of sewage, electric service, and water service	50 sites	Open Space	Greig (T)
Higby Trailer Park	6800 Higby Road	Greig (T)	need installation of sewage, electric service, and water service	7 sites	Mobile Home Park	Greig (T)
Patterson Farm	6870 Patterson Road	Greig (T)	need installation of sewage, electric service, and water service	200 sites	Open Space	Greig (T)
Ridgeview Motel	7491 NYS Route 12	Lowville (T)		50 rooms	Hotel	Lowville (T)
Babcock Campground	10370 E Rd	Lowville (V)		75 sites	Campground	Lewis County
Happy Hollow Campground	4531 NY-410	Lowville (V)	RV hookups, restrooms, showers, and laundry facilities	175 sites	Campground	Lewis County
Lewis County Fairgrounds	5485 Bostwick Road	Lowville (V)		325 Sites	Mixed Use	Lowville (V)
Tops Plaza	7301 State Route 26	Lowville (V)		50 Sites	Parking Lot	Lowville (V)
VPJ Property	Campbell Street	Lowville (V)		250 Sites	Mixed Use	Lowville (V)
Whetstone Gulf State Park	6065 West Road	Lowville (V)	RV hookups, cabins, restrooms, showers, electric power hookups, water	58 sites	Campground	Lewis County
DPW	High Street	Lyons Falls (V)	require water line installation	4 sites	Mixed Use	Lyons Falls (V)

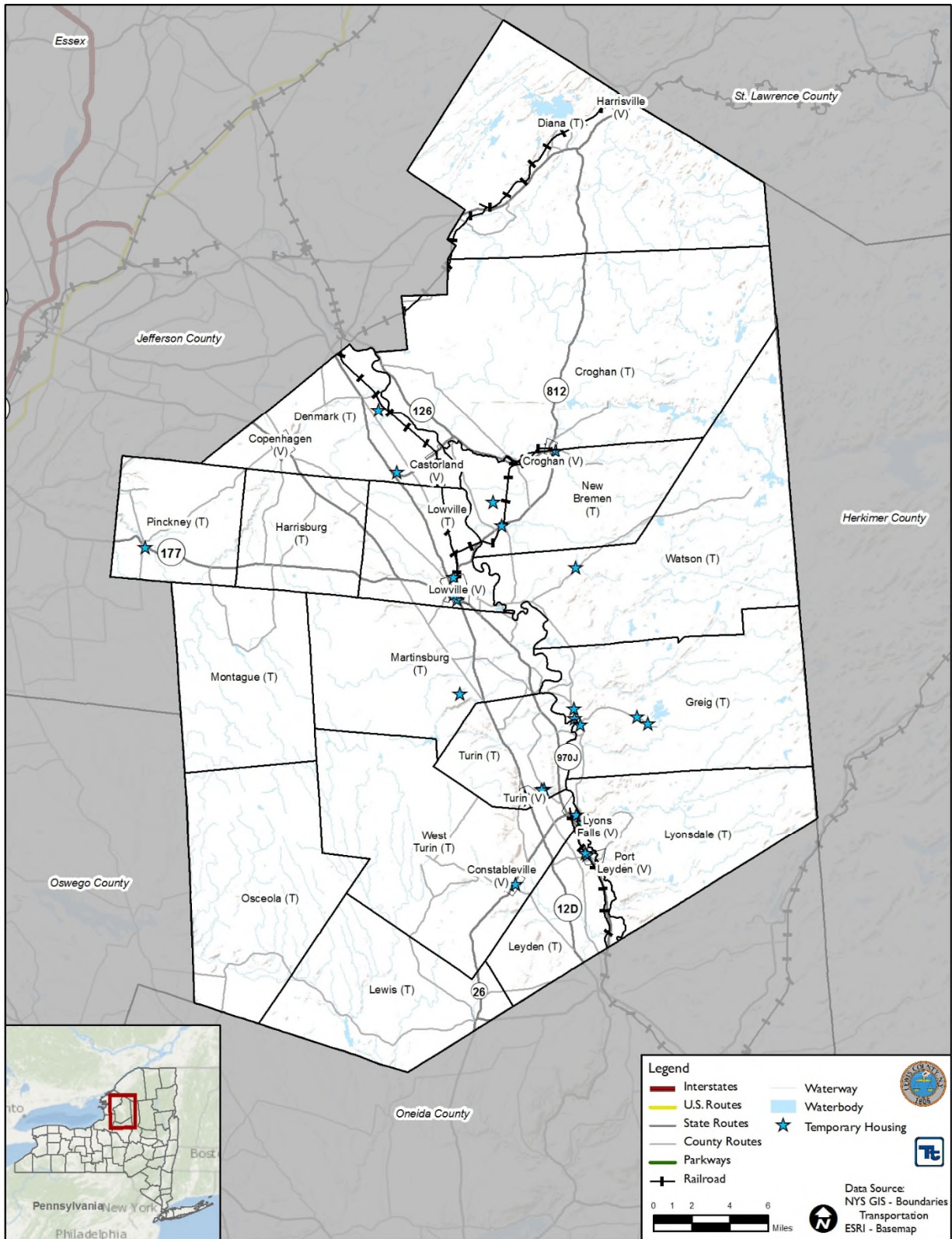


Site Name	Address	Jurisdiction	Infrastructure / Utilities Available	Capacity	Type	Identified By:
Undeveloped land	6978 Park Place	Lyons Falls (V)	require water line installation	6 sites	Open Space	Lyons Falls (V)
Adirondack Speedway	8403 Artz Road	New Bremen (T)	require water, sewer, and electric modifications	375 Sites	Mixed Use	New Bremen (T)
New Bremen Fire Department	8154 State Route 812	New Bremen (T)	require water, sewer, and electric modifications	15 Sites	Mixed Use	New Bremen (T)
Cliffs Market Public Parking Area	3205 NYS Rt 12	Port Leyden (V)	need electric and sewer connections	20 sites	Parking Lot	Leyden (T); Port Leyden (V)
Cold Brook Campsites	7301 Moose River Rd	Port Leyden (V)	electric, restrooms, laundry facilities, and showers	92 sites	Campground	Lewis County
Moose River Plains Complex Campground	Limekiln Lake-Cedar River Road, Otter Brook Road, Rock Dam Road	Port Leyden (V)		116 sites	Campground	Lewis County
Port Leyden Community Park	3387 Douglas Street	Port Leyden (V)	need electric and sewer connections	18 sites	Mixed Use	Leyden (T)
Christian Community Center	6458 East Road Turin NY 13473	Turin (T)		30 sites	Mixed Use	Turin (T)
South Lewis Central School	4264 East Road Turin NY 13473	Turin (T)		50 sites	Mixed Use	Turin (T)
Turin Municipal Building	6312 E. Main St Turin NY 13473	Turin (T)		8 sites	Mixed Use	Turin (T)
Turin Vol. Fire Company	4239 State Rt. 26 Turin NY 13473	Turin (T)		30 sites	Mixed Use	Turin (T)
North of Town Fire Hall	4391 North State St	Turin (V)		25 sites	Open Space	Turin (V)
Water Town Park	6971 Number Four Road	Watson (T)	90 acres of land	150 Sites	Mixed Use	Watson (T)





Figure 4-15. Potential Temporary Housing Locations in Lewis County







### Long-Term Housing

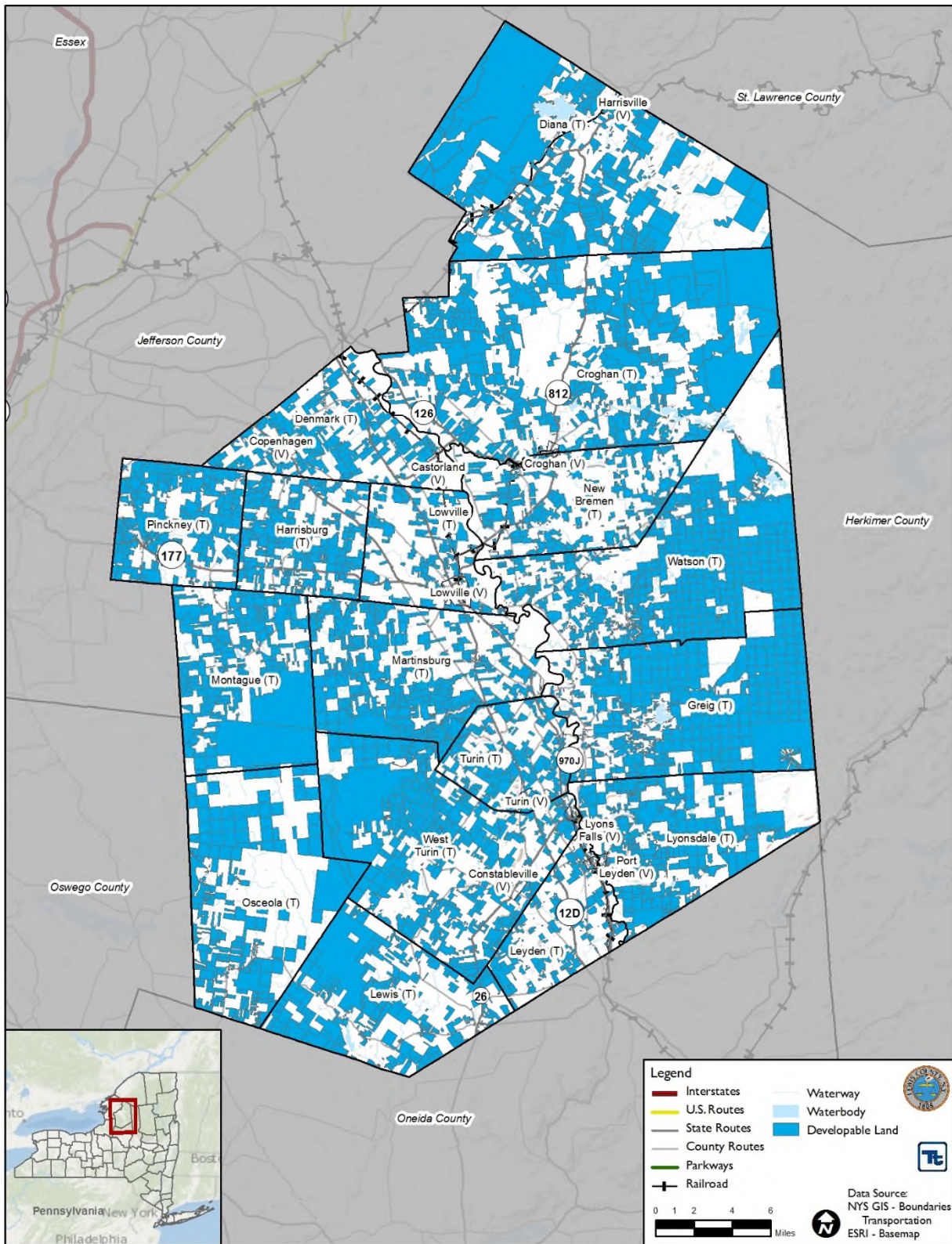
A buildable parcel analysis was conducted to support identification of potential sites suitable for relocating houses out of hazard areas (i.e., the floodplain) or building new homes in the event structures are destroyed by a natural hazard event. The analysis identified potential areas for post-disaster development in accordance with the 2017 NYSDHSES Hazard Mitigation Planning Standards Guide requirement “to identify long-term housing options for relocating displaced residents to maintain post-disaster social and economic stability”. The analysis provides an indication of vacant land suitable for development. In this case, vacant land is defined as a parcel that is classified as vacant and is located outside the following hazard areas:

1. FEMA floodplain (1- and 0.2-percent annual chance flood).
2. Wetlands (National Wetlands Inventory; National Land Cover Database)
3. Land that has steep slopes (>15% gradient) without consideration of ownership or availability.

Figure 4-16 provides potential long-term housing locations in Lewis County. Developable land displayed on the figure represents the portion of each identified vacant parcels with greater than 50-percent of their land area outside the three above hazard areas.



Figure 4-16. Potential Long-Term Housing Locations in Lewis County, New York





### 4.5.5 Levees

No levees were identified in Lewis County.

## 4.6 CRITICAL FACILITIES

A comprehensive inventory of critical facilities in Lewis County was developed from various sources including Lewis County GIS and input from the Steering and Planning Committees. The inventory of critical facilities presented in this section represents the current state of this effort at the time of publication of the draft HMP and used for the risk assessment in Section 5.

**Critical facilities** are those facilities considered critical to the health and welfare of the population and that are especially important following a hazard. As defined for this HMP, critical facilities include essential facilities, transportation systems, lifeline utility systems, high-potential loss facilities, and hazardous material facilities.

**Essential facilities** are a subset of critical facilities that include those facilities that are important to ensure a full recovery following the occurrence of a hazard event. For the County risk assessment, this category was defined to include police, fire, EMS, schools/colleges, shelters, senior facilities, and medical facilities.

### 4.6.1 Essential Facilities

This section provides information on emergency facilities, hospital and medical facilities, shelters, schools, and senior care and living facilities.

#### Emergency Facilities

For the purposes of this plan, emergency facilities include emergency operation centers (EOCs), police, fire, and emergency medical services (EMS). Table 4-11 through

Table 4-13 provide an inventory of EOCs, police stations, fire stations and EMS facilities in Lewis County. Figure 4-17 displays the location of these facilities based on the HAZUS-MH inventory data, County GIS and input from the Planning Committee.

**Table 4-11. Emergency Operation Centers in Lewis County**

Name	Address	Municipality
Lewis County Public Safety Building	5252 Outer Stowe St	Lowville (V)

Source: Lewis County GIS

Note: Where replacement cost value was not available, the percent damage to the structure as calculated by HAZUS will be reported. Where building type was not provided, concrete was assigned.

T = Town  
TBD = To be determined  
V = Village

**Table 4-12. Police Stations in Lewis County**

Police Facility Name	Address	Location (Municipality)
Lewis County Sheriff Office	Outer Stowe St	Lowville (T)
New York State Police	7881 State Route 26	Lowville (T)
Lowville Police Dept	5535 Bostwick St	Lowville (V)

Source: Lewis County GIS

Note: Where replacement cost value was not available, the percent damage to the structure as calculated by HAZUS will be reported. Where building type was not provided, concrete was assigned.

T = Town  
TBD = To be determined  
V = Village



**Table 4-13. Fire/EMS in Lewis County**

Name	Address	Municipality
Castorland Fire Company	5187 St Rte 410	Castorland (V)
Constableville Fire Company	3059 Main St	Constableville (V)
Copenhagen Fire Company	9950 St Rte 12	Copenhagen (V)
Beaver Falls Fire Company	9583 Main St	Croghan (T)
Croghan Fire Company	6860 Fire Hall St	Croghan (V)
Harrisville Fire Company	14226 Church St	Diana (T)
West Leyden Fire Company	1046 St Rte 26	Lewis (T)
Lowville Fire Company	5420 Parkway Drive	Lowville (V)
Lyons Falls Fire Company	3907 High St	Lyons Falls (V)
3G Fire Company	6229 Blue St	Martinsburg (T)
Fire Training Site	5836 Glendale Rd	Martinsburg (T)
Lewis County Search & Rescue	7782 West State St	Martinsburg (T)
Martinsburg Fire Company	5609 Whitaker Road	Martinsburg (T)
New Bremen Fire Company	8154 St Rte 812	New Bremen (T)
Port Leyden Fire Company	3387 Douglas St	Port Leyden (V)
Turin Fire Company	3387 Douglas St	Turin (V)

Source: Lewis County GIS

Note: Where replacement cost value was not available, the percent damage to the structure as calculated by HAZUS will be reported. Where building type was not provided, concrete was assigned.

T = Town  
 TBD = To be determined  
 V = Village

### Hospitals and Medical Centers

The Lewis County General Hospital & Residential Health Care Facility is located in Lowville. According to the 11<sup>th</sup> Annual Lewis County Survey of the Community, residents of Lewis County continue to report high satisfaction levels with both the “Quality of Healthcare” and “Access to Healthcare” in the county (SUNY Jefferson 2017). In addition to the Lewis County General Hospital & Residential Health Care Facility, there are several hospitals and medical centers located proximate to Lewis County.

**Table 4-14. Hospitals and Medical Centers in Lewis County**

Name	Address	Municipality	Type
State Of New York	State Of New York	Castorland (V)	Medical Care
Copenhagen Clinic	9732 State Route 12	Copenhagen (V)	Medical Care
Village of Copenhagen	Village of Copenhagen	Copenhagen (V)	Medical Care
Beaver River Health Center	9559 Main St	Croghan (T)	Medical Care
County of Lewis	County of Lewis	Croghan (T)	Medical Care
Harrisville Health Center	14214 Church St	Diana (T)	Medical Care
Town of Diana	Town of Diana	Diana (T)	Medical Care
Lewis County General Hospital	7785 N State St	Lowville (V)	Hospital
Lowville Urgent Care	5402 Dayan St	Lowville (V)	Medical Care
Southern Lewis Health Center	3926 State Route 12	Lyon Falls (V)	Medical Care







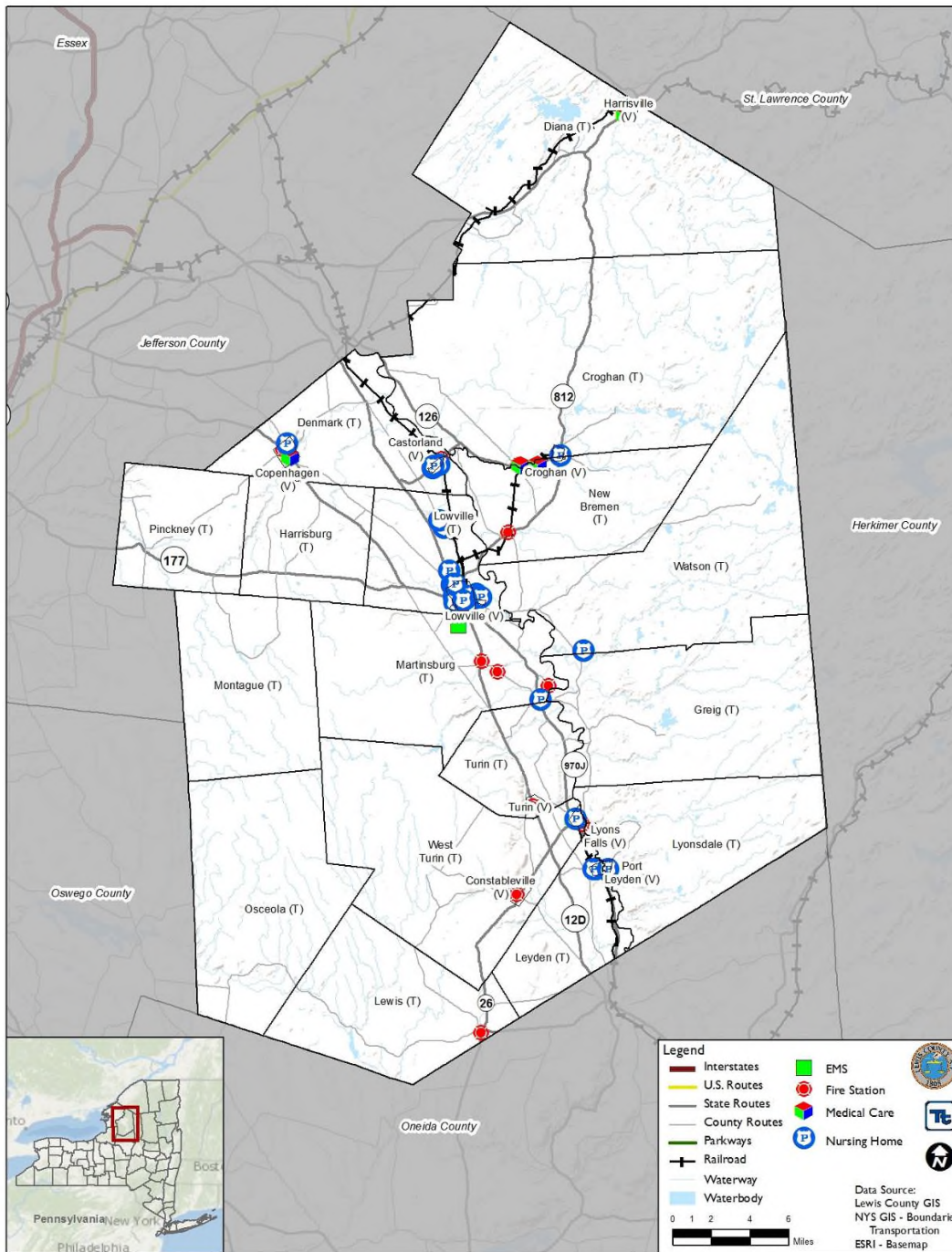
Name	Address	Municipality	Type
County of Lewis	County of Lewis	Lyons Falls (V)	Medical Care
Hbous Mahmoud N	Hbous Mahmoud N	New Bremen (T)	Medical Care

Source: Lewis County GIS

Note: Where replacement cost value was not available, the percent damage to the structure as calculated by HAZUS will be reported. Where building type was not provided, concrete was assigned.

T: Town V: Village TBD: To be determined

Figure 4-17. Emergency and Medical Facilities in Lewis County



Source: Lewis County GIS







**Schools**

The 11<sup>th</sup> Annual Lewis County Survey of the Community noted that more than 75 percent of Lewis County residents feel that Lewis County schools are adequately preparing young people for the technology and economy of the future. Table 4-15 lists all schools and other education facilities in the County. Figure 4-18 displays the locations of these schools within Lewis County.

**Table 4-15. Education Facilities in Lewis County**

Name	Address	Municipality	Type of Facility
Crystal Light Mennonite Church	9607 Highland Avenue	Castorland (V)	School
Copenhagen Central School	3020 Mechanic Street	Copenhagen (V)	School
Naumburg Mennonite Church	5473 State Route 410	Croghan (T)	School
Harrisville Central	14371 Pirate Lane	Diana (T)	School
School District #1	1157 Fish Creek Road	Lewis (T)	School
Lowville Academy	7668 State Street	Lowville (V)	School
Lowville Academy Central School Academy	5431 Trinity Avenue	Lowville (V)	School
Lewis County BOCES	5836 State Route 12	Martinsburg (T)	School
South Lewis Central Sch	5960 Main Street	Martinsburg (T)	School
Beaver River Central School	9508 Artz Road	New Bremen (T)	School
Port Leyden Elementary School	3336 Lincoln Street	Port Leyden (V)	School
School Dist No 5	Lincoln Street	Port Leyden (V)	School
South Lewis Central School	4264 East Road	Turin (T)	School

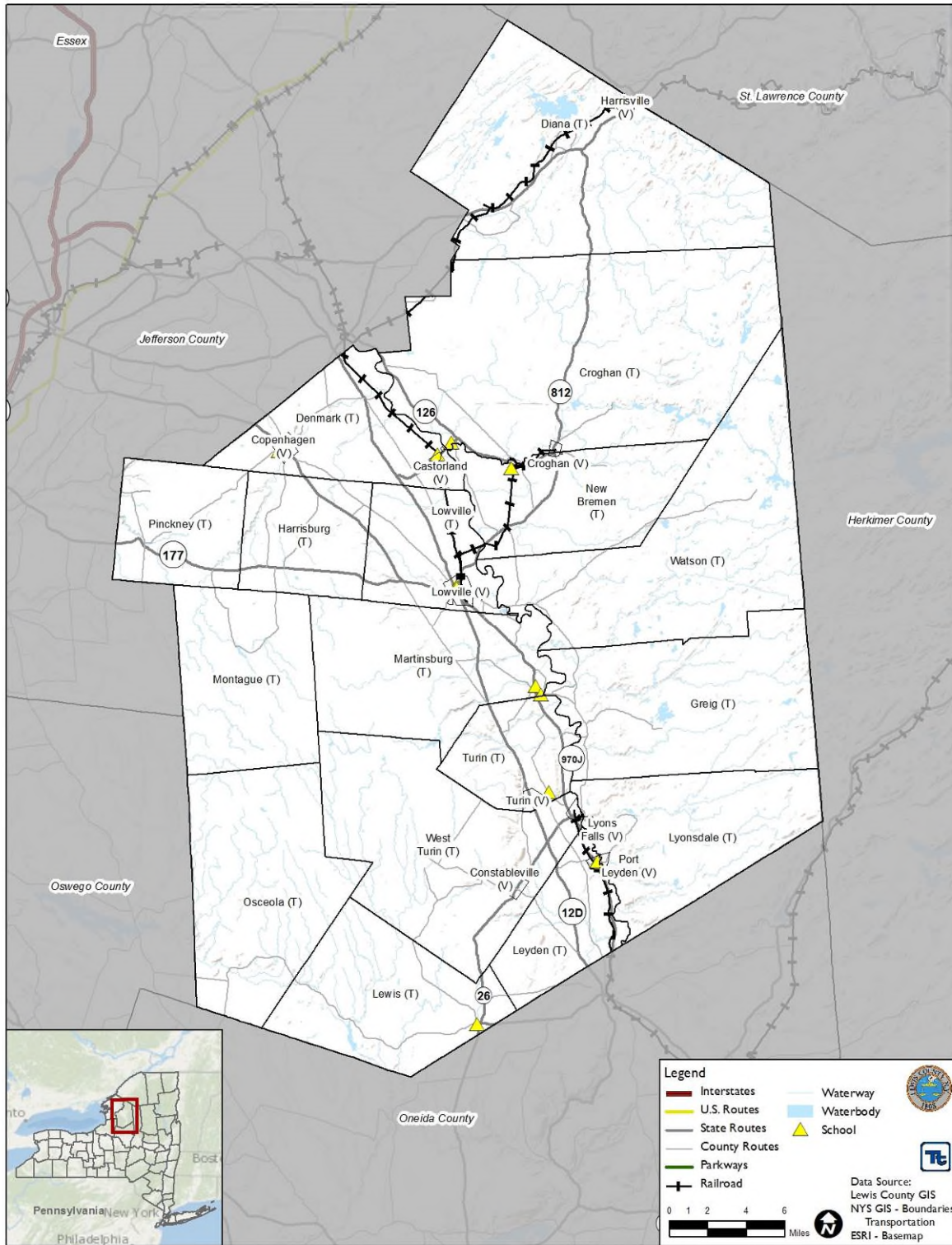
Source: Lewis County GIS

Note: Where replacement cost value was not available, the percent damage to the structure as calculated by HAZUS will be reported. Where building type was not provided, masonry (the HAZUS school default building type) was assigned.

T = Town  
 TBD = To be determined  
 V = Village



Figure 4-18. Schools within Lewis County



Source: Lewis County GIS





## Shelters

While most people who need to evacuate their homes typically stay with friends or family, or in hotels, some of them will require short-term shelter. The Lewis County Fire and Emergency Management addresses evacuation and sheltering in the Lewis County Comprehensive Emergency Management Plan (CEMP).

Evacuation routes are determined at the time of an incident by the Incident Commander or his/her designee. Generally, evacuation routes will be whatever major roads lead away from the evacuated area. Major roads are shown in Section 4.

Lewis County partners with the American Red Cross (ARC) to operate emergency shelters throughout the County. The Red Cross Sheltering Plan is included as an annex in the CEMP. The ARC has pre-identified a set of facilities that could be used as emergency shelters. Compliance with the Americans with Disabilities Act (ADA) is included in the criteria that the ARC uses to approve a facility to serve as a shelter, as is the requirement that facilities must be outside of the Special Flood Hazard Area (SFHA). During an incident that requires evacuation of an area, Lewis County Fire and Emergency Management will work with the ARC to activate one or more shelters (depending on the need and the resources available to operate a shelter) and will ensure that the location(s) of the shelter(s) is/are provided to evacuees. The ARC is also responsible for emergency feeding and clothing during incidents.

During an incident, Lewis County's emergency management structure relies on the Human Needs Task Force to address medical needs, access and functional needs, compliance with the ADA, and other issues that arise during an evacuation. This group is also described in the CEMP in the "Meeting Human Needs" section.

In addition to sheltering through the ARC, municipalities in Lewis County have identified the following shelters:

- The Village of Constableville has designated the Constableville Fire Department building on Main Street as an emergency shelter. The facility can accommodate 60 evacuees inside, has backup power, and includes ambulance and EMT access.
- The Village of Copenhagen has identified the Copenhagen Central School on Mechanic Street and the Copenhagen Fire Department at 9950 Main Street as unofficial emergency shelters. The capacity of each facility has not been determined, but each has backup power and can accommodate pets. The Copenhagen Central School is ADA compliant. Route 12 is used as the evacuation route to Watertown or Lowville in emergency situations.
- The Village of Croghan identified several locations as designated emergency shelters in the community. In addition to the facilities listed below, the village identified all schools as designated shelters:
  - Croghan Fire Department at 6860 Fire Hall Street. The site has a capacity of 150, accommodates pets, is ADA compliant, and has a kitchen and bathroom.
  - St. Stephen's Parish at 9748 Main Street. The site has a capacity of 100, accommodates pets, is ADA compliant, and has a kitchen and bathroom.
  - Steepleview Court at 6926 George Street. The site has a capacity of 20, accommodates pets, is ADA compliant, and has a kitchen and bathroom.
  - Croghan Free Library at 9794 NY-812. The site has a capacity of 20, accommodates pets, is ADA compliant, and has a bathroom.
- The Town of Denmark has designated the Copenhagen Fire Department at 9550 Main Street as an emergency shelter. The site has a capacity of 150.
- The Town of Greig has designated the following emergency shelters:
  - Camp Aldersgate: The camp is located on Brantingham Road and has a capacity of 250. It is ADA compliant. The facility has food and lodging.



- Brantingham Fire House: The fire house is located on Partidgeville Road and has a capacity of 15. It is ADA compliant and has backup power.
- Brantingham Golf Course: The golf course is located on Brantingham Road and has a capacity of 50.
- Greig Town Hall: The Town Hall is located on Greig Road and has a capacity of 25. It is ADA compliant and has backup power.
- Brantingham Snowmobile Club: The club is located on Brantingham Road and has a capacity of 25.
- The Town of Harrisburg has identified the following facilities as shelters:
  - Copenhagen Fire Department at 9932 NY-12, Copenhagen. The site has a capacity of 50-100, accommodates pets, is ADA compliant, has EMT services, and has a bathroom and kitchen.
  - Lowville Fire Department at 5409 The Parkway, Lowville. The site has a capacity of 50-100, is ADA compliant, has EMT services, and has a bathroom and kitchen.
  - Town Hall at 7886 Cobb Road. The site has a capacity of 25, is ADA compliant, has EMT services, and has a bathroom and kitchen.
- The Town of Leyden has identified the following emergency shelters:
  - Port Leyden Fire Hall at 3387 Douglas Street. The site has a capacity of 130, is ADA compliant, and has EMS personnel on hand.
  - Port Leyden Elementary School at Lincoln Street. The capacity is unknown. The site is ADA compliant, has EMT services, and has a registered nurse on hand during school hours.
- The Village of Lyons Falls has identified the following emergency shelters.
  - The Fire Hall/DPW at 3907 High Street accommodates 150 and is ADA compliant.
  - The Village offices at 4059 Cherry Street accommodates 25 and is ADA compliant.

The village noted that it plans to build a new facility which would combine the Fire Hall, DPW, and village offices into one location. The current Fire Hall has a deteriorating roof and lacks insulation and a kitchen, limiting functionality as a shelter. The village offices lack space. A combined facility would allow for improved and expanded sheltering capability.
- The Town of New Bremen identified the New Bremen Fire Department at 8154 Route 812 as a designated emergency shelter in the community. The site has backup power. In addition, the town identified all schools as designated shelters.
- The Town of Osceola identified the Highway Town Barn and the Community Center as designated emergency shelters. The Highway Town Barn is located at 2009 Church Street. The Town Barn has a capacity of 50, accommodates pets, is ADA compliant, has backup power, and has an AED available. The Community Center is located at 1426 Osceola Road. The Community Center has a capacity of 68, is ADA compliant, has backup power, and has access to the AED located next door in the Town Barn.
- The Town of Turin has designated the following emergency shelters which can all be accessed by State Routes 12 and 26:
  - South Lewis Central School at East Road. The site has a capacity of 1,000, accommodates pets, is ADA compliant, has backup power, and has a school nurse and food.
  - Turin Municipal Building at 6312 East Main Street. The site has a capacity of roughly 50, is ADA compliant, and has backup power.
  - Turin Volunteer Fire Company at 4239 State Route 26. The site has a capacity of 20-25, accommodates pets, is ADA compliant, has Ambulance/EMT services, and can serve food.
- The Village of Turin has designated the following emergency shelters:
  - Turin Fire Hall at State Route 26. The site accommodates pets, is ADA compliant, has backup power and provides some medical services.





- South Lewis Central School at 5960 Main Street. The site has a capacity of 500, accommodates pets, is ADA compliant, has backup power, and provides medical services as needed.
- The Town of Watson has designated the Town Barn at 6971 Number Four Road as the town’s emergency shelter. The site has a capacity of 50, is ADA compliant, has backup power, has first aid, and has a working kitchen.

**Senior Care and Senior Living Facilities**

Lewis County is home to numerous senior facilities. Table 4-16 provides an inventory of senior facilities in the County. Duplicate entries denote multiple facilities at a single location. See Appendix G for a full list of facilities’ locations.

**Table 4-16. Senior Facilities in Lewis County**

Facility Name	Address	Municipality
Castorland Housing	4892 State Route 410	Castorland (V)
High Street Ira	9502 Church Street	Castorland (V)
Route 410 Ira	4898 State Route 410	Castorland (V)
Copenhagen Happy Achers	2949 Stoddard Street	Copenhagen (V)
Steeple View Apts	6926 George Street	Croghan (V)
Brookside Redevelopment Co Inc	5701 Brookside Circle	Lowville (T)
Brookside Redevelopment Co Inc	5701 Brookside Circle	Lowville (T)
Disabled Persons Action Organization, Inc.	5205 Ebbley Road	Lowville (T)
East Road Adult Home	7731 East Road	Lowville (T)
East Road Adult Home	7731 East Road	Lowville (T)
Lewis County General Hospital Hospice	7785 North State Street	Lowville (T)
Lewis County General Hospital-Nursing Home Unit	7785 North State Street	Lowville (T)
Schlieder, James W	7731 East Road	Lowville (T)
Upstate Cerebral Palsy, Inc.	5716 Waters Road	Lowville (T)
Upstate Cerebral Palsy, Inc.	5714 Waters Road	Lowville (T)
Lewis County General Hospital	7785 N State Street	Lowville (V)
Lewis County General Hospital-Nursing Home Unit	7785 N State Street	Lowville (V)
Lowville Heights Apts	7486 Railroad Street	Lowville (V)
Lowville Ira	5331 Dayan Street	Lowville (V)
NYS Arc Oneida-Lewis Counties Chapter	7553 Church Street	Lowville (V)
NYS Arc Oneida-Lewis Counties Chapter	5514 Shady Avenue	Lowville (V)
NYS Arc Oneida-Lewis Counties Chapter	5356 Stowe Street	Lowville (V)
NYS Arc Oneida-Lewis Counties Chapter	5349 Summit Avenue	Lowville (V)
NYS Arc Oneida-Lewis Counties Chapter	5491 River Street	Lowville (V)
High Falls Apt	4061 Cherry Street	Lyon Falls (V)
NYS Arc Oneida-Lewis Counties Chapter	6086 Glenfield Road	Martinsburg (T)
Port Leyden Ira	3309 Railroad Street	Port Leyden (V)
Weber Matthew	3319 Quarry Street	Port Leyden (V)
Whitton Place	7320 E Main Street	Port Leyden (V)
NYS Arc Oneida-Lewis Counties Chapter	6566 Bradish Road	Watson (T)





Source: Lewis County GIS

Note: Where replacement cost value was not available, the percent damage to the structure as calculated by HAZUS will be reported. Where building type was not provided, concrete was assigned.

T	=	Town
TBD	=	To be determined
V	=	Village

### 4.6.2 Transportation Systems

This section presents available inventory data for major transportation systems in Lewis County. There are no commercial airports in the County.

#### Highway, Roadways and Associated Systems

Lewis County is linked to the surrounding area by road, being close to Interstate 81 which traverses the full extent of neighboring Jefferson County from north to south and US Highway 11 also in Jefferson County. The principal highways in Lewis County are State Routes 12 and 26, which link communities along the Black River Valley. There are no passenger railroad services in Lewis County, but there are several railroad lines for freight, owned by both Lewis County Industrial Development Agency (IDA) and Jefferson County IDA. The rail lines are operated by the Mohawk, Adirondack, and Northern Railroad and the Lowville and Beaver River Railroad. However, at the time of writing, the operational status of these freight lines was unclear, and this infrastructure is considered underutilized, if not abandoned altogether.

Local bus services have recently been introduced, with seven routes operating daily across the County plus a twice-weekly service entirely within the Village of Lowville. These services mainly connect Lowville with other communities in the Black River Valley, but there are also routes connecting Harrisville in the far north of the County and Boonville in neighboring Oneida County. These services are operated by Birnie Bus Services Inc., which also operates a twice-weekly bus service connecting Lowville and Port Leyden with the City of Utica.

There are no airports with scheduled passenger services in the County, the nearest being Watertown Airport in nearby Jefferson County. More detailed information describing critical facilities and local infrastructure can be found in Section 3b of this plan (Lewis County HMP 2010).

### 4.6.3 Lifeline Utility Systems

This section presents potable water, wastewater, and energy resource utility system data. Due to heightened security concerns, local utility lifeline data sufficient to complete the analysis have only partially been obtained. Utility data are included in HAZUS-MH but are not sufficient to support detailed analyses for this County.

#### Potable Water Supply

Municipal and public non-municipal wells, tanks, and water towers are present in Lewis County. Table 4-17 lists the potable water facilities in Lewis County. However, the potable well data is considered sensitive and although included in the risk analysis, does not appear in the public portion of this HMP. Duplicate entries denote multiple facilities at a single location. See Appendix G for a full list of facilities' locations.



Table 4-17. Potable Water Facilities in Lewis County

Name	Address	Municipality	Type
Village of Castorland	State Route 410	Castorland (V)	Potable Tank
Village of Castorland	Comer Rd	Castorland (V)	Potable Pump
Village of Castorland	9625 Elm St	Castorland (V)	Potable Pump
Village of Copenhagen	9697 Woodbattle Rd	Copenhagen (V)	Potable Pump
Croghan Water Plant	9847 Croghan Reservoir Rd	Croghan (T)	Potable Pump
Croghan Water Plant	9847 Croghan Reservoir Rd	Croghan (T)	Potable Pump
Village of Carthage	Besha Rd	Croghan (T)	Potable Pump
Village of Carthage	Kilbourn Rd	Croghan (T)	Potable Pump
Village of Carthage	Kilbourn Rd	Croghan (T)	Potable Pump
Village of Carthage	Kilbourn Rd	Croghan (T)	Potable Pump
Village of Carthage	Carthage Reservoir Rd	Croghan (T)	Potable Pump
Village of Carthage	7952 Carthage Reservoir Rd	Croghan (T)	Potable Pump
Village of Carthage	Carthage Reservoir Rd	Croghan (T)	Potable Pump
Village of Carthage	Carthage Reservoir Rd	Croghan (T)	Potable Pump
Village of Carthage	Carthage Reservoir Rd	Croghan (T)	Potable Pump
Village of Carthage	Carthage Reservoir Rd	Croghan (T)	Potable Pump
Village of Carthage	Carthage Reservoir Rd	Croghan (T)	Potable Pump
Village of Carthage	Texas Rd	Croghan (T)	Potable Pump
Village of Carthage	Besha Rd	Croghan (T)	Potable Pump
Village of Carthage	Besha Rd	Croghan (T)	Potable Pump
Village of Copenhagen	2339 County Route 194	Denmark (T)	Potable Pump
Village of Copenhagen	10379 Stoddard Rd	Denmark (T)	Potable Pump
Village of West Carthage	Fuller Rd	Denmark (T)	Potable Pump
Village of West Carthage	10886 Old State Rd	Denmark (T)	Potable Pump
Village of West Carthage	10886 Old State Rd	Denmark (T)	Potable Pump
Town of Denmark	County Route 194	Denmark (T)	Potable Pump
Town of Diana	14206 S Creek Rd	Diana (T)	Potable Pump
Town of Diana	14206 S Creek Rd	Diana (T)	Potable Pump
Town of Diana	Washington St	Diana (T)	Potable Pump
Town of Diana	14421 Hands Flat Rd	Diana (T)	Potable Pump
Town of Greig	Lake House Rd	Greig (T)	Potable Pump
City of Rome Water Dept	Osceola Rd	Lewis (T)	Reservoir
City of Rome Water Dept	Osceola Rd	Lewis (T)	Potable Pump
City of Rome Water Dept	Osceola Rd	Lewis (T)	Potable Pump
Village of Port Leyden	6741 Rugg Rd	Leyden (T)	Potable Tank
Village of Lowville	Waters Rd	Lowville (T)	Potable Pump
Village of Lowville	Waters Rd	Lowville (T)	Potable Pump
Village of Lowville	7720-7726 Number Three Rd	Lowville (T)	Potable Tank
Village of Lowville	7604 E State St	Lowville (V)	Potable Pump
Village of Lyons Falls	7067 Burnt Shanty Rd	Lyonsdale (T)	Potable Pump
Village of Lyons Falls	River Rd	Lyonsdale (T)	Potable Pump



Name	Address	Municipality	Type
Village of Lyons Falls	Burnt Shanty Rd	Lyonsdale (T)	Potable Pump
Village of Lyons Falls	Davis Bridge Rd	Lyonsdale (T)	Potable Pump
Village of Lyons Falls	7067 Burnt Shanty Rd	Lyonsdale (T)	Potable Pump
Village of Lyons Falls	Davis Bridge Rd	Lyonsdale (T)	Potable Pump
Village of Lyons Falls	River Rd	Lyonsdale (T)	Potable Pump
Village of Port Leyden	Moose River Rd	Lyonsdale (T)	Potable Pump
Village of Port Leyden	7459 Moose River Rd	Lyonsdale (T)	Potable Pump
Village of Port Leyden	Holmes Rd	Lyonsdale (T)	Potable Pump
Village of Port Leyden	Holmes Rd	Lyonsdale (T)	Potable Pump
Village of Port Leyden	Holmes Rd	Lyonsdale (T)	Potable Pump
Village of Port Leyden	Holmes Rd	Lyonsdale (T)	Potable Pump
Village of Lyons Falls	River Rd	Lyonsdale (T))	Potable Pump
Town of Martinsburg	Fykes Rd	Martinsburg (T)	Potable Pump
Town of Martinsburg	Fykes Rd	Martinsburg (T)	Potable Pump
Town of Martinsburg	5309 Cemetery Rd	Martinsburg (T)	Potable Pump
Town of Martinsburg	S Si Whittaker Rd	Martinsburg (T)	Potable Well
Beaver Falls Water Dist	Cut Off Rd	New Bremen (T)	Potable Pump
Village of Lowville	7634 Number Four Rd	New Bremen (T)	Potable Pump
Village of Lowville	Number Four Rd	New Bremen (T)	Reservoir
Village of Lowville	7634 Number Four Rd	New Bremen (T)	Potable Pump
Village of Lowville	Number Four Rd	New Bremen (T)	Potable Pump
Hillside Water Users	N Osceola Rd	Osceola (T)	Potable Pump
Village of Turin	Seymour Rd	Turin (T)	Potable Pump
Village of Turin	Lee Gulf Trl	Turin (T)	Potable Pump
Village of Turin	Seymour Rd	Turin (T)	Potable Pump
Village of Lowville	Crystal Lake Dr	Watson (T)	Potable Pump
Village of Lowville	River Rd	Watson (T)	Potable Pump
Village of Lowville	Erie Canal Rd	Watson (T)	Potable Pump
Village of Lowville	Erie Canal Rd	Watson (T)	Potable Water Treatment
Village of Lowville	Crystal Lake Dr	Watson (T)	Potable Pump
Village of Lowville	Number Four Rd	Watson (T)	Potable Pump
Village of Constableville	Crofoot Hill Rd	West Turin (T)	Potable Pump
Village of Constableville	Smith Rd	West Turin (T)	Potable Pump
Village of Constableville	Smith Rd	West Turin (T)	Potable Pump
Village of Constableville	Smith Rd	West Turin (T)	Potable Pump

Source: Lewis County GIS

T = Town

V = Village

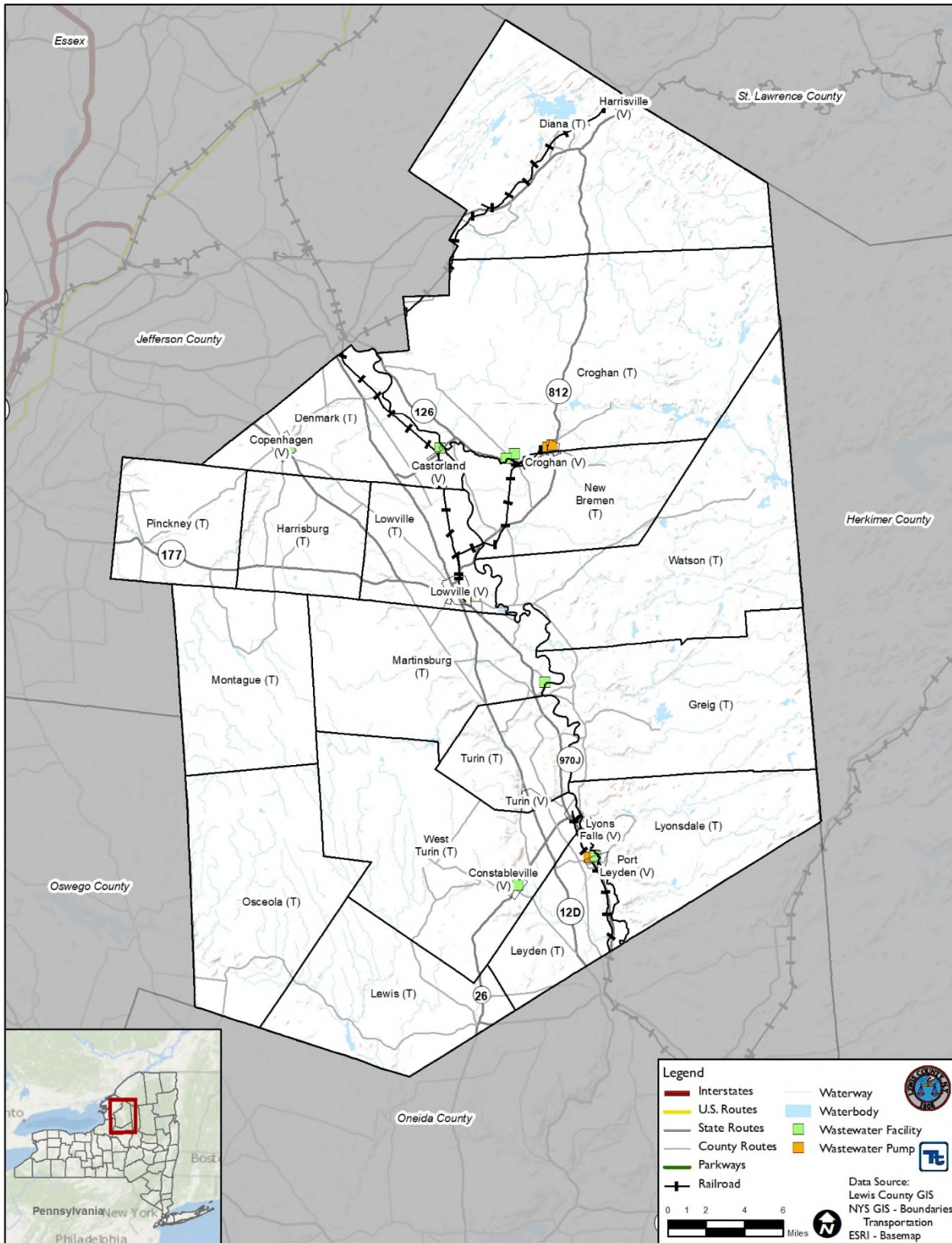
### Wastewater Facilities

Table 4-18 lists the 12 wastewater treatment facilities as well as pump stations located within Lewis County. Figure 4-19 below displays the locations of all wastewater facilities within Lewis County. Duplicate entries denote multiple facilities at a single location. See Appendix G for a full list of facilities' locations.





Figure 4-19. Wastewater Facilities in Lewis County



Source: Lewis County GIS





**Table 4-18. Lewis County Wastewater Treatment Facilities**

Facility Name	Municipality
Village of Castorland	Castorland (V)
Village of Constableville	Constableville (V)
Village of Copenhagen	Copenhagen (V)
Omniafiltra LLC	Croghan (T)
Town of Croghan	Croghan (T)
Village of Croghan	Croghan (V)
Village of Croghan	Croghan (V)
Village of Port Leyden	Leyden (T)
Village of Port Leyden	Leyden (T)
Village of Lowville	Lowville (V)
Town of Martinsburg	Martinsburg (T)
Village of Port Leyden	Port Leyden (V)

Source: Lewis County GIS

Note: Where replacement cost value was not available, the percent damage to the structure as calculated by HAZUS will be reported. Where building type was not provided, concrete was assigned.

T = Town  
 TBD = To be determined  
 V = Village

### Energy Resources

National Grid provides electrical service to residents of Lewis County (National Grid 2019). Additional electric power facilities and substations were not provided for the purposes of this plan. There are two gas pipelines in the County operated by Niagara Mohawk Power Corp and Iroquois Gas Corp. Pipelines (gas, sewer, etc.) present in Lewis County are considered sensitive information. Their presence is noted, but their location and other relevant information is not discussed further.

### Communication Resources

Table 4-19 lists the communication facilities (facilities, radio stations, radio towers) located in Lewis County. Figure 4-20 displays the locations of all communication facilities located within Lewis County.

**Table 4-19. Communication Facility**

Name	Address	Municipality
Citizens Telecom Co of NY	4900 State Route 410	Castorland (V)
Citizens Telecom Co of NY	5910 James Street	Constableville (V)
Cingular Wireless	9967 High Falls Road	Croghan (T)
Cro 1	8689 Long Pond Road Town of Croghan	Croghan (T)
Verizon Wireless	10651 State Route 812	Croghan (T)
Citizens Telecom Co of NY	6921 Bank Street	Croghan (V)
COP 1	1720 Hayes Road Town of Denmark	Denmark (T)
Kollmer William	5 Alice Court	Denmark (T)
Nexstar Broadcasting, Inc.	1720 Hayes Road	Denmark (T)
Osc 1	1688 Hayes Road Town of Denmark	Denmark (T)
Time Warner Cable Northeast	11091 State Route 26	Denmark (T)
Time Warner Cable Northeast LL	11641 Zecher Road	Denmark (T)





Name	Address	Municipality
Time Warner Cable Northeast LL	7820 Crescent Executive Drive	Denmark (T)
Verizon New York Inc	2452 County Route 194	Denmark (T)
Verizon Wireless	10080 Old State Road	Denmark (T)
AT&T Mobility	State Route 3	Diana (T)
Har 1	8153 State Route 3 Town of Diana	Diana (T)
Time Warner Entertainment	7819 State Route 3	Diana (T)
Time Warner Entertainment	State Route 3	Diana (T)
Verizon Wireless	10227 Tannery Lane	Diana (T)
Verizon New York Inc	14304 Pearl Street	Diana (T)
Cellular One	7291 Town Line Road	Greig (T)
Time Warner Cable Northeast	5620 Dump Road	Greig (T)
Time Warner Cable Northeast	7820 Crescent Executive Drive	Greig (T)
American Tower Corp	8717 NYS Route 12	Harrisburg (T)
Town of Lewis	Osceola Road	Lewis (T)
Verizon Wireless	1485 NYS Route 26	Lewis (T)
Flack William R	1809 State Route 12D	Leyden (T)
NYPA	5681 Zeigler Road Town of Leyden	Leyden (T)
State of NY Power Authority	5681 Ziegler Road	Leyden (T)
Time Warner Cable Northeast	6273 Stuckie Road	Leyden (T)
Time Warner Cable Northeast	6413 Stuckie Road	Leyden (T)
Time Warner Cable Northeast	7820 Crescent Executive Drive	Leyden (T)
Time Warner Cable Northeast	7820 Crescent Executive Drive	Leyden (T)
Beyer Martin	7746 Number Three Road	Lowville (T)
Beyer Martin	7746 Number Three Road	Lowville (T)
Evolution Site Services, LLC	East Road Extension	Lowville (T)
Low 1	7830 Number Three Road Town of Lowville	Lowville (T)
SBC Tower Holdings, LLC	7834 Number Three Road	Lowville (T)
St Lawrence Seaway RSA	Number Three Road	Lowville (T)
St Lawrence Seaway RSA	Number Three Road	Lowville (T)
911	7660 North State Street Village of Lowville Backup Location	Lowville (V)
Citizens Telecom Co of NY	5430 Shady Avenue	Lowville (V)
PSB 1	5252 Outer Stowe Street Village of Lowville	Lowville (V)
Citizens Telecom Co of NY	6818 McAlpine Street	Lyons Falls (V)
Lyn 1	3895 Marmon Road Town of Lyonsdale	Lyonsdale (T)
Verizon Wireless	2416 River Road	Lyonsdale (T)
Citizens Telecom Co of Ny	6233 Blue Street	Martinsburg (T)
Flack William R	3722 Rector Road	Martinsburg (T)
Mont	6575 Sears Pond Road Town of Montague	Montague (T)
Verizon Wireless	6716 Buckingham Road	New Bremen (T)
OSC	1276 N Osceola Road Town of Osceola	Osceola (T)
Verizon New York Inc	2034 Florence Road	Osceola (T)
American Towers Inc	1602 County Route 194	Pinckney (T)



Name	Address	Municipality
Brick, Cary R	8707 Old State Road	Pinckney (T)
Brick, Cary R	Old State Road	Pinckney (T)
Jacoby, Douglas L	S Side St Route 177	Pinckney (T)
Jacoby, Douglas L	574 NYS Route 177	Pinckney (T)
St Lawrence Valley	1773 County Route 194	Pinckney (T)
St Lawrence Valley	1773 County Route 194	Pinckney (T)
American Towers Inc	Brenon Road	Turin (T)
Gom 1	4805 Brennon Road Town of Turin	Turin (T)
Verizon Wireless	Houseville Gulf Road	Turin (T)
Cry	6876 Erie Canal Road Watson	Watson (T)
CVille	3518 Smith Road Constableville	West Turin (T)
Verizon Wireless	2863 Adams Road	West Turin (T)

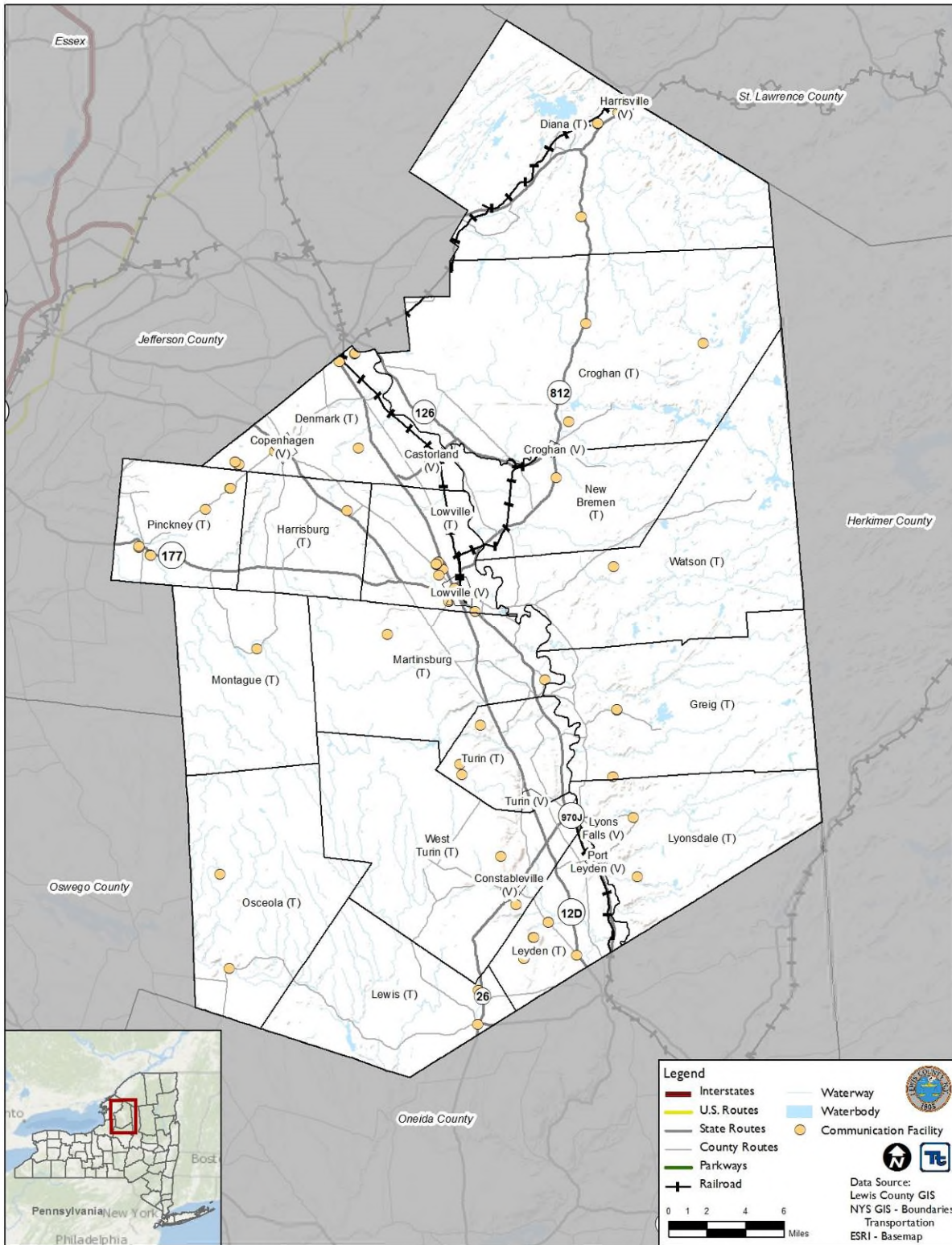
Source: Lewis County GIS

Note: Where replacement cost value was not available, the percent damage to the structure as calculated by HAZUS will be reported. Where building type was not provided, concrete was assigned.

T = Town  
 TBD = To be determined  
 V = Village



Figure 4-20. Communication Facilities within Lewis County



Source: Lewis County GIS





### 4.6.4 High-Potential Loss Facilities

High-potential loss facilities include dams, levees, nuclear power plants, military installations, and hazardous materials (HAZMAT) facilities. No levees, nuclear power plants, or military installations were identified in the County. Dams and HAZMAT facilities are discussed below; however, HAZMAT facility locations are considered sensitive for the purposes of this plan.

#### Dams

According to the Lewis County GIS Critical Facility Layer, there are 110 dams in Lewis County.

#### HAZMAT Facilities

Lewis County has identified HAZMAT facilities in the County. However, specific information regarding each facility is considered sensitive and is not included in the public portion of this plan.

#### Other Facilities

The Planning Committee identified additional facilities (user-defined facilities) as critical, including municipal buildings and garages. These facilities were included in the risk assessment conducted for the County. Table 4-20 lists the public buildings located in Lewis County. Table 4-21 lists the DPW Garages/Facilities located in Lewis County.

**Table 4-20. Public Buildings in Lewis County**

Facility Name	Address	Municipality	Building Type
LC Community Recovery Center	7714 Number 3 Road	Lowville (T)	Community Recovery Center
Lewis County Highway Dep	7362 East Road	Lowville (T)	County Building
LC Dept of Social Services	5274 Outer Stowe Street	Lowville (V)	County Building
LC Industrial Development Agency	7642 N State Street	Lowville (V)	County Building
Lowville Commons - Board of Elections/OFA	7550 S State Street	Lowville (V)	County Building
Lowville Professional Building (Public Defender)	7659 N. State Street	Lowville (V)	County Building
Lewis County Department of Motor Vehicles	7049 NY-12	Martinsburg (T)	County Building
Lewis County Opportunities	8265 State Route 812	New Bremen (T)	County Building
Lewis County Family Court	5413 Trinity Avenue	Lowville (V)	Court
Lewis Court House	7660 State Street	Lowville (V)	Court
West Turn Justice Court	4059 Cherry Street	Lyons Falls (V)	Court
Double Play Sports Community Center	5439 Shady Ave	Lowville (V)	Cultural
Lewis County Historical Society	7552 S State St	Lowville (V)	Cultural
Lowville Food Pantry	7646 Forest Ave	Lowville (V)	Cultural
Kelly's Academy of Dance	High St	Lyon Falls (V)	Cultural
Arts Community of Lewis County		Martinsburg (T)	Cultural
Town of Martinsburg Hall	6994 West Road	Martinsburg (T)	Historic
Lewis County Jail	5252 Outer Stowe Street P.O. Box 233	Lowville (V)	Jail
Village of Constableville	3158 Main Street	Constableville (V)	Library





Facility Name	Address	Municipality	Building Type
Beaver Falls Library	9607 Lewis Street	Croghan (T)	Library
Croghan Free Library	9794 NY-812 #0008	Croghan (V)	Library
Harrisville Free Library Assoc	8209 Main Street	Diana (T)	Library
Brantingham-Greig Reading Center	5186 Greig Rd	Greig (T)	Library
Town of Lewis Library	5213 Osceola Rd	Lewis (T)	Library
Lowville Free Library	5387 Dayan Street	Lowville (V)	Library
Lyons Falls Library	3918 High St	Lyon Fals (T)	Library
Wm H. Bush Memorial Library	6687 State Route 26	Martinsburg (T)	Library
American Mennonite Heritage Association (AMHA) Library	8778 Erie Canal Rd	New Bremen (T)	Library
New York State Old Tyme Fiddlers' Association (NYSOTFA)	1121 Comins Rd	Osceola (T)	Library
Town of Osceola Library	2117 N Osceola Road	Osceola (T)	Library
Port Leyden Community Library	3145 Canal Street	Port Leyden (V)	Library
B. Elizabeth Strong Memorial Library	6513 W Main Street	Turin (V)	Library
Town of Turin	6312 E Main Street	Turin (V)	Library
Village of Constableville	5859 Schuyler Street	Constableville (V)	Municipal Hall
Croghan Town	9882 State Route 126	Croghan (T)	Municipal Hall
Town of Denmark	3707 Roberts Road	Denmark (T)	Municipal Hall
Town of Greig Town Hall	5186 Greig Road	Greig (T)	Municipal Hall
Harrisburg Town	3620 O'Brien Road	Harrisburg (T)	Municipal Hall
Town of Lewis	1039 State Route 26	Lewis (T)	Municipal Hall
Leyden Town	6638 Rugg Road	Leyden (T)	Municipal Hall
Lowville Town	5533 Bostwick Street	Lowville (V)	Municipal Hall
Lowville Village	5535 Bostwick Street	Lowville (V)	Municipal Hall
Lyonsdale Town	8115 River Road	Lyonsdale (T)	Municipal Hall
Town of Martinsburg Hall	6682 State Route 26	Martinsburg (T)	Municipal Hall
Montague Town	7270 McDonald Road	Montague (T)	Municipal Hall
New Bremen Town	8420 State Route 812	New Bremen (T)	Municipal Hall
Osceola Town	1438 Osceola Road	Osceola (T)	Municipal Hall
Town of Pinckney	307 State Route 177	Pinckney (T)	Municipal Hall
Town of Pinckney	587 County Route 194	Pinckney (T)	Municipal Hall
Town of Leyden	3514 Mechanic Street	Port Leyden (V)	Municipal Hall
Town of Leyden	Mechanic Street	Port Leyden (V)	Municipal Hall
Town of Leyden	Mechanic Street	Port Leyden (V)	Municipal Hall
Turin Village	6312 E Main Street	Turin (V)	Municipal Hall
Watson Town	6965 Number Four Road	Watson (T)	Municipal Hall
West Turin Town	5438 Kessler Road	West Turin (T)	Municipal Hall
US Postal Service	5158 State Route 410	Castorland (V)	Post Office
US Government - Post Office	7651 N State Street	Lowville (V)	Post Office
State of New York	14027 S Creek Road	Diana (T)	State Government
State of New York	14027 S Creek Road	Diana (T)	State Government



Source: Lewis County GIS

Note: Where replacement cost value was not available, the percent damage to the structure as calculated by HAZUS will be reported. Where building type was not provided, concrete was assigned.

T: Town V: Village

TBD: To be determined

**Table 4-21. DPW Garages/Facilities in Lewis County**

Facility Name	Address	Municipality
Village of Castorland	5185 State Route 410	Castorland (V)
Town of West Turin	5968 James Street	Constableville (V)
Town of Croghan	9882 State Route 126	Croghan (T)
Town of Croghan	10333 State Route 812	Croghan (T)
Town of Diana	5959 Old State Road Extension	Diana (T)
Town of Greig	5184-5186 Greig Road	Greig (T)
Town of Harrisburg Town Barn	7886 Cobb Road	Harrisburg (T)
Town of Lewis Barn #2	1218 Fish Creek Road	Lewis (T)
Town of Leyden	6606 School Road	Leyden (T)
County of Lewis	East Road	Lowville (T)
Lowville Academy	Bostwick Street	Lowville (V)
State Of New York	5527 Bostwick Street	Lowville (V)
Town of Lowville	5481 Bostwick Street	Lowville (V)
Village of Lowville	7701 Forest Avenue	Lowville (V)
Village of Lowville	Forest Avenue	Lowville (V)
Village of Lyon Falls	3818 High Street	Lyon Falls (V)
Town of Lyonsdale	River Road	Lyonsdale (T)
Town of Martinsburg	5405 Cemetery Road	Martinsburg (T)
Town of Montague	Salmon River Road	Montague (T)
Beaver River Central School	6612 Depot Street	New Bremen (T)
Town of New Bremen	8420 State Route 812	New Bremen (T)
Village of Port Leyden	Railroad Street	Port Leyden (V)
Town of Turin	E Main Street	Turin (V)

Source: Lewis County GIS

Note: Where replacement cost value was not available, the percent damage to the structure as calculated by HAZUS will be reported. Where building type was not provided, concrete was assigned.

T = Town

TBD = To be determined

V = Village



## 5.1 METHODOLOGY AND TOOLS

A risk assessment is the process of measuring the potential loss of life, personal injury, and economic and property damage resulting from identified hazards. It allows planning personnel to address and reduce hazard impacts and emergency management personnel to establish early response priorities by identifying potential hazards and vulnerable assets. Results of the risk assessment are used in subsequent mitigation planning processes, including determining and prioritizing mitigation actions that reduce each jurisdiction's risk to a specified hazard. Past, present, and future conditions must be evaluated to most accurately assess risk for the County and each jurisdiction. The process focuses on the following elements:

- **Hazard Identification:** Use all available information to determine what types of hazards may affect a jurisdiction.
- **Profile Each Hazard:** Understand each hazard in terms of:
  - Extent—Severity of each hazard.
  - Location—Geographic area most affected by the hazard.
  - Previous occurrences and losses.
- **Assess Vulnerability:**
  - Exposure identification—Estimate the total number of assets in the jurisdiction that are likely to experience a hazard event if it occurs by overlaying hazard maps with the asset inventories.
  - Vulnerability identification and loss estimation—Assess the impact of hazard events on the people, property, economy, and lands of the region, including estimates of the cost of potential damage or cost that can be avoided by mitigation.
  - Future changes that may impact vulnerability—Analyze how demographic changes, projected development, and climate change impacts can alter current exposure and vulnerability.

The following summarizes the asset inventories, methodology, and tools used to support the risk assessment process.

### 5.1.1 Asset Inventories

Lewis County assets were identified to assess potential exposure and loss associated with the hazards of concern. For the Hazard Mitigation Plan (HMP) update, Lewis County assessed vulnerability of the following types of assets: population, buildings and critical facilities/infrastructure and the environment. In addition, assessment of the environment was included for the flood hazard (Section 5.4.5: Flood). Some assets may be more vulnerable because of their physical characteristics or socioeconomic uses.

#### Population

As discussed in Section 4: County Profile, research has shown that some populations are at greater risk from hazard events because of decreased resources or physical abilities. For the purposes of this planning process, vulnerable populations in Lewis County include children, elderly, low-income, the physically or mentally disabled, non-English speakers, and the medically or chemically dependent.

The 2010 U.S. Census block data layers were used to estimate exposure and potential impacts to the general population. The 2010 U.S. Census demographic data available in the Federal Emergency Management Agency's (FEMA) HAZUS-MH 4.2 model was used to estimate potential impacts to the elderly (over 65 years of age) and populations with income below the poverty threshold.



U.S. Census blocks do not follow the boundaries of the hazard areas, possibly leading to gross overestimates or underestimates of exposed populations from use of centroids or intersects of Census blocks with these zones. Limitations of these analyses are recognized, and thus the results are used only to provide a general estimate.

### Buildings

The default general building stock data in HAZUS-MH 4.2 based on the 2010 U.S. Census and RSMMeans 2016 valuations was used for the HAZUS-MH 4.2 analysis and hazard exposure analysis at the municipal level. The building inventory was used to estimate losses to the County's total replacement cost value from a hazard event. Total replacement cost value consists of both the structural cost to replace a building and the estimate value of contents of a building. The occupancy classes available in HAZUS-MH 4.2 were condensed into the following categories (residential, commercial, industrial, agricultural, religious, governmental, and educational) to facilitate the analysis and the presentation of results. Residential loss estimates address both multi-family and single-family dwellings. To estimate the number of structures in the County exposed to the hazard areas, the County's spatial building footprint layer was utilized. Building footprints with their centroid in a hazard area were totaled to estimate exposure.

The HAZUS-MH 4.2 Census blocks do not follow the boundaries of the hazard areas, possibly leading to gross overestimates or underestimates of exposed building stock from use of centroids or intersects of Census blocks with these zones. Limitations of these analyses are recognized, and thus the results are used only to provide a general estimate.

### Critical Facilities

The critical facility inventory, which includes essential facilities, utilities, transportation features, and user-defined facilities as outlined in Section 4, was updated beginning with all Geographic Information System (GIS) data provided by Lewis County and then reviewed by the Planning Committee allowing for municipal input. To protect individual privacy and the security of assets, information is presented in aggregate, without details about specific individual properties or facilities.

### New Development

In addition to summarizing the current vulnerability, Lewis County examined recent and anticipated new development that can affect the County's vulnerability to hazards. Identifying this development and integrating it into the risk assessment ensures this development is considered when developing the mitigation strategy. An exposure analysis was conducted using anticipated and recent new development provided by each jurisdiction. The development is presented in Section 9 as a table in each annex.

## 5.1.2 Methodology

To address the requirements of the DMA 2000 and better understand potential vulnerability and losses associated with hazards of concern, Lewis County used standardized tools, combined with local, state, and federal data and expertise to conduct the risk assessment. Three different levels of analysis were used depending upon the data available for each hazard as described below.

1. **Historic Occurrences and Qualitative Analysis** – This analysis includes an examination of historic impacts to understand potential impacts of future events of similar size. In addition, potential impacts and losses are discussed qualitatively using best available data and professional judgement.
2. **Exposure Assessment** – This analysis involves overlaying available spatial hazard layers, or hazards with defined extent and locations, with assets in GIS to determine which assets are located in the impact





area of the hazard. The analysis highlights which assets may be affected by the hazard. *If the center of each asset is located in the hazard area, it is deemed exposed and potentially vulnerable to the hazard.*

- 3. **Loss estimation** — The FEMA HAZUS modeling software was used to estimate potential losses for the following hazards: Flood, Earthquake, Severe Storm. In addition, an examination of historic impacts and an exposure assessment was conducted for these spatially-delineated hazards.

Table 5.1-1. Summary of Risk Assessment Analyses

Hazard	Data Analyzed			
	Population	General Building Stock	Critical Facilities	New Development
Agricultural Product Spill	Q	Q	Q	Q
Drought	Q	Q	Q	Q
Earthquake	E, H	E, H	E, H	E
Extreme Temperature	Q	Q	Q	Q
Flood	E, H	E, H	E, H	E
Hazardous Material	Q	Q	Q	Q
Landslide	E	E	E	E
Severe Storm	H	H	H	Q
Severe Winter Storm	Q	Q	Q	Q
Wildfire	E	E	E	E

E – Exposure analysis; H – HAZUS analysis; Q – Qualitative analysis

### Hazards U.S. – Multi-Hazard (HAZUS-MH)

In 1997, FEMA developed a standardized model for estimating losses caused by earthquakes, known as Hazards U.S. or HAZUS. HAZUS was developed in response to the need for more effective national-, state-, and community-level planning and the need to identify areas that face the highest risk and potential for loss. HAZUS was expanded into a multi-hazard methodology, HAZUS-MH with new models for estimating potential losses from wind (hurricanes) and flood (riverine and coastal) hazards. HAZUS-MH is a GIS-based software tool that applies engineering and scientific risk calculations, which have been developed by hazard and information technology experts, to provide defensible damage and loss estimates. These methodologies are accepted by FEMA and provide a consistent framework for assessing risk across a variety of hazards. The GIS framework also supports the evaluation of hazards and assessment of inventory and loss estimates for these hazards.

HAZUS-MH uses GIS technology to produce detailed maps and analytical reports that estimate a community’s direct physical damage to building stock, critical facilities, transportation systems, and utility systems. To generate this information, HAZUS-MH uses default HAZUS-MH provided data for inventory, vulnerability, and hazards; this default data can be supplemented with local data to provide a more refined analysis. Damage reports can include induced damage (inundation, fire, threats posed by hazardous materials and debris) and direct economic and social losses (casualties, shelter requirements, and economic impact) depending on the hazard and available local data. HAZUS-MH’s open data architecture can be used to manage community GIS data in a central location. The use of this software also promotes consistency of data output now and in the future and standardization of data collection and storage. More information on HAZUS-MH is available at <http://www.fema.gov/hazus>.

In general, probabilistic analyses were performed to develop expected/estimated distribution of losses (mean return period losses) for the flood, wind, and seismic hazards. The probabilistic model generates estimated damages and losses for specified return periods (e.g., 100- and 500-year). For annualized losses, HAZUS-MH calculates the maximum potential annual dollar loss resulting from various return periods averaged on a "per year" basis. It is the summation of all HAZUS-supplied return periods (e.g., 10, 50, 100, 200, 500) multiplied



by the return period probability (as a weighted calculation). In summary, the estimated cost of a hazard each year is calculated. Table 5.1-2 displays the various levels of analyses that can be conducted using the HAZUS-MH software.

Table 5.1-2. Summary of HAZUS-MH Analysis Levels

HAZUS-MH Analysis Levels	
Level 1	HAZUS-MH provided hazard and inventory data with minimal outside data collection or mapping.
Level 2	Analysis involves augmenting the HAZUS-MH provided hazard and inventory data with more recent or detailed data for the study region, referred to as “local data”.
Level 3	Analysis involves adjusting the built-in loss estimation models used for the hazard loss analyses. This Level is typical done in conjunction with the use of local data.

### Agricultural Product Spill

To assess the vulnerability of the County to agricultural product spills and its associated impacts, a qualitative assessment was conducted. ‘Managing Waste Milk’ by David C. Payer and Brian J. Holmes was the primary source of information regarding impacts of agricultural product spills, specifically milk products, in Lewis County. Additionally, information from Wisconsin Department of Natural Resources was utilized to assess the vulnerability of Lewis County to agricultural product spills.

### Drought

To assess the vulnerability of the County to drought and its associated impacts, a qualitative assessment was conducted. The United States Department of Agriculture Census of Agriculture 2012 was used to estimate economic impacts to the County. Information regarding the number of farms, land area in farms, total market value of products sold, etc., was extracted from the report and summarized in the vulnerability assessment. Additional resources from the Center for Disease Control and National Drought Mitigation Center were used to assess the potential impacts to the population from a drought event.

### Earthquake

A probabilistic assessment was conducted for Lewis County for the 100-, 500- and 2,500-year mean return periods (MRP) through a Level 2 analysis in HAZUS-MH 4.2 to analyze the earthquake hazard and provide a range of loss estimates. The probabilistic method uses information from historic earthquakes and inferred faults, locations and magnitudes, and computes the probable ground shaking levels that may be experienced during a recurrence period by Census tract.

*As noted in the HAZUS-MH Earthquake User Manual, “Uncertainties are inherent in any loss estimation methodology. They arise in part from incomplete scientific knowledge concerning earthquakes and their effects upon buildings and facilities. They also result from the approximations and simplifications that are necessary for comprehensive analyses. Incomplete or inaccurate inventories of the built environment, demographics and economic parameters add to the uncertainty. These factors can result in a range of uncertainty in loss estimates produced by the HAZUS Earthquake Model, possibly at best by a factor of two or more” (FEMA 2015f). However, HAZUS’ potential loss estimates are acceptable for the purposes of this HMP.*

Ground shaking is the primary cause of earthquake damage to man-made structures and soft soils amplify ground shaking. One contributor to the site amplification is the velocity at which the rock or soil transmits shear waves (S-waves). The National Earthquake Hazard Reductions Program (NEHRP) has developed five soil classifications defined by their shear-wave velocity that impact the severity of an earthquake. The soil



classification system ranges from A to E, where A represents hard rock that reduces ground motions from an earthquake and E represents soft soils that amplify and magnify ground shaking and increase building damage and losses.

Data from the New York State Division of Homeland Security and Emergency Services ( NYS DHSES) NEHRP Soil map was used in HAZUS-MH 4.2 to replace default soil conditions. Groundwater was set at depth of 5 feet (default setting). The default assumption is a magnitude 7.0 earthquake for all return periods. Damage and loss due to liquefaction, landslide, or surface fault rupture were not included in this analysis.

Damage estimates are calculated for losses to buildings (structural and non-structural) and contents; structural losses include load carrying components of the structure, and non-structural losses include those to architectural, mechanical, and electrical components of the structure, such as nonbearing walls, veneer and finishes, HVAC systems, boilers, etc. For Census tracts encompassing multiple municipalities, the default general building stock inventory was used to calculate the percent of the total census tract replacement cost value in each municipality. This percentage was applied to the census tract losses to estimate the municipal-level losses. For example, the census blocks from two municipalities are located within one census tract. The total replacement cost value of Municipality A is 60% of the total census tract replacement cost value, while Municipality B is 40% of the total value. Therefore, 60% of the losses for the census tract will be applied to Municipality A, and 40% will be applied to Municipality B.

In addition to the probabilistic scenarios cited, an annualized loss run was conducted to estimate annualized general building stock dollar losses in the County. The loss methodology combines estimated losses associated with ground shaking for eight return periods: 100-, 250-, 500-, 750-, 1,000-, 1,500-, 2,000-, and 2,500-year, which are based on values from U.S. Geological Survey (USGS) seismic probabilistic curves.

An exposure analysis was also conducted for the County’s assets (population, building stock, critical facilities, and new development) using the NEHRP soil data. NEHRP Soil Classes Type D and Type E were used to determine what assets are exposed to the soils most susceptible to seismic activity. Assets with their centroid in the hazard areas were totaled to estimate the numbers and values vulnerable to these soil types.

### Extreme Temperature

To assess the vulnerability of the County to extreme temperatures and its associated impacts, a qualitative assessment was conducted. Information from the NYS DHSES, Center of Disease Control, and the National Weather Service to assess the potential impacts to the County’s assets from extreme temperature events.

### Flood

The 1- and 0.2-percent annual chance flood events were examined to evaluate the County’s risk from the flood hazard. These flood events are generally those considered by planners and evaluated under federal programs such as NFIP.

FEMA Digital Flood Insurance Rate Maps (DFIRMs) are not available for Lewis County. Lewis County digitized their effective Flood Insurance Rate Maps (FIRMS) to spatially delineate the 1-percent annual chance flood boundaries. The digitized layer does not include the 0.2-percent annual chance flood boundary, and therefore the 0.2-percent boundaries were not included in this assessment. The effective dates for the Flood Insurance Rate Maps (FIRM) used to digitize the 1-percent annual chance flood event are as listed below:

- Village of Constableville – 7/16/1982
- Town of Croghan – 5/15/195
- Village of Croghan – 5/15/1985
- Town of Denmark – 5/15/1985



- Town of Diana – 9/24/1984
- Town of Greig – 5/15/1985
- Village of Harrisville (now incorporated into the Town of Diana) – 5/15/1985
- Town of Lewis – 8/23/1982
- Town of Leyden – 6/19/1985
- Town of Lowville – 6/20/2000
- Village of Lowville – 6/20/2000
- Village of Lyons Falls – 6/19/1985
- Town of Lyonsdale – 6/19/1985
- Town of Martinsburg – 6/19/1985
- Town of New Bremen – 5/4/2000
- Town of Osceola – 6/30/1976
- Town of Port Leyden – 6/19/1985
- Town of Turin – 8/2/1994
- Village of Turin – 7/1/1977
- Town of Watson – 7/19/2000

Not all municipalities have delineated floodplain data available in the County’s spatial layer. These communities are:

- Village of Copenhagen
- Town of Harrisburg
- Town of Montague
- Town of Pinckney
- Town of West Turin

The Lewis County digitized FEMA FIRM spatial layer was used to evaluate exposure and determine potential future losses. A 1/3-arc second (10m) resolution depth grid was developed for the 1-percent annual chance flood event for Lewis County. A depth grid was generated using the FEMA flood boundaries and a USGS 1/3 Arc-second digital elevation model (DEM) in ArcGIS 10.5.1 with 3D Analyst and Spatial Analyst tools. The depth grid was generated and integrated into the HAZUS-MH 4.2 riverine flood model.

The DFIRM flood boundaries, updated general building stock inventory (which was used for both population and general building stock), and updated critical facility inventories were used to estimate exposure to the 1- and 0.2- annual chance flood events. Assets (population, building stock, critical facilities, and new development) with their centroid in the hazard areas were totaled to estimate the numbers and values vulnerable to a flooding event. A Level 2 HAZUS-MH 4.2 riverine flood analysis was performed. The updated critical facility inventories were incorporated into HAZUS-MH 4.2, replacing the default essential facility (police, fire, schools, etc.) and utility inventories. The HAZUS-MH 4.2 riverine flood model was run to estimate potential losses in Lewis County for the 1-percent annual chance flood event. HAZUS-MH 4.2 calculated the estimated potential losses to the population (default 2010 U.S. Census data) and potential damages to the general building stock and critical facility inventories based on the depth grid generated and the default HAZUS-MH 4.2 damage functions in the flood model.

Locations of the properties with policies, claims, and repetitive and severe repetitive flooding were geocoded by FEMA with the understanding that differences (and variations in those differences) were possible between listed longitude and latitude coordinates of properties and actual locations of property addresses—namely, that indications of some locations were more accurate than others. For properties without longitude or latitude coordinates provided, addresses provided in datasets were used to geocode each location.



## Landslide

The 2011 Landslide Incidence and Susceptibility GIS layer from the U.S. Geological Survey was used to coarsely define the general landslide susceptible area. According to Radbruch-Hall and others, the Landslide Incidence and Susceptibility GIS layer from National Atlas; and applies to the U.S. Geological Survey layer as well:

“...was prepared by evaluating formations or groups of formations shown on the geologic map of the United States (King and Beikman 1974) and classifying them as having high, medium, or low landslide incidence (number of landslides) and being of high, medium, or low susceptibility to landsliding. Thus, those map units or parts of units with more than 15 percent of their area involved in landsliding were classified as having high incidence; those with 1.5 to 15 percent of their area involved in landsliding, as having medium incidence; and those with less than 1.5 percent of their area involved, as having low incidence. This classification scheme was modified where particular lithofacies are known to have variable landslide incidence or susceptibility. In continental glaciated areas, additional data were used to identify surficial deposits that are susceptible to slope movement. Susceptibility to landsliding was defined as the probable degree of response of the areal rocks and soils to natural or artificial cutting or loading of slopes or to anomalously high precipitation. High, medium, and low susceptibility are delimited by the same percentages used in classifying the incidence of landsliding. For example, it was estimated that a rock or soil unit characterized by high landslide susceptibility would respond to widespread artificial cutting by some movement in 15 percent or more of the affected area. We did not evaluate the effect of earthquakes on slope stability, although many catastrophic landslides have been generated by ground shaking during earthquakes. Areas susceptible to ground failure under static conditions would probably also be susceptible to failure during earthquakes” (Radbruch-Hall 1982).

Asset data (population, building stock, critical facilities, and new development) were used to support an evaluation of assets exposed and potential impacts and losses associated with this hazard. To determine what assets are exposed to landslide, the County’s assets were overlaid with the hazard area. Assets with their centroid located in the hazard area were totaled to estimate the totals and values exposed to a landslide event.

## Severe Storm

A HAZUS-MH 4.2 probabilistic analysis was performed to analyze the wind hazard losses for Lewis County. The probabilistic hurricane hazard activates a database of thousands of potential storms that have tracks and intensities reflecting the full spectrum of Atlantic hurricanes observed since 1886 and identifies those with tracks associated with Lewis County. HAZUS-MH 4.2 contains data on historic hurricane events and wind speeds. It also includes surface roughness and vegetation (tree coverage) maps for the area. Surface roughness and vegetation data support the modeling of wind force across various types of land surfaces. Annualized losses and the 100- and 500-year MRPs were examined for the wind/severe storm hazard. Default demographic and general building stock data in HAZUS-MH 4.2 and the updated critical facility inventories were used for the analysis.

Due to a FEMA-acknowledged issue with importing user-defined facilities in HAZUS-MH 4.2, user-defined facilities in Lewis County were appended to the Emergency Operations Center input in HAZUS-MH Comprehensive Data Management System (CDMS) and uploaded to the program to estimate potential loss.

## Severe Winter Storm

The entire general building stock inventory in Lewis County is exposed and vulnerable to the winter storm hazard. In general, structural impacts include damage to roofs and building frames, rather than building content. Current modeling tools are not available to estimate specific losses for the severe winter storm hazard. Historic





data on structural losses to general building stock are not adequate to predict specific losses to this inventory; therefore, a percentage of the custom-building stock structural replacement cost value was used to estimate damages that could result from winter storm conditions. This methodology is based on FEMA’s How-to Series (FEMA 386-2), *Understanding Your Risks, Identifying and Estimating Losses* (FEMA 2001) and FEMA’s *Using HAZUS-MH for Risk Assessment (FEMA 433)* (FEMA 2004). Given professional knowledge and the currently available information, the potential losses for this hazard are considered to be overestimated; hence, providing a conservative estimate for losses associated with winter storm events.

## Wildfire

The Wildland-Urban Interface (Interface and Intermix) obtained through the SILVIS Laboratory, Department of Forest Ecology and Management, University of Wisconsin – Madison, was referenced to delineate wildfire hazard areas. The University of Wisconsin – Madison wildland fire hazard areas are based on the 2010 Census and 2006 National Land Cover Dataset and the Protected Areas Database. For this risk assessment, the high-, medium-, and low-density interface areas were combined and used as the “Interface” hazard area, and the high-, medium-, and low-density intermix areas were combined and used as the “Intermix” hazard areas.

Asset data (population, building stock, critical facilities, and new development) were used to support an evaluation of assets exposed and potential impacts and losses associated with this hazard. To determine what assets are exposed to wildfire, available and appropriate GIS data were overlaid with the hazard area; Assets with their centroid located in the hazard area were totaled to estimate the totals and values exposed to a wildfire event.

## Considerations for Mitigation and Next Steps

The following items are to be discussed for considerations for the next plan update to enhance the vulnerability assessment:

- **All Hazards**
  - Utilize updated and current demographic data. If 2010 U.S. Census demographic data is the only data available at the census block level during the next plan update, estimate the current population for each census block using the American Community Survey 5-Year Estimate populations counts at the census block group or census tract level available at the time of the update.
    - The American Community Survey for New York State incorporates the village populations in their respective town’s populations. Some villages are a part of multiple towns and determining their individual populations is not possible.
  - Update the custom general building stock inventory using updated County tax assessor data and building location data. See individual hazards below for additional attributes that can enhance loss estimates.
  - Assess the impact of each hazard of concern on the environment.
- **Agricultural Product Spill**
  - Determine specific roadways that are most frequently used to transport agricultural products between farms and central distribution centers.
  - If possible, map the locations of past events to determine if event locations historically recurred in similar locations or along the same roadways.



- **Extreme Temperature**
  - Track extreme temperature data for injuries, deaths, shelter needs, pipe freezing, agricultural losses, and other impacts to determine distributions of most at risk areas.
- **Flood**
  - General building stock inventory can include attributes regarding first floor elevation and foundation type (basement, slab on grade, etc.) to enhance loss estimates.
  - As more current and accurate FEMA DFIRMs become available, the flood risk can be more accurately assessed utilizing the data for an exposure analysis and generating a more detailed flood depth grid that can be integrated into the current HAZUS-MH version.
  - Conduct a HAZUS-MH loss analysis for more frequent flood events (e.g., 10-year and 50-year flood events).
- **Earthquake**
  - Identify unreinforced masonry in critical facilities and privately-owned buildings (i.e., residences) by accessing local knowledge, tax assessor information, and/or pictometry/orthophotos. These buildings may not withstand earthquakes of certain magnitudes and plans to provide emergency response/recovery efforts at these properties can be developed.
- **Landslide**
  - At a minimum, steep slopes throughout the County should be assessed to determine vulnerability to landslides. A pilot study conducted in Schenectady County, NY (Landslide Susceptibility – A Pilot Study of Schenectady County, NY) provided a detailed methodology for delineating high-risk landslide areas. This study looked at a variety of environmental characteristics including slope and soil conditions to determine areas at risk to landslide. To coincide with the methodology of that study, the generated slopes were categorized into five classes: 0%-2%; 3%-7%; 6%-15%; 16%-25%; Greater than 25%. Slopes greater than 25% should be used to delineate the hazard area for the vulnerability assessment. Should the County determine the need for a more detailed assessment of risk, the additional environmental and soil characteristics used in the Schenectady County plan can be collected and used to follow the methodology used to further delineate the County's most at risk areas.
- **Severe Storm**
  - General building stock inventory can include attributes regarding date of construction, type of construction, hurricane straps to enhance loss estimates.
- **Severe Winter Storm**
  - If available for the region, obtain average snowfall distributions to determine if various areas in the County have historically received higher snowfalls and may continue to be more susceptible to higher snowfalls and snow loads on the building stock and critical facilities and infrastructure.
- **Wildfire**
  - General building stock inventory can include attributes regarding construction type, roofing material, fire detection equipment, and structural age.



### 5.1.3 Data Source Summary

Table 5.1-3 summarizes the data sources used for the risk assessment for this plan.

**Table 5.1-3. Risk Assessment Data Documentation**

Data	Source	Date	Format
Population Data	U.S. Census Bureau	2010	Digital (GIS) format
Building Stock Data	HAZUS-MH 4.2	2018	Digital (GIS) format
Building Footprints	Lewis County	2016	Digital (GIS) format
Critical Facilities	Lewis County	2018	Digital (GIS) format
Digitized Effective FIRM Maps	FEMA	2017	Digital (GIS) format
NEHRP Soil	NYSDHES	2008	Digital (GIS) format
Landslide Incidence/Susceptibility	USGS	2011	Digital (GIS) format
Wildland-Urban Interface	Radeloff et al.	2012	Digital (GIS) format
Digital Elevation Model	USGS	2018	Digital (GIS) format
Census of Agriculture	USDA	2012	Digital (PDF Report) format

#### 5.1.3.1 Limitations

For this risk assessment, the loss estimates, exposure assessments, and hazard-specific vulnerability evaluations rely on the best available data and methodologies. Uncertainties are inherent in any loss estimation methodology and arise in part from incomplete scientific knowledge concerning natural hazards and their effects on the built environment. Uncertainties also result from the following:

1. Approximations and simplifications necessary to conduct such a study
2. Incomplete or dated inventory, demographic, or economic parameter data
3. The unique nature, geographic extent, and severity of each hazard
4. Mitigation measures already employed by the participating municipalities
5. The amount of advance notice residents have to prepare for a specific hazard event

These factors can result in a range of uncertainty in loss estimates, possibly by a factor of two or more. Therefore, potential exposure and loss estimates are approximate. These results do not predict precise results and should be used to understand relative risk. Over the long term, Lewis County will collect additional data, and update and refine existing inventories, to assist in estimating potential losses.

Potential economic loss is based on the present value of the general building stock utilizing best available data. The County acknowledges significant impacts may occur to critical facilities and infrastructure as a result of these hazard events causing great economic loss. However, monetized damage estimates to critical facilities and infrastructure and economic impacts were not quantified and require more detailed loss analyses. In addition, economic impacts to industry such as tourism and the real-estate market were not analyzed.



## 5.2 IDENTIFICATION OF HAZARDS OF CONCERN

To provide a strong foundation for mitigation actions considered in Sections 6 and 9, Lewis County focused on considering a full range of hazards that could impact the area, and then identified and ranked those hazards that presented the greatest concern. The hazard of concern identification process incorporated input from the County and participating jurisdictions; review of the New York State Hazard Mitigation Plan (NYS HMP 2014); review of the 2010 Lewis County Hazard Mitigation Plan (HMP); research and local, state, and federal information on the frequency, magnitude, and costs associated with the various hazards that have previously, or could feasibly, impact the region; and qualitative or anecdotal information regarding natural hazards and the perceived vulnerability of the study area’s assets to them. Table 5.2-1 documents the process of identifying the natural hazards of concern for further profiling and evaluation.

*Hazards of Concern* are those hazards that are considered most likely to impact a community. These are identified using available data and local knowledge.

### 5.2.1 Changes from 2010 Hazard Mitigation Plan

The 2010 Lewis County HMP did not address agricultural product spill and hazardous materials as hazards of concern. These hazards have been included as hazards of concern for the 2020 HMP update due to previous instances of these hazards occurring within the County and because of input by members of the Steering Committee and the Planning Partnership.

The 2020 Lewis County HMP update includes best available data throughout the plan to present an updated understanding of the risk that Lewis County faces.

### 5.2.2 Hazard Groupings

As per the 2010 Lewis County HMP, the Steering Committee and Planning Partnership maintained the grouping of hazards based on the similarity of hazard events, their typical concurrence or their impacts, consideration of how hazards have been grouped in Federal Emergency Management Agency (FEMA) guidance documents (FEMA 386-2, *Understanding Your Risks, Identifying Hazards and Estimating Losses*; FEMA’s *Multi-Hazard Identification and Risk Assessment – The Cornerstone of the National Mitigation Strategy*; FEMA’s *Local Mitigation Planning Handbook*), and consideration of hazard grouping in the New York State (NYS) HMP.

The *Drought* hazard profile specifically addresses drought events which have occurred in Lewis County or have had a considerable impact on the County.

The *Earthquake* hazard profile specifically addresses earthquakes which have occurred in Lewis County or have had a considerable impact on the County.

The *Flood* hazard includes riverine flooding, flash flooding, shallow flooding, ice jam flooding, and dam failure flooding. Inclusion of the various forms of flooding under a general Flood hazard is consistent with FEMA’s “Multi-Hazard Identification and Risk Assessment” guidance and the NYS HMP.

The *Severe Storm* hazard includes windstorms that often entail a variety of other influencing weather conditions including thunderstorms, hail, lightning, and tornados. Tropical disturbances (hurricanes, tropical storms and tropical depressions) are often identified as a type of severe storm. For the purpose of this HMP update, severe storm includes thunderstorms, hail, lightning, tornados, hurricanes, tropical storms, and Nor’Easters.

The *Severe Winter Storm* hazard includes heavy snowfall, blizzards, freezing rain/sleet, and ice storms. This grouping is consistent with the NYS HMP.



## *Section 5.2: Risk Assessment – Identification of Hazards of Concern*

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Although the DMA 2000 regulations do not require consideration of man-made hazards, the County included *Agricultural Product Spill* and *Hazardous Materials* as hazards of concern. In the future, the County is able to expand the scope of this HMP to include other less frequent natural hazards and/or technological and man-made (terrorism, man-made dam breaches/failures) hazards as resources permit.





Table 5.2-1. Identification of Natural Hazards of Concern for Lewis County

Hazard	Is this a hazard that may occur in Lewis County?	If yes, does this hazard pose a significant threat to the County?	Why was this determination made?	Source(s)
Agricultural Product Spill	Yes	Yes	<ul style="list-style-type: none"> <li>The 2014 NYS HMP does not identify agricultural product spill as a hazard of concern for NYS.</li> <li>Previous events have had significant impacts in the County.</li> <li>Based on previous occurrences and the existence of significant environmental and agricultural assets in the County, and input from the Steering Committee and Planning Partnership, Agricultural Product Spill is identified as a hazard of concern for Lewis County.</li> </ul>	<ul style="list-style-type: none"> <li>NYS DEC</li> <li>Input from Steering Committee and Planning Partnership</li> </ul>
Avalanche	No	No	<ul style="list-style-type: none"> <li>The NYS HMP identifies avalanche as a hazard of concern.</li> <li>Avalanches can occur in any situation where snow, slope, and weather conditions combine to create proper conditions. About 90% of all avalanches start on slopes of 30 to 45 degrees and about 98% of all avalanches occur on slopes of 25 to 50 degrees. The topography of Lewis County does not support the occurrence of an avalanche.</li> <li>NYS, in general, has a very low occurrence of avalanche events based on statistics provided by National Avalanche Center – American Avalanche Association (NAC-AAA) between 1998 and 2018.</li> <li>Avalanche is identified as a hazard in the NYS HMP, and there have been occurrences in the State; however, there have been no occurrences in Lewis County, and the Planning Partnership does not consider the hazard to be a significant concern.</li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>NAC-AAA</li> </ul>
Coastal Erosion	No	No	<ul style="list-style-type: none"> <li>The NYS HMP identifies coastal erosion as a hazard of concern for NYS. Erosion can impact all of the State’s coastal counties along: Lake Erie and the Niagara River, Lake Ontario and the St. Lawrence River, Atlantic Ocean and Long Island Sound, Hudson River south of the federal dam in Troy, the East River, the Harlem River, the Kill van Kull and Arthur Kill, and all connecting waterbodies, bays, harbors, shallows and wetlands.</li> <li>As stated above, Coastal Erosion is limited to the State’s coastal counties. Lewis County is not a coastal county; therefore, Coastal Erosion is not</li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>Input from Steering Committee and Planning Partnership</li> </ul>



Table 5.2-1. Identification of Natural Hazards of Concern for Lewis County

Hazard	Is this a hazard that may occur in Lewis County?	If yes, does this hazard pose a significant threat to the County?	Why was this determination made?	Source(s)
			considered a hazard of concern by the Steering Committee and Planning Partnership.	
Dam Failure	Yes	Yes	<ul style="list-style-type: none"> <li>The 2014 NYS HMP identifies dam failure as a hazard of concern for NYS and includes it in the Flood hazard profiles.</li> <li>According to the NYS DEC, there are 111 dams in Lewis County: 63 low hazard, 8 intermediate hazard, 4 high hazard, and 77 negligible or no hazard classification (NYSDEC 2018).</li> <li>Dam Failure is included in the flood profile.</li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>Input from Steering Committee and Planning Partnership</li> <li>NYSDEC</li> <li>NYS GIS</li> </ul>
Disease Outbreak	Yes	No	<ul style="list-style-type: none"> <li>The 2014 NYS HMP does not identify disease outbreak as a hazard of concern for NYS.</li> <li>While the County has been impacted by various diseases (influenza, Lyme disease), the Steering Committee and Planning Partnership does not identify Disease Outbreak as a hazard of concern for Lewis County.</li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>NYS DEC</li> <li>Input from Steering Committee and Planning Partnership</li> </ul>
Drought	Yes	Yes	<ul style="list-style-type: none"> <li>The NYS HMP identifies drought as a hazard of concern for the State. Lewis County has been impacted by several drought events that have occurred in NYS.</li> <li>Drought conditions can cause shortages in water for human consumption, can impact agricultural production and can lead to reduced local firefighting capabilities. In the short-term, surface water supplies are affected more quickly during droughts than groundwater sources.</li> <li>NYS is included in one FEMA drought-related disaster declaration, which does not include Lewis County.</li> <li>Lewis County is included in three recent drought-related USDA disaster declarations:               <ul style="list-style-type: none"> <li>S3427 – Drought / Excessive Heat – 2012</li> <li>S3441 – Drought – 2012</li> <li>S4062 – Drought – 2016</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>FEMA</li> <li>USDA</li> <li>Input from Steering Committee and Planning Partnership</li> <li>NOAA-NCEI</li> <li>NYSDEC</li> </ul>



Table 5.2-1. Identification of Natural Hazards of Concern for Lewis County

Hazard	Is this a hazard that may occur in Lewis County?	If yes, does this hazard pose a significant threat to the County?	Why was this determination made?	Source(s)
			<ul style="list-style-type: none"> <li>• According to the NYSDEC, Lewis County is located in the Adirondack Drought Management Region. This division has been impacted by periods of severe and extreme drought, including the following events:               <ul style="list-style-type: none"> <li>○ September 1–30, 1999</li> <li>○ April 1, 2001</li> <li>○ May 8–September 24, 2001</li> <li>○ March 19–April 1, 2002</li> <li>○ July 23–August 5, 2002</li> <li>○ September 3–30, 2002</li> <li>○ April 19–25, 2005</li> <li>○ May 31–June 20, 2005</li> <li>○ August 9–September 5, 2005</li> <li>○ April 11–June 5, 2006</li> <li>○ August 7–November 26, 2007</li> <li>○ June 10–July 14, 2008</li> <li>○ April 13–May 10, 2010</li> <li>○ May 25–June 7, 2010</li> <li>○ July 26–September 12, 2011</li> <li>○ July 10–December 31, 2012</li> <li>○ April 9–15, 2013</li> <li>○ January 27–June 8, 2015</li> <li>○ September 8, 2015–February 22, 2016</li> <li>○ May 24, 2016–February 6, 2017</li> <li>○ September 26–October 30, 2017</li> <li>○ June 19–July 30, 2018</li> </ul> </li> <li>• Based on previous occurrences and the existence of significant agricultural assets in the County and input from the Steering Committee and Planning Partnership, Drought is identified as a hazard of concern for Lewis County.</li> </ul>	
Earthquake	Yes	Yes	<ul style="list-style-type: none"> <li>• The NYS HMP identifies earthquake as a hazard of concern for the State.</li> <li>• Lewis County has a PGA between 3-5%g. According to the FEMA document “Understanding Your Risks: Identifying Hazards and Estimating Losses,” areas with 3%g should conduct a risk assessment for earthquakes.</li> </ul>	<ul style="list-style-type: none"> <li>• NYS DHSES</li> <li>• Input from Steering Committee and</li> </ul>



Table 5.2-1. Identification of Natural Hazards of Concern for Lewis County

Hazard	Is this a hazard that may occur in Lewis County?	If yes, does this hazard pose a significant threat to the County?	Why was this determination made?	Source(s)
			<ul style="list-style-type: none"> <li>• NYS has been included in one FEMA earthquake-related disaster declaration (DR-1415); Lewis County was not included in this declaration.</li> <li>• According to the NYS HMP, between 1973 and 2012, there have been 189 earthquakes epicentered in the State. Of those 189 events, four had an epicenter in Lewis County.</li> <li>• Based on the potential for significant loss and input from the Steering Committee and Planning Partnership, Earthquake is identified as a hazard of concern for Lewis County.</li> </ul>	<ul style="list-style-type: none"> <li>• Planning Partnership</li> <li>• USGS – Earthquake Hazards Program, Review of USGS Seismic Maps</li> </ul>
Expansive Soils	Yes	No	<ul style="list-style-type: none"> <li>• The NYS HMP identifies expansive soils as a hazard of concern for NYS. However, a majority of Lewis County is underlain by soils with little to no swelling potential and less than 50% of the area is underlain by soils with abundant clays of slight to moderate swelling potential.</li> <li>• The Steering Committee and Planning Partnership does not identify Expansive Soils as a hazard of concern for Lewis County.</li> </ul>	<ul style="list-style-type: none"> <li>• NYS DHSES</li> <li>• Input from Steering Committee and Planning Partnership</li> <li>• Review of USGS 1989 Swelling Clays Map of the Conterminous United States</li> </ul>
Extreme Temperature	Yes	Yes	<ul style="list-style-type: none"> <li>• The NYS HMP identifies extreme temperatures as a hazard of concern for NYS.</li> <li>• According to the NOAA-NCEI database, between 1950 and December 2018, there have been 4 extreme temperature events in Lewis County, resulting in no property damages.</li> <li>• Lewis County has not been included in any FEMA disaster declarations for extreme temperature-related events; however, the County has been included in nine recent USDA disaster declarations:               <ul style="list-style-type: none"> <li>○ S3427 – Drought, Excessive Heat – June 2012</li> <li>○ S3249 – Frosts and Freezes – March 2012</li> <li>○ S3594 – Freeze and Frost – May 2013</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• NYS DHSES</li> <li>• Input from Steering Committee and Planning Partnership</li> <li>• NOAA-NCEI</li> <li>• USDA</li> </ul>



Table 5.2-1. Identification of Natural Hazards of Concern for Lewis County

Hazard	Is this a hazard that may occur in Lewis County?	If yes, does this hazard pose a significant threat to the County?	Why was this determination made?	Source(s)
			<ul style="list-style-type: none"> <li>○ S3696 – Freeze – December 2013</li> <li>○ S3666 – Freeze – December 2013</li> <li>○ S3886 – Frost, Freeze, and Excessive Snow – January 2015</li> <li>● Based on the potential for significant loss and input from the Steering Committee and Planning Partnership, Earthquake is identified as a hazard of concern for Lewis County.</li> </ul>	
Flood (riverine, ice jam, dam failure and flash)	Yes	Yes	<ul style="list-style-type: none"> <li>● The NYS HMP identifies flooding as a hazard of concern for NYS.</li> <li>● According to the NOAA-NCEI database, between 1950 and August 2018, there have been 24 flood or flash flood events in Lewis County.</li> <li>● Lewis County is included in nine flood-related FEMA disaster declarations:               <ul style="list-style-type: none"> <li>○ FEMA-DR-733 – Flood: Flooding – March 1985</li> <li>○ FEMA-DR-1095 – Severe Storms and Flooding – January 1996</li> <li>○ FEMA-DR-1335 – Severe Storms and Flooding – May-August 2000</li> <li>○ FEMA-DR-1534 – Severe Storms and Flooding – May &amp; June 2004</li> <li>○ FEMA-DR-1564 – Severe Storms and Flooding – August-September 2004</li> <li>○ FEMA-DR-4180 – Severe Storms, High Winds, Rain and Flooding – November 1996</li> <li>○ FEMA-DR-1196 – Severe Storms and Flooding – January 1998</li> <li>○ FEMA-DR-4204 – Severe Winter Storm, Snowstorm, and Flooding – November 2014</li> <li>○ FEMA-DR-1993 – Severe Storms, Flooding, Tornadoes, and Straight-Line Winds – April &amp; May 2011</li> </ul> </li> <li>● Between 1950 and 2018, there has been one ice jam in the County.</li> <li>● Based on previous events and input from the Steering Committee and Planning Partnership, Flood is identified as a hazard of concern for Lewis County.</li> </ul>	<ul style="list-style-type: none"> <li>● NYS DHSES</li> <li>● Input from Steering Committee and Planning Partnership</li> <li>● FEMA</li> <li>● NOAA-NCEI</li> <li>● USACE CRREL Ice Jam Database</li> </ul>
Hailstorm	Yes	Yes	Please see Severe Storm.	
Hazardous Materials	Yes	Yes	<ul style="list-style-type: none"> <li>● Lewis County has many roadways, railways, and pipelines that may carry hazardous materials through the County.</li> <li>● The County has had numerous hazardous material incidents in the past.</li> </ul>	<ul style="list-style-type: none"> <li>● NYS DEC</li> <li>● EPA</li> <li>● PHMSA</li> </ul>





Table 5.2-1. Identification of Natural Hazards of Concern for Lewis County

Hazard	Is this a hazard that may occur in Lewis County?	If yes, does this hazard pose a significant threat to the County?	Why was this determination made?	Source(s)
			<ul style="list-style-type: none"> <li>Lewis County is home to 163 fixed facilities that store or use hazardous materials and that fall under Tier II reporting requirements.</li> <li>Based on previous events and input from the Steering Committee and Planning Partnership, Hazardous Materials is identified as a hazard of concern for Lewis County.</li> </ul>	<ul style="list-style-type: none"> <li>Input from Steering and Planning Committees</li> </ul>
Hurricane	Yes	Yes	Please see Severe Storm.	
Ice Jams	Yes	Yes	Please see Flood.	
Ice Storm	Yes	Yes	Please see Severe Winter Storm.	
Infestation	Yes	No	Please see Invasive Species.	
Invasive Species	Yes	Yes	<ul style="list-style-type: none"> <li>Invasive species is not identified as a hazard of concern in the NYS HMP; therefore, the Steering Committees and Planning Partnership do not consider Invasive Species to be a significant concern to Lewis County.</li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>Input from Steering and Planning Committees</li> </ul>
Land Subsidence	Yes	Yes	<ul style="list-style-type: none"> <li>NYS HMP indicates NYS is vulnerable to land subsidence; however, this hazard is “extremely localized” and poses a “very low risk to population and property.”</li> <li>The Steering Committee and Planning Partnership identifies land subsidence as a potential hazard of concern for Lewis County and it is included in the Geologic Hazard profile in this plan.</li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>Input from Steering Committee and Planning Partnership</li> <li>USGS</li> </ul>
Landslide	Yes	Yes	<ul style="list-style-type: none"> <li>The NYS HMP includes landslide as a hazard of concern for NYS. According to the NYS HMP, all residents in Lewis County live within a low incidence area.</li> <li>Between 1954 and 2018, NYS was included in one landslide-related disaster declaration. Lewis County was not included in this declaration. Based on previous occurrences and input from the Steering Committee and Planning Partnership, the Landslide hazard is identified as a hazard of concern for Lewis County.</li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>Input from Steering Committee and Planning Partnership</li> <li>FEMA</li> </ul>



Table 5.2-1. Identification of Natural Hazards of Concern for Lewis County

Hazard	Is this a hazard that may occur in Lewis County?	If yes, does this hazard pose a significant threat to the County?	Why was this determination made?	Source(s)
Nor'Easters	Yes	Yes	Please see Severe Storm.	
Severe Storm (windstorms, thunderstorms, hurricanes / tropical storms, Nor'Easters, hail and tornados)	Yes	Yes	<ul style="list-style-type: none"> <li>The NYS HMP identifies severe storm as a hazard of concern for NYS. However, for the State HMP, the hazards were profiled in individual sections: hailstorm, high wind, and hurricane. For the purpose of this County HMP, the hazards were combined into one profile.</li> <li>The NOAA-NCEI Storm Events Database indicated that Lewis County was impacted by 163 severe storm-related events between 1950 and October 2018. This resulted in one fatality, no injuries, and over \$20 million in damages (as reported by NOAA-NCEI).</li> <li>According to the SPC, 6 tornados have impacted Lewis County between 1950 and 2017.</li> <li>Lewis County is included in nine severe storm-related FEMA disaster declarations:               <ul style="list-style-type: none"> <li>FEMA-DR-733 – Flood – March 1985</li> <li>FEMA-DR-1095 – Severe Storms and Flooding – January 1996</li> <li>FEMA-DR-1148 – Severe Storm: Severe Storms, High Winds, Rain, and Flooding – November 1996</li> <li>FEMA-DR-1196 – Snow, Severe Storms and Flooding – January 1998</li> <li>FEMA-DR-1335 – Severe Storms and Flooding – May-August 2000</li> <li>FEMA-DR-1534 – Severe Storms and Flooding – May &amp; June 2004</li> <li>FEMA-EM-3351 – Hurricane Sandy – October &amp; November 2012</li> <li>FEMA-DR-4180 – Severe Storms, High Winds, Rain and Flooding – May 2014</li> </ul> </li> <li>Based on previous occurrences and input from the Steering and Planning Committees, the Severe Storms is identified as a hazard of concern for Lewis County.</li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>FEMA</li> <li>NOAA-NCEI</li> <li>SPC</li> <li>Input from Steering Committee and the Planning Partnership</li> </ul>
Severe Winter Storm (heavy snow, blizzards, ice storms)	Yes	Yes	<ul style="list-style-type: none"> <li>The NYS HMP identifies severe winter storm as a hazard of concern for NYS and stated that Lewis County has experienced over 200 winter storm events.</li> <li>The NOAA-NCEI Storm Events Database indicated that Lewis County has been impacted by 288 severe winter storm-related events between 1950 and</li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>FEMA</li> <li>NOAA-NCEI</li> <li>Input from Steering</li> </ul>



Table 5.2-1. Identification of Natural Hazards of Concern for Lewis County

Hazard	Is this a hazard that may occur in Lewis County?	If yes, does this hazard pose a significant threat to the County?	Why was this determination made?	Source(s)
			<p>August 2018. This has resulted in no fatalities or injuries but over \$10 million in damages (as reported by NOAA-NCEI).</p> <ul style="list-style-type: none"> <li>FEMA included Lewis County in nine winter storm-related disaster declarations:               <ul style="list-style-type: none"> <li>FEMA-EM-3027 (Snowstorms) – January 1977</li> <li>FEMA-DR-527 (Snowstorms) – February 1977</li> <li>FEMA-DR-898 (Severe Winter Storm) – March 1990</li> <li>FEMA-DR-3107 (Severe Blizzard) – March 1993</li> <li>FEMA-EM-1196 (Snow: Severe Storms and Flooding) – January 1998</li> <li>FEMA-DR-3136 (Snow) – January 1999</li> <li>FEMA-DR-3195 (Snow) – January 2004</li> <li>FEMA-DR-3273 (Snow: Record Snow) – February 2007</li> </ul> </li> <li>Based on previous occurrences and input from the Steering Committee and Planning Partnership, Severe Winter Storms is identified as a hazard of concern for Lewis County.</li> </ul>	Committee and Planning Partnership
Tornado	Yes	Yes	Please see Severe Storm.	
Tsunami	No	No	<ul style="list-style-type: none"> <li>Tsunami is not identified as a hazard of concern in the NYS HMP; therefore, the Steering Committees and Planning Partnership do not consider Tsunami to be a significant concern to Lewis County.</li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>Input from Steering Committee and Planning Partnership</li> </ul>
Volcano	No	No	<ul style="list-style-type: none"> <li>Volcano is not identified as a hazard of concern in the NYS HMP; therefore, the Steering Committee and Planning Partnership do not consider Volcano to be a hazard of concern for Lewis County.</li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>Input from Steering Committee and Planning Partnership</li> </ul>
Wildfire	Yes	No	<ul style="list-style-type: none"> <li>The NYS HMP identifies Wildfire as a hazard of concern for NYS.</li> <li>Lewis County has not been included in any FEMA wildfire-related disaster declarations.</li> </ul>	<ul style="list-style-type: none"> <li>NYS DHSES</li> <li>Input from Steering</li> </ul>



Table 5.2-1. Identification of Natural Hazards of Concern for Lewis County

Hazard	Is this a hazard that may occur in Lewis County?	If yes, does this hazard pose a significant threat to the County?	Why was this determination made?	Source(s)
			<ul style="list-style-type: none"> <li>Based on previous occurrences and input from the Steering Committee and Planning Partnership, Wildfire is identified as a hazard of concern for Lewis County.</li> </ul>	committee and Planning Partnerships <ul style="list-style-type: none"> <li>FEMA</li> </ul>
Windstorm	Yes	Yes	Please see Severe Storm	

- CRREL Cold Regions Research and Engineering Laboratory
- DR Presidential Disaster Declaration Number
- EM Presidential Disaster Emergency Number
- FEMA Federal Emergency Management Agency
- NCEI National Centers for Environmental Information
- NRCC Northeast Regional Climate Center
- NYS DHSES New York State Division of Homeland Security and Emergency Services
- NYS HMP New York State Hazard Mitigation Plan
- SPC Storm Prediction Center
- USDA U.S. Department of Agriculture
- USGS United States Geologic Survey



In summary, a total of 10 natural hazards of concern were identified as significant hazards affecting the entire planning area, to be addressed at the county level in this plan (shown here in alphabetical order):

- Agricultural Product Spill
- Drought
- Earthquake
- Extreme Temperatures
- Flood (riverine, dam failure, flash, and ice jam)
- Hazardous Materials
- Landslide
- Severe Storm (thunderstorm, hail, wind, tornado, hurricane/tropical storm, and Nor’Easter)
- Severe Winter Storm
- Wildfire

Other natural hazards of concern that have occurred within Lewis County but have a low potential to occur and/or result in significant impacts may be considered in future versions of the HMP.





## 5.3 HAZARD RANKING

After the hazards of concern were identified for Lewis County, the hazards were ranked to describe their probability of occurrence and their impact on population, property (general building stock including critical facilities), and the economy. Each participating jurisdiction may have differing degrees of risk exposure and vulnerability compared to the County as a whole; therefore, each jurisdiction ranked the degree of risk to each hazard as it pertains to their community using the same methodology as applied to the County-wide ranking. This assured consistency in the overall ranking of risk process. The hazard ranking for the County and each participating jurisdiction can be found in their jurisdictional annex in Volume II of this plan.

### 5.3.1 Hazard Ranking Methodology

The methodology used to rank the hazards of concern for Lewis County is described below. Estimates of risk for the County were developed using methodologies promoted by the Federal Emergency Management Agency’s (FEMA) hazard mitigation planning guidance and generated by FEMA’s HAZUS-MH risk assessment tool.

#### Probability of Occurrence

The probability of occurrence is an estimate of how often a hazard event occurs. A review of historic events assists with this determination. Each hazard of concern is rated in accordance with the numerical ratings and definitions in Table 5.3-1.

Table 5.3-1. Probability of Occurrence Ranking Factors

Rating	Probability Category	Definition
1	Rare	Hazard event is not likely to occur within 100 years (<1% chance of occurrence in any given year)
2	Occasional	Hazard event is likely to occur within 100 years (1% chance of occurrence in any given year)
3	Frequent	Hazard event is likely to occur within 25 years (4% chance of occurrence in any given year)

#### Impact

The impact of each hazard is considered in three categories: impact on population, impact on property (general building stock including critical facilities), and impact on the economy. Based on documented historic losses and a subjective assessment by the Planning Partnership, an impact rating of high, medium, or low is assigned with a corresponding numeric value for each hazard of concern. In addition, a weighting factor is assigned to each impact category: three (3) for population, two (2) for property, and one (1) for economy. This gives the impact on population the greatest weight in evaluating the impact of a hazard.

Table 5.3-2 presents the numerical rating, weighted factor and description for each impact category.



**Table 5.3-2. Numerical Values and Definitions for Impacts on Population, Property and Economy**

Category	Weighting Factor	Low Impact* (1)	Medium Impact (2)	High Impact (3)
Population	3	14% or less of your population is exposed to a hazard with potential for measurable life safety impact, due to its extent and location	15% to 29% of your population is exposed to a hazard with potential for measurable life safety impact, due to its extent and location	30% or more of your population is exposed to a hazard with potential for measurable life safety impact, due to its extent and location
Property	2	Property exposure is 14% or less of the total number of structures for your community	Property exposure is 15% to 29% of the total number of structures for your community	Property exposure is 30% or more of the total number of structures for your community
Economy	1	Loss estimate is 9% or less of the total replacement cost for your community	Loss estimate is 10% to 19% of the total replacement cost for your community	Loss estimate is 20% or more of the total replacement cost for your community

Note: A numerical value of zero is assigned if there is no impact.

\*For the purposes of this exercise, "impacted" means exposed for population and property and loss for economy.

### Risk Ranking Value

The risk ranking for each hazard is then calculated by multiplying the numerical value for probability of occurrence by the sum of the numerical values for impact. The equation is as follows: Weighting Factor (1, 2, or 3) X Impact Value (6 to 18) = Hazard Ranking Value. Based on the total for each hazard, a priority ranking is assigned to each hazard of concern (high, medium, or low).

### 5.3.2 Hazard Ranking Results

Using the process described above, the risk ranking for the identified hazards of concern was determined for Lewis County. Based on the combined risk values for probability of occurrence and impact to Lewis County, a priority ranking of "high", "medium" or "low" risk was assigned. The hazard ranking for the Lewis planning area is detailed in the subsequent tables that present the step-wise process for the ranking. The county-wide risk ranking includes the entire planning area and may not reflect the highest risk indicated for any of the participating jurisdictions. The resulting ranks of each municipality indicate the differing degrees of risk exposure and vulnerability. The results support the appropriate selection and prioritization of initiatives to reduce the highest levels of risk for each municipality. Both the County and the participating jurisdictions have applied the same methodology to develop the county-wide risk and local rankings to ensure consistency in the overall ranking of risk.

This risk ranking exercise serves two purposes: 1) to describe the probability of occurrence for each hazard, and 2) to describe the impact each would have on the people, property and economy of Lewis County. Estimates of risk for Lewis County were developed using methodologies promoted by FEMA's hazard mitigation planning guidance and generated by FEMA's HAZUS-MH risk assessment tool.

Table 5.3-3 shows the probability ranking assigned for likelihood of occurrence for each hazard.

**Table 5.3-3. Probability of Occurrence Ranking for Hazards of Concern for Lewis County**

Hazard of Concern	Probability	Numeric Value
Agricultural Product Spill	Frequent	3
Drought	Frequent	3





Hazard of Concern	Probability	Numeric Value
Earthquake	Occasional	2
Extreme Temperatures	Frequent	3
Flood	Frequent	3
Hazardous Materials	Frequent	3
Landslide	Occasional	2
Severe Storm	Frequent	3
Severe Winter Storm	Frequent	3
Wildfire	Occasional	2

1: Though the hazard profile for earthquakes identifies it as “frequent” because the likelihood of any earthquake happening meets this criterion, the impact information below is based on the 250-year mean return period (MRP) earthquake event, which has a less than 1 percent chance of occurring in any given year.

Table 5.3-4 shows the impact evaluation results for each hazard of concern, including impact on property, structures, and the economy on the County level. It is noted that several hazards that have a high impact on the local jurisdictional level may have a lower impact when analyzed county-wide. Jurisdictional ranking results are presented in each local annex in Section 9 of this plan. The weighting factor results and a total impact for each hazard also are summarized.



**Table 5.3-4. Impact Ranking for Hazards of Concern for Lewis County**

Hazard of Concern	Population			Property			Economy			Total Impact Rating (Population + Property + Economy)
	Impact	Numeric Value	Multiplied by Weighing Factor (3)	Impact	Numeric Value	Multiplied by Weighing Factor (2)	Impact	Numeric Value	Multiplied by Weighing Factor (1)	
Agricultural Product Spill	Medium	2	6	Medium	2	4	Low	1	1	11
Drought	Low	1	3	Low	1	2	Medium	2	2	7
Earthquake	Medium	2	6	Medium	2	4	Low	1	1	11
Extreme Temperatures	High	3	9	Low	1	2	Medium	2	2	13
Flood	Low	1	3	Low	1	2	Low	1	1	6
Hazardous Materials	Low	1	3	Low	1	2	Low	1	1	6
Landslide	Low	1	3	Low	1	2	Low	1	1	6
Severe Storm	High	3	9	High	3	6	Low	1	1	16
Severe Winter Storm	High	3	9	High	3	6	Low	1	1	16
Wildfire	High	3	9	High	3	6	High	3	3	18



Table 5.3-5 presents the total ranking value for each hazard.

**Table 5.3-5. Total Risk Ranking Value for Hazards of Concern for Lewis County**

Hazard of Concern	Probability	Impact	Total = (Probability x Impact)
Agricultural Product Spill	3	11	33
Drought	3	7	21
Earthquake	2	11	22
Extreme Temperatures	3	13	39
Flood	3	6	18
Hazardous Materials	3	6	18
Landslide	2	6	12
Severe Storm	3	16	48
Severe Winter Storm	3	16	48
Wildfire	2	18	36

Table 5.3-6 presents the hazard ranking category by jurisdiction assigned for each hazard of concern. The ranking categories are determined by an evaluation of the total risk ranking score into three categories (low, medium, and high), whereby a total score of 14 and below is categorized as low, 15 to 30 is medium, and 31 and over is considered a high risk category.

**Table 5.3-6. Summary of Overall Ranking of Natural Hazards by Jurisdiction**

Lewis County Municipalities	Agricultural Product Spill	Drought	Earthquake	Extreme Temperatures	Flood	Hazardous Materials	Landslide	Severe Storm	Severe Winter Storm	Wildfire
Castorland (V)	High	Medium	High	High	Low	Medium	Low	High	High	High
Constableville (V)	High	Medium	Medium	High	Low	Medium	Low	High	High	High
Copenhagen (V)	High	Medium	Low	High	Low	Medium	Low	High	High	Medium
Croghan (T)	High	Medium	High	High	Medium	Medium	Low	High	High	High
Croghan (V)	High	Medium	High	High	Medium	Medium	Low	High	High	High
Denmark (T)	High	Medium	Medium	High	Medium	Medium	Low	High	High	Medium
Diana (T)	High	Medium	High	High	Medium	Medium	Low	High	High	High
Greig (T)	High	Medium	Low	High	Medium	Medium	Low	High	High	High
Harrisburg (T)	High	Medium	Low	High	Medium	Medium	Low	High	High	Medium
Lewis (T)	High	Medium	Low	High	Medium	Medium	Low	High	High	High
Leyden (T)	High	Medium	Low	High	Medium	Medium	Low	High	High	High
Lowville (T)	High	Medium	Medium	High	Medium	Medium	Low	High	High	High
Lowville (V)	High	Medium	Low	High	Low	Medium	Low	High	High	High
Lyons Falls (V)	High	Medium	High	High	Low	Medium	Low	High	High	High
Lyonsdale (T)	High	Medium	High	High	Medium	Medium	Low	High	High	High
Martinsburg (T)	High	Medium	Low	High	Medium	Medium	Low	High	High	High
Montague (T)	High	Medium	Low	High	Low	Medium	Low	High	High	High







Lewis County Municipalities	Agricultural Product Spill	Drought	Earthquake	Extreme Temperatures	Flood	Hazardous Materials	Landslide	Severe Storm	Severe Winter Storm	Wildfire
New Bremen (T)	High	Medium	High	High	Medium	Medium	Low	High	High	High
Osceola (T)	High	Medium	Medium	High	Medium	Medium	Low	High	High	High
Pinckney (T)	High	Medium	Low	High	Low	Medium	Low	High	High	High
Port Leyden (V)	High	Medium	Medium	High	Low	Medium	Low	High	High	High
Turin (T)	High	Medium	Medium	High	Medium	Medium	Low	High	High	High
Turin (V)	High	Medium	Low	High	Medium	Medium	Low	High	High	High
Watson (T)	High	Medium	High	High	Medium	Medium	Low	High	High	High
West Turin (T)	High	Medium	Low	High	Low	Medium	Low	High	High	High

*\*The overall rankings for these communities were adjusted by the community. Refer to their individual municipal annexes for an explanation of each adjustment.*

These rankings have been used as one of the bases for identifying the jurisdictional hazard mitigation strategies included in Section 9 (Jurisdictional Annexes) of this plan. The summary rankings for the County reflect the results of the vulnerability analysis for each hazard of concern and vary from the specific results of each jurisdiction. For example, the flood hazard may be ranked low in one jurisdiction, but due to the exposure and impact county-wide, may be ranked as a high hazard and is addressed in the county mitigation strategy accordingly. Jurisdictional ranking results are presented in each local annex in Section 9 (Jurisdictional Annexes) of this plan.



## 5.4.1 Agricultural Product Spill

This section provides a hazard profile and vulnerability assessment of the agricultural product spill hazard for the Lewis County Hazard Mitigation Plan (HMP). In Lewis County, this hazard includes milk and manure spills.

### 5.4.1.1 Hazard Profile

This section provides profile information including the description, location, extent, previous occurrences and losses, probability of future occurrences, and climate change impacts, as well as the vulnerability assessment for the agricultural product spill hazard in Lewis County.

#### Description

Agriculture involving livestock can often involve the storage, processing, and disposal of milk and manure. Should an accident occur that results in a spill of milk and manure, the results can be hazardous if they are released in large quantities or in sensitive locations. Over the course of 1 day, month, or year, the likelihood of some of these substances spilling onto the ground is likely very high (Wisconsin Department of Natural Resources [DNR] 2002).

#### Manure

Manure-related spills can occur in a variety of locations including a tanker during transport, a spreader that malfunctions, or in a storage facility due to equipment failure (Wisconsin DNR 2002). Evaluation of spills in Iowa by the Iowa Environmental Council and Iowa Farm Bureau found that most spills occur during transportation of manure and are caused by human error or equipment failure. The development of manure spills is affected by numerous factors, including snow fall, cold temperatures, storage volume, farm size, and conveyance method (Sell 2015).

Manure storage facilities should be professionally designed and evaluated for performance. Most manure is stored in tanks, but larger, open-surface storage facilities have also been used. Liquid manure is often conveyed via pumps, drag hose, or piping. Because the conveyance step involves transport of manure underground or in exposed conditions, the risk of leakage remains high (Sell 2015).

#### Waste Milk

Waste milk originates from a variety of sources in dairy farms and can include leftover milk in pipelines and bulk tanks; colostrum and transitional milk; mastitic milk; and milk from antibiotic-treated cows, spills, bulk tank failures, and rejected milk loads (Payer and Holmes n.d.). Waste milk types are defined below:

- Pipeline and Bulk Tank Residual Milk: Leftover milk that remains in pipelines and receiver groups after milking. This milk is usually flushed out during the rinse cycle and ends up in wastewater. This is the major source of milk entering drains. Flushing residual pipeline milk down drains is the most common cause of milking center wastewater treatment failure.
- Colostrum and Transitional Milk: Colostrum is the first milk after freshening and is an important source of nutrients for newborn calves. Transitional milk is produced over the next 4 to 5 days following birth. Neither colostrum or transitional milk is legally saleable.
- Milk from Antibiotic-Treated Cows and Mastitic Milk: Milk from cows with mastitis or cows recently treated with antibiotics is not legally saleable.
- Milk Spills, Bulk Tank Failures: Pipeline ruptures and inadvertent valve openings can lead to milk spills.



- Rejected Bulk Tank Loads: Cooling system failure or bulk tanks contaminated by antibiotic-treated cows can generate rejected bulk tank loads (Payer and Holmes n.d.).

The various sources of waste milk also have recommended control and disposal options, which are described in Table 5.4.1-1.

**Table 5.4.1-1. Sources of Dairy Waste Milk and Recommended Control and Disposal Options**

Source	Recommended control and disposal options
Pipeline and bulk tank residual milk	<ol style="list-style-type: none"> <li>1. Collect with pre-rinse prior to cleaning</li> <li>2. Feed to non-lactating stock if not too watery or contaminated with cleaning chemicals</li> <li>3. Land spread</li> </ol>
Colostrum and transitional milk	<ol style="list-style-type: none"> <li>1. If good quality, feed fresh, frozen, or fermented to livestock</li> <li>2. Land spread</li> </ol>
Mastitic and antibiotic-contaminated milk	<ol style="list-style-type: none"> <li>1. Decrease amount through herd health management</li> <li>2. Feed to stock if it looks normal, is not from a cow with a fever, and at least one milking has occurred since antibiotic treatment</li> <li>3. Land spread</li> </ol>
Milk spills, bulk tank failures, and rejected bulk tank loads	<ol style="list-style-type: none"> <li>1. Remove from treatment system immediately if milk has entered drains and system is not designed to handle large milk loads</li> <li>2. Land spread</li> </ol>

Source: Payer and Holmes n.d.

**Prevention**

Agricultural product spills are preventable with proper design, operation, and upkeep. Farm managers should strive for minimal transportation from production to end use. Doing so limits the duration inside piping and vehicles, and will decrease the potential impact area (Sell 2015). Other ways to avoid agricultural product spills include:

- Keeping manure covered during transportation
- Inspecting lines and hoses regularly
- Using safety containers to transport milk and manure
- Ensuring that all valves are closed, hoses are empty, and pumps are turned off after use
- Examining equipment for kinks, excessive wear, abrasions on hoses, or any other damage that could result in a spill or leak
- Keeping a written record of condition of equipment (Wisconsin DNR 2002)

**Response**

If spills do occur, actions should be taken to limit the impacts. These include:

- Stopping the spill from getting bigger by clamping the hose, plugging the leak, etc.
- Stopping the spill from spreading by building a dike around the area or using absorbent materials
- Isolating contaminated soil by digging up the soil and storing in a container or on a tarp
- Protecting the area from runoff by using a tarp or diverting runoff from contact (Wisconsin DNR 2002)

**Location**

Lewis County has significant exposure vulnerability to the agricultural product hazard. According to the 2012 Census of Agriculture, Lewis County has 634 farms, including 181,741 acres. The average farm size is 287





acres. The market value of products sold in 2012 was \$137 million. Crop sales accounted for \$23.6 million (17 percent) while livestock sales accounted for \$113.4 million (83 percent). Milk from cows made up the largest portion of sales (\$100.6 million), followed by cattle and calves (\$9 million). The 2012 inventory of cattle and calves was 55,509 (U.S. Department of Agriculture [USDA] 2012).

Surface water is particularly vulnerable to the impacts of agricultural product spills and can supply a conduit for spreading spills to create a larger area of impact. Approximately 1.5 percent of Lewis County is comprised of surface waters (U.S. Census 2010).

**Extent**

With such a large agricultural focus on cattle in Lewis County, agricultural product spills are likely to occur throughout the County. Milk and manure spills are most likely to take place on farms, at storage facilities, and on roadways used for transport in Lewis County. Spills that reach surface waters can spread downstream.

**Previous Occurrences and Losses**

For this 2020 HMP update, previous milk and manure spill events were summarized from 1987 to 2017. Table 5.4.1-2 lists agricultural product spill events identified by New York State Department of Environmental Conservation (NYSDEC) and media sources.

**Table 5.4.1-2. Agricultural Product Spill Events in Lewis County**

Dates of Listing of Event	Spill Type	Location	Description
January 23, 1987	Milk	Diana	A tank truck involved in a traffic accident resulted in a milk spill.
January 4, 1999	Milk	Bremen	55,000 pounds of milk spilled in a tank truck equipment failure.
April 8, 1999	Milk	Turin	A tank truck traffic accident resulted in 2,600 gallons of milk spilled.
May 10, 2000	Manure	Martinsburg	An equipment failure resulted in 250,000 gallons of manure spilled. Mill Creek was impacted.
October 1, 2002	Milk	Lowville	Commercial spill.
August 11, 2005	Manure	Lowville	The earthen wall of a lagoon holding liquid manure at Marks Dairy Farm blew out, sending about 3 million gallons into a drainage ditch and then into the river. The spill killed approximately 375,000 fish in a 20-mile stretch of the Black River. The farm settled with NYSDEC for \$2.2 million in penalties and environmental benefit projects.
December 22, 2007	Milk	New Bremen	A deliberate commercial spill of milk was reported that impacted the Black River.
February 28, 2011	Milk	Lowville	A commercial spill of milk impacted the Black River.
May 18, 2012	Manure	Martinsburg	No details were available.
July 2, 2013	Manure	Martinsburg	A storm resulted in a manure spill that impacted a creek.
May 19, 2014	Manure	Lowville	Equipment failure resulted in a manure spill.
September 30, 2014	Milk	Lowville	A traffic accident resulted in 200 gallons of spilled milk.
November 23, 2015	Manure	Lowville	Equipment failure resulted in a manure spill.
August 19, 2017	Milk	Pinckney	A truck pulling a tanker trailer of milk by Preble Milk Co-Op lost control and went off the east side of the road. The vehicle flipped on its side and slid down the road and into a ditch, spilling some milk.

Source: NYSDEC 2018; Watertown Daily Times 2017



Probability of Future Events

Though the occurrence of agricultural product spills can be reduced through proper maintenance and safety procedures, spills are still likely to occur in the future. Table 5.4.1-3 lists probabilities of occurrences of agricultural product spills in Lewis County.

Table 5.4.1-3. Probability of Occurrence of Flood-Related Events

Table with 6 columns: Hazard Type, Number of Occurrences Between 1987 and 2017, Rate of Occurrence, Recurrence Interval, Probability of Occurring, and Percent Chance of Occurrence in Any Given Year. Rows include Milk Spill and Manure Spill.

Sources: NYSDEC 2018

Note: Probabilities were calculated based on data collected from years 2012 to 2017. NYSDEC data only included flood events back to 2012.

In Section 5.3, the identified hazards of concern for Lewis County were ranked. Probability of occurrence, or likelihood of the event, is one parameter used for hazard rankings. Based on historical records and input from the Planning Partnership, the probability of occurrence of a milk or manure spill in the County is considered “frequent” (hazard event is likely to occur within 25 years).

Climate Change Impacts

Climate change is beginning to affect both people and resources in New York State (NYS), and these impacts are projected to continue to increase. Impacts related to increasing temperatures and sea level rise are already evident within the State. The Integrated Assessment for Effective Climate Change in NYS (ClimAID) was undertaken to provide decision-makers with information on the State’s vulnerability to climate change, and to facilitate development of adaptation strategies informed by both local experience and scientific knowledge (NYS Energy Research and Development Authority [NYSERDA] 2014).

Temperatures are expected to increase throughout the State by 2.0 to 3.4 degrees Fahrenheit (°F) by the 2020s, 4.1 to 6.8 °F by the 2050s, and 5.3 to 10.1 °F by the 2080s. The lower ends of these ranges are for lower greenhouse gas emission scenarios, and the higher ends for higher emission scenarios. Annual average precipitation is projected to increase by up to 1 to 8 percent by the 2020s, by 3 to 12 percent by the 2050s and 4 to 15 percent by the 2080s. During the winter months, additional precipitation will most likely occur, in the form of rain, and with the possibility of slightly reduced precipitation projected for the late summer and early fall. Northern parts of the State of New York are expected to see the greatest increases in precipitation (NYSERDA 2014).

Each region in New York State, as defined by ClimAID, has attributes that will be affected by climate change. Lewis County is part of Region 6, the Tug Hill Plateau. In Region 6, temperatures are estimated to increase by 4.4 to 6.4 °F by the 2050s and 5.9 to 10.0 °F by the 2080s (baseline of 45.4 °F, mid-range projection). Precipitation totals will increase between 4 and 10 percent by the 2050s and 6 to 12 percent by the 2080s (baseline of 42.6 inches, mid-range projection). Table 5.4.1-4 displays the projected seasonal precipitation change for the Tug Hill Plateau ClimAID Region (NYSERDA 2014).





Table 5.4.1-4. Projected Seasonal Precipitation Change in Region 6, 2050s (Percent Change)

Winter	Spring	Summer	Fall
+5 to +15	0 to +10	-5 to +10	-5 to +10

Source: NYSERDA 2011

The projected increase in precipitation is expected to fall in heavy downpours and less in light rains. The increase in heavy downpours has the potential to affect drinking water; heighten the risk of riverine flooding; flood key rail lines, roadways and transportation hubs; and increase delays and hazards related to extreme weather events (NYSERDA 2011).

Increasing air temperatures intensify the water cycle by increasing evaporation and precipitation, which can cause an increase rain totals during storm events and cause longer dry periods between those events. As heavy rain events can cause sediment erosion that can weaken earthen walls used to create lagoons to store manure, climate change may increase the threat of manure spill.

### 5.4.1.2 Vulnerability Assessment

To understand risk, a community must evaluate the assets exposed and vulnerable in the identified hazard area. This section evaluates and estimates potential impacts of agricultural product spills on Lewis County in the following subsections:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impacts on (1) life, health, and safety of residents; (2) critical facilities; (3) economy; (4) environment; and (5) future growth and development
- Effect of climate change on vulnerability
- Change of vulnerability
- Further data collections that will assist understanding this hazard over time

#### Overview of Vulnerability

Agricultural product spills are a significant concern for Lewis County. The flood hazard exposure and loss estimate analysis is presented below.

#### Data and Methodology

The County’s vulnerability to the agricultural product spill is discussed qualitatively.

#### Impact on Life, Health, and Safety

Spills that contaminate drinking water supplies could leave significant portions of Lewis County without safe drinking water. Spills on roadways could lead to shutdown of roads.

Spills involving milk and manure often happen as a result of traffic accidents. Prior to clean up, spills on roadways caused by traffic accidents increase the risk of additional accidents. In addition, equipment failure of transport vehicles driving on roadways can also cause traffic accidents.

#### Impact on Critical Facilities

Spills impacting surface water or groundwater sources that serve as water supplies could lead to shut down of drinking water facilities.



Large volumes of milk can have detrimental impacts on wastewater treatment facilities that rely on aerobic processes due to milk’s high biochemical oxygen demand (BOD). As little as 2 gallons of milk per day discharged with wastewater can deplete enough oxygen to cause treatment systems to fail. Milk also has high organic solid content that can form organic mats that plug leach fields, grass filter strips, and other wastewater treatment systems. Milk fats and proteins form “fat cakes” inside containment facilities such as holding and septic tanks that further contribute to system failure (Payer and Holmes n.d.).

### Impact on the Economy

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Economic costs from agricultural product spills are difficult to quantify in Lewis County. Economic impacts would largely be the result of agricultural shutdowns, shutdown of roadways where spills occur, shutdowns of water supplies, and the costs of advanced drinking water treatment. Fines resulting from spills could also force farm shutdowns, impacting local workers.

### Impact on the Environment

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Many of the adverse consequences of improper milk disposal or spills are due to milk’s high BOD. In streams and lakes, bacteria would need the dissolved oxygen from 1,600 gallons of water to break down the organic matter in one pint of milk. Because it depletes oxygen levels, milk spills in surface water can upset biological communities and kill fish (Payer and Holmes n.d.).

Milk contains high levels of phosphorus, which can promote the growth of algae and aquatic plants. Milk spills that enter surface waters can promote algal blooms. Because algal blooms also consume oxygen, the likelihood of fish kills is further increased (Payer and Holmes n.d.).

#### *Surface Water and Wetlands*

Too much manure can pollute lakes, streams, and rivers. Excess nutrients from manure and milk spills can raise the amount of nitrogen or phosphorus in the water and can lead to algal blooms, which lower oxygen levels. Wetlands are important water sources and habitats for fish and wildlife, provide natural flood control, and improve water quality. Excessive nutrients and sediment from manure can change the natural function of wetlands and harm plant communities, leading to habitat loss for plants, animals, fish, and birds (Wisconsin DNR 2015).

#### *Groundwater*

Manure may pollute groundwater through wells, sinkholes, and exposed bedrock. Once in groundwater, pollutants are very difficult to remove. Contaminated groundwater can threaten drinking water sources (Wisconsin DNR 2015).

### Future Growth and Development

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As discussed in Section 4 of this HMP, areas targeted for future growth and development have been identified across the County. Any areas of growth could be impacted by the agricultural product hazard. Increase in traffic would also increase the risk of transportation accidents that may involve milk or manure transport vehicles, leading to possible spills.

### Effect of Climate Change on Vulnerability

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Climate is defined not simply as average temperature and precipitation but also by the type, frequency, and intensity of weather events. Both globally and on a local scale, climate change may alter prevalence and severity



of manure spills. Increased alternation of drought and heavy precipitation could result in degradation of earthen walls that create lagoons for storage of manure.

### **Change of Vulnerability**

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The previous HMP did not identify agricultural product spills as a hazard. It appears likely that agricultural product spills will continue to pose a hazard in the future.

### **Additional Data and Next Steps**

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NYSDEC will continue to monitor for information regarding agricultural product spills. Specific mitigation actions addressing improved data collection and further vulnerability analysis are included in Volume II, Section 9 of this plan update.



## 5.4.2 Drought

The following section provides the hazard profile (hazard description, location, extent, previous occurrences and losses, probability of future occurrences, and impact of climate change) and vulnerability assessment for the drought hazard in Lewis County.

### 5.4.2.1 Profile

#### Hazard Description

Drought is a period characterized by long durations of below-normal precipitation. Drought is a temporary irregularity and differs from aridity since the latter is restricted to low rainfall regions and is a permanent feature of climate. Drought conditions occur in virtually all climatic zones, yet its characteristics vary significantly from one region to another, since it is relative to the normal precipitation in that region. Drought can affect agriculture, water supply, aquatic ecology, wildlife, and plant life.

Drought can be defined or grouped in the following our different ways:

- **Meteorological** drought is a measure of departure of precipitation from normal. It is defined solely on the relative degree of dryness. Due to climatic differences, what might be considered a drought in one location of the country may not be a drought in another location.
- **Agricultural** drought links various characteristics of meteorological (or hydrological) drought to agricultural impacts, focusing on precipitation shortages, differences between actual and potential evapotranspiration, soil water deficits, reduced groundwater or reservoir levels, and other parameters. It occurs when there is not enough water available for a particular crop to grow at a particular time. Agricultural drought is defined in terms of soil moisture deficiencies relative to water demands of plant life, primarily crops.
- **Hydrological** drought is associated with the effects of periods of precipitation shortfalls (including snowfall) on surface or subsurface water supply. It occurs when these water supplies are below normal. It is related to the effects of precipitation shortfalls on stream flows and reservoir, lake, and groundwater levels.
- **Socioeconomic** drought is associated with the supply and demand of an economic good with elements of meteorological, hydrological, and agricultural drought. This differs from the aforementioned types of drought because its occurrence depends on the time and space processes of supply and demand to identify or classify a drought. The supply of many economic goods depends on weather (for example water, forage, food grains, fish, and hydroelectric power). Socioeconomic drought occurs when the demand for an economic good exceeds supply as a result of a weather-related shortfall in water supply (National Drought Mitigation Center 2002).

#### Location

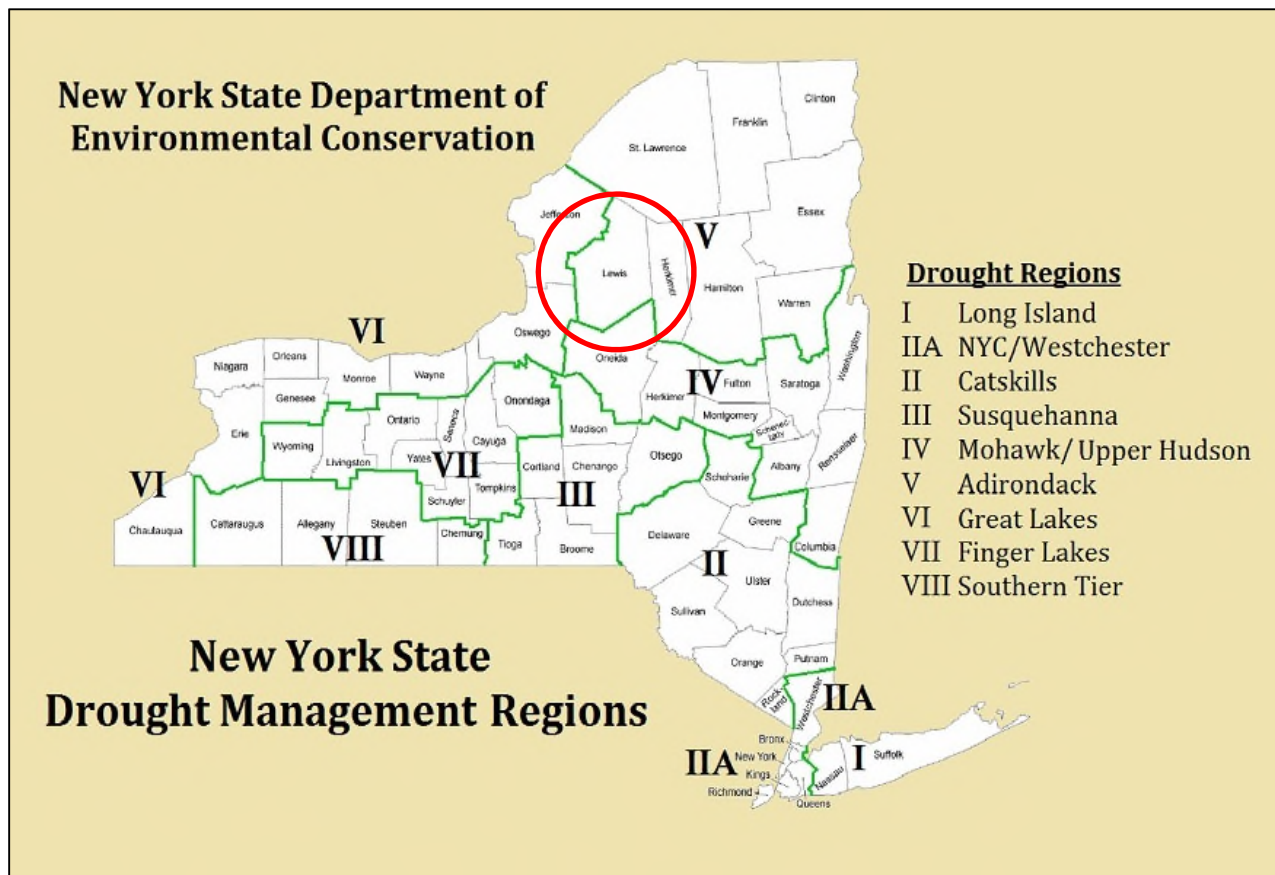
Droughts can occur in all parts of the United States and at any time of the year. Drier regions are more susceptible to long-term or extreme drought conditions, while other areas tend to be more susceptible to short-term, less severe droughts. In New York State, an abundant supply of water is found throughout the state with streams, lakes, and coastal areas that have an average precipitation ranging from 60 inches in the Catskills to 28 inches in the Lake Champlain Valley. Variations in the normal amounts can lead to periods of dry weather and periods of drought (New York State Department of Homeland Security and Emergency Services [NYS DHSES] 2014).



The National Oceanic and Atmospheric Administration (NOAA) has divided the United States into 344 climate divisions. According to NOAA, New York State is made up of 10 climate divisions: Western Plateau, Eastern Plateau, Northern Plateau, Coastal, Hudson Valley, Mohawk Valley, Champlain Valley, St. Lawrence Valley, Great Lakes, and Central Lakes (NOAA date unknown). Lewis County is located in the Northern Plateau Climate Division.

The New York State Department of Environmental Conservation (NYSDEC) has divided New York State into nine drought management regions based roughly on drainage basins and county lines. NYSDEC monitors precipitation, lake and reservoir levels, stream flow, and groundwater levels at least monthly in each region and more frequently during periods of drought. NYSDEC uses this data to assess the condition of each region, which can range from "normal" to "drought disaster" (NYSDEC date unknown). Figure 5.4.2-1 shows the drought regions of New York State with Lewis County circled. Lewis County is located within the Adirondack Drought Region (Region V).

Figure 5.4.2-1. Drought Regions of New York State



Source: NYSDEC 2016b

Note: The red circle indicates the location of Lewis County





## Extent

The severity of a drought depends on the degree of moisture deficiency, the duration, and the size and location of the affected area. The longer the duration and the larger the area impacted, the more severe the drought (NOAA 2000). The NYSDEC and the New York State Drought Management Task Force identifies droughts in the following four stages:

- **Normal** is considered the standard moisture soil levels found throughout New York State
- **Drought Watch** is the first stage of drought. This stage is declared by the NYSDEC and is intended to give advance notice of a developing drought. As this stage, the general public is urged to conserve water. Public water purveyors and industries are urged to update and begin to implement individual drought contingency plans.
- **Drought Warning** is the second stage of drought. This stage is also declared by the NYSDEC and is a notice of impending and imminent severe drought conditions. A warning declaration includes stepping up public awareness and increasing voluntary conservation. Public water supply purveyors and industries are urged to continue to implement local drought contingency plans. Federal, state, and local water resource agencies are notified to prepare for emergency response measures.
- **Drought Emergency** is the third stage of drought. This stage is declared by the NYS DHSES, based upon recommendation of the Task Force. It is a notice of existing severe and persistent drought conditions. An emergency declaration is a notice for local water resource agencies to mandate conservation and implement other emergency response measures. A continuing and worsening drought emergency may result in the New York State governor declaring a drought disaster., which is a notice of the most severe and persistent drought conditions. At this stage, a significant proportion of communities in the impacted area are likely unable to respond adequately (NYS DHSES 2014).

New York State uses two methodologies to determine the various drought stages. The Palmer Drought Index (PDI) is a commonly used drought indicator and is primarily based on soil conditions. These are typically the first indicators that a moisture deficit is present. These values range from -5 to +5 with positive values indicating wetter conditions and negative values representing drier conditions (NYS DHSES 2014).

The second methodology used by New York State was developed by the NYSDEC and is referred to as the State Drought Index (SDI). The SDI evaluates drought conditions on a more comprehensive basis by measuring whether numerous indicators reach dire thresholds. The data collected is compared against critical threshold values to show a normal or changeable drought condition. The indicators are weighted on a regional basis to reflect the unique circumstances of each drought management region (NYS DHSES 2014).

## Previous Occurrences and Losses

Between 1954 and 2018, New York State experienced one FEMA-declared drought-related major declaration (DR) classified as a water shortage (DR-204). Generally, these disasters cover a wide region of the state; therefore, they may have impacted many counties. Lewis County was not included in this declaration (FEMA 2018).

Agriculture-related drought disasters are quite common. One-half to two-thirds of the counties in the United States have been designated as disaster areas during each year of the past several years. The USDA Secretary of Agriculture is authorized to designate counties as disaster areas to make emergency loans to producers suffering losses in those counties and in counties that are contiguous to a designated county. Between 2012 and 2018, Lewis County was included in 12 USDA declarations; however, only three of them were a result of drought conditions (S3427 and S3441 in 2012 and S4062 in 2016).

For this 2020 Plan Update, known drought events, including FEMA and USDA disasters, that have impacted Lewis County between 2009 and 2018 are identified in Table 5.4.2-1. For events prior to 2009, refer to the 2010



version of the HMP. Not all events that have occurred in the County are included, due to the extent of documentation and the fact that not all sources may have been identified or researched. Loss and impact information vary depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP Update.

**Table 5.4.2-1. Drought Events Impacting Lewis County, 2010 to 2018**

Dates of Event	Losses / Impacts
January 17-31, 2012	According to the U.S. Drought Monitor, conditions held at a D0, or “abnormally dry” status across Lewis County from January 17-31.
February 14-May 15, 2012	According to the U.S. Drought Monitor, conditions held at a D0, or “abnormally dry” status across Lewis County from February 14-May 15.
July 10-17, 2012	According to the U.S. Drought Monitor, conditions held at a D0, or “abnormally dry” status across Lewis County from July 10-17.
July 17-October 23, 2012	According to the U.S. Drought Monitor, conditions held at a D0, or “abnormally dry” status across Lewis County from July 17-October 23.
October 23, 2012-February 12, 2013	According to the U.S. Drought Monitor, conditions worsened to D1, or “moderate drought” status across Lewis County from October 23, 2012-February 12, 2013.
October 1-November 19, 2013	According to the U.S. Drought Monitor, conditions held at a D0, or “abnormally dry” status across Lewis County from October 1-November 19.
December 16, 2014-January 6, 2015	According to the U.S. Drought Monitor, a small percentage (<5%) experienced conditions held at a D0, or “abnormally dry” status across Lewis County from December 16, 2014-January 6, 2015.
March 31-May 19, 2015	According to the U.S. Drought Monitor, conditions held at a D0, or “abnormally dry” status across Lewis County from March 31-May 19.
May 19-June 2, 2015	According to the U.S. Drought Monitor, conditions worsened to D1, or “moderate drought” status across Lewis County from May 19-June 2.
June 2-June 16, 2015	According to the U.S. Drought Monitor, conditions held at a D0, or “abnormally dry” status across Lewis County from June 2-16.
September 8, 2015-February 23, 2016	According to the U.S. Drought Monitor, conditions held at a D0, or “abnormally dry” status across Lewis County from September 8, 2015-February 23.
May 10-July 5, 2016	According to the U.S. Drought Monitor, conditions held at a D0, or “abnormally dry” status across Lewis County from May 10-July 5. Shallow wells in the northeast began to run dry.
July 5-November 22, 2016	According to the U.S. Drought Monitor, conditions worsened to D1, or “moderate drought” status across Lewis County from July 5-November 22. A small percentage of the County (<5%) was classified as D2 or “severe drought” from August 30-September 13. Shallow marshes due to drought impacted duck and goose hunting in New York. New York grapes were noted as being slightly small and less acidic. Dairy farmers struggled. Apples were noted for being smaller and sweeter. A drought watch and warning was put in place for New York. Surveys revealed significant crop losses.
November 22, 2016-January 17, 2017	According to the U.S. Drought Monitor, conditions held at a D0, or “abnormally dry” status across Lewis County from November 22, 2016-January 17, 2017.
February 14, 2017	All of New York was placed on a drought watch.
September 26-October 31, 2017	According to the U.S. Drought Monitor, conditions held at a D0, or “abnormally dry” status across Lewis County from September 26-October 31.
June 19-July 10, 2018	According to the U.S. Drought Monitor, conditions held at a D0, or “abnormally dry” status across Lewis County from June 19-July 10. More bear encounters were noted amid reduced food sources.
July 10-October 2, 2018	According to the U.S. Drought Monitor, conditions worsened to D1, or “moderate drought” status across Lewis County from June 19-July 10. North Country residents were urged to be cautious with fire as a result of the drought. Hay, pasture, and crops were affected by drought in northern Upstate New York.

Source(s): FEMA 2016; NYS DHSES 2014; NOAA-NCEI 2018; USDA 2018, NDMC 2018.

- FEMA Federal Emergency Management Agency USDA U.S. Department of Agriculture
- NCEI National Centers for Environmental Information
- NOAA National Oceanic and Atmospheric Administration
- NYSDEC New York State Department of Environmental Conservation
- NYS DHSES New York State Department of Homeland Security and Emergency Services





### Probability of Future Occurrences

Based upon risk factors and past occurrences, it is likely that droughts will occur across New York State and Lewis County in the future. In addition, as temperatures increase (see climate change impacts), the probability for future droughts will likely increase as well. Therefore, it is likely that droughts will occur in the state and County of varied severity in the future.

According to the 2014 New York State Hazard Mitigation Plan Update, between 1960 and 2012, Lewis County had two drought events that resulted in over \$21,000 in property damage and over \$400,000 in crop damage. These statistics showed that the County had a 4 percent chance of droughts occurring in the future with a recurrence interval of 26 years (NYS DHSES 2014).

It is estimated that Lewis County will continue to experience direct and indirect impacts of drought on occasion, with the secondary effects causing potential disruption or damage to agricultural activities and creating shortages in water supply within communities.

In Section 5.3, the identified hazards of concern for Lewis County were ranked. The probability of occurrence, or likelihood of the event, is one parameter used for hazard rankings. Based on historical records and input from the Planning Committee, the probability of occurrence for drought in the County is considered “frequent” (hazard event is likely to occur within 25 years).

### Climate Change Impacts

Climate change is beginning to affect both people and resources in New York State, and these impacts are projected to continue growing. Impacts related to increasing temperatures and sea level rise are already being felt in the state. The Integrated Assessment for Effective Climate Change in New York State (ClimAID) was undertaken to provide decision-makers with information on the state’s vulnerability to climate change and to facilitate the development of adaptation strategies informed by both local experience and scientific knowledge (New York State Energy Research and Development Authority [NYSERDA] 2011).

Temperatures in New York State are warming, with an average rate of warming over the past century of 0.25 °F per decade. Average annual temperatures are projected to increase across New York State by 2 °F to 3.4 °F by the 2020s, 4.1 °F to 6.8 °F by the 2050s, and 5.3 °F to 10.1 °F by the 2080s. By the end of the century, the greatest warming is projected to be in the northern section of the state (NYSERDA 2014).

Regional precipitation across New York State is projected to increase by approximately 1 to 8-percent by the 2020s, 3 to 12 percent by the 2050s, and 4 to 15-percent by the 2080s. By the end of the century, the greatest increases in precipitation are projected to be in the northern areas of the State (NYSERDA 2014).

Each region in New York State, as defined by ClimAID, contains attributes that will be affected by climate change. Lewis County is part of Region 6, the Tug Hill Plateau. In Region 6, it is estimated that temperatures will increase by 4.4 °F to 6.4 °F by the 2050s and 5.9 °F to 10.0 °F by the 2080s (baseline of 45.4 °F, mid-range projection). Precipitation totals will increase between 4 and 10 percent by the 2050s and 6 to 12 percent by the 2080s (baseline of 42.6 inches, mid-range projection). Table 5.4.2-2 displays the projected seasonal precipitation change for the Tug Hill Plateau ClimAID Region (NYSERDA 2014).

**Table 5.4.2-2. Projected Seasonal Precipitation Change in Region 6, 2050s (% change)**

Winter	Spring	Summer	Fall
+5 to +15	0 to +10	-5 to +10	-5 to +10

Source: NYSERDA 2011

The frequency of heat waves and drought are also projected to increase in Region 6. With the increase in temperatures, heat waves will become more frequent and intense, increasing heat-related illness and death and





posing new challenges to the energy system, air quality, and agriculture. Summer droughts are projected to increase, affecting water supply, agriculture, ecosystems, and energy projects (NYSERDA 2011). Table 5.4.2-3 displays the projected changes in these events and includes the minimum, central range, and maximum days per year.

**Table 5.4.2-3. Changes in Extreme Events in Region 3 – Heat Waves and Drought Conditions**

Event Type	# Days Per Year	Baseline	2020s	2050s	2080s
Heat Waves	<b>Number of Days per year with maximum temperature exceeding: minimum, (central range), and maximum</b>				
	90 °F	3 days	2 (4 to 7) 11	5 (8 to 17) 27	8 (12 to 36) 52
	Number of heat waves per year	0.2 events	0.2 (0.4 to 0.9) 1	0.6 (0.8 to 2) 4	0.6 (1 to 4) 6
	Average duration	4 days	3 (4 to 4) 5	3 (4 to 4) 5	4 (4 to 5) 7

Source: NYSERDA 2011

### 5.4.2.2 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed or vulnerable in the identified hazard area. For the drought hazard, all of Lewis County has been identified as exposed. Therefore, all assets in the County (population, structures, critical facilities, and lifelines), as described in the County Profile (Section 4), are exposed and potentially vulnerable to a drought. The following text evaluates and estimates the potential impact of the drought hazard on the County including:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on: (1) life, health, and safety of residents; (2) general building stock; (3) critical facilities; (4) economy; and (5) future growth and development
- Effect of climate change on vulnerability
- Change of vulnerability as compared to that presented in the 2010 Lewis County Hazard Mitigation Plan
- Further data collections that will assist understanding this hazard over time

#### Overview of Vulnerability

The entire County is vulnerable to drought. However, areas at particular risk are those used for agricultural purposes (farms and cropland); open/forested land vulnerable to the wildfire hazard; densely populated areas where communities rely on surface water supplies (above-ground reservoirs) for industrial, commercial, and domestic purposes; and certain areas where elderly, impoverished, or otherwise vulnerable populations are located. Vulnerable populations could be particularly susceptible to the drought hazard and cascading impacts due to age, health conditions, and limited ability to mobilize to shelter, cooling, and medical resources.

#### Data and Methodology

Data was collected from USDA, NOAA-NCEI, Lewis County, and the Steering and Planning Committees. Insufficient data was available to model the long-term potential impacts of a drought on the County. Over time, additional data will be collected to allow better analysis for this hazard. Available information and a preliminary assessment are provided below.

#### Impact on Life, Health, and Safety

Droughts may have devastating effects on communities and the surrounding environment. The amount of devastation depends on the strength and duration of a drought event. One impact of drought is on water supply. When drought conditions persist with little to no relief, water restrictions may be put into place by local or state



governments. These restrictions can include watering of lawns, washing cars, etc. In exceptional drought conditions, watering of lawns and crops may not be an option. If crops are not able to receive water, farmland will dry out and crops will die. This can lead to crop shortages, which, in turn, increases the price of food.

Droughts also have the potential to lead to water pollution due to the lack of rain water to dilute any chemicals in water sources. Contaminated water supplies may be harmful to plants and animals. If water is not getting into the soils, the ground will dry up and become unstable. Unstable soils increase the risk of erosion and loss of top soil.

The impacts on public health from drought can be severe and include increases in heat-related illnesses and waterborne illnesses, recreational risks, limited food availability, and reduced living conditions. Individuals who rely on water, such as farmers, may experience financial-related stress. Decreased amounts and quality of water during drought events have the potential to reduce the availability of electricity (hydropower, coal-burning, and nuclear).

Drought conditions can affect the public’s health and safety, including health problems related to low water flows and poor water quality; and health problems related to dust. Droughts also have the potential to lead to loss of human life (NDMC 2016). Other possible impacts to health due to drought include increased recreational risks; effects on air quality; diminished living conditions related to energy, air quality, and sanitation and hygiene; compromised food and nutrition; and increased incidence of illness and disease. Health implications of drought are numerous. Some drought-related health effects are short-term while others can be long-term (CDC 2012).

As previously stated, drought conditions can cause shortages in water for human consumption. Droughts can also lead to reduced local firefighting capabilities. The drought hazard is a concern for Lewis County because the County’s water supply comes from both groundwater and surface water. Nearly all the water supply for the County is derived from precipitation that falls within the County borders. Periods of below-average precipitation can result in mandatory water restrictions. In the short-term, surface water supplies are affected more quickly during droughts than groundwater sources.

### **Impact on General Building Stock**

No structures are anticipated to be directly affected by a drought event. However, droughts contribute to conditions conducive to wildfires and reduce fire-fighting capabilities. Risk to life and property is greatest in those areas where forested areas adjoin urbanized areas (high-density residential, commercial, and industrial regions) also known as the wildfire urban interface (WUI). Therefore, all assets in and adjacent to the WUI zone, including population, structures, critical facilities, lifelines, and businesses are considered vulnerable to wildfire. Refer Section 5.4.9 for the Wildfire risk assessment.

### **Impact on Critical Facilities**

Water supply facilities may be affected by shortages of water. As mentioned, drought events generally do not impact buildings; however, droughts have the potential to impact agriculture-related facilities and critical facilities associated with potable water supplies.

### **Impact on the Economy**

Drought causes many economic impacts on agriculture and related sectors (forestry, fisheries, and waterborne activities). In addition to losses in crop yields and livestock production, drought is associated with increased insect infestations, plant diseases, and wind erosion. Drought can lead to other losses because so many sectors are affected—losses that include reduced income for farmers and reduced business for retailers and others who provide goods and services to farmers. This leads to unemployment, increased credit risk for financial institutions, capital





shortfalls, and loss of tax revenue. Prices for food, energy, and other products may also increase as supplies decrease (NYS DHSES 2014).

Table 5.4.2-4 summarizes direct and indirect losses to agricultural producers, livestock producers, timber producers, fishery producers, and tourism (NYS DHSES 2014).

**Table 5.4.2-4. Impacts on the Economy**

Losses to Agricultural Producers	Losses to Livestock Producers	Losses to Timber Producers
Annual and perennial crop losses	Reduced productivity of rangeland	Reduced timber from wildland fires
Damage to crop quality	Reduced milk production	Reduced trees cut due to tree disease
Income loss for farmers due to reduced crop yields	Forced reduction of foundation stock	Reduced timber from Insect infestation
Reduced productivity of cropland (wind erosion, long-term loss of organic matter, etc.)	High cost/unavailability of water for livestock	Impaired productivity of forest land
Insect infestation	Cost of new or supplemental water resource development (wells, dams, pipelines)	Direct loss of trees, especially young ones
Plant disease	High cost/unavailability of feed for livestock	Impaired navigability of streams, rivers, and canals
Wildlife damage to crops	Increased feed transportation costs	Decline in food production/disrupted food supply
Increased irrigation costs	High livestock mortality rates	Increase in food prices
Cost of new or supplemental water resource development (wells, dams, pipelines)	Disruption of reproduction cycles (delayed breeding, more miscarriages)	Increased importation of food (higher costs)
Loss from fishery production	Decreased stock weights	
Damage to fish habitat	Increased predation	
Loss of fish and other aquatic organisms due to decreased flows	Grass fires	
Loss to Recreation and Tourism Industry	Energy-Related Effects	Water Suppliers
Loss to manufacturers and sellers of recreational equipment	Increased energy demand and reduced supply because of drought-related power curtailments	Revenue shortfalls and/or windfall profits
Losses related to curtailed activities: hunting and fishing, bird watching, boating, skiing, etc.	Costs to energy industry and consumers associated with substituting more expensive fuels (oil) for hydroelectric power	

Source: NYS DHSES 2014

When a drought occurs, the agricultural industry is most at risk in terms of economic impact and damage. During droughts, crops do not mature, leading to a lessened crop yield; wildlife and livestock are undernourished; land values decrease; and ultimately there is financial loss to the farmer (FEMA 1997).

Based on the 2012 Census of Agriculture, Lewis County included 634 farms, with 181,741 acres of total land in farms. The average farm size was 287 acres. Lewis County farm products sold had a total market value of over \$137 million (\$23.6 million in crop sales and \$113.4 million in livestock sales), averaging \$216,152 per farm. The Census indicated that 383 farm operators reported farming as their primary occupation (USDA 2012). Table 5.4.2-5 shows the acreage of agricultural land exposed to the drought hazard.



Table 5.4.2-5. Agricultural Land in Lewis County in 2012

Number of Farms	Land in Farms (acres)	Total Cropland (acres)	Harvested Cropland (acres)	Total Cropland Used Only For Pasture/Grazing (acres)
634	181,741	97,216	88,248	2,444

Source: USDA 2012

The 2012 Census of Agriculture for Lewis County indicated that the top crop items, by acres, in the County are forage land used for all hay and haylage, grass silage, and greenchop (56,467 acres) and corn for silage (21,148 acres) (USDA 2012).

A prolonged drought can have a serious economic impact on a community. Increased demand for water and electricity may result in shortages and a higher cost for these resources. Industries that rely on water for business may be impacted the hardest (e.g., landscaping businesses). Even though most businesses will remain operational, they may be impacted aesthetically. These aesthetic impacts are most significant to the recreation and tourism industry. As stated above, if there are periods of lower than average precipitation in the County, mandatory water restrictions may be enforced. In addition, droughts in another area could impact the food supply and price for residents in the County.

### Future Growth and Development

As discussed in Section 4, areas targeted for future growth and development have been identified across Lewis County. Future growth could impact the amount of potable water available due to a drain on the available water resources. Other areas that could be impacted include agriculture and recreational facilities, such as golf courses, farms, and nurseries. Areas targeted for potential future growth and development in the next 5 years have been identified across the County at the municipal level. Refer to the jurisdictional annexes in Volume II of this HMP.

### Effect of Climate Change on Vulnerability

Nearly every region in the country is facing some increased risk of seasonal drought. Climate change can significantly affect the sustainability of water supplies in the future. As parts of the United States get drier, the amount and quality of water available will likely decrease, impacting people’s health and food supplies. With climate change, the entire country will likely face some level of drought. A report by the Natural Resources Defense Council (NRDC) found that 1,100 counties (one-third of all counties in the contiguous 48 states) face higher risks of water shortages by mid-century as a result of climate change. More than 400 of these counties will face extremely high risks of water shortages.

### Change of Vulnerability

When examining the change in the County’s vulnerability to drought events from the original HMP to this update, it is important to look at each entity that is exposed and vulnerable. The total population across the County has remained fairly steady over the last three decades. However, the agricultural industry for Lewis County has seen a 3 percent increase in the total number of farms from 2007 to 2012 which has led to a 9 percent increase in the total number of acres of farmland (USDA 2012). This increases the stress placed on the water supply.

### Additional Data and Next Steps

For the Plan Update, any additional information regarding localized concerns and past impacts will be collected and analyzed. This data will be developed to support future revisions to the plan. Mitigation efforts could include building on existing New York State, Lewis County, and local efforts.



## 5.4.3 Earthquake

This section provides a profile and vulnerability assessment for the earthquake hazard.

### 5.4.3.1 Hazard Profile

This section provides profile information including description, extent, location, previous occurrences and losses, and the probability of future occurrences.

#### Description

An earthquake is the sudden movement of the earth’s surface caused by the release of stress accumulated within or along the edge of the earth’s tectonic plates, a volcanic eruption, or by a man-made explosion (Federal Emergency Management Agency [FEMA] 2001; Shedlock and Pakiser 1997). Most earthquakes occur at the boundaries where the earth’s tectonic plates meet (faults); less than 10 percent of earthquakes occur within plate interiors. As plates continue to move and plate boundaries change geologically over time, weakened boundary regions become part of the interiors of the plates. These zones of weakness within the continents can cause earthquakes in response to stresses that originate at the edges of the plate or in the deeper crust (Shedlock and Pakiser 1995).

According to the U.S. Geological Society (USGS) Earthquake Hazards Program, an earthquake hazard is any disruption associated with an earthquake that may affect residents’ normal activities. This includes surface faulting, ground shaking, landslides, liquefaction, tectonic deformation, tsunamis, and seiches; each of these terms is defined below:

- *Surface faulting*: Displacement that reaches the earth's surface during a slip along a fault. Commonly occurs with shallow earthquakes—those with an epicenter less than 20 kilometers.
- *Ground motion (shaking)*: The movement of the earth's surface from earthquakes or explosions. Ground motion or shaking is produced by waves that are generated by a sudden slip on a fault or sudden pressure at the explosive source and travel through the earth and along its surface.
- *Landslide*: A movement of surface material down a slope.
- *Liquefaction*: A process by which water-saturated sediment temporarily loses strength and acts as a fluid, like the wet sand near the water at the beach. Earthquake shaking can cause this effect. Liquefaction susceptibility is determined by the geological history, depositional setting, and topographic position of the soil (Stanford 2003). Liquefaction effects may occur along the shorelines of the ocean, rivers, and lakes and they can also happen in low-lying areas away from water bodies in locations where the ground water is near the earth’s surface.
- *Tectonic Deformation*: A change in the original shape of a material caused by stress and strain.
- *Tsunami*: A sea wave of local or distant origin that results from large-scale seafloor displacements associated with large earthquakes, major sub-marine slides, or exploding volcanic islands.
- *Seiche*: The sloshing of a closed body of water, such as a lake or bay, from earthquake shaking (USGS 2012a).

#### Extent

An earthquake’s magnitude and intensity are used to describe the size and severity of the event. Magnitude describes the size at the focus of an earthquake and intensity describes the overall felt severity of shaking during the event. The earthquake’s magnitude is a measure of the energy released at the source of the earthquake and is expressed by ratings on the Richter scale and/or the moment magnitude scale. The Richter scale measures magnitude of earthquakes and has no upper limit; however, it is not used to express damage (USGS 2014). Table



5.4.3-1 presents the Richter scale magnitudes and corresponding earthquake effects. The moment magnitude scale (MMS) is used to describe the size of an earthquake. It is based on the seismic moment and is applicable to all sizes of earthquakes (USGS 2012c). The Richter scale is not commonly used anymore, as it has been replaced by the MMS which is a more accurate measure of the earthquake size (USGS 2014). The MMS is described below.

Table 5.4.3-1. Richter Magnitude Scale

Richter Magnitude	Earthquake Effects
2.5 or less	Usually not felt, but can be recorded by seismograph
2.5 to 5.4	Often felt, but causes only minor damage
5.5 to 6.0	Slight damage to buildings and other structures
6.1 to 6.9	May cause a lot of damage in very populated areas
7.0 to 7.9	Major earthquake; serious damage
8.0 or greater	Great earthquake; can totally destroy communities near the epicenter

Source: Michigan Tech University Date Unknown

The intensity of an earthquake is based on the observed effects of ground shaking on people, buildings, and natural features, and varies with location. The Modified Mercalli (MMI) scale expresses intensity of an earthquake and describes how strong a shock was felt at a particular location in values. Table 5.4.3-2 summarizes earthquake intensity as expressed by the Modified Mercalli scale. Table 5.4.3-3 displays the MMI scale and its relationship to the areas peak ground acceleration.

Table 5.4.3-2. Modified Mercalli Intensity Scale

Mercalli Intensity	Shaking	Description
I	Not Felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations like the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very Strong	Damage negligible in buildings of superior design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

Source: USGS 2016c



Table 5.4.3-3. Modified Mercalli Intensity and PGA Equivalents

Modified Mercalli Intensity	Acceleration (%g) (PGA)	Perceived Shaking	Potential Damage
I	<.17	Not Felt	None
II	.17 – 1.4	Weak	None
III	.17 – 1.4	Weak	None
IV	1.4 – 3.9	Light	None
V	3.9 – 9.2	Moderate	Very Light
VI	9.2 – 18	Strong	Light
VII	18 – 34	Very Strong	Moderate
VIII	34 – 65	Severe	Moderate to Heavy
IX	65 – 124	Violent	Heavy
X	>124	Extreme	Very Heavy

Source: Freeman et al. (Purdue University) 2004

Note: PGA Peak Ground Acceleration

PGA expresses the severity of an earthquake and is a measure of how hard the earth shakes, or accelerates, in a given geographic area. PGA is expressed as a percent acceleration force of gravity (%g). For example, 1.0%g PGA in an earthquake (an extremely strong ground motion) means that objects accelerate sideways at the same rate as if they had been dropped from the ceiling. 10%g PGA means that the ground acceleration is 10% that of gravity (NJOEM 2011). Damage levels experienced in an earthquake vary with the intensity of ground shaking and with the seismic capacity of structures, as noted in Table 5.4.3-4.

Table 5.4.3-4. Damage Levels Experienced in Earthquakes

Ground Motion Percentage	Explanation of Damages
1 – 2%g	Motions are widely felt by people; hanging plants and lamps swing strongly, but damage levels, if any, are usually very low.
Below 10%g	Usually causes only slight damage, except in unusually vulnerable facilities.
10 – 20%g	May cause minor-to-moderate damage in well-designed buildings, with higher levels of damage in poorly designed buildings. At this level of ground shaking, only unusually poor buildings would be subject to potential collapse.
20 – 50%g	May cause significant damage in some modern buildings and very high levels of damage (including collapse) in poorly designed buildings.
≥50%g	May causes higher levels of damage in many buildings, even those designed to resist seismic forces.

Source: NJOEM 2011

Note: %g Peak Ground Acceleration

National maps of earthquake shaking hazards have been produced since 1948. They provide information essential to creating and updating the seismic design requirements for building codes, insurance rate structures, earthquake loss studies, retrofit priorities, and land use planning used in the U.S. Scientists frequently revise these maps to reflect new information and knowledge. Buildings, bridges, highways, and utilities built to meet modern seismic design requirements are typically able to withstand earthquakes better, with less damages and disruption. After thorough review of the studies, professional organizations of engineers update the seismic risk maps and seismic design requirements contained in building codes (Brown et al., 2001).

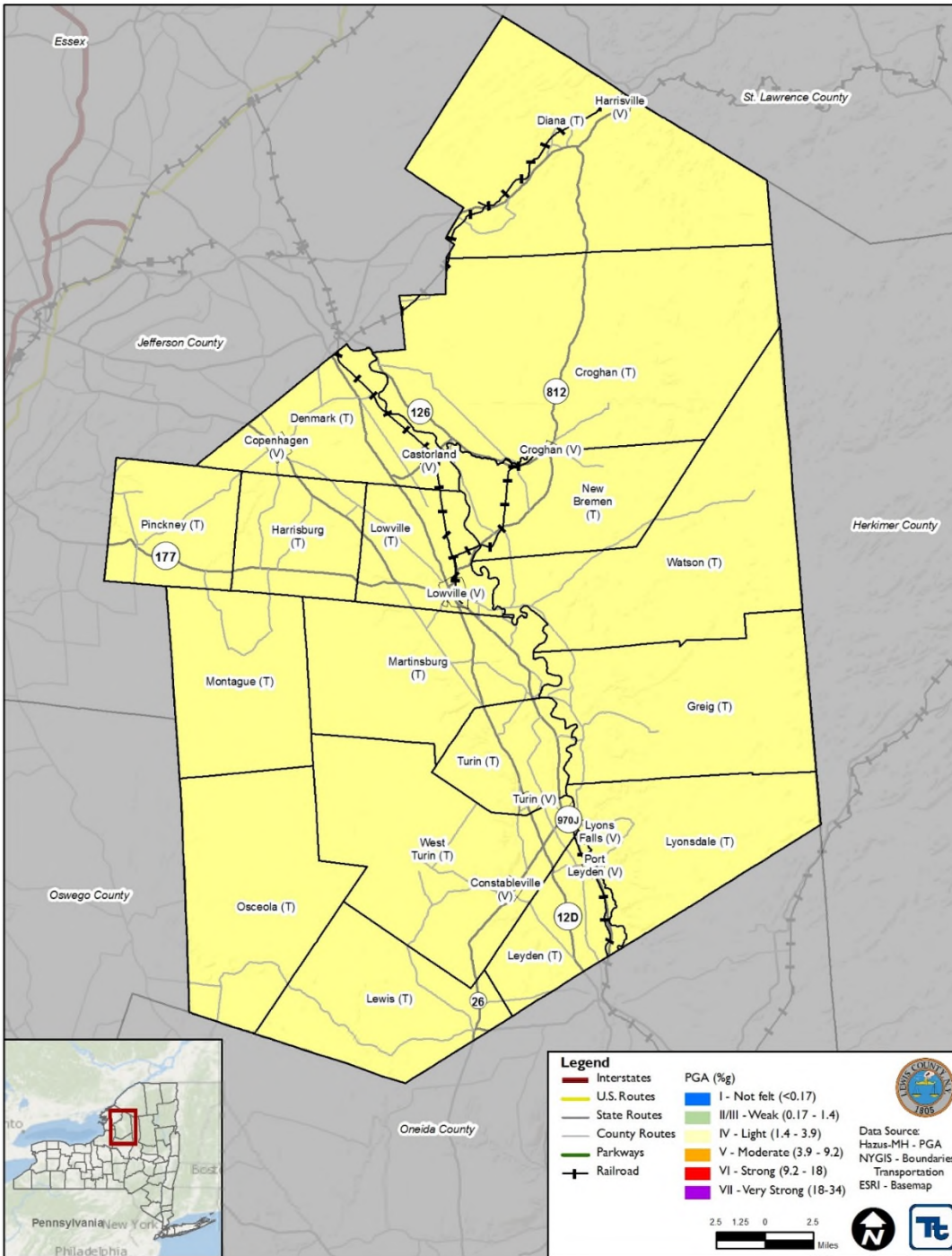
The USGS updated the National Seismic Hazard Maps in 2014, which superseded the 2008 maps. New seismic, geologic, and geodetic information on earthquake rates and associated ground shaking were incorporated into these revised maps. The 2014 map represents the best available data as determined by the USGS. According to the data, Lewis County has a PGA between 3%g and 5%g (USGS 2014). The 2014 PGA map can be found at <http://pubs.usgs.gov/of/2014/1091/pdf/ofr2014-1091.pdf>.





A probabilistic assessment was conducted for the 100-year, 250- and 1,000-year mean return periods (MRP) in HAZUS-MH 4.2 to analyze the earthquake hazard for Lewis County. The HAZUS analysis evaluates the statistical likelihood that a specific event will occur and what consequences will occur. Figure 5.4.3-1 through Figure 5.4.3-3 illustrates the geographic distribution of PGA (g) across the County or 100-year, 250- and 1,000-year MRP events by Census Tract.

Figure 5.4.3-1. Peak Ground Acceleration 100-Year Mean Return Period for Lewis County

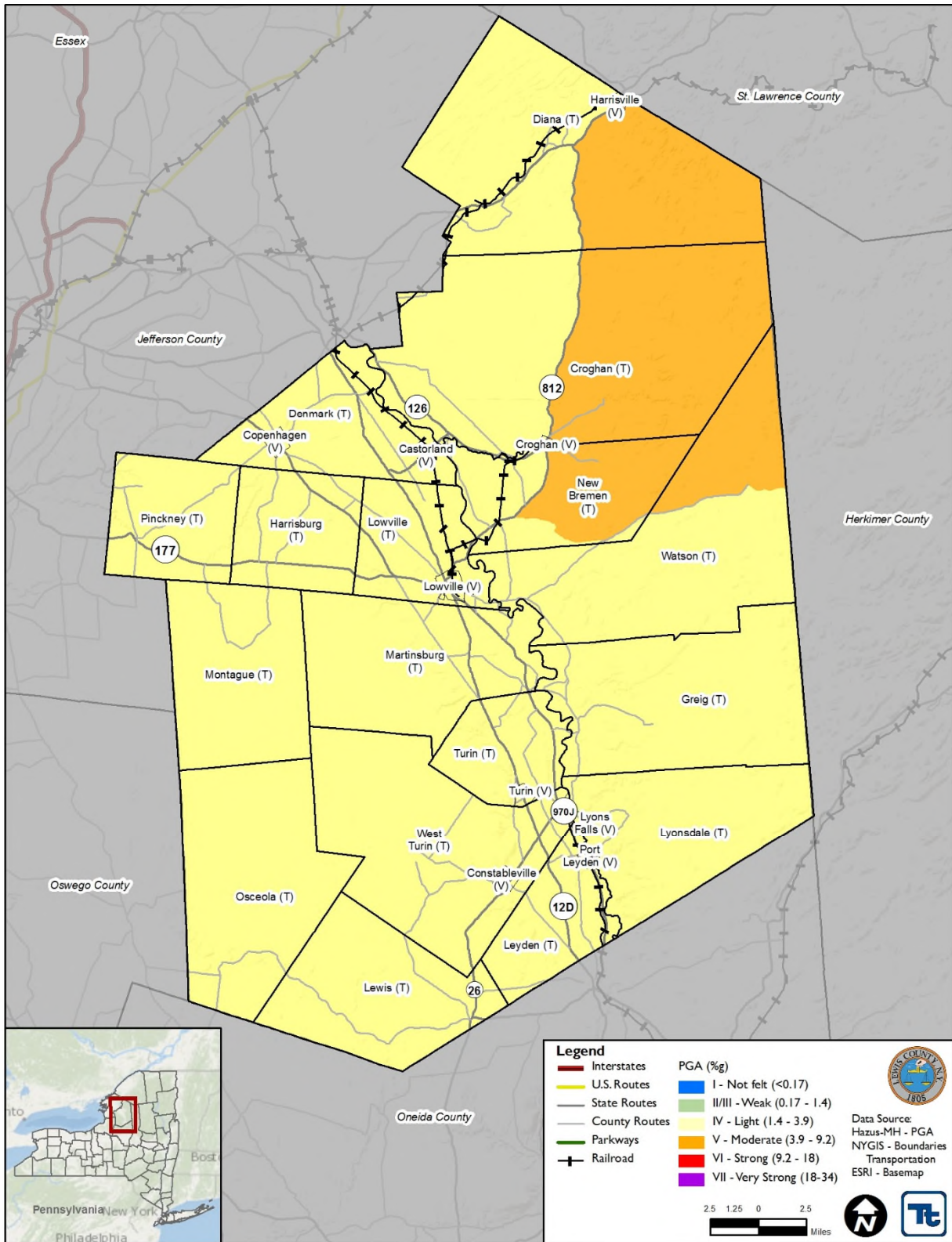


Source: HAZUS-MH 4.2





Figure 5.4.3-2. Peak Ground Acceleration 250-Year Mean Return Period for Lewis County



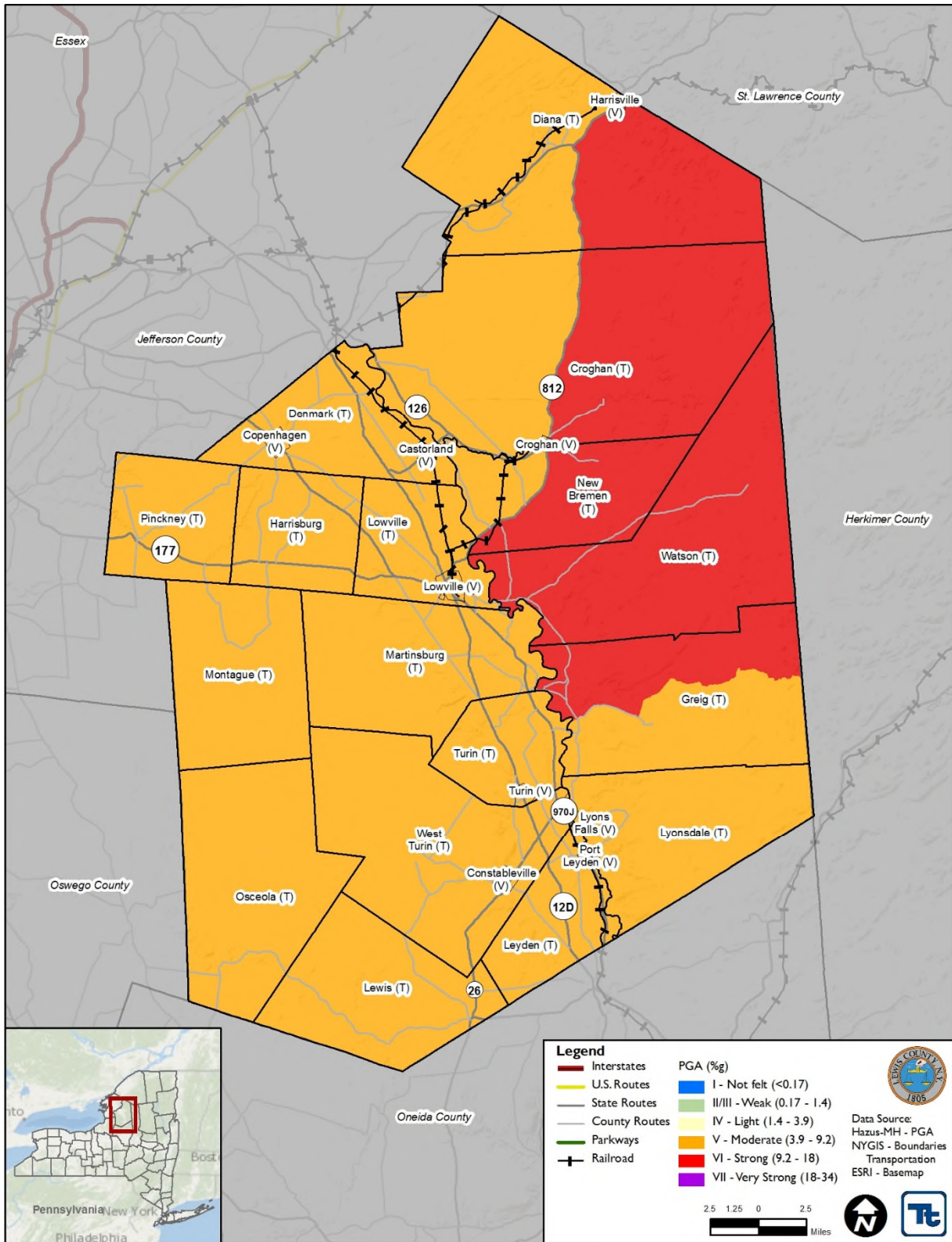
Source: HAZUS-MH 4.2







Figure 5.4.3-3. Peak Ground Acceleration 1,000-Year Mean Return Period for Lewis County



Source: HAZUS-MH 4.2





The New York State Geological Survey conducted seismic shear-wave tests of the State’s surficial geology (glacial deposits). Based on these test results, the surficial geologic materials of New York State were categorized according to the National Earthquake Hazard Reduction Program’s (NEHRP) Soil Site Classifications (Table 5.4.3-5). The NEHRP developed five soil classifications defined by their shear-wave velocity that impact the severity of an earthquake. The soil classification system ranges from A to E, as noted in Table 5.4.3-5, where A represents hard rock that reduces ground motions from an earthquake and E represents soft soils that amplify and magnify ground shaking and increase building damage and losses. Class E soils include water-saturated mud and artificial fill. The strongest amplification of shaking due is expected for this soil type. Seismic waves travel faster through hard rock than through softer rock and sediments. As the waves pass from harder to softer rocks, the waves slow down, and their amplitude increases. Shaking tends to be stronger at locations with softer surface layers where seismic waves move more slowly. Ground motion above an unconsolidated landfill or soft soils can be more than 10 times stronger than at neighboring locations on rock for small ground motions (FEMA 2016).

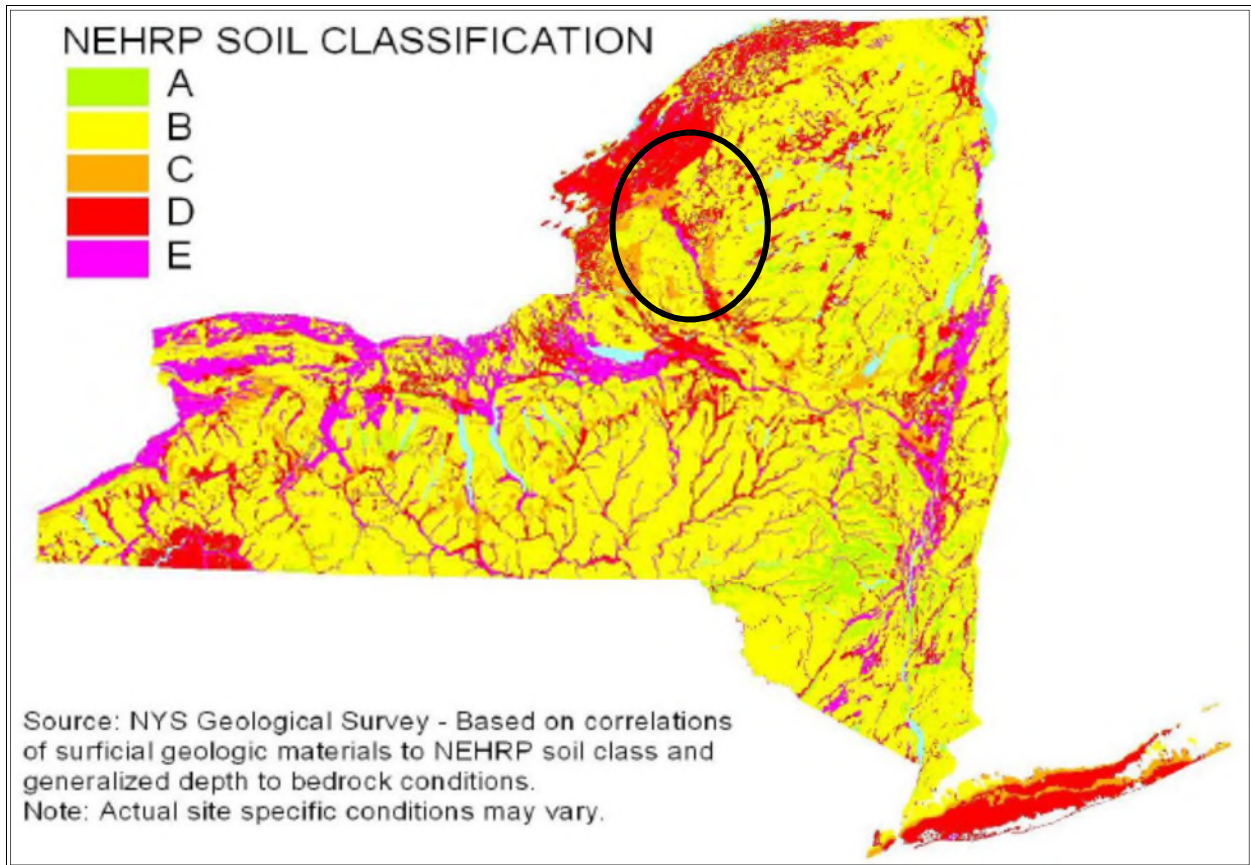
Table 5.4.3-5. NEHRP Soil Classifications

Soil Classification	Description
A	Hard Rock
B	Rock
C	Very dense soil and soft rock
D	Stiff soils
E	Soft soils

Source: FEMA 2013



Figure 5.4.3-4. NEHRP Soils in New York



Source: NYS DHSES 2014

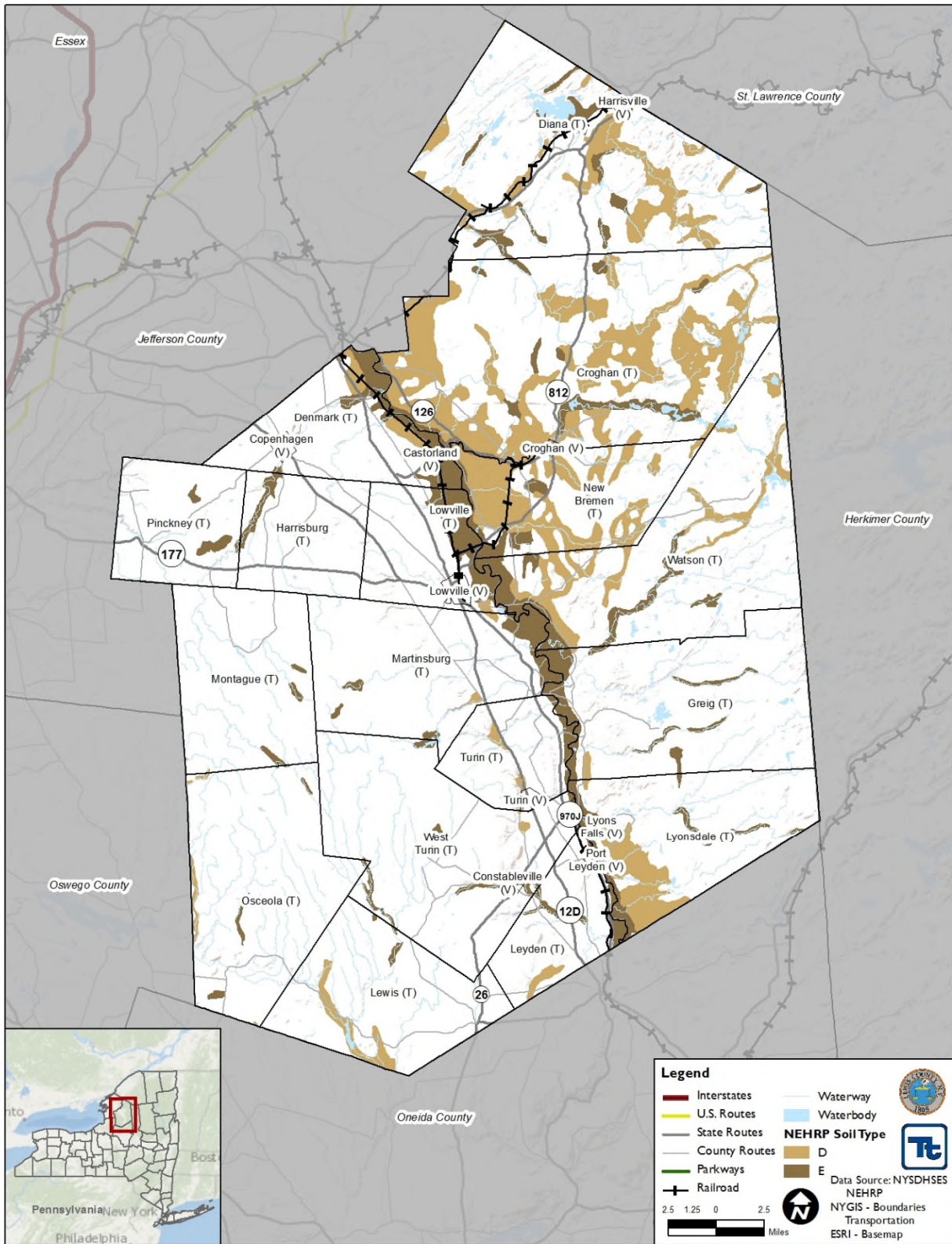
Note: The black oval indicates the approximate location of Lewis County. The figure shows that the County's NEHRP soil classifications include A, B, and D soils.

Figure 5.4.3-5 illustrates the NEHRP soils located throughout Lewis County. The data was available from the NYS DHSES. The available NEHRP soils information is incorporated into the HAZUS-MH earthquake model for the risk assessment (discussed in further detail later in this section). According to this figure, Lewis County is predominantly underlain by Type B soils with small areas of Type C, D, and E soils.





Figure 5.4.3-5. NEHRP Soils in Lewis County



Source: NYSDHSES 2008





## Location

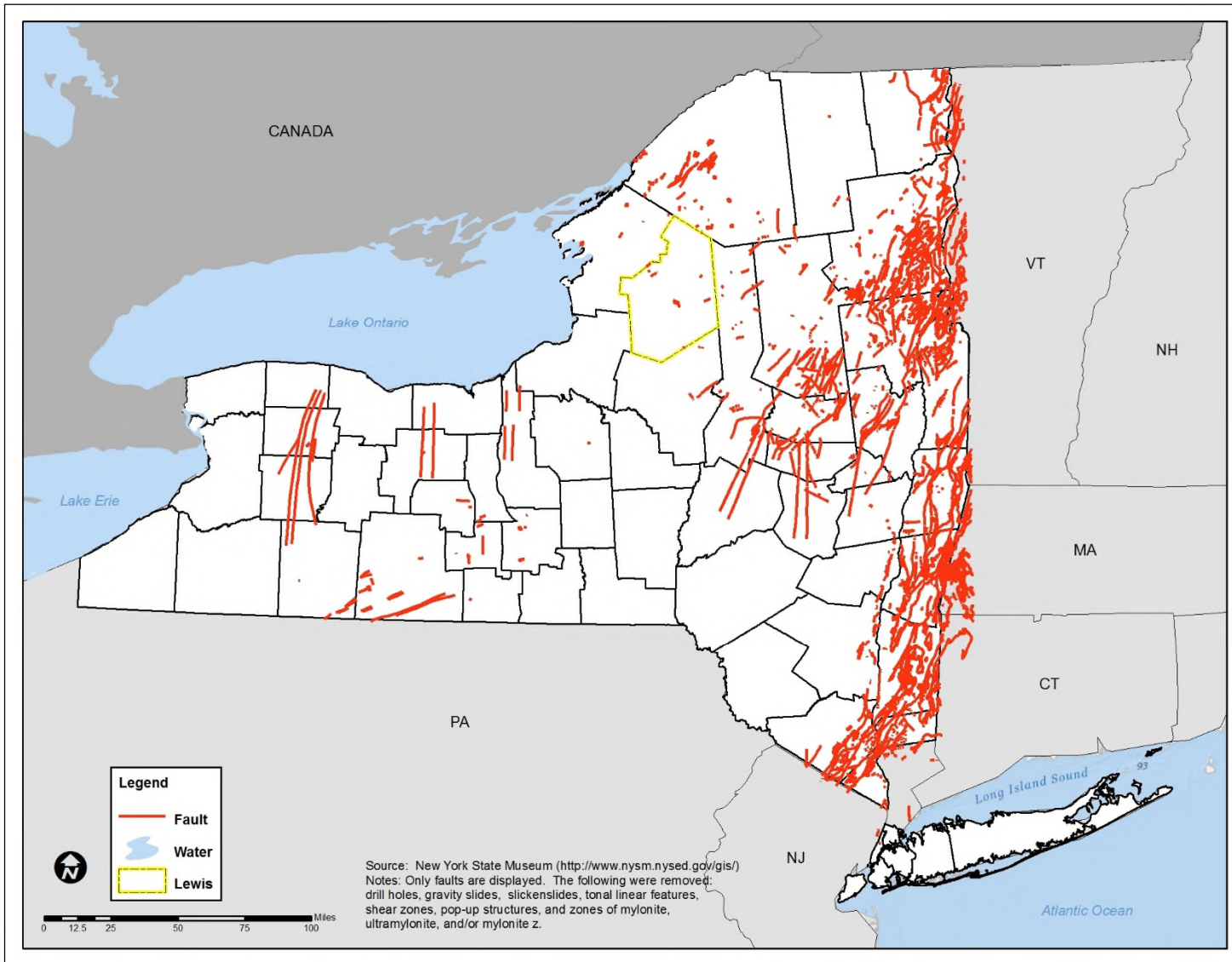
As noted in the NYS HMP, the importance of the earthquake hazard in New York State is often underestimated because other natural hazards (for example, hurricanes and floods) occur more frequently and because major floods and hurricanes have occurred more recently than a major earthquake event (NYS DHSES 2014). However, the potential for earthquakes exists across all of New York State and the entire northeastern U.S. The New York City Area Consortium for Earthquake Loss Mitigation (NYCEM) ranks New York State as having the third highest earthquake activity level east of the Mississippi River (Tantala et al. 2003).

There are three general regions in New York State that have a higher seismic risk compared to other parts of the State. These regions are: (1) the north and northeast third of the State, which includes the North Country/Adirondack region and a portion of the greater Albany-Saratoga region; (2) the southeast corner, which includes the greater New York City area and western Long Island; and (3) the northwest corner, which includes Buffalo and its surrounding area. Overall, these three regions are the most seismically active areas of the State, with the north-northeast portion having the higher seismic risk and the northwest corner of the State has the lower seismic risk (NYS DHSES 2014).

Fractures or fracture zones along with rocks on adjacent sides have broken and moved upward, downward, or horizontally are known as faults (Volkert and Witte 2015). Movement can take place at faults and cause an earthquake. There are numerous faults throughout New York State. Figure 5.4.3-6 illustrates the faults relative to Lewis County (New York State Museum 2016). According to this figure, there are several small fault lines within and surrounding the County.



Figure 5.4.3-6. Faults in Lewis County



Source: New York State Museum 2012  
 Note: Lewis County is outlined in yellow





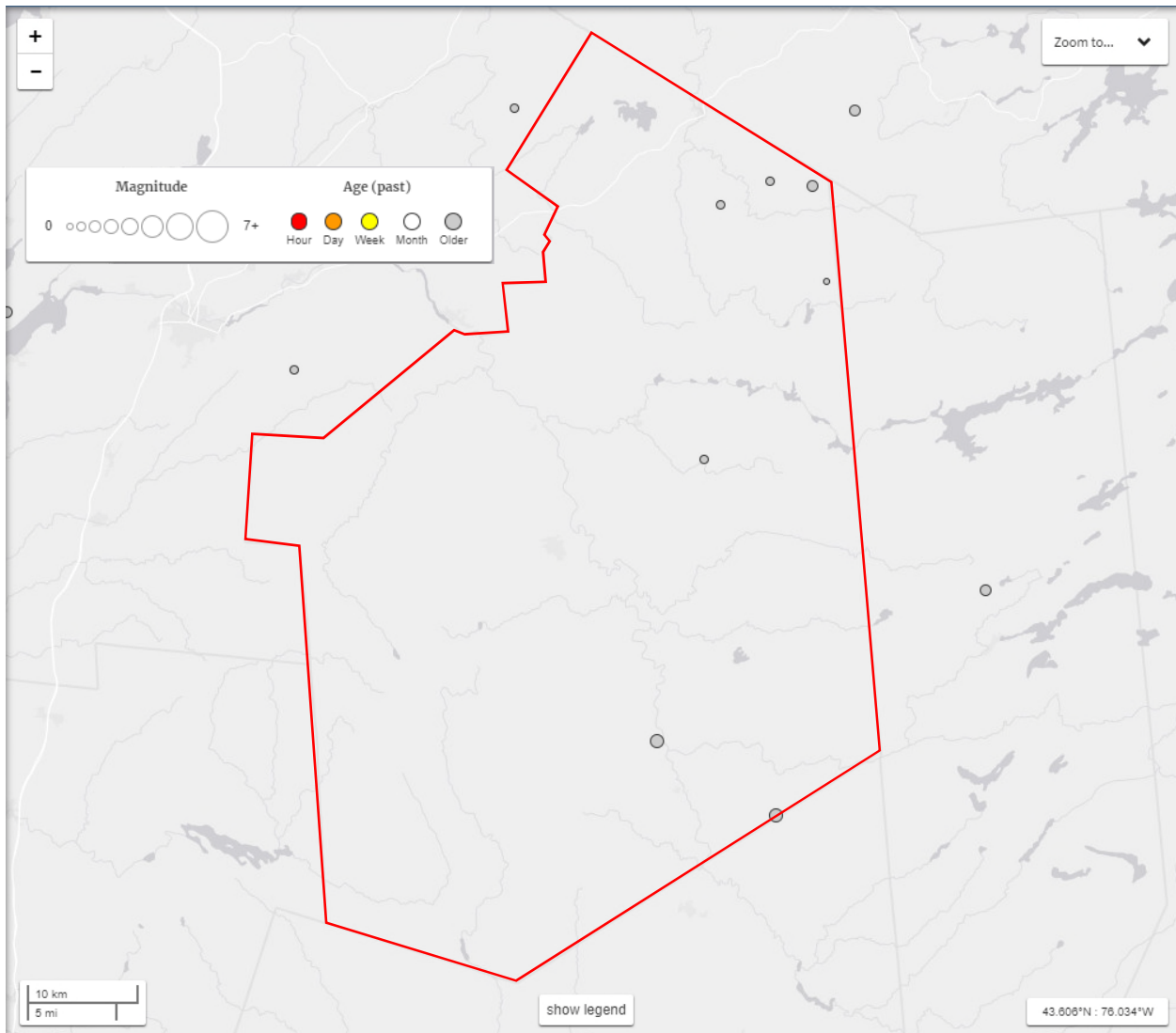
The Lamont-Doherty Cooperative Seismographic Network (LCSN) monitors earthquakes that occur primarily in the northeastern United States. The goal of the project is to compile a complete earthquake catalog for this region, to assess the earthquake hazards, and to study the causes of the earthquakes in the region. The LCSN operates 52 seismographic stations in the following seven states: Connecticut, Delaware, Maryland, New Jersey, New York, Pennsylvania, and Vermont. There are no seismic stations in Lewis County; however, there are several within the vicinity of the County (LCSN 2014). In addition to the Lamont-Doherty Seismic Stations, the USGS operates a global network of seismic stations (GSN) to monitor seismic activity. While no seismic stations are in New York State, nearby stations are positioned in State College, Pennsylvania and Oak Ridge, Massachusetts. The Advanced National Seismic System (ANSS) is also run by USGS. When earthquakes strike, ANSS delivers real-time information, providing situational awareness for emergency response personnel. In regions with sufficient seismic stations, that information includes –within minutes–a ShakeMap showing the distribution of potentially damaging ground shaking, information used to target post-earthquake response efforts. ANSS stations are operated within the State at Lake Ozonia and Binghamton (USGS 2018).

Figure 5.4.3-7 illustrates historic earthquake epicenters across Lewis County and the surrounding area between 1950 and 2016. According to this figure, there are have been seven earthquakes with epicenters in Lewis County. In addition to these earthquakes in Lewis County, there have been numerous events originating outside of New York State that have been felt within the State. According to the NYS HMP, such events are considered significant for hazard mitigation planning because they could produce damage within the State in certain situations (NYS DHSES 2014). For details regarding these events, please refer to Table 5.4.3-6.





Figure 5.4.3-7. Earthquake Epicenters in Lewis County and the Surrounding Area, 1950 – 2016



Source: USGS 2016d  
Note: Lewis County is outlined in red.

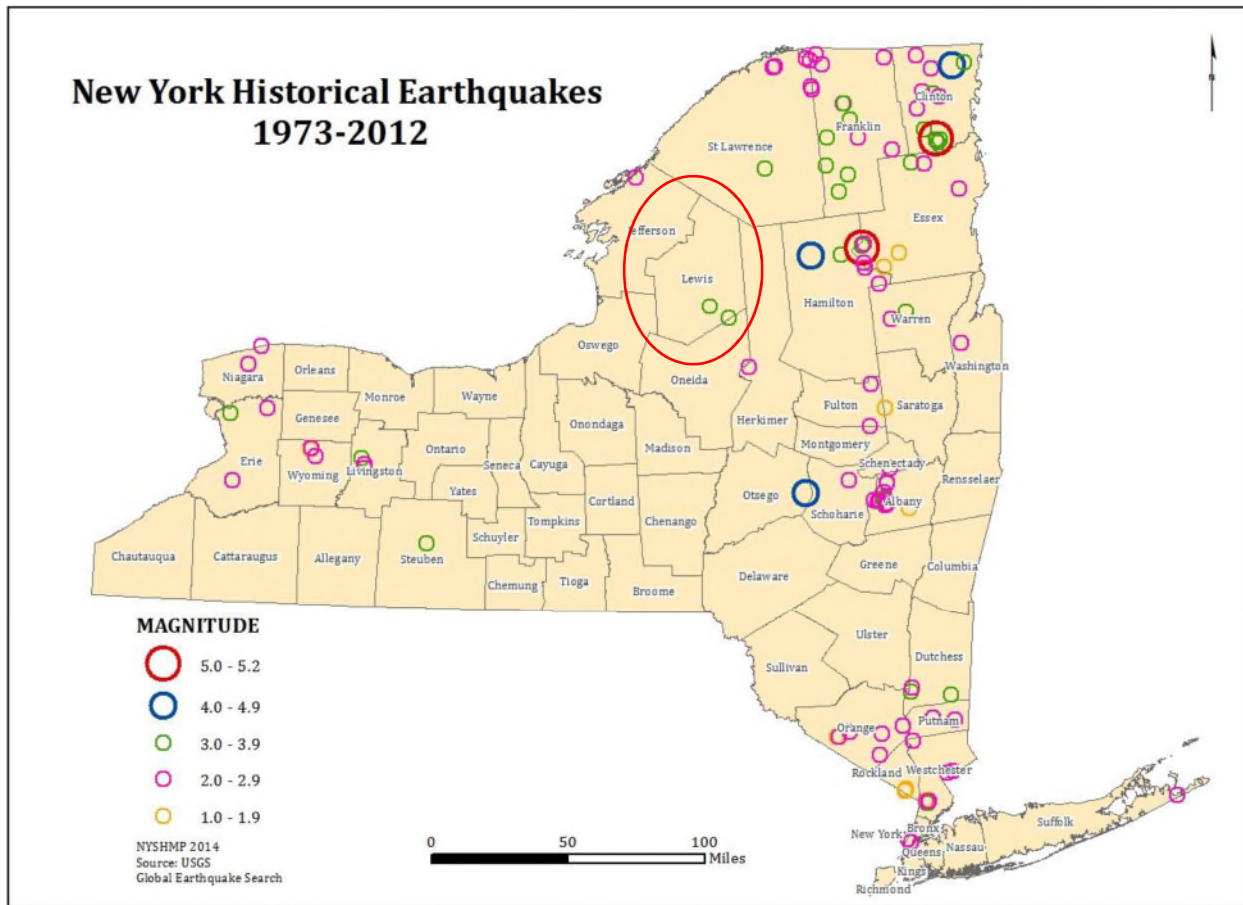
### Previous Occurrences and Losses

Many sources provided historical information regarding previous occurrences and losses associated with earthquakes throughout New York State. Therefore, with so many sources reviewed for this HMP, loss and impact information for many events could vary depending on the sources. According to the New York State 2014 HMP, between 1973 and 2012, 189 earthquakes had epicenters in New York State. Of those 189 earthquakes, four were reported in Lewis County. Figure 5.4.3-8 shows historical earthquakes in New York State from 1973-2012.





Figure 5.4.3-8. Earthquake Epicenters in New York State, 1950 – 2012



Source: NYS DHSES 2014

Note: Lewis County is circled in red

Between 1954 and 2018, New York State was included in one earthquake-related major disaster (DR) or emergency (EM) declaration (DR-1415). Generally, these disasters cover a wide region of the State; therefore, they may have impacted many counties. However, not all counties were included in the disaster declaration. Lewis County was not included in any DRs or EMs (FEMA 2018).

For this HMP, known earthquake events that have impacted New York State and Lewis County between 2010 and 2018 are identified in Table 5.4.3-6. For events prior to 2010, refer to the 2010 version of the HMP. Please note that many sources were researched for historical information regarding earthquake events in Lewis County; therefore, Table 5.4.3-6 may not include all earthquake events that have impacted the County. Additionally, not all sources may have been identified or researched. Loss and impact information could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP update.



Table 5.4.3-6. Earthquake Events Impacting Lewis County, 2010 to 2018

Dates of Event	Event Type	Location	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
June 23, 2010	Earthquake	Ontario-Quebec border	N/A	N/A	A magnitude 5.4 earthquake at the Ontario-Quebec border region in Canada was felt throughout the Northeast, including Lewis County.
August 23, 2011	Earthquake	Richmond, Virginia	N/A	N/A	A magnitude 5.8 earthquake centered northwest of Richmond, Virginia was felt throughout the East Coast. Shaking was felt in Lewis County.
May 17, 2013	Earthquake	Shawville, Canada	N/A	N/A	A magnitude 5.1 earthquake centered north-northeast of Shawville, Canada was felt throughout the Northeast, including Lewis County.
November 27, 2017	Earthquake	Lowville, NY	N/A	N/A	A magnitude 1.8 earthquake was centered just east northeast of Lowville.

Source(s): NYS DHSES, 2014; USGS 2016d; FEMA 2016  
 DR Major Disaster Declaration (FEMA)  
 FEMA Federal Emergency Management Agency  
 N/A Not Applicable  
 NY New York  
 USGS U.S. Geological Survey

### Probability of Future Events

Earthquake hazard maps illustrate the distribution of earthquake shaking levels that have a certain probability of occurring over a given time period. According to the USGS, in 2014 (the date of the most recent analysis), Lewis County had a PGA of 3-5%g for earthquakes with a 10-percent probability of occurring within 50 years.

The New York State Disaster Preparedness Commission (NYS DPC) indicates that the earthquake hazard in New York State is often understated because other natural hazards occur more frequently (for example: hurricanes, tornadoes, and flooding) and are much more visible. However, the potential for earthquakes does exist across the entire northeastern United States, and New York State is no exception (NYS DHSES 2014).

Earlier in this section, the identified hazards of concern for Lewis County were ranked. NYS DHSES conducts a similar ranking process for hazards that affect the State. The probability of occurrence, or likelihood of the event, is one parameter used for ranking hazards. Based on historical records and input from the Planning Committee, the probability of occurrence for earthquakes in the County is considered “frequent” (hazard event is likely to occur within 25 years). However, for the risk ranking calculation, earthquake was considered “occasional” (hazard event is likely to occur within 100 years), because while the likelihood meets the criteria for probability, the estimated impacts are minor. It is anticipated that the County will experience indirect impacts from earthquakes that may affect the general building stock and the local economy and may induce secondary hazards such ignite fires and cause utility failure.

### Impact of Climate Change

The impacts of global climate change on earthquake probability are unknown. Some scientists say that melting glaciers could induce tectonic activity. As ice melts and water runs off, tremendous amounts of weight are shifted on the earth’s crust. As newly freed crust returns to its original, pre-glacier shape, it could cause seismic plates to slip and stimulate volcanic activity according to research into prehistoric earthquakes and volcanic activity. NASA and USGS scientists found that retreating glaciers in southern Alaska may be opening the way for future earthquakes (NASA 2004).



Secondary impacts of earthquakes could be magnified by climate change. Soils saturated by repetitive storms could experience liquefaction during seismic activity due to the increased saturation. Dams storing increased volumes of water due to changes in the hydrograph could fail during seismic events. There are currently no models available to estimate these impacts.

### 5.4.3.2 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed or vulnerable in the identified hazard area. For the earthquake hazard, the entire County has been identified as exposed. Therefore, all assets in Lewis County (population, structures, critical facilities, and lifelines), as described in the County Profile (Section 4), are potentially vulnerable. The following section includes an evaluation and estimation of the potential impact of the earthquake hazard on Lewis County, including the following:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on: (1) life, health, and safety of residents, (2) general building stock, (3) critical facilities, (4) economy, and (5) future growth and development
- Change of vulnerability as compared to that presented in the 2010 Lewis County Hazard Mitigation Plan
- Effect of climate change on vulnerability
- Further data collections that will assist understanding this hazard over time

#### Overview of Vulnerability

Earthquakes usually occur without warning and can impact areas a great distance from their point of origin. The extent of damage depends on the density of population and the building and infrastructure construction in the area shaken by the quake. Some areas may be more vulnerable than others based on soil type, the age of the buildings, and building codes in place. Compounding the potential for damage, Building Officials Code Administration (BOCA) historically used in the Northeast were developed to address local concerns including heavy snow loads and wind; seismic requirements for design criteria are not as stringent compared to the West Coast's reliance on the more seismically-focused Uniform Building Code). As such, a smaller earthquake in the Northeast can cause more structural damage than if it occurred out west.

The entire population and general building stock inventory of the County is at risk of being damaged or experiencing losses due to impacts of an earthquake. Potential losses associated with the earth shaking were calculated for Lewis County for three probabilistic earthquake events: the 100-year, 250-year, and 1,000-year MRP. The impacts on population, existing structures, critical facilities, and the economy within Lewis County are presented below, following a summary of the data and methodology used.

#### Data and Methodology

A probabilistic assessment was conducted for Lewis County for the 100-year, 250-year, and 1,000-year MRPs through a Level 2 analysis in HAZUS-MH 4.2 to analyze the earthquake hazard and provide a range of loss estimates for Lewis County. The probabilistic method uses information from historic earthquakes and inferred faults, locations, and magnitudes, and computes the probable ground shaking levels that may be experienced during a recurrence period by Census Tract. According to the NYCEM, probabilistic estimates are best for urban planning, land use, zoning and seismic building code regulations (Tantala et al., 2003). The default assumption is a magnitude 7 earthquake for all return periods. In addition, an annualized loss run was also conducted in HAZUS-MH 4.2 to estimate the annualized general building stock dollar losses for Lewis County.



Ground shaking is the primary cause of earthquake damage to man-made structures and soft soils amplify ground shaking. One contributor to the site amplification is the velocity at which the rock or soil transmits shear waves (S-waves). The NEHRP developed five soil classifications defined by their shear-wave velocity that impact the severity of an earthquake. The soil classification system ranges from A to E, where A represents hard rock that reduces ground motions from an earthquake and E represents soft soils that amplify and magnify ground shaking and increase building damage and losses.

As illustrated in Figure 5.4.3-5 earlier in this section, Lewis County is made up primarily of areas of rock or firm ground (B) while smaller areas of dense soil/soft rock (C), stiff/soft soils (D), and soft soils (E) are located throughout the County. When unchanged, HAZUS-MH default soil types are class “D”. However, for this analysis HAZUS-MH was updated with the specific NEHRP soil types for Lewis County as provided by NYS DHSES.

In addition to the probabilistic scenarios mentioned, an annualized loss run was conducted in HAZUS 2.1 to estimate the annualized general building stock dollar losses for the County. The annualized loss methodology combines the estimated losses associated with ground shaking for eight return periods: 100-year, 250-year, 500-year, 750-year, 1000-year, 1500-year, 2000-year, and 2500-year, which are based on values from the USGS seismic probabilistic curves. Annualized losses are useful for mitigation planning because they provide a baseline upon which to (1) compare the risk of one hazard across multiple jurisdictions and (2) compare the degree of risk of all hazards for each participating jurisdiction.

As noted in the HAZUS-MH Earthquake User Manual ‘*Uncertainties are inherent in any loss estimation methodology. They arise in part from incomplete scientific knowledge concerning earthquakes and their effects upon buildings and facilities. They also result from the approximations and simplifications that are necessary for comprehensive analyses. Incomplete or inaccurate inventories of the built environment, demographics, and economic parameters add to the uncertainty. These factors can result in a range of uncertainty in loss estimates produced by the HAZUS Earthquake Model, possibly at best a factor of two or more.*’ However, HAZUS’ potential loss estimates are acceptable for the purposes of this HMP.

The occupancy classes available in HAZUS-MH 4.2 were condensed into the following categories (residential, commercial, industrial, agricultural, religious, government, and educational) to facilitate the analysis and the presentation of results. Residential loss estimates address both multi-family and single-family dwellings. Impacts to critical facilities and utilities were also evaluated.

Data used to assess this hazard include data available in the HAZUS-MH 4.2 earthquake model, USGS data, data provided by NYS DHSES, professional knowledge, and information provided by the County’s Planning Committee.

HAZUS-MH 4.2 generates results at the U.S. Census Tract level. Boundaries of census tracts are not always coincident with town and village boundaries in Lewis County. The percent of total municipal replacement cost value for each tract was calculated and used to estimate the damages at the jurisdictional level instead of the Census Tract level.

### Impacts on Life, Health, and Safety

Overall, the entire population of Lewis County is exposed to an earthquake event. According to the 2010 U.S. Census, Lewis County had a population of 27,087 people. Impacts of an earthquake on life, health, and safety depend on severity of the event. Risk to public safety and loss of life from an earthquake in the County is minimal. However, a higher risk to public safety is posed within interiors of buildings from



structural damage or people walking below building ornamentation and chimneys that may be loose and fall as a result of an earthquake.

Populations considered most vulnerable are within the built environment, particularly near unreinforced masonry construction. In addition, the vulnerable population includes the elderly (persons over age 65) and individuals living below the census poverty threshold. These socially vulnerable populations are most susceptible based on a number of factors, including their lower physical and financial ability to react or respond during a hazard and the locations and construction quality of their housing.

An exposure analysis occurred, based on NEHRP soils data and 2010 U.S. Census population data. As noted earlier, NEHRP soil classes D and E can amplify ground shaking to damaging levels even during a moderate earthquake, and thus increase risk to the population. Populations within municipalities on NEHRP Class D and E soils were calculated and are listed in Table 5.4.3-7 below. Overall, approximately 29-percent of the County’s population is located on NEHRP Class D and E soils.

**Table 5.4.3-7. Approximate Populations on NEHRP "D" and "E" Soils**

Municipality	Total Population (2010 U.S. Census)	Population NEHRP Class "D" and "E" Soils	
		Total Population Exposed	Percent of Population Exposed
Castorland (V)	351	123	35.0%
Constableville (V)	242	48	19.8%
Copenhagen (V)	801	0	0.0%
Croghan (T)	2,751	1,804	65.6%
Croghan (V)	618	595	96.3%
Denmark (T)	1,708	344	20.1%
Diana (T)	1,709	889	52.0%
Greig (T)	1,199	349	29.1%
Harrisburg (T)	437	9	2.1%
Lewis (T)	854	47	5.5%
Leyden (T)	1,303	83	6.4%
Lowville (T)	1,512	298	19.7%
Lowville (V)	3,470	0	0.0%
Lyons Falls	566	245	43.3%
Lyonsdale (T)	982	347	35.3%
Martinsburg (T)	1,433	132	9.2%
Montague (T)	78	0	0.0%
New Bremen (T)	2,430	1,334	54.9%
Osceola (T)	229	35	15.3%
Pinckney (T)	329	0	0.0%
Port Leyden	672	121	18.0%
Turin (T)	529	78	14.7%
Turin (V)	232	0	0.0%





Municipality	Total Population (2010 U.S. Census)	Population NEHRP Class "D" and "E" Soils	
		Total Population Exposed	Percent of Population Exposed
Watson (T)	1,881	930	49.4%
West Turin (T)	771	39	5.1%
<b>Lewis County</b>	<b>27,087</b>	<b>7,850</b>	<b>29.0%</b>

Sources: NYS DHSES 2008, U.S. Census 2010.

Note: NEHRP National Earthquake Hazard Reduction Program

### Impact on General Building Stock

After considering the population vulnerable to the earthquake hazard, the value of general building stock exposed to and damaged by 100-year, 250- and 1,000-year MRP earthquake events was evaluated. In addition, annualized losses were calculated using HAZUS-MH 4.2. The entire County’s general building stock is considered at risk and exposed to this hazard.

As stated earlier, soft soils (NEHRP soil classed D and E) can amplify ground shaking to damaging levels even in a moderate earthquake (Tantala et al., 2003). Therefore, buildings located on NEHRP soil classes D and E have an increased risk of damages from an earthquake. Table 5.4.3-8 summarizes the number and value of buildings in Lewis County on the approximately located NEHRP soils classes D and E.

**Table 5.4.3-8. Number and Replacement Cost Value of Buildings within NEHRP ‘D’ and ‘E’ Soils**

Municipality	Total Number of Buildings	Total Replacement Cost Value (Structure and Contents)	Buildings NEHRP Class "D" and "E" Soils		
			Number	RCV	% of Total RCV
Castorland (V)	215	\$34,034,000	70	\$7,807,000	22.9%
Constableville (V)	304	\$41,682,000	75	\$8,484,000	20.4%
Copenhagen (V)	1,413	\$140,717,000	119	\$0	0.0%
Croghan (T)	3,748	\$374,956,000	2,222	\$214,665,000	57.3%
Croghan (V)	487	\$75,012,000	466	\$73,500,000	98.0%
Denmark (T)	919	\$205,546,000	297	\$27,723,000	13.5%
Diana (T)	2,998	\$334,443,000	1,444	\$143,293,000	42.8%
Greig (T)	2,630	\$269,742,000	392	\$47,815,000	17.7%
Harrisburg (T)	645	\$71,710,000	3	\$1,029,000	1.4%
Lewis (T)	1,408	\$109,401,000	139	\$6,375,000	5.8%
Leyden (T)	1,745	\$130,509,000	163	\$12,750,000	9.8%
Lowville (T)	1,449	\$210,155,000	233	\$58,224,000	27.7%
Lowville (V)	2,067	\$1,019,570,000	0	\$1,975,000	0.2%
Lyons Falls	540	\$70,606,000	243	\$33,464,000	47.4%
Lyonsdale (T)	1,442	\$157,699,000	558	\$34,278,000	21.7%
Martinsburg (T)	1,999	\$193,202,000	178	\$12,931,000	6.7%
Montague (T)	442	\$50,885,000	2	\$0	0.0%
New Bremen (T)	2,467	\$216,271,000	1,543	\$112,515,000	52.0%
Osceola (T)	1,104	\$84,863,000	32	\$4,799,000	5.7%



**Table 5.4.3-8. Number and Replacement Cost Value of Buildings within NEHRP ‘D’ and ‘E’ Soils**

Municipality	Total Number of Buildings	Total Replacement Cost Value (Structure and Contents)	Buildings NEHRP Class "D" and "E" Soils		
			Number	RCV	% of Total RCV
Pinckney (T)	587	\$76,814,000	3	\$0	0.0%
Port Leyden	501	\$64,603,000	75	\$13,112,000	20.3%
Turin (T)	1,007	\$104,517,000	189	\$10,387,000	9.9%
Turin (V)	217	\$32,206,000	11	\$0	0.0%
Watson (T)	3,022	\$311,194,000	1,411	\$108,488,000	34.9%
West Turin (T)	1,700	\$187,251,000	74	\$6,262,000	3.3%
<b>Lewis County</b>	<b>35,056</b>	<b>\$4,567,588,000</b>	<b>9,942</b>	<b>\$939,876,000</b>	<b>20.6%</b>

Sources: NYS DHSES 2008, HAZUS 4.2, Lewis County

Note: RCV is the estimated replacement cost value of both structure and contents.

According to NYCEM, where earthquake risks and mitigation were evaluated in the New York, New Jersey, and Connecticut region, most damage and loss caused by an earthquake is directly or indirectly the result of ground shaking (NYCEM, 2003). NYCEM indicates there is a strong correlation between PGA and the damage a building might experience. The HAZUS-MH model is based on the best available earthquake science and aligns with these statements. HAZUS-MH 4.2 methodology and model were used to analyze the earthquake hazard for the general building stock for Lewis County. See Figure 5.4.3-1 through Figure 5.4.3-3 earlier in this profile which illustrate the geographic distribution of PGA (g) across the County for 100-year, 250-year, and 1,000-year MRP events at the Census Tract level.

In addition, according to NYCEM, a building’s construction determines how well it can withstand the force of an earthquake. The NYCEM report indicates that unreinforced masonry buildings are most at risk during an earthquake because the walls are prone to collapse outward, whereas steel and wood buildings absorb more of the earthquake’s energy. Additional attributes that contribute to a building’s capability to withstand an earthquake’s force include its age, number of stories, and quality of construction. HAZUS-MH considers building construction and the age of buildings as part of the analysis.

Potential building damage was evaluated by HAZUS-MH 4.2 across the following damage categories (none, slight, moderate, extensive, and complete). Table 5.4.3-9 provides definitions of these five categories of damage for a light wood-framed building; definitions for other building types are included in HAZUS-MH technical manual documentation. General building stock damage for these damage categories by occupancy class and building type on a County-wide basis is summarized below for the 100-year, 250-year, and 1,000-year events.

**Table 5.4.3-9. Example of Structural Damage State Definitions for a Light Wood-Framed Building**

Damage Category	Description
Slight	Small plaster or gypsum-board cracks at corners of door and window openings and wall-ceiling intersections; small cracks in masonry chimneys and masonry veneer.
Moderate	Large plaster or gypsum-board cracks at corners of door and window openings; small diagonal cracks across shear wall panels exhibited by small cracks in stucco and gypsum wall panels; large cracks in brick chimneys; toppling of tall masonry chimneys.
Extensive	Large diagonal cracks across shear wall panels or large cracks at plywood joints; permanent lateral movement of floors and roof; toppling of most brick chimneys; cracks in foundations; splitting of wood sill plates and/or slippage of structure over foundations; partial collapse of room-over-garage or other soft-story configurations.
Complete	Structure may have large permanent lateral displacement, may collapse, or be in imminent danger of collapse due to cripple wall failure or the failure of the lateral load resisting system; some structures may slip and fall off the foundations; large foundation cracks.



*Source: HAZUS-MH Technical Manual*

Table 5.4.3-10 shows the estimated buildings damaged by occupancy class for both the 100-year and 250-year MRP earthquake events. Table 5.4.3-11 shows the estimated buildings damaged by occupancy class for the 1,000-year MRP earthquake event.

Table 5.4.3-12 and Table 5.4.3-13 summarize the damage estimated for the 100-year, 250-year, and 1,000-year MRP earthquake events by Census Tract. Damage loss estimates include structural and non-structural damage to the building and loss of contents.



**Table 5.4.3-10. Estimated Buildings Damaged by General Occupancy for 100-year and 250-year MRP Earthquake Events**

Category	Average Damage State									
	100-Year MRP					250-Year MRP				
	None	Slight	Moderate	Extensive	Complete	None	Slight	Moderate	Extensive	Complete
Residential	14,015 (47.4%)	22 (< 1%)	0 (0%)	0 (0%)	0 (0%)	13,853 (46.8%)	148 (< 1%)	38 (< 1%)	3 (< 1%)	0 (0%)
Commercial	361 (1.2%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	355 (< 1%)	6 (< 1%)	2 (< 1%)	0 (0%)	0 (0%)
Industrial	158 (< 1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	155 (< 1%)	2 (< 1%)	1 (< 1%)	0 (0%)	0 (0%)
Education, Government, Religious and Agricultural	184 (< 1%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	181 (< 1%)	2 (< 1%)	1 (< 1%)	0 (0%)	0 (0%)

Source: HAZUS-MH 4.2

**Table 5.4.3-11. Estimated Buildings Damaged by General Occupancy for 1,000-year MRP Earthquake Events**

Category	Average Damage State				
	1,000-Year MRP				
	None	Slight	Moderate	Extensive	Complete
Residential	13,206 (44.6%)	622 (2.1%)	193 (< 1%)	18 (< 1%)	2 (< 1%)
Commercial	332 (1.1%)	20 (< 1%)	8 (< 1%)	1 (< 1%)	0 (0%)
Industrial	146 (< 1%)	8 (< 1%)	3 (< 1%)	0 (0%)	0 (0%)
Education, Government, Religious and Agricultural	171 (< 1%)	10 (< 1%)	3 (< 1%)	1 (< 1%)	0 (0%)

Source: HAZUS-MH 4.2



**Table 5.4.3-12. Estimated Value (Building and Contents) Damaged by the 100-year, 250- and 1,000-Year MRP Earthquake Events**

Municipality	Total Replacement Cost Value (Structure and Contents)	Estimated Total Damages*				Percent of Total Building and Contents **			
		Annualized Loss	100-Year	250-Year	1,000-Year	Annualized Loss	100-Year	250-Year	1,000-Year
Castorland (V)	\$34,034,000	\$277	\$0	\$8,294	\$70,277	< 1%	0%	< 1%	< 1%
Constableville (V)	\$41,682,000	\$190	\$0	\$5,797	\$48,208	< 1%	0%	< 1%	< 1%
Copenhagen (V)	\$140,717,000	\$1,147	\$0	\$34,291	\$290,566	< 1%	0%	< 1%	< 1%
Croghan (T)	\$374,956,000	\$4,271	\$22,133	\$127,926	\$1,077,205	< 1%	< 1%	< 1%	< 1%
Croghan (V)	\$75,012,000	\$861	\$4,443	\$25,697	\$217,569	< 1%	< 1%	< 1%	< 1%
Denmark (T)	\$205,546,000	\$1,675	\$0	\$50,089	\$424,431	< 1%	0%	< 1%	< 1%
Diana (T)	\$334,443,000	\$3,777	\$19,666	\$113,591	\$950,646	< 1%	< 1%	< 1%	< 1%
Greig (T)	\$269,742,000	\$2,701	\$5,698	\$77,907	\$683,359	< 1%	< 1%	< 1%	< 1%
Harrisburg (T)	\$71,710,000	\$539	\$0	\$16,121	\$136,668	< 1%	0%	< 1%	< 1%
Lewis (T)	\$109,401,000	\$500	\$0	\$15,216	\$126,529	< 1%	0%	< 1%	< 1%
Leyden (T)	\$130,509,000	\$596	\$0	\$18,152	\$150,942	< 1%	0%	< 1%	< 1%
Lowville (T)	\$210,155,000	\$1,653	\$0	\$49,427	\$418,913	< 1%	0%	< 1%	< 1%
Lowville (V)	\$1,019,570,000	\$7,887	\$0	\$235,811	\$1,998,807	< 1%	0%	< 1%	< 1%
Lyons Falls	\$70,606,000	\$405	\$0	\$11,945	\$102,980	< 1%	0%	< 1%	< 1%
Lyonsdale (T)	\$157,699,000	\$1,443	\$0	\$40,503	\$368,740	< 1%	0%	< 1%	< 1%
Martinsburg (T)	\$193,202,000	\$885	\$0	\$26,549	\$225,602	< 1%	0%	< 1%	< 1%
Montague (T)	\$50,885,000	\$217	\$0	\$6,525	\$55,394	< 1%	0%	< 1%	< 1%
New Bremen (T)	\$216,271,000	\$2,492	\$12,910	\$74,389	\$628,756	< 1%	< 1%	< 1%	< 1%
Osceola (T)	\$84,863,000	\$388	\$0	\$11,803	\$98,149	< 1%	0%	< 1%	< 1%
Pinckney (T)	\$76,814,000	\$549	\$0	\$16,426	\$139,302	< 1%	0%	< 1%	< 1%
Port Leyden (V)	\$64,603,000	\$389	\$0	\$11,405	\$99,005	< 1%	0%	< 1%	< 1%
Turin (T)	\$104,517,000	\$467	\$0	\$14,164	\$118,546	< 1%	0%	< 1%	< 1%
Turin (V)	\$32,206,000	\$147	\$0	\$4,479	\$37,248	< 1%	0%	< 1%	< 1%
Watson (T)	\$311,194,000	\$3,650	\$19,367	\$109,290	\$911,818	< 1%	< 1%	< 1%	< 1%
West Turin (T)	\$187,251,000	\$855	\$0	\$26,044	\$216,568	< 1%	0%	< 1%	< 1%
<b>Lewis County</b>	<b>\$4,567,588,000</b>	<b>\$37,962</b>	<b>\$84,218</b>	<b>\$1,131,840</b>	<b>\$9,596,227</b>	<b>&lt; 1%</b>	<b>&lt; 1%</b>	<b>&lt; 1%</b>	<b>&lt; 1%</b>

Source: HAZUS-MH 4.2







\*Total Damages is sum of damages for all occupancy classes (residential, commercial, industrial, agricultural, educational, religious, and government).

**Table 5.4.3-13. Estimated Value (Building and Contents) Damaged by the 100-year, 250-year, and 1,000-Year MRP Earthquake Events (Continued)**

Municipality	Total Replacement Cost Value (Building and Contents)	Estimated Residential Damage			Estimated Commercial Damage		
		100-Year	250-Year	1,000-Year	100-Year	250-Year	1,000-Year
Castorland (V)	\$34,034,000	\$0	\$4,559	\$35,706	\$0	\$2,119	\$19,479
Constableville (V)	\$41,682,000	\$0	\$5,011	\$40,748	\$0	\$214	\$1,976
Copenhagen (V)	\$140,717,000	\$0	\$18,849	\$147,632	\$0	\$8,762	\$80,537
Croghan (T)	\$374,956,000	\$17,405	\$102,541	\$838,656	\$1,409	\$8,548	\$74,452
Croghan (V)	\$75,012,000	\$3,592	\$21,225	\$175,343	\$253	\$1,550	\$13,654
Denmark (T)	\$205,546,000	\$0	\$27,532	\$215,646	\$0	\$12,798	\$117,641
Diana (T)	\$334,443,000	\$14,982	\$87,967	\$710,837	\$1,419	\$8,513	\$73,269
Greig (T)	\$269,742,000	\$5,014	\$66,282	\$563,749	\$232	\$5,553	\$53,201
Harrisburg (T)	\$71,710,000	\$0	\$9,268	\$73,210	\$0	\$3,861	\$35,450
Lewis (T)	\$109,401,000	\$0	\$13,152	\$106,951	\$0	\$561	\$5,187
Leyden (T)	\$130,509,000	\$0	\$15,690	\$127,586	\$0	\$669	\$6,188
Lowville (T)	\$210,155,000	\$0	\$27,705	\$217,813	\$0	\$12,288	\$112,908
Lowville (V)	\$1,019,570,000	\$0	\$133,421	\$1,050,770	\$0	\$57,839	\$531,324
Lyons Falls	\$70,606,000	\$0	\$10,107	\$84,631	\$0	\$686	\$6,547
Lyonsdale (T)	\$157,699,000	\$0	\$33,109	\$290,581	\$0	\$3,640	\$35,446
Martinsburg (T)	\$193,202,000	\$0	\$20,959	\$173,319	\$0	\$2,706	\$24,367
Montague (T)	\$50,885,000	\$0	\$5,443	\$45,222	\$0	\$470	\$4,189
New Bremen (T)	\$216,271,000	\$10,611	\$62,465	\$515,937	\$692	\$4,249	\$37,667
Osceola (T)	\$84,863,000	\$0	\$10,202	\$82,962	\$0	\$435	\$4,023
Pinckney (T)	\$76,814,000	\$0	\$9,718	\$77,161	\$0	\$3,760	\$34,496
Port Leyden	\$64,603,000	\$0	\$9,611	\$80,935	\$0	\$700	\$6,708
Turin (T)	\$104,517,000	\$0	\$12,110	\$99,122	\$0	\$677	\$6,155
Turin (V)	\$32,206,000	\$0	\$3,872	\$31,485	\$0	\$165	\$1,527
Watson (T)	\$311,194,000	\$17,108	\$98,701	\$810,106	\$756	\$4,693	\$43,123



Table 5.4.3-13. Estimated Value (Building and Contents) Damaged by the 100-year, 250-year, and 1,000-Year MRP Earthquake Events (Continued)

Municipality	Total Replacement Cost Value (Building and Contents)	Estimated Residential Damage			Estimated Commercial Damage		
		100-Year	250-Year	1,000-Year	100-Year	250-Year	1,000-Year
West Turin (T)	\$187,251,000	\$0	\$22,512	\$183,057	\$0	\$960	\$8,878
<b>Lewis County</b>	<b>\$4,567,588,000</b>	<b>\$68,713</b>	<b>\$832,011</b>	<b>\$6,779,167</b>	<b>\$4,761</b>	<b>\$146,415</b>	<b>\$1,338,393</b>

Source: HAZUS-MH 4.2



HAZUS-MH approximately \$84,218 in damages to the building stock as a result of the 100-year earthquake event. It is also estimated that there would be over \$1.1 million in damages to buildings in the County as a result of a 250-year earthquake event. This includes structural damage, non-structural damage, and loss of contents, representing less than one-percent of the total replacement value for general building stock in Lewis County. For a 1,000-year MRP earthquake event, HAZUS-MH estimates over \$9.5 million, less than one-percent of the total general building stock replacement value. Residential and commercial buildings account for most of the damage for earthquake events.

Earthquakes can cause secondary hazard events such as fires. HAZUS-MH estimates there will be no ignitions anticipated as a result of the 100-year, 250-year, and 1,000-year MRP events.

**Impact on Critical Facilities**

After considering the general building stock exposed to, and damaged by, 100-year, 250- and 1,000-year MRP earthquake events, critical facilities were evaluated. All critical facilities (essential facilities, transportation systems, lifeline utility systems, high-potential loss facilities and user-defined facilities) in Lewis County are considered exposed and potentially vulnerable to the earthquake hazard. Refer to subsection “Critical Facilities” in Section 4 (County Profile) of this Plan for a complete inventory of critical facilities in the County.

To estimate critical facility exposure to the potential impacts of an earthquake an exposure analysis was performed using the NEHRP soils data to determine the critical facility’s location in relation to these areas. The critical facilities and utilities in the areas were calculated and summarized in Table 5.4.3-14 below.

**Table 5.4.3-14. Numbers of Critical Facilities Located on Soils of NEHRP Class D or E**

Municipality	Facility Types																			
	Airport	Comm Facility	County Building	Cultural	Dam	DPW	Electric Power Facility	Fire Station	Highway Garage	Library	Medical Care	Municipal Hall	Nursing Home	Post Office	Potable Pump	Reservoir	School	State Government	Wastewater Facility	Wastewater Pump
Castorland (V)	0	0	0	0	0	0	0	1	1	0	1	0	0	1	0	0	1	0	1	0
Constableville (V)	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0
Copenhagen (V)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Croghan (T)	0	2	0	0	9	0	9	1	1	2	2	1	0	0	10	0	1	0	2	0
Croghan (V)	0	1	0	0	1	0	0	1	0	2	0	0	1	0	0	0	0	0	0	2
Denmark (T)	0	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Diana (T)	0	3	0	0	2	0	2	1	4	2	2	0	0	0	0	0	0	1	0	0
Greig (T)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harrisburg (T)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lewis (T)	0	0	0	0	3	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
Leyden (T)	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	1
Lowville (T)	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0
Lowville (V)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	2	0	0	0	1	0
Lyons Falls	0	0	0	2	1	0	1	0	0	2	0	0	0	0	0	0	0	0	0	1



Municipality	Facility Types																			
	Airport	Comm Facility	County Building	Cultural	Dam	DPW	Electric Power Facility	Fire Station	Highway Garage	Library	Medical Care	Municipal Hall	Nursing Home	Post Office	Potable Pump	Reservoir	School	State Government	Wastewater Facility	Wastewater Pump
Lyonsdale (T)	0	1	0	0	4	0	3	0	0	0	0	0	0	0	8	0	0	0	0	0
Martinsburg (T)	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0
Montague (T)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Bremen (T)	1	0	1	0	3	0	3	1	2	0	1	1	0	0	2	1	1	0	0	0
Osceola (T)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pinckney (T)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Port Leyden	0	0	0	0	3	0	3	0	0	0	0	0	1	0	0	0	0	0	1	0
Turin (T)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turin (V)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Watson (T)	0	0	0	0	4	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0
West Turin (T)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Lewis County</b>	<b>1</b>	<b>10</b>	<b>1</b>	<b>2</b>	<b>35</b>	<b>1</b>	<b>23</b>	<b>7</b>	<b>9</b>	<b>8</b>	<b>6</b>	<b>4</b>	<b>6</b>	<b>1</b>	<b>25</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>7</b>	<b>4</b>

Source: NYS DHSES, 2008, Lewis County  
 Note: DPW = Department of Public Works  
 EMS = Emergency Medical Services

HAZUS-MH 4.2 estimates the probability that critical facilities may sustain damage as a result of 100-year, 250- and 1,000-year MRP earthquake events. Additionally, HAZUS-MH estimates percent functionality for each facility days after the event. As a result of a 100-year MRP event, HAZUS-MH 4.2 estimates that emergency facilities (police, fire, EMS, and medical facilities), schools, utilities, and specific facilities identified by Lewis County as critical will be nearly 100 percent functional. Therefore, the impact to critical facilities is not significant for the 100-year event. Table 5.4.3-15 and Table 5.4.3-16 list the percent probability of critical facilities sustaining the damage category as defined by the column heading and percent functionality after the event for the 250-year and 1,000-year MRP earthquake events.

**Table 5.4.3-15. Estimated Damage and Loss of Functionality for Critical Facilities and Utilities for the 250-Year MRP Earthquake Event**

Name	Percent Probability of Sustaining Damage					Percent Functionality			
	None	Slight	Moderate	Extensive	Complete	Day 1	Day 7	Day 30	Day 90
<b>Critical Facilities</b>									
Medical	84-98	2-10	0-5	0-1	<1	83-98	94-99	99-100	99-100
Police	97-98	1-2	<1	<1	0	97-98	99	100	100
Fire	84-97	2-10	0-5	0-1	<1	83-98	94-99	99-100	99-100
EOC	99.4	<1	<1	0	0	99	100	100	100
School	84-98	2-10	1-5	0-1	<1	83-98	94-99	99-100	99-100
<b>Utilities</b>									
Potable Water	96-100	0-3	<1	0	0	98-100	100	100	100
Wastewater	96-100	0-3	<1	0	0	97-100	100	100	100





Name	Percent Probability of Sustaining Damage					Percent Functionality			
	None	Slight	Moderate	Extensive	Complete	Day 1	Day 7	Day 30	Day 90
Gas	100	<1	0	0	0	100	100	100	100
Electric Power	95-100	0-4	0-1	0	0	99-100	100	100	100
Communication	96-100	0-3	<1	0	0	100	100	100	100

Source: HAZUS-MH 4.2

**Table 5.4.3-16. Estimated Damage and Loss of Functionality for Critical Facilities and Utilities for the 1,000-Year MRP Earthquake Event**

Name	Percent Probability of Sustaining Damage					Percent Functionality			
	None	Slight	Moderate	Extensive	Complete	Day 1	Day 7	Day 30	Day 90
<b>Critical Facilities</b>									
Medical	63-91	6-19	3-13	0-4	0-1	63-91	81-67	95-100	97-100
Police	89-90	6-7	3	<1	<1	89-90	96-97	99-100	100
Fire	63-91	6-19	3-13	0-4	<1	63-91	81-97	95-100	97-100
EOC	96	3	<1	<1	0	96	99	99	100
School	63-90	6-19	3-13	0-4	<1	63-90	81-97	95-100	97-100
<b>Utilities</b>									
Potable Water	74-99	0-14	0-11	<1	<1	85-100	98-100	99-100	100
Wastewater	73-99	0-15	0-11	<1	<1	79-99	98-100	99-100	100
Gas	98.8	1	<1	0	0	100	100	100	100
Electric Power	65-99	0-17	0-16	0-2	<1	86-100	96-100	99-100	100
Communication	74-99	0-14	0-11	0-1	<1	94-100	99-100	100	100

Source: HAZUS-MH 4.2

### Impact on Economy

Earthquakes also have impacts on the economy, including: loss of business function, damage to inventory, relocation costs, wage loss and rental loss due to the repair/replacement of buildings. A Level 2 HAZUS-MH analysis estimates the total economic loss associated with each earthquake scenario, which includes building- and lifeline-related losses (transportation and utility losses) based on the available inventory (facility [or GIS point] data only). Direct building losses are the estimated costs to repair or replace the damage caused to the building. This is reported in the “Impact on General Building Stock” subsection discussed earlier in this section. Lifeline-related losses include the direct repair cost to transportation and utility systems and are reported in terms of the probability of reaching or exceeding a specified level of damage when subjected to a given level of ground motion. Additionally, economic loss includes business interruption losses associated with the inability to operate a business due to the damage sustained during the earthquake as well as temporary living expenses for those displaced. These losses are discussed below.

For the 100-year event, HAZUS-MH 4.2 estimates \$29,900 in income loss (wage, rental, relocation, and capital-related losses) and \$80,500 in capital stock losses (structural, non-structural, content, and inventory losses). It is significant to note that for the 250-year event, HAZUS-MH 4.2 estimates the County will incur \$443,300 in income losses (wage, rental, relocation, and capital-related losses) in addition to the 250-year event structural, non-structural, content, and inventory losses (\$1.1 million).

For the 1,000-year event, HAZUS-MH 4.2 estimates the County will incur approximately \$2.4 million in income losses, mainly to the residential and commercial occupancy classes associated with wage, rental, relocation, and capital-related losses. In addition, the 1,000-year event structural, non-structural, content, and inventory losses equate to greater than an estimated \$9.6 million.





Roadway segments and railroad tracks may experience damage due to ground failure and regional transportation and distribution of these materials will be interrupted as a result of an earthquake event. Losses to the community that result from damages to lifelines can be much greater than the cost of repair (HAZUS-MH 4.2 Earthquake User Manual 2016).

Earthquake events can significantly impact road bridges. These are important because they often provide the only access to certain neighborhoods. Since softer soils can generally follow floodplain boundaries, bridges that cross watercourses should be considered vulnerable. A key factor in the degree of vulnerability will be the age of the facility or infrastructure, which will help indicate to which standards the facility was built. HAZUS-MH estimates the long-term economic impacts to the County for 15-years after the earthquake event. In terms of the transportation infrastructure, HAZUS-MH estimates \$90,200 in direct repair costs to highway bridges as a result of the 250-year event and \$2.18 million in direct costs as a result of the 1,000-year event; HAZUS-MH estimates no long-term economic impacts as a result of the 100-year event.

HAZUS-MH 4.2 also estimates the volume of debris that may be generated as a result of an earthquake event to enable the study region to prepare and rapidly and efficiently manage debris removal and disposal. Debris estimates are divided into two categories: (1) reinforced concrete and steel that require special equipment to break it up before it can be transported, and (2) brick, wood, and other debris that can be loaded directly onto trucks with bulldozers (HAZUS-MH 4.2 Earthquake User’s Manual 2016).

For the 100-year MRP event, HAZUS-MH 4.2 estimates approximately 84.8 tons of total debris will be generated. For the 250-year MRP event, HAZUS-MH 4.2 estimates approximately 859.6 tons of debris will be generated. For the 1,000-year MRP event, HAZUS-MH 4.2 estimates over 4,123.9 tons of debris will be generated.

**Table 5.4.3-17. Estimated Debris Generated by the 100-Year, 250-Year, And 1,000-Year MRP Earthquake Events**

Municipality	100-Year		250-Year		1,000-Year	
	Brick/Wood (tons)	Concrete/Steel (tons)	Brick/Wood (tons)	Concrete/Steel (tons)	Brick/Wood (tons)	Concrete/Steel (tons)
Castorland (V)	0.0	0.0	4.7	1.4	20.4	8.5
Constableville (V)	0.0	0.0	4.1	0.9	19.4	5.3
Copenhagen (V)	0.0	0.0	19.6	5.9	84.1	35.1
Croghan (T)	19.3	3.6	76.2	18.3	336.3	112.7
Croghan (V)	3.9	0.7	15.3	3.6	67.9	22.1
Denmark (T)	0.0	0.0	28.7	8.6	122.9	51.3
Diana (T)	17.1	3.4	61.7	13.8	237.8	103.3
Greig (T)	4.6	0.8	48.1	11.0	222.5	69.5
Harrisburg (T)	0.0	0.0	9.5	2.8	41.1	16.5
Lewis (T)	0.0	0.0	10.8	2.2	50.8	14.0
Leyden (T)	0.0	0.0	12.8	2.7	60.6	16.6
Lowville (T)	0.0	0.0	28.6	8.5	123.3	50.6
Lowville (V)	0.0	0.0	137.2	40.5	592.9	241.3
Lyons Falls	0.0	0.0	8.2	1.8	38.3	11.1
Lyonsdale (T)	0.0	0.0	26.1	6.1	121.5	38.8
Martinsburg (T)	0.2	0.0	19.0	4.2	88.3	26.5
Montague (T)	0.0	0.0	4.8	1.0	22.7	6.4



Municipality	100-Year		250-Year		1,000-Year	
	Brick/Wood (tons)	Concrete/Steel (tons)	Brick/Wood (tons)	Concrete/Steel (tons)	Brick/Wood (tons)	Concrete/Steel (tons)
New Bremen (T)	11.1	2.0	44.1	10.2	196.7	63.0
Osceola (T)	0.0	0.0	8.3	1.7	39.4	10.8
Pinckney (T)	0.0	0.0	9.8	2.8	42.9	16.8
Port Leyden	0.0	0.0	7.7	1.7	36.3	10.7
Turin (T)	0.0	0.0	10.1	2.1	47.9	13.3
Turin (V)	0.0	0.0	3.2	0.7	15.0	4.1
Watson (T)	15.8	2.6	63.4	13.7	290.3	86.6
West Turin (T)	0.0	0.0	18.4	3.8	87.0	23.9
<b>Lewis County</b>	<b>71.8</b>	<b>13.1</b>	<b>686.5</b>	<b>173.1</b>	<b>3,065.4</b>	<b>1,058.9</b>

Source: HAZUS-MH 4.2

### Future Growth and Development

As discussed in Section 4, areas targeted for future growth and development have been identified across the County. It is anticipated that the human exposure and vulnerability to earthquake impacts in newly developed areas will be similar to those that currently exist within the County. Current building codes require seismic provisions that should render new construction less vulnerable to seismic impacts than older, existing construction that may have been built to lower construction standards.

New development located in areas with softer NEHRP soil classes may be more vulnerable to the earthquake hazard. Refer to Section 4, and Volume II Section 9 for potential new development and approximate NEHRP soil class areas in Lewis County.

### Change of Vulnerability

Lewis County continues to be vulnerable to the earthquake hazard. The best available data was used for the 2020 HMP update; probabilistic scenarios were evaluated using HAZUS-MH and updated building stock and critical facility inventories were developed and utilized.

### Effect of Climate Change on Vulnerability

Providing projections of future climate change for a specific region is challenging. Some scientists feel that melting glaciers could induce tectonic activity. As ice melts and water runs off, tremendous amounts of weight are shifted on the earth’s crust. As newly freed crust returns to its original, pre-glacier shape, it could cause seismic plates to slip and stimulate volcanic activity according to research into prehistoric earthquakes and volcanic activity. National Aeronautics and Space Administration (NASA) and USGS scientists found that retreating glaciers in southern Alaska might be opening the way for future earthquakes.

Secondary impacts of earthquakes could be magnified by future climate change. Soils saturated by repetitive storms could experience liquefaction during seismic activity because of the increased saturation. Dams storing increased volumes of water from changes in the hydrograph could fail during seismic events. There are currently no models available to estimate these impacts.

### Additional Data and Next Steps

A Level 2 HAZUS-MH earthquake analysis was conducted for Lewis County using the default model data and general building stock, with the exception of the updated critical facility inventories which included user-defined data and NEHRP soil data. Additional data needed to further refine the County’s vulnerability assessment





include: (1) updated demographic data to update the default data in HAZUS-MH; and (2) soil liquefaction data. Additionally, the County can identify unreinforced masonry critical facilities and privately-owned buildings (i.e., residences) using local knowledge and/or pictometry/orthophotos. These buildings may not withstand earthquakes of certain magnitudes and plans to provide emergency response/recovery efforts for these properties can be set in place. Further mitigation actions include training of County and municipal personnel to provide post-hazard event rapid visual damage assessments, increase of County and local debris management and logistic capabilities, and revised regulations to prevent additional construction of non-reinforced masonry buildings.



## 5.4.4 Extreme Temperature

This section provides a profile and vulnerability assessment for the extreme temperature hazard.

### 5.4.4.1 Profile

This section provides profile information including description, extent, location, previous occurrences and losses, and the probability of future occurrences.

#### Description

Extreme temperature includes both heat and cold events, which can have a significant impact on human health, commercial/agricultural businesses and primary and secondary effects on infrastructure (e.g., burst pipes and power failure). What constitutes “extreme cold” or “extreme heat” can vary across different areas of the country, based on what the population is accustomed to.

#### Extreme Cold

Extreme cold events are when temperatures drop well below normal in an area. In regions relatively unaccustomed to winter weather, near freezing temperatures are considered “extreme cold.” Extreme cold temperatures are characterized by the ambient air temperature dropping to approximately 0 degrees Fahrenheit (°F) or below (National Weather Service [NWS] 2015). Extensive exposure to extreme cold temperatures can cause frostbite or hypothermia and can become life threatening. Infants and the elderly are most susceptible to the effects of extreme changes in temperatures. Extreme cold also can cause emergencies in susceptible populations, such as those without shelter, those who are stranded, or those living in poorly insulated homes or homes without heat. Infants and the elderly are particularly at risk; however, anyone can be affected (Centers of Disease Control and Prevention [CDC] 2007). In New York State, extreme cold days are defined to reflect the state's regional climate variations. Extreme cold days in the state are individual days with minimum temperatures at or below 32° F or 0° C (NYSERDA 2014).

Several health hazards are related to extreme cold temperatures and include wind chill, frostbite, and hypothermia.

- *Wind chill* is not the actual temperature but rather how wind and cold feel on exposed skin. As the wind increases, heat is carried away from the body at an accelerated rate, driving down the body temperature.
- *Frostbite* is damage to body tissue caused by extreme cold. A wind chill of -20 °F will cause frostbite in just 30 minutes. Frostbite can cause a loss of feeling and a white or pale appearance in extremities.
- *Hypothermia* is a condition brought on when the body temperature drops to less than 95 °F and it can be deadly. Warning signs of hypothermia include uncontrollable shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness, and apparent exhaustion.

#### Extreme Heat

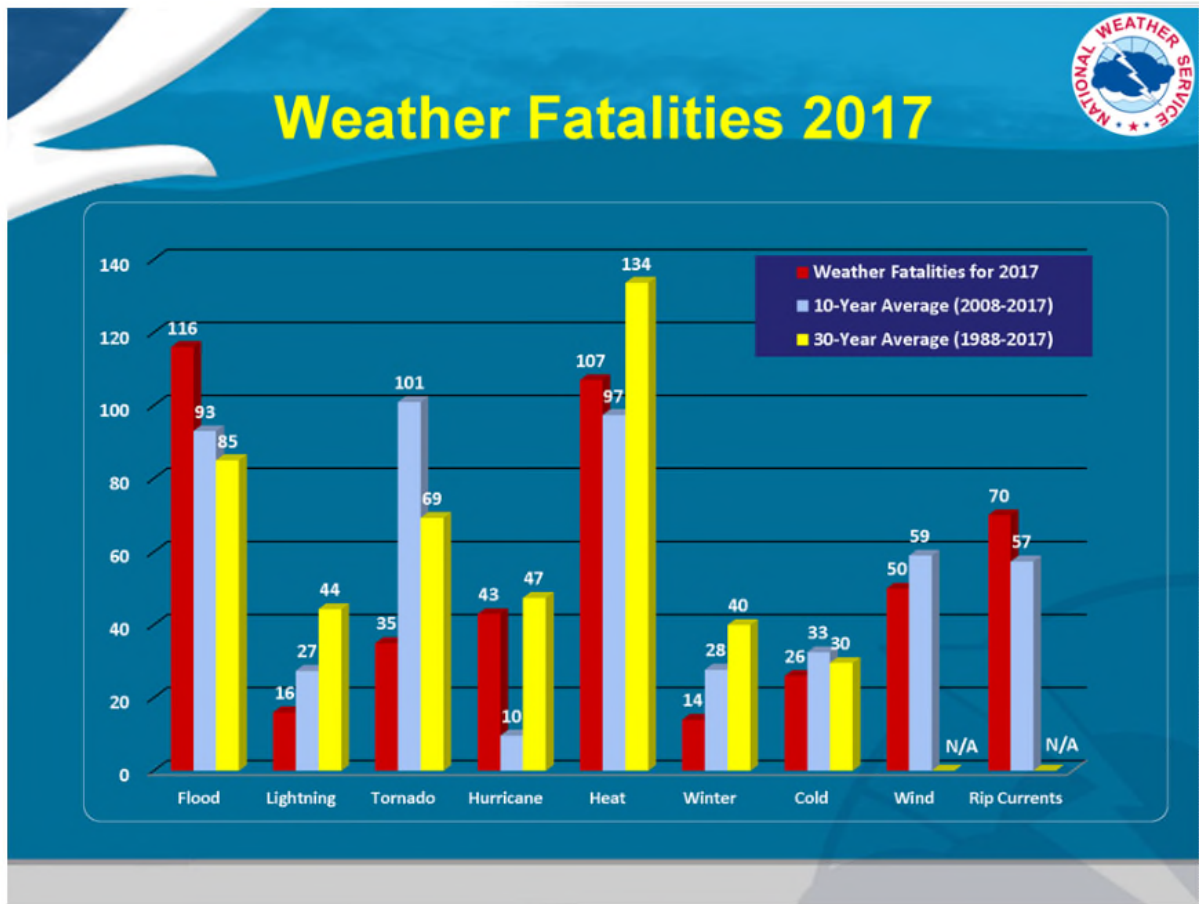
Extreme heat is defined as temperatures which hover 10 degrees or more above the average high temperature for a region and that last for several weeks (CDC 2016). Humid or muggy conditions occur when a 'dome' of high atmospheric pressure traps hazy, damp air near the ground. An extended period of extreme heat of 3 or more consecutive days is typically called a heat wave and is often accompanied by high humidity (NWS 2013). In New York State, high temperatures and heat waves are defined in several ways to reflect the diversity of conditions experienced across the state. Extreme hot days in New York State are defined as individual days with maximum temperatures at or above 90° F. Heat waves are defined as 3 consecutive days with maximum temperatures above 90° F (NYSERDA 2014).



Depending on severity, duration, and location, extreme heat events can create or provoke secondary hazards; these hazards include, but are not limited to, dust storms, droughts, wildfires, water shortages, and power outages (CDC 2016). These secondary hazards could result in a broad and far-reaching set of impacts throughout a local area or entire region. Impacts could include significant loss of life and illness; economic costs in transportation, agriculture, production, energy and infrastructure; and losses of ecosystems, wildlife habitats, and water resources (Adams Date Unknown; Meehl and Tebaldi 2004; CDC 2016; NYS DHSES 2014).

Extreme heat is one of the leading weather-related causes of death in the United States. On average, 113 people die each year from excessive heat. Figure 5.4.4-1 shows the number of weather fatalities based on both a 10-year average and a 30-year average. Heat has the highest average of weather-related fatalities between 1988 and 2017.

Figure 5.4.4-1. Average Number of Weather-Related Fatalities in the United States



Source: NWS 2018a

**Extent**

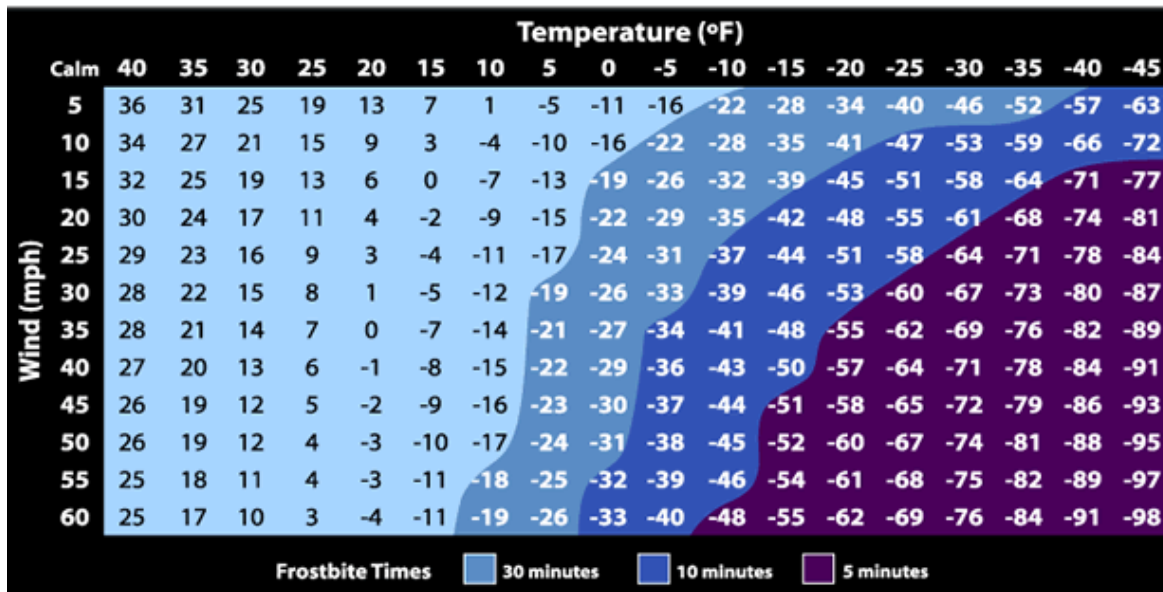
**Extreme Cold**

The extent (severity or magnitude) of extreme cold temperatures is generally measured through the Wind Chill Temperature (WCT) Index. The Index uses advances in science, technology, and computer modeling to provide an accurate, understandable, and useful formula for calculating the dangers from wind chill. For details regarding the WCT, refer to: <http://www.nws.noaa.gov/om/winter/windchill.shtml>. The WCT is presented in Figure 5.4.4-2.





Figure 5.4.4-2. NWS Wind Chill Index



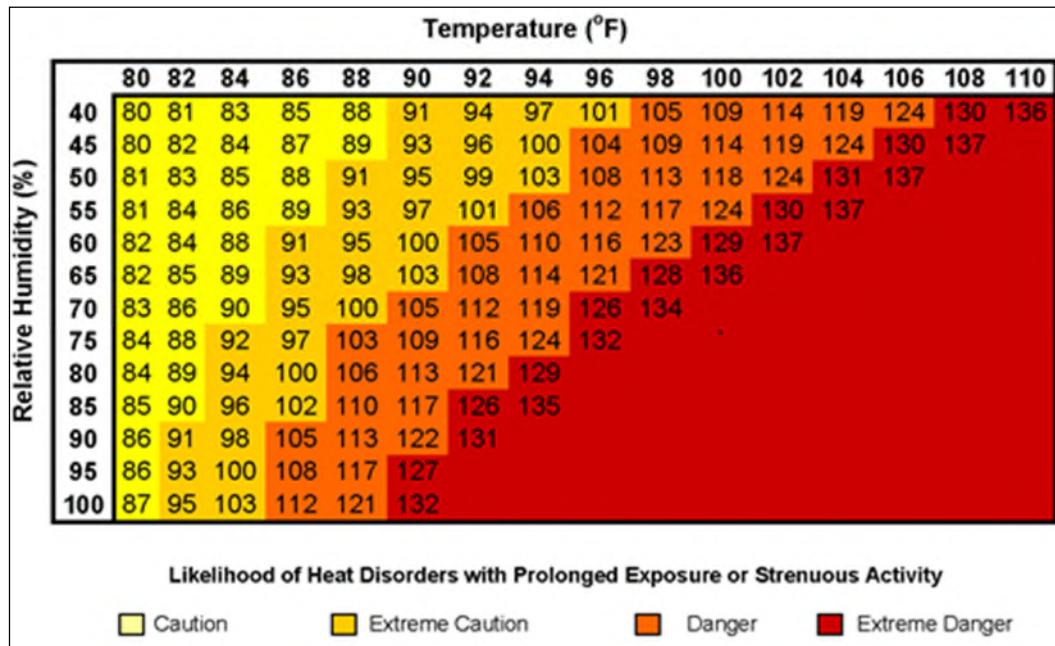
Source: NWS 2016b

Extreme Heat

The extent of extreme heat temperatures is generally measured through the Heat Index, identified in Table 5.4.4-1. Created by the NWS, the Heat Index is a chart that accurately measures apparent temperature of the air as it increases with the relative humidity. To determine the Heat Index, the temperature and relative humidity are needed. Once both values have been identified, the Heat Index is the corresponding number of both the values (as seen in Table 5.4.4-1). This provides a measure of how temperatures actually feel to a person; however, the values are devised for shady, light wind conditions. Exposure to full sun can increase the Heat Index by up to 15 degrees (NYS DHSES 2014).



Table 5.4.4-1. Heat Index Chart



Source: NWS 2016c

Table 5.4.4-2 describes the adverse effects that prolonged exposure to heat and humidity can have on an individual.

Table 5.4.4-2. Adverse Effects of Prolonged Exposures to Heat on Individuals

Category	Heat Index	Health Hazards
Extreme Danger	130 °F – Higher	Heat Stroke / Sunstroke is likely with continued exposure.
Danger	105 °F – 129 °F	Sunstroke, muscle cramps, and/or heat exhaustion possible with prolonged exposure and/or physical activity.
Extreme Caution	90 °F – 105 °F	Sunstroke, muscle cramps, and/or heat exhaustions possible with prolonged exposure and/or physical activity.
Caution	80 °F – 90 °F	Fatigue possible with prolonged exposure and/or physical activity.

Source: NYS DHSES 2014

The NWS provides alerts when Heat Indices approach hazardous levels. Table 5.4.4-3 explains these alerts. In the event of an extreme heat advisory, the NWS does the following:

- Includes Heat Index values and city forecasts
- Issues special weather statements including who is most at risk, safety rules for reducing risk, and the extent of the hazard and Heat Index values
- Provides assistance to state/local health officials in preparing Civil Emergency Messages during severe heat waves (NYS DHSES 2014).



Table 5.4.4-3. National Weather Service Alerts

Alert	Criteria
Heat Advisory	Issued 12-24 hours before the onset of the following conditions: heat index of at least 100 °F but less than 105 °F for at least 2 hours per day
Excessive Heat Watch	Issued by the NWS when heat indices of 105 °F or greater are forecast in the next 24 to 72 hours
Excessive Heat Warning	Issued within 12 hours of the onset of the following criteria: heat index of at least 105 °F for more than 3 hours per day for 2 consecutive days, or heat index more than 115 °F for any period of time

Source: NYS DHSES 2014

Location

According to the 2014 New York State Hazard Mitigation Plan (HMP) Update, the location of New York State and the typical air masses, combined with the atmospheric circulation, provides general climatic controls for the region, making the entire state susceptible to extreme temperatures. Changes in land elevations and landscape, and its close proximity to large bodies of water play a significant role in the temperatures of New York State. Extended periods of either extreme cold or warm temperatures are a result from movement of great high-pressure systems into and through the eastern United States (NYS DHSES 2014).

Extreme cold temperatures occur throughout most of the winter season and generally accompany most winter storm events throughout the state. The NYSC Office of Cornell University indicates that cold temperatures prevail over the state whenever arctic air masses, under high barometric pressure, flow southward from central Canada or from Hudson Bay. Extreme heat temperatures of varying degrees occur throughout the state for most of the summer season, except for areas with high altitudes (Cornell University Date Unknown). The location of Lewis County within the state makes it susceptible to both extreme cold and extreme heat temperature events.

Previous Occurrences and Losses

Many sources provided historical information regarding previous occurrences and losses associated with extreme temperatures throughout New York State and Lewis County. With so many sources reviewed for the purpose of this HMP update, loss and impact information could vary. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP.

Between 1954 and 2018, New York State has not been included in any major disaster (DR) or emergency (EM) declarations due to extreme temperatures. Agriculture-related disasters are quite common. The Secretary of Agriculture from the U.S. Department of Agriculture (USDA) is authorized to designate counties as disaster areas to make emergency loans to producers suffering losses in those counties and in counties that are contiguous to a designated county. Between 2010 and 2018, Lewis County was included in six USDA declarations involving extreme temperatures.

- S3427 - June 2012 Drought, excessive heat
- S3249 - March 2012 Frosts and freezes
- S3594 – May 2013 Freeze and frost
- S3696 – December 2013 Freeze
- S3666- December 2013 Freeze
- S3886 – January 2015 Frost, freeze, and excessive snow

Information regarding specific details of temperature extremes in Lewis County is scarce; therefore, previous occurrences and losses associated with extreme temperature events are limited. For this 2020 HMP update,





extreme temperature events were summarized from 2010 to 2018 and are identified in Table 5.4.4-4. There are no events provided in the NCEI database prior to 2010. It should be noted that not all events that have occurred in Lewis County are included, due to the extent of documentation and the fact that not all sources may have been identified or researched. Loss and impact information vary depending on the source.

**Table 5.4.4-4. Extreme Temperature Events in Lewis County, 2010 to 2018**

Event Date	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
1/24/2011	Extreme Cold/wind Chill	N/A	No	Arctic high pressure built across the eastern Great Lakes region and brought bitter cold temperatures to the eastern Lake Ontario region. Morning lows ranged from -25 °F to -35 °F. Even though the winds were relatively light, wind chill temperatures reached -40 °F in some locations.
12/28/2017	Extreme Cold/wind Chill	N/A	No	Arctic air brought frigid temperatures to the north country. Temperatures dropped to -10 to -20 °F and combined with the wind to produce wind chills colder than -30 °F . Some specific wind chill readings included -39 °F at Philadelphia, -34 °F at Lowville and Highmarket, -32 °F at Watertown and Copenhagen and -31 °F at West Carthage.
1/1/2018	Extreme Cold/wind Chill	N/A	No	A northwest flow of bitterly cold air brought air temperatures of plunging to -20 degrees across the north country. Cold temperatures in combination with brisk winds produced wind chills of -35 to -40 °F . Lowville recorded a wind chill of -37 °F.
1/5/2018	Extreme Cold/wind Chill	N/A	No	A bitterly cold arctic airmass entrenched across the region brought cold temperatures and dangerous wind chills across the southern tier and north country. Low temperatures dropped to -15 to -20 °F in the north country. Combined with the brisk northwest winds, wind chills dropped to -25 to -35 °F across the southern tier and as low as -50 °F across the north country.

Source(s): NYS DHSES 2014; FEMA 2018; NOAA-NCEI 2018  
 FEMA Federal Emergency Management Agency  
 NOAA-NCEI National Oceanic Atmospheric Administration – National Centers for Environmental Information  
 NWS National Weather Service  
 NYS DHSES New York State Department of Homeland Security and Emergency Services  
 N/A Not applicable  
 USDA U.S. Department of Agriculture

**Probability of Future Events**

According to the 2014 New York State HMP Update, there is an overall 6 percent average future probability that an extreme heat occurrence will impact the state at any given year. Extreme cold events have a 7 percent average future probability of occurrence (NYS DHSES 2014). It is estimated that Lewis County will continue to experience extreme temperatures annually that may induce secondary hazards such potential snow, hail, ice or wind storms, thunderstorms, drought, human health impacts, utility failure and transportation accidents as well as many other anticipated impacts.

According to the 2014 New York State HMP Update, between 1960 and 2012, Lewis County had two extreme temperature events that resulted in over \$2,890 in property damage and no fatalities. These statistics showed that the County had a 0 percent chance of extreme temperatures occurring in the future with a recurrence interval of 0 (NYS DHSES 2014). However, according to the NOAA National Centers for Environmental Information





(NCEI) database, Lewis County experienced four extreme temperature events between 1950 and 2018. Table 5.4.4-5 shows these statistics, as well as the annual average number of events and the percent chance of these individual extreme temperature events occurring in Lewis County in future years (NOAA NCEI 2018).

Table 5.4.4-5. Probability of Occurrences of Extreme Temperature Events

Hazard Type	Number of Occurrences Between 1950 and 2018	Rate of Occurrence or Annual Number of Events (average)	Recurrence Interval (in years) (# Years/Number of Events)	Probability of Event in any given year	% chance of occurrence in any given year
Cold/Wind Chill	0	0	0	0	0
Excessive Heat	0	0	0	0	0
Extreme Cold/Wind Chill	4	0.06	17.25	0.06	5.80
Heat	0	0	0	0	0
<b>TOTAL</b>	<b>4</b>	<b>0.06</b>	<b>17.25</b>	<b>0.06</b>	<b>5.80</b>

Source: NOAA NCEI 2018

Note: Probability was calculated using the available data provided in the NOAA-NCDC storm events database.

Based on historical records and input from the Planning Committee, the probability of occurrence for extreme temperatures in Lewis County is considered “frequent” (hazard event is likely to occur within 25 years).

### Climate Change Impacts

Climate change is beginning to affect both people and resources in New York State, and these impacts are projected to continue growing. Impacts related to increasing temperatures and sea level rise are already being felt in the state. The Integrated Assessment for Effective Climate Change in New York State (ClimAID) was undertaken to provide decision-makers with information on the state’s vulnerability to climate change and to facilitate the development of adaptation strategies informed by both local experience and scientific knowledge (New York State Energy Research and Development Authority [NYSERDA] 2011).

Temperatures in New York State are getting warmer, with an average warming rate over the past century of 0.25 °F per decade. Average annual temperatures are projected to increase across New York State by 2 °F to 3.4 °F by the 2020s, 4.1 °F to 6.8 °F by the 2050s, and 5.3 °F to 10.1 °F by the 2080s. By the end of the century, the greatest warming is projected to be in the northern section of the State (NYSERDA 2014). The total number of hot days in New York State is expected to increase as this century progresses. The frequency and duration of heat waves, defined as 3 or more consecutive days with maximum temperatures at or above 90 °F, are also expected to increase (Table 5.4.4-7). In contrast, extreme cold events, defined both as the number of days per year with minimum temperature at or below 32 °F and those at or below 0 °F, are expected to decrease as average temperatures rise (NYSERDA 2011).

However, each region in New York State, as defined by ClimAID, has attributes that will be uniquely affected by climate change. Lewis County is part of Region 6, the Tug Hill Plateau. In Region 6, it is estimated that temperatures will increase by 4.4 °F to 6.4 °F by the 2050s and 5.9 °F to 10.0 °F by the 2080s (baseline of 45.4 °F). Precipitation totals will increase between 4 and 10 percent by the 2050s and 6 to 12 percent by the 2080s (baseline of 42.6 inches). Table 5.4.4-6 displays the projected seasonal precipitation change for the Tug Hill Plateau ClimAID Region (NYSERDA 2014).





**Table 5.4.4-6. Projected Seasonal Precipitation Change in Region 6, 2050s (% change)**

Winter	Spring	Summer	Fall
+5 to +15	0 to +10	-5 to +10	-5 to +10

Source: NYSERDA 2011

The frequency of heat waves and cold events are also projected to increase in Region 6. With the increase in temperatures, heat waves will become more frequent and intense, increasing heat-related illness and death and posing new challenges to the energy system, air quality and agriculture (NYSERDA, 2011). Table 5.4.4-7 displays the projected changes in extreme events and includes the minimum, central range and maximum days per year.

**Table 5.4.4-7. Changes in Extreme Events in Region 3 – Heat Waves and Intense Precipitation**

Event Type	# Days Per Year	Baseline	2020s	2050s	2080s
Heat Wave	<b>Number of Days per year with maximum temperature exceeding: minimum, (central range), and maximum</b>				
	90°F	3	2 (4 to 7) 11	5 (8 to 17) 27	8 (12 to 36) 52
	Number of heat waves per year	0.2	0.2 (0.4 to 0.9) 1	0.6 (0.8 to 2) 4	0.6 (1 to 4) 6
	Average duration	4	3 (4 to 4) 5	3 (4 to 4) 5	4 (4 to 5) 7
Extreme Cold	<b>Number of days per year: minimum, (central range), and maximum</b>				
	Below 32°F	147	114 (120 to 130) 140	93 (108 to 121) 126	78 (91 to 114) 122

Source: NYSERDA 2011

### 5.4.4.2 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed or vulnerable in the identified hazard area. For the extreme temperature events, the entire County has been identified as exposed. Therefore, all assets in the County (population, structures, critical facilities and lifelines), as described in the County Profile (Section 4), are exposed and potentially vulnerable. The following text evaluates and estimates the potential impact of extreme temperatures on Lewis County including:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on: (1) life, health and safety of residents, (2) general building stock, (3) critical facilities (4) economy and (5) future growth and development
- Change of vulnerability compared to that presented in the 2010 Lewis County Hazard Mitigation Plan
- Effect of climate change on vulnerability
- Additional data and next steps

#### Overview of Vulnerability

Extreme temperatures generally occur for a short period of time but can cause a range of impacts, particularly to vulnerable populations that may not have access to adequate cooling or heating. This natural hazard can also cause impacts to agriculture (crops and animals), infrastructure (e.g., through pipe bursts associated with freezing, power failure), and the economy.



Data and Methodology

At the time of this HMP Update, insufficient data is available to model the long-term potential impacts of extreme temperature on Lewis County. Over time, additional data will be collected to allow better analysis for this hazard. Available information and a preliminary assessment are provided below.

Impact on Life, Health and Safety

For the purposes of this HMP Update, the entire population of Lewis County is exposed to extreme temperature events. Refer to Section 4 for a summary of population statistics for the County.

Extreme temperature events have potential health impacts, including injury and death. According to the Centers for Disease Control and Prevention, populations most at risk to extreme cold and heat events include the following: (1) the elderly, who are less able to withstand temperatures extremes due to their age, health conditions and limited mobility to access shelters; (2) infants and children up to 4 years of age; (3) individuals who are physically ill (e.g., with heart disease or high blood pressure); (4) low-income persons that cannot afford proper heating and cooling; and (5) members of the general public who may overexert during work or exercise during extreme heat events or experience hypothermia during extreme cold events (CDC 2017a).

According to NOAA's 2001 Winter Storms: The Deceptive Killers, approximately 50 percent of the deaths related to extreme cold temperatures happen to people over 60 years old, more than 75 percent of those deaths are male and about 20 percent occur in the home (NYS DHSES 2014).

Exposure to excessive heat can pose a number of health risks to individuals. Table 5.4.4-8 identifies different health hazards related to extreme heat conditions.

Table 5.4.4-8. Health Effects of Extreme Heat

Table with 2 columns: Health Hazard, Symptoms. Rows include Sunburn, Dehydration, Heat Cramps, Heat Exhaustion, and Heat Stroke.

Source: NYS DHSES 2014

Meteorologists can accurately forecast extreme heat event development and the severity of the associated conditions with several days of lead time. These forecasts provide an opportunity for public health and other officials to notify vulnerable populations, implement short-term emergency response actions, and focus on surveillance and relief efforts for those at greatest risk. Adhering to extreme temperature warnings can significantly reduce the risk of temperature-related deaths.

Impact on General Building Stock

All of the building stock in the County is exposed to the extreme temperature hazard. Refer to Section 4 which summarizes the building inventory in Lewis County. Extreme heat generally does not impact buildings. Losses may be associated with the overheating of heating, ventilation, and air conditioning (HVAC) systems. Extreme cold temperature events can damage buildings through freezing/bursting pipes and freeze/thaw cycles. Additionally, manufactured homes (mobile homes) and antiquated or poorly constructed facilities may have inadequate capabilities to withstand extreme temperatures.



### Impact on Critical Facilities

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All critical facilities in the County are exposed to the extreme temperature hazard. Impacts to critical facilities are the same as described for general building stock. Additionally, it is essential that critical facilities remain operational during natural hazard events. Extreme heat events can sometimes cause short periods of utility failures, commonly referred to as “brown-outs,” due to increased usage from air conditioners, appliances, etc. Similarly, heavy snowfall and ice storms, associated with extreme cold temperature events, can cause power interruption as well. Backup power is recommended for critical facilities and infrastructure.

### Impact on Economy

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Extreme temperature events also have impacts on the economy, including loss of business function and damage/loss of inventory. Business owners may be faced with increased financial burdens due to unexpected repairs caused to the building (e.g., pipes bursting), higher than normal utility bills or business interruption due to power failure (i.e., loss of electricity, telecommunications).

The agricultural industry is most at risk in terms of economic impact and damage due to extreme temperature events. Extreme heat events can result in drought and dry conditions and directly impact livestock and crop production.

### Future Growth and Development

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As discussed in Sections 4 and 9, areas targeted for future growth and development have been identified across Lewis County. Any areas of growth could be potentially impacted by the extreme temperature hazard because the entire County is exposed and potentially vulnerable. Please refer to the specific areas of development indicated in tabular form and/or on the hazard maps included in the jurisdictional annexes in Volume II, Section 9 of this plan.

### Effect of Climate Change on Vulnerability

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Climate is defined not simply by average temperature and precipitation but also by the type, frequency, and intensity of weather events. Both globally and at the local scale, climate change has the potential to alter the prevalence and severity of extremes such as extreme temperature events. While predicting changes of extreme temperature events under a changing climate is difficult, understanding vulnerabilities to potential changes is a critical part of estimating future climate change impacts on human health, society and the environment (U.S. Environmental Protection Agency [EPA] 2009).

### Additional Data and Next Steps

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For future plan updates, the County can track data on extreme temperature events and obtain additional information on past and future events; particularly in terms of any injuries, deaths, shelter needs, pipe freeze, agricultural losses, and other impacts. This will help to identify any concerns or trends for which mitigation measures should be developed or refined. In time, quantitative modeling of estimated extreme heat and cold events may be feasible as data is gathered and improved.



## 5.4.5 Flood

The following section provides the hazard profile (hazard description, location, extent, previous occurrences and losses, probability of future occurrences, and impact of climate change) and vulnerability assessment for the flood hazard in Lewis County.

### 5.4.5.1 Profile

#### Hazard Description

Floods are one of the most common natural hazards in the United States. They can develop slowly over a period of days or develop quickly, with disastrous effects that can be local (impacting a neighborhood or community) or regional (affecting entire river basins, coastlines, and multiple counties or states) (Federal Emergency Management Agency [FEMA] 2007). Most U.S. communities have experienced some type of flooding after spring rains, heavy thunderstorms, coastal storms, or winter snow thaws (George Washington University 2001).

Floods are the most frequent and costly natural hazards in New York State in terms of human hardship and economic loss, particularly to communities that lie within flood-prone areas or flood plains of a major water source. As defined in the New York State Hazard Mitigation Plan (NYS HMP) (NYS DHSES 2014), flooding is a general and temporary condition of partial or complete inundation on normally dry land from the following:

- Riverine overbank flooding;
- Flash floods;
- Alluvial fan floods;
- Mudflows or debris floods;
- Dam- and levee-break floods;
- Local draining or high groundwater levels;
- Fluctuating lake levels;
- Ice-jams; and
- Coastal flooding

Many floods fall into three categories: riverine, coastal, and shallow (FEMA 2007). Other types of floods may include ice-jam floods, alluvial fan floods, dam failure floods, and floods associated with local drainage or high groundwater. For the purpose of this HMP and as deemed appropriate by the Lewis County Steering Committee, riverine, shallow, flash, ice jam, and dam failure flooding are the main flood types of concern for the County. These types of floods are further discussed below.

#### Riverine (Inland) and Flash Flooding

Riverine floods are the most common flood type. They occur along a channel and include overbank and flash flooding. Channels are defined, ground features that carry water through and out of a watershed. They may be called rivers, creeks, streams, or ditches. When a channel receives too much water, the excess water flows over its banks and inundates low-lying areas (FEMA, 2007; The Illinois Association for Floodplain and Stormwater Management 2006).

The National Weather Service (NWS) defines a flash flood as “a rapid and extreme flow of high water into a normally dry area, or a rapid water level rise in a stream or creek above a predetermined flood level, beginning within six hours of the causative event (e.g., intense rainfall, dam failure, ice jam). However, the actual time



threshold may vary in different parts of the country. Ongoing flooding can intensify to flash flooding in cases where intense rainfall results in a rapid surge of rising flood waters” (NWS 2009).

### Shallow Flooding

Stormwater flooding is due to local drainage issues and high groundwater levels. Locally, heavy precipitation may produce flooding in areas other than delineated floodplains or along recognizable channels. If local conditions cannot accommodate intense precipitation through a combination of infiltration and surface runoff, water may accumulate and cause flooding problems. During winter and spring, frozen ground and snow accumulations may contribute to inadequate drainage and localized ponding. Flooding issues of this nature generally occur in areas with flat gradients and increase with urbanization, which speeds the accumulation of floodwaters because of impervious areas. Shallow street flooding can occur unless channels have been improved to account for increased flows (FEMA 1997).

High groundwater levels can be a concern and cause problems even where there is no surface flooding. Basements are susceptible to high groundwater levels. Seasonally high groundwater is common in many areas; elsewhere, high groundwater occurs only after a long period of above-average precipitation (FEMA 1997).

Urban drainage flooding is caused by increased water runoff due to urban development and drainage system design. Drainage systems are designed to remove surface water from developed areas as quickly as possible to prevent localized flooding on streets and other urban areas. They make use of a closed conveyance system that channels water away from an urban area to surrounding streams. This bypasses the natural processes of water filtration through the ground, containment, and evaporation of excess water. Since drainage systems reduce the amount of time the surface water takes to reach surrounding streams, flooding in those streams can occur more quickly and reach greater depths than prior to development in that area (FEMA 2007).

### Ice Jam Flooding

An ice jam occurs when pieces of floating ice are carried with a stream's current and accumulate behind any obstruction to the stream flow. Obstructions may include river bends, mouths of tributaries, points where the river slope decreases, as well as dams and bridges. The water held back by this obstruction can cause flooding upstream, and if the obstruction suddenly breaks, flash flooding can occur as well (NOAA 2011). The formation of ice jams depends on the weather and physical condition of the river and stream channels. They are most likely to occur where the channel slope naturally decreases, in culverts, and along shallows where channels may freeze solid. Ice jams and resulting floods can occur during at different times of the year: fall freeze-up from the formation of frazil ice; mid-winter periods when stream channels freeze solid, forming anchor ice; and spring breakup when rising water levels from snowmelt or rainfall break existing ice cover into pieces that accumulate at bridges or other types of obstructions (NYS DHSES 2014).

There are two main types of ice jams: freeze-up and breakup. Freeze-up jams occur when floating ice may slow or stop due to a change in water slope as it reaches an obstruction to movement. Breakup jams occur during periods of thaw, generally in late winter and early spring. The ice cover breakup is usually associated with a rapid increase in runoff and corresponding river discharge due to a heavy rainfall, snowmelt or warmer temperatures (NYS DHSES 2014).

Ice jams are common in the northeast U.S. and New York is not an exception. Areas of New York State that include characteristics lending to ice jam flooding include the northern counties of the Finger Lakes region and far western New York, the Mohawk Valley of central and eastern New York State, and the North Country (NYS DHSES, 2014).





The Ice Jam Database, maintained by the Ice Engineering Group at the U.S. Army Corp of Engineers (USACE) Cold Regions Research and Engineering Laboratory (CRREL), currently consists of over 19,000 records from across the United States. According to the USACE-CRREL, Lewis County experienced one historic ice jam event between 1780 and 2018 (USACE 2018). The ice jam took place in 1996 on the Black River in Castorland. Recent non-historic events are further mentioned in the “Previous Occurrences” section of this hazard profile.

### Dam Failure Flooding

A dam is an artificial barrier that has the ability to impound water, wastewater, or any liquid-borne material for the purpose of storage or control of water (FEMA 2007). Dams are man-made structures built across a stream or river that impound water and reduce the flow downstream (FEMA 2003). Dams can be classified according to type of construction material used, methods applied in construction, slope or cross-section of the dam, how the dam resists forces of the water pressure behind it, means used for controlling seepage, and, occasionally, according to the purpose of the dam. Materials used for construction of dams include earth, rock, tailings from mining or milling, concrete, masonry, steel, timber, miscellaneous materials (plastic or rubber), and any combination of these materials (Association of State Dam Safety Officials 2013).

Dams are built for the purpose of power production, agriculture, water supply, recreation, and flood protection. Dam failure is any malfunction or abnormality outside of the design that adversely affects a dam’s primary function of impounding water (FEMA 2007). Dam failures typically occur when spillway capacity is inadequate and excess flow overtops the dam, or when internal erosion (piping) through the dam or foundation occurs. Complete failure occurs if internal erosion or overtopping results in a complete structural breach, releasing a high-velocity wall of debris-filled water that rushes downstream damaging or destroying anything in its path (FEMA 1996).

Dams can fail for one or a combination of the following reasons:

- Overtopping caused by floods that exceed the capacity of the dam (inadequate spillway capacity);
- Prolonged periods of rainfall and flooding;
- Deliberate acts of sabotage (terrorism);
- Structural failure of materials used in dam construction;
- Movement and/or failure of the foundation supporting the dam;
- Settlement and cracking of concrete or embankment dams;
- Piping and internal erosion of soil in embankment dams;
- Inadequate or negligent operation, maintenance, and upkeep;
- Failure of upstream dams on the same waterway; or
- Earthquake (liquefaction / landslides) (FEMA 2013a).

### Location

Water drains from the land surface through drainage features that range from rivulets in parking lots to large rivers such as the Black River. The entire area drained by a particular body of water is called a drainage basin or watershed. In Lewis County, there are four major drainage basins, with most of the land in the County located within the Black River drainage basin. For details regarding the drainage basins in Lewis County, refer to Section 4 (County Profile) of this plan.

A floodplain is defined as the land adjoining the channel of a river, stream, ocean, lake, or other watercourse or water body that becomes inundated with water during a flood. Most often floodplains are referred to as 100-year floodplains. A 100-year floodplain is not a flood that will occur once every 100 years, rather it is a flood that has a 1 percent chance of being equaled or exceeded each year. Thus, the 100-year flood could occur more than once



in a relatively short period of time. Due to this misleading term, FEMA has properly defined it as the 1-percent annual chance flood. The 1-percent annual chance flood is now the standard used by most federal and state agencies and by the National Flood Insurance Program (NFIP) (FEMA 2003). Similarly, the 500-year floodplain will not occur every 500 years but is an event with a 0.2 percent chance of being equaled or exceeded each year. In Lewis County, floodplains line the rivers and streams of the County. The boundaries of the floodplains are altered as a result of changes in land use, the amount of impervious surface, placement of obstructing structures in floodways, changes in precipitation and runoff patterns, improvements in technology for measuring topographic features, and utilization of different hydrologic modeling techniques.

Figure 5.4.5-1 illustrates the FEMA flood hazard zones in Lewis County. Since FEMA Digital Flood Insurance Rate Maps (DFIRMs) are not available for Lewis County, Lewis County digitized their effective Flood Insurance Rate Maps (FIRMs) to spatially delineate the 1-percent annual chance flood boundaries. As illustrated by this figure, flooding occurs along the rivers, streams, and bodies of water located throughout the County. A large area of 1-percent annual chance event floodplain is located along the Black River, which flows through the center of the County. The 0.2-percent annual chance flood boundaries are not digitized and are not spatially available for use in this plan. The following communities do not have spatially delineated 1-percent annual chance flood boundaries available in the spatial layer:

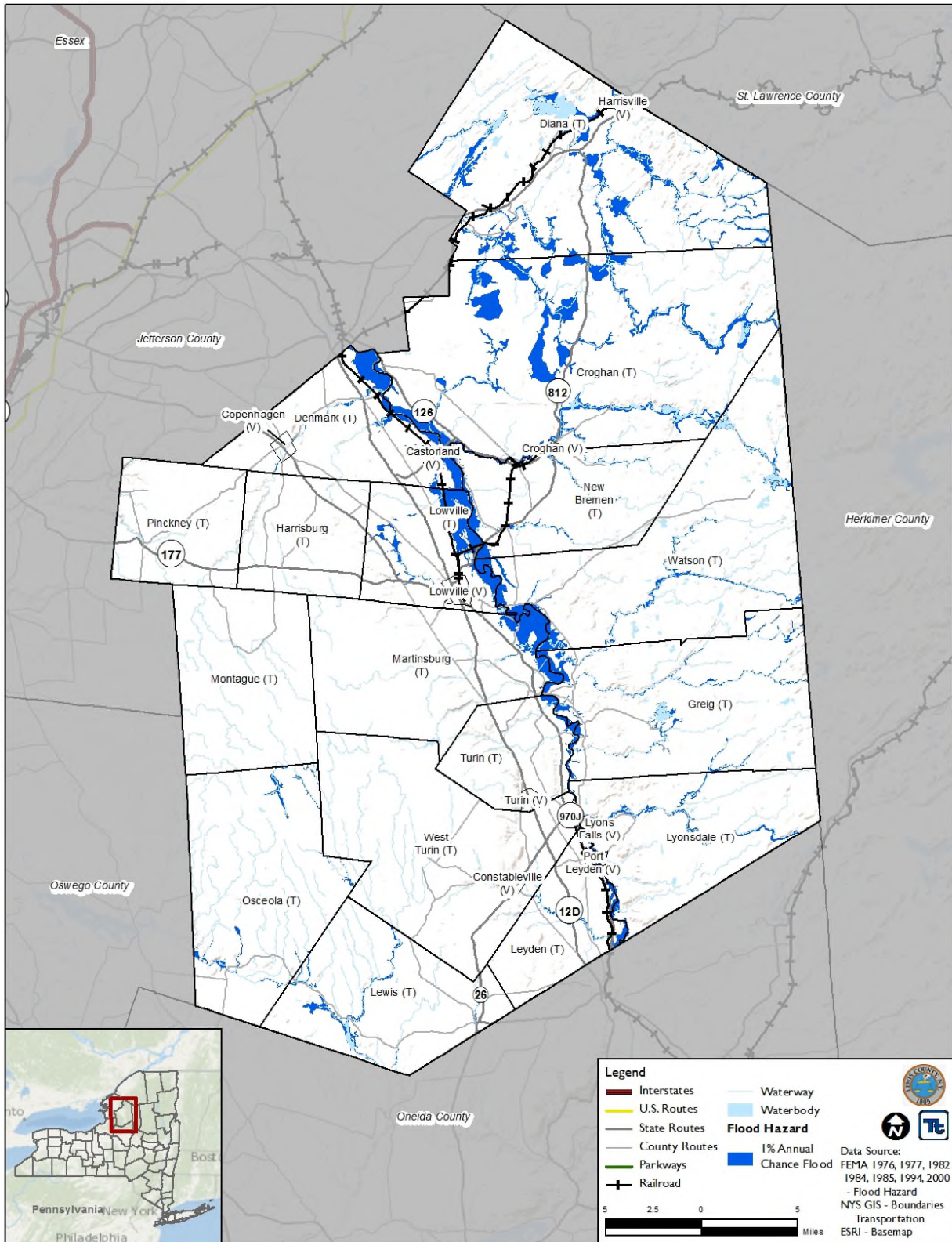
- Village of Copenhagen
- Town of Harrisburg
- Town of Montague
- Town of Pinckney
- Town of West Turin

Despite not being included in the available spatial layer, these communities are not free of flood risk. Flooding is still possible along the waterways and water bodies throughout these communities.

Section 9 (Jurisdictional Annexes) provides information regarding specific areas of flooding for each participating municipality in Lewis County.



Figure 5.4.5-1. FEMA Flood Hazard Areas in Lewis County



FEMA Federal Emergency Management Agency





According to the Flood Insurance Studies for the Town of Lewis (FEMA FIS 1996), the Town of Lowville (FEMA FIS 2000), the Village of Lowville (FEMA FIS 2000a), the Town of New Bremen (FEMA FIS 2000b), and the Town of Watson (FEMA FIS 2000c), flooding may occur in the region during all seasons but usually occurs in late winter and early spring, when the ground is still frozen and snowmelt adds to heavy rainfall producing increased runoff. The Flood Insurance Studies for the Town of Lowville, the Town of New Bremen, and the Town of Watson also noted that no major flooding was reported although excess runoff occasionally inundated open fields and parks without causing damage. None of the available Flood Insurance Studies for the County noted any structural flood protection measures.

### Dams

According to the Dam Incident Notification (DIN) system maintained by the National Performance of Dam Program (NPDP), there are 46 dams in Lewis County. Of the 46 dams, 27 are classified as low hazard, 9 are classified as significant hazard, 9 are classified as high hazard, and one is classified as unknown hazard (NPDP 2018). However, these numbers differ from the New York State Inventory of Dams, which identifies 111 dams in Lewis County: 77 low hazard, 8 intermediate hazard, 4 high hazard, and 22 negligible or no hazard classification (NYSDEC 2018).

### Extent

In the case of riverine flood hazard, once a river reaches flood stage, the flood extent or severity categories used by the NWS include minor flooding, moderate flooding, and major flooding. Each category has a definition based on property damage and public threat:

- Minor Flooding - minimal or no property damage, but possibly some public threat or inconvenience.
- Moderate Flooding - some inundation of structures and roads near streams. Some evacuations of people and/or transfer of property to higher elevations are necessary.
- Major Flooding - extensive inundation of structures and roads. Significant evacuations of people and/or transfer of property to higher elevations. (NWS 2011)

Severity of a flood depends not only on the amount of water that accumulates within a period of time, but also on the land's ability to manage this water. Sizes of rivers and streams in an area and infiltration rates are significant factors. During rain events, soil acts as a sponge. When land is saturated or frozen, infiltration rates decrease and any more water that accumulates must flow as runoff (Harris 2001).

### Hazardous Dams

According to the New York State Department of Environmental Conservation (NYSDEC) Division of Water Bureau of Flood Protection and Dam Safety, the hazard classification of a dam is assigned according to the potential impacts of a dam failure pursuant to 6 NYCRR Part 673.3 (NYSDEC date unknown). Dams are classified in terms of potential for downstream damage if the dam were to fail. These hazard classifications are identified and defined below:

- *Low Hazard (Class A)* is a dam located in an area where failure will damage nothing more than isolated buildings, undeveloped lands, or township or county roads; and/or will cause no significant economic loss or serious environmental damage. Failure or mis-operation would result in no probable loss of human life. Losses are principally limited to the owner's property
- *Intermediate Hazard (Class B)* is a dam located in an area where failure may damage isolated homes, main highways, and minor railroads; interrupt the use of relatively important public utilities; and/or cause significant economic loss or serious environmental damage. Failure or mis-operation would result in no probable loss of human life, but may cause economic loss, environment damage, disruption of





lifeline facilities, or impact other concerns. Dams classified as intermediate hazard dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

- *High Hazard (Class C)* is a dam located in an area where failure may cause loss of human life, serious damage to homes, industrial or commercial buildings, important public utilities, main highways or railroads, and/or will cause extensive economic loss. This is a downstream hazard classification for dams in which excessive economic loss (urban area including extensive community, industry, agriculture, or outstanding natural resources) would occur as a direct result of dam failure.
- *Negligible or No Hazard (Class D)* is a dam that has been breached or removed, or has failed or otherwise no longer materially impounds waters, or a dam that was planned but never constructed. Class "D" dams are considered to be defunct dams posing negligible or no hazard. NYSDEC may retain pertinent records regarding such dams.

### Regulatory Oversight of Dams

Potential for catastrophic flooding caused by dam failures led to passage of the National Dam Safety Act (Public Law 92-367). For 30 years, the National Dam Safety Program (NDSP) has protected Americans from dam failure. NDSP is a partnership among the states, federal agencies, and other stakeholders that encourages individual and community responsibility for dam safety. Under FEMA's leadership, state assistance funds have allowed all participating states to improve their programs through increased inspections, emergency action planning, and purchase of needed equipment. FEMA has also expanded existing training programs and initiated new training programs. Grant assistance from FEMA provides support for improvement of dam safety programs that regulate most dams in the United States (FEMA 2013a).

New York State has a comprehensive dam safety program through which three governmental authorities that regulate dam safety throughout the state:

- NYSDEC – Environmental Conservation Law (ECL) Article 15, Part 673
- Federal Energy Regulatory Commission (FERC) – 18 *Code of Federal Regulations* (CFR) 12.22-24
- USACE – EP 1110-2-13, Dam Safety Preparedness

Dam safety emergency action plans (EAP) are formal dam failure procedures written by the dam owner/operator. EAPs are site-specific plans and relate only to the facility's procedures to prevent/mitigate occurrence of a catastrophic dam failure. USACE is responsible for submitting an EAP for each dam it owns, operates, and maintains. EAPs for hydroelectric dams fall under the purview of FERC, and NYSDEC regulates dam safety and EAPs for all dams in NYS.

### New York State Department of Environmental Conservation

The NYSDEC's Dam Safety Section is responsible for safety inspection of dams, technical review of proposed dam construction or modification, monitoring of remedial work for compliance with dam safety criteria, and emergency preparedness for all dams in the state. NYSDEC is responsible for more than 100 flood control projects throughout the state, most of which were constructed by USACE and are operated and maintained by NYSDEC (in some cases with local municipal partners).

The state generally inspects high hazard (Class C) dams every 2 years, and moderate hazard (Class B) dams every 4 years. To support emergency planning efforts and raise awareness among local officials and emergency managers, a copy of each inspection report is sent to the chief executive of the community in which the dam is located. Municipal officials or emergency managers from any municipality in the dam's inundation area may receive a copy of the inspection report upon request.





### U.S. Army Corps of Engineers Dam Safety Program

USACE is responsible for safety inspections of some federal and non-federal dams in the United States that meet size and storage limitations specified in the National Dam Safety Act. USACE has inventoried dams and has surveyed each state's and federal agency's capabilities, practices, and regulations regarding design, construction, operation, and maintenance of dams. USACE has also developed guidelines for inspection and evaluation of dam safety (USACE 2014).

### Federal Energy Regulatory Commission Dam Safety Program

FERC has the largest dam safety program in the United States. FERC cooperates with a large number of federal and state agencies to ensure and promote dam safety and, more recently, homeland security. A total of 3,036 dams are part of regulated hydroelectric projects and are included in the FERC program. Two-thirds of these dams are more than 50 years old. As dams age, concern about their safety and integrity grows, rendering oversight and regular inspection especially important (FERC 2011).

FERC staff inspect hydroelectric projects on an unscheduled basis to investigate the following:

- Potential dam safety problems
- Complaints about constructing and operating a project
- Safety concerns related to natural disasters
- Issues concerning compliance with terms and conditions of a license (FERC 2011).

Every 5 years, an independent consulting engineer approved by the FERC must inspect and evaluate projects with dams higher than 32.8 feet (10 meters) or with total storage capacity of more than 2,000 acre-feet (FERC 2011).

FERC monitors and evaluates seismic research in geographic areas where concerns have been raised about seismic activity. This information is applied in investigating and performing structural analyses of hydroelectric projects within these areas. FERC staff also evaluate effects of potential and actual large floods on safety of dams. During and after floods, FERC staff visit dams and licensed projects, determine the extent of damage, and direct any studies or remedial measures the licensee must undertake. FERC's *Engineering Guidelines for the Evaluation of Hydropower Projects* guides FERC engineering staff and licensees in evaluating dam safety. The publication is periodically revised to reflect current information and methodologies (FERC 2011).

FERC requires licensees to prepare EAPs, and conducts training sessions on developing and testing these plans. The plans outline an early warning system in the event of an actual or potential sudden release of water from a dam failure. The plans include operational procedures that may be implemented during imposition of regulatory measures such as reducing reservoir levels and reducing downstream flows, as well as procedures for notifying affected residents and agencies responsible for emergency management. These plans are updated and tested to ensure that all applicable parties are informed of proper procedures in emergency situations (FERC 2011).

### Previous Occurrences and Losses

Many sources provided flooding information regarding previous occurrences and losses associated with flooding events throughout Lewis County. With so many sources reviewed for the purpose of this HMP, loss and impact information for many events varies depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP.

FEMA did not identify any dam break-related major disasters (DR) or emergencies (EM) between 1954 and 2018 that affected New York State. For this 2020 HMP, dam failure events impacting Lewis County between 1950 and 2018 were researched. The NPDP Dam Incident Database has records of 111 dam incidents in the



state. According to the Association of State Dam Safety Officials, 12 dam incidents in Lewis County have been recorded (Table 5.4.5-1).

**Table 5.4.5-1. Dam Failures/Incidents in Lewis County, 1992 to 2018**

Date	Dam	Impacts/Losses
June 8, 1992	Soft Maple Terminal	Unexpected increase in seepage and piezometer levels during refill after completion of slurry wall construction.
April 30, 1993	Mohawk Papers-East Dam	Partial failure of forebay wall.
March 14, 1994	Effley	Unit No. 2 steel penstock collapsed during dewatering.
January 7, 1998	Denley	Inflow Flood - Hydrologic Event
January 7, 1998	Gouldtown Mill 5 West Channel	A combined ice storm and flood event occurred. The peak flood of 14,000 cfs occurred on January 8, 1998 after several days of constant rainfall, high temperatures, and snow melt. At the Gouldtown Development, built-up ice was released and went over a retaining wall at the West Dam and through the concrete block east and west walls of the powerhouse. The switchgear, governor, and exciter-MG set were destroyed. A breached section of earth and rubble on the right island embankment extends from the opposite end of the dam in the middle of the river. The breached section is about 200 feet long by 60 feet wide by 15 feet deep. The estimated cost for the repair of the powerhouse, mechanical and electrical equipment, and the breached island embankment is about \$1,000,000. The repair work will take at least three months to complete. A section about 200 feet long of the County Roadway, between the two bridges upstream of the dam, was washed out.
January 7, 1998	Harrisville	Inflow Flood - Hydrologic Event
January 7, 1998	Lyons Falls Mill 3	Inflow Flood - Hydrologic Event
January 7, 1998	Port Leyden	Inflow Flood - Hydrologic Event
January 7, 1998	Rock Island Dam	Inflow Flood - Hydrologic Event
November 27, 1999	High Falls	This is a low hazard dam. On Monday, November 29, 1999, the owner’s representative notified NYRO that their operator discovered that about half of the concrete spillway crest cap washed out after high flows receded over the Thanksgiving weekend. The owner reported that the Deer River area sustained a heavy rainstorm over the weekend of November 27 and 28, 1999, resulting in a flash flood at the project site. Flows were passing over the top of the spillway during the Thanksgiving weekend. The peak flow resulted in 59 inches of water over the spillway crest on Saturday morning, November 27, with an estimated flow of about 7,700 cfs. When the water receded below the crest on Monday, November 29, the operator noted that a portion of the concrete spillway cap, about 75 feet long and 2.5 feet high, at the left half of the spillway, had been washed away. There were no apparent downstream impacts as a result of the partial crest cap failure. Reservoir status: Pond level below dam crest. No downstream damage.
January 1, 2003	Mohawk Papers East Dam	Inflow Flood - Hydrologic Event
April 29, 2011	Gouldtown Mill 5 West Channel	On Friday, April 29, 2011, Kruger Energy Inc. (Operator) reported the washout of the fuse embankment at the Gouldtown Development of the Lyons Falls Project. The embankment serves as a non-engineered fuse in case of high flows that cannot be passed over the spillways, to prevent overtopping of the intake structure and the powerhouse. The fuse acted as intended and no adverse impacts downstream were reported. The fuse was previously activated in January 1998 under a 14,000 cfs flood. The 200-foot long by 60-foot-wide by 15-foot deep breach was repaired in-kind by May 1998.

Source: NPDP 2018

Note: cfs Cubic feet per second

Between 1954 and 2016, FEMA included New York State in 55 flood-related major disaster (DR) or emergency (EM) declarations classified as one or a combination of the following disaster types: severe storms, flooding,



hurricane, tropical depression, heavy rains, landslides, ice storm, high tides, Nor'Easter, tornado, snowstorm, severe winter storm, and inland/coastal flooding. Generally, these disasters cover a wide region of the state; therefore, they may have impacted many counties. Lewis County was included in nine of these flood-related declarations.

For this 2020 HMP, flood events were summarized from 2010 to 2018. Known flood events (including FEMA disaster declarations) which have impacted Lewis County between 2009 and 2018 are identified in Table 5.4.5-2. For events prior to 2009, refer to the 2010 Lewis County Multi-Jurisdictional Hazard Mitigation Plan. Not all events that have occurred in Lewis County are included due to the extent of documentation and the fact that not all sources may have been identified or researched. Loss and impact information could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP. Section 9 provides detailed information regarding impacts and losses to each municipality.



Table 5.4.5-2. Flood Events in Lewis County, 2010 to 2018

Dates of Event	Location	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
August 23, 2010	Natural Bridge, Houseville	Flood	N/A	N/A	A large area of showers and embedded thunderstorms brought heavy rains to areas of the Tug Hill Plateau during the late afternoon and evening hours of August 22, 2010. Volunteer observers reported rainfall totals of 4 to 5 inches. In addition to road closures due to ponding, some road damage occurred. In Turin, the Lewis County sheriff reported that Carpenter Road had been washed out and minor flooding closed the intersection of Route 26 and Carpenter Road. In Croghan, a bridge was washed out on Tidd Road. There were reports of basement flooding in Lowville. Natural Bridge reported \$25K in property damage. Houseville reported \$30K in property damage.
September 30, 2010	West Leyden, Town of Lowville, Martinsburg, Town of Croghan, Windecker	Flood	N/A	N/A	Tropical low pressure raced north from the Carolinas to New York State and brought copious amounts of rain to the eastern Finger Lakes and eastern Lake Ontario regions. Rainfall amounts of 3 to 4-1/2 inches were widespread across the area. Numerous roads were closed in Ontario, Oswego, Jefferson and Lewis counties. Some of these included parts of: Route 245 in Naples; Waterbury, Ohara and Ryan Roads in Redfield; Towsley, Bullrun, Hong Kong, and Albion Cross Roads in Albion Center; Watson Road in Champion; Tubbs, Spath, and Smithers Roads in Mexico; Routes 41 and 11 in Pulaski. Near Altmar, Austin and South Albion Roads at the crossing of the north branch of Grindstone Creek were washed out. West Leyden recorded \$10K in property damage. Lowville recorded \$8K in property damage. Martinsburg recorded \$8K in property damage. Croghan recorded \$8K in property damage and Windecker recorded \$5K in property damage.
April 28, 2011	Naumburg	Flood	DR-1993	Yes	After near record-setting spring rainfall, a warm front brought 2 to 4 inches of rain to the eastern Lake Ontario Region. The runoff resulted in flooding across the Black River basin, including the Black River and some of its major tributaries. Numerous roads were closed, some damaged or washed out. A few examples included: South Main Street in Carthage, East Martinsburg Rd, Ridge Rd, Merz Rd, Zecher Rd, Smith Rd, Moose River Rd, River D, Shibley Rd and Milkhouse Rd. The Black River at Boonville crested at 10.7 feet around 3am on April 29. Flood stage is 10 feet. The Black River at Watertown crested at 12.7 feet around 9am on April 30. Flood stage is 10 feet. A 67-year-old man drowned in the Black River. He and his son were canoeing on the river in Dexter when the canoe overturned. The son with rescued with no



Dates of Event	Location	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
					injuries. The man's body was found a week later. Naumburg recorded \$1.1M in property damage.
April 29, 2011	Gouldtown Mill 5 West Channel	Dam Failure	N/A	N/A	On Friday, April 29, 2011, Kruger Energy Inc. (Operator) reported the washout of the fuse embankment at the Gouldtown Development of the Lyons Falls Project. The embankment serves as a non-engineered fuse in case of high flows that cannot be passed over the spillways, to prevent overtopping of the intake structure and the powerhouse. The fuse acted as intended and no adverse impacts downstream were reported. The fuse was previously activated in January 1998 under a 14,000 cfs flood. The 200-foot long by 60-foot-wide by 15-foot deep breach was repaired in-kind by May 1998.
April 15, 2014	Tallcottageville	Flood	N/A	N/A	A harsh winter built an above-normal snow pack in the Black River basin and this snow pack contributed significantly to flooding in that region. At the beginning of the month, snow water equivalent averaged about twice the normal value on the Tug Hill. Temperatures averaged much above normal the second week in April with Watertown reaching 79 degrees and setting a record high on April 13 and then reaching 80 the next day. This was immediately followed by a modest rainfall with between three-quarters of an inch and an inch falling in the basin. The combination of warm temperatures and rain melted up to 8 inches of snow water equivalent and resulted in widespread flooding in the Eastern Lake Ontario region. The Black River reached moderate flood stage cresting at 13.81 feet at 05:15 EST on the 17th which is the 3rd highest on record. The Watertown gauge remained in flood stage for about 5 days. A tributary to the Moose River reached moderate flood stage cresting at 13.45 feet at 16:45 EST on April 15, and the Black river reached minor flood stage at Boonville cresting at 10.61 feet at 01:30 EST on April 16. In addition to forecast points, the Beaver River, West Branch of the Oswegatchie River, and the Salmon River also flooded. In all, this resulted in numerous road closures, damage to farmland and some residential structures. Several dozen homes were evacuated in Jefferson and Lewis counties. Tallcottageville recorded \$75K in property damage.





Dates of Event	Location	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
May 5, 2014	Village of Port Leyden	Flash Flood	N/A	N/A	A weak surface low drifted across the North Country and produced slow moving thunderstorms. The thunderstorms produced 3/4-inch hail near Turin and Port Leyden. The storms also dropped very heavy rains with radar estimating between eight and nine inches in some locations. The Village of Port Leyden in the Town of Leyden was hardest hit. More than a dozen roads in the Town were completely washed out with numerous others damaged. A sewer line and secondary water line were destroyed with a Boil Water advisory issued. About a dozen homes were damaged. A basement wall collapsed in one resulting in a total loss. Several dozen people had to be evacuated at the height of the storm. A State of Emergency was declared, and the resulting damage was enough to warrant the county inclusion in a State Disaster Declaration. Port Leyden reported \$1.5M in property damage.

Sources: FEMA 2018; NOAA-NCEI 2018; NYS HMP 2014; SPC 2018

- Cfs Cubic feet per second
- FEMA Federal Emergency Management Agency
- HMP Hazard Mitigation Plan
- Mph Miles per hour
- NCEI National Centers for Environmental Information
- NOAA National Oceanic and Atmospheric Administration
- NYS New York State
- N/A Not applicable
- SPC Storm Prediction Center



### Probability of Future Occurrences

Based on the historic and more recent flood events in Lewis County, it is clear that the County has a high probability of flooding for the future. The fact that the elements required for flooding exist and that major flooding has occurred throughout the County in the past suggests that many people and properties are at risk from the flood hazard in the future. It is estimated that Lewis County will continue to experience direct and indirect impacts of flooding events annually that may induce secondary hazards such as coastal erosion, storm surge in coastal areas, infrastructure deterioration or failure, utility failures, power outages, water quality and supply concerns, and transportation delays, accidents, and inconveniences.

As defined by FEMA, geographic areas within the 1-percent annual chance flood area in Lewis County are estimated to have a 1 percent chance of flooding in any given year. A structure located within a 1-percent annual chance flood area has a 26-percent chance of suffering flood damage during the term of a 30-year mortgage. Geographic areas in Lewis County located within the 0.2-percent annual chance flood area boundary are estimated to have a 0.2-percent chance of being flooded in any given year (FEMA, 2003).

According to the 2014 NYS HMP, between 1960 and 2012, Lewis County had 49 flooding events which resulted in no fatalities, one injury, over \$3 million in property damage and over \$860,000 in crop damage. These statistics showed that the County had a 94 percent chance of floods occurring in the future with a recurrence interval of one (NYS DHSES 2014). However, according to the NOAA National Centers for Environmental Information (NCEI) and the CRREL database, Lewis County experienced 18 flood events between 1950 and 2015, including 4 floods, 1 flash flood, 1 ice jams, and 12 dam failures. The Table 5.4.5-3 below shows these statistics, as well as the annual average number of events and the percent chance of these individual flood hazards occurring in Lewis County in future years (NOAA NCEI 2018).

**Table 5.4.5-3. Probability of Future Occurrence of Flooding Events**

Hazard Type	Number of Occurrences Between 1950 and 2018	Rate of Occurrence or Annual Number of Events (average)	Recurrence Interval (in years) (# Years/Number of Events)	Probability of Event in any given year	% chance of occurrence in any given year
Flash Flood	12	0.2	5.8	0.2	17.39
Flood	12	0.2	5.8	0.2	17.4
Dam Failure	12	0.2	5.8	0.2	17.4
Ice Jams	1	0.0	69.0	0.0	1.5
<b>TOTAL</b>	<b>37</b>	<b>0.5</b>	<b>1.9</b>	<b>0.5</b>	<b>53.6</b>

Source: NOAA-NCEI 2018; CRREL 2018; NPD 2018

In Section 5.3, the identified hazards of concern for Lewis County were ranked. The probability of occurrence, or likelihood of the event, is one parameter used for hazard rankings. Based on historical records and input from the Planning Committee, the probability of occurrence for flooding in the County is considered ‘frequent’ (hazard event is likely to occur within 25 years).

### Climate Change Impacts

Climate change is beginning to affect both people and resources in New York State, and these impacts are projected to continue growing. ClimAID: The Integrated Assessment for Effective Climate Change in New York State (ClimAID) was undertaken to provide decision-makers with information on the state’s vulnerability to



climate change and to facilitate the development of adaptation strategies informed by both local experience and scientific knowledge (New York State Energy Research and Development Authority [NYSERDA] 2011).

Each region in New York State, as defined by ClimAID, contains attributes that will be affected by climate change. Lewis County is part of Region 6, the Tug Hill Plateau. In Region 6, it is estimated that temperatures will increase by 4.4°F to 6.4°F by the 2050s and 5.9°F to 10.0°F by the 2080s (baseline of 45.4°F, mid-range projection). Precipitation totals will increase between 4 and 10% by the 2050s and 6 to 12% by the 2080s (baseline of 42.6 inches, mid-range projection). Table 5.4.5-4 displays the projected seasonal precipitation change for the Tug Hill Plateau ClimAID Region (NYSERDA 2014).

**Table 5.4.5-4. Projected Seasonal Precipitation Change in Region 6, 2050s (% change)**

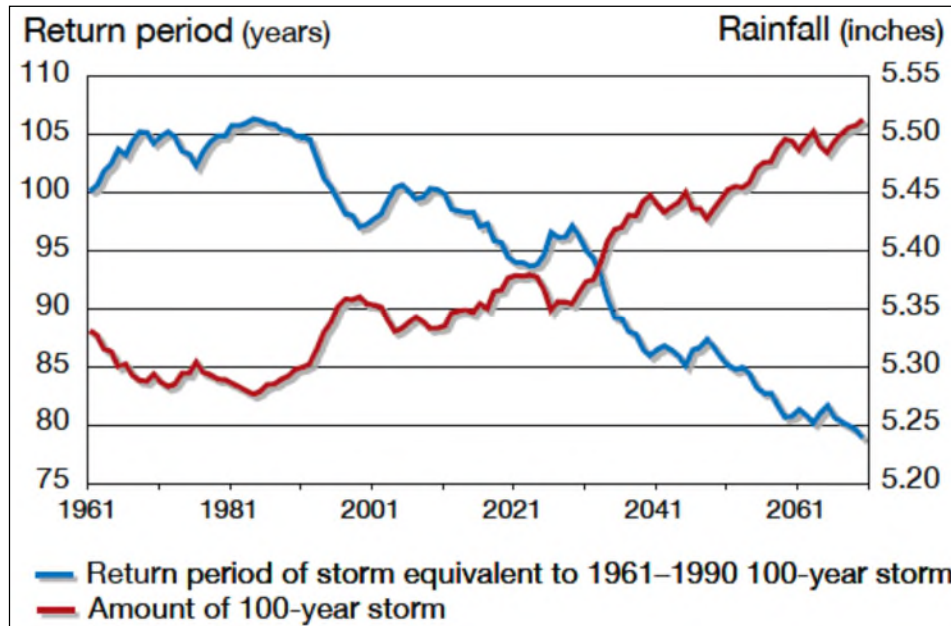
Winter	Spring	Summer	Fall
+5 to +15	0 to +10	-5 to +10	-5 to +10

Source: *NYSERDA 2011*

The projected increase in precipitation is expected to fall in heavy downpours and less in light rains. The increase in heavy downpours has the potential to affect drinking water; heighten the risk of riverine flooding; flood key rail lines, roadways and transportation hubs; and increase delays and hazards related to extreme weather events (NYSERDA 2011).

Increasing air temperatures intensify the water cycle by increasing evaporation and precipitation. This can cause an increase in rain totals during events with longer dry periods in between those events. These changes can have a variety of effects on the state’s water resources (NYSERDA 2011). Figure 5.4.5-2 displays the project rainfall and frequency of extreme storms in New York State. The amount of rain fall in a 100-year event is projected to increase, while the number of years between such storms (return period) is projected to decrease. Rainstorms will become more severe and more frequent (NYSERDA 2011).

**Figure 5.4.5-2. Projected Rainfall and Frequency of Extreme Storms**



Source: *NYSERDA 2011*

Dams are designed partly based on assumptions about a river’s flow behavior. Changes in weather patterns can significantly change the initial flow behavior used for design of a dam. If the flow behavior changes, the dam



conceivably could lose some or all of its designed margin of safety, also known as freeboard. Loss of designed margin of safety increases possibility that floodwaters would overtop the dam or create unintended loads. These situations could lead to a dam failure.

### 5.4.5.2 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed and vulnerable in the identified hazard area. For the flood hazard, the 1-percent annual chance flood event was examined (Figure 5.4.5-1). The following discusses potential flood impacts to Lewis County including:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on: (1) life, health and safety of residents, (2) general building stock, (3) critical facilities, (4) economy, and (5) future growth and development
- Effect of climate change on vulnerability
- Change of vulnerability compared to that presented in the 2010 Lewis County Hazard Mitigation Plan
- Further data collections that will assist understanding this hazard over time

#### Overview of Vulnerability

Flood is a significant concern for Lewis County. To assess vulnerability, exposure to the 1-percent annual chance flood events was examined and potential losses were calculated for the 1- percent annual chance flood event as well. The 0.2-percent annual chance flood event boundaries were not available in a spatial format for use in this HMP assessment. The flood hazard exposure and loss estimate analysis is presented below.

#### Data and Methodology

Digital Flood Insurance Rate Maps (DFIRMs) are not available for Lewis County from the FEMA Map Service Center. To delineate the 1-percent annual chance flood event boundary, Lewis County’s GIS Specialist digitized the 1-percent annual chance flood event boundaries from the County’s paper copies of their effective FIRMs. The data used for this analysis is shown in Figure 5.4.5-1. The effective dates for the FIRMs used to digitize the 1-percent annual chance flood event are as listed below:

- |  |                                      |
|--|--------------------------------------|
| • Village of Constableville – 7/16/1982                                    | • Village of Lowville – 6/20/2000    |
| • Town of Croghan – 5/15/195   | • Village of Lyons Falls – 6/19/1985 |
| • Village of Croghan – 5/15/1985   | • Town of Lyonsdale – 6/19/1985      |
| • Town of Denmark – 5/15/1985  | • Town of Martinsburg – 6/19/1985    |
| • Town of Diana – 9/24/1984  | • Town of New Bremen – 5/4/2000      |
| • Town of Greig – 5/15/1985  | • Town of Osceola – 6/30/1976        |
| • Village of Harrisville (incorporated into the Town of Diana) – 5/15/1985 | • Town of Port Leyden – 6/19/1985    |
| • Town of Lewis – 8/23/1982  | • Town of Turin – 8/2/1994           |
| • Town of Leyden – 6/19/1985   | • Village of Turin – 7/1/1977        |
| • Town of Lowville – 6/20/2000   | • Town of Watson – 7/19/2000         |

To estimate potential losses, the HAZUS-MH 4.2 flood model was used. A depth grid was generated using the FEMA flood boundaries and a USGS 1/3 Arc-second DEM in ArcGIS 10.5.1 with 3D Analyst and Spatial Analyst tools. The depth grid was integrated into HAZUS-MH 4.2 and the model was run to estimate potential losses at the U.S. Census block level using the Hazus-MH default building stock data.

The HAZUS-MH 4.2 flood model uses 2010 U.S. Census demographic data. HAZUS-MH 4.2 calculated the estimated damage to the general building stock and critical facilities based on the default general building stock



inventory and custom critical facility inventory by using the generated depth grid and the default HAZUS-MH 4.2 damage functions in the flood model.

Dam failure inundation maps and downstream hazard areas are considered sensitive information and were not available to conduct a quantitative risk assessment. Therefore, the County’s vulnerability to the dam failure is discussed qualitatively.

### Impact on Life, Health and Safety

The impact of the hydrologic hazards on life, health, and safety is dependent upon several factors, including the severity of the event and whether or not adequate warning time is provided to residents. Exposure represents the population living in or near the hazard areas that could be impacted should an event occur. Additionally, exposure should not be limited to only those who reside in a defined hazard zone, but everyone who may be affected by the cascading impacts of a hazard event (e.g., people are at risk while traveling in flooded areas, or their access to emergency services is compromised during an event). The degree of that impact will vary and is not strictly measurable.

Cascading impacts may also include exposure to pathogens such as mold. After flood events, excess moisture and standing water contribute to the growth of mold in buildings. Mold may present a health risk to building occupants, especially those with already compromised immune systems such as infants, children, the elderly and pregnant women. The degree of impact will vary and is not strictly measurable. Mold can grow in as short a period as 24-48 hours in wet and damaged areas of buildings that have not been properly cleaned. Very small mold spores can easily be inhaled, creating the potential for allergic reactions, asthma episodes, and other respiratory problems. Buildings should be properly cleaned and dried out to safely prevent mold growth.

Molds and mildews are not the only public health risk associated with flooding. Floodwaters can be contaminated by pollutants such as sewage, human and animal feces, pesticides, fertilizers, oil, asbestos, and rusting building materials. Common public health risks associated with flood events also include:

- Unsafe food
- Contaminated drinking and washing water and poor sanitation
- Mosquitos and animals
- Carbon monoxide poisoning
- Secondary hazards associated with re-entering/cleaning flooded structures
- Mental stress and fatigue

Current loss estimation models, such as HAZUS-MH, are not equipped to measure public health impacts. The best level of mitigation for these impacts is to be aware that they can occur, educate the public on prevention, and be prepared to deal with these vulnerabilities in responding to flood events.

To estimate the population exposed to the 1-percent flood events, the floodplain boundaries were overlaid upon the 2010 U.S. Census population data in GIS (U.S. Census 2010). The 2010 U.S. Census blocks, with the centroid in the flood boundaries, were used to calculate the estimated population exposed to this hazard. Within the floodplain population, senior citizens and the population in poverty are two especially vulnerable groups that must be taken under special consideration when planning for disaster preparation, response, and recovery.

Census blocks do not follow the boundaries of the floodplain and can grossly over or under estimate the population exposed when using the centroid or intersect of the Census block with these zones. The limitations of these analyses are recognized, and as such the results are only used to provide a general estimate. The total land area located in the 1-percent annual chance flood zones was calculated using the regulatory FIRM for each jurisdiction, as presented in Table 5.4.5-5.





Table 5.4.5-5. Estimated Area Exposed to the Flood Hazard

Municipality	Total Area (acres)	1-percent annual chance flood Event	
		Area (acres)	Percent (%) of Total
Castorland (V)	217.9	33.4	15.3%
Constableville (V)	721.1	43.7	6.1%
Copenhagen (V)	757.8	0.5	0.1%
Croghan (T)	116,016.6	14,144.8	12.2%
Croghan (V)	271.2	37.6	13.9%
Denmark (T)	31,747.4	3,444.1	10.8%
Diana (T)	90,074.8	10,221.8	11.3%
Greig (T)	60,586.6	3,575.6	5.9%
Harrisburg (T)	25,415.9	74.7	0.3%
Lewis (T)	41,630.0	1,574.3	3.8%
Leyden (T)	21,200.8	1,021.1	4.8%
Lowville (T)	23,173.9	4,360.3	18.8%
Lowville (V)	1,202.7	30.1	2.5%
Lyons Falls (V)	652.9	89.9	13.8%
Lyonsdale (T)	44,191.2	1,972.0	4.5%
Martinsburg (T)	48,649.2	2,836.4	5.8%
Montague (T)	41,857.4	0.2	0.0%
New Bremen (T)	35,616.0	1,922.5	5.4%
Osceola (T)	55,814.3	1,192.9	2.1%
Pinckney (T)	26,317.7	0.0	0.0%
Port Leyden	425.7	59.4	14.0%
Turin (T)	19,377.9	691.8	3.6%
Turin (V)	649.0	45.8	7.1%
Watson (T)	74,920.1	4,334.4	5.8%
West Turin (T)	64,327.5	43.0	0.1%
<b>Lewis County</b>	<b>825,815.6</b>	<b>51,750.2</b>	<b>6.3%</b>

Source: FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000

Note: The area presented includes the area of inland waterways and excludes bays or oceans.

T = Town

V = Village

The spatial analysis conducted indicates approximately 5.3 percent of the total population is exposed to the 1-percent annual chance flood event; refer to Table 5.4.5-6. The Village of Turin has the greatest number of people residing in the floodplain; approximately 15.1 percent of the Village. For this plan, the potential population located in the floodplain is used as a guide to estimate exposure.



**Table 5.4.5-6. Estimated Population Exposed to the Flood Hazard**

Municipality	Total Population	1-Percent Annual Chance Event	
		Total Number	Percent (%) of Total
Castorland (V)	351	0	0.0%
Constableville (V)	242	0	0.0%
Copenhagen (V)	801	0	0.0%
Croghan (T)	2,750	304	11.1%
Croghan (V)	618	12	1.9%
Denmark (T)	1,708	78	4.6%
Diana (T)	1,709	72	4.2%
Greig (T)	1,202	97	8.1%
Harrisburg (T)	437	0	0.0%
Lewis (T)	854	11	1.3%
Leyden (T)	1,303	36	2.8%
Lowville (T)	1,533	178	11.6%
Lowville (V)	3,449	11	0.3%
Lyons Falls (V)	566	0	0.0%
Lyonsdale (T)	982	20	2.0%
Martinsburg (T)	1,433	139	9.7%
Montague (T)	78	0	0.0%
New Bremen (T)	2,431	161	6.6%
Osceola (T)	229	0	0.0%
Pinckney (T)	329	0	0.0%
Port Leyden	672	25	3.7%
Turin (T)	529	65	12.3%
Turin (V)	232	35	15.1%
Watson (T)	1,878	186	9.9%
West Turin (T)	771	0	0.0%
<b>Lewis County</b>	<b>27,087</b>	<b>1,430</b>	<b>5.3%</b>

Sources: U.S. Census 2010; FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000

T = Town

V = Village

Of the population exposed, the most vulnerable include the economically disadvantaged and the population over the age of 65. Economically disadvantaged populations are more vulnerable because they are likely to evaluate their risk and make decisions to evacuate based on the net economic impact to their family. The population over the age of 65 is also more vulnerable because they are more likely to seek or need medical attention which may not be available due to isolation during a flood event and they may have more difficulty evacuating.

Using 2010 U.S. Census data, HAZUS-MH 4.2 estimates the potential sheltering needs as a result of a 1-percent annual chance flood event. For the 1-percent annual chance flood event, HAZUS-MH 4.2 estimates 1,495 households will be displaced, and 15 people will seek short-term sheltering. These statistics, by municipality, are presented in Table 5.4.5-7.



Table 5.4.5-7. Estimated Population Displaced or Seeking Short-Term Shelter from the 1-Percent Annual Chance Flood Event

Municipality	2010 U.S. Census Population	1-Percent Annual Chance Flood Event	
		Displaced Households	Persons Seeking Short-Term Sheltering
Castorland (V)	351	15	0
Constableville (V)	242	5	0
Copenhagen (V)	801	0	0
Croghan (T)	2,750	304	0
Croghan (V)	618	33	0
Denmark (T)	1,708	61	1
Diana (T)	1,709	138	1
Greig (T)	1,202	85	1
Harrisburg (T)	437	0	0
Lewis (T)	854	23	0
Leyden (T)	1,303	61	0
Lowville (T)	1,533	134	0
Lowville (V)	3,449	32	0
Lyons Falls	566	1	0
Lyonsdale (T)	982	47	0
Martinsburg (T)	1,433	127	3
Montague (T)	78	0	0
New Bremen (T)	2,431	194	2
Osceola (T)	229	5	0
Pinckney (T)	329	0	0
Port Leyden	672	6	0
Turin (T)	529	40	0
Turin (V)	232	10	0
Watson (T)	1,878	174	7
West Turin (T)	771	0	0
<b>Lewis County</b>	<b>27,087</b>	<b>1,495</b>	<b>15</b>

Source: HAZUS-MH 4.2

T = Town

V = Village

The total number of injuries and casualties resulting from flooding is generally limited based on advance weather forecasting, blockades, and warnings. Therefore, injuries and deaths generally are not anticipated if proper warning and precautions are in place. Ongoing mitigation efforts should help to avoid the most likely cause of injury, which results from persons trying to cross flooded roadways or channels during a flood.

Populations located within a dam failure inundation zone are considered exposed and vulnerable to a dam failure event. Potential for loss of life is affected by capacities and number of evacuation routes available to populations living within these areas. Of the population exposed to dam failure and flash flooding, the most vulnerable include the economically disadvantaged and the population over age 65. Economically disadvantaged populations are more vulnerable because they are likely to evaluate their risk and make decisions to evacuate based on net economic impact on their families. The population over age 65 is also highly vulnerable because these people are more likely to seek or need medical attention that may not be available because of isolation during a flood event, and they may have more difficulty evacuating.

Often, the warning time issued for dam failure event is limited. These events are frequently associated with other natural hazard events such as earthquakes, landslides, or severe weather, which limits their predictability and compounds the hazard. Populations without adequate warning of the event are highly vulnerable to this hazard. Ongoing mitigation efforts including dissemination and early warning systems noted in Section 6 (Mitigation





Strategies) of this HMP should help avoid the most likely cause of injury (persons trying to cross flooded roadways or channels) during a dam failure-induced flood.

### Impact on General Building Stock

To assess exposure and estimate potential impacts to buildings, the 1-percent annual chance flood boundaries were overlaid upon the default HAZUS-MH 4.2 building stock data at the 2010 U.S. Census block level and Lewis County’s building footprint spatial layer. The Census blocks with their centroid in the hazard areas were totaled for each municipality to estimate the County’s total replacement cost value exposure. To estimate the exposure to the number of buildings, the County’s building footprints with their centroid in the 1-percent annual chance flood boundaries were totaled. Table 5.4.5-8 presents these results. In summary, there are 2,077 buildings located in 1-percent annual chance flood boundary with an estimated \$222 million of building/contents exposed in Lewis County. This represents approximately 4.8 percent of the County’s total general building stock inventory (approximately \$4.56 billion).

Properties located closest to dam failure inundation zones have the greatest potential to experience the largest, most destructive surge of water. Dam failure can cause severe downstream flooding and may transport large volumes of sediment and debris, depending on the magnitude of the event.

**Table 5.4.5-8. Estimated General Building Stock Exposure to the 1- Percent Annual Chance Flood Event – All Occupancies**

Municipality	Total # Buildings	Total Replacement Cost Value (Structure and Contents)	Total (All Occupancies)			
			# Buildings	% Total	Total Replacement Cost Value (Structure and Contents)	% Total
Castorland (V)	215	\$34,034,000	5	2.3%	\$0	0.0%
Constableville (V)	304	\$41,682,000	6	2.0%	\$0	0.0%
Copenhagen (V)	460	\$140,717,000	0	0.0%	\$0	0.0%
Croghan (T)	3,748	\$374,956,000	536	14.3%	\$32,042,000	8.5%
Croghan (V)	487	\$75,012,000	15	3.1%	\$1,424,000	1.9%
Denmark (T)	1,872	\$205,546,000	97	5.2%	\$9,646,000	4.7%
Diana (T)	2,998	\$334,443,000	290	9.7%	\$22,903,000	6.8%
Greig (T)	2,630	\$269,742,000	309	11.7%	\$48,533,000	18.0%
Harrisburg (T)	645	\$71,710,000	0	0.0%	\$0	0.0%
Lewis (T)	1,408	\$109,401,000	30	2.1%	\$2,176,000	2.0%
Leyden (T)	1,745	\$130,509,000	98	5.6%	\$6,559,000	5.0%
Lowville (T)	1,448	\$210,155,000	126	8.7%	\$20,773,000	9.9%
Lowville (V)	2,068	\$1,019,570,000	4	0.2%	\$2,351,000	0.2%
Lyons Falls (V)	540	\$70,606,000	6	1.1%	\$0	0.0%
Lyonsdale (T)	1,442	\$157,699,000	80	5.5%	\$7,141,000	4.5%
Martinsburg (T)	1,999	\$193,202,000	85	4.3%	\$14,337,000	7.4%
Montague (T)	442	\$50,885,000	0	0.0%	\$0	0.0%
New Bremen (T)	2,467	\$216,271,000	77	3.1%	\$13,761,000	6.4%
Osceola (T)	1,104	\$84,863,000	15	1.4%	\$1,500,000	1.8%
Pinckney (T)	587	\$76,814,000	0	0.0%	\$0	0.0%
Port Leyden	501	\$64,603,000	9	1.8%	\$1,874,000	2.9%
Turin (T)	1,007	\$104,517,000	16	1.6%	\$8,131,000	7.8%
Turin (V)	217	\$32,206,000	5	2.3%	\$7,042,000	21.9%



Municipality	Total # Buildings	Total Replacement Cost Value (Structure and Contents)	Total (All Occupancies)			
			# Buildings	% Total	Total Replacement Cost Value (Structure and Contents)	% Total
Watson (T)	3,022	\$311,194,000	268	8.9%	\$21,029,000	6.8%
West Turin (T)	1,700	\$187,251,000	0	0.0%	\$0	0.0%
<b>Lewis County</b>	<b>35,056</b>	<b>\$4,567,588,000</b>	<b>2,077</b>	<b>5.9%</b>	<b>\$221,222,000</b>	<b>4.8%</b>

Source: FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000, Hazus-MH 4.2; Lewis County 2016

The HAZUS-MH 4.2 model estimated potential damage to the buildings in Lewis County at the 2010 U.S. Census block level using the default HAZUS-MH 4.2 building stock inventory. The potential damage estimated by HAZUS-MH 4.2 to the general building stock inventory associated with the 1-percent annual chance flood is approximately \$79.0 million or 1.7 percent of the total building stock replacement cost value.





Table 5.4.5-9. Estimated General Building Stock Potential Loss to the 1-Percent Annual Chance Flood Event

Municipality	Total Replacement Cost Value	1-percent Annual Chance Flood Event							
		All Occupancies		Residential		Commercial		Industrial, Religious, Education, and Government	
		Estimated Loss	% of Total	Estimated Loss	% of Total	Estimated Loss	% of Total	Estimated Loss	% of Total
Castorland (V)	\$34,034,000	\$12,000	<1%	\$12,000	<1%	\$0	0.00%	\$0	<1%
Constableville (V)	\$41,682,000	\$347,000	<1%	\$250,000	<1%	\$92,000	0.22%	\$5,000	<1%
Copenhagen (V)	\$140,717,000	\$0	0.0%	\$0	0.0%	\$0	0.00%	\$0	0.0%
Croghan (T)	\$374,956,000	\$8,816,000	2.4%	\$8,440,000	2.3%	\$187,000	0.05%	\$189,000	<1%
Croghan (V)	\$75,012,000	\$598,000	<1%	\$490,000	<1%	\$108,000	0.14%	\$0	0.0%
Denmark (T)	\$205,546,000	\$1,760,000	<1%	\$1,329,000	<1%	\$5,000	0.00%	\$426,000	<1%
Diana (T)	\$334,443,000	\$7,869,000	2.4%	\$5,134,000	2.3%	\$520,000	0.24%	\$846,000	<1%
Greig (T)	\$269,742,000	\$7,415,000	2.7%	\$6,580,000	2.4%	\$663,000	0.25%	\$172,000	<1%
Harrisburg (T)	\$71,710,000	\$0	0.0%	\$0	0.0%	\$0	0.00%	\$0	0.0%
Lewis (T)	\$109,401,000	\$1,062,000	<1%	\$941,000	<1%	\$4,000	0.00%	\$117,000	<1%
Leyden (T)	\$130,509,000	\$2,557,000	2.0%	\$2,557,000	2.0%	\$0	0.00%	\$0	0.0%
Lowville (T)	\$210,155,000	\$3,087,000	1.5%	\$1,781,000	<1%	\$132,000	0.06%	\$1,174,000	<1%
Lowville (V)	\$1,019,570,000	\$17,588,000	1.7%	\$453,000	<1%	\$4,885,000	0.48%	\$12,250,000	1.2%
Lyons Falls	\$70,606,000	\$19,000	<1%	\$7,000	<1%	\$0	0.00%	\$12,000	<1%
Lyonsdale (T)	\$157,699,000	\$3,843,000	2.4%	\$2,768,000	1.8%	\$636,000	0.40%	\$439,000	<1%
Martinsburg (T)	\$193,202,000	\$6,132,000	3.2%	\$6,132,000	3.2%	\$0	0.00%	\$0	0.0%
Montague (T)	\$50,885,000	\$0	0.0%	\$0	0.0%	\$0	0.00%	\$0	0.0%
New Bremen (T)	\$216,271,000	\$3,893,000	1.8%	\$3,376,000	1.6%	\$317,000	0.15%	\$200,000	<1%
Osceola (T)	\$84,863,000	\$207,000	<1%	\$207,000	<1%	\$0	0.00%	\$0	0.0%
Pinckney (T)	\$76,814,000	\$0	0.0%	\$0	0.0%	\$0	0.00%	\$0	0.0%
Port Leyden	\$64,603,000	\$112,000	<1%	\$112,000	<1%	\$0	0.00%	\$0	0.0%
Turin (T)	\$104,517,000	\$1,165,000	1.1%	\$940,000	<1%	\$0	0.00%	\$225,000	<1%
Turin (V)	\$32,206,000	\$223,000	<1%	\$103,000	<1%	\$30,000	0.09%	\$90,000	<1%
Watson (T)	\$311,194,000	\$12,265,000	3.9%	\$11,149,000	3.6%	\$540,000	0.17%	\$576,000	<1%
West Turin (T)	\$187,251,000	\$0	0.0%	\$0	0.0%	\$0	0.00%	\$0	0.0%
<b>Lewis County</b>	<b>\$4,567,588,000</b>	<b>\$78,970,000</b>	<b>1.7%</b>	<b>\$53,597,000</b>	<b>1.2%</b>	<b>\$8,494,000</b>	<b>0.19%</b>	<b>\$16,879,000</b>	<b>&lt;1%</b>

Source: HAZUS-MH 4.2 T = Town V = Village





NFIP Statistics

In addition to total building stock modeling, individual data available on flood policies, claims, repetitive loss (RL) properties and severe RL (SRLs) properties were analyzed. FEMA Region 2 provided a list of residential properties with NFIP policies, past claims and multiple claims (RLPs). According to the metadata provided: “The (sic National Flood Insurance Program) NFIP Repetitive Loss File contains losses reported from individuals who have flood insurance through the Federal Government. A property is considered an RL property when there are two or more losses reported which were paid more than \$1,000 for each loss. The two losses must be within 10 years of each other & be as least 10 days apart. Only losses from (sic since) 1/1/1978 that are closed are considered.”

According to Section 1361A of the National Flood Insurance Act, as amended (NFIA), 42 U.S.C. 4102a, an SRL property is defined as a residential property that is covered under an NFIP flood insurance policy and:

- Has at least four NFIP claim payments (including building and contents) over \$5,000 each, and the cumulative amount of such claims payments exceeds \$20,000; or
- For which at least two separate claims payments (building payments only) have been made with the cumulative amount of the building portion of such claims exceeding the market value of the building.
- For both of the above, at least two of the referenced claims must have occurred within any 10-year period and must be greater than 10 days apart.

Table 5.4.5-10 through Table 5.4.5-12 summarize the NFIP policies, claims and repetitive loss statistics for Lewis County. Four RL properties are found in the County, the majority of which are single-family residences (75 percent). The County does not have any SRL properties (FEMA Region 2 2018). This information is current as of May 3, 2018.

The location of the NFIP properties with policies, claims and repetitive and severe repetitive flooding were geocoded by FEMA with the understanding that varying tolerances occur between how closely the longitude and latitude coordinates correspond to the location of the property address, or that the identification of some locations are more accurate than others.

Table 5.4.5-10. Occupancy Class of Repetitive Loss Structures in Lewis County

Occupancy Class	Total Number of Repetitive Loss Properties	Total Number of Severe Repetitive Loss Properties	Total (RL + SRL)
Single Family	3	0	3
Condo	0	0	0
2-4 Family	0	0	0
Other Residential	0	0	0
Non-Residential	1	0	1
<b>Total</b>	<b>4</b>	<b>0</b>	<b>4</b>

Source: FEMA Region 2 2018

Note (1): Repetitive loss and severe repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.

Note (2): Total number of repetitive loss properties does not include severe repetitive loss properties.

RL Repetitive Loss





Table 5.4.5-11. Occupancy Class of Repetitive Loss Structures in Lewis County, by Municipality

Municipality	Repetitive Loss Properties					Severe Repetitive Loss Properties				
	2-4 Family	Assumed Condo	Non-Residential	Other Residential	Single Family	2-4 Family	Assumed Condo	Non-Residential	Other Residential	Single Family
Castorland (V)	0	0	1	0	0	0	0	0	0	0
Constableville (V)	0	0	0	0	0	0	0	0	0	0
Copenhagen (V)	0	0	0	0	0	0	0	0	0	0
Croghan (T)	0	0	0	0	0	0	0	0	0	0
Croghan (V)	0	0	0	0	0	0	0	0	0	0
Denmark (T)	0	0	0	0	1	0	0	0	0	0
Diana (T)	0	0	0	0	0	0	0	0	0	0
Greig (T)	0	0	0	0	1	0	0	0	0	0
Harrisburg (T)	0	0	0	0	0	0	0	0	0	0
Lewis (T)	0	0	0	0	0	0	0	0	0	0
Leyden (T)	0	0	0	0	1	0	0	0	0	0
Lowville (T)	0	0	0	0	0	0	0	0	0	0
Lowville (V)	0	0	0	0	0	0	0	0	0	0
Lyons Falls	0	0	0	0	0	0	0	0	0	0
Lyonsdale (T)	0	0	0	0	0	0	0	0	0	0
Martinsburg (T)	0	0	0	0	0	0	0	0	0	0
Montague (T)	0	0	0	0	0	0	0	0	0	0
New Bremen (T)	0	0	0	0	0	0	0	0	0	0
Osceola (T)	0	0	0	0	0	0	0	0	0	0
Pinckney (T)	0	0	0	0	0	0	0	0	0	0
Port Leyden	0	0	0	0	0	0	0	0	0	0
Turin (T)	0	0	0	0	0	0	0	0	0	0
Turin (V)	0	0	0	0	0	0	0	0	0	0
Watson (T)	0	0	0	0	0	0	0	0	0	0
West Turin (T)	0	0	0	0	0	0	0	0	0	0
<b>Lewis County</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

Source: FEMA, 2018

Note (1): Repetitive loss and severe repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.

Note (2): The statistics were summarized using the Community Name provided by FEMA Region 2.





Table 5.4.5-12. NFIP Policies, Claims and Repetitive Loss Statistics

Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in the 1% Flood Boundary (3)
Castorland (V)	0	3	\$20,041	1	0	0
Constableville (V)	0	0	\$0	0	0	0
Copenhagen (V)	0	0	\$0	0	0	0
Croghan (T)	14	1	\$16,483	0	0	6
Croghan (V)	4	0	\$2,778	0	0	2
Denmark (T)	5	13	\$114,937	1	0	4
Diana (T)	13	4	\$165,337	0	0	5
Greig (T)	9	7	\$46,085	1	0	2
Harrisburg (T)	1	0	\$320	0	0	1
Lewis (T)	1	1	\$415	0	0	1
Leyden (T)	3	4	\$13,087	1	0	1
Lowville (T)	6	2	\$12,881	0	0	4
Lowville (V)	1	2	\$3,945	0	0	0
Lyons Falls (V)	0	1	\$82,721	0	0	0
Lyonsdale (T)	3	0	\$33,425	0	0	2
Martinsburg (T)	3	0	\$2,673	0	0	2
Montague (T)	0	0	\$0	0	0	0
New Bremen (T)	5	0	\$3,021	0	0	3
Osceola (T)	2	2	\$5,052	0	0	0
Pinckney (T)	0	0	\$0	0	0	0
Port Leyden (V)	2	0	\$0	0	0	1
Turin (T)	1	2	\$27,346	0	0	1
Turin (V)	0	0	\$0	0	0	0
Watson (T)	7	8	\$54,563	0	0	6
West Turin (T)	0	0	\$0	0	0	0
<b>Lewis County</b>	<b>78</b>	<b>50</b>	<b>\$605,011</b>	<b>4</b>	<b>0</b>	<b>43</b>

Source: FEMA Region 2, 2018





*Notes:*

- (1) Policies, claims, and repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.*
- (2) Total building and content losses from the claims file provided by FEMA Region 2.*
- (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file. FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility. A zero percentage denotes less than 1/100th percentage and not zero damage or vulnerability as may be the case. Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.*





### Impact on Critical Facilities

It is important to determine the critical facilities and infrastructure within the County that may be at risk to flooding, and those who may be impacted should damage occur. Critical services during and after a flood event may not be available if critical facility structures are directly damaged or transportation routes to access these critical facilities are impacted. Roads that are blocked or damaged can isolate residents and can prevent access throughout the planning area to many service providers needing to get to vulnerable populations or to make repairs.

Major roadways that may be impacted by the 1-percent annual chance flood event include NY-12, NY-126, NY-12D, NY-177, NY-26, NY-294, NY-3, NY-410, NY-812, and NY-970J. Bridges washed out or blocked by floods or debris also can cause isolation. Water and sewer systems can be flooded or backed up, causing health problems. Floodwaters can get into drinking water supplies, causing contamination. Culverts can be blocked by debris from flood events, also causing localized urban flooding. Sewer systems can be backed up, causing wastewater to spill into homes, neighborhoods, rivers, and streams.

HAZUS-MH 4.2 was used to estimate loss to critical facilities exposed to the 1-percent annual chance flood event. Using depth/damage function curves, HAZUS-MH 4.2 estimates the percent of damage to the building and contents of critical facilities. Table 5.4.5-13 summarizes the number of critical facilities located in the FEMA flood zones by type and by jurisdiction.

In cases where short-term functionality is impacted by a hazard, other facilities of neighboring municipalities may need to increase support response functions during a disaster event. Mitigation planning should consider means to reduce impact to critical facilities and ensure sufficient emergency and school services remain when a significant event occurs. Actions addressing shared services agreements are included in Section 9 (Mitigation Strategies) of this plan.

**Table 5.4.5-13. Critical Facilities by Jurisdiction**

Municipality	Facility Types								
	Communication	Dam	Electric Power	Fire Station	Potable Water Pump	Reservoir	School	Wastewater Facility	Wastewater Pump
Castorland (V)	0	0	0	0	0	0	0	1	0
Constableville (V)	0	0	0	0	0	0	0	0	0
Copenhagen (V)	0	0	0	0	0	0	0	0	0
Croghan (T)	0	10	9	0	0	0	1	1	0
Croghan (V)	0	1	0	0	0	0	0	0	0
Denmark (T)	0	0	2	0	0	0	0	0	0
Diana (T)	1	1	2	0	0	0	0	0	0
Greig (T)	0	3	0	0	1	0	0	0	0
Harrisburg (T)	0	0	0	0	0	0	0	0	0
Lewis (T)	1	4	0	1	0	1	0	0	0
Leyden (T)	0	1	4	0	0	0	0	0	0
Lowville (T)	0	0	0	0	1	0	0	0	0



Municipality	Facility Types								
	Communication	Dam	Electric Power	Fire Station	Potable Water Pump	Reservoir	School	Wastewater Facility	Wastewater Pump
Lowville (V)	0	0	0	0	0	0	0	0	0
Lyons Falls (V)	0	1	1	0	0	0	0	0	1
Lyonsdale (T)	1	6	7	0	0	1	0	0	0
Martinsburg (T)	0	0	0	0	0	0	0	0	0
Montague (T)	0	0	0	0	0	0	0	0	0
New Bremen (T)	0	3	3	0	0	0	0	0	0
Osceola (T)	0	0	0	0	0	0	0	0	0
Pinckney (T)	0	0	0	0	0	0	0	0	0
Port Leyden	0	2	2	0	0	0	0	0	0
Turin (T)	0	0	0	0	0	0	0	0	0
Turin (V)	0	1	0	0	0	0	0	0	0
Watson (T)	0	2	2	0	0	0	0	0	0
West Turin (T)	0	0	0	0	0	0	0	0	0
<b>Lewis County</b>	<b>3</b>	<b>35</b>	<b>32</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>

Source: FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000; Lewis County 2018

T – Town

V - Village

It is important to determine what critical facilities and infrastructure may be at risk to flooding as a result of a dam failure, and who may be impacted should damage occur. Critical services during and after an event may not be available if critical facility structures are directly damaged or transportation routes to access these critical facilities are impacted. Roads that are blocked or damaged can isolate residents and can prevent access throughout the planning area, including emergency service providers needing to get to vulnerable populations or to make repairs. In addition, the flood waters can degrade the integrity of the roads. Sometimes the damage is apparent – a road that washes away, a sinkhole that appears, a bridge that crumbles, but often the damage is less obvious on the surface.

### Impact on the Economy

Flood events can significantly impact the local and regional economy. This includes but is not limited to building damage and associated tax loss, impacts to utilities and infrastructure, agricultural losses, business interruption, and effects on tourism. In areas that are directly flooded, commercial and industrial building repairs or renovations may be necessary, disrupting associated services.

Flooding can cause extensive damage to public utilities and disruptions to the delivery of services. Loss of power and communications may occur; and drinking water and wastewater treatment facilities may be temporarily out of operation. Flooded streets and road blocks make it difficult for emergency vehicles to respond to calls for service. Floodwaters can wash out sections of roadway and bridges. In addition to travel along the roadways, public transit will be greatly impacted, causing problems for emergency responders.



Debris management may also be a large expense after a flood event. HAZUS-MH 4.2 estimates the amount of debris generated from the flood events as a result of 1- and 0.2-percent events. The model breaks down debris into three categories: (1) finishes (dry wall, insulation, etc.); (2) structural (wood, brick, etc.) and (3) foundations (concrete slab and block, rebar, etc.). The distinction is made because of the different types of equipment needed to handle the debris. Table 5.4.5-14 summarizes the debris HAZUS-MH 4.2 estimates for these events. This table only represents estimated debris generated by riverine flooding.

**Table 5.4.5-14. Estimated Debris Generated from the 1-Percent Annual Chance Flood Event**

Municipality	1-percent annual chance flood Event			
	Total (tons)	Finish (tons)	Structure (tons)	Foundation (tons)
Castorland (V)	0.0	0.0	0.0	0.0
Constableville (V)	50.2	14.4	19.9	15.8
Copenhagen (V)	0.0	0.0	0.0	0.0
Croghan (T)	1,529.4	443.6	599.1	486.7
Croghan (V)	52.0	29.4	12.1	10.6
Denmark (T)	133.3	56.1	40.1	37.1
Diana (T)	673.8	246.7	232.1	195.0
Greig (T)	660.3	265.1	213.2	182.0
Harrisburg (T)	0.0	0.0	0.0	0.0
Lewis (T)	114.2	56.9	29.2	28.1
Leyden (T)	457.1	132.4	170.6	154.2
Lowville (T)	140.9	66.4	39.9	34.7
Lowville (V)	598.7	102.0	281.5	215.2
Lyons Falls	1.5	0.8	0.4	0.3
Lyonsdale (T)	466.9	118.5	186.5	162.0
Martinsburg (T)	1,196.8	270.4	638.1	288.4
Montague (T)	0.0	0.0	0.0	0.0
New Bremen (T)	462.1	189.2	149.9	123.0
Osceola (T)	18.2	8.4	4.9	4.9
Pinckney (T)	0.0	0.0	0.0	0.0
Port Leyden	22.9	6.7	8.6	7.6
Turin (T)	111.7	44.7	37.7	29.4
Turin (V)	8.0	5.8	0.9	1.4
Watson (T)	1,613.0	403.9	638.5	570.6
West Turin (T)	0.0	0.0	0.0	0.0
<b>Lewis County</b>	<b>8,311.3</b>	<b>2,461.3</b>	<b>3,302.9</b>	<b>2,547.0</b>

Source: HAZUS-MH 4.2

T - Town

V - Village

Similar to riverine flood events, dam failure events can also significantly impact the local and regional economy. Widespread damage to buildings and infrastructure affected by a dam failure event would result in large costs to repair these locations. In addition to physical damage costs, businesses can be closed while flood waters retreat, and utilities are returned to a functioning state.



### Effect of Climate Change on Vulnerability

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As discussed earlier, annual precipitation amounts in the region are projected to increase, primarily in the form of heavy rainfalls, which have the potential to affect drinking water, increase the risk of flash flooding and riverine flooding, and flood critical transportation corridors and infrastructure (NYSERDA 2014). Increases in precipitation may alter and expand the floodplain boundaries and runoff patterns, resulting in populations, buildings, and critical facilities and infrastructure that were previously outside the floodplain now located with the floodplain. This increase in exposure would result in an increased risk to life and health, an increase in structural losses, a diversion of additional resources to response and recovery efforts, and an increase in business closures affected by future flooding events due to loss of service or access.

Existing dams may not be able to retain and manage increases in water flow from more frequent, heavy rainfall events. Heavy rainfalls may result in more frequent overtopping of these dams and flooding of the County’s assets in adjacent inundation areas.

### Change of Vulnerability

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Lewis County and its municipalities continue to be vulnerable to the flood hazard. Mitigation measures undertaken by the County and municipalities are discussed in Section 6 (Mitigation Strategy) and in the jurisdictional annexes in Section 9.

When examining the change in vulnerability since the 2010 HMP, the risk assessment results in the 2010 HMP and the 2020 HMP update were compared. However, there are several differences in data and methodology used. The 2010 HMP used the digitized 1-percent annual chance flood event boundaries from Lewis County to conduct an exposure on the County’s parcels and critical facilities. Historic storm damage amounts were used to calculate an annualized loss for each municipality. For this HMP, population data (U.S. Census 2010) was incorporated into the analysis. An exposure was conducted on the County’s population, general building stock, and critical facilities. FEMA’s HAZUS-MH 4.2 default replacement cost values were used to estimate the value of building stock exposed to the hazard area, and building footprints were used to estimate the number of structures exposed to the hazard area. HAZUS-MH 4.2 was also used to estimate potential losses for the County. Due to these differences, a direct comparison could not be conducted to identify a change in vulnerability over time.

Overall, the County will continue to be exposed and potentially vulnerable to flood events, especially people, structures, and economically valuable resources within or near flood hazard areas.

This vulnerability assessment uses a more accurate and updated building inventory, which provides a more precise estimate on exposure and potential losses for Lewis County.

### Future Growth and Development

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As discussed in Sections 4 and 9, areas targeted for future growth and development have been identified across Lewis County. Any of these areas of growth could be potentially impacted by the flood hazard if located within the identified hazard areas. Refer to the specific areas of development indicated in tabular form and/or on the hazard maps included in the jurisdictional annexes in Volume II, Section 9 of this plan.

### Additional Data and Next Steps

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A HAZUS-MH 4.2 flood analysis was conducted for Lewis County using the most current and best available data, including updated critical facility inventories and the digitized spatial layer of the County’s effective FIRMs provided by Lewis County. For future plan updates, a custom general building inventory could be



generated using tax assessor data and building footprints. Depending on future availability, FEMA DFIRMs can replace the floodplain data utilized in this plan and provide a more current, accurate assessment of flood risk.

Regarding dam failure inundation impacts, potential losses have not been quantified and presented in this HMP due to the lack of spatially available inundation zones. For future plan updates if spatial data is made available, the data can be used to conduct an exposure analysis on the County’s assets. Also, to estimate potential losses to the County’s assets, dam inundation areas and depths of flooding can be used to generate depth grids. The HAZUS-MH 4.2 flood model may be applied to estimate potential losses within the County and participating municipalities.

Specific mitigation actions, addressing improved data collection and further vulnerability analysis, is included in Volume II, Section 9 of this plan.





## 5.4.6 Hazardous Materials

This section provides a hazard profile (description, location, extent, previous occurrences and losses, probability of future occurrences, and impact of climate change) and vulnerability assessment of the hazardous materials (HazMat) hazard for the Lewis County Hazard Mitigation Plan (HMP).

### 5.4.6.1 Hazard Profile

This section presents information regarding the description, location, extent, previous occurrences and losses, and probability of future occurrences for the HazMat hazard.

#### Hazard Description

HazMats consist of substances considered severely harmful to human health and the environment, as defined by the U.S. Environmental Protection Agency (EPA) Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (Superfund Law). Many are commonly used substances that are harmless in their normal uses but quite dangerous if released. The Superfund Law designates more than 800 substances as hazardous and identifies many more as potentially hazardous due to their characteristics and depending on the circumstances of their release (EPA 2016).

The Superfund Law’s definition of a hazardous substance includes the following:

- Any element, compound, mixture, solution, or substance designated as hazardous under Section 102 of CERCLA.
- Any hazardous substance designated under Section 311(b)(2)(a) of the Clean Water Act (CWA), or any toxic pollutant listed under Section 307(a) of the CWA. More than 400 substances are designated as either hazardous or toxic under the CWA.
- Any hazardous waste having the characteristics identified or listed under Section 3001 of the Resource Conservation and Recovery Act (RCRA).
- Any hazardous air pollutant listed under Section 112 of the Clean Air Act (CAA), as amended. More than 200 substances are listed as hazardous air pollutants under the CAA.
- Any imminently hazardous chemical substance or mixture regarding which EPA Administrator has “taken action” under Section 7 of the Toxic Substances Control Act (TSCA) (EPA 2016).

Numerous facilities throughout Lewis County use and store HazMats as defined by EPA. Many products containing HazMats are used and stored in homes, and these products are shipped daily on highways, railroads, waterways, and pipelines. If released or misused, HazMats can cause death, serious injury, long-lasting health effects, and damage to structures and other properties as well as to the environment.

Transportation of HazMats on highways involves tanker trucks or trailers, which are responsible for the greatest number of hazardous substance release incidents. Lewis County’s roads cross rivers and streams; hazardous substance spills on roads could pollute watersheds that serve as domestic water supplies for areas within Lewis County and other parts of the State. Hazardous substance releases also could occur along rail lines, as collisions and derailments of train cars can result in large spills.

Pipelines transport hazardous liquids and flammable substances such as natural gas and petroleum. If these pipes are corroded, releases of hazardous substances could occur when the pipes are damaged during excavation, incorrect operation, or by other forces. When HazMats are transported by aircraft or by watercraft, hazards can be posed by crashes, spills of materials, or fires on these vessels.



Nuclear power-generating stations, research reactors, or other stationary sources of radioactivity present the threat of release of radiological material. This type of event could threaten a large, multi-jurisdictional area, and result in property damage, contamination of farm and water supplies, and economic damage. The western half of Lewis County is within the 50-mile Emergency Planning Zone (EPZ) for the Nine Mile Point plant (U.S. Energy Information Administration [EIA] 2012; U.S. Nuclear Regulatory Commission [NRC] 2016).

### Location

The following information pertains to locations of hazardous substance incidents.

#### Hazardous Materials Fixed-Site

In response to the health and environmental risks caused by improper storage and disposal of hazardous waste, Congress established the Superfund program clean up the uncontrolled or abandoned warehouses, manufacturing facilities, processing plants, and landfill sites where wastes had been dumped or left out in the open. The Superfund program was established in 1980 and is administered by EPA in cooperation with individual states. In New York State, the Department of Environmental Conservation (NYSDEC) Inactive Hazardous Waste Disposal Site Program oversees the Superfund program (NYSDEC 2015).

Federal regulations, including CERCLA and the Superfund Amendments and Reauthorization Act (SARA), require maintenance and (minimally) annual revision of a National Priorities List (NPL) of the worst hazardous waste sites throughout the United States (US EPA 2018).

Fixed-site facilities that use, manufacture, or store HazMats in Lewis County pose risk and must comply with Title III of the federal SARA. SARA was signed into law on October 17, 1986, and is a federal law that applies nationwide. This law is linked to 42 U.S. Code Chapter 116 – Emergency Planning and Community Right-To-Know (EPCRA). SARA requires the governor of each state to establish a State Emergency Response Commission (SERC). New York’s SERC was established by Executive Law, Article 2-B in 1978. The signing of this legislation also established the Disaster Preparedness Commission in 1978. SARA also requires establishment of emergency planning districts by SERC and specifies that these districts can be existing political subdivisions. The function of the emergency planning district is to facilitate preparation and implementation of emergency plans.

Lewis County is home to five Toxic Release Inventory (TRI) facilities and 163 fixed facilities that are EPA regulated (EPA 2016). For security purposes, they are not mapped in this profile.

Additionally, EPA identifies six facilities under the TRI. These facilities are required to report annually how much of each chemical is recycled, combusted for energy recovery, treated for destruction, and disposed of or otherwise released on-site and off-site. In 2016, the TRI facilities in Lewis County reported a total of 2,694 pounds of on-site and off-site disposal or other releases, with the following breakdown:

- Total On-Site: 2,249 pounds
  - Lead: 1 pound
  - Xylene (mixed isomers): 498 pounds.
  - Zinc compounds: 1,750 pounds
- Total Off-Site: 445 pounds
  - Zinc compounds: 445 pounds (EPA 2016)

1,500 pounds are released by air and 750 pounds were released by water in 2014 (EPA 2018a)



### Resource Conservation and Recovery Act (RCRA) of 1976

Several reporting mechanisms and databases exist to support the RCRA, which considers solid waste and hazardous waste management. RCRAInfo is a comprehensive information system and has replaced the Resource Conservation and Recovery Information System (RCRIS) and Biennial Reporting System (BRS) previously used to gather data. RCRAInfo tracks many types of information about the regulated hazardous waste handlers, including facility status, regulated activities, and compliance histories. It also captures data on hazardous waste generation from large-quantity generators and waste management practices, including treatment, storage, and disposal facilities. As of September 2018, 121 facilities had reported information to RCRAInfo (EPA 2018).

### Superfund

Superfund is a program administered by EPA to locate, investigate, and clean up the worst hazardous waste sites throughout the United States. Data from the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database indicates that one Superfund site is present in Lewis County in Lowville (EPA 2017).

### Hazardous Materials in Transit

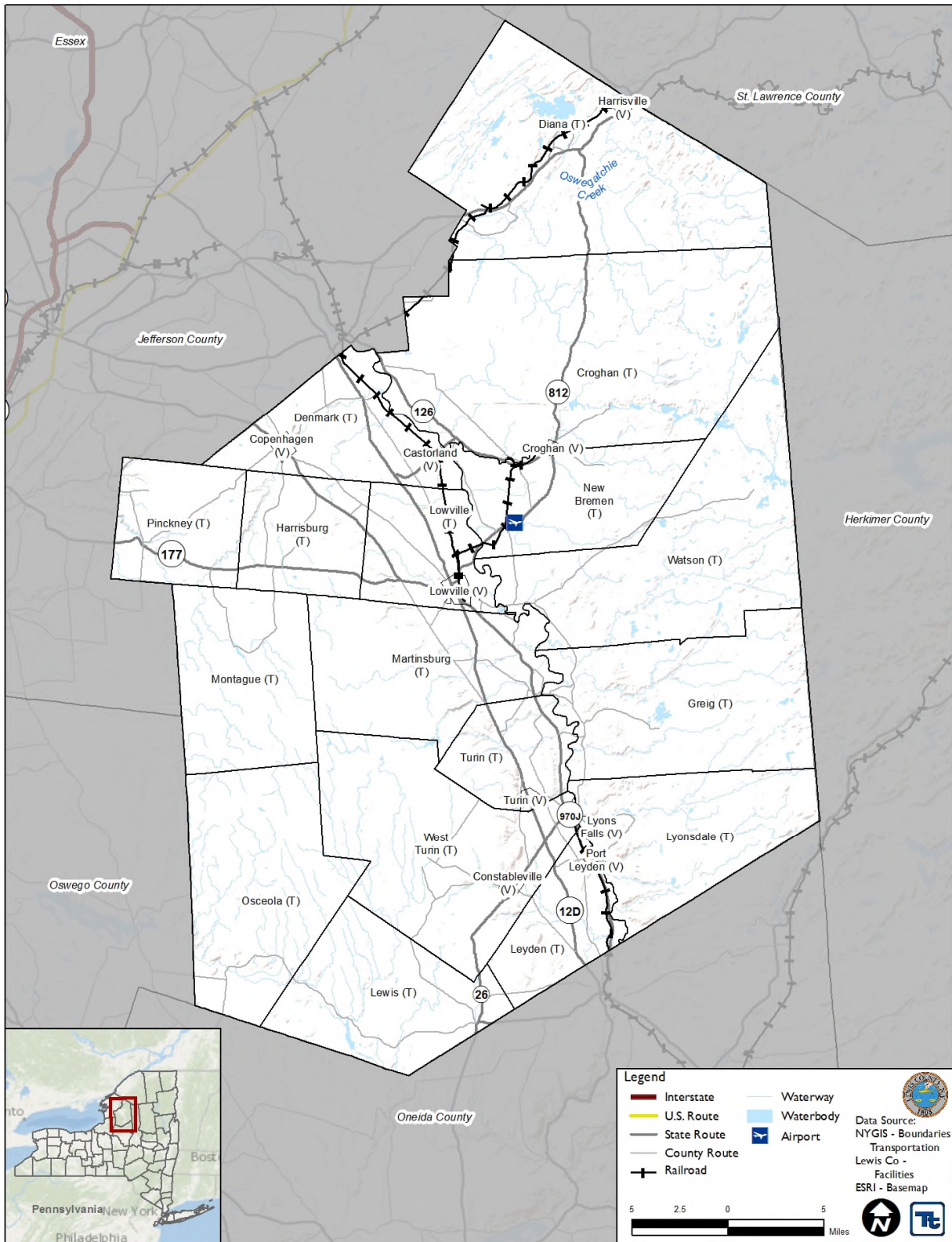
Incidents involving HazMats in transit can occur anywhere in Lewis County. Transportation corridors within Lewis County that carry HazMats include highways, railroads, air/flight paths, pipelines, and navigable waterways. Major highways are more likely to be settings for this type of hazard because of interstate and local commercial transport of HazMats. Transport vehicles do not typically travel through residential areas unless en route to destinations such as gasoline service stations or storage facilities.

Hazardous substance releases in navigable waterways are not a significant concern for Lewis County; per U.S. Coast Guard (USCG) determinations, there are no navigable waterways within the County (USCG 2016). The U.S. Army Corps of Engineers (USACE) only finds one waterway within the County as navigable and requiring permits: all areas of the Indian River below the ordinary high water mark of the Indian River extending from the upstream limits at NYS Route 812 in the Village of Indian River, Town of Croghan, Lewis County to the downstream confluence with Black Lake in the Town of Macomb, St. Lawrence County, and includes Indian River Lake and Narrow Lake in Lewis County. (USACE n.d.)

Major transportation routes through Lewis County include State Routes (S.R.) 812, 177, 970J, and 12D. Potential for a spill also exists on routes used for industrial and business purposes. Section 4 of this HMP discusses roadways in the County. Figure 5.4.6-1 shows the major transportation routes and railways in Lewis County.



Figure 5.4.6-1. Major Transportation Routes and Railways in Lewis County



Source: Lewis County 2016





HazMat incidents may occur along railways in Lewis County. Rail lines that may carry HazMats cross the Town of Diana, from to Town of Denmark to the Town of Lowville and the Town of Lyden. Rail lines that may carry HazMats include the Mohawk, Adirondack, and Northern Railroad, the Lowville and Beaver River Railroad, and CSX Transportation. However, at the time of writing, the operational status of these freight lines was unclear, and this infrastructure is considered underutilized if not abandoned altogether. New York State Department of Transportation (NYSDOT) has a vital interest in preserving and improving the rail freight part of its transportation network. Rail shipments allow cost-effective movement of goods and thus decrease stress on the State’s highway system. Major commodities shipped by rail include petrochemicals (including plastic pellets), construction materials, food products, raw materials, and finished goods for manufacturers. Rail cars carrying HazMats are of concern because an accident or release could pose a public safety hazard to the community. Figure 5.4.6-1 above shows railways that run throughout Lewis County.

HazMat can also be transported via underground petroleum and gas (natural and propane) pipelines across the state. New York has an extensive network of natural gas and petroleum pipelines, some of which pass through Lewis County. The pipelines operating in Lewis County are owned by Dominion Transmission, Inc. and National Fuel Gas Supply Corporation (NFGSC). Contact information for each company can be located on the National Pipeline Mapping System website (National Pipeline Mapping System [NPMS] 2018). Figure 5.4.6-2 shows the extent and location of pipelines in Lewis County.





Figure 5.4.6-2. Lewis County Pipelines-National Pipeline Mapping System



Source: National Pipeline Mapping System 2019





## Extent

The extent of a hazardous substance release depends on (1) whether the substance is released from a fixed or mobile source, (2) the size of the impacted area, (3) the toxicity and properties of the substance, (4) the duration of the release, and (5) environmental conditions (for example, wind and precipitation, terrain, etc.).

Hazardous substance releases can contaminate air, water, and soils, possibly resulting in death or injuries. Dispersion can occur rapidly when the hazardous substance is transported by water and wind. While often accidental, releases can occur as a result of human carelessness, intentional acts, or natural hazards. Hazardous releases caused by natural hazards are known as secondary events. HazMats can include toxic chemicals, radioactive substances, infectious substances, and hazardous wastes. Such releases can affect nearby populations and contaminate critical or sensitive environmental areas.

Severity or impact of a hazardous substance release, whether accidental or intentional, depends on several potentially mitigating or exacerbating circumstances. Mitigation involves precautionary measures taken in advance to reduce the impact of a release on the surrounding environment. For example, primary and secondary containment or shielding by implementation of sheltering-in-place protects people and property from the harmful effects of a hazardous substance release. Exacerbating conditions—characteristics that can enhance or magnify the effects of a hazardous substance release—include the following:

- Weather conditions, which affect the ways in which the hazard occurs and develops
- Micro-meteorological effects of buildings and terrain, which alter dispersion of HazMats in compliance with applicable codes (such as building or fire codes)
- Maintenance failures (such as fire protection and containment features), which can substantially increase damage to a facility and to surrounding buildings

As discussed earlier, the severity of an incident depends not only on the circumstances described above, but also on the type of substance released and the distance from the incident and related response time of emergency response teams. Areas closest to a release are generally at greatest risk; however, depending on the agent, a release can travel great distances or remain present in the environment for a long period of time (for example, centuries to millennia).

## Previous Occurrences and Losses

Historical information regarding previous occurrences and losses associated with hazardous substance incidents throughout Lewis County came from many sources. Given the many sources reviewed for the purpose of this HMP, information regarding loss from and impact of many events could vary depending on the source. Notably, monetary amounts cited in this HMP are based only on the available information identified during research for this HMP.

Between 1954 and 2018, the State of New York was included in two Federal Emergency Management Agency (FEMA)-declared emergencies related to hazardous substance incidents. Typically, EMs cover a wide region of an included state, and therefore could impact many counties within that state. However, not all counties in New York State were included in the two emergencies cited above. Importantly, Lewis County was not included in either emergency (FEMA 2018).

The U.S. Department of Transportation (USDOT) Pipeline and HazMat Safety Administration (PHMSA) provides an incident report database with information on incidents throughout the United States. The data are from HazMat incident reports. According to this database, 16 incidents occurred in Lewis County between 1976 and 2018, releasing fuel oil, acetic acid, ink, diesel fuel, and kerosene (PHMSA 2018). HazMat incidents on-site or in transit occur frequently across the State and in Lewis County. These incidents are typically small,



localized events. The NYSDEC Spill Incidents Database lists 1,675 spill incidents throughout the County from May 19, 1985 through May 19, 2018, with an average of about 50 incidents per year (NYSDEC 2018).

For this HMP, major HazMat incidents were summarized from 1965 to 2018 in Table 5.4.6-1. The information from the NYSDEC Spills Incidents Database has not been copied to the hazard incident table on the next page because of the number of events listed.

Table 5.4.6-1. Hazardous Materials Incidents in Lewis County, 1965 to 2016

Date(s) of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
May 24, 1991	Ink Spill	N/A	N/A	An ink spill took place in Lewis. 55 gallons broke open on the bottom during transit due to metal fatigue.
March 3, 1993	Fuel Oil Spill	N/A	N/A	A fuel oil spill took place in Lyons Falls. A tank overflow from an aboveground storage tank resulted in 50 gallons being spilled. The spill was contained in the tanks steel dyke. Cleanup involved vacuuming the fuel out of the dyke.
February 24, 1996	Fuel Oil Spill	N/A	N/A	A fuel oil spill took place in Lowville at the Lewis County Hospital. During delivery of fuel to the hospital tank, an employee did not monitor the tank, resulting in 5,500 gallons being forced out the vent pipe and into a storm drain. The hospital called New York State Department of Environmental Conservation (DEC) who arranged for the cleanup.
April 27, 2007	Acetic Acid Spill	N/A	N/A	An acetic acid spill took place in Lowville. While unloading, it was discovered that one carton was punctured and leaking. The affected material was placed in a salvage drum for disposition.
September 2, 2008	Kerosene Spill	N/A	N/A	A kerosene spill took place in Lowville. A delivery driver overfilled the third compartment on his truck. An outside contractor cleaned up the spill.
January 19, 2009	Fuel Oil Spill	N/A	N/A	A fuel oil spill took place in Lyons Falls. A driver in training overfilled a tank, spilling less than two gallons of fuel oil from the vent pipe to the ground. Griffith Technician cleaned up the spill.
January 23, 2008	Kerosene spill	N/A	N/A	A kerosene spill took place in Constableville. A customer’s tank vent failed to operate properly causing 3 gallons of kerosene to foam out of the fill pipe. The driver cleaned up the spill.
February 4, 2009	Fuel Oil Spill	N/A	N/A	A fuel oil spill took place in Lowville. A driver overfilled a tank, forcing 2 gallons of fuel oil out of the tank top fittings and onto the ground. Griffith Energy cleaned up initial spill with an outside contractor dispatched for testing and final remediation.
April 1, 2009	Diesel Fuel Spill	N/A	N/A	A diesel fuel spill took place in Lowville. A driver filled a tank too quickly, allowing the product to blowback out of the fill port, spilling 4 gallons to the gravel below. Griffith Energy cleaned up the spill.
January 20, 2010	Fuel Oil Spill	N/A	N/A	A fuel oil spill took place in Castorland. A driver failed to differentiate the whistle from fuel oil flow sounds and overfilled a tank, forcing 10 gallons of fuel oil from the



Date(s) of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
				vent to the gravel driveway below. The driver soaked up the available oil and an outside contractor handled the remaining remediation.
March 10, 2010	Diesel Fuel Spill	N/A	N/A	A diesel fuel spill took place in Lowville. The valve on the third compartment of a tankwagon failed while the truck was parked in a lot. 8 gallons of diesel spilled onto the frozen soil. An outside contractor handled remediation.
June 11, 2010	Diesel Fuel Spill	N/A	N/A	A diesel fuel spill took place in Lowville. A driver in training started a conversation with the trainer and stopped paying attention to the rack while loading compartments, allowing overfill of 5 gallons of diesel to spill. The driver and trainee cleaned up the spill.
October 18, 2010	Kerosene Spill	N/A	N/A	A kerosene spill took place in Lowville. A driver knocked the power takeoff (PTO) switch accidentally. The nozzle flew from the pump spraying 2-3 gallons of kerosene. An outside contractor handled remediation.
October 7, 2011	Fuel Oil Spill	N/A	N/A	A fuel oil spill took place in Lowville. A driver overfilled a tank due to a weak whistle. Approximately 1 gallon of fuel oil spilled. Technicians responded to clean up the spill and drain the product in the tank to a safe level.
October 24, 2011	Fuel Oil Spill	N/A	N/A	A fuel oil spill took place in Copenhagen. A driver switched tank compartments without turning off the nozzle. The tank overfilled while the driver was still in the truck, forcing 2 gallons of fuel oil from the vent to the concrete pad and grass.
May 23, 2017	Fuel Oil Spill	N/A	N/A	A fuel oil spill took place in Lewis. The driver arrived to offload a 9,000-gallon delivery of waste oil fuel to the customers 15 000-gallon tank. Before beginning the offload, he was told by facility personnel that the tank gauge showed there to be sufficient space for the entire load. In the process of unloading the driver noticed the tank gauge giving a much higher reading than was expected at the point. While in the process of verifying his remaining load and re checking the facility tank gauge some distance away the facility tank was over filled. The original tank gauge reading was found to be incorrect. All of the released fuel oil was captured in containment with no release to soil or water. A field service crew equipped with the correct personal protective equipment (PPE) was dispatched to pump out the fuel oil from containment and fully degrease and remediate the containment structure. All generated cleanup waste was drummed and manifested to the appropriate waste stream for disposal.

Source: PHMSA 2018

**Probability of Future Occurrences**

Predicting future hazardous substance incidents in Lewis County is difficult. This type of incident can occur at any time and any location in the County. Incidents can occur suddenly without any warning or develop slowly. Small spills, both fixed-site and in transit, occur throughout the year, and the probability of occurrences of these events is high. Risk of a major incident within a given year is small.





In Section 5.3, the identified hazards of concern within Lewis County were ranked. The probability of occurrence, or likelihood of an event, is one parameter used for hazard rankings. Based on historical records and input from the Planning Partnership, probability of occurrence of HazMat spills within the County is considered “frequent” (likely to occur within 25 years, as presented in Table 5.3-1).

The County is expected to continue to undergo direct and indirect impacts of hazardous substance incidents annually that may induce secondary hazards such as infrastructure deterioration or failure; potential decreases in water quality and supply; and transportation delays, accidents, and inconveniences.

### Climate Change Impacts

Climate change can impact HazMat and solid waste management (which often includes materials that are or have the potential to be hazardous) in multiple ways. Table 5.4.6.-2 summarizes data collected from a report on climate change impacts on solid waste management. While not all impacts will increase the risk of a HazMat incident (discussed further in the Vulnerability section), the longevity of hazardous substances in the community may increase. Further study on the impacts of climate change on hazardous substances must be conducted to verify the potential impacts below and explore other impacts of climate change on HazMat incidents.

Table 5.4.6.-2. Climate Change Impacts on Solid Waste Management

Climate Variable	Potential Impacts
Higher Temperatures	Alter waste decomposition rate
	Lead to reduced water availability, alter site hydrology and leachate production
	Waste may enhance disease transmission, by giving rise to increased vermin and increased risk of odor nuisance
	Increase dust potentials (in composting)
	Increase combustion risk
Increased Precipitation	Alter waste decomposition rate
	Alter site hydrology
	Increase leachate strength
	Increase flooding occurrence on-site due to saturated waste and rising groundwater
	Lead to disruption to transport infrastructure (road and rail) due to flooding and impact delivery of waste
	Increase slope stability risks
Sea Level Rise	Lead to inundation of sites
Reduced Cloud Cover	Adverse impact on the life of exposed materials

Source: Ifeanyi 2010

Note: Only those impacts related to solid waste management as it relates to HazMats have been listed.

### 5.4.6.2 Vulnerability Assessment

To understand risk, a community must evaluate its assets that are exposed or vulnerable within the identified hazard area. Regarding the HazMat hazard, all of Lewis County has been identified as the hazard area. Therefore, all assets within the County (population, structures, critical facilities, and lifelines), as described in the County Profile (Section 4), are vulnerable to HazMat incidents. This section addresses the following factors to evaluate and estimates potential impacts of the HazMat incident hazard on Lewis County:

- Overview of vulnerability
- Data and methodology used for the evaluation







- Impacts on (1) life, health, and safety of residents; (2) general building stock; (3) critical facilities; (4) economy; and (5) future growth and development
- Effect of climate change on vulnerability
- Change of vulnerability as compared to that presented in the 2010 Lewis County HMP
- Further data collections that will assist understanding of this hazard over time

### **Overview of Vulnerability**

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Overall, potential losses from HazMat incidents are difficult to quantify due to the many variables and human elements. Human safety and welfare can be compromised as a result of negative health effects of poisoning or exposure to toxic substances, fires, or explosions.

Effects from a radiological incident at a fixed facility would vary depending on the product released (type of radiation), amount of radiation released, current weather conditions, and time of day. The priority following an incident at any facility within the State of New York is life and safety of all individuals within the area impacted. Secondary to health and safety would be effects on critical infrastructure, environment, property, and the economy.

### **Data and Methodology**

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Data regarding this hazard were obtained from Lewis County and the Planning Partnership as well as appropriate state and federal resources.

### **Impacts on Life, Health, and Safety**

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Depending on the type and quantity of chemicals released and weather conditions, an incident can affect larger areas that cross jurisdictional boundaries. When HazMats are released into the air, water, or on land, they may contaminate the environment and pose greater danger to human health. The general population may be exposed to a HazMat release through inhalation, ingestion, or dermal exposure. Exposure may be either acute or chronic, depending on the nature of the substance and extent of release and contamination. HazMat incidents can lead to injury, illnesses, and/or death of involved persons and those living within the impacted areas.

Locations of different HazMats and waste sites in Lewis County render the entire County vulnerable to the HazMat incident hazard. Populations particularly vulnerable to effects of HazMat incidents are those residing along major transportation routes because significant quantities of chemicals are transported along these major thoroughfares.

### **Impacts on General Building Stock**

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Potential losses of general building stock caused by a HazMat incident are difficult to quantify. Extent of damage to the general building stock depends on the scale of the incident. Potential losses may include inaccessibility, loss of service, contamination, and/or potential structural and content losses if an explosion occurs.

### **Impacts on Critical Facilities**

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Potential losses of critical facilities caused by a HazMat incident are difficult to quantify. Potential losses may include inaccessibility, loss of service, contamination, and/or potential structural and content losses if an explosion occurs. Section 4 (County Profile) summarizes the number and type of critical facilities in Lewis County.



### **Impact on the Economy**

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If a significant HazMat incident occurs, not only would life, safety, and building stock be at risk, but the economy of Lewis County would be affected as well. A significant incident within an urban area may force businesses to close for an extended period of time because of contamination or direct damage caused by an explosion, if one occurred. Exact impacts on the economy are difficult to predict, given the uncertainty of the size and scope of potential incidents.

HazMat incidents can lead to closures of major transportation routes in Lewis County. Closures of waterways, railroads, airports, and highways as a result of these incidents can hinder delivery of goods and services. Potential impacts may be local, regional, or statewide depending on the magnitude of the event and the extent of disruptions to services.

### **Future Growth and Development**

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As discussed in Sections 4 and 9, areas targeted for future growth and development have been identified across Lewis County. Any areas of growth could be impacted by HazMat incidents because the entire County is exposed and vulnerable. An increase in development and population can increase likelihood of a hazardous substance incident. Future migration to larger jurisdictions may also increase the likelihood of an incident. The tables and hazard maps included in the jurisdictional annexes in Volume II, Section 9 of this plan contain information regarding the specific areas of development that would increase County vulnerability to the HazMat incident hazard.

### **Change of Vulnerability**

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Overall, the County’s vulnerability has not changed, and exposure and vulnerability of the entire County to HazMat incidents will continue.

### **Additional Data and Next Steps**

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For the HMP, any additional information regarding localized concerns and past impacts will be collected and analyzed. These data will be developed to support future revisions to the plan. Mitigation efforts could include extensions of existing New York State, Lewis County, and local efforts.



## 5.4.7 Landslide

This section provides a profile and vulnerability assessment for the landslide hazard.

### 5.4.7.1 Hazard Profile

This section provides profile information including description, extent, location, previous occurrences and losses, and the probability of future occurrences.

#### Description

According to the U.S. Geological Survey (USGS), the term landslide includes a wide range of ground movement, such as rock falls, deep failure of slopes, and shallow debris flows. Although gravity acting on an over-steepened slope is the primary reason for a landslide, there are other contributing factors that include:

- erosion by rivers, glaciers, or ocean waves create over-steepened slopes
- rock and soil slopes are weakened through saturation by snowmelt or heavy rains
- earthquakes create stresses that make weak slopes fail
- earthquakes of magnitude 4.0 and greater have been known to trigger landslides
- volcanic eruptions produce loose ash deposits, heavy rain, and debris flows
- excess weight from accumulation of rain or snow, stockpiling of rock or ore, from waste piles, or from man-made structures may stress weak slopes to failure and other structures (USGS date unknown).

Landslides may be triggered by both natural and human-caused changes in the environment, including heavy rain, rapid snow melt, steepening of slopes caused by construction or erosion, earthquakes, and changes in groundwater levels. Areas generally prone to landslide hazards include previous landslide areas, bases of steep slopes, bases of drainage channels, developed hillsides, and areas recently burned by forest and brush fires (NYS DHSES 2014). Human activities that contribute to slope failure include altering the natural slope gradient, increasing soil water content, and removing vegetation cover. Warning signs for landslide activity include:

- Springs, seeps, or saturated ground in areas that have not typically been wet before
- New cracks or unusual bulges in the ground, street pavement, or sidewalk
- Soil moving away from foundations
- Ancillary structures, such as decks and patios, tilting and moving relative to the main house
- Tilting or cracking of concrete floors and foundations
- Broken water lines and other underground utilities
- Leaning telephone poles, trees, retaining walls, or fences
- Offset fence lines
- Sunken or down-dropped road beds
- Rapid increase in creek water levels, possibly accompanied by increased turbidity
- Sudden increase in creek water levels while rain is still falling or just recently ended
- Sticking doors and windows, and visible open spaces indicating jambs and frames out of plumb
- A faint rumbling sound that increases in volume as the landslide nears
- Unusual sounds, such as trees cracking or boulders knocking together (U.S. Geological Survey [USGS] 2013).



Landslide materials may be composed of natural rock, soil, artificial fill, or a combination of these materials. They can be caused by numerous factors such as volcanic eruptions, earthquakes, fire, storms, and by human land modifications. Landslides can transpire quickly with little to no warning. Depending on the location of a landslide, they can pose significant risks to health, safety, transportation, as well as other services. Annually, landslides in the U.S. cause approximately \$3.5 billion in damages and between 25 and 50 fatalities (NYS DHSES 2014).

### Extent

To determine the extent of a landslide hazard, the affected areas need to be identified and the probability of the landslide occurring within some time period needs to be assessed. Natural variables that contribute to the overall extent of potential landslide activity in any particular area include soil properties, topographic position and slope, and historical incidence. Predicting a landslide is difficult, even under ideal conditions. As a result, the landslide hazard is often represented by landslide incidence and/or susceptibility, defined below:

- Landslide incidence is the number of landslides that have occurred in a given geographic area. High incidence means greater than 15 percent of a given area has been involved in landsliding; medium incidence means that 1.5 to 15 percent of an area has been involved; and low incidence means that less than 1.5-percent of an area has been involved. (USGS, date unknown).
- Landslide susceptibility is defined as the probable degree of response of geologic formations to natural or artificial cutting, to loading of slopes, or to unusually high precipitation. It can be assumed that unusually high precipitation or changes in existing conditions can initiate landslide movement in areas where rocks and soils have experienced numerous landslides in the past. Landslide susceptibility depends on slope angle and the geologic material underlying the slope. Landslide susceptibility only identifies areas potentially affected and does not imply a timeframe when a landslide might occur. High, medium, and low susceptibility are delimited by the same percentages used for classifying the incidence of landsliding (USGS, date unknown).

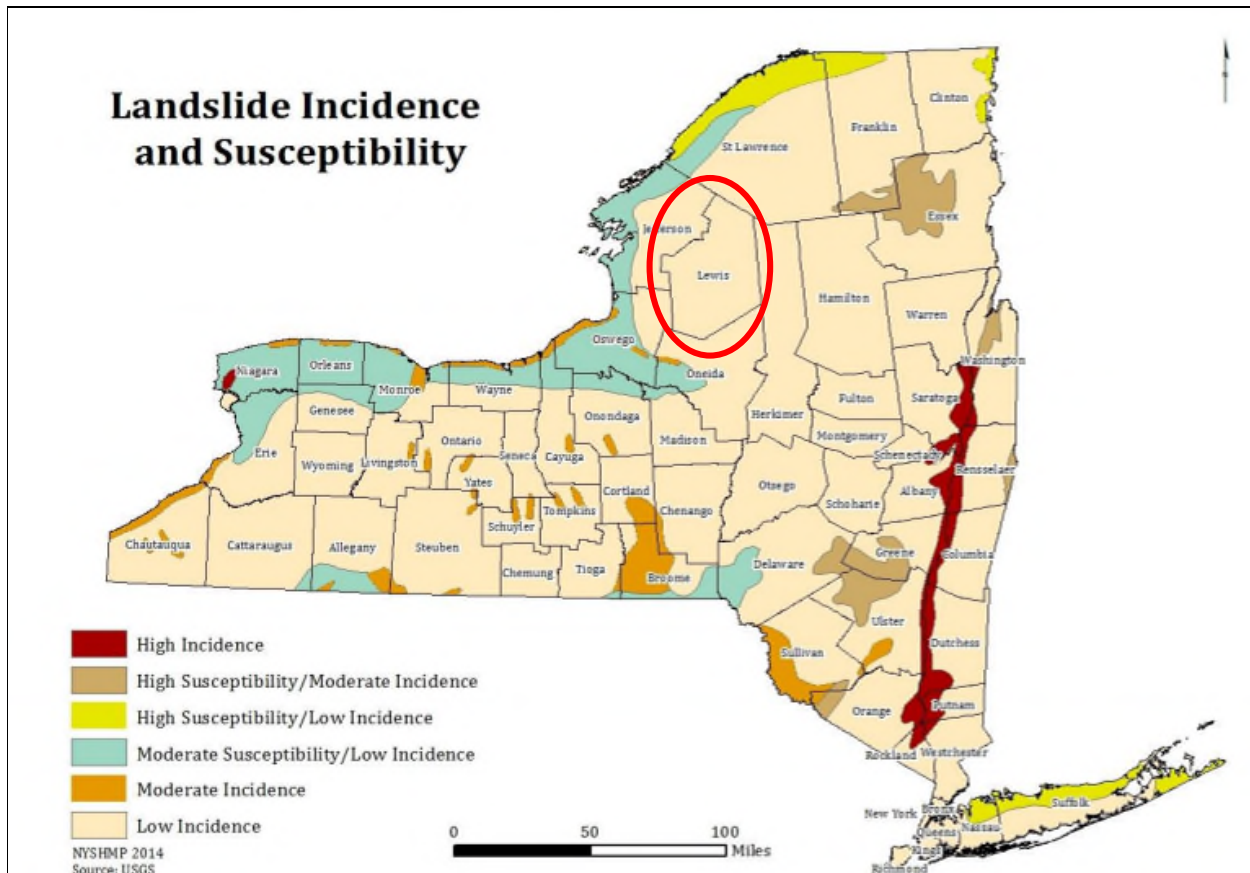
### Location

The potential for landslides exists across the entire State and the entire northeast region of the U.S. Scientific and historical data exists for New York State which indicates that some areas of the State have a substantial landslide risk. It is estimated that 80 percent of New York State has a low susceptibility to the landslide hazard. In general, the highest potential for landslides can be found along major rivers and lake valleys that were formerly occupied by glacial lakes resulting in glacial lake deposits and usually associated with steeper slopes (for example, the Hudson and Mohawk River Valleys). Some natural variables such as soil properties, topographic position and slope, and historical incidence all contribute to determining the overall risk of landslide activity in any particular area (NYS DHSES 2014).

According to the NYS HMP Update, all of the County's 27,087 residents live in a low incidence area. As illustrated in Figure 5.4.7-1 below, all of Lewis County has a low incidence of landslide.



Figure 5.4.7-1. Landslide Susceptibility in New York State



Source: NYS DHSES 2014

Note: The oval indicates the approximate location of Lewis County. According to this figure, the entire County has a low incidence.

### Previous Occurrences and Losses

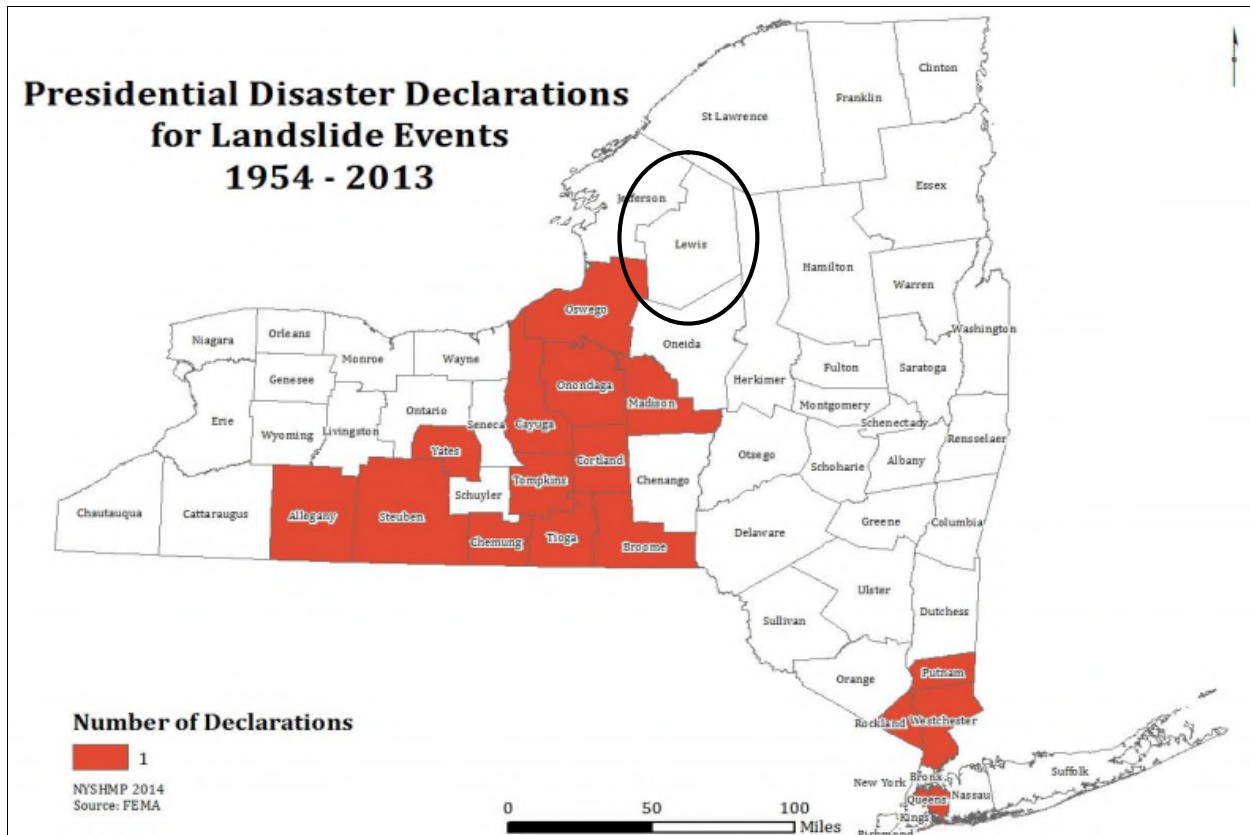
Between 1953 and 2018, New York State was included in one landslide major disaster declaration (DR-487). It was classified as a severe storm, heavy rain, landslides, and flooding. Generally, these disasters cover a wide region of the State; therefore, they may have impacted many counties. However, not all counties were included in the disaster declarations and emergencies. Lewis County was not declared as a disaster or emergency area as part of that landslide declaration (FEMA 2018).

Figure 5.4.7-2 shows the FEMA disaster declaration (DR) (and does not indicate emergency (EM) declarations) for the landslide event in New York State, from 1954 to 2013. This figure indicates that Lewis County was not included in one disaster declaration which is in agreement with FEMA data.





Figure 5.4.7-2. Presidential Disaster Declarations for Landslide Events, 1954 to 2013



Source: NYS DHSES 2014

Note: The black oval indicates the approximate location of Lewis County.

For this 2020 plan update, landslide events that occurred in the County between 2009 and 2018 were researched. However, specific information regarding any landslide events was not identified. For events prior to 2009, refer to the 2010 version of the HMP.

### Probability of Future Events

As indicated in the NYS HMP, and given the history of landslides in NYS, future landslides certainly will occur, but severity of these landslides cannot be determined. Therefore, probability of future landslides in NYS is considered high; however, because documentation on landslides in Lewis County is sparse, predicting the extent of future landslides in the County is difficult.

In Section 5.3, identified hazards of concern for Lewis County were ranked according to various parameters. Probability of occurrence, or likelihood of the event, is one parameter used for hazard rankings. Based on historical records and input from the Planning Partnership, probability of occurrence of landslides in Lewis County is considered “occasional” (hazard event likely to occur within 100 years).

### Climate Change Impacts

Projecting future climate change within a specific region is challenging. Shorter-term projections are more closely tied to existing trends, rendering longer-term projections even more challenging. The further into the future a prediction extends, the more it is subject to change.



Climate change may impact storm patterns, increasing the probability of more frequent, intense storms with varying duration. Increase in global temperature could affect the snowpack and its ability to hold and store water. Warming temperatures also could increase the occurrence and duration of droughts, which would increase the probability of wildfire, reducing the vegetation that helps to support steep slopes. All of these factors would increase the probability for landslide occurrences.

### 5.4.7.2 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed or vulnerable to the identified hazard. For this analysis, the hazard area is defined as the high incidence landslide zones. The analysis of potential impacts of the landslide hazard on Lewis County includes the following:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact, including: (1) impact on life, safety, and health of County residents, (2) general building stock, (3) critical facilities, (4) economy, and (5) future growth and development
- Effect of climate change on vulnerability
- Change of vulnerability as compared to that presented in the 2010 Lewis County Hazard Mitigation Plan
- Further data collections that will assist understanding of this hazard over time

#### Overview of Vulnerability

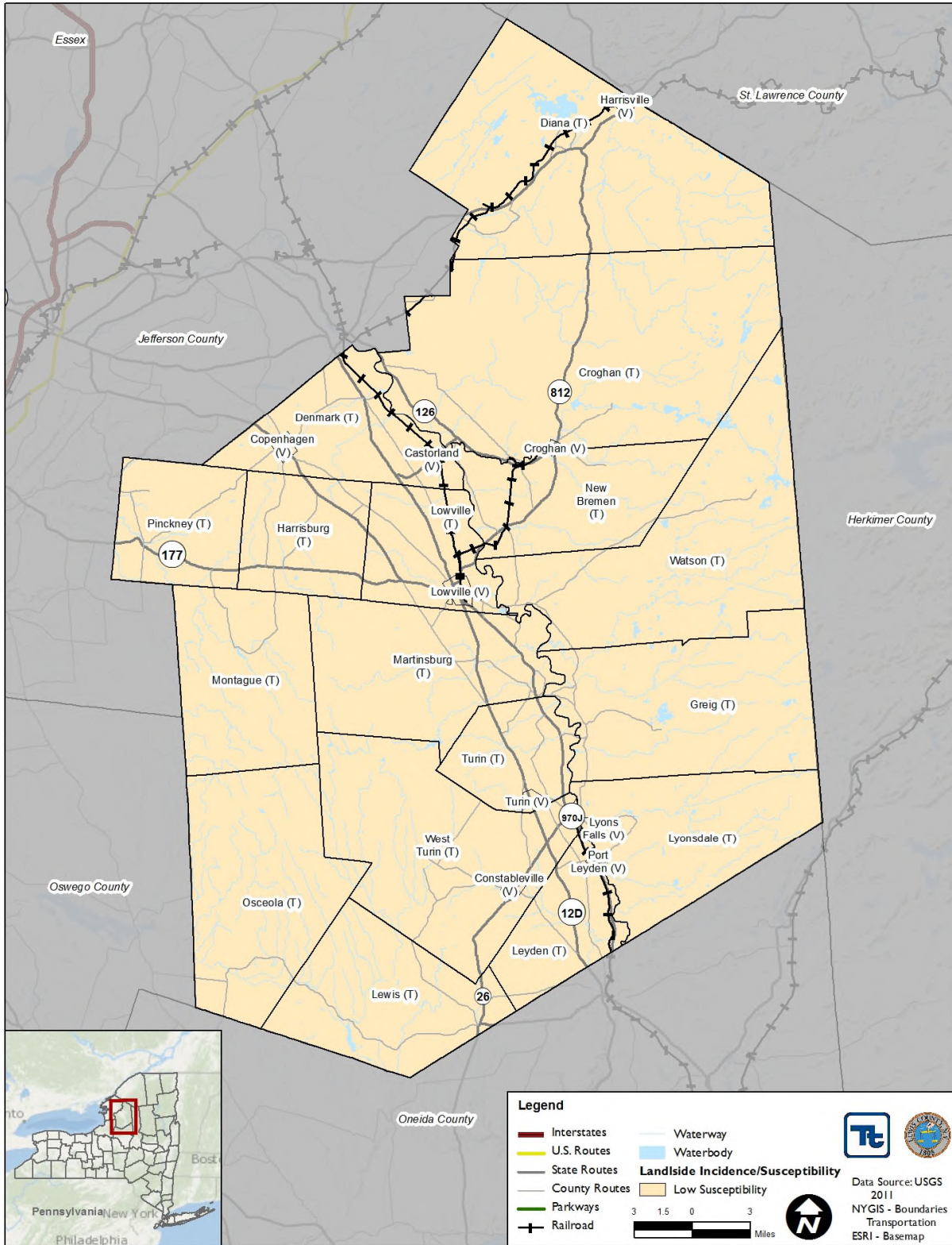
Vulnerability to landslide hazards is a function of location, type of human activity, use, and frequency of landslide events. The effects of landslides on people and structures can be lessened by total avoidance of landslide hazard areas or by restricting, prohibiting, or imposing conditions on hazard-zone activity. Local governments can reduce landslide effects through land use policies and regulations. Individuals can reduce their exposure to hazards by educating themselves on past hazard history of the site and by making inquiries to planning and engineering departments of local governments.

#### Data and Methodology

In an attempt to estimate Lewis County's vulnerability to land failure due to landslides, the Geology - Landslide Incidence and Susceptibility GIS layer from National Atlas was used to coarsely define the general landslide susceptible area. The Geology - Landslide Incidence and Susceptibility GIS layer was overlaid upon the Lewis County municipalities, 2010 Census population data, custom building inventory, and Lewis County's critical facility inventory to estimate exposure. The limitations of this analysis are recognized and are only used to provide a general estimate. Over time additional data will be collected to allow better analysis for this hazard. Available information and a preliminary assessment are provided below. The entire County is located within the "low incidence" landslide incidence and susceptibility area, as shown in Figure 5.4.7-3.



Figure 5.4.7-3. Landslide Hazard Areas in Lewis County



Source: USGS 2011





### **Impact on Life, Health and Safety, General Building Stock, and Critical Facilities**

As stated above, the entire County is located within the “low incidence” area, and although there is a low risk to landslides, occurrences are still possible throughout the County in areas with steep slopes. This includes the County’s population (27,087 people, according to U.S. Census 2010) and nearly 35,000 buildings with an estimated total replacement cost value of \$4.6 billion (according to estimates from HAZUS-MH v4.2). In general, the built environment within high susceptibility zones, as well as population, structures, and infrastructure downslope, are vulnerable to this hazard. In addition to causing damages to residential and non-residential buildings, landslides can block off major roadways and inhibit travel for emergency responders or populations trying to evacuate the area. Refer to the Impact on Economy section for a description on the direct and indirect impacts from landslides.

### **Impact on the Economy**

The impact of a landslide on the economy and estimated dollar losses are difficult to measure. As stated earlier, landslides can exert direct and indirect effects on society. Direct costs include actual damage sustained by buildings, property, and infrastructure. Direct building losses are estimated costs to repair or replace damaged buildings. Losses to Lewis County’s building inventory would impact Lewis County’s tax base and the local economy. Indirect costs, such as clean-up costs, business interruption, loss of tax revenues, reduced property values, and loss of productivity, are difficult to measure. Additionally, landslides threaten transportation corridors, fuel and energy conduits, and communication lines (USGS 2003). Estimated potential damage to general building stock can be quantified as discussed above. For the purposes of this analysis, damage to general building stock is discussed below.

### **Effect of Climate Change on Vulnerability**

Climate is defined not simply as average temperature and precipitation but also by the type, frequency, and intensity of weather events. Both globally and at the local scale, climate change has the potential to alter the prevalence and severity of extremes such as flood events. While predicting changes of landslide events under a changing climate is difficult, understanding vulnerabilities to potential changes is a critical part of estimating future climate change impacts on human health, society, and the environment (U.S. Environmental Protection Agency [EPA], 2006).

### **Change of Vulnerability**

The 2010 HMP did not include a quantitative assessment of the County’s population, building stock, and critical facilities were within the identified landslide hazard area. For the 2020 HMP update, risks to the County’s population, building stock, and critical facilities were assessed. Overall, the County remains potentially vulnerable to the landslide hazard.

### **Future Growth and Development**

As discussed in Section 4 and Volume II, Section 9, areas targeted for future growth and development have been identified across the County. It is anticipated that new development within the high landslide incidence areas identified by USGS and/or on karst environments will be exposed to land failure risks.

### **Additional Data and Next Steps**

More detailed landslide susceptibility zones can be generated so that communities can more specifically identify high hazard areas within the overall low incidence area as delineated by the USGS. A pilot study was conducted for Schenectady County, New York, which developed higher resolution landslide susceptibility zones. The methodology used the Natural Resource Conservation Services (NRCS) Digital Soil Survey soil







units and their associated properties, including the American Association of State Highway Transportation Officials (AASHTO) rating, liquid limit, hydrologic group, percentage of silt and clay, erosion potential, and slope derived from high resolution digital elevation models. Obtaining historic damages to buildings and infrastructure incurred due to landslides will also help with loss estimates and future modeling efforts, given a margin of uncertainty. Further, research on rainfall thresholds for forecasting landslide potential may also be an option for the Lewis County.





## 5.4.8 Severe Storms

The following section provides the hazard profile (hazard description, location, extent, previous occurrences and losses, probability of future occurrences, and impact of climate change) and vulnerability assessment for the severe weather hazard in Lewis County.

### 5.4.8.1 Profile

#### Hazard Description

For the purpose of this HMP Update and as deemed appropriated by the Lewis County Steering and Planning Committees, the severe storm hazard includes: hail, high winds, thunderstorms, tornadoes, Nor'Easters, and hurricanes/tropical storms, which are defined below.

#### Hailstorms

Hail forms inside a thunderstorm where there are strong updrafts of warm air and downdrafts of cold water. If a water droplet is picked up by the updrafts, it can be carried well above the freezing level. Water droplets freeze when temperatures reach 32 °F or colder. As the frozen droplet begins to fall, it may thaw as it moves into warmer air toward the bottom of the thunderstorm. However, the droplet may be picked up again by another updraft and carried back into the cold air and re-freeze. With each trip above and below the freezing level, the frozen droplet adds another layer of ice. The frozen droplet, with many layers of ice, falls to the ground as hail. Most hail is small and typically less than 2 inches in diameter (National Weather Service [NWS] 2010).

#### High Winds

High winds, other than tornadoes, are experienced in all parts of the United States. Areas that experience the highest wind speeds are coastal regions from Texas to Maine, and the Alaskan coast; however, exposed mountain areas also experience winds as high as those along the coast (FEMA 1997). Wind begins with differences in air pressures. It is rough horizontal movement of air caused by uneven heating of the earth's surface. Wind occurs at all scales, from local breezes lasting a few minutes to global winds resulting from solar heating of the earth (Rosenstiel School of Marine & Atmospheric Science 2005). High winds have the potential to down trees, tree limbs, and power lines, which can lead to widespread power outages and damage to residential and commercial structures throughout Lewis County. High winds are often associated by other severe weather events such as thunderstorms, tornadoes, hurricanes, and tropical storms (all discussed further in this section).

#### Tornadoes

Tornadoes are nature's most violent storms and can cause fatalities and devastate neighborhoods in seconds. A tornado appears as a rotating, funnel-shaped cloud that extends from a thunderstorm to the ground with whirling winds that can reach 300 mph. Damage paths can be greater than 1 mile wide and 50 miles long. Tornadoes typically develop from either a severe thunderstorm or hurricane as cool air rapidly overrides a layer of warm air. The average speed of a tornado is 30 mph but may vary from nearly stationary to 70 mph. The lifespan of a tornado rarely is longer than 30 minutes (FEMA 1997).

#### Thunderstorms

A thunderstorm is a local storm produced by a cumulonimbus cloud and accompanied by lightning and thunder (NWS 2009d). A thunderstorm forms from a combination of moisture, rapidly rising warm air, and a force capable of lifting air such as a warm front, cold front, a sea breeze, or a mountain. Thunderstorms form from the equator to as far north as Alaska. Although thunderstorms generally affect a small area when they occur,



they have the potential to become dangerous due to their ability in generating tornadoes, hailstorms, strong winds, flash flooding, and lightning. The NWS considers a thunderstorm severe only if it produces damaging wind gusts of 58 mph or higher, hail 1 inch (quarter size) in diameter or larger, or tornadoes (NWS 2010).

Lightning is a bright flash of electrical energy produced by a thunderstorm. The resulting clap of thunder is the result of a shock wave created by the rapid heating and cooling of the air in the lightning channel. All thunderstorms produce lightning and are very dangerous. Lightning ranks as one of the top weather killers in the United States, killing approximately 44 people and injuring hundreds each year (NWS 2018a). Lightning can occur anywhere there is a thunderstorm.

Thunderstorms can lead to flooding, landslides, strong winds, and lightning. Roads may become impassable from flooding, downed trees or power lines, or a landslide. Downed power lines can lead to utility losses, such as water, phone and electricity. Typical thunderstorms are 15 miles in diameter and last an average of 30 minutes. An estimated 100,000 thunderstorms occur each year in the United States, with approximately 10 percent classified as severe. During the warm season, thunderstorms are responsible for most of the rainfall.

### Nor'Easters

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A Nor'Easter is a cyclonic storm that moves along the East Coast of North America. It is called a Nor'Easter because the damaging winds over coastal areas blow from a northeasterly direction. Nor'Easters can occur any time of the year, but are most frequent and strongest between September and April. These storms usually develop between Georgia and New Jersey within 100 miles of the coastline and typically move from southwest to northeast along the Atlantic Coast of the United States (NOAA 2013).

In order to be called a Nor'Easter, a storm must have the following conditions, as per the Northeast Regional Climate Center (NRCC):

- Must persist for at least a 12-hour period
- Have a closed circulation
- Show general movement from the south-southwest to the north-northeast
- Contain wind speeds greater than 23 miles per hour (mph)

A Nor'Easter event can cause storm surges, waves, heavy rain, heavy snow, wind, and coastal flooding. Nor'Easters have diameters that can span 1,200 miles, impacting large areas of coastline. The forward speed of a Nor'Easter is usually much slower than a hurricane; therefore, a Nor'Easter can linger for days and cause tremendous damage to those areas impacted. Approximately 20 to 40 Nor'Easters occur in the northeastern United States every year, with at least two considered severe (Storm Solution 2014). The intensity of a Nor'Easter can rival that of a tropical cyclone in that, on occasion, it may flow or stall off the mid-Atlantic coast resulting in prolonged episodes of precipitation, coastal flooding, and high winds.

### Hurricanes/Tropical Storms

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A hurricane is a tropical storm that attains hurricane status when its wind speed reaches 74 or more miles per hour. Tropical systems may develop in the Atlantic between the Lesser Antilles and the African coast, or may develop in the warm tropical waters of the Caribbean and Gulf of Mexico. These storms may move up the Atlantic coast of the United States and impact the eastern seaboard, or move into the United States through the states along the Gulf Coast, bringing wind and rain as far north as New England before moving offshore and heading east.

A tropical storm system is characterized by a low-pressure center and numerous thunderstorms that produce strong winds and heavy rain (winds are at a lower speed than hurricane-force winds, thus gaining its status as



tropical storm versus hurricane). Tropical storms strengthen when water evaporated from the ocean is released as the saturated air rises, resulting in condensation of water vapor contained in the moist air. They are fueled by a different heat mechanism than other cyclonic windstorms such as Nor'Easters and polar lows. The characteristic that separates tropical cyclones from other cyclonic systems is that at any height in the atmosphere, the center of a tropical cyclone will be warmer than its surroundings; a phenomenon called “warm core” storm systems (NOAA 2013).

The NWS issues hurricane and tropical storm watches and warnings that remain in effect after a tropical cyclone becomes post-tropical when a storm poses a significant threat to life and property. The NWS allows the National Hurricane Center (NHC) to issue advisories during the post-tropical stage. The following are the definitions of the watches and warnings:

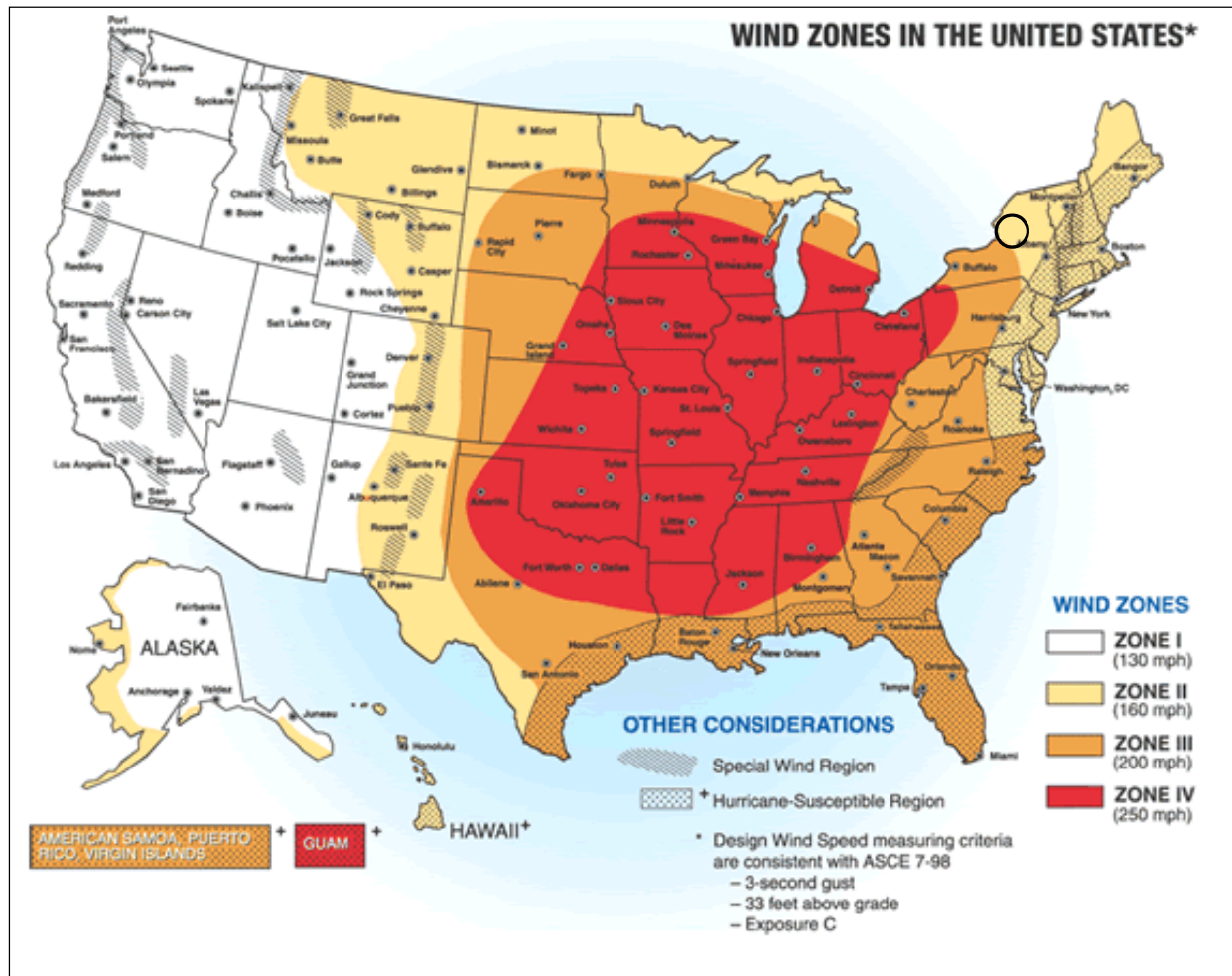
- *Hurricane/Typhoon Warning* is issued when sustained winds of 74 mph or higher are expected somewhere within the specified area in association with a tropical, subtropical, or post-tropical cyclone. Because hurricane preparedness activities become difficult once winds reach tropical storm force, the warning is issued 36 hours in advance of the anticipated onset of tropical storm force winds. The warning can remain in effect when dangerously high water or combination of dangerously high water and waves continue, even though winds may be less than hurricane force.
- *Hurricane Watch* is issued when sustained winds of 74 mph or higher are possible within the specified area in association with a tropical, subtropical, or post-tropical cyclone. Because hurricane preparedness activities become difficult once winds reach tropical storm force, the hurricane watch is issued 48 hours prior to the anticipated onset of tropical storm force winds.
- *Tropical Storm Warning* is issued when sustained winds of 39 to 73 mph are expected somewhere within the specified area within 36 hours (24 hours for the western North Pacific) in association with a tropical, subtropical, or post-tropical storm.
- *Tropical Storm Watch* is issued when sustained winds of 39 to 73 mph are possible within the specified area within 48 hours in association with a tropical, sub-tropical, or post-tropical storm (NWS date unknown).

## Location

All of Lewis County is exposed to hail, lightning, windstorms and high wind, thunderstorms, tornados, and hurricanes and tropical storms, and all of the County is subject to high winds from severe weather events. According to the FEMA Winds Zones of the United States map, Lewis County is located in Wind Zone II, where wind speeds can reach up to 160 mph. Figure 5.4.8-1 illustrates wind zones across the United States, which indicate the impacts of the strength and frequency of wind activity per region. The information on the figure is based on 40 years of tornado data and 100 years of hurricane data collected by FEMA.



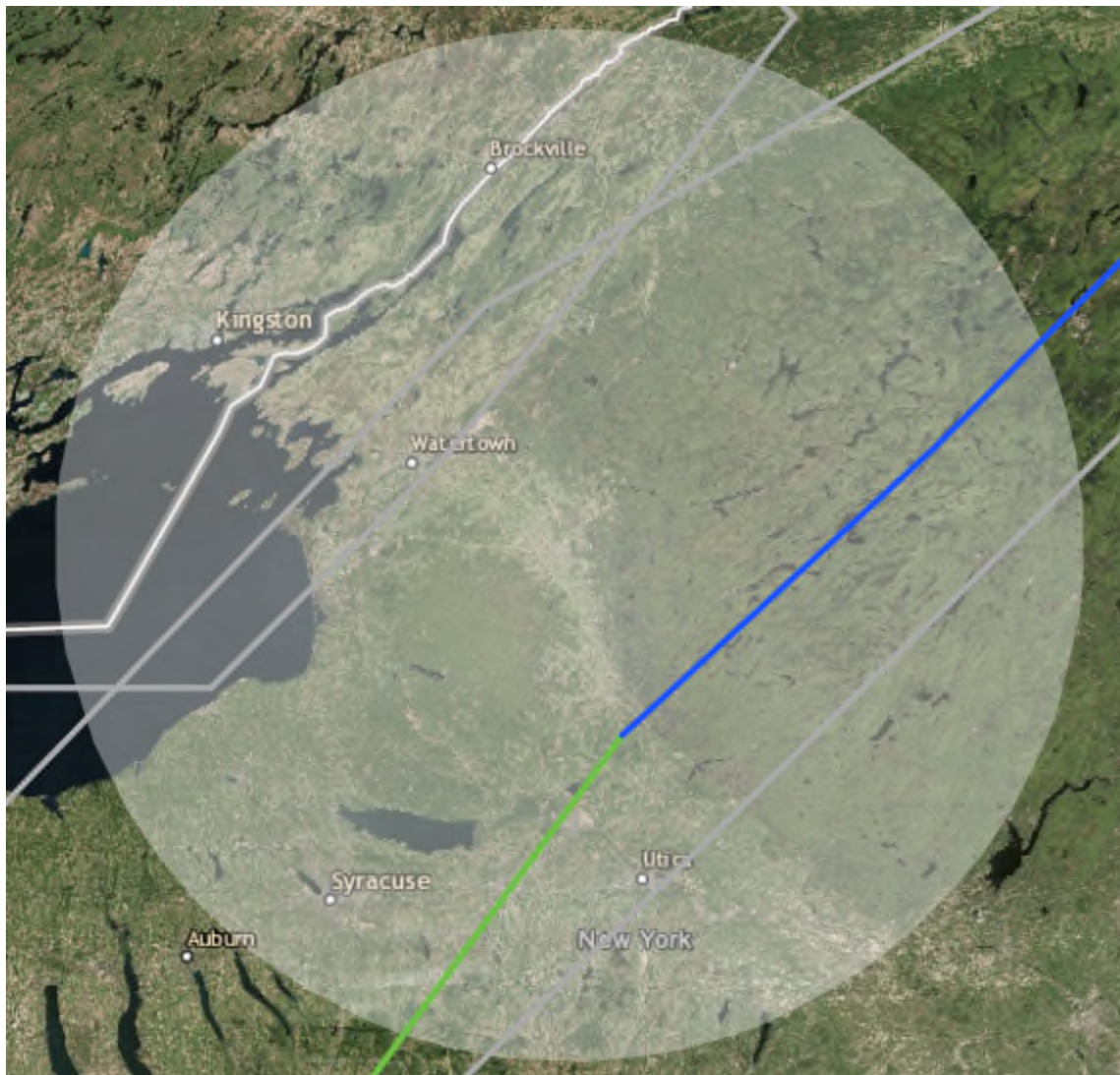
Figure 5.4.8-1. Wind Zones in the United States



NOAA’s Historical Hurricane Tracks tool is a public interactive mapping application that displays Atlantic Basin and East-Central Pacific Basin tropical cyclone data. This interactive tool catalogs tropical cyclones (hurricanes) that have occurred from 1842 to 2016 (latest date available from data source). Between 1950 and 2016, three tropical cyclones tracked within 65 nautical miles of Lewis County. Each of these storms was classified as extra-tropical. Figure 5.4.8-2 displays the tropical cyclone track for Lewis County that tracked with 65 nautical miles between 1930 and 2016.



Figure 5.4.8-2. Historical Tropical Storm and Hurricane Tracks 1930 to 2016



Source: NOAA NHC 2016

Note: The storm track in green and blue was from an un-named tropical system in 1933 that was estimated to be a tropical storm (green) and then tropical depression (blue). The other tracks are for extra-tropical systems.

## Extent

### Hailstorms

The severity of hail is measured by duration, hail size, and geographic extent. All of these factors are directly related to thunderstorms, which creates hail. There is wide potential variation in these severity components. The most significant impact of hail is damage to crops. Hail also has the potential to damage structures and vehicles during hailstorms.

Hail can be produced from many different types of storms. Typically, hail occurs with thunderstorm events. The size of hail is estimated by comparing it to a known object. Most hailstorms are made up of a variety of sizes, and only the very largest hail stones pose serious risk to people, when exposed. Table 5.4.8-1 shows the different sizes of hail and the comparison to real-world objects.





Table 5.4.8-1. Hail Size

Size	Inches in Diameter
Pea	0.25 inch
Marble/mothball	0.50 inch
Dime/Penny	0.75 inch
Nickel	0.875 inch
Quarter	1.0 inch
Ping-Pong Ball	1.5 inches
Golf Ball	1.75 inches
Tennis Ball	2.5 inches
Baseball	2.75 inches
Tea Cup	3.0 inches
Grapefruit	4.0 inches
Softball	4.5 inches

Source: NOAA 2012; NYS DHSES 2014

### High Winds

Table 5.4.8-2 provides the descriptions of winds categorized by the NWS during wind-producing events.

Table 5.4.8-2. NWS Wind Descriptions

Descriptive Term	Sustained Wind Speed (mph)
Strong, dangerous, or damaging	≥40
Very Windy	30-40
Windy	20-30
Breezy, brisk, or blustery	15-25
None	5-15 or 10-20
Light or light and variable wind	0-5

Source: NWS 2010  
mph miles per hour

The NWS normally issues site-specific advisories and warnings for winds. High wind advisories, watches, and warnings are issued by the NWS when wind speeds may pose a hazard or are life threatening. The criterion for each of these varies from state to state. Wind warnings and advisories for New York State are as follows:

- High Wind Warnings are issued when sustained wind speeds of 40 mph or greater lasting for 1 hour or longer or for winds of 58 mph or greater for any duration or widespread damage are possible.
- Wind Advisories are issues when sustained winds of 30 to 39 mph are forecast for one 1 or longer, or wind gusts of 46 to 57 mph for any duration (NWS date unknown).

### Tornadoes

The magnitude or severity of a tornado was originally categorized using the Fujita Scale (F-Scale) or Pearson Fujita Scale introduced in 1971. This used to be the standard measurement for rating the strength of a tornado. The F-Scale categorized tornadoes by intensity and area and was divided into six categories, F0 (gale) to F5 (incredible). Table 5.4.8-3 explains each of the six F-Scale categories.



Table 5.4.8-3. Fujita Damage Scale

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

Source: Storm Prediction Center (SPC) Date Unknown  
 mph miles per hour

The Enhanced Fujita Scale (EF-Scale) is now the standard used to measure the strength of a tornado. It is used to assign tornadoes a ‘rating’ based on estimated wind speeds and related damage. When tornado-related damage is surveyed, it is compared to a list of Damage Indicators (DI) and Degree of Damage (DOD), which help better estimate the range of wind speeds produced by the tornado. From that, a rating is assigned, similar to that of the F-Scale, with six categories from EF0 to EF5, representing increasing degrees of damage. The EF-Scale was revised from the original F-Scale to reflect better examinations of tornado damage surveys. This new scale considers how most structures are designed (NOAA 2014). Table 5.4.8-4 displays the EF-Scale and each of its six categories.

Table 5.4.8-4. Enhanced Fujita Damage Scale

EF-Scale Number	Intensity Phrase	Wind Speed (mph)	Type of Damage Done
EF0	Light Tornado	65–85	<b>Light damage.</b> Surfaces peeled off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
EF1	Moderate tornado	86-110	<b>Moderate damage.</b> Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	Significant tornado	111-135	<b>Considerable damage.</b> Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	Severe tornado	136-165	<b>Severe damage.</b> Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
EF4	Devastating tornado	166-200	<b>Devastating damage.</b> Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
EF5	Incredible tornado	>200	<b>Incredible damage.</b> Strong frame houses leveled off foundations and swept away; automobile-sized missiles flown through the air in excess of 100 meters (109 yards); high-rise buildings incur significant structural deformation; extraordinary phenomena occur.

Source: SPC Date Unknown  
 EF-Scale Enhanced Fujita Scale  
 mph miles per hour





Tornado watches and warning are issued by the local NWS office. A tornado watch is released when tornadoes are possible in an area. A tornado warning means a tornado has been sighted or indicated by weather radar. The current average lead time for tornado warnings is 13 minutes. Occasionally, tornadoes develop so rapidly, that little, if any, advance warning is possible (NOAA 2013; FEMA 2013).

### Thunderstorms

Severe thunderstorm watches and warnings are issued by the local NWS office and Storm Prediction Center (SPC). The NWS and SPC will update the watches and warnings and will notify the public when they are no longer in effect. Watches and warnings for tornadoes in New York State are as follows:

- Severe Thunderstorm Warnings are issued when there is evidence based on radar or a reliable spotter report that a thunderstorm is producing, or forecast to produce, wind gusts of 58 mph or greater, structural wind damage, and/or hail 1 inch in diameter or greater. A warning will include where the storm was located, what municipalities will be impacted, and the primary threat associated with the severe thunderstorm warning. After it has been issued, the NWS office will follow up periodically with Severe Weather Statements which contain updated information on the severe thunderstorm and will let the public know when the warning is no longer in effect (NWS 2009; NWS date unknown).
- Severe Thunderstorm Watches are issued by the SPC when conditions are favorable for the development of severe thunderstorms over a larger-scale region for a duration of at least 3 hours. Tornadoes are not expected in such situations, but isolated tornado development may also occur. Watches are normally issued well in advance of the actual occurrence of severe weather. During the watch, the NWS will keep the public informed on what is happening in the watch area and also let the public know when the watch has expired or been cancelled (NWS 2009; NWS 2010).
- Special Weather Statements for Near-Severe Thunderstorms are issued for strong thunderstorms that are below severe levels, but still may have some adverse impacts. Usually, they are issued for the threat of wind gusts of 40 to 58 mph or small hail less than 1 inch in diameter (NWS 2010).

### Nor'Easters

Nor'Easters have the potential to impact society to a greater extent than hurricanes and tornadoes. These storms often have a diameter three to four times larger than a hurricane and therefore impact much larger areas. More homes and properties become susceptible to damage as the size and strength of a Nor'Easter intensifies (Storm Solution date unknown). The severity of a Nor'Easter depends on several factors, including a region's climatological susceptibility to snowstorms, snowfall amounts, snowfall rates, wind speeds, temperatures, visibility, storm duration, topography, time of occurrence during the day (e.g., weekday versus weekend), and season.

### Hurricanes/Tropical Storms

The extent of a hurricane is categorized in accordance with the Saffir-Simpson Hurricane Scale. The Saffir-Simpson Hurricane Wind Scale is a 1-to-5 rating based on a hurricane's sustained wind speed. This scale estimates potential property damage. Hurricanes reaching Category 3 and higher are considered major hurricanes because of their potential for significant loss of life and damage. Category 1 and 2 storms are dangerous and require preventative measures (NHC 2010). Table 5.4.8-5 presents this scale, which is used to estimate the potential property damage and flooding expected when a hurricane makes landfall.



Table 5.4.8-5. The Saffir-Simpson Scale

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

Source: NHC 2010

Notes: mph = Miles per hour  
> = Greater than

### Mean Return Period

In evaluating the potential for hazard events of a given magnitude, a mean return period (MRP) is often used. The MRP provides an estimate of the magnitude of an event that may occur within any given year based on past recorded events. MRP is the average period of time, in years, between occurrences of a particular hazard event, equal to the inverse of the annual frequency of exceedance (Dinicola 2009).

HAZUS-MH 4.2 estimates the maximum 3-second gust wind speeds that can be anticipated in the study area associated with the 100- and 500-year MRP events. These peak wind speed projections were generated using Hazards U.S. Multi-Hazard (HAZUS-MH) model runs. HAZUS-MH 4.2 did not generate the hurricane track for the 100- and 500-year event. The maximum 3-second gust wind speeds for Lewis County are below 39 mph for both the 100- and 500-year MRP events. These wind speeds are not fast enough to be considered a tropical storm (39 to 73 mph). The associated impacts and losses from these 100-year and 500-year MRP hurricane event model runs are reported in the Vulnerability Assessment (Section 5.4.8.2).

### Previous Occurrences and Losses

Many sources provided historical information regarding previous occurrences and losses associated with severe storm events throughout Lewis County. With so many sources reviewed for the purpose of this HMP, loss and impact information varies depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP.

Between 1954 and 2018, New York State was included in 55 FEMA-declared severe storm-related disasters (DR) or emergencies (EM) classified as one or a combination of the following hazards: coastal storm, high tides, heavy rain, flooding, hurricane, ice storm, severe storms, thunderstorms, tornadoes, tropical storm, straight-line winds, and landslides. Generally, these disasters cover a wide region of the state; therefore, they may have impacted many counties. Of those declarations, Lewis County has been included in nine declarations (FEMA





2018). Additionally, Lewis County included in eight declarations identified as a snowstorm and/or severe winter storm. Those snowstorms are included in the severe winter storm profile (Section 5.4.9).

For this 2020 HMP Update, known severe storm events, including FEMA disaster declarations, which have impacted Lewis County between 2009 and 2018 are identified in Table 5.4.8-6. For events prior to 2009, refer to the 2010 version of the HMP. For detailed information on damage and impacts to each municipality, refer to Section 9 (jurisdictional annexes). Please note that not all events that have occurred in Lewis County are included due to the extent of documentation and the fact that not all sources may have been identified or researched. Loss and impact information could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this plan.





Table 5.4.8-6. Severe Storm Events Affecting Lewis County, 2009 to 2018

Dates of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
May 9, 2009	Thunderstorm wind	No	No	Strong thunderstorms accompanied the passage of a cold front during the afternoon hours. The thunderstorms produced strong winds that downed trees and power lines in Lewis County. 10K in property damage were reported in Harrisville.
December 9, 2009	High wind	No	No	Deep low pressure strengthened as it moved from near Chicago to Quebec. The strong southerly winds ahead of the system downed trees and power lines across the higher elevations of the western southern tier of New York during the pre-dawn hours. On the New York State Thruway, several tractor trailers were blown over as winds gusted to near 70 mph. As the system passed to the north, winds shifted to southwest and increased. Gusts were measured to 60 mph at the Buffalo International Airport. The winds downed trees and power lines and utilities reported tens of thousands without power. \$100K in property damage were reported.
May 8, 2010	High wind	No	No	Deep low pressure passed over western New York with its trailing cold front rapidly sweeping east across the region. Winds increased within a few hours of the approaching front to gust speeds of 60 to 65 mph. Tens of thousands were left without power. There were reports of vehicles and/or buildings damaged by falling trees in: Niagara Falls, Ransomville, Rochester, Olean, and Perry just to name a few. The high winds were blamed for several delayed flights at both Buffalo and Rochester airports. The Clayton Dock was damaged by the winds. In Clarence, a large tent at the Clarence Soccer club was blown over by the strong winds. Four people suffered injuries, one of which had to be hospitalized. Damages are estimated. \$100K in property damage were reported.
July 21, 2010	Thunderstorm wind	No	No	Thunderstorms developed ahead of an approaching cold front. The thunderstorms produced large hail and damaging winds. Hail up to 1-3/4 inches was reported in Ontario, Wayne and Jefferson counties. The thunderstorm winds downed trees and power lines in Lyons, Rochester, Brighton, Clayton, Cape Vincent, Elba, Adams Center, Fulton, and Constableville. Utility companies reported thousands without power. In Calcium, a large tree fell onto a house. In Lafargeville, the strong winds resulted in damage at the Can-Am Motorsports Park. A roof was torn off, bleachers damaged, and a tower section of spectator luxury boxes was damaged. \$10K in property damage were reported in Tallcottageville.
July 28, 2010	Thunderstorm wind	No	No	Thunderstorms developed ahead of and along a cold front that crossed the area during the late afternoon and evening hours. The thunderstorms produced damaging wind gusts estimated to 65 mph. Trees, power lines and poles were downed by the winds. Utility companies reported tens of thousands without power across the region. In Grand Island, the winds blew down soccer goals. 1-inch hail was also reported with the storms in Lewis County. \$10K in property damage were reported in Natural Bridge
September 28, 2010	Thunderstorm wind	No	No	Low pressure lifted north from West Virginia to Quebec. The low brought a round of showers and thunderstorms to the eastern Lake Ontario counties. The thunderstorm winds gusted to 65 mph. Trees were downed near Redfield, Rector, Lowville, and Sperryville. \$10K in property damage were reported in Rector. \$8K in property damage were reported in Beaches Bridge. \$8K in property damage were reported in Brantingham.
April 26-May 8, 2011	Severe Storm	DR-1993	Yes	Severe Storms, Flooding, Tornadoes, and Straightline Winds



Dates of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
May 26, 2011	Thunderstorm wind	No	No	A slow moving cold front generated showers and thunderstorms across the region. One of these storms downed trees and wires in Sherman and Mayville in Chautauqua County. Other storms strengthened over the north country downing trees and power lines in Lowville, New Bremen, and Watson. In Cayuga County, thunderstorm winds downed trees and power lines and tore the roof off a home on Jordan Road near Cross Lake. \$10K in property damage were reported in Lowville. \$8K in property damage were reported at the New Bremen Duflo Airport. \$10K in property damage were reported at Beaches Bridge.
June 1, 2011	Thunderstorm wind	No	No	Thunderstorms accompanied a cold front that crossed the region. A thunderstorm that struck Lewis County produced winds gusting to 57 mph. The winds downed trees and power lines in Belfort. \$8K in property damage were reported.
June 8, 2011	Thunderstorm wind	No	No	A thunderstorm complex moved across southern Ontario into the north country of New York. The thunderstorms produced winds measured to 65 mph which produced widespread damage across the area. Trees and power lines were downed and power outages were reported from throughout the region. Utilities reported several thousand without power. Some specific towns affected included: Wellsley Island, Alexandria Bay, Carthage, Croghan, Diana, Lowville, Ellisburg, Henderson, Denmark, and Lyonsdale. Croghan reported \$6K in property damage. Natural Bridge reported \$8K in property damage. New Bremen Duflo Airport reported \$5K in property damage. Beaver Falls reported \$8K in property damage. Lowville reported \$10K in property damage. Beaches Bridge reported \$8K in property damage. Denmark reported \$8K in property damage. Martinsburg reported \$7K in property damage. Beaver Falls reported \$6K in property damage. Croghan reported \$6K in property damage. Lowville reported \$7K in property damage. Lyonsdale reported \$8K in property damage. Port Leyden reported \$6K in property damage.
August 28, 2011	High wind	DR-4020, EM-3328	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph. Normally winds of this magnitude are not strong enough to cause damage however the ground was west and the north to northeast flow opposite of the prevailing direction for the region. Trees were anchored for the prevailing direction and were susceptible to even marginally strong winds from the opposite direction. Downed trees and lines were reported in Greece and Rochester (Monroe County), Sodus and Lyons (Wayne County), Hannibal, Fulton, Mexico and Redfield (Oswego County), Lowville and Martinsburg (Lewis County), Manchester (Ontario County), and Victory (Cayuga County). Utilities reported several thousand customers without power. Strong winds downed trees and power poles. \$15K in property damage were reported.
September 13, 2011	Thunderstorm wind	DR-4020	No	An upper level disturbance crossing the lower Great Lakes fueled thunderstorms across the region. In Lewis County, the thunderstorms winds downed trees and power lines. Moose River Road near Porters Corners was blocked by fallen trees. \$12K in property damage were reported in Porters Corners.
January 17, 2012	High wind	No	No	Strong winds developed across the entire area in the wake of a strong cold front and associated with a deep low pressure center that moved across southern Ontario. Winds gusts to around 70 mph and remained quite strong all night. The strongest winds occurred along the Lake Erie shoreline to the Chautauqua Ridge and the Lake Ontario shoreline from Henderson Bay to the St. Lawrence River. Throughout the region, the strong winds downed trees and power lines. Several autos were reported damaged by falling trees. Several reports of downed signs and minor structure damage were also received. Some school districts in the area either cancelled classes or delayed start as a result of wind damage. Utilities reported several tens of



Dates of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
				thousands without power at the peak of the storm. Specific gusts included: 72 mph at Rochester, 69 mph at Dunkirk and Oswego, 63 mph at Barcelona, 62 mph at Olcott, 60 mph at Irondequoit, 59 mph at Buffalo, 58 mph at Alabama and Fort Drum, and 46 mph at Dansville. \$40K in property damage were reported.
May 29, 2012	Thunderstorm wind, Hail	No	No	A strong cold front crossed the region bringing an end to oppressive heat and humidity. The front however was accompanied by severe thunderstorms which produced hail up to 1-3/4 inches in diameter and damaging winds that downed trees and power lines. Utilities reported tens of thousands without power scattered throughout the region. Only minor structural damage was reported, mainly broken windows and ripped off shingles. There were several automobiles that were damaged by falling trees and limbs. \$8K in property damage and \$8K in crop damage were reported in Croghan. Port Leyden reported \$10K in property damage.
July 17, 2012	Hail	No	No	Thunderstorms crossing Lewis County produced hail near Kimball Hill.
August 5, 2012	Thunderstorm wind	No	No	Showers and thunderstorms developed in a warm, moist atmosphere ahead of an approaching cold front. Wind gusts were measured to 60 mph. The thunderstorm winds downed trees and power lines throughout the region. In many areas, downed trees blocked roads and highways. In Windom, a truck was crushed by a falling tree. New Bremen Duflo Airport reported \$10K in property damage. Beaches Bridge reported \$10K in property damage. Martinsburg reported \$10K in property damage.
September 8, 2012	Thunderstorm wind	EM-3341, DR-4031	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon. The thunderstorm winds downed trees and power lines as the fast moving line swept across the area. Power poles were snapped in some cases and power outages were reported throughout the area. Utilities reported tens of thousands of customers without power. In the City of Buffalo, a funnel cloud was sighted although a damage survey proved that damage to several buildings on the west side of the city was caused by straight-line winds. In some locations, roads were blocked by downed trees. In Cheektowaga Town Park, 20 to 30 large trees were blown down. In Marilla, in addition to tree damage, a trailer was blown onto its side and into some trees. Beaches Bridge reported \$10K in property damage.
September 18, 2012	Thunderstorm wind	No	No	A line of thunderstorms accompanied a cold front as it crossed the north country. The storms tapped into higher winds aloft and brought down trees and wires across parts of the Jefferson and Lewis counties. Specific damage reports were received from Antwerp and Watson. Beaches Bridge reported \$8K in property damage.
September 22, 2012	Strong wind	No	No	A strengthening southerly wind ahead of a cold front during the morning hours brought measured wind gusts to 45 mph. Across the higher elevations the strong winds brought down some trees and power lines. Specifically, damage was reported near Clyde, Watertown, Adams, New Bremen, Crystal Dale, and Middle Branch Settlement. Law enforcement reported trees and wires down. \$8K in property damage were reported.
October 29, 2012	High wind	EM-3351, DR-4085	Yes	Remnants of Hurricane Sandy brought strong winds and heavy rains to western and north central New York. Rainfall amounts of 2 to 5 inches were measured across the area with some area creeks reaching bankful. The high winds downed trees and power lines throughout the region. Wind gusts were measured to 60 mph. Tree damage was greater than usual with such wind speeds because of saturated ground and



Dates of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
				northeast winds - opposite of the normal prevailing southwest direction. Utilities reported tens of thousands of customers without power across the entire region. Specific measured gusts included: 60 mph at Irondequoit Bay; 59 mph at Dunkirk; 58 mph at Watertown; 56 mph at Oswego; 52 mph at Fulton; 50 mph at Youngstown; 47 mph at Wellsville; 46 mph at Jamestown; and 45 mph at Buffalo. Law enforcement reported widespread trees and wires down. \$100K in property damage were reported.
December 21, 2012	High wind	No	No	Windy conditions prevailed across the entire region ahead of an approaching low pressure system. While isolated reports of a tree or wires down were received from parts of the western southern tier and northern Finger Lakes, reports were more numerous across the higher elevations of the Tug Hill plateau east of Lake Ontario. Emergency management and law enforcement reported trees and wires down in Mannsville, Croghan, Lorraine, and Watertown. The area had received several inches of wet snow and the weight of the snow may have contributed to the higher number of reports. Law enforcement reported trees down in Croghan. \$15K in property damage were reported.
January 31, 2013	High wind	No	No	Low pressure moved across the lower Great Lakes swinging a strong cold front across the region. In the wake of the front, strong westerly winds overspread the area. The wind downed trees and power lines. Utilities reported scattered outages across the region. Specific wind gusts recorded included: 63 mph at Dunkirk, 60 mph at Oswego and 59 mph at the airports at Buffalo, Rochester and Watertown. Law enforcement reported trees and wires down in Denmark. \$10K in property damage were reported.
May 21, 2013	Thunderstorm wind	No	No	Thunderstorms moved across the north country during the overnight hours. The thunderstorm winds downed trees and wires and produced 1-inch diameter hail. Lyons Falls reported \$10K in property damage.
June 1, 2013	Thunderstorm wind	No	No	Two distinct lines of thunderstorms developed ahead of a weak boundary during the late afternoon and became more organized toward evening. One line developed across the Genesee Valley and the other across the eastern Lake Ontario Region. Thunderstorm winds downed trees in Ridgeway, Murray, Ogden Center, Ellery Center, Belleville, Croghan, Lowville and near the Chautauqua Institution. In some areas, scattered power outages were reported as the falling limbs and trees brought down power lines. In Rochester, lightning struck a house igniting a fire and damaging the chimney. New Bremen Duflo Airport reported \$10K in property damage. Croghan reported \$10K in property damage.
July 19, 2013	Thunderstorm wind	No	No	A hot and very humid airmass was in place across western and north central New York with the region in a prolonged heat wave. Thunderstorms developed during the afternoon and evening hours as a pre-frontal trough approached from the upper Great Lakes. The storms moved east across the region with winds along the gust front were measured to 60 mph and several estimated even high gusts where instrumentation was not available. The strong winds downed trees and powers lines. Power outages, while scattered in nature were reported from a large portion of the area. Roads were blocked by fallen trees and debris. Several reports of minor structural damage were also received. Greig reported \$10K in property damage.
September 2, 2013	Thunderstorm wind	No	No	After a week of late summer warmth and humidity, a cold front crossed the region. The front sparked showers and thunderstorms with its passage. Several thunderstorms produced large hail and damaging winds with the large hail mainly across the southern tier and the damaging wind gusts across the north country. Hail, up to 1-3/4 inches in diameter, was reported in Jamestown, Bemus Point, Lakewood, Jordan, Red Creek, Marion and Oswego. The thunderstorms winds downed trees and power lines. At the





Dates of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
				Chautauqua Lake Yacht Club in Lakewood, several boats were flipped in addition to the down limbs and wires. In several locations, downed trees made roads impassable. Turin reported \$10K in property damage. Greig reported \$10K in property damage.
November 1, 2013	High wind	No	No	Deep low pressure lifted across the Great Lakes region. The system brought strong winds to much of the region on Friday, November 1st. Winds gusted as high as 62 mph. The strong winds downed trees and power lines throughout the region. Power outages were in the tens of thousands. In addition to minor structural damage to homes and building, a number of houses and automobiles were damaged by falling trees and limbs. In Buffalo, one person was injured when a large limb fell hitting a car and a pedestrian. Reports of damage were received from Niagara Falls, Buffalo, Angol, Hulberton, Rochester, Batavia, Portageville, Geneseo, Bristol, Butler Center, Ira, Albion Center, Watertown, and Lowville. Specific measured wind gusts included: 62 mph at the Buffalo Coast Guard Station, 60 mph at Barcelona Harbor and Kenmore, 59 mph at Buffalo Airport and Niagara Falls Airport, 58 mph at Dunkirk Airport, 56 mph at Rochester Airport, 55 mph at the Oswego Coast Guard Station, 54 mph at Alabama, and 50 mph at Watertown Airport. \$15K in property damage were reported.
November 18, 2013	High wind	No	No	Rapidly deepening low pressure tracked from the Upper Great Lakes to James Bay and brought strong winds to the entire region, gusting as high as 68 mph, bringing down trees and power lines throughout the region with numerous reports of damage from downed trees. Power outages were in the tens of thousands. In Stafford, the winds tore a portion of a roof off a house. In Pulaski, a man was blown off a two-story building while installing a new metal roof. A gust of wind blew off the piece of metal roofing while he was hanging it. He was transported to the hospital where he later died from his injuries. Other reports of damage were received from Angola, Dickersonville, Abion, Buffalo, Stafford, Carthage, Croghan, Newark, Victory, and Fulton. Specific measure wind gusts included: 68 mph at Dunkirk; 63 mph at Rochester Airport and Niagara Falls Airport; 61 mph at Barcelona; and 59 mph at Buffalo Airport. \$20K in property damage were reported.
May 22, 2014	Hail	DR-4180	Yes	A weak surface low drifted across the North Country and produced slow moving thunderstorms. The thunderstorms produced 3/4-inch hail near Turin and Port Leyden. The storms also dropped very heavy rains, radar estimating between 8 and 9 inches in some locations. The Village of Port Leyden in the Town of Leyden was hardest hit. More than a dozen roads in the town were completely washed out with numerous others damaged. A sewer line and secondary water line were destroyed and a Boil Water Advisory was issued. About a dozen homes were damaged. A basement wall collapsed in one resulting in a total loss. Several dozen people had to be evacuated at the height of the storm. A State of Emergency was declared and the resulting damage were enough to warrant the county inclusion in a State Disaster Declaration.
June 17, 2014	Thunderstorm wind, Hail	No	No	Scattered showers and thunderstorms developed in a warm, humid air mass during the afternoon hours. These were followed by a large area of showers and thunderstorms associated with low pressure moving across the Great Lakes into southern Ontario and then Quebec. Several of the thunderstorms produced strong, damaging winds. Damage was mainly reported as downed trees and wires however there were some reports of structural and other damage. These included, for example, the soffit blown off a house in Marion, several automobiles damaged by falling trees, and ten utility poles downed in Spencerport. The





Dates of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
				thunderstorms also produced hail up to 1-1/4 inches. Hail was reported in Castile, near Windecker, and in Lowville. \$10K in property damage were reported in Martinsburg. \$10K in property damage were reported in Turin. \$10K in property damage were reported in Port Leyden. \$10K in property damage were reported in Greig. Windecker reported \$5K in property damage. Lowville reported \$5K in property damage.
June 24, 2014	Thunderstorm wind	No	No	Showers and thunderstorms developed across the region in a warm, humid air mass during the afternoon hours as a cold front approached from the west. Several of the thunderstorms produced strong, damaging winds. Damage was mainly reported as downed trees and wires however there were limited reports of structural damage in Fulton. In Phelps, a large tree was downed by the strong winds. The main base of the tree was reported to be 8 to 9 feet in diameter. One of the two main branches of the tree, (about 4 feet in diameter and originally about 15 feet off the ground) fell onto a car driving by. The tree fell directly across the front seat of the vehicle. Both persons in the car were crushed and pronounced dead at the scene. The driver was a 34-year-old male and his 28-year-old wife was the passenger. Port Leyden reported \$15K in property damage
July 1, 2014	Thunderstorm wind	No	No	Thunderstorms developed in a hot, humid airmass. An isolated storm in Lewis County downed trees on Cherry Street in Lyons Falls. Lyons Falls reported \$10K in property damage.
July 8, 2014	Thunderstorm wind, Tornado	No	No	A strong cold front sweeping across the lower Great Lakes was preceded and accompanied by severe thunderstorms. The thunderstorm winds produced widespread damage throughout the region. Trees and power lines were downed. The highest recorded gust was 66 mph at Fort Drum. Some specific reports of damage included: trees down on Route 5 in Portland, Rockspring Road in Ashord, Old Chautauqua Road in Gerry, Allen Street in South Dayton, Boston-Colden Road in Colden, Route 20 in Pavilion, and Locust Street in Honeoye. Some of the trees measured 30 inches in diameter. The falling trees and limbs damaged several homes and automobiles in Marion, Scriba, West Rush and Martinsburg. In Farmington, a stretch of ten power poles was blown over by the strong winds. Martinsburg reported \$25K in property damage. Indian River reported \$10K in property damage. Natural Bridge reported \$10K in property damage. West Lowville reported \$250K in damage.
August 1, 2015	Thunderstorm wind	No	No	A cold front crossed the region during the overnight hours. A thunderstorm that moved across Lewis County produced damaging winds that downed power lines just northwest of Port Leyden. Turin reported \$10K in property damage.
August 18, 2015	Thunderstorm wind	No	No	Thunderstorms developed during the late afternoon hours on lingering boundaries from thunderstorms earlier in the day. The thunderstorms produced damaging winds and that downed trees and wires from Wayne to Oswego Counties. Isolated storms also downed trees and wires in Harrisville in Lewis County. Damage was reported near the towns of Ontario, Caughdenoy, Central Square, Fulton and Scriba. Multiple trees were downed on the State University of New York Oswego campus. At Crosslake Park, east of Cato, several recreational vehicles were damaged by falling trees and limbs while a few were overturned by the strong winds. Docks in Crosslake broke loose with multiple boats being damaged. Winds gusts were generally estimated around 60 mph but approaching 70 mph at Crosslake Park. Harrisville reported \$15K in property damage.



Dates of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
November 12, 2015	Thunderstorm wind	No	No	A cold front moved across the eastern Lake Ontario region. The thunderstorms that accompanied the cold front produced wind gusts that downed trees in Croghan. Radar estimated these winds near 60 mph. Croghan reported \$25K in property damage.
January 10, 2016	High wind	No	No	Deep low pressure crossed Ohio during the morning, southern Ontario through the day, reaching Quebec Sunday evening. The system dragged a cold front across the region during the late afternoon hours. Ahead of the cold front, southeast wind resulted in downslope wind off the Chautauqua Ridge. Wind gusts were measure to 66 mph at Dunkirk. Also ahead of the front, southeast winds channeled down the Black River valley. Across the entire south shore of Lake Ontario, winds increased following the front. The strong winds brought down trees and power lines. Utilities reported thousands without power scattered throughout the region. Some of the falling trees damaged homes and automobiles. Specific wind gusts downwind of Lake Ontario included: 68 mph at Oswego, 64 mph at Olcott, 63 mph at Watertown Airport, 59 mph at Fort Drum and 58 mph at Rochester Airport. \$25K in property damage were reported.
June 20, 2016	Thunderstorm wind	No	No	Thunderstorms developed ahead of an approaching cold front. The first round of storms developed across southern Ontario just west of the St. Lawrence River and moved east across Jefferson and northern Lewis counties producing fairly widespread wind damage. A second line formed near the Buffalo area. This line produced a few sporadic wind damage reports near Buffalo. As this line progressed southeast of Buffalo, the storms intensified producing a corridor of widespread damage. Outside of these two lines, a few more isolated severe storms developed and produced wind damage. Damage consisted mostly of downed trees and power lines. In some cases, roads were blocked and closed by downed trees. In Delevan, a large tree damaged two trailers. In Shaw Bay, Oswego County, a dock was flipped over by the thunderstorm winds. Several of the storms produced 1/2 to 3/4-inch hail near Clarence, Orchard Park, Brighton, Oswego, and Chaffee. An isolated storm near Silver Springs, Wyoming County, producing 1-inch hail. Harrisville reported \$15K in property damage. Copenhagen reported \$12K in property damage.
August 13, 2015	Thunderstorm wind	No	No	Thunderstorms developed across the region in a moist unstable air mass. Numerous thunderstorms developed on outflow and lake breeze boundaries. The thunderstorms downed trees and wires throughout the region. In Palmyra, a large barn was blown down by the winds. Near Sardinia, the thunderstorm winds downed power poles and lines. Power outages were scattered throughout the region. Lyonsdale reported \$10K in property damage.
August 16, 2016	Thunderstorm wind, Tornado	No	No	Thunderstorms accompanied the passage of a cold front during the late afternoon hours. One of the thunderstorms tracked from Monroe to Oswego Counties and eventually into southern Lewis County. In Lewis County, thunderstorm winds downed trees and wires in Osceola and Turin. In Constableville, a small tornado touched down. A small section of a cornfield was flattened by this weak tornado. The small rope tornado was caught on video. There were many pictures and videos on social media of a larger, well developed funnel cloud as the thunderstorm moved across southeast Oswego and southern Lewis Counties. The ground survey conducted uncovered no visible evidence that touchdown of that funnel occurred. Because it was a heavily wooded area however, damage may have occurred that was not visible from public roadways or at ground level. Osceola reported \$8K in property damage. Turin reported \$10K in property damage. Constableville reported \$8K in property damage.



Dates of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
September 8, 2016	Thunderstorm wind	No	No	Thunderstorms developed across the region during the afternoon hours ahead of an approaching cold front. In Chautauqua County, one of the thunderstorms produced damaging winds that downed tree limbs and wires. The wires fell on a car on Route 62 in Kennedy. There were no injuries. In Lewis County, another thunderstorm there produced damaging winds that downed trees and blew down a garage on McDonald Road. In Oswego County, thunderstorm winds downed wires in New Haven. Port Leyden reported \$25K in property damage.
September 11, 2016	Thunderstorm wind	No	No	A strong cold front crossed the region during the evening hours. Thunderstorms that accompanied the front produced damaging wind gusts. The winds downed trees and power lines across the region with scattered power outages reported. Trees fell and damage homes and garages in Lockport, Barker and near Conewango. Several streets were reported blocked and closed by downed trees and wires. Port Leyden reported \$10K in property damage.
March 8, 2017	High wind	No	No	Unusually deep low pressure moved from northwest Ontario across Hudson Bay. The low brought strong winds to the entire region with sustained winds up to 49 mph and wind gusts as high as 81 mph. \$75K in property damage were reported from downed trees and wires.
May 1, 2017	Thunderstorm wind	No	No	A strong cold front moved across the region during the afternoon and evening hours. A line of thunderstorms just ahead of the front produced damaging winds that downed trees and wires across western New York through the Finger Lakes Region as well as areas east of Lake Ontario. A few falling trees caused minor structural damage. Wind gusts were measured to 60 mph. The line of storms also dropped heavy rainfall in a short period of time, with amounts of 3/4 to 1-1/2 inches common over a few hours. While not overly excessive rates, on top of very wet antecedent conditions, there were reports of road closures in flood-prone areas such as low lying land and underpasses. Harrisville reported \$15K in property damage.
May 18, 2017	Thunderstorm wind	No	No	Several rounds of thunderstorms moved across the region during from the afternoon through the early overnight hours. Numerous storms tracked from the western Southern Tier across the northern Finger Lakes and into the eastern Lake Ontario region. Numerous reports of hail from dime- to golf-ball sized were received. The hail, up to 2-1/2 inches, did damage siding, autos and broke windows. There were also some reports of downed trees and wires from the thunderstorm winds. Downed trees blocked several roads. Croghan reported \$10K in property damage. New Bremen Duflo Airport reported \$12K in property damage. Beaches Bridge reported \$10K in property damage.
June 18, 2017	Thunderstorm wind	No	No	Under the influence of a warm, moist airmass, thunderstorms developed across western and north-central New York. A severe multi-cell cluster of storms over northeast Pennsylvania, tracked northeast forming a line of thunderstorms that moved across the region from Chautauqua County to Lewis County during the afternoon and early evening hours. Law enforcement reported trees and wires downed by thunderstorm winds. Several roads were partially or completely blocked by debris from the falling trees. Denmark reported \$10K in property damage. Croghan reported \$10K in property damage. Chase Lake reported \$10K in property damage.
July 17, 2017	Thunderstorm wind	No	No	A cluster of thunderstorms moved across the eastern Lake Ontario region during the pre-dawn hours. Thunderstorm winds downed trees in Glenfield. Glenfield reported \$10K in property damage.



Dates of Event	Event Type	FEMA Declaration Number (if applicable)	County Designated?	Losses / Impacts
August 3, 2017	Hail	No	No	Thunderstorms that developed during the afternoon hours produced dime to nickel-sized hail.
August 22, 2017	Thunderstorm wind	No	No	Three waves of severe storms moved across western and north-central NY making for an almost 8-hour severe event. The first thunderstorms which developed over northeast Ohio and northwest Pennsylvania moved across the western southern tier. The second round of thunderstorms developed mid-afternoon again across the western southern tier. These storms then moved across western New York to the eastern Lake Ontario region. The third wave of storms developed along an advancing cold front during the evening hours over the Niagara Peninsula, then moving across western New York. Osceola reported \$25K in property damage. Constableville reported \$10K in property damage. Beaches Bridge reported \$8K in property damage. Tallcottville reported \$8K in property damage. Lyonsdale reported \$10K in property damage.
October 15, 2017	Thunderstorm wind	No	No	Thunderstorms ahead of and along an approaching strong cold front produced damaging winds during the afternoon and early evening hours. The thunderstorm winds downed trees and power lines throughout the region. Wind gusts were measured to 63 mph at Rochester Airport and 66 mph at Oswego County Airport. Several homes and cars were damaged by falling trees including ones in Depew, Sinclairville, Avon, Fairport, Victor, Dansville, and Canandaigua. In Arcade, Wyoming County, a commercial sign was blown down. Several roads were closed by fallen trees and debris. Lowville reported \$10K in property damage. New Bremen Duflo Airport reported \$10K in property damage. Beaches Bridge reported \$10K in property damage. Constableville reported \$8K in property damage.
October 30, 2017	High wind	No	No	Low pressure across the mid-Atlantic rapidly intensified as it tracked across central New York. The winds were especially strong along the Lake Ontario shoreline counties. The winds downed trees and power lines. Some structural damage was reported. There were reports road closures due to downed limbs and wires. Several tens of thousands were without power due to scattered outages. Wind gusts were measured to 71 mph at Oswego. \$25K in property damage were reported.

Source(s): FEMA 2018; NOAA-NCDC 2018; NWS 2018; NYS HMP 2014

FEMA Federal Emergency Management Agency

HMP Hazard Mitigation Plan

NCDC National Climatic Data Center

NOAA National Oceanic and Atmospheric Administration

NWS National Weather Service

NYS New York State





### Probability of Future Occurrences

Predicting future severe storm events in a constantly changing climate has proven to be a difficult task. Predicting extremes in New York State is particularly difficult because of the region’s geographic location. It is positioned roughly halfway between the equator and the North Pole and is exposed to both cold and dry airstreams from the south. The interaction between these opposing air masses often leads to turbulent weather across the region (Keim 1997).

According to the NOAA National Centers for Environmental Information (NCEI) Storm Events Database and the National Hurricane Center Historical (NHC) Hurricane Tracks mapping tool, Lewis County experienced 163 severe storm events between 1950 and 2018. Table 5.4.8-7 below shows these statistics, as well as the annual average number of events and the percent chance of these individual severe storm hazards occurring in Lewis County in future years (NOAA NCEI 2018; NHC 2018).

**Table 5.4.8-7. Probability of Future Occurrence of Severe Storm Events**

Hazard Type	Number of Occurrences Between 1950 and 2018	Rate of Occurrence or Annual Number of Events (average)	Recurrence Interval (in years) (# Years/Number of Events)	Probability of Event in any given year	% chance of occurrence in any given year
Funnel Cloud	0	0	0	0	0
Hail	17	0.25	4.06	0.25	24.64
Heavy Rain	1	0.01	69.00	0.01	1.45
High Wind	30	0.44	2.30	0.43	43.48
Hurricane*	0	0	0	0	0
Lightning	0	0	0	0	0
Strong Wind	1	0.01	69.00	0.01	1.45
Thunderstorm Wind	105	1.54	0.66	1.52	152.17
Tornado	6	0.09	11.50	0.09	8.70
Tropical Depression*	3	0.04	23.00	0.04	4.35
Tropical Storm*	0	0	0	0	0
<b>TOTAL</b>	<b>163</b>	<b>2.40</b>	<b>0.42</b>	<b>2.36</b>	<b>236.23</b>

Source: NOAA-NCEI 2018; NHC 2018

\* Number of events were collected from NHC and includes events that occurred within 65 nautical miles of Lewis County.

In Section 5.3, the identified hazards of concern for Lewis County were ranked. The probability of occurrence, or likelihood of the event, is one parameter used for hazard rankings. Based on historical records and input from the Planning Committee, the probability of occurrence for severe storms in the County is considered ‘frequent’ (event that occurs within 25 years, as presented in Table 5.3-1).

### Climate Change Impacts

Climate change is beginning to affect both people and resources in New York State, and these impacts are projected to continue growing. Impacts related to increasing temperatures and sea level rise are already being felt in the state. The Integrated Assessment for Effective Climate Change in New York State (ClimAID) was undertaken to provide decision-makers with information on the state’s vulnerability to climate change and to facilitate the development of adaptation strategies informed by both local experience and scientific knowledge (New York State Energy Research and Development Authority [NYSERDA] 2014).

Temperatures in New York State are warming, with an average rate of warming over the past century of 0.25 ° F per decade. Average annual temperatures are projected to increase across New York State by 2 ° F to 3.4 ° F







by the 2020s, 4.1 °F to 6.8 °F by the 2050s, and 5.3 °F to 10.1 °F by the 2080s. By the end of the century, the greatest warming is projected to be in the northern section of the state (NYSERDA 2014).

Regional precipitation across New York State is projected to increase by approximately 1 to 8 percent by the 2020s, 3 to 12 percent by the 2050s, and 4 to 15 percent by the 2080s. By the end of the century, the greatest increases in precipitation are projected to be in the northern areas of the State (NYSERDA 2014).

Each region in New York State, as defined by ClimAID, contains attributes that will be affected by climate change. Lewis County is part of Region 6, the Tug Hill Plateau. In Region 6, it is estimated that temperatures will increase by 4.4 °F to 6.4 °F by the 2050s and 5.9 °F to 10.0 °F by the 2080s (baseline of 45.4 °F). Precipitation totals will increase between 4 and 10 percent by the 2050s and 6 to 12 percent by the 2080s (baseline of 42.6 inches). Table 5.4.8-8 displays the projected seasonal precipitation change for the Tug Hill Plateau ClimAID Region (NYSERDA 2014).

**Table 5.4.8-8. Projected Seasonal Precipitation Change in Region 2, 2050s (% change)**

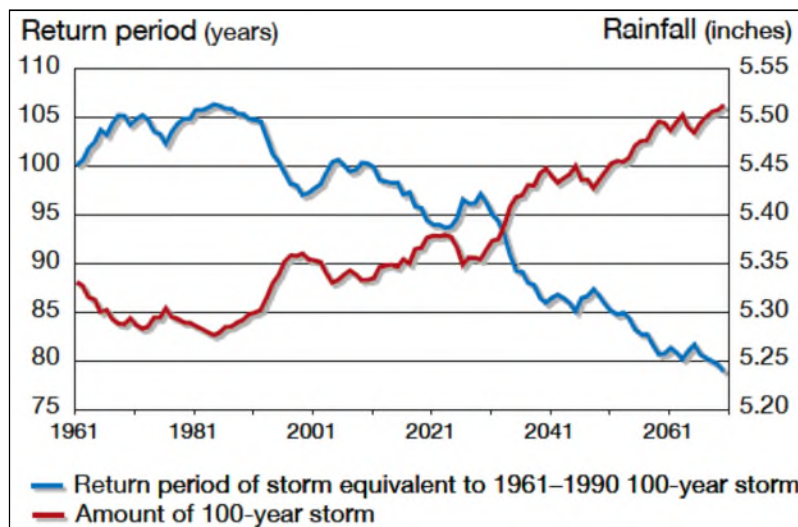
Winter	Spring	Summer	Fall
+5 to +15	0 to +10	-5 to +10	-5 to +10

Source: *NYSERDA 2011*

The projected increase in precipitation is expected to fall more so in heavy downpours and less in light rains. Downpours are very likely to increase in frequency and intensity, a change which has the potential to affect drinking water; heighten the risk of riverine flooding; flood key rail lines, roadways and transportation hubs; and increase delays and hazards related to extreme weather events (NYSERDA 2014). Less frequent rainfall during the summer months may impact the ability of water supply systems. Increasing water temperatures in rivers and streams will affect aquatic health and reduce the capacity of streams to assimilate effluent wastewater treatment plants (NYSERDA 2014).

Figure 5.4.8-3 displays the project rainfall and frequency of extreme storms in New York State. The amount of rain fall in a 100-year event is projected to increase, while the number of years between such storms (return period) is projected to decrease. Rainstorms will become more severe and more frequent (NYSERDA 2014).

**Figure 5.4.8-3. Projected Rainfall and Frequency of Extreme Storms**



Source: *NYSERDA 2011*



### 5.4.8.2 Vulnerability Assessment

To understand risk, a community must evaluate what assets are exposed or vulnerable in the identified hazard area. For the severe weather hazard, all of Lewis County is exposed and vulnerable. Therefore, all assets in the County (population, structures, critical facilities and lifelines), as described in Section 4 (County Profile), are exposed and potentially vulnerable. The following text evaluates and estimates the potential impact of severe storms on the County, including:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on: (1) life, health and safety of residents, (2) general building stock, (3) critical facilities, (4) economy, and (5) future growth and development
- Effect of climate change on vulnerability
- Change of vulnerability compared to that presented in the 2010 Lewis County Hazard Mitigation Plan
- Further data collections that will assist understanding this hazard over time

#### Overview of Vulnerability

The high winds and air speeds of a hurricane or any severe storm often result in power outages, disruptions to transportation corridors and equipment, loss of workplace access, significant property damage, injuries and loss of life, and the need to shelter and care for individuals impacted by the events. A large amount of damage can be inflicted by trees, branches, and other objects that fall onto power lines, buildings, roads, vehicles, and, in some cases, people. The risk assessment for severe storm evaluates available data for a range of storms included in this hazard category.

Losses from wind are primarily associated with severe thunderstorm or tropical depression/storm-related winds and rain (see flooding discussion in Section 5.4.5 Flood). Secondary flooding associated with the torrential downpours during severe storms is also a primary concern in Lewis County. The County has experienced flooding in association with numerous severe storms in the past.

The entire inventory of Lewis County is at risk of being damaged or destroyed due to impacts from severe storms (severe wind). Certain areas, infrastructure, and types of building are at greater risk than others due to proximity to falling hazards and manner of construction. Potential losses associated with high wind events were calculated for Lewis County for two probabilistic hurricane events, the 100-year and 500-year MRP wind events. In addition, the coastal areas are vulnerable to hurricane storm surge. The impacts on population, existing structures and critical facilities on the County are presented below, following a summary of the data and methodology used.

#### Data and Methodology

After reviewing historic data, the HAZUS-MH methodology and model were used to analyze the severe storm hazard for Lewis County. Data used to assess this hazard include data available in the HAZUS-MH 4.2 hurricane model, professional knowledge, information provided by the Steering and Planning Committees, and input from public citizens.

A probabilistic scenario was run for Lewis County for annualized losses, and the 100- and 500-year MRPs were examined for the wind/severe storm hazard. HAZUS-MH contains data on historic hurricane events and wind speeds. It also includes surface roughness and vegetation (tree coverage) maps for the area. Surface roughness and vegetation data support the modeling of wind force across various types of land surfaces. Impacts to life, health, safety, and structures are discussed below using the methodology described above. HAZUS-MH 4.2



default general building stock data and updated critical facility inventories were used in the evaluation of this hazard.

### Impact on Life, Health, and Safety

For the purposes of this HMP, the entire population of Lewis County (27,087 people) is exposed to hurricane and tropical storm events (U.S. Census 2010). Residents may be displaced or require temporary to long-term sheltering. In addition, downed trees, damaged buildings and debris carried by high winds can lead to injury or loss of life. Socially vulnerable populations are most susceptible, based on a number of factors including their physical and financial ability to react or respond during a hazard and the location and construction quality of their housing. HAZUS-MH estimates that no people will be displaced or require temporary shelter as a result of the 100-year MRP and 500-year MRP event.

Economically disadvantaged populations are more vulnerable because they are likely to evaluate their risk and make decisions based on the major economic impact to their family and may not have funds to evacuate. The population over the age of 65 is also more vulnerable and, physically, they may have more difficulty evacuating. The elderly are considered most vulnerable because they require extra time or outside assistance during evacuations and are more likely to seek or need medical attention which may not be available due to isolation during a storm event. Please refer to Section 4 for the statistics of these populations.

### Impact on General Building Stock

After considering the population exposed to the hurricane hazard, the values of general building stock exposed to and damaged by 100- and 500-year MRP hurricane wind events were considered. Potential damage is the modeled loss that could occur to the exposed inventory, including damage to structural and content value based on the wind-only impacts associated with a tropical storm or hurricane.

The entire study area is considered at risk to the hurricane wind hazard. Section 4 (County Profile) presents the total exposure value for general building stock by occupancy class for Lewis County. Expected building damage was evaluated by HAZUS-MH across the following wind damage categories: no damage/very minor damage, minor damage, moderate damage, severe damage, and total destruction. Table 5.4.8-9 summarizes the definition of the damage categories.

Table 5.4.8-9. Description of Damage Categories

Qualitative Damage Description	Roof Cover Failure	Window Door Failures	Roof Deck	Missile Impacts on Walls	Roof Structure Failure	Wall Structure Failure
No Damage or Very Minor Damage Little or no visible damage from the outside. No broken windows, or failed roof deck. Minimal loss of roof over, with no or very limited water penetration.	≤2%	No	No	No	No	No
Minor Damage Maximum of one broken window, door or garage door. Moderate roof cover loss that can be covered to prevent additional water entering the building. Marks or dents on walls requiring painting or patching for repair.	>2% and ≤15%	One window, door, or garage door failure	No	<5 impacts	No	No
Moderate Damage Major roof cover damage, moderate window breakage. Minor roof sheathing failure. Someresulting damage to interior of building from	>15% and ≤50%	> one and ≤ the larger of 20% & 3	1 to 3 panels	Typically 5 to 10 impacts	No	No



Qualitative Damage Description	Roof Cover Failure	Window Door Failures	Roof Deck	Missile Impacts on Walls	Roof Structure Failure	Wall Structure Failure
water.						
Severe Damage Major window damage or roof sheathing loss. Major roof cover loss. Extensive damage to interior from water.	>50%	> the larger of 20% & 3 and ≤50%	>3 and ≤25%	Typically 10 to 20 impacts	No	No
Destruction Complete roof failure and/or, failure of wall frame. Loss of more than 50% of roof sheathing.	Typically >50%	>50%	>25%	Typically >20 impacts	Yes	Yes

Source: HAZUS-MH Hurricane Technical Manual

Hazus-MH 4.2 estimates no structural damage to the Lewis County general building stock as a result of either the 100- and 500-year MRP wind events.

### Impact on Critical Facilities

Overall, all critical facilities are exposed to the wind hazard. HAZUS-MH estimates the probability that critical facilities (i.e., medical facilities, fire/EMS, police, EOC, schools, and user-defined facilities such as shelters and municipal buildings) may sustain damage as a result of 100- and 500-year MRP wind-only events. Additionally, HAZUS-MH estimates the loss of use for each facility in number of days. Due to the sensitive nature of the critical facility dataset, individual facility estimated loss is not provided. Overall, HAZUS-MH estimates no damage to the critical facilities as a result of the 100- and 500-year MRP events.

### Impact on Economy

Hurricanes and tropical storms also impact the economy, including: loss of business function (e.g., tourism, recreation), damage to inventory, relocation costs, wage loss, and rental loss due to the repair/replacement of buildings. HAZUS-MH estimates the total economic loss associated with each storm scenario (direct building losses and business interruption losses). Direct building losses are the estimated costs to repair or replace the damage caused to the building. This is reported in the Impact on General Building Stock subsection above. Business interruption losses are the losses associated with the inability to operate a business because of the wind damage sustained during the storm or the temporary living expenses for those displaced from their home because of the event.

For both the 100- and 500-year MRP wind events, HAZUS-MH estimates no business interruption costs (income loss, relocation costs, rental costs and lost wages) and no inventory losses.

Impacts to transportation lifelines affect both short-term (e.g., evacuation activities) and long-term (e.g., day-to-day commuting and goods transport) transportation needs. Utility infrastructure (power lines, gas lines, electrical systems) could suffer damage and impacts can result in the loss of power, which can impact business operations and can impact heating or cooling provision to the population.

HAZUS-MH 4.2 also estimates the amount of debris that may be produced a result of the 100- and 500-year MRP wind events. As a result of both the 100- and 500-year MRP wind events, no debris will be generated as estimated by HAZUS-MH 4.2. Because the estimated debris production does not include flooding, this is likely a conservative estimate and may be higher if multiple impacts occur.



### **Effect of Climate Change on Vulnerability**

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Climate is defined not simply as average temperature and precipitation but also by the type, frequency, and intensity of weather events. Both globally and at the local scale, climate change has the potential to alter the prevalence and severity of extremes such as storms, including those which may bring precipitation high winds and tornado events. While predicting changes of wind and tornado events under a changing climate is difficult, understanding vulnerabilities to potential changes is a critical part of estimating future climate change impacts on human health, society and the environment (U.S. Environmental Protection Agency [EPA], 2006).

Refer to the Climate Change Impacts subsection earlier in this profile for more details on climate change pertaining to New York State.

### **Change of Vulnerability**

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Lewis County continues to be vulnerable to the severe storm hazard. The HAZUS-MH model was not used to estimate potential losses for the 2010 HMP. The best available data were used for the 2020 HMP update; probabilistic scenarios were evaluated using HAZUS-MH and updated building stock and critical facility inventories were developed and utilized. Overall, this vulnerability assessment provides more accurate estimated exposure and potential losses for Lewis County.

### **Future Growth and Development**

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As discussed in Sections 4 and 9, areas targeted for future growth and development have been identified across Lewis County. Any areas of growth could be potentially impacted by the severe storm hazard because the entire planning area is exposed and vulnerable. Please refer to the specific areas of development indicated in each jurisdictional annex in Volume II, Section 9 of this plan.

### **Additional Data and Next Steps**

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Over time, Lewis County will obtain additional data to support the analysis of this hazard. Data that will support the analysis would include additional detail on past hazard events and impacts, custom building stock based on tax assessor data, building footprints and specific building information such as details on protective features (for example, hurricane straps).





### 5.4.9 Severe Winter Storm

The following section provides the hazard profile (hazard description, location, extent, previous occurrences and losses, probability of future occurrences, and impact of climate change) and vulnerability assessment for the severe winter storm hazard in Lewis County.

#### 5.4.9.1 Profile

##### Hazard Description

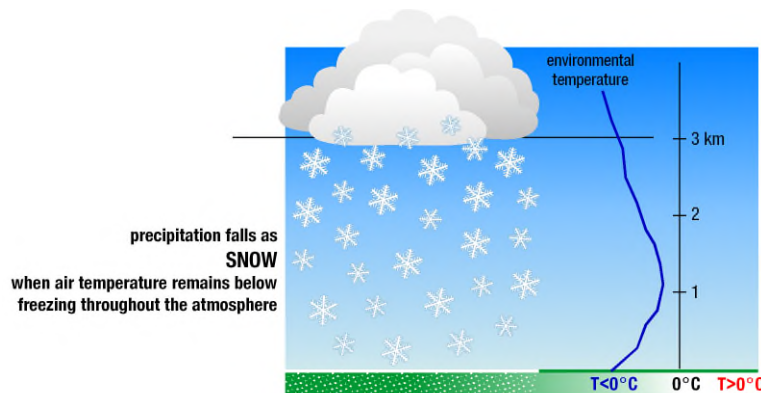
A winter storm is a weather event in which the main types of precipitation are snow, sleet, or freezing rain. They can be a combination of heavy snow, blowing snow, and/or dangerous wind chills. There are three basic components needed to make a winter storm. Below freezing temperatures (cold air) in the clouds and near the ground are necessary to make snow and ice. Lift, something to raise the moist air to form clouds and cause precipitation, is needed. Examples include warm air colliding with cold air and being forced to rise over the cold dome or air flowing up a mountainside. The last thing needed to make a winter storm is moisture to form clouds and precipitation (NSSL 2015).

Some winter storms are large enough to immobilize an entire region, while others may only affect a single community. Winter storms are typically accompanied by low temperatures, high winds, freezing rain or sleet, and heavy snowfall. The aftermath of a winter storm can have an impact on a community or region for days, weeks, or even months, potentially causing cold temperatures, flooding, storm surge, closed and/or blocked roadways, downed utility lines, and power outages. In Lewis County, winter storms include blizzards, snow storms, Nor'Easters, and ice storms. Extreme cold temperatures, wind chills, and Nor'Easters are also associated with winter storms; however, based on input from the Planning Committee, these events are further discussed in Sections 5.4.4 (Extreme Temperature) and 5.4.8 (Severe Storms).

##### Heavy Snow

According to the National Snow and Ice Data Center (NSIDC), snow is precipitation in the form of ice crystals. It originates in clouds when temperatures are below the freezing point (32°F), when water vapor in the atmosphere condenses directly into ice without going through the liquid stage. Once an ice crystal has formed, it absorbs and freezes additional water vapor from the surrounding air, growing into snow crystals or snow pellets, which then fall to the earth (NSIDC 2013).

Figure 5.4.9-1. Snow Creation



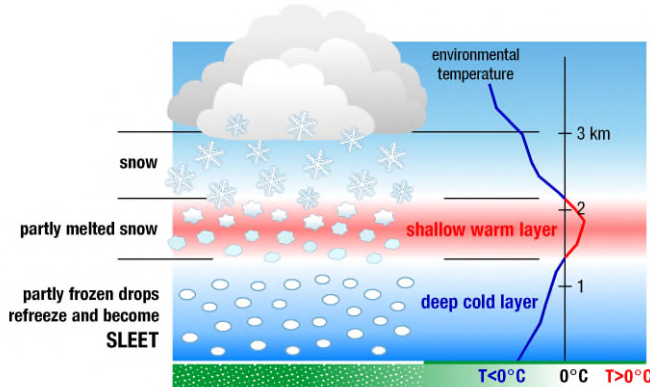
Source: NOAA-NSSL, date unknown





Snow falls in different forms: snowflakes, snow pellets, or sleet. Snowflakes are clusters of ice crystals that form from a cloud. Snow pellets are opaque ice particles in the atmosphere. They form as ice crystals fall through super-cooled cloud droplets, which are below freezing but remain a liquid. The cloud droplets then freeze to the crystals. Sleet is made up of drops of rain that freeze into ice as they fall through colder air layers. They are usually smaller than 0.30 inches in diameter (NSIDC 2013).

Figure 5.4.9-2. Sleet Creation



Source: NOAA-NSSL, date unknown

### Blizzards

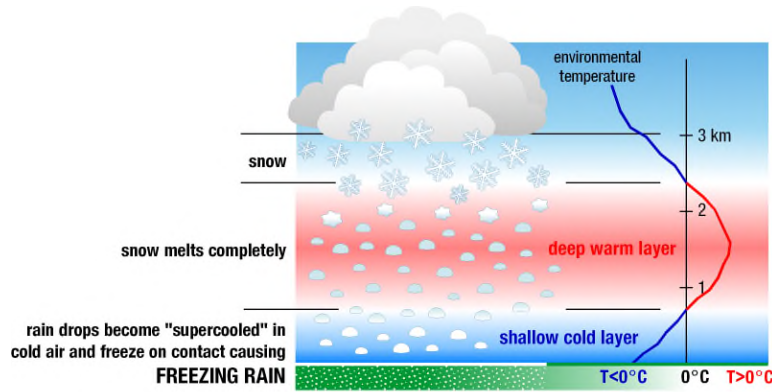
A blizzard is a winter snowstorm with sustained or frequent wind gusts of 35 mph or more, accompanied by falling or blowing snow reducing visibility to or below 0.25 mile. These must be the predominant conditions over a 3-hour period. Extremely cold temperatures are often associated with blizzard conditions but are not a formal part of the definition. The hazard, created by the combination of snow, wind, and low visibility, significantly increases when temperatures are below 20°F. A severe blizzard is categorized as having temperatures near or below 10°F, winds exceeding 45 mph, and visibility reduced by snow to near zero. Storm systems powerful enough to cause blizzards usually form when the jet stream dips far to the south, allowing cold air from the north to clash with warm, moister air from the south. Blizzard conditions often develop on the northwest side of an intense storm system. The difference between the lower pressure in the storm and the higher pressure to the west creates a tight pressure gradient, resulting in strong winds and extreme conditions caused by the blowing snow (The Weather Channel 2012).

### Ice Storms

An ice storm describes those events when damaging accumulations of ice are expected during freezing rain situations. Significant ice accumulations are typically accumulations of 0.25-inches or greater (NWS 2013). Heavy accumulations of ice can bring down trees, power lines and utility poles, and communication towers. Ice can disrupt communications and power for days. Even small accumulations of ice can be extremely dangerous to motorists and pedestrians (NWS 2008).



Figure 5.4.9-3. Freezing Rain Creation



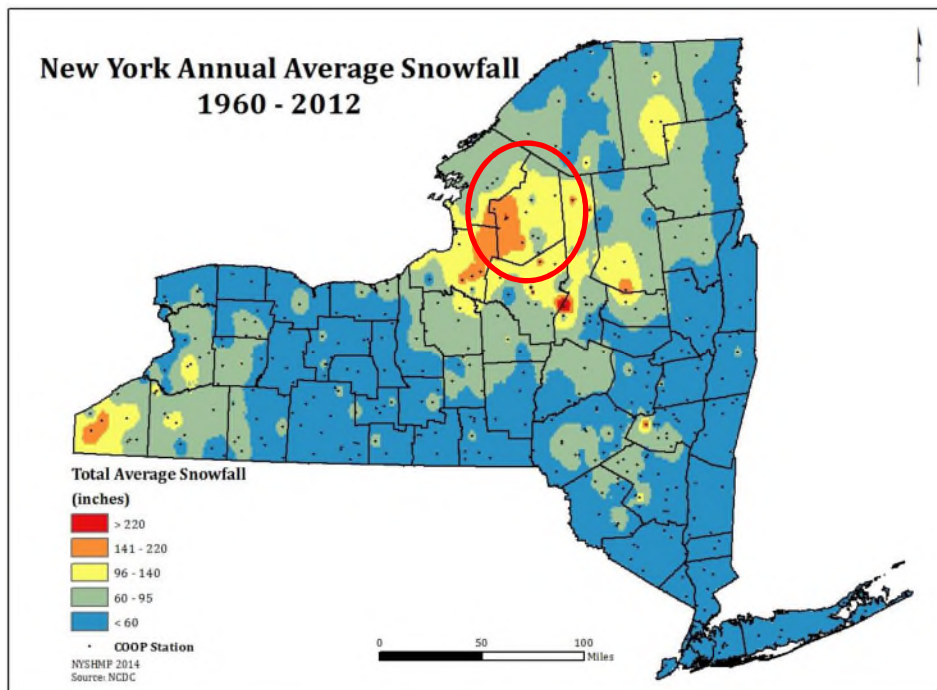
Source: NOAA-NSSL, date unknown

### Location

#### Snow and Blizzards

On average, New York State receives more snowfall than any other state in the United States, with the easternmost and west-central portions of the State most likely to suffer under severe winter storm occurrences than the southern portion. Average snowfall in the State is about 65 inches but varies greatly in the different regions of the State. Between 1960 and 2012, Lewis County had one of the highest total average snowfalls among New York counties, ranging from 60 to 220 inches (New York State HMP 2014).

Figure 5.4.9-4. New York Annual Average Snowfall, 1960–2012



Source: NYS DHSES 2014

Notes: The red oval indicates the location of Lewis County.





### Ice Storms

The Northeast United States is a prime area for freezing rain and ice storm events. These events can occur anytime between November and April, with most events occurring during December and January. Based on data from 1948 to 2000, the average annual number of days with freezing rain for Lewis County is 6 to 7 days (Midwest Regional Climate Center 2018).

### Extent

The magnitude or severity of a severe winter storm depends on several factors, including a region’s climatological susceptibility to snowstorms, snowfall amounts, snowfall rates, wind speeds, temperatures, visibility, storm duration, topography, time of occurrence during the day and week (e.g., weekday versus weekend), and time of season.

The extent of a severe winter storm can be classified by meteorological measurements and by evaluating its societal impacts. NOAA’s National Centers for Environmental Information (NCEI) is currently producing the Regional Snowfall Index (RSI) for significant snowstorms that impact the eastern two-thirds of the United States. The RSI ranks snowstorm impacts on a scale from 1 to 5. It is based on the spatial extent of the storm, the amount of snowfall, and the interaction of the extent and snowfall totals with population (based on the 2000 Census). The NCEI has analyzed and assigned RSI values to over 500 storms since 1900 (NOAA-NCEI 2018). Table 5.4.9-1 presents the five RSI ranking categories.

**Table 5.4.9-1. RSI Ranking Categories**

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

Source: NOAA-NCEI 2018

Note: RSI = Regional Snowfall Index

The National Weather Service (NWS) operates a widespread network of observing systems such as geostationary satellites, Doppler radars, and automated surface observing systems that feed into the current state-of-the-art numerical computer models to provide a look into what will happen next, ranging from hours to days. The models are then analyzed by NWS meteorologists who then write and disseminate forecasts (NWS 2013).

The magnitude of a severe winter storm can be qualified into five main categories by event type:

- Heavy Snowstorm – accumulations of 4 inches or more of snow in a 6-hour period, or 6 inches of snow in a 12-hour period
- Sleet Storm – significant accumulations of solid pellets which form from the freezing of raindrops or partially melted snowflakes causing slippery surfaces, posing a hazard to pedestrians and motorists
- Ice Storm – significant accumulation of rain or drizzle freezing on objects (trees, power lines, roadways, etc.) as it strikes them, causing slippery surfaces and damage from sheer weight of ice accumulations
- Blizzard – wind velocity of 35 mph or more, temperatures below freezing, considerable blowing snow with visibility frequently below one-quarter mile prevailing over an extended period of time



- Severe Blizzard – wind velocity of 45 mph, temperatures of 10°F or lower, a high density of blowing snow with visibility frequently measured in feet prevailing over an extended period of time (NWS 2009).

The NWS uses winter weather watches, warnings, and advisories to ensure that people know what to expect in the coming hours and days. A winter storm watch means that severe winter conditions (heavy snow, ice, etc.) may affect a certain area, but its occurrence, location, and timing are uncertain. A winter storm watch is issued when severe winter conditions (heavy rain and/or significant ice accumulations) are possible within the next day or two. A winter storm warning is issued when severe winter conditions are expected (heavy snow seven inches or greater in 12 hours or nine inches or greater in 24 hours; ice storm with ½ inch or more). A winter weather advisory is used when winter conditions (snow, sleet, and/or freezing rain/ice) are expected to cause significant inconvenience and may be hazardous (snow and/or sleet with amounts of 4 to 6 inches; freezing rain and drizzle in any accretion of ice on roads but less than ½ inch). A blizzard warning is issued when snow and strong winds will combine to produce a blinding snow, visibility near zero/whiteouts, and deep snow drifts (NWS date unknown).

### **Previous Occurrences and Losses**

Many sources provided winter storm information regarding previous occurrences and losses associated with winter storm events throughout Lewis County. With so many sources reviewed for the purpose of this Hazard Mitigation Plan (HMP), loss and impact information for many events could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP.

Between 1954 and October 2018, the Federal Emergency Management Agency (FEMA) included New York State in 25 winter storm-related major disaster (DR) or emergency (EM) declarations classified as one or a combination of the following disaster types: severe winter storm, snowstorm, snow, ice storm, winter storm, blizzard, and flooding. Generally, these disasters cover a wide region of the State; therefore, they may have impacted many counties. Lewis County was included in nine of these declarations.

For this plan update, winter weather events were summarized from 2010 to 2018. For events prior to 2010, refer to the 2010 version of the Lewis County HMP. Known severe winter storm events, including FEMA disaster declarations, that have impacted Lewis County are identified in Table 5.4.9-2. For detailed information on damages and impacts to each municipality, refer to Section 9 (jurisdictional annexes). Please note that not all events that have occurred in Lewis County are included due to the extent of documentation and the fact that not all sources may have been identified or researched. Loss and impact information could vary depending on the source. Therefore, the accuracy of monetary figures discussed is based only on the available information identified during research for this HMP Update.





Table 5.4.9-2. Severe Winter Weather Events in Lewis County, 2010 to 2018

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
February 25, 2010	Winter Storm	DR-1957	No	A deep storm system off Long Island strengthened and stalled off the New York/New Jersey coast. The system circulated Atlantic moisture back across western and north central New York. A general 6 to 10 inches of snow fell across the region with higher amounts to the east (closer to the low center) and downwind of the Great Lakes (where lake enhancement occurred). Many schools throughout the region were closed due to the snow. Numerous automobile accidents were blamed on the treacherous driving conditions. \$15K in property damages were reported.
January 15, 2011	Lake Effect Snow	N/A	N/A	A strong lake effect plume, enhanced by strong upslope flow, developed Saturday evening (the 15 <sup>th</sup> ) off Lake Ontario and focused on the Tug Hill of Lewis County and extended across northern Oswego and southern Jefferson counties. 6 to 10 inches fell in this area by early Sunday. A narrow, intense band developed Sunday morning and lingered most of the day, focusing on northern Cayuga and southern Oswego counties. The activity broke down Sunday evening and lifted out across the lake as winds became light and variable. Storm totals included: 22 inches at Fulton; 12 inches at West Leyden and Constableville; 11 inches at Phoenix and Martville; 10 inches at Minetto and Redfield; and 9 inches at Barnes Corners. \$25K in property damages were reported.
February 5, 2011	Winter Storm	N/A	N/A	A compact low-pressure system moved from Ohio across New York State to New England. The low brought general snowfall to the region. Across the eastern Lake Ontario region snowfall amounts of 10 to 12 inches were reported. Several automobile accidents resulted from the wintry driving conditions. \$25K in property damages were reported.
February 9, 2011	Lake Effect Snow	N/A	N/A	Specific snowfall amounts reported included: 25 inches in Pulaski; 24 inches in Redfield and Lacona; 22 inches in Scriba; 20 inches in Theresa; 15 inches in Barnes Corners and 10 inches in Copenhagen. \$35K in property damages were reported.
February 25, 2011	Winter Storm	N/A	N/A	The system brought a significant snowfall of 6 to 12 inches of snow to the entire area. A brisk northerly flow also resulted in a significant amount of blowing and drifting snow. Winds gusted to 40 mph along the Lake Erie Shore. A 30-mile stretch of the New York State Thruway between Hamburg and Dunkirk was closed due to multiple accidents. There were several reports of building collapses throughout the region from the weight of the snow which had built up throughout the snowy winter. \$20K in property damages were reported.
March 6, 2011	Heavy Snow	N/A	N/A	On the backside of a frontal system, a much colder airmass overspread the region with a heavy, wet snow accumulating seven to ten inches across the eastern Lake Ontario region. The snows led to slick roads and numerous minor motor vehicle accidents. Specific reports included 9.5 inches at Harrisville, nine inches at Constableville, and seven inches at Carthage. \$15K in property damages were reported.
November 22, 2011	Winter Storm	N/A	N/A	Low pressure moved from the Ohio Valley across Pennsylvania to the New Jersey coast and was accompanied by widespread precipitation across the region. Over 1 inch of precipitation fell. Across the North Country, the precipitation was a mix of freezing rain



Table 5.4.9-2. Severe Winter Weather Events in Lewis County, 2010 to 2018

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
				and sleet before changing to snow. Icy roads were covered in a layer of sleet and snow making travel extremely difficult. \$10K in property damages were reported.
January 19, 2012	Winter Storm	N/A	N/A	The system brought 8 to 12 inches of snow to the North Country in a combination of synoptic and lake effect snow. The snow combined with gusty winds produced blowing and drifting snow which made travel treacherous. Numerous automobile accidents were reported, especially on Interstate 81. Specific snow totals included: 12 inches at Osceola, 11 inches at Fulton, 9 inches at Constableville, and 8 inches at Oswego. \$20K in property damages were reported.
December 21, 2012	Winter Storm	N/A	N/A	The winter storm brought heavy snow to the higher elevations of the western Southern Tier and eastern Lake Ontario region. Specific snowfall reports received included: 19 inches at Osceola, 16 inches at Fulton, 13 inches at Jamestown, Redfield, and Lacona, 12 inches at Kennedy, 11 inches at Franklinville and Busti, 9 inches at Little Valley, Randolph, and Harrisville, and 8 inches at Warsaw. \$9K in property damages
December 26, 2012	Winter Storm	N/A	N/A	Low pressure over the deep south lifted across the Tennessee Valley to the Delmarva coast. The low spread a general foot to a foot and a half of snow across the entire region. Winds increased to 20 to 30 mph, gusting at times to near 40 mph. The winds produced blowing snow and reduced visibilities. Numerous automobile accidents occurred because of the wintry conditions. Some holiday travel was disrupted at Buffalo and Rochester airports. \$15K in property damages were reported
February 8, 2013	Heavy Snow	DR-4111	N/A	An area of low pressure passing over the lower Great Lakes brought a general 6-inch to 1-foot snowfall across the northern sections of the region. Many schools were closed on Friday the 8th. \$15K in property damages were reported.
March 18, 2013	Heavy Snow	N/A	N/A	A warm front lifted north across New York State and brought steady, heavy snow to the North Country. Snowfall amounts of seven to thirteen inches of snow fell in less than 24 hours from the late afternoon of the 18 <sup>th</sup> through the 19 <sup>th</sup> . \$15K in property damages were reported.
November 26, 2013	Winter Storm	N/A	N/A	The storm brought accumulating snow across western New York. Across parts of the North Country, the snow mixed with sleet and freezing rain. Although not exceptionally high snowfall totals, strong winds accompanying the system resulted in a considerable amount of blowing snow resulting in frequent white-out conditions. Several counties issued travel advisories due to the hazardous road conditions. The fact that the storm occurred just a day or two prior to Thanksgiving only added to the impact of the storm. \$15K in property damages were reported.
December 14, 2013	Winter Storm	N/A	N/A	Low pressure moved from the Ohio Valley to the East Coast and brought a general accumulating snow to much of the region. Six to ten inches of snow blanketed the region with the higher amounts across the higher elevations of the Eastern Lake Ontario region and areas south of Lake Ontario where lake enhancement occurred. The snow resulted in the usual traffic slowdowns and several accidents were blamed on the storm. \$10K in property damages were reported.



Table 5.4.9-2. Severe Winter Weather Events in Lewis County, 2010 to 2018

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
December 21, 2013	Ice Storm	N/A	N/A	The weight of heavy ice brought down trees and power lines. In some cases, trees fell on homes, buildings, and automobiles. Tens of thousands were left without power. New York State issued an Emergency Declaration for Jefferson and Lewis counties, the hardest hit of the region. Lewis County had \$250K in property damages.
January 2, 2014	Heavy Snow	N/A	N/A	Several areas of low pressure converged over the Atlantic coast. The result over the region was a prolonged snow event that began during the evening hours of the 1 <sup>st</sup> and persisted through the morning of the 3 <sup>rd</sup> . Snowfall rates were generally about a half-inch to 1 inch per hour though the snow briefly intensified on the afternoon and evening of the 2 <sup>nd</sup> . Snow totals downwind of Lakes Erie and Ontario were enhanced by the lake moisture. \$14K in property damages were reported.
February 5, 2014	Heavy Snow	N/A	N/A	The storm resulted in traffic slowdowns and the usual number of automobile accidents while driving in the hazardous weather conditions. \$20K in property damages were reported.
February 13, 2014	Winter Storm	N/A	N/A	Between eight and twelve inches of heavy, wet snow blanketed Jefferson, Lewis, and Oswego Counties. Specific snowfall reports included: 12 inches at Lowville and 8 inches at Watertown and Fulton. \$20K in property damages were reported.
March 12, 2014	Winter Storm	N/A	N/A	Snow began across the region during the pre-dawn hours of the Wednesday the 12 <sup>th</sup> . By morning, the combination of heavy snow and strong winds produced blizzard conditions across much of the region. Damages were mainly limited to economic loss of business and cost of cleanup as most businesses and schools announced closings early in the well forecast storm. Sustained winds of 25 to 35 mph were accompanied by frequent gusts of 45 to 50 mph. \$30K in property damages were reported.
November 17, 2014	Lake Effect Snow	DR-4204	Yes	Cold air crossing the relatively warmer waters of Lake Ontario resulted in lake effect snows. East of Lake Ontario, a lake band developed south of Watertown Monday (17) night, then drifted north across the city and to Harrisville. Winds gusts were mostly in the 40 to 50 mph with a peak gust to 55 mph at Watertown, producing blizzard conditions at times. By Tuesday night the band settled south over the Tug Hill Plateau, then quickly moved north Wednesday morning. Storm totals were highly variable, with snow amounts generally ranging between one and two feet in the hardest hit areas. Specific reports included 15 inches in Harrisville and Lowville. \$200K in property damages were reported.
November 20, 2014	Lake Effect Snow	DR-4204	Yes	By daybreak Thursday, twin bands of moderate to heavy snow were found east of Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis County. As the southern band pushed south off the lake during the course of Thursday morning, the northern band drifted south to the northern slopes of the Tug Hill (southern Jefferson County to northern Lewis) where it remained nearly stationary through the course of the afternoon. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to a foot and half of snow within this band leading up to daybreak Friday. Specific reports



Table 5.4.9-2. Severe Winter Weather Events in Lewis County, 2010 to 2018

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
				included 22 inches in Highmarket, 20 inches in Carthage, and 18 inches in Constableville. \$300K in property damages were reported.
December 10, 2014	Winter Storm	N/A	N/A	Low pressure developed off the mid-Atlantic coast then lifted to southern New England. The nor'easter brought a blanket of heavy snow to much of the region. The snow resulted in travel disruptions. Several school districts in the hardest hit areas were forced to close. \$30K in property damages were reported.
January 6, 2015	Lake Effect Snow	N/A	N/A	Lake effect snow bands developed Tuesday evening January 6 across the North Country and consolidated into a single intense snow band. The band of snow dropped between 1 foot and 2 feet of snow. Snowfall rates likely reached 5 inches per hour as this band of snow moved toward the Tug Hill region late overnight. \$30K in property damages were reported.
February 1, 2015	Winter Storm	N/A	N/A	Low pressure tracked across Ohio and Pennsylvania to the Maryland coast. The low brought a general 8 to 14 inches of snow to the entire region. \$20K in property damages were reported.
February 6, 2015	Lake Effect Snow	N/A	N/A	Westerly winds brought a disorganized band of lake effect snow on the 6 <sup>th</sup> . The snow band shifted southward and intensified over the Tug Hill region. Snowfall rates of about two inches per hour occurred during the late morning and early afternoon hours. Though the band was briefly heavy it did produce up to a foot of snow east of Lake Ontario before the snow band diminished in the early evening hours. While the intense portion of the snow band was just a few hours, it did produce white-out conditions and dangerous driving conditions. \$25K in property damages were reported.
February 15, 2016	Winter Storm	N/A	N/A	A strong cold front crossed the lower Great Lakes from west to east during the day of the 19 <sup>th</sup> . The airmass was only marginally cold by late in the day on the 19 <sup>th</sup> , with lake effect rain mixed with wet snow developing off Lake Erie near Buffalo, changing to all snow across the higher terrain south of the city during the evening. The heavier snow did not develop until a secondary cold front crossed the area on the morning of the 20 <sup>th</sup> , bringing a strong push of arctic air into the region. Abundant moisture and lift associated with the strong low-pressure system produced widespread light to moderate snow across much of the region from the Genesee Valley into Central and Northern New York. Lake enhanced snow covered a much larger area than in our typical lake effect snow events that feature very narrow bands of heavy snow. The most persistent lake enhanced snow was found east and southeast of Lake Ontario with storm totals of over 1 foot in a large area from Rochester eastward to the Tug Hill region and Watertown. \$25K in property damages were reported.
December 31, 2014–January 1, 2015	Lake Effect Snow	N/A	N/A	A band of lake effect snow developed during the evening of December 30. The band remained across Jefferson and far northern Lewis County New Year's Eve into New Year's morning with subtle changes in wind direction forcing the band to meander several miles north and south at times. Snowfall rates reached 2 to 3 inches per hour by early morning on January 2. Snowfall amounts were moderately high in this event with



Table 5.4.9-2. Severe Winter Weather Events in Lewis County, 2010 to 2018

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
				around 1 to 2 feet across southern Jefferson County into far western and northern Lewis County. \$95K in property damages were reported.
January 10, 2016	Lake Effect Snow	N/A	N/A	A strong cold front crossed the eastern Great Lakes, and this set the stage for a significant lake effect snow event east of both lakes. \$30K in property damages were reported.
November 20, 2016	Lake Effect Snow	N/A	N/A	The most persistent lake enhanced snow was found east and southeast of Lake Ontario with storm totals of over 1 foot in a large area from Rochester eastward to the Tug Hill region and Watertown. \$50K in property damages were reported.
December 8, 2016	Lake Effect Snow	N/A	N/A	Lake effect snows began early on the morning of the 8th as deepening cold air in the wake of a strong cold front moved across the Lower Great Lakes. Snowfall amounts off Lake Ontario topped out at a foot and a half in the vicinity of the Tug Hill Plateau. 25K in property damages were reported.
January 4, 2017	Lake Effect Snow	N/A	N/A	This lake effect snow event was a long duration, high impact event; one that snarled traffic and ultimately produced 3 to 4 feet of snow east of Lake Erie and Lake Ontario. \$25K in property damages were reported.
January 26, 2017	Lake Effect Snow	N/A	N/A	In the wake of a cold front, a narrow band of lake effect snow developed east of Lake Ontario. Lake effect snow developed in the early morning hours of Wednesday, January 27 as a 10- to 15-mile wide band of snow across southern Jefferson and western Lewis counties. Snowfall rates of up to two inches per hour occurred. As the band of snow reached peak intensity, several flashes of lightning were seen over southern Jefferson and western Lewis counties between 630 and 730 am. \$25K in property damages were reported.
February 1, 2017	Lake Effect Snow	N/A	N/A	A clipper system moved from the Great Lakes to New England January 31 to early on February 1, producing widespread light synoptic snow across the area. In the wake of this system, increasing westerly flow and cold air crossing Lake Ontario allowed lake effect snow to develop by the early morning hours of the 1 <sup>st</sup> . The snow intensified across the Tug Hill and dropped about two feet of snow with snowfall rates approaching three inches per hour. \$65K in property damages were reported.
February 12, 2017	Heavy Snow	N/A	N/A	Low pressure brought heavy snow to the North Country. Snow began across the region during the morning hours of Saturday the 12 <sup>th</sup> and continued through the late morning of Sunday the 13 <sup>th</sup> . The heavy, wet snow slowed travel however impact was minimized by the weekend timing of the storm. \$15K in property damages were reported.
March 14, 2017	Winter Storm	DR-4322	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region. Snow began across the region during the late evening into the early overnight hours of the 13 <sup>th</sup> -14 <sup>th</sup> . The snow continued through the day Tuesday (14 <sup>th</sup> ) before tapering off during the afternoon of the 15 <sup>th</sup> . Most schools and some businesses closed on Tuesday. The state enacted a travel ban on tractor trailers on the major interstates. The National Guard was called on to assist in snow removal in some locations. Reported storm total snowfall included 18 inches Croghan and Harrisville. \$40K in property damages were reported.





Table 5.4.9-2. Severe Winter Weather Events in Lewis County, 2010 to 2018

Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses / Impacts
December 10, 2017	Lake Effect Snow	N/A	N/A	During the late afternoon and early evening, winds become WSW just ahead of a weak system approaching the lake. The band intensified and moved north into the southern portion of Jefferson County and northern Lewis County. Snowfall rates reached 3 inches per hour during the most intense portion of this storm across the Tug Hill region and areas just south and east of Watertown. This strong band remained in place through about midnight then moved south and back into Oswego County during the pre-dawn hours of the 11 <sup>th</sup> . The storm came on a weekend, which lessened travel impacts to some extent. Nonetheless, travel was very difficult during the afternoon and evening of the 10 <sup>th</sup> across the Tug Hill region. \$35K in property damages were reported.
December 12, 2017	Winter Storm	N/A	N/A	Narrative A general snow across the region was enhanced by the Great Lakes before transitioning to lake effect snow bands east and southeast of the lakes. \$35K in property damages were reported.
December 15, 2017	Lake Effect Snow	N/A	N/A	Cold air crossing the relatively warm waters of Lakes Erie and Ontario resulted in lake effect snows. \$40K in property damages were reported.
December 24, 2017	Lake Effect Snow	N/A	N/A	Lake effect snow developed early Christmas morning and continued continuously for about 72 hours, before diminishing late in the day on Wednesday the 27 <sup>th</sup> . Off Lake Erie, the heaviest lake effect snows with this event were mainly confined to the classic snow belt directly east of Lake Erie due to the predominate westerly flow. \$70K in property damages were reported.

Sources: FEMA 2016; NOAA-NCEI 2016; SPC 2016

DR Major Disaster Declaration (FEMA)

FEMA Federal Emergency Management Agency

Mph Miles Per Hour

NCEI National Centers for Environmental Information

NOAA National Oceanic and Atmospheric Administration

N/A Not Applicable

Notes: Only Lake Effect Snow events with \$25K of property damages or greater are recorded. Total Lake Effect Snow property damages from 2010-2018 are \$1.601M.



### Probability of Future Occurrences

Winter storm hazards in New York State are virtually guaranteed yearly because the State is located at relatively high latitudes resulting in winter temperatures that range between 0°F and 32 °F for a good deal of the fall through early spring season (late October until mid-April). In addition, the State is exposed to large quantities of moisture from both the Great Lakes and the Atlantic Ocean. While it is highly probable that a number of significant winter storms will occur during the winter and fall season, what is not easily determined is how many such storms will occur during that time frame (NYS DHSES 2014).

The 2014 New York State HMP suggests that, based on historical snow related disaster declaration occurrences, New York State can expect a snow storm of disaster declaration proportions, on average, once every 3 to 5 years. Similarly, for ice storms, based on historical disaster declarations, it is expected that ice storms of disaster proportions will occur, on average, once every 7 to 10 years within the State (NYS DHSES 2014).

The New York State HMP also documents historical winter storm events by county. Between 1960 and 2012, Lewis County had 331 winter storm events and resulted in 5 fatalities, 16 injuries, over \$20 million in property damage and over \$250,000 in crop damage. These statistics showed that Lewis County has a 637% chance of winter storm events occurring in the future with a recurrence interval of 0.16 (NYS DHSES 2014). However, according to the NOAA-NCEI Storm Events Database, Lewis County experienced 288 winter weather events between 1950 and 2018, including 103 heavy snow events, 78 lake effect snow events, three ice storms, and 26 winter storms events. The table below shows these statistics as well as the annual average number of events and the percent chance of these individual severe winter storm hazards occurring in Lewis County in future years (NOAA-NCEI 2018).

**Table 5.4.9-3. Probability of Future Occurrence of Severe Winter Weather Events**

Hazard Type	Number of Occurrences Between 1950 and 2018	Rate of Occurrence or Annual Number of Events (average)	Recurrence Interval (in years) (# Years/Number of Events)	Probability of Event in any given year	% chance of occurrence in any given year
Heavy Snow	103	1.51	0.67	1.49	149.28
Ice Storm	3	0.04	23	0.04	4.35
Lake Effect Snow	78	1.15	0.88	1.13	113.04
Winter Storm	26	0.38	2.65	0.38	37.68
<b>Total</b>	<b>288</b>	<b>4.24</b>	<b>0.24</b>	<b>4.17</b>	<b>417.39</b>

Source: NOAA-NCEI 2018

In Section 5.3, the identified hazards of concern for Lewis County were ranked. The probability of occurrence, or likelihood of the event, is one parameter used for hazard rankings. Based on historical records and input from the Planning Committee, the probability of occurrence for severe winter storms in the County is considered “frequent” (hazard event is likely to occur within 25 years).

### Climate Change Impacts

New York State averages more than 40 inches of snow each year. Snowfall varies regionally, based on topography and the proximity to large lakes and the Atlantic Ocean. Maximum snowfall is more than 165 inches in parts of the Adirondacks and Tug Hill Plateau as well as in the westernmost parts of the state. The warming influence of the Atlantic Ocean keeps snow in the New York City and Long Island areas below 36 inches each year.





Climate change is beginning to affect both people and resources in New York State, and these impacts are projected to continue growing. Impacts related to increasing temperatures and sea level rise are already being felt in the State. ClimAID: the Integrated Assessment for Effective Climate Change in New York State (ClimAID) was undertaken to provide decision-makers with information on the State’s vulnerability to climate change and to facilitate the development of adaptation strategies informed by both local experience and scientific knowledge (New York State Energy Research and Development Authority [NYSERDA] 2014).

Temperatures in New York State are warming, with an average rate of warming over the past century of 0.25°F per decade. Average annual temperatures are projected to increase across New York State by 2°F to 3.4°F by the 2020s, 4.1°F to 6.8°F by the 2050s, and 5.3°F to 10.1°F by the 2080s. By the end of the century, the greatest warming is projected to be in the northern section of the State (NYSERDA 2014).

Regional precipitation across New York State is projected to increase by approximately 1 to 8 percent by the 2020s, 3 to 12 percent by the 2050s, and 4 to 15 percent by the 2080s. By the end of the century, the greatest increases in precipitation are projected to be in the northern areas of the State (NYSERDA 2014).

Each region in New York State, as defined by ClimAID, has attributes that will be affected by climate change. Lewis County is part of Region 6, the Tug Hill Plateau. In Region 6, it is estimated that temperatures will increase by 4.4°F to 6.4°F by the 2050s and 5.9°F to 10.0°F by the 2080s (baseline of 45.4°F, mid-range projection). Precipitation totals will increase between 4 and 10 percent by the 2050s and 6 to 12 percent by the 2080s (baseline of 42.6 inches, mid-range projection). As the century progresses, snowfall is likely to become less frequent, with the snow season decreasing in length. Possible changes in the intensity of snowfall per storm are highly uncertain, and it is unknown how the frequency and intensity of ice storms and freezing rain may change (NYSERDA 2014).

Table 5.4.9-4 displays the projected seasonal precipitation change for the Tugg Hill Plateau ClimAID Region (NYSERDA 2014).

**Table 5.4.9-4. Projected Seasonal Precipitation Change in Region 6, 2050s (% change)**

Winter	Spring	Summer	Fall
+5 to +15	0 to +10	-5 to +10	-5 to +10

Source: NYSEERDA 2011

It is uncertain how climate change will impact winter storms. Based on historical data, it is expected that the following will occur at least once per 100 years:

- Up to 8 inches of rain fall in the rain band near the coast over a 36-hour period
- Up to 4 inches of freezing rain in the ice band near central New York State and between 1 and 2 inches of accumulated ice over a 24-hour period
- Up to 2 feet of accumulated snow in the snow band in northern and western New York State over a 48-hour period (NYSERDA 2014)

New York State is already experiencing the effects of climate change during the winter season. Winter snow cover is decreasing, and spring comes, on average, about a week earlier than it did a few years ago. Nighttime temperatures are measurably warmer, even during the colder months (NYSDEC Date Unknown). Overall winter temperatures in New York State are almost five degrees warmer than in 1970 (NYSDEC Date Unknown). New York State has seen a decrease in the number of cold winter days (below 32°F) and can expect to see a decrease in snow cover, by as much as 25 to 50 percent by end of the next century. The lack of snow cover may jeopardize opportunities for skiing, snowmobiling, and other types of winter recreation, and natural ecosystems will be affected by the changing snow cover (Cornell University College of Agriculture and Life Sciences 2011).



Some climatologists believe that climate change may play a role in the frequency and intensity of Nor'Easters. Two ingredients are needed to produce strong Nor'Easters and intense snowfall: (1) temperatures just below freezing and (2) massive moisture coming from the Gulf of Mexico. When temperatures are far below freezing, snow is less likely. As temperatures increase in the winter months, they will be closer to freezing rather than frigidly cold. Climate change is expected to produce more moisture, thus increasing the likelihood that these two ingredients (temperatures just below freezing and intense moisture) will cause more intense snow events.

### **5.4.9.2 Vulnerability Assessment**

To understand risk, a community must evaluate what assets are exposed or vulnerable in the identified hazard area. For the severe winter storm hazard, all of Lewis County has been identified as the hazard area. Therefore, all assets in the County (population, structures, critical facilities, and lifelines), as described in the County Profile (Section 4), are vulnerable to a winter storm. The following text evaluates and estimates the potential impact of the severe winter storm hazard on Lewis County, including:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on (1) life, health, and safety of residents, (2) general building stock, (3) critical facilities, (4) economy, and (5) future growth and development
- Change of vulnerability as compared to that presented in the 2010 Lewis County HMP
- Effect of climate change on vulnerability
- Further data collections that will assist understanding this hazard over time

#### **Overview of Vulnerability**

Severe winter storms are of significant concern to Lewis County because of the frequency and magnitude of these events in the region, the direct and indirect costs associated with these events, delays caused by the storms, and impacts on the people and facilities of the region related to snow and ice removal, health problems, cascade effects such as utility failure (power outages) and traffic accidents, and stress on community resources.

#### **Data and Methodology**

Updated population and general building stock data were used to support an evaluation of assets exposed to this hazard and the potential impacts associated with this hazard. Additionally, as available economic losses were provided by the Planning Committee to support this vulnerability assessment.

#### **Impact on Life, Health, and Safety**

According to the NOAA National Severe Storms Laboratory (NSSL), every year, winter weather indirectly and deceptively kills hundreds of people in the U.S., primarily from automobile accidents, overexertion, and exposure. Winter storms are often accompanied by strong winds creating blizzard conditions with blinding wind-driven snow, drifting snow, extreme cold temperatures, and dangerous wind chill. They are considered deceptive killers because most deaths and other impacts or losses are indirectly related to the storm. People can die in traffic accidents on icy roads, heart attacks while shoveling snow, or of hypothermia from prolonged exposure to cold. Heavy accumulations of ice can bring down trees and power lines, disabling electric power and communications for days or weeks. Heavy snow can immobilize a region and paralyze a city or county, shutting down all air and rail transportation and disrupting medical and emergency services. Storms near the coast can cause coastal flooding and beach erosion as well as sink ships at sea. The economic impact of winter weather each year is huge, with costs for snow removal, damage, and loss of business in the millions (NSSL 2006).



Heavy snow can immobilize a region and paralyze a city, stranding commuters, stopping the flow of supplies, and disrupting emergency and medical services. Accumulations of snow can collapse buildings and knock down trees and power lines. In rural areas, homes and farms may be isolated for days, and unprotected livestock may be lost. In the mountains, heavy snow can lead to avalanches. The cost of snow removal, repairing damages, and loss of business can have large economic impacts on cities and towns (NSSL 2006).

Heavy accumulations of ice can bring down trees, electrical wires, telephone poles and lines, and communication towers. Communications and power can be disrupted for days while utility companies work to repair the extensive damage. Even small accumulations of ice may cause extreme hazards to motorists and pedestrians. Bridges and overpasses are particularly dangerous because they freeze before other surfaces (NSSL 2006).

For the purposes of this HMP, the entire population of Lewis County (27,087 people) is exposed to severe winter storm events (U.S. Census 2010). Snow accumulation and frozen/slippery road surfaces increase the frequency and impact of traffic accidents for the general population, resulting in personal injuries. Refer to Section 4 (County Profile) for population statistics for each participating municipality.

The elderly are considered most susceptible to this hazard due to their increased risk of injuries and death from falls and overexertion and/or hypothermia from attempts to clear snow and ice. In addition, severe winter storm events can reduce the ability of these populations to access emergency services. Residents with low incomes may not have access to housing or their housing may be less able to withstand cold temperatures (e.g., homes with poor insulation and heating supply).

**Impact on General Building Stock**

The entire general building stock inventory is exposed and vulnerable to the severe winter storm hazard. In general, structural impacts include damage to roofs and building frames, rather than building content. Table 5.4.9-5 presents the total exposure value for general building stock for each participating municipality.

Current modeling tools are not available to estimate specific losses for this hazard. As an alternate approach, this plan considers percentage damages that could result from severe winter storm conditions. Table 5.4.9-5 below summarizes percent damages that could result from severe winter storm conditions for the planning area’s total general building stock. Given professional knowledge and the currently available information, the potential loss for this hazard is many times considered to be overestimated because of varying factors (building structure type, age, load distribution, building codes in place, etc.). Therefore, the following information should be used as estimates only for planning purposes with the knowledge that the associated losses for severe winter storm events vary greatly.

**Table 5.4.9-5. General Building Stock Exposure and Estimated Losses from Severe Winter Storm Events**

Municipality	Total (All Occupancies)	1% Damage Loss Estimate	5% Damage Loss Estimate	10% Damage Loss Estimate
Castorland (V)	\$34,034,000	\$340,340	\$1,701,700	\$3,403,400
Constableville (V)	\$41,682,000	\$416,820	\$2,084,100	\$4,168,200
Copenhagen (V)	\$140,717,000	\$1,407,170	\$7,035,850	\$14,071,700
Croghan (T)	\$374,956,000	\$3,749,560	\$18,747,800	\$37,495,600
Croghan (V)	\$75,012,000	\$750,120	\$3,750,600	\$7,501,200
Denmark (T)	\$205,546,000	\$2,055,460	\$10,277,300	\$20,554,600
Diana (T)	\$334,443,000	\$3,344,430	\$16,722,150	\$33,444,300
Greig (T)	\$269,742,000	\$2,697,420	\$13,487,100	\$26,974,200
Harrisburg (T)	\$71,710,000	\$717,100	\$3,585,500	\$7,171,000





**Table 5.4.9-5. General Building Stock Exposure and Estimated Losses from Severe Winter Storm Events**

Municipality	Total (All Occupancies)	1% Damage Loss Estimate	5% Damage Loss Estimate	10% Damage Loss Estimate
Lewis (T)	\$109,401,000	\$1,094,010	\$5,470,050	\$10,940,100
Leyden (T)	\$130,509,000	\$1,305,090	\$6,525,450	\$13,050,900
Lowville (T)	\$210,155,000	\$2,101,550	\$10,507,750	\$21,015,500
Lowville (V)	\$1,019,570,000	\$10,195,700	\$50,978,500	\$101,957,000
Lyons Falls	\$70,606,000	\$706,060	\$3,530,300	\$7,060,600
Lyonsdale (T)	\$157,699,000	\$1,576,990	\$7,884,950	\$15,769,900
Martinsburg (T)	\$193,202,000	\$1,932,020	\$9,660,100	\$19,320,200
Montague (T)	\$50,885,000	\$508,850	\$2,544,250	\$5,088,500
New Bremen (T)	\$216,271,000	\$2,162,710	\$10,813,550	\$21,627,100
Osceola (T)	\$84,863,000	\$848,630	\$4,243,150	\$8,486,300
Pinckney (T)	\$76,814,000	\$768,140	\$3,840,700	\$7,681,400
Port Leyden	\$64,603,000	\$646,030	\$3,230,150	\$6,460,300
Turin (T)	\$104,517,000	\$1,045,170	\$5,225,850	\$10,451,700
Turin (V)	\$32,206,000	\$322,060	\$1,610,300	\$3,220,600
Watson (T)	\$311,194,000	\$3,111,940	\$15,559,700	\$31,119,400
West Turin (T)	\$187,251,000	\$1,872,510	\$9,362,550	\$18,725,100
<b>Lewis County</b>	<b>\$4,567,588,000</b>	<b>\$45,675,880</b>	<b>\$228,379,400</b>	<b>\$456,758,800</b>

Source: HAZUS-MH 4.2

A specific area that is vulnerable to the severe winter storm hazard is the floodplain. Severe winter storms can cause flooding through blockage of streams or through snow melt. At-risk residential infrastructures are presented in the flood hazard profile (Section 5.4.5). Generally, losses resulting from flooding associated with severe winter storms should be less than that associated with a 100-year flood. Please refer to the severe storm profile (Section 5.4.8) for losses resulting from wind.

### Impact on Critical Facilities

Full functionality of critical facilities such as police, fire, and medical facilities is essential for response during and after a severe winter storm event. These critical facility structures are largely constructed of concrete and masonry; therefore, they should only suffer minimal structural damage from severe winter storm events. Because power interruption can occur, back-up power is recommended. Infrastructure at risk for this hazard includes roadways that could be damaged due to the application of salt and intermittent freezing and warming conditions that can damage roads over time. Severe snowfall requires the clearing roadways and alerting citizens to dangerous conditions; following the winter season, resources for road maintenance and repair are required.

### Impact on Economy

The cost of snow and ice removal and repair of roads from the freeze/thaw process can drain local financial resources. Another impact on the economy includes impacts on commuting into, or out of, the area for work or school. The loss of power and closure of roads prevents the commuter population traveling to work within and outside of Lewis County.

### Future Growth and Development

As discussed in Sections 4 and 9, areas targeted for future growth and development have been identified across Lewis County. Any areas of growth could be potentially impacted by the severe winter storm hazard because



the entire planning area is exposed and vulnerable. Areas targeted for potential future growth and development in the next five years have been identified across Lewis County at the municipal level. Refer to the jurisdictional annexes in Volume II of this HMP.

Current New York State land use and building codes incorporate standards that address and mitigate snow accumulation. Some local municipalities in the State have implemented the following activities to eliminate loss of life and property and infrastructure damages during winter storm events:

- Removal of snow from roadways
- Removal of dead trees and trim trees/brush from roadways to lessen falling limbs and trees
- Ensure proper road signs are visible and installed properly
- Bury electrical and telephone utility lines to minimize downed lines
- Removal of debris/obstructions in waterways and develop routine inspections/maintenance plans to reduce potential flooding
- Replace substandard roofs of critical facilities to reduce exposure to airborne germs resulting from leakage
- Purchase and install back-up generators in evacuation facilities and critical facilities to essential services to residents
- Install cell towers in areas where limited telecommunication is available to increase emergency response and cell phone coverage (NYS DHSES 2014)

### **Change of Vulnerability**

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Overall, all of Lewis County remains vulnerable to severe winter storms. The damage estimate did not use HAZUS as part of the 2010 Lewis County HMP risk assessment. The updated vulnerability assessment provides a more current risk assessment and analysis for Lewis County.

### **Effect of Climate Change on Vulnerability**

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Climate is defined not simply as average temperature and precipitation but also by the type, frequency, and intensity of weather events. Both globally and at the local scale, climate change has the potential to alter the prevalence and severity of extremes such as winter storms. While predicting changes of winter storm events under a changing climate is difficult, understanding vulnerabilities to potential changes is a critical part of estimating future climate change impacts on human health, society, and the environment (U.S. Environmental Protection Agency [EPA], 2013).

The 2011 ‘Responding to Climate Change in New York State’ report was prepared for New York State Energy Research and Development Authority to study the potential impacts of global climate change on New York State. According to the synthesis report, it is uncertain how climate change will influence extreme winter storm events. Winter temperatures are projected to continue to increase. In general, warmer winters may lead to a decrease in snow cover and an earlier arrival in spring; all of which have numerous cascading effects on the environment and economy. Annual average precipitation is also projected to increase. The increase in precipitation is likely to occur during the winter months as rain, with the possibility of slightly reduced precipitation projected for the late summer and early fall. Increased rain on snowpack may lead to increased flooding and related impacts on water quality, infrastructure, and agriculture in the State. Overall, it is anticipated that winter storms will continue to pass through New York State (NYSERDA 2014). Future enhancements in climate modeling will provide an improved understanding of how the climate will change and impact the Northeast.



### **Additional Data and Next Steps**

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The assessment above identifies vulnerable populations and economic losses associated with this hazard of concern. Historic data on structural losses to general building stock are not adequate to predict specific losses to this inventory; therefore, the percent of damage assumption methodology was applied. This methodology is based on FEMA’s How to Series (FEMA 386-2), Understanding Your Risks, Identifying and Estimating Losses (FEMA 2001) and FEMA’s Using HAZUS-MH for Risk Assessment (FEMA 433) (FEMA, 2004). The collection of additional/actual valuation data for general building stock and critical infrastructure losses would further support future estimates of potential exposure and damage for the general building stock inventory. Mitigation strategies addressing early warning, dissemination of hazard information, provisions for snow removal, and back-up power are included in Volume II, Section 9 of this plan.



## 5.4.10 Wildfire

This section provides the hazard profile and vulnerability assessment for the wildfire hazard for the Lewis County Hazard Mitigation Plan (HMP) update.

### 5.4.10.1 Hazard Profile

This section provides profile information including the description, location, extent, previous occurrences and losses, probability of future occurrences, and climate change impacts, as well as the vulnerability assessment for the agricultural product spill hazard in Lewis County.

#### Description

According to the New York State (NYS) HMP, wildfire is defined as an uncontrolled fire spreading through natural or unnatural vegetation that can threaten lives and property if not contained. Wildfires are commonly termed forest fires, brush fires, grass fires, wildland-urban interface fires, range fires, or ground fires. Wildfires do not include fires naturally or purposely ignited to manage vegetation for one or more benefits (NYS Division of Homeland Security and Emergency Services [DHSES] 2014). Although destructive fires do not occur annually, the State’s fire history shows a cycle of outbreaks that have caused human death, property loss, forest destruction, and air pollution (NYS DHSES 2014).

The NYS Division of Forest Protection (Forest Ranger Division) is a division of NYS Department of Environmental Conservation (NYSDEC). It has fought fires and retained records for more than 125 years. Over the past 25 years (1993-2017), Forest Ranger Division records indicate that rangers suppressed 5,423 wildfires that burned a total of 52,580 acres (NYSDEC 2018). Currently, more than 1,700 fire departments respond to an average of 4,500 wildfires each year. Forest rangers respond to approximately 3 percent of all wildfires. However, they help contain 33 percent of all wildfire acres (NYSDEC 2018).

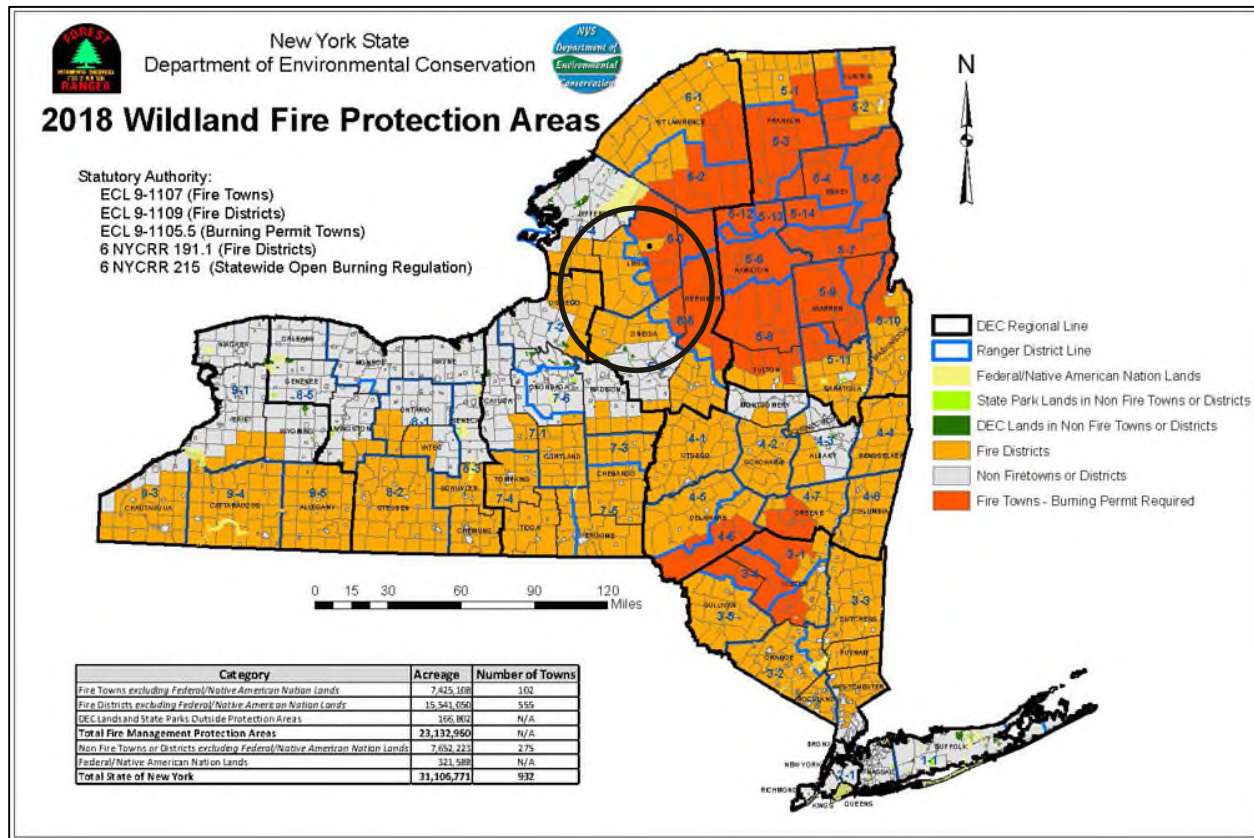
#### Location

According to the U.S. Fire Administration (USFA), the fire problem in the United States varies from region to region, which is often a result of climate, poverty, education, demographics, and other causal factors (USFA 2013). Wildfires do occur in NYS. Many areas in the State, particularly those that are heavily forested or contain large tracts of brush and shrubs, are prone to fires. NYS has over 18 million acres of non-federal forested land, along with an undetermined amount of open space and wetlands. The Adirondacks, Catskills, Hudson Highlands, Shawangunk Ridge, and Long Island Pine Barrens are examples of fire-prone areas (NYSDEC 2013).

NYSDEC’s Forest Ranger Division is designated as the State’s lead agency for wildfire mitigation. The Forest Ranger Division has a statutory requirement to provide a forest fire protection system for 657 of the 932 jurisdictions throughout NYS. It includes cities and villages and cover 23.1 million acres of land, including all State-owned land outside of the jurisdictions. The Lake Ontario Plains and New York City-Long Island areas are the general areas not included in the statutory requirement. Figure 5.4.10-1 displays the fire protection areas in NYS. This figure indicates that, as of 2015, Lewis County is located in Fire District 6-3 and 6-4.



Figure 5.4.10-1. Forest Ranger Division Wildfire Protection Areas



Source: NYSDEC 2018

Note: Lewis County is indicated by the black oval.

NYS is divided into 10 fire danger rating areas (FDRA). FDRAs are defined by areas of similar vegetation, climate, and topography in conjunction with agency regional boundaries, NWS fire weather zones, political boundaries, fire occurrence history, and other influences. The Forest Ranger Division issues daily fire danger warnings when the fire danger rating is at high or above in one or more FDRAs. The western portion of Lewis County is located in the Lake Ontario Plains FDRA and the eastern portion is located in the Adirondack FDRA. This is discussed further in the Extent section of this profile.

### Wildland-Urban Interface (WUI) in New York State and Lewis County

Wildland-urban interface (WUI) is the area where natural areas and development meet. Since 1990, 60 percent of new homes in the United States have been built in the WUI. These homes are at risk of structure loss, injury and death from a wildfire. All states have at least a small amount of land classified as WUI, approximately 9.9 percent of all land is classified as WUI. The WUI is divided into two categories: intermix and interface. Intermix WUI refers to areas where housing and wildland vegetation intermingle, while interface WUI refers to areas where housing is in the vicinity of a large area of dense wildland vegetation (Martinuzzi et al. 2015). Intermix areas have more than one house per 40 acres and have more than 50 percent vegetation. Interface areas have more than one house per 40 acres, have less than 50 percent vegetation, and are within 1.5 miles of an area over 1,235 acres that is more than 75 percent vegetated (Stewart et al. 2006). In NYS, 31 percent (15,240 square miles) is located in the WUI; with 6.3 percent (3,111 square miles) is located in the WUI interface and 24.7 percent (12,129 square miles) is located in the WUI intermix (Martinuzzi et al. 2015).

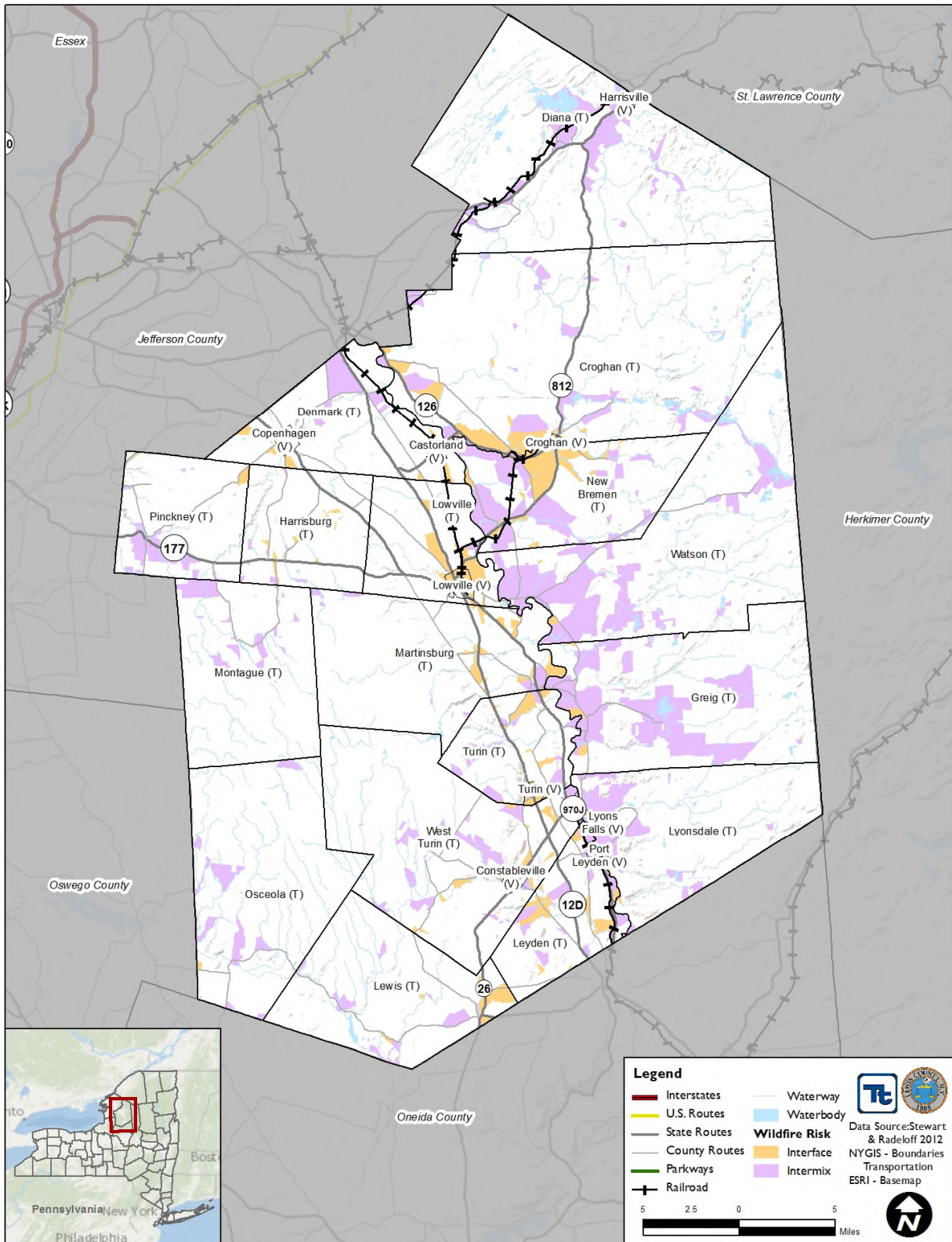




A was obtained through the SILVIS Lab, Department of Forest Ecology and Management, University of Wisconsin-Madison developed a detailed WUI area map (interface and intermix), which also defines the wildfire hazard area. The California Fire Alliance determined that areas within 1.5 miles of wildland vegetation are the approximate distance that firebrands can be carried from a wildland fire to the roof of a house. Therefore, even structures not located within the forest are at risk to wildfire. This buffer distance, along with housing density and vegetation type, were used to define the WUI illustrated in Figure 5.4.10-2 (Radeloff 2012).



Figure 5.4.10-2. SILVIS Wildland-Urban Interface and Intermix in Lewis County



Source: Radeloff et al. 2012





## Extent

The extent (that is, magnitude or severity) of wildfires depends on weather and human activity.

### Wildfire Behavior and Fire Ecology

Fire behavior is defined as the manner in which fuel ignites, flame develops, and fire spreads—all factors that depend on interactions among fuel, weather, and topography. Fire behavior is one of the most important aspects of wildfires because almost all actions taken in response to a fire depend on how it behaves. Success in pre-suppression planning and actual suppression of wildfires is directly related to the extent at which well fire managers understand and are able to predict fire behavior.

Potential for wildfire and its subsequent development (growth) and severity are controlled by the three principal factors of topography, fuel, and weather, described below.

**Topography** – Topography can powerfully influence wildfire behavior. Movement of air over the terrain tends to direct a fire’s course. A gulch or canyon can funnel air and act as a chimney, intensifying fire behavior and inducing faster spread. Saddles on ridgetops tend to offer lower resistance to passage of air and draw fires. Solar heating of drier, south-facing slopes produces upslope thermal winds that can complicate behavior. Slope is an important factor. If the percentage of uphill slope doubles, the rate the wildfire spreads will most likely double as well. Terrain can inhibit wildfires; fire travels downslope much more slowly than upslope, and ridgetops often mark the end of a wildfire's rapid spread (Federal Emergency Management Agency [FEMA] 1997).

**Fuel** – Fuels are classified by weight or volume (fuel loading) and by type. Fuel loading is a term used to describe the amount of vegetative material available. If the amount of fuel-loading material doubles, energy released can also double. Each fuel type is given a burn index—an estimate of the amount of potential energy that may be released, effort required to ignite a fire in a given fuel, and expected flame length. Different fuels have different burn qualities, and some burn more easily than others. Grass fires release relatively little energy but can sustain very high rates of spread (FEMA 1997).

According to the U.S. Forest Service (USFS), a forest stand may consist of several layers of live and dead vegetation in the understory (surface fuels), midstory (ladder fuels), and overstory (crown fuels). Surface, ladder, and crown fuels greatly influence fire behavior, and are defined as follows:

- **Surface fuels** consist of grasses, shrubs, litter, and woody material lying on the ground. Surface fires burn low vegetation, woody debris, and litter. Under the right conditions, surface fires reduce likelihood that future wildfires will grow into crown fires.
- **Ladder fuels** consist of live and dead small trees and shrubs; live and dead lower branches from larger trees, needles, vines, lichens, mosses; and any other combustible biomass between the top of surface fuels and bottom of overstory tree crowns.
- **Crown fuels** are suspended above the ground in treetops or other vegetation and consist mostly of live and dead fine material. When historically low-density forests become overcrowded, tree crowns may merge and form a closed canopy. Tree canopies constitute the primary fuel layer in a forest crown fire (USFS 2003).

**Weather and Air Mass** – Weather is the most important factor influencing fire behavior, though it is always changing. Air mass—defined by the National Weather Service (NWS) as a body of air covering a relatively wide area and exhibiting horizontally uniform properties—can affect wildfire through climatic factors that include temperature and relative humidity, local wind speed and direction, cloud cover,



precipitation amount and duration, and stability of the atmosphere at the time of the fire (NWS 2009). Extreme weather leads to extreme events, and often a subsidence of severe weather marks the end of a wildfire’s growth and the beginning of successful containment. High temperatures and low humidity can produce vigorous fire activity. Fronts and thunderstorms can produce winds that radically and suddenly change in speed and direction, causing similar changes in fire activity. The rate of spread of a fire varies directly with wind velocity. Winds may play a dominant role in directing the course of a fire. The most damaging firestorms are typically marked by high winds (FEMA 1997).

The tools listed below are available to estimate fire potential, extent, danger, and growth:

- **Wildland Fire Assessment System (WFAS)** is an Internet-based information system that provides a national view of weather and fire potential, including national fires danger, weather maps, and satellite-derived “greenness” maps (USFS n.d.).
- **Fire Potential Index (FPI)** is derived by combining information on daily weather and vegetation condition, and can identify areas most susceptible to fire ignition (Burgan et al. 2000).
- **Fuel Moisture (FM)** content measures the quantity of water in a fuel particle expressed as a percent of oven-dry weight of the fuel particle and is an expression of cumulative effects of past and present weather events, to help evaluate the effects of current or future weather on fire potential (Burgan et al. 2000).
- **Keetch-Byram Drought Index (KBDI)** is designed for fire potential assessment and is a number representing the net effect of evapotranspiration and precipitation in producing cumulative moisture deficiency in deep duff and upper soil layers (USFS n.d.).
- **Haines Index**, also known as the Lower Atmosphere Stability Index, is a fire weather index based on stability and moisture content of the lower atmosphere that measures potential for existing fires to become large fires (USFS n.d.).
- **Buildup Index (BUI)** is a number that reflects combined cumulative effects of daily drying and precipitation in fuels with a 10-day time lag constant (North Carolina Forest Service 2007).
- **Fire Danger Rating** in New York is established using information from the National Fire Danger Rating System (NFDRS) and takes into account current and antecedent weather, fuel types, and both live and dead fuel moisture. This information is provided by local station managers in each of the ten regions of NYS (USFS n.d.). Table 5.4.10-1 lists fire danger ratings and color codes, also used by NYSDEC to update its fire danger rating maps (discussed and presented later in this section).

Table 5.4.10-1. Description of Fire Danger Ratings in New York State

Adjective Rating Class and Color Code	Class Description
Red Flag	A short-term, temporary warning, indicating presence of a dangerous combination of temperature, wind, relative humidity, fuel, or drought conditions that can contribute to new fires or rapid spread of existing fires. A Red Flag warning can be issued at any fire danger level.
Extreme (Red)	Fires start quickly, spread furiously, and burn intensely. All fires are potentially serious. Development into high-intensity burning will usually be faster and occur from smaller fires than in the very high fire danger class. Direct attack is rarely possible and may be dangerous, except immediately after ignition. Fires that develop headway in heavy slash or in conifer stands may be unmanageable while the extreme burning condition lasts. Under these conditions, the only effective and safe control action is on the flanks until the weather changes or the fuel supply lessens.



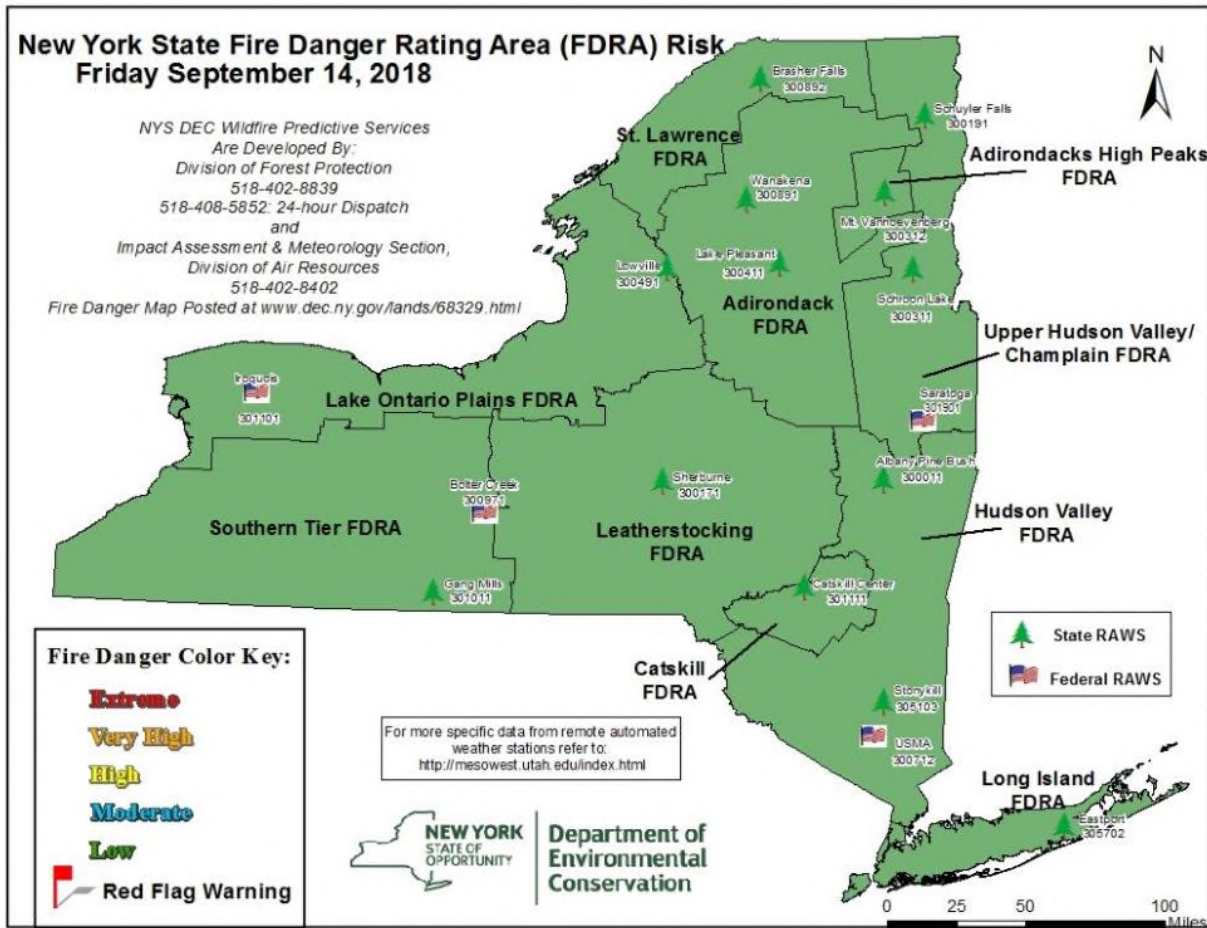
Adjective Rating Class and Color Code	Class Description
Very High (orange)	Fires start easily from all causes and, immediately after ignition, spread rapidly and increase quickly in intensity. Spot fires are a constant danger. Fires burning in light fuels may quickly develop high-intensity characteristics such as long-distance spotting and fire whirlwinds when they burn into heavier fuels.
High (yellow)	All fine dead fuels ignite readily, and fires start easily from most causes. Unattended brush and campfires are likely to escape. Fires spread rapidly, and short-distance spotting is common. High-intensity burning may develop on slopes or in concentrations of fine fuels. Fires may become serious and their control difficult unless they are attacked successfully while small.
Moderate (blue)	Fires can start from most accidental causes, but except for lightning fires in some areas, the number of starts is generally low. Fires in open-cured grasslands will burn briskly and spread rapidly on windy days. Timber fires spread slowly to moderately fast. The average fire is of moderate intensity, although heavy concentrations of fuel, especially draped fuel, may burn hot. Short-distance spotting may occur, but is not persistent. Fires are not likely to become serious and control is relatively easy.
Low (green)	Fuels do not ignite readily from small firebrands, although a more intense heat source (such as lightning) may start fires in duff or punky wood. Fires in open-cured grasslands may burn freely a few hours after rain, but woods fires spread slowly by creeping or smoldering, and burn in irregular fingers. There is little danger of spotting.

Source: NYS DHSES 2014

Figure 5.4.10-3 shows fire danger rating areas (FDRA) in NYS and the fire danger risk within each area on a specific given date (September 14, 2018).



Figure 5.4.10-3. New York State Fire Danger Rating Areas



Source: NYSDEC 2018

### Previous Occurrences and Losses

Wildfire occurrence reporting in NYS is based on two data sources: NYS Forest Ranger Division and fire department data collected by the NYS Office of Fire Prevention and Control (OFP&C). Over the past 25 years, from 1991 to 2015, the Forest Ranger Division indicated that rangers suppressed 5,984 wildfires that burned a total of 53,896 acres. OFP&C indicated that from 2002 to 2012, fire departments across the State responded to 64,208 wildfires, brush fires, grass fire or other outdoor fires (NYSDEC 2016).

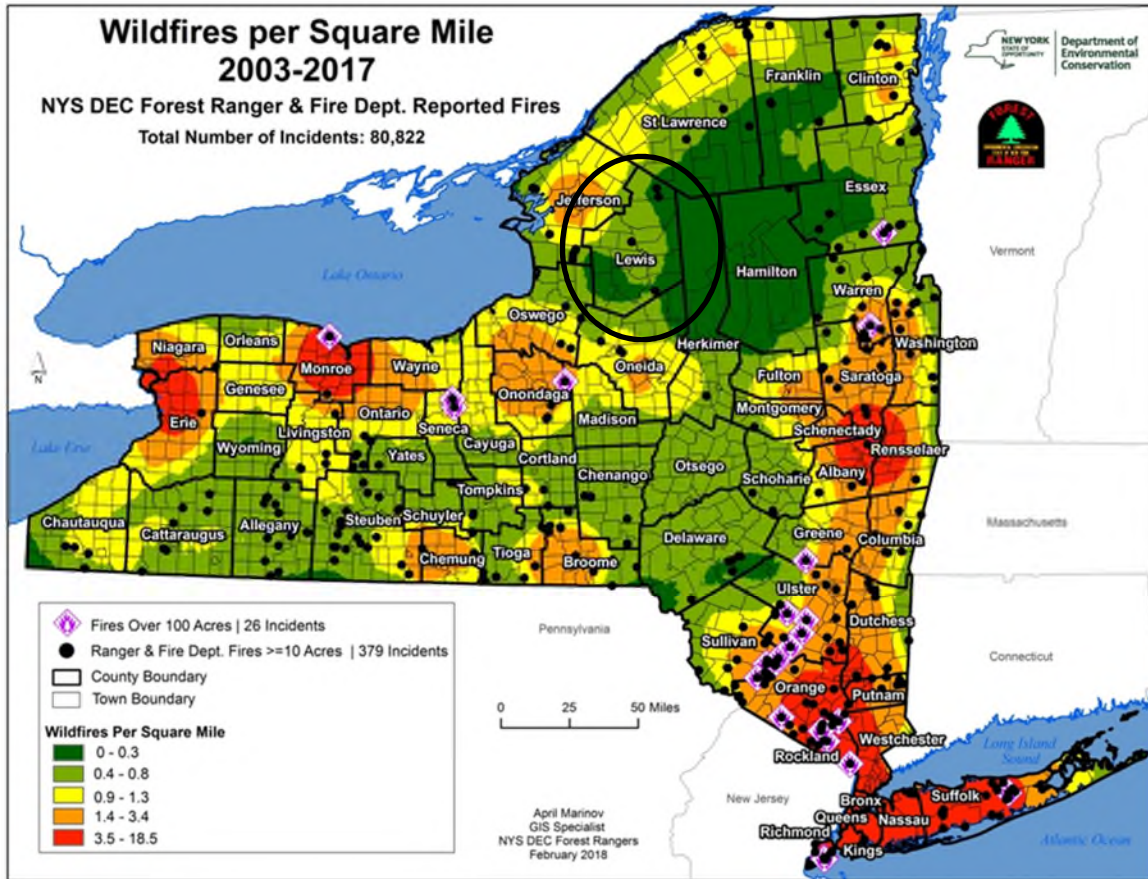
Between 1891 and 2015, 97,475 wildfires in the State have occurred burning over 2.5 million acres, as reported by the NYSDEC Division of Forest Protection (NYSDEC 2016). Between 1954 and 2018, NYS was not included in any wildfire-related major disaster (DR) or emergency (EM) declarations (FEMA 2018).

According to the Forest Ranger Division wildfire occurrence data from 1988 through 2012, 95 percent of wildfires in the State were human-caused, while lightning was responsible for 5 percent of the fires. Debris burning accounted for 35 percent; smoking, equipment, and railroads accounted for 30 percent; arson accounted for 17 percent; campfires accounted for 13 percent; children accounted for 5 percent; and lightning accounted for 5 percent of all wildfires (NYSDEC 2016).



Figure 5.4.10-4 illustrates the wildfires per square mile in NYS from 2003 to 2017 based on data from the NYSDEC Forest Ranger Division and fire department records. Lewis County is shown to have had one of the lower occurrence rates compared to the rest of the State. The majority of the County has had up to 0.8 fires per square mile, while a small portion of the western border with Jefferson County had between 0.9 and 1.3 fires per square mile.

Figure 5.4.10-4. Wildfires per Square Mile in New York State, 2003-2017



Source: NYSDEC 2018

Note: The black oval indicates the location of Lewis County.

### Probability of Future Occurrences

According to the NYS Forest Ranger Division wildfire occurrence data from 2003 to 2017, NYS (including Lewis County) will always be susceptible to wildfires. A total of 47 percent of all fire-department responses to wildfires occur from March 15 through May 15. Beginning in 2010, NYS enacted revised open-burning regulations that ban brush burning Statewide during this time period. Forest ranger data indicate that this new Statewide ban resulted in 74 percent fewer wildfires caused by debris burning in upstate New York from 2010 to 2012. Forest ranger and fire department historical fire occurrence data recorded after the new burn ban regulations were enacted in 2010 will serve as a benchmark for analyses of wildfire occurrence (NYS DHSES 2014).

Fire probability depends on local weather conditions, outdoor activities (such as camping, debris burning, and construction), and degree of public cooperation with fire-prevention measures. Dry weather, such as drought, can increase likelihood of wildfire events. Lightning can also trigger wildfire. Other natural disasters can





increase probability of wildfires by producing fuel in both urban and rural areas. Forest damage from windstorms may block interior access roads and fire breaks, pull down overhead power lines, or damage pavement and underground utilities (Northern Virginia Regional Commission [NVRC] 2006).

Nationally, wildfire risk is increasing. Wildfire experts list the following four reasons for the increase in wildfire risks:

- Fuel, in the form of fallen leaves, branches and plant growth, have accumulated over time on the forest floor. Now this fuel has the potential to “feed” a wildfire.
- Occurrences of hot, dry weather has increased in the United States.
- Weather patterns are changing across the country.
- More homes built are in the areas in the WUI, meaning homes are built closer to wildland areas where wildfires can occur (NYS DHSES 2014).

Annual small wildfires likely will occur throughout Lewis County. However, advanced methods of wildfire management and control and better understanding of fire ecosystems should reduce the number of devastating fires in the future (NYS DHSES 2014).

In Section 5.3, the identified hazards of concern for Lewis County were ranked. The probability of occurrence, or likelihood of the event, is one parameter used for ranking hazards. Based on historical records and input from the Planning Committee, the probability of occurrence for wildfire in the County is considered “occasional” (i.e., a hazard event is likely to occur within 100 years).

### **Climate Change Impacts**

Climate change directly and indirectly affects the growth and productivity of forests. Directly, changes in atmospheric carbon dioxide and climate affect forest growth, and complex interactions in forest ecosystems will indirectly affect forests. Climate also affects the frequency and severity of many forest disturbances, such as infestations, invasive species, wildfires, and storm events. As temperatures increase, the suitability of a habitat for specific types of trees changes. Prolonged heat waves are likely to lead to a greater number of wildfire incidents. Stronger winds from larger storms may lead to more fallen branches for wildfires to consume. An increase in rain and snow events primes forests for fire by growing more fuel. Drought and warmer temperatures lead to drier forest fuels (NYS DHSES 2014).

Climate change is beginning to affect both people and resources in NYS, and these impacts are projected to continue growing. Impacts related to increasing temperatures and sea-level rise are already being felt in the State. ClimAID: The Integrated Assessment for Effective Climate Change in NYS (ClimAID) was undertaken to provide decision-makers with information on the State’s vulnerability to climate change and to facilitate the development of adaptation strategies informed by both local experience and scientific knowledge (NYS Energy Research and Development Authority [NYSERDA] 2011).

Temperatures in NYS are warming, with an average rate of warming over the past century of 0.25 °F per decade. Average annual temperatures are projected to increase across NYS by 2 to 3.4 °F by the 2020s, 4.1 to 6.8 °F by the 2050s, and 5.3 to 10.1 °F by the 2080s. By the end of the century, the greatest warming is projected to be in the northern section of the State (NYSERDA 2014). According to the ClimAID report, it is likely that late-summer, short-duration droughts will increase in NYS by the end of the century.

However, each region in NYS (as defined by ClimAID) has attributes that will be uniquely affected by the impacts of climate change. Lewis County is part of Region 6, Tug Hill Plateau (NYSERDA 2011). In Region 6, temperatures are estimated to increase (middle range estimate of 25<sup>th</sup> to 75<sup>th</sup> percentile) by 4.4 to 6.4 °F by the





2050s and 5.9 to 10 °F by the 2080s (baseline of 45.4 °F). Precipitation totals will increase between 4 and 10 percent by the 2050s and 6 to 112 percent by the 2080s (baseline of 42.6 inches). Table 5.4.10-2 displays the projected seasonal precipitation change for the Tug Hill Plateau ClimAID Region (NYSERDA 2014).

**Table 5.4.10-2. Projected Seasonal Precipitation Change in Region 6, 2050s (Percent Change)**

Winter	Spring	Summer	Fall
+5 to +15	0 to +10	-5 to +10	-5 to +10

Source: *NYSERDA 2014*

With the increase in temperatures, heat waves will become more frequent and intense, posing new challenges to the energy system, air quality and agriculture, and potentially increasing the risk of wildfire. Summer droughts are also projected to increase, affecting water supply, agriculture, ecosystems, and energy projects (NYSERDA 2011).

The probability of wildfire is determined by climate variability, local topography, and human intervention. Climate change has the potential to affect multiple elements of the wildfire system: fire behavior, ignitions, fire management, and vegetation fuels. Hot dry spells create the highest fire risk. With the increasing temperatures occurring in NYS, wildfire danger may intensify by warming and drying out vegetation. When climate alters fuel loads and fuel moisture, forest susceptibility to wildfires changes. Climate change also may increase winds that spread fires. Faster fires are harder to contain, and thus are more likely to expand into residential neighborhoods.

### 5.4.10.2 Vulnerability Assessment

To understand risk, a community must evaluate the assets exposed or vulnerable in the identified hazard area. For the wildfire hazard, the portions of Lewis County in the WUI zones (Interface and Intermix) have been identified as the hazard area. Therefore, all assets in the County (population, structures, critical facilities and lifelines), as described in the County Profile (Section 4), located in the hazard area are exposed and potentially vulnerable to wildfire. This section evaluates and estimates the potential impact of the wildfire hazard on the County in the following subsections:

- Overview of vulnerability
- Data and methodology used for the evaluation
- Impact on (1) life, health, and safety of residents; (2) general building stock; (3) critical facilities; (4) economy; and (5) future growth and development
- Effect of climate change on vulnerability
- Change of vulnerability as compared to that presented in the 2010 Lewis County HMP
- Further data collections that will assist understanding this hazard over time

#### Overview of Vulnerability

Wildfire hazards can impact significant areas of land, as evidenced by wildfires throughout the State and United States over the past several years. If a wildfire occurs at a WUI, it can also cause an urban fire, which has the potential for causing great damage to infrastructure, loss of life, and strain on lifelines and emergency responders because of the high density of population and structures that can be impacted in these areas. Wildfire, however can spread quickly, become a huge fire complex consisting of thousands of acres, and present greater challenges for allocating resources, defending isolated structures, and coordinating multi-jurisdictional response.

Potential losses from wildfire include human life, structures and other improvements, and natural resources. Given the immediate response times to reported wildfires, the likelihood of injuries and casualties is minimal. Smoke and air pollution from wildfires can be a health hazard, especially for sensitive populations including





children, the elderly, and those with respiratory and cardiovascular diseases. Wildfire may also threaten the health and safety of those fighting the fires. First responders are exposed to the dangers from the initial incident and after-effects from smoke inhalation and heat stroke. In addition, wildfire can lead to ancillary impacts such as landslides in steep ravine areas and flooding caused by the impacts of silt in local watersheds.

### Data and Methodology

The WUI area map (interface and intermix) obtained through the SILVIS Lab, Department of Forest Ecology and Management, University of Wisconsin-Madison was referenced to define the wildfire hazard areas. The University of Wisconsin-Madison wildland fire hazard areas are based on the 2010 Census and 2006 National Land Cover Dataset and the Protected Areas Database. For the purposes of this risk assessment, the high-, medium-, and low-density interface areas were combined and used as the “interface” hazard area, and the high-, medium-, and low-density intermix areas were combined and used as the “intermix” hazard areas. Figure 5.4.10-2 shown above displays the 2010 Wildfire Urban Interface for Lewis County, by 2010 U.S. Census block.

The asset data (population, building stock, and critical facilities) presented in the County Profile (Section 4) were used to support an evaluation of assets exposed and potential impacts and losses associated with this hazard. To determine what assets are exposed to wildfire, available, and appropriate geographic information system (GIS) data were overlaid upon the hazard area. Limitations of this analysis are recognized, and as such, the analysis is used only to provide a general estimate.

### Impact on Life, Health, and Safety

As demonstrated by historic wildfire events in New York and other parts of the country, potential losses include human health and life of residents and responders, structures, infrastructure and natural resources. In addition, wildfire events can have major economic impacts on a community from the initial loss of structures and the subsequent loss of revenue from destroyed businesses and decreases in tourism. The most vulnerable populations include emergency responders and residents within a short distance of the interface between the built environment and the wildland environment.

Wildfires can cost thousands of taxpayer dollars to suppress and control, and involve hundreds of operating hours on fire apparatus and thousands of volunteer man hours from volunteer firefighters. Wildfires also can also result in many direct and indirect costs to local businesses that excuse volunteers from work to fight these fires.

As a way to estimate the County’s population vulnerable to the wildfire hazard, the population located within the WUI was overlaid upon the 2010 Census population data (U.S. Census 2010). Census blocks with centers within the hazard area were used to calculate the estimated population exposed to the wildfire hazard. Table 5.4.10-3 summarizes the estimated population exposed by municipality.

Based on the analysis, 8,118 individuals (30 percent of the County’s population) are exposed to the intermix wildfire hazard, while 7,470 (27.5 percent of the County’s population) is exposed to the interface wildfire hazard. Overall, the Towns of Croghan, New Bremen, and Watson, and the Village of Lowville have the greatest number of individuals located in the hazard area.

**Table 5.4.10-3. Estimated Vulnerable Population**

Municipality	U.S. Census 2010 Population	Estimated Population Exposed			% of Total Exposed
		Intermix	Interface	Total	
Castorland (V)	351	95	256	351	100.0%







Municipality	U.S. Census 2010 Population	Estimated Population Exposed			% of Total Exposed
		Intermix	Interface	Total	
Constableville (V)	242	23	210	233	96.3%
Copenhagen (V)	801	0	0	0	0.0%
Croghan (T)	2,751	541	891	1,432	52.1%
Croghan (V)	618	17	601	618	100.0%
Denmark (T)	1,708	245	117	362	21.2%
Diana (T)	1,709	969	244	1,213	70.8%
Greig (T)	1,199	746	51	797	66.5%
Harrisburg (T)	437	29	39	68	15.6%
Lewis (T)	854	186	151	337	39.5%
Leyden (T)	1,303	436	257	693	53.2%
Lowville (T)	1,512	26	582	608	40.2%
Lowville (V)	3,470	173	1,948	2,121	61.1%
Lyons Falls	566	344	222	566	100.0%
Lyonsdale (T)	982	611	0	611	62.2%
Martinsburg (T)	1,433	187	478	665	46.4%
Montague (T)	78	42	0	42	53.8%
New Bremen (T)	2,430	1,061	682	1,743	71.7%
Osceola (T)	229	82	7	89	38.9%
Pinckney (T)	329	80	37	117	35.6%
Port Leyden	672	437	210	647	96.3%
Turin (T)	529	130	156	286	54.1%
Turin (V)	232	45	187	232	100.0%
Watson (T)	1,881	1,497	19	1,516	80.6%
West Turin (T)	771	116	125	241	31.3%
<b>Lewis County</b>	<b>27,087</b>	<b>8,118</b>	<b>7,470</b>	<b>15,588</b>	<b>57.5%</b>

Sources: U.S. Census 2010; Radeloff et al. 2012

### Impact on General Building Stock

The most vulnerable structures to wildfire events are those located within the WUI areas. Buildings constructed of wood or vinyl siding are generally more likely to be impacted by the fire hazard than buildings constructed of brick or concrete. To estimate the replacement cost of buildings exposed to the wildfire hazard, the hazard areas were overlaid upon the default FEMA Hazards U.S.—Multi-Hazards (HAZUS-MH) building stock data (Census block). The replacement cost value of the structures with their center in the hazard area were totaled. To estimate the exposure to the number of buildings, the County’s building footprint spatial layer was overlaid with the WUI boundaries. Table 5.4.10-4 summarizes the estimated building stock replacement value located in the WUI hazard area by municipality. The limitations of this analysis are recognized, and as such, the analysis is only used to provide a general estimate. Table 5.4.10-5 summarizes the number of buildings located in the WUI hazard area.



**Table 5.4.10-4. Building Stock Replacement Value Located in WUI Hazard Area**

Municipality	Total RV (Structure and Contents)	Building RV Exposed			% of Total Exposed
		Intermix	Interface	Total	
Castorland (V)	\$34,034,000	\$10,589,000	\$23,445,000	\$34,034,000	100.0%
Constableville (V)	\$41,682,000	\$3,493,000	\$36,029,000	\$39,522,000	94.8%
Copenhagen (V)	\$140,717,000	\$0	\$0	\$0	0.0%
Croghan (T)	\$374,956,000	\$67,703,000	\$126,862,000	\$194,565,000	51.9%
Croghan (V)	\$75,012,000	\$3,665,000	\$71,335,000	\$75,000,000	100.0%
Denmark (T)	\$205,546,000	\$23,018,000	\$7,922,000	\$30,940,000	15.1%
Diana (T)	\$334,443,000	\$174,768,000	\$48,580,000	\$223,348,000	66.8%
Greig (T)	\$269,742,000	\$131,184,000	\$5,176,000	\$136,360,000	50.6%
Harrisburg (T)	\$71,710,000	\$6,141,000	\$5,093,000	\$11,234,000	15.7%
Lewis (T)	\$109,401,000	\$19,886,000	\$11,786,000	\$31,672,000	29.0%
Leyden (T)	\$130,509,000	\$48,060,000	\$25,728,000	\$73,788,000	56.5%
Lowville (T)	\$210,155,000	\$4,212,000	\$99,906,000	\$104,118,000	49.5%
Lowville (V)	\$1,019,570,000	\$23,301,000	\$566,946,000	\$590,247,000	57.9%
Lyons Falls (V)	\$70,606,000	\$47,906,000	\$21,039,000	\$68,945,000	97.6%
Lyonsdale (T)	\$157,699,000	\$79,304,000	\$0	\$79,304,000	50.3%
Martinsburg (T)	\$193,202,000	\$30,702,000	\$66,741,000	\$97,443,000	50.4%
Montague (T)	\$50,885,000	\$14,951,000	\$0	\$14,951,000	29.4%
New Bremen (T)	\$216,271,000	\$95,554,000	\$54,490,000	\$150,044,000	69.4%
Osceola (T)	\$84,863,000	\$35,642,000	\$750,000	\$36,392,000	42.9%
Pinckney (T)	\$76,814,000	\$16,300,000	\$3,725,000	\$20,025,000	26.1%
Port Leyden	\$64,603,000	\$39,396,000	\$20,981,000	\$60,377,000	93.5%
Turin (T)	\$104,517,000	\$20,695,000	\$18,338,000	\$39,033,000	37.3%
Turin (V)	\$32,206,000	\$4,431,000	\$27,775,000	\$32,206,000	100.0%
Watson (T)	\$311,194,000	\$217,640,000	\$2,292,000	\$219,932,000	70.7%
West Turin (T)	\$187,251,000	\$23,745,000	\$23,700,000	\$47,445,000	25.3%
<b>Lewis County</b>	<b>\$4,567,588,000</b>	<b>\$1,142,286,000</b>	<b>\$1,268,639,000</b>	<b>\$2,410,925,000</b>	<b>52.8%</b>

Sources: HAZUS-MH 4.2, Radeloff et al. 2012

**Table 5.4.10-5. Number of Buildings Located in WUI Hazard Area**

Municipality	Total Number of Buildings	Buildings Exposed			% of Total Exposed
		Intermix	Interface	Total	
Castorland (V)	215	76	128	204	94.9%
Constableville (V)	304	21	254	275	90.5%
Copenhagen (V)	1,413	178	46	224	15.9%
Croghan (T)	3,748	693	886	1,579	42.1%
Croghan (V)	487	32	451	483	99.2%





Municipality	Total Number of Buildings	Buildings Exposed			% of Total Exposed
		Intermix	Interface	Total	
Denmark (T)	919	85	68	153	16.6%
Diana (T)	2,998	1,637	226	1,863	62.1%
Greig (T)	2,630	1,979	75	2,054	78.1%
Harrisburg (T)	645	55	47	102	15.8%
Lewis (T)	1,408	225	168	393	27.9%
Leyden (T)	1,745	535	322	857	49.1%
Lowville (T)	1,449	35	306	341	23.5%
Lowville (V)	2,067	106	1,255	1,361	65.8%
Lyons Falls	540	324	210	534	98.9%
Lyonsdale (T)	1,442	754	18	772	53.5%
Martinsburg (T)	1,999	215	490	705	35.3%
Montague (T)	442	179	0	179	40.5%
New Bremen (T)	2,467	1,023	682	1,705	69.1%
Osceola (T)	1,104	381	11	392	35.5%
Pinckney (T)	587	214	34	248	42.2%
Port Leyden	501	335	163	498	99.4%
Turin (T)	1,007	225	169	394	39.1%
Turin (V)	217	60	156	216	99.5%
Watson (T)	3,022	2,253	25	2,278	75.4%
West Turin (T)	1,700	368	218	586	34.5%
<b>Lewis County</b>	<b>35,056</b>	<b>11,988</b>	<b>6,408</b>	<b>18,396</b>	<b>52.5%</b>

Sources: Lewis County 2018; Radeloff et al. 2012

### Impact on Critical Facilities

Several critical facilities are located in the wildfire hazard area and are also vulnerable to the threat of wildfire. Many of these facilities are the locations for vulnerable populations (i.e., schools, senior facilities) and responding agencies to wildfire events (i.e., fire, police). Table 5.4.10-6 summarizes the critical facilities located within the wildfire hazard area by jurisdiction.



Table 5.4.10-6. Critical Facilities in WUI (Interface and Intermix) Hazard Area

Municipality	Facility Types																							
	Airport	Communication	County Building	Court	Cultural	DPW	Electric Power Facility	Electric Substation	Fire Station	Highway Garage	Library	Medical	Municipal Hall	Nursing Home	Police	Post Office	Potable Water Plant	Potable Water Treatment	Potable Pump	Potable Tank	Potable Well	School	Waste Water Facility	Wastewater Pump
Castorland (V)	0	1	0	0	0	0	0	0	1	1	0	1	0	3	0	1	0	1	2	0	0	1	0	0
Constableville (V)	0	1	0	0	0	0	0	0	1	1	2	0	1	0	0	0	2	0	0	0	0	0	0	0
Copenhagen (V)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Croghan (T)	0	0	0	0	0	0	4	0	1	1	2	2	1	0	0	0	2	2	0	0	0	1	1	0
Croghan (V)	0	1	0	0	0	0	0	0	1	0	2	0	0	1	0	0	2	0	0	0	0	0	0	2
Denmark (T)	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Diana (T)	0	3	0	0	0	0	1	0	1	4	2	2	0	0	0	0	2	2	3	0	0	1	0	0
Greig (T)	0	0	0	0	0	0	0	0	0	1	2	0	1	0	0	0	2	0	1	0	0	0	0	0
Harrisburg (T)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lewis (T)	0	2	0	0	0	0	0	1	1	1	2	0	0	0	0	0	2	0	0	0	0	0	0	0
Leyden (T)	0	2	0	0	0	0	2	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	1
Lowville (T)	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	1	0	0	0	0	0
Lowville (V)	0	2	2	3	4	0	0	0	1	5	2	2	2	4	1	1	2	2	1	0	0	2	0	0
Lyons Falls (V)	0	1	0	1	2	1	1	1	1	0	2	2	0	1	0	0	2	2	0	0	0	0	0	1
Lyonsdale (T)	0	0	0	0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	5	0	0	0	0	0
Martinsburg (T)	0	1	0	0	2	0	0	0	2	1	2	0	1	1	0	0	2	0	1	0	1	2	1	0
Montague (T)	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
New Bremen (T)	1	0	1	0	0	0	3	0	1	1	0	1	0	0	0	0	0	1	2	0	0	1	0	0
Osceola (T)	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Pinckney (T)	0	4	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Port Leyden	0	0	0	0	0	0	1	0	1	0	2	0	3	3	0	0	2	0	0	0	0	2	1	0
Turin (T)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
Turin (V)	0	0	0	0	0	0	0	0	1	1	4	0	1	0	0	0	4	0	0	0	0	0	0	0
Watson (T)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
West Turin (T)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Lewis County</b>	<b>1</b>	<b>27</b>	<b>3</b>	<b>4</b>	<b>8</b>	<b>1</b>	<b>13</b>	<b>3</b>	<b>13</b>	<b>19</b>	<b>24</b>	<b>10</b>	<b>14</b>	<b>17</b>	<b>1</b>	<b>2</b>	<b>24</b>	<b>10</b>	<b>18</b>	<b>1</b>	<b>1</b>	<b>11</b>	<b>3</b>	<b>4</b>

Source: Lewis County 2018, Radeloff et al. 2012





### Impact on Economy

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Wildfire events can have major economic impacts on a community from the initial loss of structures and the subsequent loss of revenue from destroyed business and decrease in tourism. Wildfires can cost thousands of taxpayer dollars to suppress and control and involve hundreds of operating hours on fire apparatus and thousands of volunteer man hours from volunteer firefighters. Wildfires can also cause many direct and indirect costs to local businesses that excuse volunteers from working to fight these fires.

### Future Growth and Development

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Areas targeted for potential future growth and development in the next 5 years have been identified across Lewis County at the municipal level. The jurisdictional annexes in Volume II of this HMP address future growth in Lewis County. Any new development and new residents in the WUI areas are anticipated to be exposed to the wildfire hazard.

### Effect of Climate Change on Vulnerability

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According to the U.S. Fire Service (USFS), climate change will likely alter the atmospheric patterns that affect fire. Changes in fire patterns will, in turn, impact carbon cycling, forest structure, and species composition. Climate change associated with elevated greenhouse gas concentrations may create an atmospheric and fuel environment that is more conducive to large, severe fires (USFS 2011).

Fire interacts with climate and vegetation (fuel) in predictable ways. Understanding the ways in which climate, fire, and vegetation interact is essential for addressing issues associated with climate change. The associated climate change issues include:

- Effects on regional circulation and other atmospheric patterns that affect fire weather
- Effects of changing fire regimes on the carbon cycle, forest structure, and species composition
- Complications from land-use change, invasive species, and an increasing WUI (USFS 2011)

Higher summer temperatures are projected to likely increase the high fire risk by 10 to 30 percent. Fire occurrence and/or area burned could increase across the United States due to the increase of lightning activity, the frequency of surface pressure and associated circulation patterns conducive to surface drying, and fire-weather conditions in general, which is conducive to severe wildfires. Warmer temperatures will also increase the effects of drought and increase the number of days each year with flammable fuels, extending fire seasons and areas burned (USFS 2011).

Future changes in fire frequency and severity are difficult to predict. Global and regional climate changes associated with elevated greenhouse gas concentrations could alter large weather patterns, thereby affecting fire-weather conducive to extreme fire behavior (USFS 2011).

### Change of Vulnerability

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A wildfire exposure analysis was not conducted as part of the 2010 HMP risk assessment. The updated vulnerability assessment provides a more current exposure analysis for the County.

### Additional Data and Next Steps

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Creating a custom building inventory including tax assessor data and additional building attributes regarding the construction of structures (such as roofing material, fire detection equipment, and structure age) may be incorporated as available. As stated earlier, buildings constructed of wood or vinyl siding are generally more likely to be impacted by the fire hazard than buildings constructed of brick or concrete. The proximity of these building types to the fuel hazard areas should be identified for further evaluation. Development and availability





of such data would permit a more detailed estimate of potential vulnerabilities, including loss of life and potential structural damages.



## SECTION 6. MITIGATION STRATEGIES

This section presents mitigation actions for Lewis County to reduce potential exposure and losses identified as concerns in the Risk Assessment portion of this plan. The Steering Committee reviewed the risk assessment to identify and develop these mitigation actions, which are presented herein.

This section includes:

1. Background and Past Mitigation Accomplishments
2. General Planning Approach
3. Review and Update of Mitigation Goals and Objectives
4. Capability Assessment
5. Mitigation Strategy Development

**Hazard mitigation** reduces the potential impacts of, and costs associated with, emergency and disaster-related events. Mitigation actions address a range of impacts, including impacts on the population, property, the economy, and the environment.

**Mitigation actions** can include activities such as: revisions to land-use planning, training and education, and structural and nonstructural safety measures.

### 6.1 BACKGROUND AND PAST MITIGATION ACCOMPLISHMENTS

In accordance with the requirements of the Disaster Mitigation Act of 2000 (refer to Page 1-1 for more detail on DMA 2000), a discussion regarding past mitigation activities and an overview of past efforts is provided as a foundation for understanding the mitigation goals, objectives, and activities outlined in this plan update. The county, through previous and ongoing hazard mitigation activities, has demonstrated that it is pro-active in protecting its physical assets and citizens against losses from natural hazards. Examples of previous and ongoing actions and projects include the following:

- Lewis County facilitated the development of the original and 2010 update of the Lewis County Multi-Jurisdictional All-Hazards Mitigation Plan. The current planning process represents the regulatory 5-year plan update process, which includes participation of 26 municipal governments in the county, along with key county and regional stakeholders.
- All municipalities participating in this Hazard Mitigation Plan (HMP) update participate in the National Flood Insurance Program (NFIP), which requires the adoption of Federal Emergency Management Agency (FEMA) floodplain mapping and certain minimum standards for building within the floodplain.
- Lewis County has selected Robert A. MacKenzie, III, the Director of Fire and Emergency Management for Lewis County, to fulfill the position of Hazard Mitigation Coordinator to ensure that hazard mitigation is addressed and integrated into county and municipal operations to support implementation of mitigation projects on a timely basis.
- In the past five years, municipal officials in Lewis County have become increasingly aware and mindful of mitigation principles in their daily operations, particularly relating to flooding. Most municipal highway departments have realized that the size of culverts is inadequate. Most have an unwritten policy of up-sizing culverts when they need replacement. All municipalities now consult with Lewis County Soil & Water Conservation District before attempting debris removal in streams, bridge construction projects, or other stream projects to ensure the projects will be constructed in a sustainable and environmentally-sensitive manner that will have long-lasting performance and benefits.
- Municipalities have actively participated in available mitigation grant funding opportunities to implement mitigation projects, as identified in their jurisdictional annexes in Section 9 (Annexes).
- Reports, plans, and studies relating to or including information on natural hazards or natural hazard policies affecting Lewis County, and have been reviewed and incorporated into this plan update as appropriate. See Section 3 (Planning Process).



- The **Lewis County Soil and Water Conservation District (LCSWCD or District)** assists local farmers and citizens in protecting and enhancing natural resources and ecology in the Tug Hill Plateau, Adirondacks, and the Black River Valley of Lewis County.

## 6.2 GENERAL MITIGATION PLANNING APPROACH

The overall approach used to update the county and local hazard mitigation strategies are based on FEMA and New York State (NYS) regulations and guidance regarding local mitigation plan development, including:

- DMA 2000 regulations, specifically 44 CFR 201.6 (local mitigation planning)
- FEMA “Local Mitigation Planning Handbook”, March 2013
- FEMA Local Mitigation Plan Review Guide, October 1, 2011
- FEMA “Integrating Hazard Mitigation into Local Planning”, March 1, 2013
- FEMA “Plan Integration: Linking Local Planning Efforts”, July 2015
- FEMA Mitigation Planning How-To Guide #3, Identifying Mitigation Actions and Implementing Strategies (FEMA 386-3)
- FEMA “Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards”, January 2013
- NYS DHSES “New York State Hazard Mitigation Planning Standards”, 2017
- NYS DHSES “New York State Hazard Mitigation Planning Standards Guide”, 2017

The mitigation strategy update approach includes the following steps that are further detailed in later subsections of this section:

- Review and update mitigation goals and objectives.
- Identify mitigation capabilities and evaluate their capacity and effectiveness to mitigate and manage hazard risk.
- Prepare an implementation strategy, including:
  - Identification of progress on previous county and local mitigation strategies
  - Development of updated county and local mitigation strategies, and
  - Prioritization projects and initiatives in the updated mitigation strategy

## 6.3 REVIEW AND UPDATE OF MITIGATION GOALS AND OBJECTIVES

This section documents the efforts to develop hazard mitigation goals and objectives established to reduce or avoid long-term vulnerabilities to the identified hazards.

### 6.3.1 Goals and Objectives

According to CFR 201.6(c)(3)(i): “The hazard mitigation strategy shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.” The mitigation goals have been developed based on the risk assessment results, discussions, research, and input from among the committee, existing authorities, polices, programs, resources, stakeholders, and the public.

For the purposes of this plan, goals and objectives are defined as follows:

FEMA defines **Goals** as general guidelines that explain what should be achieved. Goals are usually broad, long-term, policy statements, and represent a global vision.

FEMA defines **Objectives** as strategies or implementation steps to attain mitigation goals. Unlike goals, objectives are specific and measurable, where feasible.

FEMA defines **Mitigation Actions** as specific actions that help to achieve the mitigation goals and objectives.



Goals are general guidelines that explain what is to be achieved. They are usually broad, long-term, policy-type statements and represent global visions. Goals help define the benefits that the plan is trying to achieve. The success of the plan, once implemented, should be measured by the degree to which its goals have been met (that is, by the actual benefits in terms of hazard mitigation).

Objectives are short-term aims which, when combined, form a strategy or course of action to meet a goal. Unlike goals, objectives are specific and measurable.

During the 2018-2020 plan update process, the Steering Committee reviewed the goals and objectives established in the 2010 HMP. These goals and objectives were reviewed in consideration of the hazard events and losses since the 2010 plan, the updated hazard profiles and vulnerability assessment, the goals and objectives established in the 2014 NYS HMP, county and local risk management plans, as well as direct input on how the county and municipalities need to move forward to best manage their hazard risk. Amendments include additions/edits to goals and/or objectives to express the planning partnership’s interests in integrating this plan with other planning mechanisms/programs, and to support mitigation through the protection and preservation of natural systems, including particular reference to certain goals and objectives in the 2014 NYS HMP update as identified in the table below.

As a result of this review process, the goals and objectives for the 2020 update have been amended, as presented in Table 6-1. *Italicized* text indicates the updates for this plan.

Table 6-1. Lewis County Hazard Mitigation Plan Goals and Objectives

Goal	Objective
<b>Goal 1: Reduce the likelihood and impacts of hazards on life, property, and the environment.</b>	<i>Objective 1-1: Develop and/or update local regulations based on current information and best practices.</i>
	<i>Objective 1-2: Maintain natural systems to reduce the impacts of hazards.</i>
<b>Goal 2: Protect life, property, critical infrastructure, the environment, and the economy from hazard impacts.</b>	<i>Objective 2-1: Acquire, retrofit, or relocate structures from flood-prone areas.</i>
	<i>Objective 2-2: Retrofit critical infrastructure to protect against hazard impacts.</i>
	<i>Objective 2-3: Enhance stormwater management infrastructure.</i>
	<i>Objective 2-4: Ensure that critical facilities can continue to function during and after hazard impacts.</i>
	<i>Objective 2-5: Encourage residents and business owners to insure their property against hazard impacts, including through flood insurance through the National Flood Insurance Program (NFIP).</i>
<b>Goal 3: Educate the public, officials, and other stakeholders about the hazards they face and what can be done to mitigate hazard impacts.</b>	<i>Objective 3-1: Ensure that local officials attend current training on regulatory issues and best practices.</i>
	<i>Objective 3-2: Provide information to individuals throughout the county on the hazards they face and what property protection measures they can take.</i>

## 6.4 CAPABILITY ASSESSMENT

According to FEMA Mitigation Planning How-To Guide #3, a capability assessment is an inventory of a community’s missions, programs and policies; and an analysis of its capacity to carry them out. This assessment is an integral part of the planning process. The assessment process enables identification, review, and analysis





of local and state programs, policies, regulations, funding, and practices currently in place that might either facilitate or hinder mitigation.

During the original planning process, the county and participating municipalities identified and assessed their capabilities in the areas of existing programs, policies, and technical documents. By completing this assessment, each jurisdiction learned how or whether they would be able to implement certain mitigation actions by determining the following:

- Limitations that might exist on undertaking actions
- The range of local and/or state administrative, programmatic, regulatory, financial, and technical resources available to assist in implementing their mitigation actions
- Actions deemed infeasible as they are currently outside the scope of capabilities
- Types of mitigation actions that might be technically, legally (regulatory), administratively, politically, or fiscally challenging or infeasible
- Opportunities to enhance local capabilities to support long-term mitigation and risk reduction

During the plan update process, all participating jurisdictions were tasked with developing or updating their capability assessment, paying particular attention to evaluating the effectiveness of these capabilities in supporting hazard mitigation, and identifying opportunities to enhance local capabilities.

County and municipal capabilities in the Planning and Regulatory, Administrative and Technical, and Fiscal arenas can be found in the Capability Assessment section of each jurisdictional annex in Section 9 - Annexes. Within each annex, participating jurisdictions identified how they have integrated hazard risk management into their existing planning, regulatory and operational/administrative framework (“integration capabilities”), and how they intend to promote this integration (“integration actions”). A further summary of these continued efforts to develop and promote a comprehensive and holistic approach to hazard risk management and mitigation is presented in Section 7 (Plan Maintenance).

A summary of the various federal, state, county, and local planning and regulatory, administrative and technical, and fiscal programs available to promote and support mitigation and risk reduction in Lewis County are presented below.

### 6.4.1 Planning and Regulatory Capabilities - County and Local

#### Municipal Land Use Planning and Regulatory Authority

The county and municipalities have various land use planning mechanisms that can be leveraged to mitigate flooding and support natural hazard risk reduction. Specific county and local planning and regulatory capabilities are identified in their jurisdictional annexes in Section 9 - Annexes. The Lewis County Planning Department and the LCSWCD both provide local land use planning support to the municipalities (see Section 6.4.3).

Section 239 of New York State General Municipal Law (GML) requires the referral of certain local planning actions to the County Planning Board for the examination of possible intermunicipal impacts. The Lewis County Planning Department, along with the County Planning Board, fulfill the requirements under Section 239-M of the law. The Planning Department coordinates local approvals processes for development projects. It provides professional planning, technical assistance to municipalities for development and update of comprehensive plans, local land use laws, and zoning. It provides professional support to the County Planning Board on review of development projects that have intermunicipal or countywide significance.





The Planning Department provides technical planning assistance for municipalities within the county. The County Planning Board reviews all aspects of the projects referred to them and often discusses natural hazard risks regarding floodplains as well as stormwater management. The Board makes recommendations on local projects to approve, disapprove, or approve with modification– it does not have the authority to make determinations. Municipalities consider county recommendations but may vote against them with a super-majority vote is disapproval or approval with modification. All municipalities within the county have some form of land use regulations.

### Emergency Plan

The Lewis County Fire and Emergency Management plays a lead role in planning, mitigation, coordination, and response and recovery for natural disasters such as floods and winter weather storm events. Fire and Emergency Management maintains the Lewis County Comprehensive Emergency Management Plan (CEMP) which establishes the framework for an effective system to ensure the county and its municipalities will be adequately prepared to respond to an occurrence of natural, man-made, and/or technological related emergencies or disasters. It is updated and reviewed annually. The CEMP provides protocol for sheltering of residents in the event of an emergency (refer to the Red Cross Sheltering Plan annex of the CEMP).

## 6.4.2 Planning and Regulatory Capabilities – State and Federal

### National Flood Insurance Program (NFIP)

The U.S. Congress established the NFIP with the passage of the National Flood Insurance Act of 1968 (FEMA’s 2002 NFIP: Program Description). The NFIP is a federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for state and community floodplain management regulations that reduce future flood damages. Please refer to the Flood Hazard Profile in Section 5.4.5 (Flood) for information on recent legislation related to reforms to the NFIP.

There are three components to the NFIP: flood insurance, floodplain management, and flood hazard mapping. Communities participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. In exchange, the NFIP makes federally backed flood insurance available to homeowners, renters, and business owners in these communities. Community participation in the NFIP is voluntary. Flood insurance is designed to provide an alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods. Flood damage in the U.S. is reduced by nearly \$1 billion each year through communities implementing sound floodplain management requirements and property owners purchasing flood insurance. Additionally, buildings constructed in compliance with NFIP building standards suffer approximately 80 percent less damage annually than those not built in compliance (FEMA, 2008).

All municipalities in Lewis County actively participate in the NFIP, aside from the Town of Montague. As of February 2, 2018, there were 72 NFIP policies in Lewis County. There have been 50 claims made, totaling over \$600,000 for damages to structures and contents. There are 4 NFIP Repetitive Loss (RL) properties and 0 Severe Repetitive Loss (SRL) properties in the county. Further details on the county’s flood vulnerability can be found in the flood hazard profile in Section 5.4.5 (Flood).

Municipal participation in and compliance with the NFIP is supported at the federal level by FEMA Region II and the Insurance Services Organization (ISO), at the state-level by the New York State Department of Environmental Conservation (NYS DEC) and New York State Division of Homeland Security and Emergency Services (NYS DHSES). Additional information on the NFIP program and its implementation throughout the county can be found in the flood hazard profile in Section 5.4.5 (Flood).



The state and municipalities can adopt higher regulatory standards when implementing the provisions of the NFIP. Specifically identified are the following:

**Freeboard:** By law, NYS requires Base Flood Elevation (BFE) plus 2 feet (BFE+2) for all construction. When there is a BFE available, the lowest floor including any basement must be at or above the BFE plus 2 feet. Elevation may be by means of properly compacted fill, a solid slab foundation, or a "crawl space" foundation which contains permanent openings to let flood waters in and out. Non-residential structures may be flood-proofed in lieu of elevation. Where a local floodplain administrator has information to estimate a BFE, such as historic flood records or a hydraulic study, that elevation must be used. If the development consists of more than 5 acres or more than 50 lots, the permit applicant must develop a BFE and build accordingly (NYS DEC 2018). Communities may go beyond this requirement, providing for additional freeboard. In most New York communities, new structures must have the lowest floor 3 feet or more above the highest adjacent grade.

**Cumulative Substantial Improvements/Damages:** The NFIP allows improvements valued at up to 50 percent of the building's pre-improvement value to be permitted without meeting the flood protection requirements. Over the years, a community may issue a succession of permits for different repairs or improvement to the same structures. This can greatly increase the overall flood damage potential for structures within a community. The community may wish to deem "substantial improvement" cumulatively so that once a threshold of improvement within a certain length of time is reached, the structure is considered to be substantially improved and must meet flood protection requirements.

### NFIP Community Rating System (CRS)

As an additional component of the NFIP, the CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS: (1) reduce flood losses; (2) facilitate accurate insurance rating; and (3) promote the awareness of flood insurance (FEMA, 2012). Municipalities and the county as a whole could expect significant cost savings on premiums if enrolled in the CRS program.

Currently, there are no municipalities in Lewis County participating in the CRS program.

### New York State Floodplain Management

There are two departments that have statutory authorities and programs that affect floodplain management at the local jurisdiction level in New York State: the NYS DEC and the Department of State's Division of Code Enforcement and Administration (DCEA).

The NYS DEC is charged with conserving, improving, and protecting the state's natural resources and environment, and preventing, abating, and controlling water, land, and air pollution. Programs that have bearing on floodplain management are managed by the Bureau of Flood Protection and Dam Safety, which cooperates with federal, state, regional, and local partners to protect lives and property from floods, coastal erosion, and dam failures. These objectives are accomplished through floodplain management and both structural and nonstructural means.

The Dam Safety Section is responsible for "reviewing repairs and modifications to dams and assuring [sic] that dam owners operate and maintain dams in a safe condition through inspections, technical reviews, enforcement, and emergency planning." The Flood Control Projects Section is responsible for reducing flood risk to life and property through construction, operation, and maintenance of flood control facilities.



The Floodplain Management Section is responsible for reducing flood risk to life and property through management of activities, such as development in flood hazard areas, and for reviewing and developing revised flood maps. The section serves as the NFIP State Coordinating Agency and in this capacity, is the liaison between FEMA and New York communities that elect to participate in the NFIP. The section provides a wide range of technical assistance.

Lewis County will work with the Floodplain Management Section to develop local floodplain administrators training for the administrators in Lewis County. This will help support municipal compliance with the NFIP, improve floodplain identification and mapping in the communities, and provide flood insurance outreach to residents.

### 6.4.3 Administrative and Technical Capabilities - County and Local

#### Lewis County Fire and Emergency Management

Lewis County Fire and Emergency Management is charged with supporting and promoting an organized, systematic approach to Emergency Planning, Preparedness, Mitigation, Response and Recovery in the event of a natural or man-made disaster in Lewis County, and to support the day to day operations of the many Emergency Service, Public Service, Public Safety, and Emergency Management organizations. In an emergency situation, the Office of Emergency Services works with county departments and external agencies to respond to the needs of citizens by helping to protect lives and property, assist those injured or whose normal lives have been disrupted by events, and to provide for the rapid restoration of normal services. Additionally, the Office of Emergency Services provides and/or supports programs to assist the 14 volunteer fire departments and emergency squad/first responder units in Lewis County.

The Emergency Management website (<https://www.lewiscounty.org/departments/emergency-management/emergency-management>) provides dates of trainings and meetings, news and announcements, and plans and programs related to the department.

#### Lewis County Soil & Water Conservation District (LC SWCD)

The LCSWCD or District) assists local farmers and citizens in protecting and enhancing natural resources and ecology in the Tug Hill Plateau, Adirondacks and the Black River Valley of Lewis County. The District assists local municipalities with conservation practices such as dry hydrant installation, hydro-seeding, and permit assistance as well as attaining maps and information regarding county land. Most common hydro-seeded areas are those that showed potential for high levels of erosion. The district assists communities with the following programs:

- **Municipal Assistance:** The LCSWCD assists local municipalities with Mined Land Permits and Reclamation Plans as well as filing the necessary permits through the NYS Department of Environmental Conservation. Dry hydrants are non-pressurized systems that are installed in lakes, ponds, and streams.
- **Dry Hydrant Installation:** The LCSWCD, with the help of local municipalities, can install dry hydrants in rural areas that have a lack of pressurized hydrant systems.
- **Geographical Information System:** The LCSWCD has Geographic Information Systems (GIS), which can be used to create resource maps. GIS maps can cover such information as types of soil, state wetlands, aquifers, tax parcels, aerial imagery, street names, municipal boundaries, topography, and many more.



- Erosion Control: Erosion is a major cause of the presence of pollutants in waterways. By preventing erosion of soil particles, pollutant sources remain in place and therefore our surface waters remain protected.
- Permit Assistance: The LCSWCD assists landowners, municipalities, and farms with many types of permits, including stream, wetland, mined land, storm water and bulk petroleum storage permits.

### **Lewis County Department of Planning**

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The Lewis County Department of Planning, at the direction of the Lewis County Board of Legislators, is to provide services to the county's municipalities, organizations, businesses, and citizens to ensure that carefully planned and successful development occurs within the county in accord with the Lewis County Comprehensive Plan. In support of this mission, the Department provides assistance and resources to Lewis County municipalities and organizations for community development, project planning, zoning, and grant writing and administration. The Department works with businesses to provide information and guidance to meet their business development needs and to create growth in Lewis County. The Department also provides general information and resources to citizens for various planning, zoning, and economic development issues.

### **Lewis County GIS Mapping Web Application**

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The **Lewis County GIS Mapping Web Application** (<http://lewiscountyny.giscloud.com/>) provides various information for mapping including parcel data, wetland inventory, topographical maps, the 1 percent annual chance floodplain, building footprints, and roadways. This application significantly enhances the resiliency of the county's data network in the event of a disaster.

### **Lewis County Highway Department**

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The Lewis County Highway Department keeps roads safe for the traveling public. The Highway Department also conducts tree removal or cutting in situations where trees are in danger of falling in the road, branches fall in the right of way, previous accidents where vehicles have come in contact with trees, inability for road crews to clean ditches, or trees that shade the road. The Highway Department also provides safe winter tips to the public that details snow removal and winter driving.

### **Buildings and Grounds Maintenance**

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The Buildings and Grounds Department is responsible for the general maintenance and upkeep of county facilities and grounds to maintain a safe environment for employees as well as the public. The facilities under the Department's care include the main county office building, county courthouse, Department of Social Services, Public Safety Building, Office for the Aging, Board of Elections, and Department of Motor Vehicles.

### **District Attorney**

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The District Attorney is a countywide elected official serving a four-year term whose duties are to prosecute all felonies, misdemeanors, and violations perpetrated against the citizens of Lewis County. Additionally, the District Attorney handles all criminal appeals at all levels of appeals, including County Court, the Appellate Division 4th Department and the Court of Appeals. Further responsibilities include being the legal advisor to the Grand Jury, handling extradition of criminals from outside the state, prosecuting violations of sentencing provisions and supporting victims of crime. The District Attorney is also called upon to advise law enforcement agencies throughout the county.



## Lewis County Public Health

The Public Health Department promotes and protects the health of Lewis County's communities. The Department works to prevent disease, promote wellness, and protect the health of the people in Lewis County.

### Shelters

Due to the variable nature of hazard events and associated sheltering needs within the county, Lewis County relies on real-time outreach methods to inform the public of pending and active evacuations, and available sheltering resources. Outreach methods include variable message sign boards, media (radio, television, and newspapers), and social media.

While most people who need to evacuate their homes typically stay with friends or family, or in hotels, some of them will require short-term shelter. Lewis County Fire and Emergency Management addresses evacuation and sheltering in the Lewis County CEMP.

Evacuation routes are determined at the time of an incident by the Incident Commander or his/her designee. Generally, evacuation routes will be whatever major roads lead away from the evacuated area. Major roads are shown in Section 4.

Lewis County partners with the American Red Cross (ARC) to operate emergency shelters throughout the County. The Red Cross Sheltering Plan is included as an annex in the CEMP. The ARC has pre-identified a set of facilities that could be used as emergency shelters. Compliance with the Americans with Disabilities Act (ADA) is included in the criteria that the ARC uses to approve a facility to serve as a shelter, as is the requirement that facilities must be outside of the Special Flood Hazard Area (SFHA). During an incident that requires evacuation of an area, Lewis County Fire and Emergency Management will work with the ARC to activate one or more shelters (depending on the need and the resources available to operate a shelter) and will ensure that the location(s) of the shelter(s) is/are provided to evacuees. The ARC is also responsible for emergency feeding and clothing during incidents.

During an incident, Lewis County's emergency management structure relies on the Human Needs Task Force to address medical needs, access and functional needs, compliance with the ADA, and other issues that arise during an evacuation. This group is also described in the CEMP in the "Meeting Human Needs" section.

In addition to sheltering through the ARC, municipalities in Lewis County have identified the following shelters:

- The Village of Constableville has designated the Constableville Fire Department building on Main Street as an emergency shelter. The facility can accommodate 60 evacuees inside, has backup power, and includes ambulance and emergency medical technician (EMT) access.
- The Village of Copenhagen has identified the Copenhagen Central School on Mechanic Street and the Copenhagen Fire Department at 9950 Main Street as unofficial emergency shelters. The capacity of each facility has not been determined, but each has backup power and can accommodate pets. The Copenhagen Central School is ADA-compliant. Route 12 is used as the evacuation route to Watertown or Lowville in emergency situations.
- The Village of Croghan identified several locations as designated emergency shelters in the community. In addition to the facilities listed below, the village identified all schools as designated shelters:
  - Croghan Fire Department at 6860 Fire Hall Street. The site has a capacity of 150, accommodates pets, is ADA-compliant, and has a kitchen and bathroom.
  - St. Stephen's Parish at 9748 Main Street. The site has a capacity of 100, accommodates pets, is ADA-compliant, and has a kitchen and bathroom.





- Steepleview Court at 6926 George Street. The site has a capacity of 20, accommodates pets, is ADA-compliant, and has a kitchen and bathroom.
- Croghan Free Library at 9794 NY-812. The site has a capacity of 20, accommodates pets, is ADA-compliant, and has a bathroom.
- The Town of Denmark has designated the Copenhagen Fire Department at 9550 Main Street as an emergency shelter. The site has a capacity of 150.
- The Town of Greig has designated the following emergency shelters:
  - Camp Aldersgate: The camp is located on Brantingham Road and has a capacity of 250. It is ADA-compliant. The facility has food and lodging.
  - Brantingham Fire House: The fire house is located on Partidgeville Road and has a capacity of 15. It is ADA-compliant and has backup power.
  - Brantingham Golf Course: The golf course is located on Brantingham Road and has a capacity of 50.
  - Greig Town Hall: The Town Hall is located on Greig Road and has a capacity of 25. It is ADA-compliant and has backup power.
  - Brantingham Snowmobile Club: The club is located on Brantingham Road and has a capacity of 25.
- The Town of Harrisburg has identified the following facilities as shelters:
  - Copenhagen Fire Department at 9932 NY-12, Copenhagen. The site has a capacity of 50-100, accommodates pets, is ADA-compliant, has EMT services, and has a bathroom and kitchen.
  - Lowville Fire Department at 5409 The Parkway, Lowville. The site has a capacity of 50-100, is ADA-compliant, has EMT services, and has a bathroom and kitchen.
  - Town Hall at 7886 Cobb Road. The site has a capacity of 25, is ADA-compliant, has EMT services, and has a bathroom and kitchen.
- The Town of Leyden has identified the following emergency shelters:
  - Port Leyden Fire Hall at 3387 Douglas Street. The site has a capacity of 130, is ADA-compliant and has Emergency Medical Services (EMS) personnel on hand.
  - Port Leyden Elementary School at Lincoln Street. The capacity is unknown. The site is ADA-compliant, has EMT services, and has a registered nurse on hand during school hours.
- The Village of Lyons Falls has identified the following emergency shelters.
  - The Fire Hall/DPW at 3907 High Street accommodates 150 and is ADA-compliant.
  - The Village offices at 4059 Cherry Street accommodates 25 and is ADA-compliant.

The village noted that it plans to build a new facility which would combine the Fire Hall, DPW, and village offices into one location. The current Fire Hall has a deteriorating roof and lacks insulation and a kitchen, limiting functionality as a shelter. The village offices lack space. A combined facility would allow for improved and expanded sheltering capability.
- The Town of New Bremen identified the New Bremen Fire Department at 8154 Route 812 as a designated emergency shelter in the community. The site has backup power. In addition, the town identified all schools as designated shelters.
- The Town of Osceola identified the Highway Town Barn and the Community Center as designated emergency shelters. The Highway Town Barn is located at 2009 Church Street. The Town Barn has a capacity of 50, accommodates pets, is ADA-compliant, has backup power, and has an AED available. The Community Center is located at 1426 Osceola Road. The Community Center has a capacity of 68, is ADA-compliant, has backup power, and has access to the AED located next door in the Town Barn.
- The Town of Turin has designated the following emergency shelters which can all be accessed by State Routes 12 and 26:
  - South Lewis Central School at East Road. The site has a capacity of 1,000, accommodates pets, is ADA-compliant, has backup power, and has a school nurse and food.



- Turin Municipal Building at 6312 East Main Street. The site has a capacity of roughly 50, is ADA-compliant, and has backup power.
- Turin Volunteer Fire Company at 4239 State Route 26. The site has a capacity of 20-25, accommodates pets, is ADA-compliant, has Ambulance/EMT services, and can serve food.
- The Village of Turin has designated the following emergency shelters:
  - Turin Fire Hall at State Route 26. The site accommodates pets, is ADA-compliant, has backup power, and provides some medical services.
  - South Lewis Central School at 5960 Main Street. The site has a capacity of 500, accommodates pets, is ADA-compliant, has backup power, and provides medical services as needed.
- The Town of Watson has designated the Town Barn at 6971 Number Four Road as the town's emergency shelter. The site has a capacity of 50, is ADA-compliant, has backup power, has first aid, and has a working kitchen.

#### 6.4.4 Administrative and Technical Capabilities - State and Federal

##### New York State Division of Homeland Security and Emergency Services (NYS DHSES)

For more than 50 years, NYS DHSES (formerly New York State Office of Emergency Management) and its predecessor agencies have been responsible for coordinating the activities of all state agencies to protect New York's communities, the state's economic well-being, and the environment from natural and man-made disasters and emergencies. NYS DHSES routinely assists local governments, voluntary organizations, and private industry through a variety of emergency management programs including hazard identification, loss prevention, planning, training, operational response to emergencies, technical support, and disaster recovery assistance.

NYS DHSES administers the FEMA mitigation grant programs in the state and supports local mitigation planning in addition to developing and routinely updating the State Hazard Mitigation Plan. NYS DHSES prepared the current State Hazard Mitigation Plan working with input from other state agencies, authorities, and organizations. It was approved by FEMA in 2014 and it keeps New York eligible for recovery assistance in all Public Assistance Categories A through G, and Hazard Mitigation Assistance in each of the Unified Hazard Mitigation Assistance Program's five grant programs. For example, the 2008-2011 State Mitigation Plan allowed the state and its communities to access nearly \$57 million in mitigation grants to prepare plans and carry out projects. The 2014 New York State HMP was used as guidance in completing the Lewis County HMP Update. The State HMP can be found here: <http://www.dhSES.ny.gov/recovery/mitigation/plan.cfm>

##### New York State Department of Environmental Conservation (NYSDEC) – Division of Water - Bureau of Flood Protection and Dam Safety

Within the NYSDEC – Division of Water, the Bureau of Flood Protection and Dam Safety (<http://www.dec.ny.gov/about/61432.html>) cooperates with federal, state, regional, and local partners to protect lives and property from floods, coastal erosion, and dam failures through floodplain management and both structural and nonstructural means; and, provides support for information technology needs in the Division. The Bureau consists of the following sections:

- Coastal Management: Works to reduce coastal erosion and storm damage to protect lives, natural resources, and properties through structural and nonstructural means.
- Dam Safety: Responsible for reviewing repairs and modifications to dams and assuring that dam owners operate and maintain dams in a safe condition through inspections, technical reviews, enforcement, and emergency planning.

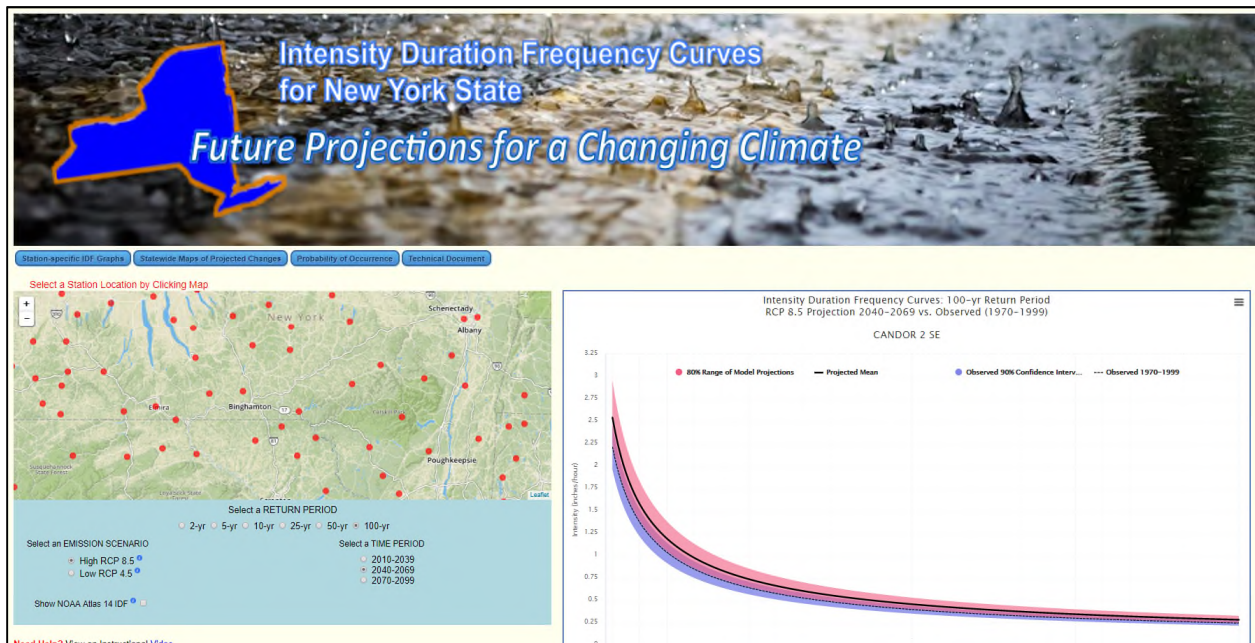


- Flood Control Projects: Responsible for reducing flood risk to life and property through construction, operation, and maintenance of flood control facilities.
- Floodplain Management: Responsible for reducing flood risk to life and property through proper management of activities including, development in flood hazard areas and review and development of revised flood maps.

### Northeast Regional Climate Center

The Northeast Regional Climate Center (NRCC) partnered with the New York State Energy Research and Development Authority (NYSERDA) to compare various methods of downscaling global climate model (GCM) output and create extreme precipitation projections for New York State. These projections will ultimately be incorporated into climate change adaptation planning. In 2009 alone, 175 total flooding events in NYS led to \$32.82 million in property damage. The state is also still recovering from the \$42 billion toll of Superstorm Sandy, among others. Climate change is resulting in an increase in the frequency of heavy rainfall events. To help NYS communities plan for effects of climate change, new graphics are now available showing the increased likelihood of heavy precipitation events. These graphs, called Intensity Duration Frequency (IDF) curves, show anticipated increases of storm events from 2- to 100-year intervals, and are projected into the future as far as 2099. These products are designed for use by municipal officials, researchers, planners, highway departments, and other decision-makers who need to take storm events into account. These IDF curves display how precipitation events are being affected by NYS’s rapidly changing climate (NRCC 2015). The figure below displays the screenshot of the website.

Figure 6-1. Screenshot of the IDF Curves for New York State



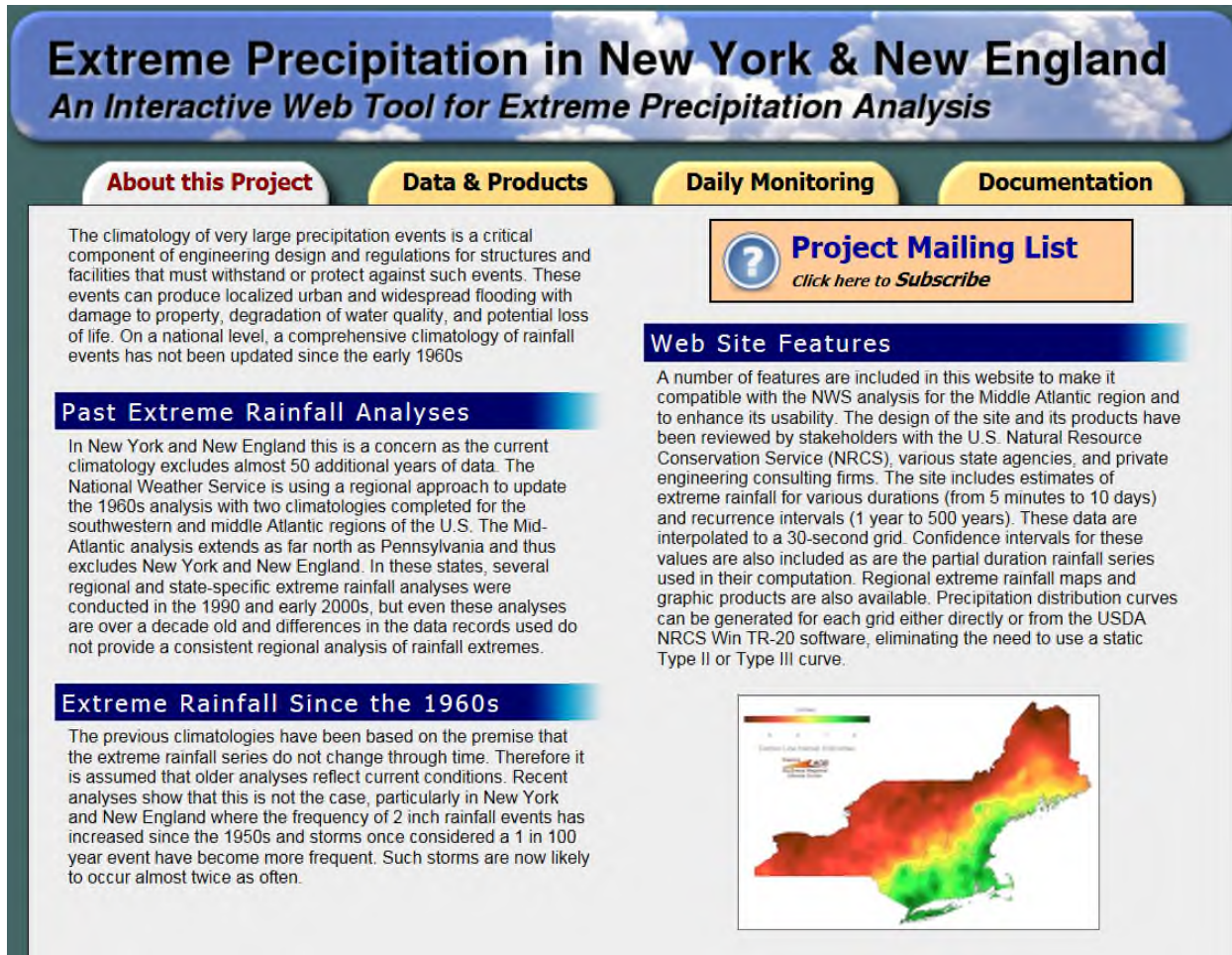
NRCC also maintains the Extreme Precipitation in New York & New England website. It is an interactive tool for extreme precipitation analysis. The site includes estimates of extreme rainfall for various durations (from 5 minutes to 10 days) and recurrence intervals (1 year to 500 years). These data are interpolated to a 30-second grid. Confidence intervals for these values are also included as are the partial duration rainfall series used in their computation. Regional extreme rainfall maps and graphic products are also available. Precipitation distribution curves can be generated for each grid either directly or from the U.S. Department of Agriculture (USDA) Natural





Resources Conservation Service (NRCS) Win TR-20 software, eliminating the need to use a static Type II or Type III curve (NRCC 2018). This tool can be used by municipalities to assist them in the design and feasibility assessment of future projects and allow them to see the future intensity and frequency of rain events. The figure below shows a screenshot of the website.

Figure 6-2. Screenshot of the Extreme Precipitation in New York & New England Website



The screenshot shows the homepage of the "Extreme Precipitation in New York & New England" website. The main heading is "Extreme Precipitation in New York & New England" with the subtitle "An Interactive Web Tool for Extreme Precipitation Analysis". Below the heading are four navigation tabs: "About this Project", "Data & Products", "Daily Monitoring", and "Documentation".

On the left side, there is a text block titled "The climatology of very large precipitation events is a critical component of engineering design and regulations for structures and facilities that must withstand or protect against such events. These events can produce localized urban and widespread flooding with damage to property, degradation of water quality, and potential loss of life. On a national level, a comprehensive climatology of rainfall events has not been updated since the early 1960s".

Below this text are two sections: "Past Extreme Rainfall Analyses" and "Extreme Rainfall Since the 1960s".

On the right side, there is a "Project Mailing List" button with a question mark icon and the text "Click here to **Subscribe**". Below that is a "Web Site Features" section with a blue header. The text describes the website's features, including its compatibility with NWS analysis, stakeholder reviews, and the inclusion of extreme rainfall estimates for various durations and recurrence intervals. It also mentions that precipitation distribution curves can be generated for each grid.

At the bottom right, there is a map of the region showing extreme rainfall intensity with a color scale from green (low) to red (high).

## Department of State's Division of Code Enforcement and Administration (DCEA)

### Technical Bulletins for the 2010 Codes of New York State

The DCEA has published 14 technical bulletins including two recent bulletins with guidance related to flood hazard areas: Electrical Systems and Equipment in Flood-damaged Structures and Accessory Structures. One archived bulletin from January 2003, Flood Venting in Foundations and Enclosures Below Design Flood Elevation, refers to the out-of-date edition of FEMA Technical Bulletin 1 and to American Society of Civil Engineers (ASCE) 24-98, which is not the edition referenced by the current codes.

### Forms and Publications

The DCEA posts several model reporting forms and related publications on its web page. The Building Permit Application requests the applicant to indicate whether the site is or is not in a floodplain and advises checking with town clerks or NYSDEC. The General Residential Code Plan Review form includes a reminder to "add 2"



freeboard.” Sample Flood Hazard Area Review Forms, including plan review checklists and inspection checklists for Zone A and Zone V, are based on the forms in Reducing Flood Losses through the International Code Series published by International Code Council and FEMA (2008).

### 6.4.5 Fiscal Capabilities – County and Local

#### Municipal Fiscal Capabilities

Lewis County municipalities are able to fund mitigation projects through existing local budgets, local appropriations (including referendums and bonding), and through a variety of federal and state loan and grant programs. Many municipalities noted throughout the planning process that they are faced with increasing fiscal constraints, including decreasing revenues, budget constraints, and tax caps. In an effort to overcome these fiscal challenges, municipalities have continued to leverage the sharing of resources and combining available funding with grants and other sources and note that plans and intermunicipal cooperation are beneficial in obtaining grants.

### 6.4.6 Fiscal Capabilities – State and Federal

The New York State Capabilities section of the 2019 NYS HMP provides information pertaining to the various funding sources available for mitigation projects, which can be found at: <https://mitigateny.availabs.org/capabilities/administerfunding>.

#### Empire State Development

Empire State Development offers a wide range of financing, grants, and incentives to promote business and employment growth and real estate development throughout the state. Several programs address infrastructure construction associated with project development, acquisition, and demolition associated with project development and brownfield remediation and redevelopment. Additional information regarding Empire State Development is available on the website: <https://esd.ny.gov/>.

#### New York State Department of Transportation (NYSDOT)

##### Scour Critical/Flood-prone Bridge Program

The Scour Critical/Flood-Prone Bridge Program is an initiative developed to harden NYS’s at-risk bridges to withstand extreme weather events. In the past three years, the state has suffered nine presidentially declared disasters due to extreme weather, many involving severe flooding (NYSDOT 2014).

For this initiative, 105 scour critical/flood-prone bridges throughout NYS were identified as most at-risk from repeated flooding and are located in the Capital District, Long Island, Mid-Hudson, Mohawk Valley, North Country, Finger Lakes, Central/Western and Southern Tier regions. The locations encompass 78 communities within 30 counties across the state (NYSDOT 2014). Additional information regarding the list of bridges is available on the website: [https://www.dot.ny.gov/main/business-center/cbow/repository/CBOW\\_list\\_2014.pdf](https://www.dot.ny.gov/main/business-center/cbow/repository/CBOW_list_2014.pdf).

All the bridges included in this program were built to the codes and standards of their time and remain safe and open for everyday traffic; however, due to a variety of natural severe weather events and the increasing frequency of major storms and floods, they are vulnerable to scour and flooding caused by the intensity and velocity of water from extreme natural events. Bridge scour erodes and carries away foundation materials, such as sand and rocks from around and beneath bridge abutments, piers, foundations, and embankments (NYSDOT 2014).

This program encompasses a variety of bridge improvement work, including upgrading concrete bridge abutments and/or piers by adding steel or concrete pile foundations, increasing the size of waterway openings to meet 100-year flood projections, and reducing or eliminating the number of bridge piers in the water to prevent





debris and ice jams that can flood surrounding areas. Completion of the program will ensure continual access to critical facilities and essential personnel during emergency events. Adverse impacts to travel throughout the state will be greatly reduced during severe weather events as well (NYSDOT 2014).

This program aims to increase the state's resiliency and mitigate the risks of loss and damage associated with future disasters. The total cost of the program, including all 105 bridges across the state, is \$518 million. It will be paid for with a mix of funding from FEMA and the U.S. Department of Housing and Urban Development. No state funding will be required (NYSDOT 2014).

### **New York State Department of Environmental Conservation Climate Smart Communities (CSC) Program**

The CSC program is jointly sponsored by the following six NYS agencies: Department of Environmental Conservation; Energy Research and Development Authority; Public Service Commission; Department of State; Department of Transportation; and the Department of Health. The program encourages municipalities to minimize the risks of climate change and reduce long-term costs through actions that reduce greenhouse gas (GHG) emissions and adapt to a changing climate. The program offers free technical support on energy and climate and guidance tailored to NYS communities. As of April 2016, more than 170 communities, representing 6.6 million New Yorkers in every region of the state, have committed to acting on climate through NYS's CSC program.

Benefits of participating in the program include saving taxpayer dollars, improving operations and infrastructure, increasing energy independence and security, demonstrating leadership, and positioning for economic growth. Registered CSC receive notification of state and federal assistance that they can leverage to help adopt low-carbon technologies, and of programs and support for efficiency improvements and energy conservation. Further, they receive an advantage in accessing some state assistance programs. They can call on the help of other local governments that already have adopted climate smart practices and policies, and their climate smart accomplishments receive statewide recognition. Key elements of the CSC program are described below.

For additional information regarding the CSC program, please refer to:  
<http://www.dec.ny.gov/energy/50845.html>

#### **Climate Smart Communities (CSC) Pledge**

Any city, town, village, or county in New York can join the program by adopting the CSC Pledge. To become a registered CSC, the municipality's governing body must adopt a resolution that includes all 10 elements of the pledge and inform NYS DEC of the passage of the resolution. The required 10 elements of the pledge are as follows:

- Pledge to be a CSC.
- Set goals, inventory emissions, plan for climate action.
- Decrease community energy use.
- Increase community use of renewable energy.
- Realize benefits of recycling and other climate smart solid waste management practices.
- Reduce greenhouse gas emissions through use of climate smart land use tools.
- Enhance community resilience and prepare for the effects of climate change.
- Support development of a green innovation economy.
- Inform and inspire the public.
- Commit to an evolving process of climate action.



At the time of this plan update, no Lewis County municipalities adopted the Climate Smart Communities Pledge, nor have they achieved certification.

### Climate Smart Communities (CSC) Certification Program

The CSC Certification Program enables high-performing registered communities to achieve recognition for their leadership. Designed around the existing 10 pledge elements, the certification program recognizes communities achieving any on over 130 total possible actions through a rating system leading to four levels of award: Certified, Bronze, Silver, and Gold. Recertification of completed actions is required every five years. Details of the program and the specific documentation required for each action are described in the CSC Certification Manual at [http://www.dec.ny.gov/docs/administration\\_pdf/certman.pdf](http://www.dec.ny.gov/docs/administration_pdf/certman.pdf).

### Climate Smart Communities (CSC) Grant Program

In April 2016, DEC announced an expansion of the Environmental Protection Fund to support communities ready to reduce greenhouse gas emissions and prepare for the effects of climate change. CSC Implementation grants support mitigation and adaptation projects and range from \$100,000 to \$2 million. Competitive grants ranging from \$25,000 to \$100,000 will provide support for local governments to become certified CSC. All counties, cities, towns, and villages of the State of New York are eligible to receive funding. The CSC grant program will provide 50/50 matching grants for eligible projects in the following categories.

Funding is available for **implementation projects** that advance a variety of climate adaptation and mitigation actions, including the following:

- Construction of natural resiliency measures
- Relocation or retrofit of climate-vulnerable facilities
- Conservation or restoration of riparian areas and tidal marsh migration area
- Reduction of flood risk
- Clean transportation
- Reduction or recycling of food waste

Funding is available for **certification projects** that advance several specific actions aligned with CSC requirements, including the following:

- Right-sizing of government fleets
- Developing natural resource inventories
- Conducting vulnerability assessments
- Developing climate adaptation strategies
- Updating HMPs to address changing conditions and reduce climate vulnerability

In scoring grant applications, increasing points are awarded to communities who have already taken the CSC Pledge and to those that have achieved certification status. All grant recipients must take the CSC Pledge within the term of their grant contract. For climate mitigation projects, grant recipients must provide a report of estimates of emissions reduction. Certification actions must adhere to the requirements and standards described in the *Climate Smart Communities Certification Manual* that is available on the website:

<http://www.dec.ny.gov/energy/96511.html>.

For implementation projects involving property (construction, improvements, restoration, rehabilitation), grant recipients that do not have ownership of the property must obtain a climate change mitigation easement.

Round 4 of the CSC Grant Program was available through the NYS Consolidated Funding Application from May 1, 2019 through July 26, 2019. Applications for the fourth round of funding were due July 26, 2019.



The CSC Toolkit was developed to educate New York communities on recommended practices that will help to reduce greenhouse gas emissions and adapt to the effects of climate change, specifically in the areas of land use, transportation policy, green buildings, infrastructure investment, green infrastructure, housing policy, adaptation, and resilience. The Climate Smart Communities Guide to Local Action contains overviews of possible community actions, how-to's and case studies to help communities implement the CSC Pledge. The CSC Toolkit allows New York communities to find recommended practices that will help to reduce greenhouse gas emissions in the areas of land use, transportation policy, green building, infrastructure investment, green infrastructure, and housing policy.

### **New York State Department of Environmental Conservation (NYSDEC)**

#### **Water Quality Improvement Project (WQIP) Program**

The WQIP program is a competitive reimbursement grant program that funds projects that directly address documented water quality impairments. The competitive statewide grant program is open to local governments and not-for-profit corporations. Grant recipients can receive up to 75 percent of the project costs for high priority wastewater treatment improvement, non-agricultural nonpoint source abatement and control, land acquisition for source water protection, aquatic habitat restoration, and municipal separate storm sewer system projects; up to 50 percent for salt storage projects; and up to 40 percent for general wastewater infrastructure improvement projects. Eligible activities include:

- Wastewater treatment improvement
- Non-agricultural nonpoint source abatement and control
- Land acquisition for source water protection
- Salt storage
- Aquatic habitat restoration
- Municipal separate storm sewer systems (MS4)

Details regarding this program are available here - <https://www.dec.ny.gov/pubs/4774.html>.

### **New York State Department of Environmental Conservation (NYS DEC)/Environmental Facilities Corporation (EFC) Wastewater Infrastructure Engineering Planning Grant (EPG)**

The DEC, in conjunction with the NYS EFC, offers grants to municipalities to help pay for the initial planning of eligible Clean Water State Revolving Fund (CWSRF) water quality projects.

The Wastewater Infrastructure EPG will assist municipalities with the engineering and planning costs of CWSRF-eligible water quality projects. Municipalities with a Median Household Income (MHI) of \$65,000 or less in Regional Economic Development Councils (REDC) regions of Capital District, Southern Tier, North Country, Mohawk Valley, Central NY, Finger Lakes, or Western NY OR with a Median Household Income of \$85,000 or less in REDC regions of Long Island, New York City or Mid-Hudson are eligible to apply. Grants with a 20 percent required local match will be provided to finance activities including engineering and/or consultant fees for engineering and planning services for the production of an engineering report.

The goal of the EPG program is to advance water quality projects to construction, so successful applicants can use the engineering report funded by the grant to seek financing through the CWSRF program, WQIP program, or other funding entities to further pursue the identified solution. Funding priorities go to projects that are:

- Required by an executed Order on Consent; or
- Required by a draft or final State Pollutant Discharge Elimination System (SPDES) permit; or
- Upgrading or replacing an existing wastewater system; or



- Constructing a wastewater treatment and/or collection system for an area with failing onsite septic systems; or
- Identified in a Total Maximum Daily Load (TMDL) Implementation Plan.

Details regarding this program can be found here - <https://www.dec.ny.gov/pubs/81196.html>.

### New York State Department of Transportation

#### BRIDGE NY

The BRIDGE NY program, administered by the New York State Department of Transportation (NYSDOT), is open to all municipal owners of bridges and culverts. Projects will be awarded through a competitive process and will support all phases of project development. Projects selected for funding under the BRIDGE NY Initiative will be evaluated based on the resiliency of the structure, including such factors as hydraulic vulnerability and structural resiliency; the significance and importance of the bridge including traffic volumes, detour considerations, number and types of businesses served and impacts on commerce; and the current bridge and culvert structural conditions. Information regarding the program can be found here:

<https://www.dot.ny.gov/BRIDGENY>

### New York State Climate Resilient Farming (CRF) Program

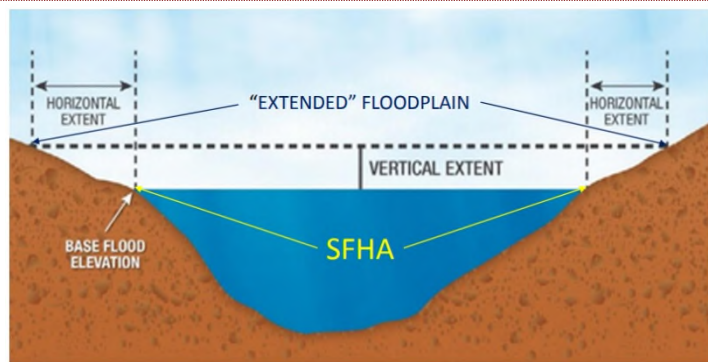
The CRF Program was started in 2015 and has provided more than \$5 million to 40 projects statewide. Farms have used the funding to reduce greenhouse gas emissions, promote energy savings, and mitigation water and soil quality concerns. The goal of the CRF Program is to reduce the impact of agriculture on climate change (mitigation) and to increase the resiliency of NYS farms in the face of a changing climate (adaptation). The program makes funds available, through NYS Department of Agriculture and the NYS Soil and Water Conservation Committee, to support climate change mitigation and adaptation/resiliency in farms across NYS. The funding comes from the Environmental Protection Fund, within the *Climate Change Mitigation and Adaptation* account. The CRF Program allows Soil and Water Conservation Districts to submit proposals to fund projects that mitigate the impacts of agriculture on climate change and enhance the on-farm adaptation and resiliency to project climate conditions. Additional information on the CRF Program can be found here:

<https://www.nys-soilandwater.org/programs/crf.html>

### Community Risk and Resiliency Act (CRRA)

The CRRA was enacted in 2014 in response to extreme flooding that has occurred in NYS. The purpose of the act is to ensure that state monies and permits include consideration of the effects of climate risk and extreme weather events, specifically flooding, storm surge, and sea-level rise. CRRA includes five major provisions:

- Official Sea-Level Rise Projections – CRRA requires the DEC to adopt science-based sea-level rise projections into regulation.
- Consideration of Sea-Level Rise, Storm Surge, and Flooding – CRRA requires applicants for permits or funding in a number of specified programs to demonstrate that future physical climate risk due to sea-level rise, storm surge, and flooding have been considered, and that DEC consider incorporating these factors into certain facility-siting regulations.

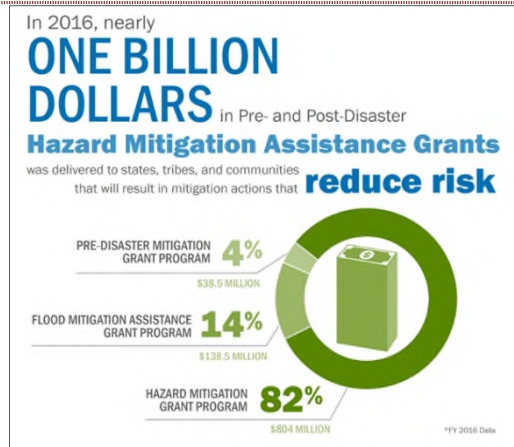




- Smart Growth Public Infrastructure Policy Act Criteria – CRRA adds mitigation of risk due to sea-level rise, storm surge, and flooding to the list of smart growth criteria to be considered by state public infrastructure agencies.
- Guidance on Natural Resiliency Measures – CRRA requires DEC, in consultation with the Department of State (DOS), to develop guidance on the use of natural resources and natural processes to enhance community resiliency.
- Model Local Laws Concerning Climate Risk – CRRA requires DOS, in cooperation with DEC, to develop model local laws that include consideration of future risk due to sea-level rise, storm surge, and/or flooding. These model local laws must be based on available data predicting the likelihood of extreme weather events, including hazard-risk analysis (NYSDEC 2018).

CRRA requires NYSDEC, in consultation with DOS, to prepare guidance on implementation of the statute. DEC developed the State Flood Risk Management Guidance (SFRMG) to fulfill this requirement. SFRMG provides guidance to state agencies on consideration of flooding risk by applicants for projects involving new and substantially improved structures or repair of substantially damaged structures in New York State (NYSDEC 2018). For additional details on the CRRA, refer to: <https://www.dec.ny.gov/energy/102559.html>

### Federal Hazard Mitigation Funding Opportunities



Source: FEMA, 2018

As noted on the FEMA Hazard Mitigation Assistance website (<https://www.fema.gov/hazard-mitigation-assistance>), Currently, FEMA administers three programs that provide funding for eligible mitigation planning and projects that reduces disaster losses and protect life and property from future disaster damages. The three programs are the Hazard Mitigation Grant Program (HMGP), the Flood Mitigation Assistance (FMA) Program, and the Pre-Disaster Mitigation (PDM) Program.

HMGP assists in implementing long-term hazard mitigation planning and projects following a Presidential major disaster declaration. PDM provides funds for hazard mitigation planning and projects on an annual basis. FMA provides funds for planning and projects to reduce or eliminate risk of flood

damage to buildings that are insured under the NFIP on an annual basis

HMGP funding is generally 15 percent of the total amount of federal assistance provided to a state, territory, or federally recognized tribe following a major disaster declaration. PDM and FMA funding depends on the amount Congress appropriates each year for those programs.

Individual homeowners and business owners may not apply directly to FEMA. Eligible local governments may apply on their behalf (FEMA 2018).

Table 6-2 provides an overview of program funding eligibility and cost share, and Table 6-3 presents Hazard Mitigation Assistance (HMA) eligible activities by program.





**Table 6-2. FEMA HMA Grant Cost Share Requirements**

Programs	Mitigation Activity (Percent of Federal/Non-Federal Share)	Recipient Management Costs (Percent of Federal/Non-Federal Share)	Subrecipient Management Costs (Percent of Federal/Non-Federal Share)
HMGP	75/25	100/0	-/( <sup>1</sup> )
PDM	75/25	75/25	75/25
PDM – Subrecipient Is Small and Impoverished Community	90/10	90/10	90/10
PDM – Tribal Recipient/Subrecipient Is Small and Impoverished	90/10	90/10	90/10
FMA – Insured Properties and Planning Grants	75/25	75/25	75/25
FMA – Repetitive Loss Property <sup>(2)</sup>	90/10	90/10	90/10
FMA – Severe Repetitive Loss Property <sup>(2)</sup>	100/0	100/0	100/0

Source: FEMA HMA Guidance 2015

- (1) Sub applicants should consult their State Hazard Mitigation Officer (SHMO) for the amount of percentage of HMGP subrecipient management cost funding their State has determined to be passed through subrecipients.
- (2) To be eligible for an increased federal cost share, a FEMA-approved state or tribal (standard or enhanced) mitigation plan that addressed repetitive loss properties must be in effect at the time of award, and the property is being submitted for consideration must be a repetitive loss property.

**Table 6-3. FEMA HMA Grant Eligible Activities by Program**

Eligible Activities	HMGP	PDM	FMA
<b>1. Mitigation Projects</b>	✓	✓	✓
Property Acquisition and Structure Demolition	✓	✓	✓
Property Acquisition and Structure Relocation	✓	✓	✓
Structure Elevation	✓	✓	✓
Mitigation Reconstruction	✓	✓	✓
Dry Floodproofing of Historic Residential Structures	✓	✓	✓
Dry Floodproofing of Non-residential Structures	✓	✓	✓
Generators	✓	✓	
Localized Flood Risk Reduction Projects	✓	✓	✓
Non-localized Flood Risk Reduction Projects	✓	✓	
Structural Retrofitting of Existing Buildings	✓	✓	✓
Safe Room Construction	✓	✓	
Wind Retrofit for One- and Two-Family Residences	✓	✓	
Infrastructure Retrofit	✓	✓	✓
Soil Stabilization	✓	✓	✓
Wildfire Mitigation	✓	✓	
Post-Disaster Code Enforcement	✓		
Advance Assistance	✓		
5 Percent Initiative Projects	✓		
Miscellaneous/Other <sup>(1)</sup>	✓	✓	✓
<b>2. Hazard Mitigation Planning</b>	✓	✓	✓
Planning Related Activities	✓		
<b>3. Technical Assistance</b>			✓
<b>4. Management Cost</b>	✓	✓	✓

Source: FEMA HMA Guidance 2015

- (1) Miscellaneous/Other indicates that any proposed action will be evaluated on its own merit against program requirements. Eligible projects will be approved provided funding is available

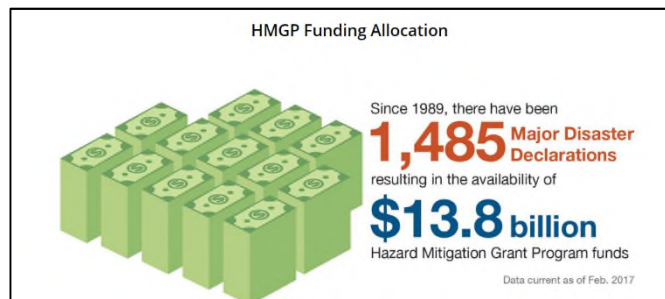




### Hazard Mitigation Grant Program (HMGP)

The HMGP is a post-disaster mitigation program. FEMA makes these grants available to states by after each federal disaster declaration. The HMGP can provide up to 75 percent funding for hazard mitigation measures and can be used to fund cost-effective projects that will protect public or private property or that will reduce the likely damage from future disasters in an area covered by a federal disaster declaration. Examples of projects include acquisition and demolition of structures in hazard-prone areas,

Figure 6-3. FEMA HMGP Funding Allocation



Source: FEMA 2018

floodproofing or elevation to reduce future damage, minor structural improvements, and development of state or local standards. Projects must fit into an overall mitigation strategy for the area identified as part of a local planning effort. All applicants must have a FEMA-approved HMP (this plan).

Applicants who are eligible for the HMGP are state and local governments, certain nonprofit organizations or institutions that perform essential government services, and Indian tribes and authorized tribal organizations. Individuals or homeowners cannot apply directly for the HMGP; a local government must apply on their behalf. Applications are submitted to NYS DHSES, placed in rank order for available funding, and submitted to FEMA for final approval. Eligible projects not selected for funding are placed in an inactive status and could be considered as additional HMGP funding becomes available. Additional information regarding the HMGP is available on the FEMA website: <https://www.fema.gov/hazard-mitigation-grant-program>.

Figure 6-4. FEMA HMGP Applicant/Subapplicant Process



Source: FEMA 2018

### Flood Mitigation Assistance (FMA) Program

The FMA Program combines the previous Repetitive Flood Claims and Severe Repetitive Loss Grants into one grant program. The FMA provides funding to assist states and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the NFIP. The FMA is funded annually; no federal disaster declaration is required. Only NFIP-insured homes and businesses are eligible for mitigation in this program. Funding for FMA is very limited and, as with the HMGP, individuals cannot apply directly for the program. Applications must come from local governments or other eligible organizations. The federal cost share for an FMA project is at least 75 percent. For the non-federal share, at most 25 percent of the total eligible costs must be provided by a non-federal source; of this 25 percent, no more than half can be provided as in-kind contributions from third parties. At minimum, a FEMA-approved local flood mitigation plan is required before a project can be approved. The FMA funds are distributed



from FEMA to the state. The NYS DHSES serves as the grantee and program administrator for the FMA Program.

The FMA Program is detailed on the FEMA website: <https://www.fema.gov/flood-mitigation-assistance-grant-program>

### Pre-Disaster Mitigation (PDM) Program

The PDM Program is an annually funded, nationwide, competitive grant program. No disaster declaration is required. Federal funds will cover 75 percent of a project's cost up to \$3 million. As with the HMGP and FMA, a FEMA-approved local HMP is required to be approved for funding under the PDM Program.

In some cases, whereby the local HMP is under development but not formally approved by FEMA, the jurisdiction can request a Letter of Extraordinary Circumstance to enable consideration of the grant application. According to the FEMA Hazard Mitigation Assistance Guidance (2015), for HMGP project subawards, the FEMA Regional Administrator might grant an exception to the local mitigation plan requirement in extraordinary circumstances when justification is provided. If this exception is granted, a local mitigation plan must be approved by FEMA within 12 months of the award of the project subaward to that community. For PDM and FMA project subawards, the FEMA Region could grant an exception to the local mitigation plan requirement in extraordinary circumstances.

The PDM Program is detailed on the FEMA website: <https://www.fema.gov/pre-disaster-mitigation-grant-program>.

### Disaster Recovery Reform Act (DRRA) of 2018

FEMA and its partners are working on the development and implementation of DRRA Section 1234: National Public Infrastructure Pre-Disaster Hazard Mitigation Grant Program. This program, Building Resilient Infrastructure and Communities (BRIC), will be funded through the Disaster Relief Fund as a 6 percent set-aside from estimated disaster grant expenditures. This program will encourage community-wide mitigation of critical lifelines; prioritize resilient infrastructure projects; lead to competitive, risk-informed projects; and build capacity and capabilities in communities.

### Extraordinary Circumstances

For PDM and FMA project subawards, the FEMA Region might apply extraordinary circumstances when justification is provided and with concurrence from FEMA Headquarters (Risk Reduction and Risk Analysis Divisions) prior to granting an exception. If this exception is granted, a local mitigation plan must be approved by FEMA within 12 months of the award of the project subaward to that community.

For HMGP, PDM, and FMA, extraordinary circumstances exist when a determination is made by the applicant and FEMA that the proposed project is consistent with the priorities and strategies identified in the state (Standard or Enhanced) Mitigation Plan and that the jurisdiction meets at least one of the criteria below. If the jurisdiction does not meet at least one of these criteria, the region must coordinate with FEMA Headquarters (Risk Reduction and Risk Analysis Divisions) for HMGP; however, for PDM and FMA, the region must coordinate and seek concurrence prior to granting an exception. The criteria are as follows:

- The jurisdiction meets the small impoverished community criteria (Part VIII, B.2 of HMA Unified Guidance).
- The jurisdiction has been determined to have had insufficient capacity due to lack of available funding, staffing, or other necessary expertise to satisfy the mitigation planning requirement prior to the current disaster or application deadline.



- The jurisdiction has been determined to have been at low risk from hazards because of low frequency of occurrence or minimal damage from previous occurrences as a result of sparse development.
- The jurisdiction experienced significant disruption from a declared disaster or another event that impacts its ability to complete the mitigation planning process prior to award or final approval of a project award.
- The jurisdiction does not have a mitigation plan for reasons beyond the control of the state, federally recognized tribe, or local community, such as Disaster Relief Fund restrictions that delay FEMA from granting a subaward prior to the expiration of the local or tribal mitigation plan.

For HMGP, PDM, and FMA, the applicant must provide written justification that identifies the specific criteria or circumstance listed above, explains why there is no longer an impediment to satisfying the mitigation planning requirement, and identifies the specific actions or circumstances that eliminated the deficiency.

When an HMGP project funding is awarded under extraordinary circumstances, the recipient shall acknowledge in writing to the Regional Administrator that a plan will be completed within 12 months of the subaward. The recipient must provide a work plan for completing the local or tribal mitigation plan, including milestones and a timetable, to ensure that the jurisdiction will complete the plan in the required time. This requirement shall be incorporated into the award (both the planning and project subaward agreements, if a planning subaward is also awarded).

### **Federal and State Disaster and Recovery Assistance Programs**

Following a disaster, various types of assistance could be made available by local, state, and federal governments. The types and levels of disaster assistance depend on the severity of the damage and the declarations that result from the disaster event. The following sections detail the general types of assistance that might be provided should the President of the United States declare the event a major disaster.

#### **Individual Assistance (IA)**

IA provides help for homeowners, renters, businesses, and some nonprofit entities after disasters occur. This program is largely funded by the U.S. Small Business Administration. For homeowners and renters, those who suffered uninsured or underinsured losses could be eligible for a Home Disaster Loan to repair or replace damaged real estate or personal property. Renters are eligible for loans to cover personal property losses. Individuals are allowed to borrow up to \$200,000 to repair or replace real estate, \$40,000 to cover losses to personal property, and an additional 20 percent for mitigation. For businesses, loans could be made to repair or replace disaster damages to property owned by the business, including real estate, machinery and equipment, inventory, and supplies. Businesses of any size are eligible. Nonprofit organizations, such as charities, churches, and private universities are eligible. An Economic Injury Disaster Loan provides necessary working capital until normal operations resume after a physical disaster but are restricted by law to small businesses only. IA is detailed on the FEMA website: <https://www.fema.gov/individual-disaster-assistance>.

#### **Public Assistance (PA)**

PA provides cost reimbursement aid to local governments (state, county, local, municipal authorities, and school districts) and certain nonprofit agencies that were involved in disaster response and recovery programs or that suffered loss or damage to facilities or property used to deliver government-like services. This program is largely funded by FEMA with both local and state matching contributions are required. PA is detailed on the FEMA website: <https://www.fema.gov/public-assistance-local-state-tribal-and-non-profit>.

#### **Small Business Administration (SBA) Loans**

SBA provides low-interest disaster loans to homeowners, renters, business of all sizes, and most private nonprofit organizations. SBA disaster loans can be used to repair or replace the following items damaged or destroyed in a declared disaster: real estate, personal property, machinery and equipment, and inventory and business assets.



Homeowners can apply for up to \$200,000 to replace or repair their primary residence. Renters and homeowners can borrow up to \$40,000 to replace or repair personal property—such as clothing, furniture, cars, and appliances that were damaged or destroyed in a disaster. Physical disaster loans of up to \$2 million are available to qualified businesses or most private nonprofit organizations. Additional information regarding SBA loans is available on the SBA website: <https://www.sba.gov/managing-business/running-business/emergency-preparedness/disaster-assistance>.

### Social Services Block Grant Program (SSBG)

To address the needs of critical health and human service providers and the populations they serve, the State of New York will receive a total of \$235.4 million in federal Superstorm Sandy SSBG funding. The state will distribute \$200,034,600 through a public and transparent solicitation for proposals and allocate \$35.4 million in State Priority Projects using the SSBG funding. Sandy SSBG resources are dedicated to covering necessary expenses resulting from Superstorm Sandy, including social, health, and mental health services for individuals, and for repair, renovation, and rebuilding of health care facilities, mental hygiene facilities, child care facilities, and other social services facilities. Additional information regarding the SSBG program is available on the website: <https://www.acf.hhs.gov/ocs/programs/ssbg>.

### Homeland Security Grant Program (HSGP)

The HSGP plays an important role in the implementation of the National Preparedness System by supporting the building, sustainment, and delivery of core capabilities essential to achieving the National Preparedness Goal of a secure and resilient nation. The FY 2019 HSGP provides funding to states, territories, urban areas, and local and tribal governments to prevent, protect against, mitigate, respond to, and recover from potential terrorist attacks and other hazards. It supports core capabilities across the five mission areas of Prevention, Protection, Mitigation, Response, and Recovery based on allowable costs. HSGP also supports the goal to strengthen national preparedness and resilience (FEMA 2019).

HSGP is composed of three interconnected grant programs, including the State Homeland Security Program (SHSP), Urban Areas Security Initiative (UASI), and the Operation Stonegarden (OPSG). Together, these grant programs fund a range of preparedness activities, including planning, organization, equipment purchase, training, exercises, and management and administration. Additional information regarding HSGP is available on the website: <https://www.fema.gov/homeland-security-grant-program>.

### Community Development Block Grants (CDBG)

CDBG are federal funds intended to provide low and moderate-income households with viable communities, including decent housing, a suitable living environment, and expanded economic opportunities. Eligible activities include community facilities and improvements, roads and infrastructure, housing rehabilitation and preservation, development activities, public services, economic development, and planning and administration. Public improvements could include flood and drainage improvements. In limited instances and during the times of “urgent need” (e.g., post-disaster) as defined by the CDBG National Objectives, CDBG funding could be used to acquire a property located in a floodplain that was severely damaged by a recent flood, demolish a structure severely damaged by an earthquake, or repair a public facility severely damaged by a hazard event. Additional information regarding CDBG is available on the website: <https://www.hudexchange.info/programs/cdbg-entitlement/>.

### U.S. Economic Development Administration

The U.S. Economic Development Administration (USEDA) is an agency of the U.S. Department of Commerce that supports regional economic development in communities around the country. It provides funding to support comprehensive planning and makes strategic investments that foster employment creation and attract private investment in economically distressed areas of the United States. Through its Public Works Program, USED A





invests in key public infrastructure, such as traditional public works projects, including water and sewer systems improvements, expansion of port and harbor facilities, brownfields, multitenant manufacturing and other facilities, business and industrial parks, business incubator facilities, redevelopment technology-based facilities, telecommunications facilities, and development facilities. Through its Economic Adjustment Program, USEDPA administers its Revolving Loan Fund Program, which supplies small businesses and entrepreneurs with the gap financing needed to start or expand their business in areas that have experienced or are under threat of serious structural damage to the underlying economic base. Additional information is available on the USEDPA website: <https://www.eda.gov/>.

#### Federal Highway Administration (FHWA) - Emergency Relief (ER)

FHWA-ER is a grant program that can be used for repair or reconstruction of federal-aid highways and roads on federal lands that have suffered serious damage as a result of a disaster. NYS is serving as the liaison between local municipalities and FHWA. \$30 million in funding was released in October-November of 2012 for emergency repair work conducted in the first 180 days following Hurricane Sandy. Another \$220 million in additional funding became available February 2013. For information regarding FHWA-ER, please refer to: <https://www.fhwa.dot.gov/programadmin/erelief.cfm>.

#### Federal Transit Administration (FTA) - Emergency Relief (ER)

FTA-ER is a grant program that funds capital projects to protect, repair, reconstruct, or replace equipment and facilities of public transportation systems. Administered by the Federal Transit Authority at the U.S. Department of Transportation and directly allocated to Metropolitan Transportation Authority (MTA) and Port Authority, this transportation-specific fund was created as an alternative to FEMA PA. Currently, a total of \$5.2 billion has been allocated to NYS-related entities. Additional information regarding FTA-ER is available on the website: <https://www.transit.dot.gov/funding/grant-programs/emergency-relief-program/emergency-relief-program>.

#### Emergency Watershed Protection Program

The purpose of the Emergency Watershed Protection Program (EWP) was established by Congress to respond to emergencies created by natural disasters. The EWP Program is designed to help people and conserve natural resources by relieving imminent hazards to life and property caused by floods, fires, drought, windstorms, and other natural occurrences. The U.S. Department of Agriculture's NRCS administers the EWP Program, EWP-Recovery, and EWP-Floodplain Easement. Additional information regarding the EWP is detailed below and available on the website:

<https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/ewpp/>.

#### EWP - Recovery

The EWP - Recovery Program is a recovery effort program aimed at relieving imminent hazards to life and property caused by floods, fires, windstorms, and other natural occurrences. Public and private landowners are eligible for assistance but must be represented by a project sponsor that must be a legal subdivision of the state, such as a city, county, township, or conservation district, and Native American Tribes or Tribal governments. NRCS will pay up to 75 percent of the construction cost of emergency measures. The remaining 25 percent must come from local sources and can be in the form of cash or in-kind services.

EWP work is not limited to any one set of measures. It is designed for installation of recovery measures to safeguard lives and property as a result of a natural disaster. NRCS completes a Damage Survey Report, which provides a case-by-case investigation of the work necessary to repair or protect a site.

Watershed impairments that the EWP Program addresses are debris-clogged stream channels, undermined and unstable streambanks, jeopardized water control structures and public infrastructures, wind-borne debris removal, and damaged upland sites stripped of protective vegetation by fire or drought.



### EWP - Floodplain Easement (FPE)

Privately owned lands or lands owned by local and state governments might be eligible for participation in EWP-FPE. To be eligible, lands must meet one of the following criteria:

- Lands that have been damaged by flooding at least once within the previous calendar year or have been subject to flood damage at least twice within the previous 10 years.
- Other lands within the floodplain are eligible, provided the lands would contribute to the restoration of the flood storage and flow, provide for control of erosion, or that would improve the practical management of the floodplain easement.
- Lands that would be inundated or adversely impacted as a result of a dam breach.

EWP-FPE easements are restored to the extent practicable to the natural environment and can include both structural and nonstructural practices to restore the flood storage and flow, erosion control, and improve the practical management of the easement.

Structures, including buildings, within the floodplain easement must be demolished and removed or relocated outside the 100-year floodplain or dam breach inundation area.

## 6.5 MITIGATION STRATEGY DEVELOPMENT AND UPDATE

### 6.5.1 Update of Municipal Mitigation Strategies

To evaluate progress on local mitigation actions, each jurisdiction was provided with a Mitigation Action Plan Review Worksheet, pre-populated with those actions identified for their jurisdiction in the prior (2010) plan. For each action, municipalities were asked to indicate the status of each action (“No Progress/Unknown”, “In Progress/Not Yet Complete”, “Ongoing Capability”, “Completed”, “Discontinued”) and provide review comments on each. Municipalities were requested to quantify the extent of progress and provide reasons for the level of progress or why actions were discontinued. Each jurisdictional annex provides a table identifying their prior mitigation strategy, the status of those actions and initiatives, and their disposition within their updated strategy.

Local mitigation actions identified as “Complete”, and those actions identified as “Discontinued”, have been removed from the updated strategies. Those local actions that municipalities identified as “No Progress/Unknown”, “In Progress/Not Yet Complete” have been carried forward in their local updated mitigation strategies. Actions considered ongoing capabilities were marked as ‘Discontinued’ and included in the plan as ongoing capabilities. Municipalities were asked to provide further details on these projects to help better define the projects, identify benefits and costs, and improve implementation.

At the Kick-Off and during subsequent local-level planning meetings, all participating municipalities were further surveyed to identify mitigation activities completed, ongoing and potential/proposed. As new additional potential mitigation actions, projects or initiatives became evident during the plan update process, including as part of the risk assessment update and as identified through the public and stakeholder outreach process (see Section 3 – Planning Process), communities were made aware of these either through direct communication (local meetings, email, phone) or via their draft municipal annexes.

To help support the selection of an appropriate, risk-based mitigation strategy, each annex provided a summary of hazard vulnerabilities identified during the plan update process, either directly by municipal representatives or through review of available county and local plans and reports, and through the hazard profiling and vulnerability assessment process.



Beginning in March 2018, members of the Steering Committee and contract consultants worked directly with each jurisdiction (phone, email, local support meetings) to assist with the development and update of their annex and include mitigation strategies, focusing on identifying well-defined, implementable projects with a careful consideration of benefits (risk reduction, losses avoided), costs, and possible funding sources (including mitigation grant programs).

Concerted efforts were made to ensure that municipalities develop updated mitigation strategies that included activities and initiatives covering the range of mitigation action types described in recent FEMA planning guidance (FEMA “Local Mitigation Planning Handbook” March 2013), specifically:

- Local Plans and Regulations – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project – These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct man-made structures to reduce the impact of hazards.
- Natural Systems Protection – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions can also include participation in national programs, such as the NFIP and CRS, StormReady (NOAA) and Firewise (NFPA) Communities.

A mitigation strategy workshop was conducted by NYS DHSES representatives on December 17, 2018, for all participating jurisdictions to support the development of focused problem statements based on the impacts of natural hazards in the county and their communities. These problem statements are intended to provide a detailed description of the problem area, including its impacts to the municipality/jurisdiction; past damages; loss of service; etc. An effort was made to include the street address of the property/project location, adjacent streets, water bodies, and well-known structures as well as a brief description of existing conditions (topography, terrain, hydrology) of the site. These problem statements form a bridge between the hazard risk assessment which quantifies impacts to each community with the development of actionable mitigation strategies.

A strong effort has been made to better focus local mitigation strategies to clearly defined, readily implementable projects and initiatives that meet the definition or characteristics of mitigation. Broadly defined mitigation objectives have been eliminated from the updated strategy unless accompanied by discrete actions, projects, or initiatives.

Certain continuous or ongoing strategies that represent programs that are, or since prior and existing plans have become, fully integrated into the normal operational and administrative framework of the community have been identified within the Capabilities section of each annex and removed from the updated mitigation strategy.

At least two mitigation projects per jurisdiction have been documented with an Action Worksheet, as per the New York State Hazard Mitigation Planning Standards Guide.

As discussed within the hazard profiles in Section 5.4, the long-term effects of climate change are anticipated to exacerbate the impacts of weather-related hazards, including flood, severe storm, severe winter storm, and wildfire. By way of addressing these climate change-sensitive hazards within their local mitigation strategies



and integration actions, communities are working to evaluate and recognize these long-term implications and potential impacts, and to incorporate in planning and capital improvement updates.

Municipalities included mitigation actions to address vulnerable critical facilities. These actions have been proposed in consideration of protection against 500-year events, or worst-case scenarios. It is recognized, however, that in the case of projects being funded through federal mitigation programs, the level of protection might be influenced by cost-effectiveness as determined through a formal benefit-cost analysis. In the case of “self-funded” projects, municipal discretion must be recognized. Further, it must be recognized that the county and municipalities have limited authority over privately owned critical facility owners with regard to mitigation at any level of protection.

### 6.5.2 Update of County Mitigation Strategy

The update of the county-level mitigation strategies included a review of progress on the actions/initiatives identified in the 2010 HMP, using a process similar to that used to review municipal mitigation strategy progress. The county, through their various department representatives, was provided with a Mitigation Action Plan Review Worksheet identifying all of the county-level actions/initiatives from the 2010 plan. The county reviewed each action and provided progress. For each action, relevant county representatives were asked to indicate the status of each action (“No Progress/Unknown”, “In Progress/Not Yet Complete”, “Ongoing”, “Completed”, or “Discontinued”), and provide review comments on each.

Projects/initiatives identified as “Complete”, and those actions identified as “Discontinued”, have been removed from the updated strategies. Those county actions that were identified as “No Progress/Unknown”, “In Progress/Not Yet Complete” have been carried forward in the updated mitigation strategy. Actions considered ongoing capabilities were marked as ‘Discontinued’ and included in the plan as ongoing capabilities. Throughout the course of the plan update process, additional regional and county-level mitigation actions have been identified. These were identified through:

- Review of the results and findings of the updated risk assessment;
- Review of available regional and county plans, reports, and studies;
- Direct input from county departments and other county and regional agencies, including:
  - Lewis County Soil and Water Conservation District (LC SWCD)
  - Lewis County Fire and Emergency Management
  - Lewis County Department of Planning
  - Lewis Economic Development/Lewis County Industrial Development Agency
  - Lewis County Highway Department
- Input received through the public and stakeholder outreach process.

As discussed within the hazard profiles in Section 5.4 (Risk Assessment), the long-term effects of climate change are anticipated to exacerbate the impacts of weather-related hazards, including drought, flood, severe storm, and severe winter storm. The county has included mitigation actions and initiatives, including continuing and long-term planning and emergency management support, to address these long-term implications and potential impacts.

Various county departments and agencies have included mitigation actions to address vulnerable critical facilities. These actions have been proposed in consideration of protection against 500-year events, or worst-case scenarios.

It is recognized, however, that in the case of projects being funded through federal mitigation programs, the level of protection might be influenced by cost-effectiveness as determined through a formal benefit-cost analysis. In the case of “self-funded” projects, local government authority may affect the ability to implement. Further, it



must be recognized that the county has limited authority over privately owned critical facility owners with regard to mitigation at any level of protection.

### 6.5.3 Mitigation Strategy Evaluation and Prioritization

Section 201.c.3.iii of 44 CFR requires an action plan describing how the actions identified will be prioritized.

The county and participating municipalities utilized a modified STAPLEE (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) mitigation action evaluation methodology based on a set of evaluation criteria suited to the purposes of hazard mitigation strategy evaluation. This method provides a systematic approach that considers the opportunities and constraints of implementing a particular mitigation action.

The Steering Committee applied an action evaluation and prioritization methodology which includes an expanded set of 14 criteria to include the consideration of cost-effectiveness, availability of funding, anticipated timeline, and if the action addresses multiple hazards.

The 14 evaluation/prioritization criteria used in the 2018-2020 update process are:

1. Life Safety – How effective will the action be at protecting lives and preventing injuries?
2. Property Protection – How significant will the action be at eliminating or reducing damage to structures and infrastructure?
3. Cost-Effectiveness – Are the costs to implement the project or initiative commensurate with the benefits achieved?
4. Technical – Is the mitigation action technically feasible? Is it a long-term solution? Eliminate actions that, from a technical standpoint, will not meet the goals.
5. Political – Is there overall public support for the mitigation action? Is there the political will to support it?
6. Legal – Does the municipality have the authority to implement the action?
7. Fiscal – Can the project be funded under existing program budgets (i.e., is this initiative currently budgeted for)? Or would it require a new budget authorization or funding from another source such as grants?
8. Environmental – What are the potential environmental impacts of the action? Will it comply with environmental regulations?
9. Social – Will the proposed action adversely affect one segment of the population? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower income people?
10. Administrative – Does the jurisdiction have the personnel and administrative capabilities to implement the action and maintain it or will outside help be necessary?
11. Multi-hazard – Does the action reduce the risk to multiple hazards?
12. Timeline - Can the action be completed in less than 5 years (within our planning horizon)?
13. Local Champion – Is there a strong advocate for the action or project among the jurisdiction’s staff, governing body, or committees that will support the action’s implementation?
14. Other Local Objectives – Does the action advance other local objectives, such as capital improvements, economic development, environmental quality, or open space preservation? Does it support the policies of other plans and programs?





Participating jurisdictions were asked to use these criteria to assist them in evaluating and prioritizing mitigation actions identified in the 2020 update. Specifically, for each mitigation action, the jurisdictions were asked to assign a numeric rank (-1, 0, or 1) for each of the 14 evaluation criteria, defined as follows:

- 1 = Highly effective or feasible
- 0 = Neutral
- -1 = Ineffective or not feasible

Further, jurisdictions were asked to provide a brief summary of the rationale behind the numeric rankings assigned, as applicable. The numerical results were totaled and then used by each jurisdiction to help prioritize the action or strategy as “Low”, “Medium”, or “High.” Actions that had a numerical value between 1 and 5 were categorized as “low”; actions with numerical values between 6 and 9 were categorized as “medium”; and actions with numerical values between 10 and 14 were categorized as “high”. While this provided a consistent, systematic methodology to support the evaluation and prioritization of mitigation actions, jurisdictions might have additional considerations that could influence their overall prioritization of mitigation actions.

It is noted that jurisdictions might be carrying forward mitigation actions and initiatives from prior mitigation strategies that were prioritized using a different, but not inherently contrary, approach. Mitigation actions in the prior (2010) Lewis County HMP were “qualitatively evaluated against the mitigation goals and objectives and other evaluation criteria. They were then prioritized into three categories: high, medium, and low”. At their discretion, jurisdictions carrying forward prior initiatives were encouraged to re-evaluate their priority, particularly if conditions that would affect the prioritization criteria had changed.

For the plan update, there has been an effort to develop more clearly defined and action-oriented mitigation strategies. These local strategies include projects and initiatives that are seen by the community as the most effective approaches to advance their local mitigation goals and objectives within their capabilities. In addition, each municipality was asked to develop problem statements. With active support from NYS DHSES planning staff, municipalities were able to develop action-oriented and achievable mitigation strategies.

As such, many of the initiatives in the updated mitigation strategy were ranked as “High” or “Medium” priority, as reflective of the community’s clear intent to implement, available resources notwithstanding. In general, initiatives that would have had “low” priority rankings were appropriately screened out during the local action evaluation process.

#### 6.5.4 Benefit/Cost Review

Section 201.6.c.3iii of 44CFR requires the prioritization of the action plan to emphasize the extent to which benefits are maximized according to a cost/benefit review of the proposed projects and their associated costs. Stated otherwise, cost-effectiveness is one of the criteria that must be applied during the evaluation and prioritization of all actions comprising the overall mitigation strategy.

The benefit/cost review applied in for the evaluation and prioritization of projects and initiatives in this plan update process was qualitative; that is, it does not include the level of detail required by FEMA for project grant eligibility under the HMA grant programs. For all actions identified in the local strategies, jurisdictions have identified both the costs and benefits associated with project, action, or initiative.

**Costs** are the total cost for the action or project and might include administrative costs, construction costs (including engineering, design and permitting), and maintenance costs.



**Benefits** are the savings from losses avoided attributed to the implementation of the project and might include life safety, structure and infrastructure damages, loss of service or function, and economic and environmental damage and losses.

When available, jurisdictions were asked to identify the actual or estimated dollar value for project costs and associated benefits. Having defined costs and benefits allows a direct comparison of benefits versus costs, and a quantitative evaluation of project cost-effectiveness. Often, however, numerical costs and/or benefits have not been identified or might be impossible to quantitatively assess.

For the purposes of this planning process, jurisdictions were tasked with evaluating project cost-effectiveness with both costs and benefits assigned to “High”, “Medium” and “Low” ratings. Where quantitative estimates of costs and benefits were available, ratings/ranges were defined as:

Low = < \$10,000      Medium = \$10,000 to \$100,000      High = > \$100,000

Where quantitative estimates of costs and/or benefits were not available, qualitative ratings using the following definitions were used:

**Table 6-4. Qualitative Cost and Benefit Ratings**

Costs	
High	Existing funding levels are not adequate to cover the costs of the proposed project, and implementation would require an increase in revenue through an alternative source (e.g., bonds, grants, and fee increases).
Medium	The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
Low	The project could be funded under the existing budget. The project is part of or can be part of an existing, ongoing program.
Benefits	
High	Project will have an immediate impact on the reduction of risk exposure to life and property.
Medium	Project will have a long-term impact on the reduction of risk exposure to life and property or will provide an immediate reduction in the risk exposure to property.
Low	Long-term benefits of the project are difficult to quantify in the short-term.

Using this approach, projects with positive benefit versus cost ratios (such as high over high, high over medium, medium over low, etc.) are considered cost-effective.

For some of the Lewis County initiatives identified, the planning partnership may seek financial assistance under FEMA’s HMA programs. These programs require detailed benefit/cost analysis as part of the application process. These analyses will be performed when funding applications are prepared, using the FEMA BCA model process. The planning partnership is committed to implementing mitigation strategies with benefits that exceed costs. For projects not seeking financial assistance from grant programs that require this sort of analysis, the planning partnership reserves the right to define “benefits” according to parameters that meet its needs and the goals and objectives of this plan.



## SECTION 7. PLAN MAINTENANCE PROCEDURES

This section describes the approach that Lewis County and all participating jurisdictions have established to monitor, evaluate, and update the mitigation plan; implement the mitigation plan through existing programs; and solicit continued public involvement for plan maintenance.

### 7.1 MONITORING, EVALUATING, AND UPDATING THE PLAN

The procedures for monitoring, evaluating, and updating the plan are provided below.

The HMP Coordinator is assigned to manage the maintenance and update of the plan during its performance period. The HMP Coordinator will chair the Planning Partnership and be the prime point of contact for questions regarding the plan and its implementation as well as to coordinate incorporation of additional information into the plan.

The Planning Partnership, which is composed of a representative from each participating jurisdiction, shall fulfill the monitoring, evaluating, and updating responsibilities identified in this section. Each jurisdiction is expected to maintain a representative on the Planning Partnership throughout the plan performance period (five years from the date of plan adoption). As of the date of this plan, primary and secondary mitigation planning representatives (points-of-contact) are identified in each jurisdictional annex in Section 9.

Regarding the composition of the Planning Partnership, it is recognized that individual commitments change over time, and it shall be the responsibility of each jurisdiction and its representatives to inform the HMP Coordinator of any changes in representation. The HMP Coordinator will strive to keep the Planning Partnership makeup as a uniform representation of planning partners and stakeholders within the county.

Currently, the Lewis County HMP Coordinator is designated as:

Robert A. MacKenzie, III  
Director of Fire and Emergency Management  
Lewis County Emergency Management  
(315) 376-5303  
5252 Outer Stowe St., Lowville, NY 13367  
robertmackenzie@lewiscounty.ny.gov

#### 7.1.1 Monitoring

The Planning Partnership shall be responsible for monitoring progress and evaluating the effectiveness of the plan and documenting annual progress. Each year, beginning one year after plan development, County and local Planning Partnership representatives will collect and process information from the departments, agencies, and organizations involved in implementing mitigation projects or activities identified in their jurisdictional annexes (Volume II, Section 9) of this plan by contacting persons responsible for initiating and/or overseeing the mitigation projects.

In the first year of the performance period, this will be accomplished by utilizing an online performance progress reporting system, the BATool<sup>SM</sup> which will enable municipal and county representatives of directly access mitigation initiatives to easily update the status of each project, document successes or obstacles to implementation, add or delete projects to maintain mitigation project implementation. It is anticipated that all participating partners will be prompted by the tool to update progress on a quarterly basis, providing an incentive for participants to refresh their mitigation strategies and to continue implementation of projects. It is expected



that this reporting system will support the submittal of an increased number of project grant fund applications due to the functionality of the system which facilitates the sorting and prioritization of projects.

In addition to progress on the implementation of mitigation actions, including efforts to obtain outside funding; and obstacles or impediments to implementation of actions, the information that Planning Committee representatives shall be expected to document, as needed and appropriate include:

- Any grant applications filed on behalf of any of the participating jurisdictions
- Hazard events and losses occurring in their jurisdiction
- Progress on the implementation of mitigation actions, including efforts to obtain outside funding
- Obstacles or impediments to implementation of actions
- Additional mitigation actions believed to be appropriate and feasible
- Public and stakeholder input

Plan monitoring for years 2 through 4 of the plan performance periods will be similarly addressed via the BATool<sup>SM</sup> or manually.

### **7.1.2 Evaluating**

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The evaluation of the mitigation plan is an assessment of whether the planning process and actions have been effective, if the HMP goals are being achieved, and whether changes are needed. The HMP will be evaluated on an annual basis to determine the effectiveness of the programs and to reflect changes that may affect mitigation priorities or available funding.

The status of the HMP will be discussed and documented at an annual plan review meeting of the Planning Partnership to be held approximately one year from the date of local adoption of this update and successively thereafter. At least one month before the annual plan review meeting, the Lewis County HMP Coordinator will advise Planning Partnership members of the meeting date, agenda, and expectations of the members.

The Lewis County HMP Coordinator will be responsible for calling and coordinating the annual plan review meeting and assessing progress toward meeting plan goals and objectives. These evaluations will assess whether:

- Goals and objectives address current and expected conditions.
- The nature or magnitude of the risks has changed.
- Current resources are appropriate for implementing the HMP and if different or additional resources are now available.
- Actions were cost effective.
- Schedules and budgets are feasible.
- Implementation problems, such as technical, political, legal or coordination issues with other agencies are presents.
- Outcomes have occurred as expected.
- Changes in county, town, or village resources impacted plan implementation (e.g., funding, personnel, and equipment).
- New agencies/departments/staff should be included, including other local governments as defined under 44 CFR 201.6.



Specifically, the Planning Partnership will review the mitigation goals, objectives, and activities using performance-based indicators, including:

- New agencies/departments
- Project completion
- Under/over spending
- Achievement of the goals and objectives
- Resource allocation
- Timeframes
- Budgets
- Lead/support agency commitment
- Resources
- Feasibility

Finally, the Planning Partnership will evaluate how other programs and policies have conflicted or augmented planned or implemented measures, and shall identify policies, programs, practices, and procedures that could be modified to accommodate hazard mitigation actions (see the “Implementation of Mitigation Plan through Existing Programs” subsection later in this Section). Other programs and policies can include those that address:

- Economic Development
- Environmental Preservation
- Historic Preservation
- Redevelopment
- Health and/or Safety
- Recreation
- Land Use/Zoning
- Public Education and Outreach
- Transportation

The Planning Partnership may refer to the evaluation forms and Worksheets #2 and #4 in the FEMA 386-4 guidance document to assist in the evaluation process. Further, the Planning Partnership may refer to any process and plan review deliverables developed by the County or participating jurisdictions as a part of the plan review processes established for prior or existing local plans within Lewis County.

The HMP Coordinator shall be responsible for preparing an Annual HMP Progress Report for each year of the performance period based on the information provided by the local Planning Partnership members, information presented at the annual Planning Partnership meeting, and other information as appropriate and relevant. These annual reports will provide data for the 5-year update of this HMP and will assist in pinpointing any implementation challenges. By monitoring the implementation of the HMP on an annual basis, the Planning Partnership will be able to assess which projects are completed, which projects are no longer feasible, and which projects may require additional funding.

This report shall apply to all planning partners, and as such, shall be developed according to an agreed format and with adequate allowance for input and comment of each planning partner prior to completion and submission to the State Hazard Mitigation Officer. Each planning partner will be responsible for providing this report to its governing body for their review. During the annual Planning Partnership meeting, the planning partners shall establish a schedule for the draft development, review, comment, amendment, and submission of the Annual HMP Progress Report to NYS DHSES by September of each year. The Annual HMP Progress Report shall be





posted on the Lewis County Emergency Management website to keep the public apprised of the plan's implementation (<https://www.lewiscounty.org/emergency-management>).

The HMP will also be evaluated and revised following any major disasters to determine if the recommended actions remain relevant and appropriate. The risk assessment will also be revisited to see if any changes are necessary based on the pattern of disaster damages or if data listed in the Section 5.4 (Hazard Profiles) of this plan has been collected to facilitate the risk assessment. This is an opportunity to increase the community's disaster resistance and build a better and stronger community.

### **7.1.3 Updating**

44 CFR 201.6.d.3 requires that local hazard mitigation plans be reviewed, revised as appropriate, and resubmitted for approval in order to remain eligible for benefits awarded under DMA 2000. It is the intent of the Lewis County HMP Planning Partnership to update this plan on a five-year cycle from the date of initial plan adoption.

To facilitate the update process, the Lewis County HMP Coordinator, with support of the Planning Partnership, shall use the second annual Planning Partnership meeting to develop and commence the implementation of a detailed plan update program. The Lewis County HMP Coordinator shall invite representatives from NYS DHSES to this meeting to provide guidance on plan update procedures. This program shall, at a minimum, establish who shall be responsible for managing and completing the plan update effort, what needs to be included in the updated plan, and a detailed timeline with milestones to ensure that the update is completed according to regulatory requirements.

At this meeting, the Planning Partnership shall determine what resources will be needed to complete the update. The Lewis County HMP Coordinator shall be responsible for assuring that needed resources are secured.

Following each five-year update of the mitigation plan, the updated plan will be distributed for public comment. After all comments are addressed, the HMP will be revised and distributed to all planning group members and the New York State Hazard Mitigation Officer.

## **7.2 IMPLEMENTATION OF MITIGATION PLAN THROUGH EXISTING PROGRAMS**

Effective mitigation is achieved when hazard awareness and risk management approaches and strategies become an integral part of public activities and decision-making. Within Lewis County, there are many existing plans and programs that support hazard risk management; thus, it is critical that this hazard mitigation plan integrate and coordinate with and complement those existing plans and programs.

The "Capability Assessment" section of Chapter 6 (Mitigation Strategy) provides a summary and description of the existing plans, programs, and regulatory mechanisms at all levels of government (federal, state, county, and local) that support hazard mitigation within the county. Within each jurisdictional annex in Section 9 (Jurisdictional Annexes), the county and each participating authority have identified how they have integrated hazard risk management into their existing planning, regulatory, and operational/administrative framework ("integration capabilities") and how they intend to promote this integration ("integration actions").

It is the intention of Planning Partnership representatives to incorporate mitigation planning as an integral component of daily government operations. Planning Partnership representatives will work with local government officials to integrate the newly adopted hazard mitigation goals and actions into the general operations of government and partner organizations. Further, the sample adoption resolution (Section 2 – Plan



Adoption) includes a resolution item stating the intent of the local governing body to incorporate mitigation planning as an integral component of government and partner operations. By doing so, the Planning Partnership anticipates the following:

- 1) Hazard mitigation planning will be formally recognized as an integral part of overall emergency management efforts.
- 2) The Hazard Mitigation Plan, Comprehensive Plans, Emergency Management Plans, and other relevant planning mechanisms will become mutually supportive documents that work in concert to meet the goals and needs of County residents.

During the annual plan evaluation process, the Planning Partnership representatives will identify additional policies, programs, practices, and procedures that could be modified to accommodate hazard mitigation actions and include these findings and recommendations in the Annual HMP Progress Report.

### **7.3 CONTINUED PUBLIC INVOLVEMENT**

Lewis County and participating jurisdictions are committed to the continued involvement of the public in the hazard mitigation process. This HMP update will continue to be posted online (<https://www.lewiscounty.org/emergency-management>). In addition, public outreach, and dissemination of the HMP will include:

- Links to the plan on municipal websites of each jurisdiction with capability.
- Continued utilization of existing social media outlets (Facebook, Twitter) to inform the public of hazard events. Educate the public via the jurisdictional websites on how these applications can be used in an emergency.
- Development of annual articles or workshops on flood hazards to educate the public and keep them aware of the dangers of flooding.

Planning Partnership representatives and the Lewis County HMP Coordinator will be responsible for receiving, tracking, and filing public comments regarding this HMP. The public will have an opportunity to comment on the plan via the hazard mitigation website at any time. The HMP Coordinator will maintain this website, posting new information and maintaining an active link to collect public comments.

The public can also provide input at the annual review meeting for the HMP and during the next 5-year plan update. The Lewis County HMP Coordinator is responsible for coordinating the plan evaluation portion of the meeting, soliciting feedback, collecting, and reviewing the comments, and ensuring their incorporation in the 5-year plan update as appropriate. Additional meetings may also be held as deemed necessary by the Planning Partnership. The purpose of these meeting would be to provide the public an opportunity to express concerns, opinions, and ideas about the mitigation plan.

The Planning Partnership representatives shall be responsible to ensure that:

- Public comment and input on the plan and hazard mitigation in general are recorded and addressed, as appropriate.
- Copies of the latest approved plan (or draft in the case that the 5-year update effort is underway) are available for review, along with instructions to facilitate public input and comment on the HMP.
- Appropriate links to the Lewis County Emergency Management website are included on municipal websites.



- Public notices are made as appropriate to inform the public of the availability of the plan, particularly during HMP update cycles.

The Lewis County HMP Coordinator shall be responsible to ensure that:

- Public and stakeholder comment and input on the plan and hazard mitigation in general are recorded and addressed, as appropriate.
- The Lewis County HMP is maintained and updated on the Lewis County Emergency Management website as appropriate.
- Copies of the latest approved plan are available for review at appropriate county facilities along with instructions to facilitate public input and comment on the plan.

Public notices, including media releases, are made as appropriate to inform the public of the availability of the plan, particularly during plan update cycles.



%	Percent
AASHTO	American Association of State Highway Transportation Officials
ACOE	Army Corps of Engineers
ACS	American Community Survey
ADA	Americans with Disabilities Act
AED	Automated external defibrillator
AICP	American Institute of Certified Planners
ANSS	Advanced National Seismic System
APA	Approval Pending Adoption
ARC	American Red Cross
ASCE	American Society of Civil Engineers
ATV	All Terrain Vehicle
BCA	Benefit Cost Analysis
BCEGS	Building Code Effectiveness Grading Schedule
BFE	Base Flood Elevation
BOCA	Building Officials Code Administration
BOD	Biological Oxygen Demand
BRIC	Building Resilient Infrastructure and Communities
BRS	Biennial Reporting System
BUI	Buildup Index
CAA	Clean Air Act
CAV	Community Assistance Visit
CDBG	Community Development Block Grant
CDBG-DR	Community Development Block Grant Disaster Recovery
CDC	Centers for Disease Control and Prevention
CDMS	Comprehensive Data Management System
CEMP	Comprehensive Emergency Management Program
CEO	Chief Executive Officer
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CHIPS	Consolidated Local Street and Highway Improvement Program
CIP	Capital Improvement Plan
COOP/COG	Continuity of Operations/Continuity of Government
CPC	Climate Prediction Center
CRREL	Cold Regions Research and Engineering Laboratory
CRF	Climate Resilient Farming



CRRA	Community Risk and Resiliency Act
CRS	Community Rating System
CSC	Climate Smart Communities (NYSDEC)
CWA	Clean Water Act
CWSRF	Clean Water State Revolving Fund
DCEA	Division of Code Enforcement and Administration
DEM	Department of Emergency Management
DFIRM	Digital Flood Insurance Rate Map
DHS	Department of Homeland Security
DI	Damage Indicators
DIN	Dam Incident Notification
DMA 2000	Disaster Mitigation Act of 2000
DNR	Department of Natural Resources
DOD	Degree of Damage
DOT	Department of Transportation
DOS	Department of State
DPW	Department of Public Works
DR	Major Disaster Declaration (FEMA)
DRRA	Disaster Recovery Reform Act
EAP	Emergency Action Plan
EAP	Education and Awareness Programs
EAS	Emergency Alert System
EBS	Emergency Broadcast System
ECL	Environmental Conservation Law
EF	Enhanced Fujita Scale
EFC	New York State Environmental Facilities Corporation
EM	Emergency Declaration (FEMA)
EM	Emergency Management
EMS	Emergency Medical Services
EMT	Emergency Medical Technician
EOC	Emergency Operation Center
EOP	Emergency Operation Plan
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right to Know
EPG	Engineering Planning Grant
ES	Emergency Services





ESRI	Environmental Systems Research Institute
EST	Eastern Standard Time
EWP	Emergency Watershed Protection Program
EWP-FPE	Emergency Watershed Protection Program Floodplain Easement
FD	Fire Department
FDPO	Flood Damage Prevention Ordinance
FDRA	Fire Danger Rating Area
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FHWA	Federal Highway Administration
FHWA-ER	Federal Highway Administration-Emergency Relief
FIRM	Flood Insurance Rate Map
FIA	Flood Insurance Administration
FIS	Flood Insurance Study
FM	Fuel Moisture
FMA	Flood Mitigation Assistance
FPA	Floodplain Administrator
FPE	Floodplain Easement
FPI	Fire Potential Index
FTA	Federal Transit Administration
FTA-ER	Federal Transit Administration-Emergency Relief
FY	Fiscal Year
GCM	Global Climate Model
GHG	Greenhouse Gas
GIS	Geographic Information System
GML	General Municipal Law
GSN	Global Seismographic Network
HAZMAT	Hazardous Materials
HAZUS	Hazards U.S.
HAZUS-MH	Hazards U.S. Multi-Hazard
HMA	Hazard Mitigation Assistance
HMGP	Hazard Mitigation Grant Program
HMP	Hazard Mitigation Plan
HSGP	Homeland Security Grant Program
HUC	Hydrologic Unit
HUD	U.S. Department of Housing and Urban Development



HVAC	Heating, Ventilation, and Air Conditioning
IA	Individual Assistance
ICS	National Incident Command System
ID	Identification
IDA	Industrial Development Agency
IDF	Intensity Duration Frequency
ISO	Insurance Service Organization
IT	Information Technology
KBDI	Keetch-Byram Drought Index
LCSN	Lamon-Doherty Cooperative Seismographic Network
LCSWCD	Lewis County Soil and Water Conservation District
LPR	Local Plans and Regulations
MHI	Median Household Income
Mi	Mile
MMI	Modified Mercalli Intensity Scale
MMS	Moment Magnitude Scale
Mph	Miles per Hour
MRP	Mean Return Period
MTA	Metropolitan Transportation Authority
N/A	Not Applicable
NA	Not Available
NASA	National Aeronautics and Space Administration
NAC-AAA	National Avalanche Center – American Avalanche Association
NAVD	North American Vertical Datum
NCDC	National Climate Data Center
NCEI	National Centers for Environmental Information
NDMC	National Drought Mitigation Center
NDSP	National Dam Safety Program
NEHRP	National Earthquake Hazard Reductions Program
NFDRS	National Fire Danger Rating System
NFGSC	National Fuel Gas Supply Corporation
NFIA	National Flood Insurance Act
NFIP	National Flood Insurance Program
NHC	National Hurricane Center
NID	National Inventory of Dams
NIMS	National Incident Management System



NOAA	National Oceanic and Atmospheric Administration
NPDP	National Performance of Dams Program
NPL	National Priorities List
NPMS	National Pipeline Mapping System
NR	Natural Resource Protection
NRCC	Northeast Regional Climate Center
NRCS	Natural Resources Conservation Service
NSIDC	National Snow and Ice Data Center
NSP	Natural Systems Protection
NSSL	National Severe Storms Library
NVRC	Northern Virginia Regional Commission
NWS	National Weather Service
NY	New York
NYCEM	New York City Area Consortium for Earthquake Loss Mitigation
NYCRR	New York Codes, Rule, and Regulations
NYS	New York State
NYS DHSES	New York State Division of Homeland Security and Emergency Services
NYS HMP	New York State Hazard Mitigation Plan
NYS DEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOS	New York State Department of State
NYS DOT	New York State Department of Transportation
NYS DPC	New York State Disaster Preparedness Commission
NYSEG	New York State Electric and Gas
NYSERDA	New York State Energy Research and Development Authority
NYSHMP	New York State Hazard Mitigation Plan
NYSFSMA	New York State Floodplain and Stormwater Managers
NYSOEM	New York State Office of Emergency Management
OEM	Office of Emergency Management
OFF&C	Office of Fire Prevention and Control
OPSG	Operation Stonegarden
PA	Public Assistance
PDI	Palmer Drought Index
PDM	Pre-Disaster Mitigation Program
PGA	Peak Ground Acceleration
PHMSA	Pipeline and Hazardous Materials Safety Administration



PI	Public Information
POC	Point of Contact
PP	Property Protection
PPE	Personal Protective Equipment
PR	Preventative Measures
PTO	Power Takeoff
RCRA	Resource Conservation and Recovery Act
RCRIS	Resource Conservation and Recovery Information System
RCV	Replacement Cost Value
REDC	Regional Economic Development Councils
RL	Repetitive Loss
RSI	Regional Snowfall Index
SARA	Superfund Amendments and Reauthorization Act
SBA	Small Business Administration
SFRMG	State Flood Risk Management Guidance
SHSP	State Homeland Security Program
SDI	State Drought Index (NYSDEC)
SERC	State Emergency Response Commission
SF	Square Feet
SFHA	Special Flood Hazard Area
SHSP	State Homeland Security Program
SHMO	State Hazard Mitigation Officer
SIP	Structure and Infrastructure Project
SP	Structural Flood Control Projects
SPC	Storm Prediction Center
SPDES	State Pollutant Discharge Elimination System
SUNY	State University of New York
Sq. Mi.	Square mile
SRL	Severe Repetitive Loss
SSBG	Social Services Block Grant Program
STAPLEE	Social, Technical, Administrative, Political, Legal, Economic, Environmental
SWCD	Soil and Water Conservation District
SWMP	Storm Water Management Plan
TBD	To Be Determined
TMDL	Total Maximum Daily Load
TRI	Toxic Release Inventory



TSCA	Toxic Substance Control Act
UASI	Urban Areas Security Initiative
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USEDA	U.S. Economic Development Administration
USEPA	U.S. Environmental Protection Agency
USFA	U.S. Fire Administration
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geologic Survey
VA	Vulnerability Assessment
WAVES	Western Area Volunteer Emergency Service
WCT	Wind Chill Temperature
WFAS	Wildland Fire Assessment System
WQIP	Water Quality Improvement Project
WUI	Wildland Urban Interface
ZBA	Zoning Board of Appeals





## GLOSSARY

This resource defines terms that are used in or support the hazard mitigation plan. These definitions were based on terms defined in documents included in the references section, with modifications as appropriate to address the Lewis County specific definitions and requirements.

**1% flood (100-year flood)** – A flood that has a 1-percent chance of being equaled or exceeded in any given year. This flood event is also referred to as the base flood. The term "100-year flood" can be misleading; it is not the flood that will occur once every 100 years. Rather, it is the flood elevation that has a 1- percent chance of being equaled or exceeded each year. Therefore, the 100-year flood could occur more than once in a relatively short period of time. The 100-year flood, which is the standard used by most federal and state agencies, is used by the National Flood Insurance Program (NFIP) as the standard for floodplain management to determine the need for flood insurance.

**0.2 % flood (500-year flood)** – A flood that has a 0.2-percent chance of being equaled or exceeded in any one year.

**Aggregate Data** – Data gathered together across an area or region (for example, census tract or census block data).

**Annualized Loss** – The estimated long-term value of losses from potential future hazard occurrences of a particular type in any given single year in a specified geographic area. In other words, the average annual loss that is likely to be incurred each year based on frequency of occurrence and loss estimates. Note that the loss in any given year can be substantially higher or lower than the estimated annualized loss.

**Annualized Loss Ratio** – Represents the annualized loss estimate as a fraction of the replacement value of the local building inventory. This ratio is calculated using the following formula: Annualized Loss Ratio = Annualized Losses / Exposure at Risk. The annualized loss ratio gauges the relationship between average annualized loss and building value at risk. This ratio can be used as a measure of relative risk between hazards as well as across different geographic units

**Asset** – Any man-made or natural feature that has value, including but not limited to people, buildings, infrastructure (such as bridges, roads, and sewer and water systems), and lifelines (such as electricity and communication resources or environmental, cultural, or recreational features like parks, dunes, wetlands, or landmarks).

**At-Risk** – Exposure values that include the entire building inventory value in census blocks that lie within or border the inundation areas or any area potentially exposed to a hazard based on location.

**Base Flood** – Flood that has a 1-percent probability of being equaled or exceeded in any given year. It is also known as the 100-year flood.

**Base Flood Elevation (BFE)** – Elevation of the base flood in relation to a specified datum, such as the National Geodetic Vertical Datum of 1929. The BFE is used as the standard for the National Flood Insurance Program.

**Benefit** – Net project outcomes, usually defined in monetary terms. Benefits may include direct and indirect effects. For the purposes of conducting a benefit-cost analysis of proposed mitigation measures, benefits are limited to specific, measurable, risk reduction factors, including a reduction in expected property losses (building, content, and function) and protection of human life.

**Benefit-cost analysis (BCA)** – Benefit-cost analysis is a systematic, quantitative method of comparing the projected benefits to projected costs of a project or policy. It is used as a measure of cost effectiveness.



**Blizzard** – Characterized by low temperatures, wind gusts of 35 mph or more and falling and/or blowing snow that reduces visibility to 0.25 miles or less for an extended period of time (three or more hours).

**Building** – A structure that is walled and roofed, principally aboveground and permanently fixed to a site. The term includes a manufactured home on a permanent foundation on which the wheels and axles carry no weight.

**Building Codes** – Regulations that set forth standards and requirements for construction, maintenance, operation, occupancy, use, or appearance of buildings, premises, and dwelling units. Building codes can include standards for structures to withstand natural disasters.

**Capability Assessment** – An assessment that provides a description and analysis of a community or state’s current capacity to address the threats associated with hazards. The capability assessment attempts to identify and evaluate existing policies, regulations, programs, and practices that positively or negatively affect the community or state’s vulnerability to hazards or specific threats.

**Climate** – The meteorological elements, including temperature, precipitation, and wind, which characterizes the general conditions of the atmosphere over a period of time (typically 30-years) for a particular region.

**Community Rating System (CRS)** – CRS is a program that provides incentives for National Flood Insurance Program communities to complete activities that reduce flood hazard risk. When the community completes specific activities, the insurance premiums of these policyholders in communities are reduced.

**Comprehensive Plan** – A document, also known as a “general plan”, covering the entire geographic area of a community and expressing community goals and objectives. The plan lays out the vision, policies, and strategies for the future of the community, including all of the physical elements that will determine the community’s future development. This plan can discuss the community’s desired physical development, desired rate and quantity of growth, community character, transportation services, location of growth, and siting of public facilities and transportation. In most states, the comprehensive plan has no authority in and of itself, but serves as a guide for community decision-making.

**Critical Facility** – Facilities that are critical to the health and welfare of the population and that are especially important following a hazard. Critical facilities include essential facilities, transportation systems, lifeline utility systems, high-potential loss facilities, and hazardous material facilities. As defined for the Lewis County risk assessment, this category includes police stations, fire and/or EMS stations, major medical care facilities, and emergency communications.

**Crop Moisture Index (CMI)** – The CMI was developed by Wayne Palmer in 1968, can be used to measure the status of dryness or wetness affecting warm season crops and field activities. It gives the short-term or current status of purely agricultural drought or moisture surplus and can change rapidly from week to week.

**Debris** – The scattered remains of assets broken or destroyed during the occurrence of a hazard. Debris caused by a wind or water hazard event can cause additional damage to other assets.

**Digital Elevation Model (DEM)** – U.S. Geological Survey (USGS) Digital Elevation Model (DEM) data files that are digital representations of cartographic information in a raster form. DEMs include a sampled array of elevations for a number of ground positions at regularly spaced intervals. These digital cartographic/geographic data files are produced by USGS as part of the National Mapping Program.

**Digital Flood Insurance Rate Maps (DFIRMs)** – These maps are used to calculate the cost insurance premiums, establish flood risk zones and base flood elevations to mitigate against potential future flood damages to properties.

**Displacement Time** – After a hazard occurs, the average time (in days) that a building’s occupants must operate from a temporary location while repairs are made to the original building due to damages resulting from the hazard.



**Disaster Mitigation Act of 2000 (DMA 2000)** – Law that requires and rewards local and state pre-disaster planning, promotes sustainability as a strategy for disaster resistance, and is intended to integrate state and local planning with the aim of strengthening state-wide mitigation planning.

**Drought** - A deficiency of moisture that results in adverse impacts on people, animals, or vegetation over a sizeable area.

**Drought Impact Reporter (DIR)** – The DIR is an interactive tool developed by the NDMC to collect, quantify, and map reported drought impacts for the U.S.

**Duration** – The length of time a hazard occurs.

**Earthquake** – A sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of earth's tectonic plates.

**Essential Facility** – A facility that is important to ensure a full recovery of a community or state following the occurrence of a hazard. These facilities can include: government facilities, major employers, banks, schools, and certain commercial establishments (such as grocery stores, hardware stores, and gas stations). For the Lewis County risk assessment, this category was defined to include schools, colleges, shelters, adult living and adult care facilities, medical facilities and health clinics, hospitals.

**Exposure** – The number and dollar value of assets that are considered to be at risk during the occurrence of a specific hazard.

**Extent** – The size of an area affected by a hazard or the occurrence of a hazard.

**Extra Tropical Cyclone** – A group of cyclones defined as synoptic scale, low pressure, weather systems that occur in the middle latitudes of the Earth. These storms have neither tropical nor polar characteristics and are connected with fronts and horizontal gradients in temperature and dew point otherwise known as “baroclinic zones”. These cyclones produce impacts ranging from cloudiness and mild showers to heavy gales and thunderstorms.

**Federal Emergency Management Agency (FEMA)** – Independent agency (now part of the Department of Homeland Security) created in 1978 to provide a single point of accountability for all federal activities related to disaster mitigation and emergency preparedness, response, and recovery.

**Flash Flood** – A flood occurring with little or no warning where water levels rise at an extremely fast rate.

**Flood** – A general and temporary condition of partial or complete inundation of normally dry land areas resulting from (1) the overflow of inland or tidal waters, (2) the unusual and rapid accumulation or runoff of surface waters from any source, or (3) mudflows or the sudden collapse of shoreline land.

**Flood Depth** – Height of the flood water surface above the ground surface.

**Flood Elevation** – Height of the water surface above an established datum (for example, the National Geodetic Vertical Datum of 1929, North American Vertical Datum of 1988, or mean sea level).

**Flood Hazard Area** – Area shown to be inundated by a flood of a given magnitude on a map.

**Flood Information Tool (FIT)** – Hazard U.S. Multi-Hazard (HAZUS-MH)- related tool designed to process and convert locally available flood information to data that can be used by the HAZUS-MH Flood Module. The FIT is a system of instructions, tutorials and geographic information system (GIS) analysis scripts. When provided with user-supplied inputs (such as ground elevations, flood elevations, and floodplain boundary information), the FIT calculates flood depth and elevation for river and coastal flood hazards.



**Flood Insurance Rate Map (FIRM)** – Map of a community, prepared by the FEMA that shows both the special flood hazard areas and the risk premium zones applicable to the community.

**Flood Insurance Study (FIS)** – A study that provides an examination, evaluation, and determination of flood hazards and, if appropriate, corresponding water surface elevations in a community or communities.

**Flood Mitigation Assistance (FMA) Program** – A program created as a part of the National Flood Insurance Report Act of 1994. FMA provides funding to assist communities and states in implementing actions that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other NFIP insurance structures, with a focus on repetitive loss properties.

**Floodplain** – Any land area, including a watercourse, susceptible to partial or complete inundation by water from any source.

**Flood Polygon** – A geographic information system vector file outlining the area exposed to the flood hazard. HAZUS-MH generates this polygon at the end of the flood computations in order to analyze the inventory at risk.

**Freezing Rain** – Rain that falls as a liquid but freezes into glaze upon contact with the ground.

**Frequency** – A measure of how often events of a particular magnitude are expected to occur. Frequency describes how often a hazard of a specific magnitude, duration, and/or extent typically occurs, on average. Statistically, a hazard with a 100-year recurrence interval is expected to occur once every 100 years on average, and would have a 1-percent chance of happening in any given year. The reliability of this information varies depending on the kind of hazard being considered.

**Fujita Scale of Tornado Intensity** – Rates tornadoes with numeric values from F0 to F5 based on tornado wind speed and damage sustained. An F0 (wind speed less than 73 mph) indicates minimal damage such as broken tree limbs or signs, while an F5 (wind speeds of 261 to 318 mph) indicated severe damage sustained.

**Geology** – The scientific study of the earth, including its composition, structure, physical properties, and history.

**Goals** – General guidelines that explain what you want to achieve. They are usually broad policy-type statements, long term in nature, and represent global visions.

**Geographic Information Systems (GIS)** – A computer software application that relates data regarding physical and other features on the earth to a database to be used for mapping and analysis.

**GIS Shape Files** – A type of GIS vector file developed by ESRI for their ArcView software. This type of file contains a table and a graphic. The records in the table are linked to corresponding objects in the graphic.

**Hailstorm** – Storm associated with spherical balls of ice. Hail is a product of thunderstorms or intense showers. It is generally white and translucent, consisting of liquid or snow particles encased with layers of ice. Hail is formed within the higher reaches of a well-developed thunderstorm. When hailstones become too heavy to be caught in an updraft back into the clouds of the thunderstorm (hailstones can be caught in numerous updrafts adding a coating of ice to the original frozen droplet of rain each time), they fall as hail and a hailstorm ensues.

**Hazard** – A source of potential danger or an adverse condition that can cause harm to people or cause property damage. For this risk assessment, priority hazards were identified and selected for the pilot project effort. A natural hazard is a hazard that occurs naturally (such as flood, wind, and earthquake). A man-made hazard is one that is caused by humans (for example, a terrorist act or a hazardous material spill). Hazards are of concern if they have the potential to harm people or property.



**Hazards of Interest** – A comprehensive listing of hazards that may affect an area.

**Hazards of Concern** – Those hazards that have been analytically determined to pose significant risk in an area, and thus the focus of the particular mitigation plan for that area (a subset of the Hazards of Interest).

**Hazard Identification** – The process of identifying hazards that threaten an area.

**Hazardous Material Facilities** – Facilities housing industrial and hazardous materials, such as corrosives, explosives, flammable materials, radioactive materials, and toxins.

**Hazard Mitigation** – Sustained actions taken to reduce or eliminate the long-term risk and effects that can result from the occurrence of a specific hazard. For example, building a retaining wall can protect an area from flooding.

**Hazard Mitigation Grant Program (HMGP)** – Authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, HMGP is administered by FEMA and provides grants to states, tribes, and local governments to implement hazard mitigation actions after a major disaster declaration. The purpose of the program is to reduce the loss of life and property due to disasters and to enable mitigation activities to be implemented as a community recovers from a disaster.

**Hazard Mitigation Plan** – A collaborative document in which hazards affecting the community are identified, vulnerability to hazards assessed, and consensus reached on how to minimize or eliminate the effects of these hazards.

**Hazard Profile** – A description of the physical characteristics of a hazard, including a determination of various descriptors including magnitude, duration, frequency, probability, and extent. In most cases, a community can most easily use these descriptors when they are recorded and displayed as maps.

**Hazards U.S. (HAZUS)** – A GIS-based nationally standardized earthquake loss estimation tool developed by FEMA. HAZUS was replaced by HAZUS-MH (see below) in 2003.

**Hazards U.S. – Multi-Hazard (HAZUS-MH)** – A GIS-based nationally standardized earthquake, flood, and wind loss estimation tool developed by FEMA. The purpose of this pilot project is to demonstrate and implement the use of HAZUS-MH to support risk assessments

**HAZUS-MH Risk Assessment Methodology** – This analysis uses the HAZUS-MH modules (earthquake, wind-hurricane and flood) to analyze potential damages and losses. For this pilot project risk assessment, the flood and hurricane hazards were evaluated using this methodology.

**HAZUS-MH-Driven Risk Assessment Methodology** – This analysis involves using inventory data in HAZUS-MH combined with knowledge such as (1) information about potentially exposed areas, (2) expected impacts, and (3) data regarding likelihood of occurrence for hazards. For this risk assessment, a HAZUS-Driven Risk Assessment Methodology could not be used to estimate losses associated with any hazards because of a lack of adequate data. However, the methodology was used, based on more limited data to estimate exposure for the dam failure, urban fire, fuel pipeline breach, and HazMat release hazards.

**Heavy Snow** – Snowfall accumulating to 4” or more in depth in 12 hours or less; or snowfall accumulating to 6” or more in depth in 24 hours or less.

**High Potential Loss Facilities** – Facilities that would have a high loss associated with them, such as nuclear power plants, dams, and military installations.

**Hurricane** – An intense tropical cyclone, formed in the atmosphere over warm ocean areas, in which wind speeds reach 74 miles-per-hour or more and blow in a large spiral around a relatively calm center or "eye." Hurricanes develop over the North Atlantic Ocean, northeast Pacific Ocean, or the South Pacific Ocean (east





of 160°E longitude). Hurricane circulation is counter-clockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere.

**Hydraulics** – That branch of science, or of engineering, which addresses fluids (especially, water) in motion, its action in rivers and canals, the works and machinery for conducting or raising it, its use as a prime mover, and other fluid-related areas.

**Hydrology** – The science of dealing with the waters of the earth (for example, a flood discharge estimate is developed through conduct of a hydrologic study).

**Infrastructure** – The public services of a community that have a direct impact on the quality of life. Infrastructure includes communication technology such as phone lines or Internet access, vital services such as public water supplies and sewer treatment facilities, transportation system (such as airports, heliports; highways, bridges, tunnels, roadbeds, overpasses, railways, bridges, rail yards, depots; and waterways, canals, locks, seaports, ferries, harbors, dry docks, piers and regional dams).

**Ice Jam** – An accumulation of ice in a river that acts as a natural dam and can flood low-lying areas upstream. They occur when warm temperatures and heavy rains cause rapid snow melt.

**Ice Storm** – Term used to describe occasions when damaging accumulations of ice are expected during freezing rain situations. Significant accumulations of ice pull down trees and utility lines resulting in loss of power and communication.

**Intensity** – A measure of the effects of a hazard occurring at a particular place.

**Inventory** – The assets identified in a study region. It includes assets that can be lost when a disaster occurs and community resources are at risk. Assets include people, buildings, transportation, and other valued community resources.

**Level 1 Analysis** – A HAZUS-MH analysis that yields a rough estimate or preliminary analysis based on the nationwide default database included in HAZUS-MH. A Level 1 analysis is a great way to begin the risk assessment process and prioritize high-risk communities without collecting or using local data.

**Level 2 Analysis** – A HAZUS-MH analysis that requires the input of additional or refined data and hazard maps that will produce more accurate risk and loss estimates. Assistance from local emergency management personnel, city planners, GIS professionals, and others may be necessary for this level of analysis.

**Level 3 Analysis** – A HAZUS-MH analysis that yields the most accurate estimate of loss and typically requires the involvement of technical experts such as structural and geotechnical engineers who can modify loss parameters based on the specific conditions of a community. This level analysis will allow users to supply their own techniques to study special conditions such as dam breaks and tsunamis. Engineering and other expertise is needed at this level.

**Lifelines** – Critical facilities that include utility systems (potable water, wastewater, oil, natural gas, electric power facilities and communication systems) and transportation systems (airways, bridges, roads, tunnels and waterways).

**Lightning** – A visible electrical discharge produced by a thunderstorm. The discharge may occur within or between clouds or between a rain cloud and the ground.

**Loss Estimation** – The process of assigning hazard-related damage and loss estimates to inventory, infrastructure, lifelines, and population data. HAZUS-MH can estimate the economic and social loss for specific hazard occurrences. Loss estimation is essential to decision making at all levels of government and provides a basis for developing mitigation plans and policies. It also supports planning for emergency preparedness, response, and recovery.



**Lowest Floor** – Under the NFIP, the lowest floor of the lowest enclosed area (including basement) of a structure. For the HAZUS-MH flood model, this information can be used to assist in assessing the damage to buildings.

**Magnitude** – A measure of the strength of a hazard occurrence. The magnitude (also referred to as severity) of a given hazard occurrence is usually determined using technical measures specific to the hazard. For example, ranges of wind speeds are used to categorize tornados.

**Major Disaster Declarations** – Post-disaster status requested by a state’s governor when local and state resources are not sufficient to meet disaster needs. It is based on the damage assessment, and an agreement to commit state funds and resources to the long-term recovery. The event must be clearly more than the state or local government can handle alone.

**Mean Return Period (MRP)** – The average period of time, in years, between occurrences of a particular hazard (equal to the inverse of the annual frequency of exceedance).

**Mitigation Actions** – Specific actions that help you achieve your goals and objectives.

**Mitigation Goals** – General guidelines that explain what you want to achieve. They are usually broad policy-type statements, long term, and represent global visions.

**Mitigation Objectives** – Strategies or implementation steps to attain the identified goals. Unlike goals, objectives are specific and measurable.

**Mitigation Plan** – A plan that documents the process used for a systematic evaluation of the nature and extent of vulnerability to the effects of natural hazards typically present in a state or community. The plan includes a description of actions to minimize future vulnerability to hazards. This plan should be developed with local experts and significant community involvement.

**National Drought Mitigation Center (NDMC)** – The NDMC helps develop and implement measures to reduce societal vulnerability to drought, stressing preparedness and risk management rather than crisis management. Most of the NDMC’s services are directed to state, federal, regional, and tribal governments that are involved in drought and water supply planning. The NDMC produces a daily drought monitor map that identifies drought areas and ranks droughts by intensity. U.S. Drought Monitor summary maps are available from May 1999 through the present and identify general drought areas and classification droughts by intensity ranging from D1 (moderate drought) to D4 (exceptional drought). Category D0, drought watch areas, are either drying out and possibly heading for drought, or are recovering from drought but not yet back to normal, suffering long-term impacts such as low reservoir levels.

**National Flood Insurance Program (NFIP)** – Federal program created by Congress in 1968 that makes flood insurance available in communities that enact minimum floodplain management regulations in 44 Code of Federal Regulations (CFR) §60.3.

**New York State Division of Homeland Security & Emergency Services (NYS DHSES)** – NYS DHSES and its predecessor agencies have been responsible for coordinating the activities of all State agencies to protect New York’s communities, the State’s economic well-being, and the environment from natural and man-made disasters and emergencies. NYS DHSES routinely assists local governments, voluntary organizations, and private industry through a variety of emergency management programs including hazard identification, loss prevention, planning, training, operational response to emergencies, technical support, and disaster recovery assistance.

**Nor’Easter** – Named for the strong northeasterly winds blowing in ahead of the storm, are also referred to as a type of extra-tropical cyclones (mid-latitude storms, or Great Lake storms). A Nor’Easter is a macro-scale extra-tropical storm whose winds come from the northeast, especially in the coastal areas of the Northeastern U.S. and Atlantic Canada.



**North America Drought Monitor (NA-DM)** – The NA-DM is a cooperative effort between drought experts in Canada, Mexico and the U.S. to monitor drought across the continent on an ongoing basis. The Drought Monitor concept was developed as a process that synthesizes multiple indices, outlooks and local impacts, into an assessment that best represents current drought conditions. The final outcome of each Drought Monitor is a consensus of federal, state and academic scientists. Maps of U.S. droughts are available from this source from 2003 to the present.

**Objectives** – Objectives define strategies or implementation steps to attain the identified goals. Unlike goals, objectives are specific and measurable.

**Occupancy Classes** – Categories of buildings used by HAZUS-MH (for example, commercial, residential, industrial, government, and “other”).

**Ordinance** – A term for a law or regulation adopted by local government.

**Palmer Drought Severity Index (PDSI)** – The PDSI was developed in 1965, and indicates the prolonged and abnormal moisture deficiency or excess. The PDSI is an important climatological tool for evaluating the scope, severity, and frequency of prolonged periods of abnormally dry or wet weather. It can be used to help delineate disaster areas and indicate the availability of irrigation water supplies, reservoir levels, range conditions, amount of stock water, and potential intensity of forest fires.

**Parametric Model** – A model relating to or including the evaluation of parameters. For example, HAZUS-MH uses parametric models that address different parameters for hazards such as earthquake, flood and wind (hurricane). For example, parameters considered for the earthquake hazard include soil type, peak ground acceleration, building construction type and other parameters.

**Planimetric** – Maps that indicate only man-made features like buildings.

**Planning** – The act or process of making or carrying out plans; the establishment of goals, policies and procedures for a social or economic unit.

**Post-disaster mitigation** – Mitigation actions taken after a disaster has occurred, usually during recovery and reconstruction.

**Presidential Disaster Declaration** – A post-disaster status that puts into motion long-term federal recovery programs, some of which are matched by state programs, and designed to help disaster victims, businesses, and public entities in the areas of human services, public assistance (infrastructure support), and hazard mitigation. If declared, funding comes from the President’s Disaster Relief Fund and disaster aid programs of other participating federal agencies.

**Preparedness** – Actions that strengthen the capability of government, citizens, and communities to respond to disasters.

**Priority Hazards** – Hazards considered most likely to impact a community based on frequency, severity, or other factors such as public perception. These are identified using available data and local knowledge.

**Provided Data** – The databases included in the HAZUS-MH software that allow users to run a preliminary analysis without collecting or using local data.

**Probability** – A statistical measure of the likelihood that a hazard event will occur.

**Public Education and Outreach Programs** – Any campaign to make the public more aware of hazard mitigation and mitigation programs, including hazard information centers, mailings, public meetings, etc.



**Q3 Flood Zone Data** – FEMA flood data that delineate the 100- and 500-year flood boundaries. The Q3 Flood Data are digital representations of certain features of FEMA’s Flood Insurance Rate Map (FIRM) product, intended for use with desktop mapping and GIS technology.

**Recovery** – The actions taken by an individual or community after a catastrophic event to restore order and lifelines in the community.

**Regulation** – Most states have granted local jurisdictions broad regulatory powers to enable the enactment and enforcement of ordinances that deal with public health, safety, and welfare. These include building codes, building inspections, zoning, floodplain and subdivision ordinances, and growth management initiatives.

**Recurrence Interval** – The average time between the occurrences of hazardous events of similar size in a given location. This interval is based on the probability that the given event will be equaled or exceeded in any given year.

**Repetitive Loss Property** – A property that is currently insured for which two or more National Flood Insurance Program losses (occurring more than ten days apart) of at least \$1,000 each have been paid within any 10-year period since 1978.

**Replacement Value** – The cost of rebuilding a structure. This cost is usually expressed in terms of cost per square foot and reflects the present-day cost of labor and materials to construct a building of a particular size, type and quality.

**Resolutions** – Expressions of a governing body’s opinion, will, or intention that can be executive or administrative in nature. Most planning documents must undergo a council resolution, which must be supported in an official vote by a majority of representatives to be adopted. Other methods of making a statement or announcement about a particular issue or topic include proclamations or declarations.

**Resources** – Resources include the people, materials, technologies, money, etc., required to implement strategies or processes. The costs of these resources are often included in a budget.

**Risk** – The estimated impact that a hazard would have on people, services, facilities, and structures in a community; the likelihood of a hazard occurring and resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate or low likelihood of sustaining damage above a particular threshold due to occurrence of a specific type of hazard. Risk also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.

**Risk Assessment** – A methodology used to assess potential exposure and estimated losses associated with priority hazards. The risk assessment process includes four steps: (1) identifying hazards, (2) profiling hazards, (3) conducting an inventory of assets, and (4) estimating losses.

**Risk Factors** – Characteristics of a hazard that contribute to the severity of potential losses.

**Riverine** – Of or produced by a river (for example, a riverine flood is one that is caused by a river overflowing its banks).

**Saffir-Simpson Scale** – This scale categorizes or rates hurricanes from 1 (Minimal) to 5 (Catastrophic) based on their intensity. It is used to give an estimate of the potential property damage and flooding expected along the coast from a hurricane landfall. Wind speed is the determining factor in the shape of the coastline, in the landfill region.

**Scale** – A proportion used in determining a dimensional relationship; the ratio of the distance between two points on a map and the actual distance between the two points on the earth’s surface.



**Scour** – Removal of soil or fill material by the flow of floodwaters. This term is frequently used to describe storm-induced, localized, conical erosion around pilings and other foundation supports where the obstruction of flow increases turbulence.

**Special Flood Hazard Area (SFHA)** – An area within a floodplain having a 1-percent or greater chance of flood occurrence in any given year (that is, the 100-year or base flood zone); represented on FIRMs as darkly shaded areas with zone designations that include the letter “A” or “V.”

**Stafford Act** – The Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law (PL) 100-107 was signed into law on November 23, 1988. This law amended the Disaster Relief Act of 1974, PL 93-288. The Stafford Act is the statutory authority for most Federal disaster response activities, especially as they pertain to FEMA and its programs.

**Stakeholder** – Stakeholders are individuals or groups, including businesses, private organizations, and citizens, that will be affected in any way by an action or policy.

**Standardized Precipitation Index (SPI)** – The SPI is a probability index that considers only precipitation. It is based on the probability of recording a given amount of precipitation, and the probabilities are standardized so that an index of zero indicates the median precipitation amount (half of the historical precipitation amounts are below the median, and half are above the median). The index is negative for drought, and positive for wet conditions.

**State Hazard Mitigation Officer (SHMO)** – The representative of state government who is the primary point of contact with FEMA, other state and Federal agencies, and local units of government in the planning and implementation of pre- and post-disaster mitigation activities.

**Structure** – Something constructed (for example, a residential or commercial building).

**Study Area** – The geographic unit for which data are collected and analyzed. A study area can be any combination of states, counties, cities, census tracts, or census blocks. The study area definition depends on the purpose of the loss study and in many cases will follow political boundaries or jurisdictions such as city limits.

**Substantial Damage** – Damage of any origin sustained by a structure in a SFHA, for which the cost of restoring the structure to its pre-hazard event condition would equal or exceed 50 percent of its pre-hazard event market value.

**Thunderstorm** – A local storm produced by a cumulonimbus cloud and accompanied by lightning and thunder. It forms from a combination of moisture, rapidly rising warm air and a force capable of lifting air, such as a warm and cold front, a sea breeze, or a mountain.

**Topographic** – Map that shows natural features and indicate the physical shape of the land using contour lines based on land elevation. These maps also can include man-made features.

**Tornado** – A violently rotating column of air extending from a thunderstorm to the ground.

**Transportation Systems** – One of the lifeline system categories. This category includes: airways (airports, heliports, highways), bridges, tunnels, roadbeds, overpasses, transfer centers; railways (tracks, tunnels, bridges, rail yards, depots), and waterways (canals, locks, seaports, ferries, harbors, dry docks, piers).

**Tropical Cyclone** – A generic term for a cyclonic, low-pressure system over tropical or sub-tropical waters containing a warm core of low barometric pressure which typically produces heavy rainfall, powerful winds and storm surge.





**Tropical Depression** – An organized system of clouds and thunderstorms with a defined surface circulation and maximum sustained winds of less than 38 mph. It has no “eye”(the calm area in the center of the storm) and does not typically have the organization or the spiral shape of more powerful storms.

**Tropical Storm** – An organized system of strong thunderstorms with a defined surface circulation and maximum sustained wind between 39 to 73 mph.

**Utility Systems** – One of the lifeline systems categories. This category includes potable water, wastewater, oil, natural gas, electric power facilities and communication systems.

**Vulnerability** – Description of how exposed or susceptible an asset is to damage. This value depends on an asset’s construction, contents, and the economic value of its functions. Like indirect damages, the vulnerability of one element of the community is often related to the vulnerability of another. For example, many businesses depend on uninterrupted electrical power. If an electric substation is flooded, it will affect not only the substation itself, but a number of businesses as well. Often, indirect affects can be much more widespread and damaging than direct affects.

**Vulnerability Assessment** – Evaluation of the extent of injury and damage that may result from a hazard event of a given intensity in a given area. The vulnerability assessment should address impacts of hazard occurrences on the existing and future built environment.

**Watershed** – Area of land that drains down gradient (from areas of higher land to areas of lower land) to the lowest point; a common drainage basin. The water moves through a network of drainage pathways, both underground and on the surface. Generally, these pathways converge into streams and rivers, which become progressively larger as the water moves downstream, eventually reaching an estuary, lake, or ocean.

**Zone** – A geographical area shown on a National FIRM that reflects the severity or type of flooding in the area.

**Zoning Ordinance** – Designation of allowable land use and intensities for a local jurisdiction. Zoning ordinances consist of two components: a zoning text and a zoning map.



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This appendix includes an example resolution to be submitted by Lewis County and participating jurisdictions authorizing adoption of the Lewis County Hazard Mitigation Plan.

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**RESOLUTION NO. XXXX-XX**

**A RESOLUTION OF THE Governing Body OF THE Jurisdiction Name  
AUTHORIZING THE ADOPTION OF THE  
2020 LEWIS COUNTY, NY  
HAZARD MITIGATION PLAN**

**WHEREAS**, all jurisdictions within Lewis County have exposure to hazards that increase the risk to life, property, environment, and the County and local economy; and

**WHEREAS**; pro-active mitigation of known hazards before a disaster event can reduce or eliminate long-term risk to life and property; and

**WHEREAS**, The Disaster Mitigation Act of 2000 (Public Law 106-390) established new requirements for pre and post disaster hazard mitigation programs; and

**WHEREAS**; a coalition of Lewis County municipalities with like planning objectives has been formed to pool resources and create consistent mitigation strategies within Lewis County; and

**WHEREAS**, the coalition has completed a planning process that engages the public, assesses the risk and vulnerability to the impacts of natural hazards, develops a mitigation strategy consistent with a set of uniform goals and objectives, and creates a plan for implementing, evaluating and revising this strategy;

**NOW, THEREFORE, BE IT RESOLVED** that the [jurisdiction name]:

- 1) Adopts in its entirety, the 2020 Lewis County Hazard Mitigation Plan (the “Plan”) as the jurisdiction’s Hazard Mitigation Plan, and resolves to execute the actions identified in the Plan that pertain to this jurisdiction.
- 2) Will use the adopted and approved portions of the Plan to guide pre- and post-disaster mitigation of the hazards identified.
- 3) Will coordinate the strategies identified in the Plan with other planning programs and mechanisms under its jurisdictional authority.
- 4) Will continue its support of the Hazard Mitigation Steering Committee and Planning Partnership as described within the Plan.
- 5) Will help to promote and support the mitigation successes of all participants in this Plan.
- 6) Will incorporate mitigation planning as an integral component of government and partner operations.
- 7) Will provide an update of the Plan in conjunction with the County no less than every five years.

PASSED AND ADOPTED on this X<sup>st</sup>, X<sup>nd</sup>, X<sup>rd</sup>, X<sup>th</sup> day of MONTH, 2020, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

ATTEST:

\_\_\_\_\_  
Executive, Town/Village/County of \_\_\_\_\_

\_\_\_\_\_  
Clerk, Town/Village/County of \_\_\_\_\_

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# MEETING NOTES

<b>Meeting</b>	Lewis County Hazard Mitigation Plan (HMP) Steering Committee Kickoff Meeting		
<b>Date</b>	March 8, 2018	<b>Time</b>	10:20 – 11:40 a.m.
<b>Location</b>	Lewis County Soil & Water Conservation District, 5274 Outer Stowe Street, Lowville, NY		
<b>Attendees</b>	Ryan Piche, Lewis County Manager		
	Robert MacKenzie, Director, Lewis County Fire and Emergency Management		
	David Becker, Superintendent, Lewis County Highway		
	Nichelle Billhardt, Director, Lewis County Soil & Water Conservation District		
	Jennifer Maracchion, Emergency Management Assistant, Lewis County Fire and Emergency Management		
	Frank Pace, Director, Lewis County Planning		
	Warren Shaw, Deputy Superintendent, Lewis County Highway		
	Tony Subbio, Project Manager, Tetra Tech (via telephone)		

## Purpose

The purpose of the kickoff meeting was to initiate the planning process to update the Lewis County HMP. The meeting provided an opportunity for the Steering Committee to meet Tetra Tech’s project manager and to discuss the project.

## Discussion Points

This section summarizes each discussion point addressed during the kickoff meeting.

## Introductions

Mr. MacKenzie welcomed attendees. He pointed out that the planning process has been delayed, and the County would like an expedited planning process with strong municipal buy-in. Attendees introduced themselves and identified their experience in hazard mitigation planning. Mr. Subbio expressed appreciation for the Steering Committee accepting his participation via telephone given the weather.

## Project Scope Review

This section summarizes each task of the project discussed at the kickoff meeting.

### Task 1 – Organize the Resources

Mr. Subbio discussed the formation of the Planning Partnership (the Partnership), which is the group of representatives from jurisdictions and stakeholder agencies involved with the HMP update process. A kickoff meeting will be held in a few weeks with the Partnership to introduce them to the planning process and explain the data-gathering worksheets that each jurisdiction will need to complete. Attendees pointed out that Lewis County contains no institutions of higher education, but Jefferson Community College is the nearest institution. There are six school districts and one private Mennonite school. The hospital is County-owned and is considered a County department. Other County departments that will be involved in the Partnership are the Office of Aging, Social Services, and Public Health. The American Red Cross will also be invited to participate. One village has its own police department. The



# MEETING NOTES

North Country Planning Directors Group will be included in the planning process as well. Most of the County's 26 municipalities are staffed by part-time individuals, and staffing changes frequently. This will be a challenge in the planning process.

Mr. Subbio then reviewed each of the eight worksheets with the Steering Committee. Mr. Pace stated that the Planning Department is in the process of updating flood damage prevention codes. County and local codes that the County has access to are on the County website. The Planning Department recently completed a Flood Insurance Rate Map (FIRM) overlay in the County's geographic information systems (GIS) database. Most municipalities rely heavily on the County's capabilities. Mr. Pace may have information on new development throughout the County.

Much of the County does not have Internet service. Mr. Pace suggested sending hard copies of the worksheets to each municipal clerk. Most municipal officials use personal emails to communicate, if they use email at all.

The Steering Committee requested that each meeting identified in the project scope be offered three times, regionally, in the County. This would greatly increase the chance of all municipalities participating in the planning process.

Mr. Subbio discussed the stakeholder outreach that would be conducted during the planning process. Tetra Tech will develop a project website for posting information and draft documents for review. Tetra Tech will also develop a simple survey for members of the public to provide information on their knowledge of the hazards they face and what can be done to mitigate impacts from those hazards. There will also be two planning meetings that will be open to the public: one to review the results of the updated risk assessment and one to review the draft plan.

## Task 2 - Risk Assessment

The following hazards are profiled in the existing HMP:

- Extreme Temperatures
- Extreme Wind
- Tornado
- Winter Storm/Ice Storm
- Dam Failure
- Drought
- Floods
- Ice Jams
- Earthquakes
- Landslides
- Wildfires

The Steering Committee members stated that these hazards still apply and are considered hazards of concern. Some hazard profiles may be combined to align with the New York State HMP. For instance, ice jams will be included under the updated Flooding hazard profile. Spills of manure or milk are also a major concern in the County, so Tetra Tech will profile this hazard as well. Other hazards to be profiled will be discussed at the Planning Partnership Kickoff Meeting.

For the flood hazard, Tetra Tech will assess exposure to the 1 percent and 0.2 percent annual chance floods, and vulnerability to the 1 percent annual chance flood. For the wind hazard, Tetra Tech will assess exposure and vulnerability to the 100-year and 500-year Mean Return Period (MRP) wind events. LiDAR information is available from the County.

Upon completion of the hazard profiles, Tetra Tech will review the risk assessment with the Planning Partnership and the public.





# MEETING NOTES

## **Task 3 – Mitigation Strategy**

The Steering Committee will set the goals and objectives for the HMP and will share them with the Partnership. Tetra Tech will use the information reported by the municipalities regarding their capabilities and the status of the mitigation actions from the 2010 version of the HMP to identify and prioritize mitigation actions for inclusion in the updated HMP.

Tetra Tech will compile the information from the worksheets, risk assessment, capability assessment, and mitigation actions into a jurisdictional annex for the County and its towns and villages. The jurisdictional annexes detail the analysis and information of the HMP for the respective jurisdictions to make the document easier to use for local officials. Tetra Tech will conduct regional municipal support meetings in the County to finalize the annexes.

## **Task 4 – Plan Maintenance**

Tetra Tech will work with the Steering Committee to develop procedures for maintaining the HMP over the next 5 years. These procedures will be documented in the Plan Maintenance section of the HMP. This section will also describe the ways in which the HMP is integrated with other planning mechanisms, such as comprehensive and master plans, local regulations, etc.

Mitigation actions will be loaded into Tetra Tech's Plan Review Tool to allow for ongoing plan maintenance.

## **Task 5 – Draft and Final Plans**

Throughout the planning process, Tetra Tech will develop the HMP document. The main body will profile the County, explain the planning process, include the risk assessment and mitigation strategy, and discuss maintenance of the plan. Each jurisdiction will have its own annex in the HMP, which will provide information specific to that jurisdiction.

The draft plan will be shared with the Steering Committee for review and comment throughout the planning process. After making any required changes, Tetra Tech will post the HMP for public review. The public review period will be advertised and will last for 30 days. Tetra Tech will then conduct a public meeting of the Partnership to gather feedback on the plan draft and make any required changes.

Tetra Tech will then submit the draft for the State's formal review. The New York State Division of Homeland Security and Emergency Services (NYS DHSES) will review the draft. If changes are required, Tetra Tech will make the changes and resubmit the document to the State. After the State is satisfied with the draft, the State will forward it to Federal Emergency Management Agency (FEMA) Region II for review. FEMA Region II will review the draft within 45 days, and Tetra Tech will make any required changes upon receipt of review comments from FEMA. When FEMA is satisfied with the HMP, FEMA will grant the HMP "approvable pending adoption" status to indicate that it meets all requirements.

The County and participating jurisdictions will formally adopt the HMP by resolution. After adoption, each jurisdiction will receive a letter from FEMA stating that the HMP is formally approved.

## **Project Schedule Review**

Mr. Subbio reviewed the project schedule. If the towns and villages provide information in a timely manner and fully participate in the planning process, the draft HMP will be ready for Steering Committee review by the end of July 2018.



# MEETING NOTES

## Next Steps

The following next steps were discussed at the meeting:

- Steering Committee members will forward to Mr. Subbio any plans, regulations, or studies that may be relevant to hazard mitigation.
- Mr. Subbio will send a Doodle Poll to the Steering Committee members to schedule the Planning Partnership Kickoff Meeting.
- Mr. Subbio will provide a list of GIS data for use in the planning process to Mr. MacKenzie and Mr. Pace.
- Tetra Tech will begin developing hazard profiles for the hazards included in the existing HMP.

The meeting adjourned at 11:40 a.m.



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# Lewis County Hazard Mitigation Plan Update Project Kickoff Meeting



## Agenda

- Introductions
- Project Scope Review
- Project Schedule Review
- Next Steps
- Questions





## Introductions



## Project Scope Review

- Task 1 – Organize the Resources
  - Planning Partnership
    - County Departments
    - State Agencies
    - General Public
  
    - Municipalities
    - Neighboring Counties
  
    - Soil and Water Conservation District
    - Chamber of Commerce
  
    - Schools and Higher Education
    - Tourism Groups





## Project Scope Review

### Task 1 – Organize the Resources (Continued)

#### – Jurisdiction Worksheets

- Outline (contact information)
- Events and Losses
- Capability Assessment
- National Flood Insurance Program
- Mitigation Action Review
- Capability Assessment and Plan Integration
- New Development
- Shelter and Evacuation Information



## Project Scope Review

### Task 1 – Organize the Resources (Continued)

#### – Stakeholder Outreach

- Website
- Survey
- Planning Partnership Meetings (Open to the Public)
  - Risk Assessment Review
  - Plan Draft Review







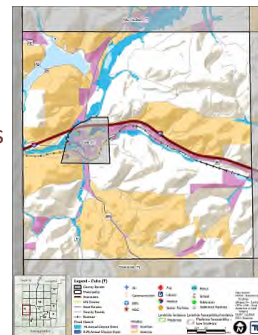
## Project Scope Review

- Task 2 – Risk Assessment
  - Hazards of Concern (2010)
    - Extreme Temperatures
    - Extreme Wind
    - Tornado
    - Winter Storm/Ice Storm
    - Dam Failure
    - Drought
    - Floods
    - Ice Jams
    - Earthquakes
    - Landslides
    - Wildfires
  - Additional Hazards (up to 2)



## Project Scope Review

- Task 2 – Risk Assessment (continued)
  - HAZUS-MH Analysis
    - Flood – 1-percent and 0.2-percent annual chance floodplains
    - Wind – 100-year and 500-year MRP events
  - Review Risk Assessment with Planning Partnership





## Project Scope Review

- **Task 3 – Mitigation Strategy**
  - Develop Goals and Objectives
    - Develop with Steering Committee
    - Review with Planning Partnership
  - Identify Mitigation Actions
    - Mitigation Strategy Workshop
    - Municipal Outreach
  - Annex Development
    - Regional Municipal Support Meetings



## Project Scope Review

- **Task 4 – Plan Maintenance**
  - Annual Review
  - Plan Review Tool
  - Integration with Other Planning Mechanisms
- **Task 5 – Draft and Final Plans**
  - Develop the Document
    - Develop and finalize main body
    - Finalize jurisdictional annexes
  - Draft Plan Reviewed by the Steering Committee Throughout the Process
  - Steering Committee Conference Call





## Project Scope Review

- Task 5 – Draft and Final Plans (Continued)
  - Public Review
  - Draft Plan Review Meeting (open to the public)
  - Submission to NYS and FEMA
  - Update as Necessary
  - “Approvable Pending Adoption”



## Project Schedule Review

*Lewis County Hazard Mitigation Plan Update 2018  
Project Schedule*

Task	Timeframe
Task 1 – Organize the Resources	<ul style="list-style-type: none"> <li>➢ Project kickoff meeting conducted in early March 2018</li> <li>➢ Planning Partnership kickoff meeting conducted in mid-March 2018</li> <li>➢ Public outreach conducted throughout the planning process</li> <li>➢ Municipal support meetings to complete jurisdictional annexes</li> <li>➢ Project close-out meeting conducted after the updated HMP receives “Approvable Pending Adoption” status</li> </ul>
Task 2 – Risk Assessment	<ul style="list-style-type: none"> <li>➢ Hazards profiled by early April 2018</li> <li>➢ Risk assessment review meeting conducted in April 2018 (open to public)</li> <li>➢ Capabilities assessed by the end of March 2018</li> </ul>
Task 3 – Mitigation Strategy	<ul style="list-style-type: none"> <li>➢ Goals and objectives identified by mid-April 2018</li> <li>➢ Mitigation Strategy Workshop conducted in early May 2018</li> <li>➢ Jurisdictional annexes complete by mid-mid-June 2018</li> </ul>
Task 4 – Plan Maintenance	<ul style="list-style-type: none"> <li>➢ Procedures developed by early-July 2018</li> <li>➢ Plan development begins at the beginning of the project</li> <li>➢ Draft plan provided to Steering Committee for review by July 31, 2018</li> <li>➢ Draft plan reviewed by Steering Committee and updated by the end of August 2018</li> <li>➢ Public review period from the end of August to the beginning of November 2018</li> </ul>
Task 5 – Draft and Final Plans	<ul style="list-style-type: none"> <li>➢ Draft plan review meeting conducted in early August 2018</li> <li>➢ Draft plan finalized and submitted to NYS DHSES in late December 2018</li> <li>➢ NYS DHSES reviews draft plan by the end of January 2019</li> <li>➢ Update draft plan based on NYS DHSES comments and resubmit by early February 2019</li> <li>➢ NYS DHSES and FEMA Region II review updated draft plan through early March 2019</li> <li>➢ Plan receives “Approvable Pending Adoption” status in end of March 2019</li> </ul>





## Next Steps

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- Document Request
- NFIP Data
- Planning Partnership Kickoff Meeting
- Risk Assessment Update





# AGENDA

## LEWIS COUNTY HAZARD MITIGATION PLAN UPDATE PROJECT Project Kickoff Meeting

Thursday, March 8, 2018 | 10:00 a.m. – 12:00 p.m.

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### 1. Introductions

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### 2. Project Scope Review

- a. Task 1 – Organize the Resources
- b. Task 2 – Risk Assessment
- c. Task 3 – Mitigation Strategy
- d. Task 4 – Plan Maintenance
- e. Task 5 – Draft and Final Plans

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### 3. Project Schedule Review

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### 4. Next Steps

- a. Document Request
- b. NFIP Data
- c. Planning Partnership Kickoff Meeting
- d. Risk Assessment Update

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### 5. Questions

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# *Lewis County Hazard Mitigation Plan Update 2018*

## *Project Schedule*

<b>Task</b>	<b>Timeframe</b>
Task 1 – Organize the Resources	<ul style="list-style-type: none"> <li>➤ Project kickoff meeting conducted in early March 2018</li> <li>➤ Planning Partnership kickoff meeting conducted in mid-March 2018</li> <li>➤ Public outreach conducted throughout the planning process</li> <li>➤ Municipal support meetings to complete jurisdictional annexes</li> <li>➤ Project close-out meeting conducted after the updated HMP receives “Approvable Pending Adoption” status</li> </ul>
Task 2 – Risk Assessment	<ul style="list-style-type: none"> <li>➤ Hazards profiled by early April 2018</li> <li>➤ Risk assessment review meeting conducted in April 2018 (open to public)</li> </ul>
Task 3 – Mitigation Strategy	<ul style="list-style-type: none"> <li>➤ Capabilities assessed by the end of March 2018</li> <li>➤ Goals and objectives identified by mid-April 2018</li> <li>➤ Mitigation Strategy Workshop conducted in early May 2018</li> <li>➤ Jurisdictional annexes complete by mid-mid-June 2018</li> </ul>
Task 4 – Plan Maintenance	<ul style="list-style-type: none"> <li>➤ Procedures developed by early-July 2018</li> </ul>
Task 5 – Draft and Final Plans	<ul style="list-style-type: none"> <li>➤ Plan development begins at the beginning of the project</li> <li>➤ Draft plan provided to Steering Committee for review by July, 31, 2018</li> <li>➤ Draft plan reviewed by Steering Committee and updated by the end of August 2018</li> <li>➤ Public review period from the end of August to the beginning of November 2018</li> <li>➤ Draft plan review meeting conducted in early August 2018</li> <li>➤ Draft plan finalized and submitted to NYS DHSES in late December 2018</li> <li>➤ NYS DHSES reviews draft plan by the end of January 2019</li> <li>➤ Update draft plan based on NYS DHSES comments and resubmit by early February 2019</li> <li>➤ NYS DHSES and FEMA Region II review updated draft plan through early March 2019</li> <li>➤ Plan receives “Approvable Pending Adoption” status in end of March 2019</li> </ul>





# MEETING NOTES

<b>Meeting</b>	Lewis County Hazard Mitigation Plan (HMP) Planning Partnership Kickoff Meetings			
<b>Date</b>	March 8, 2018	<b>Times</b>	9:00 – 11:00 a.m. 2:00 – 4:00 p.m. 6:00 – 8:00 p.m.	*three identical sessions of this meeting were conducted to maximize municipal participation
<b>Location</b>	3-G Fire Station, 6229 Blue St, Glenfield, NY 13345			
<b>Attendees</b>	Ryan Piche, Lewis County Manager			
	Robert MacKenzie, Director, Lewis County Fire and Emergency Management			
	Nichelle Billhardt, Director, Lewis County Soil & Water Conservation District			
	Jennifer Maracchion, Emergency Management Assistant, Lewis County Fire and Emergency Management			
	Frank Pace, Director, Lewis County Planning			
	Warren Shaw, Deputy Superintendent, Lewis County Highway			
	Derek Mellnitz, Superintendent, Village of Castorland			
	Joseph Genter, Trustee, Village of Constableville			
	Alan Klossner, Mayor, Village of Constableville			
	Kim Vogt, Trustee, Village of Copenhagen			
	Roger M. Burriss, Supervisor, Town of Croghan			
	Chelsea Cowan, Town Clerk, Town of Croghan			
	Derek Gage, Council Member, Town of Croghan			
	Kay Sabo, Clerk, Village of Croghan			
	James Der, Supervisor, Town of Denmark			
	Pat Mahar, Superintendent, Town of Denmark			
	Marilyn Patterson, Supervisor, Town of Greig			
	David Meade, Code Enforcement Officer, Town of Greig			
	Brian Patterson, Resident, Town of Greig			
	Charles Snyder, Highway Department Staff, Town of Harrisburg			
	Frank Platt, Superintendent, Town of Lewis			
	Rosalie White, Supervisor, Town of Leyden			
	Joseph Pfeiffer, Jr., Codes Officer, Towns of Leyden, Lowville, and Lyonsdale			
	Donna Smith, Mayor, Village of Lowville			
	Anne Huntress, Mayor, Village of Lyons Falls			
	Tyler Jones, Superintendent, Town of Martinsburg			
	Jon Bush, Superintendent, Town of New Bremen			
	Ginny Churchill, Town Clerk, Town of Osceola			
	Don Cook, Highway Superintendent, Town of Pinckney			
	Josh Marmon, Superintendent, Village of Port Leyden			



# MEETING NOTES

<b>Attendees (continued)</b>	Jane Gillette, Deputy Supervisor, Town of Turin
	Douglas Hunt, Mayor, Village of Turin
	Dennis Foster, Supervisor, Town of Watson
	Mike Hanno, Board Member, Town of Watson
	JoAnn Mostyn, Water Clerk, Town of Watson
	Virgil Taylor, Deputy Supervisor, Town of Watson
	Ed Hayes, Supervisor, Town of West Turin
	Doug Salmon, Superintendent, Town of West Turin
	Tony Subbio, Project Manager, Tetra Tech

## Purpose

The purpose of the Planning Partnership Kickoff Meetings was to initiate the planning process to update the Lewis County HMP with the jurisdictions and other stakeholders that have an interest in the HMP. The meetings provided an opportunity for the Planning Partnership to meet Tetra Tech's project manager and to discuss the planning process.

## Discussion Points

This section summarizes each discussion point addressed during the meetings. While three separate sessions of the meeting were conducted, they are described together in this single set of meeting notes.

## Introductions

Mr. MacKenzie welcomed attendees. Attendees introduced themselves and identified any particular areas of focus or concern they have for this planning process.

## Planning Process

This section summarizes each step of the planning process discussed at the meeting.

## Organization

Mr. Subbio discussed the roles of the Steering Committee and Planning Partnership (the Partnership). He identified organizations that the Partnership includes: County departments, local jurisdictions, schools, community groups, and neighboring counties. Each attendee, as a member of the Partnership, should work with stakeholders to provide and solicit information about the hazards that affect the County, what can be done to mitigate those hazards' impacts, and the planning process.

Mr. Subbio discussed the stakeholder outreach that would be conducted during the planning process. Tetra Tech is developing a project website for posting information and draft documents for review. Tetra Tech will also develop a simple survey for members of the public to provide information on their knowledge of the hazards they face and what can be done to mitigate impacts from those hazards. There will also be two planning meetings that will be open to the general public: one to review the results of the updated risk assessment and one to review the draft plan.



# MEETING NOTES

## Data Collection

Mr. Subbio discussed plans, regulations, and reports that may be relevant to the planning process. He pointed out that capital improvement plans and budgets may include several projects that could be included in the HMP. He requested that participants provide relevant documents for review and incorporation into the HMP update process.

Mr. Subbio then reviewed each of the eight worksheets with the Partnership. Mr. MacKenzie pointed out that the County has conducted evacuation planning that will identify many of the shelters and evacuation routes needed for the "Shelter and Evacuation Information" worksheet.

## Risk Assessment

Based on the hazards profiled in the 2010 HMP and discussions with the Steering Committee, the updated HMP will profile the following hazards:

- Agricultural Product Spills (milk and manure)
- Drought
- Earthquakes
- Extreme Temperatures
- Floods (including dam failure and ice jams)
- Landslides
- Winter Storm/Ice Storm
- Severe Storm (including extreme wind and tornado)
- Wildfires

Mr. Subbio asked attendees if there were any other hazards that stand out as needing to be analyzed in the updated HMP. Attendees discussed liquid manure pits located near the river and the fact that residents' water supplies are being ruined by stormwater runoff carrying liquid manure that had been recently sprayed on farm fields. The Village of Lowville has a human waste lagoon next to a stream that has a history of ice jams. Flooding has come up to almost the top of the berm around the lagoon. Increased development has greatly increased the load on the wastewater treatment plant. The plant needs to be expanded or replaced.

Attendees also discussed the risk from hazardous materials releases, such as from pipelines or ammonia at the Kraft facility. The Steering Committee will discuss including this hazard in the updated HMP.

Upon completion of the hazard profiles, Tetra Tech will review the risk assessment with the Partnership and the general public.

## Mitigation Strategy

The Steering Committee will set the goals and objectives for the HMP and will share them with the Partnership. Tetra Tech will use the information reported by the municipalities regarding their capabilities and the status of the mitigation actions from the 2010 version of the HMP to identify and prioritize mitigation actions for inclusion in the updated HMP.

The Village of Constableville received \$60,000 from the Federal Emergency Management Agency (FEMA) for streambank stabilization. Representatives of the Town of Greig stated that the Lake of the Pines dam needs a major reconstruction effort.

Tetra Tech will compile the information from the worksheets, risk assessment, capability assessment, and mitigation actions into a jurisdictional annex for the County, towns, and villages. The jurisdictional annexes detail all of the analyses and information of the HMP for the respective jurisdictions to make the document easier to use for local officials.



# MEETING NOTES

As the annexes are being completed, Tetra Tech will conduct regional meetings to work with the towns and villages to fill any remaining gaps in the annexes.

## **Draft and Final Plans**

Throughout the planning process, Tetra Tech will develop the HMP document. The main body will profile the County, explain the planning process, include the risk assessment and mitigation strategy, and discuss maintenance of the plan. Each jurisdiction will have its own annex in the HMP, which will provide information specific to that jurisdiction.

The draft plan will be shared with the Steering Committee and the Partnership for review and comment throughout the planning process. After making any required changes, Tetra Tech will post the HMP for public review. The public review period will be advertised and will last for 30 days. Tetra Tech will then conduct a public meeting of the Partnership to gather feedback on the plan draft and make any required changes.

Tetra Tech will then submit the draft for the State's formal review. If changes are required, Tetra Tech will make the changes and resubmit the document to the State. After the State is satisfied with the draft, the State will forward it to FEMA Region II for review. FEMA Region II will review the draft within 45 days, and Tetra Tech will make any required changes upon receipt of review comments from FEMA. When FEMA is satisfied with the HMP, FEMA will grant the HMP "approvable pending adoption" status to indicate that it meets all requirements.

The County and participating jurisdictions will formally adopt the HMP by resolution. After adoption, each jurisdiction will receive a letter from FEMA stating that the HMP is formally approved.

## **Project Schedule Review**

Mr. Subbio reviewed the project schedule. The 2010 HMP has expired, so the County is focused on completing the planning process as quickly as possible. To meet this goal, Tetra Tech will work to complete the risk assessment by the middle of April 2018, and the full draft of the plan by the end of July 2018.

## **Next Steps**

The following next steps were discussed at the meeting:

- The County, towns, and villages will complete the information gathering worksheets by April 13, 2018.
- Partnership members will forward any plans, regulations, or studies that may be relevant to hazard mitigation to Mr. Subbio.
- Tetra Tech will continue developing hazard profiles for the hazards analyzed in the HMP.




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**Lewis County  
Hazard Mitigation Plan Update  
Planning Partnership  
Kickoff Meeting**





## Agenda

- Introductions
- Planning Process
- Project Schedule Review
- Next Steps
- Questions




## Introductions

- Name
- Agency
- Mitigation Experience
- Focus and Concerns




## Planning Process

- Organization
  - Steering Committee
  - Planning Partnership
    - County Departments
    - Municipalities
    - Stakeholders
    - General Public
  - Public Outreach
    - Website
    - Survey
    - Public Meetings


## Planning Process (Continued)

- Data Collection
  - Reports and Plans
  - Worksheets
    - Outline (contact information)
    - Events and Losses
    - Capability Assessment
    - National Flood Insurance Program
    - Mitigation Action Review
    - Capability Assessment and Plan Integration
    - New Development
    - Shelter and Evacuation Information



## Planning Process (Continued)

- Risk Assessment
  - Hazards of Concern
    - Agricultural Product Spills
    - Extreme Temperatures
    - Winter Storm/Ice Storm
    - Drought
    - Floods (including dam failure and ice jams)
    - Severe Storm (including extreme wind and tornado)
    - Earthquakes
    - Landslides
    - Wildfires
  - One more hazard
  - Review with Planning Partnership





## Planning Process (Continued)

- **Mitigation Strategy**
  - Develop Goals and Objectives
    - Develop with Steering Committee
    - Review with Planning Partnership
  - Capability Assessment
  - Identify and Prioritize Actions
    - Carry-overs
    - Mitigation Strategy Workshop
  - Annex Development
    - Regional municipal support meetings



## Planning Process (Continued)

- **Draft and Final Plans**
  - Develop the Document
  - Submit Draft Plan for Review by the Steering Committee and Planning Partnership Throughout the Process
  - Public Review
  - Draft Plan Review Meeting
  - Submission to NYS and FEMA
  - Update as necessary
  - “Approvable Pending Adoption”



## Project Schedule Review

Task	Timeline
Task 1 - Organize the Revision	<ul style="list-style-type: none"> <li>➤ Project kickoff meeting conducted on March 6, 2018</li> <li>➤ Planning Partnership kickoff meetings conducted on March 28, 2018</li> <li>➤ Public outreach conducted throughout the planning process</li> <li>➤ Municipal support meetings to complete jurisdictional annexes</li> <li>➤ Project close-out meeting conducted after the updated HMP receives "Approvable Pending Adoption" status</li> </ul>
Task 2 - Risk Assessment	<ul style="list-style-type: none"> <li>➤ Hazards profiled by mid-April 2018</li> <li>➤ Risk assessment review meeting conducted in April 2018 (open to public)</li> </ul>
Task 3 - Mitigation Strategy	<ul style="list-style-type: none"> <li>➤ Capabilities assessed by the end of April 2018</li> <li>➤ Goals and objectives identified by mid-April 2018</li> <li>➤ Mitigation Strategy Workshop conducted in early May 2018</li> <li>➤ Jurisdictional annexes complete by mid-June 2018</li> </ul>
Task 4 - Plan Maintenance	<ul style="list-style-type: none"> <li>➤ Procedures developed by early July 2018</li> </ul>
Task 5 - Draft and Final Plans	<ul style="list-style-type: none"> <li>➤ Plan development begins at the beginning of the project</li> <li>➤ Draft plan provided to Steering Committee for review by July 31, 2018</li> <li>➤ Draft plan reviewed by Steering Committee and updated by the end of August 2018</li> <li>➤ Public review period from the end of August to the beginning of November 2018</li> <li>➤ Draft plan review meeting conducted in early August 2018</li> <li>➤ Draft plan finalized and submitted to NYS/DESG in late December 2018</li> <li>➤ NYS/DESG reviews draft plan by the end of January 2019</li> <li>➤ Update draft plan based on NYS/DESG comments and resubmit by early February 2019</li> <li>➤ NYS/DESG and FEMA Region II review updated draft plan through early March 2019</li> <li>➤ Plan receives "Approvable Pending Adoption" status in end of March 2019</li> </ul>



## Next Steps

- Complete worksheets
- Provide reports and plans
- Update risk assessment
- Next meeting – Risk Assessment Review



## Questions?

Thank you for your time!



## Contacts



**Bob MacKenzie**  
 robertmackenzie@lewiscounty.ny.gov  
 (315) 376-5305



**Tony Subbio**  
 tony.subbio@tetratech.com  
 (717) 545-3580







# AGENDA

## LEWIS COUNTY HAZARD MITIGATION PLAN UPDATE PROJECT Planning Partnership Kickoff Meeting #1

Wednesday, March 28, 2018 | 9:00 – 11:00 a.m.

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### 1. Introductions

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### 2. Planning Process

- a. Organization
- b. Data Collection
- c. Risk Assessment
- d. Mitigation Strategy
- e. Draft and Final Plans

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### 3. Project Schedule Review

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### 4. Next Steps

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### 5. Questions

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# AGENDA

## LEWIS COUNTY HAZARD MITIGATION PLAN UPDATE PROJECT Planning Partnership Kickoff Meeting #2

Wednesday, March 28, 2018 | 2:00 – 4:00 p.m.

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### 1. Introductions

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### 2. Planning Process

- a. Organization
- b. Data Collection
- c. Risk Assessment
- d. Mitigation Strategy
- e. Draft and Final Plans

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### 3. Project Schedule Review

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### 4. Next Steps

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### 5. Questions

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# AGENDA

## LEWIS COUNTY HAZARD MITIGATION PLAN UPDATE PROJECT Planning Partnership Kickoff Meeting #3

Wednesday, March 28, 2018 | 6:00 – 8:00 p.m.

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### 1. Introductions

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### 2. Planning Process

- a. Organization
- b. Data Collection
- c. Risk Assessment
- d. Mitigation Strategy
- e. Draft and Final Plans

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### 3. Project Schedule Review

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### 4. Next Steps

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### 5. Questions

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# *Lewis County Hazard Mitigation Plan Update 2018*

## *Project Schedule*

<b>Task</b>	<b>Timeframe</b>
Task 1 – Organize the Resources	<ul style="list-style-type: none"> <li>➤ Project kickoff meeting conducted on March 8, 2018</li> <li>➤ Planning Partnership kickoff meetings conducted on March 28, 2018</li> <li>➤ Public outreach conducted throughout the planning process</li> <li>➤ Municipal support meetings to complete jurisdictional annexes</li> <li>➤ Project close-out meeting conducted after the updated HMP receives “Approvable Pending Adoption” status</li> </ul>
Task 2 – Risk Assessment	<ul style="list-style-type: none"> <li>➤ Hazards profiled by mid-April 2018</li> <li>➤ Risk assessment review meeting conducted in April 2018 (open to public)</li> </ul>
Task 3 – Mitigation Strategy	<ul style="list-style-type: none"> <li>➤ Capabilities assessed by the end of April 2018</li> <li>➤ Goals and objectives identified by mid-April 2018</li> <li>➤ Mitigation Strategy Workshop conducted in early May 2018</li> <li>➤ Jurisdictional annexes complete by mid-June 2018</li> </ul>
Task 4 – Plan Maintenance	<ul style="list-style-type: none"> <li>➤ Procedures developed by early July 2018</li> </ul>
Task 5 – Draft and Final Plans	<ul style="list-style-type: none"> <li>➤ Plan development begins at the beginning of the project</li> <li>➤ Draft plan provided to Steering Committee for review by July 31, 2018</li> <li>➤ Draft plan reviewed by Steering Committee and updated by the end of August 2018</li> <li>➤ Public review period from the end of August to the beginning of November 2018</li> <li>➤ Draft plan review meeting conducted in early August 2018</li> <li>➤ Draft plan finalized and submitted to NYS DHSES in late December 2018</li> <li>➤ NYS DHSES reviews draft plan by the end of January 2019</li> <li>➤ Update draft plan based on NYS DHSES comments and resubmit by early February 2019</li> <li>➤ NYS DHSES and FEMA Region II review updated draft plan through early March 2019</li> <li>➤ Plan receives “Approvable Pending Adoption” status in end of March 2019</li> </ul>

9a-11a	NAME	ORGANIZATION	EMAIL	CONTACT #	MAILING ADDRESS	SIGNATURE
1	GINNY CHURCHILL	TOWN OF OSCEOLA CLERK	theotherginny@gmail.com	315 599-7120	2145 N Osceola Rd Camden NY 13316	Virginia A. Churchill
2	DENNIS FOSTER	TOWN OF WATSON SUPERVISOR	dennis_foster@townofwatsonny.com	315-376-3866 Ext 7	6971 Number Four Rd Lowville NY 13367	Dennis Foster
3	Warren Shaw DAVID BECKER	L.C. HIGHWAY	warrenshaw@lewiscountyny.gov davidbecker@lewiscountyny.gov	315 376-5352 " " "	7660 N. State St Lowville, NY 13367	Warren Shaw David Becker
4	TYLER JONES	TOWN OF MARTINSBURG SUPT	tylerjonesmart13@gmail.com	315-376-2304	PO Box 13 Martinsburg NY 13704	Tyler Jones
5	FRANK PLATT	TOWN OF LEWIS SUPT	fplatt58@hotmail.com	315 335 1047	1918 Fish Creek Rd West Seneca NY 14185	Frank Platt
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7	PAT MAHAR	TOWN OF DENMARK SUPT	denmarkhighwaysuper@yahoo.com	315-493-3846 Ext 2	3707 Roberts Rd CANTON NY 13619	Pat Mahar
8	KIM VOGT	VILLAGE OF COPENHAGEN	kimvogt4@gmail.com	315-783-7922	PO Box 82 Copenhagen NY 13624	Kim Vogt
9	SCOTT DOYLE	TOWN OF DENMARK COUNCILMAN	Did not attend			
10	DONNA SMITH	VILLAGE OF LOWVILLE MAYOR	missdlowville@yahoo.com willow@nnyvillage.com	315-360-6772	5535 Bostwick St. Lowville NY 13367	Donna Smith
11	DOUG SALMON	TOWN OF WEST TURIN SUPT	dssalmon17@yahoo.com	315-397-2231	5968 James St Constableville, NY 13325	Doug Salmon
12	JOSEPH PFEIFFER JR	TOWN OF LOWVILLE LEWIS COUNTY CODES OFFICER	inspectorjoepfeifferjr@gmail.com	315 681 8889	POB 251 Boonville NY 13309	Joe Pfeiffer Jr
13	JOSEPH GENTER	CONSTABLEVILLE DPTY MAYOR Trustee	jgenter@twcnv.ny.gov	315-397-8172	5938 John St. Cville 13325	Joseph J. Genter

9a-11a	NAME	ORGANIZATION	EMAIL	CONTACT #	MAILING ADDRESS	SIGNATURE
14	ALAN KLOSSNER	VILLAGE OF CONSTABLEVILLE MAYOR	afklossner@gmail.com	315-286-4855	Constableville, NY 13325 55899 High St.	Alan F. Blossner
15	Miles Harris	Town of Watson	mharris@southhulls.org	315-955-0809	6931 N. Chase Lake Rd Glenfield, NY 13343	Michael J. Harris
16	Virginia Taylor	Town of Watson	TownofWatson@gmail.com	315-231-1520	7316 #4 Rd Northville, NY 13367	Virginia E. Taylor
17	Don Cook	Town of Pinckney	COOKIE_COTTENBEAT @Yahoo.com	315-771-8671	525 Co. Rt 194 Cape Vincent, NY 13620	Don A. Cook
18	<del>Alan Klossner</del>					
19	Derek Melnitz	Village of Castorland	dmelnitz524@yahoo.com	315-608-0521	PO Box 104 Castorland, NY 13620	Derek Melnitz
20	Nicole B. Blumhardt	LC Socd	nichelleblumhardt@lewiscounty.ny.gov	315-376-6222	5274 Outer Stowe St Lowville, NY 13367	Nicole B. Blumhardt
21	Tony Subbio	Tetra Tech	tony.subbio@tetratech.com	717-545-3580	2400 Park Drive, Ste I Harrisburg, PA 17110	Tony Subbio
22	Charles Snyder	Tp Harrisburg	Chuck Snyder 300wsm@gmail.com	315-688-2949	7886 Cobb Rd Copenhagen, NY 13620	Charles W. Snyder
23	Scott Marmor	Village of Port Leyden	portleydenpw@gmail.com	315-348-8555	PO Box 582 Port Leyden 13133	Scott Marmor
24	Jennifer Maccione	LC Emo	jennifermaccione@lewiscounty.ny.gov	315-376-5303	PO Box 233 Lowville, NY 13367	Jennifer Maccione
25	Robert MacKenzie	LC Emo	robertmckenzie@lewiscounty.ny.gov	315 376-5305	PO Box 233 Lowville, NY 13367	Robert MacKenzie
26						



2p-4p	NAME	ORGANIZATION	EMAIL	CONTACT #	MAILING ADDRESS	SIGNATURE
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2	JANE GILLETTE	TOWN OF TURIN DPTY SUPERVISOR	jane.gillette1234@gmail.com	315-348-8681 315-775-6600 @com	5137 Old Rte. 12 Lyons Falls 13368	Jane Gillette
3	Chester Cowan	Town of Croghan Town Clerk	croghan@townclerk.com	315-346-1212	9882 St. Rt. 126 Croghan 13620	Chester Cowan
4	DAVID MISADY	CISO	DMENDE@001A	315-382-1760	120 Bay St 13312 Brentwood 13617	David Misady
5	Frank Pace	lc Planning Dep	frankpace@lewiscountyny.gov	315-376-5403	7660 N. State St, Lewis Falls 13361	Frank Pace
6	JOANN MOSBY	town of Watson	joann.mosby@townofwatsonny.com		6971 4th County NY Lowville 13361	Joann Mosby
7	Tomy Subis	Tetra Tech	tomy.subis@tetratech.com	717-545-3580	2400 Park Dr, Ste 1 Harrisburg, PA 17110	Tomy Subis
8	Robert Mackenzie	LC Ermo	robertmackenzie@lewiscountyny.gov	315-376-5305	PO Box 233 Lowville, NY 13367	Robert Mackenzie
9						
10						
11						
12						
13						

6p-8p	NAME	ORGANIZATION	EMAIL	CONTACT #	MAILING ADDRESS	SIGNATURE
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2	ANNE HUNTRESS	VILLAGE OF LYONS FALLS MAYOR	anne.huntress@yahoo.com	315-348-8632	Lyons Falls, NY 13368	
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5	ROSALIE WHITE	TOWN OF LEYDEN SUPERVISOR				
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13	Rosalie White	LC Enno	robertmclennan@lewiscounty.ny.gov	315-376-5305	PO Box 233 Lowville, NY 13367	
14	Tony Subbio	Tetra Tech	tony.subbio@tetra-tech.com	717-545-3550	2400 Rte 27, Sk 1 Harrisburg, PA 17110	



# MEETING NOTES

<b>Meeting</b>	Lewis County Hazard Mitigation Plan (HMP) Risk Assessment Review Meeting		
<b>Date</b>	November 13, 2018	<b>Times</b>	6:00 – 8:00 p.m.
<b>Location</b>	3-G Fire Station, 6229 Blue St, Glenfield, NY 13345		
<b>Attendees</b>	Ryan Piche, Lewis County Manager		
	Thomas Osborne, Lewis County Legislator		
	Robert MacKenzie, Director, Lewis County Fire and Emergency Management		
	Nichelle Billhardt, Director, Lewis County Soil & Water Conservation District		
	Jennifer Maracchion, Emergency Management Assistant, Lewis County Fire and Emergency Management		
	Joe Austin, Planner, Lewis County Public Health		
	Jennifer Jones, Commissioner, Lewis County Social Services Department		
	Joseph Genter, Trustee, Village of Constableville		
	Alan Klossner, Mayor, Village of Constableville		
	Mark Souva, Trustee, Village of Copenhagen		
	Lloyd Richardson, Trustee, Village of Croghan; Director of Facilities, Beaver River Central School District		
	James Der, Supervisor, Town of Denmark		
	Scott Doyle, Councilman, Town of Denmark		
	Pat Mahar, Superintendent, Town of Denmark		
	Tom Gunn, Town Clerk, Town of Greig		
	Steve Bernat, Supervisor, Town of Harrisburg		
	Joseph Pfeiffer, Jr., Codes Officer, Towns of Leyden, Lowville, and Lyonsdale		
	Randall A. Schell, Supervisor, Town of Lowville		
	Donna Smith, Mayor, Village of Lowville		
	Anne Huntress, Mayor, Village of Lyons Falls		
	Terrence Thisse, Supervisor, Town of Martinsburg		
	Tyler Jones, Superintendent, Town of Martinsburg		
	Janusz Karelus, Councilman, Town of Martinsburg		
	Mary Kelley, Clerk, Town of Martinsburg		
	Janice Belmont, Board Member, Village of Port Leyden		
	Anthony Belmont, Resident, Village of Port Leyden		
	Joanne D'Ambrosi, Supervisor, Town of Turin		
	Edward J. Hayes, Supervisor, Town of West Turin		
Richard Fifield, American Red Cross			
Tim Erwin, Lake of Pines Land Owner Association			



# MEETING NOTES

<b>Attendees (continued)</b>	Jon Schell, Director of Facilities Management, Lewis County General Hospital
	Scott Exford, Principal, Lowville Academy
	Barry Yette, Business Administrator, South Lewis Central School District
	Jennifer Snyder, Forest Ranger, New York State Department of Environmental Conservation (NYS DEC)
	Barbara Spaulding, Mitigation Planner, New York State Division of Homeland Security and Emergency Services (NYS DHSES)
	Tony Subbio, Project Manager, Tetra Tech

## Purpose

The purpose of the Risk Assessment Review Meeting was to review the results of the updated risk assessment analysis performed by Tetra Tech, collect feedback on the analysis, and identify problem areas or issues for each of the hazards identified.

## Discussion Points

This section summarizes each discussion point addressed during the meeting.

## Review Risk Assessment

Feedback on the analysis of each hazard is provided below.

- Agricultural Product Spill
  - Roads throughout the County have been damaged by heavy trucks.
- Drought
  - Wells are not as plentiful on the Tug Hill side of the County. Municipalities located in that portion of the County, such as the Town of Martinsburg, go dry more quickly than those located on the other side.
  - The Town of Lowville's water supply dries up due to a problem with high water usage.
  - Water consistently flows over the Village of Lowville dam, even when the rest of the County is dry.
- Earthquake
  - No feedback was provided. Attendees representing municipalities and stakeholders throughout the County were not particularly concerned with this hazard.
- Extreme Temperatures
  - When temperatures drop below 32 degrees Fahrenheit, County communities must provide warming centers. The communities must conduct outreach to their homeless populations.
  - Extremely low temperatures have caused frozen and broken water lines and sewer lines.
  - The County has issued requests for people to limit their power usage in the summer to prevent blackouts.
- Flood
  - A flood that occurred 15-20 years ago was the worst in recent memory. The flood was a result of runoff and melt from an ice storm.



# MEETING NOTES

- Mr. Piche stated that the County expects New York State to require backup power at all water facilities.
- Mr. Piche also stated that stormwater management throughout the County is poor.
- Village of Copenhagen
  - The fire department has repeatedly closed the Four Corners intersection.
- Town of Denmark
  - Properties along Zecher Road repeatedly flood.
  - Runoff causes damages to two culverts along Old State Road.
- Town of Lowville
  - Properties on Ridge Road and Waters Road repeatedly flood.
  - Two bridges recently suffered \$3.4 million in damages.
- Village of Lowville
  - The drainage ditch from the Kraft property floods Ross Road just south of T&T Fireworks. The fire department may have records of flooding events.
- Town of Martinsburg – the following are vulnerable to flooding:
  - East Martinsburg Road
  - Roaring Brook at Cannan Road
  - Route 12 bridge over Roaring Brook
- Flood insurance rate maps (FIRM) in the County were created in the 1980s; attendees stated that FIRMs need to be updated. Ms. Billhardt stated that the County has a large amount of data that could be used to develop new FIRMs.
- Over 2,000 structures throughout the County are in the 1-percent annual chance floodplain, but only 43 National Flood Insurance Program (NFIP) policies are in effect. These data indicate a substantial amount of uninsured property at risk.
- Hazardous Materials
  - No feedback was provided.
- Landslide
  - Route 12 north of Lowville is at risk of landslides.
  - Shale frequently slides down hillsides along West Road in the Town of Turin.
- Severe Storms
  - Damages from this hazard include roofs being blown off (especially from barns) and rain getting into structures after windows are broken by wind-driven debris.
- Severe Winter Storm
  - The Town of West Turin averages over 300 inches of snow each year.
  - Attendees thought that the damage figures provided were very low. This is likely from damages not being reported to the federal data sources.
- Wildfire
  - No feedback was provided. Attendees were not particularly concerned with this hazard.

## Risk Ranking

Mr. Subbio discussed the risk ranking scores received by each hazard. These scores are based on Tetra Tech's current ranking methodology, but that methodology is evolving based on feedback on plans developed for



# MEETING NOTES

municipalities throughout the State. Local capabilities to minimize the impacts of hazards will be incorporated into the new methodology. The final version of the HMP will include an updated risk ranking table and discussion.

## Next Steps

The following next steps were discussed at the meeting:

- Municipal representatives will continue to complete the information-gathering worksheets and provide them to Mr. MacKenzie, Mr. Subbio, or the Tetra Tech planner assigned to the jurisdiction.
- Tetra Tech's planners will work with the towns and villages to identify additional problem areas and issues related to the hazards analyzed.
- On December 17, 2018, Tetra Tech will conduct a Mitigation Strategy Workshop to discuss identification of hazard mitigation actions based on the updated risk assessment.

The meeting adjourned at 8:00 p.m.






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**Lewis County  
Hazard Mitigation Plan Update  
Risk Assessment Review  
Meeting**





**Welcome**




**Agenda**

- Review Risk Assessment
- Next Steps
- Questions




**Review Risk Assessment**

- **Agricultural Product Spill**
  - Milk and Manure Spills
  - History
    - 14 events from 1987-2017
    - August 2005:
      - 3 million gallons of liquid manure spilled
      - Contaminated the Black River
      - Killed 375,000 fish
  - Potential Impacts
    - Environmental contamination
    - Shut down water sources
    - Clog wastewater treatment systems
    - Fish kill



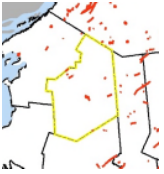

**Review Risk Assessment**

- **Drought**
  - History
    - Four droughts since 2010
    - Abnormally dry conditions 14 more times since 2010
  - Entire population is vulnerable
  - Reduction in firefighting capability
  - No direct effects on structures; may increase vulnerability to wildfires
  - Severe economic impacts on agriculture
    - 634 farms
    - 181,741 acres



**Review Risk Assessment**

- **Earthquake**
  - History
    - Four earthquakes were epi-centered in the County since 2010
  - Location
    - Known fault lines exist in the County
  - Impacts
    - Shaking
    - Evacuation of buildings
    - No damage so far
  - Probability - frequent



## Review Risk Assessment

- Earthquake (continued)
  - Entire population is exposed, especially:
    - Urban areas
    - Elderly
    - Individuals living below the poverty line
  - On soft soils
    - 7,850 people (29.0% of the County population)
    - 9,942 buildings (28.4% of the County total)
    - \$939.9 million in property replacement cost



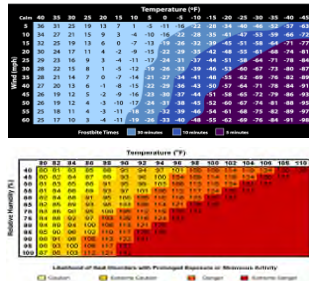
## Review Risk Assessment

- Earthquake (continued)
  - 250-year Mean Return Period (MRP) earthquake
    - \$1.1 million in damage
    - \$443,300 in income loss
    - Critical facilities – no significant damage
    - 859.6 tons of debris
      - 686.5 tons of brick/wood debris
      - 173.1 tons of concrete/steel debris



## Review Risk Assessment

- Extreme Temperature
  - History (since 1950)
    - 4 extreme lows
    - 0 extreme highs
  - Impacts
    - Health effects
    - Drought
    - Utility load
  - Probability
    - 4 events in 69 years - 6% chance each year



## Review Vulnerability Assessment

- Extreme Temperature
  - Entire population is vulnerable, especially:
    - Elderly
    - Infants and children
    - The sick
    - Low-income individuals who cannot afford heating/cooling
    - Overexertion/hypothermia
  - All structures are vulnerable
    - Overloaded HVAC systems
    - Frozen/bursting pipes
  - Loss of business, cost of repairs



## Review Risk Assessment

- Flood
  - History
    - 9 Presidential Disaster Declarations
    - 37 events since 1950
  - Location
    - 1% annual chance floodplain
    - 0.2% annual chance floodplain
    - Ice jams
    - Flash flooding



## Review Risk Assessment

- Flood (continued)
  - Impacts
    - \$3.4 million in reported property damage since 1950
  - Probability
    - 37 events in the last 69 years – 54% chance each year





## Review Risk Assessment

- Flood (continued)
  - 1% Annual Chance Floodplain
    - 1,430 people (5.3% of total population)
    - 2,077 buildings (5.9% of total)
    - \$221 million in structure and contents replacement cost value
    - \$79.0 million in expected losses
    - 39 critical facilities, not counting dams
    - 8,311 tons of debris
  - 0.2% Annual Chance Floodplain
    - Not digitized; could not be analyzed for this plan update.



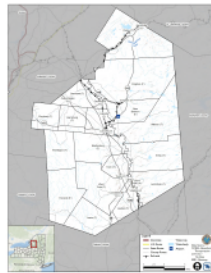
## Review Risk Assessment

- Flood (continued)
  - Flood insurance statistics (as of May 3, 2018)
    - 72 policies in the County
    - 43 policies in the 1% annual chance floodplain
    - 50 claims
    - \$605,011 in payments
  - Repetitive Loss (RL)
    - Two or more reported losses over \$1,000 in any 10-year rolling period since 1978
    - 4 total; 3 were single-family homes



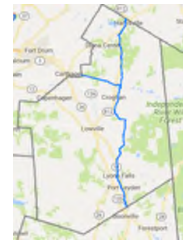
## Review Risk Assessment

- Hazardous Materials
  - History
    - 1,675 spill incidents since 1985
    - Mostly petroleum products
  - Location
    - Transit
    - Fixed facilities
  - Impacts
    - Contamination
    - Road closures
    - Property damage
    - Cleanup costs
  - Probability
    - 1,675 incidents in 34 years – 100% chance each year



## Review Risk Assessment

- Hazardous Materials (continued)
  - Entire population is vulnerable
    - Injuries/fatalities from exposure to spilled chemicals
    - Spills in transit
    - Spills from fixed facilities
  - Structures
    - Inaccessibility
    - Contamination
    - Fire/explosion



## Review Risk Assessment

- Landslide
  - Entire County has low incidence
  - History
    - No major incidents since 2010
  - Landslide Hazard Areas
    - Generally low risk
    - Areas of local steep slopes



## Review Risk Assessment

- Severe Storms
  - Hail
  - Wind
  - Lightning
  - Thunderstorms
  - Tornado
  - Hurricane/Tropical Storm





## Review Risk Assessment

- Severe Storms (continued)
  - History
    - 12 Presidential Disaster Declarations
    - 163 events since 1950
  - Impacts
    - 4 injuries, 3 fatalities since 2009
    - \$1.6 million in property damage since 2009
    - Utility failure
  - Probability
    - 163 events since 1950 – 100% chance each year



## Review Risk Assessment

- Severe Storms (continued)
  - Every structure is exposed
  - HAZUS Model – 500-year MRP Event
    - Less than 39 mph
    - No expected structure damage
    - No critical facilities impacted
    - Insignificant income loss
    - No debris



## Review Risk Assessment

- Severe Winter Storm
  - Heavy Snow
  - Blizzards
  - Ice Storms



## Review Risk Assessment

- Severe Winter Storm (continued)
  - History
    - 9 Presidential Disaster Declarations since 1954
    - 331 major events since 1960
  - Impacts
    - 5 fatalities; 16 injuries
    - \$20+ million in property damage
    - \$250,000+ in crop damage
    - Accidents
    - Travel delays
  - Probability
    - 331 events in 59 years – 100% chance each year



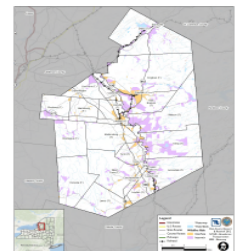
## Review Risk Assessment

- Severe Winter Storm (continued)
  - Entire population is vulnerable
    - Increase in traffic accidents
    - Overexertion
    - Hypothermia
    - Reduction in ability to access emergency services
  - All buildings exposed - \$4.6 billion
  - Loss of functionality of critical facilities
  - Economic impacts from loss of business



## Review Risk Assessment

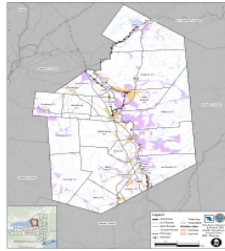
- Wildfire
  - History
    - No County records of events
    - 500-1,000+/- from 2003-2017, according to state records
  - Location
    - Wildland/urban interface
      - Interface
      - Intermix
    - 1.5 miles from wildland
  - Impacts
    - No records
  - Probability
    - Frequent





## Review Risk Assessment

- Wildfire (continued)
  - Population exposed
    - 15,588
    - 57.5% of County
  - Building stock
    - 18,396 buildings exposed
    - \$2.4 billion in value exposed
    - 52.8% of total building value



## Risk Ranking

Hazard of Concern	Probability	Impact	Total = (Probability x Impact)
Agricultural Product Spill	3	6	18
Drought	3	12	36
Earthquake	1	11	22
Extreme Temperature	3	12	36
Flood	2	6	12
Hazardous Materials	3	16	48
Landslide	2	6	12
Severe Storms	3	16	48
Severe Winter Storm	3	16	48
Wildfire	3	16	48



## Next Steps

- Complete Worksheets
- Identify Problems
- Next Meeting – Develop Mitigation Actions



## Questions?

Thank you for your time!



## Contacts



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# AGENDA

## LEWIS COUNTY HAZARD MITIGATION PLAN UPDATE Risk Assessment Review Meeting

Tuesday, November 13, 2018 | 6:00 – 8:00 p.m.

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### 1. Welcome

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### 2. Review Risk Assessment

- a. Agricultural Product Spill
  - b. Drought
  - c. Earthquake
  - d. Extreme Temperature
  - e. Flood
  - f. Hazardous Materials
  - g. Landslide
  - h. Severe Storms
  - i. Severe Winter Storm
  - j. Wildfire
- 

### 3. Next Steps

- a. Complete worksheets
  - b. Identify problems
  - c. Next meeting – Develop Mitigation Actions
- 

### 4. Questions

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# Lewis County Hazard Mitigation Plan (HMP)

## Risk Ranking – Countywide

<b>Hazard of Concern</b>	<b>Probability</b>	<b>Impact</b>	<b>Total = (Probability x Impact)</b>
Agricultural Product Spill	3	6	18
Drought	3	12	36
Earthquake	1	11	22
Extreme Temperature	3	12	36
Flood	2	6	12
Hazardous Materials	3	16	48
Landslide	2	6	12
Severe Storms	3	16	48
Severe Winter Storm	3	16	48
Wildfire	3	16	48



Please consider the questions below for the update of actions and initiatives for your mitigation strategy. Suggested actions will be developed based on an analysis of Lewis County's needs and capabilities, or will be carried over from the previous hazard mitigation plan (HMP) update based on your responses in Worksheet 4. Some questions may not apply to your municipality.

1. Which properties in your jurisdiction are most at-risk to flood events and would have the greatest need for retrofitting or other flood hazard mitigation measures? Specific property addresses do not need to be listed (to ensure residential privacy), but names of streets or neighborhoods can be included.
  
2. What public outreach and education actions would you be most interested in implementing?  
Circle all that apply.
  - A. Provide general natural hazard risk preparedness and mitigation and related National Flood Insurance Program (NFIP) information in regular newsletters and mailings.
  - B. Provide natural hazard risk and risk reduction information through social media channels and e-mail blast systems.
  - C. Post flyers and other readily available NFIP informational materials at municipal hall or distribute at regular civic meetings.
  - D. Develop/maintain a natural hazard risk management webpage on the municipal website where information and mapping can be posted.
  - E. Encourage private business owners and managers of infrastructure that provide critical services in post-disaster situations to develop Continuity of Operations Plans or Business Continuity Plans.
  - F. Enhance public outreach to residents in NFIP floodplain areas, which may include distributing periodic articles and including handouts in the annual newsletter, to inform them of annual grant opportunities.
  - G. Other:
  
3. Which critical facilities still need or would benefit from a backup generator or redundant power supply?





LEWIS COUNTY HAZARD MITIGATION PLAN UPDATE  
Risk Assessment Review Meeting

SIGN-IN

Tuesday, November 13, 2018 | 6:00 - 8:00 p.m.

NAME AND TITLE	AGENCY/ORGANIZATION	E-MAIL ADDRESS	TELEPHONE
JANICE BARNHART	Board Member - Village of Pait Snyder		348-6466
ANTHONY BELMONT	Village of Lyons Falls		315-348-6466
JOE PEIFFER	Lyons Falls		315-681-8689
SIM DES	Town of Denmark	denmark.supervisor@gmail.com	315-778-9417
BARRY YETTE	South Lewis CSO	byette@southlewis.org	348-250
TOM O'SHOWN	Legislator		326-7355
I SNYDER	NYS DEC Rangers	jennifer.snyder@dec.ny.gov	315 489-6377
ANNE HUNTRESS	Village of Lyons Falls	anne.huntress@yahoo.com	315 348 8632
PAT MALINK	T/O Denmark	denmark@lyonsfalls.com	315-778 2318
TOM GUNN	T/O Greig	gunn.tp@gmail.com	315 529 1046





LEWIS COUNTY HAZARD MITIGATION PLAN UPDATE  
Risk Assessment Review Meeting

SIGN-IN

Tuesday, November 13, 2018 | 6:00 - 8:00 p.m.

NAME AND TITLE	AGENCY/ORGANIZATION	E-MAIL ADDRESS	TELEPHONE
Jon Schmitt	LC614		
Randy Sehl	Thomville		
Scott Exford	Thomville Academy		
Jenny Jones	DSS		
Alan Klossner	Mayer Grille		
Mary Kelley	Clerk Martinsburg		
T. B. [unclear]	[unclear]		
Nichelle Billheart	Lewis Co. SWCD		
Tim Erwin	LAKE OF PINES LAND OWNERS ASS.	NEVERFORGET1953 @GMAIL.COM	315-436-8353
Brittany Spaulding	DHS&S		







LEWIS COUNTY HAZARD MITIGATION PLAN UPDATE  
Risk Assessment Review Meeting

SIGN-IN

Tuesday, November 13, 2018 | 6:00 - 8:00 p.m.

NAME AND TITLE	AGENCY/ORGANIZATION	E-MAIL ADDRESS	TELEPHONE
Tyler Jones Highway Supt.	T/O Martinsburg	tylerjonesmart13@gmail.com	315-681-3190
Edward W. Hayes Town Supervisor	Town of West Turin	SAPPAS@FIRETOWN.NY.GOV	315-397-8172
Joseph Genter Trustee	Village of C'ville	jgenter@tucny.n.com	315-397-8172
Janay A Karelus Town Councilman	Martinsburg		3376-2893
Joe Austin LCPH Planner	LCPH	Joanstin@lcpublishing.org	315-376-5161
Woyd Richardson Director of Facilities	BRCSD / Village of Crofton	Richardson@brcsd.ny.gov	315-346-1211
Ryan Piche	LCNY - County Manager	Yahoo.com	
Joanne D'Ambrosi Super Visor	Town of Turin	JoanneDambrosi@redcross.org	315-348-8735
Donna Smith Mayor	V. Lowville	missdlowville@yahoo.com	315-376-2834
Richard Piche Red Cross	Red Cross	Rich.Piche@redcross.org	315-836-6396







LEWIS COUNTY HAZARD MITIGATION PLAN UPDATE  
Risk Assessment Review Meeting

SIGN-IN

Tuesday, November 13, 2018 | 6:00 - 8:00 p.m.

NAME AND TITLE	AGENCY/ORGANIZATION	E-MAIL ADDRESS	TELEPHONE
Jennifer Marachion LC EMO Asst	LC EMO	Jennifer.marachion@lewiscounty.ny.gov	315 376-5308
Bob Mackenzie LC EMO Director	LC EMO	robert.mackenzie@lewiscounty.ny.gov	315 376-5305
Scott Doyle	Town of Denmark	Denmark Councilman Doyle@Gmail.com	315-767 5368
Mark Souwa	Village of Copenhagen	MSouwa3@twyny.ni.com	315 408 5287
Steve Berdat	T. HARRISBURG	SUBERNAT@OUTLOOK.COM	315-544- 2200
Tony Subbio/PM	Tetra Tech	tony.subbio@tetra-tech.com	717-545- 3580





# MEETING NOTES

<b>Meeting</b>	Lewis County Hazard Mitigation Plan (HMP) Mitigation Solutions Workshop		
<b>Date</b>	December 17, 2018	<b>Times</b>	6:00 – 8:00 p.m.
<b>Location</b>	3-G Fire Station, 6229 Blue St., Glenfield, NY 13345		
<b>Attendees</b>	Thomas Osborne, Lewis County Legislator		
	Robert MacKenzie, Director, Lewis County Fire and Emergency Management		
	Nichelle Billhardt, Director, Lewis County Soil and Water Conservation District		
	Joe Austin, Planner, Lewis County Public Health		
	Jennifer Maracchion, Emergency Management Assistant, Lewis County Fire and Emergency Management		
	Ashley Waite, Public Health Planner, Lewis County Public Health		
	Joseph Genter, Trustee, Village of Constableville		
	Alan Klossner, Mayor, Village of Constableville		
	Cody Meneilly, Trustee, Village of Constableville		
	Mark Sullivan, Trustee, Village of Constableville		
	Linda Nortz, Trustee, Village of Croghan		
	James Der, Supervisor, Town of Denmark		
	Pat Mahar, Superintendent, Town of Denmark		
	Joseph Pfeiffer, Jr., Codes Officer, Towns of Leyden, Lowville, and Lyonsdale		
	Randall A. Schell, Supervisor, Town of Lowville		
Edward J. Hayes, Supervisor, Town of West Turin; Employee, South Lewis Central School District			
Randy André, Deputy Chief of Mitigation, New York State Division of Homeland Security and Emergency Services (NYS DHSES)			
Tony Subbio, Project Manager, Tetra Tech			

## Purpose

The purpose of the Mitigation Solutions Workshop was to discuss the ways in which each jurisdiction in Lewis County can identify mitigation actions for inclusion in the updated HMP.

## Discussion Points

This section summarizes each discussion point addressed during the meeting.

## Goals and Objectives

Mr. Subbio reviewed the draft set of goals and objectives. The set of goals and objectives is simplified and shortened from the 2010 HMP. Mr. Subbio pointed out that the new goals are aligned with the categories of mitigation actions. The attendees approved the suggested goals and objectives for use in the updated HMP.



# MEETING NOTES

## Problem Statements

Mr. Subbio then stated that each jurisdiction should identify problems they hope to solve through hazard mitigation. These problems could be issues of concern to the public, the local government, or other stakeholders. The identified problem areas can also be found by reviewing the risk assessment and the jurisdiction's vulnerability to each hazard. Problem statements form the basis of the hazard mitigation actions identified in the HMP.

A list of identified problems was provided to attendees. Additional problem statements that were identified during the meeting are listed below:

- Village of Constableville
  - Water lines break due to the cold, resulting in constant leaks and the need to replace lines.
  - Small ditches on private property are overgrown with brush, which floods roadways. This is a problem on High Street.
  - A stream clogged with brush floods North Main Street.
  - A sewer pump station next to the Sugar River floods. This was also reported on a worksheet provided by the Village.
- Village of Copenhagen – a drainage problem just destroyed 250 feet of culvert. The 12-inch culvert needs to be upgraded to an 18-inch culvert.
- Village of Croghan
  - Water lines freeze and leak.
  - Drainage is an issue along the creek on Firehall Street.
  - There is a crumbling dam owned by Beaverite. The Croghan Island Sawmill around it is a historical structure (though it was not known if the site was on an official listing of historical structures).
- Town of Denmark
  - Zecher Road is flooded by the Black River. This road has residences and temporary camps.
- Town of Lowville
  - Ridge Road is flooded by the Black River. There are many dairy farms on this road.
  - Kraft and Walmart expanded, and the drainage systems around those properties cannot handle the runoff from any storm event.
- Town of West Turin
  - High Street in the Village of Constableville becomes Crow Foot Hill Road in the Town of West Turin. Stormwater runoff overwhelms culverts along Crow Foot Hill Road from the village line to Mackey Road. An action to address this problem was included in the 2010 HMP as well.
- Mr. MacKenzie has detailed documentation of flooding impacts along the Black River, Sugar River, Moose River, and Beaver River. This documentation will prove very valuable in any benefit-cost analysis needed to support a grant application to implement mitigation actions. Mr. André discussed "Mitigate New York,"



# MEETING NOTES

which will have a large amount of information on hazards and other topics that would prove useful to local officials as well.

## Categories of Mitigation Actions

Mr. Subbio reviewed the four types of mitigation actions and provided examples of each type. The four categories of mitigation actions are as follows:

- Local Plans and Regulations
- Structure and Infrastructure Projects
- Natural Systems Protection
- Education and Awareness Programs

## New Mitigation Actions

The mitigation action categories provide options for solving the issues identified in the problem statements. Mr. Subbio advised attendees to consider each mitigation action category and to not let the lack of funding for project implementation stop the jurisdiction from including an action on the list.

Mr. Subbio pointed out that the flood damage prevention ordinance for every town and village in Lewis County was written in the early 1980s, following the Federal Emergency Management Agency's (FEMA) creation of the effective flood insurance rate maps (FIRM) at that time. Since then, New York State has passed a law requiring freeboard on all new development. This requirement is not reflected in flood damage prevention ordinances; therefore, each jurisdiction should update its ordinance to include freeboard.

In addition, all jurisdictions with critical facilities in the special flood hazard area (SFHA) must include a specific action for protecting those facilities to the 500-year flood level.

Mr. Subbio provided the attendees with a set of sample mitigation actions to help each jurisdiction develop their own actions to include in the HMP.

Mr. Subbio requested that each jurisdiction identify other problems and possible solutions, and share those with the County and/or the Tetra Tech planners who have been working with each jurisdiction.

## Mitigation Action Worksheet

Mr. Subbio reviewed the Action Worksheet with the group. The worksheets are used to capture information about all mitigation actions.

## Next Steps

The following next steps were discussed at the meeting:

- Jurisdictions will work with Tetra Tech's planners to develop new mitigation actions and complete Action Worksheets for those actions.
- Tetra Tech will work with each jurisdiction to complete its annex.
- Tetra Tech will conduct municipal support meetings to review and complete draft annexes.

The meeting adjourned at 7:55 p.m.



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**Lewis County  
Hazard Mitigation Plan Update  
Mitigation Solutions Workshop**

## Welcome

## Agenda

- Welcome
- Goals and Objectives
- Problem Statements
- Categories of Mitigation Actions
- New Mitigation Actions
- Mitigation Action Worksheet
- Next Steps
- Questions

## Goals and Objectives

2018 Suggested Goals and Objectives	
<b>Goal 1: Reduce the likelihood and impacts of hazards on life, property, and the environment.</b>	
Objective 1.1	Develop and/or update local regulations based on current information and best practices.
Objective 1.2	Maintain natural systems to reduce the impacts of hazards.
<b>Goal 2: Protect life, property, critical infrastructure, the environment, and the economy from hazard impacts.</b>	
Objective 2.1	Acquire, retrofit, or relocate structures from flood-prone areas.
Objective 2.2	Retrofit critical infrastructure to protect against hazard impacts.
Objective 2.3	Enhance stormwater management infrastructure.
Objective 2.4	Ensure that critical facilities can continue to function during and after hazard impacts.
Objective 2.5	Encourage residents and business owners to insure their property against hazard impacts, including through flood insurance through the National Flood Insurance Program (NFIP).
<b>Goal 3: Educate the public, officials, and other stakeholders about the hazards they face and what can be done to mitigate hazard impacts.</b>	
Objective 3.1	Ensure that local officials attend current training on regulatory issues and best practices.
Objective 3.2	Provide information to individuals throughout the County on the hazards they face and what property protection measures they can take.

## Problem Statements

- What issues concern the public?
- What issues concern the County/Town/Village?
- What issues concern other stakeholders?
  
- Review the risk assessment.
- *"I really wish we could fix \_\_\_\_\_!"*
- *"Why didn't our residents \_\_\_\_\_?"*
- *"It's been a long time since we updated our \_\_\_\_\_!"*

## Categories of Mitigation Actions

- **Local Plans and Regulations**
  - Policies
  - Ordinances
  - Community plans/strategies
- **Structure and Infrastructure Projects**
  - Upgrade stormwater management system
  - Acquire, elevate, and relocate structures
  - Retrofit



## Categories of Mitigation Actions

- Natural Systems Protection
  - Protect wetlands
  - Restore waterways
- Education and Awareness Programs
  - School assemblies
  - Community meetings
  - Mailers
  - Newsletters



## New Mitigation Actions

- How to solve the problems:
  - Consider each category.
  - Don't let lack of funding stop you.
- Review the Capabilities Assessment Survey.
- Protect critical facilities in the 0.2-percent chance (500-year) floodplain.



## New Mitigation Actions

Mitigation Initiative	Applies to New and/or Existing Structures?	Hazard(s) Mitigated	Grade Met	Lead and Support Agencies	FIR Benefits	Est. Cost	Source of Funding	Timeline	Priority	Mitigation Category
Update the Flood Damage prevention ordinance	New	Flood	1	Town/Village Board	High	Low	Operating Budget	Short Term	XXX	LPR
Tighten new construction regulations, such as stormwater management and zoning	New	All	1	Town/Village Board	High	Low	Operating Budget	Short Term	XXX	LPR
Flood-proof the [CRITICAL FACILITY IN THE FLOODPLAIN] in the 100-year flood (0.2 percent annual chance flood level)	Existing	Flood, Seven Storm	2	Town/Village Public Works, Planning Board	High	High	FEMA, EMRP, FMA, FEMA, CDBG, Operating Budget	Short Term	XXX	SDP
Acquire, elevate, relocate, and/or retrofit facilities out of hazard areas	Existing	Flood, Landslide, Wildfire	2	Town/Village Board	High	High	FEMA, EMRP, FMA, FEMA, CDBG, Operating Budget	Long Term	XXX	SDP



## Mitigation Action Worksheet

Mitigation Action Worksheet							
Project Name:							
Project Number:							
How to Solve the Problem:							
Description of the Problem:							
Address of Project (include for implementation):							
Description of the Solution:							
Is this project related to a Critical Facility? Yes <input type="checkbox"/> No <input type="checkbox"/>							
Level of Protection:	Estimated Benefits (Enter monetary):						
Estimated Date:	Costs (non-):						
Estimated Cost:	Mitigation Action Type:						
Plan for Implementation:	Desired Timeline for Implementation:						
Prioritization:	Potential Funding Sources:						
Responsible Organization:	Local Planning Commission to be used in implementation if any:						
Alternatives:	<table border="1"> <thead> <tr> <th>Criteria</th> <th>Estimated Cost</th> <th>Evaluation</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Criteria	Estimated Cost	Evaluation			
Criteria	Estimated Cost	Evaluation					
Program Support (for implementation):							
Date of Status Report:							
Report of Progress:							
Update Evaluation of the Problem and/or Solution:							



## Next Steps

- Work with Tetra Tech to develop new mitigation actions.
- Complete action worksheets.
- Finalize the updated mitigation strategy.
- Develop annexes.
- Conduct municipal support meetings.



## Questions?

Thank you for your time!







## Contacts



**Bob MacKenzie**

robertmackenzie@lewiscounty.ny.gov  
(315) 376-5305



**Tony Subbio**

tony.subbio@tetrattech.com  
(717) 545-3580





# AGENDA

## LEWIS COUNTY HAZARD MITIGATION PLAN UPDATE Mitigation Solutions Workshop

Monday, December 17, 2018 | 6:00 – 8:00 p.m.

- 
1. Welcome

---

  2. Goals and Objectives

---

  3. Problem Statements

---

  4. Categories of Mitigation Actions

---

  5. New Mitigation Actions

---

  6. Mitigation Action Worksheet

---

  7. Next Steps
    - a. Work with Tetra Tech to develop new mitigation actions.
    - b. Complete action worksheets.
    - c. Finalize the updated mitigation strategy.
    - d. Develop annexes.
    - e. Conduct municipal support meetings.

---

  8. Questions

---





## Lewis County Hazard Mitigation Plan

### 2010 Goals

---

1. Promote disaster-resistant development.
2. Build and support local capacity to enable the public to prepare for, respond to, and recover from disasters.
3. Reduce the possibility of damage and losses due to extreme temperatures.
4. Reduce the possibility of damage and losses due to tornadoes and other high winds.
5. Reduce the possibility of damage and losses due to winter storms.
6. Reduce the possibility of damage and losses due to dam failure.
7. Reduce the possibility of damage and losses due to drought.
8. Reduce the possibility of damage and losses due to flooding
9. Reduce the possibility of damage and losses due to ice jams.
10. Reduce the possibility of damage and losses due to earthquakes.
11. Reduce the possibility of damage and losses due to landslides.
12. Reduce the possibility of damage and losses due to wildfires.
13. Reduce the possibility of damages to emergency and critical facilities due to flooding, wildfires, and extreme winds.



## 2018 Suggested Goals and Objectives

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### Goal 1: Reduce the likelihood and impacts of hazards on life, property, and the environment.

- Objective 1.1      Develop and/or update local regulations based on current information and best practices.
- Objective 1.2      Maintain natural systems to reduce the impacts of hazards.

### Goal 2: Protect life, property, critical infrastructure, the environment, and the economy from hazard impacts.

- Objective 2.1      Acquire, retrofit, or relocate structures from flood-prone areas.
- Objective 2.2      Retrofit critical infrastructure to protect against hazard impacts.
- Objective 2.3      Enhance stormwater management infrastructure.
- Objective 2.4      Ensure that critical facilities can continue to function during and after hazard impacts.
- Objective 2.5      Encourage residents and business owners to insure their property against hazard impacts, including through flood insurance through the National Flood Insurance Program (NFIP).

### Goal 3: Educate the public, officials, and other stakeholders about the hazards they face and what can be done to mitigate hazard impacts.

- Objective 3.1      Ensure that local officials attend current training on regulatory issues and best practices.
- Objective 3.2      Provide information to individuals throughout the County on the hazards they face and what property protection measures they can take.



## Lewis County Hazard Mitigation Plan

1. Countywide
  - a. Flood damage prevention ordinances throughout the County do not meet State requirements.
  - b. Some municipal floodplain administrators do not have a strong understanding of floodplain management and their role in regulating development in the floodplain.
  - c. Flood Insurance Rate Maps (FIRM) in the County were created in the 1980s. They are not effective in helping to regulate development in the County.
  - d. Stormwater management throughout the County is considered poor.
  - e. Roads throughout the County have been damaged by heavy trucks.
  - f. Critical facilities throughout the County are vulnerable to power outages.
  - g. Water lines and sewer lines are vulnerable to extremely low temperatures.
  - h. There are over 2,000 structures in the 1 percent annual chance floodplain throughout the County, but only 43 National Flood Insurance Program (NFIP) policies in effect. There is a substantial amount of uninsured property at risk.
2. Lewis County
  - a. The Lewis County IDA power facility on Main Street in the Town of Croghan is in the 1% annual chance floodplain and vulnerable to repetitive flooding.
3. Village of Castorland
  - a. The wastewater facility on NY-410 is in the 1% annual chance floodplain and vulnerable to repetitive flooding.
4. Village of Constableville
  - a. The dam at the water reservoir is at risk of failing.
  - b. The Village's water line infrastructure is at risk of failing.
  - c. The Village's sewer line infrastructure is at risk of failing.
  - d. The culvert on James Street cannot handle stormwater loads.
5. Village of Copenhagen
  - a. The Fire Department has repeatedly closed the Four Corners intersection.
6. Town of Croghan
  - a. The wastewater facility on Main Street is in the 1% annual chance floodplain and vulnerable to repetitive flooding.
  - b. The Naumburg Mennonite Church school on NY-410 is in the 1% annual chance floodplain and vulnerable to repetitive flooding.



7. Village of Croghan
  - a. The wastewater pump on NY-812 is in the 1% annual chance floodplain and vulnerable to repetitive flooding.
  - b. The Erie Boulevard Hydropower facilities on Effley Falls Road, Adsit Trail, Fish Creek Road, Erie Canal Road, and Old State Road are in the 1% annual chance floodplain and vulnerable to repetitive flooding.
8. Town of Denmark
  - a. Properties along Zucker Road repeatedly flood.
  - b. Runoff damages two culverts along Old State Road.
9. Town of Greig
  - a. The potable pump on Lake House Road in the Town of Lewis is in the 1% annual chance floodplain and vulnerable to repetitive flooding.
10. Village of Harrisville
  - a. The Fortis U.S. Energy Corporation power facility on Mill Street is in the 1% annual chance floodplain and vulnerable to repetitive flooding.
11. Town of Leyden
  - a. The Black River Hydro Association power facilities on the Black River are in the 1% annual chance floodplain and vulnerable to repetitive flooding.
12. Town of Lowville
  - a. Ridge Road repeatedly floods.
  - b. Willow Grove Road repeatedly floods.
  - c. Bickford Road repeatedly floods.
  - d. Mill Creek along Waters Road repeatedly floods.
  - e. Route 12 north of the Village of Lowville is at risk to landslides.
13. Village of Lowville
  - a. Maple Avenue repeatedly floods.
  - b. The Village's potable pump on Waters Road in the Town of Lyonsdale is in the 1% annual chance floodplain and vulnerable to repetitive flooding.
  - c. The Village's potable pump on River Road in the Town of Lyonsdale is in the 1% annual chance floodplain and vulnerable to repetitive flooding.
14. Village of Lyons Falls
  - a. The Northbrook Lyons Falls LLC power facility on Center Street is in the 1% annual chance floodplain and vulnerable to repetitive flooding.





15. Town of Lyonsdale

- a. The Lyn 1 communications facility on Marmon Road is in the 1% annual chance floodplain and vulnerable to repetitive flooding.
- b. The Fortis US Energy Corporation power facility on Lyonsdale Road is in the 1% annual chance floodplain and vulnerable to repetitive flooding.
- c. The Northbrook Lyons Falls LLC power facility on Shibley Road is in the 1% annual chance floodplain and vulnerable to repetitive flooding.
- d. The Lyonsdale Associates power facility on Lowdale Road is in the 1% annual chance floodplain and vulnerable to repetitive flooding.

16. Town of Martinsburg

- a. East Martinsburg Road is vulnerable to flooding.

17. Town of New Bremen

- a. The Algonquin Power LLC power facility on NY-216/County Route 35 is in the 1% annual chance floodplain and vulnerable to repetitive flooding.
- b. The Algonquin Power LLC power facility on NY-126 is in the 1% annual chance floodplain and vulnerable to repetitive flooding.

18. Town of Osceola

- a. 3/10 of a mile of Ryan Road around the Salmon River repeatedly floods.
- b. Jackson Road around Prince Brook repeatedly floods.

19. Village of Port Leyden

- a. The Black River Hydro Association power facility on North Street is in the 1% annual chance floodplain and vulnerable to repetitive flooding.
- b. The Lyonsdale Hydroelectric Company power facility on Main Street is in the 1% annual chance floodplain and vulnerable to repetitive flooding.

20. Town of Turin

- a. Shale slides down frequently along West Road.

21. Town of Watson

- a. The Erie Boulevard Hydropower facility on Beaver River Road is in the 1% annual chance floodplain and vulnerable to repetitive flooding.

22. Town of West Turin

- a. The City of Rome's water pump is in the 1% annual chance floodplain and vulnerable to repetitive flooding.
- b. The Town's wastewater pump on Center Street in the Village of Lyons Falls is in the 1% annual chance floodplain and vulnerable to repetitive flooding.



Please consider the questions below for the update of actions and initiatives for your mitigation strategy. Suggested actions will be developed based on an analysis of Lewis County's needs and capabilities or will be carried over from the previous hazard mitigation plan (HMP) update based on your responses in Worksheet 4. Some questions may not apply to your municipality.

1. Which properties in your jurisdiction are most at-risk to flood events and would have the greatest need for retrofitting or other flood hazard mitigation measures? Specific property addresses do not need to be listed (to ensure residential privacy), but names of streets or neighborhoods can be included.
  
2. What public outreach and education actions would you be most interested in implementing?  
Circle all that apply.
  - A. Provide general hazard preparedness and mitigation and related National Flood Insurance Program (NFIP) information in regular newsletters and mailings.
  - B. Provide hazard and risk reduction information through social media channels and e-mail blast systems.
  - C. Post flyers and other readily available NFIP informational materials at municipal hall or distribute at regular civic meetings.
  - D. Develop/maintain a natural hazard risk management webpage on the municipal website where information and mapping can be posted.
  - E. Encourage private business owners and managers of infrastructure that provide critical services in post-disaster situations to develop Continuity of Operations Plans or Business Continuity Plans.
  - F. Enhance public outreach to residents in floodplain areas, which may include distributing periodic articles and including handouts in the annual newsletter to inform them of annual grant opportunities.
  - G. Other:
  
3. Which critical facilities still need or would benefit from a backup generator or redundant power supply?





## Sample Mitigation Actions

Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Est. Benefits	Est. Cost	Sources of Funding	Timeline	Priority	Mitigation Category
Update the flood damage prevention ordinance.	New	Flood	1	Town/Village Board	High	Low	Operating Budget	Short Term	XXX	LPR
Implement new community regulations, such as stormwater management and zoning.	New	All	1	Town/Village Board	High	Low	Operating Budget	Short Term	XXX	LPR
Flood-proof the [CRITICAL FACILITY IN THE FLOODPLAIN] to the 500-year flood (0.2-percent annual chance flood) level.	Existing	Flood, Severe Storm	2	Town/Village Public Works, Planning Board	High	High	FEMA (HMGP, FMA, PDM), CDBG, Operating Budget	Short Term	XXX	SIP
Acquire, elevate, relocate, and/or retrofit facilities out of hazard areas.	Existing	Flood, Hazardous Materials, Landslide, Wildfire	2	Town/Village Board	High	High	FEMA (HMGP, FMA, PDM), CDBG, Operating Budget	Long Term	XXX	SIP
Install a backup generator at [FACILITY].	Existing	Severe Storm, Severe Winter Storm	2	Town/Village Public Works/ Highway	Medium	Medium	FEMA (HMGP, FMA, PDM), CDBG, Operating Budget	Short Term	XXX	SIP
Identify facilities that store hazardous materials outdoors, and work with them to implement measures to prevent spills.	Existing	Agricultural Product Spill, Hazardous Materials	1, 2, 3	Code Enforcement	High	Low	Operating Budget	Short Term	XXX	SIP





Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals Met	Lead and Support Agencies	Est. Benefits	Est. Cost	Sources of Funding	Timeline	Priority	Mitigation Category
Expand culvert capacity at [VULNERABLE ROAD] to meet 100-year storm requirements and reduce flooding overflow.	Existing	Flood, Severe Storm	2	Town/Village Public Works/ Highway	Medium	Medium	FEMA (HMGP, FMA, PDM), CDBG, Local Budget	Short Term	XXX	SIP
Send local Floodplain Administrator to County and State trainings and complete certification programs related to floodplain management.	N/A	Flood, Severe Storm, Severe Winter Storm	3	Town/Village Floodplain Administrator	Medium	Low	FEMA (HMGP, FMA, PDM), CDBG	Short Term	XXX	EAP
Conduct education and outreach to residents and business owners to inform them if their properties are in known hazard areas, and actions they can take to protect those properties.	Existing	All	3	Town/Village Board	High	Low	Operating Budget	Short Term	XXX	EAP
Implement a stream maintenance program for the [WATERWAY].	N/A	Flood, Severe Storm	1, 2	Town/Village Public Works	Medium	Medium	FEMA (HMGP, FMA, PDM), CDBG, Operating Budget	Short Term	XXX	NRP



[MUNICIPALITY] Action Worksheet			
Project Name:			
Project Number:			
Risk / Vulnerability			
Hazard(s) of Concern:			
Description of the Problem:			
Action or Project Intended for Implementation			
Description of the Solution:			
Is this project related to a Critical Facility?    Yes <input type="checkbox"/> No <input type="checkbox"/>			
(If yes, this project must intend to protect the 500-year flood event or the actual worst-case damage scenario, whichever is greater.)			
Level of Protection:		Estimated Benefits (losses avoided):	
Useful Life:		Goals Met:	
Estimated Cost:		Mitigation Action Type:	
Plan for Implementation			
Prioritization:		Desired Timeframe for Implementation:	
Estimated Time Required for Project Implementation:		Potential Funding Sources:	
Responsible Organization:		Local Planning Mechanisms to be Used in Implementation if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



**Action Worksheet**






<b>Project Name:</b>		
<b>Project Number:</b>		
<b>Criteria</b>	<b>Numeric Rank (-1, 0, 1)</b>	<b>Provide brief rationale for numeric rank when appropriate.</b>
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
<b>Total</b>		
<b>Priority (High/Med/Low)</b>		

# Specific Mitigation Actions

## Build More Resilient Communities

*Addressing Real Problems with Real Solutions*

The value of mitigating the risk from natural hazards is indisputable. A recent and comprehensive analysis found that over the past 23 years the benefits from mitigation grants exceeded costs by 6:1. That's \$6 saved for every \$1 spent, yet more needs to be done to lower risks to an acceptable level.

National Benefit-Cost Ratio Per Peril <small>*BCR numbers in this study have been rounded</small>		Federally Funded	Beyond Code Requirements
Overall Hazard Benefit-Cost Ratio		<b>6:1</b>	<b>4:1</b>
	<b>Riverine Flood</b>	<b>7:1</b>	<b>5:1</b>
	<b>Hurricane Surge</b>	Too few grants	<b>7:1</b>
	<b>Wind</b>	<b>5:1</b>	<b>5:1</b>
	<b>Earthquake</b>	<b>3:1</b>	<b>4:1</b>
	<b>Wildland-Urban Interface Fire</b>	<b>3:1</b>	<b>4:1</b>

Available funding will always be limited, making it critical that every dollar spent on mitigation is directed like a laser to where it will do the most good.

This requires solid plans that focus on specific problems and identify specific actions to mitigate those problems.

A well-crafted problem statement is the first step in solving the problem. After completing the Risk Assessment/Vulnerability Assessment for the mitigation plan, each community should develop a problem statement for each vulnerability they intend to mitigate. There must be at least two mitigation actions from each community that address a specific problem in that community, for a mitigation plan to be federally approved.

Problem statements should not imply a particular solution, as this might bias a full consideration of alternatives. Problem statements should note:

- the hazard causing the problem,
- the location of the problem, and
- the consequence of not mitigating the problem should a disaster strike.

A good problem statement does not state or imply a particular solution, as this would bias a full consideration of alternatives. It must also support or justify the need to mitigate, and be complete enough that a person unfamiliar with the situation can understand the problem. Local knowledge should not be presumed.

Next, after considering a range of alternatives, state clearly the action that will be taken to lower risk.

- The completion of each action is measurable.

Ongoing programs are very important, but because they maintain the current level of risk, they should be described separately in the mitigation plan from the specific mitigation actions that lower risk.

## Examples of Specific Mitigation Actions

Additional specificity than shown below is always better and will be required if applying for grant funding.

Specific Actions	Comment on Measuring Completion
Increase the size of the culvert on River Road near Main Street.	The completion of this project would be when the beneficial effect of the larger culvert is realized, which generally comes before final project closeout.
Increase the size of the 3 culverts on River Road, located between Second and Fifth Avenues.	<p>The completion of this project would be when the beneficial effect of a larger culvert has been realized for each of the culverts.</p> <p>This project could be split into three mitigation actions/projects, at the option of the local community; however, multiple projects that have a similar scope of work and will be combined into a single grant application or construction contract may be treated as a single mitigation action.</p>
Elevate up to 11 structures on Ocean Drive, between Second and Fifth Avenues.	Completion of this project would be when all the structures comprising this project are elevated. This could be 1-11 structures. If all eligible property owners opt out of the program, then the action is not completed.
Study and prepare a written report with recommendations for the Village Planning Board on the potential for a buy-out program in all areas subject to storm surge.	<p>This action will be completed when a written report is completed and provided to the Village Planning Board.</p> <p>Having a written product (report or memo) makes the completion of the action measurable. Production of a written document also ensures the study has some substance behind it.</p> <p>Actions to “consider” or “evaluate” a topic should always conclude with a written product, both to make it measurable and to ensure some substance behind the consideration/evaluation.</p>
Update the Town Floodplain Management Ordinance.	The action would be completed when the ordinance is enacted by the governing body of the Town.
Establish a tree trimming program	<p>The action is completed when the program is operational. To become operational a community may first have to prepare procedures, purchase equipment, and/or train staff.</p> <p>Once operation, the program becomes an important ongoing activity that would be listed separately from mitigation actions in future mitigation plans.</p>
Annually mail a brochure on mitigation to all property owners in an area subject to frequent flooding.	<p>The mailing marks the completion of the action.</p> <p>Educating citizens only about being prepared for a disaster is not a mitigation actions. The educational material must at least in part covers mitigation actions citizens can take.</p>

# Grant Funding for Hazard Mitigation

## Requirements: Applicants

- Eligible Applicant
  - NYS, acting through DHSES (Div. of Homeland Security & Emergency Services)
- Eligible Sub-Applicants
  - State agencies & local governments
  - Federally-recognized Indian Tribal Governments
  - State-recognized Indian Tribes
  - Private non-profits providing government services ((HMGP only)
    - If participating in property acquisition they must have land conservation as a mission
- Individuals/businesses are not eligible sub-applicants, but may be represented by their local government. They should understand that property will be deed restricted for open space in perpetuity.

## FEMA Mitigation Grant Programs

Pre-Disaster Mitigation Program (PDM) – open for all hazards

- Applications solicited once a year.
- Nationally competitive

Flood Mitigation Program (FMA) – limited to flood mitigation

- Applications solicited once a year.
- Nationally competitive

Hazard Mitigation Grant Program – open to all hazards with priorities set by NYS DHSES

- Periodic solicitation – money becomes available after a Presidential Disaster Declaration and the amount is proportional to the damages occurred.
- Only sub-applicants from NYS are eligible

## Grant Requirements

- Technically Feasible
  - Must demonstrate proposal will eliminate or reduce future damages
- Cost Effectiveness
  - Projects must be cost-effective as determined by a Benefit-Cost Analysis (BCA)
  - BCA must verify that future benefits (losses to be avoided) equal or exceed the project's cost
- Local Match
  - Typically FEMA provides up to 75% reimbursement of eligible costs, up to the amount of the award.
  - In-kind services or material may be used toward the 25% non-federal match
  - Other federal funds may not be used, except for:
    - Increased Cost of Compliance (ICC) payouts from a National Flood Insurance Program (NFIP) policy
    - Most HUD Community Development Block Grants (CDBG)

# Grant Funding for Hazard Mitigation

## HMGP Grants will Pay for:

- Creating or updating a Multi-jurisdictional Hazard Mitigation Plan
- Acquisition and Demolition/Relocation or Elevation
- Structural Retrofitting; Dry Floodproofing
- Localized flood reduction measures
- Floodplain restoration, green infrastructure improvements
- Roadway elevation, culvert enlargements
- Stormwater drainage system expansion/upgrades
- Stormwater retention or detention basins
- Streambank stabilization to protect infrastructure
- Placing overhead electric systems underground

Note: state establishes priorities for every cycle

## HMGP will Not Pay for:

- Preparedness activities: shelters, sandbags
- Projects dependent on other phases for benefits
- Studies not directly tied to a proposed project
- Deferred repairs, negligence, operating expenses
- Dredging, limb & debris removal, beach nourishment
- Projects initiated, begun or completed



LEWIS COUNTY HAZARD MITIGATION PLAN UPDATE  
Mitigation Solutions Workshop

SIGN-IN

Monday, December 17, 2018 | 6:00 - 8:00 p.m.

NAME AND TITLE	AGENCY/ORGANIZATION	E-MAIL ADDRESS	TELEPHONE
RANDY ANDRÉ DEPUTY CHIEF	NYS DHSES	RANDY.ANDRE@DHSES.NY.GOV	518-292-2304
Ashley Waite	LCPH	awaiter@lcpubhealth.nyc.org	315-376-3403
Nichelle Beinauer	LC SWCD		315-376-6022
Joe Austin	LCPH	Justin@lcpubhealth.org	315-376-5453
hinder Noltz	Village Crogha	hinder@twc.ny.nr.com	315 3466200
Fom Osborn	Crawls County		315-376-4355
Ed Hayes TOWN SUPERVISOR	Town of West Twin	5199 254 8700	315 376 2425
Ed Hayes	Village of Lyons Falls South School	" "	" "
Joe Pifer	Town of Lowville Lynden		315 681 8689
Alex Klassner	Cville		30-277







LEWIS COUNTY HAZARD MITIGATION PLAN UPDATE  
Mitigation Solutions Workshop

SIGN-IN

Monday, December 17, 2018 | 6:00 - 8:00 p.m.

NAME AND TITLE	AGENCY/ORGANIZATION	E-MAIL ADDRESS	TELEPHONE
Richard Spenser	T/Conville	—	715-376-9070 x 2
Jennifer Maracchion	LC Emergency Mgmt	jennifermaracchion@lewiscounty.ny.gov	315-376-5803
SIA MacKenzie	LC EMO	Same	Same
Joseph Genter	Civille trustee	same	same
Mark Sullivan	Conestableville trustee	Civillesell@hotmail.com	315-397-2578
Cody Menally	Conestableville trustee	Meredee578@gmail.com	315-3485-8010
PRT MAHAN	T/O Denmark	Same	—
Jim Dec	T/O Denmark	—	—
Tony Subbio / PM	Tetra Tech	tony.subbio@tetratech.com	717-545-3580





# MEETING NOTES

<b>Meeting</b>	Lewis County Hazard Mitigation Plan (HMP) Draft Review Meeting		
<b>Date</b>	October 21, 2019	<b>Times</b>	6:00 – 7:05 p.m.
<b>Location</b>	3-G Fire Station, 6229 Blue St., Glenfield, NY 13345		
<b>Attendees</b>	Thomas Osborne, Lewis County Legislator		
	Ryan Piche, Manager, Lewis County		
	Robert MacKenzie, Director, Lewis County Fire and Emergency Management		
	Jennifer Maracchion, Emergency Management Assistant, Lewis County Fire and Emergency Management		
	Ward Dailey, Senior Code Official, Lewis County		
	Frank Pace, Director of Planning, Lewis County Planning Department		
	Ashley Waite, Director, Lewis County Public Health		
	Joseph Genter, Trustee, Village of Constableville		
	Alan Klossner, Mayor, Village of Constableville		
	Kim Vogt, Trustee, Village of Copenhagen		
	Linda Nortz, Trustee, Village of Croghan		
	James Der, Supervisor, Town of Denmark		
	Lois Compo, Councilperson, Town of Leyden		
	Joseph Pfeiffer, Jr., Codes Officer, Towns of Leyden, Lowville, and Lyonsdale		
	Rosalie White, Supervisor, Town of Leyden		
	Randall A. Schell, Supervisor, Town of Lowville		
	Joseph Beagle, Mayor, Village of Lowville		
	Paul Denise, Department of Public Works Superintendent, Village of Lowville		
	Anne Huntress, Mayor, Village of Lyons Falls		
	Tyler Jones, Highway Superintendent, Town of Martinsburg		
	Virginia Churchill, Town Clerk, Town of Osceola		
Edward J. Hayes, Supervisor, Town of West Turin			
Richard Fifield, American Red Cross			
Tony Subbio, Project Manager, Tetra Tech			

## Purpose

The purpose of this meeting was to collect comments on the complete draft of the updated HMP.

## Discussion Points

This section summarizes each discussion point addressed during the meeting.



# MEETING NOTES

## Draft Plan Review

Mr. MacKenzie welcomed attendees to the meeting. Mr. Subbio led a discussion regarding each of the sections of the HMP. These sections are available on the project website. Information addressed in each section is summarized below:

- **Section 1: Introduction** describes mitigation planning, identifies the participating jurisdictions, and provides an overview of the HMP.
- **Section 2: Plan Adoption** describes the plan adoption process.
- **Section 3: Planning Process** identifies the participants of the planning process, describes the planning activities undertaken during the HMP update process, and describes how the planning process will continue after the draft is approved.
- **Section 4: County Profile** describes the history of the County, its physical features, the population and demographics, building stock, land use and trends, and critical facilities.
- **Section 5: Risk Assessment** identifies the hazards of concern, describes how each hazard is prioritized based on the level of risk it poses to the County and its jurisdictions, and includes full profiles of each hazard of concern.
- **Section 6: Mitigation Strategies** describes past accomplishments in implementing hazard mitigation initiatives throughout the County; lists the hazard mitigation goals and objectives; describes the federal, State, County, and local capabilities that can be leveraged to reduce vulnerability to hazards; and describes how mitigation actions were identified, evaluated, and prioritized by each jurisdiction.
- **Section 7: Plan Maintenance** identifies the HMP Coordinator and describes the responsibilities associated with this role. Mr. MacKenzie will be the Lewis County HMP Coordinator. Section 7 also identifies members of the Planning Committee that will maintain the plan over the next 5 years and describes how the plan will be monitored, evaluated, and updated. This section also describes the ways in which the HMP is integrated into other planning mechanisms and vice versa.
- **Section 8: Planning Partnership** lists the participating jurisdictions and introduces the content of the jurisdictional annexes.
- **Section 9: Jurisdictional Annexes** contains an annex for each participating jurisdiction. Each annex identifies the primary and alternate points of contact for the jurisdiction, describes the jurisdiction, assesses the risk posed to the jurisdiction by the hazards of concern, identifies critical facilities, describes the jurisdiction's capabilities to implement hazard mitigation, lists the status of all mitigation actions in the 2011 version of the HMP, identifies the actions that the jurisdiction included in the HMP update, and prioritizes those actions.

Mr. Subbio invited attendees to offer comments related to the sections of the updated HMP. Appendix H (Linkage Procedures) will be deleted because all of the county's jurisdictions fully participated in the planning process. Mr. Pfeiffer and Ms. Huntress stayed after the meeting to review changes to specific annexes with Mr. Subbio.

## Next Steps

The following next steps were identified during the meeting:

- Comments on the draft plan will be accepted by Ms. Maracchion until Wednesday, October 30, 2019.
- The draft plan will be finalized by Tetra Tech.



# MEETING NOTES

- Upon finalization, the plan will be submitted to the New York State Division of Homeland Security and Emergency Services (NYS DHSES) and Federal Emergency Management Agency (FEMA) for formal review.


The meeting adjourned at 7:05 p.m.



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**Lewis County  
Hazard Mitigation Plan Update  
Plan Draft Review Meeting**

## Welcome




## Agenda

- Welcome
- Draft Plan Review
- Next Steps
- Questions




## Draft Plan Review

- Section 1: Introduction
  - Mitigation Planning
  - Participating Jurisdictions
  - Overview
- Section 2: Plan Adoption
  - Adoption Process
- Section 3: Planning Process
  - Participants
  - Activities
  - Ongoing Process



## Draft Plan Review

- Section 4: County Profile
  - History
  - Physical Setting
  - Population and Demographics
  - General Building Stock
  - Land Use and Population Trends
  - Critical Facilities
- Section 5: Risk Assessment
  - Hazards of Concern
  - Hazard Ranking
  - Hazard Profiles



## Draft Plan Review

- Section 6: Mitigation Strategies
  - Past Accomplishments
  - Goals and Objectives
  - Capability Assessment
    - Plans, Programs, and Resources Available
    - Administrative and Technical Capabilities
    - Fiscal Capabilities
  - Mitigation Strategy Development and Update
    - Action Identification
    - Evaluation and Prioritization
    - Benefit/Cost Review

Goal	Objective
Goal 1: Review the hazard mitigation plan and the environment.	Objective 1.1: Develop and update hazard mitigation plan in conformance with state and federal requirements.
Goal 2: Review the hazard mitigation plan and the environment.	Objective 2.1: Monitor natural resources within the state of Nevada.
Goal 3: Review the hazard mitigation plan and the environment.	Objective 3.1: Monitor natural resources within the state of Nevada.
Goal 4: Review the hazard mitigation plan and the environment.	Objective 4.1: Assess critical infrastructure to ensure hazard mitigation.
Goal 5: Review the hazard mitigation plan and the environment.	Objective 5.1: Monitor critical infrastructure to ensure hazard mitigation.
Goal 6: Review the hazard mitigation plan and the environment.	Objective 6.1: Assess the state of the state to ensure hazard mitigation.
Goal 7: Review the hazard mitigation plan and the environment.	Objective 7.1: Monitor critical infrastructure to ensure hazard mitigation.
Goal 8: Review the hazard mitigation plan and the environment.	Objective 8.1: Assess the state of the state to ensure hazard mitigation.
Goal 9: Review the hazard mitigation plan and the environment.	Objective 9.1: Monitor critical infrastructure to ensure hazard mitigation.
Goal 10: Review the hazard mitigation plan and the environment.	Objective 10.1: Assess the state of the state to ensure hazard mitigation.





## Draft Plan Review

- Section 7: Plan Maintenance
  - HMP Coordinator
  - Ongoing Planning Partnership
  - Monitoring
  - Continuous Evaluation and Progress Reports
  - Updating
  - Integration of Hazard Mitigation with Existing and Future Programs
  - Continued Public Involvement



## Draft Plan Review

- Section 8: Planning Partnership
  - Participating Jurisdictions
  - Introduce Jurisdictional Annexes
- Section 9: Jurisdictional Annexes
  - Municipal Planning Team
  - Municipal Profile
  - Hazard Event History
  - Vulnerabilities
  - Capabilities
  - Mitigation Strategy
  - Status of Past Mitigation Actions
  - Current Mitigation Actions

Annex	Section	Item	Responsible Party	Start Date	End Date	Status
9.1	Municipal Planning Team	1.1	...	...	...	...
		1.2	...	...	...	...
9.2	Municipal Profile	2.1	...	...	...	...
		2.2	...	...	...	...
9.3	Hazard Event History	3.1	...	...	...	...
		3.2	...	...	...	...
9.4	Vulnerabilities	4.1	...	...	...	...
		4.2	...	...	...	...
9.5	Capabilities	5.1	...	...	...	...
		5.2	...	...	...	...
9.6	Mitigation Strategy	6.1	...	...	...	...
		6.2	...	...	...	...
9.7	Status of Past Mitigation Actions	7.1	...	...	...	...
		7.2	...	...	...	...
9.8	Current Mitigation Actions	8.1	...	...	...	...
		8.2	...	...	...	...



## Draft Plan Review

- Appendices
  - Appendix A – Sample Adoption Resolution
  - Appendix B – Meeting Documentation
  - Appendix C – Public and Stakeholder Outreach Documentation
  - Appendix D – Action Worksheet Template and Instructions
  - Appendix E – Plan Review Tools
  - Appendix F – Participation Matrix
  - Appendix G – Critical Facilities
  - Appendix H – Linkage Procedures



## Next Steps

- Finalize the Draft Plan
- Submit the HMP to NYS DHSES
- Revise and Submit the Plan to FEMA
- Plan Adoption



## Questions?

Thank you for your time!



## Contacts



**Bob MacKenzie**  
 robertmackenzie@lewiscounty.ny.gov  
 (315) 376-5305



**Tony Subbio**  
[tony.subbio@tetrattech.com](mailto:tony.subbio@tetrattech.com)  
 (717) 545-3580







# AGENDA

## LEWIS COUNTY HAZARD MITIGATION PLAN UPDATE Plan Draft Review Meeting

Monday, October 21, 2019 | 6:00 – 8:00 p.m.

---

---

### 1. Welcome

---

### 2. Draft Plan Review

- a. Section 1: Introduction
  - b. Section 2: Plan Adoption
  - c. Section 3: Planning Process
  - d. Section 4: County Profile
  - e. Section 5: Risk Assessment
  - f. Section 6: Mitigation Strategies
  - g. Section 7: Plan Maintenance
  - h. Section 8: Planning Partnership
  - i. Section 9: Jurisdictional Annexes
  - j. Appendices
- 

### 3. Next Steps

- a. Finalize the Draft Plan
  - b. Submit the HMP to NYS DHSES
  - c. Revise and Submit the Plan to FEMA
  - d. Plan Adoption
- 

### 4. Questions

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LEWIS COUNTY HAZARD MITIGATION PLAN UPDATE  
Plan Draft Review Meeting

SIGN-IN

Monday, October 21, 2019 | 6:00 - 8:00 p.m.

NAME AND TITLE	AGENCY/ORGANIZATION	E-MAIL ADDRESS	TELEPHONE
Joe Pfeiffer CEO	Leyden/Louisville	Inspector Joe Pfeiffer@aum.com	315 681 8689
Frank Pace	LC Planning	frank.pace@lewiscountyny.gov	376-5422
James Den	Town of Denmark Supervisor	denmark.supervisor@gmail.com	315-778-9417
Ed Hayes Town Sup	Town of Lewis/Town	SUP@LEWIS-TOWN.COM	315-376-4355
Tom Osborn Cng	Lewis County		315-376-4355
Rosalie White, Supervisor	Town of Zeyden	rosawhite@frontier.com	315 3488195
Virginia Churchill	Town of Osceola	osceolatownclerk@gmail.com	315 5997120
Hinda North Trustee	Village of Gresham	hnorth@tusny.ny.gov	315 346 6209
Rudy Skell	Tiltsville	R.Skell@lewisville.ny.gov	315-376- 1070xL
Joseph Genter Civille Trustee	Civille	(same)	315-397-8172





LEWIS COUNTY HAZARD MITIGATION PLAN UPDATE  
Plan Draft Review Meeting

SIGN-IN

Monday, October 21, 2019 | 6:00 – 8:00 p.m.

NAME AND TITLE	AGENCY/ORGANIZATION	E-MAIL ADDRESS	TELEPHONE
hois Compa Council person	Town of Leyden	lecomp@frontiernet.net	318-6422
Ramsey	LCENO	Same	Same
JOHN DEACON Mayor	NEW ORLEANS VILLAGES	HAYOB@NEWORLEANSVILLAGES.COM	776-2834
Alan Klossner Mayor	Crille		
Anne Huntress	Lynns Falls	anne.huntress@lynnsfalls.com	30-348-6632
Kim Vogt Mayor	Cape Byron Village Board	RVogt@tuxny.PR.COY	783-3922
Jennifer Marachion	LCENO	Same	315 376-5303
Richard F. Field	Feed Cross	Rich.FField@feedcross.org	315 816-6591
Tom Subbiah	LCNY	Same	Same
Tom Subbiah/m	Tetra Tech	tom.subbiah@tetratech.com	717-545-3580





LEWIS COUNTY HAZARD MITIGATION PLAN UPDATE  
Plan Draft Review Meeting

SIGN-IN

Monday, October 21, 2019 | 6:00 – 8:00 p.m.

NAME AND TITLE	AGENCY/ORGANIZATION	E-MAIL ADDRESS	TELEPHONE
Tyler Jones Highway Supt.	T/O Martinsburg	tylerjonesmart13@gmail.com	315-681-3190
Fawn Denise Village of Lowville	V of Lowville	apwsupt@villageoflowville.org	771-0761
Ashley Waite, Director	LCPT	ashleywaite@lewiscounty.ny.gov	(315) 376-5453
Wendy Darby ss code official	County of Lewis	wendydarby@lewiscounty.ny.gov	315-405-6531





# Home

- Home**
- About the Project
- What is Hazard Mitigation
- Announcements
- Calendar of Events
- Meeting Minutes
- Draft Documents for Review
- Links
- Site Contents

Welcome to the Lewis County Hazard Mitigation Plan (HMP) Website. This website provides project updates, resources, and links to hazard mitigation in support of the HMP update.

The goal of the project is to save lives and property through the reduction of hazard vulnerability for the entire county. During the course of this planning project, county and local leaders and the community will work in tandem to identify risks, assess capabilities, and formulate a strategy to reduce disaster vulnerability.

Public participation and feedback is a vital part of the hazard mitigation planning process. The Lewis County Hazard Mitigation Steering Committee has developed a Citizen's Preparedness Survey to assist in providing the public an outlet to contribute to the Lewis County HMP update. This survey will be used to develop portions of the HMP. Thank you for participating in this important initiative by providing us with your anonymous survey contribution.

PLEASE TAKE THE SURVEY BY [CLICKING HERE](#)

Keep checking back regularly for information on upcoming events, to take our public survey, and to review and comment on the draft plan.

If you would like to get in touch with the project team, please email Tony Subbio, Tetra Tech's project manager, at [tony.subbio@tetrattech.com](mailto:tony.subbio@tetrattech.com).

## Announcements

✓ Title	Modified
Plan Draft Review Meeting	... August 29
Mitigation Strategy Workshop	... November 29, 2018



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Page 1 of 1

## LEWIS COUNTY HAZARD MITIGATION PLAN PUBLIC HEARING

Lewis County and its municipalities are updating the Lewis County Hazard Mitigation Plan (HMP). The HMP is designed to make our communities more resistant to losses from natural and man-made disasters, and to enable the County and municipalities to be eligible for federal funding for qualifying mitigation projects. There will be a Planning Partnership meeting to review the updated risk assessment from 6:00 - 8:00 p.m. on November 13, 2018 at the 3-G Fire Station at 6229 Blue Street, Glenfield, NY. Any interested persons are invited to attend and comment on the risk assessment, which is available on the HMP website at [www.lewiscountyhmp.com](http://www.lewiscountyhmp.com) under the "Draft Documents for Review" link. For more information, contact Robert Mackenzie of Lewis County Emergency Management at 315-376-5303.



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**LEWIS COUNTY HAZARD MITIGATION PLAN PUBLIC MEETING NOTICE**

Lewis County is completing the process of updating its Hazard Mitigation Plan (HMP). The Plan documents the County's vulnerability to hazards and its strategy to reduce that vulnerability. The "draft" Plan is now complete and available for review at [www.lewiscountyhmp.com](http://www.lewiscountyhmp.com), under the "Draft Documents for Review" page, where you may also view additional information about the planning process. A meeting is scheduled to discuss the "draft" plan on October 16, 2019 from 6:00 – 8:00 p.m. at the 3-G Fire Station, 6229 Blue St., Glenfield, NY 13343. Contact Jennifer Maracchion, Emergency Management Assistant, Lewis County Fire and Emergency Management at 315-376-5303 for more information.

AFFIDAVIT OF PUBLICATION

STATE OF NEW YORK  
COUNTY OF JEFFERSON

WATERTOWN DAILY TIMES

TERESA CLARK  
LEWIS CTY BOARD LEGISLATORS  
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REFERENCE: 50810  
20432482 LEWIS COUNTY HAZARD

Christa Woodward, of Evans Mills, NY County of Jefferson, being duly sworn, says that she is a Legal Representative of the Johnson Newspaper Corp., a corporation duly organized and existing under the laws of the State of New York, and having its principal place of business in the City of Watertown, New York, and that said corporation is the publisher of the WATERTOWN DAILY TIMES, a Newspaper published in the City of Watertown, Jefferson County, and State of New York, and that a Notice, of which the annexed is a printed copy, has been published regularly in said newspaper.

  
Christa Woodward, Legal Representative

PUBLISHED ON: 10/03

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FILED ON: 10/03/19

Sworn to before me this

4th day of October, 2019

  
Notary Public

JAMI L EDWARDS  
NOTARY PUBLIC-STATE OF NEW YORK  
No. 01ED6283808  
Qualified in Jefferson County  
My Commission Expires 06-17-2021

**Lewis County Emergency Management**  
5252 Outer Stowe St.  
Lowville, New York 13367



Robert A. MacKenzie III, EMT-P/CEM/CFC

## **PRESS RELEASE**

October 1, 2019

**RE: Lewis County Hazard Mitigation Plan 2019 Update**

Since March 2018, Lewis County and our contractor, Tetra Tech, have been updating the HMP and working with each town and village in the county to develop their respective mitigation strategies. The full, updated HMP is available for review at the project website: [http://www.lewiscountyhmp.com/Pages/docs\\_review.aspx](http://www.lewiscountyhmp.com/Pages/docs_review.aspx).

We will review the draft of the updated HMP at a meeting from 6:00-8:00 p.m. on October 21, 2019. The meeting will be held at the 3-G Fire Station, 6229 Blue St, Glenfield, NY.

All interested parties are invited to review the draft HMP and attend the meeting to provide comments on the draft before it is submitted to the New York State Division of Homeland Security and Emergency Services (NYS DHSES) and Federal Emergency Management Agency (FEMA) Region II.

Please contact Lewis County Emergency Management at 315-376-5303 if you have any questions. Thank you.



[https://www.nny360.com/news/lewiscounty/lewis-county-hazard-mitigation-plan-to-be-updated/article\\_50ce6f9a-1f61-5b95-87ac-ca03dfc7e49e.html](https://www.nny360.com/news/lewiscounty/lewis-county-hazard-mitigation-plan-to-be-updated/article_50ce6f9a-1f61-5b95-87ac-ca03dfc7e49e.html)

## Lewis County Hazard Mitigation Plan to be updated

Oct 4, 2019



GLENFIELD — Lewis County municipalities will have the opportunity to review the draft of the Lewis County Hazard Mitigation Plan 2019 Update from 6 to 8 p.m. Oct. 21 at 3-G Fire Station, 6229 Blue St.

Since March 2018, Lewis County and its contractor, Tetra Tech, have been updating the plan and working with each town and village in the county to develop their respective mitigation strategies. The full, updated plan is available for review at the project website:

[http://www.lewiscountyhmp.com/Pages/docs\\_review.aspx](http://www.lewiscountyhmp.com/Pages/docs_review.aspx).

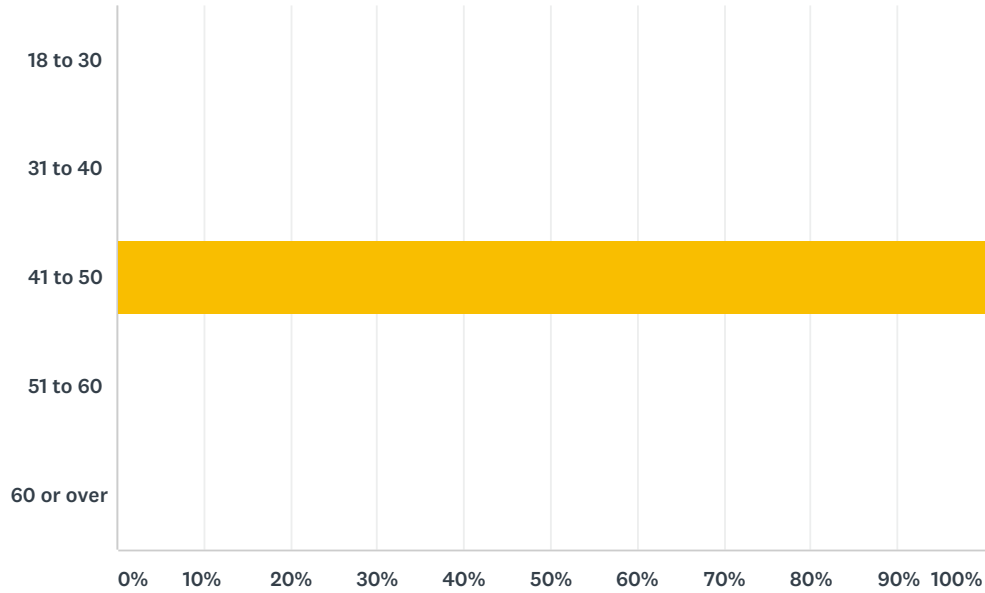
All interested parties are invited to review the draft plan and attend the meeting to provide comments on the draft before it is submitted to the New York State Division of Homeland Security and Emergency Services and Federal Emergency Management Agency Region II. Contact Lewis County Emergency Management at 315-376-5303 for more information.





### Q1 Please indicate your age range:

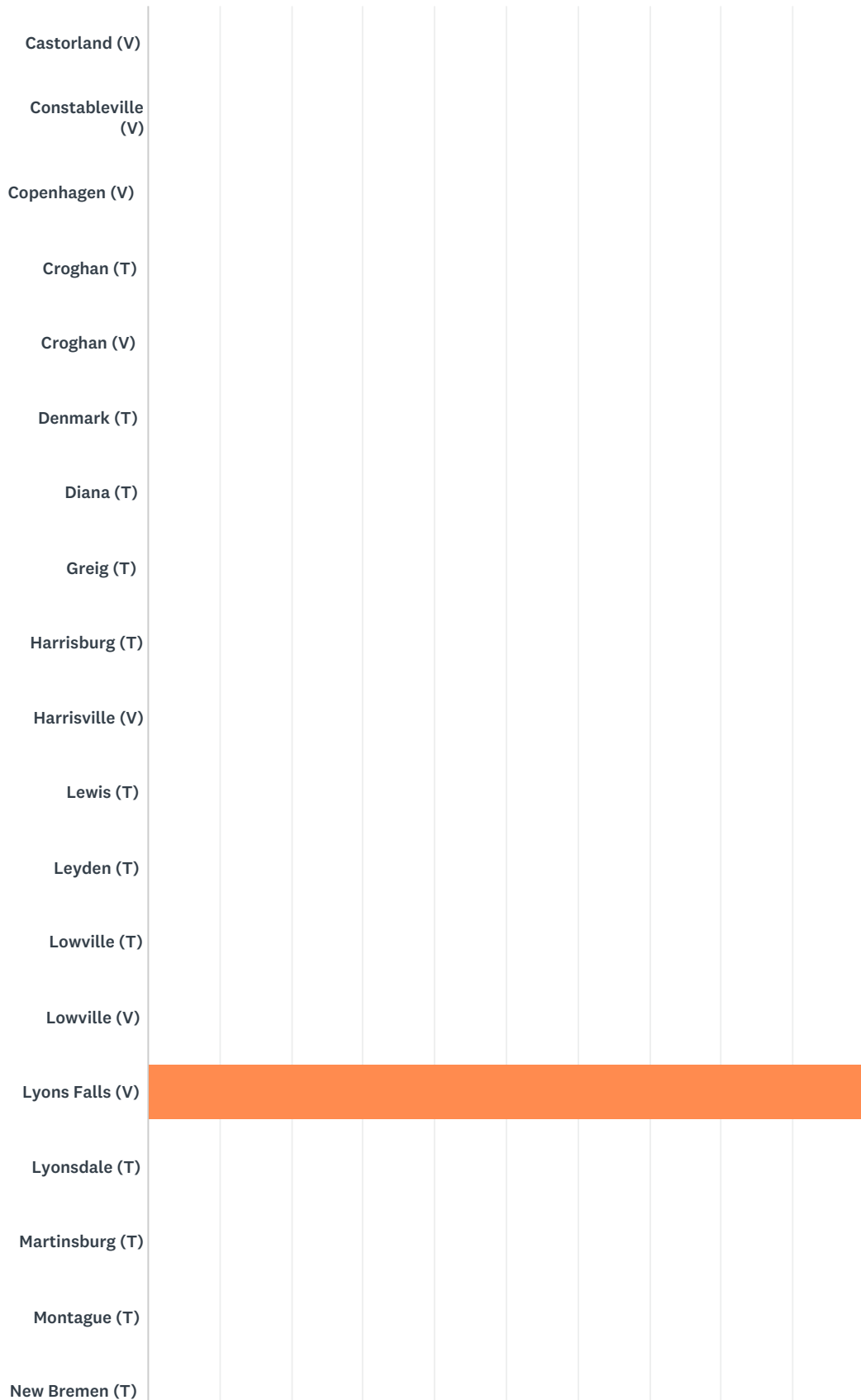
Answered: 1 Skipped: 0



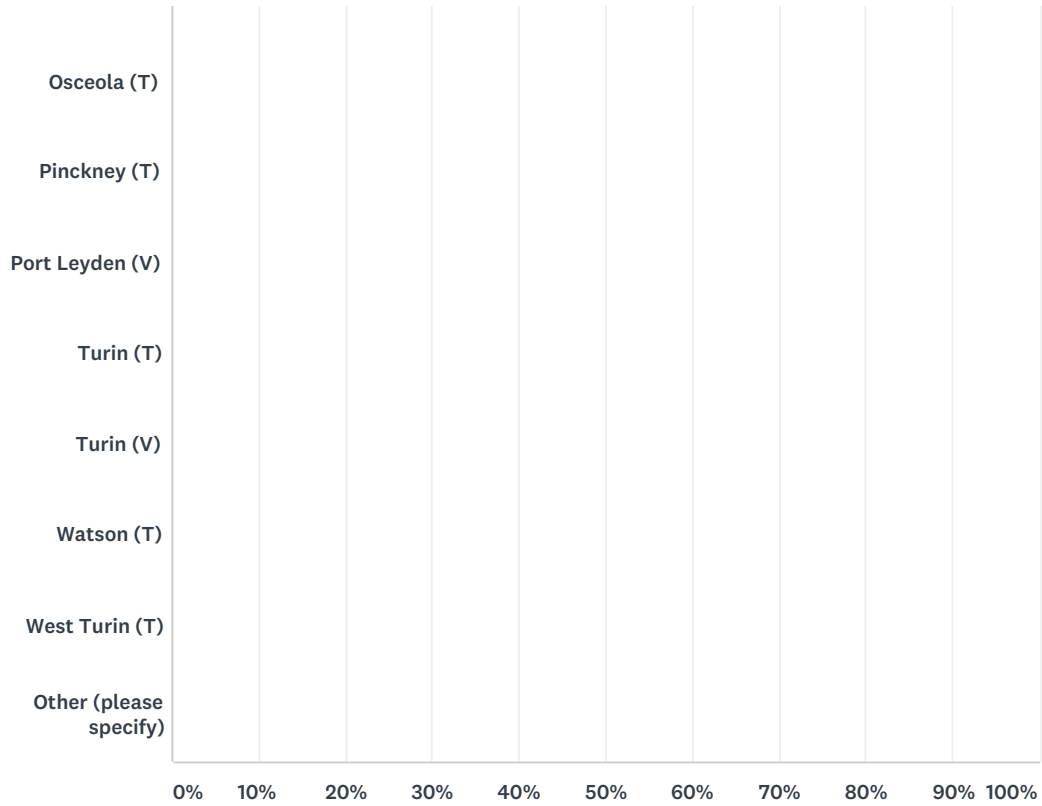
ANSWER CHOICES	RESPONSES
18 to 30	0.00% 0
31 to 40	0.00% 0
41 to 50	100.00% 1
51 to 60	0.00% 0
60 or over	0.00% 0
<b>TOTAL</b>	<b>1</b>

## Q2 Please indicate the municipality in which you live:

Answered: 1 Skipped: 0



## Lewis County Hazard Mitigation Plan Update - Citizen Survey



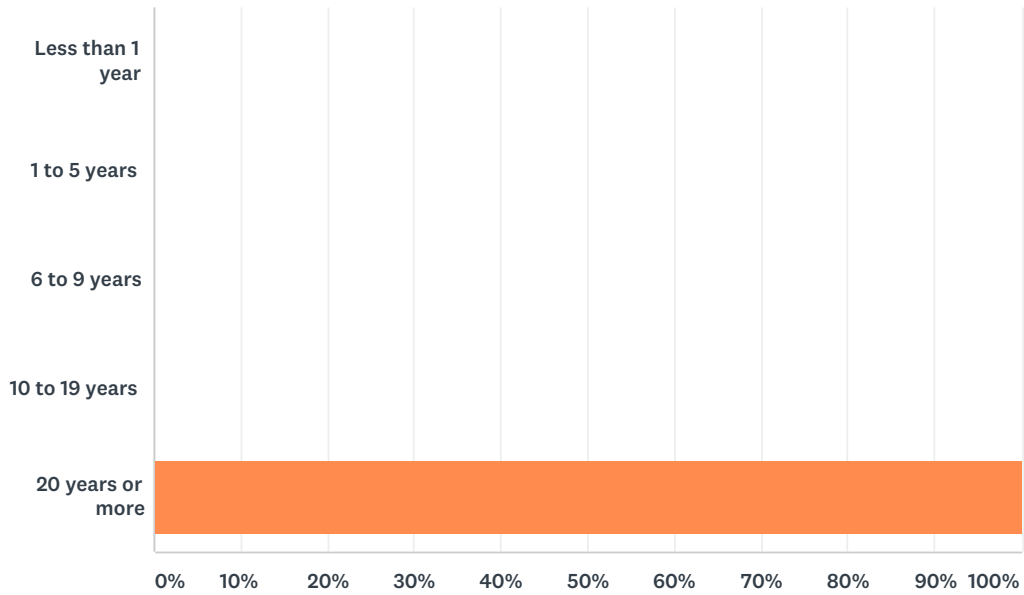
ANSWER CHOICES	RESPONSES	
Castorland (V)	0.00%	0
Constableville (V)	0.00%	0
Copenhagen (V)	0.00%	0
Croghan (T)	0.00%	0
Croghan (V)	0.00%	0
Denmark (T)	0.00%	0
Diana (T)	0.00%	0
Greig (T)	0.00%	0
Harrisburg (T)	0.00%	0
Harrisville (V)	0.00%	0
Lewis (T)	0.00%	0
Leyden (T)	0.00%	0
Lowville (T)	0.00%	0
Lowville (V)	0.00%	0
Lyons Falls (V)	100.00%	1
Lyonsdale (T)	0.00%	0
Martinsburg (T)	0.00%	0
Montague (T)	0.00%	0

## Lewis County Hazard Mitigation Plan Update - Citizen Survey

New Bremen (T)	0.00%	0
Osceola (T)	0.00%	0
Pinckney (T)	0.00%	0
Port Leyden (V)	0.00%	0
Turin (T)	0.00%	0
Turin (V)	0.00%	0
Watson (T)	0.00%	0
West Turin (T)	0.00%	0
Other (please specify)	0.00%	0
<b>TOTAL</b>		<b>1</b>

### Q3 How long have you lived here?

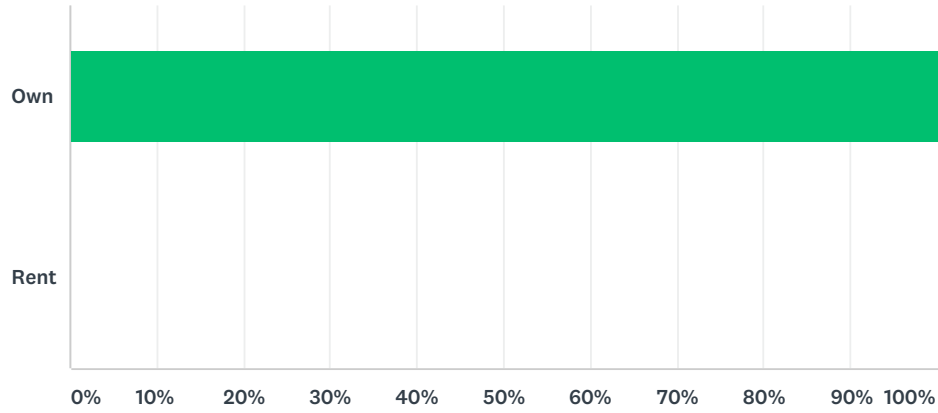
Answered: 1 Skipped: 0



ANSWER CHOICES	RESPONSES
Less than 1 year	0.00% 0
1 to 5 years	0.00% 0
6 to 9 years	0.00% 0
10 to 19 years	0.00% 0
20 years or more	100.00% 1
<b>TOTAL</b>	<b>1</b>

### Q4 Do you own or rent your place of residence?

Answered: 1 Skipped: 0



ANSWER CHOICES	RESPONSES	
Own	100.00%	1
Rent	0.00%	0
TOTAL		1

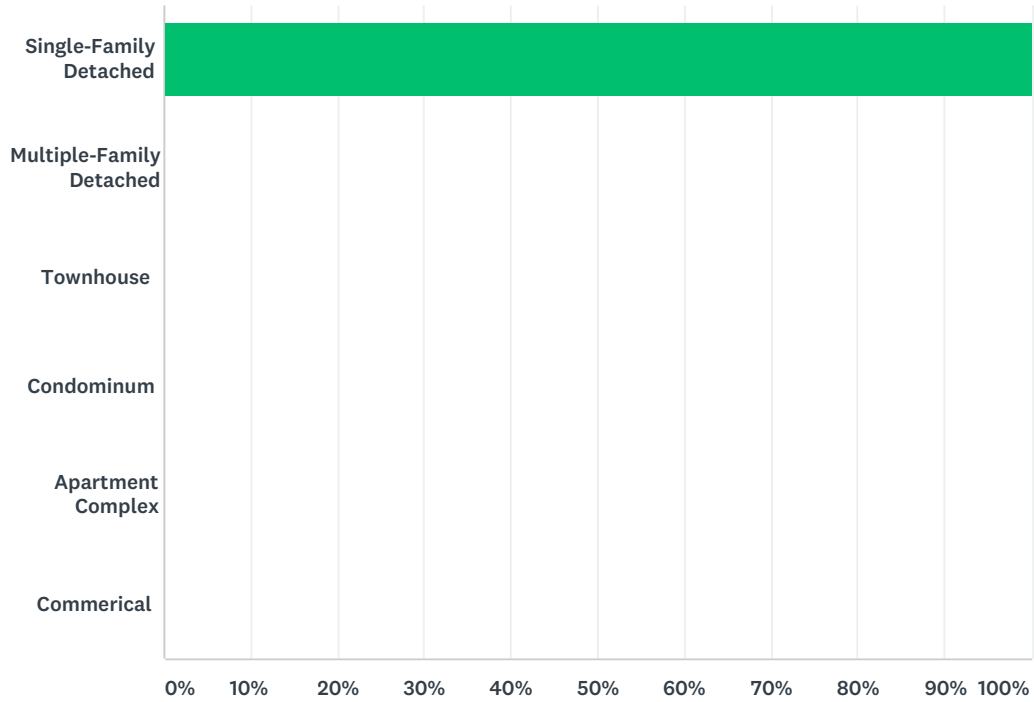


**Q5 What street is your property on? (Optional. This information will be kept confidential and will only be used to identify localized hazard areas such as flooding.)**

Answered: 0 Skipped: 1

## Q6 What type of residence do you live in?

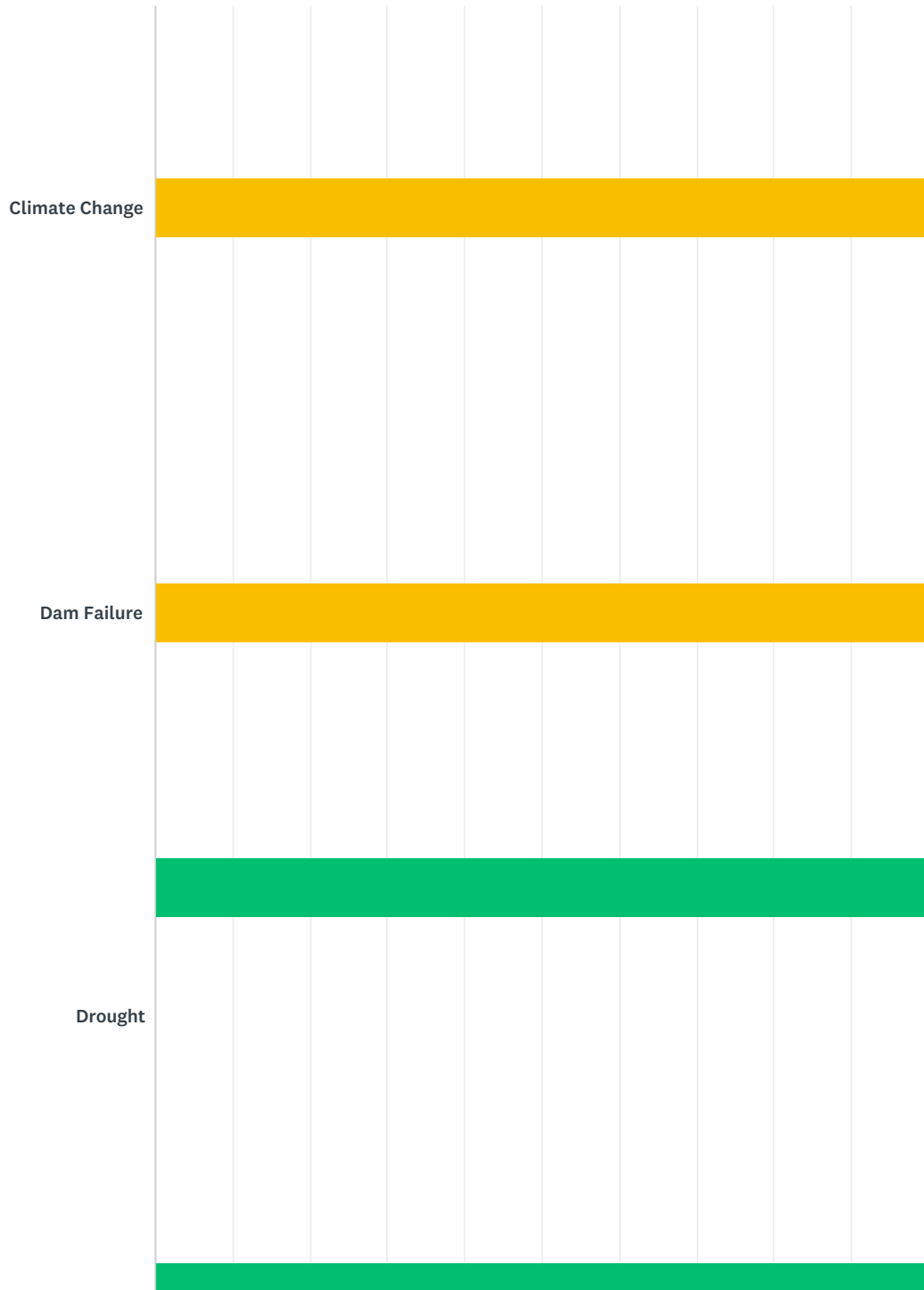
Answered: 1 Skipped: 0



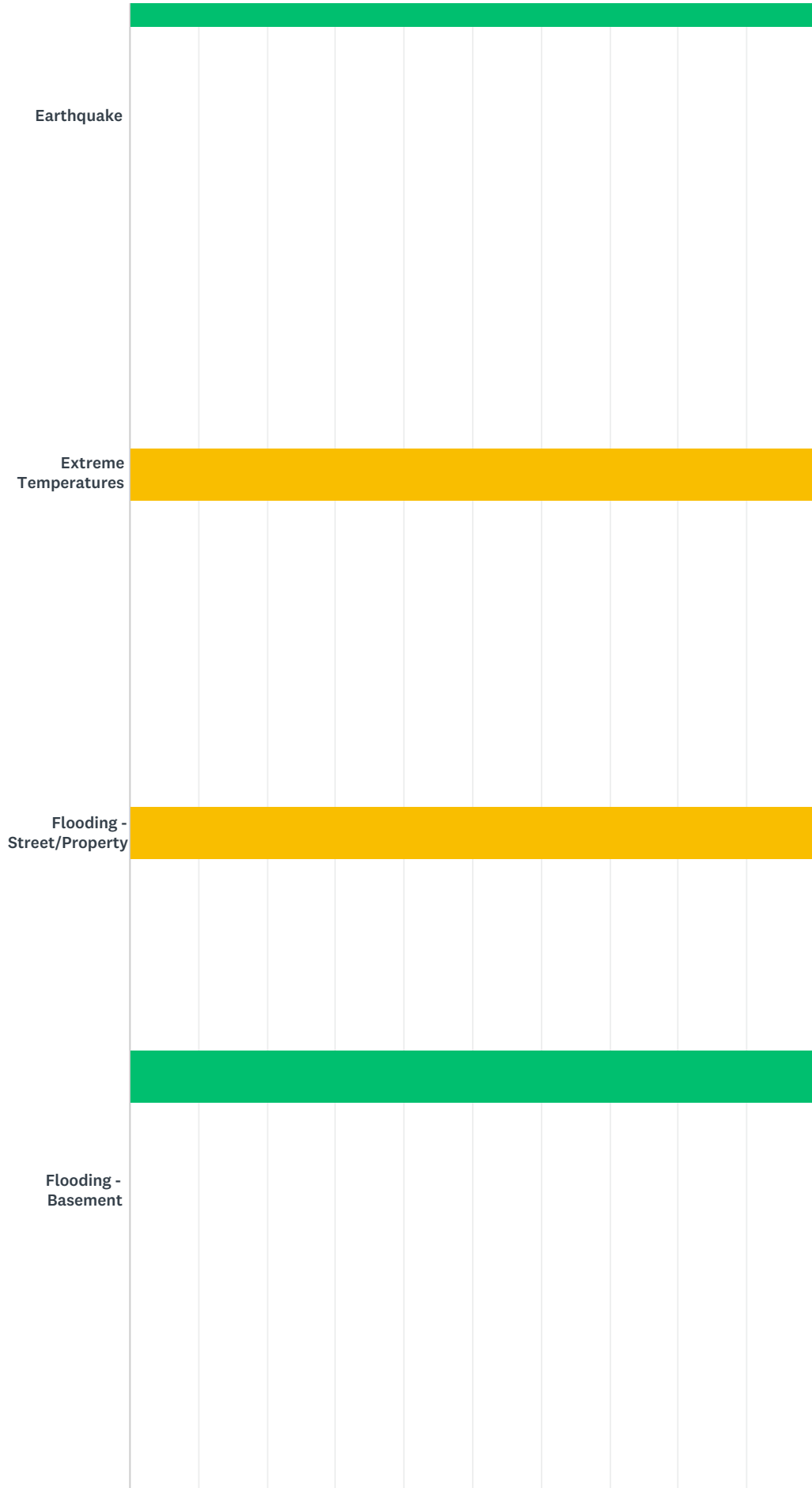
ANSWER CHOICES	RESPONSES	
Single-Family Detached	100.00%	1
Multiple-Family Detached	0.00%	0
Townhouse	0.00%	0
Condominium	0.00%	0
Apartment Complex	0.00%	0
Commerical	0.00%	0
<b>TOTAL</b>		<b>1</b>

Q7 In the past 10 years, which of the following types of hazards/natural disasters have you or someone in your household experienced within Lewis County, or sustained damage as a result of? How concerned are you about the following hazards impacting the County? (In the first column indicate if you have experienced the hazard, then indicate your level of concern).

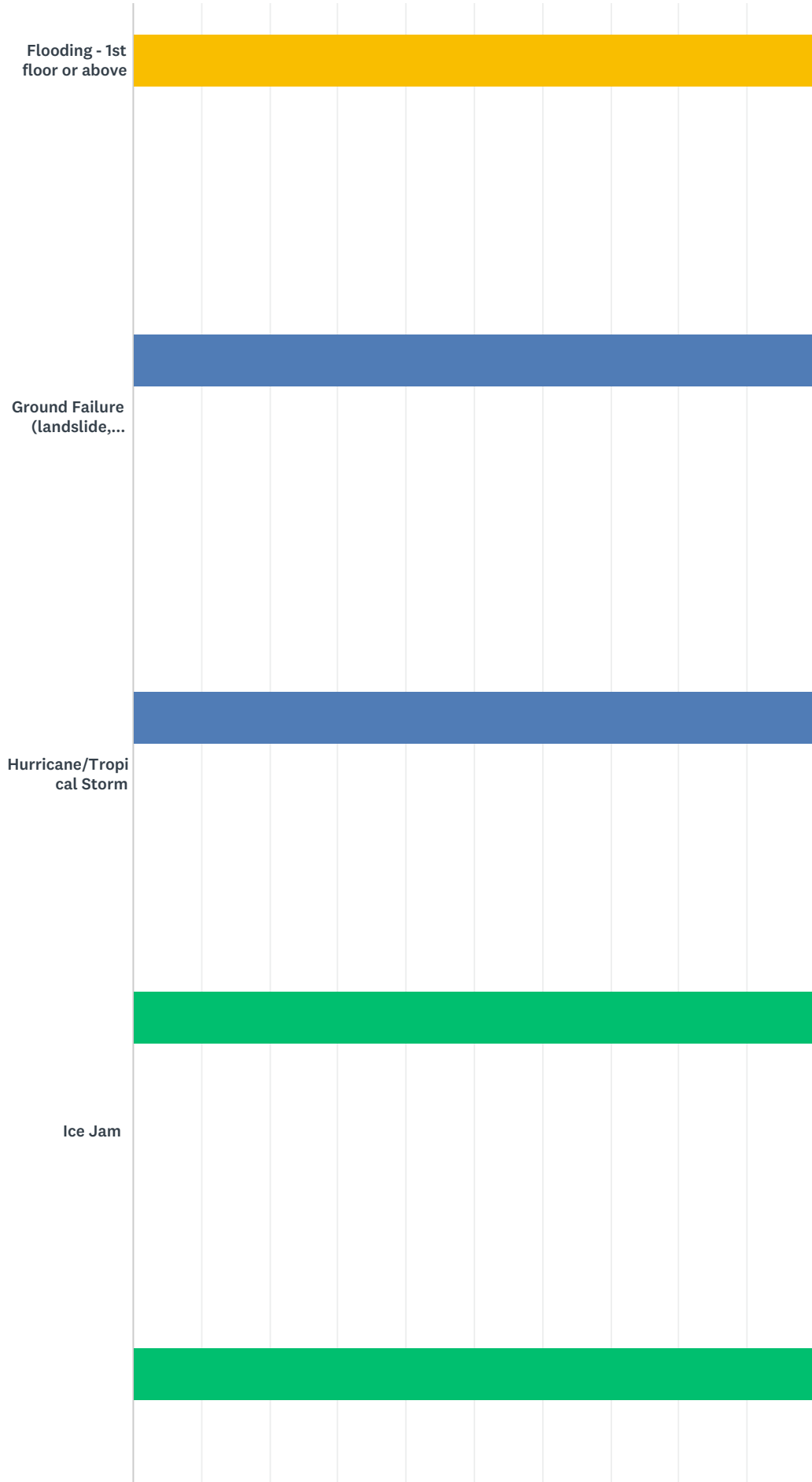
Answered: 1 Skipped: 0



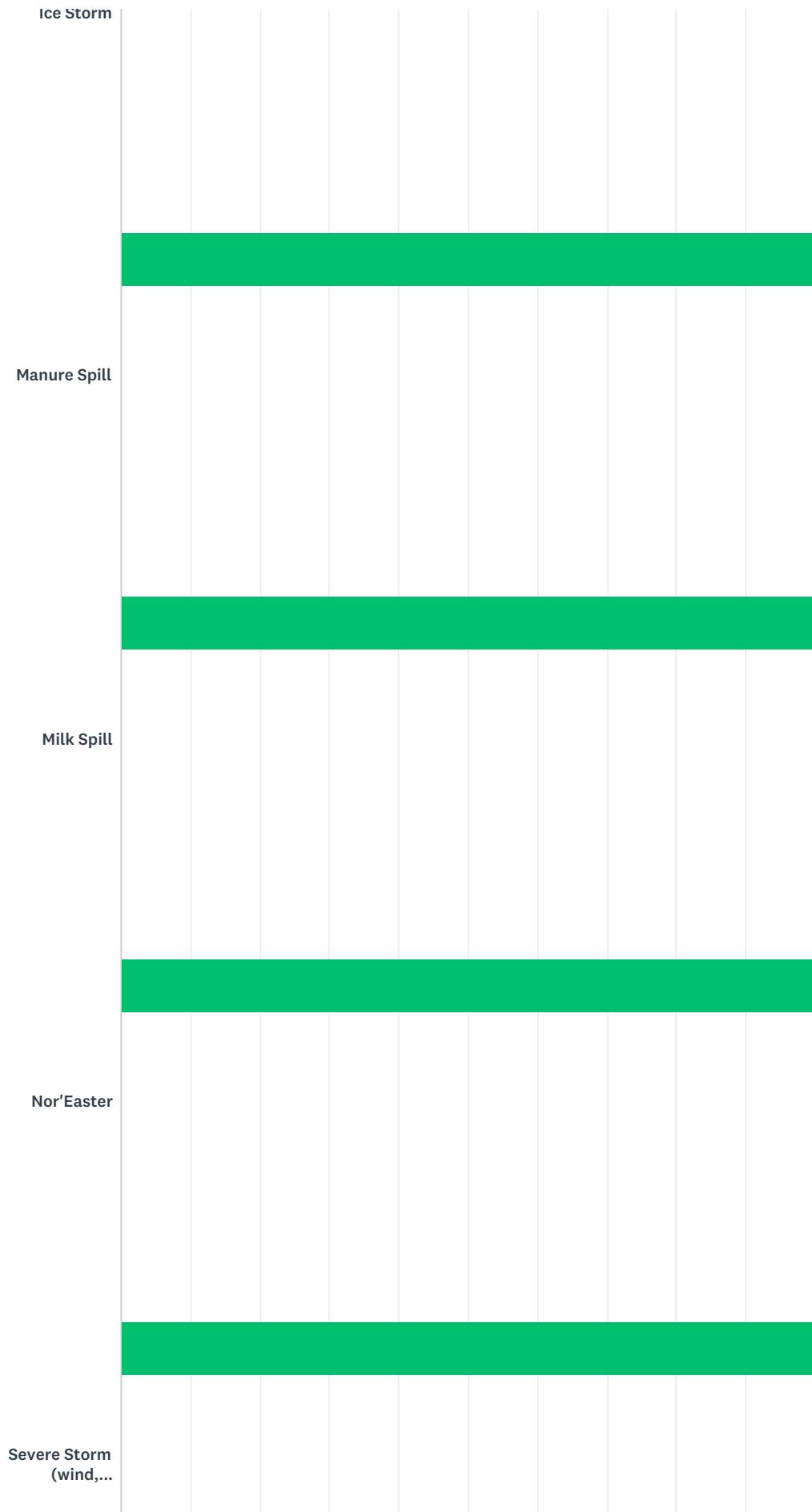
# Lewis County Hazard Mitigation Plan Update - Citizen Survey



# Lewis County Hazard Mitigation Plan Update - Citizen Survey

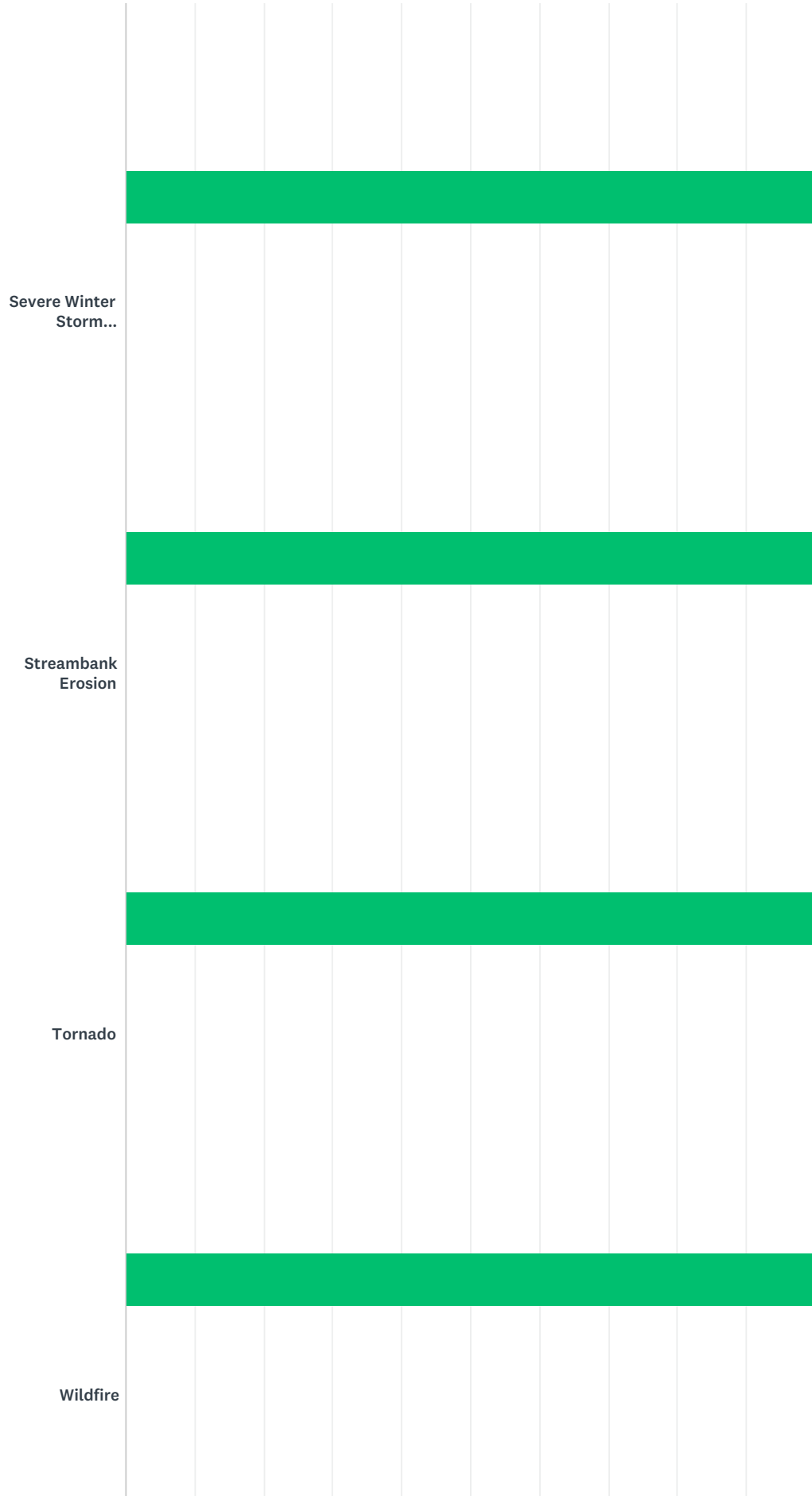


# Lewis County Hazard Mitigation Plan Update - Citizen Survey

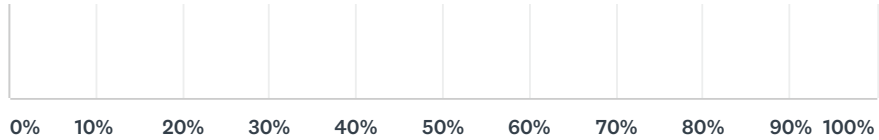




Lewis County Hazard Mitigation Plan Update - Citizen Survey



## Lewis County Hazard Mitigation Plan Update - Citizen Survey



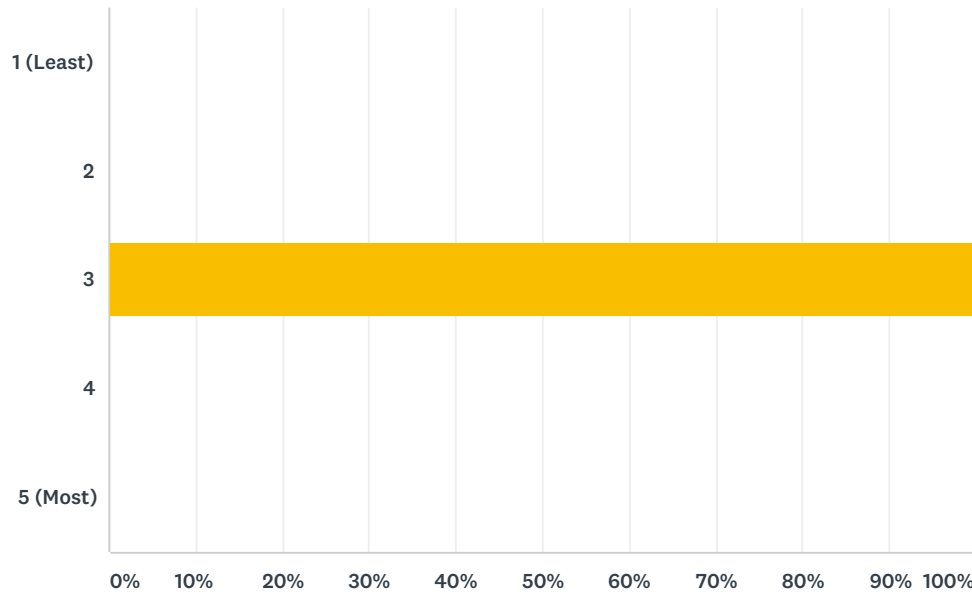
■ Have Experienced   
 ■ Not Concerned   
 ■ Somewhat Concerned  
■ Very Concerned   
 ■ Extremely Concerned

	HAVE EXPERIENCED	NOT CONCERNED	SOMEWHAT CONCERNED	VERY CONCERNED	EXTREMELY CONCERNED	TOTAL RESPONDENTS
Climate Change	0.00% 0	0.00% 0	100.00% 1	0.00% 0	0.00% 0	1
Dam Failure	0.00% 0	0.00% 0	100.00% 1	0.00% 0	0.00% 0	1
Drought	100.00% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	1
Earthquake	100.00% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	1
Extreme Temperatures	0.00% 0	0.00% 0	100.00% 1	0.00% 0	0.00% 0	1
Flooding - Street/Property	0.00% 0	0.00% 0	100.00% 1	0.00% 0	0.00% 0	1
Flooding - Basement	100.00% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	1
Flooding - 1st floor or above	0.00% 0	0.00% 0	100.00% 1	0.00% 0	0.00% 0	1
Ground Failure (landslide, sinkholes)	0.00% 0	100.00% 1	0.00% 0	0.00% 0	0.00% 0	1
Hurricane/Tropical Storm	0.00% 0	100.00% 1	0.00% 0	0.00% 0	0.00% 0	1
Ice Jam	100.00% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	1
Ice Storm	100.00% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	1
Manure Spill	100.00% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	1
Milk Spill	100.00% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	1
Nor'Easter	100.00% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	1
Severe Storm (wind, lightning, hail)	100.00% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	1
Severe Winter Storm (blizzard, heavy snow, ice)	100.00% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	1
Streambank Erosion	100.00% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	1
Tornado	100.00% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	1
Wildfire	100.00% 1	0.00% 0	0.00% 0	0.00% 0	0.00% 0	1



**Q8 Please rank how prepared you feel you and your household are for disaster events likely to occur within your municipality. Rank on a scale of 1 to 5, with 5 representing the most prepared.**

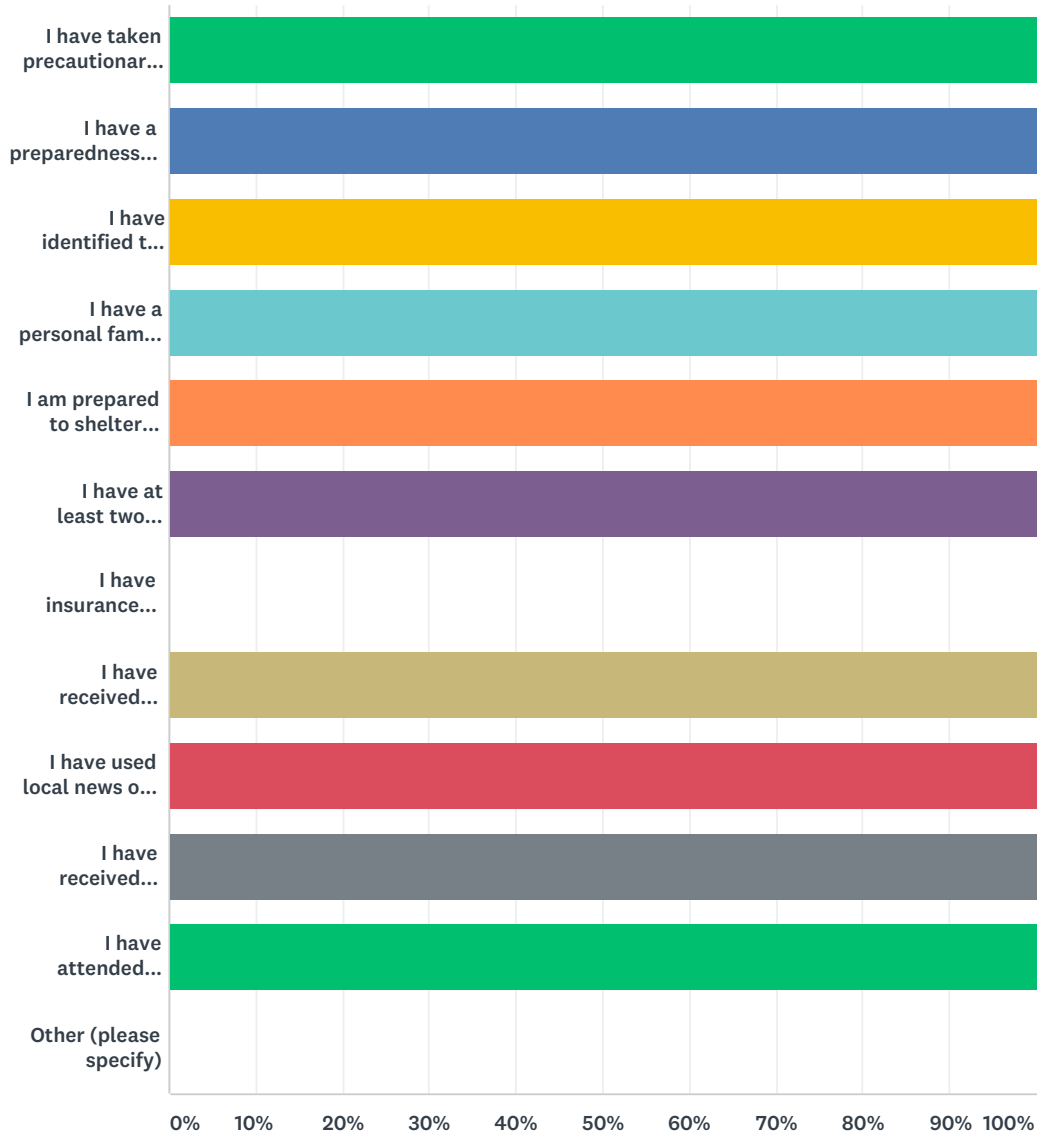
Answered: 1 Skipped: 0



ANSWER CHOICES	RESPONSES
1 (Least)	0.00% 0
2	0.00% 0
3	100.00% 1
4	0.00% 0
5 (Most)	0.00% 0
<b>TOTAL</b>	<b>1</b>

### Q9 In what ways do you believe you are prepared for a disaster that may occur within your municipality? (Please check all that apply)

Answered: 1 Skipped: 0



ANSWER CHOICES	RESPONSES
I have taken precautionary measures to protect my property though retrofits or when constructed	100.00% 1
I have a preparedness kit containing basic supplies and materials for my family and myself	100.00% 1
I have identified the location of the nearest severe weather shelter	100.00% 1
I have a personal family emergency preparedness plan, and have discussed it with my family and others for whom I have responsibility	100.00% 1
I am prepared to shelter in-place if that is the best available option	100.00% 1
I have at least two methods for receiving emergency notifications and other critical information during severe weather or other potential emergency situations	100.00% 1

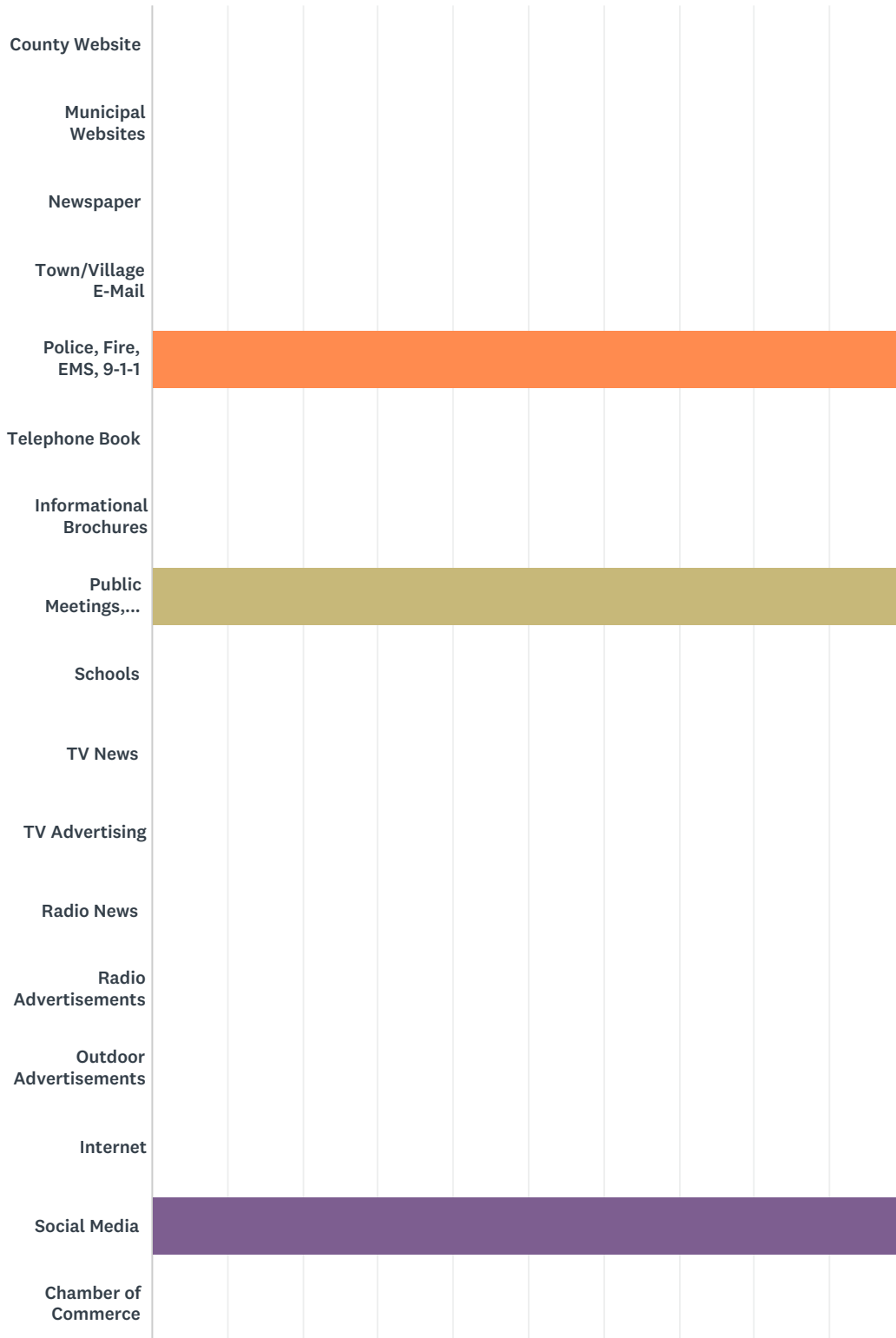
## Lewis County Hazard Mitigation Plan Update - Citizen Survey

I have insurance policies to cover losses from specific risks (e.g. flood insurance)	0.00%	0
I have received emergency preparedness information from a government source (e.g., federal, state, or local emergency management)	100.00%	1
I have used local news or other media to obtain information	100.00%	1
I have received information from schools and other academic institutions	100.00%	1
I have attended meetings that have dealt with disaster preparedness	100.00%	1
Other (please specify)	0.00%	0
<b>Total Respondents: 1</b>		

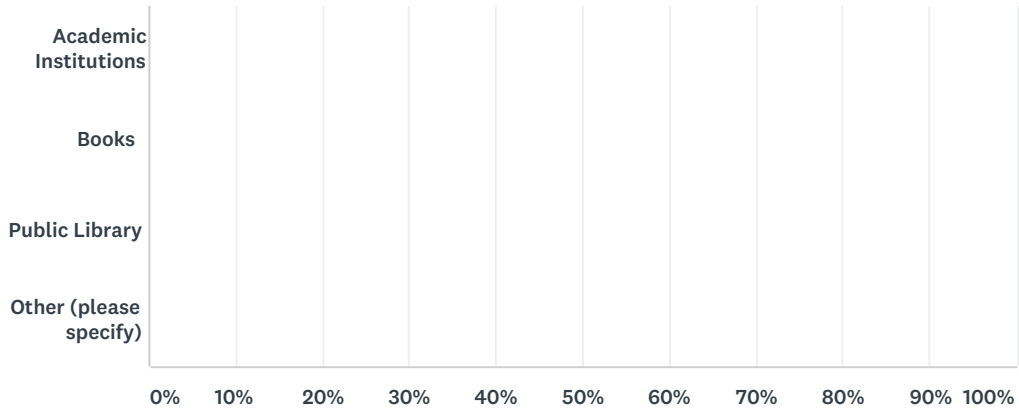


Q10 How do you receive your information concerning a disaster? Of the information sources below, please identify the top three (3) that are MOST EFFECTIVE in providing you with information to make your home safer and better able to withstand the impact of disaster events.

Answered: 1 Skipped: 0



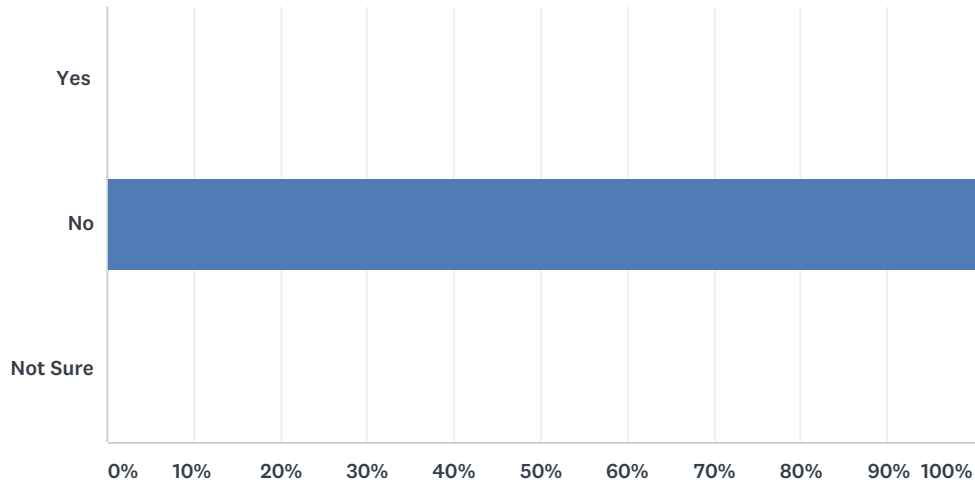
## Lewis County Hazard Mitigation Plan Update - Citizen Survey



ANSWER CHOICES	RESPONSES
County Website	0.00%      0
Municipal Websites	0.00%      0
Newspaper	0.00%      0
Town/Village E-Mail	0.00%      0
Police, Fire, EMS, 9-1-1	100.00%      1
Telephone Book	0.00%      0
Informational Brochures	0.00%      0
Public Meetings, Workshops, Public Awareness Events	100.00%      1
Schools	0.00%      0
TV News	0.00%      0
TV Advertising	0.00%      0
Radio News	0.00%      0
Radio Advertisements	0.00%      0
Outdoor Advertisements	0.00%      0
Internet	0.00%      0
Social Media	100.00%      1
Chamber of Commerce	0.00%      0
Academic Institutions	0.00%      0
Books	0.00%      0
Public Library	0.00%      0
Other (please specify)	0.00%      0
<b>Total Respondents: 1</b>	

Q11 To the best of your knowledge, is your property located in a designated floodplain? If you do not know, or are not sure, please check the following websites: - FEMA: <https://www.floodsmart.gov> - FEMA: <https://msc.fema.gov> Google Earth users can install the FEMA NFIP flood delineations by going to: <https://hazards.fema.gov/femaportal/wps/portal/NFHLWMSkmzdownload>

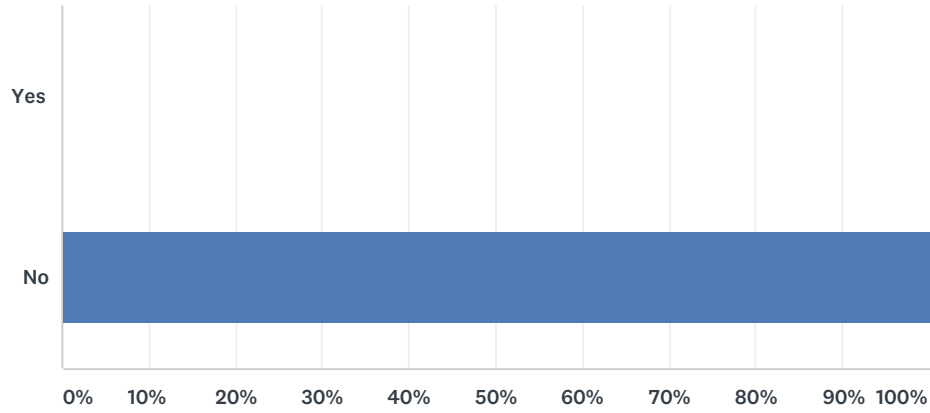
Answered: 1 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	0.00%	0
No	100.00%	1
Not Sure	0.00%	0
TOTAL		1

## Q12 Do you have flood insurance?

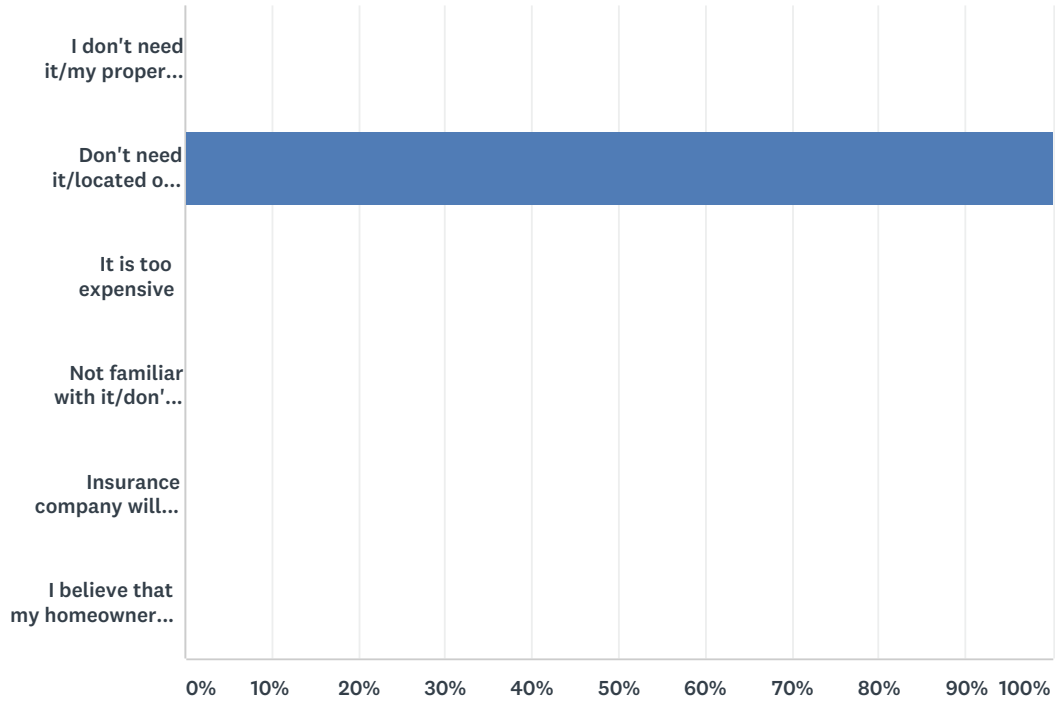
Answered: 1 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	0.00%	0
No	100.00%	1
TOTAL		1

### Q13 If you do NOT have flood insurance, what is the primary reason?

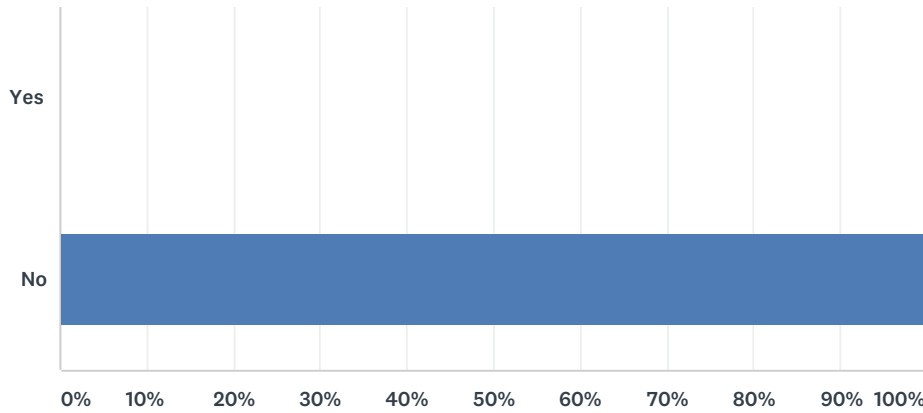
Answered: 1 Skipped: 0



ANSWER CHOICES	RESPONSES	
I don't need it/my property has never flooded	0.00%	0
Don't need it/located on high ground	100.00%	1
It is too expensive	0.00%	0
Not familiar with it/don't know about it	0.00%	0
Insurance company will not provide	0.00%	0
I believe that my homeowners insurance will cover me	0.00%	0
<b>TOTAL</b>		<b>1</b>

### Q14 Do you or did you have problems getting homeowners/renters insurance due to risks from natural hazards?

Answered: 1 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	0.00%	0
No	100.00%	1
TOTAL		1



**Q15 If you answered "Yes" to the previous question, please identify the natural hazard risk that caused you to have problems obtaining homeowners/renters insurance.**

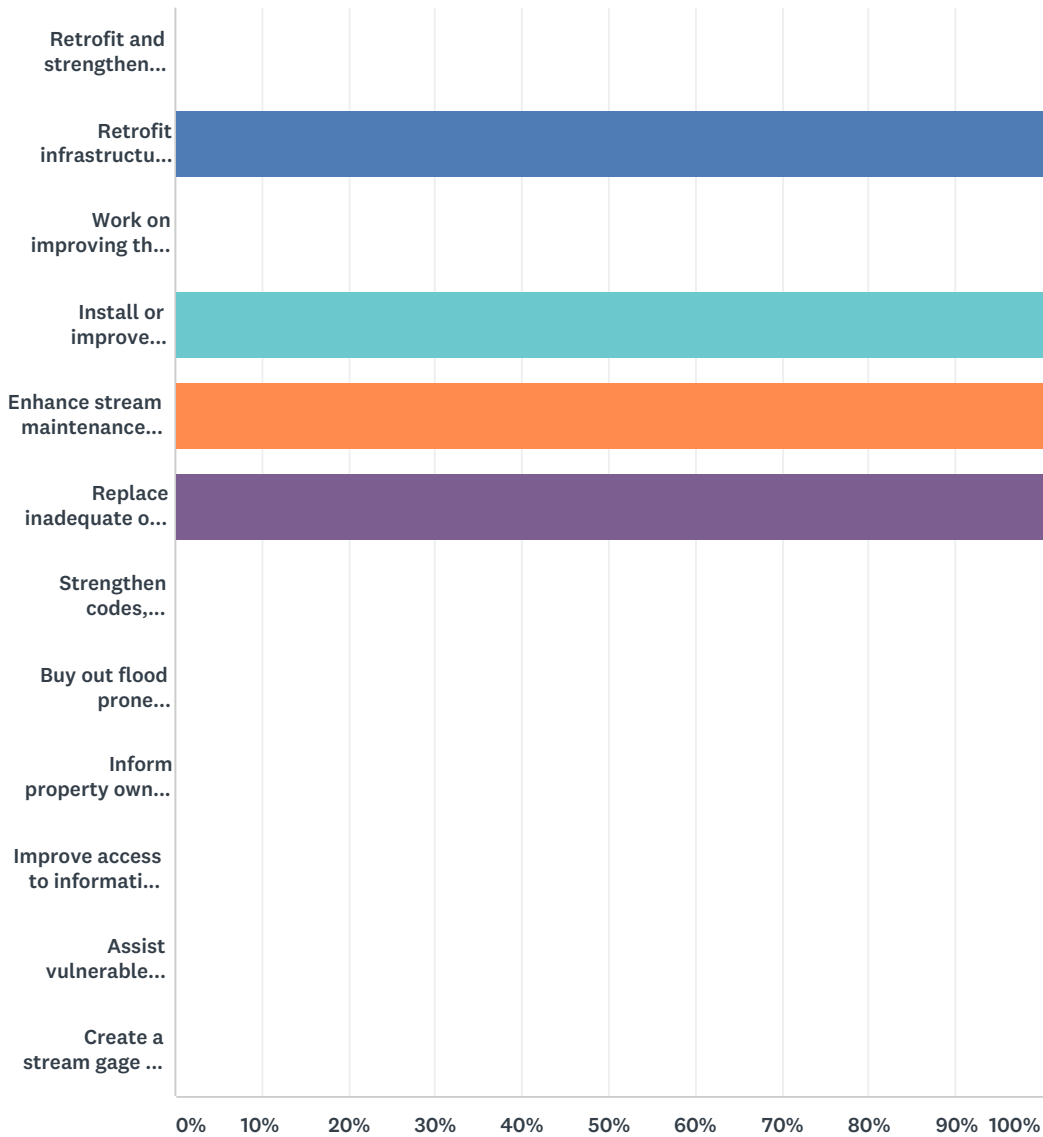
Answered: 0 Skipped: 1

**Q16 What areas in the County are most likely to flood? Please list street names and other specific identifiers, if possible.**

Answered: 1 Skipped: 0

### Q17 What types of projects do you believe Local, County, State, or Federal Government agencies could be doing to reduce the damage and disruption of disasters in Lewis County? Select your top three choices.

Answered: 1 Skipped: 0



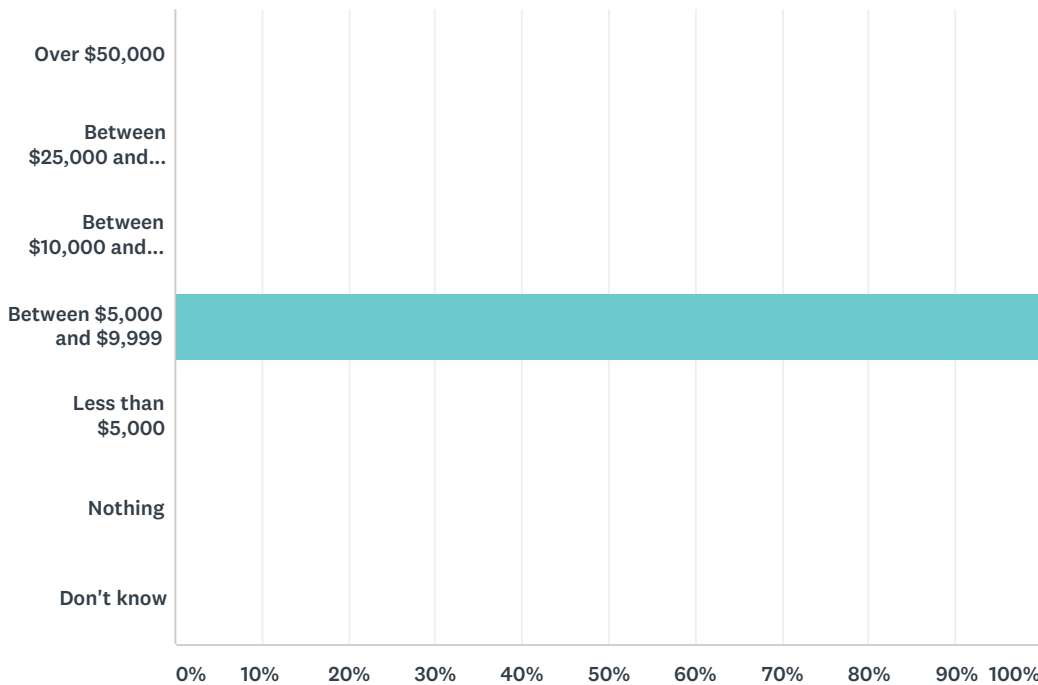
ANSWER CHOICES	RESPONSES
Retrofit and strengthen essential facilities such as police, schools, and hospitals	0.00% 0
Retrofit infrastructure, such as elevating roadways and improving drainage systems	100.00% 1
Work on improving the damage resistance of utilities (electricity, communications, water/wastewater facilities etc.)	0.00% 0
Install or improve protective structures, such as floodwalls, levees, bulkheads, and firebreaks	100.00% 1
Enhance stream maintenance programs/projects	100.00% 1
Replace inadequate or vulnerable bridges and causeways	100.00% 1

## Lewis County Hazard Mitigation Plan Update - Citizen Survey

Strengthen codes, ordinances and plans to require higher hazard risk management standards and/or provide greater control over development in high hazard areas	0.00%	0
Buy out flood prone properties and maintain as open space	0.00%	0
Inform property owners of ways they can mitigate damage to their properties	0.00%	0
Improve access to information about hazard risks and high-hazard areas	0.00%	0
Assist vulnerable property owners with securing funding to mitigate their properties	0.00%	0
Create a stream gage and weather monitoring program to provide more accurate data and warnings	0.00%	0
Total Respondents: 1		

Q18 How much money would you be willing to spend on your current home to help protect it from the impacts of potential future disasters within our community? Examples of hazard mitigation-related home improvements are elevating a flood-prone home; elevating utilities in flood-prone basements; strengthening your roof, siding, doors, or windows to withstand high winds; and removing threatening trees or branches from your property.

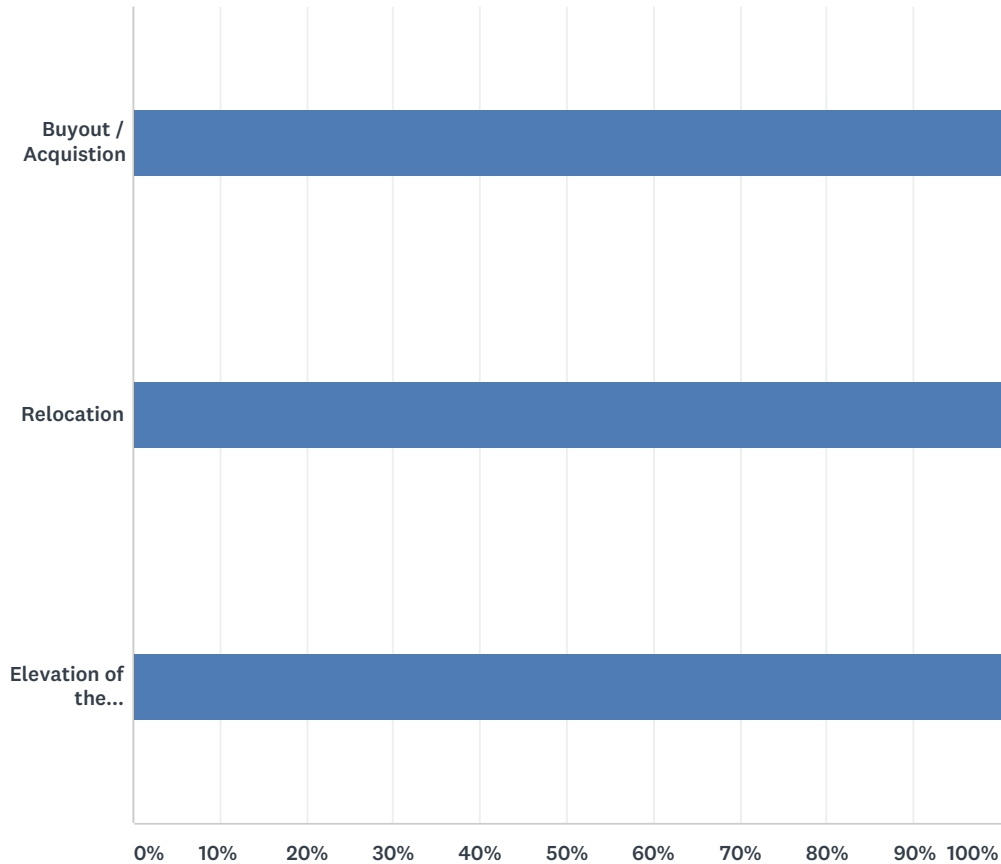
Answered: 1 Skipped: 0



ANSWER CHOICES	RESPONSES	
Over \$50,000	0.00%	0
Between \$25,000 and \$50,000	0.00%	0
Between \$10,000 and \$24,999	0.00%	0
Between \$5,000 and \$9,999	100.00%	1
Less than \$5,000	0.00%	0
Nothing	0.00%	0
Don't know	0.00%	0
<b>TOTAL</b>		<b>1</b>

Q19 If your property were located in a designated high-hazard area (for example, NFIP flood zone or storm surge zone) or had received repeated damages from a natural disaster event, would you consider any of the following options? If your response is dependent on certain factors, such as the funding source, please indicate why in the "influencing factors" comment box.

Answered: 1 Skipped: 0



Yes No Unsure

	YES	NO	UNSURE	TOTAL
Buyout / Acquisition	0.00% 0	100.00% 1	0.00% 0	1
Relocation	0.00% 0	100.00% 1	0.00% 0	1
Elevation of the structure/residence on the property	0.00% 0	100.00% 1	0.00% 0	1



**Q20 If you have already had to spend money to mitigate your property, how much have you spent and on what measures?**

Answered: 1 Skipped: 0

**Q21 Which (if any) incentives would motivate you to spend money on protecting your home from the possible impacts of a disaster? (such as lower interest rates, grant funding, waivers, etc.)?**

Answered: 0 Skipped: 1

**Q22 Please list any additional types of projects you believe local, County, State, or Federal government agencies could be doing to reduce the damage and disruption of disasters in Lewis County?**

Answered: 1 Skipped: 0

**Q23 Do you have any other comments, questions, or concerns regarding hazard mitigation in Lewis County?**

Answered: 0 Skipped: 1



[Jurisdiction] Action Worksheet			
Project Name:			
Project Number:			
Risk / Vulnerability			
Hazard(s) of Concern:			
Description of the Problem:			
Action or Project Intended for Implementation			
Description of the Solution:			
Is this project related to a Critical Facility?    Yes <input type="checkbox"/> No <input type="checkbox"/>			
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
Level of Protection:		Estimated Benefits (losses avoided):	
Useful Life:		Goals Met:	
Estimated Cost:		Mitigation Action Type:	
Plan for Implementation			
Prioritization:		Desired Timeframe for Implementation:	
Estimated Time Required for Project Implementation:		Potential Funding Sources:	
Responsible Organization:		Local Planning Mechanisms to be Used in Implementation if any:	
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Problem continues.
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
<b>Project Name:</b>		
<b>Project Number:</b>		
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety		
Property Protection		
Cost-Effectiveness		
Technical		
Political		
Legal		
Fiscal		
Environmental		
Social		
Administrative		
Multi-Hazard		
Timeline		
Agency Champion		
Other Community Objectives		
<b>Total</b>		
<b>Priority (High/Med/Low)</b>		





**Plan Goal(s)/Objective(s) Addressed:**

Goal: \_\_\_\_\_

Objective: \_\_\_\_\_

**Indicator of Success** (e.g., losses avoided as a result of the acquisition program):

*In most cases, you will list losses avoided as the indicator. In cases where it is difficult to quantify the benefits in dollar amounts, you will use other indicators, such as the number of people who now know about mitigation or who are taking mitigation actions to reduce their vulnerability to hazards.*

\_\_\_\_\_  
\_\_\_\_\_

**Status** (Please check pertinent information and provide explanations for items with an asterisk. For completed or canceled projects, see Worksheet #2 — to complete a project evaluation):

**Project Status**

Project on schedule

Project completed

Project delayed\*

\*explain: \_\_\_\_\_

\_\_\_\_\_

Project canceled

**Project Cost Status**

Cost unchanged

Cost overrun\*

\*explain: \_\_\_\_\_

\_\_\_\_\_

Cost underrun\*

\*explain: \_\_\_\_\_

\_\_\_\_\_

**Summary of progress on project for this report:**

A. What was accomplished during this reporting period?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

B. What obstacles, problems, or delays did you encounter, if any?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

C. How was each problem resolved?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Next Steps:** What is/are the next step(s) to be accomplished over the next reporting period?

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**Other comments:**

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*When gearing up for the plan evaluation, the planning team should reassess its composition and ask the following questions:*

	YES	NO
Have there been local staffing changes that would warrant inviting different members to the planning team?		
<b>Comments/Proposed Action:</b>		
Are there organizations that have been invaluable to the planning process or to project implementation that should be represented on the planning team?		
<b>Comments/Proposed Action:</b>		
Are there any representatives of essential organizations who have not fully participated in the planning and implementation of actions? If so, can someone else from this organization commit to the planning team?		
<b>Comments/Proposed Action:</b>		
Are there procedures (e.g., signing of MOAs, commenting on submitted progress reports, distributing meeting minutes, etc.) that can be done more efficiently?		
<b>Comments/Proposed Action:</b>		
Are there ways to gain more diverse and widespread cooperation?		
<b>Comments/Proposed Action:</b>		
Are there different or additional resources (financial, technical, and human) that are now available for mitigation planning?		
<b>Comments/Proposed Action:</b>		

*If the planning team determines the answer to any of these questions is “yes,” some changes may be necessary.*

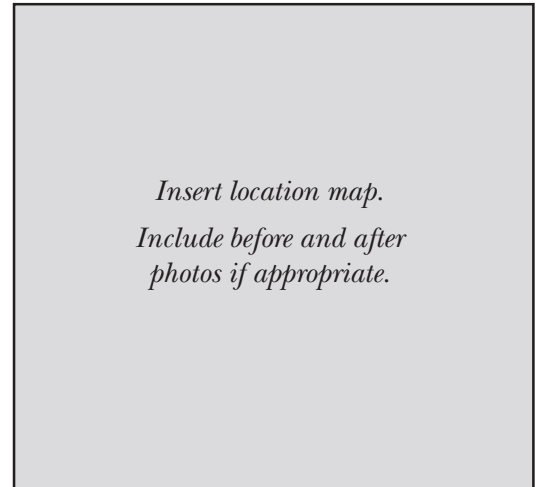
Project Name and Number: \_\_\_\_\_

Project Budget: \_\_\_\_\_

Project Description: \_\_\_\_\_

Associated Goal and Objective(s): \_\_\_\_\_

Indicator of Success (e.g., losses avoided): \_\_\_\_\_



Was the action implemented?  YES  NO



**Why not?**

Was there political support for the action?

Were enough funds available?

Were workloads equitably or realistically distributed?

Was new information discovered about the risks or community that made implementation difficult or no longer sensible?

Was the estimated time of implementation reasonable?

Were sufficient resources (for example staff and technical assistance) available?

**YES NO**



What were the results of the implemented action? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

	YES	NO
Were the outcomes as expected? If No, please explain:		
Did the results achieve the goal and objective(s)? Explain how:		
Was the action cost-effective? Explain how or how not:		
What were the losses avoided after having completed the project?		
If it was a structural project, how did it change the hazard profile?		
Additional comments or other outcomes:		

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Date: \_\_\_\_\_  
Prepared by: \_\_\_\_\_



Risk Assessment Steps	Questions	YES	NO	COMMENTS
<b>Identify hazards</b>	Are there new hazards that can affect your community?			
<b>Profile hazard events</b>	Are new historical records available?			
	Are additional maps or new hazard studies available?			
	Have chances of future events (along with their magnitude, extent, etc.) changed?			
	Have recent and future development in the community been checked for their effect on hazard areas?			
<b>Inventory assets</b>	Have inventories of existing structures in hazard areas been updated?			
	Is future land development accounted for in the inventories?			
	Are there any new special high-risk populations?			
<b>Estimate losses</b>	Have loss estimates been updated to account for recent changes?			

*If you answered "Yes" to any of the above questions, review your data and update your risk assessment information accordingly.*

# Worksheet #1

# Progress Report

# step 2

Progress Report Period: October 1, 2003 to December 31, 2003  
(date) (date)

Project Title: Raging River Views Park Flood Acquisition Project Project ID#: HVMP-2003-01

Responsible Agency: Hazardville Department of Planning

Address: 1909 Burnham Way

City/County: Hazardville, Emergency

Contact Person: Eustoe Eudlid Title: Grants Administrator

Phone #(s): (555) 555-8478 email address: eeudlid@town.hazardville.oh

List Supporting Agencies and Contacts:

Hazardville Department of Housing: Noah Hudson (555) 555-8465

Hazardville Habitat for Humanity: Carter Goodman (555) 555-9432

Total Project Cost: \$360,000

Anticipated Cost Overrun/Underrun: \$N/A

Date of Project Approval: July 21, 2003 Start date of the project: November 15, 2003

Anticipated completion date: Summer 2005

Description of the Project (include a description of each phase, if applicable, and the time frame for completing each phase):

Acquire and demolish 14 structures located at the Raging River Views Park. Work with Habitat for Humanity and the Department of Housing to construct new housing or rehabilitate existing housing for displaced low-income residents. The Department of Housing will also provide funds for temporary housing to displaced residents.

Milestones	Complete	Projected Date of Completion
Conduct surveys of ground and first-floor elevations	✓	
Obtain Notices of Intent by owners	✓	
Conduct structure appraisals	✓	
Send letters of offer to homeowners		1/31/04
Perform title work		3/30/04
Acquire structures		6/30/04
Begin construction of new housing or reconstruction of existing housing for relocated residents		6/30/04
Send payment for relocation to centers		9/30/04
Finalize contract for demolition		1/12/05
Demolish structures		4/26/05
Landscape open parcels		6/30/05

Plan Goal(s)/Objective(s) Addressed:

Goal: Minimize losses to existing and future structures within hazard areas.

Objective: Reduce potential damages to the manufactured home park in the floodplain.

Indicator of Success (e.g., losses avoided as a result of the acquisition program):

*In most cases, you will list losses avoided as the indicator. In cases where it is difficult to quantify the benefits in dollar amounts, you will use other indicators, such as the number of people who now know about mitigation or who are taking mitigation actions to reduce their vulnerability to hazards.*

Losses Avoided. After a major flood (100-year), the Department of Economic Development will assist the Planning Department in calculating the losses avoided.

Status (Please check pertinent information and provide explanations for items with an asterisk. For completed or canceled projects, see Worksheet #2 — to complete a project evaluation):

Project Status	Project Cost Status
<input checked="" type="checkbox"/> Project on schedule	<input checked="" type="checkbox"/> Cost unchanged
<input type="checkbox"/> Project completed	<input type="checkbox"/> Cost overrun*
<input type="checkbox"/> Project delayed*	*explain: _____
*explain: _____	_____
<input type="checkbox"/> Project canceled	<input type="checkbox"/> Cost underrun*
	*explain: _____
	_____

Summary of progress on project for this report:

A. What was accomplished during this reporting period?

The Department of Planning contacted the owners of the properties vulnerable to floods to determine their willingness to sell their properties. Of the 14 property owners contacted, 10 agreed to have their homes acquired. An appraiser contracted by the Department of Planning estimated the value of the 10 properties.

B. What obstacles, problems, or delays did you encounter, if any?

The owners of four properties refused to sell. There has been some limited neighborhood opposition to various suggestions for the community open space created by the acquisitions.

C. How was each problem resolved?

The Department of Planning has proposed to the residents a design charrette to develop alternatives for the open space that would be created, with the understanding that no permanent structures can be constructed on the open parcels after acquisition and demolition has been completed. Recreational activities will be limited to passive uses such as trails and bike paths.



## Worksheet #2 Evaluate Your Planning Team step **3**

<i>When gearing up for the plan evaluation, the planning team should reassess its composition and ask the following questions:</i>	YES	NO
Have there been local staffing changes that would warrant inviting different members to the planning team?		✓
Comments/Proposed Action: <b>NA</b>		
Are there organizations that have been invaluable to the planning process or to project implementation that should be represented on the planning team?	✓	
Comments/Proposed Action: <b>Hazardville Habitat for Humanity has been invaluable to assisting the relocation of former Ragin River Views Park residents. The organization should be invited to participate in THORR.</b>		
Are there any representatives of essential organizations who have not fully participated in the planning and implementation of actions? If so, can someone else from this organization commit to the planning team?	✓	
Comments/Proposed Action: <b>It is essential that the Department of Public Works be represented at each meeting because so many mitigation actions involve them. However, representatives from the department have been unable to attend meetings consistently since the development of the plan. THORR will work with the department's director to find consistent, active representation.</b>		
Are there procedures (e.g., signing of MOAs, commenting on submitted progress reports, distributing meeting minutes, etc.) that can be done more efficiently?	✓	
Comments/Proposed Action: <b>Again, the Department of Public Works has been unable to provide timely progress reports of its mitigation actions. Administrative duties and paperwork have fallen through the cracks since the department has been assigned numerous new duties to Hazardville's mitigation efforts. Perhaps the department, in partnership with THORR, should approach the Town Council for funding for more department staff.</b>		
Are there ways to gain more diverse and widespread cooperation?	✓	
Comments/Proposed Action: <b>THORR members believe that better publicity about mitigation actions will garner more interest from the public, affected/interested organizations, and state agencies.</b>		
Are there different or additional resources (financial, technical, and human) that are now available for mitigation planning?	✓	
Comments/Proposed Action: <b>THORR has learned about new PDM funding. The state has asked that local jurisdictions submit applications for brick and mortar projects and risk assessments studies.</b>		

*If the planning team determines the answer to any of these questions is "yes," some changes may be necessary.*



# Worksheet #3 Evaluate Your Project Results **step 3**

page 1 of 2

Project Name and Number:

**Raging River Views Park Flood Acquisition Project (HVMP-2003-01)**

Project Budget:

**\$360,000**

Project Description:

**Acquisition and demolition of 14 flood-prone structures**

Associated Goal and Objective(s):

**Goal: Minimize losses to existing and future structures within hazard areas**

**Objective: Reduce potential damages to the manufactured home park in the floodplain**

Indicator of Success (e.g., losses avoided):

**Losses avoided by acquisition and demolition of flood-prone structures**



Town of Hazardville Composite Loss Map developed previously during risk assessment (see FEMA 386-2).

Was the action implemented?  YES  NO

**IF NO**

Why not?

Was there political support for the action?

YES NO

Were enough funds available?

Were workloads equitably or realistically distributed?

Was new information discovered about the risks or community that made implementation difficult or no longer sensible?

Was the estimated time of implementation reasonable?

Were sufficient resources (for example staff and technical assistance) available?

**IF YES**

What were the results of the implemented action?

**Of the 14 proposed properties, 10 were acquired. The benefit-cost ratio is 2.19, based on project benefits of \$789,000 and costs of \$360,274. Benefits are based on the net present value of the avoided damages over the project life. Furthermore, about 40 people are no longer in the path of a potential flood, making emergency rescue operations in that area less likely and evacuation easier.**



	YES	NO
Were the outcomes as expected? If No, please explain:		<input checked="" type="checkbox"/>
The project originally set out to acquire 14 properties. Four of the 14 owners did not want to participate in the buyout program.		
Did the results achieve the goal and objective(s)? Explain how:	<input checked="" type="checkbox"/>	
Despite four properties still in harm's way, the objective has been largely met. See additional comments.		
Was the action cost-effective? Explain how or how not:	<input checked="" type="checkbox"/>	
The FEMA Limited Data module was used to perform the benefit-cost analysis. Data for the analysis was collected from historical flood data and used as benchmarks in the before mitigation section of the analysis. The damages after mitigation section was left blank, due to the properties being permanently acquired, and the economic risk removed completely. The analysis resulted in a benefit-cost ratio of 2.19, with benefits totaling \$789,000 for 10 properties.		
What were the losses avoided after having completed the project?		
Total avoided losses are \$789,000 over the lifetime of the project (estimated at 100 years).		
If it was a structural project, how did it change the hazard profile?		
N/A		
Additional comments or other outcomes:		
The Planning Department has agreed to work with the remaining four homeowners in evaluating other flood-proofing options.		

Date: October 12, 2005

Prepared by: Hazardville Department of Economic Development  
Hazardville Department of Planning

## Worksheet #4 Revisit Your Risk Assessment **step 4**

Risk Assessment Steps	Questions	YES	NO	COMMENTS
Identify hazards	Are there new hazards that can affect your community?		✓	
Profile hazard events	Are new historical records available?		✓	
	Are additional maps or new hazard studies available?	✓		Recently completed maps and studies showing vulnerability of the new coastal development to erosion and tidal surge are available.
	Have chances of future events (along with their magnitude, extent, etc.) changed?		✓	
	Have recent and future development in the community been checked for their effect on hazard areas?	✓		
Inventory assets	Have inventories of existing structures in hazard areas been updated?	✓		
	Is future land development accounted for in the inventories?	✓		The Planning Department is preparing a coastal development plan to ensure that any future development is set back far enough to be outside the erosion zones and the coastal high hazard areas. Corroset and future road configurations will also be studied to ensure adequate evacuation times before hurricane events.
	Are there any new special high-risk populations?	✓		Coastal residents and business owners.
Estimate losses	Have loss estimates been updated to account for recent changes?	✓		

*If you answered "Yes" to any of the above questions, review your data and update your risk assessment information accordingly.*



Name	Title / Position	Attended Meeting(s)	Attended PP Kickoff Meeting	Attended Risk Assessment Review Meeting - 11/13/18	Attended Mitigation Solutions Workshop 12/17/18	Plan Draft Review Meeting 10/21/19	Completed Information Gathering Worksheets / Surveys	Provided Data and Information	Reviews/Updated Inventories (e.g. Critical Facilities)	Identified vulnerabilities	Identified progress on original Mitigation Strategy	Supported updates of Mitigation Strategy	Supported Integration/Coordination with other Planning Mechanisms	Reviews/Approved Draft and Final Plan Sections	Designated Project Point of Contact
<b>Lewis County</b>															
Ryan Piche	County Manager		x	x		x									
Thomas Osborne	County Legislator			x	x	x									
Robert MacKenzie	Director, Lewis County Fire and Emergency Management		x	x	x	x	x	x	x	x	x	x	x	x	x
Nichelle Billhardt	Director, Lewis County Soil & Water Conservation District		x	x	x		x	x	x	x	x	x	x	x	
Jennifer Maracchion	Emergency Management Assistant, Lewis County Fire and Emergency Management		x	x	x	x									
Joe Austin	Planner, Lewis County Public Health			x	x										
Jennifer Jones	Commissioner, Lewis County Social Services			x											
Ashley Waite	Public Health Planner, Lewis County Public Health				x	x									
Frank Pace	Director, Lewis County Planning		x			x									
Ward Dailey	Senior Code Official, Lewis County Building and Fire Codes Department					x	x	x				x	x		
Jon Schell	Director of Facilities Management, Lewis County General Hospital			x											
Warren Shaw	Deputy Superintendent, Highway Department		x												
<b>Castorland (V)</b>															
Derek Mellnitz	Superintendent		x				x	x	x	x	x	x	x	x	x
Robin Grunert	Clerk/Treasurer						x	x	x	x	x	x	x	x	x
<b>Constableville (V)</b>															
Mary Failing	Village Clerk - Treasurer						x								
Joseph Genter	Trustee		x	x	x	x	x	x	x	x	x	x	x	x	x
Alan Klossner	Mayor		x	x	x	x									
Cody Meneilly	Trustee				x										
Mark Sullivan	Trustee				x		x	x	x	x	x	x	x		
<b>Copenhagen (V)</b>															
Mark Souva	Trustee			x			x	x	x	x	x	x	x		
Kim Vogt	Trustee		x			x	x	x	x	x	x	x	x	x	x
<b>Croghan (T)</b>															
Roger M. Burriss	Supervisor		x				x	x	x	x	x	x	x		
Chelsea Cowan	Town Clerk		x												
Derek Gage	Council Member		x												
Allen C. Shaw	Highway Superintendent						x	x	x	x	x	x	x	x	x
<b>Croghan (V)</b>															
Lloyd Richardson	Trustee			x											
Linda Nortz	Trustee				x	x									
Kay Sabo	Clerk		x												
Michael Monnat	Mayor						x	x	x	x	x	x	x	x	x
Bruce Widrick	Deputy Mayor						x	x	x	x	x	x	x		
<b>Denmark (T)</b>															
James Der	Supervisor		x	x	x	x	x	x	x	x	x	x	x		
Scott Doyle	Councilman			x											
Patrick Mahar	Superintendent of Highways		x	x	x		x	x	x	x	x	x	x	x	x
Lloyd Woodruff	Town Zoning Enforcement						x	x	x	x	x	x	x		
<b>Diana (T)</b>															
David Parow	Town Supervisor						x	x	x	x	x	x	x	x	x
Janet Taylor	Town Clerk						x	x	x	x	x	x	x		
<b>Greig (T)</b>															
Tom Gunn	Town Clerk			x			x	x	x	x	x	x	x	x	x
Marilyn Patterson	Supervisor		x				x	x	x	x	x	x	x	x	x
David Meade	Code Enforcement Officer		x												
Brian Patterson	Resident		x												
David Van de Water	Code Enforcement Officer						x	x	x	x	x	x	x		

Name	Title / Position	Attended Meeting(s)	Attended PP Kickoff Meeting	Attended Risk Assessment Review Meeting - 11/13/18	Attended Mitigation Solutions Workshop 12/17/18	Plan Draft Review Meeting 10/21/19	Completed Information Gathering Worksheets / Surveys	Provided Data and Information	Reviews/Updated Inventories (e.g. Critical Facilities)	Identified vulnerabilities	Identified progress on original Mitigation Strategy	Supported updates of Mitigation Strategy	Supported Integration/Coordination with other Planning Mechanisms	Reviews/Approved Draft and Final Plan Sections	Designated Project Point of Contact
<b>Harrisburg (T)</b>															
Steve Bernat	Supervisor			x			x	x	x	x	x	x	x	x	x
Charles Snyder	Highway Department Staff		x												
<b>Lewis (T)</b>															
Frank Platt	Superintendent		x												
Dawn Zagurski	Supervisor						x	x	x	x	x	x	x	x	x
Heidi Fey Gerrard	Clerk						x	x	x	x	x	x	x		
<b>Leyden (T)</b>															
Joseph Pfeiffer, Jr.	Codes Officer		x	x	x	x	x	x	x	x	x	x	x	x	
Rosalie White	Supervisor		x			x	x	x	x	x	x	x	x	x	x
Lois Compo	Town Board Member					x	x	x	x	x	x	x	x		
<b>Lowville (T)</b>															
Joseph Pfeiffer, Jr.	Codes Officer		x	x	x	x	x	x	x	x	x	x	x	x	
Randall A. Schell	Supervisor			x	x	x	x	x	x	x	x	x	x	x	x
<b>Lowville (V)</b>															
Donna Smith	Mayor		x	x											
Joseph G. Beagle	Mayor					x	x	x	x	x	x	x	x	x	x
Paul Denise	DPW Superintendent					x	x	x	x	x	x	x	x		
<b>Lyons Falls (V)</b>															
Anne Huntress	Mayor		x	x		x	x	x	x	x	x	x	x	x	x
Shane Rogers	DPW Supervisor						x	x	x	x	x	x	x		
<b>Lyonsdale (T)</b>															
Joseph Pfeiffer, Jr.	Codes Officer		x	x	x	x	x	x	x	x	x	x	x		
Phil Boardman	Supervisor						x	x	x	x	x	x	x	x	x
Brian Oullette	Councilman						x	x	x	x	x	x	x		
<b>Martinsburg (T)</b>															
Terrence Thisse	Supervisor			x			x	x	x	x	x	x	x	x	x
Tyler Jones	Superintendent		x	x		x	x	x	x	x	x	x	x		
Janusz Karelus	Councilman			x											
Mary Kelley	Clerk			x											
Mike Pleskach	Land Use Officer						x	x	x	x	x	x	x		
<b>Montague (T)</b>															
Kurt Riordan	Supervisor						x	x	x	x	x	x	x	x	x
Tony Young	Highway Superintendent						x	x	x	x	x	x	x		
<b>New Bremen (T)</b>															
Jonathan M. Bush	Superintendent of Highways		x				x	x	x	x	x	x	x		x
Peter Keys	Town Supervisor						x	x	x	x	x	x	x		
<b>Osceola (T)</b>															
Ginny Churchill	Town Clerk		x			x	x	x	x	x	x	x	x		
Richard Meagher	Highway Superintendent						x	x	x	x	x	x	x	x	x
Michael Findlay	Town Supervisor						x	x	x	x	x	x	x		
<b>Pinckney (T)</b>															
Donald Cook	Highway Superintendent		x				x	x	x	x	x	x	x	x	x
Sherry Harmych	Supervisor						x	x	x	x	x	x	x		

Name	Title / Position	Attended Meeting(s)	Attended PP Kickoff Meeting	Attended Risk Assessment Review Meeting - 11/13/18	Attended Mitigation Solutions Workshop 12/17/18	Plan Draft Review Meeting 10/21/19	Completed Information Gathering Worksheets / Surveys	Provided Data and Information	Reviews/Updated Inventories (e.g. Critical Facilities)	Identified vulnerabilities	Identified progress on original Mitigation Strategy	Supported update of Mitigation Strategy	Supported Integration/Coordination with other Planning Mechanisms	Reviews/Approved Draft and Final Plan Sections	Designated Project Point of Contact
<b>Port Leyden (V)</b>															
Janice Belmont	Board Member			x											
Anthony Belmont	Resident			x											
Joshua Marmon	Superintendent		x				x	x	x	x	x	x	x		
Heather Collins	Mayor Collins						x	x	x	x	x	x	x	x	x
<b>Turin (T)</b>															
Joanne D'Ambrosi	Supervisor			x			x	x	x	x	x	x	x	x	x
Jane Gillette	Deputy Supervisor		x				x	x	x	x	x	x	x		
<b>Turin (V)</b>															
Douglas Hunt	Mayor		x												
Josh Leviker	Mayor						x	x	x	x	x	x	x	x	x
Therese Dunn	Clerk						x	x	x	x	x	x	x		
<b>Watson (T)</b>															
Dennis Foster	Supervisor		x				x	x	x	x	x	x	x	x	x
Mike Hanno	Board Member		x				x	x	x	x	x	x	x		
JoAnn Mostyn	Water Clerk		x												
Virgil Taylor	Deputy Supervisor		x												
<b>West Turin (T)</b>															
Edward J. Hayes	Supervisor		x	x	x	x	x	x	x	x	x	x	x	x	x
Douglas Salmon	Superintendent		x				x	x	x	x	x	x	x	x	x
<b>Other Stakeholders</b>															
Richard Fifield, American Red Cross	American Red Cross			x		x									
Tim Erwin	Lake of Pines Land Owner Association			x											
Scott Exford	Principal, Lowville Academy			x											
Barry Yette	Business Administrator, South Lewis Central School District			x											
Jennifer Snyder	Forest Ranger, New York State Department of Environmental Conservation (NYS DEC)			x											
Barbara Spaulding	Mitigation Planner, New York State Division of Homeland Security and Emergency Services (NYS DHSES)			x											
Lloyd Richardson	Director of Facilities, Beaver River Central School District			x											
Edward Hayes	Employee, South Lewis Central School District				x										
Randy André	Deputy Chief of Mitigation, New York State Division of Homeland Security and Emergency Services (NYS DHSES)				x										



## APPENDIX G. CRITICAL FACILITIES

### G.1 OVERVIEW

This section contains information and details to support information provided in Section 4 – County Profile which provides the distribution of critical facilities located within Lewis County and its municipalities.





Name	Muni	Type	Latitude	Longitude
Citizens Telecom Co of NY	Castorland (V)	Comm Facility	43.883648	-75.520863
Castorland Fire Company	Castorland (V)	Fire Station	43.889649	-75.511984
Village of Castorland	Castorland (V)	Highway Garage	43.889652	-75.512296
State of New York	Castorland (V)	Medical Care	43.885195	-75.513140
Castorland Housing	Castorland (V)	Nursing Home	43.882538	-75.521016
HIGH STREET IRA	Castorland (V)	Nursing Home	43.885113	-75.513880
ROUTE 410 IRA	Castorland (V)	Nursing Home	43.884144	-75.520454
US Postal Service	Castorland (V)	Post Office	43.889021	-75.512270
Village of Carthage	Castorland (V)	Potable Pump	43.960750	-75.290545
Village of Carthage	Castorland (V)	Potable Pump	43.963815	-75.292301
Village of Carthage	Castorland (V)	Potable Pump	43.966854	-75.296604
Crystal Light Mennonite Church	Castorland (V)	School	43.889691	-75.513567
Village of Castorland	Castorland (V)	Wastewater Facility	43.894034	-75.508926
Citizens Telecom Co of NY	Constableville (V)	Comm Facility	43.566488	-75.427588
Constableville Fire Company	Constableville (V)	Fire Station	43.563251	-75.429055
Town of West Turin	Constableville (V)	Highway Garage	43.566180	-75.423907
Village of Constableville	Constableville (V)	Library	43.565320	-75.428413
Village of Constableville	Constableville (V)	Library	43.565320	-75.428413
Village of Constableville	Constableville (V)	Municipal Hall	43.565279	-75.429734
Village of Constableville	Constableville (V)	Wastewater Facility	43.565043	-75.422721
High Falls Dam At Copenhagen	Copenhagen (V)	Dam	43.897222	-75.664167
Copenhagen Fire Company	Copenhagen (V)	Fire Station	43.895001	-75.675969
Herbert Manure - Ukn. Cap.	Copenhagen (V)	Manure Pit	43.889389	-75.667978
Jones Manure - 1.4 mill Gallons	Copenhagen (V)	Manure Pit	43.900015	-75.666080
Copenhagen Clinic	Copenhagen (V)	Medical Care	43.889445	-75.668928
Village of Copenhagen	Copenhagen (V)	Medical Care	43.889635	-75.668784
Copenhagen Happy Achers	Copenhagen (V)	Nursing Home	43.899647	-75.672083
Village of Carthage	Copenhagen (V)	Potable Pump	43.969492	-75.296964
Copenhagen Central School	Copenhagen (V)	School	43.890647	-75.678745





Name	Muni	Type	Latitude	Longitude
Village of Copenhagen	Copenhagen (V)	Wastewater Facility	43.892523	-75.666312
Cingular Wireless	Croghan (T)	Comm Facility	43.915793	-75.376204
Cro 1	Croghan (T)	Comm Facility	43.975656	-75.237361
Verizon Wireless	Croghan (T)	Comm Facility	43.989627	-75.359557
Belfort Dam	Croghan (T)	Dam	43.926667	-75.288333
Carthage Dam	Croghan (T)	Dam	43.975000	-75.337222
Croghan Island Dam	Croghan (T)	Dam	43.898333	-75.392500
Effley Falls Dam	Croghan (T)	Dam	43.923333	-75.278333
Elmer Falls Dam	Croghan (T)	Dam	43.926667	-75.288889
High Falls Dam	Croghan (T)	Dam	43.926111	-75.373889
Long Level Dam	Croghan (T)	Dam	44.006111	-75.258333
Soft Maple Terminal Dam	Croghan (T)	Dam	43.918333	-75.223056
Steiners Mill Dam	Croghan (T)	Dam	43.899167	-75.359722
Taylorville Dam	Croghan (T)	Dam	43.928333	-75.303333
County of Lewis IDA	Croghan (T)	Electric Power Facility	43.886239	-75.434174
Erie Blvd Hydropower LP	Croghan (T)	Electric Power Facility	43.919869	-75.230819
Erie Blvd Hydropower LP	Croghan (T)	Electric Power Facility	43.919925	-75.261408
Erie Blvd Hydropower LP	Croghan (T)	Electric Power Facility	43.923918	-75.213546
Erie Blvd Hydropower LP	Croghan (T)	Electric Power Facility	43.925878	-75.211706
Erie Blvd Hydropower LP	Croghan (T)	Electric Power Facility	43.926647	-75.287871
Erie Blvd Hydropower LP	Croghan (T)	Electric Power Facility	43.927263	-75.333290
Erie Blvd Hydropower LP	Croghan (T)	Electric Power Facility	43.928202	-75.326362
Erie Blvd Hydropower LP	Croghan (T)	Electric Power Facility	43.928787	-75.370306
Erie Blvd Hydropower LP	Croghan (T)	Electric Power Facility	43.933716	-75.366827
Erie Blvd Hydropower, LP	Croghan (T)	Electric Power Facility	43.927246	-75.309377
National Grid	Croghan (T)	Electric Power Facility	43.927258	-75.320308
Beaver Falls Fire Company	Croghan (T)	Fire Station	43.885939	-75.431332
Town of Croghan	Croghan (T)	Highway Garage	43.886416	-75.446385
Town of Croghan	Croghan (T)	Highway Garage	43.934203	-75.392214





Name	Muni	Type	Latitude	Longitude
Beaver Falls Library	Croghan (T)	Library	43.885939	-75.428869
Beaver Falls Library	Croghan (T)	Library	43.885939	-75.428869
Beaver River Health Center	Croghan (T)	Medical Care	43.885596	-75.429508
County of Lewis	Croghan (T)	Medical Care	43.885453	-75.429675
Croghan Town	Croghan (T)	Municipal Hall	43.886416	-75.446171
National Grid	Croghan (T)	Natural Gas Facility	43.935832	-75.359457
Hillside Water Users	Croghan (T)	Potable Pump	43.505412	-75.719288
Village of Constableville	Croghan (T)	Potable Pump	43.572743	-75.442028
Village of Constableville	Croghan (T)	Potable Pump	43.580470	-75.438297
Village of Constableville	Croghan (T)	Potable Pump	43.592543	-75.443956
Village of Constableville	Croghan (T)	Potable Pump	43.596192	-75.443925
Village of Lyons Falls	Croghan (T)	Potable Pump	43.602838	-75.334584
Village of Lyons Falls	Croghan (T)	Potable Pump	43.602954	-75.325143
Village of Lyons Falls	Croghan (T)	Potable Pump	43.603360	-75.334667
Village of Lyons Falls	Croghan (T)	Potable Pump	43.605344	-75.320449
Village of Port Leyden	Croghan (T)	Potable Pump	43.578218	-75.296487
Village of Port Leyden	Croghan (T)	Potable Pump	43.579282	-75.309801
Village of Port Leyden	Croghan (T)	Potable Pump	43.585715	-75.302064
Village of Port Leyden	Croghan (T)	Potable Pump	43.586547	-75.297970
Village of Port Leyden	Croghan (T)	Potable Pump	43.587260	-75.290595
Village of Port Leyden	Croghan (T)	Potable Pump	43.589249	-75.282173
Village of Port Leyden	Croghan (T)	Potable Tank	43.584167	-75.357779
Naumburg Mennonite Church	Croghan (T)	School	43.898919	-75.499263
Omniafiltra LLC	Croghan (T)	Wastewater Facility	43.890383	-75.431553
Town of Croghan	Croghan (T)	Wastewater Facility	43.886705	-75.439627
Citizens Telecom Co of NY	Croghan (V)	Comm Facility	43.893067	-75.392981
Croghan Fire Company	Croghan (V)	Fire Station	43.894027	-75.392043
Croghan Free Library	Croghan (V)	Library	43.894300	-75.391962
Croghan Free Library	Croghan (V)	Library	43.894300	-75.391962





Name	Muni	Type	Latitude	Longitude
Steeple view Apts	Croghan (V)	Nursing Home	43.893293	-75.388819
Village of Croghan	Croghan (V)	Wastewater Pump	43.895421	-75.396411
Village of Croghan	Croghan (V)	Wastewater Pump	43.897013	-75.392537
COP 1	Denmark (T)	Comm Facility	43.879741	-75.719591
Kollmer William	Denmark (T)	Comm Facility	43.882391	-75.723688
Nexstar Broadcasting, Inc.	Denmark (T)	Comm Facility	43.880035	-75.719196
Osc 1	Denmark (T)	Comm Facility	43.882422	-75.723715
Time Warner Cable Northeast	Denmark (T)	Comm Facility	43.958907	-75.616500
Time Warner Cable Northeast LL	Denmark (T)	Comm Facility	43.965098	-75.600462
Time Warner Cable Northeast LL	Denmark (T)	Comm Facility	43.965138	-75.600226
Verizon New York Inc	Denmark (T)	Comm Facility	43.890375	-75.682467
Verizon Wireless	Denmark (T)	Comm Facility	43.894030	-75.595415
Copenhagen Dam	Denmark (T)	Dam	43.896667	-75.665000
Deer River Village Dam	Denmark (T)	Dam	43.930556	-75.586667
Kings Falls Dam	Denmark (T)	Dam	43.920833	-75.631389
Murrock Marsh Dam	Denmark (T)	Dam	43.900833	-75.687222
Copenhagen Hydro, LLC	Denmark (T)	Electric Power Facility	43.899546	-75.661411
Tug Hill Energy Inc	Denmark (T)	Electric Power Facility	43.917261	-75.634475
Town of Denmark	Denmark (T)	Municipal Hall	43.929625	-75.596059
Village of Lyons Falls	Denmark (T)	Potable Pump	43.606095	-75.341369
Village of Lyons Falls	Denmark (T)	Potable Pump	43.606464	-75.324956
Village of Lyons Falls	Denmark (T)	Potable Pump	43.607639	-75.342111
Village of Lyons Falls	Denmark (T)	Potable Pump	43.608672	-75.346318
Village of Turin	Denmark (T)	Potable Pump	43.646962	-75.453661
Village of Turin	Denmark (T)	Potable Pump	43.647144	-75.429513
AT&T Mobility	Diana (T)	Comm Facility	44.148995	-75.327956
Har 1	Diana (T)	Comm Facility	44.149033	-75.327976
Time Warner Entertainment	Diana (T)	Comm Facility	44.140544	-75.349628
Time Warner Entertainment	Diana (T)	Comm Facility	44.140590	-75.349563





Name	Muni	Type	Latitude	Longitude
Verizon Wireless	Diana (T)	Comm Facility	44.070249	-75.365481
Alpina Dam	Diana (T)	Dam	44.170556	-75.431944
Austin Dam	Diana (T)	Dam	44.111111	-75.345833
Blanchard Pond Dam	Diana (T)	Dam	44.066667	-75.436111
Cahill Brothers Farm Pond Dam	Diana (T)	Dam	44.074167	-75.403333
Harrisville Dam	Diana (T)	Dam	44.155556	-75.319444
Village of Carthage	Diana (T)	Potable Pump	43.976207	-75.318511
State of New York	Diana (T)	State Government	44.125321	-75.322181
State of New York	Diana (T)	State Government	44.133320	-75.323687
Cellular One	Greig (T)	Comm Facility	43.647982	-75.326709
Time Warner Cable Northeast	Greig (T)	Comm Facility	43.698300	-75.323396
Time Warner Cable Northeast	Greig (T)	Comm Facility	43.698308	-75.323345
Adirondack Acres Dam A	Greig (T)	Dam	43.678333	-75.275000
Adirondack Acres Dam B	Greig (T)	Dam	43.678333	-75.280000
Big Otter Lake Dam	Greig (T)	Dam	43.721389	-75.126944
Brantingham Lake Dam	Greig (T)	Dam	43.688333	-75.275000
Grieg Dam	Greig (T)	Dam	43.685000	-75.350000
Kenneth Clark Pond Dam	Greig (T)	Dam	43.750833	-75.376389
Millard Pond #2 Dam	Greig (T)	Dam	43.733333	-75.375000
Otter Creek Dam	Greig (T)	Dam	43.724444	-75.358889
Otter Creek Pond Dam	Greig (T)	Dam	43.716111	-75.368889
Tug Hill Energy Inc	Greig (T)	Electric Power Facility	43.723563	-75.358388
3G Fire Company	Greig (T)	Fire Station	43.719931	-75.398338
Martinsburg Fire Company	Greig (T)	Fire Station	43.737842	-75.467859
Town of Greig	Greig (T)	Highway Garage	43.679943	-75.353379
Brantingham-Greig Reading Center	Greig (T)	Library	43.679870	-75.353815
Brantingham-Greig Reading Center	Greig (T)	Library	43.679870	-75.353815
Town of Greig Town Hall	Greig (T)	Municipal Hall	43.679839	-75.353910
Village of Turin	Greig (T)	Potable Pump	43.647362	-75.446966





Name	Muni	Type	Latitude	Longitude
American Tower Corp	Harrisburg (T)	Comm Facility	43.846460	-75.605949
Edward C Yancey Pond Dam	Harrisburg (T)	Dam	43.802500	-75.618056
Town of Harrisburg	Harrisburg (T)	Highway Garage	43.825145	-75.651181
Town of Harrisburg Town Barn	Harrisburg (T)	Highway Garage	43.824801	-75.651939
Town of Harrisburg Town Barn	Harrisburg (T)	Highway Garage	43.824119	-75.652518
Harrisburg Town	Harrisburg (T)	Municipal Hall	43.822196	-75.611534
Verizon New York Inc	Harrisville (V)	Comm Facility	44.153240	-75.319408
Fortis US Energy Corp	Harrisville (V)	Electric Power Facility	44.154395	-75.318252
Fortis US Energy Corp	Harrisville (V)	Electric Power Facility	44.154928	-75.321823
Harrisville Fire Company	Harrisville (V)	Fire Station	44.149659	-75.324205
Town of Diana	Harrisville (V)	Highway Garage	44.154688	-75.317408
Town of Diana	Harrisville (V)	Highway Garage	44.154676	-75.314279
Town of Diana	Harrisville (V)	Highway Garage	44.156499	-75.318860
Town of Diana	Harrisville (V)	Highway Garage	44.154558	-75.315188
Harrisville Free Library Assoc	Harrisville (V)	Library	44.148803	-75.316037
Harrisville Free Library Assoc	Harrisville (V)	Library	44.148803	-75.316037
Harrisville Health Center	Harrisville (V)	Medical Care	44.148890	-75.324911
Town of Diana	Harrisville (V)	Medical Care	44.148950	-75.324637
Village of Carthage	Harrisville (V)	Potable Pump	43.974981	-75.326781
Village of Carthage	Harrisville (V)	Potable Pump	43.975014	-75.319869
Village of Carthage	Harrisville (V)	Potable Pump	43.976382	-75.324434
Harrisville Central	Harrisville (V)	School	44.159550	-75.320543
Town of Lewis	Lewis (T)	Comm Facility	43.460092	-75.464001
Verizon Wireless	Lewis (T)	Comm Facility	43.486033	-75.463489
Leishfer Mill Dam	Lewis (T)	Dam	43.486389	-75.638333
Reimiller Dam	Lewis (T)	Dam	43.460000	-75.463333
Rome City Dam	Lewis (T)	Dam	43.438611	-75.590000
Rome City Dam Dike	Lewis (T)	Dam	43.439861	-75.587361
Swancott Dam	Lewis (T)	Dam	43.456111	-75.600000







Name	Muni	Type	Latitude	Longitude
West Leyden Lower Dam	Lewis (T)	Dam	43.456389	-75.461389
Boonville Municipal Commission	Lewis (T)	Electric Substation	43.462565	-75.461658
West Leyden Fire Company	Lewis (T)	Fire Station	43.458850	-75.463682
Town of Lewis Barn #2	Lewis (T)	Highway Garage	43.467499	-75.466727
Town of Lewis Library	Lewis (T)	Library	43.459641	-75.464489
Town of Lewis Library	Lewis (T)	Library	43.459641	-75.464489
Town of Lewis	Lewis (T)	Municipal Hall	43.458518	-75.464332
Town of Greig	Lewis (T)	Potable Pump	43.685012	-75.276050
Town of Martinsburg	Lewis (T)	Potable Pump	43.703918	-75.503555
Town of Martinsburg	Lewis (T)	Potable Pump	43.710197	-75.503007
School District #1	Lewis (T)	School	43.460053	-75.465621
Flack William R	Leyden (T)	Comm Facility	43.512975	-75.362501
NYPA	Leyden (T)	Comm Facility	43.509974	-75.416714
State of NY Power Authority	Leyden (T)	Comm Facility	43.510141	-75.416915
Time Warner Cable Northeast	Leyden (T)	Comm Facility	43.526094	-75.407445
Time Warner Cable Northeast	Leyden (T)	Comm Facility	43.537497	-75.391947
Time Warner Cable Northeast	Leyden (T)	Comm Facility	43.537466	-75.391947
Time Warner Cable Northeast	Leyden (T)	Comm Facility	43.526102	-75.407323
Denley Dam	Leyden (T)	Dam	43.545278	-75.325278
Rock Island Dam	Leyden (T)	Dam	43.586667	-75.338611
Black River Hydro Assoc	Leyden (T)	Electric Power Facility	43.542979	-75.326155
Black River Hydro Assoc	Leyden (T)	Electric Power Facility	43.545636	-75.325746
Black River Hydro Assoc	Leyden (T)	Electric Power Facility	43.588528	-75.342214
Black River Hydro Assoc	Leyden (T)	Electric Power Facility	43.590158	-75.345353
National Grid	Leyden (T)	Electric Substation	43.578291	-75.350971
Town of Leyden	Leyden (T)	Highway Garage	43.533667	-75.368193
Leyden Town	Leyden (T)	Municipal Hall	43.585699	-75.354366
Town of Martinsburg	Leyden (T)	Potable Pump	43.734732	-75.481095
Village of Port Leyden	Leyden (T)	Wastewater Pump	43.586662	-75.349312





Name	Muni	Type	Latitude	Longitude
Village of Port Leyden	Leyden (T)	Wastewater Pump	43.588299	-75.343466
Beyer Martin	Lowville (T)	Comm Facility	43.803169	-75.505691
Beyer Martin	Lowville (T)	Comm Facility	43.798662	-75.509773
Evolution Site Services, LLC	Lowville (T)	Comm Facility	43.771962	-75.471831
Low 1	Lowville (T)	Comm Facility	43.807144	-75.512847
SBC Tower Holdings, LLC	Lowville (T)	Comm Facility	43.808555	-75.510851
St Lawrence Seaway RSA	Lowville (T)	Comm Facility	43.807011	-75.512887
St Lawrence Seaway RSA	Lowville (T)	Comm Facility	43.807130	-75.512798
LC Community Recovery Center	Lowville (T)	Community Recovery Center	43.795666	-75.501515
Lewis County Highway Dep	Lowville (T)	County Building	43.804681	-75.487286
MSP Realty LLC	Lowville (T)	Electric Power Facility	43.780549	-75.473866
County of Lewis	Lowville (T)	Highway Garage	43.803870	-75.486863
Brookside Redevelopment Co Inc	Lowville (T)	Nursing Home	43.788509	-75.473818
Brookside Redevelopment Co Inc	Lowville (T)	Nursing Home	43.786354	-75.474157
DISABLED PERSONS ACTION ORGANIZATION, INC.	Lowville (T)	Nursing Home	43.805813	-75.502410
East Road Adult Home	Lowville (T)	Nursing Home	43.838276	-75.508210
East Road Adult Home	Lowville (T)	Nursing Home	43.843669	-75.513244
Lewis County General Hospital Hospice	Lowville (T)	Nursing Home	43.795392	-75.499607
Lewis County General Hospital-Nursing Home Unit	Lowville (T)	Nursing Home	43.795463	-75.499494
Schlieder, James W	Lowville (T)	Nursing Home	43.843395	-75.513601
UPSTATE CEREBRAL PALSY, INC.	Lowville (T)	Nursing Home	43.786087	-75.469230
UPSTATE CEREBRAL PALSY, INC.	Lowville (T)	Nursing Home	43.786060	-75.469500
Lewis County Sheriff Office	Lowville (T)	Police Station	43.778981	-75.500929
New York State Police	Lowville (T)	Police Station	43.804756	-75.503179
Village of Castorland	Lowville (T)	Potable Pump	43.883368	-75.517089
Village of Castorland	Lowville (T)	Potable Pump	43.884781	-75.515723
Village of Castorland	Lowville (T)	Potable Tank	43.882759	-75.526137
911	Lowville (V)	Comm Facility	43.788875	-75.493334



Name	Muni	Type	Latitude	Longitude
Citizens Telecom Co of NY	Lowville (V)	Comm Facility	43.786318	-75.490595
PSB 1	Lowville (V)	Comm Facility	43.778964	-75.499004
LC Industrial Development Agency	Lowville (V)	County Building	43.787933	-75.492918
LC Dept of Social Services	Lowville (V)	County Building	43.778685	-75.498647
Lowville Commons - Board of Elections/OFA	Lowville (V)	County Building	43.785560	-75.491033
Lowville Professional Building (Public Defender)	Lowville (V)	County Building	43.788752	-75.494242
Lewis County Family Court	Lowville (V)	Court	43.788918	-75.492819
Lewis Court House	Lowville (V)	Court	43.788814	-75.493389
Lewis Court House	Lowville (V)	Court	43.788924	-75.493501
Double Play Sports Community Center	Lowville (V)	Cultural	43.788054	-75.490591
Double Play Sports Community Center	Lowville (V)	Cultural	43.788054	-75.490591
Lewis County Historical Society	Lowville (V)	Cultural	43.786029	-75.491465
Lewis County Historical Society	Lowville (V)	Cultural	43.786029	-75.491465
Lowville Food Pantry	Lowville (V)	Cultural	43.790116	-75.487873
Lowville Food Pantry	Lowville (V)	Cultural	43.790116	-75.487873
Nohles Mill Dam	Lowville (V)	Dam	43.783333	-75.485556
Lewis County Search & Rescue	Lowville (V)	EMS	43.764403	-75.492460
Lewis County Public Safety Building	Lowville (V)	EOC	43.778833	-75.500724
Lowville Fire Company	Lowville (V)	Fire Station	43.787708	-75.493278
Lowville Academy	Lowville (V)	Highway Garage	43.794478	-75.488969
State of New York	Lowville (V)	Highway Garage	43.796947	-75.486121
Town of Lowville	Lowville (V)	Highway Garage	43.795050	-75.488580
Village of Lowville	Lowville (V)	Highway Garage	43.793030	-75.489601
Village of Lowville	Lowville (V)	Highway Garage	43.792644	-75.489457
Lewis County Jail	Lowville (V)	Jail	43.778401	-75.499443
Lowville Free Library	Lowville (V)	Library	43.786790	-75.494032
Lowville Free Library	Lowville (V)	Library	43.786790	-75.494032
Lewis County General Hospital	Lowville (V)	Medical Care	43.795237	-75.499598
Lowville Urgent Care	Lowville (V)	Medical Care	43.786446	-75.493294





Name	Muni	Type	Latitude	Longitude
Lowville Town	Lowville (V)	Municipal Hall	43.795016	-75.488538
Lowville Village	Lowville (V)	Municipal Hall	43.796828	-75.483358
Lewis County General Hospital	Lowville (V)	Nursing Home	43.795790	-75.498140
Lewis County General Hospital-Nursing Home Unit	Lowville (V)	Nursing Home	43.795790	-75.498140
Lowville Heights Apts	Lowville (V)	Nursing Home	43.780948	-75.482987
LOWVILLE IRA	Lowville (V)	Nursing Home	43.786484	-75.497500
NYS ARC ONEIDA-LEWIS COUNTIES CHAPTER	Lowville (V)	Nursing Home	43.785250	-75.484720
NYS ARC ONEIDA-LEWIS COUNTIES CHAPTER	Lowville (V)	Nursing Home	43.785286	-75.484726
NYS ARC ONEIDA-LEWIS COUNTIES CHAPTER	Lowville (V)	Nursing Home	43.787487	-75.486370
NYS ARC ONEIDA-LEWIS COUNTIES CHAPTER	Lowville (V)	Nursing Home	43.781960	-75.496666
NYS ARC ONEIDA-LEWIS COUNTIES CHAPTER	Lowville (V)	Nursing Home	43.795920	-75.495895
NYS ARC ONEIDA-LEWIS COUNTIES CHAPTER	Lowville (V)	Nursing Home	43.783688	-75.487460
Lowville Police Dept	Lowville (V)	Police Station	43.796555	-75.484127
US Government - Post Office	Lowville (V)	Post Office	43.787996	-75.493935
Village of Carthage	Lowville (V)	Potable Pump	43.969809	-75.305656
Lowville Academy	Lowville (V)	School	43.790722	-75.492105
Lowville Academy Central Sch Academy	Lowville (V)	School	43.789186	-75.492133
Village of Lowville	Lowville (V)	Wastewater Facility	43.782882	-75.469982
Citizens Telecom Co of NY	Lyons Falls (V)	Comm Facility	43.619051	-75.366135
West Turn Justice Court	Lyons Falls (V)	Court	43.619191	-75.369002
Kelly's Academy of Dance	Lyons Falls (V)	Cultural	43.616948	-75.360543
Kelly's Academy of Dance	Lyons Falls (V)	Cultural	43.616948	-75.360543
Lyons Falls Mill 3 Dam	Lyons Falls (V)	Dam	43.618333	-75.358333
Village of Lyon Falls	Lyons Falls (V)	DPW	43.616959	-75.360362
Northbrook Lyons Falls LLC	Lyons Falls (V)	Electric Power Facility	43.618419	-75.358331
Lyons Falls Fire Company	Lyons Falls (V)	Fire Station	43.616112	-75.361860
Lyons Falls Library	Lyons Falls (V)	Library	43.617057	-75.360427
Lyons Falls Library	Lyons Falls (V)	Library	43.617057	-75.360427
Southern Lewis Health Center	Lyons Falls (V)	Medical Care	43.618992	-75.370823



Name	Muni	Type	Latitude	Longitude
County of Lewis	Lyons Falls (V)	Medical Care	43.619070	-75.370439
High Falls Apt	Lyons Falls (V)	Nursing Home	43.620134	-75.368436
Lyn 1	Lyonsdale (T)	Comm Facility	43.617275	-75.305277
Verizon Wireless	Lyonsdale (T)	Comm Facility	43.572695	-75.300228
Agers Falls Dam	Lyonsdale (T)	Dam	43.621389	-75.311667
Gouldtown Mill # 5 Dam	Lyonsdale (T)	Dam	43.612500	-75.338056
John Teal Recreational Pond Dam	Lyonsdale (T)	Dam	43.653333	-75.221667
Kosterville Lower Dam	Lyonsdale (T)	Dam	43.615000	-75.332500
Kosterville Upper Dam	Lyonsdale (T)	Dam	43.615833	-75.329167
Lyons Falls Water Supply Dam #4	Lyonsdale (T)	Dam	43.585278	-75.333333
Lyonsdale Dam	Lyonsdale (T)	Dam	43.616667	-75.305556
Port Leyden Lower Dam	Lyonsdale (T)	Dam	43.591667	-75.344167
Port Leyden Power Dam	Lyonsdale (T)	Dam	43.585556	-75.338333
Port Leyden Reservoir Dam	Lyonsdale (T)	Dam	43.571389	-75.302778
Port Leyden Water Supply Dam	Lyonsdale (T)	Dam	43.584167	-75.298333
Richard Trombley Pond Dam	Lyonsdale (T)	Dam	43.566667	-75.266667
S L Meda Fish Pond Dam	Lyonsdale (T)	Dam	43.631667	-75.311667
Shuetown Dam	Lyonsdale (T)	Dam	43.618333	-75.325000
Terry Smith Dam	Lyonsdale (T)	Dam	43.563611	-75.258056
Black River Hydro Assoc	Lyonsdale (T)	Electric Power Facility	43.545080	-75.323896
Black River Hydro Assoc	Lyonsdale (T)	Electric Power Facility	43.590940	-75.342945
County of Lewis IDA	Lyonsdale (T)	Electric Power Facility	43.615800	-75.305957
Fortis US Energy Corp	Lyonsdale (T)	Electric Power Facility	43.621256	-75.315471
Lyonsdale Associates	Lyonsdale (T)	Electric Power Facility	43.618123	-75.302698
Lyonsdale Associates	Lyonsdale (T)	Electric Power Facility	43.620082	-75.306028
Northbrook Lyons Falls	Lyonsdale (T)	Electric Power Facility	43.613092	-75.333918
Northbrook Lyons Falls	Lyonsdale (T)	Electric Power Facility	43.613419	-75.338745
Town of Lyonsdale	Lyonsdale (T)	Highway Garage	43.579216	-75.329562
Lyonsdale Town	Lyonsdale (T)	Municipal Hall	43.642582	-75.361541





Name	Muni	Type	Latitude	Longitude
Beaver Falls Water Dist	Lyonsdale (T)	Potable Pump	43.881553	-75.424689
City of Rome Water Dept	Lyonsdale (T)	Potable Pump	43.457730	-75.604263
Village of Lowville	Lyonsdale (T)	Potable Pump	43.797489	-75.445599
Village of Lowville	Lyonsdale (T)	Potable Pump	43.797879	-75.444607
Village of Lowville	Lyonsdale (T)	Potable Pump	43.816530	-75.304144
Village of Lowville	Lyonsdale (T)	Potable Pump	43.821895	-75.278794
Village of Lowville	Lyonsdale (T)	Potable Pump	43.821936	-75.308419
Village of Lowville	Lyonsdale (T)	Potable Pump	43.822301	-75.326561
Village of Lowville	Lyonsdale (T)	Potable Pump	43.823079	-75.274449
Village of Lowville	Lyonsdale (T)	Potable Pump	43.823299	-75.327525
Village of Lowville	Lyonsdale (T)	Potable Pump	43.830488	-75.300468
Village of Lowville	Lyonsdale (T)	Potable Water Treatment	43.819052	-75.326218
City of Rome Water Dept	Lyonsdale (T)	Reservoir	43.448275	-75.595868
Village of Lowville	Lyonsdale (T)	Reservoir	43.822696	-75.322574
Citizens Telecom Co of Ny	Martinsburg (T)	Comm Facility	43.720295	-75.398553
Flack William R	Martinsburg (T)	Comm Facility	43.753375	-75.562428
Lewis County Department of Motor Vehicles	Martinsburg (T)	County Building	43.767689	-75.464883
Arts Community of Lewis County	Martinsburg (T)	Cultural	43.709894	-75.404111
Arts Community of Lewis County	Martinsburg (T)	Cultural	43.709894	-75.404111
Glendale Mill Dam	Martinsburg (T)	Dam	43.720000	-75.490000
Jeffrey Beyer Dam	Martinsburg (T)	Dam	43.775556	-75.551944
Kearns Mill Dam	Martinsburg (T)	Dam	43.734167	-75.473333
Martinsburg Reservoir Dam	Martinsburg (T)	Dam	43.720278	-75.490000
Roaring Brook Dam	Martinsburg (T)	Dam	43.716111	-75.583611
WHETSTONE GULF STATE PARK DAM	Martinsburg (T)	Dam	43.702222	-75.465278
Whetstone Gulf Storage Dam	Martinsburg (T)	Dam	43.683889	-75.509444
Fire Training Site	Martinsburg (T)	Fire Station	43.729828	-75.451474
Town of Martinsburg	Martinsburg (T)	Highway Garage	43.735735	-75.473042
Town of Martinsburg Hall	Martinsburg (T)	Historic	43.760901	-75.518353





Name	Muni	Type	Latitude	Longitude
Wm H. Bush Memorial Library	Martinsburg (T)	Library	43.738122	-75.468584
Wm H. Bush Memorial Library	Martinsburg (T)	Library	43.738122	-75.468584
Town of Martinsburg Hall	Martinsburg (T)	Municipal Hall	43.737409	-75.468559
NYS ARC ONEIDA-LEWIS COUNTIES CHAPTER	Martinsburg (T)	Nursing Home	43.709260	-75.406390
Village of Lowville	Martinsburg (T)	Potable Pump	43.787724	-75.479928
Village of Lowville	Martinsburg (T)	Potable Pump	43.792285	-75.467703
Village of Lowville	Martinsburg (T)	Potable Tank	43.797013	-75.502877
Town of Martinsburg	Martinsburg (T)	Potable Well	43.736611	-75.465585
Lewis County BOCES	Martinsburg (T)	School	43.715489	-75.408372
South Lewis Central Sch	Martinsburg (T)	School	43.708686	-75.403172
Town of Martinsburg	Martinsburg (T)	Wastewater Facility	43.718581	-75.396964
Mont	Montague (T)	Comm Facility	43.740981	-75.698226
Birch Wildlife Pond Dam #1	Montague (T)	Dam	43.784722	-75.770833
Birch Wildlife Pond Dam #2	Montague (T)	Dam	43.785000	-75.767222
H Farrington Young Pond Dam	Montague (T)	Dam	43.783611	-75.704722
Marcellus Mill Dam	Montague (T)	Dam	43.747778	-75.727500
Millard & Rice Dam	Montague (T)	Dam	43.773611	-75.759167
Millard Pond Dam	Montague (T)	Dam	43.759167	-75.726667
Perrigo Creek Dam	Montague (T)	Dam	43.731944	-75.769444
Sears Pond Dam	Montague (T)	Dam	43.742222	-75.718611
Unkurt Dam	Montague (T)	Dam	43.771944	-75.635833
William J Tucker Dam	Montague (T)	Dam	43.695000	-75.716667
Town of Montague	Montague (T)	Highway Garage	43.739033	-75.720620
Montague Town	Montague (T)	Municipal Hall	43.781428	-75.763063
Duflo Airport	New Bremen (T)	Airport	43.838502	-75.429349
Verizon Wireless	New Bremen (T)	Comm Facility	43.873308	-75.388838
Lewis County Opportunities	New Bremen (T)	County Building	43.836909	-75.438413
Boise Cascade Lower Dam	New Bremen (T)	Dam	43.884167	-75.430833
Boise Cascade Upper Dam	New Bremen (T)	Dam	43.883333	-75.428611







Name	Muni	Type	Latitude	Longitude
Croghan Reservoir Dam	New Bremen (T)	Dam	43.908333	-75.304722
Crystal Creek Dam	New Bremen (T)	Dam	43.836111	-75.440000
Lowville Reservoir Dam	New Bremen (T)	Dam	43.822222	-75.321944
Sash & Blind Mill Dam	New Bremen (T)	Dam	43.832778	-75.449722
Algonquin Power LLC	New Bremen (T)	Electric Power Facility	43.883247	-75.426704
Algonquin Power LLC	New Bremen (T)	Electric Power Facility	43.883318	-75.428334
Algonquin Power LLC	New Bremen (T)	Electric Power Facility	43.883449	-75.430418
New Bremen Fire Company	New Bremen (T)	Fire Station	43.835161	-75.441737
Beaver River Central School	New Bremen (T)	Highway Garage	43.881886	-75.425100
Town of New Bremen	New Bremen (T)	Highway Garage	43.840395	-75.421317
AMHA	New Bremen (T)	Library	43.892095	-75.334466
AMHA	New Bremen (T)	Library	43.892095	-75.334466
Hbous Mahmoud N	New Bremen (T)	Medical Care	43.885885	-75.411722
New Bremen Town	New Bremen (T)	Municipal Hall	43.840381	-75.421584
Croghan Water Plant	New Bremen (T)	Potable Pump	43.908455	-75.302112
Croghan Water Plant	New Bremen (T)	Potable Pump	43.910575	-75.305217
Town of Denmark	New Bremen (T)	Potable Pump	43.885407	-75.694630
Village of Copenhagen	New Bremen (T)	Potable Pump	43.889523	-75.686663
Village of Copenhagen	New Bremen (T)	Potable Pump	43.917450	-75.665825
Beaver River Central School	New Bremen (T)	School	43.879845	-75.436125
OSC	Osceola (T)	Comm Facility	43.570944	-75.732722
Verizon New York Inc	Osceola (T)	Comm Facility	43.499918	-75.721929
E J Strodel Pond Dam	Osceola (T)	Dam	43.535833	-75.714167
Gould Paper Co Dam	Osceola (T)	Dam	43.566667	-75.594722
Roaring Brook Dam	Osceola (T)	Dam	43.567222	-75.605000
Smith Brook Lower Dam	Osceola (T)	Dam	43.522778	-75.672778
Upper Smith Brook Dam	Osceola (T)	Dam	43.551111	-75.675000
NYSOTFA	Osceola (T)	Library	43.533067	-75.736892
NYSOTFA	Osceola (T)	Library	43.533067	-75.736892





Name	Muni	Type	Latitude	Longitude
Town of Osceola Library	Osceola (T)	Library	43.501046	-75.722328
Town of Osceola Library	Osceola (T)	Library	43.501046	-75.722328
Osceola Town	Osceola (T)	Municipal Hall	43.500654	-75.722008
Village of West Carthage	Osceola (T)	Potable Pump	43.931145	-75.649596
American Towers Inc	Pinckney (T)	Comm Facility	43.846354	-75.753343
Brick, Cary R	Pinckney (T)	Comm Facility	43.816658	-75.822521
Brick, Cary R	Pinckney (T)	Comm Facility	43.817613	-75.822012
Jacoby, Douglas L	Pinckney (T)	Comm Facility	43.811092	-75.810696
Jacoby, Douglas L	Pinckney (T)	Comm Facility	43.810736	-75.809575
St Lawrence Valley	Pinckney (T)	Comm Facility	43.862054	-75.728328
St Lawrence Valley	Pinckney (T)	Comm Facility	43.862432	-75.727488
Hodkinson Wildlife Pond Dam	Pinckney (T)	Dam	43.806944	-75.813333
Neil Burns Marsh Dam	Pinckney (T)	Dam	43.805556	-75.736111
Nys Dec Marsh Dam	Pinckney (T)	Dam	43.796111	-75.762778
Nys Dec Marsh Dam #2	Pinckney (T)	Dam	43.825000	-75.826389
Nys Dec Marsh Dam #3	Pinckney (T)	Dam	43.831111	-75.838889
Nys Dec/joans Marsh Dam	Pinckney (T)	Dam	43.840278	-75.769444
Town of Pinckney	Pinckney (T)	Municipal Hall	43.818334	-75.818862
Town of Pinckney	Pinckney (T)	Municipal Hall	43.819993	-75.816643
Port Leyden Upper Dam	Port Leyden (V)	Dam	43.583333	-75.340278
Black River Hydro Assoc	Port Leyden (V)	Electric Power Facility	43.585734	-75.339669
Black River Hydro Assoc	Port Leyden (V)	Electric Power Facility	43.587067	-75.341151
Lyonsdale Hydroelectric Co Inc	Port Leyden (V)	Electric Power Facility	43.583786	-75.339634
Port Leyden Fire Company	Port Leyden (V)	Fire Station	43.585746	-75.347811
Village of Port Leyden	Port Leyden (V)	Highway Garage	43.583100	-75.347234
Port Leyden Community Library	Port Leyden (V)	Library	43.582037	-75.345331
Port Leyden Community Library	Port Leyden (V)	Library	43.582037	-75.345331
Town of Leyden	Port Leyden (V)	Municipal Hall	43.584764	-75.345520
Town of Leyden	Port Leyden (V)	Municipal Hall	43.585005	-75.345761





Name	Muni	Type	Latitude	Longitude
Town of Leyden	Port Leyden (V)	Municipal Hall	43.585117	-75.345881
PORT LEYDEN IRA	Port Leyden (V)	Nursing Home	43.582623	-75.346930
Weber Matthew	Port Leyden (V)	Nursing Home	43.582798	-75.349731
Whitton Place	Port Leyden (V)	Nursing Home	43.582780	-75.334521
Port Leyden Elementary School	Port leyden (V)	School	43.582874	-75.341745
School Dist No 5	Port Leyden (V)	School	43.583843	-75.342350
Village of Port Leyden	Port Leyden (V)	Wastewater Facility	43.587578	-75.342688
American Towers Inc	Turin (T)	Comm Facility	43.648127	-75.483109
Gom 1	Turin (T)	Comm Facility	43.656153	-75.485577
Verizon Wireless	Turin (T)	Comm Facility	43.685462	-75.464549
Constableville Dam	Turin (T)	Dam	43.586667	-75.438333
Turin Reservoir Dam	Turin (T)	Dam	43.646944	-75.429444
Village of Turin Water Supply Dam	Turin (T)	Dam	43.626944	-75.433056
Village of Carthage	Turin (T)	Potable Pump	43.958925	-75.311206
Village of West Carthage	Turin (T)	Potable Pump	43.936995	-75.647036
Village of West Carthage	Turin (T)	Potable Pump	43.940374	-75.644250
South Lewis Central School	Turin (T)	School	43.635212	-75.393406
Turin Recreation Pond Dam	Turin (V)	Dam	43.630278	-75.405556
Turin Fire Company	Turin (V)	Fire Station	43.629521	-75.412329
Town of Turin	Turin (V)	Highway Garage	43.629931	-75.404253
B. Elizabeth Strong Memorial Library	Turin (V)	Library	43.627540	-75.409827
B. Elizabeth Strong Memorial Library	Turin (V)	Library	43.627540	-75.409827
Town of Turin	Turin (V)	Library	43.627355	-75.409855
Town of Turin	Turin (V)	Library	43.627355	-75.409855
Turin Village	Turin (V)	Municipal Hall	43.627398	-75.409859
Cry	Watson (T)	Comm Facility	43.806940	-75.328247
Beach Mill Dam	Watson (T)	Dam	43.808333	-75.275556
Beaver Meadow Brook Dam	Watson (T)	Dam	43.878333	-75.160000
C Harry Edick Pond Dam	Watson (T)	Dam	43.778889	-75.343333



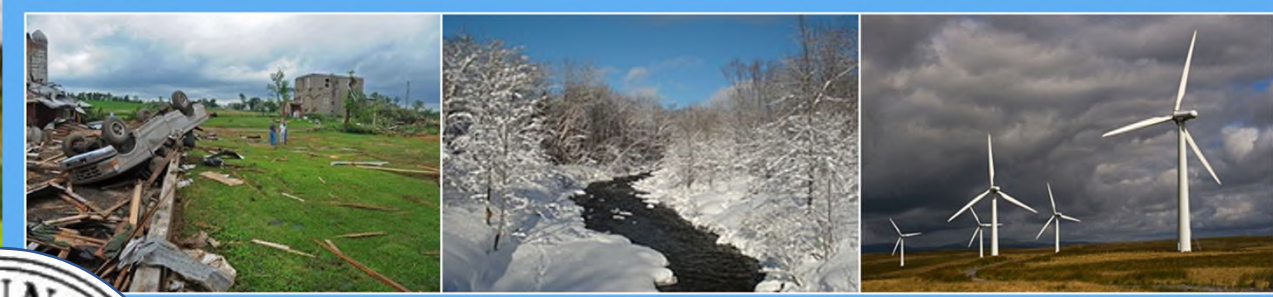


Name	Muni	Type	Latitude	Longitude
Chase Lake Dam	Watson (T)	Dam	43.761389	-75.314722
Croghan Reservoir #2 Dam	Watson (T)	Dam	43.907500	-75.302778
Crystal Lake Dike	Watson (T)	Dam	43.838333	-75.280000
Eagle Falls Dam	Watson (T)	Dam	43.901667	-75.194444
Francis Lake Dam	Watson (T)	Dam	43.854444	-75.149444
Glenn Creek Dam	Watson (T)	Dam	43.762500	-75.377222
Passengers Pond Dam	Watson (T)	Dam	43.798333	-75.355833
Pietries Mill Dam	Watson (T)	Dam	43.855556	-75.263611
Wilers Mill Dam	Watson (T)	Dam	43.803333	-75.368611
Erie Blvd Hydropower LP	Watson (T)	Electric Power Facility	43.895252	-75.185916
Erie Blvd Hydropower LP	Watson (T)	Electric Power Facility	43.914695	-75.212443
National Grid	Watson (T)	Electric Substation	43.765281	-75.348884
Watson Town	Watson (T)	Municipal Hall	43.800584	-75.373993
NYS ARC ONEIDA-LEWIS COUNTIES CHAPTER	Watson (T)	Nursing Home	43.746433	-75.362206
Village of Carthage	Watson (T)	Potable Pump	43.978031	-75.319805
Village of Carthage	Watson (T)	Potable Pump	43.985293	-75.500693
Village of Carthage	Watson (T)	Potable Pump	43.986655	-75.279116
Village of Carthage	Watson (T)	Potable Pump	43.990036	-75.279764
Village of Copenhagen	Watson (T)	Potable Pump	43.886270	-75.673387
Village of Harrisville	Watson (T)	Potable Pump	44.144485	-75.315150
CVille	West Turin (T)	Comm Facility	43.586829	-75.442119
Verizon Wireless	West Turin (T)	Comm Facility	43.550917	-75.425748
Constableville Fish & Game Club Dam	West Turin (T)	Dam	43.591667	-75.530556
Fish Creek Dam	West Turin (T)	Dam	43.562778	-75.583056
Lloyd Akin Dam	West Turin (T)	Dam	43.588333	-75.465556
National Grid	West Turin (T)	Electric Substation	43.612018	-75.384534
West Turin Town	West Turin (T)	Municipal Hall	43.535396	-75.453698
City of Rome Water Dept	West Turin (T)	Potable Pump	43.463117	-75.595777
Village of Harrisville	West Turin (T)	Potable Pump	44.145022	-75.316311





Name	Muni	Type	Latitude	Longitude
Village of Harrisville	West Turin (T)	Potable Pump	44.153994	-75.331568
Village of Harrisville	West Turin (T)	Potable Pump	44.157409	-75.330382
Natural Bridge Power Dam	Wilna (T)	Dam	44.066667	-75.491389



# LEWIS COUNTY

New York

# Hazard Mitigation Plan

Volume II July 2020



Prepared By:  
Tetra Tech, Inc.  
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## SECTION 8. PLANNING PARTNERSHIP

This section provides a description of the Lewis County’s Hazard Mitigation Plan (HMP) update Planning Partnership, their responsibilities throughout the planning process, and the jurisdictional annexes developed as a result of their plan update efforts.

### 8.1 Background

Section 201.6.a(4) of Chapter 44 of the Code of Federal Regulations (44CFR) states: “Multi-jurisdictional plans (e.g., watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process and has officially adopted the plan.” The Federal Emergency Management Agency (FEMA) and New York State (NYS) Division of Homeland Security and Emergency Services (DHSES) both encourage multi-jurisdictional planning. Therefore, in the preparation of the Lewis County HMP update, a Planning Partnership was formed to meet the requirements of the federal Disaster Mitigation Act of 2000 (DMA) for as many eligible local governments in Lewis County as possible.

The DMA defines a local government as, “Any county, municipality, city, town, township, public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or instrumentality of a local government; any Indian tribe or authorized tribal organization, or Alaska Native village or organization; and any rural community, unincorporated town or village, or other public entity.”

#### 8.1.1 Initial Solicitation

Lewis County solicited the participation of all municipalities in the County at the commencement of this project. Table 8-1 lists the jurisdictions that elected to participate in the update process and that met the minimum requirements of participation as established by the County and the Steering Committee.

**Table 8-1. Participating Jurisdictions in Lewis County**

Jurisdictions		
Lewis County		
Castorland (Village)	Lewis (Town)	Osceola (Town)
Constableville (Village)	Leyden (Town)	Pinckney (Town)
Copenhagen (Village)	Lowville (Town)	Port Leyden (Village)
Croghan (Town)	Lowville (Village)	Turin (Town)
Croghan (Village)	Lyons Falls (Village)	Turin (Village)
Denmark (Town)	Lyonsdale (Town)	Watson (Town)
Diana (Town)	Martinsburg (Town)	West Turin (Town)
Greig (Town)	Montague (Town)	
Harrisburg (Town)	New Bremen (Town)	

#### 8.1.2 Planning Partner Responsibilities

The Planning Partnership agreed to the following list of expectations:

- Review 2010 HMP goals and re-establish HMP update goals and objectives.







- Establish a timeline for completion of the HMP update.
- Ensure the HMP update meets the requirements of the DMA 2000 and FEMA and NYS DHSES guidance.
- Solicit and encourage the participation of regional agencies, a range of stakeholders, and citizens in the HMP development process.
- Assist in gathering information for inclusion in the HMP, including the use of previously developed reports and data.
- Organize and oversee the public involvement process and support outreach efforts in the community.
- Develop, revise, adopt, and maintain Volume I of the HMP update in its entirety and the local jurisdictional annex in Volume II.

As described in Section 7 (Plan Maintenance), it is intended that the Planning Partnership remain active beyond the regulatory update to support plan maintenance. Regarding the composition of the Steering Committee and Planning Partnership, it is recognized that individual commitments change over time, and it shall be the responsibility of each jurisdiction and its representatives to inform the HMP Coordinator of any changes in representation.

### 8.1.3 Jurisdictional Annexes

New to the Lewis County HMP update is a two-volume approach, including the development of a jurisdictional annex for each participating jurisdiction. While the local annex format is designed to document and ensure local compliance with the DMA 2000 regulations, its greater purpose and function includes the following:

- Providing a locally-relevant synthesis of the overall mitigation plan that can be readily presented, distributed, and maintained
- Facilitating local understanding of the community’s risk to natural hazards
- Facilitating local understanding of the community’s capabilities to manage natural hazard risk, including opportunities to improve those capabilities
- Facilitating local understanding of the efforts the community has taken, and plans to take, to reduce their natural hazard risk
- Facilitating the implementation of mitigation strategies, including the development of grant applications
- Providing a framework by which the community can continue to capture relevant data and information for future plan updates

It is recognized that each jurisdiction’s annex is a “living” document and will continue to be improved as resources permit. As such, its design is intended to promote and accommodate continued efforts to maintain the annex to be current and to improve the effectiveness of the annex as the key tool, reference, and guiding document by which the jurisdiction will implement hazard mitigation locally.

The following provides a description of the various elements of the jurisdictional annex.

**Section 9.X.1: Hazard Mitigation Planning Team:** Identifies the hazard mitigation planning primary and alternate(s) contacts, as identified by the jurisdiction.

**Section 9.X.2: Municipal Profile:** Provides an overview and profile of the jurisdiction, including an overview of the history and cultural resources, identification of areas of known and anticipated for future development, and the vulnerability of those areas to the hazards of concern.



**Section 9.X.3: Hazard Event History Specific to the Municipality:** Identifies hazard events that have caused significant impacts within the jurisdiction, including a summary characterization of those impacts as identified by the jurisdiction. The documentation of events and losses is critical to supporting the identification and justification of appropriate mitigation actions, including providing critical data for benefit-cost analysis. It is recognized that this “inventory” of events and losses is a work-in-progress and may continue to be improved as resources permit. As such, the lack of data or information for a specific event does not necessarily mean that the jurisdiction did not suffer significant losses during that event.

**Section 9.X.4: Hazard Ranking and Jurisdiction-Specific Vulnerabilities:** This subsection provides information regarding each plan participant’s vulnerability to the identified hazards. Full data and information on the hazards of concern, the methodology used to develop the vulnerability assessments, and the results of those assessments that serve as the basis of these local risk rankings may be found in Section 5.

- **Hazard Risk Ranking:** The Lewis County HMP update identifies and characterizes the broad range of hazards that pose risk to the entire planning area; however, each jurisdiction has differing degrees of risk exposure and vulnerability aside from the whole. The local risk ranking serves to identify each jurisdiction’s degree of risk to each hazard as it pertains to them, supporting the appropriate selection and prioritization of initiatives that will reduce the highest levels of risk for each community.
- **Critical Facilities Flood Risk:** Identifies potential flood losses to critical facilities in the jurisdiction based on the flood vulnerability assessment process presented in Section 5.
- **Identified Issues:** Presents other specific hazard vulnerabilities as identified by the jurisdiction.

**Section 9.X.5: Capability Assessment:** This subsection provides an inventory and evaluation of the jurisdiction’s tools, mechanisms, and resources available to support hazard mitigation and natural hazard risk reduction. Within the municipal annexes, tables provide an inventory of the municipality’s planning and regulatory, administrative and technical, and fiscal capabilities, respectively. Further, another table identifies the municipality’s level of participation in state and federal programs designed to promote and incentivize local risk reduction efforts.

- **National Flood Insurance Program (NFIP):** This subsection documents the NFIP as implemented within the jurisdiction. This summary was based on surveys prepared by and/or interviews conducted with the NFIP Floodplain Administrators for each NFIP-participating community in the County. This subsection also identifies actions to enhance implementation and enforcement of the NFIP within the community.
- **Integration of Hazard Mitigation into Existing Planning Mechanisms:** This subsection identifies how the jurisdiction has integrated hazard risk management into their existing planning, regulatory, and operational/administrative framework (“integration capabilities”) and/or how they intend to promote this integration (“integration actions”). Further information regarding federal, state, and local capabilities may be found in the Capability Assessment portion of Section 6.
- **Shelter, Evacuation, and Temporary Housing:** This subsection describes the planning conducted for identifying evacuation routes and emergency shelters for residents displaced by hazard impacts (notably flooding). It also describes the areas in the jurisdiction and/or coordinated by the County where temporary housing (e.g., FEMA trailers) can be placed for evacuees and describes areas suitable for development of new permanent housing.



**Section 9.X.6: Mitigation Strategy and Prioritization:** This section discusses and provides the status of past mitigation actions and status and describes proposed hazard mitigation initiatives and prioritization.

- **Past Mitigation Initiative Status:** Where applicable, a review of progress on the jurisdiction’s prior mitigation strategy is presented, identifying the disposition of each prior action, project, or initiative in the jurisdiction’s updated mitigation strategy.
- **Completed Mitigation Initiatives Not Identified in the Previous Mitigation Strategy:** Other completed or on-going mitigation activities that were not specifically part of a prior local mitigation strategy may be included in this subsection as well.
- **Proposed Hazard Mitigation Initiatives:** The Proposed Hazard Mitigation Initiatives table presents the jurisdiction’s updated mitigation strategy. The Summary of Prioritization of Actions table provides a summary of the local mitigation strategy prioritization process discussed in Section 6.

**Section 9.X.7: Future Needs to Better Understand Risk/Vulnerability:** During the development of each annex, each jurisdiction identified if there are any anticipated needs in order to better understand risk and vulnerability going forward. If a jurisdiction identified such needs, they are captured in this section.

**Section 9.X.8: Staff and Local Stakeholder Involvement in Annex Development:** This section describes the jurisdiction’s participation in the overall mitigation planning process and in developing the jurisdiction’s annex in particular.

**Section 9.X.9: Hazard Area Extent and Location:** Each annex includes a map (or series of maps) illustrating identified hazard zones, critical facilities, and areas of NFIP Repetitive Loss/Severe Repetitive Loss (RL/SRL). Further, these maps show areas of known or anticipated future development, as available and provided by the jurisdiction.

**Action Worksheets:** Each mitigation action described in Section 9.X.6 is documented on an Action Worksheet. Including Action Worksheets in the HMP facilitates implementation of mitigation actions when funding becomes available. The worksheets document the problem being solved/addressed, alternatives considered, the solution chosen, and other key details.

Workshops and additional meetings (via in-person, email and/or teleconference) to complete the jurisdictional annexes were held with the Steering Committee and Planning Partnership throughout the planning process. In summary, all participating communities and the County completed the planning partner expectations and annex-preparation process. Details regarding these meetings are described further in Section 3 (Planning Process) and Section 6 (Mitigation Strategy). Completed jurisdictional annexes are presented in Section 9.



## 9.1 LEWIS COUNTY

This section presents the jurisdictional annex for Lewis County.

### 9.1.1 Hazard Mitigation Plan Point of Contact

The following individuals have been identified as the hazard mitigation plan’s primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Robert A. MacKenzie Title: Director of Fire and Emergency Management Address: 5252 Outer Stowe Street Public Safety Building Lowville, NY 13367 Phone Number: 315-376-5305 Email: robertmackenzie@lewiscounty.ny.gov	Name: Jennifer Marachion Title: Emergency Management Assistant Address: 5252 Outer Stowe Street Public Safety Building Lowville, NY 13367 Phone Number: 315-376-5303 Email: jennifermaracchion@lewiscounty.ny.gov
Floodplain Administrator	
Name: Lewis County Codes Department, Ward Dailey Title: Senior Code Enforcement Officer Phone Number: 315-377-2037 Address: 7660 North State Street Email: <a href="mailto:permits@lewiscounty.ny.gov">permits@lewiscounty.ny.gov</a> Note: Lewis County performs floodplain management for several municipalities as noted in their annexes.	

### 9.1.2 Municipal Profile

Section 4 (County Profile), Volume I of this HMP includes details on Lewis County’s population, location, climate, history, growth, and development.

### 9.1.3 Hazard Event History Specific to the County

Lewis County has a history of natural hazard events, as detailed in Volume I, Section 5.0 (Risk Assessment) of this HMP. A summary of historical events appears in each hazard profile of the plan and includes a chronology of events that have affected the county and its municipalities.

**Table 9.1-1. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Summary of Damages and Losses
April 26- May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region. After near record-setting spring rainfall, a warm front brought 2 to 4 inches of rain to the eastern Lake Ontario Region. The runoff resulted in flooding across the Black River basin, including the Black River and some of its major tributaries	Damages in the county totaled \$470,000. Damages to towns and villages totaled \$1,073,000.
August 26- September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	The county was impacted but no damages were reported.



Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Summary of Damages and Losses
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	The county was impacted but no damages were reported.
October 29, 2012	Remnants of Hurricane Sandy (EM-3351, DR-4085)	Yes	Remnants of Hurricane Sandy brought strong winds and heavy rains to western and north central New York. Rainfall amounts of 2 to 5 inches were measured across the area with some area creeks reaching capacity. The high winds downed trees and power lines throughout the region. Wind gusts were measured to 60 mph.	The high winds downed trees and power lines throughout the region. Property damages totaled \$100,000.
June 26-July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	The county was impacted but no damages were reported.
May 13-22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	Damages in Lewis County totaled \$73,856.86. Port Leyden Village was heavily impacted.
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to a foot and half of snow within this band leading up to daybreak Friday.	The storm had routine impacts. The county did not meet the minimum requirements to apply for recovery assistance.
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	The storm had routine impacts. The county did not meet the minimums to apply.
January 12, 2018	Flooding and Ice Jams	No	Heavy rainfall and flooding led to ice jams.	Roads were flooded and iced over from ice jams backing up. Snow slides occurred and many roads needed to be cleared of ice, snow, and debris. Lewis County met their damage amount needed for a declaration, but New York State did not declare a disaster

### 9.1.4 Hazard Vulnerabilities and Ranking

The hazard profiles in Section 5 (Risk Assessment) of this HMP convey detailed information regarding each participating jurisdiction’s vulnerability to the identified hazards. The risk ranking methodology is presented in Section 5.3 (Risk Ranking). The county had the opportunity to adjust the final ranking based on feedback from planning partners. The following summarizes the hazard vulnerabilities and their ranking in Lewis County.



### Hazard Risk Ranking

This section provides county-specific identification of the primary hazards of concern based on identified problems, impacts, and the results of the risk assessment as presented in Section 5 (Risk Assessment) of this plan. The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for Lewis County. The table indicates that drought, severe storm, and severe winter storm are the highest ranked hazards for the county. The county commented that while flooding occurs annually, wildfires have not occurred in a long time. The county noted that while earthquakes are a hazard, their frequency is quite low, and impacts seem to be minimal in the North Country. The county also noted that agricultural spills are a high hazard, there is just as much of a hazard with the trucking of hazardous materials across the county.

Table 9.1-2. Lewis County Calculated Risk Ranking

Hazard of Concern	County Hazard Ranking
Agricultural Spills	High
Drought	Medium
Earthquake	Medium
Extreme Temperature	High
Flood	Medium
Hazardous Material Incidents	Medium
Landslide	Low
Severe Storm	High
Severe Winter Storm	High
Wildfire	High

Note: The scale is based on the following hazard rankings as established in Section 5.3.

### Identified Issues

The county has identified the following vulnerabilities:

- The county has issued requests for people to limit their power usage in the summer to prevent blackouts.
- Stormwater management throughout the county is poor.
- Floodplain management appears to be a significant weakness in the county. Flood insurance rate maps (FIRM) are outdated and inaccurate due to the increased severity of storms.
- Many municipalities are unaware of the problems that occur without restrictions on building in floodplains.
- Municipalities rarely track the expenditures that they have undergone when repairing assets, such as roads, bridges, and buildings, after damages due to hazard events. The North Country seems to be a “take care of ourselves” mentality, which is an asset in many circumstances, but it does not help in the tracking of event related expenditures.
- In general, the county has very limited budget for emergencies and seems to rely solely on the state for resources. The county does not have a backup plan or budget to deliver water to vulnerable residents suffering in flooding or drought situations. The emergency management committee has worked together in the past to fulfill this basic need.
- Roads throughout the county have been damaged by heavy trucks.





- Manure storage facilities and transfer of milk, manure, and other agricultural products can result in large spills which can cause major impacts.

### 9.1.5 Capability Assessment

This section identifies the following capabilities of Lewis County:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms

#### Planning and Regulatory Capability

The table below summarizes the regulatory tools that are available to Lewis County.

**Table 9.1-3. Planning and Regulatory Tools**

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Master / Comprehensive Plan	Yes, 2009	County	Planning	Comprehensive Plan
Capital Improvements Plan	No	-	-	-
Floodplain Management / Basin Plan	No	-	-	-
Stormwater Management Plan	No	-	-	-
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	Yes, January 2010-June 2016 Presently	All 61 watershed municipalities	Soil and Water Quality Coordinating Committee	Black River Watershed Management Plan, Black River Watershed 9 Element Plan; St. Lawrence River Watershed Management Plan Oneida Lake Watershed Management Plan
Economic Development Plan	Yes	County	Economic Development	Economic Development Plan
Comprehensive Emergency Management Plan	Yes, July 2013	County	Emergency Management	Lewis County Comprehensive Emergency Management Plan
Emergency Operation Plan	No	-	-	-
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	Yes, 2019 update	County	Planning	Transportation Plan
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	Yes	State	NYS Tug Hill Commission	Groundwater Assessment and Recommendations Report for the Black River Watershed, New York





Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Regulatory Capability</b>				
Building Code	No	Local and State	-	-
Zoning Ordinance	No	Local	Various	Regulated at local level
Subdivision Ordinance	No	-	-	-
NFIP Flood Damage Prevention Ordinance	No	Local	Various	Regulated at local level. Lewis County codes performs floodplain administration for several municipalities as noted in their annexes.
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	No	Local	N/A	Regulated at local level. Lewis County codes performs floodplain administration for several municipalities as noted in their annexes.
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	Yes	County	Planning	Upon municipal referral
Stormwater Management Ordinance	No	-	-	-
Municipal Separate Storm Sewer System (MS4)	No	-	-	-
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	NYS Department of State, Real Estate Agent	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

### Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to Lewis County.

**Table 9.1-4. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	Yes	County
Mitigation Planning Committee	No	-
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-





Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Economic Development Commission/Committee	No	-
Maintenance Programs to Reduce Risk	No	-
Mutual Aid Agreements	Yes	Mutual aid agreements among volunteer fire departments
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	Yes	Director of Planning and Senior Planner
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	No	-
Planners or engineers with an understanding of natural hazards	Yes	Director of Planning
NFIP Floodplain Administrator (FPA)	No	Municipal level
Surveyor(s)	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	No	-
Scientist familiar with natural hazards	Yes	Lewis County Soil and Water Conservation District
Warning systems/services	Yes	Emergency Alert System (EAS) - formerly known as Emergency Broadcast System (EBS)
Emergency Manager	Yes	Emergency Management Coordinator
Grant writer(s)	Yes	Planning, Soil and Water Conservation District
Staff with expertise or training in benefit/cost analysis	No	-
Professionals trained in conducting damage assessments	No	-

### Fiscal Capability

The table below summarizes financial resources available to Lewis County.

**Table 9.1-5. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvements project funding	No
Authority to levy taxes for specific purposes	No
User fees for water, sewer, gas or electric service	No
Impact fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	No
Incur debt through general obligation bonds	No
Incur debt through special tax bonds	No
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No
Other federal or state Funding Programs	No
Open Space Acquisition funding programs	No
Other	No

### Community Classifications





The table below summarizes classifications for community program available to Lewis County.

**Table 9.1-6. Community Classifications**

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	N/A	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	No	-	-
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	No	-	-
Public-private partnership initiatives addressing disaster-related issues	No	-	-

Notes: N/A Not applicable, - - Unavailable

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual.
- The Building Code Effectiveness Grading Schedule (<https://www.isomitigation.com/bcegs/>).
- The ISO Mitigation online ISO’s Public Protection (<https://www.isomitigation.com/ppc/>).
- New York State Climate Smart Communities (<http://www.dec.ny.gov/energy/56876.html>).
- The National Weather Service Storm Ready (<https://www.weather.gov/stormready/communities>).
- The National Firewise Communities (<http://firewise.org/>).

**Self-Assessment of Capability**

The table below provides an approximate measure of Lewis County’s capability to work in a hazard-mitigation capacity and effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

**Table 9.1-7. Self-Assessment Capability for the Municipality**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Planning and regulatory capability	X – Regulatory ability is limited unless in state of emergency		
Administrative and technical capability	X – Two Person Emergency Management Staff – Soil and Waters Assistance Provided but limited staff, as well		
Fiscal capability	X – Limited Emergency Management Budget		
Community political capability	X – Difficult to convince current political establishment of needs until emergency occurs		
Community resiliency capability	X – Lack of knowledge or acceptance that it is needed		





Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Capability to integrate mitigation into municipal processes and activities	X – Lack of knowledge or acceptance that it is needed		

### Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

It is the intention of the county to incorporate hazard mitigation planning and natural hazard risk reduction as an integral component of the county’s administrative, regulatory and operational framework. Such efforts, which are now an ongoing part of county operations, are identified in the Capability Assessment of Section 6 (Mitigation Strategy), as well as in the completed mitigation initiatives identified in Section 9.1.6 below. In addition, the county identified specific integration activities that will be incorporated into procedures and are included in their updated mitigation strategy. The following textual summary and table identify relevant planning mechanisms and programs that have been or will be incorporated into county procedures, which can include former mitigation initiatives that have become continuous/on-going programs and are now considered mitigation “capabilities.”

#### Planning

##### Existing Integration

**Comprehensive Plan:** The Lewis County Comprehensive Plan was last updated in 2009. The plan includes information on areas of natural hazard risk in the land use development section. The plan outlines numerous areas of community development options but does not refer to the Lewis County HMP.

**Comprehensive Emergency Management Plan:** The Lewis County Emergency Management Plan was last updated in 2010. The plan establishes responsibilities during emergency events and the use of the National Incident Management System (NIMS) & Incident Command System (ICS) to respond to emergencies. The plan provides a general all-hazards management guidance, using existing organizations, to allow the county to meet its responsibilities before, during, and after an emergency.

Lewis County does not have a Stormwater Management Plan, Re-Development Plan, Growth Plan, Economic Development Plan, Open Space Plan, Watershed/Stream Corridor Management Plan, or Local Waterfront Revitalization Plan. The county does not have a Continuity of Operations or Continuity of Government Plan (COOP/COG) but holds annual trainings.

##### Opportunities for Future Integration

Future updates to the Comprehensive Plan and other planning documents could include references to the Countywide Hazard Mitigation Plan.

#### Regulatory and Enforcement (Ordinances)

##### Existing Integration

Ordinances in Lewis County are regulated at the local level. Each municipality maintains its own land use and zoning ordinances, although several villages do not have zoning requirements.

##### Opportunities for Future Integration

The county could provide guidance to local municipalities on updating ordinances to include information on natural hazards.



## Operational and Administration

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### Existing Integration

**Planning Department:** The Lewis County Department of Planning provides services to local municipalities, organizations, businesses, and citizens to ensure that carefully planned and successful development occurs within the county in accord with the Lewis County Comprehensive Plan. In support of this mission, the department provides assistance and resources to Lewis County municipalities and organizations for community development, project planning, zoning, and grant writing and administration. The department works with businesses to provide information and guidance to meet their business development needs and to create growth in Lewis County. The department also provides general information and resources to citizens for various planning, zoning, and economic development issues.

**Emergency Management:** Lewis County Emergency Management is charged with supporting and promoting an organized, systematic approach to Emergency Planning, Preparedness, Mitigation, Response and Recovery in the event of a natural or manmade disaster in Lewis County, and to support the day to day operations of the many Emergency Service, Public Service, Public Safety, and Emergency Management organizations.

**Highway Department:** The Lewis County Highway Department is responsible for bridge and roadway maintenance and care and takes part in numerous structural hazard mitigation related projects.

**Buildings & Grounds Department:** The Buildings and Grounds Department is responsible for the general maintenance and upkeep of county facilities and grounds to maintain a safe environment for employees and public. The facilities under the Department's care include the main county office building, county courthouse, Department of Social Services, Public Safety Building, Office for the Aging, Board of Elections, and Department of Motor Vehicles.

**Building and Fire Codes Department:** The Building and Fire Codes Department enforces the NYS Uniform Fire Prevention and Building Code. The department review building plans, issues building permits, conducts construction and fire safety inspections, and investigates violations and complaints. The department serves as the municipal floodplain administrator for several municipalities.

**Lewis County Flood Monitoring Task-Force:** The Planning Department takes part in the Lewis County Flood Monitoring Task-Force, which assists EMS as needed during flood events.

Under the Planning Department, Lewis County staff received seminars and webinars, which support natural hazard risk reduction.

### Opportunities for Future Integration

Staff would benefit from training in grant programs, BCAs, and best practices.

## Funding

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### Existing Integration

The county has applied for hazard mitigation grant funding, but Emergency Management has a very minimal budget with limited ability for training other than what is mandatory.

### Opportunities for Future Integration

The county could write grants to obtain training and include mitigation projects as line items in the county budget/capital improvements budget as relevant and pursue grant funding to support hazard mitigation.



## Education and Outreach

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### Existing Integration

Lewis County operates a website (<https://www.lewiscounty.org/>) that has various information and news from the county departments. The website includes a GIS mapping web application.

### Opportunities for Future Integration

The county can expand outreach efforts to include the findings of the Hazard Mitigation Plan update.

## Sheltering, Evacuation, and Temporary Housing

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Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

### Evacuation and Sheltering Needs

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While most people who need to evacuate their homes typically stay with friends or family, or in hotels, some of them will require short-term shelter. The Lewis County Fire and Emergency Management addresses evacuation and sheltering in the Lewis County Comprehensive Emergency Management Plan.

Evacuation routes are determined at the time of an incident by the Incident Commander or his/her designee. Generally, evacuation routes will be whatever major roads lead away from the evacuated area. Major roads are shown in Section 4 (County Profile).

Lewis County partners with the American Red Cross (ARC) to operate emergency shelters throughout the county. The Red Cross Sheltering Plan is included as an annex in the CEMP. The ARC has pre-identified a set of facilities that could be used as emergency shelters. Compliance with the Americans with Disabilities Act (ADA) is included in the criteria that the ARC uses to approve a facility to serve as a shelter, as is the requirement that facilities must be outside of the Special Flood Hazard Area (SFHA). During an incident that requires evacuation of an area, Lewis County Emergency Management will work with the ARC to activate one or more shelters (depending on the need and the resources available to operate a shelter) and will ensure that the location(s) of the shelter(s) is/are provided to evacuees. The ARC is also responsible for emergency feeding and clothing during incidents.

During an incident, Lewis County's emergency management structure relies on the Human Needs Task Force to address medical needs, access and functional needs, compliance with the ADA, and other issues that arise during an evacuation. This group is also described in the CEMP in the "Meeting Human Needs" section.

In addition to sheltering through the ARC, municipalities in Lewis County have identified the following shelters:

- The Village of Constableville has designated the Constableville Fire Department building on Main Street as an emergency shelter. The facility can accommodate 60 evacuees inside, has backup power, and includes ambulance and EMT access.
- The Village of Copenhagen has identified the Copenhagen Central School on Mechanic Street and the Copenhagen Fire Department at 9950 Main Street as unofficial emergency shelters. The capacity of each facility has not been determined but each have backup power and can accommodate pets. The Copenhagen Central School is ADA compliant. Route 12 is used as the evacuation route to Watertown or Lowville in emergency situations.



- The Village of Croghan identified several locations as designated emergency shelters in the community. In addition to the facilities listed below, the village identified all schools as designated shelters:
  - Croghan Fire Department at 6860 Fire Hall Street. The site has a capacity of 150, accommodates pets, is ADA compliant, and has a kitchen and bathroom.
  - St. Stephen's Parish at 9748 Main Street. The site has a capacity of 100, accommodates pets, is ADA compliant, and has a kitchen and bathroom.
  - Steepleview Court at 6926 George Street. The site has a capacity of 20, accommodates pets, is ADA compliant, and has a kitchen and bathroom.
  - Croghan Free Library at 9794 NY-812. The site has a capacity of 20, accommodates pets, is ADA compliant, and has a bathroom.
- The Town of Denmark has designated the Copenhagen Fire Department at 9550 Main Street as an emergency shelter. The site has a capacity of 150.
- The Town of Greig has designated the following emergency shelters:
  - Camp Aldersgate: The camp is located on Brantingham Road and has a capacity of 250. It is ADA compliant. The facility has food and lodging.
  - Brantingham Fire House: The fire house is located on Partidgeville Road and has a capacity of 15. It is ADA compliant and has backup power.
  - Brantingham Golf Course: The golf course is located on Brantingham Road and has a capacity of 50.
  - Greig Town Hall: The Town Hall is located on Greig Road and has a capacity of 25. It is ADA compliant and has backup power.
  - Brantingham Snowmobile Club: The club is located on Brantingham Road and has a capacity of 25.
- The Town of Harrisburg has identified the following facilities as shelters:
  - Copenhagen Fire Department at 9932 NY-12, Copenhagen. The site has a capacity of 50-100, accommodates pets, is ADA compliant, has EMT services, and has a bathroom and kitchen.
  - Lowville Fire Department at 5409 The Parkway, Lowville. The site has a capacity of 50-100, is ADA compliant, has EMT services, and has a bathroom and kitchen.
  - Town Hall at 7886 Cobb Road. The site has a capacity of 25, is ADA compliant, has EMT services, and has a bathroom and kitchen.
- The Town of Leyden has identified the following emergency shelters:
  - Port Leyden Fire Hall at 3387 Douglas Street. The site has a capacity of 130, is ADA compliant, and has EMS personnel on hand.
  - Port Leyden Elementary School at Lincoln Street. The capacity is unknown. The site is ADA compliant, has EMT services, and has a registered nurse on hand during school hours.
- The Village of Lyons Falls has identified the following emergency shelters:
  - The Fire Hall/DPW at 3907 High Street accommodates 150 and is ADA compliant.
  - The Village of Lyons Falls offices at 4059 Cherry Street accommodate 25 and is ADA complaint.

The village noted that it plans to build a new facility, which would combine the Fire Hall, DPW, and village offices into one location. The current Fire Hall has a deteriorating roof and lacks insulation and a kitchen, limiting functionality as a shelter. The village offices lack space. A combined facility would allow for improved and expanded sheltering capability.

- The Town of New Bremen identified the New Bremen Fire Department at 8154 Route 812 as a designated emergency shelter in the community. The site has backup power. In addition, the town identified all schools as designated shelters.
- The Town of Osceola identified the Highway Town Barn and the Community Center as designated emergency shelters. The Highway Town Barn is located at 2009 Church Street. The Town Barn has a





capacity of 50, accommodates pets, is ADA compliant, has backup power, and has an AED available. The Community Center is located at 1426 Osceola Road. The Community Center has a capacity of 68, is ADA compliant, has backup power, and has access to the AED located next door in the town barn.

- The Town of Turin has designated the following emergency shelters, which can all be accessed by State Routes 12 and 26:
  - South Lewis Central School at East Road. The site has a capacity of 1,000, accommodates pets, is ADA compliant, has backup power, and has a school nurse, and can provide food.
  - Turin Municipal Building at 6312 East Main Street. The site has a capacity of roughly 50, is ADA compliant, and has backup power.
  - Turin Volunteer Fire Company at 4239 State Route 26. The site has a capacity of 20-25, accommodates pets, is ADA compliant, has Ambulance/EMT services, and can serve food.
- The Village of Turin has designated the following emergency shelters:
  - Turin Fire Hall at State Route 26. The site accommodates pets, is ADA compliant, has backup power and provides some medical services.
  - South Lewis Central School at 5960 Main Street. The site has a capacity of 500, accommodates pets, is ADA compliant, has backup power, and provides medical services as needed.
- The Town of Watson has designated the Town Barn at 6971 Number Four Road as the town's emergency shelter. The site has a capacity of 50, is ADA compliant, has backup power, has first aid, and has a working kitchen.

### Temporary and Permanent Housing

Following a flood or other emergency, municipalities can request that Lewis County identify sites throughout the county for the location of temporary housing (e.g., FEMA trailers) to house evacuees. As events requiring temporary housing are likely to be relatively small in geographic scale, Lewis County noted that the need could likely be absorbed by facilities available through the American Red Cross, Salvation Army, and the existing available housing stock. In addition, farming fields, parks, and rural locations could be used for space for temporary housing, though proper utility access would need to be addressed. Campgrounds could be used for temporary housing and are more likely to have access to utilities than other open space locations. Capacity of campgrounds would be dependent on time of year and available vacancies in campsites. Campgrounds in Lewis County include:

- Babcock Campground in Lowville. The campground has 75 sites.
- Happy Hollow Campground in Lowville. The campground has 175 sites. The campground has RV hookups, restrooms, showers, and laundry facilities.
- Whetstone Gulf in Lowville. The campground has 58 sites. The campground has RV hookups, cabins, restrooms, showers, electric power hookups, and tap water.
- Cold Brook Campsites in Port Leyden. The campsite has 92 sites. The campsites have electric, restrooms, laundry facilities, and showers available.
- Moose River Plains Complex Campgrounds in Port Leyden. The campgrounds have 116 campsites.
- Tuggers Grill Bar and Campgrounds in Copenhagen. The campgrounds have RV hookups, cabins, restrooms, and showers available.
- Twin Ponds Campground in Copenhagen. The site has RV hookups.



In addition, municipalities in Lewis County have identified the following locations as possible sites for temporary housing:

- The Village of Constableville has identified the Constableville Fire House on Main Street and Flywheels & Pulleys on State Route 26 as potential sites. Both facilities have capacities to handle approximately 50 trailers.
- The Village of Croghan has identified the Croghan Recreational Park, located at 9578 Park Drive.
- The Village of Copenhagen has identified the Copenhagen Central School on Mechanic Street and the Copenhagen Fire Department at 9950 Main Street as potential sites. The capacity for both sites has not been determined.
- The Town of Greig has identified the following sites:
  - Camp Aldersgate: The camp is located on Brantingham Road. The site has a capacity of 100. It would require installation of sewage dispersal system, electric service, and water service to ensure conformance with the NYS Uniform Fire Prevention and Building Code.
  - Brantingham Snowmobile Club: The club is located on Brantingham Road. This site has a capacity of 10. It would require installation of sewage dispersal system, electric service, and water service to ensure conformance with the NYS Uniform Fire Prevention and Building Code.
  - Greig Town Park: The park is located on Greig Road and Park Road and has a capacity of 50. It would require installation of sewage dispersal system, electric service, and water service to ensure conformance with the NYS Uniform Fire Prevention and Building Code.
  - Higby Trailer Park: The trailer park is located on Higby Road and has a capacity of 7 units. It would require installation of sewage dispersal system, electric service, and water service to ensure conformance with the NYS Uniform Fire Prevention and Building Code.
  - Patterson Farm: The farm is located on Patterson Road, Greig Road, and McConnell Road. This site has a capacity of 200. It would require installation of sewage dispersal system, electric service, and water service to ensure conformance with the NYS Uniform Fire Prevention and Building Code.
- The Town of Leyden has identified the following locations:
  - Port Leyden Community Park, 3387 Douglas Street, Port Leyden, NY. The site would require the running of power and sewer lines. Capacity is unknown.
  - Cliffs Market Public Parking Area, 3205 NYS Rt 12, Port Leyden, NY. The site would require the running of power and sewer lines. Capacity is unknown.
- The Town of Lowville has not identified sites for the placement of trailers for temporary housing for residents displaced by a disaster, but the Ridgeview Motel is an option for the temporary housing of displaced people. The motel has a capacity of 50+ and is located at NYS Route 12 North.
- The Village of Lowville has identified the Tops Plaza on State Route 26, Lewis County Fairground on Bostwick St, East State Street, and VPJ Property behind Campbell Street. The capacity of these locations is unknown. The village also noted that many local churches and the village would work with Lewis County Emergency Management to support temporary housing efforts.
- The Village of Lyons Falls has identified the following locations:
  - Park Place. The site has a capacity of 6. The site would require water lines to be installed.
  - High Street. The site is located by the Department of Public Works. The site has a capacity of 4. The site would require water lines to be installed.
- The Town of New Bremen has identified the New Bremen Fire Department on State Route 812 and Adirondack Speedway on Artz Road. Both facilities have unknown capacity and would require water, sewer, and electric modifications to conform to NYS Uniform Fire Prevention and Building Code.



- The Town of Turin has identified the following sites:
  - Turin Municipal Building at 6312 E. Main St Turin NY 13473 capacity of 8.
  - Turin Vol. Fire Company at 4239 State Rt. 26 Turin NY 134, capacity of 30.
  - South Lewis Central School at East Road Turin NY 13473, capacity of 50.
  - Christian Community Center at East Road Turin NY 13473, capacity of 30.
- The Village of Turin has identified north of Town Fire Hall. The site has a capacity of 25. The site would need infrastructure developed to support trailers.
- The Town of Watson identified Water Town Park at 6971 Number Four Road. The site has a capacity of 90 acres and is up to code.

In addition to farming fields and rural areas of the county, the following locations have been identified as potential areas for the relocation of houses out of the floodplain or the building of new homes once properties in the floodplain are acquired:

- The Village of Constableville identified Farmer’s Field on Route 26 and the Historical Property on John Street. The capacity would be approximately 50 homes at Farmer’s field.
- The Town of Greig has identified the following potential sites:
  - Pomerville Development: The development is located on Lyons Falls Road and has a capacity of 25. Roads and utilities would need to be installed to ensure conformance with the NYS Uniform Fire Prevention and Building Code.
  - Linda Place: Linda Place is located on Linda Place Road and has a capacity of 10. Septic and water would need to be installed to ensure conformance with the NYS Uniform Fire Prevention and Building Code.
- The Village of Lowville has identified the East State Street field between Bostwick and Woodlawn. The capacity is currently unknown for this site.

### 9.1.6 Mitigation Strategy and Prioritization

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and prioritization.

#### Past Mitigation Initiative Status

The following table indicates progress on the community’s mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and can also be found under ‘Capability Assessment’ presented previously in this annex.



Table 9.1-8. Status of Previous Mitigation Actions

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete, Ongoing Capability)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection	
	Investigate expansion of hazard-related GIS capabilities via acquisition of HAZUS-MH to collect and develop more sophisticated hazard mapping and loss estimation. Use information in future plan updates. Ensure information will be available to the public and to local communities and agencies.	Earthquakes, Wind, and Flood	More GIS information is needed for future plan updates and public outreach.	Lewis County Emergency Management and local municipal agencies	No progress			1. Include in 2020 HMP 2. Expansion of Hazard Related GIS Capabilities 3.
	Undertake a year built and level of protection survey for all critical/ emergency facilities and shelters to highlight structures built before codes and standards were put in place to provide protection from natural hazards. Pursue potential mitigation opportunities to protect these sites as funding becomes available.	Wind/Tornado, Winter Storms, Earthquakes, and Flooding (including Ice Jams)	Critical facilities need to be protected using higher building standards	Lewis County Emergency Management and local municipal agencies	No progress			1. Include in 2020 HMP 2. Undertake Year Build and Protection Level Survey of Critical Facilities 3.
	Conduct surveys to determine local vulnerabilities to landslides threatening property and roads, coordinate with municipalities to limit development in these areas, and develop remedial measures for existing vulnerabilities.	Landslides	Landslide vulnerability needs to be identified.	Lewis County Emergency Management and local municipal agencies	No Progress			1. Include in 2020 HMP 2. Lidar needs to be flown for entire county for a cost of \$200,000. 3.
	Coordinate with NYSDEC and owners of all high and moderate hazard dams to work towards full compliance with applicable dam safety programs and development/updates of Emergency Action Plans including inundation mapping.	Dam Failure	Dams need to meet safety requirements	Lewis County Emergency Management and local municipal agencies	Ongoing Capability			1. Discontinue 2. 3. NYSDEC notifies dam owners of their compliance status.
	Ensure that local comprehensive plans incorporate disaster mitigation techniques through a courtesy review of all draft plans by the County Economic Development and Planning Department	All	Comprehensive plans need to incorporate disaster mitigation	Lewis County Department of Economic Development and	No Progress			1. Include in 2020 HMP 2. Incorporate disaster mitigation into comprehensive plans



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete, Ongoing Capability)	Evaluation of Success (if project status is complete)		Next Steps
						Cost	Level of Protection	
				Planning and local municipal agencies		Damages Avoided; Evidence of Success		3.
	Publish and distribute literature (via the County web site, supplemented by hard copy distribution) on water conservation techniques and drought management strategies.	Drought	Outreach is needed on water conservation and drought management	Lewis County Emergency Management and local municipal agencies	In Progress	Cost		1. Include in 2020 HMP
						Level of Protection		2. Handouts have been provided to public but nothing on website yet.
						Damages Avoided; Evidence of Success		3.
	East Martinsburg Road, Town of Martinsburg - Stabilize eroding road bank	Flooding	Road bank is eroding	Lewis County Highway Department	Ongoing Capability	Cost		1. Discontinue
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3. Ongoing capability; Bank has been stabilized with rock. Stability needs to be evaluated seasonally.
	Town of Watson Streambank Erosion - Stabilize streambank along Black River	Flooding	Streambank is eroding	Lewis County Highway Department	Ongoing Capability	Cost		1. Discontinue
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3. Ongoing capability; Bank has been stabilized with rock. Stability needs to be evaluated seasonally.
	Roaring Brook, Town of Martinsburg -Stabilize eroding streambank	Flooding	Streambank is eroding	Lewis County Highway Department	In Progress	Cost		1. Include in 2020 HMP
						Level of Protection		2. Grade Stabilization Structure was installed. Maintenance is required as structure has moved.
						Damages Avoided; Evidence of Success		3.
	East Martinsburg Road, Town of Watson - Road elevation along major floodplain	Flooding	Roadways are at low elevation, resulting in flood risk	Lewis County Highway Department	No Progress	Cost		1. Include in 2020 HMP
						Level of Protection		2. East Martinsburg Roadway Elevation



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete, Ongoing Capability)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Damages Avoided; Evidence of Success	
								3.
	Mill Creek, Village of Lowville - Debris removal and erosion control	Flooding	Mill Creek is experiencing erosion and debris	Lewis County Soil and Water	In Progress	Cost		1. Include in 2020 HMP 2. Mill Creek debris removal and erosion control 3.
	Flood gauging - Update flood gauging technology within county	Flooding	Flood gauging is necessary for adequate warning.	Lewis County Emergency Management	In Progress	Level of Protection		1. Include in 2020 HMP 2. Expansion of system to Burdicks Crossing for a cost of \$11,000. 3.
	Emergency Communications - Purchase high band portable radio communications equipment	All	Emergency communications need to be maintained at high level	Lewis County Highway Department	Complete	Damages Avoided; Evidence of Success		1. Discontinue 2. 3. Complete.
	Weather stations - Purchase weather monitoring system	All Atmospheric Hazards	Weather station is needed for monitoring and advanced warnings	Lewis County Emergency Management	No Progress	Cost		1. Include in 2020 HMP 2. Weather monitoring system 3.
	Snow fencing - Purchase snow fence (living and other) to be used for wind and snow control throughout county	Wind and Winter Storms	Drifting snow leads to road closures and unsafe conditions	Lewis County Soil and Water, Lewis County Highway Department	No Progress	Level of Protection		1. Include in 2020 HMP 2. Snow Fencing 3.
						Damages Avoided;		



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete, Ongoing Capability)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Evidence of Success	Cost	
	Emergency Water Source - Utilization of emergency water source centrally located in county	All	Emergency water source needs to be established.	Lewis County Emergency Management	No Progress	Level of Protection		1. Include in 2020 HMP 2. Emergency Water Source 3.
	Countywide FIRM Update - Update flood hazard mapping for Black River and other areas	Flooding	Best available flood mapping is needed.	Lewis County Soil and Water	In Progress	Level of Protection		1. Include in 2020 HMP Lidar has been flown but update to the flood mapping is not complete. Needs more coverage before FP maps can be updated. 2. 3.
	Certified Floodplain Managers - Obtain/host specialist training and certification for floodplain managers	Flooding	Floodplain managers require training	Lewis County Emergency Management/ Lewis County Codes Department	No Progress	Level of Protection		1. Include in 2020 HMP  Those responsible for floodplain management are lacking in their knowledge of required duties. Training is needed for all municipal officials and for code enforcement officials in charge of municipalities. Very little zoning precludes homeowners from building in floodplains, leading to problems later. 2. 3.





Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete, Ongoing Capability)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Evidence of Success	Cost	
	Wildfire Mapping - Create and distribute mapping and database of wildland access points for firefighters, develop enhanced mapping of urban/wildland interface.	Wildfire	Wildfire risk needs to be mapped.	Lewis County Emergency Management, Lewis County Planning, local municipal agencies	No progress	Evidence of Success		1. Include in 2020 HMP 2. Wildfire Mapping 3.
	Stormwater Retention, Lewis County General Hospital - Install stormwater drainage system	Flooding	Stormwater drainage needs to be established for the General Hospital.	Lewis County Highway Department	No progress	Cost		1. Include in 2020 HMP 2. Stormwater Retention at Lewis County General Hospital 3.
	Winter Driving and Vehicle Preparation Education - Provide education opportunities for residents to learn winter driving techniques.	Winter Storms and Wind	Residents require education on winter driving.	Lewis County Emergency Management	No progress	Level of Protection		1. Include in 2020 HMP 2. Winter Driving and Vehicle Preparation Education 3.
	Winter Storm Public Awareness and Preparation - Increase public awareness of personal responsibilities during emergencies, specifically winter storm events	Winter Storm and Snow	Public needs to be educated on winter storms.	Lewis County Emergency Management and local municipal agencies	No progress	Damages Avoided; Evidence of Success		1. Include in 2020 HMP 2. Winter Storm Public Awareness and Preparation 3.
	Emergency Warming Shelters - Establish warming shelters for vulnerable populations, including residents and stranded motorists	Extreme Temperatures and Winter Storms	Warming shelters are needed.	Lewis County Emergency Management and local municipal agencies	No progress	Cost		1. Include in 2020 HMP 2. Emergency Warming Shelters 3.



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete, Ongoing Capability)	Evaluation of Success (if project status is complete)		Next Steps
						Cost		
	Outreach Program - County coordination with local governments and other agencies to systematically contact isolated, vulnerable or special-needs population during severe winter storm events	Extreme Temperatures and Winter Storms	Special needs populations need to be cared for during hazard events.	Lewis County Emergency Management and local municipal agencies	No progress			<ol style="list-style-type: none"> <li>1. Project to be included in 2020 HMP or Discontinue</li> <li>2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate).</li> <li>3. If discontinue, explain why.</li> </ol>
	Auxiliary Power Supply - Conduct a countywide survey on status of auxiliary power supplies at all critical facilities.	Winter Storms, Wind, Tornado	Critical services need to be maintained during power outages.	Lewis County Emergency Management and local municipal agencies	No progress			<ol style="list-style-type: none"> <li>1. Include in 2020 HMP</li> <li>2. Auxiliary Power Supply</li> <li>3.</li> </ol>
	Wind Hazards Training - Provide trainings to municipalities regarding the development and implementation of programs to mitigate wind damage to private and public properties.	Wind, Tornado	Officials need to be education on how to mitigate wind damage.	Lewis County Emergency Management and local municipal agencies	No progress			<ol style="list-style-type: none"> <li>1. Include in 2020 HMP</li> <li>2. Wind Hazards Training</li> <li>3.</li> </ol>



### **Completed Mitigation Initiatives Not Identified in the Previous Mitigation Strategy**

Lewis County has performed ongoing maintenance projects to reduce the impact of flooding but has not identified specific mitigation projects/activities that have been completed but were not identified in the previous mitigation strategy in the 2010 HMP.

### **Proposed Hazard Mitigation Initiatives for the Plan Update**

Lewis County participated in a mitigation action workshop on December 17, 2018.

Table 9.1-9 summarizes the comprehensive-range of specific mitigation initiatives Lewis County would like to pursue in the future to reduce the effects of hazards. Some of these initiatives might be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and can be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the 4 FEMA mitigation action categories and the 6 CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6 (Mitigation Strategy), 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing actions as 'High', 'Medium', or 'Low.' The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.1-10 provides a summary of the prioritization of all proposed mitigation initiatives for the plan update.



Table 9.1-9. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category/CRS Category
Lewis County-1	Outreach on power reduction during heat events.	3	Extreme Temperature	<p><b>Problem:</b> In the past, the county has had to issue requests for the public to limit power usage in order to prevent blackouts.</p> <p><b>Solution:</b> Conduct outreach on the need to reduce power consumption during heat waves.</p>	No	None	Within 5 years	Lewis County Emergency Management	\$2,000	Reduction in blackouts during heat waves.	County budget	High	EAP/PI
Lewis County-2	Survey critical facilities to determine flood exposure	2	Flood	<p><b>Problem:</b> Critical facilities need to be protected to the 500-year flood level.</p> <p><b>Solution:</b> The county will undertake a survey to determine which county owned facilities are located in the 100-year floodplain.</p>	Yes	None	Within 5 years	Lewis County Emergency Management	\$5,000	Critical facilities protected to the 500-year flood level.	County budget	High	LPR/PR
Lewis County-3	Black River – River Road – Watson	1	Flooding	<p><b>Problem:</b> Streambank and eventually property is going to fall into the river. Homeowners pass the problem on to the next buyer.</p> <p><b>Solution:</b> Buyout property. Restore natural floodplain function.</p>	No	No	1 Year	Town or County	\$150,000	Property has failing banks, problem keeps being sold to the next owner. Could be used as a canoe launch, house be removed and banks sloped to prevent erosion	Hazard Mitigation	High – land is for sale now	SIP, NSP/PP, NR
Lewis County-4	Bush’s Landing Lock	1	Flooding	<p><b>Problem:</b> Former lock of Black River Navigation System is crumbling and has been somewhat dismantled. As a result, a significant portion of field and now old canal lock are in danger of eroding in to the river.</p> <p><b>Solution:</b> Protect streambank and prevent erosion. Restore navigability of channel.</p>	No	None identified after requesting information from SHPO	2 years	County	\$150,000	Protect streambank, provide for boat navigation for emergency purposes	Great Lake Restoration Initiative Water Quality Incentives Program	High	SIP/SP





Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category/CRS Category
Lewis County-5	Mill Creek Floodplain access	1	Flooding	<p><b>Problem:</b> Mill Creek has limited access to floodplain below the WWTP in Lowville due to a berm being built to keep the creek out.</p> <p><b>Solution:</b> Remove the berm and re-establish the original floodplain of Mill Creek.</p>	Yes	No	1 year	Soil and Water Conservation District	\$50,000	Prevent flooding and ice jams on the Mill Creek at the Village of Lowville and Town of Lowville boundary	HMGP, County budget	High	NSP/NR
Lewis County-6	Landslide mapping	1	Landslide	<p><b>Problem:</b> Lewis County needs to determine vulnerability to landslide, specifically for property and road protection.</p> <p><b>Solution:</b> Fly LiDAR for entire county. Coordinate with municipalities to limit development in these areas and develop remedial measures for existing vulnerabilities.</p>	No	None	1 year	Lewis County Emergency Management and local municipal agencies	\$200,000 for LiDAR	Areas prone to landslide mapped	County budget	High	LPR/PR
Lewis County-7	Incorporate disaster mitigation into comprehensive plans	1	All Hazards	<p><b>Problem:</b> Comprehensive plans need to incorporate disaster mitigation</p> <p><b>Solution:</b> Ensure that local comprehensive plans incorporate disaster mitigation techniques through a courtesy review of all draft plans by the County Economic Development and Planning Department.</p>	No	None	Within 5 years	Lewis County Department of Economic Development and Planning and local municipal agencies	\$500	Disaster mitigation incorporated into comprehensive planning	County budget	High	LPR/PR
Lewis County-8	Outreach on Water Conservation and Drought Management	3	Drought	<p><b>Problem:</b> Additional outreach is needed on water conservation and drought management. In the past, handouts have been provided to the public.</p> <p><b>Solution:</b> Publish and distribute literature (via the county website, supplemented by hard copy distribution) on</p>	No	None	Within 5 years	Lewis County Emergency Management and local municipal agencies	\$2,000	Public educated on water conservation and drought management	County budget	High	EAP/PI





Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category/CRS Category
				water conservation techniques and drought management strategies.									
Lewis County-9	Stabilize Roaring Brook	1	Flood	<p><b>Problem:</b> Roaring Brook in the Town of Martinsburg has an eroding streambank. A structure was installed to protect the streambank, but the structure has moved and needs maintenance to fix it.</p> <p><b>Solution:</b> The Highway Department will assess the structure and determine if it needs to be relocated or replaced and carry out the necessary work.</p>	No	None	Within 5 years	Lewis County Highway Department	TBD after assessment by Highway Department	Streambank protected from erosion	County budget	High	NSP/NR
Lewis County-10	East Martinsburg Roadway Elevation	2	Flood	<p><b>Problem:</b> East Martinsburg Road in the Town of Watson is at low elevation, resulting in flood risk.</p> <p><b>Solution:</b> Raise the roadway elevation of East Martinsburg Road.</p>	No	None	Within 5 years	Lewis County Highway Department	\$25,000	Flood risk to roadway reduced	County budget, HMGP	High	SIP/PP
Lewis County-11	Mill Creek debris removal and erosion control	1	Flood	<p><b>Problem:</b> Mill Creek is experiencing erosion and debris buildup, which increases flood risk. 2 of 4 sites along the lower Mill Creek have been stabilized. The berm needs removal and 2 more sites, including banks on both sides of Mill Creek owned by the village adjacent to the WWTP and above and below East State Street bridge, need stabilization for increased creek access to the floodplain.</p> <p><b>Solution:</b> Remove debris and conduct feasibility assessment</p>	No	Permitting	Within 5 years	Lewis County Soil and Water	To be determined by feasibility assessment	Flood risk reduced	County Budget	High	NSP/NR





Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category/CRS Category
Lewis County-12	Flood Gauge upgrades	1, 2, 3	Flood	<p>to develop erosion control mechanisms.</p> <p><b>Problem:</b> Flood gauging is necessary for adequate warning.</p> <p><b>Solution:</b> Expand flood gauge system to include Burdicks Crossing.</p>	No	None	Within 5 years	Lewis County Emergency Management	\$11,000	Adequate flood warning system established.	County budget, HMGP, USGS	High	EAP, LPR/PI
Lewis County-13	Weather monitoring system	2	Severe Weather, Severe Winter Weather	<p><b>Problem:</b> Weather station is needed for monitoring and advanced warnings.</p> <p><b>Solution:</b> Lewis County will purchase and install a weather monitoring system.</p>	No	None	Within 5 years	Lewis County Emergency Management	\$10,000	Weather warning system established.	County budget	High	EAP, LPR/PI
Lewis County-14	Snow Fencing	2	Severe Winter Storm	<p><b>Problem:</b> Drifting snow leads to road closures and unsafe conditions.</p> <p><b>Solution:</b> Purchase snow fencing (living and other) to be used for wind and snow control throughout county.</p>	No	None	Within 2 years	Lewis County Soil and Water, Lewis County Highway Department	\$5,000	Reduced road closures and safer driving conditions during snowstorms	County budget	High	SIP/PP
Lewis County-15	Emergency Water Source	1, 2	Drought	<p><b>Problem:</b> An emergency water source needs to be established.</p> <p><b>Solution:</b> The county will identify an emergency water source centrally located in county.</p>	No	None	Within 5 years	Lewis County Emergency Management	TBD by location and access of selected water source	Safe and reliable drinking water source established for times of extreme drought.	County budget	High	LPR/PR
Lewis County-16	Countywide FIRM Update	1, 3	Flood	<p><b>Problem:</b> Best available flood mapping is needed.</p> <p><b>Solution:</b> Update flood hazard mapping for Black River and other areas</p>	No	None	Within 5 years	Lewis County Soil and Water	\$50,000	Best available flood mapping established.	County budget	High	LPR/PR, PI
Lewis County-17	Certified Floodplain Manager training	3	Flood	<p><b>Problem:</b> Floodplain managers require training. Those responsible for floodplain management are lacking in their knowledge of required duties. Training is</p>	No	None	Within 5 years	Lewis County Emergency Management/ Lewis County Codes Department	\$3,000	Certified floodplain managers trained. Floodplain management improved.	County budget	High	EAP/PI







Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category/CRS Category
				<p>sorely needed for all municipal officials and for code enforcement officials in charge of municipalities. Very little zoning precludes homeowners from building in floodplains, leading to problems later.</p> <p><b>Solution:</b> Obtain/host specialist training and certification for floodplain managers</p>									
Lewis County-18	Expansion of Hazard Related GIS Capabilities	1, 3	All hazards	<p><b>Problem:</b> More GIS information is needed for future HMP updates and public outreach.</p> <p><b>Solution:</b> Investigate expansion of hazard-related GIS capabilities via acquisition of HAZUS-MH to collect and develop more sophisticated hazard mapping and loss estimation. Use information in future HMP updates. Ensure information will be available to the public and to local communities and agencies.</p>	No	None	Within 5 years	Lewis County Emergency Management and local municipal agencies	TBD	GIS information able to be used in future plan updates.	County budget	High	LPR/PR
Lewis County-19	Undertake Year Build and Protection Level Survey of Critical Facilities	2	All hazards	<p><b>Problem:</b> Critical facilities need to be protected using higher building standards.</p> <p><b>Solution:</b> Undertake a year built and level of protection survey for all critical/emergency facilities and shelters to highlight structures built before codes and standards were put in place to</p>	Yes	None	Within 5 years	Lewis County Emergency Management and local municipal agencies	\$10,000	Facilities in need of upgrade identified.	County budget	High	LPR/PR



Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category/CRS Category
				provide protection from natural hazards. Pursue potential mitigation opportunities to protect these sites as funding becomes available.									
Lewis County-20	Wildfire Mapping	3	Wildfire	<p><b>Problem:</b> Wildfire risk needs to be mapped.</p> <p><b>Solution:</b> Create and distribute mapping and database of wildland access points for firefighters, develop enhanced mapping of urban/wildland interface.</p>	No	None	Within 5 years	Lewis County Emergency Management, Lewis County Planning, local municipal agencies	\$20,000	Areas with high wildfire risk identified.	County budget	High	LPR/PR
Lewis County-21	Stormwater Retention at Lewis County General Hospital	2	Flood	<p><b>Problem:</b> Stormwater drainage needs to be improved for the General Hospital.</p> <p><b>Solution:</b> Undertake feasibility study for a stormwater system at the Lewis County General Hospital. Install stormwater drainage system after feasibility study completed.</p>	Yes	None	Within 5 years	Lewis County Highway Department	To be determined after feasibility study.	Stormwater system improved. Flood risk reduced.	HMGP, County budget	High	SIP/SP
Lewis County-22	Winter Driving and Vehicle Preparation Education	3	Severe Winter Storm	<p><b>Problem:</b> Residents require education on winter driving.</p> <p><b>Solution:</b> Provide education opportunities for residents to learn winter driving techniques.</p>	No	None	Within 5 years	Lewis County Emergency Management	\$2,000	Residents educated on winter driving. Reduction in winter transportation accidents.	County budget	High	EAP/PI
Lewis County-23	Winter Storm Public Awareness and Preparation	3	Severe Winter Storm	<p><b>Problem:</b> Public needs to be educated on winter storms.</p> <p><b>Solution:</b> Increase public awareness of personal responsibilities during emergencies, specifically winter storm events.</p>	No	None	Within 5 years	Lewis County Emergency Management and local municipal agencies	\$2,000	Public needs to be educated on winter storms.	County budget	High	EAP/PI



Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem and Solution	Critical Facility (Yes/No)	EHP Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category/CRS Category
Lewis County-24	Emergency Warming Shelters	2, 3	Severe Winter Storm	<p><b>Problem:</b> Warming shelters are needed in the county for stranded motorists and those without proper shelter from cold temperatures.</p> <p><b>Solution:</b> Establish warming shelters for vulnerable populations, including residents and stranded motorists. Coordinate with local governments and other agencies to systematically contact isolated, vulnerable or special-needs population during severe winter storm events.</p>	Yes	None	Within 5 years	Lewis County Emergency Management and local municipal agencies	\$15,000	Decrease in cold temperature related deaths/injuries.	County budget	High	EAP, SIP/PI, SP
Lewis County-25	Auxiliary Power Supply	2	Severe Storm, Severe Winter Storm	<p><b>Problem:</b> Critical services need to be maintained during power outages.</p> <p><b>Solution:</b> Conduct a countywide survey on status of auxiliary power supplies at all critical facilities.</p>	Yes	None	Within 5 years	Lewis County Emergency Management and local municipal agencies	\$2,000	Critical services maintained during power outages	County budget	High	LPR, SIP/SP
Lewis County-26	Wind Hazards Training	3	Severe Storm	<p><b>Problem:</b> Officials need to be educated on how to mitigate wind damage.</p> <p><b>Solution:</b> Provide trainings to municipalities regarding the development and implementation of programs to mitigate wind damage to private and public properties.</p>	No	None	Within 5 years	Lewis County Emergency Management and local municipal agencies	\$2,000	Officials trained to mitigate wind damage	County budget	High	EAP/PI



Notes:

Not all acronyms and abbreviations defined below are included in the table.

\*Does this mitigation initiative reduce the effects of hazards on new and/or existing buildings and/or infrastructure? Not applicable (N/A) is inserted if this does not apply.

Acronyms and Abbreviations:

CAV	Community Assistance Visit
CRS	Community Rating System
DPW	Department of Public Works
EHP	Environmental and Historic Preservation
FEMA	Federal Emergency Management Agency
FPA	Floodplain Administrator
HMA	Hazard Mitigation Assistance
N/A	Not applicable
NFIP	National Flood Insurance Program
OEM	Office of Emergency Management

Potential FEMA HMA Funding Sources:

FMA	Flood Mitigation Assistance Grant Program
HMGF	Hazard Mitigation Grant Program
PDM	Pre-Disaster Mitigation Grant Program

Timeline:

The time required for completion of the project upon implementation

Cost:

The estimated cost for implementation.

Benefits:

A description of the estimated benefits, either quantitative and/or qualitative.

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities.

CRS Category:

- Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.
- Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.

Critical Facility:

- Yes ◆ - Critical facility is located in the 1% floodplain.



Table 9.1-10. Summary of Prioritization of Actions

Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
Lewis County-1	Outreach on power reduction during heat events.	1	0	1	1	1	1	1	1	1	1	0	0	1	1	11	High
Lewis County-2	Survey critical facilities to determine flood exposure	1	1	1	1	1	1	1	1	1	1	0	0	1	1	12	High
Lewis County-3	Black River – River Road – Watson	1	1	1	1	1	1	0	1	1	1	0	1	1	1	12	High
Lewis County-4	Bush’s Landing Lock	1	1	1	1	1	1	0	1	1	1	0	1	1	1	12	High
Lewis County-5	Mill Creek Floodplain access	1	0	1	1	1	1	0	1	1	1	0	1	1	1	11	High
Lewis County-6	Landslide mapping	1	1	1	1	1	1	1	1	1	1	0	0	1	1	12	High
Lewis County-7	Incorporate disaster mitigation into comprehensive plans	1	1	1	1	1	1	1	1	1	1	1	0	1	1	13	High
Lewis County-8	Outreach on Water Conservation and Drought Management	1	0	1	1	1	1	1	1	1	1	0	0	1	1	11	High
Lewis County-9	Stabilize Roaring Brook	1	1	1	1	1	1	1	1	1	1	0	0	1	1	12	High
Lewis County-10	East Martinsburg Roadway Elevation	1	1	1	1	1	1	0	1	1	1	0	1	1	1	12	High
Lewis County-11	Mill Creek debris removal and erosion control	1	1	1	1	1	1	1	1	1	1	0	0	1	1	12	High
Lewis County-12	Flood Gauge upgrades	1	0	1	1	1	1	0	1	1	1	0	0	1	1	10	High
Lewis County-13	Weather monitoring system	1	1	1	1	1	1	1	1	1	1	1	0	1	1	13	High
Lewis County-14	Snow Fencing	1	1	1	1	1	1	1	1	1	1	0	1	1	1	13	High
Lewis County-15	Emergency Water Source	1	0	1	1	1	1	0	1	1	1	0	0	1	1	10	High
Lewis County-16	Countywide FIRM Update	1	1	1	1	1	1	0	1	1	1	0	1	1	1	12	High
Lewis County-17	Certified Floodplain Manager training	1	1	1	1	1	1	0	1	1	1	0	0	1	1	11	High
Lewis County-18	Expansion of Hazard Related GIS Capabilities	1	1	1	1	1	1	1	1	1	1	1	0	1	1	13	High
Lewis County-19	Undertake Year Build and Protection Level Survey of Critical Facilities	1	1	1	1	1	1	1	1	1	1	1	0	1	1	13	High
Lewis County-20	Wildfire Mapping	1	1	1	1	1	1	1	1	1	1	0	0	1	1	12	High
Lewis County-21	Stormwater Retention at Lewis County General Hospital	1	1	1	1	1	1	0	1	1	1	0	0	1	1	11	High
Lewis County-22	Winter Driving and Vehicle Preparation Education	1	0	1	1	1	1	1	1	1	1	0	0	1	1	11	High
Lewis County-23	Winter Storm Public Awareness and Preparation	1	1	1	1	1	1	1	1	1	1	0	0	1	1	12	High
Lewis County-24	Emergency Warming Shelters	1	0	1	1	1	1	1	1	1	1	0	0	1	1	11	High
Lewis County-25	Auxiliary Power Supply	1	1	1	1	1	1	1	1	1	1	1	0	1	1	13	High
Lewis County-26	Wind Hazards Training	1	1	1	1	1	1	1	1	1	1	0	0	1	1	12	High

Note: Section 6 (Mitigation Strategy conveys guidance on prioritizing mitigation actions. Low (0-4), Medium (5-8), High (9-14). Changes to priority values are noted with an \*.





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### **9.1.7 Future Needs To Better Understand Risk/Vulnerability**

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None at this time.

### **9.1.8 Staff and Local Stakeholder Involvement in Annex Development**

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Lewis County followed the planning process described in Section 3 (Planning Process) in Volume I of this plan update. This annex was developed over the course of several months with input from many county departments, including: Director of Fire and Emergency Management and the Emergency Management Assistant and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Additional documentation on the municipality's planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix B (Meeting Documentation).

### **9.1.9 Hazard Area Extent and Location**

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Hazard area extent and location maps have been generated for the county that illustrate the probable areas impacted within the county. These maps are shown in the hazard profiles in Section 5 of the HMP.



Action Worksheet			
<b>Project Name:</b>	Black River – River Road Watson Streambank Erosion		
<b>Project Number:</b>	Lewis County-3		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Flooding		
<b>Description of the Problem:</b>	In the area of River Road Watson, a piece of property and eventually a house are eroding into the river. The property has been sold without having the problem addressed. Approximately 10 feet of the property has been lost. The current homeowner does not have means to fix the issue. If funding was available, there is no access to the streambank to stabilize it.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	The home will be purchased and removed, banks will be sloped and stabilized, and the property could be used for a recreation access point for canoes and kayaks. The property is for sale for \$77,600. Opportune time to purchase the property without eminent domain.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Property bought out	<b>Estimated Benefits (losses avoided):</b>	Property removed from floodplain
<b>Useful Life:</b>	100 years	<b>Goals Met:</b>	1
<b>Estimated Cost:</b>	\$150,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project, Natural Systems Protection
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	1 year
<b>Estimated Time Required for Project Implementation:</b>	2 years	<b>Potential Funding Sources:</b>	HMGP, County budget
<b>Responsible Organization:</b>	County, Town of Watson	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation Planning
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Streambank Protection	\$250,000	No Access to bank
	Roll house back from stream	\$75,000	Not enough room on property to adequately roll back from flood risk.
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			





Action Worksheet		
<b>Project Name:</b>	Black River – River Road Watson Streambank Erosion	
<b>Project Number:</b>	Lewis County-3	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
<b>Life Safety</b>	1	Removes home from floodplain
<b>Property Protection</b>	1	Removes property from floodplain
<b>Cost-Effectiveness</b>	1	
<b>Technical</b>	1	
<b>Political</b>	1	
<b>Legal</b>	1	The county has the legal authority to complete the project
<b>Fiscal</b>	0	The project requires funding support
<b>Environmental</b>	1	
<b>Social</b>	1	
<b>Administrative</b>	1	
<b>Multi-Hazard</b>	0	Flood
<b>Timeline</b>	1	Within 2 years
<b>Agency Champion</b>	1	Lewis County Soil and Water Conservation District
<b>Other Community Objectives</b>	1	
<b>Total</b>	12	
<b>Priority (High/Med/Low)</b>	High	



Action Worksheet			
<b>Project Name:</b>	Bush's Landing Lock Protection		
<b>Project Number:</b>	Lewis County-4		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Flooding		
<b>Description of the Problem:</b>	Former Lock of the Black River Navigational Canal system is crumbling into the river, causing a significant portion of the bank and lock to erode. This is the only navigation route to the river between Watson and Glenfield, and may be unnavigable for rescue boats, if not repaired.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	Streambank stabilization and stabilization of the canal lock to ensure emergency boats can move between Glenfield and Bush's Landing.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Built to withstand erosional forces	<b>Estimated Benefits (losses avoided):</b>	Emergency Management access
<b>Useful Life:</b>	100 years	<b>Goals Met:</b>	1
<b>Estimated Cost:</b>	\$150,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	2 years
<b>Estimated Time Required for Project Implementation:</b>	2 years	<b>Potential Funding Sources:</b>	Great Lake Restoration Initiative Water Quality Incentives Program
<b>Responsible Organization:</b>	County OEM	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Return canal banks to natural function	\$50,000	Loss of navigable channel
	Dredge canal	\$75,000	Canal lock continues to degrade
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Bush's Landing Lock Protection	
<b>Project Number:</b>	Lewis County-4	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project will maintain channel for emergency access
Property Protection	1	Project will protect from erosion
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The county has the legal authority to complete the project
Fiscal	0	Project requires funding support
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	0	Flood
Timeline	1	2 years
Agency Champion	1	Lewis County Soil and Water Conservation District
Other Community Objectives	1	
<b>Total</b>	12	
<b>Priority (High/Med/Low)</b>	High	



Action Worksheet			
<b>Project Name:</b>	Lewis County-5		
<b>Project Number:</b>	Mill Creek Floodplain Access		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Flooding and Ice Jams		
<b>Description of the Problem:</b>	Mill Creek has limited access to its original floodplain because a berm was constructed in its place, presumably to protect the Village of Lowville wastewater treatment plant. As a result, ice jams are forming and Waters Road continues to flood because of the ice jams.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	Remove the berm and take the spoil outside of the floodplain in order to allow Mill Creek to have access to its original floodplain.		
<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Restores natural floodplain	<b>Estimated Benefits (losses avoided):</b>	Prevent flooding and ice jams on the Mill Creek at the Village of Lowville and Town of Lowville boundary
<b>Useful Life:</b>	15 years	<b>Goals Met:</b>	1
<b>Estimated Cost:</b>	\$50,000	<b>Mitigation Action Type:</b>	Natural Systems Protection
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	6 months
<b>Estimated Time Required for Project Implementation:</b>	1 year	<b>Potential Funding Sources:</b>	HMGP, county budget
<b>Responsible Organization:</b>	Village of Lowville or Lewis County Soil and Water Conservation District	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Build stairs over berm	\$2,000	Natural floodplain function still not allowed.
	Remove portion of berm for walkway	\$2,000	Natural floodplain function still not allowed.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Lewis County-5	
<b>Project Number:</b>	Mill Creek Floodplain Access	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project will reduce flood risk
Property Protection	0	
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The county has the legal authority to complete the project
Fiscal	0	Project requires funding support
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	0	Flood
Timeline	1	
Agency Champion	1	Village of Lowville or Lewis County Soil and Water Conservation District
Other Community Objectives	1	Restore natural floodplain function
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	



Action Worksheet			
<b>Project Name:</b>	Stormwater Retention at Lewis County General Hospital		
<b>Project Number:</b>	Lewis County-21		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Flood		
<b>Description of the Problem:</b>	Stormwater drainage needs to be improved for the General Hospital.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	Undertake feasibility study for the construction of a 50-year design flood stormwater system at the Lewis County General Hospital. Install stormwater drainage system after feasibility study completed.		
<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	50-year	<b>Estimated Benefits (losses avoided):</b>	Stormwater system improved. Flood risk reduced.
<b>Useful Life:</b>	30 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	To be determined after feasibility study.	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	1 year	<b>Potential Funding Sources:</b>	HMGP, county Budget
<b>Responsible Organization:</b>	Lewis County Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation, Capital Improvement
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Install rain gardens	\$5,000	Not enough capacity for full stormwater load
	Install detention basins	\$75,000	Without proper design, may not be efficient or effective.
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Stormwater Retention at Lewis County General Hospital	
<b>Project Number:</b>	Lewis County-21	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project protects critical lifeline facility from flooding
Property Protection	1	Project protects hospital from flood damages
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The county has the legal authority to complete the project
Fiscal	0	Project requires funding support
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	0	Flood
Timeline	0	Within 5 years
Agency Champion	1	
Other Community Objectives	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	





## 9.2 VILLAGE OF CASTORLAND

This section presents the jurisdictional annex for the Village of Castorland. It includes resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions that can be implemented prior to a disaster to reduce or eliminate damage to property and people. This annex includes a general overview of the Village of Castorland and who in the village participated in the planning process, an assessment of the Village of Castorland’s risk and vulnerability, the different capabilities used in the village, and an action plan that will be implemented to achieve a more resilient community.

### 9.2.1 Hazard Mitigation Planning Team

The following individuals have been identified as the Village of Castorland’s hazard mitigation plan primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Derek Mellnitz Title: Superintendent of Public Works Phone Number: 315-608-0521 Address: PO Box 104, Castorland, NY 13620 Email: castorland@twcny.rr.com	Name: Robin Grunert Title: Clerk/Treasurer Phone Number: 315-523-0954 Address: PO Box 104, Castorland, NY 13620 Email: castorland@twcny.rr.com
Floodplain Administrator	
Name: Ward Dailey Title: Lewis County Codes Phone Number: 315-376-5377 Address: 7660 N State Street, Lowville, NY 13620 Email: permits@lewiscounty.ny.gov	

### 9.2.2 Municipal Profile

The Village of Castorland lies in the southeast part of the Town of Denmark in Lewis County in northern New York State. The village is bordered to the south by the Town of Lowville, the northwest by the Town of Carthage, and to the east by the Black River. The village is found on New York State Route 410 in the Town of Denmark, as presented in Section 9.7 (Town of Denmark) for their individual annex. The village has a mayor and board of trustees. The village has a total area of 0.3 square miles, all of which is land. The estimated 2017 population was 324, a 7.7 percent increase from the 2010 Census (351).

Data from the 2017 U.S. Census American Community Survey indicate that 8.3 percent of the village’s population is five years of age or younger, and 18.8 percent is 65 years of age or older. Communities must deploy a support system that enables all populations to safely reach shelters or to quickly evacuate a hazard area.

#### History and Cultural Resources

The Village of Castorland’s name means “Land of the Beaver”. The name comes from a colony of refugees from the French Revolution. The original colony was established in 1792 but was dissolved in 1814.

#### Growth/Development Trends

The Village of Castorland did not note any recent residential/commercial development since 2009 or any major residential or commercial development or major infrastructure development planned for the next five years in the municipality.





**Table 9.2-1. Growth and Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2009 to present</b>					
None					
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
None					

\* Only location-specific hazard zones or vulnerabilities identified.

### 9.2.3 Hazard Event History Specific to the Village of Castorland

Lewis County has a history of natural hazard events as detailed in Volume I, Section 5.0 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the county and its municipalities. The Village of Castorland’s history of federally-declared (as presented by FEMA) and significant hazard events (as presented in NOAA-NCEI) is consistent with that of Lewis County. Table 9.2-2 provides details regarding municipal-specific loss and damages the village experienced during hazard events. Information provided in the table below is based on reference material or local sources.

**Table 9.2-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April 26- May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	Although the county suffered damages, the village did not report damages from this event.
August 26- September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	Although the county suffered damages, the village did not report damages from this event.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	Although the county suffered damages, the village did not report damages from this event.
June 26-July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	Although the county suffered damages, the village did not report damages from this event.
May 13-22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	Although the county suffered damages, the village did not report damages from this event.



Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to a foot and half of snow within this band leading up to daybreak Friday.	Although the county suffered damages, the village did not report damages from this event.
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	Although the county suffered damages, the village did not report damages from this event.

Notes:

- EM Emergency Declaration (FEMA)
- DR Major Disaster Declaration (FEMA)

### 9.2.4 Hazard Ranking and Jurisdiction-Specific Vulnerabilities

The hazard profiles in Section 5.0 (Risk Assessment) have detailed information regarding each plan participant’s vulnerability to the identified hazards. This section provides a summary of exposure and impacts from significant hazards of concern as identified by the Village of Castorland.

#### Hazard Risk Ranking

This section includes the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard; its potential impacts on people, property, and the economy, community capability; and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating town or village might have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Village of Castorland. The Village of Castorland has reviewed the county hazard risk/vulnerability risk ranking table, as well as its individual results, to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the village indicated the following:

**Table 9.2-3. Village of Castorland Calculated Hazard Ranking**

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	Medium
Extreme Temperature	High	High
Flood	Medium	Medium
Hazardous Material Incidents	Medium	Medium





Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	High

Notes: The scale is based on the following hazard rankings as established in Section 5.3 (Hazard Ranking).

### Critical Facilities Flood Risk

NYS DEC Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for state projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a SFHA unless constructed according to specific mitigation specifications, including being raised 2 feet above the BFE. This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the State places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 500-year flood event, or worst damage scenario. For those that do not meet this criterion, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain and presents HAZUS-MH estimates of the damage and loss of use to critical facilities as a result of a 1-percent annual chance flood event.

Table 9.2-4. Potential Flood Losses to Critical Facilities

Name	Type	Exposure		Addressed by Proposed Action
		1% Event	0.2% Event	
Village of Castorland Wastewater Facility	Wastewater Facility	X	X	V. Castorland-3

Source: Lewis County Real Property 2018, FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000

### Identified Issues

The Village of Castorland has identified the following vulnerabilities within their community:

- The village has a repetitive loss property that remains vulnerable to flooding.
- Ridge road outside of the village has flooded.
- The Fire Department siren does not carry sound well and is vulnerable to power loss.
- The Elm Street Pump Station is vulnerable to power loss. A two-day power loss has previously threatened the village’s water supply.

### 9.2.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms





**Planning and Regulatory Capability**

The table below summarizes the regulatory tools that are available to the Village of Castorland. The village relies on Lewis County for administering municipal codes.

**Table 9.2-5. Planning and Regulatory Tools**

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Master Plan	Yes	Local	Village Board	Master Plan
Capital Improvements Plan	Yes	Local	Village Board	Capital Improvements Plan
Floodplain Management / Basin Plan	Yes	County	County Planning	Floodplain Management / Basin Plan
Stormwater Management Plan	Yes	County	County Planning	Stormwater Management Plan
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	No	-	-	-
Economic Development Plan	No	-	-	-
Comprehensive Emergency Management Plan	No	-	-	-
Emergency Operation Plan	No	-	-	-
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	No	-	-	-
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-
<b>Regulatory Capability</b>				
Building Code	Yes	State & Local	County Codes	NYS Building Code
Zoning Ordinance	No	-	-	-
Subdivision Ordinance	No	-	-	-
NFIP Flood Damage Prevention Ordinance	Yes	Federal, State, Local	County Codes	Flood Damage Prevention Ordinance
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	Yes	State, Local	County Codes	State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	No	-	-	-
Stormwater Management Ordinance	No	-	-	-



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Municipal Separate Storm Sewer System (MS4)	No	-	-	-
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	NY State, Real Estate Agents	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

**Administrative and Technical Capability**

The table below summarizes potential staff and personnel resources available to the Village of Castorland.

**Table 9.2-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	No	-
Mitigation Planning Committee	No	-
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	No	-
Maintenance programs to reduce risk	No	-
Mutual aid agreements	Yes	Local municipalities and the county.
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	No	-
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	No	-
Planners or engineers with an understanding of natural hazards	No	-
NFIP Floodplain Administrator (FPA)	Yes	Clerk/Treasurer is named as the FPA in the FDPO; County Codes performs floodplain administration for the village.
Surveyor(s)	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	No	-
Scientist familiar with natural hazards	No	-
Emergency Manager	No	-
Grant writer(s)	No	-
Staff with expertise or training in benefit/cost analysis	No	-



Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Professionals trained in conducting damage assessments	No	-

### Fiscal Capability

The table below summarizes financial resources available to the Village of Castorland.

**Table 9.2-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	No
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes
Impact fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	No
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No
Other federal or state Funding Programs	Yes
Open Space Acquisition funding programs	No
Other	No

### Community Classifications

The table below summarizes classifications for community programs available to the Village of Castorland.

**Table 9.2-8. Community Classifications**

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	Unknown	-
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	No	-	-
Public-private partnership initiatives addressing disaster-related issues	No	-	-
Other	No	-	-

Note:

N/A Not applicable

- Unavailable







The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery, and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10, with class 1 being the best possible classification and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual.
- The Building Code Effectiveness Grading Schedule (<https://www.isomitigation.com/bcegs/>).
- The ISO Mitigation online ISO’s Public Protection (<https://www.isomitigation.com/ppc/>).
- New York State Climate Smart Communities (<http://www.dec.ny.gov/energy/56876.html>).
- The National Weather Service Storm Ready (<https://www.weather.gov/stormready/communities>).
- The National Firewise Communities (<http://firewise.org/>).

### Self-Assessment of Capability

The table below provides an approximate measure of the Village of Castorland’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

Table 9.2-9. Self-Assessment Capability for the Village of Castorland

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Planning and regulatory capability		X	
Administrative and technical capability			X
Fiscal capability	X – limited funding available		
Community political capability	X – lower public support for funding projects		
Community resiliency capability		X	
Capability to integrate mitigation into municipal processes and activities		X	

### National Flood Insurance Program

This section provides specific information on the management and regulation of the regulatory floodplain.

#### NFIP Floodplain Administrator (FPA)

Ward Dailey, Lewis County Codes

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

The village does not maintain lists or inventories of properties that have been flood damaged or identify property owners who are interested in mitigation. The FPA stated that no structures were damaged in recent flood events. The FPA does not make Substantial Damage Determinations and stated that no property owners are listed in mitigation. Funding sources for mitigation have not been identified.





The following table summarizes the NFIP statistics for the Village of Castorland.

Table 9.2-10. NFIP Summary

Municipality	# Policies	# Claims (Losses)	Total Loss Payments	# Repetitive Loss Properties	# Severe Repetitive Loss Properties	# Policies in the 1% Flood Boundary
Village of Castorland	0	3	\$20,041	1	0	0

Source: FEMA Region 2, 2018

Notes:

- (1) Policies, claims, and repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.
  - (2) Total building and content losses from the claims file provided by FEMA Region 2.
  - (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file.
- FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility. A zero percentage denotes less than 1/100th percentage and not zero damage or vulnerability as may be the case. Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.

### Resources

The FPA assumes the responsibilities of floodplain administration with the help of additional staff. The FPA stated that the village does not provide NFIP administrative services or functions or provide education or outreach to the community regarding flood hazards/risk and flood risk reduction through NFIP insurance, mitigation, etc. The FPA does not feel there are any barriers to running an effective floodplain management program in the community but does not feel adequately supported and trained to fulfill their responsibilities as the municipal floodplain manager. The FPA stated that they would consider attending education and/or certification training on floodplain management if it were offered in the county for local floodplain administrators.

### Compliance History

The Village of Castorland is in good standing in the NFIP. Records from NYS indicate that the village has not had a compliance audit [e.g. Community Assistance Visit (CAV)].

### Regulatory

Enforcement of the village’s flood damage prevention ordinance is performed by the Lewis County Codes Department. The village’s floodplain management regulations/ordinances meet the FEMA and State minimum requirements. The FPA stated there are no other local ordinances, plans, or programs that support floodplain management and meeting the NFIP requirements. The FPA stated that the village has not considered joining the CRS to reduce flood insurance premiums for their insured.

### Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community’s progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures, which is also indicated below.



## Planning

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### Existing Integration

The village does not have a Master/Comprehensive Plan or Stormwater Management Plan and is not an MS4 Regulated Community. The village does not have a Re-Development Plan, Growth Plan, Economic Development Plan, Open Space Plan, Watershed/Stream Corridor Management Plan, Local Waterfront Revitalization Plan, Continuity of Operations/Continuity of Government plan, Comprehensive Emergency Management Plan, Post Disaster Recovery Plan, or Strategic Recovery Plan.

### Opportunities for Future Integration

The village could develop planning documents that incorporate hazard mitigation.

## Regulatory and Enforcement (Ordinances)

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### Existing Integration

The municipal zoning regulations, subdivision regulations, and site plan review process do not consider natural hazard risk or require developers to take additional actions to mitigate natural hazard risk. The Planning Board/Zoning Board of Adjustment are not provided with data, information, or tools to guide their decisions with respect to natural hazard risk management.

### Opportunities for Future Integration

The village could enact regulations that require developers to take additional actions to mitigate natural hazard risk.

## Operational and Administration

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### Existing Integration

The village does not have a municipal planner or contract planning firm. The village has a Planning Board/Zoning Board of Adjustment, but the board has never met. The village does not have any other boards or committees that include functions with respect to managing natural hazard risk. Stormwater Management and NFIP Floodplain Management functions are performed by Derek Mellnitz, Superintendent of Public Works. The village contracts with firms that have experience with developing Benefit-Cost Analysis, performing Substantial Damage Determinations, and developing grant applications for mitigation projects. Village staff do not get training or continuing professional education which supports natural hazard risk reduction. The Clerk and the Superintendent of Public Works would benefit from additional training and/or certification with respect to natural hazard risk management. None of the village staff have job descriptions that specifically include identifying and/or implementing mitigation projects/actions or other efforts to reduce natural hazard risk. No village staff or departments participate in associations, organizations, groups, or other committees that support natural hazard risk reduction and build hazard management capabilities.

### Opportunities for Future Integration

Village staff could receive training or continuing professional education which supports natural hazard reduction.

## Funding

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### Existing Integration

The village's municipal/operating budget does not include line items for mitigation projects/activities. The village has a Capital Improvements Budget that includes budget for mitigation-related projects. The village has



not pursued or been awarded grant funds for mitigation-related projects. The village does not have any other mechanisms to fiscally support hazard mitigation projects.

### Opportunities for Future Integration

The village could supplement the funding in the Capital Improvements Budget by pursuing grant funding to support hazard mitigation.

### Education and Outreach

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#### Existing Integration

The Village of Castorland does not have any public outreach mechanisms/programs in place to inform citizens on natural hazards. The village operates a municipal website (<http://www.villageofcastorlandny.org/>), which includes municipal information, public notices, and community contacts.

#### Opportunities for Future Integration

The village could develop educational programs to inform citizens on natural hazards and host educational information on the village website.

### Sheltering, Evacuation, and Temporary Housing

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Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

#### Evacuation and Sheltering Needs

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The Village of Castorland has not designated emergency shelters, evacuation routes, or evacuation procedures. For shelters, the Village will evaluate the use of the municipal hall to serve as a warming/cooling center in the event of power outages. Evacuation routes and shelters would be determined at the time of an emergency, in accordance with the County CEMP. While the Village does not have a formal evacuation plan, the major roads in and out of the Village can serve as evacuation routes if needed.

#### Temporary and Permanent Housing

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The Village of Castorland has not identified sites for the placement of temporary housing for residents displaced by a disaster or potential sites suitable for relocating houses of the floodplain and/or building new homes once properties in the floodplain are acquired. In the event temporary housing was needed, the village would work with the county to find suitable locations.

## 9.2.6 Mitigation Strategy and Prioritization

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This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and their prioritization.

### Past Mitigation Initiative Status

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The following table indicates progress on the community’s mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under ‘Capability Assessment’ presented previously in this annex.



Table 9.2-11. Status of Previous Mitigation Actions

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection	
	Replace current sewage treatment facility: relocate out of the floodplain, with improvements and enlargements to accommodate future flows	Flooding of critical facility, pollution of Black River	Sewage treatment plant is vulnerable to flooding	Public works, Clerk/Treasurer	Complete	Cost	Level of Protection	1. Discontinue 2. 3. Project Completed
	Install new storm sewers	Flooding	Storm sewers are outdated	Public Works	Complete	Cost	Level of Protection	1. Discontinue 2. 3. Project Completed
	Relocate and replace current emergency alarm system	Multiple: Provide better access to emergency personnel and community	Emergency alarm system is outdated.	Public Works and Fire Company	In Progress	Cost	Level of Protection	1. Include in 2020 HMP 2. To be completed in 2019 or 2020. 3.
	Purchase a large generator (20,000kw) for use during long periods of power outages	Multiple, provide water in case of emergency	Backup power source is needed	Public Works	Complete	Cost	Level of Protection	1. Discontinue 2. 3. Project Completed



### **Completed Mitigation Initiatives Not Identified in the Previous Mitigation Strategy**

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The Village of Castorland has performed ongoing maintenance projects to reduce the impact of flooding but has not identified specific mitigation projects/activities that have been completed but were not identified in the previous mitigation strategy in the 2010 Plan.

### **Proposed Hazard Mitigation Initiatives for the Plan Update**

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The Village of Castorland participated in a mitigation action workshop on December 17, 2018.

Table 9.2-12 summarizes the comprehensive-range of specific mitigation initiatives the Village of Castorland would like to pursue in the future to reduce the effects of hazards. Some of these initiatives may be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6 (Mitigation Strategy), 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.2-13 provides a summary of the prioritization of all proposed mitigation initiatives for the village.



Table 9.2-12. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
V. Castorland-1	Relocate and replace current emergency alarm system to Wastewater Treatment Plant.	<b>Problem:</b> The Fire Department's siren is outdated. The current location for the siren is not optimal for sound to carry through the village. The current location also lacks a backup power source.	<b>Solution:</b> The village will relocate the fire siren from the Fire Department to the Wastewater Treatment Plant. The Plant is situated in a better area for sound to carry and has a backup power source.	All Hazards	2	Yes	None	Within 1 year	Public Works, Fire Company	\$15,000	Emergency Alarm system more effective and protected from power loss	Municipal budget	High	SIP	PP, ES
V. Castorland-2	Backup generator for pump station on Elm Street.	<b>Problem:</b> The pump station located at 9625 Elm Street lacks a backup power source. In the past, extended periods of power loss have threatened the village's water supply. The village water tower is being replaced in 2 years and to run efficiently needs the pump station to be effective .	<b>Solution:</b> The village will purchase and install the generator and necessary electrical components to provide backup power for the Elm Street pump station.	All Hazards	2	Yes	None	Within 2 years	Highway Department	\$15,000-20,000	Pump station protected from power loss	HMGP, PDM, municipal budget	High	SIP	PP, ES
V. Castorland-3	Protect the Village of Castorland Wastewater Facility to the 500-	<b>Problem:</b> The Wastewater Facility is in the 100-year floodplain. In 2015, the facility was updated, and flood protections that were put in place might not be up to 500-year elevation standard.		Flood	2	Yes	None	Within 6 months	Facilities manager, Village	\$1,000	Wastewater Facility protected to the 500-year flood level	HMGP, PDM, CDBG, Municipal budget	Medium	SIP	PP







Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
	year flood level.	<b>Solution:</b> The village will determine the level of protection that was put in place in 2015. If additional protections are necessary, the village will work to meet standards.													
V. Castorland-4	Work with repetitive loss property owner to determine appropriate mitigation technique.	<b>Problem:</b> The village has a repetitive loss property that remains vulnerable to flood damages. <b>Solution:</b> The village will work with the property owner to discuss mitigation options (elevation, buyout, etc.) and help find funding sources.		Flood	2, 3	No	None	Within 6 months	Clerk, County	<\$100	Repetitive loss property mitigated from future flood damages	Municipal budget	Medium	EAP	PI

**Notes:**

Not all acronyms and abbreviations defined below are included in the table.

Acronyms and Abbreviations:

- CAV Community Assistance Visit
- CRS Community Rating System
- DPW Department of Public Works
- EHP Environmental Planning and Historic Preservation
- FEMA Federal Emergency Management Agency
- FPA Floodplain Administrator
- HMA Hazard Mitigation Assistance
- N/A Not applicable
- NFIP National Flood Insurance Program
- OEM Office of Emergency Management

Potential FEMA HMA Funding Sources:

- FMA Flood Mitigation Assistance Grant Program
- HMGP Hazard Mitigation Grant Program
- PDM Pre-Disaster Mitigation Grant Program

Timeline:

The time required for completion of the project upon implementation

Cost:

The estimated cost for implementation.

Benefits:

A description of the estimated benefits, either quantitative and/or qualitative.

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities

CRS Category:





- *Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.*
- *Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.*
- *Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.*
- *Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.*
- *Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.*
- *Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.*

Critical Facility:


- Yes  - Critical Facility in 1% floodplain.



Table 9.2-13. Summary of Prioritization of Actions

Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community	Total	High / Medium / Low
V. Castorland-1	Relocate and replace current emergency alarm system to Wastewater Treatment Plant.	1	1	1	1	1	1	0	1	1	1	1	1	1	1	13	High
V. Castorland-2	Backup generator for pump station on Elm Street.	1	1	1	1	1	1	0	1	1	1	1	1	1	1	13	High
V. Castorland-3	Protect the Wastewater Facility to the 500-year flood level.	0	1	0	0	1	1	0	1	1	1	0	0	1	1	8	Medium
V. Castorland-4	Work with repetitive loss property owner to determine appropriate mitigation technique.	0	1	0	1	1	0	1	1	0	0	0	1	1	0	7	Medium

Note: Refer to Section 6 (Mitigation Strategy), which conveys guidance on prioritizing mitigation actions. Low (0-4), Medium (5-8), High (9-14).



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### **9.2.7 Future Needs To Better Understand Risk/Vulnerability**

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None at this time.

### **9.2.8 Staff and Local Stakeholder Involvement in Annex Development**

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The Village of Castorland followed the planning process described in Section 3 (Planning Process). This annex was developed over the course of several months with input from many village departments, including: Superintendent of Public Works and the Clerk/Treasurer. The Superintendent of Public Works represented the community on the Lewis County Hazard Mitigation Plan Planning Partnership and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Additional documentation on the Village of Castorland’s planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix B (Meeting Documentation).

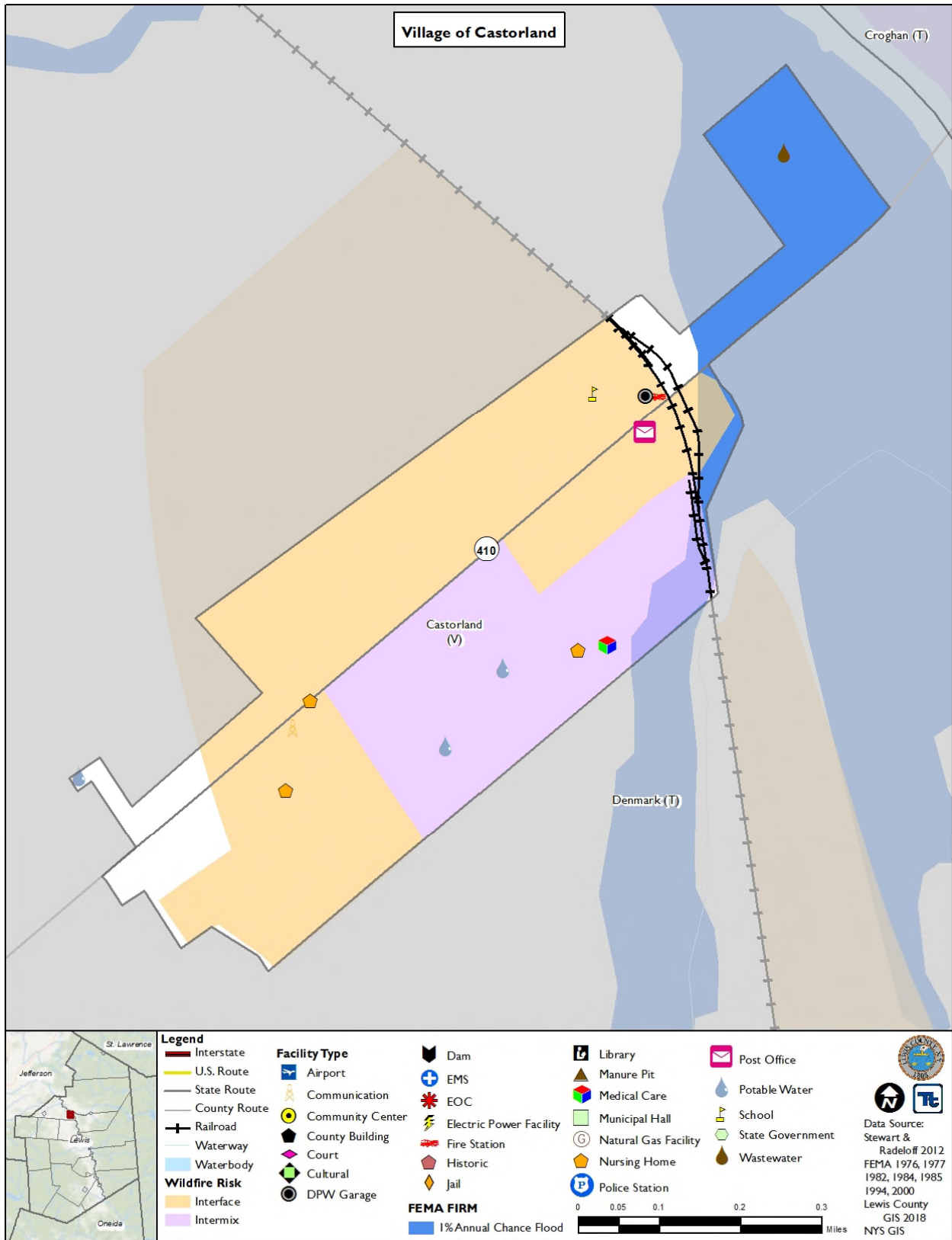
### **9.2.9 Hazard Area Extent and Location**

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Hazard area extent and location maps have been generated for the Village of Castorland that illustrate the probable areas impacted within the Village of Castorland. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps have been generated for only those hazards that can be clearly identified using mapping techniques and technologies and for which the Village of Castorland has significant exposure. A map of the Village of Castorland hazard area extent and location is provided on the following page. This map indicates the location of the regulatory floodplain, as well as identified critical facilities within the Village of Castorland.



Figure 9.2-1. Village of Castorland Hazard Area Extent and Location Map





Village of Castorland Action Worksheet			
<b>Project Name:</b>	Relocate and replace current emergency alarm system to Wastewater Treatment Plant		
<b>Project Number:</b>	V. Castorland-1		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	All Hazards		
<b>Description of the Problem:</b>	The Fire Department's siren is outdated. The current location for the siren is not optimal for sound to carry through the village. The current location also lacks a backup power source.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	The Village of Castorland will relocate the fire siren from the Volunteer Fire Department to the Wastewater Treatment Plant. The Plant is situated in a better area for sound to carry and has a backup power source. The village will install a new 14V AC Warning Siren at the site.		
<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Flood protection addressed by V. Castorland-3
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Emergency services protected	<b>Estimated Benefits (losses avoided):</b>	Emergency alarm system more effective and protected from power loss
<b>Useful Life:</b>	30 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$15,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 3 years
<b>Estimated Time Required for Project Implementation:</b>	Within 1 year	<b>Potential Funding Sources:</b>	HMGP, PDM, Municipal budget
<b>Responsible Organization:</b>	Public Works, Fire Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Find other location for Fire Siren	\$60,000	Costly to develop new property. Backup power source needed.
	Install generator at Fire Station	\$15,000-20,000	Fire siren still not as audible as necessary.
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Relocate and replace current emergency alarm system to Wastewater Treatment Plant	
<b>Project Number:</b>	V. Castorland-1	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project protects critical functions of fire department
Property Protection	1	
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The village has the legal authority to complete the project
Fiscal	0	Project requires financial assistance
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	All hazards
Timeline	1	Within 1 year
Agency Champion	1	Public Works and Fire Department
Other Community Objectives	1	
<b>Total</b>	13	
<b>Priority (High/Med/Low)</b>	High	





Village of Castorland Action Worksheet			
<b>Project Name:</b>	Backup generator for pump station on Elm Street.		
<b>Project Number:</b>	V. Castorland-2		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	All Hazards		
<b>Description of the Problem:</b>	The pump station located at 9625 Elm Street lacks a backup power source. In the past, extended periods of power loss have threatened the village's water supply. The village water tower is being replaced in 2 years and needs the pump station to be effective in order to be efficient.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	The village will determine the appropriate size generator necessary to support the pump station. The village will purchase and install the generator and necessary electrical components.		
<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	No power loss	<b>Estimated Benefits (losses avoided):</b>	Pump station protected from power loss; water supply protected.
<b>Useful Life:</b>	30 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$15,000-20,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 2 years
<b>Estimated Time Required for Project Implementation:</b>	6 months	<b>Potential Funding Sources:</b>	HMGP, PDM, municipal budget
<b>Responsible Organization:</b>	Public Works	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	Action	Estimated Cost	Evaluation
	No Action	\$0	Problem continues.
	Solar panels	\$20,000	Weather dependent
	Microgrid	\$250,000	Costly, may not fully prevent power loss
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Backup generator for pump station on Elm Street.	
<b>Project Number:</b>	V. Castorland-2	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project protects water supply.
Property Protection	1	Generator protects critical facility from power loss.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The village has the legal authority to complete the project.
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	All hazards
Timeline	1	
Agency Champion	1	Public Works
Other Community Objectives	1	Protection of critical functions
<b>Total</b>	13	
<b>Priority (High/Med/Low)</b>	High	



Village of Castorland Action Worksheet			
<b>Project Name:</b>	Protect the Village of Castorland Wastewater Facility to the 500-year flood level.		
<b>Project Number:</b>	V. Castorland-3		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Flood		
<b>Description of the Problem:</b>	The Wastewater Facility is in the 100-year floodplain. In 2015, the facility was updated, and flood protections that were put in place might not be up to 500-year elevation standard.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The village will determine the level of protection that was put in place in 2015. If additional protections are necessary, the village will work to meet standards.		
<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	N/A	<b>Estimated Benefits (losses avoided):</b>	Wastewater Facility protected to the 500-year flood level
<b>Useful Life:</b>	N/A	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$1,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	Medium	<b>Desired Timeframe for Implementation:</b>	Within 2 years
<b>Estimated Time Required for Project Implementation:</b>	6 months	<b>Potential Funding Sources:</b>	HMGP, PDM, CDBG, Municipal budget
<b>Responsible Organization:</b>	Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Elevate facility	\$1 million+	Not feasible – entire facility cannot be elevated
	Relocate facility	\$1 million+	Costly; not available land to relocate facility
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Protect the Village of Castorland Wastewater Facility to the 500-year flood level.	
<b>Project Number:</b>	V. Castorland-3	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Protect structure from 500-year flood events
Cost-Effectiveness	0	
Technical	0	
Political	1	
Legal	1	The village has the legal authority to complete the project.
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	0	Flood
Timeline	0	
Agency Champion	1	Public Works
Other Community Objectives	1	Protection of critical functions
<b>Total</b>	8	
<b>Priority (High/Med/Low)</b>	Medium	



### 9.3 VILLAGE OF CONSTABLEVILLE

This section presents the jurisdictional annex for the Village of Constableville. It includes resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions that can be implemented prior to a disaster to reduce or eliminate damage to property and people. This annex includes a general overview of the Village of Constableville and who in the village participated in the planning process, an assessment of the Village of Constableville’s risk and vulnerability, the different capabilities used in the village, and an action plan that will be implemented to achieve a more resilient community.

#### 9.3.1 Hazard Mitigation Planning Team

The following individuals have been identified as the Village of Constableville’s hazard mitigation plan primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Joseph Genter Title: Constableville Trustee Phone Number: 315-397-8172 Address: 5938 John St, Constableville, NY 13325 Email: Jgenter@twcny.rr.com	Name: Mark Sullivan Title: Constableville Trustee Phone Number: 315-397-2578 Address: PO Box 403, Constableville, NY 13325 Email: C-villesull@hotmail.com
Floodplain Administrator	
Name: Ward Dailey Title: Lewis County Code Enforcement Official Phone Number: 315-377-2037 Address: 7660 North State Street Lowville, NY 13367 Email: warddailey@lewiscounty.ny.gov	

#### 9.3.2 Municipal Profile

The Village of Constableville lies within in the Town of West Turin in south central Lewis County in northern New York State. The annex in Section 9.26 (Town of West Turin) provides the town’s individual annex. The estimated 2017 population of the village was 267, a 10.3 percent increase from the 2010 Census (242).

Data from the 2017 U.S. Census American Community Survey indicate that 10.9 percent of the village population is five years of age or younger and 10.5 percent is 65 years of age or older. Communities must deploy a support system that enables all populations to safely reach shelters or to quickly evacuate a hazard area.

#### History and Cultural Resources

The village was the first settlement in the Town of West Turin in 1796. The Constableville Village Historic District, Jonathan C. Collins House and Cemetery, and Constable Hall are listed on the National Register of Historic Places.

#### Growth/Development Trends

The Village of Constableville did not note any residential/commercial development that has occurred since 2013 or any planned major residential or commercial development, or major infrastructure development anticipated in the next five years.



**Table 9.3-1. Growth and Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2010 to present</b>					
None					
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
None anticipated					

\* Only location-specific hazard zones or vulnerabilities identified.

### 9.3.3 Hazard Event History Specific to the Village of Constableville

Lewis County has a history of natural hazard events as detailed in Volume I, Section 5.0 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the county and its municipalities. The Village of Constableville’s history of federally-declared (as presented by FEMA) and significant hazard events (as presented in NOAA-NCEI) is consistent with that of Lewis County. Table 9.3-2 provides details regarding municipal-specific loss and damages the village experienced during hazard events. Information provided in the table below is based on reference material or local sources.

**Table 9.3-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April 26-May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	Although the county reported damages, no damages were reported in the village.
August 26-September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	Although the county reported damages, no damages were reported in the village.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	Although the county reported damages, no damages were reported in the village.
June 26-July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	Although the county reported damages, no damages were reported in the village.
May 13-22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	Although the county reported damages, no damages were reported in the village.
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour produced an average of a foot to a foot and half of snow within this band.	Although the county reported damages, no damages were reported in the village.



Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	Although the County reported damages, no damages were reported in the village.
January 12, 2018	Rain & Ice Melt & Ice Dam in Sugar River	No	Ice Dam on Sugar River near the Sewer Plant.	The Blossoms & Blooms Greenhouse was impacted; excavators and private backhoe were hired to break up ice dam in the stream by the library/mini storage; Extra payroll was expended for laborer and volunteer time for Mayors and Trustees; Cost for excavators and extra payroll was \$4,270

Notes:

EM Emergency Declaration (FEMA)  
 DR Major Disaster Declaration (FEMA)

### 9.3.4 Hazard Ranking and Jurisdiction-Specific Vulnerabilities

The hazard profiles in Section 5.0 (Risk Assessment) have detailed information regarding each plan participant’s vulnerability to the identified hazards. This section provides a summary of exposure and impacts from significant hazards of concern as identified by the Village of Constableville.

#### Hazard Risk Ranking

This section includes the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard; the hazard’s potential impacts on people, property, and the economy; the community capability; and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating town or village may have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Village of Constableville. The Village of Constableville has reviewed the county hazard risk/vulnerability risk ranking table, as well as its individual results, to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the village indicated the following:

**Table 9.3-3. Village of Constableville Calculated Hazard Ranking**

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	Medium
Extreme Temperature	High	High
Flood	Medium	Low





Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Hazardous Material Incidents	Medium	Medium
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	High

Notes: The scale is based on the following hazard rankings as established in Section 5.3.

### Critical Facilities Flood Risk

NYS DEC Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for state projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a SFHA unless constructed according to specific mitigation specifications, including being raised 2 feet above the BFE. This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the state places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 500-year flood event, or worst damage scenario. For those that do not meet these criteria, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain and presents HAZUS-MH estimates of the damage and loss of use to critical facilities as a result of a 1-percent annual chance flood event.

Table 9.3-4. Potential Flood Losses to Critical Facilities

Name	Type	Exposure		Addressed by Proposed Action
		1% Event	0.2% Event	
None identified				

Source: Lewis County Real Property 2018, FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000

### Identified Issues

The Village of Constableville has identified the following vulnerabilities within their community:

- Culvert on North Main Street is undersized.
- Culvert on High Street is undersized.
- Water lines break due to the cold, resulting in constant leaks and the need to replace lines.
- Small ditches on private property are overgrown with brush, which floods roadways. This is a problem on North Main Street.
- An unnamed stream clogged with debris floods between High Street and North Main Street.
- A sewer pump station between the Sugar River and Route 26 floods.

### 9.3.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability





- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms

**Planning and Regulatory Capability**

The table below summarizes the regulatory tools that are available to the Village of Constableville.

**Table 9.3-5. Planning and Regulatory Tools**

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Comprehensive Plan	No	-	-	-
Capital Improvements Plan	No	-	-	-
Floodplain Management / Basin Plan	No	-	-	-
Stormwater Management Plan	No	-	-	-
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	No	-	-	-
Economic Development Plan	No	-	-	-
Comprehensive Emergency Management Plan	No	-	-	-
Emergency Operation Plan	No	-	-	-
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	No	-	-	-
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-
<b>Regulatory Capability</b>				
Building Code	Yes	State & Local	Lewis County Codes Dept	Lewis County Local Law #9 of 2006
Zoning Ordinance	Yes	Town	Town of West Turin Zoning Board	The Village does not have a zoning board and utilizes the Town of West Turin’s Zoning Board. Village of Constableville Local Law #1 of 1992 Village of Constableville Local Law #2 of 2018
Subdivision Ordinance	No	-	-	-
NFIP Flood Damage Prevention Ordinance	Yes	Federal, State, Local	Village Board	Village of Constableville Local Law #2 of 1992; Local Law No. 1 of 2019
NFIP: Cumulative Substantial Damages	No	-	-	-



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
NFIP: Freeboard	Yes	State, Local	Village Board	State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	No	-	-	-
Stormwater Management Ordinance	No	-	-	-
Municipal Separate Storm Sewer System (MS4)	No	-	-	-
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	NYS, Real Estate Agents	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

### Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the Village of Constableville.

**Table 9.3-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	No	-
Mitigation Planning Committee	Yes	Village Board
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	No	-
Maintenance programs to reduce risk	No	-
Mutual aid agreements	No	-
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	No	-
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	No	-
Planners or engineers with an understanding of natural hazards	No	-
NFIP Floodplain Administrator (FPA)	Yes	Lewis County
Surveyor(s)	No	-



Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	No	-
Scientist familiar with natural hazards	No	-
Emergency Manager	Yes	Lewis County – Robert MacKenzie
Grant writer(s)	Yes	Tug Hill Commission
Staff with expertise or training in benefit/cost analysis	No	-
Professionals trained in conducting damage assessments	No	-

### Fiscal Capability

The table below summarizes financial resources available to the Village of Constableville.

**Table 9.3-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes
Impact fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	No
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No
Other federal or state Funding Programs	No
Open Space Acquisition funding programs	No
Other	No

### Community Classifications

The table below summarizes classifications for community programs available to the Village of Constableville.

**Table 9.3-8. Community Classifications**

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	9	-
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Natural disaster/safety programs in/for schools	No	-	-





Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	Yes	Village Tax Bills, Water & Sewer Bills	
Public-private partnership initiatives addressing disaster-related issues	No	-	-
Other	No	-	-

Note:

- Unavailable

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance, while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class 1 being the best possible classification and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule (<https://www.isomitigation.com/bcegs/>)
- The ISO Mitigation online ISO’s Public Protection website at <https://www.isomitigation.com/ppc/>
- New York State Climate Smart Communities (<http://www.dec.ny.gov/energy/56876.html>)
- The National Weather Service Storm Ready website at <https://www.weather.gov/stormready/communities>
- The National Firewise Communities website at <http://firewise.org/>

### Self-Assessment of Capability

The table below provides an approximate measure of the Village of Constableville’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

**Table 9.3-9. Self-Assessment Capability for the Village of Constableville**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Planning and regulatory capability	X - Limited staff		
Administrative and technical capability	X - Limited staff		
Fiscal capability	X - Limited staff		
Community political capability	X - Limited staff		
Community resiliency capability	X - Limited staff		





Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Capability to integrate mitigation into municipal processes and activities	X - Limited staff		

### National Flood Insurance Program

This section provides specific information on the management and regulation of the regulatory floodplain.

#### NFIP Floodplain Administrator (FPA)

Ward Dailey, Lewis County Codes

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

The village does not maintain lists or inventories of properties that have been flood damaged. The only known structure to sustain damage from flooding in the village since 2010 is the Blossoms and Blooms Greenhouse, which was damaged by the Januray 2018 ice dam. The village does not make substantial damage determinations.

The following table summarizes the NFIP statistics for the Village of Constableville.

**Table 9.3-10. NFIP Summary**

Municipality	# Policies	# Claims (Losses)	Total Loss Payments	# RL Properties	# SRL Properties	# Policies in the 1% Flood Boundary
Village of Constableville	0	0	0	0	0	0

Source: FEMA Region 2, 2018

Notes:

- (1) Policies, claims, and repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.
  - (2) Total building and content losses from the claims file provided by FEMA Region 2.
  - (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file.
- FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility. A zero percentage denotes less than 1/100th percentage and not zero damage or vulnerability as may be the case. Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.

### Resources

Lewis County is the floodplain administrator for the Village of Constableville.

### Compliance History

The Village of Constableville is in good standing in the NFIP. According to records from NYS, the last compliance audit [e.g. Community Assistance Visit (CAV)] took place on August 24, 1994.

### Regulatory

The Lewis County Codes Department is responsible for the enforcement of the Village of Constableville’s Flood Damage Prevention Ordinance (Local Law #2 of 1992). The ordinance regulates development in the floodplain.

### Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better



understanding of their community's progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures, which is also indicated below.

## Planning

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### Existing Integration

The village's planning is covered by the county. The village does not have a Re-Development Plan, Growth Plan, Economic Development Plan, Open Space Plan, Watershed/Stream Corridor Management Plan, Local Waterfront Revitalization Plan, or Continuity of Operations/Continuity of Government plan. The village uses the county's planning for Post-Disaster Recovery and Strategic Recovery.

### Opportunities for Future Integration

The village could develop their own planning documents. New planning documents would consider natural hazards and refer to the Lewis County HMP.

## Regulatory and Enforcement (Ordinances)

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### Existing Integration

Zoning, subdivision, and site plan review for the village is conducted by Lewis County.

### Opportunities for Future Integration

The village could update the village's ordinances to create higher standards.

## Operational and Administration

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### Existing Integration

The village does not have a municipal planner or contract planning firm. Village staff do not receive training or continuing professional education to support natural hazard risk reduction. No staff have job descriptions that include identifying or implementing mitigation projects. The village relies on the County Planning Board and West Turin Zoning Board. The County Codes Department performs the stormwater management functions in the village. NFIP Floodplain Management functions in the village are carried out by the county. The village does not have any boards or committees that include functions with respect to managing natural hazard risk or staff that participate in associations, organizations, groups, or other committees that support natural hazard risk reduction and build hazard management capabilities.

### Opportunities for Future Integration

The village could hire additional staff to perform stormwater management, NFIP Floodplain Management, and other tasks related to hazard management.

## Funding

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### Existing Integration

The village's municipal/operating budget and Capital Improvements Budget do not include line items for mitigation projects. The village has applied for and been awarded grant funding for mitigation projects in the past. FEMA funding was awarded for the stabilization of the Sugar River riverbank by the Waste Water Sewer





Treatment Plant at 75% of the project with a 25% local share. The village does not have any other funding mechanisms to support hazard mitigation projects.

### Opportunities for Future Integration

The village could include a line item for mitigation projects in the municipal budget or Capital Improvements Budget. The village could continue to apply for grant funding to support hazard mitigation.

### Education and Outreach

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#### Existing Integration

The Village of Constableville includes outreach and educational materials on hazards through the Village Tax Bills and Water & Sewer Bills.

#### Opportunities for Future Integration

The village could make educational materials available at community events.

### Sheltering, Evacuation, and Temporary Housing

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Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

#### Evacuation and Sheltering Needs

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The Village of Constableville has designated the following emergency shelters, evacuation routes, or evacuation procedures:

- The village has identified the Constableville Fire Department building on Main Street as the designated emergency shelter. The facility can accommodate 60 evacuees inside, is ADA compliant, has backup power, and includes ambulance and EMT access.

While the Village does not have a formal evacuation plan, major roadways in and out of the Village can serve as evacuation routes if needed.

#### Temporary and Permanent Housing

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The Village of Constableville identified the following site for the placement of temporary housing for residents displaced by a disaster:

- The village identified the Constableville Fire House on Main Street and Flywheels & Pulleys on State Route 26 as potential sites for temporary housing for residents displaced by a disaster. Both facilities have capacities to handle approximately 50 trailers.

The Village of Constableville identified the following potential sites suitable for relocating houses of the floodplain and/or building new homes once properties in the floodplain are acquired:

- The village identified Farmer's Field on Route 26 and the Historical Property on John Street as potential sites within the village suitable for relocating houses of the floodplain and/or building new homes once properties in the floodplain are acquired. The capacity would also be approximately 50 homes at Farmer's field. The capability would be approximately 35 for the Historical Property. Both sites would require additional electric, water, and sewers.



### 9.3.6 Mitigation Strategy and Prioritization

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This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and their prioritization.

#### Past Mitigation Initiative Status

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The following table indicates progress on the community’s mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under ‘Capability Assessment’ presented previously in this annex.



Table 9.3-11. Status of Previous Mitigation Actions

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinued, explain why.
						Cost	Unknown	
	<u>Rebuild High Street</u> Rebuild drainage on High Street.	Flooding of and washing out of High Street.	Culvert could not handle the amount of water coming down High Street ditch.	Village of Constableville	Complete	Level of Protection	High	1. Discontinue 2. 3. Complete
	<u>North Main Street Storm Drains</u> Upgrade existing storm drains on North Main Street	Flooding in cellars of residents and ponding in road.	Stormwater flooding occurs on North Main Street.	Village of Constableville	No Progress	Level of Protection		1. Discontinue 2. 3. After road resurfacing & regular preventative maintenance the issue has improved.
	<u>Culvert Replacement</u> Replace box culvert under Main Street System	Chance of collapse and possible flooding of Village of Constableville.	Culvert is in danger of collapse.	Village of Constableville	No Progress	Level of Protection		1. Project to be included in 2020 HMP. 2. A plan is in place to replace when water pipes are replaced and road is resurfaced 3.
	<u>Plan Review for Mitigation</u> Ensure that local comprehensive plans incorporate disaster mitigation techniques through a courtesy review of all draft plans by the County Economic Development and Planning Department	All Hazards	Plans should be reviewed for mitigation	Village Mayor / CPG Member	No Progress	Level of Protection		1. Discontinue 2. 3. No local plans.



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. 3. If discontinue, explain why.
						Cost	Level of Protection	
	<u>GIS Enhancement</u> Investigate expansion of hazard-related GIS capabilities via acquisition of HAZUS-MH to collect and develop more sophisticated hazard mapping and loss estimation. Use information in future plan updates. Ensure information will be available to the public and to local communities and agencies.	Earthquakes, Wind, and Flood	GIS system should be enhanced if possible.	Village Mayor / CPG Member	No Progress			1. Project to be included in 2020 HMP. 2. 3.
	<u>Outreach Program</u> County coordination with local governments and other agencies to systematically contact isolated, vulnerable or special-needs population during severe winter storm events	Winter Storms and Extreme temperatures	Isolated/special needs residents require assistance	Village Mayor / CPG Member	No Progress			1. Discontinue 2. 3. Our village is low population with minimal or no special-needs population.
	<u>Auxiliary Power Supply</u> Conduct a countywide survey on status of auxiliary power supplies at all critical facilities.	Winter Storms, Wind, Tornado	Critical facilities need backup power	Village Mayor / CPG Member	Complete	\$0	High	1. Discontinue 2. 3. Complete
	<u>Wind Hazards Training</u> Provide trainings to municipalities regarding the development and implementation of programs to mitigate wind damage to private and public properties.	Wind, Tornado	Municipalities require education	Village Mayor / CPG Member	No Progress			1. Discontinue 2. 3. Wind and tornado damage is not frequent in the Village and the history of damage is minimal, if any. Therefore, this action will not be included in the plan update.
				Village Mayor /		Cost		1. Discontinue



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. 3. If discontinue, explain why.
						Level of Protection	Cost	
	<u>Winter Driving and Vehicle Preparation Education</u> Provide education opportunities for residents to learn winter driving techniques.	Winter Storms and Wind	Citizens require education	CPG Member	No Progress	Level of Protection		2.  3. The Village and its residents are adapted to long, hard winters and know how to handle driving in winter conditions. Therefore, this action will not be included in the plan update.
	<u>Winter Storm Public Awareness and Preparation</u> Increase public awareness of personal responsibilities during emergencies, specifically winter storm events	Winter Storms and Snow	Citizens require education	Village Mayor / Village Clerk/ CPG Member	No Progress	Cost		1. Project to be included in 2020 HMP. 2. Develop notice and mail to households. 3.
						Level of Protection		
	<u>Emergency Warming Shelters</u> Establish warming shelters for vulnerable populations, including residents and stranded motorists	Extreme Temperatures and Winter Storms	Warming shelters are needed	Village Mayor / Village Clerk/ CPG Member	No Progress	Cost		1. Project to be included in 2020 HMP. 2. Confirm locations and notify households and business through mailing 3.
						Level of Protection		
	<u>Dam Safety</u> Coordinate with NYSDEC and owners of all high and moderate hazard dams to work towards full compliance with applicable dam safety programs and development/updating of Emergency Action Plans including inundation mapping.	Dam Failure	Dams need to meet safety requirements	Village Mayor / CPG Member	No Progress	Cost		1. Project to be included in 2020 HMP. 2. Dam safety program. 3.
						Level of Protection		
	<u>Drought Preparedness</u> Publish and distribute literature on water conservation techniques	Drought	Citizens require education	Village Mayor / Village Clerk/ CPG Member	No Progress	Cost		1. Project to be included in 2020 HMP. 2. Develop notice and mail to households.
						Level of Protection		





Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. 3. If discontinue, explain why.
						Damages Avoided; Evidence of Success	Cost	
	and drought management strategies.					Damages Avoided; Evidence of Success		3.
	<u>Landslide Study</u> Conduct surveys to determine local vulnerabilities to landslides threatening property and roads, coordinate with municipalities to limit development in these areas and develop remedial measures for existing vulnerabilities.	Landslides	Landslide potential needs to be determined	Village Mayor / CPG Member	No Progress	Damages Avoided; Evidence of Success		1. Discontinue 2. 3. The Village is not susceptible to landslides and at this time, a survey is not needed. Therefore, this action will not be included in the plan update.
	<u>Wildfire Mapping</u> Create and distribute mapping and database of wildland access points for firefighters, develop enhanced mapping of urban/wildland interface.	Wildfire	Firefighters require more information	Village Mayor / CPG Member	No Progress	Damages Avoided; Evidence of Success		1. Discontinue 2. 3. Wildfires are rare in the Village. Therefore, this action will not be included in the plan update.
	<u>Critical Facilities Survey</u> Undertake a year built and level of protection survey for all critical/emergency facilities and shelters to highlight structures built before codes and standards were put in place to provide protection from natural hazards, and pursue potential mitigation opportunities to protect these sites as funding becomes available.	Wind/Tornado, Winter Storms, Earthquakes, and Flooding (including Ice Jams)	Critical facilities need to be built to higher protections	Village Mayor / CPG Member	No Progress	Damages Avoided; Evidence of Success		1. Discontinue 2. 3. Critical facilities in the Village are few and there are minimum areas of risk that the critical facilities are not exposed to. Therefore, this action will not be included in the plan update.



### Completed Mitigation Initiatives Not Identified in the Previous Mitigation Strategy

The Constableville Wastewater Treatment Plant Streambank Protection Project was completed in the Fall of 2018. The installation was complete in October and payments made in December. Four rock vanes and rock outlet protection were installed and willows planted to protect the streambank from erosion by the Sugar River. This site will need maintenance as is normal for natural stream design, but it has been completed.

### Proposed Hazard Mitigation Initiatives for the Plan Update

The Village of Constableville participated in a mitigation action workshop on December 17, 2018 and was provided the following FEMA publications to use as a resource as part of their comprehensive review of all possible activities and mitigation measures to address their hazards: FEMA 551 ‘Selecting Appropriate Mitigation Measures for Floodprone Structures’ (March 2007) and FEMA ‘Mitigation Ideas – A Resource for Reducing Risk to Natural Hazards’ (January 2013).

Table 9.3-12 summarizes the comprehensive-range of specific mitigation initiatives the Village of Constableville would like to pursue in the future to reduce the effects of hazards. Some of these initiatives might be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and can be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6 (Mitigation Strategy), 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.3-13 provides a summary of the prioritization of all proposed mitigation initiatives for the plan update.





Table 9.3-12. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
V. Constable ville-1	Floodwall for Sewer Pump Station at Route 26	<b>Problem:</b> The Pump Station located between State Route 26 and the Sugar River is prone to flooding. The Pump Station is located 50-100 feet away from the river. An ice jam in January 2018 nearly flooded the electrical components of the Pump Station. The Pump Station cannot be relocated and must be at the current elevation, as the village's sewer system is gravity fed.	<b>Solution:</b> The village will install a three-walled floodwall that backs up to the berm of State Route 26. The village will construct a pavilion over the top of the pump station to prevent rain water from filling the area protected by the floodwall. The village will coordinate with NYS DOT during project design and implementation as the project will involve connection of the floodwall to the berm of State Route 26.	Flood	2	Yes	None	1 month	Village Board of Trustees	\$22,500	Pump station protected from flooding. Critical functions maintained.	HMGP, PDM, FMA, Village budget	High	SIP	SP, PP
V. Constable ville-2	Water Distribution System improvements	<b>Problem:</b> Water lines in the village are outdated with some 100 years old. Many areas have undersized lines. Existing lines often break due to extreme cold events, resulting in constant leaks and the need to replace lines. Several areas in the village lack fire hydrants.		Extreme Temperature, Drought, Wildfire	2	No	None	3 years	Village Board of Trustees	\$1.5 million	Water supply system updated and improved. Fire hydrants installed.	HMGP, CDBG, FEMA Assistance to Firefighters Grant Program, Village budget	High	SIP	PP, ES





Section 9.3: Village of Constableville

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
		<p><b>Solution:</b> The village will work with Lewis County to replace the water distribution system. Lewis County is nearing completion of a study of the water distribution system. The village will use the results of the study to conduct appropriate replacement of the undersized water lines with 8" lines and the installation of fire hydrants in appropriate locations.</p>													
V. Constable ville-3	Clear ditches of vegetation and debris	<p><b>Problem:</b> Village ditches are clogged with debris and vegetation resulting in lower capacity.</p> <p><b>Solution:</b> The village will hire a contractor to remove debris and vegetation in village ditches.</p>		Severe Storm, Flood	1	No	None	6 months	Village Board of Trustees	\$1,000	Ditch capacity improved, flood risk reduced.	Village budget	High	SIP	SP
V. Constable ville-4	Replace box culvert at North Main Street	<p><b>Problem:</b> The current culvert is 24" wide by 18" tall and is in danger of collapse. Collapse could cause flooding and erosion at North Main Street.</p> <p><b>Solution:</b> The box culvert will be replaced when water pipes are replaced and road is resurfaced. The village will determine if the roadway will need to be elevated during this process.</p>		Severe Storm, Flood	2	No	None	Within 3 years	Village Board of Trustees	\$4000	Culvert capacity increased, flood risk reduced.	HMGP, CDBG	High	SIP	SP
V. Constable ville-5	Upsize culvert at High Street	<p><b>Problem:</b> The current 12" culvert along High Street is undersized resulting in flooding and erosion issues.</p> <p><b>Solution:</b> The village will replace the current culvert with an 18" culvert.</p>		Severe Storm, Flood	2	No	None	Within 3 years	Village Board of Trustees	\$1250	Culvert capacity increased, flood risk reduced.	HMGP, CDBG	High	SIP	SP





Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
V. Constable ville-6	GIS Enhancement	<b>Problem:</b> The village requires access to additional GIS information.	<b>Solution:</b> The village will work with the county to investigate expansion of hazard-related GIS capabilities via acquisition of HAZUS-MH to collect and develop more sophisticated hazard mapping and loss estimation. Use information in future plan updates. Ensure information will be available to the public and to local communities and agencies.	Earthquake, Severe Storm, Severe Winter Storm, Flood	1, 3	No	None	Within 5 years	CPG member	\$250 for outreach to residents, Lewis County to cover GIS costs.	Access to hazard information improved.	Municipal and county budgets	High	LPR	PR
V. Constable ville-7	Winter Storm Public Awareness and Preparation	<b>Problem:</b> The public needs increased awareness of personal responsibilities during emergencies, specifically winter storm events.	<b>Solution:</b> The village will develop a notice and mail to households.	Severe Winter Storms	3	No	None	6 months	Village Mayor / Village Clerk	\$250	Increased awareness of personal responsibilities during winter storm events.	Municipal budget	High	EAP	PI
V. Constable ville-8	Emergency Warming Shelters	<b>Problem:</b> The village needs to establish warming shelters for vulnerable populations, including residents and stranded motorists.	<b>Solution:</b> The village will confirm locations and notify households and business through mailing.	Severe Winter Storm	2, 3	No	None	6 months	Village Mayor / Village Clerk	\$250	Warming shelters for vulnerable populations will be established and promoted.	Municipal budget	High	LPR	ES
V. Constable ville-9	Dam Safety Programs	<b>Problem:</b> Dams need to be kept safe and have emergency procedures in place.		Dam Failure/ Flood	1, 2	No	None	6 months	Village Mayor, NYS DEC	\$250	Dam safety programs established	Municipal budget	High	LPR	ES





Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
		<b>Solution:</b> The village will coordinate with NYS DEC and owners of all high and moderate hazard dams to work towards full compliance with applicable dam safety programs and development/updating of Emergency Action Plans, including inundation mapping.									for village dams.				
V. Constableville-10	Drought Preparedness	<b>Problem:</b> The village needs to publish and distribute literature on water conservation techniques and drought management strategies. <b>Solution:</b> The village will develop notice and mail to households.		Drought	3	No	None	6 months	Village Mayor, Village Clerk	\$250	Literature on water conservation techniques and drought management strategies distributed.	Municipal budget	High	EAP	PI

Notes:  
Not all acronyms and abbreviations defined below are included in the table.

Acronyms and Abbreviations:

- CAV Community Assistance Visit
- CRS Community Rating System
- DPW Department of Public Works
- EHP Environmental Planning and Historic Preservation
- FEMA Federal Emergency Management Agency
- FPA Floodplain Administrator
- HMA Hazard Mitigation Assistance
- N/A Not applicable
- NFIP National Flood Insurance Program
- OEM Office of Emergency Management

Potential FEMA HMA Funding Sources:

- FMA Flood Mitigation Assistance Grant Program
- HMGP Hazard Mitigation Grant Program
- PDM Pre-Disaster Mitigation Grant Program

Timeline:

The time required for completion of the project upon implementation

Cost:

The estimated cost for implementation.

Benefits:

A description of the estimated benefits, either quantitative and/or qualitative.

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.





- *Education and Awareness Programs (EAP)* – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities.

CRS Category:

- *Preventative Measures (PR)* - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- *Property Protection (PP)* - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- *Public Information (PI)* - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- *Natural Resource Protection (NR)* - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- *Structural Flood Control Projects (SP)* - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.
- *Emergency Services (ES)* - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.

Critical Facility:


- Yes  - Critical Facility located in 1% floodplain.



Table 9.3-13. Summary of Prioritization of Actions

Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community	Total	High / Medium / Low
V. Constableville-1	Floodwall for Sewer Pump Station at Route 26	0	1	1	1	1	0	0	1	1	1	0	1	1	1	10	High
V. Constableville-2	Water Distribution System improvements	1	1	0	1	1	1	0	1	1	1	1	0	1	1	11	High
V. Constableville-3	Clear ditches of vegetation and debris	0	1	1	1	1	1	1	1	1	1	1	1	1	1	13	High
V. Constableville-4	Replace box culvert at North Main Street	0	1	1	1	1	1	0	1	1	1	1	0	1	1	11	High
V. Constableville-5	Upsize culvert at James Street	0	1	1	1	1	1	0	1	1	1	1	0	1	1	11	High
V. Constableville-6	GIS Enhancement	1	1	1	0	1	1	1	1	1	1	1	1	1	1	13	High
V. Constableville-7	Winter Storm Public Awareness and Preparation	1	0	1	1	1	1	1	1	1	1	0	1	1	1	12	High
V. Constableville-8	Emergency Warming Shelters	1	0	1	1	1	1	1	1	1	1	0	1	1	1	12	High
V. Constableville-9	Dam Safety Programs	1	1	1	0	1	1	1	1	1	1	0	1	1	1	12	High
V. Constableville-10	Drought Preparedness	1	0	1	1	1	1	1	1	1	1	0	1	1	1	12	High

Note: Refer to Section 6 (Mitigation Strategy), which conveys guidance on prioritizing mitigation actions. Low (0-4), Medium (5-8), High (9-14).





### 9.3.7 Future Needs To Better Understand Risk/Vulnerability

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None at this time.

### 9.3.8 Staff and Local Stakeholder Involvement in Annex Development

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The Village of Constableville followed the planning process described in Section 3 (Planning Process) in Volume I of this plan update. This annex was developed over the course of several months with input from many village departments, including: The Village of Constableville Board of Trustees. The Board of Trustees represented the community on the Lewis County Hazard Mitigation Plan Planning Partnership and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Additional documentation on the Village of Constableville’s planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix B (Meeting Documentation).

### 9.3.9 Hazard Area Extent and Location

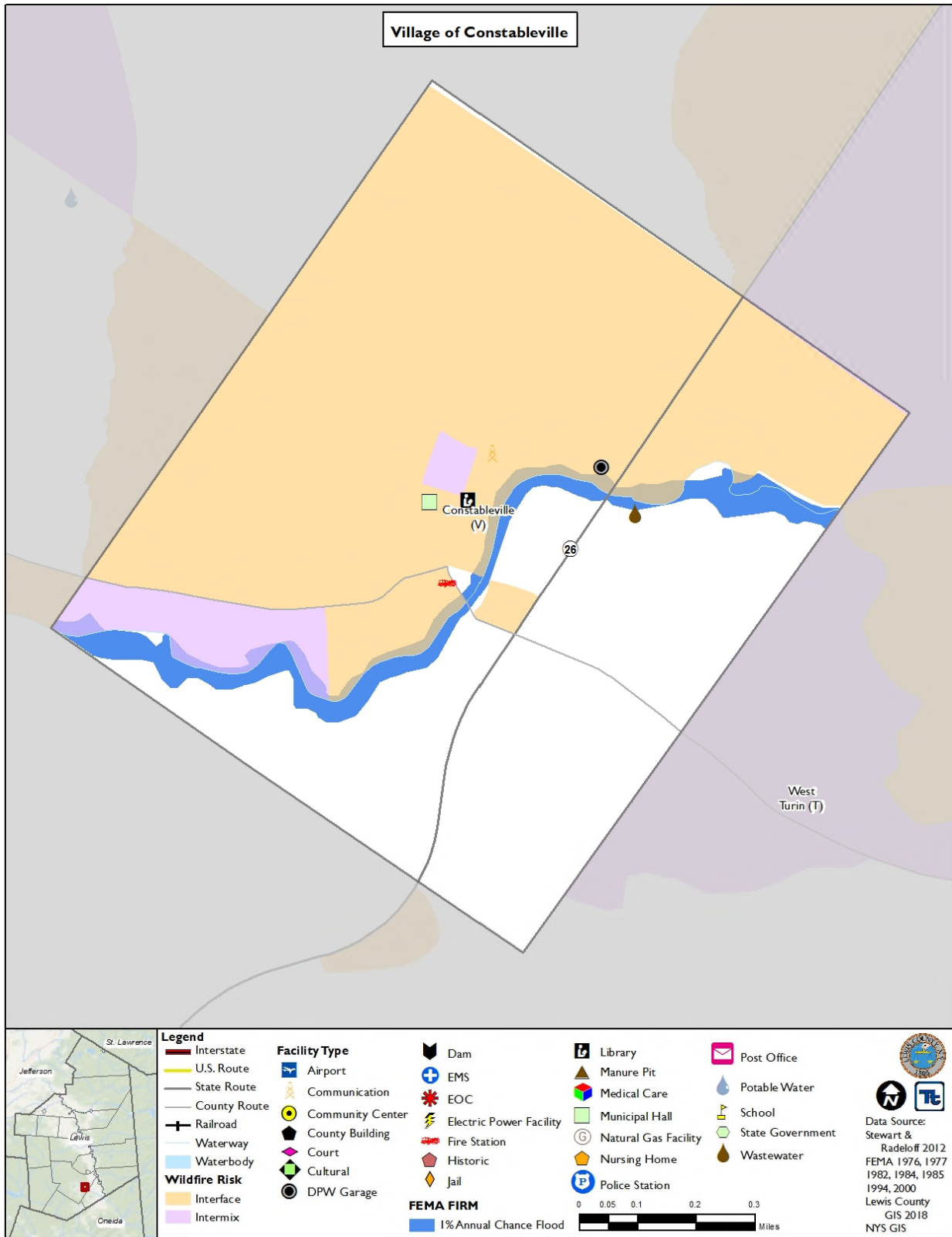
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Hazard area extent and location maps were generated for the Village of Constableville that illustrate the probable areas impacted within the Village of Constableville. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps have been generated only for those hazards that can be clearly identified using mapping techniques and technologies and for which the Village of Constableville has significant exposure. A map of the Village of Constableville hazard area extent and location is provided on the following page. This map indicates the location of the regulatory floodplain, as well as identified critical facilities within the Village of Constableville.





Figure 9.3-1. Village of Constableville Hazard Area Extent and Location Map





Village of Constableville Action Worksheet			
<b>Project Name:</b>	Floodwall for Sewer Pump Station at Route 26		
<b>Project Number:</b>	V. Constableville-1		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Flood		
<b>Description of the Problem:</b>	The Pump Station located between State Route 26 and the Sugar River is prone to flooding. The Pump Station is located 50-100 feet away from the river. A recent ice jam in January 2018 nearly flooded the electrical components of the Pump Station. The Pump Station cannot be relocated and needs to be at the current elevation as the village's sewer system is gravity fed.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	The Village of Constableville will install a three walled floodwall that backs up to the berm of State Route 26. The village will construct a pavilion over the top of the pump station to prevent rain water from filling the area protected by the floodwall. The village will coordinate with NYS DOT during project design and implementation as the project will involve connection of the floodwall to the berm of State Route 26.		
<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	500-year flood event	<b>Estimated Benefits (losses avoided):</b>	Pump station protected from flooding. Critical functions maintained.
<b>Useful Life:</b>	50 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$22,500	<b>Mitigation Action Type:</b>	Structure and Infrastructure Projects
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 2 years
<b>Estimated Time Required for Project Implementation:</b>	1 month	<b>Potential Funding Sources:</b>	HMGP, PDM, FMA, Village budget
<b>Responsible Organization:</b>	Village Board of Trustees	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	n/a
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Raise pump station	N/A	Not feasible. The pump station needs to be at a lower elevation due to the sewer system being gravity fed.
	Relocate pump station	N/A	Not feasible. The pump station cannot be relocated to a new location.
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Floodwall for Pump Station at Route 26	
<b>Project Number:</b>	V. Constableville-1	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project will protect the pump station from flooding.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	0	Project will require approval and coordination from NYS DOT.
Fiscal	0	Project will require grant funding assistance.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	0	Flood
Timeline	1	1 month
Agency Champion	1	Village Board
Other Community Objectives	1	Protection of critical facilities.
<b>Total</b>	10	
<b>Priority (High/Med/Low)</b>	High	



Village of Constableville Action Worksheet			
<b>Project Name:</b>	Water Distribution System improvements		
<b>Project Number:</b>	V. Constableville-2		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Extreme Temperature, Drought, Wildfire		
<b>Description of the Problem:</b>	Water lines in the Village of Constableville are outdated, with some 100 years old. Many areas have undersized lines. Existing lines often break due to extreme cold events, resulting in constant leaks and the need to replace lines. Several areas in the village lack fire hydrants.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The Village of Constableville will work with Lewis County to replace the water distribution system. Lewis County is nearing completion of a study of the water distribution system. The village will use the results of the study to conduct appropriate replacement of the undersized water lines with 8" lines and the installation of fire hydrants in appropriate locations.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	n/a	<b>Estimated Benefits (losses avoided):</b>	Water supply system updated and improved. Fire hydrants installed.
<b>Useful Life:</b>	75 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$1.5 million	<b>Mitigation Action Type:</b>	SIP
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 3 years
<b>Estimated Time Required for Project Implementation:</b>	3 years	<b>Potential Funding Sources:</b>	HMGP, CDBG, FEMA Assistance to Firefighters Grant Program, Village budget
<b>Responsible Organization:</b>	Village Board, Lewis County	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	n/a
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Replace targeted sections of the water distribution system	\$837,000	Only a portion of the system will be replaced, areas still vulnerable.
	Install 10,000-gallon potable water tank for residents to draw from if water lines rupture.	\$6,000	Inconvenient for residents, areas still lack fire hydrants.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Water Distribution System improvements	
<b>Project Number:</b>	V. Constableville-2	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
<b>Life Safety</b>	1	Project will ensure water access is maintained for residents, fire hydrants are available to fight fires in the village.
<b>Property Protection</b>	1	Project will protect water distribution system.
<b>Cost-Effectiveness</b>	0	
<b>Technical</b>	1	
<b>Political</b>	1	
<b>Legal</b>	1	The village has the legal authority to complete the project.
<b>Fiscal</b>	0	Project will require grant funding assistance.
<b>Environmental</b>	1	
<b>Social</b>	1	
<b>Administrative</b>	1	
<b>Multi-Hazard</b>	1	Extreme Temperature, Drought, Wildfire
<b>Timeline</b>	0	3 years
<b>Agency Champion</b>	1	Village Board
<b>Other Community Objectives</b>	1	Protect village infrastructure
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	



## 9.4 VILLAGE OF COPENHAGEN

This section presents the jurisdictional annex for the Village of Copenhagen. It includes resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions that can be implemented prior to a disaster to reduce or eliminate damage to property and people. This annex includes a general overview of the Village of Copenhagen and who in the village participated in the planning process; an assessment of the Village of Copenhagen’s risk and vulnerability; the different capabilities utilized in the village; and an action plan that will be implemented to achieve a more resilient community.

### 9.4.1 Hazard Mitigation Planning Team

The following individuals have been identified as the Village of Copenhagen’s hazard mitigation plan primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Kim Vogt Title: Village Trustee Phone Number: 315-688-2921 Address: c/o Village of Copenhagen P.O. Box 237 Copenhagen, NY 13626 Email: kvogt@copenhagen-ny.com	Name: Mark Souva Title: Village Trustee Phone Number: 315-408-5287 Address: c/o Village of Copenhagen P.O. Box 237 Copenhagen, NY 13626 Email: msouva@copenhagen-ny.com
Floodplain Administrator	
Name: Lewis County Codes Department, Timothy R Widrick Title: Code Enforcement Official Phone Number: 315-376-5377 Address: 7660 North State Street Email: <a href="http://www.lewiscounty.org">www.lewiscounty.org</a> , <a href="mailto:timwidrick@lewiscounty.ny.gov">timwidrick@lewiscounty.ny.gov</a>	

### 9.4.2 Municipal Profile

The Village of Copenhagen lies in the Town of Denmark in the northwest portion of Lewis County in northern New York State. Refer to Section 9.7 (Town of Denmark) for their individual annex. The village has a total area of 1.2 square miles, all of which is land. The Village of Copenhagen is governed by a mayor and trustees. The estimated 2017 population was 803, a 0.2 percent decrease from the 2010 Census (801).

Data from the 2017 U.S. Census American Community Survey estimates that 5.9 percent of the village population is five years of age or younger, and 14.6 percent is 65 years of age or older. Communities must deploy a support system that enables all populations to safely reach shelters or to quickly evacuate a hazard area.

#### History and Cultural Resources

The Village of Copenhagen was formerly known as Mungers Mills. Pinckney Corners Cemetery was listed on the National Register of Historic Places in 2014.

#### Growth/Development Trends

Table 9.4-1 summarizes major residential/commercial development that known or anticipated to take place prior to 2023. Refer to the map in 9.4.9 of this annex which illustrates the hazard areas along with the location of potential new development.



**Table 9.4-1. Growth and Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2009 to present</b>					
Water Treatment Plant	Comm.	1 building	Stoddard Road	Wells prone to drought	Under construction
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
Dollar General Store	Comm.	1 building	State Route 12 at northern border	None	Site plan has been approved
Old Water Treatment Plant	Comm.	1 building	Woodbattle Road	Wells prone to drought	Looking into rehabbing the facility.

\*Only location-specific hazard zones or vulnerabilities identified.

### 9.4.3 Hazard Event History Specific to the Village of Copenhagen

Lewis County has a history of natural hazard events as detailed in Volume I, Section 5.0 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. The Village of Copenhagen’s history of federally-declared (as presented by FEMA) and significant hazard events (as presented in NOAA-NCEI) is consistent with that of Lewis County. Table 9.4-2 provides details regarding municipal-specific loss and damages the village experienced during hazard events. Information provided in the table below is based on reference material or local sources. For details of these and additional events, refer to Volume I, Section 5.0 of this plan.

**Table 9.4-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April 26-May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	Although the county suffered losses, the village did not report losses.
August 26-September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	Although the county suffered losses, the village did not report losses.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	Although the county suffered losses, the village did not report losses.
October 24, 2011	Fuel Oil Spill	N/A	N/A	A fuel oil spill took place in Copenhagen. A driver switched tank compartments without turning off the nozzle. The tank overfilled while the driver was still in the truck, forcing 2 gallons of fuel oil from the vent to the concrete pad and grass.
June 26-July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	Although the county suffered losses, the village did not report losses.
May 13-22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	The Fire Department was called in to pump out floodwaters from





Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
				several homeowner's cellars/basements.
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to a foot and half of snow within this band leading up to daybreak Friday.	The Fire Department opened to shelter motorists that had become stranded by the storm.
September-October 2016	Drought	No	Drought resulted in a water shortage with Village wells.	Water had to be hauled in from other sources. Lowville and Carthage provided water that the village paid to have trucked in. Costs totaled \$5,400
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	The Fire Department opened to shelter motorists that had become stranded by the storm.
January 17, 2018	Flooding	No	Rapid snowmelt combined with a heavy rain event produced significant flooding.	Maiden Lane and Center Street were closed due to flooding. The Fire Department requested assistance from Lewis County Emergency Management for sand bags. Structures in the village sustained flooding damages. The Fire Department was called in to pump out flooding from cellars.

Notes:

- EM Emergency Declaration (FEMA)
- FEMA Federal Emergency Management Agency
- DR Major Disaster Declaration (FEMA)
- N/A Not applicable

### 9.4.4 Hazard Ranking and Jurisdiction-Specific Vulnerabilities

The hazard profiles in Section 5.0 of this plan have detailed information regarding each plan participant's vulnerability to the identified hazards. This section provides a summary of exposure and impacts from significant hazards of concern as identified by the Village of Copenhagen. For additional vulnerability information relevant to this jurisdiction, refer to Section 5.0.

#### Hazard Risk Ranking

This section includes the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 of the plan. The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating town or village may have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Village of Copenhagen. The Village of Copenhagen has reviewed the County hazard risk/vulnerability risk ranking table as well as its individual results to reflect the relative risk of the hazards of concern to the community.





During the review of the hazard/vulnerability risk ranking, the village indicated the following:

- The village agreed with the county’s risk rankings.

**Table 9.4-3. Village of Copenhagen Calculated Hazard Ranking**

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	Low
Extreme Temperature	High	High
Flood	Medium	Low
Hazardous Material Incidents	Medium	Medium
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	Medium

Notes: The scale is based on the following hazard rankings as established in Section 5.3.  
 \*The Village of Copenhagen changed the initial ranking of this hazard based on event history, municipal experience, and feedback from the Village of Copenhagen

**Critical Facilities Flood Risk**

NYS DEC Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for state projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a SFHA unless constructed according to specific mitigation specifications, including being raised 2 feet above the BFE. This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the state places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 500-year flood event, or worst damage scenario. For those that do not meet these criteria, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain and presents HAZUS-MH estimates of the damage and loss of use to critical facilities as a result of a 1-percent annual chance flood event.

**Table 9.4-4. Potential Flood Losses to Critical Facilities**

Name	Type	Exposure		Addressed by Proposed Action
		1% Event	0.2% Event	
None identified				

Source: Lewis County Real Property 2018, FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000

**Identified Issues**

The Village of Copenhagen has identified the following vulnerabilities within their community:

- The fire department has repeatedly closed the Four Corners intersection due to flooding.
- Stormwater issues at Maple Avenue and Route 12.





- Drainage issues between Route 12 and Plank Road/County Road 163.
- The Plank Road farm in the neighboring Town of Lowville is planning construction of a 20-million-gallon manure storage lagoon, less than one mile uphill from the village’s main municipal well field and treatment facility located on Stoddard Road. The village is concerned about the possibility of a spill occurring at the proposed manure storage lagoon contaminating the village’s water supply. Although NYS DEC has responded to the village by explaining the operation and maintenance requirements to be met by the manure storage lagoon, the village remains concerned.

### 9.4.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms

#### Planning and Regulatory Capability

The table below summarizes the regulatory tools that are available to the Village of Copenhagen.

**Table 9.4-5. Planning and Regulatory Tools**

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Comprehensive Plan	No	-	-	-
Capital Improvements Plan	No	-	-	-
Floodplain Management / Basin Plan	No	-	-	-
Stormwater Management Plan	No	-	-	-
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	No	-	-	-
Economic Development Plan	No	-	-	-
Comprehensive Emergency Management Plan	No	-	-	-
Emergency Operation Plan	No	-	-	-
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	No	-	-	-
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	Yes	Local	Board of Trustees	Source Water Protection Plan
<b>Regulatory Capability</b>				



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Building Code	Yes	State & Local	Plan to work with the county for enforcement	NYS Building Code
Zoning Ordinance	Under development	Local, County	Plan to work with the county for enforcement.	Under development
Subdivision Ordinance	Under development	Local, County	Plan to work with the county for enforcement.	Under development
NFIP Flood Damage Prevention Ordinance	No, plan to develop	Federal, State, Local	Plan to work with the county for enforcement	Under development
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	No, plan to develop	State, Local	Plan to work with the county for enforcement	Will develop NFIP Flood Damage Prevention Ordinance to include State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	Under development	State, Local, County	Plan to work with the county for enforcement	Under development
Stormwater Management Ordinance	No	-	-	-
Municipal Separate Storm Sewer System (MS4)	No	-	-	-
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	NYS, Real Estate Agents	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

**Administrative and Technical Capability**

The table below summarizes potential staff and personnel resources available to the Village of Copenhagen.



**Table 9.4-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	No	-
Mitigation Planning Committee	No	-
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	No	-
Maintenance programs to reduce risk	No	-
Mutual aid agreements	No	-
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	Yes	Bernier & Carr Associates out of Watertown
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Bernier & Carr Associates out of Watertown
Planners or engineers with an understanding of natural hazards	No	-
NFIP Floodplain Administrator (FPA)	Yes	Lewis County
Surveyor(s)	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	Yes	Bernier & Carr Associates out of Watertown
Scientist familiar with natural hazards	No	-
Emergency Manager	No	-
Grant writer(s)	No	-
Staff with expertise or training in benefit/cost analysis	No	-
Professionals trained in conducting damage assessments	Yes	Bernier & Carr Associates out of Watertown

**Fiscal Capability**

The table below summarizes financial resources available to the Village of Copenhagen.

**Table 9.4-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes
Impact fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No





Financial Resources	Accessible or Eligible to Use (Yes/No)
Other federal or state Funding Programs	Yes
Open Space Acquisition funding programs	No
Other	No

### Community Classifications

The table below summarizes classifications for community programs available to the Village of Copenhagen.

**Table 9.4-8. Community Classifications**

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	6	-
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	No	-	-
Public-private partnership initiatives addressing disaster-related issues	No	-	-
Other	No	-	-

Note:

- Unavailable

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery, and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance, while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10, with class 1 being the best possible classification and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule (<https://www.isomitigation.com/bcegs/>).
- The ISO Mitigation online ISO’s Public Protection (<https://www.isomitigation.com/ppc/>).
- New York State Climate Smart Communities (<http://www.dec.ny.gov/energy/56876.html>).
- The National Weather Service Storm Ready (<https://www.weather.gov/stormready/communities>).
- The National Firewise Communities (<http://firewise.org/>).



### Self-Assessment of Capability

The table below provides an approximate measure of the Village of Copenhagen’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

**Table 9.4-9. Self-Assessment Capability for the Village of Copenhagen**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Planning and regulatory capability	X - No Staff		
Administrative and technical capability	X - No Staff		
Fiscal capability	X - No Staff		
Community political capability	X - No Staff		
Community resiliency capability	X - No Staff		
Capability to integrate mitigation into municipal processes and activities	X - No Staff		

### National Flood Insurance Program

This section provides specific information on the management and regulation of the regulatory floodplain.

#### NFIP Floodplain Administrator (FPA)

Timothy R Widrick, Lewis County Codes Department

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

The Village of Copenhagen does not have a SFHA but has a history of stormwater flooding. A recent flood event in January of 2018 was the result of rapid snowmelt combined with heavy rain. The village considered this event to be a very rare event as these conditions rarely occur. The municipality maintains lists/inventories of properties that have been flood damaged. The village is currently working on determining how many residents are interested in mitigation (elevation or acquisition) and how many are currently in the process of mitigation. Mitigation funding is not currently identified for these projects other than property owner funds.

The following table summarizes the NFIP statistics for the Village of Copenhagen.

**Table 9.4-10. NFIP Summary**

Municipality	# Policies	# Claims (Losses)	Total Loss Payments	# RL Properties	# SRL Properties	# Policies in the 1% Flood Boundary
Village of Copenhagen	0	0	0	0	0	0

Source: FEMA Region 2, 2018

Notes:

- (1) Policies, claims, and repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.
- (2) Total building and content losses from the claims file provided by FEMA Region 2.
- (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file. FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility. A zero percentage denotes less than 1/100th percentage and not zero damage or vulnerability as may be the case. Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.







## Resources

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The village currently does not provide any education or outreach to the community regarding flood hazards/risk, and flood risk reduction. The village would consider attending continuing education and/or certification training on floodplain management if it were offered in the county for all local floodplain administrators.

## Compliance History

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According to NYS records, the village has not had a compliance audit (Community Assistance Visit [CAV]).

## Regulatory

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The Village of Copenhagen lacks a SFHA. The village currently does not have any floodplain management regulations in place and does not have any local ordinances, plans or programs (e.g. site plan review) that support floodplain management and meeting the NFIP requirements. The village plans to adopt a Flood Damage Prevention Ordinance that will meet federal and state standards. The village has not considered joining the CRS program and would not be interested in attending a CRS seminar if it were offered locally.

## Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

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For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community's progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures, which is also indicated below.

## Planning

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### Existing Integration

**Source Water Protection Plan:** The New York Rural Water Association (NYRWA) and the Village of Copenhagen developed a Source Water Protection Plan in 2010 to raise the awareness of local agencies regarding source water protection in the critical areas that supply Copenhagen's water supply in order to lead local governments, departments, and agencies working together to prevent drinking water contamination. The Source Water Protection Plan establishes Wellhead Protection Areas, Water Supply Protection Strategies, and the Water Supply Contingency Plan.

The village does not have a Master/Comprehensive Plan, Stormwater Management Plan, Re-Development Plan, Growth Plan, Economic Development Plan, Open Space Plan, Watershed/Stream Corridor Management Plan, Local Waterfront Revitalization Plan, Comprehensive Emergency Management Plan, Post-Disaster Recovery Plan/Strategic Recovery Plan, or Continuity of Operations/Continuity of Government plan.

### Opportunities for Future Integration

The village could develop planning documents that include information on hazards.

## Regulatory and Enforcement (Ordinances)

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### Existing Integration

The Village of Copenhagen does not have zoning regulations or subdivision regulations.



### Opportunities for Future Integration

The Village of Copenhagen is developing a zoning ordinance, subdivision ordinance, and site plan review requirements.

### Operational and Administration

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#### Existing Integration

The village does not have a municipal planner or contract planning firm. No staff have job descriptions that include identifying or implementing mitigation projects. The village relies on the County Planning Board and Zoning Board of Adjustments. The village uses a contractor who has experience with developing Benefit-Cost Analyses and experience in preparing grant applications for mitigation projects. The village does not have staff or contract with firms who can perform Substantial Damage Determinations.

The village does not have any boards or committees that include functions with respect to managing natural hazard risk or staff that participate in associations, organizations, groups or other committees that support natural hazard risk reduction and build hazard management capabilities. The village does not have other hazard management programs in place. Village staff do not receive training or continuing professional education to support natural hazard risk reduction and the village noted that training would be beneficial.

#### Opportunities for Future Integration

The village could train staff on hazard risk reduction.

### Funding

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#### Existing Integration

The village's municipal/operating budget and Capital Improvements Budget do not include line items for mitigation projects and has not applied for grant funding for mitigation projects. The village does not have any other mechanisms to fiscally support hazard mitigation projects.

#### Opportunities for Future Integration

The village could include a line item for mitigation actions in the municipal budget or Capital Improvements Budget and supplement municipal funding by applying for grants.

### Education and Outreach

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#### Existing Integration

The Village of Copenhagen does not have any public outreach programs in place to inform citizens on natural hazards.

#### Opportunities for Future Integration

The village could develop outreach materials to be handed out at community events and displayed at municipal buildings.

### Sheltering, Evacuation, and Temporary Housing

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Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.



**Evacuation and Sheltering Needs**

The Village of Copenhagen has designated the following emergency shelters, evacuation routes, or evacuation procedures:

- The village has identified the Copenhagen Central School on Mechanic Street and the Copenhagen Fire Department at 9950 Main Street as unofficial emergency shelters. The capacity of each facility has not been determined but each have backup power and can accommodate pets. Both facilities are ADA compliant.
- Route 12 is used as the evacuation route to Watertown or Lowville in emergency situations.

**Temporary and Permanent Housing**

The Village of Copenhagen has identified the following site for the placement of temporary housing for residents displaced by a disaster:

- The village has identified the Copenhagen Central School on Mechanic Street and the Copenhagen Fire Department at 9950 Main Street as potential sites for temporary housing for residents displaced by a disaster. The capacity for both sites has not been determined.

The Village of Copenhagen has not identified the potential sites suitable for relocating houses of the floodplain and/or building new homes once properties in the floodplain are acquired but would work with Lewis County to identify sites if the need were to arise.

**9.4.6 Mitigation Strategy and Prioritization**

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and their prioritization.

**Past Mitigation Initiative Status**

The Village of Copenhagen did not participate in the 2010 Lewis County Hazard Mitigation plan.

**Completed Mitigation Initiatives Not Identified in the Previous Mitigation Strategy**

The Village of Copenhagen replaced 250 feet of stormwater culvert at Maple Avenue and Route 12.

**Proposed Hazard Mitigation Initiatives for the Plan Update**

The Village of Copenhagen participated in a mitigation action workshop on December 17, 2018.

Table 9.4-11 summarizes the comprehensive-range of specific mitigation initiatives the Village of Copenhagen would like to pursue in the future to reduce the effects of hazards. Some of these initiatives might be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and can be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6, 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.4-12 provides a summary of the prioritization of all proposed mitigation initiatives for the plan update.





Table 9.4-11. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
V. Copenhagen-1	Fire Department sheltering upgrades	<p><b>Problem:</b> The Village of Copenhagen does not have an official Red Cross shelter. During hazard events, particularly severe winter storms with heavy snowfall, travelers become stranded in the village and require a sheltering location. Residents also require a sheltering location during major hazard events. Because of its location and base of operations for first responder, the Fire Department, located at 9950 NYS Rt 12, has been used as a makeshift shelter as necessary but lacks the necessary amenities to be used as an official shelter. The Fire Department is 45 years old and needs upgrades to the facility</p> <p><b>Solution:</b> The Village of Copenhagen will conduct an engineering study to determine what actions are needed to upgrade the Fire Department for suitable use as an emergency shelter. Possible upgrades include replacing the current emergency generator and structural upgrades to better withstand natural hazards. Upon completion of the study, the village will conduct the necessary upgrades to the facility as identified in the engineering study.</p>		Flood, Severe Storm	2	Yes	None	2 years	Copenhagen Fire Department	\$15,000 for evaluation and design.	Facility used as a safe emergency shelter.	Village budget	High	SIP	ES



Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
V. Copenhagen-2	Stormwater upgrades to Maple Avenue and Route 12	<p><b>Problem:</b> An undersized culvert caused a drainage problem that destroyed 250 feet of culvert. The culvert was replaced and upgraded from 12 inches to 18 inches; however, the current configuration of the stormwater system is not effective. A portion of pipe runs underneath a building that houses a business and apartments at the corner of Maple Avenue and Route 12 resulting in flooding of the building. A catch basin for the system does not have an outflow path to the Deer River due to private property. Prior efforts to establish easements through several private properties to conduct stormwater upgrades were not effective. The village believes that the new owners of the properties might allow for easements to be established.</p> <p><b>Solution:</b> The Village of Copenhagen will secure easements from property owners to allow for stormwater project to connect isolated catch basin to Deer River. The village will conduct an engineering study to determine best stormwater upgrade solution (e.g., overland flow, culvert) and conduct selected action.</p>		Flood, Severe Storm	2	No	None	2 years	Village DPW	\$15,000	Reduction in stormwater flooding	HMGP, PDM, CDBG, Village budget	High	SIP	SP





Section 9.4: Village of Copenhagen

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
V. Copenhagen-3	Coordinate with Town of Denmark and Town of Lowville to protect drinking water supply	<b>Problem:</b> Spill from manure storage facility in Town of Lowville could threaten drinking water supply in Village of Copenhagen. The Town of Denmark also relies on the Village of Copenhagen for drinking water. <b>Solution:</b> The Village of Copenhagen will coordinate efforts with Town of Lowville and Town of Denmark to protect drinking water sources from agricultural spills.		Agricultural Spill	2	Yes	None	Within 1 year	Village Board	\$0	Protection of drinking water supply for Village of Copenhagen and Town of Denmark	Village budget	High	LPR, NSP	PR, NR
V. Copenhagen-4	Stormwater maintenance and improvements between Route 12 and County Road 163	<b>Problem:</b> The stormwater system between Route 12 and County Road 163 requires cleaning and maintenance and is currently not operating efficiently. <b>Solution:</b> The village will contract with an outside group to thoroughly clean the stormwater system and conduct maintenance. During maintenance, the village will determine if upgrades to the system are necessary.		Flood, Severe Storm	2	No	None	6 months	Village DPW	\$40,000	Reduction in stormwater flooding	Village budget	High	SIP, LPR	SP, PR
V. Copenhagen-5	Upgrades to Woodbattle Road water facility	<b>Problem:</b> The Woodbattle Road water plant needs upgrades so it can be used during periods of drought. <b>Solution:</b> The village will work with the NYS DOH to identify and complete appropriate upgrades so facility will function during periods of drought.		Drought	2	Yes	None	3 years	Village Board	TBD	Use of Woodbattle Road water plant during times of drought. Continuous water supply for residents.	Village budget.	High	SIP	PP





Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
V. Copenhagen-6	Adopt a Flood Damage Prevention Ordinance	<b>Problem:</b> The village currently does not have a NFIP Flood Damage Prevention Ordinance. <b>Solution:</b> The village will adopt an NFIP Flood Damage Prevention Ordinance.	The village currently does not have a NFIP Flood Damage Prevention Ordinance.	Flood	1	No	None	Within 6 months	FPA	<\$100	Meeting of NFIP standards	Village budget	High	LPR	PR

Notes:

Not all acronyms and abbreviations defined below are included in the table.

Acronyms and Abbreviations:

- CAV Community Assistance Visit
- CRS Community Rating System
- DPW Department of Public Works
- EHP Environmental Protection and Historic Preservation
- FEMA Federal Emergency Management Agency
- FPA Floodplain Administrator
- HMA Hazard Mitigation Assistance
- N/A Not applicable
- NFIP National Flood Insurance Program
- OEM Office of Emergency Management

Potential FEMA HMA Funding Sources:

- FMA Flood Mitigation Assistance Grant Program
- HMGP Hazard Mitigation Grant Program
- PDM Pre-Disaster Mitigation Grant Program

Timeline:

The time required for completion of the project upon implementation

Cost:

The estimated cost for implementation.

Benefits:

A description of the estimated benefits, either quantitative and/or qualitative.

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities.

CRS Category:

- Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.







- *Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.*
- *Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.*
- *Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.*

Critical Facility:

- Yes  - Critical Facility is located in 1% floodplain.



Table 9.4-12. Summary of Prioritization of Actions

Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
V. Copenhagen-1	Fire Department sheltering upgrades	1	1	1	1	1	1	0	1	1	1	1	0	1	1	12	High
V. Copenhagen-2	Stormwater upgrades to Maple Avenue and Route 12	0	1	1	1	1	0	0	1	1	1	1	0	1	1	10	High
V. Copenhagen-3	Coordinate with Town of Denmark and Town of Lowville to protect drinking water supply	1	1	1	1	1	0	1	1	1	1	0	1	1	1	12	High
V. Copenhagen-4	Stormwater maintenance and improvements between Route 12 and County Road 163	0	1	1	1	1	1	1	1	1	1	1	1	1	1	13	High
V. Copenhagen-5	Upgrades to Woodbattle Road water facility	1	1	0	0	1	1	1	1	1	1	0	0	1	1	10	High
V. Copenhagen-6	Adopt a Flood Damage Prevention Ordinance	0	1	1	1	1	1	1	1	1	1	0	1	1	1	12	High

Note: Refer to Section 6 (Mitigation Strategy), which conveys guidance on prioritizing mitigation actions. Low (0-4), Medium (5-8), High (9-14).



#### **9.4.7 Future Needs To Better Understand Risk/Vulnerability**

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None at this time.

#### **9.4.8 Staff and Local Stakeholder Involvement in Annex Development**

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The Village of Copenhagen followed the planning process described in Section 3 (Planning Process). This annex was developed over the course of several months with input from many village departments, including the Village Board of Trustees. The Board of Trustees represented the community on the Lewis County Hazard Mitigation Plan Planning Partnership and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Additional documentation on the Village of Copenhagen’s planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix B (Meeting Documentation).

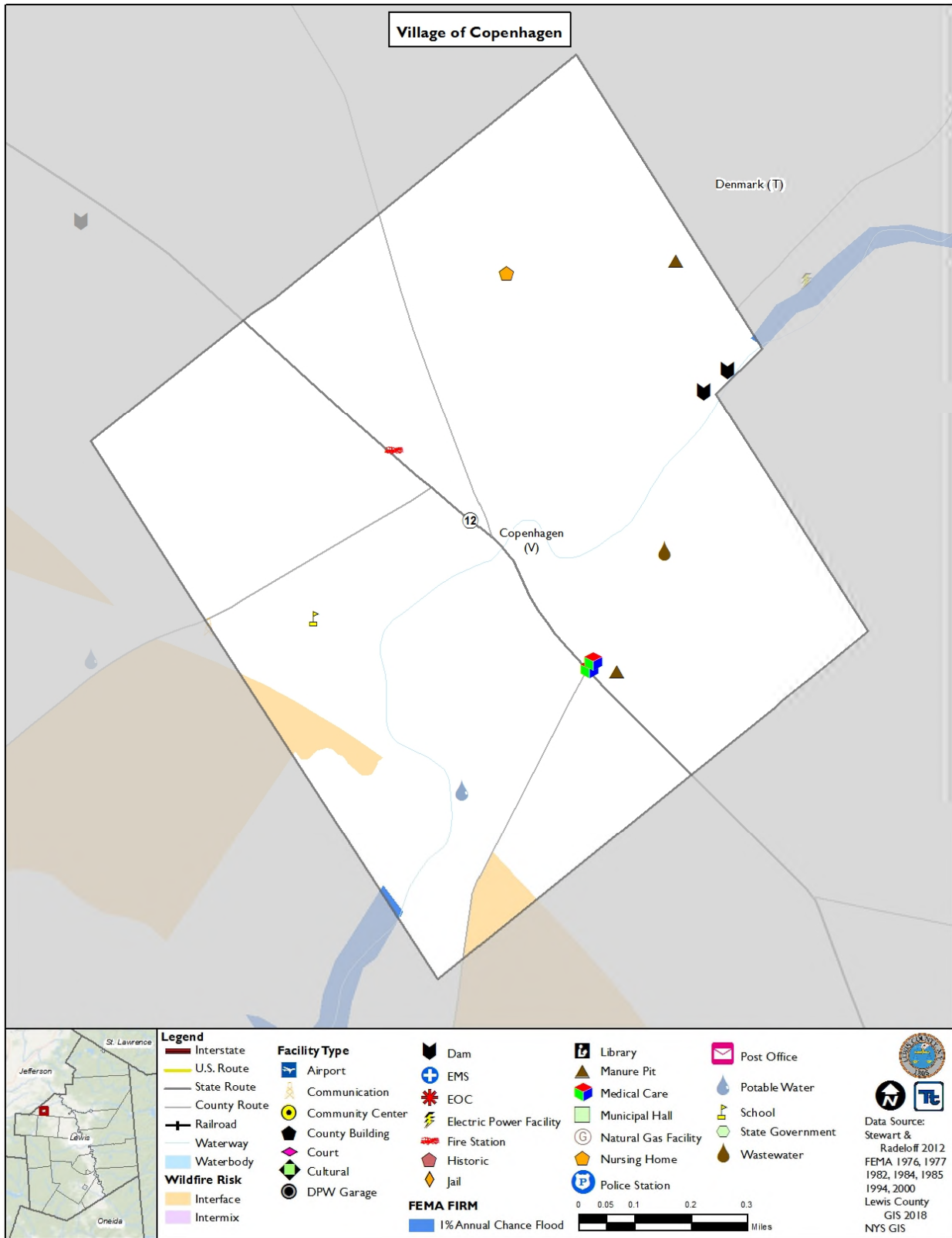
#### **9.4.9 Hazard Area Extent and Location**

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Hazard area extent and location maps have been generated for the Village of Copenhagen that illustrate the probable areas impacted within the Village of Copenhagen. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps have been generated only for those hazards that can be clearly identified using mapping techniques and technologies and for which the Village of Copenhagen has significant exposure. A map of the Village of Copenhagen hazard area extent and location is provided on the following page. This map indicates the location of the regulatory floodplain, as well as identified critical facilities within the Village of Copenhagen.



Figure 9.4-1. Village of Copenhagen Hazard Area Extent and Location Map





Village of Copenhagen Action Worksheet			
<b>Project Name:</b>	Fire Department sheltering upgrades		
<b>Project Number:</b>	V. Copenhagen-1		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	All Hazards		
<b>Description of the Problem:</b>	The Village of Copenhagen does not have an official Red Cross shelter. During hazard events, particularly severe winter storms with heavy snowfall, travelers become stranded in the village and require a sheltering location. Residents also require a sheltering location during major hazard events. Because of its location and base of operations for first responder, the Fire Department has been used as a makeshift shelter as necessary but lacks the necessary amenities to be used as an official shelter. The Fire Department is 45 years old and needs upgrades to the facility. The Fire Department is located at 9950 NYS Rt 12.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The Village of Copenhagen will conduct an engineering study to determine what actions are needed to upgrade the Fire Department for suitable use as an emergency shelter. Possible upgrades will include replacing the current emergency generator and structural upgrades to better withstand natural hazards. Upon completion of the study, the village will conduct the necessary upgrades to the facility as identified in the engineering study.		
<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Facility to meet modern standards for wind, snow loading, etc.	<b>Estimated Benefits (losses avoided):</b>	Facility used as a safe emergency shelter
<b>Useful Life:</b>	30 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$15,000 for evaluation and design	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	2 years	<b>Potential Funding Sources:</b>	Village budget
<b>Responsible Organization:</b>	Copenhagen Fire Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Develop mutual aid agreement with neighboring municipalities for sheltering	\$0	Transporting people in need of shelter during major hazard events presents an unsafe alternative.
	Develop Copenhagen Central School on Mechanic Street into an official emergency shelter	\$15,000	The school is not a desirable official shelter as longer term sheltering would interrupt classes
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Fire Department sheltering upgrades	
<b>Project Number:</b>	V. Copenhagen-1	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project will provide life safety services as emergency shelter is set up.
Property Protection	1	Project will protect Fire Department from damages during hazard events.
Cost-Effectiveness	1	
Technical	1	
Political	1	The public is supportive of the project.
Legal	1	The village has the legal authority to conduct the project.
Fiscal	0	The project will require grant funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	All Hazards
Timeline	0	
Agency Champion	1	Fire Department
Other Community Objectives	1	Establishment of designated emergency shelters
<b>Total</b>	12	
<b>Priority (High/Med/Low)</b>	High	



Village of Copenhagen Action Worksheet			
<b>Project Name:</b>	Stormwater upgrades to Maple Avenue and Route 12		
<b>Project Number:</b>	V. Copenhagen-2		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Severe Storm, Flood		
<b>Description of the Problem:</b>	An undersized culvert caused a drainage problem that destroyed 250 feet of culvert. The culvert was replaced and upgraded from 12 inches to 18 inches; however, the current configuration of the stormwater system is not effective. A portion of pipe runs underneath a building that houses a business and apartments at the corner of Maple Avenue and Route 12 resulting in flooding of the building. A catch basin for the system does not have an outflow path to the Deer River due to private property. Prior efforts to establish easements through several private properties to conduct stormwater upgrades were not effective. The village believes that the new owners of the properties might allow for easements to be established.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The Village of Copenhagen will secure easements from property owners to allow for stormwater project to connect isolated catch basin to Deer River. The village will conduct an engineering study to determine best stormwater upgrade solution (overland flow, culvert, etc.) and conduct selected action.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	50-year storm event	<b>Estimated Benefits (losses avoided):</b>	Reduction in stormwater flooding
<b>Useful Life:</b>	30 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$15,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	2 years	<b>Potential Funding Sources:</b>	HMGP, PDM, CDBG, Village budget
<b>Responsible Organization:</b>	Village DPW Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Remove stormwater components from area	\$25,000+	Not technically feasible, would cause different flooding concerns due to lack of stormwater system
	Raise building that is prone to flooding	\$100,000	Area still prone to flooding issues.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			





Action Worksheet		
<b>Project Name:</b>	Stormwater upgrades to Maple Avenue and Route 12	
<b>Project Number:</b>	V. Copenhagen-2	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Reduction in stormwater flooding of properties at Maple Avenue and Route 12
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	0	Project will require the securing of easements
Fiscal	0	Project will require grant funding support
Environmental	1	
Social	1	There is public support for the project
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	0	Within 5 years
Agency Champion	1	Village DPW Department
Other Community Objectives	1	
<b>Total</b>	10	
<b>Priority (High/Med/Low)</b>	High	



## 9.5 TOWN OF CROGHAN

This section presents the jurisdictional annex for the Town of Croghan.

### 9.5.1 Hazard Mitigation Plan Point of Contact

The following individuals have been identified as the hazard mitigation plan’s primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Allan C. Shaw Title: Highway Superintendent Phone Number: 315-346-6722 Address: 9882 State Route 126 Ste. A Castorland, NY 13620	Name: Roger Burriss Title: Town Supervisor Phone Number: 315-346-1212 Ext. 4 Address: 9882 State Route 126 Ste. A Castorland, NY 13620 Email: cbr9605@yahoo.com
Floodplain Administrator	
Name: Ward Dailey Title: Lewis County Codes Phone Number: 315-377-2037 Address: 7660 N State Street, Lowville, NY 13367 Email: permits@lewiscounty.ny.gov	

### 9.5.2 Municipal Profile

The Town of Croghan is located in Upstate New York and sits northeast of Lowville and west of the Five Ponds Wilderness. The Town of Croghan is bordered by Jefferson and Herkimer counties and occupies 179.2 square miles of land and 2.85 square miles of water. The Town of Croghan was settled in the 1830s and founded in 1841, after being named in honor of the famous 1812 war hero, Colonel George Croghan.

Within the Town of Croghan there are multiple smaller communities, including Beaver Falls, Belfort, the Village of Croghan, Indian River, and Naumburg. The Village of Croghan is detailed in Section 9.6 (Village of Croghan). The town is home to the American Maple Museum and Hall of Fame, the Oswegatchie Educational Center, and the Railway Historical Society of Northern New York Museum. The predominant industries and businesses in the Town of Croghan are construction, paper, agriculture, forestry, fishing, and hunting.

The Town Supervisor serves as the Chief Executive Officer for the town and is the head of the town government’s administrative branch. The Town Board is comprised of the Supervisor and four Councilpersons, who serve as the legislative and administrative body for the Town (Town of Croghan 2018). The estimated 2017 population was 3,080, which is an 0.4 percent decrease in population from 2010 (3,093 persons).

Data from the 2017 U.S. Census American Community Survey indicate that 6.2 percent of the town population is 5 years of age or younger and 19.4 percent is 65 years of age or older. Communities must deploy a support system that enables all populations to safely reach shelters or to quickly evacuate a hazard area.

### Growth/Development Trends

The Town of Croghan did not note any recent residential/commercial development since 2010 or any major residential, commercial, or major infrastructure development planned for the next five years in the municipality.



**Table 9.5-1. Growth and Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2010 to present</b>					
None identified					
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
None anticipated					

### 9.5.3 Natural Hazard Event History Specific to the Municipality

Lewis County has a history of natural and non-natural hazard events as detailed in Volume I, Section 5.0 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the county and its municipalities. For the purpose of this plan update, events that have occurred in the county from 2009 to present were summarized to indicate the range and impact of hazard events in the community. Information regarding specific damages is included, if available, based on reference material or local sources. This information is presented in the table below.

**Table 9.5-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April 26 - May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	Although the county suffered damages, the town did not report damages from this event.
August 26 – September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	Although the county suffered damages, the town did not report damages from this event.
September 7 – 11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	Although the county suffered damages, the town did not report damages from this event.
June 26 – July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	Although the county suffered damages, the town did not report damages from this event.
May 13 – 22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	Although the county suffered damages, the town did not report damages from this event.
November 17 – 27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis	Although the county suffered damages, the town did not report damages from this event.



Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
			County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to a foot and half of snow within this band leading up to daybreak Friday.	
March 14 - 15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	Although the county suffered damages, the town did not report damages from this event.

Notes:

- EM      Emergency Declaration (FEMA)
- DR      Major Disaster Declaration (FEMA)

### 9.5.4 Hazard Ranking and Jurisdiction-Specific Vulnerabilities

The hazard profiles in Section 5.0 (Risk Assessment) have detailed information regarding each plan participant’s vulnerability to the identified hazards. The following summarizes the hazard vulnerabilities and their ranking in the Town of Croghan.

#### Hazard Risk/Vulnerability Risk Ranking

This section provides the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 of the plan. The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating town or village may have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Town of Croghan. The Town of Croghan has reviewed the county hazard risk/vulnerability risk ranking table as well as its individual results to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the town indicated the following:

- The Town of Croghan agreed with the calculated hazard rankings.

**Table 9.5-3. Hazard Risk/Vulnerability Risk Ranking**

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	High
Extreme Temperature	High	High
Flood	Medium	Medium





Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Hazardous Material Incidents	Medium	Medium
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	High

Notes: The hazard ranking calculation is based on probability of occurrence and impacts on population, property, and the economy. Section 5.3 (Hazard Ranking) provides the hazard ranking methodology.

### Critical Facilities Flood Risk

NYS DEC Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for state projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a SFHA unless constructed according to specific mitigation specifications, including being raised 2 feet above the BFE. This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the state places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 500-year flood event or worst damage scenario. For those that do not meet these criteria, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain and presents HAZUS-MH estimates of the damage and loss of use to critical facilities as a result of a 1-percent annual chance flood event.

Table 9.5-4. Potential Flood Losses to Critical Facilities

Name	Type	Exposure		Potential Loss from 1% Flood Event		Addressed by Proposed Action
		1% Flood Event	0.2% Flood Event	Percent Structure Damage	Percent Content Damage	
County of Lewis IDA	Electric Power Facility	X	X	-	-	T. Croghan-1
Carthage Dam	Dam	X		-	-	T. Croghan-2
Effley Falls Dam	Dam	X	X	-	-	T. Croghan-3
Elmer Falls Dam	Dam	X	X	-	-	T. Croghan-4
Erie Blvd Hydropower LP, 8410 Effley Falls Rd	Electric Power Facility	X	X	-	-	T. Croghan-5
Erie Blvd Hydropower LP, 9530 Adsit Trl	Electric Power Facility	X	X	-	-	T. Croghan-6
Erie Blvd Hydropower LP, 9530 Adsit Trl	Electric Power Facility	X	X	-	-	T. Croghan-7
Erie Blvd Hydropower LP, Fish Creek Rd	Electric Power Facility	X	X	-	-	T. Croghan-8
Erie Blvd Hydropower LP, Erie Canal Rd	Electric Power Facility	X	X	-	-	T. Croghan-9
Erie Blvd Hydropower LP, Old State Rd	Electric Power Facility	X	X	-	-	T. Croghan-10
Erie Blvd Hydropower LP, Old State Rd	Electric Power Facility	X	X	-	-	T. Croghan-11
Erie Blvd Hydropower, LP, 10260 Taylorville Rd	Electric Power Facility	X	X	-	-	T. Croghan-12
High Falls Dam	Dam	X	X	-	-	T. Croghan-13
Long Level Dam	Dam	X	X	-	-	T. Croghan-14





Name	Type	Exposure		Potential Loss from 1% Flood Event		Addressed by Proposed Action
		1% Flood Event	0.2% Flood Event	Percent Structure Damage	Percent Content Damage	
Naumburg Mennonite Church	School	X	X	-	-	T. Croghan-15
Soft Maple Terminal Dam	Dam	X	X	-	-	T. Croghan-16
Steiners Mill Dam	Dam	X	X	-	-	T. Croghan-17
Taylorville Dam	Dam	X	X	-	-	T. Croghan-18
Town of Croghan	Wastewater Facility	X	X	40	-	T. Croghan-19
Boise Cascade Lower Dam	Dam	X	-	-	-	T. Croghan-21

Source: Lewis County Real Property 2018, FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000

### Identified Issues

The municipality has identified the following vulnerabilities within their community:

- The town has numerous critical facilities located within the 1 percent annual chance floodplain.

### 9.5.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms

### Planning and Regulatory Capability

The table below summarizes the regulatory tools that are available to the Town of Croghan.

Table 9.5-5. Planning and Regulatory Tools

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Master Plan	No	-	-	-
Capital Improvements Plan	No	-	-	-
Floodplain Management / Basin Plan	No	-	-	-
Stormwater Management Plan	No	-	-	-
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	No	-	-	-



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Economic Development Plan	No	-	-	-
Comprehensive Emergency Management Plan	Yes	County	Fire and Emergency Management	Lewis County Comprehensive Emergency Management Plan
Emergency Operation Plan	No	-	-	-
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	No	-	-	-
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-
<b>Regulatory Capability</b>				
Building Code	Yes	State & Local	County Codes	NYS Building Code
Zoning Ordinance	No	-	-	-
Subdivision Ordinance	No	-	-	-
NFIP Flood Damage Prevention Ordinance	Yes	Federal, State, Local	County Codes	Flood Damage Prevention Ordinance
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	Yes	State, Local	County Codes	State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	No	-	-	-
Stormwater Management Ordinance	No	-	-	-
Municipal Separate Storm Sewer System (MS4)	No	-	-	-
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	NY State, Real Estate Agents	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

**Administrative and Technical Capability**

The table below summarizes potential staff and personnel resources available to the Town of Croghan.





**Table 9.5-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	No	-
Mitigation Planning Committee	No	-
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	No	-
Maintenance programs to reduce risk	No	-
Mutual aid agreements	No	-
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	No	-
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	No	-
Planners or engineers with an understanding of natural hazards	No	-
NFIP Floodplain Administrator (FPA)	No	-
Surveyor(s)	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	No	-
Scientist familiar with natural hazards	No	-
Emergency Manager	No	-
Grant writer(s)	No	-
Staff with expertise or training in benefit/cost analysis	No	-
Professionals trained in conducting damage assessments	No	-

**Fiscal Capability**

The table below summarizes financial resources available to the Town of Croghan.

**Table 9.5-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	No
Capital improvements project funding	No
Authority to levy taxes for specific purposes	No
User fees for water, sewer, gas or electric service	No
Impact fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	No
Incur debt through general obligation bonds	No
Incur debt through special tax bonds	No
Incur debt through private activity bonds	No



Financial Resources	Accessible or Eligible to Use (Yes/No)
Withhold public expenditures in hazard-prone areas	No
Other federal or state Funding Programs	No
Open Space Acquisition funding programs	No
Other	No

### Community Classifications

The table below summarizes classifications for community program available to the Town of Croghan.

Table 9.5-8. Community Classifications

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	No	-	-
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	No	-	-
Public-private partnership initiatives addressing disaster-related issues	No	-	-

Note:

- Unavailable

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery, and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance, while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10, with class 1 being the best possible classification and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1,000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual.
- The Building Code Effectiveness Grading Schedule.
- The ISO Mitigation online ISO’s Public Protection website at <https://www.isomitigation.com/ppc/>.
- The National Weather Service Storm Ready website at <http://www.stormready.noaa.gov/index.html>.
- The National Firewise Communities website at <http://firewise.org/>.





### Self-Assessment of Capability

The table below provides an approximate measure of the Town of Croghan’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

Table 9.5-9. Self-Assessment Capability for the Municipality

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)*	Moderate	High
Planning and regulatory capability	X – limited staff and funding		
Administrative and technical capability	X – limited staff and funding		
Fiscal capability	X – limited staff and funding		
Community political capability	X – limited staff and funding		
Community resiliency capability	X – limited staff and funding		
Capability to integrate mitigation into municipal processes and activities	X – limited staff and funding		

### National Flood Insurance Program

#### NFIP Floodplain Administrator (FPA)

Ward Dailey, Lewis County Codes

#### Flood Vulnerability Summary

The following table summarizes the NFIP statistics for the Town of Croghan.

Table 9.5-10. NFIP Summary

Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in 100- year Boundary (3)
Town of Croghan	14	1	\$16,483	0	0	6

Source: FEMA Region 2, 2018

Notes:

- (1) Policies, claims, and repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.
  - (2) Total building and content losses from the claims file provided by FEMA Region 2.
  - (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file.
- FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility. A zero percentage denotes less than 1/100th percentage and not zero damage or vulnerability as may be the case. Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.

### Resources

Site plan review and permit applications are completed by the Lewis County Building and Codes Department.

### Compliance History

The Town of Croghan is in good-standing in the NFIP. The most recent compliance audit was a Community Assistance Visit (CAV) on July 17, 2017.





## Regulatory

Enforcement of the Town of Croghan’s Flood Damage Prevention Ordinance is the responsibility of the Lewis County Building and Codes Department.

## Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community’s progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures.

## Planning

The Town of Croghan does not have municipal planning documents.

### Opportunities for Future Integration

The village could develop planning documents that incorporate hazard mitigation.

## Regulatory and Enforcement (Ordinances)

The municipal zoning regulations, subdivision regulations, and site plan review process do not consider natural hazard risk or require developers to take additional actions to mitigate natural hazard risk. The town does not have a Planning Board or Zoning Board of Adjustment.

### Opportunities for Future Integration

The town could enact regulations that require developers to take additional actions to mitigate natural hazard risk.

## Operational and Administration

The Town of Croghan has a Highway Department. The town is serviced by the Beaver Falls Fire Department, the Castorland Fire Department, Croghan Fire Department, and the Natural Bridge Fire Department.

**Town Board:** The Town Board is the legislative and administrative body for the Town of Croghan. The Town Board enacts local laws and town policies, approves budgets and amendments, authorizes special project expenditures, approves bids for services, materials and contracts and makes appointments to the town’s departments and boards. The board is comprised of the Supervisor and four Councilpersons, which are all elected. The Supervisor’s term is for two years, while the councilperson terms are for four years and are staggered.

### Opportunities for Future Integration

Town staff could receive training or continuing professional education that supports natural hazard reduction.

## Funding

The Town of Croghan’s municipal/operating budget does not include line items for mitigation projects/activities. The town has not pursued or been awarded grant funds for mitigation-related projects.

### Opportunities for Future Integration

The town could pursue grant funding to support hazard mitigation.



### Education and Outreach

The Town of Croghan operates a municipal website (<http://www.townofcroghan.com/index.html>), which has various information on the town and upcoming events.

### Opportunities for Future Integration

The town could develop educational programs to inform citizens on natural hazards and host educational information on the town website.

### Sheltering, Evacuation, and Temporary Housing

Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

### Evacuation and Sheltering Needs

While the Town does not have a formal evacuation plan, the major roads in and out of the Town can serve as evacuation routes if needed. The Town will work with Lewis County at the time of a hazard event to determine to the best routes. The Town of Croghan has designated the emergency shelters indicated in the following table.

**Table 9.5-11. Emergency Shelters in the Community**

Shelter Name	Address	Capacity	Accommodates Pets?	ADA Compliant?	Backup Power?	Types of Medical Services Provided	Other Services Provided
Croghan Fire Department	6860 Fire Hall St.	150	Yes	Yes	Yes	None	Kitchen and Bathroom
St. Stephen's Parish	9748 Main St.	100	Yes	Yes	No	None	Kitchen and Bathroom
Steepleview Court	6926 George St.	20	Yes	Yes	Yes	None	Kitchen and Bathroom
Croghan Free Library	9794 NY-812	10	Yes	Yes	No	None	Bathroom

### Temporary and Permanent Housing

The Town of Croghan has not identified sites for the placement of temporary housing for residents displaced by a disaster or potential sites suitable for relocating houses of the floodplain and/or building new homes once properties in the floodplain are acquired. The Town of Croghan would work with Lewis County at the time of an emergency event in order to establish temporary and permanent housing locations.

## 9.5.6 Mitigation Strategy and Prioritization

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and prioritization.

### Past Mitigation Initiative Status

The following table indicates progress on the community’s mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and also can be found under ‘Capability Assessment’ presented previously in this annex.



Table 9.5-12. Status of Previous Mitigation Actions

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem and the Solution (Project)	Responsible Party	Status (In Progress, Ongoing Capability, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection	
	Culvert Pipe on Steiner Road. Add culvert to increase water flow.	Road damage, flooding, private property, silting of water	Flooding was causing property damage and water impairments along Steiner Road.	Town of Croghan Highway Department	Complete	Damages Avoided; Evidence of Success	Unknown. Information was not available from the town.	1. Discontinue 2. 3. Complete
	Prevent ice damage to back wall of town highway garage	Public property damage during winter storms/extreme temperatures	During winter storms and extremely cold weather, the formation of ice damages the back wall of the town highway garage.	Town of Croghan Highway Department	In progress	Damages Avoided; Evidence of Success		1. Include in 2020 HMP. 2. Project is on the table.
	Bridge Repair on Jerden Falls Road. Change bridge structure to better accommodate water flow.	Public property damage; flooding	During heavy rains, the bridge floods due to inadequate water flow.	Town of Croghan Highway Department and Lewis County Highway Department	In progress	Damages Avoided; Evidence of Success		1. Include in 2020 HMP. 2. Project is out to bid.



### **Completed Mitigation Initiatives not Identified in the Previous Mitigation Strategy**

The Town of Croghan did not identify additional mitigation projects/activities that were completed but not identified in the previous mitigation strategy in the 2010 Plan.

### **Proposed Hazard Mitigation Initiatives for the Plan Update**

Table 9.5-13 summarizes the comprehensive-range of specific mitigation initiatives the Town of Croghan would like to pursue in the future to reduce the effects of hazards. Some of these initiatives might be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and can be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6 (Mitigation Strategy), 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.5-14 provides a summary of the prioritization of all proposed mitigation initiatives for the plan update.





Table 9.5-13. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues ?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
T. Croghan-1	Protect County of Lewis IDA to the 500-year flood level	<b>Problem:</b> The County of Lewis IDA is located in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager and discuss options to protect the facility to the 500-year flood level.		Flood	2	Yes <span style="color: blue;">♦</span>	None	Within 6 months	FPA, facility manager	<\$100	Facility protected to the 500-year flood level	Municipal budget	Medium	EAP	PI
T. Croghan-2	Protect Carthage Dam to the 500-year flood level	<b>Problem:</b> The Carthage Dam is located in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager and discuss options to protect the facility to the 500-year flood level.		Flood	2	Yes <span style="color: blue;">♦</span>	None	Within 6 months	FPA, facility manager	<\$100	Facility protected to the 500-year flood level	Municipal budget	Medium	EAP	PI
T. Croghan-3	Protect Effley Falls Dam to the 500-year flood level	<b>Problem:</b> The Effley Falls Dam is located in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager and discuss options to protect the facility to the 500-year flood level.		Flood	2	Yes <span style="color: blue;">♦</span>	None	Within 6 months	FPA, facility manager	<\$100	Facility protected to the 500-year flood level	Municipal budget	Medium	EAP	PI
T. Croghan-4	Protect Elmer Falls Dam to the 500-year flood level	<b>Problem:</b> The Elmer Falls Dam is located in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager and discuss options to protect the facility to the 500-year flood level.		Flood	2	Yes <span style="color: blue;">♦</span>	None	Within 6 months	FPA, facility manager	<\$100	Facility protected to the 500-year flood level	Municipal budget	Medium	EAP	PI
T. Croghan-5	Protect Erie Blvd Hydropower LP, 8410 Effley Falls	<b>Problem:</b> The Erie Blvd Hydropower LP, 8410 Effley Falls Rd is located in the 100-year floodplain.		Flood	2	Yes <span style="color: blue;">♦</span>	None	Within 6 months	FPA, facility manager	<\$100	Facility protected to the 500-year flood level	Municipal budget	Medium	EAP	PI





Table 9.5-13. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues ?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
	Rd to the 500-year flood level	<b>Solution:</b> The FPA will contact the facility manager and discuss options to protect the facility to the 500-year flood level.													
T. Croghan-6	Protect Erie Blvd Hydropower LP, 9530 Adsit Trl 1 to the 500-year flood level	<b>Problem:</b> The Erie Blvd Hydropower LP, 9530 Adsit Trl 1 is located in the 100-year floodplain.	<b>Solution:</b> The FPA will contact the facility manager and discuss options to protect the facility to the 500-year flood level.	Flood	2	Yes <span style="color: blue;">♦</span>	None	Within 6 months	FPA, facility manager	<\$100	Facility protected to the 500-year flood level	Municipal budget	Medium	EAP	PI
T. Croghan-7	Protect Erie Blvd Hydropower LP, 9530 Adsit Trl 2 to the 500-year flood level	<b>Problem:</b> The Erie Blvd Hydropower LP, 9530 Adsit Trl 2 is located in the 100-year floodplain.	<b>Solution:</b> The FPA will contact the facility manager and discuss options to protect the facility to the 500-year flood level.	Flood	2	Yes <span style="color: blue;">♦</span>	None	Within 6 months	FPA, facility manager	<\$100	Facility protected to the 500-year flood level	Municipal budget	Medium	EAP	PI
T. Croghan-8	Protect Erie Blvd Hydropower LP, Fish Creek Rd to the 500-year flood level	<b>Problem:</b> The Erie Blvd Hydropower LP, Fish Creek Rd is located in the 100-year floodplain.	<b>Solution:</b> The FPA will contact the facility manager and discuss options to protect the facility to the 500-year flood level.	Flood	2	Yes <span style="color: blue;">♦</span>	None	Within 6 months	FPA, facility manager	<\$100	Facility protected to the 500-year flood level	Municipal budget	Medium	EAP	PI
T. Croghan-9	Protect Erie Blvd Hydropower	<b>Problem:</b> The Erie Blvd Hydropower LP, Erie Canal Rd is located in the 100-year floodplain.		Flood	2	Yes <span style="color: blue;">♦</span>	None	Within 6 months	FPA, facility manager	<\$100	Facility protected to the 500-	Municipal budget	Medium	EAP	PI



Table 9.5-13. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues ?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
	LP, Erie Canal Rd to the 500-year flood level	<b>Solution:</b> The FPA will contact the facility manager and discuss options to protect the facility to the 500-year flood level.									year flood level				
T. Croghan-10	Protect Erie Blvd Hydropower LP, Old State Rd to the 500-year flood level	<b>Problem:</b> The Erie Blvd Hydropower LP, Old State Rd is located in the 100-year floodplain.	<b>Solution:</b> The FPA will contact the facility manager and discuss options to protect the facility to the 500-year flood level.	Flood	2	Yes <span style="color: blue;">♦</span>	None	Within 6 months	FPA, facility manager	<\$100	Facility protected to the 500-year flood level	Municipal budget	Medium	EAP	PI
T. Croghan-11	Protect Erie Blvd Hydropower LP, Old State Rd to the 500-year flood level	<b>Problem:</b> The Erie Blvd Hydropower LP, Old State Rd is located in the 100-year floodplain.	<b>Solution:</b> The FPA will contact the facility manager and discuss options to protect the facility to the 500-year flood level.	Flood	2	Yes <span style="color: blue;">♦</span>	None	Within 6 months	FPA, facility manager	<\$100	Facility protected to the 500-year flood level	Municipal budget	Medium	EAP	PI
T. Croghan-12	Protect Erie Blvd Hydropower, LP, 10260 Taylorville Rd to the 500-year flood level	<b>Problem:</b> The Erie Blvd Hydropower, LP, 10260 Taylorville Rd is located in the 100-year floodplain.	<b>Solution:</b> The FPA will contact the facility manager and discuss options to protect the facility to the 500-year flood level.	Flood	2	Yes <span style="color: blue;">♦</span>	None	Within 6 months	FPA, facility manager	<\$100	Facility protected to the 500-year flood level	Municipal budget	Medium	EAP	PI
T. Croghan-13	Protect High Falls Dam to the 500-year flood level	<b>Problem:</b> The High Falls Dam is located in the 100-year floodplain.	<b>Solution:</b> The FPA will contact the facility manager and discuss options to protect	Flood	2	Yes <span style="color: blue;">♦</span>	None	Within 6 months	FPA, facility manager	<\$100	Facility protected to the 500-year flood level	Municipal budget	Medium	EAP	PI





Table 9.5-13. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues ?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
		the facility to the 500-year flood level.													
T. Croghan-14	Protect Long Level Dam to the 500-year flood level	<b>Problem:</b> The Long Level Dam is located in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager and discuss options to protect the facility to the 500-year flood level.		Flood	2	Yes <span style="color: blue;">◆</span>	None	Within 6 months	FPA, facility manager	<\$100	Facility protected to the 500-year flood level	Municipal budget	Medium	EAP	PI
T. Croghan-15	Protect Naumburg Mennonite Church to the 500-year flood level	<b>Problem:</b> The Naumburg Mennonite Church is located in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager and discuss options to protect the facility to the 500-year flood level.		Flood	2	Yes <span style="color: blue;">◆</span>	None	Within 6 months	FPA, facility manager	<\$100	Facility protected to the 500-year flood level	Municipal budget	Medium	EAP	PI
T. Croghan-16	Protect Soft Maple Terminal Dam to the 500-year flood level	<b>Problem:</b> The Protect Soft Maple Terminal Dam is located in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager and discuss options to protect the facility to the 500-year flood level.		Flood	2	Yes <span style="color: blue;">◆</span>	None	Within 6 months	FPA, facility manager	<\$100	Facility protected to the 500-year flood level	Municipal budget	Medium	EAP	PI
T. Croghan-17	Protect Steiners Mill Dam to the 500-year flood level	<b>Problem:</b> The Steiners Mill Dam is located in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager and discuss options to protect the facility to the 500-year flood level.		Flood	2	Yes <span style="color: blue;">◆</span>	None	Within 6 months	FPA, facility manager	<\$100	Facility protected to the 500-year flood level	Municipal budget	Medium	EAP	PI
T. Croghan-18	Protect Taylorville	<b>Problem:</b> The Taylorville Dam is located in the 100-year floodplain.		Flood	2	Yes <span style="color: blue;">◆</span>	None	Within 6 months	FPA, facility manager	<\$100	Facility protected to the 500-	Municipal budget	Medium	EAP	PI





Table 9.5-13. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues ?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
	Dam to the 500-year flood level	<b>Solution:</b> The FPA will contact the facility manager and discuss options to protect the facility to the 500-year flood level.									year flood level				
T. Croghan-19	Protect Town of Croghan Wastewater Facility to the 500-year flood level	<b>Problem:</b> The Town of Croghan Wastewater Facility is located in the 100-year floodplain. <b>Solution:</b> The town will determine the current level of protection at the facility. If additional protections are necessary, the town will develop methods to protect to the 500-year flood level.		Flood	2	Yes	None	Within 3 years	FPA, facility manager	TBD	Facility protected to the 500-year flood elevation	HMGP, PDM, CDBG, Municipal budget	High	SIP	PP
T. Croghan-20	Prevent ice damage to back wall of town highway garage	<b>Problem:</b> During winter storms and extremely cold weather, the formation of ice damages the back wall of the town highway garage. <b>Solution:</b> The Town will explore mitigation techniques to prevent formation of ice and resulting damages.		Winter Storm	2	Yes	None	Within 5 years	Highway Department	TBD	Highway Garage protected from ice damages	HMGP, PDM, CHIPS, Municipal budget	High	SIP	PP
T. Croghan-21	Bridge Repair on Jerden Falls Road.	<b>Problem:</b> During heavy rains, the bridge floods due to inadequate water flow. <b>Solution:</b> Conduct feasibility to change bridge structure to better accommodate water flow.		Flood	2	No	None	Within 2 years	Highway Department	Dependent on results of feasibility study	Bridge remains open, not vulnerable to flood damages	HMGP, PDM, Municipal budget	High	SIP	PP
T. Croghan-22	Protect Boise Cascade Lower Dam to the 500-	<b>Problem:</b> The Boise Cascade Lower Dam is located in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.		Flood	2	Yes	None	Within 6 months	FPA	<\$100	Facility manager aware of methods to protect to 500-year flood level	Operating budget	High	EAP	PI





Table 9.5-13. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues ?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
	year flood level														



Notes:

Not all acronyms and abbreviations defined below are included in the table.

Acronyms and Abbreviations:

CAV	Community Assistance Visit
CRS	Community Rating System
DPW	Department of Public Works
EHP	Environmental Protection and Historic Preservation
FEMA	Federal Emergency Management Agency
FPA	Floodplain Administrator
HMA	Hazard Mitigation Assistance
N/A	Not applicable
NFIP	National Flood Insurance Program
OEM	Office of Emergency Management

Potential FEMA HMA Funding Sources:

FMA	Flood Mitigation Assistance Grant Program
HMGP	Hazard Mitigation Grant Program
PDM	Pre-Disaster Mitigation Grant Program
RFC	Repetitive Flood Claims Grant Program (discontinued in 2015)
SRL	Severe Repetitive Loss Grant Program (discontinued in 2015)

Timeline:

Short	1 to 5 years
Long Term	5 years or greater
OG	On-going program
DOF	Depending on funding

Costs:

Where actual project costs have been reasonably estimated:

Low	< \$10,000
Medium	\$10,000 to \$100,000
High	> \$100,000

Where actual project costs cannot reasonably be established at this time:

Low	Possible to fund under existing budget. Project is part of, or can be part of an existing on-going program.
Medium	Could budget for under existing work plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
High	Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.

Benefits:

Where possible, an estimate of project benefits (per FEMA's benefit calculation methodology) has been evaluated against the project costs, and is presented as:

Low=	< \$10,000
Medium	\$10,000 to \$100,000
High	> \$100,000

Where numerical project benefits cannot reasonably be established at this time:

Low	Long-term benefits of the project are difficult to quantify in the short term.
Medium	Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.
High	Project will have an immediate impact on the reduction of risk exposure to life and property.

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities.

CRS Category:

- Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.







- *Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.*
- *Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.*

*Critical Facility:*


- Yes  - *Critical Facility is located in the 1% floodplain.*



Table 9.5-14. Summary of Prioritization of Actions

Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
T. Croghan-1	Protect County of Lewis IDA to the 500-year flood level	0	1	0	0	1	1	0	1	1	1	0	1	1	0	8	Medium
T. Croghan-2	Protect Carthage Dam to the 500-year flood level	0	1	0	0	1	1	0	1	1	1	0	1	1	0	8	Medium
T. Croghan-3	Protect Effley Falls Dam to the 500-year flood level	0	1	0	0	1	1	0	1	1	1	0	1	1	0	8	Medium
T. Croghan-4	Protect Elmer Falls Dam to the 500-year flood level	0	1	0	0	1	1	0	1	1	1	0	1	1	0	8	Medium
T. Croghan-5	Protect Erie Blvd Hydropower LP, 8410 Effley Falls Rd to the 500-year flood level	0	1	0	0	1	1	0	1	1	1	0	1	1	0	8	Medium
T. Croghan-6	Protect Erie Blvd Hydropower LP, 9530 Adsit Trl 1 to the 500-year flood level	0	1	0	0	1	1	0	1	1	1	0	1	1	0	8	Medium
T. Croghan-7	Protect Erie Blvd Hydropower LP, 9530 Adsit Trl 2 to the 500-year flood level	0	1	0	0	1	1	0	1	1	1	0	1	1	0	8	Medium
T. Croghan-8	Protect Erie Blvd Hydropower LP, Fish Creek Rd to the 500-year flood level	0	1	0	0	1	1	0	1	1	1	0	1	1	0	8	Medium
T. Croghan-9	Protect Erie Blvd Hydropower LP, Erie Canal Rd to the 500-year flood level	0	1	0	0	1	1	0	1	1	1	0	1	1	0	8	Medium
T. Croghan-10	Protect Erie Blvd Hydropower LP, Old State Rd to the 500-year flood level	0	1	0	0	1	1	0	1	1	1	0	1	1	0	8	Medium
T. Croghan-11	Protect Erie Blvd Hydropower LP, Old State Rd	0	1	0	0	1	1	0	1	1	1	0	1	1	0	8	Medium
T. Croghan-12	Protect Erie Blvd Hydropower, LP, 10260 Taylorville Rd to the 500-year flood level	0	1	0	0	1	1	0	1	1	1	0	1	1	0	8	Medium
T. Croghan-13	Protect High Falls Dam to the 500-year flood level	0	1	0	0	1	1	0	1	1	1	0	1	1	0	8	Medium
T. Croghan-14	Protect Long Level Dam to the 500-year flood level	0	1	0	0	1	1	0	1	1	1	0	1	1	0	8	Medium
T. Croghan-15	Protect Naumburg Mennonite Church to the 500-year flood level	0	1	0	0	1	1	0	1	1	1	0	1	1	0	8	Medium
T. Croghan-16	Protect Soft Maple Terminal Dam to the 500-year flood level	0	1	0	0	1	1	0	1	1	1	0	1	1	0	8	Medium
T. Croghan-17	Protect Steiners Mill Dam to the 500-year flood level	0	1	0	0	1	1	0	1	1	1	0	1	1	0	8	Medium
T. Croghan-18	Protect Taylorville Dam to the 500-year flood level	0	1	0	0	1	1	0	1	1	1	0	1	1	0	8	Medium
T. Croghan-19	Protect Town of Croghan Wastewater Facility to the 500-year flood level	0	1	1	0	1	1	0	1	1	1	0	0	1	1	9	High
T. Croghan-20	Prevent ice damage to back wall of town highway garage	1	1	1	1	1	1	0	1	1	1	0	0	1	1	11	High
T. Croghan-21	Bridge Repair on Jerden Falls Road.	1	1	1	1	1	1	0	1	1	1	0	0	1	1	11	High
T. Croghan-22	Protect Boise Cascade Lower Dam to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High

Note: Section 6 (Mitigation Strategy) conveys guidance on prioritizing mitigation actions.





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### 9.5.7 Future Needs To Better Understand Risk/Vulnerability

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None at this time.

### 9.5.8 Staff and Local Stakeholder Involvement in Annex Development

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The Town of Croghan followed the planning process described in Section 3 (Planning Process). This annex was developed over the course of several months with input from many town departments, including the Town Clerk, the Highway Department, and the Town Supervisor. The Highway Superintendent represented the community on the Lewis County Hazard Mitigation Plan Planning Partnership and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Additional documentation on the municipality's planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix B (Meeting Documentation).

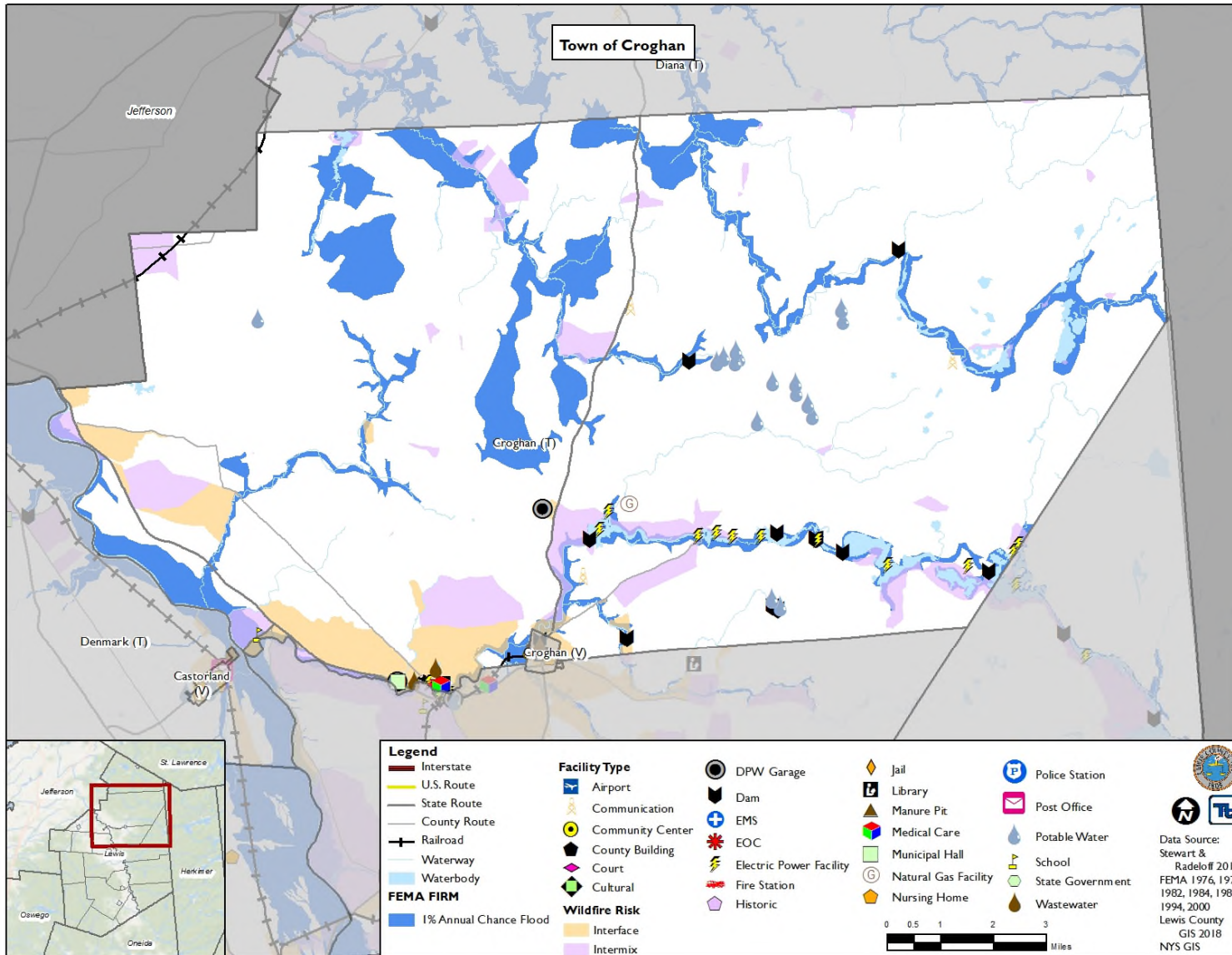
### 9.5.9 Hazard Area Extent and Location

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The hazard area extent and location map below was generated for the Town of Croghan that illustrates the probable areas impacted within the municipality. This map is based on the best available data at the time of the preparation of this plan and is adequate for planning purposes. The maps was generated only for those hazards that can be clearly identified using mapping techniques and technologies and for which the Town of Croghan has significant exposure.



Figure 9.5-1. Town of Croghan Hazard Area Extent and Location Map





Town of Croghan Action Worksheet			
<b>Project Name:</b>	Prevent ice damage to back wall of town highway garage		
<b>Project Number:</b>	T. Croghan-20		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Winter Storms		
<b>Description of the Problem:</b>	During winter storms and extremely cold weather, the formation of ice damages the back wall of the town highway garage.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The town will explore possible mitigation measures to prevent the formation of ice on the garage, as well as methods to allow for ice without damages taking place. The town will then implement the most cost-effective measure.		
<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	N/A	<b>Estimated Benefits (losses avoided):</b>	Highway Garage protected from ice damages
<b>Useful Life:</b>	25 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	TBD by selected action	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 1 year
<b>Estimated Time Required for Project Implementation:</b>	TBD by selected action	<b>Potential Funding Sources:</b>	HMGP, PDM, CHIPS, Municipal budget
<b>Responsible Organization:</b>	Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Remove Highway Garage	\$15,000+	Not feasible
	Relocate Highway Garage	\$750,000	Costly
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Prevent ice damage to back wall of town highway garage	
<b>Project Number:</b>	T. Croghan-20	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project will protect critical services of the highway garage.
Property Protection	1	Project will protect the highway garage from damages.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The town has the legal authority to complete the project.
Fiscal	0	The project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	0	Winter Storm
Timeline	0	
Agency Champion	1	Highway Department
Other Community Objectives	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	



Town of Croghan Action Worksheet			
<b>Project Name:</b>	Bridge Repair on Jerden Falls Road		
<b>Project Number:</b>	T. Croghan-21		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Flood		
<b>Description of the Problem:</b>	During heavy rains, the bridge floods due to inadequate water flow of the West Branch Oswegatchie River. This can result in closure of the bridge or damage to the bridge.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	The town will conduct a feasibility study to determine the appropriate structure changes to reduce flooding and flood damages. The town will then rebuild the bridge structure to better accommodate water flow.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	100-year	<b>Estimated Benefits (losses avoided):</b>	Bridge remains open, not vulnerable to flood damages
<b>Useful Life:</b>	50 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	Cost of project dependent on results of feasibility study.	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 1 year
<b>Estimated Time Required for Project Implementation:</b>	Timeline dependent on results of feasibility study.	<b>Potential Funding Sources:</b>	HMGP, PDM, Municipal budget
<b>Responsible Organization:</b>	Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation, Capital Improvement
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Remove bridge	\$100,000+	Not feasible, bridge is necessary to maintain access in the area
	Relocate bridge	\$100,000+	Not feasible due to River location, utility lines.
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			





Action Worksheet		
<b>Project Name:</b>	Bridge Repair on Jerden Falls Road	
<b>Project Number:</b>	T. Croghan-21	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project will keep the bridge open during flooding events.
Property Protection	1	Project will protect the bridge from flood damages.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The town has the legal authority to complete the project.
Fiscal	0	
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	0	Flood
Timeline	0	
Agency Champion	1	Highway Department
Other Community Objectives	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	



## 9.6 VILLAGE OF CROGHAN

This section presents the jurisdictional annex for the Village of Croghan. It includes resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions that can be implemented prior to a disaster in order to reduce or eliminate damage to property and people. This annex includes a general overview of the municipality and who in the village participated in the planning process, an assessment of the Village of Croghan’s risk and vulnerability, the different capabilities used in the village, and an action plan that will be implemented to achieve a more resilient community.

### 9.6.1 Hazard Mitigation Plan Point of Contact

The following individuals have been identified as the hazard mitigation plan’s primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Michael Monnat Title: Mayor Phone Number: 716.481.4371 Address: P.O. Box 185, Croghan, NY 13327 Email: <a href="mailto:Michaelmonnat716@gmail.com">Michaelmonnat716@gmail.com</a>	Name: Bruce Widrick Title: Deputy Mayor Phone Number: 315.771.4059 Address: 6868 Convent Street, Croghan, NY 13327 Email: <a href="mailto:brucewidrick@gmail.com">brucewidrick@gmail.com</a>
Floodplain Administrator	
Name: Ward Dailey Title: Lewis County Codes Phone Number: (315) 377-2037 Address: 7660 N State St Lowville, NY 13367 Email: <a href="mailto:permits@lewiscountyny.gov">permits@lewiscountyny.gov</a>	

### 9.6.2 Municipal Profile



The area was first settled by members of the Oneida tribe of the Iroquois Nation. Immigrants from Switzerland, Germany and France settled here and in 1841 named the village after George Croghan, a hero in the War of 1812. The Village of Croghan was incorporated in 1906. Much of the early industry was centered on the forests and the Beaver River. Logs were sent down the river to the sawmills powered by the river. The present Croghan Island Mill Lumber Company has been in operation for more than 150 years.

The Village of Croghan is located mainly in the south part of the Town of Croghan, as discussed in Section 9.5 (Town of Croghan), with a small part in the Town of New Bremen, as discussed in Section 9.19 (Town of New Bremen). It is located in central Lewis County. The village slogan, which reflects Croghan's proximity to the Adirondack Mountains, is "In the Foothills of the Adirondacks."

The Village is Croghan has a total area of 0.4 square miles. The Beaver River flows through the village. The village is bordered by the hamlet of Kirscherville (Town of New Bremen) to the east, the Town of New Bremen to its south, Beaver Falls (Town of Croghan) down the Beaver River to the west, and Belfort (Town of Croghan) up the river to the northeast. The estimated 2017 population was 631 persons, which is an 8.9 percent increase in population from 2010 (618 persons).

Data from the 2017 U.S. Census American Community Survey indicate that 8.4 percent of the Village population is 5 years of age or younger and 26.3 percent is 65 years of age or older.





### Growth/Development Trends

The following table summarizes recent residential/commercial development since 2010 to present and any known or anticipated major residential/commercial development and major infrastructure development that has been identified in the next five years within the municipality. The map in 9.6.9 of this annex illustrates the hazard areas along with the location of potential new development.

**Table 9.6-1. Growth and Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2010 to present</b>					
Columbus Midtown Properties Dollar General	Comm.	1	9688 State Route 812 Parcel #: 129.16-8.11	Wildfire Interface	Construction completed in 2017
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
None identified					

*\* Only location-specific hazard zones or vulnerabilities identified.*

### 9.6.3 Natural Hazard Event History Specific to the Municipality

Lewis County has a history of natural and non-natural hazard events as detailed in Volume I, Section 5.0 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that affected the county and its municipalities. For the purpose of this plan update, events that have occurred in the county from 2009 to present were summarized to indicate the range and impact of hazard events in the community. Information regarding specific damages is included, if available, based on reference material or local sources. This information is presented in the table below.

**Table 9.6-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April 26-May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	Although the county suffered damages, the village did not report damages from this event.
August 26-September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	Although the county suffered damages, the village did not report damages from this event.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	Although the county suffered damages, the village did not report damages from this event.
June 26-July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	Although the county suffered damages, the village did not report damages from this event.



Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
May 13-22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	Although the county suffered damages, the village did not report damages from this event.
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to a foot and half of snow within this band leading up to daybreak Friday.	Although the county suffered damages, the village did not report damages from this event.
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	Although the county suffered damages, the village did not report damages from this event.

Notes:

EM Emergency Declaration (FEMA)

DR Major Disaster Declaration (FEMA)

### 9.6.4 Hazard Ranking and Jurisdiction-Specific Vulnerabilities

The hazard profiles in Section 5.0 (Risk Assessment) have detailed information regarding each plan participant’s vulnerability to the identified hazards. This section provides a summary of exposure and impacts from significant hazards of concern as identified by the Village of Croghan.

#### Hazard Risk Ranking

This section provides the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy, as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating town or village may have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Village of Croghan. The Village of Croghan has reviewed the county hazard risk/vulnerability risk ranking table, as well as its individual results, to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the village indicated the following:

- The village agreed with the calculated hazard and vulnerability rankings.



Table 9.6-3. Hazard Risk/Vulnerability Risk Ranking

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	High
Extreme Temperature	High	High
Flood	Medium	Medium
Hazardous Material Incidents	Medium	Medium
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	High

Notes: The scale is based on the following hazard rankings as established in Section 5.3 (Hazard Ranking).

### Critical Facilities Flood Risk

NYS DEC Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for state projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a SFHA unless constructed according to specific mitigation specifications, including being raised 2' above the BFE. This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the state places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 500-year flood event, or worst damage scenario. For those that do not meet these criteria, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain and presents HAZUS-MH estimates of the damage and loss of use to critical facilities as a result of a 1-percent annual chance flood event.

Table 9.6-4. Potential Flood Losses to Critical Facilities

Name	Type	Exposure		Potential Loss from 1% Flood Event		Addressed by Proposed Action
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage	
Village of Croghan	Wastewater Pump	X	X	0	-	V. Croghan-6
Croghan Island Dam	Dam	X	X	-	-	V. Croghan-10

Source: FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000; Lewis County 2018

### Identified Issues

The municipality has identified the following vulnerabilities within their community:

- Pumping stations and the wastewater plant require backup generators.

### 9.6.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:





- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms

**Planning and Regulatory Capability**

The table below summarizes the regulatory tools that are available to the Village of Croghan.

**Table 9.6-5. Planning and Regulatory Tools**

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Comprehensive Plan	Yes, 2012	Local	Planning	Community Development Plan
Capital Improvements Plan	Yes	Local	Planning / Village Board	Capital Improvements Plan
Floodplain Management / Basin Plan	No	-	-	-
Stormwater Management Plan	No	-	-	-
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	No	-	-	-
Economic Development Plan	No	-	-	-
Comprehensive Emergency Management Plan	Yes, July 2013	County	Emergency Management	Lewis County Comprehensive Emergency Management Plan
Emergency Operation Plan	No	-	-	-
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	Yes, 2018	County	County Planning	Transportation Plan
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-
<b>Regulatory Capability</b>				
Building Code	Yes	County	County Code Enforcement	NYS Building Code
Zoning Ordinance	Yes	County	County Code Enforcement	Code citation unavailable
Subdivision Ordinance	Yes	County	County Code Enforcement	Code citation unavailable
NFIP Flood Damage Prevention Ordinance	Yes	Federal, State, Local	County Code Enforcement	Updated 5/15/85
NFIP: Cumulative Substantial Damages	No	-	-	-



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
NFIP: Freeboard	Yes	State, Local	County Code Enforcement	State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	Yes	Local	Village Board	Community Development Plan – February 2012
Site Plan Review Requirements	Yes	Local	Planning Board	Code citation unavailable
Stormwater Management Ordinance	No	-	-	-
Municipal Separate Storm Sewer System (MS4)	Yes	Local	Public Works	Local Law #1 Governing Sewer Use (August 1988) Local Law #2 of 2002 (amendment)
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	NYS Department of State, Real Estate Agent	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

### Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the Village of Croghan.

**Table 9.6-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	Yes	Planning Board
Mitigation Planning Committee	Yes	Mayor and Village Board
Environmental Board/Commission	Yes	Planning Board
Open Space Board/Committee	No	-
Economic Development Commission/Committee	Yes	IDA
Maintenance programs to reduce risk	Yes	Village Board
Mutual aid agreements	Yes	Village
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	Yes	Planning Board
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Planning Board
Planners or engineers with an understanding of natural hazards	Yes	Planning Board
NFIP Floodplain Administrator (FPA)	Yes	Lewis County Codes







Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Surveyor(s)	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	Yes	Planning Board
Scientist familiar with natural hazards	Yes	LCEM
Emergency Manager	Yes	LCEM
Grant writer(s)	No	Village Trustee
Staff with expertise or training in benefit/cost analysis	No	Village Trustee
Professionals trained in conducting damage assessments	Yes	NYS DHSES

### Fiscal Capability

The table below summarizes financial resources available to the Village of Croghan.

**Table 9.6-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes
Impact fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	No
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No
Other federal or state Funding Programs	Yes
Open Space Acquisition funding programs	No
Other	No

### Community Classifications

The table below summarizes classifications for community program available to the Village of Croghan.

**Table 9.6-8. Community Classifications**

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	Yes	Classification unavailable from the village	-
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	9	-
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-





Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	No	-	-
Public-private partnership initiatives addressing disaster-related issues	No	-	-

Note:

- Unavailable

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery, and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class 1 being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual.
- The Building Code Effectiveness Grading Schedule).
- The ISO Mitigation online ISO’s Public Protection (<https://www.isomitigation.com/ppc/>).
- The National Weather Service Storm Ready (<http://www.stormready.noaa.gov/index.html>).
- The National Firewise Communities (<http://firewise.org/>).

### Self-Assessment of Capability

The table below provides an approximate measure of the Village of Croghan’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

**Table 9.6-9. Self-Assessment Capability for the Municipality**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Planning and regulatory capability		X	
Administrative and technical capability			X
Fiscal capability	X – limited funds		
Community political capability		X	
Community resiliency capability			X
Capability to integrate mitigation into municipal processes and activities		X	



### National Flood Insurance Program

#### NFIP Floodplain Administrator (FPA)

Ward Dailey, Lewis County Codes

#### Flood Vulnerability Summary

The Village of Croghan does not maintain lists or inventories of properties that have been flooded. Additionally, the village does not make Substantial Damage estimates of buildings in the municipality. The following table summarizes the NFIP statistics for the Village of Croghan.

Table 9.6-10. NFIP Summary

Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in 100-year Boundary (3)
Village of Croghan	4	0	\$2,778	0	0	2

Source: FEMA Region 2, 2018

Notes:

- (1) Policies, claims, and repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.
- (2) Total building and content losses from the claims file provided by FEMA Region 2.
- (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file.  
 FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility.  
 A zero percentage denotes less than 1/100th percentage and not zero damage or vulnerability as may be the case.  
 Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.

#### Resources

Lewis County is responsible for floodplain administration in the village, with the assistance of the mayor and other staff. The village does not provide any education or outreach to the community regarding flood hazards/risk or flood risk reduction. The mayor indicated that the lack of dedicated time and resources is a barrier to running an effective floodplain management program in the village. If education and/or certification training on floodplain management was offered in Lewis County, the mayor would consider attending.

#### Compliance History

The Village of Croghan is currently in good standing with the NFIP. According to the NYS DEC, the most recent compliance audit was conducted on July 14, 2017.

#### Regulatory

The village’s flood damage prevention ordinance is enforcement by the Lewis County Codes Department. The ordinance meets the minimum set by FEMA but does not include the freeboard mandated by the state. The village does not have other ordinances, laws, or programs in place that supports floodplain management in the village.

#### Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community’s progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures.





## Planning

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### Existing Integration

**Community Development Plan:** The village maintains a comprehensive plan called the Community Development Plan which was adopted in January 2012.

### Opportunities for Future Integration

**Comprehensive Plan:** The comprehensive plan provides a framework for the design and development of a community over a long-term planning horizon. The plan addresses social, economic, and environmental issues for the community. During the next update of the village's comprehensive plan, the village will integrate the 2020 HMP update. By doing so, it establishes resilience as an overarching value for the village and provides the opportunity to continuously manage development in a way that does not lead to increased hazard vulnerability.

## Regulatory and Enforcement (Ordinances)

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### Existing Integration

The village's municipal zoning and subdivision regulations, along with the site plan review process, consider natural hazard risk when updating and enforcing regulations and reviewing site plans.

### Opportunities for Future Integration

The Planning Board will refer to the County's Hazard Mitigation Plan to help guide their decisions with respect to natural hazard risk management.

## Operational and Administration

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### Existing Integration

**Warming Shelters:** The village has established warming shelters for residents to use for power outages during winter months.

**Dams:** Four dams are located in the village, including one high hazard dam. The village will work with NYS DEC and dam owners to assist with working towards full compliance with applicable dam safety programs and developing/updating the Emergency Action Plans for the dams.

### Opportunities for Future Integration

**GIS:** The village will work with the county to look into expanding the GIS capabilities of the county to collect and develop more sophisticated hazard mapping and loss estimation.

**Critical Facilities:** The village will work with the county to provide a status of auxiliary power supplies at critical facilities in the village. If the critical facilities in the village do not have backup power, the village will seek funding to purchase and install backup power to the facilities. Additionally, the village will work with critical facility owners to identify the level of protection and year built of each facility to indicate whether or not standards were put into place to provide protection from natural hazards.



### Funding

#### Existing Integration

**Grants:** The village has been awarded grants for mitigation-related projects. The first was for \$100,000 with no local match. The second was various grants with the County for dam design, rehabilitation, and hydrological designs for the village.

#### Opportunities for Future Integration

The village can continue to apply for grant funding and allocate budget to support hazard mitigation funding.

### Education and Outreach

#### Existing Integration

Currently, the village does not have a public outreach program in place that informs citizens on natural hazards. However, the village is working with Lewis County in developing and enhancing these types of programs. The village operates a municipal website (<http://www.croghanny.org/>) that has community news and information.

#### Opportunities for Future Integration

The village will continue working with Lewis County in developing and enhancing public education and outreach programs for the hazards of concern in the village. The village will consider attending trainings on the development and implementation of programs to mitigate wind damage to private and public properties.

### Sheltering, Evacuation, and Temporary Housing

Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

#### Evacuation and Sheltering Needs

The Village of Croghan identified several locations as designated emergency shelters in the community. In addition to the facilities listed below, the village identified all schools as designated shelters.

**Table 9.6-11. Emergency Shelters in the Community**

Shelter Name	Address	Capacity	Accommodates Pets?	ADA Compliant?	Backup Power?	Types of Medical Services Provided	Other Services Provided
Croghan Fire Department	6860 Fire Hall St.	150	Yes	Yes	Yes	None	Kitchen and Bathroom
St. Stephen's Parish	9748 Main St.	100	Yes	Yes	No	None	Kitchen and Bathroom
Steepleview Court	6926 George St.	20	Yes	Yes	Yes	None	Kitchen and Bathroom
Croghan Free Library	9794 NY-812	10	Yes	Yes	No	None	Bathroom

While the Village does not have a formal evacuation plan, the major roads in and out of the Village can serve as evacuation routes if needed. During emergency events, the Village follows the County's guidance on evacuation procedures.



### Temporary and Permanent Housing

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The Village of Croghan identified the Croghan Recreational Park, located at 9578 Park Drive, as a potential site for temporary housing for residents displaced by a disaster. The village does not have suitable locations for relocating houses out of the floodplain or building new homes once properties in the floodplain are acquired.

### 9.6.6 Mitigation Strategy and Prioritization

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This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and prioritization.

#### Past Mitigation Initiative Status

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The following table indicates progress on the community’s mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under ‘Capability Assessment’ presented previously in this annex.



Table 9.6-12. Status of Previous Mitigation Actions

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem and the Solution (Project)	Responsible Party	Status (In Progress, Ongoing Capability, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection	
	Removing trees that in a high wind threaten damage to emergency power (which kicks in during power outages) that operates the water plant that supplies water to the Village of Croghan	Flooding of critical facility, pollution of Black River	Falling trees can threaten power.	Village Board and Department of Public Works	No progress due to limited resources, funding, and staff			<ol style="list-style-type: none"> <li>To be included in the 2020 HMP.</li> <li>Vegetation management</li> <li></li> </ol>
	Prevent flooding of the sewer beds from high water (flooding) of the Beaver River and inflow and infiltration (I & I) to the sewer system caused by extreme weather-related occurrences. A. Raise berms at the WWTP to mitigate inflow. B. Improve consumer compliance with existing Sewer Law. C. Locate and eliminate I & I in sewer infrastructure.	Flood	<ol style="list-style-type: none"> <li>Inundation from Beaver River overflowing its banks</li> <li>High I &amp; I from extreme weather.</li> <li>High I &amp; I from extreme weather</li> </ol>	Village Board (all)	No progress due to limited resources, funding, and staff			<ol style="list-style-type: none"> <li>To be included in the 2020 HMP</li> <li>Raise berms at WWTP</li> </ol>
	Clearing a 25' wide swath the 4.76 miles the Village of Croghan water line runs from the wellhead to the	Severe Storm	Uprooting trees damaging the waterline during high wind events.	Village Board and Dept of Public Works	No progress due to limited resources, funding, and staff			<ol style="list-style-type: none"> <li>To be included in the 2020 HMP</li> <li>Vegetation management</li> </ol>





Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem and the Solution (Project)	Responsible Party	Status (In Progress, Ongoing Capability, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Evidence of Success	Cost	
	Village to protect the line from wind damage from uprooting of trees.					Evidence of Success		
	Repair/rehabilitate the Croghan Dam	Flooding, ice jams, earthquake and dam failure	The dam is damaged and degraded.	Village of Croghan with support from Lewis County Development Corporation	No progress due to limited resources, funding, and staff	Level of Protection		1. To be included in the 2020 HMP 2. Repair/rehabilitate the Croghan Dam
	Plan Review for Mitigation Ensure that local comprehensive plans incorporate disaster mitigation techniques through a courtesy review of all draft plans by the County Economic Development and Planning Department	All Hazards	Comprehensive plans should incorporate disaster mitigation	Village Mayor / CPG Member, Lewis County Emergency Management	Ongoing Capability	Level of Protection		This is an ongoing capability for the village and part of their day-to-day operations.
	Investigate expansion of hazard-related GIS capabilities via acquisition of HAZUS-MH to collect and develop more sophisticated hazard mapping and loss estimation. Use information in future plan updates. Ensure information will be available to the public	Earthquakes, Wind, and Flood	GIS information is needed to support planning.	Village Mayor / CPG Member, Lewis County Emergency Management	Ongoing Capability	Level of Protection		



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem and the Solution (Project)	Responsible Party	Status (In Progress, Ongoing Capability, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection	
	and to local communities and agencies.							
	Outreach Program County coordination with local governments and other agencies to systematically contact isolated, vulnerable, or special-needs population during severe winter storm events	Winter Storms and Extreme temperatures	Special needs populations need education and assistance.	Village Mayor / CPG Member, Lewis County Emergency Management	Ongoing Capability	Cost		This is an ongoing capability for the village and part of their day-to-day operations.
						Level of Protection		
						Damages Avoided; Evidence of Success		
	Auxiliary Power Supply Conduct a countywide survey on status of auxiliary power supplies at all critical facilities.	Winter Storms, Wind, Tornado	Critical facilities require backup power sources.	Village Mayor / CPG Member, Lewis County Emergency Management	Ongoing Capability	Cost		This is an ongoing capability for the village and part of their day-to-day operations.
						Level of Protection		
						Damages Avoided; Evidence of Success		
	Wind Hazards Training Provide trainings to municipalities regarding the development and implementation of programs to mitigate wind damage to private and public properties.	Wind, Tornado	Officials require training on wind damage.	Village Mayor / CPG Member, Lewis County Emergency Management	Ongoing Capability	Cost		This is an ongoing capability for the village and part of their day-to-day operations.
						Level of Protection		
						Damages Avoided; Evidence of Success		
	Winter Driving and Vehicle Preparation Education Provide education opportunities for	Winter Storms and Wind	Public requires education on winter driving techniques.	Village Mayor / CPG Member, Lewis County	Ongoing Capability	Cost		This is an ongoing capability for the village and part of their day-to-day operations.
						Level of Protection		
						Damages Avoided;		



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem and the Solution (Project)	Responsible Party	Status (In Progress, Ongoing Capability, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Evidence of Success	Cost	
	residents to learn winter driving techniques.			Emergency Management		Evidence of Success		
	Winter Storm Public Awareness and Preparation Increase public awareness of personal responsibilities during emergencies, specifically winter storm events	Winter Storms and Snow	Public requires education on personal responsibilities during hazard events.	Village Mayor / CPG Member, Lewis County Emergency Management	Ongoing Capability	Level of Protection		This is an ongoing capability for the village and part of their day-to-day operations.
						Damages Avoided; Evidence of Success		
						Cost		
	Emergency Warming Shelters Establish warming shelters for vulnerable populations, including residents and stranded motorists	Extreme Temperatures and Winter Storms	Warming shelters need to be established.	Village Mayor / CPG Member, Lewis County Emergency Management	Ongoing Capability	Level of Protection		This is an ongoing capability for the village and part of their day-to-day operations.
						Damages Avoided; Evidence of Success		
						Cost		
	Dam Safety Coordinate with NYS DEC and owners of all high and moderate hazard dams to work towards full compliance with applicable dam safety programs and development/updating of Emergency Action Plans including inundation mapping.	Dam Failure	Dams need to be compliant with safety regulations.	Village Mayor / CPG Member, Lewis County Emergency Management	Ongoing Capability	Level of Protection		This is an ongoing capability for the village and part of their day-to-day operations.
						Damages Avoided; Evidence of Success		
						Cost		
	Drought Preparedness Publish and distribute literature (via the county website, supplemented by hard	Drought	Drought education is needed for the public.	Village Mayor / CPG Member, Lewis County	Ongoing Capability	Level of Protection		This is an ongoing capability for the village and part of their day-to-day operations.
						Damages Avoided;		
						Cost		



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem and the Solution (Project)	Responsible Party	Status (In Progress, Ongoing Capability, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Evidence of Success		
	copy distribution) on water conservation techniques and drought management strategies.			Emergency Management		Evidence of Success		
	Landslide Study Conduct surveys to determine local vulnerabilities to landslides threatening property and roads, coordinate with municipalities to limit development in these areas and develop remedial measures for existing vulnerabilities.	Landslides	Landslide information is needed for development decisions.	Village Mayor / CPG Member, County Soil and Water	No Progress	Cost		The County Soil and Water Conservation District is responsible for this action; therefore, it will not be included as a mitigation action for the village
						Level of Protection		
						Damages Avoided; Evidence of Success		
	Wildfire Mapping Create and distribute mapping and database of wildland access points for firefighters, develop enhanced mapping of urban/wildland interface.	Wildfire	Wildfire areas need to be mapped for emergency purposes.	Village Mayor / CPG Member, Lewis County Emergency Management	Ongoing Capability	Cost		This is an ongoing capability for the village and part of their day-to-day operations.
						Level of Protection		
						Damages Avoided; Evidence of Success		
	Critical Facilities Survey Undertake a year built and level of protection survey for all critical/emergency facilities and shelters to highlight structures built before codes and standards were put in	Wind/Tornado, Winter Storms, Earthquakes, and Flooding (including Ice Jams)	Critical facilities should be built/retrofitted to higher standards.	Village Mayor / CPG Member, Lewis County Emergency Management	Ongoing Capability	Cost		This is an ongoing capability for the village and part of their day-to-day operations.
						Level of Protection		
						Damages Avoided; Evidence of Success		



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem and the Solution (Project)	Responsible Party	Status (In Progress, Ongoing Capability, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps <ol style="list-style-type: none"> <li>1. Project to be included in 2020 HMP or Discontinue</li> <li>2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate).</li> <li>3. If discontinue, explain why.</li> </ol>
	place to provide protection from natural hazards, and pursue potential mitigation opportunities to protect these sites as funding becomes available.							



### **Completed Mitigation Initiatives not Identified in the Previous Mitigation Strategy**

The Village of Croghan has conducted regular stormwater maintenance operations since the last hazard mitigation plan.

### **Proposed Hazard Mitigation Initiatives for the Plan Update**

Table 9.6-13 summarizes the comprehensive-range of specific mitigation initiatives the Village of Croghan would like to pursue in the future to reduce the effects of hazards. Some of these initiatives may be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6 (Mitigation Strategy), 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.6-14 provides a summary of the prioritization of all proposed mitigation initiatives for the plan update.



Table 9.6-13. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility	EHP Issues	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Estimated Timeline	Potential Funding Sources	Priority	Mitigation Category	CRS Category
V. Croghan-1	Road Expansion in the Village	<p><b>Problem:</b> A portion of the village water line is inaccessible by vehicle.</p> <p><b>Solution:</b> The village will conduct a feasibility study to determine feasibility and cost to build road to portion of water line that is currently inaccessible to vehicles.</p>	Flood, Severe Storm, Severe Winter Storm	2	No	No	Village Public Works	TBD by feasibility study	To protect the integrity of the water line	Within 5 years	Village budget	High	SIP	PP
V. Croghan-2	Generator for Sewer Pumping Station #1	<p><b>Problem:</b> Sewer pump station #1 currently does not have a form of backup power. During a power outage, the station cannot function properly. Lack of power prevents pumps from pumping properly, threat of sewage overflow, and potential impacts to the health and safety of the community.</p> <p><b>Solution:</b> Purchase and install backup generator for sewer pumping station #1. A generator would allow the station to pump properly during a power outage and prevent overflow and other issues associated with a power outage.</p>	All	2	Yes	No	Village Public Works	\$20,000	To protect the integrity of the sewer plants; continuity of operations	Within 5 years	HMGP, PDM, operating budget	High	SIP	PP
V. Croghan-3	Generator for Sewer Pumping Station #2	<p><b>Problem:</b> Sewer pump station #2 currently does not have a form of backup power. During a power outage, the station cannot function properly. Lack of power prevents pumps from pumping properly, threat of sewage overflow, and potential impacts to the health and safety of the community.</p> <p><b>Solution:</b> Purchase and install backup generator for sewer pumping station #2. A generator would allow the station to pump properly during a power outage and prevent overflow and other issues</p>	All	2	Yes	No	Village Public Works	\$20,000	To protect the integrity of the sewer plants; continuity of operations	Within 5 years	HMGP, PDM, operating budget	High	SIP	PP







Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility	EHP Issues	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Estimated Timeline	Potential Funding Sources	Priority	Mitigation Category	CRS Category
V. Croghan-4	Portable Generator for Water and Sewer Treatment Plants	<p><b>Problem:</b> Extended power outages can have devastating impacts on water and sewer utilities. Loss of power to water treatment plants can impact the water supply to residents and businesses and pose a risk of contaminated drinking water. Losing pumps at sewer plants can lead to direct discharge of untreated sewage to waterbodies or cause sewage backup into homes and businesses.</p> <p><b>Solution:</b> Purchase one large portable generator to serve either sewer or water treatment plants in the village. A portable generator will allow the village to bring the generator to the facility that needs power. It will allow the pumps to function during a power outage, providing drinking water and/or proper sewage pumping to the community.</p>	All	2	Yes	No	Village Public Works	\$10,000	To ensure continued integrity of both sewer and water plants during power outage	Within 5 years	HMGP, PDM, operating budget	High	SIP	PP
V. Croghan-5	Erie Boulevard Hydropower Facilities	<p><b>Problem:</b> The Erie Boulevard Hydropower facilities located on Effley Falls Road, Adsit Trail, Fish Creek Road, Erie Canal Road, and Old State Road are located in the one-percent floodplain and vulnerable to flooding.</p> <p><b>Solution:</b> Working the facility operator/owner, identify the level of protection of each facility. The village will provide mitigation options to the owner/operator to protect the facilities to the 500-year flood level.</p>	Flood	4	Yes <span style="color: blue;">♦</span>	No	Village Floodplain Administrator with support from the facility owner / operator	<\$10,000	Increase awareness of flood damages; increase protection of critical facilities	Within 2 years	Village Budget	Medium	EAP	PI
V. Croghan-6	Protect the wastewater pump to the 500-year flood level	<p><b>Problem:</b> The wastewater pump is located in the 100-year floodplain.</p> <p><b>Solution:</b> The village will explore mitigation actions to protect the</p>	Flood	2	Yes <span style="color: blue;">♦</span>	No	FPA	TBD by selected mitigation actions	Wastewater pump protected to	Within 5 years	HMGP, PDM, village budget	High	SIP	PP





Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility	EHP Issues	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Estimated Timeline	Potential Funding Sources	Priority	Mitigation Category	CRS Category
		wastewater pump to the 500-year flood level. The village will then implement the selected action.							the 500-year flood level					
V. Croghan-7	Vegetation management	<p><b>Problem:</b> Falling trees can threaten power to critical facilities such as the water plant. Uprooting trees can damage the water line that runs from the wellhead to the village.</p> <p><b>Solution:</b> The Village will develop a tree maintenance program to identify trees that need to be pruned or removed. This will include clearing a 25' wide swath the 4.76 miles the Village of Croghan water line runs from the wellhead to the village and remove identified problem trees that could fall on power lines.</p>	Severe Storm, Severe Winter Storm	1	Yes	Extensive tree removal along water line.	Village Board and Department of Public Works	\$50,000	Power lines and water line protected from falling trees and uprooted trees.	Within 5 years	HMGP, PDM, village budget	High	SIP, NSP	PP, NR
V. Croghan-8	Repair/rehabilitate the Croghan Dam	<p><b>Problem:</b> Croghan Dam is degraded.</p> <p><b>Solution:</b> The village will conduct a feasibility assessment to determine the level of degradation and repairs needed.</p>	Flood	2	Yes	None	Village Board and Department of Public Works	Feasibility study; \$5,000. Repair costs to be determined by feasibility study	Dam strengthened	Within 5 years	Village budget	High	SIP	PP
V. Croghan-9	Raise berms at WWTP	<p><b>Problem:</b> The sewer beds are vulnerable to flooding from the Beaver River.</p> <p><b>Solution:</b> The village will raise the berms at the WWTP. The current berms will be surveyed to determine current elevation. Village will aim to protect to the 500-year flood level.</p>	Flood	2	Yes	None	Village Board and Department of Public Works	\$30,000	Sewer beds protected from infiltration during high water events	Within 5 years	HMGP, PDM, village budget	High	SIP	PP
V. Croghan-10	Protect Croghan Island Dam to the 500-year flood level	<p><b>Problem:</b> The Croghan Island Dam is located in the 100-year floodplain.</p> <p><b>Solution:</b> The FPA will contact the facility manager and discuss</p>	Flood	2	Yes	None	Within 6 months	FPA, facility manager	<\$100	Facility protected to the 500-year flood level	Municipal budget	Medium	EAP	PI





Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility	EHP Issues	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Estimated Timeline	Potential Funding Sources	Priority	Mitigation Category	CRS Category
		options to protect the facility to the 500-year flood level.												

Notes:  
Not all acronyms and abbreviations defined below are included in the table.

Acronyms and Abbreviations:

- CAV Community Assistance Visit
- CRS Community Rating System
- FEMA Federal Emergency Management Agency
- FPA Floodplain Administrator
- HMA Hazard Mitigation Assistance
- N/A Not applicable
- NFIP National Flood Insurance Program
- OEM Office of Emergency Management

Potential FEMA HMA Funding Sources:

- FMA Flood Mitigation Assistance Grant Program
- HMGP Hazard Mitigation Grant Program
- PDM Pre-Disaster Mitigation Grant Program

Timeline:

The time required for completion of the project upon implementation

Cost:

The estimated cost for implementation.

Benefits:

A description of the estimated benefits, either quantitative and/or qualitative.


Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses and preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities

CRS Category:

- Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.
- Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities

Critical Facility:

- Yes  - Critical Facility located in 1% floodplain





**Table 9.6-14. Summary of Prioritization of Actions**

Mitigation Action/Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community	Total	High / Medium / Low
V. Croghan-1	Road Expansion in the Village	1	1	1	1	1	1	0	1	1	1	1	0	1	1	12	High
V. Croghan-2	Generator for Sewer Pumping Station #1	0	1	1	1	1	1	0	1	1	1	1	0	1	1	11	High
V. Croghan-3	Generator for Sewer Pumping Station #2	0	1	1	1	1	1	0	1	1	1	1	0	1	1	11	High
V. Croghan-4	Portable Generator for Water and Sewer Treatment Plants	1	1	1	1	1	1	0	1	1	1	1	0	1	1	12	High
V. Croghan-5	Erie Boulevard Hydropower Facilities	1	1	1	1	1	1	1	0	1	1	0	1	1	1	11	High
V. Croghan-6	Protect the wastewater pump to the 500-year flood level	0	1	1	1	1	1	0	1	1	1	0	0	1	1	10	High
V. Croghan-7	Vegetation management	0	1	0	1	1	1	0	1	1	1	1	0	1	1	10	High
V. Croghan-8	Repair/rehabilitate the Croghan Dam	1	1	0	0	1	1	0	1	1	1	0	0	1	1	9	High
V. Croghan-9	Raise berms at WWTP	0	1	1	1	1	1	0	1	1	1	0	0	1	1	10	High
V. Croghan-10	Protect Croghan Island Dam to the 500-year flood level	0	1	0	0	1	1	0	1	1	1	0	1	1	0	8	Medium

Note: Refer to Section 6 (Mitigation Strategy), which conveys guidance on prioritizing mitigation actions.



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### 9.6.7 Future Needs To Better Understand Risk/Vulnerability

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None at this time.

### 9.6.8 Staff and Local Stakeholder Involvement in Annex Development

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The Village of Croghan followed the planning process described in Section 3 (Planning Process). This annex was developed over the course of several months with input from many village departments, including: the Mayor and Deputy Mayor. The Mayor represented the community on the Lewis County Hazard Mitigation Plan Planning Partnership and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Additional documentation on the municipality's planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix B (Meeting Documentation).

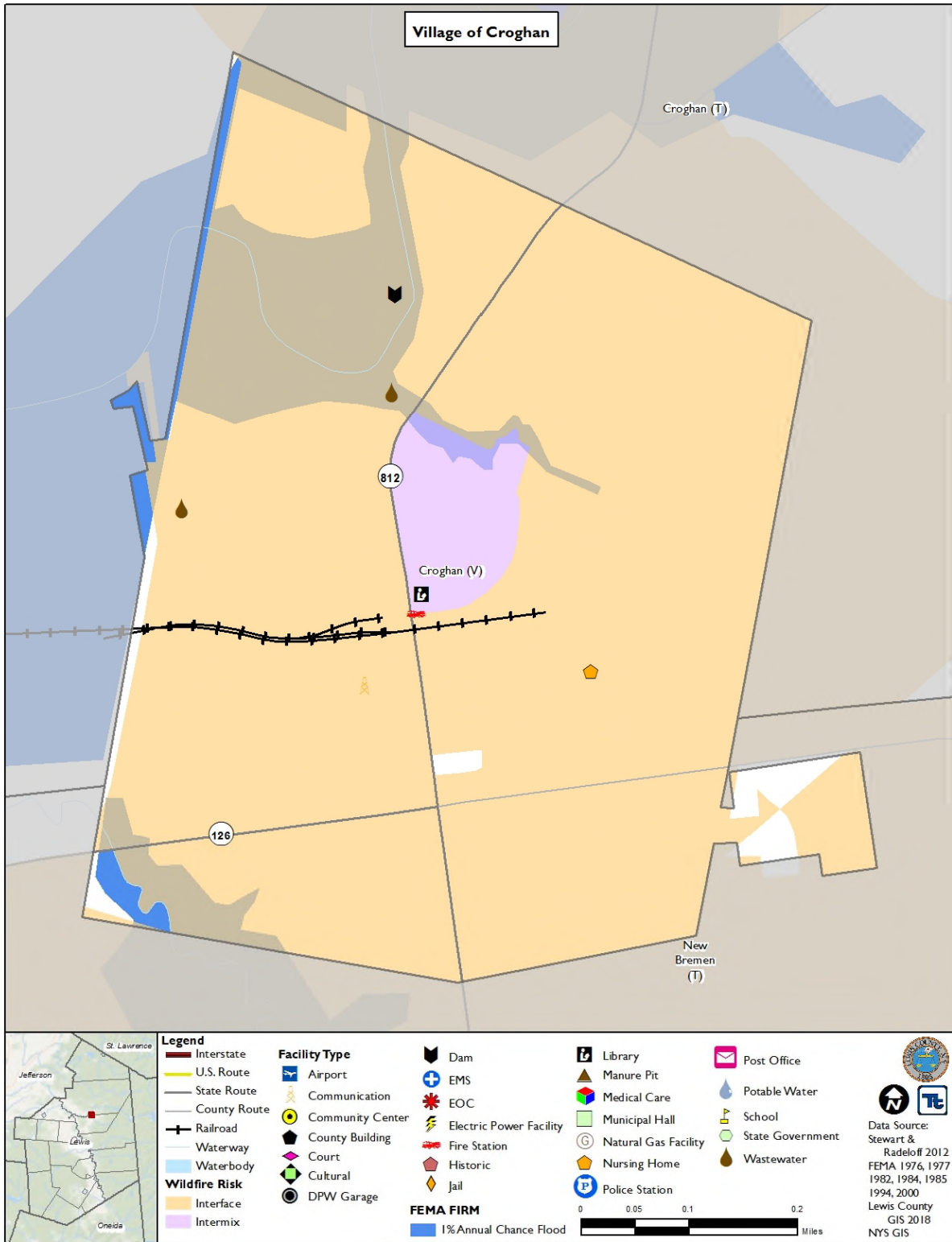
### 9.6.9 Hazard Area Extent and Location

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Hazard area extent and location maps have been generated for the Village of Croghan that illustrate the probable areas impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps have been generated only for those hazards that can be clearly identified using mapping techniques and technologies and for which the Village of Croghan has significant exposure. A map of the Village of Croghan hazard area extent and location is provided on the following page. This map indicates the location of the regulatory floodplain, as well as identified critical facilities within the municipality.



Figure 9.6-1. Village of Croghan Hazard Area Extent and Location Map





Action Worksheet			
<b>Project Name:</b>	Generator for Sewer Pumping Station #1		
<b>Project Number:</b>	V. Croghan-2		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	All hazards		
<b>Description of the Problem:</b>	Sewer pump station #1 currently does not have a form of backup power. During a power outage, the station cannot function properly. Lack of power prevents pumps from pumping properly, threat of sewage overflow, and potential impacts to the health and safety of the community.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	Purchase and install backup generator for sewer pumping station #1. A generator would allow the station to pump properly during a power outage and prevent overflow and other issues associated with a power outage.		
<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Not applicable as a generator provides protection during any storm-related power outage	<b>Estimated Benefits (losses avoided):</b>	To protect the integrity of the sewer plants; continuity of operations
<b>Useful Life:</b>	19 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$20,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	Within 5 years	<b>Potential Funding Sources:</b>	HMGP, PDM, operating budget
<b>Responsible Organization:</b>	Village Public Works	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation, Annual Budget
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Purchase portable generator	\$10,000	While it will provide power to the facility, it cannot fully power the entire facility
	Install solar panels	\$15,000	Weather dependent
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			





Action Worksheet		
<b>Project Name:</b>	Generator for Sewer Pumping Station #1	
<b>Project Number:</b>	V. Croghan-2	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Protects from power loss.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The village has the legal authority to conduct the project.
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	All hazards.
Timeline	0	Within 5 years.
Agency Champion	1	Village Public Works.
Other Community Objectives	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	



Action Worksheet			
<b>Project Name:</b>	Generator for Sewer Pumping Station #2		
<b>Project Number:</b>	V. Croghan-3		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	All hazards		
<b>Description of the Problem:</b>	Sewer pump station #2 currently does not have a form of backup power. During a power outage, the station cannot function properly. Lack of power prevents pumps from pumping properly, threat of sewage overflow, and potential impacts to the health and safety of the community.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	Purchase and install backup generator for sewer pumping station #2. A generator would allow the station to pump properly during a power outage and prevent overflow and other issues associated with a power outage.		
<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Not applicable as a generator provides protection during any storm-related power outage	<b>Estimated Benefits (losses avoided):</b>	To protect the integrity of the sewer plants; continuity of operations
<b>Useful Life:</b>	19 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$20,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	Within 5 years	<b>Potential Funding Sources:</b>	HMGP, PDM, operating budget
<b>Responsible Organization:</b>	Village Public Works	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation, Annual Budget
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Purchase portable generator	\$10,000	While it will provide power to the facility, it cannot fully power the entire facility
	Install solar panels	\$15,000	Weather dependent
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Generator for Sewer Pumping Station #2	
<b>Project Number:</b>	V. Croghan-3	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Protects from power loss.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The Village has the legal authority to conduct the project.
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	All hazards.
Timeline	0	Within 5 years.
Agency Champion	1	Village Public Works.
Other Community Objectives	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	



Action Worksheet			
<b>Project Name:</b>	Protect the wastewater pump to the 500-year flood level		
<b>Project Number:</b>	V. Croghan-6		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Flood		
<b>Description of the Problem:</b>	<i>The wastewater pump is located in the 100-year floodplain.</i>		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	The village will explore mitigation actions to protect the wastewater pump to the 500-year flood level. The village will then implement the selected action.		
<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	500-year	<b>Estimated Benefits (losses avoided):</b>	Wastewater pump protected to the 500-year flood level
<b>Useful Life:</b>	Once appropriate project is identified, then useful life can be determined.	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	Staff time to explore mitigation actions; once appropriate project is identified, then useful life can be determined.	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	Within 5 years	<b>Potential Funding Sources:</b>	HMGP, PDM, village budget
<b>Responsible Organization:</b>	Floodplain Administrator	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation; Annual Budget
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Current problem continues
	Remove wastewater pump	\$100,000+	Wastewater pump cannot be removed
	Relocate wastewater pump	\$100,000+	Wastewater pump cannot be relocated
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Protect the wastewater pump to the 500-year flood level	
<b>Project Number:</b>	V. Croghan-6	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project will protect the wastewater pump from flood damages
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The village has the legal authority to complete the project
Fiscal	0	Project requires funding support
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	0	Flood
Timeline	0	Within 5 years
Agency Champion	1	
Other Community Objectives	1	Protection of critical facilities
<b>Total</b>	10	
<b>Priority (High/Med/Low)</b>	High	



Action Worksheet			
<b>Project Name:</b>	Vegetation management		
<b>Project Number:</b>	V. Croghan-7		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Severe storm, severe winter storm		
<b>Description of the Problem:</b>	<i>Falling trees can threaten power to critical facilities such as the water plant. Uprooting trees can damage the water line that runs from the wellhead to the village.</i>		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	The Village will develop a tree maintenance program to identify trees that need to be pruned or removed. This will include clearing a 25' wide swath the 4.76 miles the Village of Croghan water line runs from the wellhead to the village and remove identified problem trees that could fall on power lines.		
<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	25' swath of non-vegetated along water line.	<b>Estimated Benefits (losses avoided):</b>	Power lines and water line protected from falling trees and uprooted trees.
<b>Useful Life:</b>	2 years	<b>Goals Met:</b>	1
<b>Estimated Cost:</b>	\$50,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project, Natural Systems Protection
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	Within 5 years	<b>Potential Funding Sources:</b>	HMGP, PDM, village budget
<b>Responsible Organization:</b>	Village Board and Department of Public Works	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation, Annual Budget
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Current problem continues
	Rely on citizen reports of what trees are likely to fall and then address trees.	\$1,000	Reactive and likely to miss many falling trees.
	Remove all trees.	\$50,000+	Removal all trees is not feasible.
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Vegetation management	
<b>Project Number:</b>	V. Croghan-7	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project will protect property from damage from falling trees
Cost-Effectiveness	0	
Technical	1	
Political	1	
Legal	1	The village has the legal authority to complete the project
Fiscal	0	Project requires funding support
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Severe storm, severe winter storm
Timeline	0	Within 5 years
Agency Champion	1	
Other Community Objectives	1	Protection of critical infrastructure
<b>Total</b>	10	
<b>Priority (High/Med/Low)</b>	High	





Action Worksheet			
<b>Project Name:</b>	Raise berms at WWTP		
<b>Project Number:</b>	V. Croghan-9		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Flood		
<b>Description of the Problem:</b>	<i>The sewer beds are vulnerable to flooding from the Beaver River though outside of the 100-year floodplain.</i>		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	The village will raise the berms at the WWTP. The current berms will be surveyed to determine current elevation. Village will aim to protect to the 500-year flood level.		
<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	500-year flood level	<b>Estimated Benefits (losses avoided):</b>	Sewer beds protected from infiltration during high water events
<b>Useful Life:</b>	25 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$30,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	Within 5 years	<b>Potential Funding Sources:</b>	HMGP, PDM, village budget
<b>Responsible Organization:</b>	Village Board; Department of Public Works	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation, Capital Improvement
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Build concrete floodwalls	\$150,000	Not cost-effective
	Floodproof the WWTP	\$100,000	Not cost-effective
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Raise berms at WWTP	
<b>Project Number:</b>	V. Croghan-9	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project will protect WWTP from flood damages
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The village has the legal authority to complete the project
Fiscal	0	The project requires funding support
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	0	Flood
Timeline	0	Within 5 years
Agency Champion	1	Village Board; Department of Public Works
Other Community Objectives	1	
<b>Total</b>	10	
<b>Priority (High/Med/Low)</b>	High	



## 9.7 TOWN OF DENMARK

This section presents the jurisdictional annex for the Town of Denmark.

### 9.7.1 Hazard Mitigation Plan Point of Contact

The following individuals have been identified as the hazard mitigation plan’s primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Patrick Mahar Title: Superintendent of Highways Phone Number: 315-493-3846 Address: 3707 Roberts Rd., Carthage, NY, 13619 Email: denmarkhighwaysuper@yahoo.com	Name: James Der Title: Supervisor Phone Number: 315-778-9417 Address: 3707 Roberts Rd., Carthage, NY, 13619 Email: denmarksupervisor@gmail.com
<b>Floodplain Administrator</b>	
Name: Lloyd Woodruff Title: Town Zoning Enforcement	

### 9.7.2 Municipal Profile

The Town of Denmark is located in northern New York about 20 miles east of Lake Ontario and 40 miles south of the Canadian border. The town is on the northern border of Lewis County and is approximately 51 square miles in area. According to the Census American Community Survey 5-Year Estimate 2013-2017, the population estimate was 1,714. This is a 0.3 percent population increase from the 2010 population total of 1,708. Approximately 4.1 percent of the population is under 5 years of age, and 11 percent of the population is 65 years of age or older. The Black River makes up the eastern border of the town, and the Deer River bisects the town in a northeasterly to southwesterly direction. The town is rural, primarily contains farmland, and includes the villages of Copenhagen and Castorland.

### Growth/Development Trends

The following table summarizes recent residential/commercial development since 2010 to present and any known or anticipated major residential/commercial development and major infrastructure development that has been identified in the next five years within the municipality. The map in 9.7.9 of this annex illustrates the hazard areas along with the location of potential new development.

Table 9.7-1. Growth and Development

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2010 to present</b>					
Johnson Lumber	Comm.	Information unavailable	10972 State Route 26, Carthage, NY	None	Complete
Wind	Comm.	Information unavailable	Information unavailable	Information unavailable	Information unavailable
Solar	Comm.	Information unavailable	Information unavailable	Information unavailable	Information unavailable
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
None anticipated					



### 9.7.3 Natural Hazard Event History Specific to the Municipality

Lewis County has a history of natural and non-natural hazard events as detailed in Volume I, Section 5.0 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the county and its municipalities. For the purpose of this plan update, events that have occurred in the county from 2009 to present were summarized to indicate the range and impact of hazard events in the community. Information regarding specific damages is included, if available, based on reference material or local sources. This information is presented in the table below.

**Table 9.7-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April 26-May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	The town experienced shoulder washouts on roadways due to flash flooding.
August 26-September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	Although the county suffered damages, the town did not report damages from this event.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	Although the county suffered damages, the town did not report damages from this event.
June 26-July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	Although the county suffered damages, the town did not report damages from this event.
May 13-22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	Although the county suffered damages, the town did not report damages from this event.
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to a foot and half of snow within this band leading up to daybreak Friday.	The town experienced severe winter storm conditions but did not report damages.
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	Although the county suffered damages, the town did not report damages from this event.

Notes:

- EM Emergency Declaration (FEMA)
- DR Major Disaster Declaration (FEMA)





### 9.7.4 Hazard Vulnerabilities and Ranking

The hazard profiles in Section 5.0 (Risk Assessment) have detailed information regarding each plan participant’s vulnerability to the identified hazards. The following summarizes the hazard vulnerabilities and their ranking in the Town of Denmark.

#### Hazard Risk/Vulnerability Risk Ranking

This section provides the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating town or village might have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Town of Denmark. The Town of Denmark has reviewed the county hazard risk/vulnerability risk ranking table, as well as its individual results, to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the town indicated the following:

- The Town of Denmark agreed with the calculated hazard risk/vulnerability risk rankings.

Table 9.7-3. Hazard Risk/Vulnerability Risk Ranking

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	Medium
Extreme Temperature	High	High
Flood	Medium	Medium
Hazardous Material Incidents	Medium	Medium
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	Medium

Notes: The hazard ranking calculation is based on probability of occurrence and impacts on population, property, and the economy. Section 5.3 (Hazard Ranking) provides for the hazard ranking methodology.

#### Critical Facilities Flood Risk

NYS DEC Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for state projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a SFHA unless constructed according to specific mitigation specifications, including being raised 2 feet above the BFE. This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the state places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 500-year flood event or worst damage scenario. For those that do not meet this criteria, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).





The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain and presents HAZUS-MH estimates of the damage and loss of use to critical facilities as a result of a 1-percent annual chance flood event.

**Table 9.7-4. Potential Flood Losses to Critical Facilities**

Name	Type	Exposure		Potential Loss from 1% Flood Event		Addressed by Proposed Action
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage	
Copenhagen Hydro, LLC	Electric Power Facility	X	-	-	-	T. Denmark-3
Tug Hill Energy Inc	Electric Power Facility	X	-	-	-	T. Denmark-4

Source: FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000; Lewis County 2018

### Identified Issues

The municipality has identified the following vulnerabilities within their community:

- Numerous roadways have low elevations and are in the floodplain.
- Numerous culverts are undersized and have contributed to flood damages.

### 9.7.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms

### Planning and Regulatory Capability

The table below summarizes the regulatory tools that are available to the Town of Denmark.

**Table 9.7-5. Planning and Regulatory Tools**

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Master Plan	No	-	-	-
Capital Improvements Plan	Yes	Town	Highway Dept.	5-Year Plan
Floodplain Management / Basin Plan	Yes	Town	Zoning Enforcement Officer	Codes Enforcement



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Stormwater Management Plan	No	-	-	-
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	No	-	-	-
Economic Development Plan	No	-	-	-
Comprehensive Emergency Management Plan	Yes	County	County Emergency Management	Lewis County Comprehensive Emergency Management Plan
Emergency Operation Plan	No	-	-	-
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	No	-	-	-
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-
<b>Regulatory Capability</b>				
Building Code	Yes	Local	Lewis County Codes	Code citation not available
Zoning Ordinance	Yes	Local	Zoning Enforcement Officer	Code citation not available
Subdivision Ordinance	Yes	Local	Planning	Planning Board
NFIP Flood Damage Prevention Ordinance	Yes	Local	Zoning Enforcement Officer	Code citation not available
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	Yes	State, Local	Zoning Enforcement Officer	State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	Yes	Local	Planning	Planning Board
Stormwater Management Ordinance	No	-	-	-
Municipal Separate Storm Sewer System (MS4)	No	-	-	-





Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	NY State, Real Estate Agents	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

### Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the Town of Denmark.

**Table 9.7-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	Yes	Planning
Mitigation Planning Committee	No	-
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	No	-
Maintenance programs to reduce risk	No	-
Mutual aid agreements	No	-
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	No	-
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	No	-
Planners or engineers with an understanding of natural hazards	No	-
NFIP Floodplain Administrator (FPA)	Yes	Lloyd Woodruff, Town Zoning Enforcement
Surveyor(s)	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	No	-



Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Scientist familiar with natural hazards	No	-
Emergency Manager	No	-
Grant writer(s)	No	-
Staff with expertise or training in benefit/cost analysis	No	-
Professionals trained in conducting damage assessments	No	-

### Fiscal Capability

The table below summarizes financial resources available to the Town of Denmark.

**Table 9.7-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	No
Capital improvements project funding	No
Authority to levy taxes for specific purposes	No
User fees for water, sewer, gas or electric service	Yes
Impact fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	No
Incur debt through general obligation bonds	No
Incur debt through special tax bonds	No
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No
Other federal or state Funding Programs	No
Open Space Acquisition funding programs	No
Other	No

### Community Classifications

The table below summarizes classifications for community program available to the Town of Denmark.

**Table 9.7-8. Community Classifications**

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	No	-	-
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-



Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	No	-	-
Public-private partnership initiatives addressing disaster-related issues	No	-	-

Note:

- Unavailable

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery, and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10, with class 1 being the best possible classification and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual.
- The Building Code Effectiveness Grading Schedule.
- The ISO Mitigation online ISO’s Public Protection website at <https://www.isomitigation.com/ppc/>.
- The National Weather Service Storm Ready website at <http://www.stormready.noaa.gov/index.html>.
- The National Firewise Communities website at <http://firewise.org/>.

### Self-Assessment of Capability

The table below provides an approximate measure of the Town of Denmark’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

**Table 9.7-9. Self-Assessment Capability for the Municipality**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)*	Moderate	High
Planning and regulatory capability			X
Administrative and technical capability		X	
Fiscal capability	X - limited funds		
Community political capability	X - limited staff		
Community resiliency capability	X - limited staff		
Capability to integrate mitigation into municipal processes and activities	X - limited staff		

### National Flood Insurance Program





This section provides specific information on the management and regulation of the regulatory floodplain.

### NFIP Floodplain Administrator (FPA)

Lloyd Woodruff, Town Zoning Enforcement

### Flood Vulnerability Summary

The following table summarizes the NFIP statistics for the Town of Denmark.

Table 9.7-10. NFIP Summary

Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in 100-year Boundary (3)
Town of Denmark	5	13	\$114,937	1	0	4

Source: FEMA Region 2, 2018

Notes:

- (1) Policies, claims, and repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.
  - (2) Total building and content losses from the claims file provided by FEMA Region 2.
  - (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file.
- FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility. A zero percentage denotes less than 1/100th percentage and not zero damage or vulnerability as may be the case. Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.  
Rep. = repetitive

### Resources

The Floodplain Administrator for the Town of Denmark is the sole resource for floodplain administration. The FPA stated that the town does not provide NFIP administrative services or functions or provide education or outreach to the community regarding flood hazards/risk and flood risk reduction through NFIP insurance, mitigation, etc. The FPA does not feel there are any barriers to running an effective floodplain management program in the community and feels adequately supported and trained to fulfill their responsibilities as the municipal floodplain manager. The FPA stated that they would consider attending education and/or certification training on floodplain management, if it were offered in the county for local floodplain administrators.

### Compliance History

The Town of Denmark is in good standing in the NFIP. Records from NYS indicate that the town’s latest Community Assistance Visit (CAV) was on September 10, 2009.

### Regulatory

The town’s floodplain management regulations/ordinances meet FEMA’s minimum requirements, but might not meet the State’s minimum requirements. The FPA stated there are other local ordinances, plans, or programs that support floodplain management and meeting the NFIP requirements. The FPA stated that the town has not considered joining the Community Rating System (CRS) to reduce flood insurance premiums for their insured.

### Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community’s progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures.





## Planning

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### Existing Integration

The town has a Capital Improvements Plan and Floodplain Management/Basin Plan. The town adopted a number of county-wide plans including: Lewis County Economic Development Plan, Lewis County Comprehensive Emergency Management Plan, and the Lewis County Emergency Operations Plan. The town does not have a Re-Development Plan, Growth Plan, Open Space Plan, Watershed/Stream Corridor Management Plan, Local Waterfront Revitalization Plan, Continuity of Operations/Continuity of Government (COOP/COG) plan, Post Disaster Recovery Plan, or Strategic Recovery Plan.

### Opportunities for Future Integration

The town could develop plans at the municipal level which incorporate hazard mitigation.

## Regulatory and Enforcement (Ordinances)

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### Existing Integration

The municipal zoning regulations, subdivision regulations, and site plan review process do consider natural hazard risk or require developers to take additional actions to mitigate natural hazard risk. There is coordination with the town's Floodplain Administrator.

### Opportunities for Future Integration

The town could enact regulations that require developers to take additional actions to mitigate natural hazard risk.

## Operational and Administration

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### Existing Integration

The town does not have a municipal planner or contract planning firm. The town has a Planning Board, Zoning Board of Appeals, Town Board, and Board of Assessment. The town does not have any other boards or committees that include functions with respect to managing natural hazard risk. NFIP Floodplain Management functions are performed by Lloyd Woodruff, Town Zoning Enforcement. The town does not contract with firms that have experience with developing Benefit-Cost Analyses, performing Substantial Damage Determinations, or developing grant applications for mitigation projects.

### Opportunities for Future Integration

Town staff could receive training or continuing professional education that supports natural hazard reduction.

## Funding

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The Town of Denmark's municipal/operating budget does not include line items for mitigation projects/activities. The town has not pursued or been awarded grant funds for mitigation-related projects.

### Opportunities for Future Integration

The town could dedicate operating budget and pursue grant funding to support hazard mitigation.

## Education and Outreach

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The Town of Denmark does not currently have any education or outreach programs in place.



### Opportunities for Future Integration

The town could develop educational programs to inform citizens on natural hazards. The town could also develop a town website and host educational information.

### Sheltering, Evacuation, and Temporary Housing

Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability. One area was identified for temporary housing and sheltering in the Town of Denmark. This location was the Copenhagen Fire Department located at 9550 Main Street, Copenhagen. There were no sites identified which would be suitable and capable of sustaining the relocation of housing or the new construction of replacement housing.

### Evacuation and Sheltering Needs

The Town of Denmark has designated the following emergency shelter:

Table 9.7-11. Emergency Shelters in the Community

Shelter Name	Address	Capacity	Accommodates Pets?	ADA Compliant?	Backup Power?	Types of Medical Services Provided	Other Services Provided
Copenhagen Fire Department	9550 Main Street	150	Yes	Yes	Yes	Basic first aid	None

The Town of Denmark has not identified evacuation routes or procedures. However, major roads in and out of the Town can serve as evacuation routes. In the event of an emergency events, the town would work with the county to establish evacuation routes and emergency procedures.

### Temporary and Permanent Housing

The Town of Denmark has not identified sites for the placement of temporary housing for residents displaced by a disaster or potential sites suitable for relocating houses of the floodplain and/or building new homes once properties in the floodplain are acquired. In the event of a disaster event, the town would work with the county to establish appropriate locations for temporary housing.

## 9.7.6 Mitigation Strategy and Prioritization

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and prioritization.

### Past Mitigation Initiative Status

The following table indicates progress on the community’s mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and can also be found under ‘Capability Assessment’ presented previously in this annex.



Table 9.7-12. Status of Previous Mitigation Actions

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem and the Solution (Project)	Responsible Party	Status (In Progress, Ongoing Capability, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection	
	Snow fencing. Lining and Other	Public and private property damage.	Area roads and private property are prone to snowbanks that can cause blockages and damages.	Town of Denmark	Discontinue			1. Discontinue. 2. 3. Can't obtain land.
	Road elevation along major floodplain.	Public and private property damage.	Low road height.	Town of Denmark	No Progress			1. Include in 2020 HMP 2. Project will not start until 2020. 3.
	Culvert Replacement	Public and private property damage.	Culverts in the town are outdated and undersized in some areas	Town of Denmark	In Progress			1. Include in 2020 HMP 2. Work in progress. 3.





### **Completed Mitigation Initiatives not Identified in the Previous Mitigation Strategy**

The Town of Denmark did not identify any mitigation projects/activities that have been completed but were not identified in the previous mitigation strategy in the 2010 Plan.

### **Proposed Hazard Mitigation Initiatives for the Plan Update**

Table 9.7-13 summarizes the comprehensive-range of specific mitigation initiatives the Town of Denmark would like to pursue in the future to reduce the effects of hazards. Some of these initiatives may be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6 (Mitigation Strategy), 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.7-14 provides a summary of the prioritization of all proposed mitigation initiatives for the plan update.



Table 9.7-13. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
T. Denmark-1	Road elevation along major floodplain.	<b>Problem:</b> Low road elevations in the floodplain create flooding problems.	Flood	2	No	None	Within 5 years	Highway Department	\$20,000+ for study	Reduction in flood risk to roadways	HMGP, PDM, operating budget	High	SIP	PP
		<b>Solution:</b> The town will survey roadway elevations and conduct a feasibility assessment to determine what roadways should and can be elevated. The town will then work to raise the elevation of selected roadways.												
T. Denmark-2	Culvert replacement	<b>Problem:</b> Culverts in the Town are outdated and undersized in some areas resulting in private and public property damages.	Severe Storm, Flood	2	No	None	1 year	Highway Department	\$10,000+	Reduction in stormwater flooding	HMGP, PDM, operating budget	High	SIP	SP
		<b>Solution:</b> The town will survey culverts and make the necessary replacements and improvements.												
T. Denmark-3	Protect Copenhagen Hydro, LLC to the 500-year flood level	<b>Problem:</b> Copenhagen Hydro, LLC is located in the 100-year floodplain.	Flood	2	Yes <span style="color:blue">💧</span>	None	Within 6 months	FPA, facility manager	<\$100	Facility protected to the 500-year flood level	Municipal budget	Medium	EAP	PI
		<b>Solution:</b> The FPA will contact the facility manager and discuss options to protect the facility to the 500-year flood level.												
T. Denmark-4	Protect Tug Hill Energy Inc to the 500-year flood level	<b>Problem:</b> Tug Hill Energy Inc is located in the 100-year floodplain.	Flood	2	Yes <span style="color:blue">💧</span>	None	Within 6 months	FPA, facility manager	<\$100	Facility protected to the 500-year flood level	Municipal budget	Medium	EAP	PI
		<b>Solution:</b> The FPA will contact the facility manager and discuss options to protect the facility to the 500-year flood level.												

Notes:  
 Not all acronyms and abbreviations defined below are included in the table.  
 \*Does this mitigation initiative reduce the effects of hazards on new and/or existing buildings and/or infrastructure? Not applicable (N/A) is inserted if this does not apply.

Acronyms and Abbreviations:

CAV Community Assistance Visit

Potential FEMA HMA Funding Sources:

FMA Flood Mitigation Assistance Grant Program

Timeline:

Short 1 to 5 years





CRS	Community Rating System	HMGP	Hazard Mitigation Grant Program	Long Term	5 years or greater
DPW	Department of Public Works	PDM	Pre-Disaster Mitigation Grant Program	OG	On-going program
EHP	Environmental Protection and Historic Preservation	RFC	Repetitive Flood Claims Grant Program (discontinued in 2015)	DOF	Depending on funding
FEMA	Federal Emergency Management Agency	SRL	Severe Repetitive Loss Grant Program (discontinued in 2015)		
FPA	Floodplain Administrator				
HMA	Hazard Mitigation Assistance				
N/A	Not applicable				
NFIP	National Flood Insurance Program				
OEM	Office of Emergency Management				

Costs:  
Where actual project costs have been reasonably estimated:  
Low < \$10,000  
Medium \$10,000 to \$100,000  
High > \$100,000

Where actual project costs cannot reasonably be established at this time:  
Low Possible to fund under existing budget. Project is part of, or can be part of an existing on-going program.  
Medium Could budget for under existing work plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.  
High Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.

Benefits:  
Where possible, an estimate of project benefits (per FEMA's benefit calculation methodology) has been evaluated against the project costs, and is presented as:  
Low= < \$10,000  
Medium \$10,000 to \$100,000  
High > \$100,000

Where numerical project benefits cannot reasonably be established at this time:  
Low Long-term benefits of the project are difficult to quantify in the short term.  
Medium Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.  
High Project will have an immediate impact on the reduction of risk exposure to life and property.

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities.

CRS Category:

- Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.
- Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.

Critical Facility:

- Yes - Critical Facility is located in 1% floodplain.





**Table 9.7-14. Summary of Prioritization of Actions**

Mitigation Action/Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
T. Denmark-1	Road elevation along major floodplain.	1	1	1	0	1	1	0	1	1	1	0	0	1	1	10	High
T. Denmark-2	Culvert replacement	0	1	1	1	1	1	0	1	1	1	1	1	1	1	12	High
T. Denmark-3	Protect Copenhagen Hydro, LLC to the 500-year flood level	0	1	0	0	1	1	0	1	1	1	0	1	1	0	8	Medium
T. Denmark-4	Protect Tug Hill Energy Inc to the 500-year flood level	0	1	0	0	1	1	0	1	1	1	0	1	1	0	8	Medium

*Note: Section 6 (Mitigation Strategy) conveys guidance on prioritizing mitigation actions.*



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### 9.7.7 Future Needs To Better Understand Risk/Vulnerability

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None at this time.

### 9.7.8 Staff and Local Stakeholder Involvement in Annex Development

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The Town of Denmark followed the planning process described in Section 3 (Planning Process). This annex was developed over the course of several months with input from many town departments, including: Superintendent of Highways, Supervisor, and Zoning Officer. The Superintendent of Highways represented the community on the Lewis County Hazard Mitigation Plan Planning Partnership and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Additional documentation on the municipality's planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix B (Meeting Documentation).

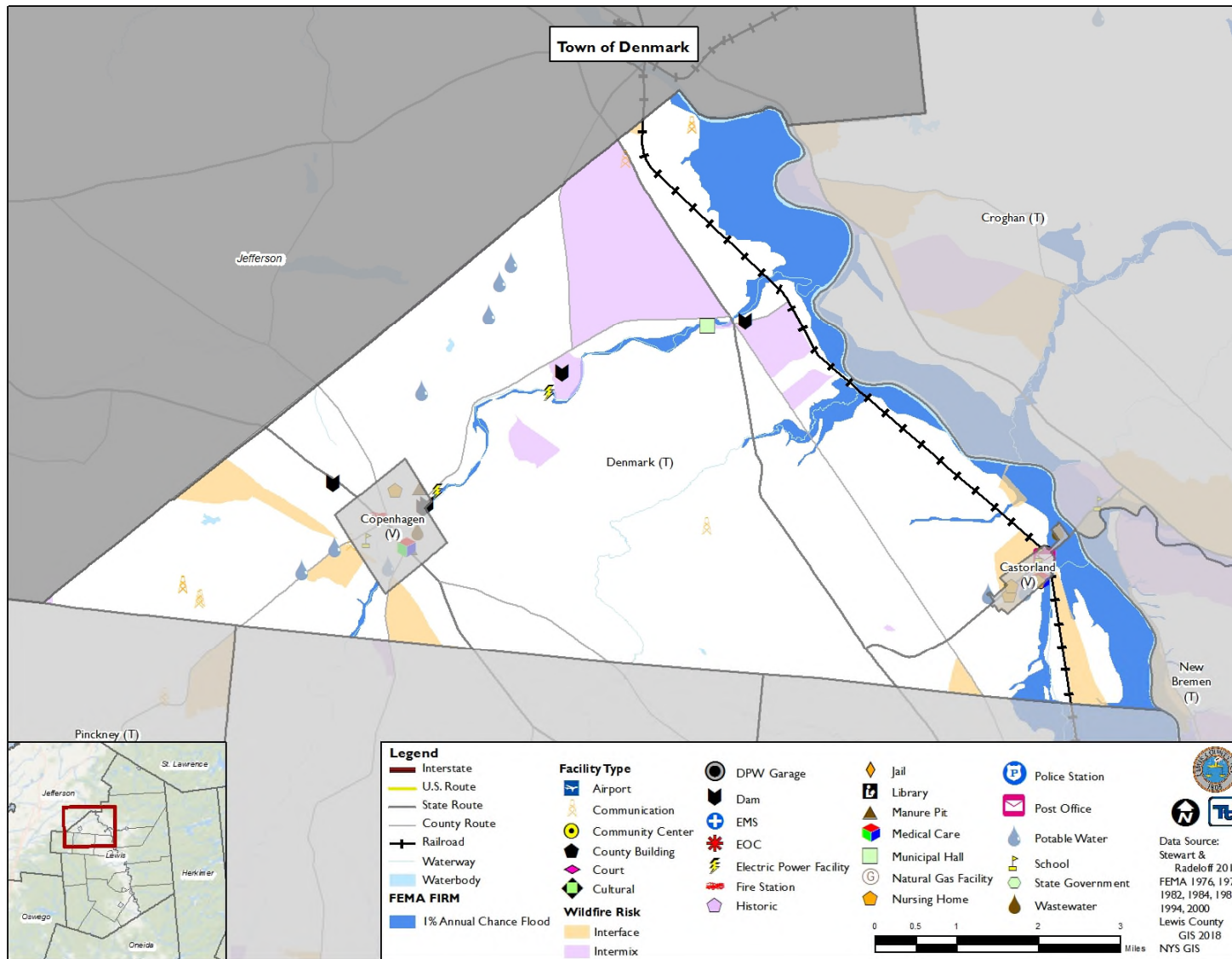
### 9.7.9 Hazard Area Extent and Location

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Hazard area extent and location maps have been generated for the Town of Denmark that illustrate the probable areas impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps have been generated only for those hazards that can be clearly identified using mapping techniques and technologies and for which the Town of Denmark has significant exposure. These maps are illustrated in the hazard profiles in Section 5.4 (Hazard Profiles).



Figure 9.7-1. Town of Denmark Hazard Area Extent and Location Map





Town of Denmark Action Worksheet			
<b>Project Name:</b>	Road elevation along major floodplain.		
<b>Project Number:</b>	T. Denmark-1		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Flood		
<b>Description of the Problem:</b>	Low road elevations in the floodplain create flooding problems. This can result in closed roadways and damage to private/public property.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The town will survey roadway elevations and conduct a feasibility assessment to determine what roadways should and can be elevated. The town will then work to raise the elevation of selected roadways.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	10-30 years	<b>Estimated Benefits (losses avoided):</b>	Reduction in flood risk to roadways
<b>Useful Life:</b>	20 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$20,000+ for study	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	6 months from receiving funds	<b>Potential Funding Sources:</b>	HMGP, PDM, operating budget
<b>Responsible Organization:</b>	Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation, Capital Improvement
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Remove roadways from floodplain	\$15,000+	Not feasible. Roadways cannot be removed
	Develop system to close roadways during flooding events.	\$10,000	No ideal. Roadways closed.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			





Action Worksheet		
<b>Project Name:</b>	Road elevation along major floodplain.	
<b>Project Number:</b>	T. Denmark-1	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
<b>Life Safety</b>	1	Project will keep roadways open for emergency services.
<b>Property Protection</b>	1	Project will protect private and public property from flood damage.
<b>Cost-Effectiveness</b>	1	
<b>Technical</b>	0	
<b>Political</b>	1	
<b>Legal</b>	1	The town has the legal authority to complete the project.
<b>Fiscal</b>	0	Project requires funding support.
<b>Environmental</b>	1	
<b>Social</b>	1	
<b>Administrative</b>	1	
<b>Multi-Hazard</b>	0	Flood
<b>Timeline</b>	0	
<b>Agency Champion</b>	1	Highway Department
<b>Other Community Objectives</b>	1	
<b>Total</b>	10	
<b>Priority (High/Med/Low)</b>	High	



Town of Denmark Action Worksheet			
<b>Project Name:</b>	Culvert replacement		
<b>Project Number:</b>	T. Denmark-2		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Flood, Severe Storm		
<b>Description of the Problem:</b>	Culverts in the Town of Denmark are outdated and undersized in some areas resulting in private and public property damages.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The town will survey culverts and make the necessary replacements and improvements.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	N/A	<b>Estimated Benefits (losses avoided):</b>	Reduction in stormwater flooding
<b>Useful Life:</b>	30 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$10,000+	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	1 year
<b>Estimated Time Required for Project Implementation:</b>	Within 6 months of receiving funds	<b>Potential Funding Sources:</b>	HMGP, PDM, operating budget
<b>Responsible Organization:</b>	Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Remove culverts	\$5,000+	Culverts cannot be removed
	Remove roadways where culverts are causing damages	\$15,000+	Roadways cannot be removed
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Culvert replacement	
<b>Project Number:</b>	T. Denmark-2	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project will protect property from stormwater damages.
Cost-Effectiveness	1	
Technical	1	
Political	1	There is public support for the project.
Legal	1	The town has the legal authority to complete the project.
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	1	
Agency Champion	1	Highway Department
Other Community Objectives	1	
<b>Total</b>	12	
<b>Priority (High/Med/Low)</b>	High	



## 9.8 TOWN OF DIANA

This section presents the jurisdictional annex for the Town of Diana. It includes resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions that can be implemented prior to a disaster in order to reduce or eliminate damage to property and people. This annex includes a general overview of the municipality and who in the town participated in the planning process, an assessment of the Town of Diana’s risk and vulnerability, the different capabilities used in the town, and an action plan that will be implemented to achieve a more resilient community.

### 9.8.1 Hazard Mitigation Plan Point of Contact

The following individuals have been identified as the hazard mitigation plan’s primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: David Parow Title: Town Supervisor Address: PO Box 460, Harrisville, NY 13648 Phone Number: 315-543-0030 ext. 2 Email: <a href="mailto:townofdiana@nnymail.com">townofdiana@nnymail.com</a>	Name: Janet Taylor Title: Town Clerk Address: PO Box 460, Harrisville, NY 13648 Phone Number: 315-543-0030 ext. 1 Email: <a href="mailto:diana.townclerk@nnymail.com">diana.townclerk@nnymail.com</a>
Floodplain Administrator	
Name: Ward Dailey Title: Lewis County Code Enforcement Phone Number: 315-376-5377 Address: 7660 N State Street Lowville, NY 13367 Email: <a href="mailto:warddailey@lewiscounty.ny.gov">warddailey@lewiscounty.ny.gov</a>	

### 9.8.2 Municipal Profile

The Town of Diana is located in northern Lewis County, bordered to the north by Saint Lawrence County, to the south by the Town of Croghan, to the east by Saint Lawrence and Herkimer Counties, and to the west by Jefferson County. The eastern third of the town is located in Adirondack Park. The town has a total area of 140.8 square miles, of which 137.4 square miles is land and 3.5 square miles is water. There are many bodies of water in the town, including Lake Bonaparte, Indian Lake, West Branch Oswegatchie River, Clark Creek, Palmer Creek, Weatherhead Creek, Blanchard Creek, and South Creek.

The estimated 2017 population was 1,650, which is a 0.6 percent decrease in population from 2010 (1,661 persons). Data from the 2017 U.S. Census American Community Survey indicate that 4.0 percent of the town population is five years of age or younger and 17.0 percent is 65 years of age or older.

### Growth/Development Trends

The Town of Diana did not note any recent residential/commercial development or any major residential or commercial development since 2010 or major infrastructure development planned for the next five years in the municipality.



**Table 9.8-1. Growth and Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)*	Description/Status of Development
<b>Recent Development from 2010 to present</b>					
None					
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
None					

\* Only location-specific hazard zones or vulnerabilities identified.

### 9.8.3 Natural Hazard Event History Specific to the Municipality

Lewis County has a history of natural and non-natural hazard events as detailed in Volume I, Section 5.0 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the county and its municipalities. For the purpose of this plan update, events that have occurred in the county from 2009 to present were summarized to indicate the range and impact of hazard events in the community. Information regarding specific damages is included, if available, based on reference material or local sources. This information is presented in the table below.

**Table 9.8-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April 26-May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	The town sustained damage to roads throughout the municipality. This included: Goose Pond Road, Bryant Bridge Road, Jerden Falls Road, Tid Road, Patching Road, Aldrich Road, and Hogs Back Road. The town had over \$7,000 in repair costs.
August 26-September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	Although the county suffered damages, the town did not report damages from this event.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	Although the county suffered damages, the town did not report damages from this event.
June 26-July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	Although the county suffered damages, the town did not report damages from this event.
May 13-22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	Although the county suffered damages, the town did not report damages from this event.



Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to a foot and half of snow within this band leading up to daybreak Friday.	Although the county suffered damages, the town did not report damages from this event.
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	Although the county suffered damages, the town did not report damages from this event.

Notes:

EM Emergency Declaration (FEMA)  
 DR Major Disaster Declaration (FEMA)

### 9.8.4 Hazard Vulnerabilities and Ranking

The hazard profiles in Section 5.0 (Risk Assessment) have detailed information regarding each plan participant’s vulnerability to the identified hazards. This section provides a summary of exposure and impacts from significant hazards of concern as identified by the Town of Diana.

#### Hazard Risk Ranking

This section provides the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating town or village may have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Town of Diana. The Town of Diana has reviewed the county hazard risk/vulnerability risk ranking table, as well as its individual results, to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the town indicated the following:

- The town agreed with the calculated hazard rankings.

**Table 9.8-3. Hazard Risk/Vulnerability Risk Ranking**

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	High
Extreme Temperature	High	High





Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Flood	Medium	Medium
Hazardous Material Incidents	Medium	Medium
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	High

Notes: The scale is based on the following hazard rankings as established in Section 5.3 (Hazard Ranking).

### Critical Facilities Flood Risk

NYS DEC Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for state projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a SFHA unless constructed according to specific mitigation specifications, including being raised 2 feet above the BFE. This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the state places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 500-year flood event or worst damage scenario. For those that do not meet these criteria, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain and presents HAZUS-MH estimates of the damage and loss of use to critical facilities as a result of a 1-percent annual chance flood event.

Table 9.8-4. Potential Flood Losses to Critical Facilities

Name	Type	Exposure		Potential Loss from 1% Flood Event		Addressed by Proposed Action
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage	
Blanchard Pond Dam	Dam	X	X	-	-	T. Diana-3
Verizon New York Inc	Communications Facility	X	-	-	-	T. Diana-4

Source: FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000; Lewis County 2018

### Identified Issues

The municipality has identified the following vulnerabilities within their community:

- There are numerous undersized culverts in the town that contribute to increased flooding risk.

### 9.8.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms







**Planning and Regulatory Capability**

The table below summarizes the regulatory tools that are available to the Town of Diana.

**Table 9.8-5. Planning and Regulatory Tools**

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Comprehensive Plan	No	-	-	-
Capital Improvements Plan	No	-	-	-
Floodplain Management / Basin Plan	Yes	County	County Planning	Lewis County
Stormwater Management Plan	No	-	-	-
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	No	-	-	-
Economic Development Plan	No	-	-	-
Comprehensive Emergency Management Plan	No	-	-	-
Emergency Operation Plan	No	-	-	-
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	No	-	-	-
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-
<b>Regulatory Capability</b>				
Building Code	Yes	County	Lewis County Codes	Lewis County
Zoning Ordinance	Yes	Local	Town Board	Lewis County
Subdivision Ordinance	Yes	County	Lewis County Codes	Lewis County
NFIP Flood Damage Prevention Ordinance	Yes	Federal, State, Local	Lewis County Codes	Lewis County
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	Yes	State, Local	Lewis County Codes	State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	Yes	Local	Town Zoning	Lewis County
Stormwater Management Ordinance	No	-	-	-



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Municipal Separate Storm Sewer System (MS4)	No	-	-	-
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	NYS, Real Estate Agents	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

### Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the Town of Diana.

**Table 9.8-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	No	-
Mitigation Planning Committee	No	-
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	No	-
Maintenance programs to reduce risk	No	-
Mutual aid agreements	No	-
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	No	-
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	No	-
Planners or engineers with an understanding of natural hazards	No	-
NFIP Floodplain Administrator (FPA)	Yes	Lewis County
Surveyor(s)	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	No	-
Scientist familiar with natural hazards	No	-
Emergency Manager	No	-
Grant writer(s)	No	-
Staff with expertise or training in benefit/cost analysis	No	-
Professionals trained in conducting damage assessments	No	-



### Fiscal Capability

The table below summarizes financial resources available to the Town of Diana.

**Table 9.8-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	No
Capital improvements project funding	No
Authority to levy taxes for specific purposes	Yes – Budget – Town Bd, Public Hearing
User fees for water, sewer, gas or electric service	N/A
Impact fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	No
Incur debt through general obligation bonds	Yes - Town Bd, Public Hearing
Incur debt through special tax bonds	Yes - Town Bd, Public Hearing
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	Yes – Lewis Co. Code
Other federal or state Funding Programs	CHIPS
Open Space Acquisition funding programs	No
Other	No

### Community Classifications

The table below summarizes classifications for community program available to the Town of Diana.

**Table 9.8-8. Community Classifications**

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	No	-	-
NYS DEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	No	-	-
Public-private partnership initiatives addressing disaster-related issues	No	-	-

Note:

- N/A Not applicable
- Unavailable

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s





capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class 1 being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO’s Public Protection website at <https://www.isomitigation.com/ppc/>
- The National Weather Service Storm Ready website at <http://www.stormready.noaa.gov/index.html>
- The National Firewise Communities website at <http://firewise.org/>

### Self-Assessment of Capability

The table below provides an approximate measure of the Town of Diana’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

**Table 9.8-9. Self-Assessment Capability for the Municipality**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)*	Moderate	High
Planning and regulatory capability	X – limited staff	-	-
Administrative and technical capability	X – limited staff	-	-
Fiscal capability	X – not ample funding	-	-
Community political capability	X – limited staff	-	-
Community resiliency capability	X – limited staff	-	-
Capability to integrate mitigation into municipal processes and activities	X – limited staff	-	-

### National Flood Insurance Program

#### NFIP Floodplain Administrator (FPA)

Ward Dailey, Lewis County Code Enforcement

#### Flood Vulnerability Summary

The Town of Diana has a dozen properties with flood insurance policies. Floodplains exist along the town’s creeks and streams.

**Table 9.8-10. NFIP Summary**

Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in 100- year Boundary (3)
Diana (T)	12	4	\$164,922	0	0	5

Source: FEMA Region 2, 2018





Notes:

- (1) Policies, claims, and repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.
- (2) Total building and content losses from the claims file provided by FEMA Region 2.
- (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file.  
FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility.  
A zero percentage denotes less than 1/100th percentage and not zero damage or vulnerability as may be the case.  
Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.

## Resources

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Floodplain administration for the Town of Diana is administered by the Lewis County Codes Department.

## Compliance History

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The Town of Diana is in good standing in the National Flood Insurance Program. The last compliance audit (Community Assistance Visit [CAV]) took place on May 9, 1994.

## Regulatory

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The Town of Diana's flood damage prevention ordinance is administered by the Lewis County Codes Department.

## Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

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For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community's progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures.

## Planning

---

### Existing Integration

The Town of Diana lacks municipal specific planning documents.

### Opportunities for Future Integration

**Comprehensive Plan:** The comprehensive plan provides a framework for the design and development of a community over a long-term planning horizon. The plan addresses social, economic, and environmental issues for the community. At the time of the plan update, the town does not have a comprehensive plan. The town should consider creating a comprehensive plan. If the town completes a plan, they will integrate the 2020 HMP update. By doing so, it establishes resilience as an overarching value for the town and provides the opportunity to continuously manage development in a way that does not lead to increased hazard vulnerability.

## Regulatory and Enforcement (Ordinances)

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### Existing Integration

The Zoning Law is administered by the Town Board. Site plan review requirements are specified by the Zoning Law. The building code and Subdivision Ordinance for the Town of Diana are administered by the Lewis County Codes Department.



### Opportunities for Future Integration

During updates to municipal ordinances, the town could review ordinances to ensure they address natural hazards through the identification of hazard zones and possible mitigation efforts.

### Operational and Administration

---

#### Existing Integration

The Town Board's municipal zoning and subdivision regulations consider natural hazard risk. The Town Board uses the Town Zoning Law to guide their decisions with respect to natural hazard risk management. The Zoning Law requires developers to take additional actions to mitigate natural hazard risk in the community.

**Warming Shelters:** The town has established warming shelters for residents to use for power outages during winter months.

#### Opportunities for Future Integration

**Dams:** There are three dams located in the town, all of which are low hazard. The town will work with NYS DEC and dam owners to assist with working towards full compliance with applicable dam safety programs and developing/updating the Emergency Action Plans for the dams.

**GIS:** The town will work with the county to look into expanding the GIS capabilities of the county to collect and develop more sophisticated hazard mapping and loss estimation.

**Critical Facilities:** The town will work with the county to provide a status of auxiliary power supplies at critical facilities in the town. If the critical facilities in the town do not have backup power, the town will seek funding to purchase and install backup power to the facilities. Additionally, the town will work with critical facility owners to identify the level of protection and year built of each facility to indicate whether or not standards were put into place to provide protection from natural hazards.

### Funding

---

#### Existing Integration

The Town of Diana has the ability to levy taxes for specific purposes, can incur debt through general obligation bonds, and can incur debt through special tax bonds.

#### Opportunities for Future Integration

**Grants:** The town will consider applying for mitigation grants to complete projects that will increase resiliency and protect the life and safety of residents in the town.

### Education and Outreach

---

#### Existing Integration

The town lacks formal outreach programs to educate the public about hazards.

#### Opportunities for Future Integration

The town will continue working with Lewis County in developing and enhancing public education and outreach programs for the hazards of concern in the town. The town will consider attending trainings on the development and implementation of programs to mitigate wind damage to private and public properties.



### Sheltering, Evacuation, and Temporary Housing

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Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

#### Evacuation and Sheltering Needs

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The town did not identify any shelter locations to use in the event of an emergency. The town indicated that the fire department has sheltered people during snow storms when the highway was closed. The fire department is located at 14226 Church St. in Harrisville. It is ADA compliant and can provide basic first aid. The fire department can also serve as a heating and cooling center. The town did not identify evacuation procedures but would follow the guidance of Lewis County during emergency events. The town could use the major roads in and out of the town to serve as evacuation routes.

#### Temporary and Permanent Housing

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The town did not identify any potential locations for temporary or permanent housing within the town. The town would work with Lewis County to identify locations for temporary housing during disaster events.

## 9.8.6 Mitigation Strategy and Prioritization

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This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and prioritization.

### Past Mitigation Initiative Status

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The following table indicates progress on the community's mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under 'Capability Assessment' presented previously in this annex.





Table 9.8-11. Status of Previous Mitigation Actions

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem and the Solution (Project)	Responsible Party	Status (In Progress, Ongoing Capability, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection	
	Henry Road Bridge Replace bridge on Henry Road with culvert. Bridge is too narrow.	Flood, Severe Storm, Severe Winter Storm	Road damage, flooding, silting of water, plowing hazard during winter storms	Town of Diana Highway Department	No Progress			1. Include in 2020 HMP 2. Replace bridge on Henry Road with culvert. Bridge is too narrow. 3. N/A
	Culvert Upgrades Replace culverts with larger size to increase water flow.	Flood, Severe Storm, Severe Winter Storm	Road damage, flooding, silting of water, plowing hazard during winter storms	Town of Diana Highway Department	No Progress			1. Include in 2020 HMP 2. Combined action: Culvert Upgrades 3. N/A
	Bridge Replacement Replace small narrow bridge with large culvert.	Flood, Severe Storm, Severe Winter Storm	Road damage, flooding, silting of water, plowing hazard during winter storms	Town of Diana Highway Department	No Progress			1. Include in 2020 HMP 2. Combined action: Culvert Upgrades 3. N/A
	Plan Review for Mitigation Ensure that local comprehensive plans incorporate disaster mitigation techniques through a courtesy review of all draft plans by the County Economic Development and Planning Department.	All Hazards	Plans should be reviewed to incorporate natural hazards.	Town Mayor / CPG Member	Ongoing Capability			1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem and the Solution (Project)	Responsible Party	Status (In Progress, Ongoing Capability, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
	GIS Enhancement Investigate expansion of hazard-related GIS capabilities via acquisition of HAZUS-MH to collect and develop more sophisticated hazard mapping and loss estimation. Use information in future plan updates. Ensure information will be available to the public and to local communities and agencies.	Earthquakes, Wind, and Flood	GIS should be enhanced where possible.	Town Mayor / CPG Member	Ongoing Capability			1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
	Outreach Program County coordination with local governments and other agencies to systematically contact isolated, vulnerable or special-needs population during severe winter storm events.	Winter Storms and Extreme temperatures	Special needs populations need to be protected and cared for during hazard events.	Town Mayor / CPG Member	Ongoing Capability			1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
	Auxiliary Power Supply Conduct a countywide survey on status of auxiliary power supplies at all critical facilities.	Winter Storms, Wind, Tornado	Critical facilities require backup power.	Town Mayor / CPG Member	Ongoing Capability			1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
	Wind Hazards Training Provide trainings to municipalities regarding the development and implementation of programs to mitigate wind damage to private and public properties.	Wind, Tornado	Officials need to be educated.	Town Mayor / CPG Member	Ongoing Capability			1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
	Winter Driving and Vehicle Preparation Education Provide education opportunities for residents to learn winter driving techniques.	Winter Storms and Wind	Residents need to be educated.	Town Mayor / CPG Member	Ongoing Capability			1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem and the Solution (Project)	Responsible Party	Status (In Progress, Ongoing Capability, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
	Winter Storm Public Awareness and Preparation Increase public awareness of personal responsibilities during emergencies, specifically winter storm events.	Winter Storms and Snow	Residents need to be educated.	Town Mayor / CPG Member	Ongoing Capability			1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
	Emergency Warming Shelters Establish warming shelters for vulnerable populations, including residents and stranded motorists	Extreme Temperatures and Winter Storms	Shelters need to be established	Town Mayor / CPG Member	Ongoing Capability			1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
	Dam Safety Coordinate with NYS DEC and owners of all high and moderate hazard dams to work towards full compliance with applicable dam safety programs and development/updating of Emergency Action Plans including inundation mapping.	Dam Failure	Dams need to meet safety standards.	Town Mayor / CPG Member	Ongoing Capability			1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
	Drought Preparedness Publish and distribute literature (via the county website, supplemented by hard copy distribution) on water conservation techniques and drought management strategies.	Drought	Residents need to be educated.	Town Mayor / CPG Member	Ongoing Capability			1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
	Landslide Study Conduct surveys to determine local vulnerabilities to landslides threatening property and roads, coordinate with municipalities to limit development in these areas and develop remedial	Landslides	Landslide vulnerability needs to be determined.	Town Mayor / CPG Member	Ongoing Capability			1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem and the Solution (Project)	Responsible Party	Status (In Progress, Ongoing Capability, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
	measures for existing vulnerabilities.							
	Wildfire Mapping Create and distribute mapping and database of wildland access points for firefighters, develop enhanced mapping of urban/wildland interface.	Wildfire	Wildfire areas need to be mapped.	Town Mayor / CPG Member	Ongoing Capability			<ol style="list-style-type: none"> <li>Discontinue</li> <li>N/A</li> <li>This is an ongoing capability for the town and has been incorporated into their day-to-day duties.</li> </ol>
	Critical Facilities Survey Undertake a year built and level of protection survey for all critical/emergency facilities and shelters to highlight structures built before codes and standards were put in place to provide protection from natural hazards, and pursue potential mitigation opportunities to protect these sites as funding becomes available.	Wind/Tornado, Winter Storms, Earthquakes, and Flooding (including Ice Jams)	Critical facilities need to be built to higher standards.	Town Mayor / CPG Member	Ongoing Capability			<ol style="list-style-type: none"> <li>Discontinue</li> <li>N/A</li> <li>This is an ongoing capability for the town and has been incorporated into their day-to-day duties.</li> </ol>



### **Completed Mitigation Initiatives not Identified in the Previous Mitigation Strategy**

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The Town of Diana has conducted regular stormwater maintenance activities since the 2010 plan.

### **Proposed Hazard Mitigation Initiatives for the Plan Update**

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Table 9.8-12 summarizes the comprehensive-range of specific mitigation initiatives the Town of Diana would like to pursue in the future to reduce the effects of hazards. Some of these initiatives might be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and can be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6 (Mitigation Strategy), 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.8-13 provides a summary of the prioritization of all proposed mitigation initiatives for the plan update.



Table 9.8-12. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility	EHP Issues	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Estimated Timeline	Potential Funding Sources	Priority	Mitigation Category	CRS Category
T. Diana-1	Henry Road Bridge and Culvert	<p><b>Problem:</b> The bridge on Henry Road is too narrow, which leads to road damage, flooding, silting of water, and plowing hazards during winter months. The problems caused by the narrow bridge lead to road closures, which prevent emergency personnel from accessing this area of the town during a flood or severe weather event.</p> <p><b>Solution:</b> Replace bridge on Henry Road with culvert with larger carrying capacity than the bridge.</p>	Flood, Severe Storm, Severe Winter Storm	2	No	No	Town Highway Department	\$25,000	Reduce or eliminate road damage; reduce or eliminate need for road closures	Within 5 years	Municipal Budget, BridgeNY, FEMA HMGP	High	SIP	PP
T. Diana-2	Culvert Upgrades	<p><b>Problem:</b> Many of the culverts in the town are undersized, leading to damaged roads, flooding of streets and private properties, and silt deposits. The problems caused by the undersized culverts lead to road closures, which prevent emergency personnel from accessing this area of the town during a flood or severe weather event.</p> <p><b>Solution:</b> The town will conduct a study to determine which culverts are undersized and replace the selected culverts.</p>	Flood, Severe Storm	2	No	No	Town Highway Department	\$25,000 per culvert	Reduce or eliminate road damage; reduce or eliminate need for road closures	Within 5 years	Municipal budget, BridgeNY, FEMA HMGP	High	SIP	PP
T. Diana-3	Protect Blanchard Pond Dam to the 500-year flood level	<p><b>Problem:</b> The Blanchard Pond Dam is located in the 100-year floodplain.</p> <p><b>Solution:</b> The town will contact the facility manager and discuss options for protecting the dam to the 500-year flood level.</p>	Flood	2	Yes <span style="color: blue;">💧</span>	No	FPA	<\$100	Facility manager aware of flood exposure and possible mitigation techniques	Within 6 months	Municipal budget	High	EAP	PI
T. Diana-4	Protect the Verizon New York Inc Communications Facility to the 500-year flood level	<p><b>Problem:</b> The Verizon New York Inc Communications Facility is located in the 100-year floodplain.</p> <p><b>Solution:</b> The town will contact the facility manager and discuss options for protecting the dam to the 500-year flood level.</p>	Flood	2	Yes <span style="color: blue;">💧</span>	No	FPA	<\$100	Facility manager aware of flood exposure and possible mitigation techniques	Within 6 months	Municipal budget	High	EAP	PI

Notes:





Not all acronyms and abbreviations defined below are included in the table.

Acronyms and Abbreviations:

CAV	Community Assistance Visit
CRS	Community Rating System
DPW	Department of Public Works
EHP	Environmental Protection and Historic Preservation
FEMA	Federal Emergency Management Agency
FPA	Floodplain Administrator
HMA	Hazard Mitigation Assistance
N/A	Not applicable
NFIP	National Flood Insurance Program
OEM	Office of Emergency Management

Potential FEMA HMA Funding Sources:

FMA	Flood Mitigation Assistance Grant Program
HMGP	Hazard Mitigation Grant Program
PDM	Pre-Disaster Mitigation Grant Program

Timeline:

The time required for completion of the project upon implementation

Cost:

The estimated cost for implementation.

Benefits:

A description of the estimated benefits, either quantitative and/or qualitative.

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses and preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities

CRS Category:

- Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.
- Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities

Critical Facility:

- Yes - Critical Facility located in 1% floodplain







**Table 9.8-13. Summary of Prioritization of Actions**

Mitigation Action/Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
T. Diana-1	Henry Road Bridge and Culvert	0	1	1	1	1	1	0	1	1	1	1	0	1	1	11	High
T. Diana-2	Culvert Upgrades	0	1	1	1	1	1	0	1	1	1	1	0	1	1	11	High
T. Diana-3	Protect Blanchard Pond Dam to the 500-year flood level	1	1	1	1	1	0	1	1	1	1	0	1	1	1	12	High
T. Diana-4	Protect the Verizon New York Inc Communications Facility to the 500-year flood level	1	1	1	1	1	0	1	1	1	1	0	1	1	1	12	High

Note: Refer to Section 6, which conveys guidance on prioritizing mitigation actions.



### **9.8.7 Future Needs To Better Understand Risk/Vulnerability**

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None at this time.

### **9.8.8 Staff and Local Stakeholder Involvement in Annex Development**

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The Town of Diana followed the planning process described in Section 3 (Planning Process). This annex was developed over the course of several months with input from many town departments, including the Town Supervisor and Town Clerk. The Town Supervisor represented the community on the Lewis County Hazard Mitigation Plan Planning Partnership and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Additional documentation on the municipality's planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix B (Meeting Documentation).

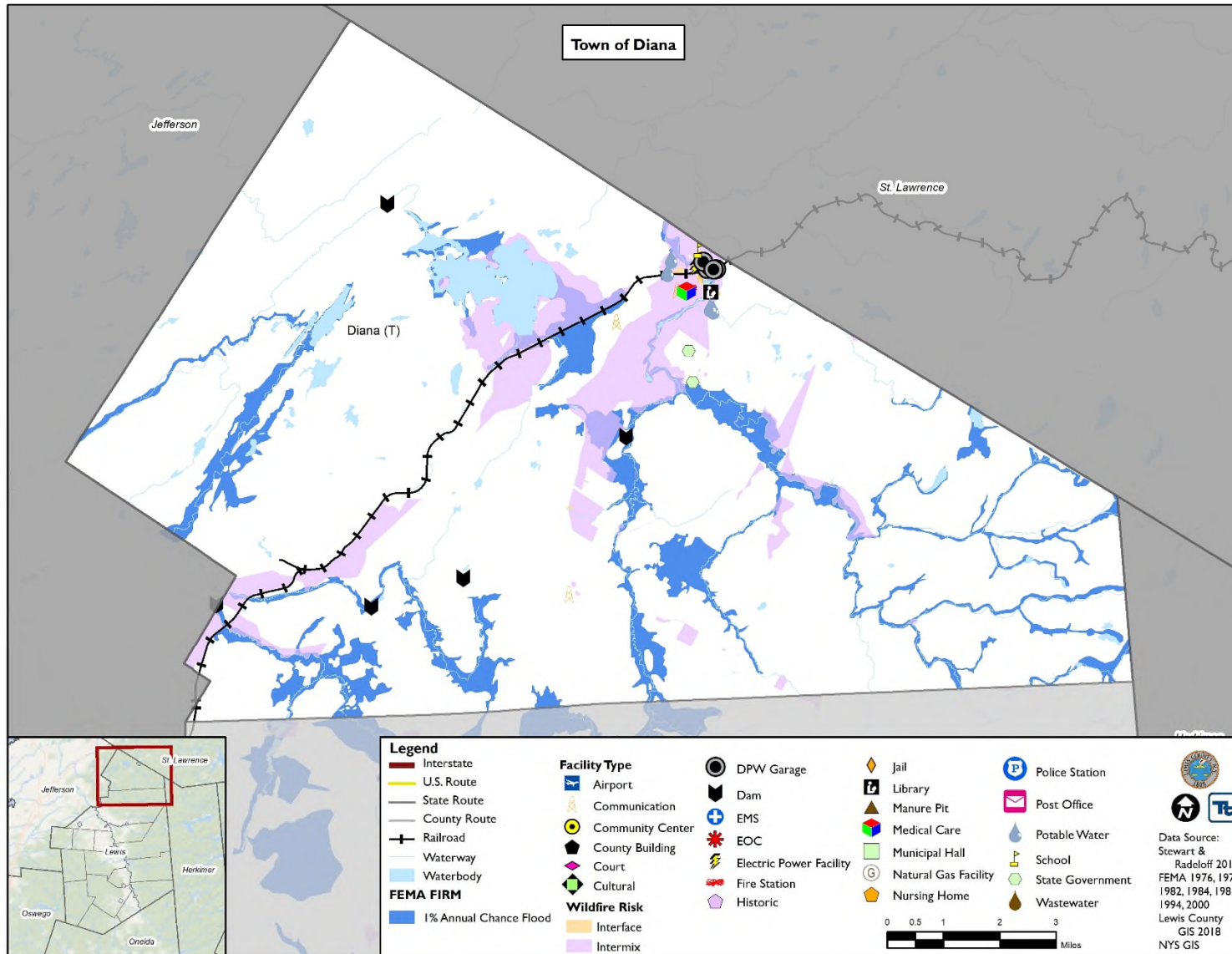
### **9.8.9 Hazard Area Extent and Location**

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Hazard area extent and location maps have been generated for the Town of Diana that illustrate the probable areas impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps have been generated only for those hazards that can be clearly identified using mapping techniques and technologies and for which the Town of Diana has significant exposure. A map of the Town of Diana hazard area extent and location is provided on the following page. This map indicates the location of the regulatory floodplain, as well as identified critical facilities within the municipality.



Figure 9.8-1. Town of Diana Hazard Area Extent and Location Map





Town of Diana Action Worksheet			
<b>Project Name:</b>	Henry Road Bridge and Culvert		
<b>Project Number:</b>	T. Diana-1		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Flood, Severe Storm		
<b>Description of the Problem:</b>	The bridge on Henry Road is too narrow which leads to road damage, flooding, silting of water and creates a plowing hazard during winter months. The problems caused by the narrow bridge leads to road closures which prevents emergency personnel from accessing this area of the town during a flood or severe weather event.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The Town of Diana will replace the bridge on Henry Road with culvert with larger carrying capacity than the bridge.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	To be determined	<b>Estimated Benefits (losses avoided):</b>	Reduce or eliminate road damage; reduce or eliminate need for road closures
<b>Useful Life:</b>	30 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$25,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	1 year	<b>Potential Funding Sources:</b>	Municipal Budget, BridgeNY, FEMA HMGP
<b>Responsible Organization:</b>	Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Capital improvements planning
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Remove culvert and roadway	\$5,000+	Roadway cannot be removed
	Replace bridge with culvert of same carrying capacity	\$25,000	Still not enough carrying capacity.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Henry Road Bridge and Culvert	
<b>Project Number:</b>	T. Diana-1	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project will protect culvert from flood damages, protect neighboring area from flood risk.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	0	Within 5 years
Agency Champion	1	Highway Department
Other Community Objectives	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	



Town of Diana Action Worksheet			
<b>Project Name:</b>	Culvert Upgrades		
<b>Project Number:</b>	T. Diana-2		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Flood, Severe Storm		
<b>Description of the Problem:</b>	Many of the culverts in the town are undersized, leading to damaged roads, flooding of streets and private properties, and silt deposits. The problems caused by the undersized culverts lead to road closures, which prevent emergency personnel from accessing this area of the town during a flood or severe weather event.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The town will conduct a study to determine which culverts are undersized and replace the selected culverts.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	To be determined	<b>Estimated Benefits (losses avoided):</b>	Reduce or eliminate road damage; reduce or eliminate need for road closures
<b>Useful Life:</b>	30 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$25,000 per culvert	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	1 year	<b>Potential Funding Sources:</b>	Municipal Budget, BridgeNY, FEMA HMGP
<b>Responsible Organization:</b>	Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Capital improvements planning
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Remove culvert and roadway	\$5,000+	Roadway cannot be removed
	Replace culverts with bridges	\$250,000	Costly
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Culvert Upgrades	
<b>Project Number:</b>	T. Diana-2	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project will protect culvert from flood damages, protect neighboring area from flood risk.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	0	Within 5 years
Agency Champion	1	Highway Department
Other Community Objectives	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	





## 9.9 TOWN OF GREIG

This section presents the jurisdictional annex for the Town of Greig. It includes resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions that can be implemented prior to a disaster to reduce or eliminate damage to property and people. This annex includes a general overview of the Town of Greig and who in the town participated in the planning process, an assessment of the Town of Greig’s risk and vulnerability, the different capabilities used in the town, and an action plan that will be implemented to achieve a more resilient community.

### 9.9.1 Hazard Mitigation Planning Team

The following individuals have been identified as the Town of Greig’s hazard mitigation plan primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Marilyn Patterson Title: Town Supervisor Phone Number: 315-348-8272 ext. 2 Address: 5186 Greig Road, Greig, NY 13345 Email: mpatter@twcny.rr.com	Name: Thomas Gunn Title: Town Clerk Phone Number: 315-348-8272 ext. 0 Address: 5186 Greig Road, Greig, NY 13345 Email: gunn.tp@gmail.com
Floodplain Administrator	
Name: David Van de Water Title: Code Enforcement Officer Phone Number: 315-816-7877, 315-348-8884 Address: 3950 State Route 12, Lyons Falls, NY 13368 Email: david@vandewaterland.com	

### 9.9.2 Municipal Profile

The Town of Greig lies on the eastern border of Lewis County in Northern New York State. The Town of Greig is bordered by the Town of Watson to the north, the Black River and Herkimer County to the east, the Town of Lyonsdale to the south, and the Towns of Turin and Martinsburg to the west. The Town of Greig includes the following communities: Brantingham (hamlet), Glenfield (hamlet), Greig (hamlet), and Otter Creek (hamlet). Brantingham Lake, Catspaw Lake, Little Pine Lake, East Pine Pond, and Pine Lake are located in the town. The estimated 2017 population was 1,294, a 7.9 percent increase from the 2010 Census (1,199).

Data from the 2017 U.S. Census American Community Survey indicate that 3.8 percent of the town population is 5 years of age or younger and 22.2 percent is 65 years of age or older. Communities must deploy a support system that enables all populations to safely reach shelters or to quickly evacuate a hazard area.

### History and Cultural Resources

The eastern half of the town is inside the Adirondack Park. It is the largest park in the contiguous United States (6.1 million acres), the largest National Historic Landmark, and the largest area protected by any state. The part of the Adirondack State Park under government control is referred to as the Adirondack Forest Preserve, which became a National Historic Landmark in 1963.



**Growth/Development Trends**

Table 9.9-1 summarizes major residential/commercial development that known or anticipated to take place prior to 2023. The map in 9.9.9 of this annex illustrates the hazard areas along with the location of potential new development.

**Table 9.9-1. Growth and Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2010 to present</b>					
Hiawatha Lake	Res.	10 Lots	246.04-01-66.000	Zone C	10% completed
Buck Ridge	Res.	26 Lots	290.00-01-03.110	Zone C	0%
Lyons Falls Road Pomerville	Res.	15 Lots	276.00-02-21.116	Zone C	40%
Linda Place	Res.	9 Lots	290.00-05-(1-8)	Zone C	0%
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
None identified					

*\* Only location-specific hazard zones or vulnerabilities identified.*

**9.9.3 Hazard Event History Specific to the Town of Greig**

Lewis County has a history of natural hazard events as detailed in Volume I, Section 5.0 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the county and its municipalities. The Town of Greig’s history of federally-declared (as presented by FEMA) and significant hazard events (as presented in NOAA-NCEI) is consistent with that of Lewis County. Table 9.9-2 provides details regarding municipal-specific loss and damages the town experienced during hazard events. Information provided in the table below is based on reference material or local sources.

**Table 9.9-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April 26- May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	Numerous road closures and utility outages took place in the town. Culverts, ditches, and road shoulders were damaged. Highway Department staff had to work overtime. The Volunteer Fire Department was called into action to assist with traffic control and civilian safety efforts.
August 26- September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	Although the county incurred damages, the town did not report damages.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	Although the county incurred damages, the town did not report damages.





Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
June 26- July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	Although the county incurred damages, the town did not report damages.
May 13-22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	Chases Lake Road was closed due to trees falling across the roadway and shoulders becoming washed out. Numerous utility outages took place. The Volunteer Fire Department was called into action to assist with traffic control and civilian safety efforts. The Highway Department focused on debris removal and cleanup after the storm.
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to a foot and half of snow within this band leading up to daybreak Friday.	The storm knocked down many trees and wires, resulting in utility outages. The Volunteer Fire Department was called into action to assist with traffic control and civilian safety efforts.
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	Although the county incurred damages, the town did not report damages.

Notes:

EM Emergency Declaration (FEMA)  
 DR Major Disaster Declaration (FEMA)

### 9.9.4 Hazard Ranking and Jurisdiction-Specific Vulnerabilities

The hazard profiles in Section 5.0 (Risk Assessment) have detailed information regarding each plan participant’s vulnerability to the identified hazards. This section provides a summary of exposure and impacts from significant hazards of concern as identified by the Town of Greig.

#### Hazard Risk Ranking

This section includes the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating town or village may have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Town of Greig. The Town of Greig has reviewed





the county hazard risk/vulnerability risk ranking table, as well as its individual results, to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the town indicated the following:

Table 9.9-3. Town of Greig Calculated Hazard Ranking

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	Low
Extreme Temperature	High	High
Flood	Medium	Medium
Hazardous Material Incidents	Medium	Medium
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	High

Notes: The scale is based on the following hazard rankings as established in Section 5.3.

### Critical Facilities Flood Risk

NYS DEC Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for state projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a SFHA unless constructed according to specific mitigation specifications, including being raised 2 feet above the BFE. This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the State places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 500-year flood event or worst damage scenario. For those that do not meet these criteria, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain and presents HAZUS-MH estimates of the damage and loss of use to critical facilities as a result of a 1-percent annual chance flood event.

Table 9.9-4. Potential Flood Losses to Critical Facilities

Name	Type	Exposure		Potential Loss from 1% Flood Event		Addressed by Proposed Action
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage	
Town of Greig	Potable Pump	X	-	30%	-	T. Greig-4

Source: Lewis County Real Property 2018, FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000

### Identified Issues

The Town of Greig has identified the following vulnerabilities within their community:

- None identified.





### 9.9.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms

#### Planning and Regulatory Capability

The table below summarizes the regulatory tools that are available to the Town of Greig.

**Table 9.9-5. Planning and Regulatory Tools**

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Comprehensive Plan	No	-	-	-
Capital Improvements Plan	No	-	-	-
Floodplain Management / Basin Plan	No	-	-	-
Stormwater Management Plan	No	-	-	-
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	No	-	-	-
Economic Development Plan	No	-	-	-
Comprehensive Emergency Management Plan	No	-	-	-
Emergency Operation Plan	No	-	-	-
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	No	-	-	-
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-
<b>Regulatory Capability</b>				
Building Code	Yes	State & Local	CEO	Local Law 1-2006 NYS 2016 UFC & Building Code Local Law Local Law 2015-1 1-19-2015
Zoning Ordinance	Yes	State & Local	CEO	Local Law 1-1990 Amended 8-12-15
Subdivision Ordinance	Yes	Local	CEO	Local Law 5-2005
NFIP Flood Damage Prevention Ordinance	Yes	Federal, State, Local	CEO	Local Law 4-08 enacted 10/2008



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	Yes	State, Local	CEO	State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	Yes	Local, State	CEO	Building Code, Zoning Code
Stormwater Management Ordinance	No	-	-	-
Municipal Separate Storm Sewer System (MS4)	No	-	-	-
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	-	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	Yes	Local	CEO	Mass Gathering Law Local Law 1-2007; 5-16-07 On Site Sewage & Dispersal Law Local Law 2-2005; 5-18-2005 Local Law;

### Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the Town of Greig.

**Table 9.9-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	Yes	Building Dept., Planning Board
Mitigation Planning Committee	No	-
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	No	-
Maintenance programs to reduce risk	Yes	Highway Dept.
Mutual aid agreements	Yes	Highway Dept.
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	No	-
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Planning Board Chairman; CEO
Planners or engineers with an understanding of natural hazards	No	-



Resources	Is this in place? (Yes or No)	Department/ Agency/Position
NFIP Floodplain Administrator (FPA)	Yes	CEO
Surveyor(s)	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	No	-
Scientist familiar with natural hazards	No	-
Emergency Manager	No	-
Grant writer(s)	No	-
Staff with expertise or training in benefit/cost analysis	Yes	CEO; Highway Superintendent
Professionals trained in conducting damage assessments	No	-

### Fiscal Capability

The table below summarizes financial resources available to the Town of Greig.

**Table 9.9-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	No
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	No
User fees for water, sewer, gas or electric service	No
Impact fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	No
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No
Other federal or state Funding Programs	No
Open Space Acquisition funding programs	No
Other	No

### Community Classifications

The table below summarizes classifications for community programs available to the Town of Greig.

**Table 9.9-8. Community Classifications**

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	Yes	4 for 1 & 2 family construction and 4 for commercial and industrial construction	October 21, 2016
Public Protection (ISO Fire Protection Classes 1 to 10)	No	-	-







Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	No	-	-
Public-private partnership initiatives addressing disaster-related issues	No	-	-
Other	No	-	-

Note:

- Unavailable

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery, and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10, with class 1 being the best possible classification and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual.
- The Building Code Effectiveness Grading Schedule (<https://www.isomitigation.com/bcegs/>).
- The ISO Mitigation online ISO’s Public Protection (<https://www.isomitigation.com/ppc/>).
- New York State Climate Smart Communities (<http://www.dec.ny.gov/energy/56876.html>).
- The National Weather Service Storm Ready (<https://www.weather.gov/stormready/communities>).
- The National Firewise Communities (<http://firewise.org/>).

### Self-Assessment of Capability

The table below provides an approximate measure of the Town of Greig’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

Table 9.9-9. Self-Assessment Capability for the Town of Greig

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Planning and regulatory capability	X- Limited staff	-	-
Administrative and technical capability	X- Limited staff	-	-
Fiscal capability	X- Limited staff	-	-
Community political capability	X- Limited staff	-	-





Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Community resiliency capability	X- Limited staff	-	-
Capability to integrate mitigation into municipal processes and activities	X- Limited staff	-	-

### National Flood Insurance Program

This section provides specific information on the management and regulation of the regulatory floodplain.

#### NFIP Floodplain Administrator (FPA)

David Van de Water, Code Enforcement Officer

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

Only one property is located in the floodplain. It has not been damaged in recent flooding events and the owners are not interested in mitigation. The FPA noted that the flood maps for the Brantingham Lake area are out of date and inaccurate causing many to pay higher insurance rates than needed or are required to obtain a survey to determine the exact flood elevation in relation to the property. The FPA suggested that these maps need to be corrected and updated.

The following table summarizes the NFIP statistics for the Town of Greig.

Table 9.9-10. NFIP Summary

Municipality	# Policies	# Claims (Losses)	Total Loss Payments	# RL Properties	# SRL Properties	# Policies in the 1% Flood Boundary
Town of Greig	9	7	\$46,085	1	0	2

Source: FEMA Region 2, 2018

Notes:

- (1) Policies, claims, and repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.
  - (2) Total building and content losses from the claims file provided by FEMA Region 2.
  - (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file.
- FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility. A zero percentage denotes less than 1/100th percentage and not zero damage or vulnerability as may be the case. Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.

### Resources

The FPA is the sole person responsible for floodplain administration in the town. NFIP administration services and functions are limited to permit reviews. The town does not provide education or outreach to the community regarding flood hazards/risk, and flood risk reduction. The FPA does not feel there any barriers to running an effective floodplain management program and feels adequately supported and trained. The FPA might consider attending continuing education and/or certification training on floodplain management if it were offered in the county for all local floodplain administrators, depending on the timing and commitment necessary. Flooding is not a major problem in the town.

### Compliance History

The town is in good standing with the National Flood Insurance Program. The most recent compliance audit (Community Assistance Visit [CAV]) took place on April 10, 2014.





## Regulatory

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Floodplain management regulations/ordinances meet the FEMA and state minimum requirements. In order to support floodplain management, the Planning Board reviews site location information and setback requirements and the CEO reviews all plans for proper setback.

## Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

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For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community's progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures, which is also indicated below.

## Planning

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### Existing Integration

The Town of Greig has a Comprehensive Plan and is currently working on an update. The current plan has a zoning map which determines land uses, lot size, and building locations. It includes areas of natural hazard risk but does not currently refer to the countywide HMP. The town is not an MS4 regulated community and does not have a formal Stormwater Management Plan.

The town does not have a Re-Development Plan, Growth Plan, Economic Development Plan, Open Space Plan, Watershed/Stream Corridor Management Plan, Local Waterfront Revitalization Plan, Post-Disaster Recovery Plan, Strategic Recovery Plan, or Continuity of Operations/Continuity of Government plan.

### Opportunities for Future Integration

The update to the town's Comprehensive Plan could refer to the Lewis County HMP.

## Regulatory and Enforcement (Ordinances)

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### Existing Integration

Municipal zoning, subdivision regulations, and site plan review process consider natural hazard risk but do not require developers to take additional actions to mitigate natural hazard risk. The Planning Board/ZBA is supplied with the Zoning Law and Subdivision Law to guide their decisions with respect to natural hazard risk management.

**Zoning Law:** The Town of Greig's Zoning Law was established to provide for orderly growth in accordance with a comprehensive plan; to lessen congestion on the roads; to secure safety from fire, flood, and other dangers; to provide adequate light and air; to prevent the overcrowding of land; to protect historical and recreational, and natural attributes; to avoid undue concentration of population; to facilitate the adequate provision of transportation, water, sewerage, schools, parks and other requirements; and to promote the health, safety, and general welfare of the public.

**Subdivision Control Law of the Town of Greig:** The Town of Greig's Subdivision Control Law was enacted to provide for orderly efficient growth within the community and to afford adequate facilities for the transportation, housing, comfort, convenience, safety, health, and welfare of its population. The law is administered by the Planning Board and the Code Enforcement Officer.



### Opportunities for Future Integration

The town could require developers to take additional actions to mitigate natural hazard risk.

### Operational and Administration

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#### Existing Integration

**Town Planning Board:** The Town of Greig’s Planning Board is made up of six members. The board meets the first Thursday of each month at 5:30 pm at the Town Hall.

**Town Zoning Board of Appeals:** The Town of Greig’s Zoning Board of Appeals is made up of five members. The board meets the first Thursday of each month at 6:30 pm at the Town Hall.

**Vegetation Maintenance:** The Town of Greig’s Highway Department operates a tree trimming and clearing program to prevent public and private property damage and flooding caused by falling trees and branches.

**Roadway and Culvert Maintenance:** The Town of Greig’s Highway Department operates a culvert and roadway maintenance program. The program replaces shoulder material and cleans ditches to prevent erosion due to sandy soil conditions and steepness of grade. Culverts are cleaned of debris to prevent flooding.

The town does not have a municipal planner or contract planning firm. No staff have job descriptions that specifically include identifying and/or implementing mitigation projects/actions or other efforts to reduce natural hazard risk but staff receive training/continuing education which supports natural hazard risk reduction. The town has identified annual NYS CEO training as an additional opportunity for training of town staff.

The town has a Planning Board/Zoning Board of Adjustment but does not have any other boards or committees that include functions with respect to managing natural hazard risk. Stormwater Management functions are performed by the Highway Superintendent, while NFIP Floodplain Management functions are performed by the CEO who also participates in outside groups, associations, committees, and organizations that support natural hazard risk reduction and build hazard mitigation capabilities.

### Opportunities for Future Integration

The town could hire a contract planning firm to help apply for hazard mitigation related grants.

### Funding

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#### Existing Integration

The town’s municipal/operating budget and Capital Improvements Budget do not include line items for mitigation projects. The town has not applied for grant funding for mitigation projects in the past and does not have any other mechanisms to fiscally support hazard mitigation.

### Opportunities for Future Integration

The town could include line items for hazard mitigation projects in the municipal budget or Capital Improvements budget and supplement municipal funding by applying for grants.

### Education and Outreach

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#### Existing Integration

The Town of Greig currently does not provide public outreach and education concerning natural hazards.



### Opportunities for Future Integration

The town could develop outreach materials to be shared at community events and hosted at municipal buildings.

### Sheltering, Evacuation, and Temporary Housing

Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

### Evacuation and Sheltering Needs

The Town of Greig has designated the following emergency shelters, evacuation routes, or evacuation procedures.

Table 9.9-11. Identified Shelters in the Community

Shelter Name	Address	Capacity	Accommodates Pets?	ADA Compliant?	Backup Power?	Types of Medical Services Provided	Other Services Provided
Camp Aldersgate	Brantingham Road	250	No	Yes	No	None	Food and lodging
Brantingham Fire House	Partidgeville Road	15	No	Yes	Yes	None	None
Greig Town Hall	Greig Road	25	No	Yes	Yes	None	None
Brantingham Snowmobile Club	Brantingham Road	25	No	No	No	No	No

### Temporary and Permanent Housing

The Town of Greig has identified the following site for the placement of temporary housing for residents displaced by a disaster:

- Camp Aldersgate: The camp is located on Brantingham Road. The site has a capacity of 100. It would require installation of sewage dispersal system, electric service, and water service to ensure conformance with the NYS Uniform Fire Prevention and Building Code.
- Brantingham Snowmobile Club: The club is located on Brantingham Road. This site has a capacity of 10. It would require installation of sewage dispersal system, electric service, and water service to ensure conformance with the NYS Uniform Fire Prevention and Building Code.
- Greig Town Park: The park is located on Greig Road and Park Road and has a capacity of 50. It would require installation of sewage dispersal system, electric service, and water service to ensure conformance with the NYS Uniform Fire Prevention and Building Code.
- Higby Trailer Park: The Trailer Park is located on Higby Road and has a capacity of 7 units. It would require installation of sewage dispersal system, electric service, and water service to ensure conformance with the NYS Uniform Fire Prevention and Building Code.
- Patterson Farm: The farm is located on Patterson Road, Greig Road, and McConnell Road. This site has a capacity of 200. It would require installation of sewage dispersal system, electric service, and water service to ensure conformance with the NYS Uniform Fire Prevention and Building Code.



The Town of Greig has identified the following potential sites suitable for relocating houses of the floodplain and/or building new homes once properties in the floodplain are acquired:

- Pominville Development: The development is located on Lyons Falls Road and has a capacity of 25. Roads and utilities would need to be installed to ensure conformance with the NYS Uniform Fire Prevention and Building Code.
- Linda Place: Linda Place is located on Linda Place Road and has a capacity of 10. Septic and water would need to be installed to ensure conformance with the NYS Uniform Fire Prevention and Building Code.

### 9.9.6 Mitigation Strategy and Prioritization

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and their prioritization.

#### Past Mitigation Initiative Status

The following table indicates progress on the community’s mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under ‘Capability Assessment’ presented previously in this annex.



Table 9.9-12. Status of Previous Mitigation Actions

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection	
	<u>Eatonville Road</u> Replace 3 culverts with larger size. Clean ditch line for ¾ miles on the North Side of the road.	Public and Private property damage and flooding	Small, older culverts collect leaves and debris in ditches – seasonal road.	Town Highway Department	Complete	\$26,500	Not available	1. Discontinue 2. Ongoing ditch maintenance 3. Complete
	<u>Jones Road</u> Clean ditch line and replace 2 culverts with larger size.	Public and private property damage and flooding	Small culverts collect debris in ditches from winter.	Town Highway Department	Complete	\$5,000	Not available	1. Discontinue 2. Ongoing ditch maintenance 3. Complete
	<u>Chases Lake Road</u> Remove large trees that are dead or have several dead limbs that will fall into roadway in high winds.	Public and private property damage and flooding	Heavily wooded area with many large older trees.	Town Highway Department	Complete	\$5000	Not available	1. Discontinue 2. Ongoing maintenance 3. Complete
	<u>Chases Lake Road (Hill Section)</u> Repair shoulders and replace shoulder material with non-erosive materials (stone).	Public and private property damage and flooding	Erosion due to sandy soil conditions and steepness of grade	Town Highway Department	Complete	\$25,000	Not available	1. Discontinue 2. Ongoing maintenance 3. Complete
	<u>Rumble Road</u> Repair and line ditches so run-off water will not destroy shoulder and edges of roadway.	Public property damage and flooding	Replace shoulder material and cleaned ditches	Town Highway Department	Complete	\$5200	Not available	1. Discontinue 2. Ongoing maintenance 3. Complete
	<u>Partridgeville Road Bridge</u>				Complete	\$1000		1. Discontinue







Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Level of Protection	Cost	
	Repair Southside Wingwall, remove storm debris from the upside of the bridge.	Bridge safety and flooding	Debris washed downstream from APA controlled area No stream clearance allowed	Town Highway Department		Level of Protection	Not available	2.
						Damages Avoided; Evidence of Success	Limited success	3. Complete
	<u>Plan Review for Mitigation</u> Ensure that local comprehensive plans incorporate disaster mitigation techniques through a courtesy review of all draft plans by the County Economic Development and Planning Department	All Hazards		Town Mayor / CPG Member	No Progress	Cost		1. Discontinue
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3. County action
	<u>GIS Enhancement</u> Investigate expansion of hazard-related GIS capabilities via acquisition of HAZUS-MH to collect and develop more sophisticated hazard mapping and loss estimation. Use information in future plan updates. Ensure information will be available to the public and to local communities and agencies.	Earthquakes, Wind, and Flood	None	Town Mayor / CPG Member	No Progress	Cost		1. Discontinue
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3. County action
	<u>Outreach Program</u> County coordination with local governments and other agencies to systematically contact isolated, vulnerable or special-needs population during severe winter storm events	Winter Storms and Extreme temperatures	None	Town Mayor / CPG Member	No Progress	Cost		1. Discontinue
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3. County action
	<u>Auxiliary Power Supply</u> Conduct a countywide survey on status of auxiliary power supplies at all critical facilities.	Winter Storms, Wind, Tornado	No list Of facilities with aux. power but	Town Mayor / CPG Member	No Progress	Cost		1. Discontinue
						Level of Protection		2.
						Damages Avoided;		3. County action



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Staff Time	
			known by locals			Evidence of Success		
	<u>Wind Hazards Training</u> Provide trainings to municipalities regarding the development and implementation of programs to mitigate wind damage to private and public properties.	Wind, Tornado	None	Town Mayor / CPG Member	No Progress	Cost		1. Discontinue
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3. County action
	<u>Winter Driving and Vehicle Preparation Education</u> Provide education opportunities for residents to learn winter driving techniques.	Winter Storms and Wind	None	Town Mayor / CPG Member	No Progress	Cost		1. Discontinue
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3. County action
	<u>Winter Storm Public Awareness and Preparation</u> Increase public awareness of personal responsibilities during emergencies, specifically winter storm events.	Winter Storms and Snow	None	County EMS and Sherriff's Dept.	Complete	Cost	Staff Time	1. Discontinue
						Level of Protection	Not applicable	2.
						Damages Avoided; Evidence of Success	Increase awareness of residents	3. Complete
	<u>Emergency Warming Shelters</u> Establish warming shelters for vulnerable populations, including residents and stranded motorists.	Extreme Temperatures and Winter Storms	Facilities Available No list prepared (Town Hall and Fire House)	Town Mayor / CPG Member	Complete	Cost	Staff Time	1. Discontinue
						Level of Protection	Not applicable	2.
						Damages Avoided; Evidence of Success	Provides proper shelter locations for residents	3. Complete
	<u>Dam Safety</u> Coordinate with NYSDEC and owners of all high and moderate hazard dams to work towards full compliance with applicable dam safety programs and development/updating of Emergency Action Plans including inundation mapping.	Dam Failure	Completion of survey of Dams with DEC completed Emergency Action Plan for Lake of the Pines	CEO and Lake of the Pines Owners Association	Complete	Cost	\$20,000	1. Discontinue
						Level of Protection	Not applicable	2.
						Damages Avoided; Evidence of Success	Increase safety of dams	3. Complete. Lake of the Pines Assn working with engineers to correct deficiencies with drop tube and plug valve/gate (private lake)





Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection	
	<u>Drought Preparedness</u> Publish and distribute literature (via the county website, supplemented by hard copy distribution) on water conservation techniques and drought management strategies.	Drought	NA	Town Mayor / CPG Member	No Progress	Cost		1. Discontinue 2. 3. County action
	<u>Landslide Study</u> Conduct surveys to determine local vulnerabilities to landslides threatening property and roads, coordinate with municipalities to limit development in these areas and develop remedial measures for existing vulnerabilities.	Landslides	Possible landslides for certain areas along the Black River	CEO Town Supervisor	Complete	Cost	Staff Time	1. Discontinue Zoning Law has established setbacks to mitigate the possibility of structures being constructed in critical areas. Present time no structures exist in that area. 2. 3. Complete
	<u>Wildfire Mapping</u> Create and distribute mapping and database of wildland access points for firefighters, develop enhanced mapping of urban/wildland interface.	Wildfire	NA	Town Mayor / CPG Member	No Progress	Cost		1. Discontinue 2. 3. County action
	<u>Critical Facilities Survey</u> Undertake a year built and level of protection survey for all critical/emergency facilities and shelters to highlight structures built before codes and standards were put in place to provide protection from natural hazards, and pursue potential mitigation opportunities to protect these sites as funding becomes available.	Wind/Tornado, Winter Storms, Earthquakes, and Flooding (including Ice Jams)	NA	Town Mayor / CPG Member	No Progress	Cost		1. Discontinue 2. 3. County action



### **Completed Mitigation Initiatives Not Identified in the Previous Mitigation Strategy**

The Town of Greig has performed ongoing maintenance projects to reduce the impact of flooding but has not identified specific mitigation projects/activities that were completed but not identified in the previous mitigation strategy in the 2010 Plan.

### **Proposed Hazard Mitigation Initiatives for the Plan Update**

Table 9.9-13 summarizes the comprehensive-range of specific mitigation initiatives the Town of Greig would like to pursue in the future to reduce the effects of hazards. Some of these initiatives might be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and can be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6 (Mitigation Strategy), 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as 'High', 'Medium', or 'Low.' The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.9-14 provides a summary of the prioritization of all proposed mitigation initiatives for the plan update.



Table 9.9-13. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category	
T. Greig-1	Vegetation/Tree Management and Mitigation Project	<b>Problem:</b> Falling tree limbs and trees on town, county, and state roads throughout the Town. There are no specific tree species that are prone to falling but ash trees are prone to emerald ash borer infestation. This may cause power line disruption or personal injuries. Storms of late have caused sporadic times for reaction from road crews.		Severe Storm, Severe Winter Storm	1	No	None	1 year	DPW	\$5,000/year	High-reduction of power outages	Operating Budget, HMGP	High	NSP	NR	
		<b>Solution:</b> Hire tree service to evaluate trees, survey and harvest as necessary.														
T. Greig-2	Hill Road Shoulder project	<b>Problem:</b> Hill Road experiences erosion along the shoulders of the roadway during severe storms and flooding.		Severe Storm, Flood	2	No	None	Within 2 years	DPW	\$15,000	Hill Road kept open.	HMGP, PDM, CHIPS	High	SIP	PP	
		<b>Solution:</b> The town will secure the shoulders of Hill Road. Areas where the hillside is slumping into the road will be carved back. Areas where the roadbank is eroded away will be regraded and secured.														
T. Greig-3	Iroquois Gas Pipeline	<b>Problem:</b> The Iroquois Gas Pipeline runs through the town. The town has needed to close off areas near the pipeline where slumping has occurred.		Flood, Severe Storm, Severe Winter Storm	2	No	None	Within 1 year	Town Board	Staff time	Secure the Iroquois Gas Pipeline and prevent damage and gas leaks	Town budget	High	SIP	PP	
		<b>Solution:</b> The town will work with the owner of the pipeline to secure the pipeline from exposure to hazards.														





Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
T. Greig-4	Protect the Town of Greig Potable Pump to the 500-year flood level.	<b>Problem:</b> The pump is located in the 100-year floodplain. The Town does not have jurisdiction over this pump as it is owned by the Town of Greig.	<b>Solution:</b> The FPA will contact the facility manager to discuss mitigation techniques to protect the pump to the 500-year flood level.	Flood	2	Yes ●	None	Within 6 months	Facilities manager, Town Supervisor	<\$100	Pump protected to the 500-year flood level	Municipal budget	High	SIP	PP

**Notes:**

Not all acronyms and abbreviations defined below are included in the table.

Acronyms and Abbreviations:

- CAV Community Assistance Visit
- CRS Community Rating System
- DPW Department of Public Works
- EHP Environmental Protection Historic Preservation
- FEMA Federal Emergency Management Agency
- FPA Floodplain Administrator
- HMA Hazard Mitigation Assistance
- N/A Not applicable
- NFIP National Flood Insurance Program
- OEM Office of Emergency Management

Potential FEMA HMA Funding Sources:

- FMA Flood Mitigation Assistance Grant Program
- HMGP Hazard Mitigation Grant Program
- PDM Pre-Disaster Mitigation Grant Program

Timeline:

The time required for completion of the project upon implementation

Cost:

The estimated cost for implementation.

Benefits:

A description of the estimated benefits, either quantitative and/or qualitative.

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities.

CRS Category:


- Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.





- *Property Protection (PP)* - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- *Public Information (PI)* - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- *Natural Resource Protection (NR)* - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- *Structural Flood Control Projects (SP)* - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.
- *Emergency Services (ES)* - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.

Critical Facility:

- Yes  - Critical Facility located in 1% floodplain.





**Table 9.9-14. Summary of Prioritization of Actions**

Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community	Total	High / Medium / Low
T. Greig-1	Vegetation/Tree Management and Mitigation Project	0	1	1	1	1	1	1	1	1	1	1	1	1	1	13	High
T. Greig-2	Hill Road Shoulder project	0	1	1	1	1	1	0	1	1	1	1	1	1	1	12	High
T. Greig-3	Iroquois Gas Line	0	1	1	1	1	0	1	1	1	1	1	1	1	1	12	High
T. Greig-4	Protect the Town of Greig Potable Pump to the 500-year flood level.	1	1	1	1	1	0	1	1	1	1	0	1	1	1	12	High

Note: Refer to Section 6 (Mitigation Strategy), which conveys guidance on prioritizing mitigation actions. Low (0-4), Medium (5-8), High (9-14).





### **9.9.7 Future Needs To Better Understand Risk/Vulnerability**

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None at this time.

### **9.9.8 Staff and Local Stakeholder Involvement in Annex Development**

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The Town of Greig followed the planning process described in Section 3 (Planning Process). This annex was developed over the course of several months with input from many town departments, including: the Town Supervisor and Town Clerk. The Town Supervisor represented the community on the Lewis County Hazard Mitigation Plan Planning Partnership and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Additional documentation on the Town of Greig’s planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix B (Meeting Documentation).

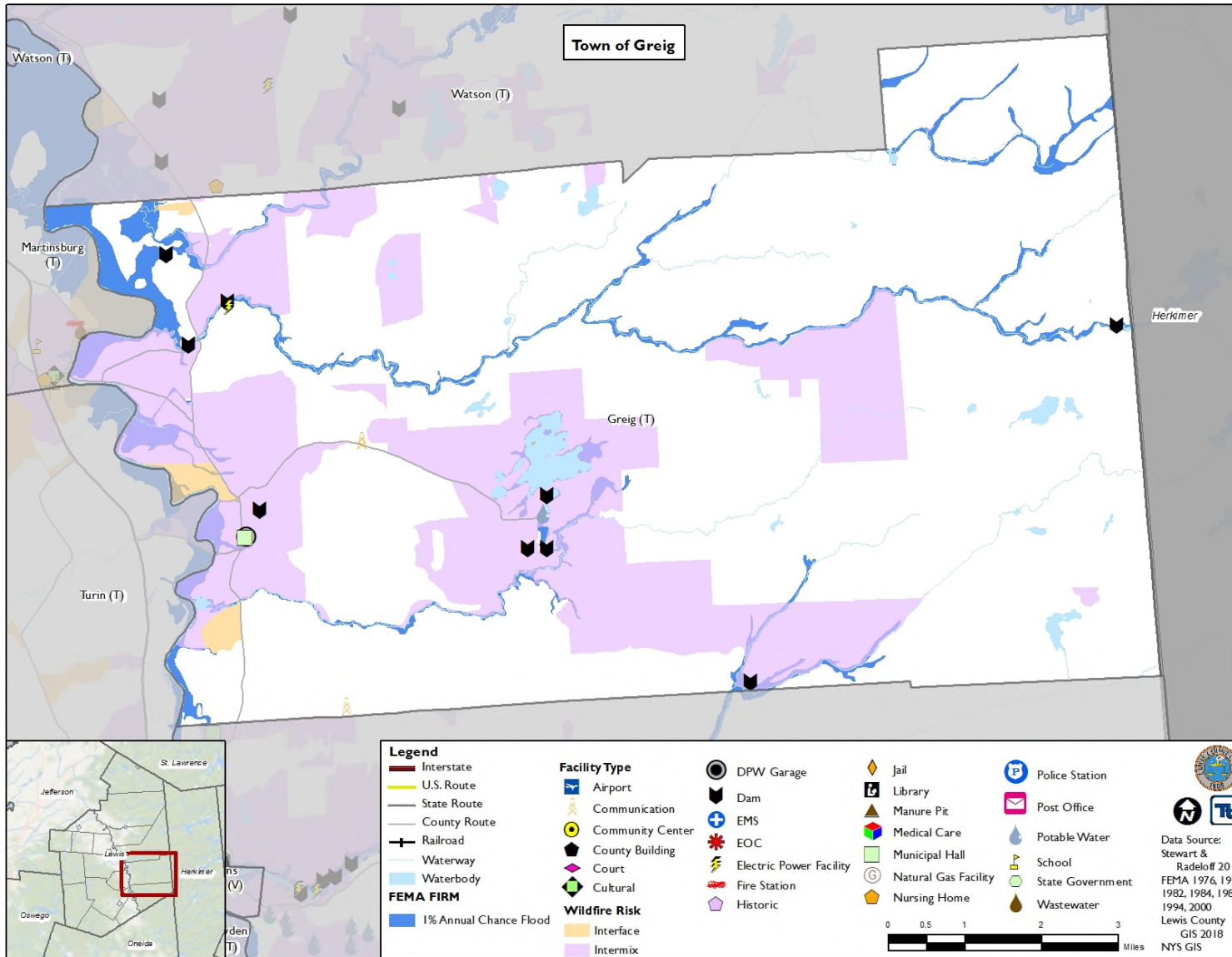
### **9.9.9 Hazard Area Extent and Location**

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Hazard area extent and location maps were generated for the Town of Greig that illustrate the probable areas impacted within the Town of Greig. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps have been generated only for those hazards that can be clearly identified using mapping techniques and technologies and for which the Town of Greig has significant exposure. A map of the Town of Greig hazard area extent and location is provided on the following page. This map indicates the location of the regulatory floodplain, as well as identified critical facilities within the Town of Greig.



Figure 9.9-1. Town of Greig Hazard Area Extent and Location Map





Town of Greig Action Worksheet			
<b>Project Name:</b>	Vegetation/Tree Management and Mitigation Project		
<b>Project Number:</b>	T. Elbridge-1		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Severe Storm, Severe Winter Storm		
<b>Description of the Problem:</b>	Falling tree limbs and trees on town, county, and state roads throughout the town leading to possible closed roads, infrastructure damage, power outages, and injuries. This can also prevent emergency personnel from accessing areas of the town.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	Hire tree service to evaluate trees, survey and harvest as necessary.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Not applicable	<b>Estimated Benefits (losses avoided):</b>	High-reduction of power outages
<b>Useful Life:</b>	4 years; however, this is project is ongoing maintenance each year	<b>Goals Met:</b>	1
<b>Estimated Cost:</b>	\$5,000/year	<b>Mitigation Action Type:</b>	Natural Systems Protection
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	1 year
<b>Estimated Time Required for Project Implementation:</b>	Ongoing throughout each year	<b>Potential Funding Sources:</b>	Operating Budget, HMGP
<b>Responsible Organization:</b>	DPW	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation Plan
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	Action	Estimated Cost	Evaluation
	No Action	\$0	Current problem continues
	Education program to teach people how to maintain trees and report problem trees	\$500/year	Limited impact
	Change zoning to increase	\$500	Only deals with future issues, not current problem
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Vegetation/Tree Management and Mitigation Project	
<b>Project Number:</b>	T. Greig-1	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Protects property from damage from falling limbs.
Cost-Effectiveness	1	
Technical	1	
Political	1	Public would support the initiative.
Legal	1	
Fiscal	1	Operating budget could support the project.
Environmental	1	Keeps ecosystems healthy.
Social	1	
Administrative	1	
Multi-Hazard	1	Severe storm, severe winter storm
Timeline	1	
Agency Champion	1	DPW
Other Community Objectives	1	
<b>Total</b>	13	
<b>Priority (High/Med/Low)</b>	High	



Town of Greig Action Worksheet			
<b>Project Name:</b>	Hill Road Shoulder project		
<b>Project Number:</b>	T. Greig-2		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Severe Storm, Flood		
<b>Description of the Problem:</b>	Hill Road experiences erosion along the shoulders of the roadway during severe storms and flooding.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The town will secure the shoulders of Hill Road. Areas where the hillside is slumping into the road will be carved back. Areas where the roadbank is eroded away will be regraded and secured with gravel.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	n/a	<b>Estimated Benefits (losses avoided):</b>	Hill Road kept open.
<b>Useful Life:</b>	10 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$15,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 2 years
<b>Estimated Time Required for Project Implementation:</b>	3 months	<b>Potential Funding Sources:</b>	HMGP, PDM, CHIPS
<b>Responsible Organization:</b>	DPW	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation, Capital Improvement
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Close Hill Road	\$200	Isolates residents
	Reroute Road to areas with low slope	N/A	Not technically feasible
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Hill Road Shoulder project	
<b>Project Number:</b>	T. Greig-2	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Secure shoulder of Hill Road.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The town has the legal authority to complete the project.
Fiscal	0	The project requires grant funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Severe Storm, Flood
Timeline	1	
Agency Champion	1	DPW
Other Community Objectives	1	
<b>Total</b>	12	
<b>Priority (High/Med/Low)</b>	High	





## 9.10 TOWN OF HARRISBURG

This section presents the jurisdictional annex for the Town of Harrisburg. It includes resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions that can be implemented prior to a disaster in order to reduce or eliminate damage to property and people. This annex includes a general overview of the municipality and who in the town participated in the planning process, an assessment of the Town of Harrisburg’s risk and vulnerability, the different capabilities used in the town, and an action plan that will be implemented to achieve a more resilient community.

### 9.10.1 Hazard Mitigation Plan Point of Contact

The following individuals have been identified as the hazard mitigation plan’s primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Stephen Bernat, Title: Supervisor Phone: 315-376-2221 Address: 3620 Obrien Road, Lowville, NY Email: sbernat@ridgeviewtel.us <b>Floodplain Administrator</b>	Not identified at time of plan update
Name: Ward Dailey Title: Lewis County Codes Phone: (315) 377-2037 Address: Lewis County Court House, 7660 N State Street, Lowville, NY 13367 Email: warddailey@lewiscounty.ny.gov	

### 9.10.2 Municipal Profile

The Town of Harrisburg was formed February 22, 1803 and is the oldest town in what is now Lewis County. The town is located in the western portion of the county and is bordered to the north by the Town of Denmark, to the south by the towns of Montague and Martinsburg, to the east by the Town of Lowville, and to the west by the Town of Pinckney. State Route 12 runs through the northwestern corner, and State Route 177 runs through the southern portion of the town from east to west.



The current municipal facility was constructed in 2001 and is home to following municipal offices: town clerk, highway superintendent, justice court, and the town supervisor. The facility also contains a meeting room, kitchen, and records retention room. The rear of the building houses the highway department’s garage and maintenance facility.

The estimated 2017 population was 484, which a 14.4 percent increase in population from 2010 (423 persons). Data from the 2017 U.S. Census American Community Survey indicate that 9.9 percent of the town population is five years of age or younger, and 12.0 percent is 65 years of age or older.

### Growth/Development Trends

The following table summarizes recent residential/commercial development since 2010 to present and any known or anticipated major residential/commercial development and major infrastructure development that has





been identified in the next five years within the municipality. The map in 9.10.9 of this annex illustrates the hazard areas, along with the location of potential new development.

**Table 9.10-1. Growth and Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)*	Description/Status of Development
<b>Recent Development from 2010 to present</b>					
None					
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
#3 Windfarm	Comm.	25-30	#3 Road; varies roads	None Known	Planning stages
Deer River Wind	Comm.	9	West of Wood Battle Road	None Known	Planning stages

\* Only location-specific hazard zones or vulnerabilities identified.

### 9.10.3 Natural Hazard Event History Specific to the Municipality

Lewis County has a history of natural and non-natural hazard events as detailed in Volume I, Section 5.0 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the county and its municipalities. For the purpose of this plan update, events that have occurred in the county from 2009 to present were summarized to indicate the range and impact of hazard events in the community. Information regarding specific damages is included, if available, based on reference material or local sources. This information is presented in the table below.

**Table 9.10-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April 26- May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	Although the county suffered damages, the town did not report damages from this event.
August 26- September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	Although the county suffered damages, the town did not report damages from this event.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	Although the county suffered damages, the town did not report damages from this event.
June 26-July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	Although the county suffered damages, the town did not report damages from this event.
May 13-22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	Although the county suffered damages, the town did not report damages from this event.



Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to a foot and half of snow within this band leading up to daybreak Friday.	Although the county suffered damages, the town did not report damages from this event.
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	Although the county suffered damages, the town did not report damages from this event.

Notes:

- EM Emergency Declaration (FEMA)
- DR Major Disaster Declaration (FEMA)

### 9.10.4 Hazard Vulnerabilities and Ranking

The hazard profiles in Section 5.0 (Risk Assessment) have detailed information regarding each plan participant’s vulnerability to the identified hazards. This section provides a summary of exposure and impacts from significant hazards of concern as identified by the Town of Harrisburg.

#### Hazard Risk Ranking

This section provides the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy, as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating town or village may have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Town of Harrisburg. The Town of Harrisburg has reviewed the county hazard risk/vulnerability risk ranking table, as well as its individual results, to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the town indicated the following:

- The town agreed with the calculated hazard rankings.

**Table 9.10-3. Hazard Risk/Vulnerability Risk Ranking**

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	Low
Extreme Temperature	High	High





Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Flood	Medium	Medium
Hazardous Material Incidents	Medium	Medium
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	Medium

Notes: The scale is based on the following hazard rankings as established in Section 5.3 (Hazard Ranking).

### Critical Facilities Flood Risk

NYS DEC Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for state projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a SFHA unless constructed according to specific mitigation specifications, including being raised 2 feet above the BFE. This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the state places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 500-year flood event or worst damage scenario. For those that do not meet these criteria, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain and presents HAZUS-MH estimates of the damage and loss of use to critical facilities as a result of a 1-percent annual chance flood event.

Table 9.10-4. Potential Flood Losses to Critical Facilities

Name	Type	Exposure		Potential Loss from 1% Flood Event		Addressed by Proposed Action
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage	
None identified						

Source: FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000; Lewis County 2018

### Identified Issues

The municipality has identified the following vulnerabilities within their community:

- The Kubinski Road Bridge embankment is deteriorated and prone to future erosion damages.
- The culvert at the intersection of Austin Road and River Road is undersized and prone to flooding.

### 9.10.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms





**Planning and Regulatory Capability**

The table below summarizes the regulatory tools that are available to the Town of Harrisburg.

**Table 9.10-5. Planning and Regulatory Tools**

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Comprehensive Plan	Yes	Local	Cooperative Tug Hill Council	2006 – Joint Comprehensive Plan
Capital Improvements Plan	No	-	-	-
Floodplain Management / Basin Plan	No	-	-	-
Stormwater Management Plan	No	-	-	-
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	No	-	-	-
Economic Development Plan	No	-	-	-
Comprehensive Emergency Management Plan	No	-	-	-
Emergency Operation Plan	No	-	-	-
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	No	-	-	-
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	Yes	Local	Planning Board	Land Use Plan updated in 2015/2016
<b>Regulatory Capability</b>				
Building Code	Yes	State and Local	Lewis County Codes	NYS Building Code
Zoning Ordinance	Yes	Local	Zoning Enforcement Officer	Code citation unavailable
Subdivision Ordinance	Yes	Local	Planning Board	Code citation unavailable
NFIP Flood Damage Prevention Ordinance	Yes	County	Lewis County Codes	The town does not have a local flood damage prevention ordinance and uses Lewis County Codes Office.
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	Yes	State, Local	Lewis County Codes	State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	No	-	-	-



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Site Plan Review Requirements	Yes	County	Lewis County Codes	Code citation unavailable.
Stormwater Management Ordinance	No	-	-	-
Municipal Separate Storm Sewer System (MS4)	No	-	-	-
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	NYS, Real Estate Agents	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

**Administrative and Technical Capability**

The table below summarizes potential staff and personnel resources available to the Town of Harrisburg.

**Table 9.10-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	Yes	Planning Board
Mitigation Planning Committee	No	-
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	No	-
Maintenance programs to reduce risk	No	-
Mutual aid agreements	Yes	Fire, County, EMF
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	No	-
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	No	-
Planners or engineers with an understanding of natural hazards	No	-
NFIP Floodplain Administrator (FPA)	Yes	Lewis County
Surveyor(s)	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	No	-
Scientist familiar with natural hazards	No	-
Emergency Manager	Yes	Town Supervisor





Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Grant writer(s)	No	-
Staff with expertise or training in benefit/cost analysis	No	-
Professionals trained in conducting damage assessments	No	-

### Fiscal Capability

The table below summarizes financial resources available to the Town of Harrisburg.

**Table 9.10-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	Yes – Town Board
Capital improvements project funding	Yes – Town Board
Authority to levy taxes for specific purposes	Yes – Town Board
User fees for water, sewer, gas or electric service	No
Impact fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	No
Incur debt through general obligation bonds	Yes – Town Board
Incur debt through special tax bonds	No
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No
Other federal or state Funding Programs	Yes – Town Board
Open Space Acquisition funding programs	No
Other	No

### Community Classifications

The table below summarizes classifications for community program available to the Town of Harrisburg.

**Table 9.10-8. Community Classifications**

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	9	-
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-





Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Public education program/outreach (through website, social media)	Yes	Though tax bills sent to residents	-
Public-private partnership initiatives addressing disaster-related issues	No	-	-

Note:

- Unavailable

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10, with class 1 being the best possible classification and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual.
- The Building Code Effectiveness Grading Schedule.
- The ISO Mitigation online ISO’s Public Protection website at <https://www.isomitigation.com/ppc/>.
- The National Weather Service Storm Ready website at <http://www.stormready.noaa.gov/index.html>.
- The National Firewise Communities website at <http://firewise.org/>.

### Self-Assessment of Capability

The table below provides an approximate measure of the Town of Harrisburg’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

**Table 9.10-9. Self-Assessment Capability for the Municipality**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)*	Moderate	High
Planning and regulatory capability	X – limited staff		
Administrative and technical capability	X – limited staff		
Fiscal capability	X – limited staff		
Community political capability	X – limited staff		
Community resiliency capability	X – limited staff		
Capability to integrate mitigation into municipal processes and activities	X – limited staff; not award of FEMA mitigation funding sources		



### National Flood Insurance Program

#### NFIP Floodplain Administrator (FPA)

Ward Dailey, Lewis County Code Enforcement

#### Flood Vulnerability Summary

The town does not maintain lists or inventories of properties that have been damaged by floods in the past, nor do they make substantial damage determinations. At the time of the plan update, there is no interest from homeowners in mitigating their properties.

Table 9.10-10. NFIP Summary

Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in 100-year Boundary (3)
Harrisburg (T)	1	0	\$320	0	0	1

Source: FEMA Region 2, 2018

Notes:

- (1) Policies, claims, and repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.
- (2) Total building and content losses from the claims file provided by FEMA Region 2.
- (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file. FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility. A zero percentage denotes less than 1/100th percentage and not zero damage or vulnerability as may be the case. Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.

#### Resources

Lewis County provides floodplain administration duties for the Town of Harrisburg.

#### Compliance History

The town is good standing with the NFIP. According to the NYSDEC, the town has not had a compliance audit conducted recently.

#### Regulatory

Lewis County Code Enforcement is responsible for the enforcement of the flood damage prevention ordinance.

#### Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community’s progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures.

#### Planning

##### Existing Integration

**Land Use Plan:** The town has a land use plan that was updated in 2015/2016. The plan includes a map that identifies areas of steep slopes, wetlands, and waterbodies.





### Opportunities for Future Integration

**Land use Plan:** The town's current land use plan does not refer to the Lewis County HMP. During the next update of the land use plan, the town will integrate the 2020 HMP as it establishes resilience as an overarching value for the town and provides the opportunity to continuously manage development in a way that does not lead to increased hazard vulnerability.

### Regulatory and Enforcement (Ordinances)

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#### Existing Integration

**Planning Board:** The Planning Board considers natural hazard risk areas during the site plan review process and when reviewing permits. The Planning Board uses the map included in the land use plan. They require developers to take additional actions to mitigate hazard risk, including underground phone lines and collection on Maple Ridge Wind Farm. The Planning Board has the following resources available to guide their decisions with respect to hazard risk management: Tug Hill Commission, Lewis County Codes, and Lewis County Building and Zoning office.

#### Opportunities for Future Integration

As ordinances are updated, the town can review them to ensure that natural hazards are incorporated.

### Operational and Administration

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#### Existing Integration

**Warming Shelters:** The town has established warming shelters for residents to use for power outages during winter months.

#### Opportunities for Future Integration

**GIS:** The town will support the county with expanding the GIS capabilities of the county to collect and develop more sophisticated hazard mapping and loss estimation.

**Critical Facilities:** The town will work with the county to provide a status of auxiliary power supplies at critical facilities in the town. If the critical facilities in the town does not have backup power, the town will seek funding to purchase and install backup power to the facilities. Additionally, the town will work with critical facility owners to identify the level of protection and year built of each facility to indicate whether or not standards were put into place to provide protection from natural hazards.

### Funding

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#### Existing Integration

**Municipal Budget:** The town's annual budget includes line items for the highway department to make road repairs and snow removal. The town budget and a limited municipal loan can be used to support hazard mitigation projects in the town as well.

#### Opportunities for Future Integration

**Grants:** The town will consider applying for mitigation grants to complete projects that will increase resiliency and protect the life and safety of residents in the town.



## Education and Outreach

### Existing Integration

**Public Education and Outreach:** The town has an education and outreach program for their residents specific to natural hazards. The information is distributed through tax bills, local television stations, radio announcements, and newspapers.

**Municipal Staff Education:** The town’s highway superintendent and employees receive training and continuing professional education that support natural hazard risk reduction.

### Opportunities for Future Integration

The town will continue working with Lewis County in developing and enhancing public education and outreach programs for the hazards of concern in the town. The town would consider attending trainings on the development and implementation of programs to mitigate wind damage to private and public properties. The town will work on developing a social media page to help expand and promote their education and outreach efforts.

## Sheltering, Evacuation, and Temporary Housing

Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

### Evacuation and Sheltering Needs

The town identified the following facilities as emergency shelters for the community.

**Table 9.10-11. Emergency Shelters Identified in the Town of Harrisburg**

Shelter Name	Address	Capacity	Accommodates Pets?	ADA Compliant?	Backup Power?	Types of Medical Services Provided	Other Services Provided
Copenhagen Fire Dept.	9932 NY-12, Copenhagen	50-100	Yes	Yes	Yes	EMT	Bathroom, kitchen
Lowville Fire Dept.	5409 The Parkway, Lowville	50-100	Yes	Yes	Yes	None	Bathroom, kitchen
Town Hall	7886 Cobb Rd.	25	Yes	Yes	Yes	None	Bathroom, kitchen

In the event of an evacuation, the town relies on local fire departments and law enforcement to assist in evacuations and identifying the proper evacuation routes. This depends on the type and location of event. The primary routes in and out of the town will be used in the event of an evacuation.

### Temporary and Permanent Housing

The town did not identify any potential locations for temporary housing. The town noted that various farming fields in the town could be suitable for relocating houses out of the floodplain or build new homes once properties in the floodplain are acquired. However, the land would need to be serviced by electric, sewer, and water, as it is currently not installed.



### 9.10.6 Mitigation Strategy and Prioritization

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This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and prioritization.

#### Past Mitigation Initiative Status

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The following table indicates progress on the community’s mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under ‘Capability Assessment’ presented previously in this annex.



Table 9.10-12. Status of Previous Mitigation Actions

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem and the Solution (Project)	Responsible Party	Status (In Progress, Ongoing Capability, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Not available	
	Intersection Obrien and Moody Roads – Build up road and replace culverts.	Severe Storm, Flood	Road flooding, erosion, safety at intersection	Town Highway Dept.	Complete	Level of Protection	Not available	1. Discontinue 2. N/A 3. Project has been completed; the road was elevated, and new culverts were installed
	Kubinski Road Bridge Embankment – Secure the embankment upstream from the bridge.	Severe Storm, Flood	Bank erosion, safety	Town Highway Dept.	No progress	Level of Protection	Not available	1. Include in 2020 HMP 2. Kubinski Embankment 3. N/A
	Boshart Road Culvert – Increase the size of the culvert, and improve approach.	Severe Storm, Flooding	Road flooding, erosion, safety	Town Highway Dept.	Complete	Level of Protection	Not available	1. Discontinue 2. N/A 3. Project has been completed; the road was elevated, and new culverts were installed
	Austin Road Culvert and River Road Intersection – Increase the size of the culvert, and protect the bank.	Severe Storm, Flooding	Bank erosion, flooding	Town Highway Dept.	No progress	Level of Protection	Not available	1. Include in 2020 HMP 2. Austin Road Culver and River Road Intersection 3. N/A
	Boshart Road Culvert (west of Sears Pond Road) – Increase the size of the culvert, and build up the road.	Severe Storm, Flooding	Bank erosion, flooding	Town Highway Dept.	Complete	Level of Protection	Not available	1. Discontinue 2. N/A 3. Project has been completed; the road was elevated, and new culverts were installed.





Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem and the Solution (Project)	Responsible Party	Status (In Progress, Ongoing Capability, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection	
	Plan Review for Mitigation – Ensure that local comprehensive plans incorporate disaster mitigation techniques through a courtesy review of all draft plans by the County Economic Development and Planning Department.	All Hazards	Plans should be reviewed to incorporate natural hazards.	Town Mayor / CPG Member	Ongoing Capability	Cost		1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
	GIS Enhancement – Investigate expansion of hazard-related GIS capabilities via acquisition of HAZUS-MH to collect and develop more sophisticated hazard mapping and loss estimation. Use information in future plan updates. Ensure information will be available to the public and to local communities and agencies.	Earthquakes, Wind, and Flood	GIS should be enhanced where possible.	Town Mayor / CPG Member	Ongoing Capability	Level of Protection		
Damages Avoided; Evidence of Success								
Cost								
	Outreach Program – County coordinates with local governments and other agencies to systematically contact isolated, vulnerable, or special-needs population during severe winter storm events.	Winter Storms and Extreme temperatures	Special needs populations need to be protected and cared for during hazard events.	Town Mayor / CPG Member	Ongoing Capability	Level of Protection		1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
Damages Avoided; Evidence of Success								
Cost								
	Auxiliary Power Supply – Conduct a countywide survey on status of auxiliary power supplies at all critical facilities.	Winter Storms, Wind, Tornado	Critical facilities require backup power.	Town Mayor / CPG Member	Ongoing Capability	Level of Protection		1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
Damages Avoided; Evidence of Success								
Cost								





Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem and the Solution (Project)	Responsible Party	Status (In Progress, Ongoing Capability, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost		
	Wind Hazards Training – Provide trainings to municipalities regarding the development and implementation of programs to mitigate wind damage to private and public properties.	Wind, Tornado	Officials need to be educated.	Town Mayor / CPG Member	Ongoing Capability	Cost		1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
	Winter Driving and Vehicle Preparation Education – Provide education opportunities for residents to learn winter driving techniques.	Winter Storms and Wind	Residents need to be educated.	Town Mayor / CPG Member	Ongoing Capability	Level of Protection		1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
	Winter Storm Public Awareness and Preparation – Increase public awareness of personal responsibilities during emergencies, specifically winter storm events	Winter Storms and Snow	Residents need to be educated.	Town Mayor / CPG Member	Ongoing Capability	Damages Avoided; Evidence of Success		1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
	Emergency Warming Shelters Establish warming shelters for vulnerable populations, including residents and stranded motorists.	Extreme Temperatures and Winter Storms	Shelters need to be established	Town Mayor / CPG Member	Ongoing Capability	Cost		1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
	Dam Safety – Coordinate with NYS DEC and owners of all high and moderate hazard dams to work towards full compliance with applicable dam safety programs and development/updating of Emergency Action Plans including inundation mapping.	Dam Failure	Dams need to meet safety standards.	Town Mayor / CPG Member	Ongoing Capability	Level of Protection		1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
						Damages Avoided; Evidence of Success		



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem and the Solution (Project)	Responsible Party	Status (In Progress, Ongoing Capability, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost		
	Drought Preparedness – Publish and distribute literature (via the county website, supplemented by hard copy distribution) on water conservation techniques and drought management strategies.	Drought	Residents need to be educated.	Town Mayor / CPG Member	Ongoing Capability	Cost		1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
	Landslide Study – Conduct surveys to determine local vulnerabilities to landslides threatening property and roads, coordinate with municipalities to limit development in these areas and develop remedial measures for existing vulnerabilities.	Landslides	Landslide vulnerability needs to be determined.	Town Mayor / CPG Member	Ongoing Capability	Cost		1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
	Wildfire Mapping – Create and distribute mapping and database of wildland access points for firefighters, develop enhanced mapping of urban/wildland interface.	Wildfire	Wildfire areas need to be mapped.	Town Mayor / CPG Member	Ongoing Capability	Cost		1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
	Critical Facilities Survey – Undertake a year built and level of protection survey for all critical/emergency facilities and shelters to highlight structures built before codes and standards were put in place to provide protection from natural hazards, and pursue potential mitigation opportunities to protect these sites as funding becomes available.	Wind/Tornado, Winter Storms, Earthquakes, and Flooding (including Ice Jams)	Critical facilities need to be built to higher standards.	Town Mayor / CPG Member	Ongoing Capability	Cost		1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.



### **Completed Mitigation Initiatives Not Identified in the Previous Mitigation Strategy**

The Town of Harrisburg has performed ongoing maintenance projects to reduce the impact of flooding but has not identified specific mitigation projects/activities that have been completed but were not identified in the previous mitigation strategy in the 2010 Plan.

### **Proposed Hazard Mitigation Initiatives for the Plan Update**

Table 9.10-13 summarizes the comprehensive-range of specific mitigation initiatives the Town of Harrisburg would like to pursue in the future to reduce the effects of hazards. Some of these initiatives might be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and can be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6 (Mitigation Strategy), 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.10-14 provides a summary of the prioritization of all proposed mitigation initiatives for the plan update.



Table 9.10-13. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility	EHP Issues	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Estimated Timeline	Potential Funding Sources	Priority	Mitigation Category	CRS Category
T. Harrisburg-1	Kubinski Road Bridge Embankment	<p><b>Problem:</b> The Kubinski Road Bridge Embankment is deteriorated and prone to future erosion damages.</p> <p><b>Solution:</b> The Town of Harrisburg will conduct a feasibility assessment to determine the cause of the damages and best method to restore the embankment and secure it from future damages.</p>	Severe Storm and Flooding	2	No	No	Town Highway Department	\$50,000	Reduce or eliminate roadway flooding and streambank erosion; allow roads to remain open	Within 5 years	Municipal Budget, BridgeNY, FEMA HMGP	High	SIP	PP
T. Harrisburg-2	Austin Road and River Road Intersection culvert	<p><b>Problem:</b> The culvert at the Austin Road and River Road intersection is undersized. This leads to increased flood risk and possible stream bank erosion issues.</p> <p><b>Solution:</b> Increase culvert size at the intersection of Austin Road and River Road and protect the stream bank.</p>	Severe Storm and Flooding	2	No	No	Town Highway Department	\$10,000	Reduce or eliminate roadway flooding and streambank erosion; allow roads to remain open	Within 5 years	Municipal Budget, BridgeNY, FEMA HMGP	High	SIP	PP

Notes:

Not all acronyms and abbreviations defined below are included in the table.

Acronyms and Abbreviations:

- CAV Community Assistance Visit
- CRS Community Rating System
- DPW Department of Public Works
- EHP Environmental Preservation and Historic Preservation
- FEMA Federal Emergency Management Agency
- FPA Floodplain Administrator
- HMA Hazard Mitigation Assistance
- N/A Not applicable
- NFIP National Flood Insurance Program
- OEM Office of Emergency Management

Potential FEMA HMA Funding Sources:

- FMA Flood Mitigation Assistance Grant Program
- HMGP Hazard Mitigation Grant Program
- PDM Pre-Disaster Mitigation Grant Program

Timeline:

The time required for completion of the project upon implementation

Cost:

The estimated cost for implementation.

Benefits:

A description of the estimated benefits, either quantitative and/or qualitative.

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses and preserve or restore the functions of natural systems.





- *Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities*

CRS Category:

- *Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.*
- *Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.*
- *Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.*
- *Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.*
- *Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.*
- *Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities*

Critical Facility:


- *Yes  - Critical Facility located in 1% floodplain*



Table 9.10-14. Summary of Prioritization of Actions

Mitigation Action/Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community	Total	High / Medium / Low
T. Harrisburg-1	Kubinski Road Bridge Embankment	1	1	1	1	1	1	0	1	1	1	1	0	1	1	12	High
T. Harrisburg-2	Austin Road and River Road Intersection culvert	0	1	1	1	1	1	0	1	1	1	1	0	1	1	11	High

Note: Section 6 (Mitigation Strategy) conveys guidance on prioritizing mitigation actions.



### **9.10.7 Future Needs To Better Understand Risk/Vulnerability**

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None at this time.

### **9.10.8 Staff and Local Stakeholder Involvement in Annex Development**

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The Town of Harrisburg followed the planning process described in Section 3 (Planning Process). This annex was developed over the course of several months with input from many town departments, including the Town Supervisor and Town Clerk. The Town Supervisor represented the community on the Lewis County Hazard Mitigation Plan Planning Partnership and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Additional documentation on the municipality's planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix B (Meeting Documentation).

### **9.10.9 Hazard Area Extent and Location**

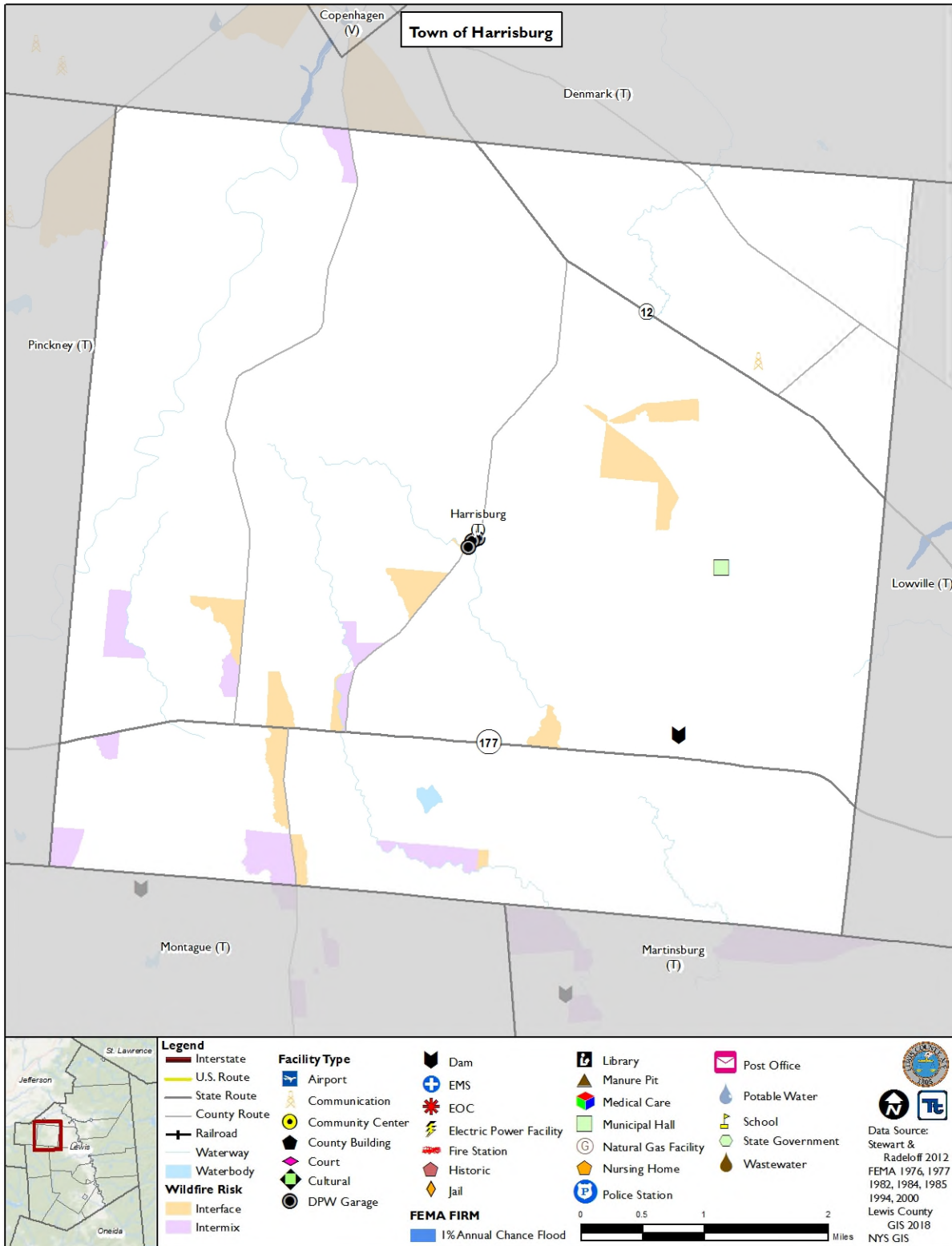
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Hazard area extent and location maps have been generated for the Town of Harrisburg that illustrate the probable areas impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps have been generated only for those hazards that can be clearly identified using mapping techniques and technologies, and for which the Town of Harrisburg has significant exposure. A map of the Town of Harrisburg hazard area extent and location is provided on the following page. This map indicates the location of the regulatory floodplain, as well as identified critical facilities within the municipality.





Figure 9.10-1. Town of Harrisburg Hazard Area Extent and Location Map





Action Worksheet			
<b>Project Name:</b>	Kubinski Road Bridge Embankment		
<b>Project Number:</b>	T. Harrisburg-1		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Flood, Severe Storm		
<b>Description of the Problem:</b>	The Kubinski Road Bridge Embankment is deteriorated and prone to future erosion damages.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	The Town of Harrisburg will conduct a feasibility assessment to determine the cause of the damages and best method to restore the embankment and secure it from future damages. The town will then implement the selected mitigation action.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	To be determined	<b>Estimated Benefits (losses avoided):</b>	Reduce or eliminate roadway flooding and streambank erosion; allow roads to remain open
<b>Useful Life:</b>	10 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$50,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	Within 5 years	<b>Potential Funding Sources:</b>	Municipal Budget, BridgeNY, FEMA HMGP
<b>Responsible Organization:</b>	Town Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Current problem continues
	Remove roadway	\$25,000	Not feasible, roadway needs to remain in place.
	Bring in fill to restore embankment to prior condition	\$5,000	Problem persists and conditions likely to repeat.
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Kubinski Road Bridge Embankment	
<b>Project Number:</b>	T. Harrisburg-1	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project to protect safety of those that use Kubinski Road.
Property Protection	1	Project protects Kubinski Road.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The town has the legal authority to complete the project.
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Severe Storm, Flooding
Timeline	0	Within 5 years
Agency Champion	1	Town Highway Department
Other Community Objectives	1	
<b>Total</b>	12	
<b>Priority (High/Med/Low)</b>	High	



Action Worksheet			
<b>Project Name:</b>	Austin Road Culvert and River Road Intersection		
<b>Project Number:</b>	T. Harrisburg-2		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Flood and Severe Storm		
<b>Description of the Problem:</b>	The culvert at the Austin Road and River Road intersection is undersized. This leads to increased flood risk and possible stream bank erosion issues.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	The town will increase the culvert size at the intersection of Austin Road and River Road and protect the stream bank.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	At least a 5-year event; will be determined once project is complete	<b>Estimated Benefits (losses avoided):</b>	Reduce or eliminate roadway flooding and streambank erosion; allow roads to remain open
<b>Useful Life:</b>	30 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$10,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	Within 5 years	<b>Potential Funding Sources:</b>	Municipal Budget, BridgeNY, FEMA HMGP
<b>Responsible Organization:</b>	Town Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Current problem continues
	Remove road	\$20,000	Roadway cannot be removed
	Relocate road to another location	\$50,000	Roadway will still need to cross stream, costly
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Austin Road Culvert and River Road Intersection	
<b>Project Number:</b>	T. Harrisburg-2	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project will protect intersection from flooding.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	Town has the legal authority to complete the project.
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Severe Storm, Flood
Timeline	0	Within 5 years
Agency Champion	1	Town Highway Department
Other Community Objectives	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	



## 9.11 TOWN OF LEWIS

This section presents the jurisdictional annex for the Town of Lewis. It includes resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions that can be implemented prior to a disaster to reduce or eliminate damage to property and people. This annex includes a general overview of the municipality and who in the town participated in the planning process, an assessment of the Town of Lewis’s risk and vulnerability, the different capabilities used in the town, and an action plan that will be implemented to achieve a more resilient community.

### 9.11.1 Hazard Mitigation Planning Team

The following individuals have been identified as the Town of Lewis’s hazard mitigation plan primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Dawn Zagurski Title: Supervisor Phone Number: 315-942-4470 Address: PO Box 218, West Leyden, NY 13489 Email: ezagurski@twcny.rr.com	Name: Heidi Fey Gerrard Title: Clerk Phone Number: 315-358-0001 Address: PO Box 132, West Leyden, NY 13489 Email: TownofLewis@twcny.rr.com
Floodplain Administrator	
Name: Ward Dailey Title: Lewis County Codes Phone Number: 315-376-5377 Address: 7660 N State Street, Lowville, NY 13620 Email: <a href="mailto:permits@lewiscounty.ny.gov">permits@lewiscounty.ny.gov</a>	

### 9.11.2 Municipal Profile

The Town of Lewis is located along the southern border of Lewis County, and is adjacent to Oneida County, New York. The town encompasses a total area of 65.1 square miles including 64.7 square miles of land and 0.5 square miles of water. The Town of Lewis is composed of six hamlets: Fey Mill, Fish Creek, Freeman Mill, Parson Mill, Swancott Mill, and West Leydon. The estimated 2017 population was 782, a 9.2 percent decrease from the 2010 Census (854).

Data from the 2017 U.S. Census American Community Survey indicate that 7.3 percent of the town population is 5 years of age or younger, and 9.7 percent is 65 years of age or older. Communities must deploy a support system that enables all populations to safely reach shelters or to quickly evacuate a hazard area.

#### History and Cultural Resources

The town was first settled in 1798 and incorporated in 1852.

#### Growth/Development Trends

The Town of Lewis did not note any recent residential/commercial development since 2009 or any major residential or commercial development, or major infrastructure development planned for the next five years in the municipality.



**Table 9.11-1. Growth and Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2009 to present</b>					
None identified					
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
None anticipated					

*\* Only location-specific hazard zones or vulnerabilities identified.*

### 9.11.3 Hazard Event History Specific to the Town of Lewis

Lewis County has a history of natural hazard events as detailed in Volume I, Section 5.0 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the county and its municipalities. The Town of Lewis’s history of federally-declared (as presented by FEMA) and significant hazard events (as presented in NOAA-NCEI) is consistent with that of Lewis County. Table 9.11-2 provides details regarding municipal-specific loss and damages the town experienced during hazard events. Information provided in the table below is based on reference material or local sources.

**Table 9.11-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April 26-May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	While the county suffered losses, the town did not report losses.
August 26-September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	While the county suffered losses, the town did not report losses.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	While the county suffered losses, the town did not report losses.
June 26-July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	While the county suffered losses, the town did not report losses.
May 13-22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	While the county suffered losses, the town did not report losses.
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to a foot and half of snow within this band leading up to daybreak Friday.	The storm caused road closures. The town needed to pay overtime for excess snow removal.
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	While the county suffered losses, the town did not report losses.





Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
May 23, 2017	Fuel Oil Spill	N/A	N/A	<p>A fuel oil spill took place in Lewis. The driver arrived to offload a 9,000-gallon delivery of waste oil fuel to the customers 15 000-gallon tank. Before beginning the offload, he was told by facility personnel that the tank gauge showed there to be sufficient space for the entire load. In the process of unloading the driver noticed the tank gauge giving a much higher reading than was expected at the point. While in the process of verifying his remaining load and re checking the facility tank gauge some distance away the facility tank was over filled. The original tank gauge reading was found to be incorrect. All of the released fuel oil was captured in containment with no release to soil or water. A field service crew equipped with the correct personal protective equipment (PPE) was dispatched to pump out the fuel oil from containment and fully degrease and remediate the containment structure. All generated cleanup waste was drummed and manifested to the appropriate waste stream for disposal.</p>

Notes:

EM Emergency Declaration (FEMA)

DR Major Disaster Declaration (FEMA)

### 9.11.4 Hazard Ranking and Jurisdiction-Specific Vulnerabilities

The hazard profiles in Section 5.0 (Risk Assessment) have detailed information regarding each plan participant’s vulnerability to the identified hazards. This section provides a summary of exposure and impacts from significant hazards of concern as identified by the Town of Lewis.

#### Hazard Risk Ranking

This section includes the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating town or village may have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Town of Lewis. The Town of Lewis has reviewed the county hazard risk/vulnerability risk ranking table, as well as its individual results to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the town indicated the following:

- The Town of Lewis agreed with the calculated risk rankings.





Table 9.11-3. Hazard Risk/Vulnerability Risk Ranking

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	Low
Extreme Temperature	High	High
Flood	Medium	Medium
Hazardous Material Incidents	Medium	Medium
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	High

Notes: The hazard ranking calculation is based on probability of occurrence and impacts on population, property, and the economy. Refer to Section 5.3 (Hazard Ranking) for the hazard ranking methodology.

### Critical Facilities Flood Risk

NYS DEC Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for state projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a SFHA unless constructed according to specific mitigation specifications, including being raised 2 feet above the BFE. This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the state places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 500-year flood event or worst damage scenario. For those that do not meet these criteria, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain and presents HAZUS-MH estimates of the damage and loss of use to critical facilities as a result of a 1-percent annual chance flood event.

Table 9.11-4. Potential Flood Losses to Critical Facilities

Name	Type	Exposure		Potential Loss from 1% Flood Event		Addressed by Proposed Action
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage	
Leishfer Mill Dam	Dam	X	-	-	-	T. Lewis-3
Reimiller Dam	Dam	X	-	-	-	T. Lewis-4
Rome City Dam	Dam	X	-	-	-	T. Lewis-5
Rome City Dam Dike	Dam	X	-	-	-	T. Lewis-6
Swancott Dam	Dam	X	-	-	-	T. Lewis-7
City of Rome Water Dept	Reservoir	X		40	-	T. Lewis-8
Town of Lewis	Comm Facility	X	-	-	-	T. Lewis-9
West Leyden Fire Company	Fire Station	X	-	-	-	T. Lewis-10

Source: Lewis County Real Property 2018, FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000



### Identified Issues

The municipality has identified the following vulnerabilities within their community:

- Osceola Road is impacted by chronic snow drifting.
- Statzer Road culvert causes flooding issues.

### 9.11.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms

### Planning and Regulatory Capability

The table below summarizes the regulatory tools that are available to the Town of Lewis.

Table 9.11-5. Planning and Regulatory Tools

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Comprehensive Plan	No	-	-	-
Capital Improvements Plan	No	-	-	-
Floodplain Management / Basin Plan	No	-	-	-
Stormwater Management Plan	No	-	-	-
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	No	-	-	-
Economic Development Plan	No	-	-	-
Comprehensive Emergency Management Plan	Yes	County	Lewis County Emergency Management	Lewis County Comprehensive Emergency Management Plan
Emergency Operation Plan	No	-	-	-
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	No	-	-	-
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-
<b>Regulatory Capability</b>				



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Building Code	Yes	State & Local	Lewis County Codes	NYS Building Code
Zoning Ordinance	No	-	-	-
Subdivision Ordinance	No	-	-	-
NFIP Flood Damage Prevention Ordinance	Yes	Federal, State, and Local	Lewis County Codes	Flood Damage Prevention Ordinance
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	Yes	State, Local	Lewis County Codes	State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	No	-	-	-
Stormwater Management Ordinance	No	-	-	-
Municipal Separate Storm Sewer System (MS4)	No	-	-	-
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	NYS, Real Estate Agents	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

### Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the Town of Lewis.

**Table 9.11-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board		Information unavailable from the town
Mitigation Planning Committee		Information unavailable from the town
Environmental Board/Commission		Information unavailable from the town
Open Space Board/Committee		Information unavailable from the town
Economic Development Commission/Committee		Information unavailable from the town
Maintenance programs to reduce risk		Information unavailable from the town
Mutual aid agreements		Information unavailable from the town
<b>Technical/Staffing Capability</b>		



Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Planner(s) or engineer(s) with knowledge of land development and land management practices		Information unavailable from the town
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure		Information unavailable from the town
Planners or engineers with an understanding of natural hazards		Information unavailable from the town
NFIP Floodplain Administrator (FPA)	Yes	Lewis County Codes
Surveyor(s)		Information unavailable from the town
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications		Information unavailable from the town
Scientist familiar with natural hazards		Information unavailable from the town
Emergency Manager		Information unavailable from the town
Grant writer(s)		Information unavailable from the town
Staff with expertise or training in benefit/cost analysis		Information unavailable from the town
Professionals trained in conducting damage assessments		Information unavailable from the town

### Fiscal Capability

The table below summarizes financial resources available to the Town of Lewis.

**Table 9.11-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	Information unavailable from the town
Capital improvements project funding	Information unavailable from the town
Authority to levy taxes for specific purposes	Information unavailable from the town
User fees for water, sewer, gas or electric service	Information unavailable from the town
Impact fees for homebuyers or developers of new development/homes	Information unavailable from the town
Stormwater utility fee	Information unavailable from the town
Incur debt through general obligation bonds	Information unavailable from the town
Incur debt through special tax bonds	Information unavailable from the town
Incur debt through private activity bonds	Information unavailable from the town
Withhold public expenditures in hazard-prone areas	Information unavailable from the town
Other federal or state Funding Programs	Information unavailable from the town
Open Space Acquisition funding programs	Information unavailable from the town
Other	Information unavailable from the town

### Community Classifications

The table below summarizes classifications for community programs available to the Town of Lewis.



**Table 9.11-8. Community Classifications**

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	Unavailable	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	Unavailable	-	-
NYS DEC Climate Smart Community	Unavailable	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	Unavailable	-	-
Natural disaster/safety programs in/for schools	Unavailable	-	-
Organizations with mitigation focus (advocacy group, non-government)	Unavailable	-	-
Public education program/outreach (through website, social media)	Unavailable	-	-
Public-private partnership initiatives addressing disaster-related issues	Unavailable	-	-
Other	Unavailable	-	-

Note: - Unavailable

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance, while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10, with class 1 being the best possible classification and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual.
- The Building Code Effectiveness Grading Schedule (<https://www.isomitigation.com/bcegs/>).
- The ISO Mitigation online ISO’s Public Protection (<https://www.isomitigation.com/ppc/>).
- New York State Climate Smart Communities (<http://www.dec.ny.gov/energy/56876.html>).
- The National Weather Service Storm Ready (<https://www.weather.gov/stormready/communities>).
- The National Firewise Communities (<http://firewise.org/>).

**Self-Assessment of Capability**

The table below provides an approximate measure of the Town of Lewis’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

**Table 9.11-9. Self-Assessment Capability for the Municipality**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Planning and regulatory capability	Information unavailable from municipality		
Administrative and technical capability			





Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Fiscal capability			
Community political capability			
Community resiliency capability			
Capability to integrate mitigation into municipal processes and activities			

### National Flood Insurance Program

This section provides specific information on the management and regulation of the regulatory floodplain.

### NFIP Floodplain Administrator (FPA)

Ward Dailey, Lewis County Codes Department

### National Flood Insurance Program (NFIP) Summary

The following table summarizes the NFIP statistics for the Town of Lewis.

**Table 9.11-10. NFIP Summary**

Municipality	# Policies	# Claims (Losses)	Total Loss Payments	# RL Properties	# SRL Properties	# Policies in the 1% Flood Boundary
Lewis (T)	1	1	\$415	0	0	1

Source: FEMA Region 2 2018.

(1) Policies, claims, RL, and SRL statistics provided by FEMA Region 2, and are current as of June 30, 2018. Total number of RL properties does not include SRL properties. Number of claims represents claims closed by July 31, 2018.

(2) Total building and content losses from the claims file provided by FEMA Region 2.

(3) Number of policies inside and outside of flood zones is based on latitude and longitude coordinates provided by FEMA Region 2 in the policy file. FEMA noted that for a property with more than one entry, more than one policy may have been in force or more than one Geographic Information System (GIS) specification was possible. Number of policies and claims, and claims total, exclude properties outside Lewis County boundary, based on provided latitude and longitude coordinates.

RL Repetitive Loss  
SRL Severe Repetitive Loss

### Resources

The Town of Lewis has a signed inter-municipal agreement (IMA) with the Lewis County Codes Department to act on the town’s behalf for the administration and enforcement of the Flood Damage Prevention Ordinance.

### Compliance History

The Town of Lewis is in good standing in the NFIP. The town has not had a Community Assistance Visit (CAV) but had a Community Assistance Contact (CAC) take place on March 17, 2016

### Regulatory

The Town of Lewis’ Flood Damage Prevention Ordinance is administered by the Lewis County Codes Department. The Town of Lewis is not a member of the CRS program and has limited flood exposure.







## Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

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For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community's progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures, which is also indicated below.

### Planning

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#### Existing Integration

The Town of Lewis uses the county's comprehensive emergency management plan. The town does not have a comprehensive plan or other additional planning documents.

#### Opportunities for Future Integration

The Town of Lewis will ensure that local plans incorporate disaster mitigation techniques through a courtesy review of all draft plans by the County Economic Development and Planning Department.

### Regulatory and Enforcement (Ordinances)

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#### Existing Integration

The Town of Lewis does not have a zoning or subdivision ordinance.

#### Opportunities for Future Integration

The Town of Lewis could develop zoning and subdivision ordinances.

### Operational and Administration

---

#### Existing Integration

The Town of Lewis uses Lewis County for code enforcement.

#### Opportunities for Future Integration

The town could hire additional staff to assist with hazard mitigation initiatives.

### Education and Outreach

---

#### Existing Integration

The Town of Lewis operates a municipal website (<https://www.lewisny.com/>). The site contains municipal information, public notices, and community contacts.

#### Opportunities for Future Integration

The town could develop educational programs to inform citizens on natural hazards and host educational information on the town website.

## Sheltering, Evacuation, and Temporary Housing

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Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.



### Evacuation and Sheltering Needs

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The Town of Lewis has not designated emergency shelters, evacuation routes, or evacuation procedures. Evacuation routes and shelters would be determined at the time of an emergency, in accordance with the County CEMP. In the event of an evacuation, the Town will utilize the primary roads in and out of the municipality. If needed, the Town could utilize their town hall/town court/town library for a heating and cooling center.

### Temporary and Permanent Housing

---

The Town of Lewis has not identified sites for the placement of temporary housing for residents displaced by a disaster or potential sites suitable for relocating houses of the floodplain and/or building new homes once properties in the floodplain are acquired. In the event of a disaster event, the town would work with the county to establish appropriate sites.

## 9.11.6 Mitigation Strategy and Prioritization

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This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and their prioritization.

### Past Mitigation Initiative Status

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The following table indicates progress on the community's mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under 'Capability Assessment' presented previously in this annex.



Table 9.11-11. Status of Previous Mitigation Actions

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)			Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection	Damages Avoided; Evidence of Success	
	<u>Statzer Road</u> Half mile west of Kirk Road. Flash flooding and sudden snowmelt. Rehabilitate culvert to allow for flash flooding events.	Flooding	Insufficient culvert to handle the volume of water from flash flooding and snowmelt.	Highway Department	No Progress	Cost			1. Include in 2020 HMP 2. Statzer Road 3.
	<u>Snowfencing.</u> 4 miles of Osceola Road. Chronic drifting concerns.	Wind and Winter Storms	Topography creates chronic snow drifting across Osceola Road.	Highway Department	No Progress	Cost			1. Include in 2020 HMP 2. Snowfencing 3.
	<u>Plan Review for Mitigation</u> Ensure that local comprehensive plans incorporate disaster mitigation techniques through a courtesy review of all draft plans by the County Economic Development and Planning Department	All Hazards	Planning documents should incorporate disaster mitigation techniques	Town Supervisor/CPG Member	No Progress	Cost			1. Discontinue 2. 3. Will be an ongoing capability
						Level of Protection			
						Damages Avoided; Evidence of Success			



### **Completed Mitigation Initiatives Not Identified in the Previous Mitigation Strategy**

The Town of Lewis has performed ongoing maintenance projects to reduce the impact of flooding but has not identified specific mitigation projects/activities that have been completed but were not identified in the previous mitigation strategy in the 2010 Plan.

### **Proposed Hazard Mitigation Initiatives for the Plan Update**

Table 9.11-12 summarizes the comprehensive-range of specific mitigation initiatives the Town of Lewis would like to pursue in the future to reduce the effects of hazards. Some of these initiatives might be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6 (Mitigation Strategy), 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.11-13 provides a summary of the prioritization of all proposed mitigation initiatives for the plan update.



Table 9.11-12. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
T. Lewis-1	Statzer Road culvert	<b>Problem:</b> Half mile west of Kirk Road. Insufficient culvert to handle the volume of water from flash flooding and snowmelt. <b>Solution:</b> Rehabilitate culvert to allow for flash flooding events.	Flood, Severe Storm	2	No	None	Within 5 years	Highway Department	\$6,000	Culvert properly sized, flooding risk reduced	HMGP, PDM, operating budget	High	SIP	PP
T. Lewis-2	Snowfencing on Osceola Road.	<b>Problem:</b> Topography creates chronic snow drifting across Osceola Road. <b>Solution:</b> Install snowfencing along Osceola Road	Severe Winter Storm	2	No	None	Within 5 years	Highway Department	\$3,000	Reduction in drifting snow, closed roadways	HMGP, PDM, operating budget	High	SIP	PP
T. Lewis-3	Protect Leishfer Mill Dam to the 500-year flood level	<b>Problem:</b> The Leishfer Mill Dam is located in the 100-year floodplain. <b>Solution:</b> The Town FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.	Flood	2	Yes <span style="color: blue;">💧</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of methods to protect to 500-year flood level	Operating budget	High	EAP	PI
T. Lewis-4	Protect Reimiller Dam to the 500-year flood level	<b>Problem:</b> The Reimiller Dam is located in the 100-year floodplain. <b>Solution:</b> The Town FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.	Flood	2	Yes <span style="color: blue;">💧</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of methods to protect to 500-year flood level	Operating budget	High	EAP	PI
T. Lewis-5	Protect Rome City Dam to the	<b>Problem:</b> The Rome City Dam is located in the 100-year floodplain.	Flood	2	Yes <span style="color: blue;">💧</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of	Operating budget	High	EAP	PI





Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
	500-year flood level	<b>Solution:</b> The Town FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.								methods to protect to 500-year flood level				
T. Lewis-6	Protect Rome City Dam Dike to the 500-year flood level	<b>Problem:</b> The Rome City Dam Dike is located in the 100-year floodplain. <b>Solution:</b> The Town FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.	Flood	2	Yes <span style="color: blue;">♦</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of methods to protect to 500-year flood level	Operating budget	High	EAP	PI
T. Lewis-7	Protect Swancott Dam to the 500-year flood level	<b>Problem:</b> The Swancott Dam is located in the 100-year floodplain. <b>Solution:</b> The Town FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.	Flood	2	Yes <span style="color: blue;">♦</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of methods to protect to 500-year flood level	Operating budget	High	EAP	PI
T. Lewis-8	Protect City of Rome Water Dept, Osceola Road to the 500-year flood level	<b>Problem:</b> The City of Rome Water Department facility on Osceola Road is in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.	Flood	2, 3	Yes <span style="color: blue;">♦</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of options to protect facility to 500-year flood level	Operating budget	High	EAP, SIP	PI, PP
T. Lewis-9	Protect the Town of Lewis Comm Facility to the 500-year flood level	<b>Problem:</b> The Town of Lewis Comm Facility is located in the 100-year floodplain. <b>Solution:</b> The Town FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.	Flood	2	Yes <span style="color: blue;">♦</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of methods to protect to 500-year flood level	Operating budget	High	EAP	PI



Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
T. Lewis-10	Protect the West Leyden Fire Company to the 500-year flood level	<p><b>Problem:</b> The West Leyden Fire Company is located in the 100-year floodplain.</p> <p><b>Solution:</b> The Town FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.</p>	Flood	2	Yes <span style="color: blue;">💧</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of methods to protect to 500-year flood level	Operating budget	High	EAP	PI

Notes:

Not all acronyms and abbreviations defined below are included in the table.

Acronyms and Abbreviations:

- CAV Community Assistance Visit
- CRS Community Rating System
- DPW Department of Public Works
- EHP Environmental Protection Historic Preservation
- FEMA Federal Emergency Management Agency
- FPA Floodplain Administrator
- HMA Hazard Mitigation Assistance
- N/A Not applicable
- NFIP National Flood Insurance Program
- OEM Office of Emergency Management

Potential FEMA HMA Funding Sources:

- FMA Flood Mitigation Assistance Grant Program
- HMGP Hazard Mitigation Grant Program
- PDM Pre-Disaster Mitigation Grant Program

Timeline:

The time required for completion of the project upon implementation

Cost:

The estimated cost for implementation.

Benefits:

A description of the estimated benefits, either quantitative and/or qualitative.

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities.

CRS Category:

- Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.







- *Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.*
- *Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.*

*Critical Facility:*


- Yes  - *Critical Facility located in 1% floodplain.*



Table 9.11-13. Summary of Prioritization of Actions

Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community	Total	High / Medium / Low
T. Lewis-1	Statzer Road culvert	0	1	1	1	1	1	0	1	1	1	1	0	1	1	11	High
T. Lewis-2	Snowfencing on Osceola Road.	1	1	1	1	1	1	0	1	1	1	0	0	1	1	11	High
T. Lewis-3	Protect Leishfer Mill Dam to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lewis-4	Protect Reimiller Dam to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lewis-5	Protect Rome City Dam to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lewis-6	Protect Rome City Dam Dike to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lewis-7	Protect Swancott Dam to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lewis-8	Protect City of Rome Water Dept, Osceola Road to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lewis-9	Protect the Town of Lewis Comm Facility to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lewis-10	Protect the West Leyden Fire Company to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High

Note: Refer to Section 6, which conveys guidance on prioritizing mitigation actions. Low (0-4), Medium (5-8), High (9-14).





### **9.11.7 Future Needs To Better Understand Risk/Vulnerability**

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None at this time.

### **9.11.8 Staff and Local Stakeholder Involvement in Annex Development**

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The Town of Lewis followed the planning process described in Section 3 (Planning Process). This annex was developed over the course of several months with input from many town departments, including: Town Supervisor and Town Clerk. The Town Supervisor represented the community on the Lewis County Hazard Mitigation Plan Planning Partnership and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Additional documentation on the municipality's planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix B (Meeting Documentation).

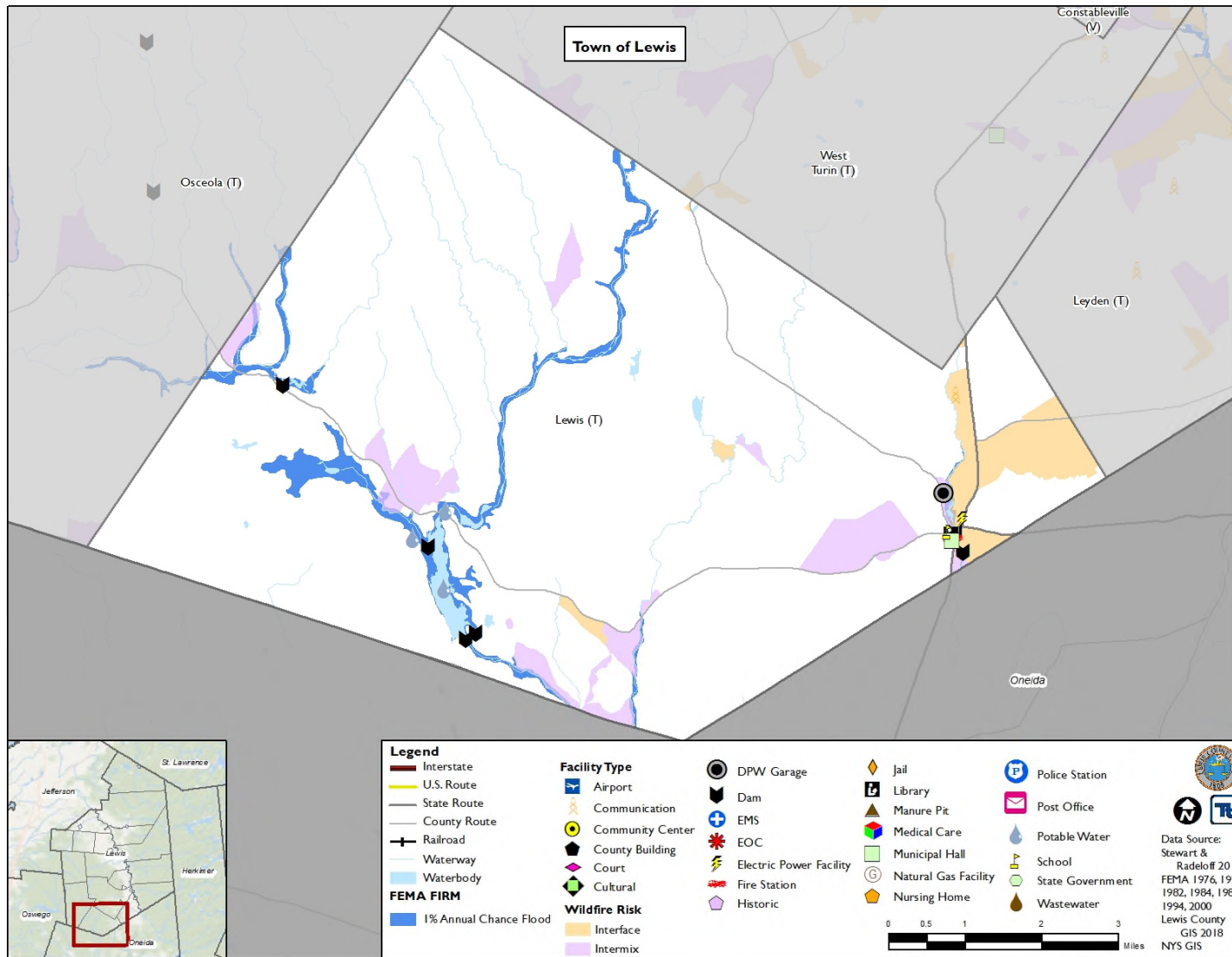
### **9.11.9 Hazard Area Extent and Location**

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Hazard area extent and location maps have been generated for the Town of Lewis that illustrate the probable areas impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps have been generated only for those hazards that can be clearly identified using mapping techniques and technologies and for which the Town of Lewis has significant exposure. A map of the Town of Lewis hazard area extent and location is provided on the following page. This map indicates the location of the regulatory floodplain, as well as identified critical facilities within the municipality.



Figure 9.11-1. Town of Lewis Hazard Area Extent and Location Map





Town of Lewis Action Worksheet			
<b>Project Name:</b>	Statzer Road culvert		
<b>Project Number:</b>	T. Lewis-1		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Flood, Severe Storm		
<b>Description of the Problem:</b>	The Statzer Road culvert is located a half mile west of Kirk Road. The culvert is undersized and insufficient to handle the volume of water from flash flooding and snowmelt.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The Town of Lewis will rehabilitate the culvert through upsizing to allow for flash flooding events.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	At least a 5-year storm	<b>Estimated Benefits (losses avoided):</b>	Culvert properly sized, flooding risk reduced
<b>Useful Life:</b>	30	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$6,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	6 months	<b>Potential Funding Sources:</b>	HMGP, PDM, operating budget
<b>Responsible Organization:</b>	Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation; Capital Improvement
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Remove roadway and culvert	\$50,000+	Not feasible. Roadway and culvert must remain in place
	Build bridge	\$50,000	Costly
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Statzer Road culvert	
<b>Project Number:</b>	T. Lewis-1	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project will protect Statzer Road from flooding.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The town has the legal authority to complete the project.
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	0	Within 5 years
Agency Champion	1	Highway Department
Other Community Objectives	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	



Town of Lewis Action Worksheet			
<b>Project Name:</b>	Snowfencing on Osceola Road.		
<b>Project Number:</b>	T. Lewis-2		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Severe Winter Storm		
<b>Description of the Problem:</b>	Topography creates chronic snow drifting across Osceola Road. This can lead to road closures and emergency response issues.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The Town of Lewis will install snowfencing along Osceola Road in areas where chronic snow drifting is a problem.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Not applicable; snowfall occurs every year and this project will provide protection for most winter events	<b>Estimated Benefits (losses avoided):</b>	Reduction in drifting snow, closed roadways
<b>Useful Life:</b>	5 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$3,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	1 month	<b>Potential Funding Sources:</b>	HMGP, PDM, operating budget
<b>Responsible Organization:</b>	Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Preemptively close roadway during snow events	\$100	Not desirable solution; reduces access to this area of the Town
	Increase plowing operations on roadway	\$70,000	Additional staff hiring, additional snow plow
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			





Action Worksheet		
<b>Project Name:</b>	Snowfencing on Osceola Road.	
<b>Project Number:</b>	T. Lewis-2	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project will protect emergency response capabilities by keeping roadway open.
Property Protection	1	
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	0	Severe Winter Storm
Timeline	0	Within 5 years
Agency Champion	1	Highway Department
Other Community Objectives	1	
<b>Total</b>	1	
<b>Priority (High/Med/Low)</b>	11	



## 9.12 TOWN OF LEYDEN

This section presents the jurisdictional annex for the Town of Leyden. It includes resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions that can be implemented prior to a disaster in order to reduce or eliminate damage to property and people. This annex includes a general overview of the municipality and who in the town participated in the planning process, an assessment of the Town of Leyden’s risk and vulnerability, the different capabilities used in the town, and an action plan that will be implemented to achieve a more resilient community.

### 9.12.1 Hazard Mitigation Plan Point of Contact

The following individuals have been identified as the hazard mitigation plan’s primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Rosalia White Title: Supervisor Phone Number: 315-348-8195 Address: 6638 Rugg Road, Boonville, NY 13309 Email: rosawhite@frontier.com	Name: Lois Compo Title: Town Board Member Phone Number: 315-348-6422 Address: PO Box 303, Port Leyden, NY 13433 Email: lcompo@frontiernet.net
Floodplain Administrator	
Name: Joseph Pfeiffer Title: Code Enforcement Officer Phone Number: 315-681-8689 Address: 6606 Scholl Road, Boonville, NY 13309 Email: inspectorjoep@aim.com	

### 9.12.2 Municipal Profile

The Town of Leyden is located just west of the Adirondack Park in southern Lewis County. The town is bordered to the north by the Towns of West Turin and Lyonsdale, to the south by Oneida County, to the east by the Town of Lyonsdale, and to the west by the Towns of Lewis and West Turin. The Black River forms the town’s eastern border.

The estimated 2017 population was 1,808, a 38.7 percent increase in population from 2010 (1,303 persons). Data from the 2017 U.S. Census American Community Survey indicate that 7.4 percent of the town population is five years of age or younger, and 16.6 percent is 65 years of age or older.

### Growth/Development Trends

The following table summarizes recent residential/commercial development since 2010 to present and any known or anticipated major residential/commercial development and major infrastructure development that has been identified in the next five years within the municipality. The map in 9.12.9 of this annex illustrates the hazard areas along with the location of potential new development.

Table 9.12-1. Growth and Development

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2010 to present</b>					
Barrett Paving Materials	Commercial	N/A	Route 12, Port Leyden, NY	Mining (Hazmat)	Operational





Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
Glider Oil Company	Commercial	1	Route 12, Port Leyden, NY	Fuel Storage (Hazmat)	Fuel Storage Tanks/Operational
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
None Anticipated					

\* Only location-specific hazard zones or vulnerabilities identified.

### 9.12.3 Natural Hazard Event History Specific to the Municipality

Lewis County has a history of natural and non-natural hazard events as detailed in Volume I, Section 5.0 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected Lewis County and its municipalities. For the purpose of this plan update, events that have occurred in the county from 2009 to present were summarized to indicate the range and impact of hazard events in the community. Information regarding specific damages is included, if available, based on reference material or local sources. This information is presented in the table below.

**Table 9.12-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April 26- May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	The Town of Leyden experienced road washouts as a result of this event. The storm brought heavy rainfall and flooding throughout the town and resulted in loss of roadways surfaces, bank erosion, culvert and wing wall damages to many roads – Thayer Hill Road, Fitch Road, New Road, New Road extension, Zeigler Road, and Stuckle Road. The Town of Leyden experienced rainfall totals of six inches per hour. As a result of the rain, runoff water overwhelmed the drainage system capabilities. This caused water to overtop road surfaces and ditches. At Leyden Hill Road, there was shoulder and ditch erosion, scouring of ditches, and displacement of roadway surfaces.
August 26- September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	Although the county suffered damages, the village did not report damages from this event.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	Although the county suffered damages, the village did not report damages from this event.



Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
June 26-July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	Although the county suffered damages, the village did not report damages from this event.
May 13-22, 2014	Severe Storms and Flooding (DR-4180)	Yes	The storms also dropped very heavy rains, radar estimating between 8 and 9 inches in some locations. The Village of Port Leyden in the Town of Leyden was hardest hit. More than a dozen roads in the town were completely washed out with numerous others damaged. A sewer line and secondary water line were destroyed, and a Boil Water Advisory was issued. About a dozen homes were damaged. A basement wall collapsed in one resulting in a total loss. Several dozen people had to be evacuated at the height of the storm. A State of Emergency was declared, and the resulting damage were enough to warrant the county inclusion in a State Disaster Declaration.	As a result of the rain, runoff water overwhelmed the drainage system capabilities. This caused water to overflow road surfaces and ditches. At Leyden Hill Road, there was shoulder and ditch erosion, scouring of ditches, and displacement of roadway surfaces.
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to a foot and half of snow within this band leading up to daybreak Friday.	Although the county suffered damages, the village did not report damages from this event.
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	Although the county suffered damages, the village did not report damages from this event.

Notes:

- EM Emergency Declaration (FEMA)
- DR Major Disaster Declaration (FEMA)

### 9.12.4 Hazard Vulnerabilities and Ranking

The hazard profiles in Section 5.0 (Risk Assessment) have detailed information regarding each plan participant’s vulnerability to the identified hazards. This section provides a summary of exposure and impacts from significant hazards of concern as identified by the Town of Leyden.

#### Hazard Risk Ranking

This section provides the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.





As discussed in Section 5.3 (Hazard Ranking), each participating town or village may have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Town of Leyden. The Town of Leyden has reviewed the county hazard risk/vulnerability risk ranking table, as well as its individual results to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the town indicated the following:

- The town agreed with the calculated hazard rankings.

**Table 9.12-3. Hazard Risk/Vulnerability Risk Ranking**

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	Low
Extreme Temperature	High	High
Flood	Medium	Medium
Hazardous Material Incidents	Medium	Medium
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	High

Notes: The scale is based on the following hazard rankings as established in Section 5.3 (Hazard Ranking).  
 \*The Town of Leyden changed the initial ranking of this hazard based on event history, municipal experience, and feedback from the Town of Leyden.

### Critical Facilities Flood Risk

NYS DEC Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for state projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a SFHA unless constructed according to specific mitigation specifications, including being raised 2 feet above the BFE. This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the state places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 500-year flood event, or worst damage scenario. For those that do not meet these criteria, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain and presents HAZUS-MH estimates of the damage and loss of use to critical facilities as a result of a 1-percent annual chance flood event.



**Table 9.12-4. Potential Flood Losses to Critical Facilities**

Name	Type	Exposure		Potential Loss from 1% Flood Event		Addressed by Proposed Action
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage	
Black River Hydro Assoc – 3 Facilities	Electric Power Facility	X	X	-	-	T. Leyden-10
Denley Dam	Dam	X	X	-	-	T. Leyden-11
Rock Island Dam	Dam	X	X	-	-	T. Leyden-12

Source: FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000; Lewis County 2018

**Identified Issues**

The municipality has identified the following vulnerabilities within their community:

- The town has several areas with flooding concerns.
- Barrett-Paving's Port Leyden quarry requires the halting of traffic and evacuation prior to blasting.
- Glider Oil Company has a potential for leaks and/or explosion during transfers.

**9.12.5 Capability Assessment**

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms

**Planning and Regulatory Capability**

The table below summarizes the regulatory tools that are available to the Town of Leyden.

**Table 9.12-5. Planning and Regulatory Tools**

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Comprehensive Plan	No	-	-	-
Capital Improvements Plan	No	-	-	-
Floodplain Management / Basin Plan	No	-	-	-
Stormwater Management Plan	No	-	-	-
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	No	-	-	-





Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Economic Development Plan	No	-	-	-
Comprehensive Emergency Management Plan	No	-	-	-
Emergency Operation Plan	No	-	-	-
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	No	-	-	-
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-
<b>Regulatory Capability</b>				
Building Code	Yes	State & Local	Town Code Enforcement Officer (CEO)/Zoning Enforcement Officer (ZEO)	Local Law #3-2006 a Local Law to provide for the administration and enforcement of the NYS uniform fire prevention and building code
Zoning Ordinance	Yes	Local	Town CEO/ZEO and Planning Board	Local Law #1-2014 amended Local Law #1-2011
Subdivision Ordinance	No	-	-	-
NFIP Flood Damage Prevention Ordinance	Yes	Federal, State, Local	Town CEO/ZEO	Local Law 1987 (to be revised)
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	Yes	State, Local	Town CEO/ZEO	Currently being updated to meet state mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	Yes	local, county	Planning Board	Local Law #1-2014 and General Municipal Law (Article 12-B) (section 239L & 239M)
Stormwater Management Ordinance	No	-	-	-
Municipal Separate Storm Sewer System (MS4)	No	-	-	-
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	NYS, Real Estate Agents	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

**Administrative and Technical Capability**

The table below summarizes potential staff and personnel resources available to the Town of Leyden.







**Table 9.12-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	Yes	Code Enforcement
Mitigation Planning Committee	Yes	Supervisor/Town Board
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	No	-
Maintenance programs to reduce risk	Yes	Town Highway Dept.
Mutual aid agreements	No	-
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	Yes	Tug Hill Commission
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	CEO/ZEO
Planners or engineers with an understanding of natural hazards	No	-
NFIP Floodplain Administrator (FPA)	Yes	CEO
Surveyor(s)	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	Yes	Tug Hill Commission/GIS Staff
Scientist familiar with natural hazards	No	-
Emergency Manager	Yes	Lewis County Emergency Management
Grant writer(s)	No	-
Staff with expertise or training in benefit/cost analysis	No	-
Professionals trained in conducting damage assessments	No	-

**Fiscal Capability**

The table below summarizes financial resources available to the Town of Leyden.

**Table 9.12-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	No
Impact fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	No
Incur debt through general obligation bonds	TBD
Incur debt through special tax bonds	TBD
Incur debt through private activity bonds	TBD
Withhold public expenditures in hazard-prone areas	No





Financial Resources	Accessible or Eligible to Use (Yes/No)
Other federal or state Funding Programs	Yes
Open Space Acquisition funding programs	No
Other	No

### Community Classifications

The table below summarizes classifications for community program available to the Town of Leyden.

**Table 9.12-8. Community Classifications**

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	Yes	TBD	TBD
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	TBD	TBD
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	No	-	-
Public-private partnership initiatives addressing disaster-related issues	No	-	-

Note:

TBD To be determined

- Unavailable

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class 1 being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1,000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual.
- The Building Code Effectiveness Grading Schedule.
- The ISO Mitigation online ISO’s Public Protection (<https://www.isomitigation.com/ppc/>).
- The National Weather Service Storm Ready (<http://www.stormready.noaa.gov/index.html>).
- The National Firewise Communities (<http://firewise.org/>).





### Self-Assessment of Capability

The table below provides an approximate measure of the Town of Leyden’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

Table 9.12-9. Self-Assessment Capability for the Municipality

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)*	Moderate	High
Planning and regulatory capability	X – limited staff		
Administrative and technical capability	X – limited staff		
Fiscal capability	X – limited staff		
Community political capability	X – limited staff		
Community resiliency capability	X – limited staff		
Capability to integrate mitigation into municipal processes and activities	X – limited staff		

### National Flood Insurance Program

This section provides specific information on the management and regulation of the regulatory floodplain.

#### NFIP Floodplain Administrator (FPA)

Joseph Pfeiffer, Code Enforcement Officer

#### Flood Vulnerability Summary

The town does not maintain lists or inventories of properties that have been damaged by floods nor make substantial damage estimates. More recent flooding events resulted in minimal damage, and no structures were damaged or destroyed. At the time of the plan update, there is no interest in mitigation.

Table 9.12-10. NFIP Summary

Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in 100- year Boundary (3)
Leyden (T)	3	4	\$13,087	1	0	1

Source: FEMA Region 2, 2018

Notes:

- (1) Policies, claims, and repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.
- (2) Total building and content losses from the claims file provided by FEMA Region 2.
- (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file.  
FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility.  
A zero percentage denotes less than 1/100th percentage and not zero damage or vulnerability as may be the case.  
Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.

### Resources

The FPA is the sole person assuming the responsibilities of floodplain administration in the Town of Leyden. Services provided by the FPA include permit review, inspections, record keeping, and public outreach and education through informational handouts to the public.





The FPA indicated that there are barriers to running an effective floodplain management program and the primary barrier is funding. However, the FPA does feel adequately supported and trained to fulfil their role as the FPA and will be attending additional training.

### Compliance History

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The Town of Leyden is in good standing with the NFIP. According to the NYS DEC, the most recent Community Assistance Contact (CAC) was conducted on June 27, 2002 and the most recent Community Assistance Visit (CAV) was conducted on March 19, 2003.

### Regulatory

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The town's flood damage prevention ordinance is being updated to meet minimum requirements set by FEMA and New York State. The town currently does not have any other local ordinances, plans, or programs in place that support floodplain management.

### Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

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For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community's progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures.

### Planning

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#### Existing Integration

**Comprehensive Plan:** The town's comprehensive plan was completed in 2015. It includes areas of natural hazards including steep slopes, wetlands, and floodplains.

#### Opportunities for Future Integration

**Comprehensive Plan:** The 2015 plan does not refer to the Lewis County HMP. During the next update of the comprehensive plan, the town will refer to the HMP and incorporate hazard areas.

### Regulatory and Enforcement (Ordinances)

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#### Existing Integration

**Land Use:** Land use in the Town of Leyden consists primarily of residential, agricultural, and small-scale commercial use. The hamlet of Talcottville contains the town's institutional uses, including the Town Hall and the highway garage. There are approximately one hundred mobile homes scattered throughout the town, and one mobile home park. There are mining operations in the northeastern and southeastern corners of the town as well. Land use regulations in the Town of Leyden currently consist of a zoning law with a single unnamed zone. The law allows all uses (that are not specifically prohibited) either by right or by site plan review in all areas of the town.

#### Opportunities for Future Integration

**Permit Review:** The town should consider amending the zoning law to include provisions for special use permit review. The town should consider adopting a subdivision review law and develop a floodplain overlay district or zone to integrate flood mitigation into day-to-day zoning administration.



## Operational and Administration

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### Existing Integration

The Town of Leyden does not have a municipal planner or contract planning firm. The town has a Planning Board and Zoning Board of Appeals, but neither board currently include compliance with natural hazard regulations. Stormwater management functions are performed by the Highway Superintendent. NFIP Floodplain Management functions are performed by the Code Enforcement Officer/Floodplain Administrator. The town does not have staff or contract with firms that have experience in developing Benefit-Cost Analysis, can perform Substantial Damage Determinations, or have experience in preparing grant applications for mitigation projects. The Code Enforcement Officer receives annual training for his certification. No staff currently have job descriptions that specifically include identifying and/or implementing mitigation projects/actions or other efforts to reduce natural hazard risk. The town works closely with the Tug Hill Commission which supports natural hazard risk reduction and the building of hazard management capabilities.

### Opportunities for Future Integration

The town could hire staff or contract with firms that have experience in developing Benefit-Cost Analysis, can perform Substantial Damage Determinations, or have experience in preparing grant applications for mitigation projects. The Planning Board, Town Board, and Highway Department could benefit from additional training on natural hazard management.

## Funding

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### Existing Integration

The town Capital Improvements Budget does not include a line item for mitigation projects/activities. The town has not pursued or been awarded grant funds for mitigation-related projects and does not have any other mechanisms to fiscally support hazard mitigation projects.

### Opportunities for Future Integration

The town could allocate municipal funds and apply for grant funding to support hazard mitigation programs.

## Education and Outreach

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### Existing Integration

In the case of the winter storm hazard, the Highway Superintendent contacts the County Sheriff's Office who advises the community by radio of hazards, such as road closures and flooding.

### Opportunities for Future Integration

The town could develop a community natural hazard risk management training program.

## Sheltering, Evacuation, and Temporary Housing

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Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.



Evacuation and Sheltering Needs

The Town of Leyden has identified the following emergency shelters:

Table 9.12-11. Emergency Shelters Identified in the Town of Leyden

Shelter Name	Address	Capacity	Accommodates Pets?	ADA Compliant?	Backup Power?	Types of Medical Services Provided	Other Services Provided
Port Leyden Fire Hall	3387 Douglas St Port Leyden NY	130	None	Yes	Yes	EMS personnel on hand	Auxiliary furnishes food
Port Leyden Elementary School	Lincoln St Port Leyden NY	~100	None	Yes	Yes	RN on hand During School Hrs.	Cafeteria Staff

In the event of a severe hazard event. The town has established evacuation procedures. Depending on the location and type of the event, all emergency personnel would be involved from the county Emergency Management Office, local fire departments, Lewis County Sheriff and Town Highway personnel to block certain roadways and divert traffic north or south on NYS Rt. 12 or if needed to reach higher elevation, the traffic flow would be directed west on Rugg Road/Hells Kitchen Road/Leyden Road or Denley Road to reach NYS Route 12D.

Temporary and Permanent Housing

The Town of Leyden has identified the following locations for the placement of temporary housing for residents displaced by a disaster:

- Port Leyden Community Park, 3387 Douglas Street, Port Leyden, NY. The site would require the running of power and sewer lines. Capacity is unknown.
- Cliffs Market Public Parking Area, 3205 NYS Rt 12, Port Leyden, NY. The site would require the running of power and sewer lines. Capacity is unknown.

The Town of Leyden has an abundance of large fields/farm fields/ rural areas out of the floodplain that are being purchased for new housing. The Building Code Official/Floodplain Administrator ensures that all viable needs are met to conform with NYS Uniform Fire Prevention and Building Codes.

9.12.6 Mitigation Strategy and Prioritization

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and prioritization.

Past Mitigation Initiative Status

The following table indicates progress on the community’s mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under ‘Capability Assessment’ presented previously in this annex.





Table 9.12-12. Status of Previous Mitigation Actions

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem and the Solution (Project)	Responsible Party	Status (In Progress, Ongoing Capability, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection Damages Avoided; Evidence of Success	
	Build up streambanks along Black River and Denley Dam	Flooding	Streambanks are degraded	Highway Department	No Progress			1. Include in the 2020 HMP 2. Building up streambanks along Black River and Denley Dam 3. N/A
	Enforce compliance with dam safety procedures at Denley Dam	Flooding	Dams need to meet safety requirements	Town Board	No Progress			1. Include in the 2020 HMP 2. Enforce compliance with dam safety procedures at Denley Dam 3. N/A
	Build up streambanks along Black River at Port Leyden – Lower Dam	Flooding	Streambanks are degraded	Highway Department	No Progress			1. Include in the 2020 HMP 2. Build up streambanks along Black River at Port Leyden – Lower Dam 3. N/A
	Enforce compliance with dam safety procedures at Port Leyden – Lower Dam	Flooding	Dams need to meet safety requirements	Town Board	No Progress			1. Include in the 2020 HMP 2. Enforce compliance with dam safety procedures at Port Leyden – Lower Dam 3. N/A
	Hydrologic and hydraulic analysis to study existing flooding and waterflow concerns at Davis Bridge along Black River	Flooding emergency management (public safety concerns)	Black River flooding	Town Board	No Progress			1. Include in the 2020 HMP 2. Hydrologic and hydraulic analysis to study existing flooding and waterflow concerns at Davis Bridge along Black River 3. N/A
			Drifting snow causes	Highway Department	In Progress			1. Include in the 2020 HMP





Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem and the Solution (Project)	Responsible Party	Status (In Progress, Ongoing Capability, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Level of Protection	Damages Avoided; Evidence of Success	
	Snow fencing for snow drifting control – throughout town	Winter storms, heavy snow, wind	roadway closures			Level of Protection		2. Snow fencing for snow drifting control – throughout town 3. N/A
	Replace culvert along Stuckie Road because of high water flooding events	Flooding	Culvert is degraded	Highway Department	In Progress	Cost		1. Include in the 2020 HMP 2. Replace culvert along Stuckie Road because of high water flooding events 3. N/A
	Replace culvert along Iseneker Road because of high water flooding events.	Flooding	Culvert is degraded	Highway Department	No Progress	Level of Protection		1. Discontinue 2. N/A 3. Flooding does not occur along Iseneker Road
	Ensure that local comprehensive plans incorporate disaster mitigation techniques through a courtesy review of all draft plans by the County Economic Development and Planning Department	All Hazards	Plans should be reviewed to incorporate natural hazards.	Town Mayor / CPG Member	Ongoing Capability	Damages Avoided; Evidence of Success		1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
	Investigate expansion of hazard-related GIS capabilities via acquisition of HAZUS-MH to	Earthquakes, Wind, and Flood	GIS should be enhanced where possible.	Town Mayor / CPG Member	Ongoing Capability	Cost		1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been
						Level of Protection		



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem and the Solution (Project)	Responsible Party	Status (In Progress, Ongoing Capability, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps
	collect and develop more sophisticated hazard mapping and loss estimation. Use information in future plan updates. Ensure information will be available to the public and to local communities and agencies.					Damages Avoided; Evidence of Success		<ol style="list-style-type: none"> <li>1. Project to be included in 2020 HMP or Discontinue</li> <li>2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate).</li> <li>3. If discontinue, explain why.</li> </ol> incorporated into their day-to-day duties.
	County coordination with local governments and other agencies to systematically contact isolated, vulnerable or special-needs population during severe winter storm events	Winter Storms and Extreme temperatures	Special needs populations need to be protected and cared for during hazard events.	Town Mayor / CPG Member	Ongoing Capability	Cost		<ol style="list-style-type: none"> <li>1. Discontinue</li> <li>2. N/A</li> <li>3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.</li> </ol>
	Conduct a countywide survey on status of auxiliary power supplies at all critical facilities.	Winter Storms, Wind, Tornado	Critical facilities require backup power.	Town Mayor / CPG Member	Ongoing Capability	Level of Protection		
	Provide wind hazards training trainings to municipalities regarding the development and implementation of programs to mitigate wind damage to private and public properties.	Wind, Tornado	Officials need to be educated.	Town Mayor / CPG Member	Ongoing Capability	Damages Avoided; Evidence of Success		
				Town Mayor /	Ongoing Capability	Cost		1. Discontinue



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem and the Solution (Project)	Responsible Party	Status (In Progress, Ongoing Capability, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Level of Protection	Damages Avoided; Evidence of Success	
	Provide education opportunities for residents to learn winter driving techniques.	Winter Storms and Wind	Residents need to be educated.	CPG Member		Level of Protection		2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
						Damages Avoided; Evidence of Success		
	Winter Storm Public Awareness and Preparation Increase public awareness of personal responsibilities during emergencies, specifically winter storm events	Winter Storms and Snow	Residents need to be educated.	Town Mayor / CPG Member	Ongoing Capability	Cost		1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
						Level of Protection		
						Damages Avoided; Evidence of Success		
	Establish emergency warming shelters for vulnerable populations, including residents and stranded motorists	Extreme Temperatures and Winter Storms	Shelters need to be established	Town Mayor / CPG Member	Ongoing Capability	Cost		1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
						Level of Protection		
						Damages Avoided; Evidence of Success		
	Coordinate with NYS DEC and owners of all high and moderate hazard dams to work towards full compliance with applicable dam safety programs and development/updating of Emergency Action Plans including inundation mapping.	Dam Failure	Dams need to meet safety standards.	Town Mayor / CPG Member	Ongoing Capability	Cost		1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
						Level of Protection		
						Damages Avoided; Evidence of Success		
	Publish and distribute literature (via the bounty website, supplemented by hard copy distribution) on water conservation techniques and	Drought	Residents need to be educated.	Town Mayor / CPG Member	Ongoing Capability	Cost		1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
						Level of Protection		
						Damages Avoided;		



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem and the Solution (Project)	Responsible Party	Status (In Progress, Ongoing Capability, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Evidence of Success	Cost	
	drought management strategies.					Evidence of Success		
	Conduct surveys to determine local vulnerabilities to landslides threatening property and roads, coordinate with municipalities to limit development in these areas and develop remedial measures for existing vulnerabilities.	Landslides	Landslide vulnerability needs to be determined.	Town Mayor / CPG Member	Ongoing Capability	Level of Protection		1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
						Damages Avoided; Evidence of Success		
	Create and distribute mapping and database of wildland access points for firefighters, develop enhanced wildfire mapping of urban/wildland interface.	Wildfire	Wildfire areas need to be mapped.	Town Mayor / CPG Member	Ongoing Capability	Level of Protection		1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
						Damages Avoided; Evidence of Success		
	Undertake a year built and level of protection survey for all critical/emergency facilities and shelters to highlight structures built before codes and standards were put in place to provide protection from natural hazards, and pursue potential mitigation opportunities to protect these sites as funding becomes available.	Wind/Tornado, Winter Storms, Earthquakes, and Flooding (including Ice Jams)	Critical facilities need to be built to higher standards.	Town Mayor / CPG Member	Ongoing Capability	Level of Protection		1. Discontinue 2. N/A 3. This is an ongoing capability for the town and has been incorporated into their day-to-day duties.
						Damages Avoided; Evidence of Success		



### **Completed Mitigation Initiatives not Identified in the Previous Mitigation Strategy**

The Town of Leyden has performed ongoing maintenance projects to reduce the impact of flooding but has not identified specific mitigation projects/activities that have been completed but were not identified in the previous mitigation strategy in the 2010 Plan.

### **Proposed Hazard Mitigation Initiatives for the Plan Update**

Table 9.12-13 summarizes the comprehensive-range of specific mitigation initiatives the Town of Leyden would like to pursue in the future to reduce the effects of hazards. Some of these initiatives may be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6 (Mitigation Strategy), 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by action number.

Table 9.12-14 provides a summary of the prioritization of all proposed mitigation initiatives for the plan update.



Table 9.12-13. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility	EHP Issues	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Estimated Timeline	Potential Funding Sources	Priority	Mitigation Category	CRS Category
T. Leyden-1	Build up streambanks along Black River at Denley Dam	<b>Problem:</b> Streambanks are degraded and prone to failure which can cause flooding. <b>Solution:</b> The town will build up and restore streambanks along Black River at Denley Dam	Flood	1	No	May require permitting	Highway Department	\$20,000	Reduction in flood risk	Within 5 years	HMGP, PDM, municipal budget	High	NSP	NR
T. Leyden-2	Enforce compliance with dam safety procedures at Denley Dam	<b>Problem:</b> Safety procedures need to be compliant at the dam. <b>Solution:</b> The town will enforce dam safety procedures to ensure compliance.	Flood	1	Yes	None	Town Board	Staff time	Dam compliant with safety procedures.	Within 1 year	Municipal budget	High	LPR	ES
T. Leyden-3	Build up streambanks along Black River at Port Leyden – Lower Dam	<b>Problem:</b> Streambanks are degraded and prone to failure which can cause flooding. <b>Solution:</b> The town will build up and restore streambanks along the Black River at Port Leyden – Lower Dam	Flood	1	No	May require permitting	Highway Department	\$20,000	Reduction in flood risk	Within 5 years	HMGP, PDM, municipal budget	High	NSP	NR
T. Leyden-4	Enforce compliance with dam safety procedures at Port Leyden – Lower Dam	<b>Problem:</b> Safety procedures need to be compliant at the dam. <b>Solution:</b> The town will enforce dam safety procedures to ensure compliance.	Flood	1	Yes	None	Town Board	Staff time	Dam compliant with safety procedures.	Within 1 year	Municipal budget	High	LPR	ES
T. Leyden-5	Hydrologic and	<b>Problem:</b> There is flooding and waterflow issues at the Davis Bridge along the Black River.	Flood	1, 3	No	None	Town Board	Staff time	Flooding and waterflow	Within 1 year	Municipal budget	High	LPR	PR





Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility	EHP Issues	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Estimated Timeline	Potential Funding Sources	Priority	Mitigation Category	CRS Category
	hydraulic analysis	<b>Solution:</b> Encourage FEMA to conduct hydrologic and hydraulic analysis to study existing flooding and waterflow concerns at Davis Bridge along Black River							issues identified and able to be resolved/mitigated.					
T. Leyden-6	Snow fencing for snow drifting control – throughout town	<b>Problem:</b> Drifting snow leads to road closures <b>Solution:</b> The town will install snow fencing in areas where snow drifting has led to problems.	Severe Winter Storm	2	No	None	Highway Department	\$2,000	Reduction in road closures due to drifting snow.	Within 1 year	HMGP, PDM, municipal budget	High	SIP	PP
T. Leyden-7	Replace culvert along Stuckie Road because of high water flooding events	<b>Problem:</b> The culvert at Stuckie Road has been damaged by flood events. <b>Solution:</b> The town will replace the culvert to ensure it remains functional.	Flood, Severe Storm	2	No	None	Highway Department	\$10,000	Reduction in flood risk.	Within 5 years	HMGP, PDM, CHIPS, municipal budget	High	SIP	SP
T. Leyden-8	Enforce compliance at Barrett-Paving's Port Leyden quarry.	<b>Problem:</b> Traffic halted and sites evacuated before blasting occurs. <b>Solution:</b> Call list to advise of blasting (all in progress). Enforce proper compliance.	Landslide	1	No	None	NYSDEC; Town Board	Staff time	Reduction in risk to neighboring residents	Within 1 year	Municipal budget	High	LPR	PR
T. Leyden-9	Glider Oil Co. - Holding tanks/transfer site Rt. 12 Boonville NY	<b>Problem:</b> Potential for leaks and/or explosion <b>Solution:</b> Enforce proper compliance of hazardous material storage and transfer.	Hazardous Materials	1	Yes	Env. concerns if leak occurs.	NYSDEC; Town Board	Staff time	Reduction in chances of hazmat spills, explosions.	Within 1 year	Municipal budget	High	LPR	PR
T. Leyden-10	Protect the Black River Hydro Association	<b>Problem:</b> Three of the Black River Hydro Association Electric Power Facilities are in the 100-year floodplain and vulnerable to flood	Flood	2, 3	Yes	None	FPA	<\$100 per facility	Facility managers aware of flood risk	Within 6 months	Municipal budget	High	EAP	PI







Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility	EHP Issues	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Estimated Timeline	Potential Funding Sources	Priority	Mitigation Category	CRS Category
	facilities to the 500-year flood level	damages. The facilities are not owned by the municipality. <b>Solution:</b> The FPA will contact the facilities managers of each facility to discuss the facilities flood exposure and possible mitigation actions to protect the facilities to the 500-year flood level.							and possible mitigation measures.					
T. Leyden-11	Protect the Denley Dam to the 500-year flood level	<b>Problem:</b> The Denley Dam is in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager to discuss the facility flood exposure and possible mitigation actions to protect the facility to the 500-year flood level.	Flood	2, 3	Yes	None	FPA	<\$100	Facility manager aware of flood risk and possible mitigation measures.	Within 6 months	Municipal budget	High	EAP	PI

Notes:

Not all acronyms and abbreviations defined below are included in the table.

Acronyms and Abbreviations:

- CAV Community Assistance Visit
- CRS Community Rating System
- DPW Department of Public Works
- EHP Environmental Protection and Historic Preservation
- FEMA Federal Emergency Management Agency
- FPA Floodplain Administrator
- HMA Hazard Mitigation Assistance
- N/A Not applicable
- NFIP National Flood Insurance Program
- OEM Office of Emergency Management

Potential FEMA HMA Funding Sources:

- FMA Flood Mitigation Assistance Grant Program
- HMGP Hazard Mitigation Grant Program
- PDM Pre-Disaster Mitigation Grant Program

Timeline:

The time required for completion of the project upon implementation.

Cost:

The estimated cost for implementation.

Benefits:

A description of the estimated benefits, either quantitative and/or qualitative.

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses and preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities.





CRS Category:

- *Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.*
- *Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.*
- *Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.*
- *Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.*
- *Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.*
- *Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.*

Critical Facility:


- Yes  - Critical Facility is in 1% floodplain.



Table 9.12-14. Summary of Prioritization of Actions

Mitigation Action/Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
T. Leyden-1	Build up streambanks along Black River and Denley Dam	1	1	1	1	1	1	0	1	1	1	0	0	1	1	11	High
T. Leyden-2	Enforce compliance with dam safety procedures at Denley Dam	1	1	1	1	1	1	1	1	1	1	0	1	1	1	13	High
T. Leyden-3	Build up streambanks along Black River at Port Leyden – Lower Dam	1	1	1	1	1	1	0	1	1	1	0	0	1	1	11	High
T. Leyden-4	Enforce compliance with dam safety procedures at Port Leyden – Lower Dam	1	1	1	1	1	1	1	1	1	1	0	1	1	1	13	High
T. Leyden-5	Hydrologic and hydraulic analysis	0	1	1	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Leyden-6	Snow fencing for snow drifting control – throughout town	1	0	1	1	1	1	1	1	1	1	1	1	1	1	12	High
T. Leyden-7	Replace culvert along Stuckie Road because of high water flooding events	0	1	1	1	1	1	0	1	1	1	0	1	1	1	11	High
T. Leyden-8	Enforce compliance at Barrett-Paving's Port Leyden quarry.	1	1	1	1	1	1	1	1	1	1	0	1	1	1	13	High
T. Leyden-9	Glider Oil Co. - Holding tanks/transfer site Rt. 12 Boonville NY	1	1	1	1	1	1	1	1	1	1	0	1	1	1	13	High
T. Leyden-10	Protect the Black River Hydro Association facilities to the 500-year flood level	0	1	1	1	1	0	1	1	1	1	0	1	1	1	11	High
T. Leyden-11	Protect the Denley Dam to the 500-year flood level	0	1	1	1	1	0	1	1	1	1	0	1	1	1	11	High

Note: Refer to Section 6, which conveys guidance on prioritizing mitigation actions.





### **9.12.7 Future Needs To Better Understand Risk/Vulnerability**

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None at this time.

### **9.12.8 Staff and Local Stakeholder Involvement in Annex Development**

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The Town of Leyden followed the planning process described in Section 3 (Planning Process). This annex was developed over the course of several months with input from many town departments, including: Town Supervisor and Town Clerk. The Town Supervisor represented the community on the Lewis County Hazard Mitigation Plan Planning Partnership, and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Additional documentation on the municipality's planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix B (Meeting Documentation).

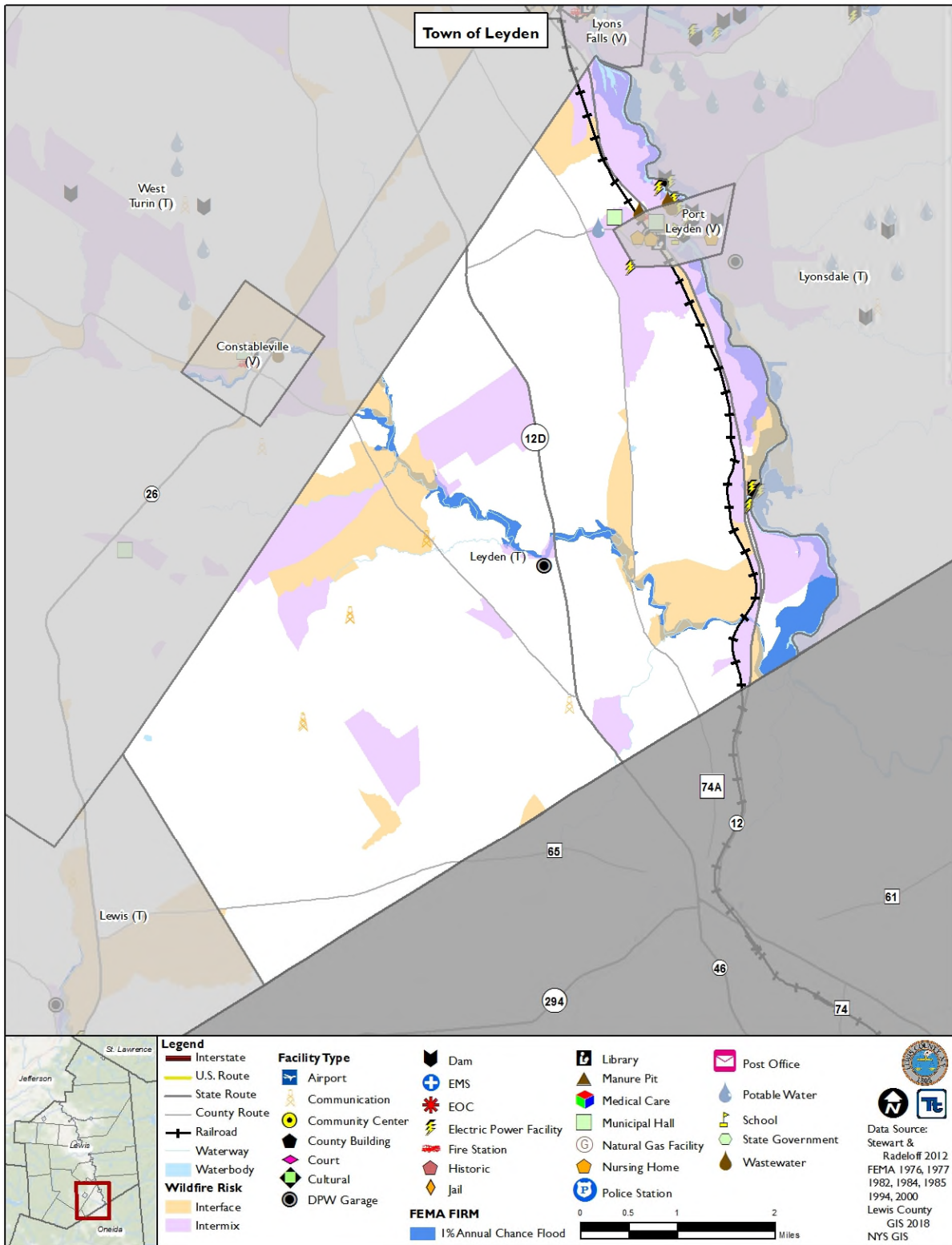
### **9.12.9 Hazard Area Extent and Location**

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Hazard area extent and location maps have been generated for the Town of Leyden that illustrate the probable areas impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the Town of Leyden has significant exposure. A map of the Town of Leyden hazard area extent and location is provided on the following page. This map indicates the location of the regulatory floodplain, as well as identified critical facilities within the municipality.



Figure 9.12-1. Town of Leyden Hazard Area Extent and Location Map





Town of Leyden Action Worksheet			
<b>Project Name:</b>	Build up streambanks along Black River at Denley Dam		
<b>Project Number:</b>	T. Leyden-1		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Flood		
<b>Description of the Problem:</b>	Streambanks are degraded and prone to failure which can cause flooding.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	The town will build up and restore streambanks along Black River at Denley Dam.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	50-year (estimated)	<b>Estimated Benefits (losses avoided):</b>	Reduction in flood risk
<b>Useful Life:</b>	5 years	<b>Goals Met:</b>	1
<b>Estimated Cost:</b>	\$20,000	<b>Mitigation Action Type:</b>	Natural Systems Protection
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	1 year	<b>Potential Funding Sources:</b>	HMGP, PDM, municipal budget
<b>Responsible Organization:</b>	Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation, Capital Improvement
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Encourage non-profit groups to conduct streambank restoration	\$0	Groups may be incapable of or unwilling to conduct restoration.
	Remove Denley Dam	\$1 million+	Dam cannot be removed; flooding problems will increase
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Build up streambanks along Black River at Denley Dam	
<b>Project Number:</b>	T. Leyden-1	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
<b>Life Safety</b>	1	Project will reduce flooding threat.
<b>Property Protection</b>	1	Project will help protect Denley Dam from flood related damages.
<b>Cost-Effectiveness</b>	1	
<b>Technical</b>	1	
<b>Political</b>	1	
<b>Legal</b>	1	The town has the legal authority to complete the project.
<b>Fiscal</b>	0	Project requires funding support.
<b>Environmental</b>	1	
<b>Social</b>	1	
<b>Administrative</b>	1	
<b>Multi-Hazard</b>	0	Flood
<b>Timeline</b>	0	
<b>Agency Champion</b>	1	Highway Department
<b>Other Community Objectives</b>	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	





Town of Leyden Action Worksheet			
<b>Project Name:</b>	Build up streambanks along Black River at Port Leyden – Lower Dam		
<b>Project Number:</b>	T. Leyden-3		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Flood		
<b>Description of the Problem:</b>	Streambanks are degraded and prone to failure which can cause flooding.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	The town will build up and restore streambanks along the Black River at Port Leyden – Lower Dam		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	50-year (estimated)	<b>Estimated Benefits (losses avoided):</b>	Reduction in flood risk
<b>Useful Life:</b>	5 years	<b>Goals Met:</b>	1
<b>Estimated Cost:</b>	\$20,000	<b>Mitigation Action Type:</b>	Natural Systems Protection
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	1 year	<b>Potential Funding Sources:</b>	HMGP, PDM, municipal budget
<b>Responsible Organization:</b>	Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	Action	Estimated Cost	Evaluation
	No Action	\$0	Problem continues.
	Encourage non-profit groups to conduct streambank restoration	\$0	Groups may be incapable of or unwilling to conduct restoration.
	Remove Port Leyden - Lower Dam	\$1 million+	Dam cannot be removed; flooding problems will increase
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Build up streambanks along Black River at Port Leyden – Lower Dam	
<b>Project Number:</b>	T. Leyden-3	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
<b>Life Safety</b>	1	Project will reduce flooding threat.
<b>Property Protection</b>	1	Project will help protect Port Leyden - Lower Dam from flood related damages.
<b>Cost-Effectiveness</b>	1	
<b>Technical</b>	1	
<b>Political</b>	1	
<b>Legal</b>	1	The town has the legal authority to complete the project.
<b>Fiscal</b>	0	Project requires funding support.
<b>Environmental</b>	1	
<b>Social</b>	1	
<b>Administrative</b>	1	
<b>Multi-Hazard</b>	0	Flood
<b>Timeline</b>	0	
<b>Agency Champion</b>	1	Highway Department
<b>Other Community Objectives</b>	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	



Town of Leyden Action Worksheet			
<b>Project Name:</b>	Snow fencing for snow drifting control – throughout town		
<b>Project Number:</b>	T. Leyden-6		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Severe Winter Storm		
<b>Description of the Problem:</b>	Drifting snow leads to road closures in numerous areas in the town. This leads to increased chance of stranded motorists and increases the time for emergency response.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	The town will conduct a study to determine the roadways most vulnerable to drifting snow. The town will then install snow fencing in areas where snow drifting has led to problems.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	This project will protect roadways each year; however, level of protection depends on how much snow falls	<b>Estimated Benefits (losses avoided):</b>	Reduction in road closures due to drifting snow.
<b>Useful Life:</b>	3 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$2,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 1 year
<b>Estimated Time Required for Project Implementation:</b>	1 month	<b>Potential Funding Sources:</b>	HMGP, PDM, municipal budget
<b>Responsible Organization:</b>	Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation, Capital Improvement
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	Action	Estimated Cost	Evaluation
	No Action	\$0	Problem continues.
	Hire additional staff and purchase additional plow	\$175,000	Not cost effective
	Close roadways pre-emptively during snowstorms	\$200	Emergency response greatly reduced.
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Snow fencing for snow drifting control – throughout town	
<b>Project Number:</b>	T. Leyden-6	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project will improve emergency response rates during winter storms and reduce likelihood of stranded motorists.
Property Protection	0	
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The town has the legal authority to conduct the project
Fiscal	1	
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	0	Severe Winter Storm
Timeline	1	
Agency Champion	1	Highway Department
Other Community Objectives	1	
<b>Total</b>	12	
<b>Priority (High/Med/Low)</b>	High	



Town of Leyden Action Worksheet			
<b>Project Name:</b>	Replace culvert along Stuckie Road because of high water flooding events		
<b>Project Number:</b>	T. Leyden-7		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Flood, Severe Storm		
<b>Description of the Problem:</b>	The culvert at Stuckie Road has been damaged by flood events. Continued damage increases the likelihood of failure and flooding.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The town will replace the culvert to ensure it remains functional. Prior to replacement, the Town Highway Department will determine if a larger sized culvert is necessary. If a larger size is necessary, an upsized culvert will be used to replace the damaged culvert.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	At least a 5-year event	<b>Estimated Benefits (losses avoided):</b>	Reduction in flood risk
<b>Useful Life:</b>	30 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$10,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	1 month	<b>Potential Funding Sources:</b>	HMGP, PDM, CHIPS, municipal budget
<b>Responsible Organization:</b>	Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Capital improvements planning
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Remove road	\$25,000	Roadway cannot be removed
	Relocate road to another location	\$50,000	Roadway will still need to cross stream
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Replace culvert along Stuckie Road because of high water flooding events	
<b>Project Number:</b>	T. Leyden-7	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project will protect intersection from flooding.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The town has the legal authority to complete the project.
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Severe Storm, Flood
Timeline	0	Within 5 years
Agency Champion	1	Town Highway Department
Other Community Objectives	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	



## 9.13 TOWN OF LOWVILLE

This section presents the jurisdictional annex for the Town of Lowville. It includes resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions that can be implemented prior to a disaster to reduce or eliminate damage to property and people. This annex includes a general overview of the Town of Lowville and who in the town participated in the planning process, an assessment of the Town of Lowville’s risk and vulnerability, the different capabilities used in the town, and an action plan that will be implemented to achieve a more resilient community.

### 9.13.1 Hazard Mitigation Planning Team

The following individuals have been identified as the Town of Lowville’s hazard mitigation plan primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Randall Schell Title: Supervisor Phone Number: 315-376-8070 x2 Address: 5533 Bostwick St., Lowville, NY 13367 Email: <a href="mailto:rschell@centralny.twcbc.com">rschell@centralny.twcbc.com</a>	Name: Joseph Pfeiffer Title: Code Enforcement Phone Number: 315-681-8689 Address: 5533 Bostwick St., Lowville, NY 13367 Email: <a href="mailto:inspectorjoep@aim.com">inspectorjoep@aim.com</a>
Floodplain Administrator	
Name: Joseph Pfeiffer Title: Code Enforcement Phone Number: 315-681-8689 Address: 5533 Bostwick St., Lowville, NY 13367 Email: <a href="mailto:inspectorjoep@aim.com">inspectorjoep@aim.com</a>	

### 9.13.2 Municipal Profile

The Town of Lowville lies in the center of Lewis County in Northern New York State. Mill Creek flows eastward towards the Black River. The Town of Lowville is bordered to the north by the Town of Denmark, the west by the Town of Harrisburg, the south by the Town of Martinsburg, the southeast by the Town of Watson, and the northeast by the Town of New Bremen. The Town of Lowville contains the Village of Lowville, which is the county seat. Refer to Section 9.15 (Village of Lowville) for their individual annex. The town includes the following communities: Dadville (hamlet) and West Lowville (hamlet). The town is governed by a four member Town Council. The estimated 2017 population was 1,708, a 12.9 percent increase from the 2010 Census (1,512).

Data from the 2017 U.S. Census American Community Survey indicate that 9.5 percent of the town population is 5 years of age or younger and 20.2 percent is 65 years of age or older. Communities must deploy a support system that enables all populations to safely reach shelters or to quickly evacuate a hazard area.

#### History and Cultural Resources

The Town of Lowville was first settled in 1798 with the town being formed in 1800 from the Town of Mexico in Oswego County. In 1803, part of Lowville was used to form the town of Harrisburg. The Village of Lowville was incorporated in 1854 and was designated the county seat in 1864, succeeding the community of Martinsburg in the Town of Martinsburg.

Dedicated in 2006, the "Maple Ridge Wind Farm" is one of the largest wind farms in the United States.







**Growth/Development Trends**

Table 9.13-1 summarizes major residential/commercial development that known or anticipated to take place prior to 2023. The map in 9.13.9 of this annex illustrates the hazard areas, along with the location of potential new development.

**Table 9.13-1. Growth and Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2010 to present</b>					
Nolt's Country Store	Commercial	1	7189 State Rte 812 195.00-03-03.000	No	Complete
Maple Run Homes	Residential	Several	Various	No	Some Complete, Ongoing
Brookside Redevelopment	Residential	12	Various	No	Complete
Miller Spraying	Commercial	1	8624 State Rte 26 160.00-02-02.000	No	Complete
Ridgeview Restaurant & Banquet Hall	Commercial	1	6912 Bardo Road 212.00-01-55.212	No	Complete
Roggie's Flooring	Commercial	1	5809 #4 Road 213.00-01-39.150	No	Complete
VS Virkler Solar	Commercial	1	7398 Rice Road 194.00-01-08.100	No	Complete
Colleen Farney/The Blue Bird	Commercial	1	8311 State Rte 26 177.00-02-08.000	No	Complete
Miller Time Express: Ridgeview Lodge	Commercial Residential	Various	7491 State Rte 12 212.0-01-55.211	No	Complete
Bakstan Properties: Ridgeview Electric	Commercial	1	7974 State Rte 26 195.00-04-05.000	No	Complete
Roes	Commercial	1	4792 Shack Rd. 143.00-02-06.200	No	Complete
Farney	Commercial	1	7881 State Rte 26 195.00-01-59.100	No	Complete
Lewis County/JCC Extension	Commercial/Assembly School	Unknown	East Road 195.00-01-13.211	No	Complete
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
Brookside Redevelopment	Residential	Unknown	Various	No	Discussions for expansion
Number Three Wind	Commercial	Unknown	Various	No	Permit processing
LCIDA Commerce Park	Commercial	Unknown	State Rte 26 195.00-01-40.114	No	Under construction
Nolt's Country Store	Commercial	1	7189 State Rte 812 195.00-03-03.000	No	Plans for expansion
Maple Run Homes	Residential	Several	Various	No	Ongoing development

\* Only location-specific hazard zones or vulnerabilities identified.

**9.13.3 Hazard Event History Specific to the Town of Lowville**

Lewis County has a history of natural hazard events as detailed in Volume I, Section 5.0 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that





have affected the county and its municipalities. The Town of Lowville’s history of federally-declared (as presented by FEMA) and significant hazard events (as presented in NOAA-NCEI) is consistent with that of Lewis County. Table 9.13-2 provides details regarding municipal-specific loss and damages the town experienced during hazard events. Information provided in the table below is based on reference material or local sources.

**Table 9.13-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
February 28, 2011	Agricultural Product Spill	N/A	N/A	A commercial spill of milk impacted the Black River in the Town.
April 26- May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	Homes on Gardner Rd., State Route 12, Rice Rd., home and a barn on Route 26 sustained structural damage. Debris clean-up was required.
August 26- September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	Debris clean-up, washouts, etc.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	Debris clean-up, washouts, etc.
October 7, 2011	Fuel Oil Spill	N/A	N/A	A fuel oil spill took place in Lowville. A driver overfilled a tank due to a weak whistle. Approximately 1 gallon of fuel oil spilled. Technicians responded to clean up the spill and drain the product in the tank to a safe level.
June 26- July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	Although the county reported damages, no damages were reported in the town.
May 13-22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	Ridge Road was closed due to flooding.
May 19, 2014	Agricultural Product Spill	N/A	N/A	Equipment failure resulted in a manure spill in the Town.
July 8, 2014	Tornado	No	A tornado impacted the area.	Several homes and farms were damaged. Personal property was lost. There were some limited power outages. Debris clean-up was required.
September 30, 2014	Agricultural Product Spill	N/A	N/A	A traffic accident resulted in 200 gallons of spilled milk in the Town.
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to a foot and half of snow within this band leading up to daybreak Friday.	Ridge Road was closed. The snow event required excessive overtime. FEMA reimbursed the town a total of \$5,907.49.
November 23, 2015	Agricultural Product Spill	N/A	N/A	Equipment failure resulted in a manure spill.
March 14- 15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	Although the county reported damages, no damages were reported in the town.



Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
January 2018	Ice jam	No	A rapid thaw and subsequent ice jam resulted in the Mill Creek reaching record levels.	Areas of the creek experienced erosion. A private business on Water Street experienced flood damage.

Notes:

- EM Emergency Declaration (FEMA)
- DR Major Disaster Declaration (FEMA)

### 9.13.4 Hazard Ranking and Jurisdiction-Specific Vulnerabilities

The hazard profiles in Section 5.0 (Risk Assessment) have detailed information regarding each plan participant’s vulnerability to the identified hazards. This section provides a summary of exposure and impacts from significant hazards of concern as identified by the Town of Lowville.

#### Hazard Risk Ranking

This section includes the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating town or village may have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Town of Lowville. The Town of Lowville has reviewed the county hazard risk/vulnerability risk ranking table as well as its individual results to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the town indicated the following:

**Table 9.13-3. Town of Lowville Calculated Hazard Ranking**

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	Medium
Extreme Temperature	High	High
Flood	Medium	Medium
Hazardous Material Incidents	Medium	Medium
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	High

Notes: The scale is based on the following hazard rankings as established in Section 5.3 (Hazard Ranking).





### Critical Facilities Flood Risk

NYSDEC) Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for state projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a SFHA unless constructed according to specific mitigation specifications, including being raised 2 feet above the BFE. This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the state places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 500-year flood event, or worst damage scenario. For those that do not meet these criteria, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain and presents HAZUS-MH estimates of the damage and loss of use to critical facilities as a result of a 1-percent annual chance flood event.

Table 9.13-4. Potential Flood Losses to Critical Facilities

Name	Type	Exposure	Potential Loss from 1% Flood Event		Addressed by Proposed Action
		1% Event	Percent Structure Damage	Percent Content Damage	
Village of Lowville	Potable Pump	X	40	-	T. Lowville-24

Source: Lewis County Real Property 2018, FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000

### Identified Issues

The Town of Lowville has identified the following vulnerabilities within their community:

- Mill Creek off the Waters Road and Maple Ave in the Village of Lowville. Mill Creek experiences ice jams and stream bank erosion.
- Flooding on the Willow Grove Road and Bickford Road
- Two bridges recently suffered \$3.4 million in damages.
- Ridge Road is flooded by the Black River. There are many dairy farms on this road. Properties on Ridge Road and Waters Road repeatedly flood.
- Kraft and Walmart expanded, and the drainage systems around those properties cannot handle the runoff from any storm event.

Specific areas of concern based on resident response to the Lewis County Hazard Mitigation Citizen survey include:

- Flooding in Lowville along Mill Creek, Dadville area, Beaches Bridge.

### 9.13.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms





**Planning and Regulatory Capability**

The table below summarizes the regulatory tools that are available to the Town of Lowville.

**Table 9.13-5. Planning and Regulatory Tools**

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Comprehensive Plan	Yes	Local	Town Board	Comprehensive Plan 12/18/2008
Capital Improvements Plan	No	-	-	-
Floodplain Management / Basin Plan	Yes	Local	Various	Town Law Chapter 124
Stormwater Management Plan	Yes	Local	Various	Town Law Chapter 198
Open Space Plan	Yes	Local	Various	Town Law Chapter 250
Stream Corridor Management Plan	Yes	County	Lewis County Planning	Stream Corridor Management Plan
Watershed Management or Protection Plan	Yes	County	Lewis County Planning	Watershed Management or Protection Plan
Economic Development Plan	Yes	County	Lewis County Planning	Economic Development Plan
Comprehensive Emergency Management Plan	Yes	County	Lewis County Emergency Management	Comprehensive Emergency Management Plan
Emergency Operation Plan	Yes	County	Lewis County Emergency Management	Emergency Operation Plan
Post-Disaster Recovery Plan	Yes	County	Lewis County Emergency Management	Post-Disaster Recovery Plan
Transportation Plan	Yes	County	Lewis County Planning	Transportation Plan
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-
<b>Regulatory Capability</b>				
Building Code	Yes	State & Local	Code Enforcement	Chapter 118 Fire Prevention and Building Construction.
Zoning Ordinance	Yes	Local	Planning/Zoning	Town Law Chapter 250
Subdivision Ordinance	Yes	Local	Planning/Zoning	Town Law Chapter 240
NFIP Flood Damage Prevention Ordinance	Yes	Federal, State, Local	Code Enforcement	Local Law 3-1987 Section 124 in Town of Lowville Code
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	Yes	State, Local	Code Enforcement	State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	Yes	Local	Planning/Zoning	Town Law Chapter 250



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Stormwater Management Ordinance	Yes	Local	Various	Town Law Chapter 198
Municipal Separate Storm Sewer System (MS4)	No	-	-	-
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	NY State, Real Estate Agents	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	Yes	Local	Town Clerk	Chapter 130 Freshwater Wetlands

### Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the Town of Lowville.

**Table 9.13-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	Yes	Planning Board
Mitigation Planning Committee	No	-
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	No	-
Maintenance programs to reduce risk	No	-
Mutual aid agreements	Yes	With school, highway depts
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	No	-
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	No	-
Planners or engineers with an understanding of natural hazards	Yes	Zoning Officer
NFIP Floodplain Administrator (FPA)	Yes	Code Enforcement
Surveyor(s)	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	No	-
Scientist familiar with natural hazards	No	-
Emergency Manager	No	-
Grant writer(s)	No	-
Staff with expertise or training in benefit/cost analysis	No	-



Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Professionals trained in conducting damage assessments	No	-

### Fiscal Capability

The table below summarizes financial resources available to the Town of Lowville.

**Table 9.13-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvements project funding	Yes, usually a County initiative
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes
Impact fees for homebuyers or developers of new development/homes	Yes
Stormwater utility fee	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	Yes
Withhold public expenditures in hazard-prone areas	Yes
Other federal or state Funding Programs	No
Open Space Acquisition funding programs	No
Other	No

### Community Classifications

The table below summarizes classifications for community programs available to the Town of Lowville.

**Table 9.13-8. Community Classifications**

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	No	-	-
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	No	-	-
Public-private partnership initiatives addressing disaster-related issues	No	-	-
Other	No	-	-

Note: - Unavailable







The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class 1 being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual.
- The Building Code Effectiveness Grading Schedule (<https://www.isomitigation.com/bcegs/>).
- The ISO Mitigation online ISO’s Public Protection (<https://www.isomitigation.com/ppc/>).
- New York State Climate Smart Communities (<http://www.dec.ny.gov/energy/56876.html>).
- The National Weather Service Storm Ready (<https://www.weather.gov/stormready/communities>).
- The National Firewise Communities (<http://firewise.org/>).

### Self-Assessment of Capability

The table below provides an approximate measure of the Town of Lowville’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

Table 9.13-9. Self-Assessment Capability for the Town of Lowville

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Planning and regulatory capability	X – financial/human resources		
Administrative and technical capability	X – financial/human resources		
Fiscal capability		X	
Community political capability		X	
Community resiliency capability	X – financial/human resources		
Capability to integrate mitigation into municipal processes and activities	X – financial/human resources		

### National Flood Insurance Program

This section provides specific information on the management and regulation of the regulatory floodplain.

#### NFIP Floodplain Administrator (FPA)

Joseph Pfeiffer Jr., Code Enforcement

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

The town does not maintain lists or inventories of properties that have been flood damaged or identify property owners who are interested in mitigation. The FPA stated that one structure was damaged in recent flood events.





The FPA does not make Substantial Damage Determinations and stated that no property owners are listed in mitigation. Funding sources for mitigation include the property owners, insurance, and grants.

The following table summarizes the NFIP statistics for the Town of Lowville.

Table 9.13-10. NFIP Summary

Municipality	# Policies	# Claims (Losses)	Total Loss Payments	# RL Properties	# SRL Properties	# Policies in the 1% Flood Boundary
Town of Lowville	6	2	\$12,881	0	0	4

Source: FEMA Region 2, 2018

Notes:

- (1) Policies, claims, and repetitive loss statistics provided by FEMA Region 2 are current as of 05/03/2018.
- (2) Total building and content losses from the claims file provided by FEMA Region 2.
- (3) The policies inside and outside of the flood zones are based on the latitude and longitude provided by FEMA Region 2 in the policy file.
- (4) FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility.
- (5) Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.

### Resources

The FPA is the sole person responsible for floodplain administration. The FPA stated that the town’s NFIP administrative services or functions include permit review, inspections, record keeping, and outreach. The FPA stated that the town does not provide education or outreach to the community regarding flood hazards/risk and flood risk reduction through NFIP insurance, mitigation, etc. The FPA feels that money and manpower are barriers to running an effective floodplain management program in the community and does not feel adequately supported and trained to fulfill their responsibilities as the municipal floodplain manager. The FPA has been working with NYCDEC to provide regional training. The FPA stated that they would consider attending education and certification training on floodplain management if it were offered in the county for local floodplain administrators.

### Compliance History

The town is in good standing with the NFIP and works to maintain compliance. According to records from NYS, the town’s most recent compliance audit (Community Assistance Visit) took place on April 14, 1993.

### Regulatory

**Flood Damage Prevention Ordinance:** The Town of Lowville’s Flood Damage Prevention Ordinance (Chapter 142 of the municipal code) was adopted to promote the public health, safety and general welfare and to minimize public and private losses due to flood conditions in specific areas by provisions designed to:

- Regulate uses which are dangerous to health, safety and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities.
- Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction.
- Control the alteration of natural floodplains, stream channels and natural protective barriers which are involved in the accommodation of floodwaters.
- Control filling, grading, dredging and other development which may increase erosion or flood damages.
- Regulate the construction of flood barriers which will unnaturally divert floodwaters or which may increase flood hazards to other lands.





- Qualify and maintain participation in the National Flood Insurance Program.

The objectives of the chapter are to:

- Protect human life and health.
- Minimize expenditure of public money for costly flood-control projects.
- Minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public.
- Minimize prolonged business interruptions.
- Minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines and streets and bridges located in areas of special flood hazard
- Help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas.
- Provide that developers are notified that property is in an area of special flood hazard
- Ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.

The town's Flood Damage Prevention Ordinance meets the FEMA minimum requirements but does not meet the state's freeboard requirements. The FPA stated there are no other local ordinances, plans, or programs that support floodplain management and meeting the NFIP requirements but the Zoning Board of Adjustment does variances. The FPA stated that the town has considered joining the CRS to reduce flood insurance premiums for their insured and would attend a CRS seminar if it was offered locally.

### **Integration of Hazard Mitigation into Existing and Future Planning Mechanisms**

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community's progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures, which also are indicated below.

#### **Planning**

##### **Existing Integration**

The town has a Master/Comprehensive Plan, which includes areas of natural hazard risk but does not refer to the Countywide Hazard Mitigation Plan. The town is an MS4 Regulated Community and has a formal Stormwater Management Plan. The Stormwater Management Plan specifies projects/actions/initiatives to reduce the volume of stormwater or otherwise mitigate stormwater flooding. The town has an Open Space Plan, which manages natural hazards through subdivision and zoning laws. The town does not have a Re-Development Plan, Growth Plan, Economic Development Plan, Watershed/Stream Corridor Management Plan, Local Waterfront Revitalization Plan, Continuity of Operations/Continuity of Government (COOP/COG) plan, Comprehensive Emergency Management Plan, Post Disaster Recovery Plan, or Strategic Recovery Plan.

##### **Opportunities for Future Integration**

The Master Plan could be updated to include references to the Countywide Hazard Mitigation Plan. The town will ensure that local comprehensive plans incorporate disaster mitigation techniques through a courtesy review of all draft plans by the County Economic Development and Planning Department.



## Regulatory and Enforcement (Ordinances)

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### Existing Integration

The municipal zoning regulations, subdivision regulations, and site plan review process consider natural hazard risk and require developers to take additional actions to mitigate natural hazard risk. The Planning Board/Zoning Board of Adjustment is provided with a copy of the Town Code Book, SEQR Process, and are required to obtain approved training.

**Zoning Ordinance:** The Town of Lowville’s Zoning Ordinance (Chapter 250 of the municipal code) was established for the following purposes:

- To provide for orderly growth in accordance with a Comprehensive Plan;
- To lessen congestion in the streets;
- To secure safety from fire, flood and other dangers;
- To provide adequate light and air;
- To prevent the overcrowding of land;
- To avoid undue concentration of population;
- To make provision for, so far as conditions may permit, the accommodation of solar energy systems and equipment and access to sunlight necessary therefor;
- To facilitate the adequate provision of transportation, water, sewerage, schools, parks and other public requirements; and
- To promote the health, safety and general welfare of the public.

**Subdivision Ordinance:** The Town of Lowville’s Subdivision Ordinance (Chapter 240 of the municipal code) was enacted for the purpose of providing for the future growth and development of the town and affording adequate facilities for the housing, transportation, distribution, comfort, convenience, safety, health and welfare of its population.

### Opportunities for Future Integration

The town will consider hazards and hazard mitigation initiatives when updating ordinances and regulations. The town will update the Flood Damage Prevention Ordinance to include the state’s 2 foot freeboard requirement.

## Operational and Administration

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### Existing Integration

The town does not have a municipal planner or contract planning firm. The town has a Planning Board/Zoning Board of Adjustment that manages natural hazard risk and compliance with related hazard regulations through Town Laws, SEQR, and the Comprehensive Plan. The town does not have any other boards or committees that include functions with respect to managing natural hazard risk. Stormwater Management and NFIP Floodplain Management functions are performed by the Code Enforcer/Floodplain Administrator. The town contracts with firms that have experience with developing Benefit-Cost Analysis and performing Substantial Damage Determinations as needed. County resources are used in developing grant applications for mitigation projects. Town staff receive training/continuing professional education that supports natural hazard risk reduction. Training for staff includes the Code/Zoning officer and Town Highway Department. None of the town staff have job descriptions that specifically include identifying and/or implementing mitigation projects/actions or other efforts to reduce natural hazard risk. town staff participate in the Northern Adirondack Code Enforcement Officials group and the NYS Building Officials Conference. The Town of Lowville believes these two groups/conferences support natural hazard risk reduction and build hazard management capabilities.



### Opportunities for Future Integration

The town identified floodplain management as a topic that staff would benefit from additional trainings/certification.

### Funding

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#### Existing Integration

The town's municipal/operating budget does not include line items for mitigation projects/activities. The town has a Capital Improvements Budget that includes budget for mitigation-related projects. The town has pursued and been awarded grant funds for a generator at 5533 Bostwick Street Offices. The source of funds was the Justice Court Assistance Program and was \$12,000 with no match required. The town does not have any other mechanisms to fiscally support hazard mitigation projects.

#### Opportunities for Future Integration

The town could continue to apply for grant funding to support hazard mitigation.

### Education and Outreach

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#### Existing Integration

The town does not have any public outreach mechanisms/programs in place to inform citizens on natural hazards. The town operates a municipal website (<http://www.lowville.ny.us/index.html>) that includes various community information.

#### Opportunities for Future Integration

The town could include information on hazards on the municipal website.

### Sheltering, Evacuation, and Temporary Housing

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Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

### Evacuation and Sheltering Needs

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The Town of Lowville has not designated emergency shelters, evacuation routes, or evacuation procedures. Routes and procedures would be determined at the time of an incident, in accordance with the County's CEMP. In the event of an emergency, the Town will utilize their primary roads to get residents in and out of the municipality. The Lowville Fire Department and the municipal hall could serve as warming and cooling centers if needed.

### Temporary and Permanent Housing

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The Town of Lowville has not identified sites for the placement of trailers for temporary housing for residents displaced by a disaster but the Ridgeview Motel is an option for the temporary housing of displaced people. The Motel has a capacity of 50+ and is located at NYS Route 12 North.

The Town of Lowville has not identified potential sites suitable for relocating houses of the floodplain and/or building new homes once properties in the floodplain are acquired.



### 9.13.6 Mitigation Strategy and Prioritization

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This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and their prioritization.

#### **Past Mitigation Initiative Status**

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The following table indicates progress on the community’s mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under ‘Capability Assessment’ presented previously in this annex.



Table 9.13-11. Status of Previous Mitigation Actions

Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
					Cost	Level of Protection	
Training for staff to include Code/Zoning officer, Town Highway Department	All	The 2010 HMP did not indicate the original problem being addressed.	Town Board	Ongoing capability	Cost		1. Discontinue 2. 3. Ongoing capability
					Level of Protection		
					Damages Avoided; Evidence of Success		
Generator/Power Plan for T/V Offices located at 5533 Bostwick Street	All	The 2010 HMP did not indicate the original problem being addressed.	Town Board	Complete	Cost	\$12,000	1. Discontinue 2. 3. Complete
					Level of Protection	Adequate	
					Damages Avoided; Evidence of Success	Loss of power; the Offices do not lose power	
Bridge Replacement Due to Under Sizing, choking, halo water upstream Boshart Road, Town of Lowville	Road Damage, flooding upstream, soil erosion	The 2010 HMP did not indicate the original problem being addressed.	Town Board	No Progress	Cost		1. Include in 2020 HMP 2. 3.
					Level of Protection		
					Damages Avoided; Evidence of Success		
Culvert Replacement due to insufficient flow, flooding the roadway, creating damage to infrastructure, East Road, Town of Lowville	Road Damage, flooding RR Crossing	The 2010 HMP did not indicate the original problem being addressed.	Town Board	Complete	Cost	\$1,500	1. Discontinue 2. 3. Complete
					Level of Protection	Adequate	
					Damages Avoided; Evidence of Success	Flooding of that portion of highway; no longer	





Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. 3. If discontinue, explain why.
					Cost	Level of Protection	
						flooding there	
Early warning to persons located in the floodplain – coordinate with county	All	The 2010 HMP did not indicate the original problem being addressed.	Town Board	In Progress	Cost		1. Include in 2020 HMP 2. 3.
					Level of Protection		
					Damages Avoided; Evidence of Success		
Review existing local information to ensure consistency with goals and objectives	All	The 2010 HMP did not indicate the original problem being addressed.	Town Board	In Progress	Cost		1. Include in 2020 HMP 2. 3.
					Level of Protection		
					Damages Avoided; Evidence of Success		
Initiate River Bank Clean up – potential for Black River dredging to clear of items which contribute to flooding – Consider non-structural flood hazards including roadways and other Town/Village infrastructure	All	The 2010 HMP did not indicate the original problem being addressed.	Town Board	In Progress	Cost		1. Include in 2020 HMP 2. 3.
					Level of Protection		
					Damages Avoided; Evidence of Success		
Evaluate participation in the CRS for four individuals	All	The 2010 HMP did not indicate the	Town Board	No Progress	Cost		1. Include in 2020 HMP 2.
					Level of Protection		



Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. 3. If discontinue, explain why.
		original problem being addressed.			Damages Avoided; Evidence of Success		3.
Encourage development and enforcement of wind-resistant building siting and construction codes	All	The 2010 HMP did not indicate the original problem being addressed.	Town Board	No Progress	Cost		1. Include in 2020 HMP 2. 3.
					Level of Protection		
					Damages Avoided; Evidence of Success		
Identify and address obstructions to surface water drainage	All	The 2010 HMP did not indicate the original problem being addressed.	Town Board	In Progress	Cost		1. Include in 2020 HMP 2. 3.
					Level of Protection		
					Damages Avoided; Evidence of Success		
Coordinate protocol with County Emergency Services Coordinator for notification of key officials involved with the CRS	All	The 2010 HMP did not indicate the original problem being addressed.	Town Board	In Progress	Cost		1. Include in 2020 HMP 2. 3.
					Level of Protection		
					Damages Avoided; Evidence of Success		
Identification of evacuation plans, routes, policies and procedures for the full range of contingencies and geographic areas of the jurisdictions and coordinate with the county.	All	The 2010 HMP did not indicate the original problem being addressed.	Town Board	In Progress	Cost		1. Include in 2020 HMP 2. 3.
					Level of Protection		
					Damages Avoided; Evidence of Success		



Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. 3. If discontinue, explain why.
					Cost	Level of Protection Damages Avoided; Evidence of Success	
Identify areas and specific residents who would need evacuation assistance, including residents who lack transportation, and develop evacuation assistance plans.	All	The 2010 HMP did not indicate the original problem being addressed.	Town Board	In Progress	Cost		1. Include in 2020 HMP 2. 3.
					Level of Protection		
					Damages Avoided; Evidence of Success		
Monitor condition and maintain repair of town roads and road banks in high flood hazard areas.	All	The 2010 HMP did not indicate the original problem being addressed.	Town Board	In Progress	Cost		1. Include in 2020 HMP 2. 3.
					Level of Protection		
					Damages Avoided; Evidence of Success		
Identify and address obstructions to surface water drainage	All	The 2010 HMP did not indicate the original problem being addressed.	Town Board	In Progress	Cost		1. Include in 2020 HMP 2. 3.
					Level of Protection		
					Damages Avoided; Evidence of Success		
Review existing local plans and efforts to ensure consistency with this plan's goals and objectives, and integrate the goals, objectives and activities from this plan into existing regulatory documents and programs, where appropriate (including zone ordinances, building codes, and land use policies).	All	The 2010 HMP did not indicate the original problem being addressed.	Town Board	In Progress	Cost		1. Include in 2020 HMP 2. 3.
					Level of Protection		
					Damages Avoided; Evidence of Success		



Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. 3. If discontinue, explain why.
					Cost	Level of Protection Damages Avoided; Evidence of Success	
Assist in updating the flood plain (FIRM) maps.	Flood/Ice Jams	The 2010 HMP did not indicate the original problem being addressed.	Town Board	No Progress			1. Include in 2020 HMP 2. 3.
Continue participation in the National Flood Insurance Program (NFIP)	Flood/Ice Jams	The 2010 HMP did not indicate the original problem being addressed.	Town Board	Ongoing capability			1. Discontinue 2. 3. Ongoing capability
<u>Plan Review for Mitigation</u> Ensure that local comprehensive plans incorporate disaster mitigation techniques through a courtesy review of all draft plans by the County Economic Development and Planning Department	All Hazards	The 2010 HMP did not indicate the original problem being addressed.	Town Supervisor / CPG Member	No Progress			1. Include in 2020 HMP 2. 3.
<u>GIS Enhancement</u> Investigate expansion of hazard-related GIS capabilities via acquisition of HAZUS-MH to collect and develop more sophisticated	Earthquakes, Wind, and Flood	The 2010 HMP did not indicate the original problem being addressed.	Town Supervisor / CPG Member	No Progress	Cost		1. Include in 2020 HMP
					Level of Protection		2.



Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. 3. If discontinue, explain why.
					Damages Avoided; Evidence of Success	Cost	
hazard mapping and loss estimation. Use information in future plan updates. Ensure information will be available to the public and to local communities and agencies.					Damages Avoided; Evidence of Success		3.
<u>Outreach Program</u> County coordination with local governments and other agencies to systematically contact isolated, vulnerable or special-needs population during severe winter storm events	Winter Storms and Extreme temperatures	The 2010 HMP did not indicate the original problem being addressed.	Town Supervisor / CPG Member	In Progress	Cost		1. Discontinue
					Level of Protection		2.
					Damages Avoided; Evidence of Success		3. Repetitive to special needs assistance action.
<u>Auxiliary Power Supply</u> Conduct a countywide survey on status of auxiliary power supplies at all critical facilities.	Winter Storms, Wind, Tornado	The 2010 HMP did not indicate the original problem being addressed.	Town Supervisor / CPG Member	Complete	Cost	\$0	1. Discontinue
					Level of Protection	Storms that cause power outages	2.
					Damages Avoided; Evidence of Success	Continuity of operations	3. Complete. Town Hall has backup power.
<u>Wind Hazards Training</u> Provide trainings to municipalities regarding the development and implementation of programs to mitigate wind damage to private and public properties.	Wind, Tornado	The 2010 HMP did not indicate the original problem being addressed.	Town Supervisor / CPG Member	No Progress	Cost		1. Include in 2020 HMP
					Level of Protection		2.
					Damages Avoided; Evidence of Success		3.
				No Progress	Cost		1. Include in 2020 HMP



Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. 3. If discontinue, explain why.
					Level of Protection	Damages Avoided; Evidence of Success	
<u>Winter Driving and Vehicle Preparation Education</u> Provide education opportunities for residents to learn winter driving techniques.	Winter Storms and Wind	The 2010 HMP did not indicate the original problem being addressed.	Town Supervisor/CPG Member		Level of Protection		2.  3.
					Damages Avoided; Evidence of Success		
<u>Winter Storm Public Awareness and Preparation</u> Increase public awareness of personal responsibilities during emergencies, specifically winter storm events	Winter Storms and Snow	The 2010 HMP did not indicate the original problem being addressed.	Town Supervisor / CPG Member	In Progress	Cost		1. Include in 2020 HMP 2. 3.
					Level of Protection		
					Damages Avoided; Evidence of Success		
<u>Emergency Warming Shelters</u> Establish warming shelters for vulnerable populations, including residents and stranded motorists	Extreme Temperatures and Winter Storms	The 2010 HMP did not indicate the original problem being addressed.	Town Supervisor / CPG Member	In Progress	Cost		1. Include in 2020 HMP 2. 3.
					Level of Protection		
					Damages Avoided; Evidence of Success		
<u>Dam Safety</u> Coordinate with NYSDEC and owners of all high and moderate hazard dams to work towards full compliance with applicable dam safety programs and development/updates of Emergency Action Plans including inundation mapping.	Dam Failure	The 2010 HMP did not indicate the original problem being addressed.	Town Supervisor / CPG Member	No Progress	Cost		1. Discontinue 2. 3. No dams located in Town of Lowville
					Level of Protection		
					Damages Avoided; Evidence of Success		
<u>Drought Preparedness</u> Publish and distribute literature (via the County web site,	Drought	The 2010 HMP did not indicate the	Town Supervisor / CPG Member	In Progress	Cost		1. Include in 2020 HMP 2.
					Level of Protection		





Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps
supplemented by hard copy distribution) on water conservation techniques and drought management strategies.		original problem being addressed.			Damages Avoided; Evidence of Success		3.
<u>Landslide Study</u> Conduct surveys to determine local vulnerabilities to landslides threatening property and roads, coordinate with municipalities to limit development in these areas and develop remedial measures for existing vulnerabilities.	Landslides	The 2010 HMP did not indicate the original problem being addressed.	Town Supervisor / CPG Member	No Progress	Cost		1. Include in 2020 HMP
					Level of Protection		2.
					Damages Avoided; Evidence of Success		3.
<u>Wildfire Mapping</u> Create and distribute mapping and database of wildland access points for firefighters, develop enhanced mapping of urban/wildland interface.	Wildfire	The 2010 HMP did not indicate the original problem being addressed.	Town Supervisor / CPG Member	No Progress	Cost		1. Include in 2020 HMP
					Level of Protection		2.
					Damages Avoided; Evidence of Success		3.
<u>Critical Facilities Survey</u> Undertake a year built and level of protection survey for all critical/emergency facilities and shelters to highlight structures built before codes and standards were put in place to provide protection from natural hazards, and pursue potential mitigation opportunities to protect these sites as funding becomes available.	Wind/Tornado, Winter Storms, Earthquakes, and Flooding (including Ice Jams)	The 2010 HMP did not indicate the original problem being addressed.	Town Supervisor / CPG Member	No Progress	Cost		1. Include in 2020 HMP
					Level of Protection		2.
					Damages Avoided; Evidence of Success		3.





### **Completed Mitigation Initiatives Not Identified in the Previous Mitigation Strategy**

The Town of Lowville has identified the following mitigation projects/activities that have been completed but were not identified in the previous mitigation strategy in the 2010 Plan:

- The Town of Lowville worked with the Village of Lowville and Lewis County to complete emergency stream bank protection on a section of Mill Creek around the East State Street bridge. The project consisted of placing large rock along a 100-foot section of the creek.

### **Proposed Hazard Mitigation Initiatives for the Plan Update**

The Town of Lowville participated in a mitigation action workshop on December 17, 2018.

Table 9.13-12 summarizes the comprehensive-range of specific mitigation initiatives the Town of Lowville would like to pursue in the future to reduce the effects of hazards. Some of these initiatives may be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6 (Mitigation Strategy), 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.13-13 provides a summary of the prioritization of all proposed mitigation initiatives for the plan update.



Table 9.13-12. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
T. Lowville-1	Bridge Replacement Boshart Road, Town of Lowville	<b>Problem:</b> Due to the bridge being undersized, there is an increased flood risk. <b>Solution:</b> The town will replace the bridge to allow for increased volume to pass under the bridge.	Flood, Severe Storm	2	No	Permitting	Within 1 year	Town Board, Highway Department	\$750,000	Reduction in flood risk at Boshart Road.	HMGP, PDM, CDBG	High	SIP	PP
T. Lowville-2	Bridge Replacement Gordon Road, Town of Lowville	<b>Problem:</b> Due to the bridge being undersized, there is an increased flood risk. <b>Solution:</b> The town will replace the bridge to allow for increased volume to pass under the bridge.	Flood, Severe Storm	2	No	Permitting	Within 1 year	Town Board, Highway Department	\$900,000	Reduction in flood risk at Gordon Road.	HMGP, PDM, CDBG	High	SIP	PP
T. Lowville-3	Early warning to persons located in the floodplain	<b>Problem:</b> Residents in the floodplain require notification during hazard events. <b>Solution:</b> The town will coordinate with the county to install an early warning system to notify residents of impending hazard events such as floods.	All	3	No	None	Ongoing once established	Town Board, Lewis County	Staff time	Residents in the floodplain require notification during hazard events.	Municipal budget	High	LPR	ES
T. Lowville-4	Plan Integration	<b>Problem:</b> Local ordinances need to be consistent with	All	1	No	None	Within 6 months	Town Board	Staff time	Updated and consistent ordinances	Municipal budget	High	EAP	PI





Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
		goals of hazard mitigation plan. <b>Solution:</b> The town will review existing ordinances and update ordinances which are outdated and need to be aligned with hazard mitigation goals.												
T. Lowville-5	Initiate River Bank Clean up –	<b>Problem:</b> Debris and sedimentation in the Black River contribute to flooding. <b>Solution:</b> The town will investigate the potential for Black River dredging and debris removal. The Town will also investigate other non-structural flood control measures to help reduce flood risk from the River.	All	1, 2	No	Permitting	Within 1 year	Town Board	TBD by project selection (dredging/debris removal)	Reduction in flood risk from Black River.	Municipal budget for investigation; FEMA FMA or HMGP for implementation	High	NSP	NR
T. Lowville-6	Evaluate participation in the CRS for four individuals	<b>Problem:</b> There are four NFIP policies in the SFHA. Flood insurance is costly. <b>Solution:</b> The town will determine the costs and benefits of CRS participation.	Flood	1, 2, 3	No	None	Within 6 months	Town Board	Staff time.	Reduction in flood insurance premiums	Municipal Budget	High	LPR	PR
T. Lowville-7	Encourage development and enforcement of wind-resistant building	<b>Problem:</b> The Town of Lowville is impacted by high wind events. Buildings need to be able to withstand high wind events.	Severe Storm, Severe Winter Storm	1	No	None	Ongoing once established	Town Board	Staff time	Construction meets higher standards to protect from wind damages.	Municipal Budget	High	LPR	PR





Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
	siting and construction codes	<b>Solution:</b> The town will establish higher building code standards to protect from wind damages.												
T. Lowville-8	Identify and address obstructions to surface water drainage	<b>Problem:</b> Obstructions in streams can cause flooding. <b>Solution:</b> The town will identify areas of debris for removal and conduct removal.	Flood	2	No	Permitting may be necessary in some areas.	Ongoing once established	Town Board	\$5,000-\$15,000	Reduction in flood risk.	Municipal Budget	High	NSP	NR
T. Lowville-9	Coordinate protocol with County Emergency Services Coordinator for notification of key officials involved with the CRS	<b>Problem:</b> The town is unaware of what services the county may be able to provide for CRS <b>Solution:</b> The town will coordinate with the County Emergency Services Coordinator to discuss what services the county has available	Flood	1, 2	No	None	Within 6 months	Town Board	Staff time	Reduction in flood risk	Municipal Budget	High	LPR	ES
T. Lowville-10	Identification of evacuation plans, routes, policies and procedures for the full range of contingencies and geographic areas of the jurisdictions and	<b>Problem:</b> The Town of Lowville lacks established evacuation routes, policies, and procedures. <b>Solution:</b> The town will establish evacuation plans, routes, policies and procedures for the full range of contingencies and geographic areas of	All	1, 3	No	None	Within 6 months	Town Board	Staff time	Established evacuation routes, policies, and procedures.	Municipal Budget	High	LPR	ES





Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
	coordinate with county.	the jurisdictions and coordinate with county.												
T. Lowville-11	Special needs database.	<p><b>Problem:</b> Some residents need evacuation assistance, including residents who lack transportation, and develop.</p> <p><b>Solution:</b> Identify areas and specific residents who would need evacuation assistance, including residents who lack transportation, and develop evacuation assistance plans.</p>	All	1, 3	No	None	Within 6 months, then ongoing	Town Board	\$500	Evacuation assistance program established for residents with special needs.	Municipal Budget	High	EAP	PL, ES
T. Lowville-12	Monitor condition and maintain repair of town roads and road banks in high flood hazard areas.	<p><b>Problem:</b> Roads and road banks in flood hazard areas are prone to damage due to flooding events.</p> <p><b>Solution:</b> The town will monitor roadways for damage and repair</p>	All	2	No	None	Ongoing once established	Town Board	Staff time	Town roadways maintained.	Municipal budget	High	LPR	PR
T. Lowville-13	Assist in updating the flood plain (FIRM) maps.	<p><b>Problem:</b> FIRM's are outdated.</p> <p><b>Solution:</b> The town will assist FEMA in the update of FIRM maps by providing information on areas of flooding.</p>	Flood/ Ice Jams	1, 3	No	None	Ongoing until FIRM's are updated.	Town Board	Staff time	FIRMs and construction standards up to date.	Municipal budget	High	LPR	PR
T. Lowville-14	Update the Flood Damage	<b>Problem:</b> The Flood Damage Prevention	Flood	1, 3	No	None	Within 6 months	Town Board	<\$100	Construction meets state standards.	Municipal budget	High	LPR	PR





Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
	Prevention Ordinance to include freeboard	Ordinance does not include the 2' freeboard requirement mandated by NYS. <b>Solution:</b> The Flood Damage Prevention Ordinance will be updated to include the 2' freeboard requirement mandated by NYS.												
T. Lowville-15	GIS Enhancement	<b>Problem:</b> Information on hazards should be available to the public and town staff <b>Solution:</b> Work with county to investigate expansion of hazard-related GIS capabilities via acquisition of HAZUS-MH to collect and develop more sophisticated hazard mapping and loss estimation. Use information in future plan updates. Ensure information will be available to the public and to local communities and agencies.	Earthquakes, Wind, Flood	1, 3	No	None	Within 6 months	Town Supervisor / CPG Member	Staff time	Staff have additional information available. Public better educated.	Municipal budget	High	LPR	PR, PI
T. Lowville-16		<b>Problem:</b> Staff require training on wind mitigation.	Wind, Tornado	3	No	None	Within 6 months	Town Supervisor /	Staff time	Staff trained on wind	Municipal budget	High	LPR	PR





Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
	Wind Hazards Training	<b>Solution:</b> Work with county to provide trainings to municipalities regarding the development and implementation of programs to mitigate wind damage to private and public properties.						CPG Member		mitigation techniques.				
T. Lowville-17	Winter Driving and Vehicle Preparation Education	<b>Problem:</b> Public require training on winter driving to reduce risk of accident. <b>Solution:</b> Work with county to provide education opportunities for residents to learn winter driving techniques.	Winter Storms and Wind	3	No	None	Within 6 months	Town Supervisor / CPG Member	Staff time	Public educated on winter driving techniques	Municipal budget	High	EAP	PI
T. Lowville-18	Winter Storm Public Awareness and Preparation	<b>Problem:</b> Public require education on winter storm responsibilities. <b>Solution:</b> Work with county to increase public awareness of personal responsibilities during emergencies, specifically winter storm events	Winter Storms and Snow	3	No	None	Within 6 months	Town Supervisor / CPG Member	Staff time	Public educated on winter storm responsibilities.	Municipal budget	High	EAP	PI
T. Lowville-19	Emergency Warming Shelters	<b>Problem:</b> The town requires warming shelters for residents and stranded motorists.	Extreme Temp. and Winter Storms	2	Yes	None	Within 6 months	Town Supervisor / CPG Member	Staff time	Warming shelters for residents and stranded	Municipal budget	High	SIP	ES







Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
		<b>Solution:</b> Work with county to establish warming shelters for vulnerable populations, including residents and stranded motorists								motorists established				
T. Lowville-20	Drought Preparedness	<p><b>Problem:</b> Public needs education on drought management strategies</p> <p><b>Solution:</b> Work with county to publish and distribute literature (via the county web site, supplemented by hard copy distribution) on water conservation techniques and drought management strategies.</p>	Drought	3	No	None	Within 6 months	Town Supervisor / CPG Member	Staff time	Public educated on drought management	Municipal budget	High	EAP	PI
T. Lowville-21	Landslide Study	<p><b>Problem:</b> The town needs to determine local vulnerabilities to landslides threatening property and roads.</p> <p><b>Solution:</b> Work with county to conduct surveys to determine local vulnerabilities to landslides threatening property and roads.</p>	Landslides	1	No	None	Within 6 months	Town Supervisor / CPG Member	Staff time	Local vulnerabilities to landslides threatening property and roads determined	Municipal budget	High	LPR	PR





Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
		coordinate with municipalities to limit development in these areas and develop remedial measures for existing vulnerabilities.												
T. Lowville-22	Wildfire Mapping	<p><b>Problem:</b> Firefighters require information on access points.</p> <p><b>Solution:</b> Work with county to create and distribute mapping and database of wildland access points for firefighters, develop enhanced mapping of urban/wildland interface.</p>	Wildfire	1	No	None	Within 6 months	Town Supervisor / CPG Member	Staff time	Firefighters provided with information on access points for firefighting.	Municipal budget	High	LPR	ES
T. Lowville-23	Critical Facilities Survey	<p><b>Problem:</b> Critical facilities need to be evaluated for level of protection.</p> <p><b>Solution:</b> Work with county to undertake a year built and level of protection survey for all critical/emergency facilities and shelters to highlight structures built before codes and standards were put in place to provide protection from natural hazards and</p>	Wind/ Tornado, Winter Storms, Earthquakes, and Flooding (including Ice Jams)	2	No	None	Within 6 months	Town Supervisor / CPG Member	Staff time	Critical facility level of protection determined.	Municipal budget	High	LPR	PR, ES





Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
		pursue potential mitigation opportunities to protect these sites as funding becomes available.												
T. Lowville-24	Protect Village of Lowville Waters Road potable pump to the 500-year flood level	<p><b>Problem:</b> The Village of Lowville Waters Road potable pump is in the 100-year floodplain.</p> <p><b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.</p>	Flood	2, 3	Yes <span style="color:blue">💧</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of options to protect facility to 500-year flood level	Operating budget	High	EAP, SIP	PI, PP

Notes:  
 Not all acronyms and abbreviations defined below are included in the table.

Acronyms and Abbreviations:

- CAV Community Assistance Visit
- CRS Community Rating System
- DPW Department of Public Works
- FEMA Federal Emergency Management Agency
- FPA Floodplain Administrator
- HMA Hazard Mitigation Assistance
- N/A Not applicable
- NFIP National Flood Insurance Program
- OEM Office of Emergency Management
- Temp. Temperature

Potential FEMA HMA Funding Sources:

- FMA Flood Mitigation Assistance Grant Program
- HMGP Hazard Mitigation Grant Program
- PDM Pre-Disaster Mitigation Grant Program

Timeline:

The time required for completion of the project upon implementation

Cost:

The estimated cost for implementation.

Benefits:

A description of the estimated benefits, either quantitative and/or qualitative.

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.





- *Education and Awareness Programs (EAP)* – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities

CRS Category:

- *Preventative Measures (PR)* - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- *Property Protection (PP)* - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- *Public Information (PI)* - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- *Natural Resource Protection (NR)* - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- *Structural Flood Control Projects (SP)* - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.
- *Emergency Services (ES)* - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities

Critical Facility:


- Yes  - Critical Facility located in 1% floodplain



Table 9.13-13. Summary of Prioritization of Actions

Mitigation Action/Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
T. Lowville-1	Bridge Replacement Boshart Road, Town of Lowville	0	1	1	1	1	1	-1	1	1	1	1	0	1	1	10	High
T. Lowville-2	Bridge Replacement Gordon Road, Town of Lowville	0	1	1	1	1	1	-1	1	1	1	1	0	1	1	10	High
T. Lowville-3	Early warning to persons located in the floodplain – coordinate with County	1	1	1	1	1	1	-1	1	1	1	0	1	1	1	11	High
T. Lowville-4	Plan Integration	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
T. Lowville-5	Initiate River Bank Clean up – potential for Black River dredging to clear of items which contribute to flooding – Consider non-structural flood hazards including roadways and other Town/Village infrastructure	0	1	1	1	1	1	-1	1	1	1	0	1	1	1	10	High
T. Lowville-6	Evaluate participation in the CRS for four individuals	1	1	1	1	1	1	1	1	1	1	0	1	1	1	13	High
T. Lowville-7	Encourage development and enforcement of wind-resistant building siting and construction codes	0	1	1	1	1	1	1	1	1	1	1	1	1	1	13	High
T. Lowville-8	Identify and address obstructions to surface water drainage	1	1	1	1	1	1	1	1	1	1	0	1	1	1	13	High
T. Lowville-9	Coordinate protocol with County Emergency Services Coordinator for notification of key officials involved with the CRS	1	1	1	1	1	1	1	1	1	1	0	1	1	1	13	High
T. Lowville-10	Identification of evacuation plans, routes, policies and procedures for the full range of contingencies and geographic areas of the jurisdictions and coordinate with County.	1	0	1	1	1	1	1	1	1	1	1	1	1	1	13	High
T. Lowville-11	Identify areas and specific residents who would need evacuation assistance, including residents who lack transportation, and develop evacuation assistance plans.	1	0	1	1	1	1	1	1	1	1	1	1	1	1	13	High
T. Lowville-12	Monitor condition and maintain repair of town roads and road banks in high flood hazard areas.	0	1	1	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lowville-13	Assist in updating the flood plain (FIRM) maps.	0	1	1	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lowville-14	Update the Flood Damage Prevention Ordinance to include freeboard	0	1	1	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lowville-15	GIS Enhancement	1	1	1	0	1	1	1	1	1	1	1	0	1	1	12	High





Table 9.13-13. Summary of Prioritization of Actions

Mitigation Action/Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
T. Lowville-16	Wind Hazards Training	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
T. Lowville-17	Winter Driving and Vehicle Preparation Education	1	0	1	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lowville-18	Winter Storm Public Awareness and Preparation	1	1	1	1	1	1	1	1	1	1	0	1	1	1	13	High
T. Lowville-19	Emergency Warming Shelters	1	0	1	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lowville-20	Drought Preparedness	1	1	1	1	1	1	1	1	1	1	0	1	1	1	13	High
T. Lowville-21	Landslide Study	1	1	1	1	1	1	1	1	1	1	0	1	1	1	13	High
T. Lowville-22	Wildfire Mapping	1	1	1	1	1	1	1	1	1	1	0	1	1	1	13	High
T. Lowville-23	Critical Facilities Survey	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
T. Lowville-24	Protect Village of Lowville Waters Road potable pump to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High

Note: Refer to Section 6, which conveys guidance on prioritizing mitigation actions. Low (0-4), Medium (5-8), High (9-14).



### **9.13.7 Future Needs To Better Understand Risk/Vulnerability**

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None at this time.

### **9.13.8 Staff and Local Stakeholder Involvement in Annex Development**

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The Town of Lowville followed the planning process described in Section 3 (Planning Process). This annex was developed over the course of several months with input from many town departments, including: the Town Supervisor and Code Enforcer. The Town Supervisor represented the community on the Lewis County Hazard Mitigation Plan Planning Partnership, Steering Committee, and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Additional documentation on the Town of Lowville’s planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix B (Meeting Documentation).

### **9.13.9 Hazard Area Extent and Location**

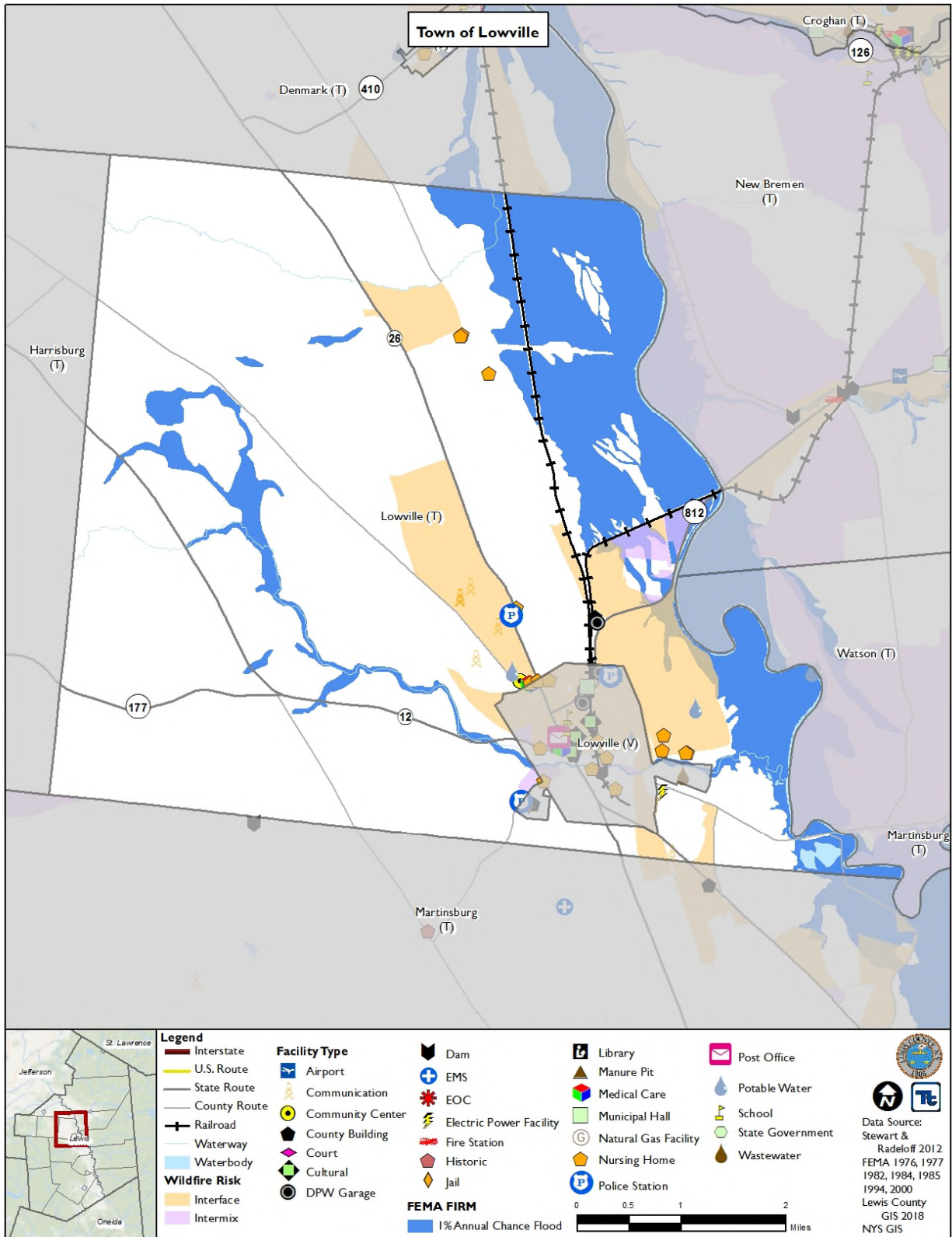
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Hazard area extent and location maps have been generated for the Town of Lowville that illustrate the probable areas impacted within the Town of Lowville. These maps are based on the best available data at the time of the preparation of this plan and are considered to be adequate for planning purposes. Maps have been generated for those hazards that can be clearly identified using mapping techniques and technologies and for which the Town of Lowville has significant exposure. A map of the Town of Lowville hazard area extent and location is provided on the following page. This map indicates the location of the regulatory floodplain, as well as identified critical facilities within the Town of Lowville.





Figure 9.13-1. Town of Lowville Hazard Area Extent and Location Map





Town of Lowville Action Worksheet			
<b>Project Name:</b>	Bridge Replacement Boshart Road		
<b>Project Number:</b>	T. Lowville-1		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Flood, Severe Storm		
<b>Description of the Problem:</b>	Due to the bridge being undersized, there is an increased flood risk. This also increases the risk for scouring of the bridge supports and streambank.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	Following an engineering study, the town will replace the bridge to allow for increased volume to pass under the bridge.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Reduction in flood risk, erosion risk	<b>Estimated Benefits (losses avoided):</b>	Reduction in flood risk at Boshart Road. Reduction in scouring.
<b>Useful Life:</b>	50 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$750,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 1 year
<b>Estimated Time Required for Project Implementation:</b>	1 year	<b>Potential Funding Sources:</b>	HMGP, PDM, CDBG
<b>Responsible Organization:</b>	Town Board, Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Reinforce bridge to prevent scouring	\$2,000	Flooding issues remain due to volume limitations.
	Remove bridge	\$50,000+	Bridge cannot be removed as it will cut off transportation route.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Bridge Replacement Boshart Road	
<b>Project Number:</b>	T. Lowville-1	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project will reduce possible damages to bridge and possible flooding to surrounding area.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The town has the legal authority to complete the project.
Fiscal	-1	Project requires grant funding.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	1	Within 1 year
Agency Champion	1	Town Board, Highway Department
Other Community Objectives	1	
<b>Total</b>	10	
<b>Priority (High/Med/Low)</b>	High	



Town of Lowville Action Worksheet			
<b>Project Name:</b>	Bridge Replacement Gordon Road		
<b>Project Number:</b>	T. Lowville-2		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Flood, Severe Storm		
<b>Description of the Problem:</b>	Due to the bridge being undersized, there is an increased flood risk. This also increases the risk for scouring of the bridge supports and streambank.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	Following an engineering study, the town will replace the bridge to allow for increased volume to pass under the bridge.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Reduction in flood risk, erosion risk	<b>Estimated Benefits (losses avoided):</b>	Reduction in flood risk at Gordon Road. Reduction in scouring.
<b>Useful Life:</b>	50 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$900,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 1 year
<b>Estimated Time Required for Project Implementation:</b>	1 year	<b>Potential Funding Sources:</b>	HMGP, PDM, CDBG
<b>Responsible Organization:</b>	Town Board, Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Reinforce bridge to prevent scouring	\$2,000	Flooding issues remain due to volume limitations.
	Remove bridge	\$50,000+	Bridge cannot be removed as it will cut off transportation route.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Bridge Replacement Gordon Road	
<b>Project Number:</b>	T. Lowville-2	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project will reduce possible damages to bridge and possible flooding to surrounding area.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The town has the legal authority to complete the project.
Fiscal	-1	Project requires grant funding.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	1	Within 1 year
Agency Champion	1	Town Board, Highway Department
Other Community Objectives	1	
<b>Total</b>	10	
<b>Priority (High/Med/Low)</b>	High	



## 9.14 VILLAGE OF LOWVILLE

This section presents the jurisdictional annex for the Village of Lowville.

### 9.14.1 Hazard Mitigation Plan Point of Contact

The following individuals have been identified as the hazard mitigation plan’s primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Joseph G. Beagle Title: Mayor Phone Number: 315-376-2834 Address: 5535 Bostwick St., Lowville, NY 13367 Email: <a href="mailto:mayor@villageoflowville.org">mayor@villageoflowville.org</a>	Name: Paul Denise Title: Phone Number: 315-376-2834 Address: 5535 Bostwick St., Lowville, NY 13367 Email: <a href="mailto:dpwsupt@villageoflowville.org">dpwsupt@villageoflowville.org</a>
Floodplain Administrator	
Name: Ward Dailey Title: Lewis County Codes Phone Number: 315-376-5377 Address: 7660 N State Street Lowville, NY 13620 Email: <a href="mailto:permits@lewiscounty.ny.gov">permits@lewiscounty.ny.gov</a>	

### 9.14.2 Municipal Profile

The Village of Lowville is located in northern New York about 36 miles east of Lake Ontario and 46 miles southeast of the Canadian border. The village is located in the central region of Lewis County and is approximately 2 square miles in area. The Black River lies approximately 2 miles to the east of the village. The village is bisected by Route 26 running northwest to southeast through the village. The Village of Lowville is the county seat for Lewis County and contains the largest population of any municipality in Lewis County. The village is primarily a suburban community with a more densely developed downtown. There are areas in the southern and eastern portions of the village which contain larger manufacturing/industrial facilities. The estimated 2017 population was 3,180, a 3.2 percent decrease from the 2010 Census (3,282).

Data from the 2017 U.S. Census American Community Survey indicate that 6.8 percent of the village population is five years of age or younger and 18.6 percent is 65 years of age or older. Communities must deploy a support system that enables all populations to safely reach shelters or to quickly evacuate a hazard area.

### Growth/Development Trends

The following table summarizes recent residential/commercial development since 2010 to present and any known or anticipated major residential/commercial development and major infrastructure development that has been identified in the next five years within the municipality. The map in 9.14.9 of this annex illustrates the hazard areas along with the location of potential new development.

Table 9.14-1. Growth and Development

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2010 to present</b>					
Kraft-Heinz	Comm.	Structure addition	Utica Blvd.	None	Construction of commercial addition. Village required to update water supply





Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
					and sewer line-sewer treatment.
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
Possible small housing development	Residential	TBD	Behind Campbell Street	None	Planning stages
Possible community center	Public	1	Behind James Street	Wildfire Interface	Planning stages

\* Only location-specific hazard zones or vulnerabilities identified.

### 9.14.3 Natural Hazard Event History Specific to the Municipality

Lewis County has a history of natural and non-natural hazard events as detailed in Volume I, Section 5.0 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the county and its municipalities. For the purpose of this plan update, events that have occurred in the county from 2009 to present were summarized to indicate the range and impact of hazard events in the community. Information regarding specific damages is included, if available, based on reference material or local sources. This information is presented in the table below.

**Table 9.14-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April 26- May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	Although the county suffered damages, the village did not report damages from this event.
August 26- September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	Although the county suffered damages, the village did not report damages from this event.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	Although the county suffered damages, the village did not report damages from this event.
June 26-July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	Although the county suffered damages, the village did not report damages from this event.
May 13-22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	Although the county suffered damages, the village did not report damages from this event.
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to a foot and half of snow within this band leading up to daybreak Friday.	Although the county suffered damages, the village did not report damages from this event.





Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	Although the county suffered damages, the village did not report damages from this event.
June 12, 2018	Severe Storm	No	A heavy rainfall created flooding and erosion.	\$38,000 in fencing along river to protect the wastewater treatment plant. Erosion of embankment along Mill Creek for the entire length of the river within Village of Lowville limits.

Notes:

- EM Emergency Declaration (FEMA)
- FEMA Federal Emergency Management Agency
- DR Major Disaster Declaration (FEMA)

### 9.14.4 Hazard Vulnerabilities and Ranking

The hazard profiles in Section 5.0 (Risk Assessment) have detailed information regarding each plan participant’s vulnerability to the identified hazards. The following summarizes the hazard vulnerabilities and their ranking in the Village of Lowville.

#### Hazard Risk/Vulnerability Risk Ranking

This section provides the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating town or village may have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Village of Lowville. The Village of Lowville has reviewed the county hazard risk/vulnerability risk ranking table as well as its individual results to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the village indicated the following:

- The village agreed with the calculated risk rankings.

Table 9.14-3. Hazard Risk/Vulnerability Risk Ranking

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	Low
Extreme Temperature	High	High
Flood	Medium	Low
Hazardous Material Incidents	Medium	Medium
Landslide	Low	Low





Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	High

Notes: The hazard ranking calculation is based on probability of occurrence and impacts on population, property, and the economy. Refer to Section 5.3 \_Hazard Ranking) for the hazard ranking methodology.

### Critical Facilities Flood Risk

NYS DEC Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for state projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a SFHA unless constructed according to specific mitigation specifications, including being raised 2 feet above the BFE. This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the State places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 500-year flood event or worst damage scenario. For those that do not meet these criteria, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain and presents HAZUS-MH estimates of the damage and loss of use to critical facilities as a result of a 1-percent annual chance flood event.

**Table 9.14-4. Potential Flood Losses to Critical Facilities**

Name	Type	Exposure		Potential Loss from 1% Flood Event		Addressed by Proposed Action
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage	
None identified						

Source: Lewis County Real Property 2018, FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000

### Identified Issues

The municipality has identified the following vulnerabilities within their community:

- Mill Creek has experienced erosion along stream banks during flooding events.
- Storm drains and catch basins on Collins and Easton Street are needed.

### 9.14.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms

### Planning and Regulatory Capability

The table below summarizes the regulatory tools that are available to the Village of Lowville.





Table 9.14-5. Planning and Regulatory Tools

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Master Plan	Yes	Local	Village Board	Town and Village of Lowville Comprehensive Plan 2008
Capital Improvements Plan	No	-	-	-
Floodplain Management / Basin Plan	Yes	Local	Village Board	Code 112:1 thru 112:20
Stormwater Management Plan	No	-	-	-
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	No	-	-	-
Economic Development Plan	No	-	-	-
Comprehensive Emergency Management Plan (CEMP)	Yes	Local	Lewis County/ Village of Lowville	Lewis County CEMP
Emergency Operation Plan	No	-	-	-
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	Yes	County	Lewis County	Lewis County Human Services Coordinated Transportation Plan
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-
<b>Regulatory Capability</b>				
Building Code	Yes	State & Local	Lewis County/ Village of Lowville	NY Building Code
Zoning Ordinance	Yes	Local	Lewis County/ Village of Lowville	Chapter 201 (Adopted 3/11/2015)
Subdivision Ordinance	Yes	Local	Lewis County/ Village of Lowville	Chapter 165 (Readopted 8/7/1984)
NFIP Flood Damage Prevention Ordinance	Yes	Federal, State, Local	Lewis County/ Village of Lowville	Chapter 112 (Adopted 6/14/2000)
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	Yes	State, Local	Lewis County/ Village of Lowville	State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	Yes	Local	Lewis County/ Village of Lowville	Chapter 201, Article IX



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Stormwater Management Ordinance	No	-	-	-
Municipal Separate Storm Sewer System (MS4)	No	-	-	-
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	NYS, Real Estate Agents	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

### Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the Village of Lowville.

**Table 9.14-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	Yes	Village of Lowville Planning Board
Mitigation Planning Committee	Yes	Mayor, Chief of Police, DPW Superintendent
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	No	-
Maintenance programs to reduce risk	No	-
Mutual aid agreements	Yes	County, Local, Fire/Police Department
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	No	-
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	No	-
Planners or engineers with an understanding of natural hazards	No	-
NFIP Floodplain Administrator (FPA)	Yes	Lewis County Codes Department
Surveyor(s)	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	Yes	DPW has personnel with GIS skills/training.
Scientist familiar with natural hazards	No	-
Emergency Manager	No	-
Grant writer(s)	No	-
Staff with expertise or training in benefit/cost analysis	No	-



Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Professionals trained in conducting damage assessments	No	-

### Fiscal Capability

The table below summarizes financial resources available to the Village of Lowville.

**Table 9.14-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes
Impact fees for homebuyers or developers of new development/homes	Yes
Stormwater utility fee	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	Yes
Withhold public expenditures in hazard-prone areas	Yes
Other federal or state Funding Programs	Yes
Open Space Acquisition funding programs	No
Other	No

### Community Classifications

The table below summarizes classifications for community program available to the Village of Lowville.

**Table 9.14-8. Community Classifications**

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	9	-
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	Yes	-	-



Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Public-private partnership initiatives addressing disaster-related issues	No	-	-

Note:

- NP Not participating
- Unavailable, not applicable

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class 1 being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual.
- The Building Code Effectiveness Grading Schedule.
- The ISO Mitigation online ISO’s Public Protection website at <https://www.isomitigation.com/ppc/>.
- The National Weather Service Storm Ready website at <http://www.stormready.noaa.gov/index.html>.
- The National Firewise Communities website at <http://firewise.org/>.

### Self-Assessment of Capability

The table below provides an approximate measure of the Village of Lowville’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

**Table 9.14-9. Self-Assessment Capability for the Municipality**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)*	Moderate	High
Planning and regulatory capability	X – limited staff/funding	-	-
Administrative and technical capability	X – limited staff/funding	-	-
Fiscal capability	X – limited staff/funding	-	-
Community political capability	X – limited staff/funding	-	-
Community resiliency capability	X – limited staff/funding	-	-
Capability to integrate mitigation into municipal processes and activities	X – limited staff/funding	-	-

The village noted that while staff and funding is limited to support hazard mitigation initiatives, the village has received assistance in the past and can continue to work and partner with the Lewis County Soil and Water and Lewis County.





### National Flood Insurance Program

#### NFIP Floodplain Administrator (FPA)

Ward Dailey, Lewis County Codes Department.

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

The village maintains an inventory for municipal properties which have been damaged by flooding. Property owners interested in mitigation have been identified.

Table 9.14-10. NFIP Summary

Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in 100-year Boundary (3)
Village of Lowville	1	2	\$3,945	0	0	0

Source: FEMA Region 2, 2018

Notes:

- (1) Policies, claims, and repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.
  - (2) Total building and content losses from the claims file provided by FEMA Region 2.
  - (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file.
- FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility. A zero percentage denotes less than 1/100th percentage and not zero damage or vulnerability as may be the case. Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.

#### Resources

The Village of Lewis has a signed inter-municipal agreement (IMA) with the Lewis County Codes Department to act on the village’s behalf for the administration and enforcement of Flood Damage Prevention Ordinances.

#### Compliance History

The Village of Lowville is in good standing in the NFIP. According to records from NYS, the last compliance audit (Community Assistance Visit [CAV]) took place on April 14, 1993.

#### Regulatory

The Village of Lowville’s Flood Damage Prevention Ordinance (Chapter 112 of the Village Municipal Code) regulates development in the floodplain. The village Flood Damage Prevention Ordinance meets the NYS minimum standards.

### Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community’s progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures.

#### Planning

##### Existing Integration

The Town and Village of Lowville have a joint comprehensive plan, which references the Lewis County HMP. The village has a Floodplain Management/Basin Plan, Continuity of Operations/Continuity of Government Plan, and is covered by the Lewis County’s CEMP and the Lewis County Transportation Plan. The Village of Lowville







does not have a Stormwater Management Plan, Re-Development Plan, Growth Plan, Economic Development Plan, Open Space Plan, Watershed/Stream Management Plan, Waterfront Revitalization Plan, Post-Disaster Recovery Plan, or Strategic Recovery Plan.

### Opportunities for Future Integration

The village continues to ensure that local comprehensive plans incorporate disaster mitigation techniques through a courtesy review of all draft plans by the County Economic Development and Planning Departments.

### Regulatory and Enforcement (Ordinances)

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#### Existing Integration

Zoning and subdivision regulations/site plan review processes within the Village of Lowville consider natural risks and, if necessary, require developers to mitigate natural hazard risk. The village has access to zoning regulations, their Comprehensive Plan, and the Infill & Development plan for zoning enforcement.

#### Opportunities for Future Integration

The village could maintain winter parking regulations to allow for easier snow removal.

### Operational and Administration

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#### Existing Integration

The village does not have a municipal planner or contract planning firm. The Planning Board follows the State Environmental Quality Review (SEQR) Act to management future development. The Village of Lowville Department of Public Works performs the Stormwater Management Functions in the village. Lewis County Codes Department performs the NFIP Floodplain Management Functions on the village's behalf. The village does not have any boards or committees that include functions with respect to managing natural hazard risk or staff that participate in associations, organizations, groups or other committees that support natural hazard risk reduction and build hazard management capabilities. The village identified that the Department of Public Works could benefit from additional trainings for road closures with respect to natural hazard risk management. The Department of Public Works Superintendent job description specifically includes identification and implementation of mitigation projects/actions to reduce natural hazard risk. The Police Chief is involved with the Local Emergency Planning Committee (LEPC) which involves risk reduction and hazard management. The village works with the county Soil and Water to conduct mitigation projects such as those involving Mill Creek.

**Winter Parking Regulations:** The village maintains winter parking regulations to allow for proper snow removal.

**GIS Enhancement:** The village supports the county's expansion of hazard-related GIS capabilities by assisting in the collection and development of more sophisticated hazard mapping and loss estimation. The village uses GIS information in plan updates and works to ensure information is available to the public and to local communities and agencies.

**Wind Hazards Training:** The village takes part in trainings regarding the development and implementation of programs to mitigate wind damage to private and public properties.

#### Opportunities for Future Integration

The village could hire additional staff to perform NFIP Floodplain Management, and other tasks related to hazard management. The village could investigate expansion of hazard-related GIS capabilities through the acquisition of HAZUS-MH to collect and develop more sophisticated hazard mapping and loss estimation. Future plan



updates would use the finer data, and the county would ensure information will be available to the public, local communities, and agencies.

## Funding

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### Existing Integration

The village municipal budget does regularly include line items for mitigation projects and activities, but when there is a specific project to be completed, a line item is created. The village has a Capital Improvements Budget, but it does not include line items for mitigation projects. The Village of Lowville has received grants for mitigation-related projects from the EFC Clean Water grant which will be implemented in the future.

### Opportunities for Future Integration

The village could include a line item for mitigation projects in the municipal budget or Capital Improvements Budget. The village could continue to apply for grant funding to support hazard mitigation.

## Education and Outreach

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### Existing Integration

The Village of Lowville performs education and outreach through a variety of meetings such as: radio, web-site, billing, and public mailings. The village assists county efforts to systematically contact isolated, vulnerable or special-needs population during severe winter storm events. The village also participates in outreach to address winter driving, winter storm preparedness, and drought preparedness.

### Opportunities for Future Integration

The village could send out additional information regarding natural hazard risk. The village could coordinate with the county and other agencies to systematically contact isolated, vulnerable or special-needs population during severe winter storm events. The village could provide trainings to residents regarding the development and implementation of programs to mitigate wind damage to private and public properties and publicly disseminate that information to residents who do not attend the trainings.

## Sheltering, Evacuation, and Temporary Housing

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Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

### Evacuation and Sheltering Needs

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The Village of Lowville has not designated official emergency shelters. However, the Lowville Fire Department and village hall could serve as warming and cooling centers in the event of an emergency. The village has designated Route 12 North and South and Route 26 North and South as evacuation routes. Evacuation routes and shelters would be determined at the time of an emergency, in accordance with the Lewis County CEMP.



### Temporary and Permanent Housing

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The Village of Lowville has identified the following site for the placement of temporary housing for residents displaced by a disaster:

- The village has identified the Tops Plaza on State Route 26, Lewis County Fairground on Bostwick St, East State Street, and VPJ Property behind Campbell Street as potential sites for temporary housing for residents displaced by a disaster. The capacity of these locations is unknown.

The village also has noted that many local churches and the village would work with Lewis County Emergency Management to support temporary housing efforts. The Village of Lowville has identified the following potential sites suitable for relocating houses of the floodplain or building new homes once properties in the floodplain are acquired:

- The village has identified the East State Street field between Bostwick and Woodlawn as a potential site within the Village suitable for relocating houses out of the floodplain or building new homes once properties in the floodplain are acquired. The capacity is currently unknown for this site.

#### 9.14.6 Mitigation Strategy and Prioritization

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This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and provides prioritization.

##### Past Mitigation Initiative Status

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The following table indicates progress on the community’s mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under ‘Capability Assessment’ presented previously in this annex.

Implementation of a portable power generating plan at the Town/Village of Lowville Offices so that daily operations can continue during power outages. This location may also be considered for a possible shelter location in the event of stranded motorists or residents left without electricity for extended periods.



Table 9.14-11. Status of Previous Mitigation Actions

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection; Damages Avoided; Evidence of Success	
1.	<u>Build Retaining Wall</u> Construction of concrete or other type of retaining wall on both sides of Mill Creek throughout the village.	Flood, ice jam	Insufficient culvert to handle the volume of water from flash flooding and snowmelt.	Public Works	No Progress			1. Include in 2020 HMP 2. Mill Creek retaining wall. 3.
2.	<u>Reconstruct Wall</u> Reinforce or reconstruct the stone/earthen wall on the North side of Mill Creek at a location just West of the South State Street bridge. Currently this location has approximately a 10 to 12-foot diameter section that has already fallen out of the wall and bottom third of the wall is bowing outwards towards Mill Creek on private property.	Flood, ice jam	This is on private property.	Public Works	In Progress			1. Include in 2020 HMP 2. Reinforce or reconstruct the stone/earthen wall on the North side of Mill Creek. 3.
3.	<u>Emergency Generators</u> Implementation of a portable power generating plan at the Town/Village of Lowville Offices so that daily operations may continue during power outages. This location could be considered for a possible shelter location in the event of stranded motorists or residents left without electricity for extended periods.	Extreme wind, lightning, nor'easter, winter storm	Backup power is necessary for continuity of operations.	Police Department	Completed	\$35,000	Every storm that leads to power outage Continuity of operations	1. Discontinue 2. 3. Completed for all village offices.
4.	<u>Village Snow Removal</u> Provides an alternative location for snow dumping.	Winter storm	A site alternative is necessary for snow dumping.	Village board	Completed	Roughly \$6500 per year.	Site established behind Sewer Plant Increases capabilities during snow	1. Discontinue 2. 3. Complete





Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Evidence of Success	Cost	
5.	<u>Winter Parking</u> Maintain winter parking regulations to allow for proper snow removal.	Winter storm	Roads must be clear of cars for proper snow removal.	Village DPW/Police Department	Ongoing capability	Level of Protection	Damages Avoided; Evidence of Success	1. Discontinue 2. 3. Ongoing Capability
6.	<u>Wastewater Treatment</u> Retaining wall and/or elevation of wastewater treatment plant.	Flood	The wastewater treatment plant needs to be protected from flooding.	Village	In Progress	Level of Protection	Damages Avoided; Evidence of Success	1. Include in 2020 HMP. 2. Protect wastewater treatment plant from flooding. 3.
7.	<u>Plan Review for Mitigation</u> Ensure that local comprehensive plans incorporate disaster mitigation techniques through a courtesy review of all draft plans by the County Economic Development and Planning Department.	All Hazards	Local plans should be reviewed to incorporate mitigation techniques.	Village Mayor/CPG Member	Ongoing capability	Level of Protection	Damages Avoided; Evidence of Success	1. Discontinue 2. 3. Ongoing Capability
8.	<u>GIS Enhancement</u> Investigate expansion of hazard-related GIS capabilities via acquisition of HAZUS-MH to collect and develop more sophisticated hazard mapping and loss estimation. Use information in future plan updates. Ensure information will be available to the public and to local communities and agencies.	Earthquake, wind, flood	GIS information should be available to the public and to local communities and agencies.	Village Mayor/CPG Member	Ongoing capability	Level of Protection	Damages Avoided; Evidence of Success	1. Discontinue. 2. 3. Ongoing capability
9.	<u>Outreach Program</u> County coordination with local governments and other agencies to systematically contact isolated,	Winter storms, extreme temperature	Special needs and isolated populations should be	Village Mayor/CPG Member	Ongoing capability	Level of Protection		1. Discontinue. 2.



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Damages Avoided; Evidence of Success	Staff Time	
	vulnerable or special-needs population during severe winter storm events.		contacted during severe storms.			Damages Avoided; Evidence of Success		3. Ongoing Capability.
10.	<u>Auxiliary Power Supply</u> Conduct a countywide survey on status of auxiliary power supplies at all critical facilities.	Winter storms, wind, tornado	Critical facilities require backup power.	Village Mayor/CPG Member	Complete	Cost	Staff Time	1. Discontinue 2. 3. Complete
						Level of Protection	Not applicable	
						Damages Avoided; Evidence of Success	Identifies power supplies for continuity of operations	
11.	<u>Wind Hazards Training</u> Provide trainings to municipalities regarding the development and implementation of programs to mitigate wind damage to private and public properties.	Wind, tornado	Municipalities require training on wind hazards.	Village Mayor/CPG Member	Ongoing capability	Cost		1. Discontinue. 2. 3. Ongoing capability
						Level of Protection		
						Damages Avoided; Evidence of Success		
12.	<u>Winter Driving and Vehicle Preparation Education</u> Provide education opportunities for residents to learn winter driving techniques.	Winter storms, snow	Residents need training on winter driving and vehicle care.	Village Mayor/CPG Member	Ongoing capability	Cost		1. Discontinue. 2. 3. Ongoing capability.
						Level of Protection		
						Damages Avoided; Evidence of Success		
13.	<u>Winter Storm Public Awareness and Preparation</u> Increase public awareness of personal responsibilities during emergencies, specifically winter storm events.	Winter storms, snow	Residents need to be made aware of responsibilities during winter storms.	Village Mayor/CPG Member	Ongoing capability	Cost		1. Discontinue 2. 3. Ongoing capability.
						Level of Protection		
						Damages Avoided; Evidence of Success		
14.	<u>Emergency Warming Shelters</u>	Extreme temperature,	Warming shelters are needed for	Village Mayor/CPG Member	Complete	Cost	Staff Time	1. Discontinue
						Level of Protection	Lowville Fire Hall	



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps
	Establish warming shelters for vulnerable populations, including residents and stranded motorists	winter storms	extreme temperature events			Damages Avoided; Evidence of Success	Provides locations for residents during power outages	<ol style="list-style-type: none"> <li>Project to be included in 2020 HMP or Discontinue</li> <li>If including action in the 2020 HMP, revise/reword to be more specific (as appropriate).</li> <li>If discontinue, explain why.</li> </ol> 2. Lowville Fire Hall established as emergency warming shelters 3. Complete
15.	<u>Dam Safety</u> Coordinate with NYSDEC and owners of all high- and moderate hazard dams to achieve full compliance with applicable dam safety programs and to develop or update Emergency Action Plans, including inundation mapping.	Dam failure	Dams need to maintain safety programs	Village Mayor/CPG Member	No progress	Cost		<ol style="list-style-type: none"> <li>Discontinue</li> <li></li> <li>No dams in village</li> </ol>
					Level of Protection			
					Damages Avoided; Evidence of Success			
16.	<u>Drought Preparedness</u> Publish and distribute literature on water conservation techniques and drought management strategies.	Drought	Drought education is needed to conserve water	Village Mayor/CPG Member	Ongoing capability	Cost		<ol style="list-style-type: none"> <li>Discontinue.</li> <li></li> <li>Ongoing capability.</li> </ol>
					Level of Protection			
					Damages Avoided; Evidence of Success			
17.	<u>Landslide Study</u> Conduct surveys to determine local vulnerabilities to landslides threatening property and roads, coordinate with municipalities to limit development in these areas and develop remedial measures for existing vulnerabilities.	Landslides	Landslide vulnerability needs to be determined	Village Mayor/CPG Member	Complete	Cost	Staff time	<ol style="list-style-type: none"> <li>Discontinue</li> <li></li> <li>Complete. Code officer and Village Zoning Code.</li> </ol>
					Level of Protection	Identifies landslide areas		
					Damages Avoided; Evidence of Success	Reduces vulnerability to landslides		
18.	<u>Wildfire Mapping</u> Create and distribute mapping and database of wildland access points for firefighters, develop enhanced mapping of urban/wildland interface.	Wildfire	Wildfire data needs to be available for firefighters	Village Mayor/CPG Member	Complete	Cost	County Time	<ol style="list-style-type: none"> <li>Discontinue</li> <li></li> <li>Complete by County Emergency Management</li> </ol>
					Level of Protection	Identifies access points		
					Damages Avoided; Evidence of Success	Increases response time to wildfires		







Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Staff Time	
19.	<u>Critical Facilities Survey</u> Undertake a year built and level of protection survey for all critical and emergency facilities and shelters to highlight structures built before codes and standards were put in place to provide protection from natural hazards and pursue potential mitigation opportunities to protect these sites as funding is available.		Critical facilities should be built to withstand hazard events	Village Mayor/CPG Member-	Complete	Level of Protection	All storms	1. Discontinue 2. 3. Complete
						Damages Avoided; Evidence of Success	Identifies structures that should be protected from storms	



### **Completed Mitigation Initiatives not Identified in the Previous Mitigation Strategy**

The Village of Lowville performed ongoing maintenance projects to reduce the impact of flooding but has not identified specific mitigation projects and activities that were completed but not identified in the previous mitigation strategy in the 2010 Plan.

### **Proposed Hazard Mitigation Initiatives for the Plan Update**

Table 9.14-12 summarizes the comprehensive-range of specific mitigation initiatives the Village of Lowville would like to pursue in the future to reduce the effects of hazards. Some of these initiatives might be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and can be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6, 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.14-13 provides a summary of the prioritization of all proposed mitigation initiatives for the Plan update.



Table 9.14-12. Proposed Hazard Mitigation Initiatives

Initiative	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefit	Potential Funding Sources	Priority	Mitigation Category	CRS Category
V. Lowville-1	Mill Creek retaining wall	<b>Problem:</b> More protections are needed to handle the volume of water from flash flooding and snowmelt. <b>Solution:</b> Construct concrete or other type of retaining wall on both sides of Mill Creek throughout the village.		Flood, ice jam	2	No	None	Within 1 year	DPW, Soil and Water	Staff time	Reduced flooding adjacent to Mill Creek	UASCE, HMGP, PDM	High	SIP	PP
V. Lowville-2	Reinforce or reconstruct the stone/earthen wall on the North side of Mill Creek	<b>Problem:</b> This location has approximately a 10 to 12-foot diameter section that has already fallen out of the wall and bottom third of the wall is bowing outwards towards Mill Creek on private property <b>Solution:</b> Reinforce or reconstruct the stone/earthen wall on the North side of Mill Creek at a location just West of the South State Street bridge.		Flood, ice jam	2	No	None	Within 1 year	DPW	Staff time	Village property will not be affected by flood	USACE, HMGP, PDM Municipal budget	High	SIP	PP
V. Lowville-3	Wastewater Treatment Plant flood protection	<b>Problem:</b> The wastewater treatment plant needs to be protected from flooding. The plant is located near the edge of the 100-year floodplain, though it is not located within the 100-year floodplain. <b>Solution:</b> Retaining wall and/or elevation of wastewater treatment plant. Use fill from water/sewer project to help build up retaining walls.		Flood	2	Yes	None	Within 1 year	Plant manager	Full Phase 2 Plant reconstruction cost of \$9.2 million	Wastewater Treatment Plant protected from flooding	HMGP, PDM, operating budget	High	SIP	PP
V. Lowville-4	Ross Rd. Drainage	<b>Problem:</b> Drainage throughout the south end of the village has caused Ross property on the west and east side of Ross Road to flood on a regular basis		Severe storm, flood	2	No	None	Within 1 year	Village DPW, Town of Lowville,	\$75,000	Drainage for Ross Road improved	HMGP, PDM, operating budget	High	SIP	SP





Initiative	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefit	Potential Funding Sources	Priority	Mitigation Category	CRS Category
		<b>Solution:</b> Install drainage ditches and replace degraded culvert pipe.							Lewis County						
V. Lowville-5	Water/Sewer line replacement	<b>Problem:</b> Aged water/sewer lines are vulnerable to rupture during extreme temperature events.	<b>Solution:</b> The village will work to replace water/sewer lines and protect lines from rupture from extreme temperature and other hazards.	Extreme Temperature	2	No	None	In process	DPW	\$18.8 million	Water/Sewer lines protected from rupture	Bond	High	SIP	PP
V. Lowville-6	Storm drain improvements	<b>Problem:</b> Storm drains are outdated or do not exist.	<b>Solution:</b> The village will replace the necessary storm drains and establish them where they do not currently exist.	Severe Storm, Flood	2	No	None	In process	DPW	\$18.8 million	Storm drains improved	Operating budget	High	SIP	SP
V. Lowville-7	Develop two ground wells to protect from drought	<b>Problem:</b> The village water supply is from surface ponds which are vulnerable to drought.	<b>Solution:</b> The village will construct two new ground wells to secure the water supply and reduce costs.	Drought	2	Yes	None	Within 2 years	Highway Supt	\$4 million	Village water supply protected	HMGP, PDM, operating budget	High	SIP	PP

Notes:

Not all acronyms and abbreviations defined below are included in the table.

\*Does this mitigation initiative reduce the effects of hazards on new and/or existing buildings and/or infrastructure? Not applicable (N/A) is inserted if this does not apply.

Acronyms and Abbreviations:

CAV Community Assistance Visit  
 CRS Community Rating System  
 DPW Department of Public Works  
 FEMA Federal Emergency Management Agency  
 FPA Floodplain Administrator  
 HMA Hazard Mitigation Assistance  
 N/A Not applicable  
 NFIP National Flood Insurance Program  
 OEM Office of Emergency Management

Potential FEMA HMA Funding Sources:

FMA Flood Mitigation Assistance Grant Program  
 HMGP Hazard Mitigation Grant Program  
 PDM Pre-Disaster Mitigation Grant Program  
 RFC Repetitive Flood Claims Grant Program  
 (discontinued in 2015)  
 SRL Severe Repetitive Loss Grant Program (discontinued in 2015)

Timeline:

Short 1 to 5 years  
 Long Term 5 years or greater  
 OG On-going program  
 DOF Depending on funding





Costs:

Where actual project costs have been reasonably estimated:

- Low < \$10,000
- Medium \$10,000 to \$100,000
- High > \$100,000

Where actual project costs cannot reasonably be established at this time:

- Low Possible to fund under existing budget. Project is part of, or can be part of an existing on-going program.
- Medium Could budget for under existing work plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
- High Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.

Benefits:

Where possible, an estimate of project benefits (per FEMA's benefit calculation methodology) has been evaluated against the project costs, and is presented as:

- Low= < \$10,000
- Medium \$10,000 to \$100,000
- High > \$100,000

Where numerical project benefits cannot reasonably be established at this time:

- Low Long-term benefits of the project are difficult to quantify in the short term.
- Medium Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.
- High Project will have an immediate impact on the reduction of risk exposure to life and property.

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities

CRS Category:

- Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.
- Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities

Critical Facility:

Yes  - Critical Facility located in 1% floodplain





**Table 9.14-13. Summary of Prioritization of Actions**

Mitigation Action/Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community	Total	High / Medium / Low
V. Lowville-1 (Former 1)	Mill Creek retaining wall	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
V. Lowville-2 (Former 2)	Reinforce or reconstruct the stone/earthen wall on the North side of Mill Creek	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
V. Lowville-3 (Former 6)	Wastewater Treatment Plant flood protection	0	1	1	1	1	1	0	1	1	1	0	1	1	1	11	High
V. Lowville-4	Ross Rd. Drainage	0	1	1	1	1	1	0	1	1	1	1	1	1	1	12	High
V. Lowville-5	Water/Sewer line replacement	1	1	1	1	1	1	1	1	1	1	0	1	1	1	13	High
V. Lowville-6	Storm drain improvements	0	1	1	1	1	1	1	1	1	1	1	1	1	1	13	High
V. Lowville-7	Develop two ground wells to protect from drought	1	0	1	1	1	1	0	1	1	1	0	0	1	1	10	High

Note: Refer to Section 6 (Mitigation Actions), which conveys guidance on prioritizing mitigation actions.



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### **9.14.7 Future Needs To Better Understand Risk/Vulnerability**

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None at this time.

### **9.14.8 Staff and Local Stakeholder Involvement in Annex Development**

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The Village of Lowville followed the planning process described in Section 3 (Planning Process). This annex was developed over the course of several months with input from many village departments, including: the Mayor. The Mayor represented the community on the Lewis County Hazard Mitigation Plan Planning Partnership and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Additional documentation on the municipality’s planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix B (Meeting Documentation).

### **9.14.9 Hazard Area Extent and Location**

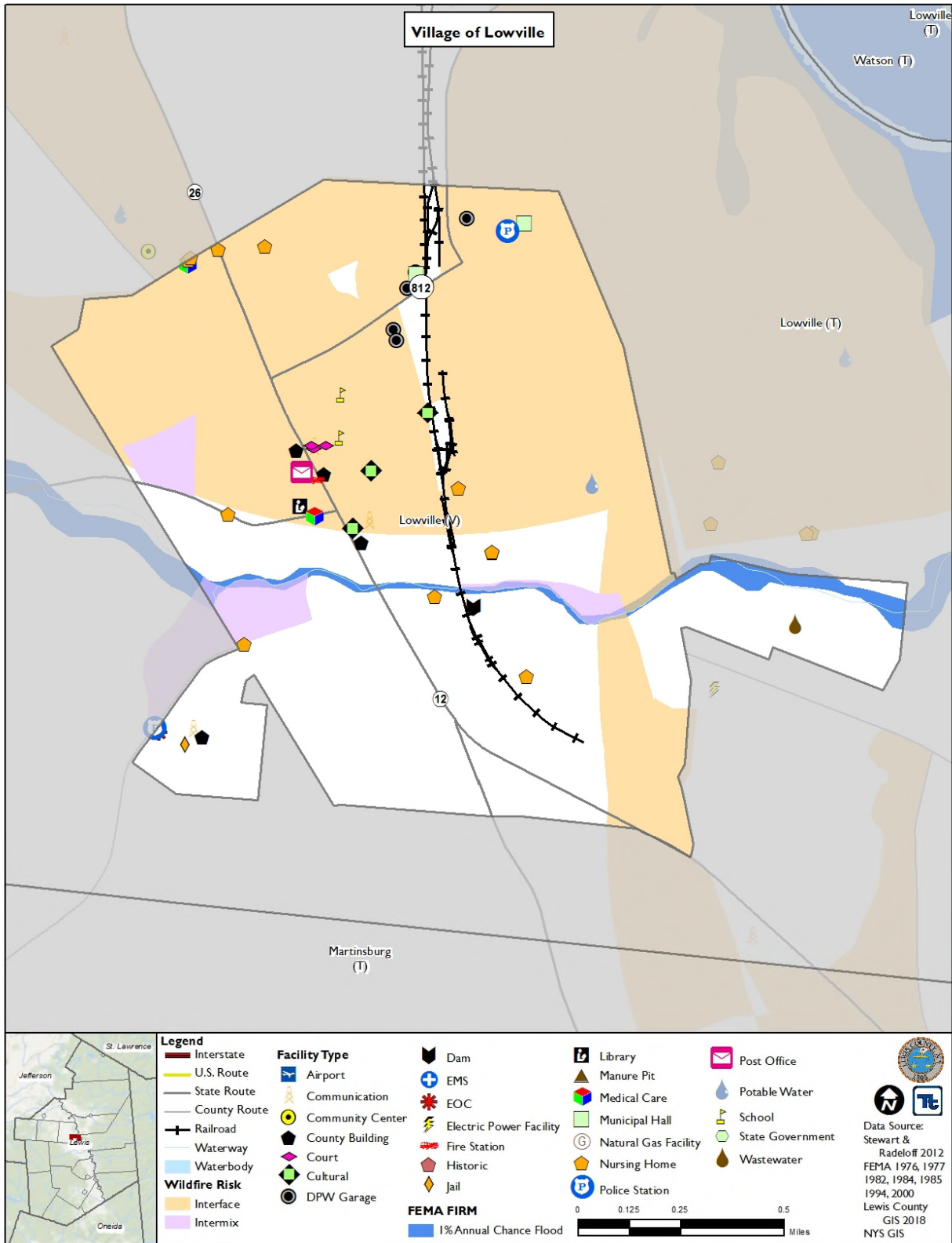
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Hazard area extent and location maps have been generated for the Village of Lowville that illustrate the probable areas impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan and are considered to be adequate for planning purposes. Maps have been generated for those hazards that can be clearly identified using mapping techniques and technologies and for which the Village of Lowville has significant exposure. These maps are illustrated in the hazard profiles in Section 5.4 (Hazard Profiles).





Figure 9.14-1. Village of Lowville Hazard Area Extent and Location Map





Village of Lowville Action Worksheet			
<b>Project Name:</b>	Ross Rd. Drainage		
<b>Project Number:</b>	V. Lowville-4		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Flood, Severe Storm		
<b>Description of the Problem:</b>	Drainage throughout the south end of the village has caused the Ross property on the west and east side of Ross Road to flood on a regular basis.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The Village DPW will install drainage ditches and replace degraded culvert pipes with the assistance of the Town of Lowville and Lewis County.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Improves drainage during and after every rain storm	<b>Estimated Benefits (losses avoided):</b>	Drainage for Ross Road improved.
<b>Useful Life:</b>	50 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$75,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 1 year
<b>Estimated Time Required for Project Implementation:</b>	1 year	<b>Potential Funding Sources:</b>	HMGP, PDM, operating budget
<b>Responsible Organization:</b>	Village DPW with the support of the Town of Lowville and Lewis County	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Install retention basin	\$50,000+	Not enough room.
	Install stormwater pipes	\$200,000	Costly
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Ross Rd. Drainage	
<b>Project Number:</b>	V. Lowville-4	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project will protect Ross property from flooding.
Cost-Effectiveness	1	
Technical	1	
Political	1	There is public support for the project.
Legal	1	The village has the legal authority to complete the project.
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	Assistance by the Town of Lowville and Lewis County.
Multi-Hazard	1	Flood, Severe Storm
Timeline	1	1 year
Agency Champion	1	Village DPW
Other Community Objectives	1	
<b>Total</b>	12	
<b>Priority (High/Med/Low)</b>	High	



Village of Lowville Action Worksheet			
<b>Project Name:</b>	Develop two ground wells to protect from drought		
<b>Project Number:</b>	V. Lowville-7		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Drought		
<b>Description of the Problem:</b>	The Village of Lowville operates its own water system. The demand on the system is high, in part due to the Kraft-Heinz commercial demands (roughly 1 million gallons per day). The current water source for the village is surface water ponds. This water source is vulnerable to drought and also is costly due to filtration needs (the village has spent \$1.6M in filtration upgrades).		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The village will construct two potable water wells to draw from a water source that is not vulnerable to drought and is less costly to operate.		
<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Provides source of drinking water during drought	<b>Estimated Benefits (losses avoided):</b>	Drinking water supply protected from drought.
<b>Useful Life:</b>	50 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$1.6 million	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 2 years
<b>Estimated Time Required for Project Implementation:</b>	2 years	<b>Potential Funding Sources:</b>	HMGP, PDM, operating budget
<b>Responsible Organization:</b>	Highway Superintendent	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Construct a reservoir	\$10 million+	The village does not have the necessary land to construct a reservoir.
	Establish mutual aid agreements to truck water in during periods of drought	Staff Time	Volume of water imported would exceed capability of neighboring municipal water sources.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Develop two ground wells to protect from drought	
<b>Project Number:</b>	V. Lowville-7	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Protects water supply.
Property Protection	0	
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	Village has legal authority to complete the project.
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	0	Drought
Timeline	0	2 years
Agency Champion	1	Highway Superintendent
Other Community Objectives	1	
<b>Total</b>	10	
<b>Priority (High/Med/Low)</b>	High	



## 9.15 VILLAGE OF LYONS FALLS

This section presents the jurisdictional annex for the Village of Lyons Falls.

### 9.15.1 Hazard Mitigation Plan Point of Contact

The following individuals have been identified as the hazard mitigation plan’s primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Anne Huntress Title: Mayor Phone Number: 315-348-5081 (office), 315-348-8632 (home) Address: 4059 Cherry Street Lyons Falls, NY 13368 Email: <a href="mailto:Anne.huntress@yahoo.com">Anne.huntress@yahoo.com</a>	Name: Shane Rogers Title: DPW Supervisor Phone Number: 315-348-5081 (office) Address: 4059 Cherry Street Lyons Falls, NY 13368 Email: <a href="mailto:lfvillagedpw@centralny.twcbc.com">lfvillagedpw@centralny.twcbc.com</a>
Floodplain Administrator	
Name: Ward Dailey Title: Lewis County Codes Phone Number: (315) 377-2037 Address: 7660 N State St Lowville, NY 13367 Email: <a href="mailto:permits@lewiscounty.ny.gov">permits@lewiscounty.ny.gov</a>	

### 9.15.2 Municipal Profile

The Village of Lyons Falls is located on the border of the Town of West Turin and the Town of Lyonsdale. For information on these respective municipalities, refer to their specific municipal annexes of Section 9.2 (Town of West Turin) and Section 9.17 (Town of Lyonsdale). The village is located at the junction of NYS Route 12 and NYS Route 12D. The Black River meets the Moose River within the village.

The estimated 2017 population was 613, which an 8.3 percent increase in population from 2010 (566 persons). Data from the 2017 U.S. Census American Community Survey indicate that 3.3 percent of the village population is five years of age or younger and 25.3 percent is 65 years of age or older.

#### History and Cultural Resources

The Village of Lyons Falls was at the northern end of the Black River Canal, which was completed in 1858. The Forest Presbyterian Church, Gould Mansion Complex, The Pines, Wildwood Cemetery, and Mary Lyon Fisher Memorial Chapel are listed on the National Register of Historic Places.

#### Growth/Development Trends

The following table summarizes recent residential/commercial development since 2010 to present and any known or anticipated major residential/commercial development and major infrastructure development that has been identified in the next five years within the municipality. The map in 9.15.8 of this annex illustrates the hazard areas along with the location of potential new development.



**Table 9.15-1. Growth and Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2010 to present</b>					
UCP Housing	Residential	1	338.12-01-06.100	None	6 bed Cerebral Palsy Housing facility
LCDC-Mill site redevelopment	Commercial	N/A	322.19-07-04.100	Eliminating hazardous materials and structure to make way for new development	Demolition to be completed upon acquisition of needed funds
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
Roger Abbey Realty	Residential	6	338.08-02-13.100	None	6 or 7 houses
North Brook Hydroelectric Plan	Utility	N/A	322.19-07-06.000	Flood	Discussed
Fire Hall/DPW	Public	1	322.19-04-14.100	None	Plans to increase hardening of infrastructure and use site for future emergency shelter

\* Only location-specific hazard zones or vulnerabilities identified.

### 9.15.3 Natural Hazard Event History Specific to the Municipality

Lewis County has a history of natural and non-natural hazard events as detailed in Volume I, Section 5.0 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the county and its municipalities. For the purpose of this plan update, events that have occurred in the county from 2009 to present were summarized to indicate the range and impact of hazard events in the community. Information regarding specific damages is included, if available, based on reference material or local sources. This information is presented in the table below.

**Table 9.15-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April 26- May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	Although the county suffered damages, the village did not report damages from this event.
August 26- September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	Although the county suffered damages, the village did not report damages from this event.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	Although the county suffered damages, the village did not report damages from this event.
June 26- July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	Although the county suffered damages, the village did not report damages from this event.







Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
May 13-22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	Although the county suffered damages, the village did not report damages from this event.
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to a foot and half of snow within this band leading up to daybreak Friday.	Although the county suffered damages, the village did not report damages from this event.
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	Although the county suffered damages, the village did not report damages from this event.

Notes:

- EM Emergency Declaration (FEMA)
- FEMA Federal Emergency Management Agency
- DR Major Disaster Declaration (FEMA)

### 9.15.4 Hazard Vulnerabilities and Ranking

The hazard profiles in Section 5.0 (Risk Assessment) have detailed information regarding each plan participant’s vulnerability to the identified hazards. The following summarizes the hazard vulnerabilities and their ranking in the Village of Lyons Falls.

#### Hazard Risk/Vulnerability Risk Ranking

The table below summarizes the hazard risk/vulnerability rankings of potential hazards for the Village of Lyons Falls.

Table 9.15-3. Hazard Risk/Vulnerability Risk Ranking

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	High
Extreme Temperature	High	High
Flood	Medium	Low
Hazardous Material Incidents	Medium	Medium
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	High

Notes: The scale is based on the following hazard rankings as established in Section 5.3 (Hazard Ranking).  
High = Total hazard priority risk ranking score of 5 and above





Medium = Total hazard priority risk ranking of 3.9 – 4.9  
Low = Total hazard risk ranking below 3.8

### Critical Facilities

The table below presents HAZUS-MH estimates of the damage and loss of use to critical facilities in the community as a result of a 1- and 0.2-percent annual chance flood event.

Table 9.15-4. Potential Flood Losses to Critical Facilities

Name	Type	Exposure		Potential Loss from 1% Flood Event		Addressed by Proposed Action
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage	
Lyons Falls Mill 3 Dam	Dam	X	X	-	-	See below.
Northbrook Lyons Falls LLC (4010 Center Street) Electric Power Facility	Electric Power Facility	X	X	-	-	V. Lyons Falls-3

Source: Lewis County Real Property 2018, FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000

The Village of Lyons Falls reviewed the critical facilities above and noted that none of the facilities are owned by the village. In addition, the Lyons Falls Mill 3 Dam is a simple concrete structure and is not considered critical for the purpose of essential services. As a result, the Village of Lyons Falls did not develop mitigation actions to protect the dam to the 500-year flood level.

### Identified Issues

The municipality has identified the following vulnerabilities within their community:

- Falling tree branches present a risk to utilities and private property.
- A degraded and in some cases absent stormwater drainage system contributes to flooding in the village.

### 9.15.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms

### Planning and Regulatory Capability

The table below summarizes the regulatory tools that are available to the Village of Lyons Falls.



Table 9.15-5. Planning and Regulatory Tools

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Master Plan	Yes	-	-	-
Capital Improvements Plan	Yes	Village	Board/DPW	Asset Management Plan prepared by Development Authority of the North Country (DANC) 2013-14
Floodplain Management / Basin Plan	No	-	-	-
Stormwater Management Plan	No	-	-	-
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	No	-	-	-
Economic Development Plan	Yes	Village	Board/DPW	Community Development Plan prepared by Snowbelt Housing 2010
Comprehensive Emergency Management Plan	Yes	LC Fire and Emergency Management	Multiple	Part 201.6 of Disaster Management Act of 2000. Local Resolution 2011-11
Emergency Operation Plan	No	-	-	-
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	No	-	-	-
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-
<b>Regulatory Capability</b>				
Building Code	Yes	State	Lewis County Codes	Ward Daily- LC Code enforcement
Zoning Ordinance	Yes	Local	Board	Village of Lyons Falls Zoning Law
Subdivision Ordinance	No	-	-	-
NFIP Flood Damage Prevention Ordinance	Yes	Federal, State, Local	Lewis County Codes	Local Law 3-1989: Flood Damage Prevention Law
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	Yes	State, Local	Lewis County Codes	State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	Yes	Local	Board	Village of Lyons Falls Zoning Law
Stormwater Management Ordinance	No	-	-	-
Municipal Separate Storm Sewer System (MS4)	No	-	-	-
Natural Hazard Ordinance	No	-	-	-



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	NYS State – Real Estate Agents	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

**Administrative and Technical Capability**

The table below summarizes potential staff and personnel resources available to the Village of Lyons Falls.

**Table 9.15-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	No	-
Mitigation Planning Committee	No	-
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	Yes	LCIDA
Maintenance programs to reduce risk	Yes	DPW/Village/Supervisor
Mutual aid agreements	Yes	State/County/Villages of Port Leyden and Turin/ Towns of Lyonsdale and West Turin
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	Yes	DANC/LCDC
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Board Members
Planners or engineers with an understanding of natural hazards	Yes	DANC
NFIP Floodplain Administrator (FPA)	Yes	Lewis County Codes
Surveyor(s)	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	Yes	DPW Staff
Scientist familiar with natural hazards	No	-
Emergency Manager	Yes	Bob McKenzie- LC Fire Dept. Management
Grant writer(s)	Yes	Tug Hill Commission
Staff with expertise or training in benefit/cost analysis	No	-
Professionals trained in conducting damage assessments	No	-



### Fiscal Capability

The table below summarizes financial resources available to the Village of Lyons Falls.

**Table 9.15-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes
Impact fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	Yes
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	Yes
Other federal or state Funding Programs	Yes
Open Space Acquisition funding programs	No
Other	No

### Community Classifications

The table below summarizes classifications for community program available to the Village of Lyons Falls.

**Table 9.15-8. Community Classifications**

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	No	-	-
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	No	-	-
Public-private partnership initiatives addressing disaster-related issues	No	-	-

Note:

- Unavailable





The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class 1 being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual.
- The Building Code Effectiveness Grading Schedule.
- The ISO Mitigation online ISO’s Public Protection website at <https://www.isomitigation.com/ppc/>.
- The National Weather Service Storm Ready website at <http://www.stormready.noaa.gov/index.html>.
- The National Firewise Communities website at <http://firewise.org/>.

### Self-Assessment of Capability

The table below provides an approximate measure of the Village of Lyons Falls’s capability to work in a hazard-mitigation capacity and effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

Table 9.15-9. Self-Assessment Capability for the Municipality

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)*	Moderate	High
Planning and regulatory capability	X - Limited staff		
Administrative and technical capability	X – Limited staff		
Fiscal capability	X – Unaware of any funding availability		
Community political capability		X	
Community resiliency capability		X	
Capability to integrate mitigation into municipal processes and activities	X – Limited staff		

### National Flood Insurance Program

#### NFIP Floodplain Administrator (FPA)

Ward Dailey, Lewis County Codes

### Flood Vulnerability Summary

The Village of Lyons Falls does not maintain lists or inventories of properties that have been flood damaged or identify property owners who are interested in mitigation. The village did not experience flood damage during recent countywide flood events. The village does not make substantial damage determinations.



Table 9.15-10. NFIP Summary

Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in 100- year Boundary (3)
Lyons Falls (V)	0	1	\$82,721	0	0	0

Source: FEMA Region 2, 2018

Notes:

- (1) Policies, claims, and repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.
- (2) Total building and content losses from the claims file provided by FEMA Region 2.
- (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file.  
FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility.  
A zero percentage denotes less than 1/100th percentage and not zero damage or vulnerability as may be the case.  
Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.

### Resources

Through an intermunicipal agreement, the Lewis County Codes Department assumes the responsibilities of floodplain administration with the assistance of the mayor, Village Board, and Village DPW. NFIP administration services include permit review, although there is very little flood zone in the village. The village does not provide flood education or outreach. Although the village does not require much flood administration due to limited flood zone, if the need arose, staff have limited time and capability. If there were properties placed into the flood zone and there were a need for floodplain administration, the FPA would consider attending training on floodplain management.

### Compliance History

The Village of Lyons Falls is in good-standing in the NFIP. The most recent Community Assistance Contact (CAC) took place on December 22, 2006.

### Regulatory

Floodplain management regulations/ordinances exceed the FEMA and state minimum requirements. Permits are required according to local law. Zoning regulations were updated in 2018. Due to limited floodplain exposure, the village has not considered joining the CRS program.

### Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community’s progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures.

### Planning

**Master Plan:** The Village of Lyons Falls Master Plan does not include areas of natural hazard risk. The plan does not refer to the countywide HMP. The village works to ensure that the local comprehensive plan incorporates disaster mitigation techniques through a courtesy review of all draft plans by the County Economic Development and Planning Department.

The Village of Lyons Falls is not an MS4 Regulated Community and does not have a Stormwater Management Plan. The village has a Community Development Plan and a Tourism Asset Plan. The village does not have an







Economic Development Plan, Open Space Plan, Watershed/Stream Corridor Management Plan, Comprehensive Emergency Management Plan, Post-Disaster Recovery Plan, or Strategic Recovery Plan.

### Opportunities for Future Integration

The village could develop planning documents that incorporate hazard mitigation. The village could update the master plan to include areas of natural hazard risk and refer to the Lewis CountyHMP.

### Regulatory and Enforcement (Ordinances)

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Municipal zoning and subdivision regulations and site plan review processes do not consider natural hazards or require developers to take additional actions to mitigate natural hazard risk. The village adopted a Frozen Water Law in February 2018 to help residents fund and be aware of available resources in the case of loss of water and sewer services during extremely cold winters.

### Opportunities for Future Integration

The village could enact regulations that consider natural hazards and require developers to take additional actions to mitigate natural hazard risk.

### Operational and Administration

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The Village of Lyons Falls does not have a municipal planner, contract planning firm, Planning Board, or Zoning Board of Adjustments. The Village Mayor, Village Board, Village Clerk, and Village DPW all include functions with respect to managing natural hazard risk. Stormwater Management functions are performed by the DPW Supervisor. NFIP Floodplain Management functions are performed by the mayor. DANC staff have experience with developing Benefit-Cost Analysis. Substantial Damage Determinations are performed, as needed, by the County Buildings and Codes Department. The village uses the assistance of the Tug Hill Commission to prepare grant applications for mitigation projects.

Village staff do not receive training or continuing professional education to support natural hazard risk reduction. No village staff have job descriptions that specifically include identifying and/or implementing mitigation projects/actions or other efforts to reduce natural hazard risk. No staff or departments participate in associations, organizations, groups or other committees that support natural hazard risk reduction and build hazard management capabilities.

**GIS Enhancement:** The village works with Lewis County to investigate expansion of hazard-related GIS capabilities via acquisition of HAZUS-MH to collect and develop more sophisticated hazard mapping and loss estimation. The village will use this information in future plan updates and work with the county to ensure information will be available to the public and to local communities and agencies.

**Auxiliary Power Supply:** The village assists the county to conduct a countywide survey on status of auxiliary power supplies at all critical facilities.

**Critical Facilities Survey:** The village is helping the county undertake a year built and level of protection survey for all critical/emergency facilities and shelters to highlight structures built before codes and standards were put in place to provide protection from natural hazards and pursue potential mitigation opportunities to protect these sites as funding becomes available.

### Opportunities for Future Integration

Village staff would benefit from training on the availability and use of grants and funds and how to apply.



Funding

The Village of Lyons Falls does not include line items in the municipal budget for mitigation projects and activities. The Village Capital Improvements budget includes budget for mitigation-related projects. The village has been awarded \$99,000 for culvert repairs from the USDA, which included matching funds from the village. The village seeks guidance from the Tug Hill Commission and Lewis County Emergency Planning for additional fiscal support.

Opportunities for Future Integration

The village could continue to allocate municipal funds and apply for grant funding to support mitigation projects.

Education and Outreach

The village does not have any public outreach mechanisms or programs. The village assists the county to systematically contact isolated, vulnerable, or special-needs population during severe winter storm events. The village assists the county with providing education opportunities for residents to learn winter driving techniques and increasing public awareness of personal responsibilities during emergencies, specifically winter storm events. The village also assists the county in publishing and distributing literature (via the county web site and supplemented by hard copy distribution) on water conservation techniques and drought management strategies.

Opportunities for Future Integration

The village could develop a video to be shared on a Facebook page and offer information at the library.

Sheltering, Evacuation, and Temporary Housing

Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

Evacuation and Sheltering Needs

The Village of Lyons Falls has identified the following emergency shelters.

Table 9.15-11. Emergency Shelters Identified in the Village of Lyons Falls

Shelter Name	Address	Capacity	Accommodates Pets?	ADA Compliant?	Backup Power?	Types of Medical Services Provided	Other Services Provided
Fire Hall/DPW	3907 High Street	150	No	No	Yes	None	Food
Village offices	4059 Cherry Street	25	No	Yes	No	None	None

The village noted that it plans to build a new facility which would combine the Fire Hall, DPW, and village offices into one location. The current Fire Hall has a deteriorating roof and lacks insulation and a kitchen, limiting functionality as a shelter. The village offices lack space. A combined facility would allow for improved and expanded sheltering capability.

At the time of emergencies, the village works with the County OEM to establish evacuation routes, dependent on individual hazard events. These routes typically include the primary roads in and out of the Village; however,



which routes depends on the hazard event. The village also assists the county with establishing warming shelters for vulnerable populations, including residents and stranded motorists.

### **Temporary and Permanent Housing**

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The Village of Lyons Falls has identified the following locations for the placement of temporary housing for residents displaced by a disaster:

- Park Place. The site has a capacity of 6. The site would require water lines to be installed.
- High Street. The site is located by the Department of Public Works. The site has a capacity of 4. The site would require water lines to be installed.

The village has not identified potential sites for relocating houses of the floodplain, as the village does not have houses within the floodplain.

### **9.15.6 Mitigation Strategy and Prioritization**

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This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and prioritization.

#### **Past Mitigation Initiative Status**

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The following table indicates progress on the community’s mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under ‘Capability Assessment’ presented previously in this annex.



Table 9.15-12. Status of Previous Mitigation Actions

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. 3. If discontinue, explain why.
						Cost	Level of Protection	
	<u>Center Street Bridge</u> Replace the bridge/culvert on Center Street, presently travel restrictions over bridge regarding weight.	Flooding & erosion	Emergency Vehicles and large trucks were not able to use the road.	Village Board	Complete	323,700.00	complete	1. Discontinue 2. 3. Completed in 2012
	<u>Tree Trimming</u> Tree trimming and removal throughout the village.	Ice storms, snow storms, wind storms	Mitigate possible damage due to falling limbs.	DPW	In Progress			1. Include in 2020 HMP 2. 3.
	<u>Stormwater Drainage</u> Repair present and install new stormwater drainage system.	Flooding & erosion	Need replacement as needed to conserve water loss.	Village Board	In Progress			1. Include in 2020 HMP 2. 3.
	<u>Plan Review for Mitigation</u> Ensure that local comprehensive plans incorporate disaster mitigation techniques	All Hazards	Update newly elected officials on	Village Mayor /	Ongoing capability			1. Discontinue 2.





Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Damages Avoided; Evidence of Success		
	through a courtesy review of all draft plans by the County Economic Development and Planning Department.		current processes.	Community Planning Group (CPG) Member		Damages Avoided; Evidence of Success		3. This is an ongoing capability for the village and has been incorporated into their day-to-day duties.
	<u>GIS Enhancement</u> Investigate expansion of hazard-related GIS capabilities via acquisition of HAZUS-MH to collect and develop more sophisticated hazard mapping and loss estimation. Use information in future plan updates. Ensure information will be available to the public and to local communities and agencies.	Earthquakes, Wind, and Flood	Keep using and see cost benefit of expansion.	Village Mayor /CPG Member	Ongoing capability	Cost		1. Discontinue
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3. This is an ongoing capability for the village and has been incorporated into their day-to-day duties.
	<u>Outreach Program</u> County coordination with local governments and other agencies to systematically contact isolated, vulnerable or special-needs population during severe winter storm events.	Winter Storms and Extreme temperatures	No current plan to contact disadvantaged.	Village Mayor / CPG Member	Ongoing capability	Cost		1. Discontinue
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3. This is an ongoing capability for the village and has been incorporated into their day-to-day duties.
	<u>Auxiliary Power Supply</u> Conduct a countywide survey on status of auxiliary power supplies at all critical facilities.	Winter Storms, Wind, Tornado	Availability of back-up power countywide.	Village Mayor / CPG Member	No Progress	Cost		1. Discontinue
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3. Outside of village responsibility and capability





Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinued, explain why.
						Cost	Level of Protection	
	<u>Wind Hazards Training</u> Provide trainings to municipalities regarding the development and implementation of programs to mitigate wind damage to private and public properties.	Wind, Tornado	New home owners and elderly residents need yearly updates and reminders.	Village Mayor / CPG Member	Ongoing capability			1. Discontinue. 2. 3. This is an ongoing capability for the village and has been incorporated into their day-to-day duties.
	<u>Winter Driving and Vehicle Preparation Education</u> Provide education opportunities for residents to learn winter driving techniques.	Winter Storms and Wind	New home owners and elderly residents need yearly updates and reminders.	Village Mayor / CPG Member	Ongoing capability			1. Discontinue 2. 3. This is an ongoing capability for the village and has been incorporated into their day-to-day duties.
	<u>Winter Storm Public Awareness and Preparation</u> Increase public awareness of personal responsibilities during emergencies, specifically winter storm events.	Winter Storms and Snow	New home owners and elderly residents need yearly updates and reminders.	Village Mayor / CPG Member	Ongoing capability			1. Discontinue 2. 3. This is an ongoing capability for the village and has been incorporated into their day-to-day duties.
	<u>Emergency Warming Shelters</u> Establish warming shelters for vulnerable populations, including residents and stranded motorists.	Extreme Temperatures and Winter Storms	New home owners and elderly residents need yearly updates and reminders.	Village Mayor / CPG Member	Ongoing capability			1. Discontinue 2. 3. This is an ongoing capability for the village and has been incorporated into their day-to-day duties.





Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection	
	<u>Dam Safety</u> Coordinate with NYS DEC and owners of all high and moderate hazard dams to work towards full compliance with applicable dam safety programs and development/updating of Emergency Action Plans including inundation mapping.	Dam Failure	Work towards full compliance with applicable dam safety programs.	Village Mayor / CPG Member	No Progress	Cost		1. Discontinue 2. 3. No dams under village ownership.
	<u>Drought Preparedness</u> Publish and distribute literature (via the County website, supplemented by hard copy distribution) on water conservation techniques and drought management strategies.	Drought	New home owners and elderly residents need yearly updates and reminders.	Village Mayor / CPG Member	Ongoing capability	Cost		1. Discontinue 2. 3. This is an ongoing capability for the village and has been incorporated into their day-to-day duties.
	<u>Landslide Study</u> Conduct surveys to determine local vulnerabilities to landslides threatening property and roads, coordinate with municipalities to limit development in these areas and develop remedial measures for existing vulnerabilities.	Landslides	Unknown locations for areas vulnerable to landslides.	Village Mayor / CPG Member	Complete	Cost	Staff Time	1. Discontinue 2. 3. Complete: No apparent threat.
	<u>Wildfire Mapping</u> Create and distribute mapping and database of wildland access points for firefighters, develop enhanced mapping of urban/wildland interface.	Wildfire	Unknown locations for areas vulnerable to wildfires..	Village Mayor / CPG Member	Complete	Cost	Staff Time	1. Discontinue 2. 3. Complete: No apparent threat.







Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						of Success	areas in the Village	
						Cost		1. Discontinue
	<u>Critical Facilities Survey</u> Undertake a year built and level of protection survey for all critical/emergency facilities and shelters to highlight structures built before codes and standards were put in place to provide protection from natural hazards, and pursue potential mitigation opportunities to protect these sites as funding becomes available.	Wind/Tornado, Winter Storms, Earthquakes, and Flooding (including Ice Jams)	Need understanding of facilities.	Village Mayor / CPG Member	Ongoing capability	Level of Protection		2.
						Damages Avoided; Evidence of Success		3. This is an ongoing capability for the village and has been incorporated into their day-to-day duties.



### **Completed Mitigation Initiatives not Identified in the Previous Mitigation Strategy**

The Village of Lyons Falls has performed ongoing maintenance projects to reduce the impact of flooding but has not identified specific mitigation projects/activities that were completed but not identified in the previous mitigation strategy in the 2010 Plan.

### **Proposed Hazard Mitigation Initiatives for the Plan Update**

Table 9.15-13 summarizes the comprehensive-range of specific mitigation initiatives the Village of Lyons Falls would like to pursue in the future to reduce the effects of hazards. Some of these initiatives might be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and can be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6 (Mitigation Strategy), 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.15-14 provides a summary of the prioritization of all proposed mitigation initiatives for this plan update.



Table 9.15-13. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility	EHP Issues	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Estimated Timeline	Potential Funding Sources	Priority	Mitigation Category	CRS Category
V. Lyons Falls-1	Tree Maintenance Program	<p><b>Problem:</b> The Village does not have a tree trimming program in place. It is unknown the safety of trees throughout the Village. During wind events or heavy snow, falling tree branches can damage utilities and private property.</p> <p><b>Solution:</b> The Village will develop a tree trimming maintenance program. The program will include conducting tree inventories to determine which ones pose a threat in the event of a storm. Once identified, the Village will trim or remove trees that pose a threat.</p>	Severe Storm, Severe Winter Storm	1	No	None	Village DPW	\$5,000	Reduction in power loss, property damage.	3 months	HMGP, PDM, municipal budget	High	NSP	NR
V. Lyons Falls-2	Repair present and install new stormwater drainage system.	<p><b>Problem:</b> A degraded and in some cases absent stormwater drainage system contributes to flooding.</p> <p><b>Solution:</b> The village will repair present and install a new storm water drainage system.</p>	Flood, Severe Storm	2	No	None	Village Board	\$2,500	Reduction in flooding.	6 months	HMGP, PDM, CHIPS, municipal budget	High	SIP	SP
V. Lyons Falls-3	Protect the Northbrook Lyons Falls LLC (4010 Center Street) Electric Power Facility to the 500-year flood level.	<p><b>Problem:</b> The Northbrook Lyons Falls LLC (4010 Center Street) Electric Power Facility is in the 100-year floodplain and needs to be protected to the 500-year flood level.</p> <p><b>Solution:</b> The village will contact the facilities manager at the Northbrook Lyons Falls LLC Electric Power Facility to discuss options to protect the facility to the 500-year flood level.</p>	Flood	2, 3	Yes	None	FPA	<\$100	Facility protected to the 500-year flood level.	Within 6 months	Municipal budget	Medium	EAP	PI
V. Lyons Falls-4	Renovations at Fire Hall/DPW Building.	<p><b>Problem:</b> The current DPW/Fire Hall is the only available evacuation center but has no operating kitchen facility and minimal space for more than a few families. It also has a failing roof and poor insulation, which is detrimental to our fire/rescue vehicles and our village DPW plows and trucks.</p>	All Hazards	2	Yes	None	Village Board	\$2.5 million	Fire Hall/DPW buildings updated and protected. Emergency	Within 5 years	CDBG, Municipal budget	High	SIP	PP, ES





Table 9.15-13. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility	EHP Issues	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Estimated Timeline	Potential Funding Sources	Priority	Mitigation Category	CRS Category
		<b>Solution:</b> The village will renovate the building to consolidate our village and DPW offices, while also including a large community room to be used as shelter. A larger Fire Hall would be newly constructed that would incorporate suitable garages and a handicapped accessible community space.							vehicles protected. Sheltering capabilities improved.					

Notes:

Not all acronyms and abbreviations defined below are included in the table.

\*Does this mitigation initiative reduce the effects of hazards on new and/or existing buildings and/or infrastructure? Not applicable (N/A) is inserted if this does not apply.

Acronyms and Abbreviations:

- CAV Community Assistance Visit
- CRS Community Rating System
- DPW Department of Public Works
- FEMA Federal Emergency Management Agency
- FPA Floodplain Administrator
- HMA Hazard Mitigation Assistance
- N/A Not applicable
- NFIP National Flood Insurance Program
- OEM Office of Emergency Management

Potential FEMA HMA Funding Sources:

- FMA Flood Mitigation Assistance Grant Program
- HMGP Hazard Mitigation Grant Program
- PDM Pre-Disaster Mitigation Grant Program
- RFC Repetitive Flood Claims Grant Program (discontinued in 2015)
- SRL Severe Repetitive Loss Grant Program (discontinued in 2015)

Timeline:

- Short 1 to 5 years
- Long Term 5 years or greater
- OG On-going program
- DOF Depending on funding

Costs:

Where actual project costs have been reasonably estimated:

- Low < \$10,000
- Medium \$10,000 to \$100,000
- High > \$100,000

Where actual project costs cannot reasonably be established at this time:

- Low Possible to fund under existing budget. Project is part of, or can be part of an existing on-going program.
- Medium Could budget for under existing work plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
- High Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.

Benefits:

Where possible, an estimate of project benefits (per FEMA's benefit calculation methodology)

- has been evaluated against the project costs, and is presented as:
- Low= < \$10,000
- Medium \$10,000 to \$100,000
- High > \$100,000

Where numerical project benefits cannot reasonably be established at this time:

- Low Long-term benefits of the project are difficult to quantify in the short term.
- Medium Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.
- High Project will have an immediate impact on the reduction of risk exposure to life and property.






Mitigation Category:

- *Local Plans and Regulations (LPR)* – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- *Structure and Infrastructure Project (SIP)* - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- *Natural Systems Protection (NSP)* – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- *Education and Awareness Programs (EAP)* – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities

CRS Category:

- *Preventative Measures (PR)* - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- *Property Protection (PP)* - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- *Public Information (PI)* - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- *Natural Resource Protection (NR)* - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- *Structural Flood Control Projects (SP)* - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.
- *Emergency Services (ES)* - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities

Critical Facility:

- Yes  - Critical Facility located in 1% floodplain



**Table 9.15-14. Summary of Prioritization of Actions**

Mitigation Action/Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community	Total	High / Medium / Low
V. Lyons Falls-1	Tree Maintenance Program	0	1	1	1	1	1	0	1	1	1	1	1	1	1	12	High
V. Lyons Falls-2	Repair present and install new stormwater drainage system.	0	1	1	1	1	1	0	1	1	1	1	1	1	1	12	High
V. Lyons Falls-3	Protect the Northbrook Lyons Falls LLC (4010 Center Street) Electric Power Facility to the 500-year flood level.	0	1	0	1	1	0	1	1	1	0	0	0	1	1	8	Medium
V. Lyons Falls-4	Renovations at Fire Hall/DPW Building.	1	1	1	1	1	1	0	1	1	1	1	0	1	1	12	High

Note: Refer to Section 6 (Mitigation Strategy), which conveys guidance on prioritizing mitigation actions.



### **9.15.7 Future Needs To Better Understand Risk/Vulnerability**

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None at this time.

### **9.15.8 Hazard Area Extent and Location**

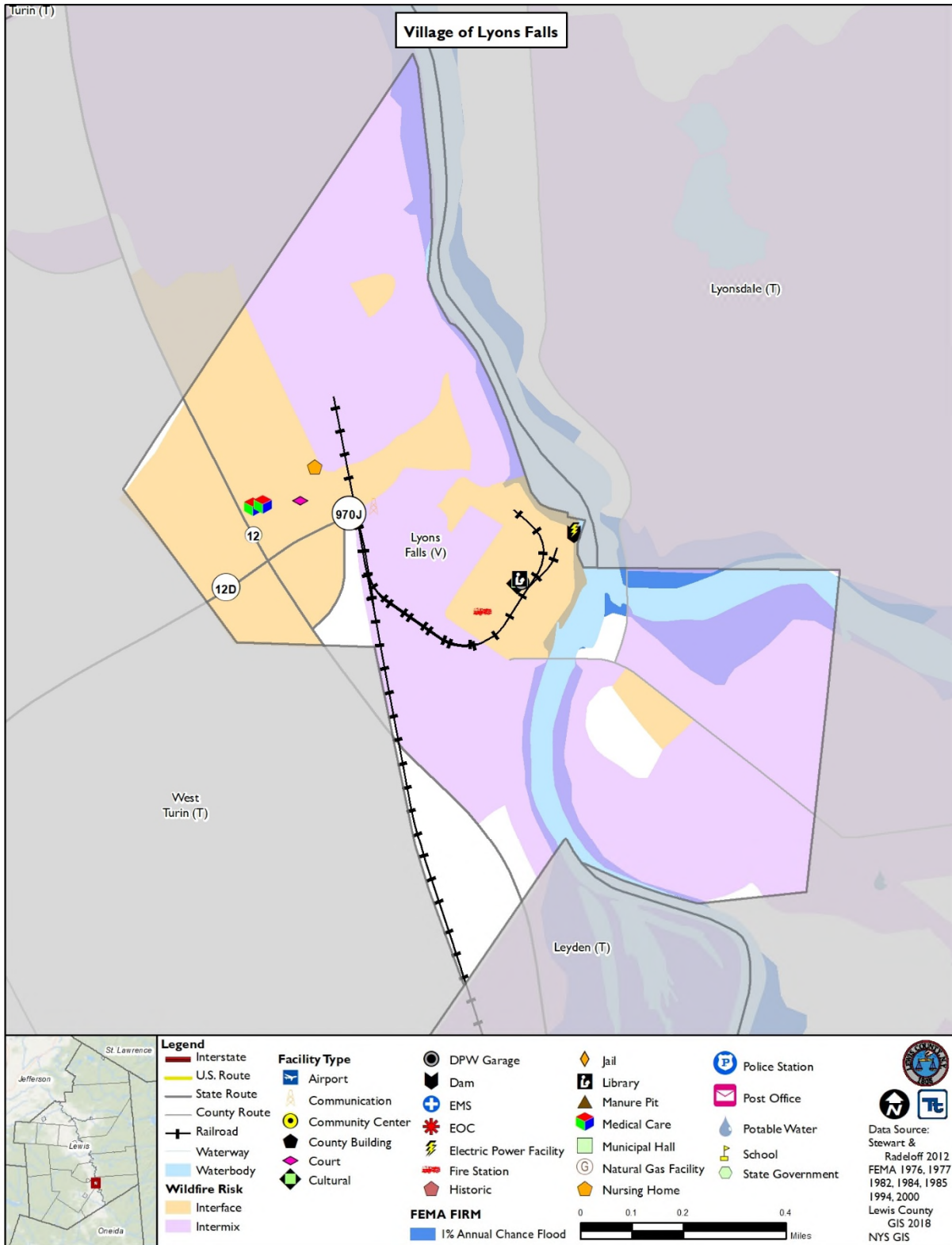
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Hazard area extent and location maps have been generated for the Village of Lyons Falls that illustrate the probable areas impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps have been generated for those hazards that can be clearly identified using mapping techniques and technologies, as well as for which the Village of Lyons Falls has significant exposure. These maps are illustrated in the hazard profiles in Section 5.4 (Hazard Profiles).





Figure 9.15-1. Village of Lyons Falls Hazard Area Extent and Location Map





Village of Lyons Falls Action Worksheet			
<b>Project Name:</b>	Tree Maintenance Program		
<b>Project Number:</b>	V. Lyons Falls-1		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Severe Storm, Severe Winter Storm		
<b>Description of the Problem:</b>	The Village does not have a tree trimming program in place. It is unknown the safety of trees throughout the Village. During wind events or heavy snow, falling tree branches can damage utilities and private property.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The Village will develop a tree trimming maintenance program. The program will include conducting tree inventories to determine which ones pose a threat in the event of a storm. Once identified, the Village will trim or remove trees that pose a threat.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Addresses trees that pose a threat to utility lines and roadways	<b>Estimated Benefits (losses avoided):</b>	Reduction in damage to property. Reduction in power loss.
<b>Useful Life:</b>	5 years	<b>Goals Met:</b>	1
<b>Estimated Cost:</b>	\$5,000	<b>Mitigation Action Type:</b>	Natural Systems Protection
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 2 years
<b>Estimated Time Required for Project Implementation:</b>	3 months	<b>Potential Funding Sources:</b>	HMGP, PDM, municipal budget
<b>Responsible Organization:</b>	DPW	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation, Capital Improvement
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Remove all trees	\$10,000+	Not feasible. Would lose community identity. Environmental concern. Costly.
	Establish program for residents to report problem trees.	\$1,000	DPW may not have capability to address all problem trees. Public may not be able to accurately identify problem trees.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			





Action Worksheet		
<b>Project Name:</b>	Tree Maintenance Program	
<b>Project Number:</b>	V. Lyons Falls-1	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Protects property and utilities from damage from falling trees and branches.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The village has the legal authority to complete the project.
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Severe Storm, Severe Winter Storm
Timeline	1	3 months
Agency Champion	1	DPW
Other Community Objectives	1	
<b>Total</b>	12	
<b>Priority (High/Med/Low)</b>	High	



Village of Lyons Falls Action Worksheet			
<b>Project Name:</b>	Protect the Northbrook Lyons Falls LLC (4010 Center Street) Electric Power Facility to the 500-year flood level.		
<b>Project Number:</b>	V. Lyons Falls-3		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Flood		
<b>Description of the Problem:</b>	The Northbrook Lyons Falls LLC (4010 Center Street) Electric Power Facility is in the 100-year floodplain and needs to be protected to the 500-year flood level. The village does not have legal jurisdiction over the facility.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The village will contact the facilities manager at the Northbrook Lyons Falls LLC Electric Power Facility to discuss options to protect the facility to the 500-year flood level. The village will work with the facilities manager to identify funding opportunities to support the selected mitigation action.		
<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	500-year	<b>Estimated Benefits (losses avoided):</b>	Facility manager is aware of actions needed to protect facility to 500-year flood level.
<b>Useful Life:</b>	TBD by selected action	<b>Goals Met:</b>	2, 3
<b>Estimated Cost:</b>	<\$100 for outreach. Mitigation action cost TBD by selected action	<b>Mitigation Action Type:</b>	Education and Awareness Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	Medium	<b>Desired Timeframe for Implementation:</b>	Within 6 months for outreach
<b>Estimated Time Required for Project Implementation:</b>	6 months for outreach	<b>Potential Funding Sources:</b>	Municipal budget
<b>Responsible Organization:</b>	FPA	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Request non-profit groups to conduct outreach.	\$0	Non-profits might be unable or unwilling to assist.
	Assume property owner will protect facility without assistance.	\$0	Property owner might not be aware of flood exposure and possible mitigation actions.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Protect the Northbrook Lyons Falls LLC (4010 Center Street) Electric Power Facility to the 500-year flood level.	
<b>Project Number:</b>	V. Lyons Falls-3	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project aims to protect facility from flooding damages.
Cost-Effectiveness	0	
Technical	1	
Political	1	
Legal	0	The village does not have legal jurisdiction over the facility.
Fiscal	1	Municipal budget
Environmental	1	
Social	1	
Administrative	0	
Multi-Hazard	0	Flood
Timeline	0	
Agency Champion	1	FPA
Other Community Objectives	1	Protect critical facilities.
<b>Total</b>	8	
<b>Priority (High/Med/Low)</b>	Medium	



Village of Lyons Falls Action Worksheet			
<b>Project Name:</b>	Renovations at Fire Hall/ DPW Building		
<b>Project Number:</b>	V. Lyons Falls-4		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	All Hazards		
<b>Description of the Problem:</b>	The current DPW/Fire Hall is the only available evacuation center but has no operating kitchen facility and minimal space for more than a few families. It also has a failing roof and poor insulation, which is detrimental to fire/rescue vehicles and village DPW plows and trucks. The blocks of the building are crumbling and require patch and repair.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The village will renovate the building to consolidate village administration and DPW offices, while also including a large community room to be used as shelter. A larger Fire Hall would be newly constructed that would incorporate suitable garages and a handicapped accessible community space.		
<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Provide appropriate offices and shelter to use during emergencies	<b>Estimated Benefits (losses avoided):</b>	Fire Hall/DPW buildings updated and protected. Emergency vehicles protected. Sheltering capabilities improved.
<b>Useful Life:</b>	50 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$2.5 million	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	5 years	<b>Potential Funding Sources:</b>	CDBG, Municipal budget
<b>Responsible Organization:</b>	Village Board	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Patch and repair blocks.	\$2,500	Roof issues continue, sheltering capabilities continue to be limited.
	Build a community center for sheltering in secondary location.	N/A	Costly, would need to be staffed by emergency staff. Not ideal as not connected to village offices, DPW, and fire personnel.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Renovations at Fire Hall/ DPW Building	
<b>Project Number:</b>	V. Lyons Falls-4	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project will increase sheltering capabilities.
Property Protection	1	Project will protect Fire Hall and DPW from damages. Project will protect emergency equipment from damages.
Cost-Effectiveness	1	
Technical	1	A feasibility study has been completed.
Political	1	There is public support for the project.
Legal	1	The village has the legal authority to complete the project.
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	All Hazards
Timeline	0	5 years
Agency Champion	1	Village Board
Other Community Objectives	1	Protection of critical facilities.
<b>Total</b>	12	
<b>Priority (High/Med/Low)</b>	High	





## 9.16 TOWN OF LYONSDALE

This section presents the jurisdictional annex for the Town of Lyonsdale. It includes resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions that can be implemented prior to a disaster to reduce or eliminate damage to property and people. This annex includes a general overview of the municipality and who in the town participated in the planning process, an assessment of the Town of Lyonsdale’s risk and vulnerability, the different capabilities used in the town, and an action plan that will be implemented to achieve a more resilient community.

### 9.16.1 Hazard Mitigation Planning Team

The following individuals have been identified as the Town of Lyonsdale’s hazard mitigation plan primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Phil Boardman Title: Supervisor Phone Number: 315-709-7309 Address: Moose River Road, Port Leyden Email: lyonsdaletownclerk@gmail.com	Name: Brian Ouellette Title: Councilman Phone Number: 315-942-2417 Address: Moose River Road, Port Leyden Email: lyonsdaletownclerk@gmail.com
Floodplain Administrator	
Name: Joseph Pfeiffer, Jr. Title: CEO, Flood Administrator Phone Number: 315-681-8689 Address: 6606 School Road, Boonville, NY 13309 Email: inspectorjoep@aim.com	

### 9.16.2 Municipal Profile

The Town of Lyonsdale lies in the southeast portion of Lewis County in Northern New York State. The Town of Lyonsdale is bordered by the Town of Leyden to the west, the Town of Webb (Herkimer County) to the east, the Town of Boonville (Oneida County) to the south, and the Town of Greig to the north. Section 9.13 (Town of Leyden) and Section 9.9 (Town of Greig) provide those individual annexes. The estimated 2017 population was 1,139, a 13.7 percent increase from the 2010 Census (982).

Data from the 2017 U.S. Census American Community Survey indicate that 4.2 percent of the town population is five years of age or younger, and 19.1 percent is 65 years of age or older. Communities must deploy a support system that enables all populations to safely reach shelters or to quickly evacuate a hazard area.

#### History and Cultural Resources

Lyonsdale was settled in 1819 and formed from the Town of Greig in 1873.

#### Growth/Development Trends

The Town of Lyonsdale did not note any recent residential/commercial development since 2010 or any major residential or commercial development or major infrastructure development planned for the next five years in the municipality.



**Table 9.16-1. Growth and Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2010 to present</b>					
None					
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
None					

*\* Only location-specific hazard zones or vulnerabilities identified.*

### 9.16.3 Hazard Event History Specific to the Town of Lyonsdale

Lewis County has a history of natural hazard events as detailed in Volume I, Section 5.0 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that affected the county and its municipalities. The Town of Lyonsdale’s history of federally-declared (as presented by FEMA) and significant hazard events (as presented in NOAA-NCEI) is consistent with that of Lewis County. Table 9.16-2 provides details regarding municipal-specific loss and damages the town experienced during hazard events. Information provided in the table below is based on reference material or local sources.

**Table 9.16-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April 26- May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	Although the county suffered damages, the town did not report damages from this event.
August 26- September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	Although the county suffered damages, the town did not report damages from this event.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	Although the county suffered damages, the town did not report damages from this event.
June 26- July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	Although the county suffered damages, the town did not report damages from this event.
May 13-22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	Although the county suffered damages, the town did not report damages from this event.
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to	Although the county suffered damages, the town did not report damages from this event.



Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
			a foot and half of snow within this band leading up to daybreak Friday.	
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	Although the county suffered damages, the town did not report damages from this event.

Notes:

EM Emergency Declaration (FEMA)

DR Major Disaster Declaration (FEMA)

### 9.16.4 Hazard Ranking and Jurisdiction-Specific Vulnerabilities

The hazard profiles in Section 5.0 (Risk Assessment) of this plan have detailed information regarding each plan participant’s vulnerability to the identified hazards. This section provides a summary of exposure and impacts from significant hazards of concern as identified by the Town of Lyonsdale.

#### Hazard Risk Ranking

This section includes the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy, as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating town or village may have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Town of Lyonsdale. The Town of Lyonsdale has reviewed the County hazard risk/vulnerability risk ranking table as well as its individual results to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the town indicated the following:

- The town agreed with the calculated hazard/vulnerability risk rankings.

**Table 9.16-3. Hazard Risk/Vulnerability Risk Ranking**

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	High
Extreme Temperature	High	High
Flood	Medium	Medium
Hazardous Material Incidents	Medium	Medium
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High



Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Wildfire	High	High

Notes: The hazard ranking calculation is based on probability of occurrence and impacts on population, property, and the economy, as described in Section 5.3 (Hazard Ranking).

### Critical Facilities Flood Risk

NYS DEC Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for state projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a SFHA unless constructed according to specific mitigation specifications, including being raised 2 feet above the BFE. This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the state places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 500-year flood event or worst damage scenario. For those that do not meet these criteria, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain and presents HAZUS-MH estimates of the damage and loss of use to critical facilities as a result of a 1-percent annual chance flood event.

**Table 9.16-4. Potential Flood Losses to Critical Facilities**

Name	Type	Exposure 1% Event	Potential Loss from 1% Flood Event		Addressed by Proposed Action
			Percent Structure Damage	Percent Content Damage	
Agers Falls Dam	Dam	X	-	-	T. Lyonsdale-6
Black River Hydro Assoc	Electric Power Facility	X	-	-	T. Lyonsdale-7
Black River Hydro Assoc	Electric Power Facility	X	-	-	T. Lyonsdale-8
Fortis US Energy Corp	Electric Power Facility	X	-	-	T. Lyonsdale-9
Gouldtown Mill # 5 Dam	Dam	X	-	-	T. Lyonsdale-10
John Teal Recreational Pond Dam	Dam	X	-	-	T. Lyonsdale-11
Kosterville Lower Dam	Dam	X	-	-	T. Lyonsdale-12
Kosterville Upper Dam	Dam	X	-	-	T. Lyonsdale-13
Lyn 1	Comm Facility	X	-	-	T. Lyonsdale-14
Lyonsdale Associates	Electric Power Facility	X	-	-	T. Lyonsdale-15
Lyonsdale Associates	Electric Power Facility	X	-	-	T. Lyonsdale-16
Northbrook Lyons Falls	Electric Power Facility	X	-	-	T. Lyonsdale-17
Northbrook Lyons Falls	Electric Power Facility	X	-	-	T. Lyonsdale-18
Port Leyden Lower Dam	Dam	X	-	-	T. Lyonsdale-19
Port Leyden Power Dam	Dam	X	-	-	T. Lyonsdale-20
Shuetown Dam	Dam	X	-	-	T. Lyonsdale-21
Village of Lowville	Potable Pump	X	40	-	T. Lyonsdale-22

Source: Lewis County Real Property 2018, FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000

### Identified Issues

The municipality has identified the following vulnerabilities within their community:

- The town has numerous critical facilities located in the 100-year floodplain.





- The fire department requires a portable generator.
- Culverts are undersized at numerous locations.

### 9.16.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms

### Planning and Regulatory Capability

The table below summarizes the regulatory tools that are available to the Town of Lyonsdale.

**Table 9.16-5. Planning and Regulatory Tools**

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Comprehensive Plan	Yes	County	Lewis County OEM	Lewis County OEM
Capital Improvements Plan	No	-	-	-
Floodplain Management / Basin Plan	Yes	Lyonsdale	Lewis County Codes Department	CEO Flood Administrator
Stormwater Management Plan	No	-	-	-
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	Yes	Lewis Co.	Lewis County Soil & Water Conservation District	Stream Corridor Management Plan
Watershed Management or Protection Plan	No	-	-	-
Economic Development Plan	No	-	-	-
Comprehensive Emergency Management Plan	Yes	Lewis County	Lewis County OEM	Lewis County OEM
Emergency Operation Plan	Yes	Lewis County	Lewis County OEM	Lewis County OEM
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	Yes	Town of Lyonsdale	DPW	Annual Request
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Regulatory Capability</b>				
Building Code	Yes	State & Local	CEO	NYS Building Code
Zoning Ordinance	Yes	Local	CEO	Lewis County
Subdivision Ordinance	No	-	-	-
NFIP Flood Damage Prevention Ordinance	Yes	Federal, State, and Local	FPA	Flood Damage Prevention Ordinance
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	Yes	State, Local	FPA	State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	Yes	Town of Lyonsdale	Town Board	Town of Lyonsdale Site Plan Review Law
Stormwater Management Ordinance	No	-	-	-
Municipal Separate Storm Sewer System (MS4)	No	-	-	-
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	NYS, Real Estate Agents	NYS mandate, Property Condition Disclosure Act, NY Code – Article 14 460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

**Administrative and Technical Capability**

The table below summarizes potential staff and personnel resources available to the Town of Lyonsdale.

**Table 9.16-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	Yes	Town Board
Mitigation Planning Committee	Yes	Town Clerk & Town Board
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	Yes	Lewis County Economic Development
Maintenance programs to reduce risk	No	-
Mutual aid agreements	Yes	Multiple



Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	Yes	Lewis County Codes Department
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Lewis County Codes Department
Planners or engineers with an understanding of natural hazards	Yes	Codes, County Planner, Soil & Water
NFIP Floodplain Administrator (FPA)	Yes	-
Surveyor(s)	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	Yes	Lewis County Real Property
Scientist familiar with natural hazards	No	-
Emergency Manager	Yes	Lewis County
Grant writer(s)	No	-
Staff with expertise or training in benefit/cost analysis	No	-
Professionals trained in conducting damage assessments	Yes	NYS DHSES/FEMA

### Fiscal Capability

The table below summarizes financial resources available to the Town of Lyonsdale.

**Table 9.16-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	No
Capital improvements project funding	No
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes
Impact fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	Yes
Other federal or state Funding Programs	Yes
Open Space Acquisition funding programs	Yes
Other	No

### Community Classifications

The table below summarizes classifications for community programs available to the Town of Lyonsdale.





Table 9.16-8. Community Classifications

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	Yes	Classification unavailable	-
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	9	-
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	No	-	-
Public-private partnership initiatives addressing disaster-related issues	No	-	-
Other	No	-	-

Note:

- Unavailable

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery, and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class 1 being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual.
- The Building Code Effectiveness Grading Schedule (<https://www.isomitigation.com/bcegs/>).
- The ISO Mitigation online ISO’s Public Protection (<https://www.isomitigation.com/ppc/>).
- New York State Climate Smart Communities (<http://www.dec.ny.gov/energy/56876.html>).
- The National Weather Service Storm Ready (<https://www.weather.gov/stormready/communities>).
- The National Firewise Communities (<http://firewise.org/>).

### Self-Assessment of Capability

The table below provides an approximate measure of the Town of Lyonsdale’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.



**Table 9.16-9. Self-Assessment Capability for the Municipality**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Planning and regulatory capability	X – low staffing		
Administrative and technical capability	X – low staffing		
Fiscal capability	X – low funding		
Community political capability	X -low political support		
Community resiliency capability		X	
Capability to integrate mitigation into municipal processes and activities		X	

**National Flood Insurance Program**

This section provides specific information on the management and regulation of the regulatory floodplain.

**NFIP Floodplain Administrator (FPA)**

Joseph Pfeiffer, Jr., CEO

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

The Town of Lyonsdale does not maintain lists/inventories of properties that have been flood damaged. However, no structures have been damaged due to flood events. The town has not made Substantial Damage estimates.

The following table summarizes the NFIP statistics for the Town of Lyonsdale.

**Table 9.16-10. NFIP Summary**

Municipality	# Policies	# Claims (Losses)	Total Loss Payments	# RL Properties	# SRL Properties	# Policies in the 1% Flood Boundary
Lyonsdale (T)	3	0	\$33,425	0	0	2

Source: FEMA Region 2 2018.

(1) Policies, claims, RL, and SRL statistics provided by FEMA Region 2, and are current as of June 30, 2018. Total number of RL properties does not include SRL properties. Number of claims represents claims closed by July 31, 2018.

(2) Total building and content losses from the claims file provided by FEMA Region 2.

(3) Number of policies inside and outside of flood zones is based on latitude and longitude coordinates provided by FEMA Region 2 in the policy file. FEMA noted that for a property with more than one entry, more than one policy may have been in force or more than one Geographic Information System (GIS) specification was possible. Number of policies and claims, and claims total, exclude properties outside Lewis County boundary, based on provided latitude and longitude coordinates.

RL Repetitive Loss  
 SRL Severe Repetitive Loss

**Resources**

The FPA is the sole person responsible for floodplain administration. The town provides various NFIP administration services and functions including information/education regarding the NFIP, permit review, inspections, damage assessments, record-keeping, and outreach. The FPA provides informational handouts to the public to describe flood hazards/risk, flood reduction through NFIP insurance, and mitigation. The FPA attends annual trainings on floodplain management. The FPA stated they would like additional training to support running an effective floodplain management program and that funding is a barrier.





## Compliance History

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The Town of Lyonsdale is in good standing in the NFIP. According to records from NYS, the last compliance audit (e.g. Community Assistance Visit [CAV]) took place on September 14, 1995.

## Regulatory

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The Flood Damage Prevention Ordinance for the Town of Lyonsdale meets minimum federal and state NFIP regulatory requirements. The town is not a member of the Community Rating System program but is interested in starting the process and would attend a seminar, if offered locally.

## Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

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For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community's progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures, which are also indicated below.

## Planning

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### Existing Integration

The Town of Lyonsdale has a Floodplain Management/Basin Plan and a Transportation Plan. The town does not have a Capital Improvements Plan, Stormwater Management Plan, Open Space Plan, Watershed Management/Protection Plan, Economic Development Plan, Post-Disaster Recovery Plan, or Strategic Recovery Plan. The town participates in the Lewis County Comprehensive Plan, Comprehensive Emergency Management Plan, and Emergency Operations Plan. The Lewis County Soil and Water Conservation District has a Stream Corridor Management Plan, which includes the Town of Lyonsdale.

### Opportunities for Future Integration

The town could develop their own plans, which are tailored specifically to the municipality. The town could incorporate disaster mitigation techniques through a courtesy review of all draft plans by the County Economic Development and Planning Departments.

## Regulatory and Enforcement (Ordinances)

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### Existing Integration

Zoning and subdivision ordinances within the town do not consider natural hazard risk nor do they require developers to take additional action to mitigate natural hazard risk.

### Opportunities for Future Integration

The town could develop their own ordinances.

## Operational and Administration

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### Existing Integration

The town does not have a municipal planner or contract planning firm. Town staff do not receive training or continuing professional education to support natural hazard risk reduction. No staff have job descriptions that include identifying or implementing mitigation projects. The town relies on the County Planning Board and Zoning Board of Adjustments. The County Codes Department performs the Stormwater Management functions



in the town. NFIP Floodplain Management functions in the town are carried out by the Floodplain Administrator. The town does not have any boards or committees that include functions with respect to managing natural hazard risk or staff that participate in associations, organizations, groups or other committees that support natural hazard risk reduction and build hazard management capabilities.

### Opportunities for Future Integration

The town could hire additional staff to perform Stormwater Management and other tasks related to hazard management.

### Funding

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#### Existing Integration

The municipal budget for the Town of Lyonsdale includes line items for mitigation projects/activities.

#### Opportunities for Future Integration

The town could pursue grant funding to supplement the municipal budget to implement mitigation projects and activities.

### Education and Outreach

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#### Existing Integration

The Town of Lyonsdale does not have any public outreach mechanisms/programs in place to inform citizens about natural hazards. The town operates a newly created Facebook page to help the people of Lyonsdale better understand the work that the board and elected officials complete on the town's behalf.

#### Opportunities for Future Integration

The Town of Lyonsdale could develop an outreach program that would include brochures at the Town Hall and information that could be dispersed at community events. The town could use the Facebook page to distribute outreach information.

### Sheltering, Evacuation, and Temporary Housing

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Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

#### Evacuation and Sheltering Needs

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The Town of Lyonsdale has not designated emergency shelters, evacuation routes, or evacuation procedures.

However, at the time of an emergency, the Town works with the County to establish evacuation routes, depending on the hazard impacting the Town. These routes typically include the primary roads in and out of the Town. Evacuation routes and shelters would be determined at the time of an emergency, in accordance with the County CEMP.

#### Temporary and Permanent Housing

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The Town of Lyonsdale has not identified sites for the placement of temporary housing for residents displaced by a disaster or potential sites suitable for relocating houses of the floodplain and/or building new homes once



properties in the floodplain are acquired. During emergency events, the town would work with Lewis County to identify suitable temporary housing locations.

### 9.16.6 Mitigation Strategy and Prioritization

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This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and their prioritization.

#### Past Mitigation Initiative Status

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The following table indicates progress on the community’s mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under ‘Capability Assessment’ presented previously in this annex.



Table 9.16-11. Status of Previous Mitigation Actions

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection	
1.	Bridge replacement – North side Moose River on Lowdale Road (raise roads). Smaller Gouldtown Bridge South side Moose River on Shibley Road	Safety – Flooding, Ice Jams	Bridge is unsafe and out of service	Lewis County and Lyonsdale Highway Department	No Progress			Include in 2020 HMP Bridge replacement
2.	Wash outs – Hill on Shibley Road. J. Smith’s driveway (hill) on Pearl Street.	Washouts	Sections of roadways and driveway destroyed by floodwater	Town Highway Department	No Progress			Include in 2020 HMP Roads wash out
3.	Culvert replacement – all need larger culverts: Hoag River by Dave Post, Rumble Road by Ronald Farr, Moose River by Knoltons Pond, Sand Pitt, and Catte Pass	Flooding	Culverts are too small to accommodate flood water	Town Highway Department	No Progress			Include in 2020 HMP Culvert replacement
4.	Portable generators and pumps for Port Leyden and Lyons Fall fire department	Cellar flooding, forest and grass fires	Additional capability to suppress fires and pump flooded structures	Port Leydon FD/Lyons Falls FD	No Progress			Include in 2020 HMP Fire department upgrades
5.	Replace old Fire Hydrants and water lines	Fire protections	Improved capability to fight fires	Firemen, villages, and towns	No Progress			Include in 2020 HMP Fire hydrant and lines upgrades



### **Completed Mitigation Initiatives Not Identified in the Previous Mitigation Strategy**

The Town of Lyonsdale has identified the following mitigation projects/activities that have also been completed but were not identified in the previous mitigation strategy in the 2010 Plan:

- The Town of Lyonsdale installed new garage doors at the Town Barn.

### **Proposed Hazard Mitigation Initiatives for the Plan Update**

Table 9.16-12 summarizes the comprehensive-range of specific mitigation initiatives the Town of Lyonsdale would like to pursue in the future to reduce the effects of hazards. Some of these initiatives might be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and can be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6 (Mitigation Actions), 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.16-13 provides a summary of the prioritization of all proposed mitigation initiatives for the plan update.





Table 9.16-12. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
T. Lyonsdale 1	Bridge Replacement	<b>Problem:</b> Bridge is unsafe and out of service. <b>Solution:</b> Raise roadway elevations on the north side Moose River on Lowdale Road (raise roads). Rebuild the smaller Gouldtown Bridge South side Moose River on Shibley Road to a higher elevation and safety standards.		Flood	2	No	None	Within 5 years	Lewis County and Lyonsdale Highway Department	\$750,000	Bridge able to be used and protected from flood damages	NYSDOT	High	SIP	PP
T. Lyonsdale 2	Roads Wash Out	<b>Problem:</b> Roads around town are prone to wash outs, including Wild Cat Rd, Moose River Rd at Remond Hell & Round Lake Hill, Davis Bridge Rd near Murphy Rd & Davis Bridge, and Shibley Rd between bridges. <b>Solution:</b> Conduct feasibility study on roadways to determine best mitigation action (e.g., strengthen shoulders, raise roadway, create culverts) and implement selected actions at each roadway.		Flood, severe storm	2	No	None	Within 5 years	Town Highway Department	TBD by selected mitigation actions	Roads protected from washout	HMGP, PDM, operating budget	High	SIP	PP
T. Lyonsdale 3	Culvert Replacement	<b>Problem:</b> Culverts are undersized at numerous locations. <b>Solution:</b> Culvert replacement with upsized culverts, including along the Hoag River by Dave Post, Rumble Road by Ronald Farr, Moose River by Knoltons		Flood, Severe Storm	2	No	None	Within 5 years	Town Highway Department	\$5,000-\$50,000 per culvert depending on selected sizes	Culverts properly sized and functional	HMGP, PDM, operating budget	High	SIP	SP





Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
		Pond, Sand Pitt, and Catte Pass.													
T. Lyonsdale 4	Portable Generators	<b>Problem:</b> The fire department requires a portable generator	<b>Solution:</b> Install portable generators for Port Leyden and Lyons Falls fire departments.	All hazards	2	No	None	Within 2 years	Port Leyden FD/ Lyons Falls FD	\$5,000	Critical facilities have access to backup power	FEMA Assistance to Firefighter Grants, Municipal Budget	High	SIP	PP, ES
T. Lyonsdale 5	Replace Fire Hydrants	<b>Problem:</b> Fire hydrants and water lines are outdated. They need to be maintained in order to fight fires in the town.	<b>Solution:</b> Replace old fire hydrants and water lines after surveying of system to determine which areas are in need of replacement.	Hazmat, wildfire	2	No	None	Within 5 years	Firemen, villages, and towns	\$3,500 per hydrant. Water line cost dependent on extent of replacements	Fire hydrants able to be maintained	FEMA Assistance to Firefighter Grants, Municipal Budget	High	SIP	PP, ES
T. Lyonsdale-6	Protect Agers Falls Dam to the 500-year flood level	<b>Problem:</b> The Agers Falls Dam is in the 100-year floodplain.	<b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.	Flood	2, 3	Yes	None	Within 6 months	FPA	<\$100	Facility manager aware of options to protect facility to 500-year flood level	Operating budget	High	EAP, SIP	PI, PP
T. Lyonsdale-7	Protect Black River Hydro Association River Road to the 500-year flood level	<b>Problem:</b> The Black River Hydro Association River Road facility is in the 100-year floodplain	<b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.	Flood	2, 3	Yes	None	Within 6 months	FPA	<\$100	Facility manager aware of options to protect facility to 500-year flood level	Operating budget	High	EAP, SIP	PI, PP





Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
T. Lyonsdale-8	Protect Black River Hydro Association Port Leyden Site to the 500-year flood level	<b>Problem:</b> The Black River Hydro Association Port Leyden Site is in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.		Flood	2, 3	Yes <span style="color: blue;">♦</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of options to protect facility to 500-year flood level	Operating budget	High	EAP, SIP	PI, PP
T. Lyonsdale-9	Protect Fortis US Energy Corp to the 500-year flood level	<b>Problem:</b> The US Energy Corp facility is in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.		Flood	2, 3	Yes <span style="color: blue;">♦</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of options to protect facility to 500-year flood level	Operating budget	High	EAP, SIP	PI, PP
T. Lyonsdale-10	Protect Gouldtown Mill # 5 Dam to the 500-year flood level	<b>Problem:</b> The Gouldtown Mill #5 Dam is in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.		Flood	2, 3	Yes <span style="color: blue;">♦</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of options to protect facility to 500-year flood level	Operating budget	High	EAP, SIP	PI, PP
T. Lyonsdale-11	Protect John Teal Recreational Pond Dam to the 500-year flood level	<b>Problem:</b> The John Teal Recreational Pond Dam is in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.		Flood	2, 3	Yes <span style="color: blue;">♦</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of options to protect facility to 500-year flood level	Operating budget	High	EAP, SIP	PI, PP
	Protect Kosterville Lower Dam to	<b>Problem:</b> The Kosterville Lower Dam is in the 100-year floodplain.		Flood	2, 3	Yes <span style="color: blue;">♦</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of	Operating budget	High	EAP, SIP	PI, PP





Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
T. Lyonsdale-12	the 500-year flood level	<b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.									options to protect facility to 500-year flood level				
T. Lyonsdale-13	Protect Kosterville Upper Dam to the 500-year flood level	<b>Problem:</b> The Kosterville Upper Dam is in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.		Flood	2, 3	Yes <span style="color: blue;">💧</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of options to protect facility to 500-year flood level	Operating budget	High	EAP, SIP	PI, PP
T. Lyonsdale-14	Protect Lyn 1 communication facility to the 500-year flood level	<b>Problem:</b> The Lyn 1 communication facility is in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.		Flood	2, 3	Yes <span style="color: blue;">💧</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of options to protect facility to 500-year flood level	Operating budget	High	EAP, SIP	PI, PP
T. Lyonsdale-15	Protect Lyonsdale Associates to the 500-year flood level	<b>Problem:</b> The Lyonsdale Associates electric power facility is in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.		Flood	2, 3	Yes <span style="color: blue;">💧</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of options to protect facility to 500-year flood level	Operating budget	High	EAP, SIP	PI, PP
T. Lyonsdale-16	Protect Lyonsdale Associates to the 500-year flood level	<b>Problem:</b> The Lyonsdale Associates electric power facility is in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.		Flood	2, 3	Yes <span style="color: blue;">💧</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of options to protect facility to 500-year flood level	Operating budget	High	EAP, SIP	PI, PP





Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
T. Lyonsdale-17	Protect Northbrook Lyons Falls to the 500-year flood level	<b>Problem:</b> The Northbrook Lyons Falls electric power facility is in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.		Flood	2, 3	Yes <span style="color: blue;">💧</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of options to protect facility to 500-year flood level	Operating budget	High	EAP, SIP	PI, PP
T. Lyonsdale-18	Protect Northbrook Lyons Falls electric power facility to the 500-year flood level	<b>Problem:</b> The Northbrook Lyons Falls electric power facility is in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.		Flood	2, 3	Yes <span style="color: blue;">💧</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of options to protect facility to 500-year flood level	Operating budget	High	EAP, SIP	PI, PP
T. Lyonsdale-19	Protect Port Leyden Lower Dam to the 500-year flood level	<b>Problem:</b> The Port Leyden Lower Dam is in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.		Flood	2, 3	Yes <span style="color: blue;">💧</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of options to protect facility to 500-year flood level	Operating budget	High	EAP, SIP	PI, PP
T. Lyonsdale-20	Protect Port Leyden Power Dam to the 500-year flood level	<b>Problem:</b> The Port Leyden Power Dam is in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.		Flood	2, 3	Yes <span style="color: blue;">💧</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of options to protect facility to 500-year flood level	Operating budget	High	EAP, SIP	PI, PP
	Protect Shuetown Dam	<b>Problem:</b> The Shuetown Dam is in the 100-year floodplain.		Flood	2, 3	Yes <span style="color: blue;">💧</span>	None	Within 6 months	FPA	<\$100	Facility manager	Operating budget	High	EAP, SIP	PI, PP





Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
T. Lyonsdale-21	to the 500-year flood level	<b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.									aware of options to protect facility to 500-year flood level				
T. Lyonsdale-22	Protect Village of Lowville River Road potable pump to the 500-year flood level	<b>Problem:</b> The Village of Lowville River Road potable pump is in the 100-year floodplain <b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.		Flood	2, 3	Yes <span style="color: blue;">♦</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of options to protect facility to 500-year flood level	Operating budget	High	EAP, SIP	PI, PP

Notes:  
Not all acronyms and abbreviations defined below are included in the table.

Acronyms and Abbreviations:

- CAV Community Assistance Visit
- CRS Community Rating System
- DPW Department of Public Works
- EHP Environmental Protection and Historic Preservation
- FEMA Federal Emergency Management Agency
- FPA Floodplain Administrator
- HMA Hazard Mitigation Assistance
- N/A Not applicable
- NFIP National Flood Insurance Program
- OEM Office of Emergency Management

Potential FEMA HMA Funding Sources:

- FMA Flood Mitigation Assistance Grant Program
- HMGP Hazard Mitigation Grant Program
- PDM Pre-Disaster Mitigation Grant Program

Timeline:

The time required for completion of the project upon implementation

Cost:

The estimated cost for implementation.

Benefits:

A description of the estimated benefits, either quantitative and/or qualitative.

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities.

CRS Category:





- *Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.*
- *Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.*
- *Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.*
- *Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.*
- *Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.*
- *Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.*

Critical Facility:


- Yes  - Critical Facility is located in 1% floodplain.





Table 9.16-13. Summary of Prioritization of Actions

Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
T. Lyonsdale-1	Bridge Replacement	1	1	1	1	1	1	0	1	1	1	0	0	1	1	11	High
T. Lyonsdale-2	Roads Wash Out	0	1	1	1	1	1	0	1	1	1	1	0	1	1	11	High
T. Lyonsdale-3	Culvert Replacement	1	1	1	1	1	1	0	1	1	1	1	0	1	1	12	High
T. Lyonsdale-4	Portable Generators	1	0	1	1	1	1	0	1	1	1	1	1	1	1	12	High
T. Lyonsdale-5	Replace Fire Hydrants	1	1	1	1	1	1	0	1	1	1	1	0	1	1	12	High
T. Lyonsdale-6	Protect Agers Falls Dam to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lyonsdale-7	Protect Black River Hydro Association River Road to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lyonsdale-8	Protect Black River Hydro Association Port Leyden Site to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lyonsdale-9	Protect Fortis US Energy Corp to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lyonsdale-10	Protect Gouldtown Mill # 5 Dam to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lyonsdale-11	Protect John Teal Recreational Pond Dam to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lyonsdale-12	Protect Kosterville Lower Dam to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lyonsdale-13	Protect Kosterville Upper Dam to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lyonsdale-14	Protect Lyn 1 communication facility to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lyonsdale-15	Protect Lyonsdale Associates to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High





Table 9.16-13. Summary of Prioritization of Actions

Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
T. Lyonsdale-16	Protect Lyonsdale Associates to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lyonsdale-17	Protect Northbrook Lyons Falls to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lyonsdale-18	Protect Northbrook Lyons Falls electric power facility to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lyonsdale-19	Protect Port Leyden Lower Dam to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lyonsdale-20	Protect Port Leyden Power Dam to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lyonsdale-21	Protect Shuetown Dam to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. Lyonsdale-22	Protect Village of Lowville River Road potable pump to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High

Note: Section 6 (Mitigation Actions) conveys guidance on prioritizing mitigation actions. Low (0-4), Medium (5-8), High (9-14).





### **9.16.7 Future Needs To Better Understand Risk/Vulnerability**

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None at this time.

### **9.16.8 Staff and Local Stakeholder Involvement in Annex Development**

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The Town of Lyonsdale followed the planning process described in Section 3 (Planning Process). This annex was developed over the course of several months with input from many town departments, including the Town Supervisor and Town Council. The Town Supervisor represented the community on the Lewis County Hazard Mitigation Plan Planning Partnership and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Additional documentation on the municipality's planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix B (Meeting Documentation).

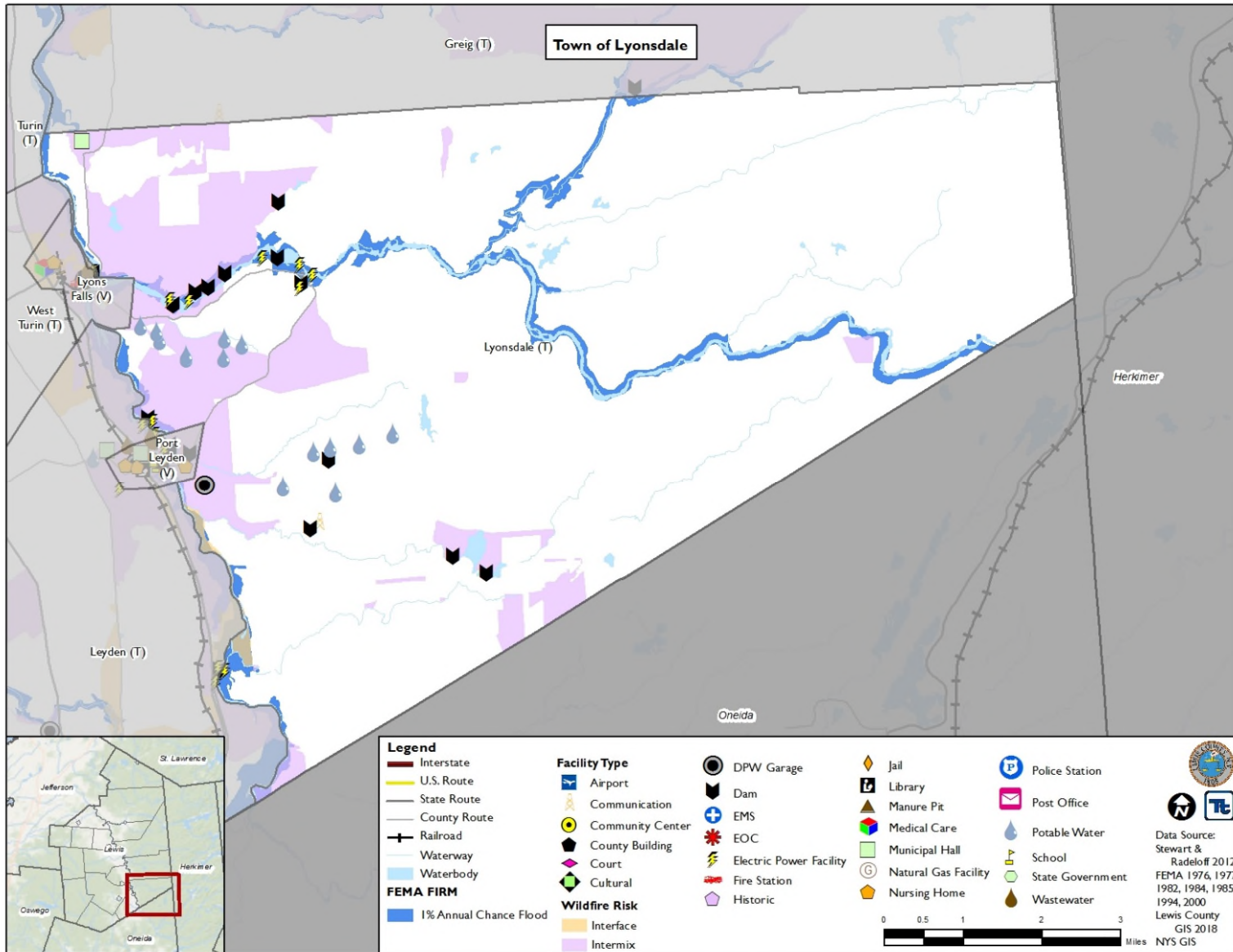
### **9.16.9 Hazard Area Extent and Location**

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Hazard area extent and location maps have been generated for the Town of Lyonsdale that illustrate the probable areas impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps have been generated only for those hazards that can be clearly identified using mapping techniques and technologies and for which the Town of Lyonsdale has significant exposure. A map of the Town of Lyonsdale hazard area extent and location is provided on the following page. This map indicates the location of the regulatory floodplain, as well as identified critical facilities within the municipality.



Figure 9.16-1. Town of Lyonsdale Hazard Area Extent and Location Map





Town of Lyonsdale Action Worksheet			
<b>Project Name:</b>	Bridge Replacement		
<b>Project Number:</b>	T. Lyonsdale 1		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Flood		
<b>Description of the Problem:</b>	The north side of Moose River on Lowdale Road has low elevation and is prone to flooding. The smaller Gouldtown Bridge South side Moose River on Shibley Road is damaged from flood/ice jam events and is unsafe and out of service.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	Raise roadway elevations on the north side Moose River on Lowdale Road (raise roads). Rebuild the smaller Gouldtown Bridge South side Moose River on Shibley Road to a higher elevation and safety standards.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	25-year storm (estimated)	<b>Estimated Benefits (losses avoided):</b>	Bridge able to be used and protected from flood damages
<b>Useful Life:</b>	50 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$750,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	Within 5 years	<b>Potential Funding Sources:</b>	NYSDOT
<b>Responsible Organization:</b>	Lewis County and Lyonsdale Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Capital improvements planning
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Remove bridge	\$20,000	Transportation route lost, emergency service response times.
	Raise roadway but do not address bridge	\$25,000	Transportation route lost, emergency service response times.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Bridge Replacement	
<b>Project Number:</b>	T. Lyonsdale 1	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Emergency service response time kept low.
Property Protection	1	Bridge and roadway protected from flooding and ice damages.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	Coordination with County and Lewis County Highway Department
Multi-Hazard	0	Flood
Timeline	0	Within 5 years
Agency Champion	1	Lewis County and Lyonsdale Highway Department
Other Community Objectives	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	



Town of Lyonsdale Action Worksheet			
<b>Project Name:</b>	Culvert Replacement		
<b>Project Number:</b>	T. Lyonsdale-3		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Flood, Severe Storm		
<b>Description of the Problem:</b>	Culverts are undersized at numerous locations in the Town. This contributes to flooding and flood damages to roadways.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	The town will remove existing culverts for replacement with upsized culverts –Hoag River by Dave Post, Rumble Road by Ronald Farr, Moose River by Knoltons Pond, Sand Pitt, and Catte Pass.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	10-year event (estimated)	<b>Estimated Benefits (losses avoided):</b>	Culverts properly sized and functional, flood risk reduced
<b>Useful Life:</b>	30 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$5,000-\$50,000 per culvert depending on selected sizes.	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	5 years	<b>Potential Funding Sources:</b>	HMGP, PDM, operating budget
<b>Responsible Organization:</b>	Town Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Capital improvements planning
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	Action	Estimated Cost	Evaluation
	No Action	\$0	Problem continues.
	Replace culverts with same size culverts with end treatments	\$5,000-\$30,000	Culverts still undersized
	Remove roadways that have culverts that are undersized	\$10,000 per removal	Roadways unable to be used.
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			





Action Worksheet		
<b>Project Name:</b>	Culvert Replacement	
<b>Project Number:</b>	T. Lyonsdale-3	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Emergency response time kept low.
Property Protection	1	Roadways and culverts protected from washout.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	Town has the legal authority to conduct the culvert replacements.
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	0	Within 5 years
Agency Champion	1	Town Highway Department
Other Community Objectives	1	
<b>Total</b>	12	
<b>Priority (High/Med/Low)</b>	High	



Town of Lyonsdale Action Worksheet			
<b>Project Name:</b>	Replace Fire Hydrants		
<b>Project Number:</b>	T. Lyonsdale-5		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Hazmat, Wildfire		
<b>Description of the Problem:</b>	Fire hydrants and water lines are outdated. They need to be maintained in order to fight fires in the town.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The town will replace old Fire Hydrants and water lines after surveying of the system to determine which areas need replacement.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Increases fire protection services	<b>Estimated Benefits (losses avoided):</b>	Fire hydrants and water lines maintained for emergency response
<b>Useful Life:</b>	20 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$3,500 per hydrant. Water line cost dependent on extent of replacements.	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	Within 5 years	<b>Potential Funding Sources:</b>	NYSDOT
<b>Responsible Organization:</b>	Firemen, villages, and towns	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Capital improvements planning
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Purchase tanker truck for water	\$190,000	Transportation route lost, emergency service response times.
	Develop contract with neighboring towns for fire response	Staff Time	Too slow of response times, towns unable
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Replace Fire Hydrants	
<b>Project Number:</b>	T. Lyonsdale-5	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Fire response is preserved to protect life.
Property Protection	1	Fire response is preserved to protect property.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	Coordination with firemen, villages, and towns
Multi-Hazard	1	Hazmat, wildfire
Timeline	0	Within 5 years
Agency Champion	1	Firemen, villages, and towns
Other Community Objectives	1	
<b>Total</b>	12	
<b>Priority (High/Med/Low)</b>	High	



## 9.17 TOWN OF MARTINSBURG

This section presents the jurisdictional annex for the Town of Martinsburg. It includes resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions that can be implemented prior to a disaster to reduce or eliminate damage to property and people. This annex includes a general overview of the Town of Martinsburg and who in the town participated in the planning process, an assessment of the Town of Martinsburg’s risk and vulnerability, the different capabilities used in the town, and an action plan that will be implemented to achieve a more resilient community.

### 9.17.1 Hazard Mitigation Planning Team

The following individuals have been identified as the Town of Martinsburg’s hazard mitigation plan primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Terry Thisse Title: Supervisor Phone Number: 315-376-3329 Address: P.O. Box 8 Martinsburg, NJ 13404 Email: sales@lowvillesport.com	Name: Tyler Jones Title: Highway Superintendent. Phone Number: 315-376-2309 Address: P.O. Box 13 Martinsburg, NY 13404 Email: tylerjonesmart13@gmail.com
Floodplain Administrator	
Name: Mike Pleskach Title: Land Use Officer Phone Number: 315-681-0138 Address: 5614 Whitaker Road Martinsburg, N.Y. 13404	

### 9.17.2 Municipal Profile

The Town of Martinsburg lies in the west-central portion of Lewis County in northern New York State. Whetstone Gulf State Park is found at the south town line. The town is bordered to the north by the Town of Lowville, to the northeast by the Town of Watson, to the east by the Black River and the Town of Greig, to the southeast by the Town of Turin, to the south by the Town of West Turin, to the west by the Town of Montague, and to the northeast by the Town of Harrisburg. The town includes the hamlets of East Martinsburg, Glendale, Glenfield, Graves Corners, Martinsburg, McGraw Corners, Tabolt Corners, West Martinsburg, and Whittaker Falls Park. In addition to Whetstone Gulf State Park, Whitaker Falls Park is located in the Town. The estimated 2017 population was 1,479, a 3.2 percent increase from the 2010 Census (1,433).

Data from the 2017 U.S. Census American Community Survey indicate that 5.2 percent of the town population is 5 years of age or younger, and 12.5 percent is 65 years of age or older. Communities must deploy a support system that enables all populations to safely reach shelters or to quickly evacuate a hazard area.

### History and Cultural Resources

The town was first settled in 1801 and established from part of the Town of Turin in 1803. The town was previously the County Seat until 1864. The Gen. Walter Martin House and Martinsburg Town Hall are listed on the National Register of Historic Places.





**Growth/Development Trends**

Table 9.17-1 summarizes major residential/commercial development that known or anticipated to take place prior to 2023. The map in 9.17.9 of this annex illustrates the hazard areas along with the location of potential new development.

**Table 9.17-1. Growth and Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)*	Description/Status of Development
<b>Recent Development from 2010 to present</b>					
Town of Martinsburg Municipal Building	Government	1	5405 Cemetery Road	None	Complete
Marks Farm	Comm.	12	Williams Road	SFHA	Ongoing
Demko Farms	Comm.	8	Lee Road	None	Ongoing
Town of Martinsburg Sewer Upgrade	Government	1	Main Street	None	Complete
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
Roaring Brookwind	Comm.	Unknown	Tug Hill	None	To be completed in 2019
Town of Martinsburg Water Upgrade	Government	2	Glensfield	None	To be completed summer 2019

\* Only location-specific hazard zones or vulnerabilities identified.

**9.17.3 Hazard Event History Specific to the Town of Martinsburg**

Lewis County has a history of natural hazard events, as detailed in Volume I, Section 5.0 (Risk Assessment) of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the county and its municipalities. The Town of Martinsburg’s history of federally-declared (as presented by FEMA) and significant hazard events (as presented in NOAA-NCEI) is consistent with that of Lewis County. Table 9.17-2 provides details regarding municipal-specific loss and damages the town experienced during hazard events. Information provided in the table below is based on reference material or local sources.

**Table 9.17-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April 26-May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	While the county sustained damages, the town did not report damages.
August 26-September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	While the county sustained damages, the town did not report damages.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	While the county sustained damages, the town did not report damages.
May 18, 2012	Agricultural Product Spill	N/A	N/A	Manure spill in the Town





Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
July 2, 2013	Agricultural Product Spill	N/A	N/A	A storm resulted in a manure spill that impacted a creek in the Town.
June 26- July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	While the county sustained damages, the town did not report damages.
May 13-22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	While the county sustained damages, the town did not report damages.
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to a foot and half of snow within this band leading up to daybreak Friday.	While the county sustained damages, the town did not report damages.
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	While the county sustained damages, the town did not report damages.

Notes:

EM Emergency Declaration (FEMA)  
 DR Major Disaster Declaration (FEMA)

### 9.17.4 Hazard Ranking and Jurisdiction-Specific Vulnerabilities

The hazard profiles in Section 5.0 (Risk Assessment) have detailed information regarding each plan participant’s vulnerability to the identified hazards. This section provides a summary of exposure and impacts from significant hazards of concern as identified by the Town of Martinsburg.

#### Hazard Risk Ranking

This section includes the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5(Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating town or village may have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Town of Martinsburg. The Town of Martinsburg has reviewed the county hazard risk/vulnerability risk ranking table, as well as its individual results, to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the town indicated the following:





Table 9.17-3. Town of Martinsburg Calculated Hazard Ranking

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	Low*
Extreme Temperature	High	High
Flood	Medium	Medium
Hazardous Material Incidents	Medium	Medium
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	High

Notes: The scale is based on the following hazard rankings as established in Section 5.3 (Hazard Ranking).  
 \*The Town of Martinsburg changed the initial ranking of this hazard based on event history and municipal experience.

### Critical Facilities Flood Risk

NYSDEC Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for state projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a SFHA unless constructed according to specific mitigation specifications, including being raised 2 feet above the BFE. This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the state places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 500-year flood event, or worst damage scenario. For those that do not meet these criteria, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain and presents HAZUS-MH estimates of the damage and loss of use to critical facilities as a result of a 1-percent annual chance flood event.

Table 9.17-4. Potential Flood Losses to Critical Facilities

Name	Type	Exposure		Addressed by Proposed Action
		1% Event	0.2% Event	
None identified				

Source: Lewis County Real Property 2018, FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000

### Identified Issues

The Town of Martinsburg has identified the following vulnerabilities within their community:

- The following areas are vulnerable to flooding:
  - East Martinsburg Road
  - Roaring Brook at Canan Road
  - Route 12 bridge over Roaring Brook







### 9.17.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms

#### Planning and Regulatory Capability

The table below summarizes the regulatory tools that are available to the Town of Martinsburg.

**Table 9.17-5. Planning and Regulatory Tools**

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Comprehensive Plan	Yes	Local	Town Board	Master Plan
Capital Improvements Plan	Yes	Local	Town Board	Capital Improvements Plan
Floodplain Management / Basin Plan	No	-	-	-
Stormwater Management Plan	No	-	-	-
Open Space Plan	Yes	Local	Town Board	Comprehensive Plan
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	Yes	Local	Town Board	Well Head Protection
Economic Development Plan	Yes	County	County Planning	Economic Development Plan
Comprehensive Emergency Management Plan	Yes	County	County OEM	Comprehensive Emergency Management Plan
Emergency Operation Plan	No	-	-	-
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	No	-	-	-
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-
<b>Regulatory Capability</b>				
Building Code	Yes	State & Local	Land Use Officer	NYS Building Code
Zoning Ordinance	Yes	All	Town Board	Chapter 240
Subdivision Ordinance	Yes	Local	Planning Board	Chapter 195
NFIP Flood Damage Prevention Ordinance	Yes	Federal, State, Local	Land Use Officer	Chapter 125



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	Yes	State, Local	Land Use Officer	Chapter 125: Freeboard. State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	Yes	Local	Planning	Chapter 240-51
Stormwater Management Ordinance	No	-	-	-
Municipal Separate Storm Sewer System (MS4)	Yes	County	Highway	Chapter 195-52
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	NYS, Real Estate Agent	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	Yes	Local	Town Board	Chapter 20-65

**Administrative and Technical Capability**

The table below summarizes potential staff and personnel resources available to the Town of Martinsburg.

**Table 9.17-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	Yes	Planning Board
Mitigation Planning Committee	No	-
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	Yes	County
Maintenance programs to reduce risk	No	-
Mutual aid agreements	Yes	Fire Department
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	Yes	County
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	County
Planners or engineers with an understanding of natural hazards	No	-
NFIP Floodplain Administrator (FPA)	Yes	Land Use Officer
Surveyor(s)	No	-



Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	Yes	Tug Hill Commission
Scientist familiar with natural hazards	No	-
Emergency Manager	Yes	County
Grant writer(s)	No	-
Staff with expertise or training in benefit/cost analysis	No	-
Professionals trained in conducting damage assessments	Yes	County

### Fiscal Capability

The table below summarizes financial resources available to the Town of Martinsburg.

**Table 9.17-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	No
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes/Water & Sewer District
Impact fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	N/A
Incur debt through private activity bonds	N/A
Withhold public expenditures in hazard-prone areas	No
Other federal or state Funding Programs	Yes
Open Space Acquisition funding programs	No
Other	No

### Community Classifications

The table below summarizes classifications for community programs available to the Town of Martinsburg.

**Table 9.17-8. Community Classifications**

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	Unknown	Ongoing
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-





Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	No	-	-
Public-private partnership initiatives addressing disaster-related issues	No	-	-
Other	No	-	-

Note:  
 N/A Not applicable  
 NP Not participating  
 - Unavailable

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class 1 being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual.
- The Building Code Effectiveness Grading Schedule (<https://www.isomitigation.com/bcegs/>).
- The ISO Mitigation online ISO’s Public Protection (<https://www.isomitigation.com/ppc/>).
- New York State Climate Smart Communities (<http://www.dec.ny.gov/energy/56876.html>).
- The National Weather Service Storm Ready (<https://www.weather.gov/stormready/communities>).
- The National Firewise Communities (<http://firewise.org/>).

### Self-Assessment of Capability

The table below provides an approximate measure of the Town of Martinsburg’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

**Table 9.17-9. Self-Assessment Capability for the Town of Martinsburg**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Planning and regulatory capability	-	X	-
Administrative and technical capability	X – limited staff	-	-
Fiscal capability	X – limited budget	-	-
Community political capability	X – limited public support	-	-
Community resiliency capability	X – limited staff/budget	-	-





Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Capability to integrate mitigation into municipal processes and activities	-	X	-

### National Flood Insurance Program

This section provides specific information on the management and regulation of the regulatory floodplain.

#### NFIP Floodplain Administrator (FPA)

Mike Pleskach, Land Use Officer

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

The Town of Martinsburg maintains lists/inventories of properties that have been flooded as well as identifies property owners who are interested in mitigation. The town does not make substantial damage determinations. One property owner is interested in mitigation (elevation) and would fund the project themselves. None are currently undergoing mitigation projects.

The following table summarizes the NFIP statistics for the Town of Martinsburg.

**Table 9.17-10. NFIP Summary**

Municipality	# Policies	# Claims (Losses)	Total Loss Payments	# RL Properties	# SRL Properties	# Policies in the 1% Flood Boundary
Town of Martinsburg	3	0	\$2,673	0	0	2

Source: FEMA Region 2, 2018

Notes:

- (1) Policies, claims, and repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.
  - (2) Total building and content losses from the claims file provided by FEMA Region 2.
  - (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file. FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility.
- A zero percentage denotes less than 1/100th percentage and not zero damage or vulnerability as may be the case.  
 Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.

### Resources

The Supervisor and the Land Use Officer are responsible for floodplain administration. NFIP administration services include land use permit and inspection of land use. The town does not conduct any outreach regarding flood hazards/risk or flood risk reduction. The FPA does not feel adequately supported and trained in their position and noted that the town is in need of an updated and accurate floodplain map. The FPA would consider attending continuing education and/or certification training on floodplain management if it were offered in the county for all local floodplain administrators.

### Compliance History

The town is in good standing with the NFIP. The most recent compliance audit (Community Assistance Visit) took place in 2017. Prior to that, a compliance audit took place on November 4, 1991.





## Regulatory

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**Flood Damage Prevention Ordinance:** The Town of Martinsburg’s NFIP Flood Damage Prevention Ordinance (Chapter 125 of the municipal code) meets the Federal and State NFIP regulatory requirements. The purpose of Ordinance is to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed:

- To protect human life and health.
- To minimize expenditure of public money for costly flood control projects.
- To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public.
- To minimize prolonged business interruptions.
- To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone, and sewer lines, and streets and bridges located in areas of special flood hazard.
- To help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas.
- To ensure that potential buyers are notified that property is in an area of special flood hazard.
- To ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.

The town’s floodplain management regulations/ordinances meet the FEMA and state minimum requirements. The Planning Board and Zoning Officer support floodplain management and the meeting of NFIP requirements. The town has not considered joining the Community Rating System (CRS) program, but officials would consider attending a seminar.

## Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

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For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community’s progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures, which also are indicated below.

## Planning

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### Existing Integration

The town has a Master/Comprehensive Plan. The plan does not currently consider areas of natural risk or refer to the Countywide Hazard Mitigation Plan. The Town of Martinsburg is not an MS4 Regulated Community and does not have a Stormwater Management Plan. The town does not have a Re-Development Plan, Growth Plan, Watershed/Stream Corridor Management Plan, Local Waterfront Revitalization Plan, Continuity of Operations/Continuity of Government plan, Post-Disaster Recovery Plan, or Strategic Recovery Plan. The town uses the County’s Economic Development Plan. The Town has their own Open Space Plan.

### Opportunities for Future Integration

Updates to planning documents and new plans could include information on natural hazards and refer to the Countywide Hazard Mitigation Plan.



## Regulatory and Enforcement (Ordinances)

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### Existing Integration

The town's municipal zoning, subdivision regulations, and site plan review process consider natural hazard risk. Currently, the Planning Board/ZBA is supplied with floodplain maps to guide their decisions with respect to natural hazard risk management, though the FPA notes these maps are outdated. Zoning and Landuse regulations in the town require developers to take additional actions to mitigate natural hazard risk.

**Zoning Ordinance:** The Town of Martinsburg's Zoning Ordinance (Chapter 240 of the municipal code) has the following objectives:

- Protect the open and natural character of the land.
- Provide for the controlled growth of residential and commercial use of land consistent with the economic and social needs of the community without interfering with existing land use.
- Preserve the Town's natural resources, particularly the water supply.
- Promote the health, safety and general welfare of the community consistent with the objectives of Article 16 of the Town Law.
- Be aware of and consistent with the goals and policies common to adjacent communities.
- To make provision for, so far as conditions may permit, the accommodation of solar energy systems and equipment and access to sunlight necessary therefor.
- To facilitate the adequate provision of transpiration, water, sewerage, schools, parks and other public requirements; and to promote the health, safety, and general welfare of the public.

**Subdivision of Land Ordinance:** The Town of Martinsburg's Subdivision of Land Ordinance (Chapter 195 of the municipal code) has been enacted for the purpose of providing for the future growth and development of the town and affording adequate facilities for the housing, transportation, distribution, comfort, convenience, safety, health, and welfare of its population.

### Opportunities for Future Integration

Updates to floodplain maps will allow for additional strengthening of ordinance language.

## Operational and Administration

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### Existing Integration

The Town of Martinsburg uses Lewis County for municipal planning and preparing grant applications for mitigation projects. The town has their own Planning Board and Zoning Board of Adjustment but does not have additional Boards or Committees that include functions with respect to managing natural hazard risk. Stormwater Management functions in the town are performed by the Highway Superintendent. The town does not have staff or contract with firms who have experience with developing Benefit-Cost Analysis or can perform Substantial Damage Determinations.

No town staff have job descriptions that specifically include identification or implementation of hazard mitigation projects and do not participate in any associations or groups that support natural hazard risk reduction or build hazard mitigation capabilities. Town staff receive minimal training or continuing professional education to support risk reduction. Staff would benefit from training on highway stabilization. Lewis County Soil and Water assists in developing some hazard mitigation programs.





### Opportunities for Future Integration

Staff could receive additional training to support natural hazard risk reduction.

### Funding

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#### Existing Integration

The town's municipal/operating budget and Capital Improvements Budget do not include line items for mitigation projects, and the town has not applied for grant funding for mitigation projects in the past. The town does not have any other mechanisms to fiscally support hazard mitigation. Municipal funding is expected to decrease in the future, as funds from commercial wind projects are phased out.

#### Opportunities for Future Integration

The town could dedicate a line in the municipal budget or Capital Improvements Budget and apply for grant funding to support hazard mitigation.

### Education and Outreach

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#### Existing Integration

Although the town currently does not offer education or outreach concerning hazard mitigation, the town website (<http://www.townofmartinsburg.org/>) is scheduled to be updated. This should offer opportunities to increase outreach.

#### Opportunities for Future Integration

The updated municipal website could offer educational information on natural hazards and hazard mitigation.

### Sheltering, Evacuation, and Temporary Housing

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Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

### Evacuation and Sheltering Needs

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The Town of Martinsburg has not designated emergency shelters, evacuation routes, or evacuation procedures. However, at the time of an emergency, the Town works with the County to establish evacuation routes, depending on the hazard impacting the Town. These routes typically include the primary roads in and out of the Town. Routes and procedures would be determined at the time of an incident, in accordance with the County's CEMP.

### Temporary and Permanent Housing

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The Town of Martinsburg has not identified potential sites for the placement of temporary housing for residents displaced by a disaster, potential sites suitable for relocating houses of the floodplain or sites for building new homes once properties in the floodplain are acquired.

## 9.17.6 Mitigation Strategy and Prioritization

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This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and their prioritization.



### **Past Mitigation Initiative Status**

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The following table indicates progress on the community’s mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under ‘Capability Assessment’ presented previously in this annex.



Table 9.17-11. Status of Previous Mitigation Actions

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem and the Solution (Project)	Responsible Party	Status (In Progress, Ongoing Capability, No Progress, Complete)	Evaluation of Success (if complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection	
	Tap storm drain and insert pipe.	Flooding	Run-off into basements	Town Board	In Progress			<ol style="list-style-type: none"> <li>1. Include</li> <li>2. New Stormwater system to be put in place.</li> <li>3.</li> </ol>
	Locate and purchase land outside of floodplain to relocate the sewage treatment facility.	Flooding	Current facility is within 20 feet of Black River.	Town Board	In Progress			<ol style="list-style-type: none"> <li>1. Include</li> <li>2.</li> <li>3.</li> </ol>
	Extend shoulders and line ditches with asphalt to prevent erosion along Flat Road and Whitaker Roads.	Flooding and Winter Storms	Winter Thaws	Highway Department	Complete	\$25,000	Decreases erosion risk to this section of the Town	<ol style="list-style-type: none"> <li>1. Discontinue</li> <li>2.</li> <li>3. Complete</li> </ol>
							Reduces erosion	



### **Completed Mitigation Initiatives Not Identified in the Previous Mitigation Strategy**

The Town of Martinsburg has performed ongoing maintenance projects to reduce the impact of flooding but has not identified specific mitigation projects/activities that have been completed but were not identified in the previous mitigation strategy in the 2010 Plan.

### **Proposed Hazard Mitigation Initiatives for the Plan Update**

Table 9.17-12 summarizes the comprehensive-range of specific mitigation initiatives the Town of Martinsburg would like to pursue in the future to reduce the effects of hazards. Some of these initiatives are previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6, 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.17-13 provides a summary of the prioritization of all proposed mitigation initiatives for the plan update.



Table 9.17-12. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues ?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
T. Martinsburg-1	Relocate Sewage Treatment Facility	<b>Problem:</b> The Sewage Treatment Facility is prone to flooding	<b>Solution:</b> Locate and purchase land outside of floodplain to relocate the sewage treatment facility.	Flood	2	Yes	None	Within 5 years	Town Board	TBD by cost of property once identified. Rough estimate of \$5 million	Reduction in flood risk	HMGP, CDBG, town budget	High	SIP	PP
T. Martinsburg-2	Canan Road Bridge	<b>Problem:</b> Canan Road has a bridge over the Roaring Brook. Flooding with ice has occurred on the Roaring Brook in the past. The town is concerned that a flood with ice debris could damage the bridge.	<b>Solution:</b> The town will conduct a feasibility study to determine the best option to protect Canan Road bridge. Possible project may include relocation, raising the bridge elevation, strengthening the bridge, or ice breaking structures.	Flood, Winter Storm	2	No	None	Within 5 years	Town Board, Highway Department	\$15,000 for feasibility study. Cost of project TBD by outcome of feasibility study.	Canan Road bridge protected from damage. Roadway kept open.	HMGP, PDM, BridgeNY, town budget	High	SIP	PP
T. Martinsburg-3	Storm Sewer replacement	<b>Problem:</b> The storm sewer on Main Street is degraded. Main Street is a county road.	<b>Solution:</b> The town will supply equipment and manpower to support the county as it replaces the stormwater system.	Severe Storm, Flood	2	No	None	Within 6 months	Highway Department	Staff time and equipment.	Stormwater system kept functional.	Town budget	High	SIP	SP
T. Martinsburg-4	Flooding at East	<b>Problem:</b> East Martinsburg Road is vulnerable to flooding.		Flood, Severe Storm	2	No	None	Within 5 years	Highway Department	\$5,000	Flood risk to East Martins-	HMGP, town budget	High	SIP	PP





Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues ?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
	Martinsburg Road	<b>Solution:</b> The town will conduct a study to determine the main cause of flooding on East Martinsburg Road and determine appropriate projects to mitigate the flood risk.									burg Road reduced				
T. Martinsburg-5	Route 12 bridge over Roaring Brook	<b>Problem:</b> The Route 12 Bridge over the Roaring Brook is vulnerable to flooding. <b>Solution:</b> The town will conduct a feasibility study to determine if raising the elevation of the bridge will reduce flood risk and if elevation of the bridge is possible.		Flood	2	No	None	Within 5 years	Highway Department	\$5,000	Flood risk at Route 12 bridge reduced	HMGP, Town budget	High	SIP	PP

Notes:

Not all acronyms and abbreviations defined below are included in the table.

Acronyms and Abbreviations:

- CAV Community Assistance Visit
- CRS Community Rating System
- DPW Department of Public Works
- FEMA Federal Emergency Management Agency
- FPA Floodplain Administrator
- HMA Hazard Mitigation Assistance
- N/A Not applicable
- NFIP National Flood Insurance Program
- OEM Office of Emergency Management

Potential FEMA HMA Funding Sources:

- FMA Flood Mitigation Assistance Grant Program
- HMGP Hazard Mitigation Grant Program
- PDM Pre-Disaster Mitigation Grant Program

Timeline:

The time required for completion of the project upon implementation

Cost:

The estimated cost for implementation.

Benefits:

A description of the estimated benefits, either quantitative and/or qualitative.

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities






CRS Category:

- *Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.*
- *Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.*
- *Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.*
- *Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.*
- *Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.*
- *Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities*

Critical Facility:

- Yes  - Critical Facility located in 1% floodplain





**Table 9.17-13. Summary of Prioritization of Actions**

Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community	Total	High / Medium / Low
T. Martinsburg-1	Relocate Sewage Treatment Facility	0	1	1	1	1	1	0	1	1	1	0	1	1	1	11	High
T. Martinsburg-2	Canan Road Bridge	1	1	1	0	1	1	0	1	1	1	1	0	1	1	11	High
T. Martinsburg-3	Storm Sewer replacement	0	1	1	1	1	1	1	1	1	1	1	1	1	1	13	High
T. Martinsburg-4	Flooding at East Martinsburg Road	1	1	0	0	1	1	0	1	1	1	1	0	1	1	10	High
T. Martinsburg-5	Route 12 bridge over Roaring Brook	1	1	0	0	1	1	0	1	1	1	0	0	1	1	9	High

Note: Refer to Section 6 (Mitigation Strategy), which conveys guidance on prioritizing mitigation actions. Low (0-4), Medium (5-8), High (9-14).



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### 9.17.7 Future Needs To Better Understand Risk/Vulnerability

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None at this time.

### 9.17.8 Staff and Local Stakeholder Involvement in Annex Development

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The Town of Martinsburg followed the planning process described in Section 3 (Planning Process). This annex was developed over the course of several months with input from many town departments, including: the Supervisor, the Highway Superintendent, and the Land Use Officer. The Supervisor represented the community on the Lewis County Hazard Mitigation Plan Planning Partnership and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Additional documentation on the Town of Martinsburg's planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix B (Meeting Documentation).

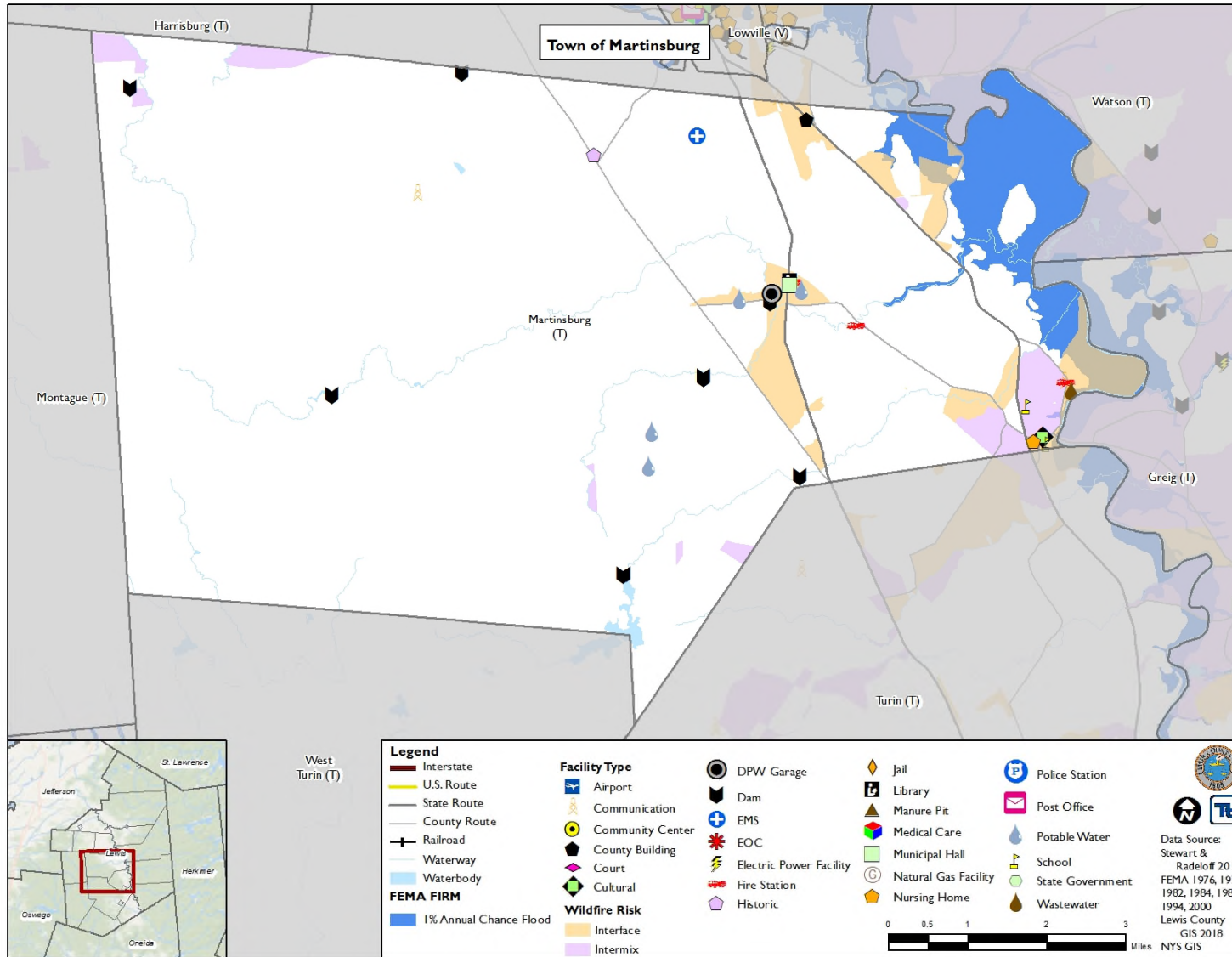
### 9.17.9 Hazard Area Extent and Location

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Hazard area extent and location maps have been generated for the Town of Martinsburg that illustrate the probable areas impacted within the Town of Martinsburg. These maps are based on the best available data at the time of the preparation of this plan and are considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the Town of Martinsburg has significant exposure. A map of the Town of Martinsburg hazard area extent and location is provided on the following page. This map indicates the location of the regulatory floodplain, as well as identified critical facilities, within the Town of Martinsburg.



Figure 9.17-1. Town of Martinsburg Hazard Area Extent and Location Map





Town of Martinsburg Action Worksheet			
<b>Project Name:</b>	Relocate Sewage Treatment Facility		
<b>Project Number:</b>	T. Martinsburg-1		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Flood		
<b>Description of the Problem:</b>	The Town of Martinsburg's Sewage Treatment Facility is prone to flooding. The facility must be protected from flooding to continue to function. Flooding damages can result in sewage spills.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	The town will locate and purchase land outside of floodplain to relocate the sewage treatment facility. The town will then construct a new sewage treatment facility and demolish the old facility.		
<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	500-year flood	<b>Estimated Benefits (losses avoided):</b>	Project will protect critical facility from flood damages.
<b>Useful Life:</b>	100 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	TBD by cost of property once identified. Rough estimate of \$5 million	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	3 years	<b>Potential Funding Sources:</b>	HMGP, CDBG, Town budget
<b>Responsible Organization:</b>	Town Board	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Floodproof electrical components of sewage treatment plant	\$75,000	May still be sewage spills.
	Build levee around Sewage Treatment Facility	\$1 million+	Not enough room for levee footprint
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Relocate Sewage Treatment Facility	
<b>Project Number:</b>	T. Martinsburg-1	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project will protect the Sewage Treatment Plant from flooding.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	Town has the legal authority to complete the project.
Fiscal	0	Project requires financial support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	0	Flood
Timeline	1	
Agency Champion	1	Town Board
Other Community Objectives	1	Protection of critical facilities
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	



Town of Martinsburg Action Worksheet			
<b>Project Name:</b>	Canan Road Bridge		
<b>Project Number:</b>	T. Martinsburg-2		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Flood, Winter Storm		
<b>Description of the Problem:</b>	Canan Road has a bridge over the Roaring Brook. Flooding with ice has occurred on the Roaring Brook in the past. The town is concerned that a flood combined with ice and debris could damage the bridge.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	This project will broke into two phases. The first phase will include a feasibility study to determine the best option to protect Canan Road bridge. Possible projects include bridge relocation, elevating the bridge, strengthening the bridge, or ice breaking structures. Once the best solution is identified, phase two of this project will be implementing and completing the project to protect the bridge.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Phase 1 – identifies best project to protect the road Phase 2 – depends on the project selected	<b>Estimated Benefits (losses avoided):</b>	Canan Road bridge protected from damage. Roadway kept open.
<b>Useful Life:</b>	Phase 1 – not applicable Phase 2 – at least 25 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$15,000 for feasibility study. Cost of project TBD by outcome of feasibility study.	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	1 year	<b>Potential Funding Sources:</b>	HMGP, PDM, BridgeNY, town budget
<b>Responsible Organization:</b>	Town Board, Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Remove bridge	\$50,000+	The bridge cannot be fully removed as it will isolate residents and prevent transportation.
	Close roadway when Roaring Brook is experiencing flooding	\$0	Bridge may be damaged and unusable by severe flood events.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Canan Road Bridge	
<b>Project Number:</b>	T. Martinsburg-2	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	
Property Protection	1	Project will protect Canan Road Bridge.
Cost-Effectiveness	1	
Technical	0	
Political	1	
Legal	1	The town has the legal authority to complete the project.
Fiscal	0	Project will require funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, Winter Storm
Timeline	0	
Agency Champion	1	Town Board, Highway Department
Other Community Objectives	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	





## 9.18 TOWN OF MONTAGUE

This section presents the jurisdictional annex for the Town of Montague. It includes resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions that can be implemented prior to a disaster to reduce or eliminate damage to property and people. This annex includes a general overview of the Town of Montague and who in the town participated in the planning process, an assessment of the Town of Montague’s risk and vulnerability, the different capabilities used in the town, and an action plan that will be implemented to achieve a more resilient community.

### 9.18.1 Hazard Mitigation Planning Team

The following individuals have been identified as the Town of Montague’s hazard mitigation plan primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Kurt Riordan Title: Supervisor Phone Number: 315-783-4483 Address: 6353 Salmon River Rd Lowville, NY 13367 Email: <a href="mailto:Towncouncil20@gmail.com">Towncouncil20@gmail.com</a>	Name: Tony Young Title: Highway Superintendent Phone Number: 315-376-4299 Address: 6353 Salmon River Rd Lowville, NY 13367 Email: <a href="mailto:Youngtony4299@yahoo.com">Youngtony4299@yahoo.com</a>
Floodplain Administrator	
Name: Kurt Riordan Title: Supervisor Phone Number: 315-783-4483 Address: 6353 Salmon River Rd Lowville, NY 13367 Email: <a href="mailto:Towncouncil20@gmail.com">Towncouncil20@gmail.com</a>	

### 9.18.2 Municipal Profile

The Town of Montague lies on the western border of Lewis County in Northern New York State. The town is bordered by the Town of Pinckney to the northwest, the Town of Harrisburg to the northeast, the Town of Martinsburg to the east, the Town of West Turin to the southeast, the Town of Osceola to the south, Oswego County to the southwest, and Jefferson County to the west. The town has a total area of 65.3 square miles of which 65.1 square miles is land and 0.2 square miles is water. The town includes the hamlets of Hooker, Parkers, and Rector. The Town of Montague is governed by a Town Supervisor, a Highway Superintendent, and four Town Council people. The estimated 2017 population was 40, a 48.7 percent decrease from the 2010 Census (78).

Data from the 2017 U.S. Census American Community Survey indicate that 0 percent of the Town population is five years of age or younger, and 30 percent is 65 years of age or older. Communities must deploy a support system that enables all populations to safely reach shelters or to quickly evacuate a hazard area.

### History and Cultural Resources

The Town of Montague was first settled in 1846 with the Town incorporated in 1850 from part of the Town of West Turin. The town is well known for snowmobiling.





### Growth/Development Trends

The Town of Montague did not note any recent residential/commercial development since 2009 or any major residential or commercial development or major infrastructure development planned for the next five years in the town.

**Table 9.18-1. Growth and Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2009 to present</b>					
None					
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
None					

*\* Only location-specific hazard zones or vulnerabilities identified.*

### 9.18.3 Hazard Event History Specific to the Town of Montague

Lewis County has a history of natural hazard events as detailed in Volume I, Section 5.0 (Risk Assessment) of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected Lewis County and its municipalities. The Town of Montague’s history of federally-declared (as presented by FEMA) and significant hazard events (as presented in NOAA-NCEI) is consistent with that of Lewis County. Table 9.18-2 provides details regarding municipal-specific loss and damages the town experienced during hazard events. Information provided in the table below is based on reference material or local sources.

**Table 9.18-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April 26-May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	Although the county suffered damages, the town did not report damages from this event.
August 26-September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	Although the county suffered damages, the town did not report damages from this event.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	Although the county suffered damages, the town did not report damages from this event.
June 26-July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	Although the county suffered damages, the town did not report damages from this event.
May 13-22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	Although the county suffered damages, the town did not report damages from this event.



Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to a foot and half of snow within this band leading up to daybreak Friday.	Although the county suffered damages, the town did not report damages from this event.
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	Although the county suffered damages, the town did not report damages from this event.

Notes:

EM Emergency Declaration (FEMA)  
 DR Major Disaster Declaration (FEMA)

### 9.18.4 Hazard Ranking and Jurisdiction-Specific Vulnerabilities

The hazard profiles in Section 5.0 (Risk Assessment) have detailed information regarding each plan participant’s vulnerability to the identified hazards. This section provides a summary of exposure and impacts from significant hazards of concern as identified by the Town of Montague..

#### Hazard Risk Ranking

This section includes the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating town or village may have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Town of Montague. The Town of Montague has reviewed the county hazard risk/vulnerability risk ranking table, as well as its individual results to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the town indicated the following:

**Table 9.18-3. Town of Montague Calculated Hazard Ranking**

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	Low
Extreme Temperature	High	High
Flood	Medium	Low
Hazardous Material Incidents	Medium	Medium





Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	High

Notes: The scale is based on the following hazard rankings as established in Section 5.3 (Hazard Ranking).

### Critical Facilities Flood Risk

NYS DEC Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for State projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a SFHA unless constructed according to specific mitigation specifications, including being raised 2 feet above the BFE. This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the state places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 500-year flood event, or worst damage scenario. For those that do not meet these criteria, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain and presents HAZUS-MH estimates of the damage and loss of use to critical facilities as a result of a 1-percent annual chance flood event.

**Table 9.18-4. Potential Flood Losses to Critical Facilities**

Name	Type	Exposure		Addressed by Proposed Action
		1% Event	0.2% Event	
None identified				

Source: Lewis County Real Property 2018, FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000

### Identified Issues

The Town of Montague has identified the following vulnerabilities within their community:

- The town has a seasonal roadway that has become dangerous to use due to falling trees and washed out sections. The road is used by snowmobiles during the winter. The winter of 2018/2019 saw three fatalities due to unsafe conditions on the roadway.

### 9.18.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms



**Planning and Regulatory Capability**

The table below summarizes the regulatory tools that are available to the Town of Montague.

**Table 9.18-5. Planning and Regulatory Tools**

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Comprehensive Plan	No	-	-	-
Capital Improvements Plan	No	-	-	-
Floodplain Management / Basin Plan	No	-	-	-
Stormwater Management Plan	No	-	-	-
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	No	-	-	-
Economic Development Plan	No	-	-	-
Comprehensive Emergency Management Plan	No	-	-	-
Emergency Operation Plan	No	-	-	-
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	No	-	-	-
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-
<b>Regulatory Capability</b>				
Building Code	Yes	State, Local, County	Lewis County	NYS Building Code
Zoning Ordinance	Yes	County	Lewis County	Code citation unavailable from the Town.
Subdivision Ordinance	Yes	County	Lewis County	Code citation unavailable from the Town.
NFIP Flood Damage Prevention Ordinance	No	-	-	The town has no flood zones.
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	No	-	-	-
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	No	-	-	-
Stormwater Management Ordinance	No	-	-	-
Municipal Separate Storm Sewer System (MS4)	No	-	-	-
Natural Hazard Ordinance	No	-	-	-



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	NYS, Real Estate Agents	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

### Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the Town of Montague.

**Table 9.18-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	No	-
Mitigation Planning Committee	No	-
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	No	-
Maintenance programs to reduce risk	No	-
Mutual aid agreements	No	-
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	No	-
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	No	-
Planners or engineers with an understanding of natural hazards	No	-
NFIP Floodplain Administrator (FPA)	No	-
Surveyor(s)	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	No	-
Scientist familiar with natural hazards	No	-
Emergency Manager	No	-
Grant writer(s)	No	-
Staff with expertise or training in benefit/cost analysis	No	-
Professionals trained in conducting damage assessments	No	-

### Fiscal Capability

The table below summarizes financial resources available to the Town of Montague.



**Table 9.18-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	No
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	No
User fees for water, sewer, gas or electric service	No
Impact fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	No
Incur debt through general obligation bonds	No
Incur debt through special tax bonds	No
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No
Other federal or state Funding Programs	No
Open Space Acquisition funding programs	No
Other	No

**Community Classifications**

The table below summarizes classifications for community programs available to the Town of Montague.

**Table 9.18-8. Community Classifications**

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	The town is unsure of the class ranking.	-
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	No	-	-
Public-private partnership initiatives addressing disaster-related issues	No	-	-
Other	No	-	-

Note:  
- Unavailable

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery, and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies







to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10, with class 1 being the best possible classification and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual.
- The Building Code Effectiveness Grading Schedule (<https://www.isomitigation.com/bcegs/>).
- The ISO Mitigation online ISO’s Public Protection (<https://www.isomitigation.com/ppc/>).
- New York State Climate Smart Communities (<http://www.dec.ny.gov/energy/56876.html>).
- The National Weather Service Storm Ready (<https://www.weather.gov/stormready/communities>).
- The National Firewise Communities (<http://firewise.org/>).

### Self-Assessment of Capability

The table below provides an approximate measure of the Town of Montague’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

Table 9.18-9. Self-Assessment Capability for the Town of Montague

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Planning and regulatory capability	X - Staffing		
Administrative and technical capability	X - Staffing		
Fiscal capability	X - Staffing		
Community political capability	X - Staffing		
Community resiliency capability	X - Staffing		
Capability to integrate mitigation into municipal processes and activities	X - Staffing		

### National Flood Insurance Program

This section provides specific information on the management and regulation of the regulatory floodplain.

#### NFIP Floodplain Administrator (FPA)

There is no appointed FPA for the Town. Mr. Kurt Riordan, Town Supervisor, provided information to complete this section of the annex.

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

The Town of Montague does not have any FEMA designated flood hazard zones and is not a member of the NFIP. The town does not maintain lists or inventories of properties that have been flood damaged or identify property owners who are interested in mitigation. The FPA stated that no structures have been damaged recently by flood events. The FPA does not make Substantial Damage Determinations and stated that no property owners are listed in mitigation. Funding sources for mitigation have not been identified.

The following table summarizes the NFIP statistics for the Town of Montague.



Table 9.18-10. NFIP Summary

Municipality	# Policies	# Claims (Losses)	Total Loss Payments	# RL Properties	# SRL Properties	# Policies in the 1% Flood Boundary
Town of Montague	0	0	\$0	0	0	0

Source: FEMA Region 2, 2018

Notes:

- (1) Policies, claims, and repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.
  - (2) Total building and content losses from the claims file provided by FEMA Region 2.
  - (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file.
- FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility. A zero percentage denotes less than 1/100th percentage and not zero damage or vulnerability as may be the case. Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.

### Resources

The FPA is the sole person responsible for floodplain administration. The FPA stated that the town does not provide education or outreach to the community regarding flood hazards/risk and flood risk reduction. The FPA feels that lack of personnel is a barrier to running an effective floodplain management program in the community and does not feel adequately supported and trained to fulfill their responsibilities as the municipal floodplain manager. The FPA stated that they would not be interested in attending education and/or certification training on floodplain management if it were offered in the county for local floodplain administrators.

### Compliance History

The Town of Montague is not a member of the National Flood Insurance Program.

### Regulatory

The Town of Montague does not have a flood damage prevention ordinance as it lacks any FEMA designated flood hazard zones. The FPA is unsure if there are other local ordinances, plans, or programs that support floodplain management.

### Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community’s progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures, which is also indicated below.

### Planning

#### Existing Integration

The Town does not have a Master/Comprehensive Plan. The Town is not a MS4 Regulated community and does not have a Stormwater Management Plan. The Town does not have a Re-Development Plan, Growth Plan, Economic Development Plan, Watershed/Stream Corridor Management Plan, Local Waterfront Revitalization Plan, Continuity of Operations/Continuity of Government (COOP/COG) plan, Comprehensive Emergency Management Plan, Post Disaster Recovery Plan, or Strategic Recovery Plan.





### Opportunities for Future Integration

The town could develop planning documents which include information natural hazards and refer to the Hazard Mitigation Plan.

### Regulatory and Enforcement (Ordinances)

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#### Existing Integration

Lewis County has taken over administering ordinances for the Town of Montague. The municipal zoning regulations, subdivision regulations, and site plan review process do not consider natural hazard risk. The Town Supervisor is unsure if the municipal zoning regulations, subdivision regulations, and site plan review process require developers to take additional actions to mitigate natural hazard risk. The Town Supervisor is unsure if the Planning Board/Zoning Board of Adjustment is provided with data, information, tools, or resources to guide their decisions with respect to natural hazard risk management.

#### Opportunities for Future Integration

Municipal regulations could be updated to consider natural hazard risk.

### Operational and Administration

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#### Existing Integration

The town does not have a municipal planner or contract planning firm. The town does not have a Planning Board/Zoning Board of Adjustment that manages natural hazard risk and compliance with related hazards. The town does not have any other boards or committees that include functions with respect to managing natural hazard risk. Stormwater management functions are not performed by any town staff, and Lewis County is responsible for administering the town's codes. The town does not have staff or contract with firms that have experience with developing Benefit-Cost Analysis, performing Substantial Damage Determinations, or have experience with preparing grant applications for mitigation projects. Town staff do not receive training/continuing professional education which supports natural hazard risk reduction. None of the town staff have job descriptions that specifically include identifying and/or implementing mitigation projects/actions or other efforts to reduce natural hazard risk. Town staff do not participate in associations, organizations, groups, or other committees support natural hazard risk reduction and build hazard management capabilities.

#### Opportunities for Future Integration

Town staff could receive training on natural hazard risk reduction.

### Funding

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#### Existing Integration

The town's municipal/operating budget does not include line items for mitigation projects/activities. The town does not have a Capital Improvements Budget that includes budget for mitigation-related projects. The town has not pursued grant funds for mitigation related projects. The town does not have any other mechanisms to fiscally support hazard mitigation projects.

#### Opportunities for Future Integration

The town could include line items in the municipal budget and supplement municipal funding through grant funding.



## Education and Outreach

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### Existing Integration

The town does not have any public outreach mechanisms/programs in place to inform citizens on natural hazards.

### Opportunities for Future Integration

The town could develop outreach materials to be hosted at municipal buildings.

## Sheltering, Evacuation, and Temporary Housing

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Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

### Evacuation and Sheltering Needs

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The Town of Montague has not designated emergency shelters, evacuation routes, or evacuation procedures. However, at the time of an emergency, the Town works with the County to establish evacuation routes, depending on the hazard impacting the Town. These routes typically include the primary roads in and out of the Town. Routes and procedures would be determined at the time of an incident, in accordance with the County's CEMP.

### Temporary and Permanent Housing

---

The Town of Montague has not identified sites for the placement of temporary housing for residents displaced by a disaster, potential sites suitable for relocating houses of the floodplain, or potential sites for building new homes once properties in the floodplain are acquired. In an event temporary housing was needed, the town would work with Lewis County to identify suitable locations.

## 9.18.6 Mitigation Strategy and Prioritization

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This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and their prioritization.

### Past Mitigation Initiative Status

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The following table indicates progress on the community's mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under 'Capability Assessment' presented previously in this annex.



Table 9.18-11. Status of Previous Mitigation Actions

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection	
	Gardner Rd. - Appx 1 mile west of Sears Pond Rd. Larger culvert and ditch downstream	Road flooding	The 2010 HMP did not indicate the problem being addressed by this action.	Highway	No Progress			1. Discontinue 2. 3. Town abandoned the road in accordance with NY DEC mandate
	Gardner Rd. - appx. 1.2 miles west of Sears Pond Rd. Ditch downstream	Road flooding	The 2010 HMP did not indicate the problem being addressed by this action.	Highway	No Progress			1. Discontinue 2. 3. Town abandoned the road in accordance with NY DEC mandate
	Gardner Rd. appx. 2.2 miles west of Sears Pond Rd. Ditch downstream	Road flooding	The 2010 HMP did not indicate the problem being addressed by this action.	Highway	No Progress			1. Discontinue 2. 3. Town abandoned the road in accordance with NY DEC mandate
	Parker Rd. 1.4 miles south of Sears Pond Rd. Ditch Downstream	Road flooding	The 2010 HMP did not indicate the problem being addressed by this action.	Highway	No Progress			1. Discontinue 2. 3. Town abandoned the road in accordance with NY DEC mandate





### **Completed Mitigation Initiatives Not Identified in the Previous Mitigation Strategy**

The Town of Montague has performed ongoing maintenance projects to reduce the impact of flooding but has not identified specific mitigation projects/activities that were completed but not identified in the previous mitigation strategy in the 2010 Plan.

### **Proposed Hazard Mitigation Initiatives for the Plan Update**

Table 9.18-12 summarizes the comprehensive-range of specific mitigation initiatives the Town of Montague would like to pursue in the future to reduce the effects of hazards. Some of these initiatives might be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and can be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6 (Mitigation Strategy), 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as 'High', 'Medium', or 'Low.' The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.18-13 provides a summary of the prioritization of all proposed mitigation initiatives for the plan update.



Table 9.18-12. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
T. Montague-1	Vegetation Management Program	<b>Purpose:</b> The town has a history of falling trees blocking roadways.	<b>Solution:</b> The town will identify high risk trees throughout the town and trim branches or remove trees that are likely to fall in areas that could be damaging to life or property.	Severe Storm, Severe Winter Storm	1	No	None	6 months	Highway Department	\$15,000	Reduced damages to properties and utilities from falling trees.	HMGP, PDM, CHIPS	High	SIP	PP
T. Montague-2	Olin Improvements	<b>Purpose:</b> The town has a seasonal roadway that has become dangerous to use due to falling trees and washed out sections. The road is used by snowmobiles during the winter. The winter of 2018/2019 saw three fatalities due to unsafe conditions on the roadway. The roadway connects to Flat Rock Road.	<b>Solution:</b> The town will bring in fill to raise the elevation of the roadway in compromised areas and install ditches and culverts.	Severe Storm, Severe Winter Storm	2	No	None	1 year	Highway Department	\$100,000	The roadway will be safe to use and be protected from future damages.	Municipal budget, HMGP, CDBG, CHIPS	High	SIP	PP, SP
T. Montague-3	Develop Flood Damage Prevention Ordinance	<b>Purpose:</b> The town of Montague lacks a flood damage prevention ordinance.	<b>Solution:</b> The town will develop and adopt a flood damage prevention ordinance.	Flood	1	No	None	Within 6 months	Town board	<\$100	Meet NFIP requirements, buildings built to higher standard	Town budget	High	LPR	PR
T. Montague-4	Join the NFIP	<b>Purpose:</b> The town is not a member of the NFIP. Residents are unable to purchase NFIP flood insurance policies.		Flood	1	No	None	Within 1 year	Town Board	Staff time	Residents able to purchase flood insurance	Town budget	High	LPR	PR





Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
		<b>Solution:</b> The town will join the National Flood Insurance Program.													

Notes:

Not all acronyms and abbreviations defined below are included in the table.

Acronyms and Abbreviations:

- CAV Community Assistance Visit
- CRS Community Rating System
- DPW Department of Public Works
- FEMA Federal Emergency Management Agency
- FPA Floodplain Administrator
- HMA Hazard Mitigation Assistance
- N/A Not applicable
- NFIP National Flood Insurance Program
- OEM Office of Emergency Management

Potential FEMA HMA Funding Sources:

- FMA Flood Mitigation Assistance Grant Program
- HMGP Hazard Mitigation Grant Program
- PDM Pre-Disaster Mitigation Grant Program

Timeline:

The time required for completion of the project upon implementation

Cost:

The estimated cost for implementation.

Benefits:

A description of the estimated benefits, either quantitative and/or qualitative.

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities

CRS Category:

- Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.
- Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities

Critical Facility: Yes ♦ - Critical Facility located in 1% floodplain





**Table 9.18-13. Summary of Prioritization of Actions**

Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community	Total	High / Medium / Low
T. Montague-1	Vegetation Management Program	1	1	1	1	1	1	0	1	1	1	1	1	1	1	13	High
T. Montague-2	Olin Road Improvements	1	1	0	1	1	1	0	1	1	1	1	1	1	1	12	High
T. Montague-3	Develop Flood Damage Prevention Ordinance	1	1	1	1	1	1	1	1	1	1	0	1	1	1	13	High
T. Montague-4	Join the NFIP	0	1	1	1	1	1	1	1	1	1	0	1	1	1	12	High

Note: Refer to Section 6 (Mitigation Strategy), which conveys guidance on prioritizing mitigation actions. Low (0-4), Medium (5-8), High (9-14).



### **9.18.7 Future Needs To Better Understand Risk/Vulnerability**

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None at this time.

### **9.18.8 Staff and Local Stakeholder Involvement in Annex Development**

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The Town of Montague followed the planning process described in Section 3 (Planning Process). This annex was developed over the course of several months with input from many town departments, including the Supervisor and Highway Superintendent. The Supervisor represented the community on the Lewis County Hazard Mitigation Plan Planning Partnership and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Additional documentation on the Town of Montague’s planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix B (Meeting Documentation).

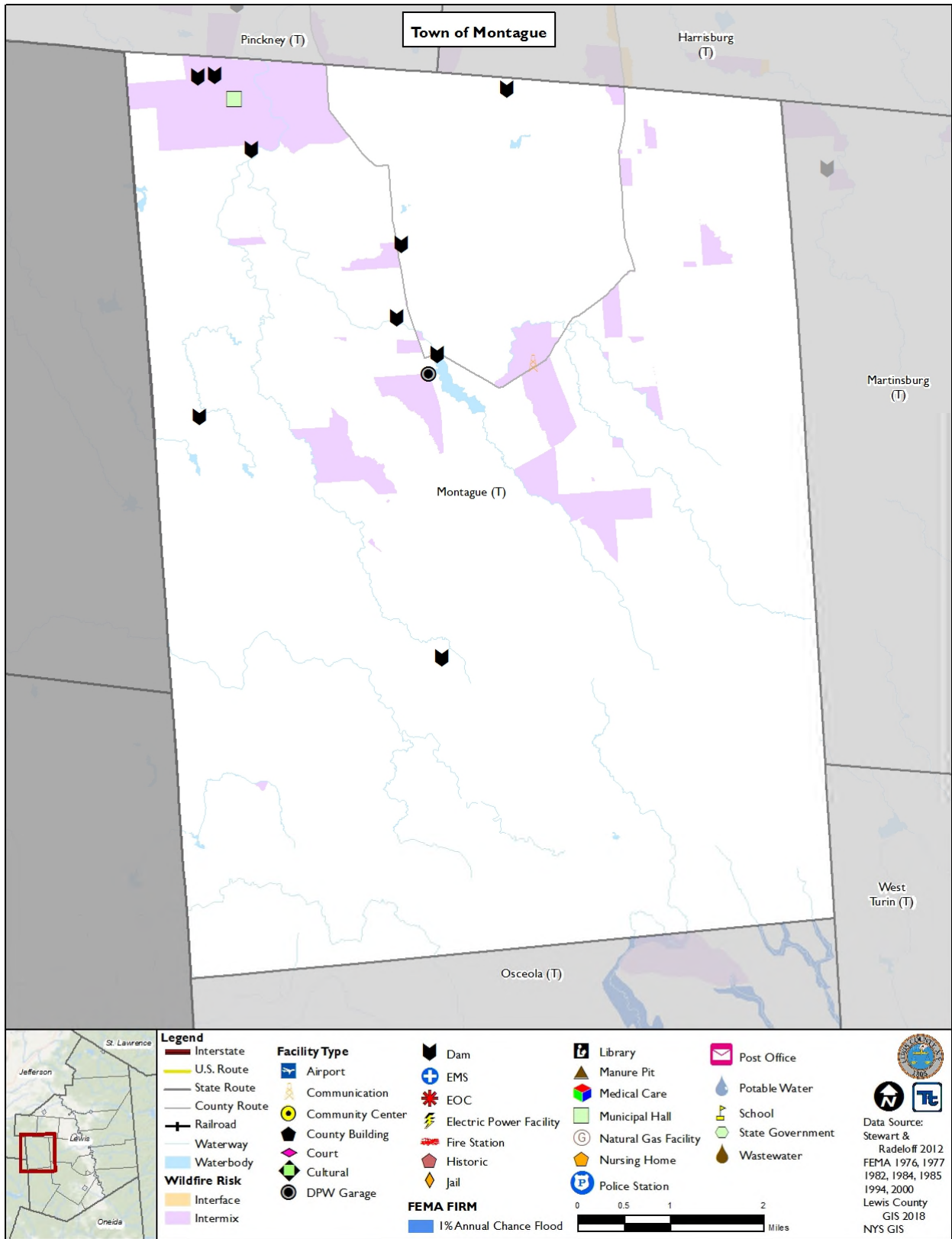
### **9.18.9 Hazard Area Extent and Location**

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Hazard area extent and location maps have been generated for the Town of Montague that illustrate the probable areas impacted within the Town of Montague. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies and for which the Town of Montague has significant exposure. A map of the Town of Montague hazard area extent and location is provided on the following page.



Figure 9.18-1. Town of Montague Hazard Area Extent and Location Map





Town of Montague Action Worksheet			
<b>Project Name:</b>	T. Montague-1		
<b>Project Number:</b>	Vegetation Management Program		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Severe Storm, Severe Winter Storm		
<b>Description of the Problem:</b>	The town has a history of falling trees blocking roadways and damaging infrastructure.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The town will identify high risk trees throughout the town and trim branches or remove trees that are likely to fall in areas that could be damaging to life or property.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Understanding of high risk trees, identify ways to protect life and property	<b>Estimated Benefits (losses avoided):</b>	Reduced damages to properties and utilities from falling trees.
<b>Useful Life:</b>	5 years	<b>Goals Met:</b>	1
<b>Estimated Cost:</b>	\$15,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 6 months
<b>Estimated Time Required for Project Implementation:</b>	Less than 6 months	<b>Potential Funding Sources:</b>	HMGP, PDM, CHIPS
<b>Responsible Organization:</b>	Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Capital Improvements Planning
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Remove trees to create buffer along all roadways and utility lines	\$750,000	Cost prohibitive. Negative public reaction. Upkeep issues.
	Establish program for citizens to request problem trees to be removed.	\$500	Reactive rather than prohibitive.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	T. Montague-1	
<b>Project Number:</b>	Vegetation Management Program	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project reduces of trees falling on roadways and buildings.
Property Protection	1	Project reduces of trees falling on roadways and buildings.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The town has the legal authority to complete the project.
Fiscal	0	The project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Severe Storm, Severe Winter Storm
Timeline	1	
Agency Champion	1	Highway Department
Other Community Objectives	1	
<b>Total</b>	13	
<b>Priority (High/Med/Low)</b>	High	



Town of Montague Action Worksheet			
<b>Project Name:</b>	Seasonal Roadway Improvements		
<b>Project Number:</b>	T. Montague-2		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Severe Storm, Severe Winter Storm		
<b>Description of the Problem:</b>	The town has a seasonal roadway (Olin Road, located between Salmon River and Pitcher Road) that has become dangerous to use due to falling trees and washed out sections. The road is used by snowmobiles during the winter. The winter of 2018/2019 has seen three fatalities due to unsafe conditions on the roadway. The roadway connects to Flat Rock Road. If the road is not improved, the town may need to close the roadway.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The town will bring in fill to raise the elevation of the roadway in compromised areas. The town will determine areas in need of improvements for drainage and install ditches and culverts.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	25-year storm (estimated)	<b>Estimated Benefits (losses avoided):</b>	The roadway will be safe to use and be protected from future damages. Roadway able to stay open.
<b>Useful Life:</b>	30 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$100,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	1 year
<b>Estimated Time Required for Project Implementation:</b>	1 year	<b>Potential Funding Sources:</b>	Municipal budget, HMGP, CDBG, CHIPS
<b>Responsible Organization:</b>	Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Close roadway	\$0	Reduction in public access
	Repair roadway but not undergo drainage improvements	\$15,000	Continued likelihood of washouts and roadway damages.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			





Action Worksheet		
<b>Project Name:</b>	Seasonal Roadway Improvements	
<b>Project Number:</b>	T. Montague-2	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project will improve safety of roadway.
Property Protection	1	
Cost-Effectiveness	0	
Technical	1	
Political	1	
Legal	1	The town has the legal authority to complete the project.
Fiscal	0	Project requires funding assistance
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Severe Storm, Severe Winter Storm
Timeline	1	
Agency Champion	1	Highway Department
Other Community Objectives	1	
<b>Total</b>	12	
<b>Priority (High/Med/Low)</b>	High	



## 9.19 TOWN OF NEW BREMEN

This section presents the jurisdictional annex for the Town of New Bremen. It includes resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions that can be implemented prior to a disaster to reduce or eliminate damage to property and people. This annex includes a general overview of the municipality and who in the town participated in the planning process; an assessment of the Town of New Bremen’s risk and vulnerability; the different capabilities utilized in the town; and an action plan that will be implemented to achieve a more resilient community.

### 9.19.1 Hazard Mitigation Plan Point of Contact

The following individuals have been identified as the hazard mitigation plan’s primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Jonathan M. Bush Title: Superintendent of Highways Phone Number: 315-376-7323 Address: 8420 State Rte 812, Lowville NY 13367 Email: <a href="mailto:newbremenhighway@gmail.com">newbremenhighway@gmail.com</a>	Name: Peter Keys Title: Town Supervisor Phone Number: 315-376-8728 Address: 8420 State Rte 812, Lowville NY 13367 Email: <a href="mailto:supervisorkeys@hotmail.com">supervisorkeys@hotmail.com</a>
Floodplain Administrator	
Name: Ward Daily, Lewis County Codes Department Title: Code Enforcement Official Phone Number: 315-376-5377 Address: 7660 North State Street, Lowville, NY 13367 Email: <a href="mailto:warddaily@lewiscounty.ny.gov">warddaily@lewiscounty.ny.gov</a>	

### 9.19.2 Municipal Profile

The Town of New Bremen is located in central Lewis County, New York. It is bordered by the Town of Watson to the east, the Town of Croghan to the north, the Town of Denmark to the northwest, and the Town of Lowville to the west. The estimated 2017 population was 2685, a 0.7 percent decrease from the 2010 Census (2706). Data from the 2017 U.S. Census American Community Survey indicate that 10.9 percent of the town’s population is five years of age or younger and 10.5 percent is 65 years of age or older.

Initial settlement in the present-day Town of New Bremen took place in the last 18<sup>th</sup> Century by the “Castorland Company” near the hamlet of Beaver Falls. Eventually this settlement failed due to the harsh climate. In 1830, James LeRay acquired a large tract of land and established the settlement of Dayanville on the banks of Crystal Creek. The Town of New Bremen was formed in 1848 and Dayanville became New Bremen, named after Bremen, Germany. Early industries including sawmills, gristmills, blacksmith shops, a door, sash and blind factory, and a brewery were established along the creek. A dam created Crystal Pond that provided waterpower for the mills. Today Crystal Creek is a noted Brown Trout fishing stream and is stocked annually. Industries in the town include the Farney Lumber Corporation and the Aries Chemical Co. The town also boasts many farms, and small businesses such as Duflo Spray Chemical, Croghan Candy Kitchen, New Bremen General Store, Nice n Easy, Adirondack Funeral Home, Rusty P’s, the Deli Lama Souper Shop, and The Pond, as well as many in home businesses (Town of New Bremen 2018).

### Growth/Development Trends

The following table summarizes recent residential/commercial development since 2010 to present and any known or anticipated major residential/commercial development and major infrastructure development that has





been identified in the next five years within the municipality. The map in 9.19.9 of this annex illustrates the hazard areas along with the location of potential new development.

**Table 9.19-1. Growth and Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2010 to present</b>					
Zehers Landscaping	Comm.	1	Vanamber Road Castorland, NY 13620 145.00-01-13.400	N/A	Complete
Adirondack Steel Works	Comm.	1	Cutoff Road Castorland, NY 13620 163.00-01-05.210	N/A	Complete
Wolfs Body Shop	Comm.	1	State Route 812 Croghan, NY 13327 146.00-01-14.300	N/A	Complete
CMC Storage	Comm.	1	State Route 812 Lowville, NY 13367 147.00-01-03.120	N/A	Complete
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
None anticipated					

*\* Only location-specific hazard zones or vulnerabilities identified.*

### 9.19.3 Natural Hazard Event History Specific to the Municipality

Lewis County has a history of natural and non-natural hazard events as detailed in Volume I, Section 5.0 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the county and its municipalities. For the purpose of this plan update, events that have occurred in the county from 2009 to present were summarized to indicate the range and impact of hazard events in the community. Information regarding specific damages is included, if available, based on reference material or local sources. This information is presented in the table below.

**Table 9.19-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Damages/Losses
April 26-May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	While the county reported damages, the Town of New Bremen did not.
August 26 – September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	While the county reported damages, the Town of New Bremen did not.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	While the county reported damages, the Town of New Bremen did not.
June 26-July 11, 2013	Severe Storms and Flooding (DR-4129)	No	While the county reported damages, the Town of New Bremen did not.



Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Damages/Losses
May 13-22, 2014	Severe Storms and Flooding  (DR-4180)	Yes	While the county reported damages, the Town of New Bremen did not.
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	The town received partial reimbursement for snow removal costs.
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	While the county reported damages, the Town of New Bremen did not.

Notes:

EM Emergency Declaration (FEMA)

DR Major Disaster Declaration (FEMA)

### 9.19.4 Hazard Vulnerabilities and Ranking

The hazard profiles in Section 5.0 (Risk Assessment) have detailed information regarding each plan participant’s vulnerability to the identified hazards. The following summarizes the hazard vulnerabilities and their ranking in the Town of New Bremen.

#### Hazard Risk/Vulnerability Risk Ranking

This section provides the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy, as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating town or village may have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Town of New Bremen. The Town of New Bremen reviewed the county hazard risk/vulnerability risk ranking table, as well as its individual results, to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the town indicated the following:

- The Town agreed with the calculated hazard risk and vulnerability rankings.

**Table 9.19-3. Hazard Risk/Vulnerability Risk Ranking**

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	High*
Extreme Temperature	High	High
Flood	Medium	Medium



Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Hazardous Material Incidents	Medium	Medium
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	High

Notes: The hazard ranking calculation is based on probability of occurrence and impacts on population, property, and the economy. Section 5.3 (Hazard Ranking) for the hazard ranking methodology.

\*The municipality changed the initial ranking of this hazard based on event history, municipal experience, and feedback from the municipality.

### Critical Facilities Flood Risk

NYS DEC Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for State projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a SFHA unless constructed according to specific mitigation specifications, including being raised 2 feet above the BFE. This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the State places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 500-year flood event, or worst damage scenario. For those that do not meet these criteria, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain and presents HAZUS-MH estimates of the damage and loss of use to critical facilities as a result of a 1-percent annual chance flood event.

**Table 9.19-4. Potential Flood Losses to Critical Facilities**

Name	Type	Exposure		Potential Loss from 1% Flood Event		Addressed by Proposed Action
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage	
Algonquin Power LLC, Site 1, St Rte 126/Co Rte 35	Electric Power Facility	X	-	-	-	T. New Bremen-1
Algonquin Power LLC, Site 2, St Rte 126/Co Rte 35	Electric Power Facility	X	-	-	-	T. New Bremen-2
Algonquin Power LLC, 9692 St Rte 126	Electric Power Facility	X	-	-	-	T. New Bremen-3
Boise Cascade Upper Dam	Dam	X	-	-	-	T. New Bremen-5
Sash & Blind Mill Dam	Dam	X	-	-	-	T. New Bremen-6
Crystal Creek Dam	Dam	X	-	-	-	T. New Bremen-9

Source: Lewis County Real Property 2018, FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000

### Identified Issues

The municipality has identified the following vulnerabilities within their community:

- Benton Road has experienced flooding during heavy rain and snowmelt.





- Artz Road has experienced flooding during heavy rain and snowmelt. The roadway also is impacted by flooding from beaver activity.
- Culverts/low bridges are aging on numerous roadways and might require replacement: Arch Road, Soft Maple Road, Erie Canal Road (3 culverts), Brewery Road.

### 9.19.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms

#### Planning and Regulatory Capability

The table below summarizes the regulatory tools that are available to the Town of New Bremen.

Table 9.19-5. Planning and Regulatory Tools

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Master Plan	No	-	-	-
Capital Improvements Plan	No	-	-	-
Floodplain Management / Basin Plan	No	-	-	-
Stormwater Management Plan	No	-	-	-
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	No	-	-	-
Economic Development Plan	No	-	-	-
Comprehensive Emergency Management Plan	No	-	-	-
Emergency Operation Plan	No	-	-	-
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	No	-	-	-
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-
<b>Regulatory Capability</b>				
Building Code	Yes	State & Local	County & local	NYS Building Code



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Zoning Ordinance	Yes	County & local	County & local	Site Plan Review & Zoning Law
Subdivision Ordinance	No	-	-	-
NFIP Flood Damage Prevention Ordinance	Yes	Federal, State, Local	Lewis County Codes Department	Flood Damage Prevention Ordinance
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	Yes	State, Local	Lewis County Codes Department	State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	Yes	County & Local	County and Local	Site Plan Review Law & Zoning Law
Stormwater Management Ordinance	No	-	-	-
Municipal Separate Storm Sewer System (MS4)	No	-	-	-
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	NYS, Real Estate Agents	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

### Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the Town of New Bremen.

**Table 9.19-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	Yes	Under the direction of the Town Board
Mitigation Planning Committee	No	-
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	No	-
Maintenance programs to reduce risk	No	-







Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Mutual aid agreements	Yes	Agreement with State DOT to share resources and a shared services agreement with all towns in the County and the County itself
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	No	-
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	No	-
Planners or engineers with an understanding of natural hazards	No	-
NFIP Floodplain Administrator (FPA)	Yes	Lewis County Codes
Surveyor(s)	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	No	-
Scientist familiar with natural hazards	No	-
Emergency Manager	Yes	Lewis County Emergency Management
Grant writer(s)	No	-
Staff with expertise or training in benefit/cost analysis	No	-
Professionals trained in conducting damage assessments	No	-

**Fiscal Capability**

The table below summarizes financial resources available to the Town of New Bremen.

**Table 9.19-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	No
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	No
Impact fees for homebuyers or developers of new development/homes	Yes
Stormwater utility fee	No
Incur debt through general obligation bonds	No
Incur debt through special tax bonds	No
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No
Other federal or state Funding Programs	CHIPS
Open Space Acquisition funding programs	No
Other	Private funding opportunities, CHIPS funding

**Community Classifications**

The table below summarizes classifications for community program available to the Town of New Bremen.





Table 9.19-8. Community Classifications

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	9	-
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	Yes	Website	-
Public-private partnership initiatives addressing disaster-related issues	No	-	-

Note:

- Unavailable

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery, and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10, with class 1 being the best possible classification and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual.
- The Building Code Effectiveness Grading Schedule.
- The ISO Mitigation online ISO’s Public Protection website at <https://www.isomitigation.com/ppc/>.
- The National Weather Service Storm Ready website at <http://www.stormready.noaa.gov/index.html>.
- The National Firewise Communities website at <http://firewise.org/>.

### Self-Assessment of Capability

The table below provides an approximate measure of the Town of New Bremen’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.



**Table 9.19-9. Self-Assessment Capability for the Municipality**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)*	Moderate	High
Planning and regulatory capability	X – Low staff, limited public interest in planning board.		
Administrative and technical capability	X – Low staffing		
Fiscal capability	X – limited funding		
Community political capability		X	
Community resiliency capability		X	
Capability to integrate mitigation into municipal processes and activities		X	

**National Flood Insurance Program**

**NFIP Floodplain Administrator (FPA)**

Ward Dailey, Lewis County Codes Department

**Flood Vulnerability Summary**

The following table summarizes the NFIP statistics for the Town of New Bremen.

**Table 9.19-10. NFIP Summary**

Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in 100-year Boundary (3)
Town of New Bremen	5	0	\$3,021	0	0	3

Source: FEMA Region 2, 2018

Notes:

- (1) Policies, claims, and repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.
  - (2) Total building and content losses from the claims file provided by FEMA Region 2.
  - (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file.
- FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility. A zero percentage denotes less than 1/100th percentage and not zero damage or vulnerability as may be the case. Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.

**Resources**

The Town of New Bremen has a signed inter-municipal agreement (IMA) with the Lewis County Codes Department to act on the town’s behalf for the administratin and enforcement of Flood Damage Prevention Ordinances.

**Compliance History**

The Town of New Bremen is in good standing with the National Flood Insurance Program (NFIP). The date of their last Community Assistance Visit (CAV) was April 12, 1993.

**Regulatory**

The Town of New Bremen’s Flood Damage Ordinance is administered by the Lewis County Codes Department. The town does not participate in the Community Rating System.





## Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community's progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures.

### Planning

#### Existing Integration

The town uses the Lewis County Comprehensive Emergency Management Plan and Comprehensive Plan. The Town of New Bremen does not have a Continuity of Operations/Government Plan. The town is not an MS4 Regulated Community and does not have a formal Stormwater Management Plan.

### Regulatory and Enforcement (Ordinances)

#### Existing Integration

The Town of New Bremen and Lewis County zoning and subdivision regulations/site plan review process considers natural hazard risk. They require developers to take additional action to mitigate natural hazard risk. The Lewis County Codes Department advises the town in matters of zoning to guide their decisions with respect to natural hazard risk management.

### Operational and Administration

#### Existing Integration

The Town of New Bremen does not have a municipal planner or contract planning firm. Town staff do not receive training or continuing professional education to support natural hazard risk reduction. No staff have job descriptions that include identifying or implementing mitigation projects. The town does not have any boards or committees that include functions with respect to managing natural hazard risk. The town has staff that participate in county associations, organizations, groups, or other committees that support natural hazard risk reduction and build hazard management capabilities. The County Codes Department performs NFIP Floodplain Management functions in the town.

#### Opportunities for Future Integration

The town could send employees to receive training regarding stormwater management.

### Funding

#### Existing Integration

The town's municipal budget does not include line items for mitigation projects and activities. The town does not have a Capital Improvements Budget that includes mitigation related projects. There are no other mechanisms within the Town of New Bremen to provide fiscal support mitigation initiatives.

#### Opportunities for Future Integration

The town could seek grant funding to supplement their municipal budget or to pay for mitigation projects/initiatives.



## Education and Outreach

### Existing Integration

The Town of New Bremen maintains social media pages, which are used to disseminate information to the public in addition to the town website and tax bill mailings.

### Sheltering, Evacuation, and Temporary Housing

Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

### Evacuation and Sheltering Needs

The Town of New Bremen identified locations as designated emergency shelters in the community. In addition to the facility listed below, the town identified all schools as designated shelters.

**Table 9.19-11. Emergency Shelters in the Community**

Shelter Name	Address	Capacity	Accommodates Pets?	ADA Compliant?	Backup Power?	Types of Medical Services Provided	Other Services Provided
New Bremen Fire Department	8154 Route 812 Lowville, NY 13367	Unknown	Unknown	Unknown	Yes	Unknown	Unknown

The Town did not identify specific evacuation routes or procedures; however, primary roads in and out of the Town can be used if an evacuation is needed. Routes and procedures would be determined at the time of an emergency, in accordance with the Lewis County CEMP.

### Temporary and Permanent Housing

The town identified the New Bremen Fire Department on State Route 812 and Adirondack Speedway on Artz Road as potential sites for temporary housing for residents displaced by a disaster. Both facilities have unknown capacity and would require water, sewer, and electric modifications to conform to NYS Uniform Fire Prevention and Building Code.

The town identified farmer’s fields throughout the town as potential sites suitable for relocating houses from the floodplain and/or building new homes once properties in the floodplain are acquired. The capacity of the sites are unknown and would require additional electric, water, and sewers.

## 9.19.6 Mitigation Strategy and Prioritization

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and summarizes prioritization.

### Past Mitigation Initiative Status

The Town of New Bremen did not participate in the 2010 Lewis County Hazard Mitigation Plan and therefore did not have progress to report on for past mitigation actions.



### **Completed Mitigation Initiatives Not Identified in the Previous Mitigation Strategy**

The Town of New Bremen performed ongoing maintenance projects to reduce the impact of flooding but has not identified specific mitigation projects/activities that have been completed but were not identified in the previous mitigation strategy in the 2010 HMP.

### **Proposed Hazard Mitigation Initiatives for the Plan Update**

Table 9.19-12 summarizes the comprehensive-range of specific mitigation initiatives the Town of New Bremen would like to pursue in the future to reduce the effects of hazards. Some of these initiatives might be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6 (Mitigation Strategy), 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.19-13 provides a summary of the prioritization of all proposed mitigation initiatives for the plan update.



Table 9.19-12. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
T. New Bremen-1	Protect Algonquin Power LLC, Site 1 to the 500-year flood level	<b>Problem:</b> The Algonquin Power LLC, Site 1, St Rte 126/Co Rte 35 is located in the 100-year floodplain.	<b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.	Flood	2	Yes <span style="color:blue">●</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of methods to protect to 500-year flood level	Operating budget	High	EAP	PI
T. New Bremen-2	Protect Algonquin Power LLC, Site 2 to the 500-year flood level	<b>Problem:</b> The Algonquin Power LLC, Site 2, St Rte 126/Co Rte 35 is located in the 100-year floodplain.	<b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.	Flood	2	Yes <span style="color:blue">●</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of methods to protect to 500-year flood level	Operating budget	High	EAP	PI
T. New Bremen-3	Protect Algonquin Power LLC to the 500-year flood level	<b>Problem:</b> The Algonquin Power LLC, 9692 St Rte 126 is located in the 100-year floodplain.	<b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.	Flood	2	Yes <span style="color:blue">●</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of methods to protect to 500-year flood level	Operating budget	High	EAP	PI
T. New Bremen-4	Protect Boise Cascade Upper Dam to the 500-year flood level	<b>Problem:</b> The Boise Cascade Upper Dam is located in the 100-year floodplain.	<b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.	Flood	2	Yes <span style="color:blue">●</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of methods to protect to 500-year flood level	Operating budget	High	EAP	PI
T. New Bremen-5	Protect Sash & Blind Mill Dam to the	<b>Problem:</b> The Sash & Blind Mill Dam is located in the 100-year floodplain.		Flood	2	Yes <span style="color:blue">●</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of	Operating budget	High	EAP	PI







Table 9.19-12. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
	500-year flood level	<b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.									methods to protect to 500-year flood level				
T. New Bremen-6	Benton Road pipe	<b>Problem:</b> A small creek flows through a 30-inch pipe under Benton Road. During rare times of heavy rainfall and significant snowmelt, the pipe is undersized and causes flood over the roadway. This can result in shoulder and roadway damages. The pipe is aging.	<b>Solution:</b> The town DPW will replace the existing 30-inch pipe and add an additional 30-inch pipe under the roadway. This will allow for an additional pipe to be used for flow during periods of increased volume.	Flood, Severe Storm	2	No	None	Within 1 year	DPW	\$20,000	Roadway flooding and damages reduced	HMGP, CHIPS, PDM, Operating budget	High	SIP	SP
T. New Bremen-7	Artz Road pipe	<b>Problem:</b> There is a 24-inch pipe under Artz Road. During rare times of heavy rainfall and significant snowmelt, the pipe is undersized and causes flood over the roadway. This can result in shoulder and roadway damages. The pipe is prone to clogging from beaver activity.	<b>Solution:</b> The town DPW will replace the 24-inch pipe with a 30-inch pipe and add a second 30-inch pipe, separated by 10 feet. This will allow for an additional pipe to be used for flow during periods of increased volume and reduce the likelihood of plugging of the pipe from beaver activity.	Flood, Severe Storm	2	No	None	Within 1 year	DPW	\$20,000	Roadway flooding and damages reduced	HMGP, CHIPS, PDM, Operating budget	High	SIP	SP
T. New Bremen-8	Culvert maintenance/replacement	<b>Problem:</b> Culverts/low bridges are aging on numerous roadways and might require replacement:		Flood, Severe Storm	2	No	May require permit	Within 5 years	DPW, NYS DEC	\$50,000 per replacement	Culverts/low bridges protected	HMGP, PDM, CHIPS,	High	SIP	SP



Table 9.19-12. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
		Arch Road, Soft Maple Road, Erie Canal Road (3 culverts), Brewery Road. <b>Solution:</b> The DPW will monitor the following culverts/bridges: Arch Road, Soft Maple Road, Erie Canal Road (3 culverts), Brewery Road. When structure is found to be degraded, DPW will replace.					g from NYS DEC				from collapse	Operating budget			
T. New Bremen-9	Protect Crystal Creek Dam to the 500-year flood level	<b>Problem:</b> The Crystal Creek Dam is located in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.		Flood	2	Yes <span style="color: blue;">💧</span>	None	Within 6 months	FPA	<\$100	Facility manager aware of methods to protect to 500-year flood level	Operating budget	High	EAP	PI

Notes:  
 Not all acronyms and abbreviations defined below are included in the table.  
 \*Does this mitigation initiative reduce the effects of hazards on new and/or existing buildings and/or infrastructure? Not applicable (N/A) is inserted if this does not apply.

Acronyms and Abbreviations:

- CAV Community Assistance Visit
- CRS Community Rating System
- DPW Department of Public Works
- FEMA Federal Emergency Management Agency
- FPA Floodplain Administrator
- HMA Hazard Mitigation Assistance
- N/A Not applicable
- NFIP National Flood Insurance Program
- OEM Office of Emergency Management

Potential FEMA HMA Funding Sources:

- FMA Flood Mitigation Assistance Grant Program
- HMGP Hazard Mitigation Grant Program
- PDM Pre-Disaster Mitigation Grant Program
- RFC Repetitive Flood Claims Grant Program (discontinued in 2015)
- SRL Severe Repetitive Loss Grant Program (discontinued in 2015)

Timeline:

- Short 1 to 5 years
- Long Term 5 years or greater
- OG On-going program
- DOF Depending on funding

Costs:

Where actual project costs have been reasonably estimated:

- Low < \$10,000
- Medium \$10,000 to \$100,000
- High > \$100,000

Where actual project costs cannot reasonably be established at this time:

- Low Possible to fund under existing budget. Project is part of, or can be part of an existing on-going program.

Benefits:

Where possible, an estimate of project benefits (per FEMA's benefit calculation methodology) has been evaluated against the project costs, and is presented as:

- Low= < \$10,000
- Medium \$10,000 to \$100,000
- High > \$100,000

Where numerical project benefits cannot reasonably be established at this time:

- Low Long-term benefits of the project are difficult to quantify in the short term.





Costs:

- Medium *Could budget for under existing work plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.*
- High *Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.*

Benefits:

- Medium *Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.*
- High *Project will have an immediate impact on the reduction of risk exposure to life and property.*


Mitigation Category:

- *Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.*
- *Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.*
- *Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.*
- *Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities*

CRS Category:

- *Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.*
- *Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.*
- *Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.*
- *Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.*
- *Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.*
- *Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities*

Critical Facility:

- Yes  - *Critical Facility located in 1% floodplain*



**Table 9.19-13. Summary of Prioritization of Actions**

Mitigation Action/Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Organizations	Total	High / Medium / Low
T. New Bremen-1	Protect Algonquin Power LLC, Site 1 to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. New Bremen-2	Protect Algonquin Power LLC, Site 2 to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. New Bremen-3	Protect Algonquin Power LLC to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. New Bremen-4	Protect Boise Cascade Upper Dam to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. New Bremen-5	Protect Sash & Blind Mill Dam to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High
T. New Bremen-6	Benton Road pipe	0	1	1	1	1	1	1	1	1	1	1	1	1	1	13	High
T. New Bremen-7	Artz Road pipe	0	1	1	1	1	1	1	1	1	1	1	1	1	1	13	High
T. New Bremen-8	Culvert maintenance/replacement	0	1	1	1	1	1	1	1	1	1	1	0	1	1	12	High
T. New Bremen-9	Protect Crystal Creek Dam to the 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High

Note: Refer to Section 6 (Mitigation Strategy), which conveys guidance on prioritizing mitigation actions.



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### **9.19.7 Future Needs To Better Understand Risk/Vulnerability**

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None at this time.

### **9.19.8 Staff and Local Stakeholder Involvement in Annex Development**

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The Town of New Bremen followed the planning process described in Section 3 (Planning Process). This annex was developed over the course of several months with input from many town departments, including: the Superintendent of Highways and the Town Supervisor. The Superintendent of Highways represented the community on the Lewis County Hazard Mitigation Plan Planning Partnership and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Additional documentation on the municipality's planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix B (Meeting Documentation).

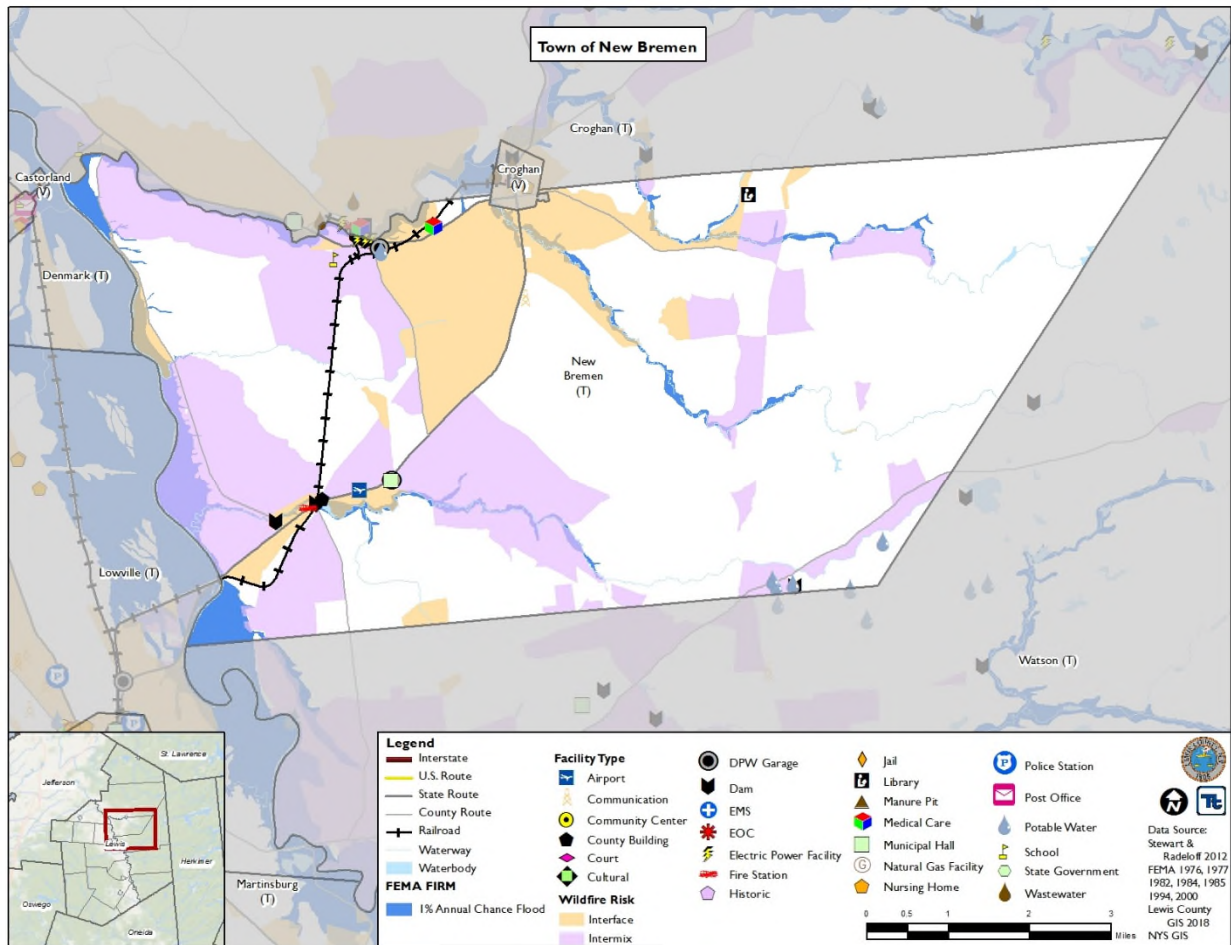
### **9.19.9 Hazard Area Extent and Location**

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Hazard area extent and location maps have been generated for the Town of New Bremen that illustrate the probable areas impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps have been generated only for those hazards that can be clearly identified using mapping techniques and technologies and for which the Town of New Bremen has significant exposure. These maps are illustrated in the hazard profiles within Section 5.4 (Hazard Profiles).



Figure 9.19-1. Town of New Bremen Hazard Area Extent and Location Map





Town of New Bremen Action Worksheet			
<b>Project Name:</b>	Benton Road pipe		
<b>Project Number:</b>	T. New Bremen-6		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Severe Storm, Flood		
<b>Description of the Problem:</b>	A small creek flows through a 30-inch pipe under Benton Road. During rare times of heavy rainfall and significant snowmelt, the pipe is undersized and causes flood over the roadway. This can result in shoulder and roadway damages. The pipe is aging.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The town DPW will replace the existing 30-inch pipe and add an additional 30-inch pipe under the roadway. This will allow for an additional pipe to be used for flow during periods of increased volume.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Estimated 5-year storm	<b>Estimated Benefits (losses avoided):</b>	Roadway flooding and damages reduced
<b>Useful Life:</b>	10 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$20,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 1 year
<b>Estimated Time Required for Project Implementation:</b>	1 month	<b>Potential Funding Sources:</b>	HMGP, CHIPS, PDM, Operating budget
<b>Responsible Organization:</b>	DPW	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Capital Improvements Planning
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Remove roadway	\$50,000+	Roadway cannot be removed
	Build bridge/elevated roadway	\$250,000	Not cost effective
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			





Action Worksheet		
<b>Project Name:</b>	Benton Road pipe	
<b>Project Number:</b>	T. New Bremen-6	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project will protect Benton Road from flooding.
Cost-Effectiveness	1	
Technical	1	The DPW has the technical capability to carry out the project.
Political	1	
Legal	1	The town has the legal authority to complete the project.
Fiscal	1	
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	1	1 month
Agency Champion	1	DPW
Other Community Objectives	1	
<b>Total</b>	13	
<b>Priority (High/Med/Low)</b>	High	



Town of New Bremen Action Worksheet			
<b>Project Name:</b>	Artz Road pipe		
<b>Project Number:</b>	T. New Bremen-7		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Severe Storm, Flood		
<b>Description of the Problem:</b>	There is a 24-inch pipe under Artz Road. During rare times of heavy rainfall and significant snowmelt, the pipe is undersized and causes flood over the roadway. This can result in shoulder and roadway damages. The pipe is prone to clogging from beaver activity.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The town DPW will replace the 24-inch pipe with a 30-inch pipe and add a second 30 inch pipe, separated by 10 feet This will allow for an additional pipe to be used for flow during periods of increased volume and reduce the likelihood of plugging of the pipe from beaver activity.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Estimated 5-year event	<b>Estimated Benefits (losses avoided):</b>	Roadway flooding and damages reduced. Beaver impacts reduced.
<b>Useful Life:</b>	10 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$20,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 1 year
<b>Estimated Time Required for Project Implementation:</b>	1 month	<b>Potential Funding Sources:</b>	HMGP, CHIPS, PDM, Operating budget
<b>Responsible Organization:</b>	DPW	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Capital Improvements Planning
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Remove roadway	\$50,000+	Roadway cannot be removed
	Build bridge/elevated roadway	\$250,000	Not cost effective
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Artz Road pipe	
<b>Project Number:</b>	T. New Bremen-7	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project will protect Artz Road from flooding.
Cost-Effectiveness	1	
Technical	1	The DPW has the technical capability to carry out the project.
Political	1	
Legal	1	The town has the legal authority to complete the project.
Fiscal	1	
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	1	1 month
Agency Champion	1	DPW
Other Community Objectives	1	
<b>Total</b>	13	
<b>Priority (High/Med/Low)</b>	High	



## 9.20 TOWN OF OSCEOLA

This section presents the jurisdictional annex for the Town of Osceola. It includes resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions that can be implemented prior to a disaster to reduce or eliminate damage to property and people. This annex includes a general overview of the Town of Osceola and who in the town participated in the planning process, an assessment of the Town of Osceola’s risk and vulnerability, the different capabilities used in the town, and an action plan that will be implemented to achieve a more resilient community.

### 9.20.1 Hazard Mitigation Planning Team

The following individuals have been identified as the Town of Osceola’s hazard mitigation plan primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Richard Meagher Title: Highway Superintendent Phone Number: 315-225-7916, Town Barn 315-599-8845 Address: 2009 Church St, Camden, NY 13316 Email: osceolatownclerk@gmail.com	Name: Ginny Churchill Title: Town Clerk Phone Number: 315-599-7120 Address: 1426 Osceola Rd, Camden, NY 13316 Email: osceolatownclerk@gmail.com
Floodplain Administrator	
Name: Michael Findlay Title: Town Supervisor Phone Number: 315-599-8842 Address: 1426 Osceola Road, Camden, NY 13316 Email: hondamikedec2@gmail.com	

### 9.20.2 Municipal Profile

The Town of Osceola lies in the southwest part of Lewis County in northern New York State. The town is bordered by the Town of Montague to the north, the Town of West Turin to the east, the Town of Lewis to the southeast, Oneida County to the south, and Oswego County to the west. Town of Osceola includes the following communities: Monteola (hamlet), New Campbellwood Wye (hamlet), North Osceola (hamlet), Old Campbellwood Wye (hamlet), and Osceola (hamlet). The town has a total area of 87 square miles. The Salmon River flows through the southern portion of the town. The town is governed by a Town Supervisor, four Town Council members, and a Town Clerk. The estimated 2017 population was 235, a 28.5 percent decrease from the 2010 Census (329).

Data from the 2017 U.S. Census American Community Survey indicate that 0.9 percent of the town population is five years of age or younger and 20.4 percent is 65 years of age or older. Communities must deploy a support system that enables all populations to safely reach shelters or to quickly evacuate a hazard area.

### History and Cultural Resources

The Town of Osceola was settled in 1838. The town was formed in 1844 from the Town of West Turin. The Osceola Town Hall was added to the National Register of Historic Places in 2005.



### Growth/Development Trends

The Town of Osceola did not note any recent residential/commercial development since 2009 or any major residential or commercial development, or major infrastructure development planned for the next five years in the Town of Osceola.

**Table 9.20-1. Growth and Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2009 to present</b>					
None					
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
None					

*\* Only location-specific hazard zones or vulnerabilities identified.*

### 9.20.3 Hazard Event History Specific to the Town of Osceola

Lewis County has a history of natural hazard events as detailed in Volume I, Section 5.0 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected Lewis County and its municipalities. The Town of Osceola’s history of federally-declared (as presented by FEMA) and significant hazard events (as presented in NOAA-NCEI) is consistent with that of Lewis County. Table 9.20-2 provides details regarding municipal-specific loss and damages the town experienced during hazard events. Information provided in the table below is based on reference material or local sources.

**Table 9.20-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April 26- May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	Although the county reported damages, no damages were reported by the town.
August 26- September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	Although the county reported damages, no damages were reported by the town.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	Although the county reported damages, no damages were reported by the town.
June 26- July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	Although the county reported damages, no damages were reported by the town.
May 13-22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	Although the county reported damages, no damages were reported by the town.



Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to a foot and half of snow within this band leading up to daybreak Friday.	Although the county reported damages, no damages were reported by the town.
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	Although the county reported damages, no damages were reported by the town.

Notes:

- EM Emergency Declaration (FEMA)
- FEMA Federal Emergency Management Agency
- DR Major Disaster Declaration (FEMA)

### 9.20.4 Hazard Ranking and Jurisdiction-Specific Vulnerabilities

The hazard profiles in Section 5.0 (Risk Assessment) have detailed information regarding each plan participant’s vulnerability to the identified hazards. This section provides a summary of exposure and impacts from significant hazards of concern as identified by the Town of Osceola.

#### Hazard Risk Ranking

This section includes the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating town or village may have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, the Town of Osceola ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential hazards for the Town of Osceola. The Town of Osceola has reviewed the county hazard risk/vulnerability risk ranking table as well as its individual results to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the town indicated the following:

- The town agreed with the calculated hazard rankings.

**Table 9.20-3. Town of Osceola Calculated Hazard Ranking**

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	Medium





Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Extreme Temperature	High	High
Flood	Medium	Medium
Hazardous Material Incidents	Medium	Medium
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	High

Notes: The scale is based on the following hazard rankings as established in Section 5.3 (Hazard Ranking).

### Critical Facilities Flood Risk

NYS DEC Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for State projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a SFHA unless constructed according to specific mitigation specifications, including being raised 2 feet above the BFE. This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the state places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 500-year flood event or worst damage scenario. For those that do not meet these criteria, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain and presents HAZUS-MH estimates of the damage and loss of use to critical facilities as a result of a 1-percent annual chance flood event.

**Table 9.20-4. Potential Flood Losses to Critical Facilities**

Name	Type	Exposure		Addressed by Proposed Action
		1% Event	0.2% Event	
None identified				

Source: Lewis County Real Property 2018, FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000

### Identified Issues

The Town of Osceola has identified the following vulnerabilities within their community:

- Flood prone areas
  - 3/10 mile of Ryan Road around Salmon River.
  - Jackson Road around Prince Brook.

### 9.20.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program







- Integration of mitigation planning into existing and future planning mechanisms

**Planning and Regulatory Capability**

The table below summarizes the regulatory tools that are available to the Town of Osceola.

**Table 9.20-5. Planning and Regulatory Tools**

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Comprehensive Plan	Yes	County	Lewis County Emergency Management	Master Plan
Capital Improvements Plan	No	-	-	-
Floodplain Management / Basin Plan	Yes	County	Lewis County Emergency Management	Floodplain Management Plan
Stormwater Management Plan	No	-	-	-
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	No	-	-	-
Economic Development Plan	No	-	-	-
Comprehensive Emergency Management Plan	No	-	-	-
Emergency Operation Plan	No	-	-	-
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	No	-	-	-
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-
<b>Regulatory Capability</b>				
Building Code	Yes	State & County	Lewis County Codes	Follow the County Building Codes
Zoning Ordinance	Yes	Local	Town Board, County	LL#1 2001
Subdivision Ordinance	Yes	Local	Town Board	LL#2 2009
NFIP Flood Damage Prevention Ordinance	To be determined	-	-	-
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	No	-	-	State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	Yes	Local	Planning Board	Local Law#2-2009
Site Plan Review Requirements	Yes	County, Local	Town Board	Local Law#1-2014



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Stormwater Management Ordinance	No	-	-	-
Municipal Separate Storm Sewer System (MS4)	No	-	-	-
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	NYS, Real Estate Agents	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

### Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the Town of Osceola.

**Table 9.20-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	Yes	Town Board
Mitigation Planning Committee	No	Follow county plan
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	No	-
Maintenance programs to reduce risk	No	-
Mutual aid agreements	Yes	Surrounding Highway & Fire Departments
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	No	-
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	No	-
Planners or engineers with an understanding of natural hazards	No	-
NFIP Floodplain Administrator (FPA)	Yes	To be determined
Surveyor(s)	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	No	-
Scientist familiar with natural hazards	No	-
Emergency Manager	No	-
Grant writer(s)	No	-
Staff with expertise or training in benefit/cost analysis	No	-



Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Professionals trained in conducting damage assessments	No	-

### Fiscal Capability

The table below summarizes financial resources available to the Town of Osceola.

**Table 9.20-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	No
Capital improvements project funding	No
Authority to levy taxes for specific purposes	No
User fees for water, sewer, gas or electric service	No
Impact fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	No
Incur debt through general obligation bonds	No
Incur debt through special tax bonds	No
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No
Other federal or state Funding Programs	No
Open Space Acquisition funding programs	No
Other	No

### Community Classifications

The table below summarizes classifications for community programs available to the Town of Osceola.

**Table 9.20-8. Community Classifications**

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	No	-	-
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	No	-	-
Public-private partnership initiatives addressing disaster-related issues	No	-	-
Other	No	-	-

Note:

- Unavailable





The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance, while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10, with class 1 being the best possible classification and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual.
- The Building Code Effectiveness Grading Schedule (<https://www.isomitigation.com/bcegs/>).
- The ISO Mitigation online ISO’s Public Protection (<https://www.isomitigation.com/ppc/>).
- New York State Climate Smart Communities (<http://www.dec.ny.gov/energy/56876.html>).
- The National Weather Service Storm Ready (<https://www.weather.gov/stormready/communities>).
- The National Firewise Communities (<http://firewise.org/>).

### Self-Assessment of Capability

The table below provides an approximate measure of the Town of Osceola’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

Table 9.20-9. Self-Assessment Capability for the Town of Osceola

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Planning and regulatory capability	X- Limited staff; Few people have numerous roles/responsibilities	-	-
Administrative and technical capability	X- Limited staff; Few people have numerous roles/responsibilities	-	-
Fiscal capability	X- Not aware of FEMA mitigation funding sources	-	-
Community political capability	X- Limited staff; Few people have numerous roles/responsibilities	-	-
Community resiliency capability	X- Limited staff; Few people have numerous roles/responsibilities	-	-
Capability to integrate mitigation into municipal processes and activities	X- Limited staff; Few people have numerous roles/responsibilities	-	-

### National Flood Insurance Program

This section provides specific information on the management and regulation of the regulatory floodplain.



### NFIP Floodplain Administrator (FPA)

The Town of Osceola is not certain if it has a NFIP Flood Damage Protection Ordinance ; therefore, it is unknown as to who the appointed FPA is for the Town. Mr. Michael Findlay, Town Supervisor provided information to complete this section.

### National Flood Insurance Program (NFIP) Summary

The following table summarizes the NFIP statistics for the Town of Osceola.

Table 9.20-10. NFIP Summary

Municipality	# Policies	# Claims (Losses)	Total Loss Payments	# RL Properties	# SRL Properties	# Policies in the 1% Flood Boundary
Town of Osceola	2	2	\$5,052	0	0	0

Source: FEMA Region 2, 2018

Notes:

- (1) Policies, claims, and repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.
  - (2) Total building and content losses from the claims file provided by FEMA Region 2.
  - (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file.
- FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility. A zero percentage denotes less than 1/100th percentage and not zero damage or vulnerability as may be the case. Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.

### Compliance History

The Town of Osceola is in good standing with the NFIP. According to records from NYS, the town’s last compliance audit (Community Assistance Visit [CAV]) took place on September 8, 1990.

### Regulatory

The Town of Osceola is not certain if it has a NFIP Flood Damage Protection Ordinance but plans to determine the status of the ordinance and create a new ordinance or update the ordinance if necessary.

### Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community’s progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures, which also are indicated below.

### Planning

#### Existing Integration

The town does not have a Master/Comprehensive Plan. The town is not an MS4 Regulated Community. The town does not have a Re-Development Plan, Growth Plan, Economic Development Plan, Watershed/Stream Corridor Management Plan, Local Waterfront Revitalization Plan, Continuity of Operations/Continuity of Government (COOP/COG) plan, Post Disaster Recovery Plan, Strategic Recovery Plan, or Comprehensive Emergency Management Plan. The town does refer to the county’s Comprehensive Emergency Management Plan.





### Opportunities for Future Integration

The town could develop a Master Plan, which refers to natural hazards and the Countywide Hazard Mitigation Plan.

### Regulatory and Enforcement (Ordinances)

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#### Existing Integration

The municipal zoning regulations, subdivision regulations, and site plan review process consider natural hazard risk and require developers to take additional actions to mitigate natural hazard risk. The Planning Board/Zoning Board of Adjustment is provided with information about the Cooperative Tugg Hill Council (CTHC) to help guide their decisions with respect to natural hazard management.

**Zoning Ordinance:** The Town of Osceola's Zoning Ordinance (LL#1 of 2001) is written for the following:

- to provide orderly growth in accordance with a comprehensive plan.
- to lessen congestion in the streets.
- to secure safety from fire, flood, and other dangers.
- to provide adequate light and air; to make provision for, so far as conditions may permit, the accommodation of solar energy systems and equipment and access to sunlight necessary therefor.
- to prevent the overcrowding of land.
- to avoid undue concentration of population.
- to facilitate the adequate provision of transportation, water, sewerage, schools, parks, and other public requirements.
- to promote the health, safety, and general welfare of the public.

**Subdivision Ordinance:** The Town of Osceola's Subdivision Law (LL#2 of 2009) is written to provide for the future growth and development of the town and affording adequate facilities for the housing, transportation, distribution, comfort, convenience, safety, health, and welfare of its population.

### Opportunities for Future Integration

The town could supply the Planning Board with flood maps and other relevant information to better inform their decisions in regard to natural hazards.

### Operational and Administration

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#### Existing Integration

The town does not have a municipal planner or contract planning firm. The town follows the Lewis County HMP to manage natural hazard. NFIP Floodplain Management functions are performed by the town appointed codes enforcement officer (which is Lewis County Building and Codes) and Osceola Planning Board. The town does not have staff or contract with firms that have experience with developing Benefit-Cost Analysis, performing Substantial Damage Determinations, or developing grant applications for mitigation projects. The Osceola Planning Board receives training/continuing professional education which supports natural hazard risk reduction. None of the town staff have job descriptions that specifically include identifying and/or implementing mitigation projects/actions or other efforts to reduce natural hazard risk. Town staff participate in the Cooperative Tugg Hill Council (CTHC). The Town of Osceola believes that participation in the Council supports natural hazard risk reduction and build hazard management capabilities.



### Opportunities for Future Integration

The town could hire staff or contract with firms that have experience in developing Benefit-Cost Analysis, performing Substantial Damage Determinations, and developing grant applications for mitigation projects.

### Funding

#### Existing Integration

The town’s municipal/operating budget does not include line items for mitigation projects/activities. The town does not have a Capital Improvements. The town does not have grant funds for mitigation-related projects. The town does not have any other mechanisms to fiscally support hazard mitigation projects.

#### Opportunities for Future Integration

The town could create a line item in the municipal budget for mitigation projects and supplement funding by applying for grant assistance.

### Education and Outreach

#### Existing Integration

The town does not have any public outreach mechanisms/programs in place to inform citizens on natural hazards.

#### Opportunities for Future Integration

The town could develop an outreach program to educate the public about natural hazard risk.

### Sheltering, Evacuation, and Temporary Housing

Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

### Evacuation and Sheltering Needs

The Town of Osceola has designated the following emergency shelters, evacuation routes, or evacuation procedures. While the Town does not have a formal evacuation procedure, they can use the primary roads in and out of the Town. Routes and procedures would be determined at the time of an incident, in accordance with the County’s CEMP.

Table 9.20-11. Identified Shelters in the Community

Shelter Name	Address	Capacity	Accommodates Pets?	ADA Compliant?	Backup Power?	Types of Medical Services Provided	Other Services Provided
Highway Town Barn	2009 Church Street	50	Yes	Yes	Yes	Yes – AED	None
Community Center	1426 Osceola Road	68	No	Yes	Yes	Yes – AED	None

### Temporary and Permanent Housing

The Town of Osceola has not identified sites for the placement of temporary housing for residents displaced by a disaster or potential sites suitable for relocating houses of the floodplain and/or building new homes once







properties in the floodplain are acquired. The town relies on the county to identify temporary housing sites as necessary, depending on the individual hazard events.

### **9.20.6 Mitigation Strategy and Prioritization**

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This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and their prioritization.

#### **Past Mitigation Initiative Status**

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The following table indicates progress on the community’s mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and also can be found under ‘Capability Assessment’ presented previously in this annex.



Table 9.20-12. Status of Previous Mitigation Actions

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection	
	Ryan Road. Replace culverts. Raise road height or replace gravel fill. This is a constant problem.	Will allow for more water to flow through the road	Culverts are too low and do not allow proper flow	Town Highway Supervisor	No Progress	Cost		1. Include in 2020 HMP 2. 3. Ryan Road replacements.
	North Osceola Road. Replace culvert at Prince Brook.	Reduce road flooding. Widen road.	Culvert has broken and road needs gravel wash	Town Highway Supervisor	Complete	Cost	Not identified	1. Discontinue 2. 3. Complete
	North Osceola Road (between Jackson Road and Corner at Gallos). Replace culvert and redo road.	Repair road flooding	Culvert plugs and floods roadway.	Town Highway Supervisor	Complete	Cost		1. Discontinue 2. 3. Complete
	Potter Road. Replace culvert with large one. Raise road height.	Stop road flooding and washout	Culvert is undersized and causes road flooding and washout.	Town Highway Supervisor	Complete	Cost		1. Discontinue 2. 3. Complete



### **Completed Mitigation Initiatives Not Identified in the Previous Mitigation Strategy**

The Town of Osceola has performed ongoing maintenance projects to reduce the impact of flooding but has not identified specific mitigation projects/activities that have been completed but were not identified in the previous mitigation strategy in the 2010 Plan.

### **Proposed Hazard Mitigation Initiatives for the Plan Update**

Table 9.20-13 summarizes the comprehensive-range of specific mitigation initiatives the Town of Osceola would like to pursue in the future to reduce the effects of hazards. Some of these initiatives may be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and could be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6, 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.20-14 provides a summary of the prioritization of all proposed mitigation initiatives for this HMP update.



Table 9.20-13. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
T. Osceola-1	Ryan Road	<b>Problem:</b> Ryan Road forms the town's western border with Oswego County. The road has issues with flooding and washouts.	<b>Solution:</b> Work with neighboring Oswego County to complete project. Replace culverts. Raise road height or replace gravel fill.	Flood	2	No	None	Within 5 years	Town Highway Supervisor, support from Army Corp of Engineers & NY DEC	\$50,000+	Ryan Road will be protected from flood damages.	HMGP, PDM, Town budget, NY Shared Service	High	SIP	SP, PP
T. Osceola-2	North Osceola Road Bridge Feasibility Study	<b>Problem:</b> The North Osceola Road Bridge is degraded. Continued degradation may result in collapse during flooding events.	<b>Solution:</b> Conduct a feasibility study to identify the best solution to upgrade the North Osceola Road Bridge. Once project is identified, the Town will begin work on upgrading this critical bridge in the Town. This work will also include replacing the north side wing wall.	Flood, Severe Storm	2	Yes	None	2 years	Town Highway Superintendent, NYS Shared Service	\$1 million+	North Osceola Road Bridge will be safe and secure.	U.S. DOT; Bridge NY	High	SIP	PP
T. Osceola-3	Adopt an updated Flood Damage Prevention Ordinance	<b>Problem:</b> The town is not aware of the status of its NFIP Flood Damage Prevention Ordinance.	<b>Solution:</b> The town will determine if an ordinance exists. If necessary, the town will update or adopt a new NFIP Flood Damage Prevention Ordinance.	Flood	1	No	None	Within 6 months	FPA	<\$100	Meeting of NFIP standards	Town budget	High	LPR	PR

Notes:





Not all acronyms and abbreviations defined below are included in the table.

Acronyms and Abbreviations:

CAV	Community Assistance Visit
CRS	Community Rating System
DPW	Department of Public Works
FEMA	Federal Emergency Management Agency
FPA	Floodplain Administrator
HMA	Hazard Mitigation Assistance
N/A	Not applicable
NFIP	National Flood Insurance Program
OEM	Office of Emergency Management

Potential FEMA HMA Funding Sources:

FMA	Flood Mitigation Assistance Grant Program
HMGP	Hazard Mitigation Grant Program
PDM	Pre-Disaster Mitigation Grant Program

Timeline:

The time required for completion of the project upon implementation

Cost:

The estimated cost for implementation.

Benefits:

A description of the estimated benefits, either quantitative and/or qualitative.


Mitigation Category:

- *Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.*
- *Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.*
- *Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.*
- *Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities*

CRS Category:

- *Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.*
- *Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.*
- *Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.*
- *Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.*
- *Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.*
- *Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities*

Critical Facility:

- Yes  - Critical Facility located in 1% floodplain





**Table 9.20-14. Summary of Prioritization of Actions**

Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community	Total	High / Medium / Low
T. Osceola-1	Ryan Road	0	1	1	1	1	0	0	1	1	1	1	0	1	1	10	High
T. Osceola-2	North Osceola Road Bridge Feasibility Study	1	1	1	1	1	1	0	1	1	1	1	1	1	1	13	High
T. Osceola-3	Adopt an updated Flood Damage Prevention Ordinance	0	1	1	1	1	1	1	1	1	1	0	1	1	1	12	High

Note: Refer to Section 6 (Mitigation Strategy), which conveys guidance on prioritizing mitigation actions.



### **9.20.7 Future Needs To Better Understand Risk/Vulnerability**

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None at this time.

### **9.20.8 Staff and Local Stakeholder Involvement in Annex Development**

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The Town of Osceola followed the planning process described in Section 3 (Planning Process). This annex was developed over the course of several months with input from many town departments, including the Highway Superintendent and Town Clerk. The Highway Superintendent represented the community on the Lewis County Hazard Mitigation Plan Planning Partnership, Steering Committee, and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Additional documentation on the Town of Osceola’s planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix B (Meeting Documentation).

### **9.20.9 Hazard Area Extent and Location**

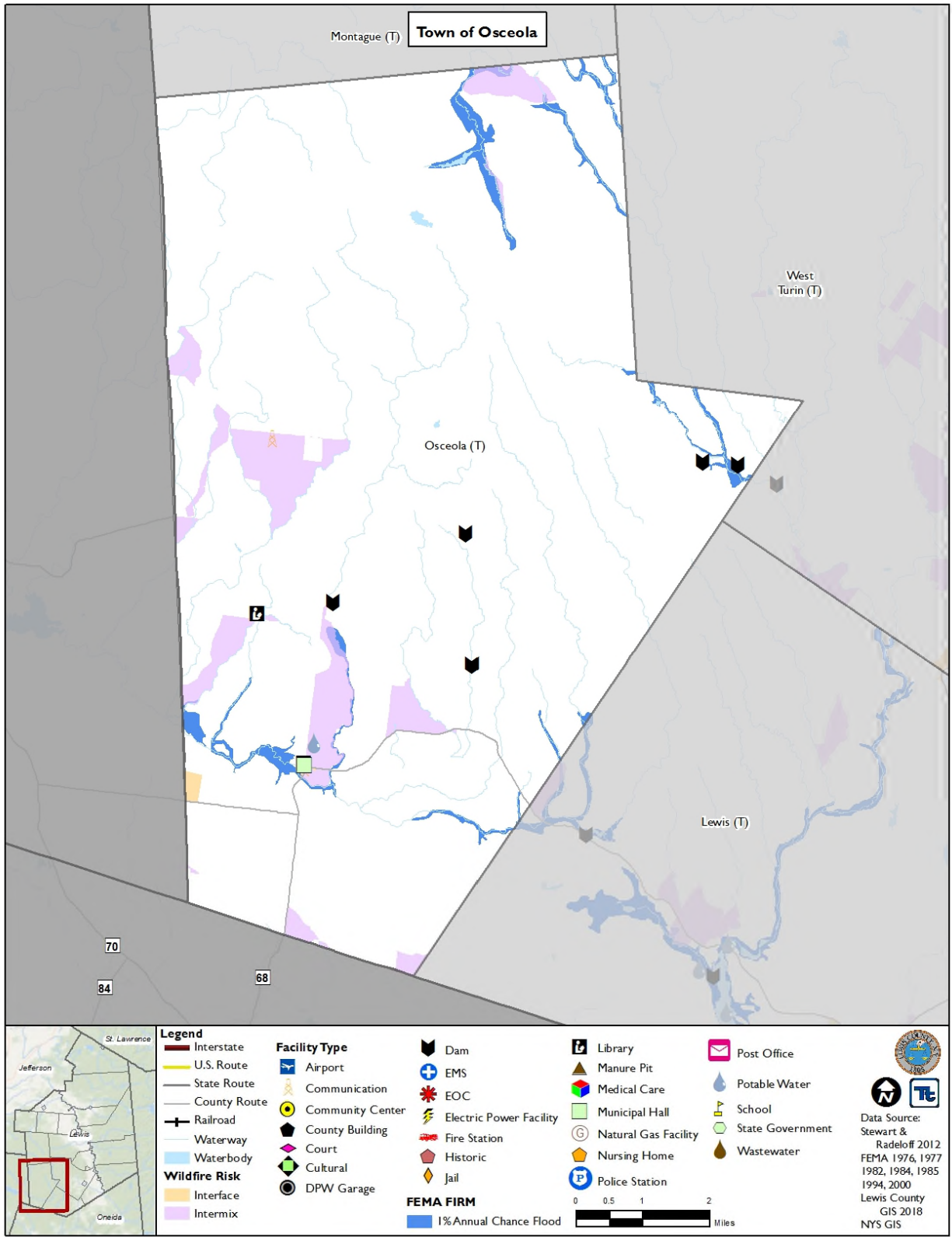
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Hazard area extent and location maps have been generated for the Town of Osceola that illustrate the probable areas impacted within the Town of Osceola. These maps are based on the best available data at the time of the preparation of this plan and are considered to be adequate for planning purposes. Maps have been generated for those hazards that can be clearly identified using mapping techniques and technologies and for which the Town of Osceola has significant exposure. A map of the Town of Osceola hazard area extent and location is provided on the following page. This map indicates the location of the regulatory floodplain, as well as identified critical facilities within the Town of Osceola.





Figure 9.20-1. Town of Osceola Hazard Area Extent and Location Map





Town of Osceola Action Worksheet			
<b>Project Name:</b>	Ryan Road		
<b>Project Number:</b>	T. Osceola-1		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Flood, Severe Storm		
<b>Description of the Problem:</b>	Ryan Road forms the town's western border with Oswego County. The road has issues with flooding and washouts.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	The Town of Osceola will work with neighboring Oswego County to complete project. An engineering study will be completed to identify what culverts need to be replaced and upsized, where the roadway elevation needs to be raised, and where gravel fill needs to be placed. The town will then carry out the improvements as dictated by the study.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Estimated 10-year storm	<b>Estimated Benefits (losses avoided):</b>	Ryan Road remains open during storm events, washouts greatly reduced.
<b>Useful Life:</b>	30 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	TBD by engineering study	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	Within 5 years for culverts, annual upkeep of fill and gravel	<b>Potential Funding Sources:</b>	HMGP, PDM, CHIPS, Town budget
<b>Responsible Organization:</b>	Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	Action	Estimated Cost	Evaluation
	No Action	\$0	Problem continues.
	Abandon road	\$25,000+	Roadway needs to be maintained for access
	Address culvert issues but not raise roadway elevations	\$15,000+	Less expensive but flooding damages still likely.
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Ryan Road	
<b>Project Number:</b>	T. Osceola-1	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project protects Ryan Road from flood damages.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	0	Project requires agreements for shared services with Oswego County.
Fiscal	0	Project requires grant funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	0	
Agency Champion	1	Highway Department
Other Community Objectives	1	
<b>Total</b>	10	
<b>Priority (High/Med/Low)</b>	High	



Town of Osceola Action Worksheet			
<b>Project Name:</b>	North Osceola Road Bridge Feasibility Study		
<b>Project Number:</b>	T. Osceola-2		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Flood, Severe Storm		
<b>Description of the Problem:</b>	The North Osceola Road Bridge is degraded. Continued degradation may result in collapse during flooding events.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	Conduct a feasibility study to identify the best solution to upgrade the North Osceola Road Bridge. Once project is identified, the Town will begin work on upgrading this critical bridge in the Town. This work will also include replacing the north side wing wall.		
<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	50 year	<b>Estimated Benefits (losses avoided):</b>	North Osceola Road Bridge remains safe and secure.
<b>Useful Life:</b>	50 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$1 million+	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 2 years
<b>Estimated Time Required for Project Implementation:</b>	1 year	<b>Potential Funding Sources:</b>	U.S. DOT; Bridge NY
<b>Responsible Organization:</b>	Town Highway Superintendent, NYS Shared Service	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Problem continues.
	Remove bridge	\$20,000	Bridge is lost, would result in need for long detour.
	Secure bridge from scouring.	\$20,000	Bridge continues to degrade.
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	North Osceola Road Bridge Feasibility Study	
<b>Project Number:</b>	T. Osceola-2	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project protects bridge from collapse.
Property Protection	1	Project protects bridge from collapse.
Cost-Effectiveness	1	
Technical	1	
Political	1	There is public support for the project.
Legal	1	
Fiscal	0	The project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	1	
Agency Champion	1	Town Highway Superintendent, NYS Shared Service
Other Community Objectives	1	
<b>Total</b>	13	
<b>Priority (High/Med/Low)</b>	High	



## 9.21 TOWN OF PINCKNEY

This section presents the jurisdictional annex for the Town of Pinckney. It includes resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions that can be implemented prior to a disaster to reduce or eliminate damage to property and people. This annex includes a general overview of the Town of Pinckney and who in the town participated in the planning process, an assessment of the Town of Pinckney’s risk and vulnerability, the different capabilities used in the town, and an action plan that will be implemented to achieve a more resilient community.

### 9.21.1 Hazard Mitigation Planning Team

The following individuals have been identified as the Town of Pinckney’s hazard mitigation plan primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Donald Cook Title: Superintendent Phone Number: 315-771-8671 Address: 587 Co Rt 194, Copenhagen, NY 13626 Email: <a href="mailto:cookie.cutterboat@yahoo.com">cookie.cutterboat@yahoo.com</a>	Name: Sherry Harmych Title: Supervisor Phone Number: 315-486-4245 Address: 587 Co Rt 194, Copenhagen, NY 13626 Email: <a href="mailto:mishnico@yahoo.com">mishnico@yahoo.com</a>
Floodplain Administrator	
Name: Lewis County Codes Department, Timothy R Widrick Title: Code Enforcement Official Phone Number: 315-376-5377 Address: 7660 North State Street, Lowville, NY 13367 Email: <a href="http://www.lewiscounty.org">www.lewiscounty.org</a> , <a href="mailto:timwidrick@lewiscounty.ny.gov">timwidrick@lewiscounty.ny.gov</a>	

### 9.21.2 Municipal Profile

The Town of Pinckney lies on the western border of Lewis County in Northern New York State. The town of Pinckney is bordered by Jefferson County to the west, the Town of Denmark to the north, the town of Harrisburg to the east, and the Town of Montague to the south. The Town of Pinckney includes Barnes Corners (hamlet), Cronk Corners, New Boston (hamlet), Pinckney Corners. The estimated 2017 population was 337, a 2.4 percent increase from the 2010 Census (329).

Data from the 2017 U.S. Census American Community Survey indicate that 2.7 percent of the town population is 5 years of age or younger, and 10.4 percent is 65 years of age or older. Communities must deploy a support system that enables all populations to safely reach shelters or to quickly evacuate a hazard area.

### History and Cultural Resources

The Town of Pinckney was first settled around 1804. The town was formed in 1808 from the Town of Harrisburg and the Town of Rodman in Jefferson County.

### Growth/Development Trends

Table 9.21-1 summarizes major residential/commercial development that known or anticipated to take place prior to 2024. The map in Figure 9.21-1 illustrates the hazard areas along with the location of potential new development.





**Table 9.21-1. Growth and Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2010 to present</b>					
None					
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
Arangrid	Wind Turbines	Poss: 28	Town wide	None	Beginning/Planning Stage

\* Only location-specific hazard zones or vulnerabilities identified.

### 9.21.3 Hazard Event History Specific to the Town of Pinckney

Lewis County has a history of natural hazard events as detailed in Volume I, Section 5.0 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. The Town of Pinckney’s history of federally-declared (as presented by FEMA) and significant hazard events (as presented in NOAA-NCEI) is consistent with that of Lewis County. Table 9.21-2 provides details regarding municipal-specific loss and damages the town experienced during hazard events. Information provided in the table below is based on reference material or local sources.

**Table 9.21-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April 26- May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	Flooding and washout of Munnock Road. Munnock Road, River Road, and McDonald Road were closed. Culvert replacements were necessary on Munnock Road. Two of the culverts had their sizes increased during replacement.
August 26- September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted 40 to 45 mph.	River Road flooding and washout. Munnock Road, River Road, and McDonald Road were closed. Culvert replacements were necessary on Munnock Road.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	Though the county was impacted, the town did not report damages.
June 26- July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	Though the county was impacted, the town did not report damages.
May 13-22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	Washout of Munnock Road. Munnock Road, River Road, and McDonald Road were closed. Culvert replacements were necessary on Munnock Road.





Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to a foot and half of snow within this band leading up to daybreak Friday.	Washout of Munnock Road. Munnock Road, River Road, and McDonald Road were closed. Culvert replacements were necessary on Munnock Road.
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	Munnock Road replaced and increased culvert sizes.
August 19, 2017	Agricultural Product Spill	N/A	N/A	A truck pulling a tanker trailer of milk by Preble Milk Co-Op lost control and went off the east side of the road. The vehicle flipped on its side and slid down the road and into a ditch, spilling some milk.
August 22, 2017	Severe Thunderstorm	No	Three waves of severe storms moved across western and north-central NY making for an almost 8-hour severe event. Flash flooding and strong winds took place.	Munnock Road washout. Replaced main culvert at Pinckney Road: and Tontanski Road.

Notes:

- EM Emergency Declaration (FEMA)
- FEMA Federal Emergency Management Agency
- DR Major Disaster Declaration (FEMA)

### 9.21.4 Hazard Ranking and Jurisdiction-Specific Vulnerabilities

The hazard profiles in Section 5.0 (Risk Assessment) have detailed information regarding each plan participant’s vulnerability to the identified hazards. This section provides a summary of exposure and impacts from significant hazards of concern as identified by the Town of Pinckney.

#### Hazard Risk Ranking

This section includes the community specific identification of the primary hazard concerns based on identified problems, impacts, and the results of the risk assessment as presented in Section 5 (Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy, as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating town or village may have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, each town ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Town of Pinckney. The Town of Pinckney has reviewed the county hazard risk/vulnerability risk ranking table, as well as its individual results to reflect the relative risk of the hazards of concern to the community.





Table 9.21-3. Town of Pinckney Calculated Hazard Ranking

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	Low
Extreme Temperature	High	High
Flood	Medium	Low
Hazardous Material Incidents	Medium	Medium
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	High

Notes: The scale is based on the following hazard rankings as established in Section 5.3 (Hazard Ranking).

### Critical Facilities Flood Risk

NYS DEC Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for state projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a SFHA unless constructed according to specific mitigation specifications, including being raised 2 feet above the BFE. This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the state places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 500-year flood event, or worst damage scenario. For those that do not meet these criteria, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain and presents HAZUS-MH estimates of the damage and loss of use to critical facilities as a result of a 1-percent annual chance flood event.

Table 9.21-4. Potential Flood Losses to Critical Facilities

Name	Type	Exposure		Addressed by Proposed Action
		1% Event	0.2% Event	
None identified				

Source: Lewis County Real Property 2018, FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000

### Identified Issues

The Town of Pinckney has identified the following vulnerabilities within their community:

- The town has issues with falling trees and tree branches during storm events.
- DPW equipment for managing heavy snowfall is aging.

### 9.21.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability





- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms

**Planning and Regulatory Capability**

The table below summarizes the regulatory tools that are available to the Town of Pinckney.

**Table 9.21-5. Planning and Regulatory Tools**

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Comprehensive Plan	No	-	-	-
Capital Improvements Plan	No	-	-	-
Floodplain Management / Basin Plan	No	-	-	-
Stormwater Management Plan	No	-	-	-
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	Yes	County	Lewis County Planning	Watershed Management Plan
Economic Development Plan	No	-	-	-
Comprehensive Emergency Management Plan	Yes	County	Lewis County Emergency Management	Comprehensive Emergency Management Plan
Emergency Operation Plan	Yes	County	Lewis County Emergency Management	Emergency Operation Plan
Post-Disaster Recovery Plan	Yes	County	Lewis County Emergency Management	Post-Disaster Recovery Plan
Transportation Plan	No	-	-	-
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-
<b>Regulatory Capability</b>				
Building Code	Yes	State and Local	County	NYS Building Code
Zoning Ordinance	Yes	County	County	Code citation unavailable from the Town
Subdivision Ordinance	Yes	Local	Planning Board	Code citation unavailable from the Town



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
NFIP Flood Damage Prevention Ordinance	No	Federal, State, Local	County Codes	Code citation unavailable from the Town
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	No	State, County	County Codes	State mandated BFE+2 for all construction
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	Site Plan Review Requirements	Local	Planning Board	Planning Board site plan review process
Stormwater Management Ordinance	No	-	-	-
Municipal Separate Storm Sewer System (MS4)	No	-	-	-
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	State of NY, Real Estate Agents	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

### Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the Town of Pinckney.

**Table 9.21-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	Yes	Town
Mitigation Planning Committee	Yes	County
Environmental Board/Commission	Yes	DEC
Open Space Board/Committee	No	-
Economic Development Commission/Committee	No	-
Maintenance programs to reduce risk	No	-
Mutual aid agreements	Yes	County/Towns
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	Yes	Tug Hill Commission
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	No	-
Planners or engineers with an understanding of natural hazards	Yes	Tug Hill Commission



Resources	Is this in place? (Yes or No)	Department/ Agency/Position
NFIP Floodplain Administrator (FPA)	Yes	County
Surveyor(s)	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	Yes	County
Scientist familiar with natural hazards	No	-
Emergency Manager	Yes	Tug Hill Commission
Grant writer(s)	No	-
Staff with expertise or training in benefit/cost analysis	No	-
Professionals trained in conducting damage assessments	Yes	Tug Hill Commission

### Fiscal Capability

The table below summarizes financial resources available to the Town of Pinckney.

**Table 9.21-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	Yes - Tug Hill Commission
Capital improvements project funding	No
Authority to levy taxes for specific purposes	Yes - Town Board
User fees for water, sewer, gas or electric service	No
Impact fees for homebuyers or developers of new development/homes	Yes - County Codes
Stormwater utility fee	No
Incur debt through general obligation bonds	Yes-Town Board
Incur debt through special tax bonds	Yes-Town Board
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No
Other federal or state Funding Programs	No
Open Space Acquisition funding programs	No
Other	No

### Community Classifications

The table below summarizes classifications for community programs available to the Town of Pinckney.

**Table 9.21-8. Community Classifications**

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	No	-	-



Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Natural disaster/safety programs in/for schools	Yes	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	TBD	-	-
Public-private partnership initiatives addressing disaster-related issues	No	-	-
Other	No	-	-

Note:

- Unavailable

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10, with class 1 being the best possible classification and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual.
- The Building Code Effectiveness Grading Schedule (<https://www.isomitigation.com/bcegs/>).
- The ISO Mitigation online ISO’s Public Protection website at (<https://www.isomitigation.com/ppc/>).
- New York State Climate Smart Communities (<http://www.dec.ny.gov/energy/56876.html>).
- The National Weather Service Storm Ready (<https://www.weather.gov/stormready/communities>).
- The National Firewise Communities website at (<http://firewise.org>).

### Self-Assessment of Capability

The table below provides an approximate measure of the Town of Pinckney’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

Table 9.21-9. Self-Assessment Capability for the Town of Pinckney

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Planning and regulatory capability		X	
Administrative and technical capability	X – Low staff		
Fiscal capability	X – Low budget		
Community political capability	X – Low staff and budget		





Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Community resiliency capability		X	
Capability to integrate mitigation into municipal processes and activities	X – Low staff and budget		

### National Flood Insurance Program

This section provides specific information on the management and regulation of the regulatory floodplain.

#### NFIP Floodplain Administrator (FPA)

Lewis County Building and Codes

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

The Town of Pinckney does not have any FEMA designated flood hazard zones. The town does not maintain lists or inventories of properties that have been flood damaged or identify property owners who are interested in mitigation but refers to county plans.

The following table summarizes the NFIP statistics for the Town of Pinckney.

**Table 9.21-10. NFIP Summary**

Town of Pinckney	# Policies	# Claims (Losses)	Total Loss Payments	# RL Properties	# SRL Properties	# Policies in the 1% Flood Boundary
Town of Pinckney	0	0	0	0	0	0

Source: FEMA Region 2, 2018

Notes:

- (1) Policies, claims, and repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.
  - (2) Total building and content losses from the claims file provided by FEMA Region 2.
  - (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file.
- FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility. A zero percentage denotes less than 1/100th percentage and not zero damage or vulnerability as may be the case. Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.

### Resources

Lewis County is responsible for floodplain administration. The town does not provide NFIP administrative services or functions or provide education or outreach to the community regarding flood hazards/risk and flood risk reduction through NFIP insurance, mitigation, etc. and instead relies upon the county.

### Compliance History

The Town of Pinckney is in good standing in the NFIP. According to records from NYS, the town has not had a compliance audit [e.g. Community Assistance Visit (CAV)].

### Regulatory

The Town of Pinckney is working on developing a flood damage prevention ordinance to meet state and federal standards.







## Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

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For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community's progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures, which is also indicated below.

### Planning

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#### Existing Integration

The Town does not have a Master/Comprehensive Plan or Stormwater Management Plan and is not an MS4 Regulated Community. The town does not have a Re-Development Plan, Growth Plan, Economic Development Plan, Open Space Plan, Watershed/Stream Corridor Management Plan, or Local Waterfront Revitalization Plan. The town has a Continuity of Operations/Continuity of Government (COOP/COG) plan with deputies in place. The town has a Comprehensive Emergency Management Plan and Post Disaster Recovery Plan/Strategic Recovery Plan, but they do not refer to the Hazard Mitigation Plan.

#### Opportunities for Future Integration

The town could develop a Master Plan, which includes information on natural hazards and refers to the Lewis County HMP.

### Regulatory and Enforcement (Ordinances)

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#### Existing Integration

The municipal zoning regulations, subdivision regulations, and site plan review process consider natural hazard risk and require developers to take additional actions to mitigate natural hazard risk. The Planning Board/Zoning Board of Adjustment are provided with data, information, and tools from the Tughill Commission, as well as copies of the planning and building codes to guide their decisions with respect to natural hazard risk management.

#### Opportunities for Future Integration

The town could consider including higher standards in hazard zones, such as stricter freeboard requirements.

### Operational and Administration

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#### Existing Integration

The town does not have a municipal planner or contract planning firm. The town has a Planning Board. The town does not have any other boards or committees that include functions with respect to managing natural hazard risk. Stormwater Management and NFIP Floodplain Management functions are performed by Lewis County. The town does not have staff or contract with firms that have experience with developing Benefit-Cost Analyses, performing Substantial Damage Determinations, or developing grant applications for mitigation projects. Town of Pinckney Highway staff receive training or continuing professional education, which supports natural hazard risk reduction. None of the town staff have job descriptions that specifically include identifying and/or implementing mitigation projects/actions or other efforts to reduce natural hazard risk. No town staff or departments participate in associations, organizations, groups, or other committees that support natural hazard risk reduction and build hazard management capabilities.



### Opportunities for Future Integration

The town could designate internal staff to serve as the NFIP Floodplain Administrator.

### Funding

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#### Existing Integration

The town's municipal/operating budget does not include line items for mitigation projects/activities and the town does not have a capital improvements budget. The town has not pursued or been awarded grant funds for mitigation-related projects. The town does not have any other mechanisms to fiscally support hazard mitigation projects.

#### Opportunities for Future Integration

The town could designate a line item in the municipal budget for mitigation projects and supplement funding by applying for grants.

### Education and Outreach

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#### Existing Integration

The town does not have any public outreach mechanisms/programs in place to inform citizens on natural hazards and did not identify any enhancements that would promote public outreach and education.

#### Opportunities for Future Integration

The town could develop an outreach program that would include brochures at the Town Hall and information that could be dispersed at community events.

### Sheltering, Evacuation, and Temporary Housing

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Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

### Evacuation and Sheltering Needs

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The Town of Pinckney has not designated emergency shelters, evacuation routes, or evacuation procedures. During emergency incidents, the town coordinates with the county for sheltering and evacuation procedures. In the event of a power outage and heating/cooling centers are needed, the Town can use the fire department or municipal buildings. If an evacuation is needed, the primary roads in and out of the Town can be used. Routes and procedures would be determined at the time of an incident, in accordance with the County's CEMP.

### Temporary and Permanent Housing

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The Town of Pinckney has not identified sites for the placement of temporary housing for residents displaced by a disaster or potential sites suitable for relocating houses of the floodplain and/or building new homes once properties in the floodplain are acquired.

## 9.21.6 Mitigation Strategy and Prioritization

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This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and their prioritization.



### **Past Mitigation Initiative Status**

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The following table indicates progress on the community’s mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under ‘Capability Assessment’ presented previously in this annex.



Table 9.21-11. Status of Previous Mitigation Actions

Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
					Cost	Level of Protection	
<u>Drainage ditching</u> River Road approximately 2 miles north of Intersection of Route 177 – road banks and ditch repair	Drainage/flooding; Erosion Control	The 2010 HMP did not indicate the problem being addressed.	Highway Dept.	Complete	Cost	\$1,190	1. Discontinue  2.  3. Complete
					Level of Protection	Reduce flooding of road	
					Damages Avoided; Evidence of Success	Increase drainage capacity, reduce flooding	
<u>Drainage ditching</u> River Road approximately 3 miles north of Intersection of Route 177 – road banks and ditch repair	Drainage/flooding; Erosion Control	The 2010 HMP did not indicate the problem being addressed.	Highway Dept.	Complete	Cost	\$1,115	1. Discontinue  2.  3. Complete
					Level of Protection	Reduce flooding of road	
					Damages Avoided; Evidence of Success	Increase drainage capacity, reduce flooding	
<u>Snowfencing and Tree Plantings</u> Throughout town – plant trees as living fences and other snow fencing to mitigate snow drifting due to heavy snows and winds	High Winds and Winter Storms	The 2010 HMP did not indicate the problem being addressed.	Highway Dept.	No Progress	Cost		1. Discontinue  2.  3. The Town is experienced with reducing or preventing snow drifts; therefore, this action will not be included in the plan update.
					Level of Protection		
					Damages Avoided; Evidence of Success		
<u>Plan Review for Mitigation</u> Ensure that local comprehensive plans incorporate disaster mitigation techniques through a courtesy	All Hazards	The 2010 HMP did not indicate the problem	Town Mayor / CPG Member	No Progress	Cost		1. Discontinue  2.
					Level of Protection		





Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps
review of all draft plans by the County Economic Development and Planning Department		being addressed.			Damages Avoided; Evidence of Success		1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinued, explain why.  3. The County reviews any applicable plans developed by the Town; therefore, this action will not be included in the plan update.
<u>GIS Enhancement</u> Investigate expansion of hazard-related GIS capabilities via acquisition of HAZUS-MH to collect and develop more sophisticated hazard mapping and loss estimation. Use information in future plan updates. Ensure information will be available to the public and to local communities and agencies.	Earthquakes, Wind, and Flood	The 2010 HMP did not indicate the problem being addressed.	Town Mayor / CPG Member	No Progress	Cost		1. Discontinue  2.  3. This action is related to a countywide action; therefore, this action will not be included in the plan update.
<u>Outreach Program</u> County coordination with local governments and other agencies to systematically contact isolated, vulnerable, or special-needs population during severe winter storm events	Winter Storms and Extreme temperatures	The 2010 HMP did not indicate the problem being addressed.	Town Mayor / CPG Member	No Progress	Cost		1. Discontinue  2.  3. This action is related to a countywide outreach program; therefore, this action will not be included in the plan update.
<u>Auxiliary Power Supply</u> Conduct a countywide survey on status of auxiliary power supplies at all critical facilities.	Winter Storms, Wind, Tornado	The 2010 HMP did not indicate the problem being addressed.	Town Mayor / CPG Member	No Progress	Cost		1. Discontinue  2.  3. This action is related to a countywide assessment; therefore, this action will not be included in the plan update.
<u>Wind Hazards Training</u>	Wind, Tornado		Town Mayor /		Cost		1. Discontinue



Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps
					Level of Protection	Damages Avoided; Evidence of Success	
Provide trainings to municipalities regarding the development and implementation of programs to mitigate wind damage to private and public properties.		The 2010 HMP did not indicate the problem being addressed.	CPG Member	No Progress	Level of Protection		<ol style="list-style-type: none"> <li>Project to be included in 2020 HMP or Discontinue</li> <li>If including action in the 2020 HMP, revise/reword to be more specific (as appropriate).</li> <li>If discontinued, explain why.</li> </ol>
					Damages Avoided; Evidence of Success		<ol style="list-style-type: none"> <li>Wind and tornado damage is not frequent in the Town and the history of damage is minimal, if any.</li> <li>Therefore, this action will not be included in the plan update.</li> </ol>
<u>Winter Driving and Vehicle Preparation Education</u> Provide education opportunities for residents to learn winter driving techniques.	Winter Storms and Wind	The 2010 HMP did not indicate the problem being addressed.	Town Mayor / CPG Member	No Progress	Cost		<ol style="list-style-type: none"> <li>Discontinue</li> <li>The Town and its residents are adapted to long, hard winters and know how to handle driving in winter conditions.</li> <li>Therefore, this action will not be included in the plan update.</li> </ol>
					Level of Protection		
					Damages Avoided; Evidence of Success		
<u>Winter Storm Public Awareness and Preparation</u> Increase public awareness of personal responsibilities during emergencies, specifically winter storm events	Winter Storms and Snow	The 2010 HMP did not indicate the problem being addressed.	Town Mayor / CPG Member	No Progress	Cost		<ol style="list-style-type: none"> <li>Discontinue</li> <li>The Town and its residents are adapted to long, hard winters and know how to prepare for winter conditions. Therefore, this action will not be included in the plan update.</li> </ol>
					Level of Protection		
					Damages Avoided; Evidence of Success		
<u>Emergency Warming Shelters</u> Establish warming shelters for vulnerable populations, including residents and stranded motorists	Extreme Temperatures and Winter Storms	The 2010 HMP did not indicate the problem being addressed.	Town Mayor / CPG Member	No Progress	Cost		<ol style="list-style-type: none"> <li>Discontinue</li> <li>The Town can utilize the local fire</li> </ol>
					Level of Protection		
					Damages Avoided;		



Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinued, explain why.
					Evidence of Success	Cost	
					Evidence of Success		department and municipal hall as a warming shelter. Therefore, this action will be not included in the plan update.
<u>Dam Safety</u> Coordinate with NYSDEC and owners of all high and moderate hazard dams to work towards full compliance with applicable dam safety programs and development/updating of Emergency Action Plans including inundation mapping.	Dam Failure	The 2010 HMP did not indicate the problem being addressed.	Town Mayor / CPG Member	No Progress	Cost		1. Discontinue
					Level of Protection		2.
					Damages Avoided; Evidence of Success		3. There are no dams in the Town; therefore this action will not be included in the plan update.
<u>Drought Preparedness</u> Publish and distribute literature (via the County web site, supplemented by hard copy distribution) on water conservation techniques and drought management strategies.	Drought	The 2010 HMP did not indicate the problem being addressed.	Town Mayor / CPG Member	No Progress	Cost		1. Discontinue
					Level of Protection		2.
					Damages Avoided; Evidence of Success		3. This is done at the County level. Therefore, this action will be not included in the plan update.
<u>Landslide Study</u> Conduct surveys to determine local vulnerabilities to landslides threatening property and roads, coordinate with municipalities to limit development in these areas and develop remedial measures for existing vulnerabilities.	Landslides	The 2010 HMP did not indicate the problem being addressed.	Town Mayor / CPG Member	No Progress	Cost		1. Discontinue
					Level of Protection		2.
					Damages Avoided; Evidence of Success		3. Wildfires are rare in the Town. Therefore, this action will not be included in the plan update.
<u>Wildfire Mapping</u> Create and distribute mapping and database of wildland access points for firefighters, develop enhanced mapping of urban/wildland interface.	Wildfire	The 2010 HMP did not indicate the problem being addressed.	Town Mayor / CPG Member	No Progress	Cost		1. Discontinue
					Level of Protection		2.
					Damages Avoided; Evidence of Success		3. The town did not indicate it was interested in continuing this action.
Critical Facilities Survey	Wind/Tornado, Winter Storms,	The 2010 HMP did not indicate	Town Mayor / CPG Member	No Progress	Cost		1. Discontinue







Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps
Undertake a year built and level of protection survey for all critical/emergency facilities and shelters to highlight structures built before codes and standards were put in place to provide protection from natural hazards, and pursue potential mitigation opportunities to protect these sites as funding becomes available.	Earthquakes, and Flooding (including Ice Jams)	the problem being addressed.			Level of Protection		<ol style="list-style-type: none"> <li>1. Project to be included in 2020 HMP or Discontinue</li> <li>2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate).</li> <li>3. If discontinue, explain why.</li> </ol> <p>2. Critical facilities in the Town are few and there are minimum areas of risk that the critical facilities are not exposed to.</p> <p>3. Therefore, this action will not be included in the plan update.</p>
					Damages Avoided; Evidence of Success		



### **Completed Mitigation Initiatives Not Identified in the Previous Mitigation Strategy**

The Town of Pinckney has identified the following mitigation projects/activities that were completed but not identified in the previous mitigation strategy in the 2010 Plan:

- January 23, 2018: Cleaned debris from culverts and bridges at Munnock, McDonald, McGowan, Pinckney, and Cronk Roads.

### **Proposed Hazard Mitigation Initiatives for the Plan Update**

Table 9.21-12 summarizes the comprehensive-range of specific mitigation initiatives the Town of Pinckney would like to pursue in the future to reduce the effects of hazards. Some of these initiatives may be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6, 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number

Table 9.21-13 provides a summary of the prioritization of all proposed mitigation initiatives for the plan update.



Table 9.21-12. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem and Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
T. Pinckney-1	Vegetation/ Tree Management and Mitigation Project	<p><b>Problem:</b> Falling tree limbs and trees on town, county, and state roads throughout the town, which leads to closed roads, infrastructure damage, and power outages. This can prevent emergency personnel from accessing areas of the town and can cause power line disruption or personal injuries.</p> <p><b>Solution:</b> The Town will develop a tree management program. The program will include tree inspections to identify at-risk trees. Once trees are identified, the Town will work with a tree service company to trim or remove hazard trees.</p>	Severe Storm, Severe Winter Storm	1	No	None	Ongoing throughout each year	DPW	\$5,000/year	High reduction of power outages	Operating budget, HMGP	High	NSP	NR
T. Pinckney-2	Outreach program	<p><b>Problem:</b> The Town of Pinckney lacks an outreach program related to hazards that impact the Town.</p> <p><b>Solution:</b> The town will develop an outreach program to educate the public about hazards of concern that impact the Town. This will include informational flyers, posting information on website and social media accounts, and including information in tax bills.</p>	All hazards	3	No	None	1 year	Town board	\$4,000	Public educated and better prepared and protected from hazards	Town budget	High	EAP	PI
T. Pinckney-3	Develop Flood Damage Prevention Ordinance	<p><b>Problem:</b> The Town of Pinckney lacks a flood damage prevention ordinance.</p> <p><b>Solution:</b> The town will develop and adopt a flood damage prevention ordinance.</p>	Flood	1	No	None	Within 6 months	Town board	<\$100	Meet NFIP requirements, buildings built to higher standard	Town budget	High	LPR	PR





Notes:

Not all acronyms and abbreviations defined below are included in the table.

Acronyms and Abbreviations:

CAV	Community Assistance Visit
CRS	Community Rating System
DPW	Department of Public Works
FEMA	Federal Emergency Management Agency
FPA	Floodplain Administrator
HMA	Hazard Mitigation Assistance
N/A	Not applicable
NFIP	National Flood Insurance Program
OEM	Office of Emergency Management

Potential FEMA HMA Funding Sources:

FMA	Flood Mitigation Assistance Grant Program
HMGP	Hazard Mitigation Grant Program
PDM	Pre-Disaster Mitigation Grant Program

Timeline:

The time required for completion of the project upon implementation

Cost:

The estimated cost for implementation.

Benefits:

A description of the estimated benefits, either quantitative and/or qualitative.

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities

CRS Category:

- Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.
- Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities

Critical Facility:


- Yes  - Critical Facility located in 1% floodplain





Table 9.21-13. Summary of Prioritization of Actions

Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community	Total	High / Medium / Low
T. Pinckney-1	Vegetation/Tree Management and Mitigation Project	0	1	1	1	1	1	1	1	1	1	1	1	1	1	13	High
T. Pinckney-2	Outreach Program	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
T. Pinckney-3	Flood Damage Prevention Ordinance Development	1	1	1	1	1	1	1	1	1	1	0	1	1	1	13	High

Note: Refer to Section 6 (Mitigation Strategy), which conveys guidance on prioritizing mitigation actions. Low (0-4), Medium (5-8), High (9-14).





### **9.21.7 Future Needs To Better Understand Risk/Vulnerability**

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None at this time.

### **9.21.8 Staff and Local Stakeholder Involvement in Annex Development**

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The Town of Pinckney followed the planning process described in Section 3 (Planning Process). This annex was developed over the course of several months with input from many town departments, including: the Superintendent and the Supervisor. The Superintendent represented the community on the Lewis County Hazard Mitigation Plan Planning Partnership and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Additional documentation on the Town of Pinckney's planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix B (Meeting Documentation).

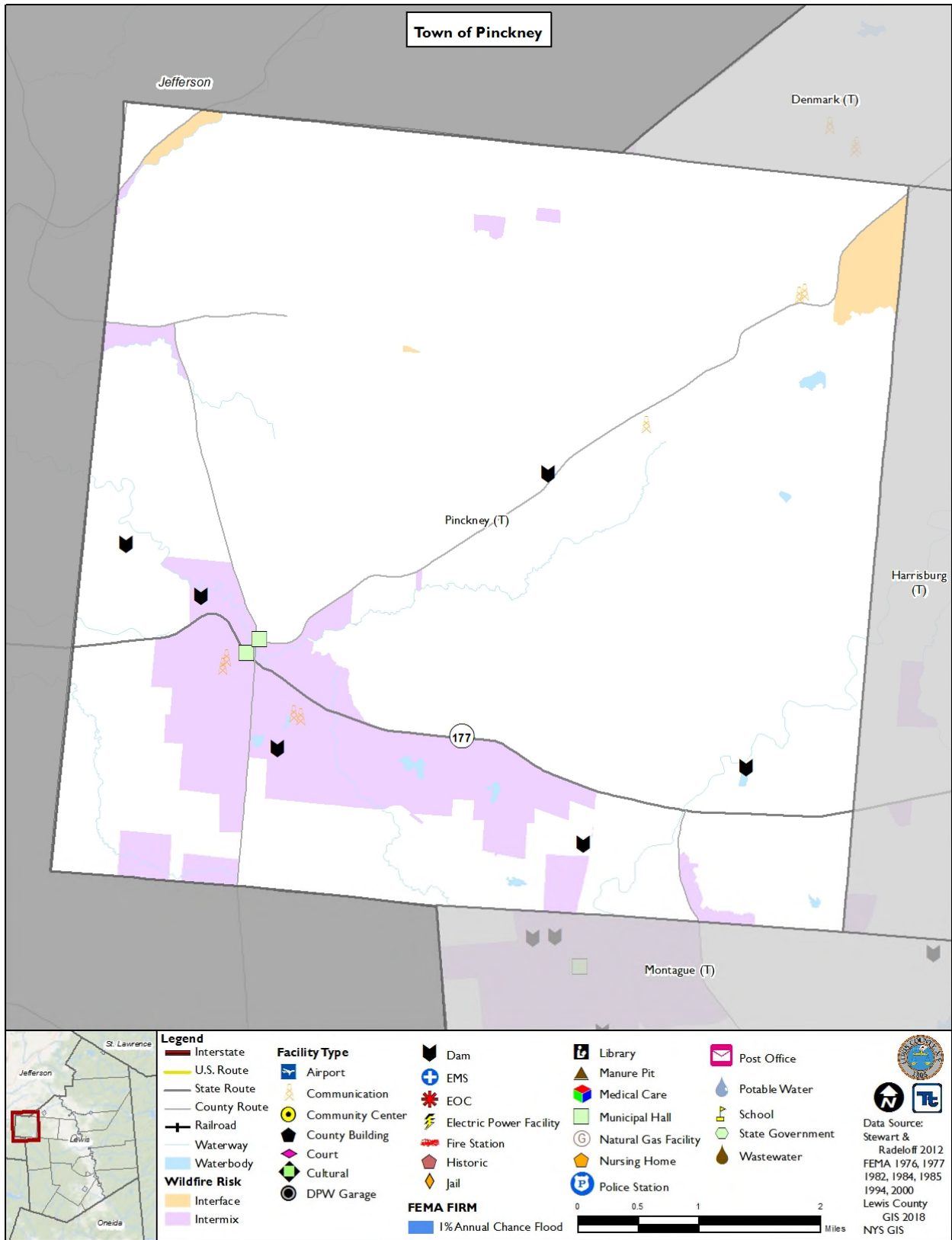
### **9.21.9 Hazard Area Extent and Location**

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Hazard area extent and location maps have been generated for the Town of Pinckney that illustrate the probable areas impacted within the Town of Pinckney. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the Town of Pinckney has significant exposure. A map of the Town of Pinckney hazard area extent and location is provided on the following page. This map indicates the location of the regulatory floodplain, as well as identified critical facilities within the Town of Pinckney.



Figure 9.21-1. Town of Pinckney Hazard Area Extent and Location Map







Town of Pinckney Action Worksheet			
<b>Project Name:</b>	Vegetation/Tree Management and Mitigation Project		
<b>Project Number:</b>	T. Pinckney-1		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Severe Storm, Severe Winter Storm		
<b>Description of the Problem:</b>	Falling tree limbs and trees on town, county, and state roads throughout the town. This leads to closed roads, infrastructure damage, and power outages. This can prevent emergency personnel from accessing areas of the town. This may cause power line disruption or personal injuries.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	The Town will develop a tree management program. The program will include tree inspections to identify at-risk trees. Once trees are identified, the Town will work with a tree service company to trim or remove hazard trees.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Protect from falling trees during wind events and snow storms	<b>Estimated Benefits (losses avoided):</b>	High-reduction of power outages
<b>Useful Life:</b>	Not applicable-ongoing action that will occur every year	<b>Goals Met:</b>	1, 4
<b>Estimated Cost:</b>	\$5,000/year	<b>Mitigation Action Type:</b>	Natural Systems Protection
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	1 year
<b>Estimated Time Required for Project Implementation:</b>	Ongoing throughout each year	<b>Potential Funding Sources:</b>	Operating Budget, HMGP
<b>Responsible Organization:</b>	DPW	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation Plan
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Current problem continues
	Education program to teach people how to maintain trees and report problem trees	\$500/year	Limited impact
	Change zoning to increase	\$500	Only deals with future issues, not current problem
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			





Action Worksheet		
<b>Project Name:</b>	Vegetation/Tree Management and Mitigation Project	
<b>Project Number:</b>	T. Pinckney-1	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Protects property from damage from falling limbs
Cost-Effectiveness	1	
Technical	1	
Political	1	Public would support the initiative
Legal	1	
Fiscal	1	Operating budget could support the project.
Environmental	1	Keeps ecosystems healthy
Social	1	
Administrative	1	
Multi-Hazard	1	Severe storm, severe winter storm
Timeline	1	
Agency Champion	1	DPW
Other Community Objectives	1	
<b>Total</b>	13	
<b>Priority (High/Med/Low)</b>	High	



Town of Pinckney Action Worksheet			
<b>Project Name:</b>	Outreach Program		
<b>Project Number:</b>	T. Pinckney-2		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Flood		
<b>Description of the Problem:</b>	The Town of Pinckney lacks an outreach program to educate the public about hazards.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The town will develop an outreach program to educate the public about hazards of concern that impact the Town. This will include informational flyers, posting information on website and social media accounts, and including information in tax bills.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Increase awareness to residents	<b>Estimated Benefits (losses avoided):</b>	Public educated and better prepared for hazard events.
<b>Useful Life:</b>	5 years	<b>Goals Met:</b>	3
<b>Estimated Cost:</b>	\$4,000	<b>Mitigation Action Type:</b>	Education and Awareness Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	1 year
<b>Estimated Time Required for Project Implementation:</b>	Within 1 year	<b>Potential Funding Sources:</b>	Operating budget
<b>Responsible Organization:</b>	Town Board	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Encourage non-profit groups to conduct outreach	\$0	Non-profits might not be interested/capable of completing outreach.
	Rely on property owners to educate themselves without municipal assistance	\$0	Property owners might not be aware of need to educate.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Outreach Program	
<b>Project Number:</b>	T. Pinckney-2	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Public aware of how to protect life from hazards
Property Protection	1	Public aware of how to protect property from hazards
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	Town has legal authority to conduct outreach
Fiscal	1	
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	All hazards to be addressed
Timeline	1	
Agency Champion	1	FPA
Other Community Objectives	1	Public education
<b>Total</b>	14	
<b>Priority (High/Med/Low)</b>	High	



## 9.22 VILLAGE OF PORT LEYDEN

This section presents the jurisdictional annex for the Village of Port Leyden.

### 9.22.1 Hazard Mitigation Plan Point of Contact

The following individuals have been identified as the hazard mitigation plan’s primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Heather Collins Title: Mayor Phone Number: 315-513-4127 (home), 315-348-8613 (office) Address: P.O. Box 582, 3387 Douglas Street, Port Leyden, NY 13433 Email: <a href="mailto:villageofportmayor@gmail.com">villageofportmayor@gmail.com</a>	Name: Joshua Mormon Title: DPW Supervisor Phone Number: 315-348-8613 (office), (315-)-348-8555 (garage) Address: P.O. Box 582, 3387 Douglas Street, Port Leyden, NY 13433 Email: <a href="mailto:portleydendpw@gmail.com">portleydendpw@gmail.com</a>
Floodplain Administrator	
Name: Ward Dailey Title: Lewis County Codes Phone Number: (315) 377-2037 Address: 7660 N State St Lowville, NY 13367 Email: <a href="mailto:permits@lewiscounty.ny.gov">permits@lewiscounty.ny.gov</a>	

### 9.22.2 Municipal Profile

The Village of Port Leyden is located in the southern portion of Lewis County along the Black River. The village is surrounded by the Town of Leyden on the west side of the Black River and the Town of Lyonsdale on the east side of the river. The village is located on New York State Route 12.

The estimated 2017 population was 688, which is a 2.4 percent increase in population from 2010 (672 persons). Data from the 2017 U.S. Census American Community Survey estimates that 10.0 percent of the town population is 5 years of age or younger and 16.1 percent is 65 years of age or older.

#### History and Cultural Resources

The Village of Port Leyden was originally called Kelsey’s Mills after a mill built on the site around 1800. When the Black River Canal was built, the name was changed to the Village of Port Leyden as the village served as a port on the canal. However, the canal eventually was abandoned in 1900 in the stretch that included the village. St. Mark’s Church and the Edmund Wilson House are listed on the National Register of Historic Places.

#### Growth/Development Trends

The Village of Port Leyden did not note any recent residential/commercial development or any major residential or commercial development since 2010 or major infrastructure development planned for the next five years in the municipality.

Table 9.22-1. Growth and Development

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2010 to present</b>					
None identified					





Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
None anticipated					

\*Only location-specific hazard zones or vulnerabilities identified.

### 9.22.3 Natural Hazard Event History Specific to the Municipality

Lewis County has a history of natural and non-natural hazard events as detailed in Volume I, Section 5.0 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the county and its municipalities. For the purpose of this plan update, events that have occurred in the county from 2009 to present were summarized to indicate the range and impact of hazard events in the community. Information regarding specific damages is included, if available, based on reference material or local sources. This information is presented in the table below.

**Table 9.22-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April 26-May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	Although the county reported damages, no damages were reported in the village.
August 26-September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	Although the county reported damages, no damages were reported in the village.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	Although the county reported damages, no damages were reported in the village.
June 26-July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	Although the county reported damages, no damages were reported in the village.
May 13-22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	Flooding resulted in evacuation of North Street and portions of Quarry Street. Utility outages and road closures of North Street, Quarry Street, North Elm Street, and a small portion of Douglas Street. Sewer system damage to North Elm and Quarry Street and water system washed out on North Street. Culvert blew out, roads washed out on North and Quarry Street. A small bridge on Quarry Street was also damaged. Numerous houses damaged. An adult home required residents to be relocated by the Red Cross. Funding was requested from FEMA for debris removal and overtime by the DPW.





Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to a foot and half of snow within this band leading up to daybreak Friday.	Although the county reported damages, no damages were reported in the village.
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	Although the county reported damages, no damages were reported in the village.
January 12, 2018	Rain & Ice Melt & Ice Dam in Sugar River	No	Ice Dam on Sugar River near the Sewer Plant.	Although the county reported damages, no damages were reported in the village.

Notes:

EM Emergency Declaration (FEMA)  
 DR Major Disaster Declaration (FEMA)

### 9.22.4 Hazard Vulnerabilities and Ranking

The hazard profiles in Section 5.0 (Risk Assessment) have detailed information regarding each plan participant’s vulnerability to the identified hazards. The following summarizes the hazard vulnerabilities and their ranking in the Village of Port Leyden.

#### Hazard Risk/Vulnerability Risk Ranking

This section provides the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating town or village may have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Village of Port Leyden. The Village of Port Leyden has reviewed the county hazard risk/vulnerability risk ranking table, as well as its individual results, to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the village indicated the following:

- The village agreed with the calculated hazard rankings.

Table 9.22-3. Hazard Risk/Vulnerability Risk Ranking

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High







Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Drought	Medium	Medium
Earthquake	Medium	Medium
Extreme Temperature	High	High
Flood	Medium	Low
Hazardous Material Incidents	Medium	Medium
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	High

Notes: The scale is based on the following hazard rankings as established in Section 5.3 (Hazard Ranking).

### Critical Facilities

The table below presents Hazards United States (HAZUS) – Multi-Hazards (MH) estimates of the damage and loss of use to critical facilities in the community as a result of a 1-percent annual chance flood event.

**Table 9.22-4. Potential Flood Losses to Critical Facilities**

Name	Type	Exposure		Potential Loss from 1% Flood Event		Addressed by Proposed Action
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage	
Black River Hydro Assoc	Electric Power Facility	X	X	-	-	V. Port Leyden-3
Lyonsdale Hydroelectric Co Inc	Electric Power Facility	X	X	-	-	V. Port Leyden-4
Port Leyden Upper Dam	Dam	X	X	-	-	V. Port Leyden-5

Source: Lewis County Real Property 2018, FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000

### Identified Issues

The municipality has identified the following vulnerabilities within their community:

- The village has had issues with falling trees/branches damaging property and interrupting utilities.
- The village has a need for stormwater improvements.

### 9.22.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms



**Planning and Regulatory Capability**

The table below summarizes the regulatory tools that are available to the Village of Port Leyden.

**Table 9.22-5. Planning and Regulatory Tools**

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Master Plan	Yes	Local	Village Board	Master Plan
Capital Improvements Plan	No	-	-	-
Floodplain Management / Basin Plan	No	-	-	-
Stormwater Management Plan	No	-	-	-
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	No	-	-	-
Economic Development Plan	No	-	-	-
Comprehensive Emergency Management Plan	Yes	Local	Emergency Management	Comprehensive Emergency Management Plan
Emergency Operation Plan	No	-	-	-
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	No	-	-	-
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-
<b>Regulatory Capability</b>				
Building Code	Yes	State & Local	Lewis County Codes	NYS Building Code
Zoning Ordinance	Yes	County	Codes	Code citation unavailable
Subdivision Ordinance	Yes	County	Codes	Code citation unavailable
NFIP Flood Damage Prevention Ordinance	Yes	Federal, State, Local	Lewis County Codes	Code citation unavailable
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	Yes	State, Local	Lewis County Codes	State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	Yes	County	Codes	Code citation unavailable
Site Plan Review Requirements	Yes	County	Codes	Code citation unavailable



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Stormwater Management Ordinance	Yes	County	Codes	Code citation unavailable
Municipal Separate Storm Sewer System (MS4)	Yes	County	Codes	Code citation unavailable
Natural Hazard Ordinance	Yes	County	Codes	Code citation unavailable
Post-Disaster Recovery Ordinance	Yes	County	Codes	Code citation unavailable
Real Estate Disclosure Requirement	Yes	State	NYS, Real Estate Agents	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

### Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the Village of Port Leyden.

**Table 9.22-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	No	-
Mitigation Planning Committee	No	-
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	No	-
Maintenance programs to reduce risk	No	-
Mutual aid agreements	No	-
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	No	-
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	No	-
Planners or engineers with an understanding of natural hazards	No	-
NFIP Floodplain Administrator (FPA)	Yes	Lewis County
Surveyor(s)	Yes	County
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	Yes	County
Scientist familiar with natural hazards	Yes	County
Emergency Manager	Yes	County
Grant writer(s)	No	-



Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Staff with expertise or training in benefit/cost analysis	No	-
Professionals trained in conducting damage assessments	No	-

### Fiscal Capability

The table below summarizes financial resources available to the Village of Port Leyden.

**Table 9.22-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes
Impact fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	No
Incur debt through private activity bonds	Yes
Withhold public expenditures in hazard-prone areas	No
Other federal or state Funding Programs	Yes
Open Space Acquisition funding programs	No
Other	No

### Community Classifications

The table below summarizes classifications for community program available to the Village of Port Leyden.

**Table 9.22-8. Community Classifications**

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	No	-	-
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	Yes	ISO 9	-
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	Yes	Social media, paper mail, TV	-



Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Public-private partnership initiatives addressing disaster-related issues	Yes	Work with the County and Village of Lyons Falls	-

Note:

- Unavailable

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery, and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance, while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10, with class 1 being the best possible classification and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual.
- The Building Code Effectiveness Grading Schedule.
- The ISO Mitigation online ISO’s Public Protection website at <https://www.isomitigation.com/ppc/>.
- The National Weather Service Storm Ready website at <http://www.stormready.noaa.gov/index.html>.
- The National Firewise Communities website at <http://firewise.org/>.

### Self-Assessment of Capability

The table below provides an approximate measure of the Village of Port Leyden’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

Table 9.22-9. Self-Assessment Capability for the Municipality

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)*	Moderate	High
Planning and regulatory capability		X	
Administrative and technical capability		X	
Fiscal capability		X	
Community political capability			X
Community resiliency capability		X	
Capability to integrate mitigation into municipal processes and activities		X	

### National Flood Insurance Program

#### NFIP Floodplain Administrator (FPA)

Ward Dailey, Lewis County Codes





### Flood Vulnerability Summary

The Village of Port Leyden does not maintain lists/inventories of properties that have been flood damaged or identify property owners who are interested in mitigation. Eight homes were flooded in the May 2014 storms and flooding. FEMA made substantial damage determinations for that event. One property owner was interested in mitigation after that event.

The following table summarizes the NFIP statistics for the Village of Port Leyden.

Table 9.22-10. NFIP Summary

Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in 100-year Boundary (3)
Port Leyden (V)	2	0	\$0	0	0	1

Source: FEMA Region 2, 2018

Notes:

- (1) Policies, claims, and repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.
- (2) Total building and content losses from the claims file provided by FEMA Region 2.
- (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file. FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility.  
A zero percentage denotes less than 1/100th percentage and not zero damage or vulnerability as may be the case.  
Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.

### Resources

The Lewis County Codes Department is responsible for floodplain administration, with the assistance of the village mayor. The village does not provide NFIP administration services or flood outreach. The FPA stated that they did not feel there were any barriers to running an effective floodplain management program but did not feel adequately supported and trained to fulfill their responsibilities as the municipal floodplain administrator. As such, the FPA stated they would consider attending continuing education and/or certification training on floodplain management if it were offered in the county for all local floodplain administrators.

### Compliance History

The Village of Port Leyden is in good-standing in the NFIP. The most recent compliance audit (e.g. Community Assistance Visit [CAV]) took place on September 4, 2015.

### Regulatory

The Village of Port Leyden’s floodplain management regulations meet the FEMA and state minimum requirements. The village has considered joining the CRS program in the past and would attend a CRS seminar if offered locally.

### Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community’s progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures.



## Planning

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### Existing Integration

**Master Plan:** The Village of Port Leyden’s Master Plan includes areas of natural hazard risk and refers to the Countywide Hazard Mitigation Plan. The village works to ensure that the local comprehensive plan incorporates disaster mitigation techniques through a courtesy review of all draft plans by the County Economic Development and Planning Department.

**Comprehensive Emergency Management Plan:** The Village of Port Leyden has a Comprehensive Emergency Management Plan. The plan refers to the Hazard Mitigation Plan.

**Continuity of Operations/Continuity of Government Plan:** The Deputy Mayor is responsible for the Continuity of Operations/Continuity of Government Plan (COOP/COG) that serves to protect the local government and operations from natural hazard disruptions.

The village does not have a Re-Development Plan, Growth Plan, Economic Development Plan, Open Space Plan, Watershed/Stream Corridor Management Plan, or Local Waterfront Revitalization Plan.

### Opportunities for Future Integration

The village could develop additional planning documents that address natural hazards and refer to the Lewis County Hazard Mitigation Plan.

## Regulatory and Enforcement (Ordinances)

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### Existing Integration

The Village of Port Leyden’s municipal zoning and subdivision regulations and site plan review process do not consider natural hazard risk or require developers to take additional actions to mitigate natural hazard risk.

### Opportunities for Future Integration

The village could develop municipal ordinances that address natural hazard risk.

## Operational and Administration

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### Existing Integration

The Village of Port Leyden does not have a municipal planner or contract planning firm. The village does not have a planning board or board of adjustments, but the Village Board, Mayor, Clerk, and DPW include functions with respect to managing natural hazard risk and compliance with related natural hazard regulations. Stormwater management functions are carried out by the Village DPW Supervisor. NFIP floodplain management functions are carried out by the mayor.

The Village relies on the DANC for developing Benefit-Cost Analysis. The village relies on the County Building and Codes department for Substantial Damage Determinations. The village works with the Tug Hill Commission to prepare grant applications for mitigation projects. Village staff receive some training/continuing professional education and work with Lewis County to support natural hazard reduction and build hazard management capabilities.

**GIS Enhancement:** The village works with Lewis County to investigate expansion of hazard-related GIS capabilities via acquisition of HAZUS-MH to collect and develop more sophisticated hazard mapping and loss





estimation. The village will use this information in future plan updates and work with the county to ensure information will be available to the public and to local communities and agencies.

**Auxiliary Power Supply:** The village assists the county with a countywide survey on status of auxiliary power supplies at all critical facilities.

**Critical Facilities Survey:** The village assists the county with a year built and level of protection survey for all critical/emergency facilities and shelters to highlight structures built before codes and standards were put in place to provide protection from natural hazards and pursue potential mitigation opportunities to protect these sites, as funding becomes available.

**Landslide Study:** The village assists the county with conducting surveys to determine local vulnerabilities to landslides threatening property and roads, coordinate to limit development in these areas, and develop remedial measures for existing vulnerabilities.

**Wildfire Mapping:** The village assists the county with creating and distributing maps and a database of wildland access points for firefighters, including enhanced mapping of urban/wildland interface.

**Dam Safety:** The village coordinates with NYSDEC and owners of all high and moderate hazard dams to work towards full compliance with applicable dam safety programs and development/updating of Emergency Action Plans, including inundation mapping.

### Opportunities for Future Integration

The village could add additional training opportunities for staff. The village could establish vegetative management programs to help reduce risk.

## Funding

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### Existing Integration

The Village of Port Leyden does not have line items for mitigation projects in the municipal budget. The village has not applied for grant funding to support mitigation

### Opportunities for Future Integration

The village could allocate municipal funds and apply for grant funding to support hazard mitigation.

## Education and Outreach

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### Existing Integration

The Village of Port Leyden utilizes its social media page for public outreach. The village assists the county to systematically contact isolated, vulnerable or special-needs population during severe winter storm events. The village assists the county with providing education opportunities for residents to learn winter driving techniques and increasing public awareness of personal responsibilities during emergencies, specifically winter storm events. The village also assists the county in publishing and distributing literature (via the county web site, supplemented by hard copy distribution) on water conservation techniques and drought management strategies.

### Opportunities for Future Integration

The village could establish a municipal website and offer information at the public library.



### Sheltering, Evacuation, and Temporary Housing

Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

#### Evacuation and Sheltering Needs

The Village of Port Leyden has identified the following emergency shelters.

**Table 9.22-11. Emergency Shelters Identified in the Village of Port Leyden**

Shelter Name	Address	Capacity	Accommodates Pets?	ADA Compliant?	Backup Power?	Types of Medical Services Provided	Other Services Provided
Community Fire Hall	3387 Douglas Street	80-100	Yes	Yes	Yes	EMS	Food

The village also assists the county with establishing warming shelters for vulnerable populations, including residents and stranded motorists. Evacuation routes are established by the Fire Department as necessary during emergency events.

#### Temporary and Permanent Housing

The Village of Port Leyden has identified the following locations for the placement of temporary housing for residents displaced by a disaster:

- Community Park: 3387 Douglas Street. The site has capacity for 18 trailers but would need sewer laterals.

The Village of Port Leyden has identified the following sites which would be suitable for the relocation of houses of the floodplain or construction of new homes once properties in the floodplain are acquired:

- Coral Street Place: The site would require sewer laterals.

### 9.22.6 Mitigation Strategy and Prioritization

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and proposes prioritization.

#### Past Mitigation Initiative Status

The following table indicates progress on the community’s mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and can be found under ‘Capability Assessment’ presented previously in this annex.



Table 9.22-12. Status of Previous Mitigation Actions

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection	
	<u>Hazardous Trees</u> Project 1: Prioritization of Actions	Thunder storms, tornadoes, and blizzards/lake effect storms	Hazardous trees can fall on utilities and private properties	Streets/Public Works	No Progress			1. Include in 2020 HMP 2. 3.
	<u>Culvert/Storm Water Drainage System</u> Project 2: Periodization of Actions	Major Street/Landowner Damage	Culverts need to be maintained in order to prevent flooding	Streets/Public Works	No Progress			1. Include in 2020 HMP 2. 3.
	<u>Plan Review for Mitigation</u> Ensure that local comprehensive plans incorporate disaster mitigation techniques through a courtesy review of all draft plans by the County Economic Development and Planning Department	All Hazards	Plans should be reviewed to incorporate natural hazards.	Village Mayor / CPG Member	Ongoing capability			1. Discontinue 2. 3. Ongoing capability
	<u>GIS Enhancement</u> Investigate expansion of hazard-related GIS capabilities via acquisition of HAZUS-MH to collect and develop more sophisticated hazard mapping and loss estimation. Use information in future plan updates. Ensure information will be available to the public and to local communities and agencies.	Earthquakes, Wind, and Flood	GIS should be enhanced where possible.	Village Mayor / CPG Member	Ongoing capability			1. Discontinue 2. 3. Ongoing capability
	<u>Outreach Program</u>	Winter Storms and Extreme	Special needs populations	Village Mayor / CPG Member	Ongoing capability	Cost		1. Discontinue





Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Level of Protection	Damages Avoided; Evidence of Success	
	County coordination with local governments and other agencies to systematically contact isolated, vulnerable or special-needs population during severe winter storm events	temperatures	need to be protected and cared for during hazard events.			Level of Protection		2.  3. Ongoing capability
	<u>Auxiliary Power Supply</u> Conduct a countywide survey on status of auxiliary power supplies at all critical facilities.	Winter Storms, Wind, Tornado	Critical facilities require backup power.	Village Mayor / CPG Member	Ongoing capability	Cost		1. Discontinue
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3. Ongoing capability
	<u>Wind Hazards Training</u> Provide trainings to municipalities regarding the development and implementation of programs to mitigate wind damage to private and public properties.	Wind, Tornado	Officials need to be educated.	Village Mayor / CPG Member	Ongoing capability	Cost		1. Discontinue
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3. Ongoing capability
	<u>Winter Driving and Vehicle Preparation Education</u> Provide education opportunities for residents to learn winter driving techniques.	Winter Storms and Wind	Residents need to be educated.	Village Mayor / CPG Member	Ongoing capability	Cost		1. Discontinue
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3. Ongoing capability
	<u>Winter Storm Public Awareness and Preparation</u>		Residents need to be educated.	Village Mayor / CPG Member	Ongoing capability	Cost		1. Discontinue
						Level of Protection		2.



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Damages Avoided; Evidence of Success	
	Increase public awareness of personal responsibilities during emergencies, specifically winter storm events	Winter Storms and Snow					Damages Avoided; Evidence of Success	3. Ongoing capability
	<u>Emergency Warming Shelters</u> Establish warming shelters for vulnerable populations, including residents and stranded motorists	Extreme Temperatures and Winter Storms	Shelters need to be established	Village Mayor / CPG Member	Ongoing capability	Cost	Damages Avoided; Evidence of Success	1. Discontinue 2. 3. Ongoing capability
	<u>Dam Safety</u> Coordinate with NYSDEC and owners of all high and moderate hazard dams to work towards full compliance with applicable dam safety programs and development/updating of Emergency Action Plans including inundation mapping.	Dam Failure	Dams need to meet safety standards.	Village Mayor / CPG Member	Ongoing capability	Cost	Damages Avoided; Evidence of Success	1. Discontinue 2. 3. Ongoing capability
	<u>Drought Preparedness</u> Publish and distribute literature (via the County web site, supplemented by hard copy distribution) on water conservation techniques and drought management strategies.	Drought	Residents need to be educated.	Village Mayor / CPG Member	Ongoing capability	Cost	Damages Avoided; Evidence of Success	1. Discontinue 2. 3. Ongoing capability
	<u>Landslide Study</u> Conduct surveys to determine local vulnerabilities to landslides threatening property and roads, coordinate with municipalities to limit development in these areas	Landslides	Landslide vulnerability needs to be determined.	Village Mayor / CPG Member	Ongoing capability	Cost	Damages Avoided;	1. Discontinue 2. 3. Ongoing capability



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Evidence of Success	Cost	
	and develop remedial measures for existing vulnerabilities.					Evidence of Success		
	<u>Wildfire Mapping</u> Create and distribute mapping and database of wildland access points for firefighters, develop enhanced mapping of urban/wildland interface.	Wildfire	Wildfire areas need to be mapped.	Village Mayor / CPG Member	Ongoing capability	Level of Protection		1. Discontinue 2.
	<u>Critical Facilities Survey</u> Undertake a year built and level of protection survey for all critical/emergency facilities and shelters to highlight structures built before codes and standards were put in place to provide protection from natural hazards and pursue potential mitigation opportunities to protect these sites as funding becomes available.	Wind/Tornado, Winter Storms, Earthquakes, and Flooding (including Ice Jams)	Critical facilities need to be built to higher standards.	Village Mayor / CPG Member	Ongoing capability	Damages Avoided; Evidence of Success		3. Ongoing capability
						Cost		1. Discontinue
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3. Ongoing capability



### **Completed Mitigation Initiatives not Identified in the Previous Mitigation Strategy**

The Village of Port Leyden has performed ongoing maintenance projects to reduce the impact of flooding but has not identified specific mitigation projects/activities that have been completed but were not identified in the previous mitigation strategy in the 2010 Plan.

### **Proposed Hazard Mitigation Initiatives for the Plan Update**

Table 9.22-13 summarizes the comprehensive-range of specific mitigation initiatives the Village of Port Leyden would like to pursue in the future to reduce the effects of hazards. Some of these initiatives may be previous actions carried forward for this plan update. These initiatives are dependent on available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the 4 FEMA mitigation action categories and the 6 CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6, 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.22-14 provides a summary of the prioritization of all proposed mitigation initiatives for the plan update.





Table 9.22-13. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues ?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
V. Port Leyden-1	Hazardous Tree Management Program	<b>Problem:</b> Falling trees can damage property and lead to power outages in the Village.	<b>Solution:</b> The Village will develop a tree management program. The program will include tree inspections to identify at-risk trees. Once identified, the Village will remove or trim the hazardous trees.	Severe Storm, Severe Winter Storm	1	No	None	Within 5 years	Streets/ Public Works	\$10,000	Reduction in falling trees/tree branches, property damage, and power outages.	HMGP, PDM, CHIPS, municipal budget	High	NSP	NR
V. Port Leyden-2	Culvert Survey and Upgrade/ Replacement	<b>Problem:</b> Many of the culverts in the Village are undersized and unable to handle water runoff and flow during heavy rain events. This leads to damaged culverts and flooded roadways.	<b>Solution:</b> The Village will conduct a survey of all culverts and the stormwater system in the Village to determine which culverts need to be upgraded. Once identified, the Village will implement a culvert upgrade program.	Flood, Severe Storm	2	No	None	Within 5 years	Streets/ Public Works	Roughly \$10,000 per culvert	Reduction in flood risk.	HMGP, Bridge NY, CHIPS, municipal budget	High	SIP	SP
V. Port Leyden-3	Protect the Black River Hydro Association Electric Power	<b>Problem:</b> The Power facility is located in the 100-year floodplain. The village does not have jurisdiction over the facility and cannot mitigate it themselves.		Flood	2	Yes	None	Within 6 months	Village Floodplain Administrator working with facility	<\$100	Provide outreach to the property owner to	Municipal budget	Medium	EAP	PI



Table 9.22-13. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues ?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
	Facility to the 500-year flood level.	<b>Solution:</b> The village will contact the facilities manager and discuss options for protecting the facility to the 500-year flood level							operators / owners		inform of potential flood damage and possible solutions				
V. Port Leyden-4	Protect the Lyonsdale Hydroelectric Co. Inc. Electric Power Facility to the 500-year flood level.	<b>Problem:</b> The Power Facility is located in the 100-year floodplain. The village does not have jurisdiction over the facility and cannot mitigate themselves. <b>Solution:</b> The village will contact the facilities manager and discuss options for protecting the facility to the 500-year flood level		Flood	2	Yes <span style="color:blue">●</span>	None	Within 6 months	Village Floodplain Administrator working with facility operators / owners	<\$100	Provide outreach to the property owner and informing them of potential flood damage and possible solutions	Municipal budget	Medium	EAP	PI
V. Port Leyden-5	Protect the Port Leyden Upper Dam to the 500-year flood level.	<b>Problem:</b> The Port Leyden Upper Dam is located in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager to discuss the facility flood exposure and possible mitigation actions to protect the facility to the 500-year flood level.		Flood	2	Yes <span style="color:blue">●</span>	None	Within 6 months	Village Floodplain Administrator , facility operator	<\$100	Port Leyden Upper Dam protected to the 500-year flood level.	HMGP, PDM, municipal budget	High	SIP	PP
V. Port Leyden-6	Protect the Rock Island Dam to the 500-year flood level	<b>Problem:</b> The Rock Island Dam is in the 100-year floodplain. <b>Solution:</b> The FPA will contact the facility manager of each		Flood	2, 3	Yes <span style="color:blue">●</span>	None	FPA	<\$100	Facility manager aware of flood risk and possible	Within 6 months	Municipal budget	High	EAP	PI





Table 9.22-13. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues ?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
		facility to discuss the facility flood exposure and possible mitigation actions to protect the facility to the 500-year flood level.								mitigation measures.					

**Notes:**

Not all acronyms and abbreviations defined below are included in the table.

\*Does this mitigation initiative reduce the effects of hazards on new and/or existing buildings and/or infrastructure? Not applicable (N/A) is inserted if this does not apply.

Acronyms and Abbreviations:

CAV	Community Assistance Visit
CRS	Community Rating System
DPW	Department of Public Works
FEMA	Federal Emergency Management Agency
FPA	Floodplain Administrator
HMA	Hazard Mitigation Assistance
N/A	Not applicable
NFIP	National Flood Insurance Program
OEM	Office of Emergency Management

Potential FEMA HMA Funding Sources:

FMA	Flood Mitigation Assistance Grant Program
HMGP	Hazard Mitigation Grant Program
PDM	Pre-Disaster Mitigation Grant Program
RFC	Repetitive Flood Claims Grant Program (discontinued in 2015)
SRL	Severe Repetitive Loss Grant Program (discontinued in 2015)

Timeline:

Short	1 to 5 years
Long Term	5 years or greater
OG	On-going program
DOF	Depending on funding

Costs:

Where actual project costs have been reasonably estimated:

Low	< \$10,000
Medium	\$10,000 to \$100,000
High	> \$100,000

Where actual project costs cannot reasonably be established at this time:

Low	Possible to fund under existing budget. Project is part of, or can be part of an existing on-going program.
Medium	Could budget for under existing work plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
High	Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.

Benefits:

Where possible, an estimate of project benefits (per FEMA's benefit calculation methodology) has been evaluated against the project costs, and is presented as:

Low=	< \$10,000
Medium	\$10,000 to \$100,000
High	> \$100,000

Where numerical project benefits cannot reasonably be established at this time:

Low	Long-term benefits of the project are difficult to quantify in the short term.
Medium	Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.
High	Project will have an immediate impact on the reduction of risk exposure to life and property.

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.






- *Structure and Infrastructure Project (SIP)* - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- *Natural Systems Protection (NSP)* - These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- *Education and Awareness Programs (EAP)* - These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities.

CRS Category:

- *Preventative Measures (PR)* - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- *Property Protection (PP)* - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- *Public Information (PI)* - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- *Natural Resource Protection (NR)* - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- *Structural Flood Control Projects (SP)* - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.
- *Emergency Services (ES)* - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.

Critical Facility:

- Yes  - Critical Facility located in 1% floodplain.



**Table 9.22-14. Summary of Prioritization of Actions**

Mitigation Action/Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community	Total	High / Medium / Low
V. Port Leyden-1	Hazardous Tree Management Program	1	1	1	1	1	1	0	1	1	1	1	0	1	1	13	High
V. Port Leyden-2	Culvert Survey and Upgrade/ Replacement	0	1	1	1	1	1	0	1	1	1	1	0	1	1	11	High
V. Port Leyden-3	Protect the Black River Hydro Association Electric Power Facility to the 500-year flood level.	0	1	0	1	1	0	1	1	1	0	0	0	1	1	8	Medium
V. Port Leyden-4	Protect the Lyonsdale Hydroelectric Co. Inc. Electric Power Facility to the 500-year flood level.	0	1	0	1	1	0	1	1	1	0	0	0	1	1	8	Medium
V. Port Leyden-5	Protect the Port Leyden Upper Dam to the 500-year flood level.	0	1	1	1	1	0	1	1	1	1	0	1	1	1	11	High
V. Port Leyden-6	Protect the Rock Island Dam to the 500-year flood level	0	1	1	1	1	0	1	1	1	1	0	1	1	1	11	High

Note: Refer to Section 6 (Mitigation Strategy), which conveys guidance on prioritizing mitigation actions.



### **9.22.7 Future Needs To Better Understand Risk/Vulnerability**

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None at this time.

### **9.22.8 Hazard Area Extent and Location**

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Hazard area extent and location maps have been generated for the Village of Port Leyden that illustrate the probable areas impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan and are considered to be adequate for planning purposes. Maps have been generated only for those hazards that can be clearly identified using mapping techniques and technologies and for which the Village of Port Leyden has significant exposure. These maps are illustrated in the hazard profiles within Section 5.4, Volume I of this plan.

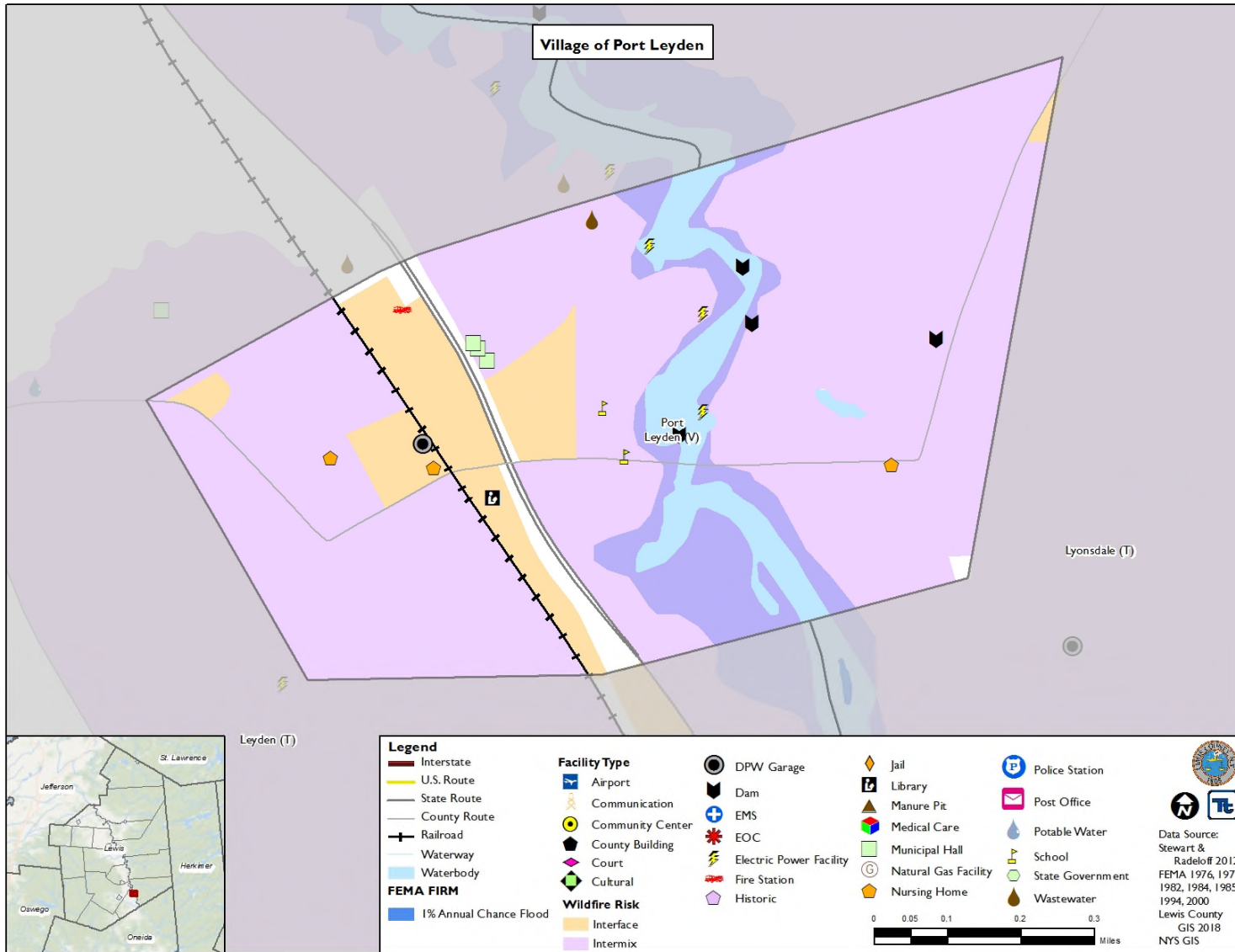
### **9.22.9 Additional Comments**

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None at this time.



Figure 9.22-1. Village of Port Leyden Hazard Area Extent and Location Map







Village of Port Leyden Action Worksheet			
<b>Project Name:</b>	Hazardous Tree Management Program		
<b>Project Number:</b>	V. Port Leyden-1		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Severe Storm, Severe Winter Storm		
<b>Description of the Problem:</b>	Falling trees can damage property and lead to power outages.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The Village will develop a tree management program. The program will include tree inspections to identify at-risk trees. Once identified, the Village will remove or trim the hazardous trees.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Protect infrastructure from storm damage	<b>Estimated Benefits (losses avoided):</b>	Reduction in falling trees/tree branches, property damage, and power outages.
<b>Useful Life:</b>	3 years	<b>Goals Met:</b>	1
<b>Estimated Cost:</b>	\$10,000	<b>Mitigation Action Type:</b>	Natural Systems Protection
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	6 months	<b>Potential Funding Sources:</b>	HMGP, PDM, CHIPS, municipal budget
<b>Responsible Organization:</b>	Streets/Public Works	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation, Annual Budget
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Remove all trees along utility lines	\$75,000	Costly, environmentally damaging.
	Hire contractor to handle all tree trimming	\$20,000	More costly.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Hazardous Tree Management Program	
<b>Project Number:</b>	V. Port Leyden-1	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project will protect critical utilities.
Property Protection	1	Project will protect private property from falling trees.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The Village has the legal authority to complete the project.
Fiscal	0	The project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Severe Storm, Severe Winter Storm
Timeline	0	Within 5 years
Agency Champion	1	Streets/Public Works
Other Community Objectives	1	
<b>Total</b>	13	
<b>Priority (High/Med/Low)</b>	High	



Village of Port Leyden Action Worksheet			
<b>Project Name:</b>	Culverts/Stormwater Improvements		
<b>Project Number:</b>	V. Port Leyden-2		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Severe Storm, Flood		
<b>Description of the Problem:</b>	Many of the culverts in the Village are undersized and unable to handle water runoff and flow during heavy rain events. This leads to damaged culverts and flooded roadways.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The Village will conduct a survey of all culverts and the stormwater system in the Village to determine which culverts need to be upgraded. Once identified, the Village will implement a culvert upgrade program.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Estimated 10-year storms	<b>Estimated Benefits (losses avoided):</b>	Reduction in flood risk.
<b>Useful Life:</b>	30 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	Roughly \$10,000 per culvert	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	5 years	<b>Potential Funding Sources:</b>	HMGP, Bridge NY, CHIPS, municipal budget
<b>Responsible Organization:</b>	Streets/Public Works	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Capital improvements planning, Hazard Mitigation
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Remove roads with culverts	\$50,000+	Roadway cannot be removed.
	Relocate roads to other locations	\$50,000+	Roadway will still need to cross streams and low-lying areas.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Culverts/Stormwater Improvements	
<b>Project Number:</b>	V. Port Leyden-2	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project will restore culverts and protect them from flooding.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	Village has the legal authority to complete the project.
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Severe Storm, Flood
Timeline	0	Within 5 years
Agency Champion	1	Streets/ Public Works
Other Community Objectives	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	



## 9.23 TOWN OF TURIN

This section presents the jurisdictional annex for the Town of Turin. It includes resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions that can be implemented prior to a disaster to reduce or eliminate damage to property and people. This annex includes a general overview of the municipality and who in the town participated in the planning process, an assessment of the Town of Turin’s risk and vulnerability, the different capabilities used in the town, and an action plan that will be implemented to achieve a more resilient community.

### 9.23.1 Hazard Mitigation Plan Point of Contact

The following individuals have been identified as the hazard mitigation plan’s primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Joanne D'Ambrosi Title: Supervisor Phone Number: 315-348-8708 (office) Address: P.O. Box 236, Turin, NY 13473 Email: <a href="mailto:joannedambrosi@yahoo.com">joannedambrosi@yahoo.com</a>	Name: Jane Gillette Phone Number: 315-775-6600 (cell) Address: 5137 Old State Rt. 12, Lyons Falls, NY 13368 Email: <a href="mailto:janegillette1234@yahoo.com">janegillette1234@yahoo.com</a>
Floodplain Administrator	
Name: Ward Dailey Title: Lewis County Code Enforcement Phone Number: 315-377-2037 Address: 7660 N State Street, Lowville, NY 13367 Email: <a href="mailto:warddailey@lewiscounty.ny.gov">warddailey@lewiscounty.ny.gov</a>	

### 9.23.2 Municipal Profile

The Town of Turin is located near the center of Lewis County. The Town of Turin is bordered to the northwest by the Town of Martinsburg, to the east by the Town of Greig, to the southeast by the Town of Lyonsdale, and to the southwest by the Town of West Turin. The Village of Turin, detailed in the annex for the Village of Turin (Section 9.24), is located within the town on New York State Route 26 near the south town line.

The estimated 2017 population was 420, which was a 38.7 percent increase in population from 2010 (529 persons). Data from the 2017 U.S. Census American Community Survey indicate that 3.6 percent of the town population is five years of age or younger, and 16.7 percent is 65 years of age or older.

#### History and Cultural Resources

The Town of Turin was established in 1800 from a portion of the Town of Mexico in Oswego County. In 1803, part of the Town of Turin separated to form the Town of Martinsburg. An additional portion of the Town of Turin was added to the Town of Martinsburg in 1819. A portion of the Town of Turin was then taken to form the Town of West Turin in 1830.

#### Growth/Development Trends

The following table summarizes recent residential/commercial development since 2010 to present and any known or anticipated major residential/commercial development and major infrastructure development that has been identified in the next five years within the municipality. The map in 9.23.8 of this annex illustrates the hazard areas along with the location of potential new development.



**Table 9.23-1. Growth and Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2010 to present</b>					
Christian Community Center	Church	1	4269 East Road Turin, NY 13473	None	Community Center/Church
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
Possible solar project	Comm.	TBD	TBD	TBD	In discussion phase

*\*Only location-specific hazard zones or vulnerabilities identified.*

### 9.23.3 Natural Hazard Event History Specific to the Municipality

Lewis County has a history of natural and non-natural hazard events as detailed in Volume I, Section 5.0 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the county and its municipalities. For the purpose of this plan update, events that have occurred in the county from 2009 to present were summarized to indicate the range and impact of hazard events in the community. Information regarding specific damages is included, if available, based on reference material or local sources. This information is presented in the table below.

**Table 9.23-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April 26-May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	Storms led to road closures. West Road/Gomer Hill Road, Lee Gulf Road, Ives Road, East Road, Milkhouse Road, and Whiskey Lane Road experienced damages.
August 26-September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	Although the county suffered damages, the town did not report damages from this event.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	Although the county suffered damages, the town did not report damages from this event.
June 26-July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	Although the county suffered damages, the town did not report damages from this event.
May 13-22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	Although the county suffered damages, the town did not report damages from this event.
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot	Although the county suffered damages, the town did not report damages from this event.



Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	Although the county suffered damages, the town did not report damages from this event.

Notes:

EM Emergency Declaration (FEMA)  
 DR Major Disaster Declaration (FEMA)

### 9.23.4 Hazard Vulnerabilities and Ranking

The hazard profiles in Section 5.0 (Risk Assessment) have detailed information regarding each plan participant’s vulnerability to the identified hazards. The following summarizes the hazard vulnerabilities and their ranking in the Town of Turin.

#### Hazard Risk/Vulnerability Risk Ranking

This section includes the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating town or village may have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Town of Turin. The Town of Turin has reviewed the county hazard risk/vulnerability risk ranking table, as well as its individual results, to reflect the relative risk of the hazards of concern to the community.

The table below summarizes the hazard risk/vulnerability rankings of potential hazards for the Town of Turin.

**Table 9.23-3. Hazard Risk/Vulnerability Risk Ranking**

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	Medium
Extreme Temperature	High	High
Flood	Medium	Medium
Hazardous Material Incidents	Medium	Medium
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	High

Notes: The scale is based on the following hazard rankings as established in Section 5.3 (Hazard Ranking).







### Critical Facilities

The table below presents HAZUS-MH estimates of the damage and loss of use to critical facilities in the community as a result of a 1-percent annual chance flood event.

**Table 9.23-4. Potential Flood Losses to Critical Facilities**

Name	Type	Exposure		Potential Loss from 1% Flood Event		Addressed by Proposed Action
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage	
None identified						

Source: Lewis County Real Property 2018, FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000

### Identified Issues

The municipality did not identify vulnerabilities within the community.

### 9.23.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms

### Planning and Regulatory Capability

The table below summarizes the regulatory tools that are available to the Town of Turin.

**Table 9.23-5. Planning and Regulatory Tools**

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Master Plan	No	-	-	-
Capital Improvements Plan	No	-	-	-
Floodplain Management / Basin Plan	No	-	-	-
Stormwater Management Plan	No	-	-	-
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	No	-	-	-
Economic Development Plan	Yes	County	IDA	Industrial Development



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Comprehensive Emergency Management Plan	Yes	County	County EM	Lewis County Emergency Management Plan
Emergency Operation Plan	No	-	-	-
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	No	-	-	-
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-
<b>Regulatory Capability</b>				
Building Code	Yes	State & Local	Lewis County Codes	Code citation unavailable
Zoning Ordinance	Yes	Local	Planning Board	Code citation unavailable
Subdivision Ordinance	Yes	Local	Planning Board	Code citation unavailable
NFIP Flood Damage Prevention Ordinance	Yes	Federal, State, Local	Lewis County Codes	Code citation unavailable
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	Yes	State, Local	Lewis County Codes	State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	Yes	Local	Planning Board	Site plan review
Stormwater Management Ordinance	No	-	-	-
Municipal Separate Storm Sewer System (MS4)	No	-	-	-
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	NYS, Real Estate Agents	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

### Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the Town of Turin.



**Table 9.23-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	Yes	Town of Turin Planning Board
Mitigation Planning Committee	No	-
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	No	-
Maintenance programs to reduce risk	No	-
Mutual aid agreements	No	-
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	No	-
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	No	-
Planners or engineers with an understanding of natural hazards	No	-
NFIP Floodplain Administrator (FPA)	Yes	Lewis County
Surveyor(s)	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	No	-
Scientist familiar with natural hazards	No	-
Emergency Manager	No	-
Grant writer(s)	No	-
Staff with expertise or training in benefit/cost analysis	No	-
Professionals trained in conducting damage assessments	No	-

**Fiscal Capability**

The table below summarizes financial resources available to the Town of Turin.

**Table 9.23-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	No
Impact fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	Yes
Withhold public expenditures in hazard-prone areas	No
Other federal or state Funding Programs	Yes





Financial Resources	Accessible or Eligible to Use (Yes/No)
Open Space Acquisition funding programs	No
Other	No

### Community Classifications

The table below summarizes classifications for community program available to the Town of Turin.

Table 9.23-8. Community Classifications

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	9	-
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	No	-	-
Public-private partnership initiatives addressing disaster-related issues	No	-	-

Note:  
- Unavailable

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery, and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance, while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10, with class 1 being the best possible classification and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual.
- The Building Code Effectiveness Grading Schedule.
- The ISO Mitigation online ISO’s Public Protection website at <https://www.isomitigation.com/ppc/>.
- The National Weather Service Storm Ready website at <http://www.stormready.noaa.gov/index.html>.
- The National Firewise Communities website at <http://firewise.org/>.

### Self-Assessment of Capability

The table below provides an approximate measure of the Town of Turin’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.





Table 9.23-9. Self-Assessment Capability for the Municipality

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)*	Moderate	High
Planning and regulatory capability	X – low staff and funding		
Administrative and technical capability	X – low staff and funding		
Fiscal capability	X – low funding		
Community political capability	X – low staffing		
Community resiliency capability	X – low staff and funding		
Capability to integrate mitigation into municipal processes and activities	X - low staff and funding		

National Flood Insurance Program

NFIP Floodplain Administrator (FPA)

Ward Dailey, Lewis County Code Enforcement

Flood Vulnerability Summary

The Town of Turin does not maintain lists/inventories of properties that have been flood damaged or identify property owners who are interested mitigation. The town does not make substantial damage determinations.

Table 9.23-10. NFIP Summary

Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in 100-year Boundary (3)
Turin (T)	1	2	\$27,346	0	0	1

Source: FEMA Region 2, 2018

Notes:

- (1) Policies, claims, and repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.
- (2) Total building and content losses from the claims file provided by FEMA Region 2.
- (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file. FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility.  
A zero percentage denotes less than 1/100th percentage and not zero damage or vulnerability as may be the case.  
Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.

Resources

Lewis County is responsible for floodplain administration in the Town of Turin. The town does not provide education or outreach regarding flood hazards/risk, and flood risk reduction through NFIP insurance, mitigation, etc. The Town would consider attending continuing education and/or certification training on floodplain management if it were offered in the county for all local floodplain administrators

Compliance History

The Town of Turin is in good-standing in the NFIP. The most recent Community Assisted Contact (CAC) took place on October 14, 2015. The most recent compliance audit (Community Assistance Visit [CAV]) took place on February 23, 1995.





## Regulatory

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Lewis County is responsible for the regulation of ordinances in the Town of Turin, including the town's floodplain management related ordinances.

## Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

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For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community's progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures.

## Planning

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### Existing Integration

The Town of Turin does not have a municipal Master Plan, Stormwater Management Plan, Re-Development Plan, Growth Plan, Economic Development Plan, Open Space Plan, Watershed or Stream Corridor Management Plan, Local Waterfront Revitalization Plan, or Continuity of Operations/Continuity of Government (COOP/COG) plan. The town relies on the county's Comprehensive Emergency Management Plan.

### Opportunities for Future Integration

The town could develop municipal specific planning documents which address natural hazards and refer to the Countywide Hazard Mitigation Plan.

## Regulatory and Enforcement (Ordinances)

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### Existing Integration

The Town of Turin relies on the Lewis County Plan for municipal zoning, subdivision regulations, and site plan review process but noted that the regulations require developers to take additional actions to mitigate natural hazard risk. The Town of Turin Planning Board attends training seminars to guide their decisions with respect to natural hazard risk management.

### Opportunities for Future Integration

The town could develop additional ordinances to address natural hazard risk management.

## Operational and Administration

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### Existing Integration

The Town of Turin does not have a municipal planner or contract planning firm. The Planning Board refers to the County Plan/Guidelines to manage natural hazard risk and compliance with related natural hazard regulations. The town does not have any other boards or committees that include functions with respect to managing natural hazard risk. The town does not perform stormwater management functions. NFIP Floodplain Management functions are carried out by Lewis County. The town does not have any other hazard management programs in place.

The town does not have staff or contract with firms that have experience with developing Benefit-Cost Analysis or experience in preparing grant applications for mitigation projects. The town relies on the county to perform substantial damage determinations. Town staff do not receive training or continuing professional education which supports natural hazard risk reduction. No staff have job descriptions that specifically include identifying and/or implementing mitigation projects/actions or other efforts to reduce natural hazard risk. No staff participate



in associations, organizations, groups or other committees that support natural hazard risk reduction and build hazard management capabilities.

Opportunities for Future Integration

The town could offer additional training to staff on natural hazard management. The town could hire staff or contract with firms that have experience with developing Benefit-Cost Analysis and experience in preparing grant applications for mitigation projects.

Funding

Existing Integration

The municipal budget does not include line items for mitigation projects/activities. The town has not pursued grant funding for mitigation-related projects. The town does not have any other mechanisms to fiscally support hazard mitigation projects.

Opportunities for Future Integration

The town could allocate municipal funds and apply for grant funding to support hazard mitigation projects.

Education and Outreach

Existing Integration

The Town of Turin does not have any existing education or outreach campaigns.

Opportunities for Future Integration

The town could send out information with the County Tax Bill and develop a municipal website to distribute educational information.

Sheltering, Evacuation, and Temporary Housing

Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

Evacuation and Sheltering Needs

The Town of Turin has designated the following emergency shelters:

Table 9.23-11. Designated Emergency Shelters

Shelter Name	Address	Capacity	Accommodates Pets?	ADA Compliant?	Backup Power?	Types of Medical Services Provided	Other Services Provided
South Lewis Central School	East Rd. Turin, NY 13473	1,000	Yes (if crated)	Yes	Yes	School Nurse/PA	Food
Turin Municipal Building	6312 E. Main St. Turin, NY 13473	Roughly 50	No	Yes	Yes	N/A	None
Turin Vol. Fire Company	4239 State Rt. 26, Turin, NY 13473	20-25	Yes (if crated)	Yes	Yes	Ambulance/EMT	Food







All shelters listed can be accessed by State Routes 12 and 26. Evacuation routes are established at the time of an emergency.

### Temporary and Permanent Housing

The Town of Turin has identified the following sites for the placement of temporary housing for residents displaced by a disaster:

**Table 9.23-12. Sites for the Placement of Temporary Housing**

Site Name	Site Address	Capacity	Actions Required to Ensure Conformance with the NYS Uniform Fire Prevention and Building Code
Turin Municipal Building	6312 E. Main St Turin NY 13473	~8	Unknown
Turin Vol. Fire Company	4239 State Rt. 26 Turin NY 13473	~30	Unknown
South Lewis Central School	East Road Turin NY 13473	~50	Unknown
Christian Community Center	East Road Turin NY 13473	~30	Unknown

The Town of Turin has not identified potential sites suitable for relocating houses of the floodplain and/or building new homes once properties in the floodplain are acquired. The town would work with Lewis County to identify suitable locations as needs arise.

### 9.23.6 Mitigation Strategy and Prioritization

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and prioritization.

#### Past Mitigation Initiative Status

The Town of Turin did not participate in the 2010 Lewis County Hazard Mitigation Plan.

#### Completed Mitigation Initiatives Not Identified in the Previous Mitigation Strategy

The Town of Turin has performed ongoing maintenance projects to reduce the impact of flooding but has not identified specific mitigation projects/activities that have been completed but were not identified in the previous mitigation strategy in the 2010 Plan.

#### Proposed Hazard Mitigation Initiatives for the Plan Update

Table 9.23-13 summarizes the comprehensive-range of specific mitigation initiatives the Town of Turin would like to pursue in the future to reduce the effects of hazards. These initiatives are dependent upon available funding (grants and local match availability) and might be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6 (Mitigation Strategy), 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.23-14 provides a summary of the prioritization of all proposed mitigation initiatives for the plan update.





Table 9.23-13. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
T. Turin-1	Hazardous Tree Management Program	<b>Problem:</b> Falling trees can damage property and lead to power outages in the Town.	<b>Solution:</b> The Town will develop a tree management program. The program will include tree inspections to identify at-risk trees. Once identified, the Town will remove or trim the hazardous trees.	Severe Storm, Severe Winter Storm	1	No	None	Within 5 years	Streets/ Public Works	\$10,000	Reduction in falling trees/tree branches. Reduction in property damage. Reduction in power outages.	HMGP, PDM, CHIPS, municipal budget	High	NSP	NR
T. Turin-2	Outreach Program	<b>Problem:</b> The town lacks an outreach program regarding hazards of concern.	<b>Solution:</b> The town will develop an outreach program to educate the public on hazards and preparedness. This includes posting information on the municipal website and social media accounts, developing informational flyers to distribute, and include hazard-related information in tax bills.	All Hazards	3	No	None	Within 5 years	Town Board	\$3,000	Public better educated and prepared for hazard events	Municipal budget	High	EAP	PI

Notes:

Not all acronyms and abbreviations defined below are included in the table.

Acronyms and Abbreviations:

CAV Community Assistance Visit  
 CRS Community Rating System  
 DPW Department of Public Works  
 EHP Environmental Protection and Historic Preservation  
 FEMA Federal Emergency Management Agency  
 FPA Floodplain Administrator  
 HMA Hazard Mitigation Assistance

Potential FEMA HMA Funding Sources:

FMA Flood Mitigation Assistance Grant Program  
 HMGP Hazard Mitigation Grant Program  
 PDM Pre-Disaster Mitigation Grant Program  
 RFC Repetitive Flood Claims Grant Program (discontinued in 2015)  
 SRL Severe Repetitive Loss Grant Program (discontinued in 2015)

Timeline:

Short 1 to 5 years  
 Long Term 5 years or greater  
 OG On-going program  
 DOF Depending on funding





N/A Not applicable  
 NFIP National Flood Insurance Program  
 OEM Office of Emergency Management


Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities.

CRS Category:

- Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.
- Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.

Critical Facility:

- Yes  - Critical Facility is located in 1% floodplain.



**Table 9.23-14. Summary of Prioritization of Actions**

Mitigation Action/Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
T. Turin-1	Hazardous Trees	1	1	1	1	1	1	0	1	1	1	1	0	1	1	12	High
T. Turin-2	Outreach Program	1	1	1	1	1	1	1	1	1	1	1	0	1	1	13	High

*Note: Refer to Section 6 (Mitigation Strategy), which conveys guidance on prioritizing mitigation actions.*



### **9.23.7 Future Needs To Better Understand Risk/Vulnerability**

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None at this time.

### **9.23.8 Hazard Area Extent and Location**

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Hazard area extent and location maps have been generated for the Town of Turin that illustrate the probable areas impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps have been generated only for those hazards that can be clearly identified using mapping techniques and technologies and for which the Town of Turin has significant exposure. These maps are illustrated in the hazard profiles within Section 5.4 (Hazard Profiles).

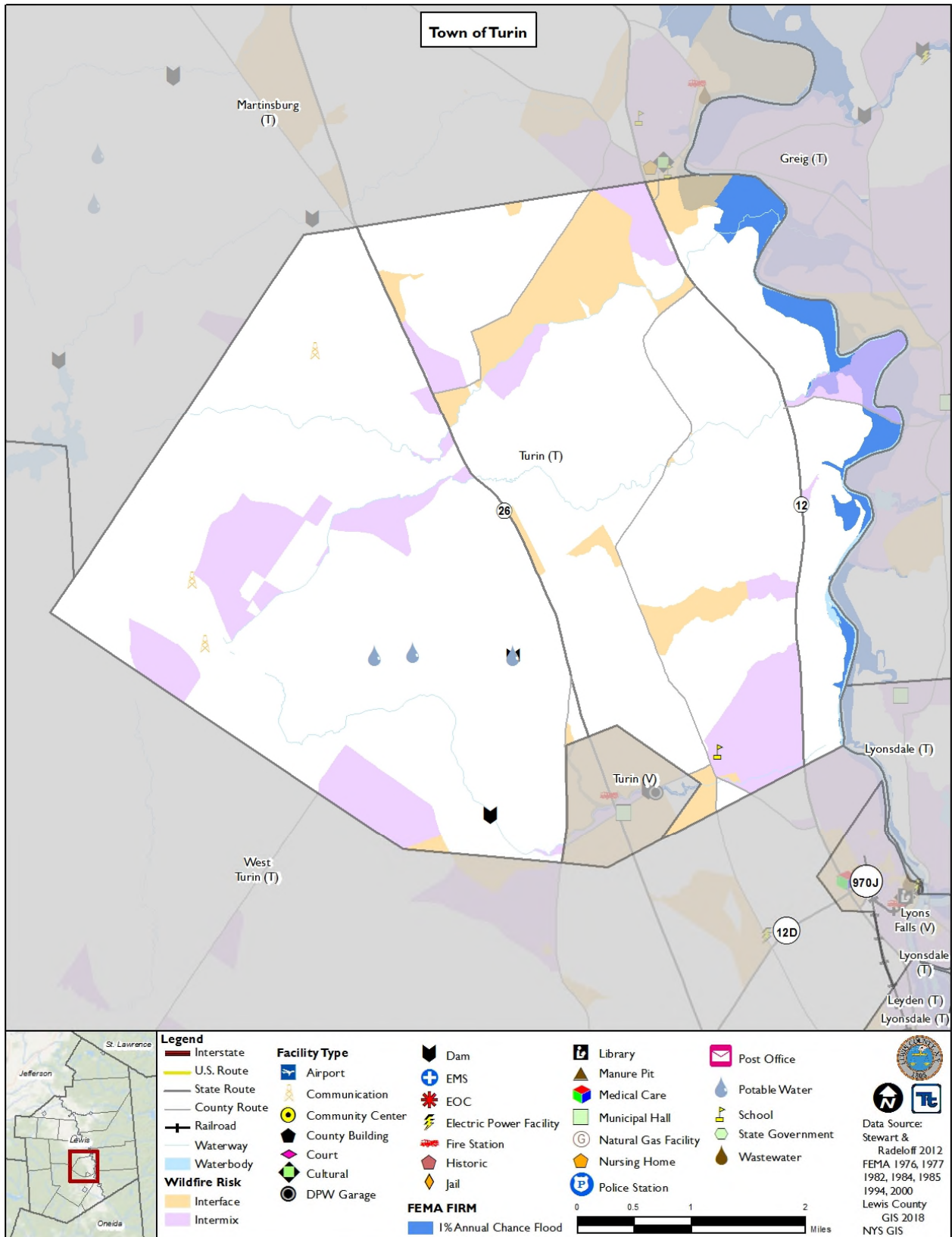
### **9.23.9 Additional Comments**

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None at this time.



Figure 9.23-1. Town of Turin Hazard Area Extent and Location Map





Town of Turin Action Worksheet			
<b>Project Name:</b>	Hazardous Tree Management Program		
<b>Project Number:</b>	T. Turin-1		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Severe Storm, Severe Winter Storm		
<b>Description of the Problem:</b>	Falling trees can damage property and lead to power outages.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The Town will develop a tree management program. The program will include tree inspections to identify at-risk trees. Once identified, the Town will remove or trim the hazardous trees.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Depends on the type of storm that causes tree damage; should protect from strong winds and heavy snow	<b>Estimated Benefits (losses avoided):</b>	Reduction in falling trees/tree branches. Reduction in property damage. Reduction in power outages.
<b>Useful Life:</b>	3 years	<b>Goals Met:</b>	1
<b>Estimated Cost:</b>	\$10,000	<b>Mitigation Action Type:</b>	Natural Systems Protection
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	6 months	<b>Potential Funding Sources:</b>	HMGP, PDM, CHIPS, municipal budget
<b>Responsible Organization:</b>	Streets/Public Works	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation, Annual Budget
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Remove all trees along utility lines.	\$75,000	Costly, environmentally damaging
	Hire contractor to handle all tree trimming.	\$20,000	More costly
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			





Action Worksheet		
<b>Project Name:</b>	Hazardous Trees	
<b>Project Number:</b>	T. Turin-1	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project will protect critical utilities.
Property Protection	1	Project will protect private property from falling trees.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The town has the legal authority to complete the project.
Fiscal	0	The project requires funding support
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Severe Storm, Severe Winter Storm
Timeline	0	Within 5 years
Agency Champion	1	Streets/Public Works
Other Community Objectives	1	
<b>Total</b>	13	
<b>Priority (High/Med/Low)</b>	High	



Town of Turin Action Worksheet			
<b>Project Name:</b>	Outreach Program		
<b>Project Number:</b>	T. Turin-2		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	All Hazards		
<b>Description of the Problem:</b>	The town lacks an outreach program regarding hazards of concern.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The town will develop an outreach program to educate the public on hazards and preparedness. This includes posting information on the municipal website and social media accounts, developing informational flyers to distribute, and include hazard-related information in tax bills.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Cannot measure the level of protection for public outreach; all hazards differ in size and severity	<b>Estimated Benefits (losses avoided):</b>	Public better educated and prepared for hazard events
<b>Useful Life:</b>	1 year	<b>Goals Met:</b>	3
<b>Estimated Cost:</b>	\$3,000	<b>Mitigation Action Type:</b>	Education and Awareness Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	2 years	<b>Potential Funding Sources:</b>	Town budget
<b>Responsible Organization:</b>	Town Board	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Encourage non-profits to conduct outreach.	\$0	Non-profits may be unwilling or unable to conduct outreach.
	Rely on residents coming to Town for information.	\$0	Residents may be unaware of need to educate.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			





Action Worksheet		
<b>Project Name:</b>	Outreach Program	
<b>Project Number:</b>	T. Turin-2	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project will encourage better preparedness.
Property Protection	1	Project will encourage better private mitigation.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	1	The town can support the project with the municipal budget.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	All hazards
Timeline	0	
Agency Champion	1	Town Board
Other Community Objectives	1	
<b>Total</b>	13	
<b>Priority (High/Med/Low)</b>	High	



## 9.24 VILLAGE OF TURIN

This section presents the jurisdictional annex for the Village of Turin. It includes resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions that can be implemented prior to a disaster to reduce or eliminate damage to property and people. This annex includes a general overview of the municipality and who in the town participated in the planning process, an assessment of the Village of Turin’s risk and vulnerability, the different capabilities used in the town, and an action plan that will be implemented to achieve a more resilient community.

### 9.24.1 Hazard Mitigation Plan Point of Contact

The following individuals have been identified as the hazard mitigation plan’s primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Josh Leviker Title: Mayor Phone Number: 315-391-5405 Address: P.O. Box 223, Turin, NY 13403 Email: <a href="mailto:jleviker@barrett paving.com">jleviker@barrett paving.com</a>	Name: Therese Dunn Title: Clerk Phone Number: 315-527-5072 Address: P.O. Box 223, Turin, NY 13403 Email: <a href="mailto:tdunn8@twcn y.rr.com">tdunn8@twcn y.rr.com</a>
Floodplain Administrator	
Name: Ward Dailey Title: Lewis County Codes Phone Number: (315) 377-2037 Address: 7660 N State St Lowville, NY 13367 Email: <a href="mailto:permits@lewis county.ny.gov">permits@lewis county.ny.gov</a>	

### 9.24.2 Municipal Profile

The Village of Turin is located entirely within the Town of Turin, as presented in the town’s municipal annex in Section 9.23 (Town of Turin). The village is located on Mill Creek and is found on New York State Route 26, State Street, near the south town line.

The estimated 2017 population was 200, which a 13.8 percent decrease in population from 2010 (232 persons). Data from the 2017 U.S. Census American Community Survey indicate that 12.0 percent of the village population is five years of age or younger, and 18.5 percent is 65 years of age or older.

#### History and Cultural Resources

The Village of Turin was previously known as “Turin Four Corners”. The village was home to three grist mills.

#### Growth/Development Trends

The Village of Turin did not note any recent residential/commercial development since 2010 or any major residential or commercial development, or major infrastructure development planned for the next five years in the municipality.

Table 9.24-1. Growth and Development

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2010 to present</b>					
None Reported					





Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
None Anticipated					

\* Only location-specific hazard zones or vulnerabilities identified.

### 9.24.3 Natural Hazard Event History Specific to the Municipality

Lewis County has a history of natural and non-natural hazard events as detailed in Volume I, Section 5.0 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the county and its municipalities. For the purpose of this plan update, events that have occurred in the county from 2009 to present were summarized to indicate the range and impact of hazard events in the community. Information regarding specific damages is included, if available, based on reference material or local sources. This information is presented in the table below.

**Table 9.24-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April 26-May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	Although the county suffered damages, the village did not report damages from this event.
August 26-September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	Although the county suffered damages, the village did not report damages from this event.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	Although the county suffered damages, the village did not report damages from this event.
June 26-July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	Although the county suffered damages, the village did not report damages from this event.
May 13-22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	Although the county suffered damages, the village did not report damages from this event.
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to a foot and half of snow within this band leading up to daybreak Friday.	Although the county suffered damages, the village did not report damages from this event.



Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	Although the county suffered damages, the village did not report damages from this event.

Notes:

EM Emergency Declaration (FEMA)

DR Major Disaster Declaration (FEMA)

### 9.24.4 Hazard Vulnerabilities and Ranking

The hazard profiles in Section 5.0 (Risk Assessment) have detailed information regarding each plan participant’s vulnerability to the identified hazards. The following summarizes the hazard vulnerabilities and their ranking in the Village of Turin.

#### Hazard Risk/Vulnerability Risk Ranking

This section includes the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy, as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating town or village might have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Village of Turin. The Village of Turin has reviewed the county hazard risk/vulnerability risk ranking table, as well as its individual results, to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the village indicated the following:

- The village agreed with the calculated hazard rankings.

Table 9.24-3. Hazard Risk/Vulnerability Risk Ranking

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	Low
Extreme Temperature	High	High
Flood	Medium	Medium
Hazardous Material Incidents	Medium	Medium
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	High

Notes: The scale is based on the following hazard rankings as established in Section 5.3 (Hazard Ranking).





### Critical Facilities

The table below presents HAZUS-MH estimates of the damage and loss of use to critical facilities in the community as a result of a 1-percent annual chance flood event.

**Table 9.24-4. Potential Flood Losses to Critical Facilities**

Name	Type	Exposure		Potential Loss from 1% Flood Event		Addressed by Proposed Action
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage	
Turin Recreation Pond Dam	Dam	X	X			-

Source: Lewis County Real Property 2018, FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000

The Village of Turin noted that the dam does not have any electrical components or mechanical components that could be damaged by flooding and therefore is not considered critical for the purpose of essential services. As a result, the Village of Turin did not develop mitigation actions to protect the dam to the 500-year flood level.

### Other Vulnerabilities Identified

The municipality has identified the following vulnerabilities within their community:

- Falling tree limbs present a damage risk.
- Increased outreach is needed.

### 9.24.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms

### Planning and Regulatory Capability

The table below summarizes the regulatory tools that are available to the Village of Turin.

**Table 9.24-5. Planning and Regulatory Tools**

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Master Plan	No	-	-	-
Capital Improvements Plan	No	-	-	-
Floodplain Management / Basin Plan	No	-	-	-
Stormwater Management Plan	No	-	-	-







Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	Yes	Local	Mayor	Water Treatment Operation
Economic Development Plan	No	-	-	-
Comprehensive Emergency Management Plan	Yes	County	EMO	Comprehensive Emergency Management Plan
Emergency Operation Plan	Yes	County	EMO	Emergency Operation Plan
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	No	-	-	-
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-
<b>Regulatory Capability</b>				
Building Code	Yes	State & Local	Lewis County Codes	Lewis County
Zoning Ordinance	No	-	-	-
Subdivision Ordinance	No	-	-	-
NFIP Flood Damage Prevention Ordinance	Yes	Federal, State, Local	Lewis County Codes	Lewis County
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	Yes	State, Local	Lewis County Codes	State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	No	-	-	-
Stormwater Management Ordinance	No	-	-	-
Municipal Separate Storm Sewer System (MS4)	No	-	-	-
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	NYS, Real Estate Agents	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

**Administrative and Technical Capability**

The table below summarizes potential staff and personnel resources available to the Village of Turin.





**Table 9.24-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	No	-
Mitigation Planning Committee	Yes	Village Board
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	Yes	Tug Hill Commission
Maintenance programs to reduce risk	Yes	Village Board
Mutual aid agreements	Yes	Village/Town
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	Yes	Lewis County Planning, Lewis County Soil and Water
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Lewis County Codes
Planners or engineers with an understanding of natural hazards	Yes	Lewis County Planning
NFIP Floodplain Administrator (FPA)	Yes	Lewis County Codes
Surveyor(s)	Yes	Development Authority of the North Country (D.A.N.C.)
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	Yes	Lewis County Planning Department
Scientist familiar with natural hazards	No	
Emergency Manager	Yes	Lewis County
Grant writer(s)	No	-
Staff with expertise or training in benefit/cost analysis	Yes	Village Board
Professionals trained in conducting damage assessments	No	-

**Fiscal Capability**

The table below summarizes financial resources available to the Village of Turin.

**Table 9.24-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	Yes
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes
Impact fees for homebuyers or developers of new development/homes	Yes (water)
Stormwater utility fee	Yes (water)
Incur debt through general obligation bonds	No
Incur debt through special tax bonds	Yes (water)
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No





Financial Resources	Accessible or Eligible to Use (Yes/No)
Other federal or state Funding Programs	No
Open Space Acquisition funding programs	No
Other	No

### Community Classifications

The table below summarizes classifications for community program available to the Village of Turin.

Table 9.24-8. Community Classifications

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	Yes	Codes- Lewis County	-
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	9	-
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	Yes	9	-
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	Yes	-	-
Public education program/outreach (through website, social media)	Yes	Direct Mailing	-
Public-private partnership initiatives addressing disaster-related issues	Yes	TBD	-

Note:

- Unavailable

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery, and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance, while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10, with class 1 being the best possible classification and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual.
- The Building Code Effectiveness Grading Schedule.
- The ISO Mitigation online ISO’s Public Protection website at <https://www.isomitigation.com/ppc/>.
- The National Weather Service Storm Ready website at <http://www.stormready.noaa.gov/index.html>.
- The National Firewise Communities website at <http://firewise.org/>.





### Self-Assessment of Capability

The table below provides an approximate measure of the Village of Turin’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

**Table 9.24-9. Self-Assessment Capability for the Municipality**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)*	Moderate	High
Planning and regulatory capability	X – Low Staff		
Administrative and technical capability	X – Low Staff		
Fiscal capability	X – Low Funding		
Community political capability	X – Low Staff		
Community resiliency capability	X – Low Staff/Funding		
Capability to integrate mitigation into municipal processes and activities		X	

### National Flood Insurance Program

#### NFIP Floodplain Administrator (FPA)

Ward Dailey, Lewis County Codes

#### Flood Vulnerability Summary

The Village of Turin does not maintain lists or inventories of properties that have been flood damaged or identify property owners who are interested in mitigation. The village does not perform substantial damage determinations. As of May 2018, the village did not have any NFIP policies.

The following table summarizes the NFIP statistics for the Village of Turin.

**Table 9.24-10. NFIP Summary**

Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in 100- year Boundary (3)
Village of Turin	0	0	\$0	0	0	0

Source: FEMA Region 2, 2018

Notes:

- (1) Policies, claims, and repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.
- (2) Total building and content losses from the claims file provided by FEMA Region 2.
- (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file. FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility.  
A zero percentage denotes less than 1/100th percentage and not zero damage or vulnerability as may be the case.  
Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.

### Resources

Lewis County is responsible for floodplain administration in the Village of Turin with the assistance of the mayor. The village does not provide NFIP administration services. The village does not conduct education or outreach regarding flood hazards and flood risk reduction. However, the FPA noted that the village has the ability to conduct mailings. The mayor stated that they feel adequately trained to assist with floodplain administration.





However, a lack of additional manpower presents an obstacle to running an effective program. The mayor stated that they would consider attending education and/or certification training on floodplain management if it were offered in the county for all local floodplain administrators.

### Compliance History

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The Village of Turin is in good-standing in the NFIP. The most recent Community Assistance Contact (CAC) took place on October 14, 2015. The village has not had a Community Assistance Visit (CAV).

### Regulatory

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The Village of Turin's floodplain management regulations/ordinances meet the FEMA and state minimum requirements. The mayor noted that additional ordinances and plans from Lewis County support floodplain management and meeting of NFIP requirements. The mayor stated that the village would attend a CRS seminar if offered locally.

### Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

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For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community's progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures.

### Planning

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#### Existing Integration

The Village of Turin follows the Lewis County Comprehensive Emergency Management Plan. The village does not have a Master Plan, Stormwater Management Plan, Redevelopment Plan, Growth Plan, Economic Development Plan, Open Space Plan, Watershed/Stream Corridor Management Plan, Local Waterfront Revitalization Plan, Continuity of Operations/Continuity of Government (COOP/COG) Plan, Post-Disaster Recovery Plan, or Strategic Recovery Plan.

#### Opportunities for Future Integration

The village could develop their own municipal planning documents and ensure that the documents address natural hazards and refer to the Lewis County HMP.

### Regulatory and Enforcement (Ordinances)

---

#### Existing Integration

The Village of Turin relies on Lewis County's Codes department for municipal zoning and subdivision regulations. The regulations consider natural hazard risk. The Village Zoning Board of Adjustment is provided with GIS mapping in order to help guide their decisions with respect to natural hazard risk management.

#### Opportunities for Future Integration

The village could work with the Lewis County Codes Department to ensure that zoning and subdivision regulations require developers to take additional actions to mitigate natural hazard risk. The village could work to develop their own municipal codes.



## Operational and Administration

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### Existing Integration

The Village of Turin does not have a municipal planner or contract planning firm. The village has a Zoning Board of Adjustment that is responsible for regulating setbacks. The village does not have any additional boards or committees that include functions involving managing natural hazard risk. Stormwater management functions are not performed by the Village. NFIP Floodplain Management functions are performed by the Lewis County G.I.S./ Soil and Water Departments. The village uses the D.A.N.C for developing Benefit-Cost Analysis. The village does not have staff or contract with firms who can perform Substantial Damage Determinations or have experience in preparing grant applications for mitigation projects.

Village staff do not receive training or continuing professional education to support natural hazard risk reduction. Staff do not have job descriptions that specifically include identifying and/or implementing mitigation projects/actions or other efforts to reduce natural hazard risk. Staff participate in the local water association to support natural hazard risk reduction and the building of hazard management capabilities.

### Opportunities for Future Integration

The village could supply staff with training to support natural hazard risk reduction. The village could hire staff or contract with firms that can perform Substantial Damage Determinations and have experience in preparing grant applications for mitigation projects.

## Funding

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### Existing Integration

The village does not allocate municipal funding for mitigation projects or activities. The village has not pursued grant funding for mitigation projects. The village does not have any other mechanisms to support hazard mitigation projects.

### Opportunities for Future Integration

The village could allocate municipal funds and apply for grant funding to support hazard mitigation projects and initiatives.

## Education and Outreach

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### Existing Integration

The village uses inserts with the water bill and local radio to conduct public outreach to inform citizens on natural hazards.

### Opportunities for Future Integration

The village could create a municipal website which could be used to host educational information.

## Sheltering, Evacuation, and Temporary Housing

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Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.



### Evacuation and Sheltering Needs

The Village of Turin has designated the following emergency shelters:

**Table 9.24-11. Emergency Shelters**

Shelter Name	Address	Capacity	Accommodates Pets?	ADA Compliant?	Backup Power?	Types of Medical Services Provided	Other Services Provided
Turin Fire Hall	State Route 26 Turin, NY 13473	50	Yes	Yes	Yes	As Needed	As Needed
South Lewis Central School	5960 Main Street, Glenfield, NY 13343	500	Yes	Yes	Yes	As Needed	As Needed

The village has not identified evacuation routes or evacuation procedures but would work with Lewis County during an emergency event to establish evacuations routes and procedures. The village could use the primary roads in and out of the municipality to serve as evacuation routes if needed.

### Temporary and Permanent Housing

The Village of Turin has identified the following sites for the placement of temporary housing for residents displaced by a disaster:

- North of Town Fire Hall. The site has a capacity of 25. The site would need infrastructure developed to support trailers.

The village has not identified potential sites suitable for relocating houses of the floodplain and/or building new homes once properties in the floodplain are acquired but would work with Lewis County if a hazard event required sites to be selected.

### 9.24.6 Mitigation Strategy and Prioritization

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and prioritization.

#### Past Mitigation Initiative Status

The Village of Turin did not participate in the 2010 Lewis County Hazard Mitigation and therefore did not have past mitigation initiatives to note progress.

#### Completed Mitigation Initiatives not Identified in the Previous Mitigation Strategy

The Village of Turin has performed ongoing maintenance projects to reduce the impact of flooding but has not identified specific mitigation projects/activities that have been completed but were not identified in the previous mitigation strategy in the 2010 Plan.

#### Proposed Hazard Mitigation Initiatives for the Plan Update

Table 9.24-12 summarizes the comprehensive-range of specific mitigation initiatives the Village of Turin would like to pursue in the future to reduce the effects of hazards. Some of these initiatives might be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation







action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6, 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.24-13 provides a summary of the prioritization of all proposed mitigation initiatives for the plan update.



Table 9.24-12. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
V. Turin-1	Outreach Program	<b>Problem:</b> The village’s outreach is limited to inserts with the water bill and local radio announcements. This limits the amount of information available to residents. <b>Solution:</b> The village will expand outreach initiatives. The village will explore establishing a municipal website and creating a seminar series on hazards. This will include maps showing where floodplains are located, proper generator use, and driving in winter weather conditions.		All Hazards	3	No	None	Within 5 years	Village Board	\$2,000	Public educated on hazards and preparedness	Municipal budget	High	EAP	PI
V. Turin-2	Vegetation Management	<b>Problem:</b> High hazard trees pose a risk for falling on private property and utilities during storm events. <b>Solution:</b> The Village Highway Department will develop a tree management program. The program will include tree inspections to identify at-risk trees. Once identified, the Village will remove or trim the hazardous trees.		Severe Storm, Severe Winter Storm	1	No	None	Within 5 years	Highway Department	\$10,000	High risk trees removed	Municipal budget	High	NSP	NR

Notes:

Not all acronyms and abbreviations defined below are included in the table.

\*Does this mitigation initiative reduce the effects of hazards on new and/or existing buildings and/or infrastructure? Not applicable (N/A) is inserted if this does not apply.

Acronyms and Abbreviations:

CAV Community Assistance Visit  
 CRS Community Rating System  
 DPW Department of Public Works  
 EHP Environmental Protection and Historic Preservation

Potential FEMA HMA Funding Sources:

FMA Flood Mitigation Assistance Grant Program  
 HMGP Hazard Mitigation Grant Program  
 PDM Pre-Disaster Mitigation Grant Program

Timeline:

Short 1 to 5 years  
 Long Term 5 years or greater  
 OG On-going program  
 DOF Depending on funding





FEMA	Federal Emergency Management Agency	RFC	Repetitive Flood Claims Grant Program (discontinued in 2015)
FPA	Floodplain Administrator		
HMA	Hazard Mitigation Assistance	SRL	Severe Repetitive Loss Grant Program (discontinued in 2015)
N/A	Not applicable		
NFIP	National Flood Insurance Program		
OEM	Office of Emergency Management		

Mitigation Category:

- *Local Plans and Regulations (LPR)* – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- *Structure and Infrastructure Project (SIP)* - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- *Natural Systems Protection (NSP)* – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- *Education and Awareness Programs (EAP)* – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities.

CRS Category:

- *Preventative Measures (PR)* - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- *Property Protection (PP)* - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- *Public Information (PI)* - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- *Natural Resource Protection (NR)* - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- *Structural Flood Control Projects (SP)* - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.
- *Emergency Services (ES)* - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.

Critical Facility:

- Yes - Critical Facility is located in 1% floodplain.



**Table 9.24-13. Summary of Prioritization of Actions**

Mitigation Action/Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community	Total	High / Medium / Low
V. Turin-1	Outreach Program	1	1	1	1	1	1	1	1	1	1	1	0	1	1	13	High
V. Turin-2	Vegetation Management	0	1	1	1	1	1	1	1	1	1	1	0	1	1	13	High

Note: Refer to Section 6 (Mitigation Strategy), which conveys guidance on prioritizing mitigation actions.



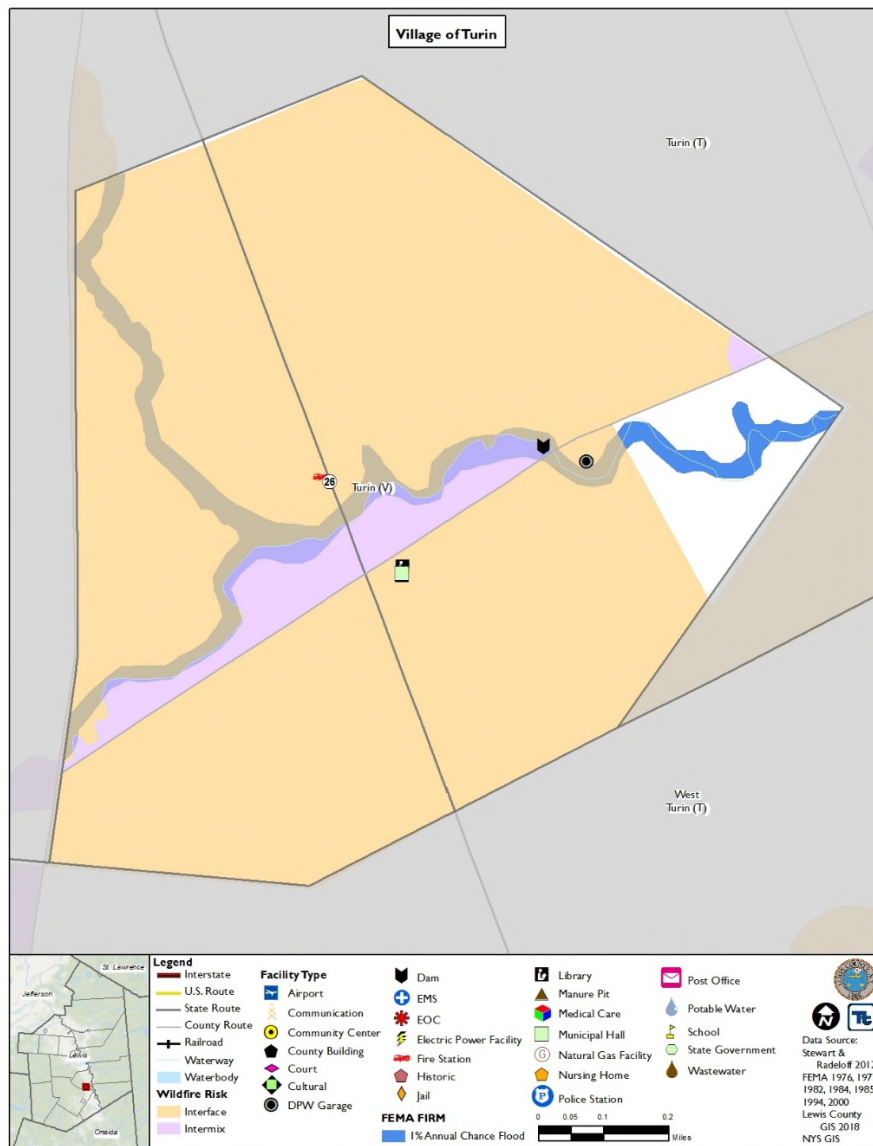
### 9.24.7 Future Needs To Better Understand Risk/Vulnerability

None at this time.

### 9.24.8 Hazard Area Extent and Location

Hazard area extent and location maps have been generated for the Village of Turin that illustrate the probable areas impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps have been generated only for those hazards that can be clearly identified using mapping techniques and technologies and for which the Village of Turin has significant exposure. These maps are illustrated in the hazard profiles in Section 5.4 (Hazard Profiles).

Figure 9.24-1. Village of Turin Hazard Area Extent and Location Map



### 9.24.9 Additional Comments

None at this time.





Village of Turin Action Worksheet			
<b>Project Name:</b>	Outreach Program		
<b>Project Number:</b>	V. Turin-1		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	All Hazards		
<b>Description of the Problem:</b>	The village's outreach is limited to inserts with the water bill and local radio announcements.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The village will expand outreach initiatives. The village will explore establishing a municipal website and creating a seminar series on hazards. This will include maps showing where floodplains are located, proper generator use, and driving in winter weather conditions.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Depends on the type of storm impacting the Village	<b>Estimated Benefits (losses avoided):</b>	Public educated on hazards and preparedness
<b>Useful Life:</b>	1 year (outreach to be annual)	<b>Goals Met:</b>	3
<b>Estimated Cost:</b>	\$2,000	<b>Mitigation Action Type:</b>	Education and Awareness Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	5 years
<b>Estimated Time Required for Project Implementation:</b>	1 year	<b>Potential Funding Sources:</b>	Municipal budget
<b>Responsible Organization:</b>	Village Board	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Encourage residents to educate themselves.	\$0	Residents might not be aware of where to access information.
	Ask non-profits to conduct outreach.	\$0	Non-profits might not be able or willing to provide outreach.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Outreach Program	
<b>Project Number:</b>	V. Turin-1	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Project will encourage better citizen preparedness.
Property Protection	1	Project will encourage private home and business mitigation.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The village has the legal authority to conduct outreach.
Fiscal	1	Municipal budget
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	All hazards
Timeline	0	
Agency Champion	1	Village Board
Other Community Objectives	1	
<b>Total</b>	13	
<b>Priority (High/Med/Low)</b>	High	





Village of Turin Action Worksheet			
<b>Project Name:</b>	Vegetation Management		
<b>Project Number:</b>	V. Turin-2		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Severe Storm, Severe Winter Storm		
<b>Description of the Problem:</b>	High hazard trees pose a risk for falling on private property and utilities during storm events.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The Village Highway Department will develop a tree management program. The program will include tree inspections to identify at-risk trees. Once identified, the Village will remove or trim the hazardous trees.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	Depends on the severity of the storm that hits the Village	<b>Estimated Benefits (losses avoided):</b>	High risk trees removed
<b>Useful Life:</b>	5 years	<b>Goals Met:</b>	1
<b>Estimated Cost:</b>	\$10,000	<b>Mitigation Action Type:</b>	Natural Systems Protection
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	6 months	<b>Potential Funding Sources:</b>	Municipal budget
<b>Responsible Organization:</b>	Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Remove all trees with fall risk on power lines and private property.	\$10,000+	Private property issues.
	Encourage residents to report problem trees.	\$100	Reactive instead of preemptive. Not as effective in controlling risk.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Vegetation Management	
<b>Project Number:</b>	V. Turin-2	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project will protect property from damage from falling trees.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	Village has the legal authority to conduct the project.
Fiscal	1	Municipal budget
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	
Timeline	0	Within 5 years
Agency Champion	1	Highway Department
Other Community Objectives	1	
<b>Total</b>	12	
<b>Priority (High/Med/Low)</b>	High	



## 9.25 TOWN OF WATSON

This section presents the jurisdictional annex for the Town of Watson. It includes resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions that can be implemented prior to a disaster to reduce or eliminate damage to property and people. This annex includes a general overview of the Town of Watson and who in the town participated in the planning process, an assessment of the Town of Watson’s risk and vulnerability, the different capabilities used in the town, and an action plan that will be implemented to achieve a more resilient community.

### 9.25.1 Hazard Mitigation Planning Team

The following individuals have been identified as the Town of Watson’s hazard mitigation plan primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Dennis Foster Title: Supervisor Phone Number: 315-376-3866 Address: Town of Watson, 6971 Number Four Road, Lowville, NY 13367 Email: Dennis_Foster@townofwatsonny.com	Name: Michael Hanno Title: Town Board member Phone Number: 315-376-6792 Address: Town of Watson, 6971 Number Four Road, Lowville, NY 13367 Email: mhanno@southlewis.org
Floodplain Administrator	
Name: Michael Hanno Title: Town Board member Phone Number: 315-376-6792 Address: 6931 North Chase Lake Road, Watson, NY Email: mhanno@southlewis.org	

### 9.25.2 Municipal Profile

The Town of Watson is located at the east border of Lewis County to the east of the county seat of Lowville. The east town line is the border of Herkimer County and the west town line is partly defined by the Black River. The Beaver River flows through the northern portion of town. The eastern portion of Watson is inside of Adirondack Park. The Town of Watson is bordered by the Towns of New Bremen and Croghan to the north, Herkimer County to the east, the Town of Greig to the south, the Town of Martinsburg to the southwest, and the Town of Lowville to the northwest. The town has a total area of 115.8 square miles. The estimated 2017 population was 1,864, a 0.9 percent increase from the 2010 Census (1,881).

Data from the 2017 U.S. Census American Community Survey indicate that 5.2 percent of the town population is five years of age or younger, and 17.8 percent is 65 years of age or older. Communities must deploy a support system that enables all populations to safely reach shelters or to quickly evacuate a hazard area.

### History and Cultural Resources

The Town of Watson was first settled in 1815 and officially formed from the Town of Leyden in 1821. Parts of the Town of Watson were later taken to form the Towns of Greig in 1828, Diane in 1830, Croghan in 1841, and New Bremen in 1848.





**Growth/Development Trends**

Table 9.25-1 summarizes major residential/commercial development that known or anticipated to take place prior to 2023. The map in Figure 9.25-1 of this annex illustrates the hazard areas, along with the location of potential new development.

**Table 9.25-1. Growth and Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2010 to present</b>					
None					
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
Town of Watson	Res. & Comm.	323	Various	N/A	Municipal Water, engineering

*\* Only location-specific hazard zones or vulnerabilities identified.*

**9.25.3 Hazard Event History Specific to the Town of Watson**

Lewis County has a history of natural hazard events as detailed in Volume I, Section 5.0 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the county and its municipalities. The Town of Watson’s history of federally-declared (as presented by FEMA) and significant hazard events (as presented in NOAA-NCEI) is consistent with that of Lewis County. Table 9.25-2 provides details regarding municipal-specific loss and damages the town experienced during hazard events. Information provided in the table below is based on reference material or local sources.

**Table 9.25-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April 26- May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	While the county suffered losses, the town did not report losses.
August 26- September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	While the county suffered losses, the town did not report losses.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	While the county suffered losses, the town did not report losses.
June 26- July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	While the county suffered losses, the town did not report losses.
May 13- 22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	While the county suffered losses, the town did not report losses.





Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to a foot and half of snow within this band leading up to daybreak Friday.	The storm caused road closures. The town needed to pay overtime for excess snow removal.
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	While the county suffered losses, the town did not report losses.

Notes:

EM Emergency Declaration (FEMA)  
 DR Major Disaster Declaration (FEMA)

### 9.25.4 Hazard Ranking and Jurisdiction-Specific Vulnerabilities

The hazard profiles in Section 5.0 (Risk Assessment) have detailed information regarding each plan participant’s vulnerability to the identified hazards. This section provides a summary of exposure and impacts from significant hazards of concern as identified by the Town of Watson.

#### Hazard Risk Ranking

This section includes the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy, as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating town or village may have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, each town ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Town of Watson. The Town of Watson has reviewed the county hazard risk/vulnerability risk ranking table, as well as its individual results to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the town indicated the following:

**Table 9.25-3. Town of Watson Calculated Hazard Ranking**

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	High
Extreme Temperature	High	High
Flood	Medium	Medium





Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Hazardous Material Incidents	Medium	Medium
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	High

Notes: The scale is based on the following hazard rankings as established in Section 5.3.

### Critical Facilities Flood Risk

NYS DEC Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for state projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a SFHA unless constructed according to specific mitigation specifications, including being raised 2 feet above the BFE. This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the state places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 500-year flood event, or worst damage scenario. For those that do not meet these criteria, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain and presents HAZUS-MH estimates of the damage and loss of use to critical facilities as a result of a 1-percent annual chance flood event.

Table 9.25-4. Potential Flood Losses to Critical Facilities

Name	Type	Exposure		Addressed by Proposed Action
		1% Event	0.2% Event	
Erie Blvd Hydropower LP	Electric Power Facility	X	X	T. Watson-1

Source: Lewis County Real Property 2018, FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000

### Identified Issues

The Town of Watson has identified the following vulnerabilities within their community:

- The town lacks an outreach program.

### 9.25.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms

### Planning and Regulatory Capability

The table below summarizes the regulatory tools that are available to the Town of Watson.





Table 9.25-5. Planning and Regulatory Tools

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Comprehensive Plan	Yes	Local	Planning	Master Plan
Capital Improvements Plan	Yes	Local	Highway	Capital Improvements Plan
Floodplain Management / Basin Plan	Yes	Local	Codes	Floodplain Management Plan
Stormwater Management Plan	No	-	-	-
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	No	-	-	-
Economic Development Plan	No	-	-	-
Comprehensive Emergency Management Plan	No	-	-	-
Emergency Operation Plan	No	-	-	-
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	No	-	-	-
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-
<b>Regulatory Capability</b>				
Building Code	Yes	State & Local	Codes	NYS Building Code
Zoning Ordinance	Yes	State & Local	ZBA	Proposed Zoning Law 1997
Subdivision Ordinance	Yes	State & Local	Planning	Code citation information was not available from the town
NFIP Flood Damage Prevention Ordinance	Yes	Federal, State, Local	Codes	Code citation information was not available from the town
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	Yes	State, Local	Codes	State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	Yes	Local	Planning	Planning Board requirements
Stormwater Management Ordinance	No	-	-	-
Municipal Separate Storm Sewer System (MS4)	No	-	-	-
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-





Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Real Estate Disclosure Requirement	Yes	State	NY State, Real Estate Agents	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

### Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the Town of Watson.

**Table 9.25-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	Yes	Town Board
Mitigation Planning Committee	No	-
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	No	-
Maintenance programs to reduce risk	No	-
Mutual aid agreements	Yes	Town, County
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	No	-
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	No	-
Planners or engineers with an understanding of natural hazards	No	-
NFIP Floodplain Administrator (FPA)	Yes	Town Board member
Surveyor(s)	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	Yes	Town Board
Scientist familiar with natural hazards	No	-
Emergency Manager	No	-
Grant writer(s)	No	-
Staff with expertise or training in benefit/cost analysis	No	-
Professionals trained in conducting damage assessments	No	-

### Fiscal Capability

The table below summarizes financial resources available to the Town of Watson.





**Table 9.25-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	No
Capital improvements project funding	Yes, Town Board
Authority to levy taxes for specific purposes	Yes, Town Board
User fees for water, sewer, gas or electric service	Yes, Town Board
Impact fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	No
Incur debt through general obligation bonds	Yes, Town Board
Incur debt through special tax bonds	No
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No
Other federal or state Funding Programs	No
Open Space Acquisition funding programs	No
Other	No

**Community Classifications**

The table below summarizes classifications for community programs available to the Town of Watson.

**Table 9.25-8. Community Classifications**

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	Class 5	-
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	No	-	-
Public-private partnership initiatives addressing disaster-related issues	No	-	-
Other	No	-	-

Note:  
- Unavailable

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery, and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies





to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class 1 being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual.
- The Building Code Effectiveness Grading Schedule (<https://www.isomitigation.com/bcegs/>).
- The ISO Mitigation online ISO’s Public Protection (<https://www.isomitigation.com/ppc/>).
- New York State Climate Smart Communities (<http://www.dec.ny.gov/energy/56876.html>).
- The National Weather Service Storm Ready (<https://www.weather.gov/stormready/communities>).
- The National Firewise Communities (<http://firewise.org/>).

### Self-Assessment of Capability

The table below provides an approximate measure of the Town of Watson’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

Table 9.25-9. Self-Assessment Capability for the Town of Watson

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Planning and regulatory capability		X	
Administrative and technical capability	X – low staff		
Fiscal capability	X – low funding resources		
Community political capability	X – low public involvement		
Community resiliency capability	X – low staff and equipment		
Capability to integrate mitigation into municipal processes and activities	X – low staffing and resources		

The town noted that while it has limited capability in many areas, it can rely on shared services with neighboring municipalities and the county during disaster response or mitigation.

### National Flood Insurance Program

This section provides specific information on the management and regulation of the regulatory floodplain.

#### NFIP Floodplain Administrator (FPA)

Michael Hanno, Town Board member

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

The Town of Watson does not maintain lists/inventories of properties that have been flooded or identify property owners who are interested in mitigation. The town does not make substantial determinations. No property owners are interested in mitigation (elevation/acquisition), and none are currently undergoing mitigation projects.





The following table summarizes the NFIP statistics for the Town of Watson.

Table 9.25-10. NFIP Summary

Municipality	# Policies	# Claims (Losses)	Total Loss Payments	# RL Properties	# SRL Properties	# Policies in the 1% Flood Boundary
Town of Watson	7	8	\$54,563	0	0	6

Source: FEMA Region 2, 2018

Notes:

- (1) Policies, claims, and repetitive loss statistics provided by FEMA Region 2 and are current as of 05/03/2018.
  - (2) Total building and content losses from the claims file provided by FEMA Region 2.
  - (3) The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file.
- FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility. A zero percentage denotes less than 1/100th percentage and not zero damage or vulnerability as may be the case.
- Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.

### Resources

The Town Board is responsible for floodplain administration. NFIP administration services include code enforcement via the Superintendent of Highways. The town does not conduct any outreach regarding flood hazards/risk or flood risk reduction. The FPA does not feel adequately supported and trained in their position and noted that the town is in need of an updated and accurate floodplain map. The FPA would consider attending continuing education and/or certification training on floodplain management if it were offered in the county for all local floodplain administrators.

### Compliance History

The town is in good standing with the NFIP. According to records from NYS, the town’s last compliance audit (Community Assistance Visit [CAV]) took place on August 7, 2015.

### Regulatory

The town’s floodplain management regulations/ordinances meet the FEMA and state minimum requirements. The FPA stated that there are no other local ordinances, plans, or programs that support floodplain management and the meeting of NFIP requirements. The town has not considered joining the Community Rating System (CRS) program and would need more information before considering attending a seminar.

### Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community’s progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures, which are also indicated below.

### Planning

#### Existing Integration

The town has a Comprehensive Plan. The plan does not currently consider areas of natural risk or refer to the Lewis County HMP. The Town of Watson is not an MS4 Regulated Community and does not have a Stormwater Management Plan. The town does not have a Re-Development Plan, Growth Plan, Watershed/Stream Corridor





Management Plan, Local Waterfront Revitalization Plan, Continuity of Operations/Continuity of Government plan, Post-Disaster Recovery Plan, Strategic Recovery Plan, Economic Development Plan, or Open Space Plan.

### Opportunities for Future Integration

The Town's Comprehensive Plan could be updated to consider areas of natural risk and refer to the county HMP.

## Regulatory and Enforcement (Ordinances)

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### Existing Integration

The town's municipal zoning, subdivision regulations, and site plan review process consider natural hazard risk. Currently, the Planning Board/ZBA have access to the County Planner to guide their decisions with respect to natural hazard risk management. Zoning, subdivision regulations, and the site plan review process in the Town do not require developers to take additional actions to mitigate natural hazard risk.

**Zoning Ordinance:** The purpose of the Town of Watson's Zoning Ordinance aims to promote and guide development in an orderly and efficient manner, to reduce land use conflicts, promote traffic safety, enhance and protect the historical and recreational attribute of the town, retain and improve land values, encourage quality development, insure wise use of public resources and promote the general health and welfare of the town residents. This law is designed to protect existing development while providing some control of growth so that future development will not be a detriment to the town and its residents.

### Opportunities for Future Integration

The Town could require developers to take additional actions to mitigate natural hazard risk.

## Operational and Administration

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### Existing Integration

The Town of Watson does not have a municipal planner or contract planning firm. The town has their own Planning Board and Zoning Board of Adjustment but does not have additional Boards or Committees that include functions with respect to managing natural hazard risk. The town does not have staff or contract with firms who have experience with developing Benefit-Cost Analysis, can perform Substantial Damage Determinations, or have experience in preparing grant applications for mitigation projects.

Town staff do not have job descriptions that specifically include identification or implementation of hazard mitigation projects and do not participate in any associations or groups that support natural hazard risk reduction or build hazard mitigation capabilities. Town staff do not receive training or continuing professional education to support risk reduction.

### Opportunities for Future Integration

The town could hire staff or contract with firms who have experience with developing Benefit-Cost Analysis, can perform Substantial Damage Determinations, and have experience in preparing grant applications for mitigation projects. The town could administer training to staff to educate them on natural hazard risk reduction.

## Funding

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### Existing Integration

The town's municipal/operating budget and Capital Improvements Budget do not include line items for mitigation projects, and the town has not applied for grant funding for mitigation projects in the past. The town does not have any other mechanisms to fiscally support hazard mitigation.



### Opportunities for Future Integration

The town budget and/or Capital Improvements Budget could include a line item for mitigation. The town could supplement municipal funding by applying for grants.

### Education and Outreach

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#### Existing Integration

The town does not currently offer education or outreach concerning hazard mitigation.

#### Opportunities for Future Integration

The town could develop educational brochures to be dispersed at community events.

### Sheltering, Evacuation, and Temporary Housing

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Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

#### Evacuation and Sheltering Needs

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The Town of Watson designated the following emergency shelters, evacuation routes, or evacuation procedures:

- The town designated the Town Barn at 6971 Number Four Road as the town's emergency shelter. It has a capacity of 50, is ADA compliant, has backup power, has first aid, and has a working kitchen.
- The town has not identified evacuation routes; however, the primary roads in and out of the town can serve as evacuation routes if needed. Routes and procedures would be determined at the time of an incident, in accordance with the County's CEMP.

#### Temporary and Permanent Housing

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The Town of Watson identified the following site for the placement of temporary housing for residents displaced by a disaster:

- The town identified Water Town Park at 6971 Number Four Road as a potential site for temporary housing for residents displaced by a disaster. The site has a capacity of 90 acres and is up to code.

The Town of Watson has not identified potential sites suitable for relocating houses of the floodplain and/or building new homes once properties in the floodplain are acquired.

### 9.25.6 Mitigation Strategy and Prioritization

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This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and their prioritization.

#### Past Mitigation Initiative Status

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The Town of Watson did not identify mitigation actions in the 2010 Lewis County Hazard Mitigation Plan.



### **Completed Mitigation Initiatives Not Identified in the Previous Mitigation Strategy**

The Town of Watson has performed ongoing maintenance projects to reduce the impact of flooding but has not identified specific mitigation projects/activities that have been completed but were not identified in the previous mitigation strategy in the 2010 Plan.

### **Proposed Hazard Mitigation Initiatives for the Plan Update**

Table 9.25-11 summarizes the comprehensive-range of specific mitigation initiatives the Town of Watson would like to pursue in the future to reduce the effects of hazards. Some of these initiatives may be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and can be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6 (Mitigation Strategy) , 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.25-12 provides a summary of the prioritization of all proposed mitigation initiatives for the plan update.





Table 9.25-11. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
T. Watson-1	Protect the Erie Blvd Hydropower LP facility to the 500-year flood level.	<b>Problem:</b> The facility is located in the 100-year floodplain. The town does not have jurisdiction over the facility and cannot mitigate themselves.	<b>Solution:</b> The town will contact the facilities manager and discuss options for protecting the facility to the 500-year flood level	Flood	3	Yes	None	Within 6 months	Town Floodplain Administrator working with facility operators/ owners	<\$100	Provide outreach to the property owner and informing them of potential flood damage and possible solutions	Municipal budget	High	SIP, EAP	PI
T. Watson-2	Outreach program	<b>Problem:</b> The Town of Watson lacks an outreach program related to natural hazards, preparedness, and what to do during a hazard event. This limits how information is provided to residents.	<b>Solution:</b> The town will develop an outreach program to educate the public about hazards. This will include information in a municipal newsletter, encouraging residents to review the HMP, and developing hazard-related flyers. Educational materials will include generator operation, driving in severe weather conditions, and how to be prepared for long-term power outages.	All hazards	3	No	None	1 year	Town board	\$4,000	Public educated and better prepared and protected from hazards	Town budget	High	EAP	PI

Notes:  
Not all acronyms and abbreviations defined below are included in the table.

Acronyms and Abbreviations:

Potential FEMA HMA Funding Sources:

Timeline:





CAV Community Assistance Visit  
 CRS Community Rating System  
 DPW Department of Public Works  
 FEMA Federal Emergency Management Agency  
 FPA Floodplain Administrator  
 HMA Hazard Mitigation Assistance  
 N/A Not applicable  
 NFIP National Flood Insurance Program  
 OEM Office of Emergency Management

FMA Flood Mitigation Assistance Grant Program  
 HMGP Hazard Mitigation Grant Program  
 PDM Pre-Disaster Mitigation Grant Program

The time required for completion of the project upon implementation

Cost:  
 The estimated cost for implementation.

Benefits:  
 A description of the estimated benefits, either quantitative and/or qualitative.

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities

CRS Category:

- Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.
- Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities

Critical Facility:


- Yes  - Critical Facility located in 1% floodplain





Table 9.25-12. Summary of Prioritization of Actions

Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
T. Watson-1	Protect the Erie Blvd Hydropower LP facility to the 500-year flood level.	0	1	1	0	1	0	1	1	1	1	0	1	1	1	10	High
T. Watson-2	Outreach program	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High

Note: Section 6 (Mitigation Strategy), conveys guidance on prioritizing mitigation actions.



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### 9.25.7 Future Needs To Better Understand Risk/Vulnerability

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None at this time.

### 9.25.8 Staff and Local Stakeholder Involvement in Annex Development

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The Town of Watson followed the planning process described in Section 3 (Planning Process) in Volume I of this plan update. This annex was developed over the course of several months with input from many Town departments, including: the Supervisor and the Town Board. The Town Supervisor represented the community on the Lewis County Hazard Mitigation Plan Planning Partnership and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Additional documentation on the Town of Watson’s planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix B (Meeting Documentation).

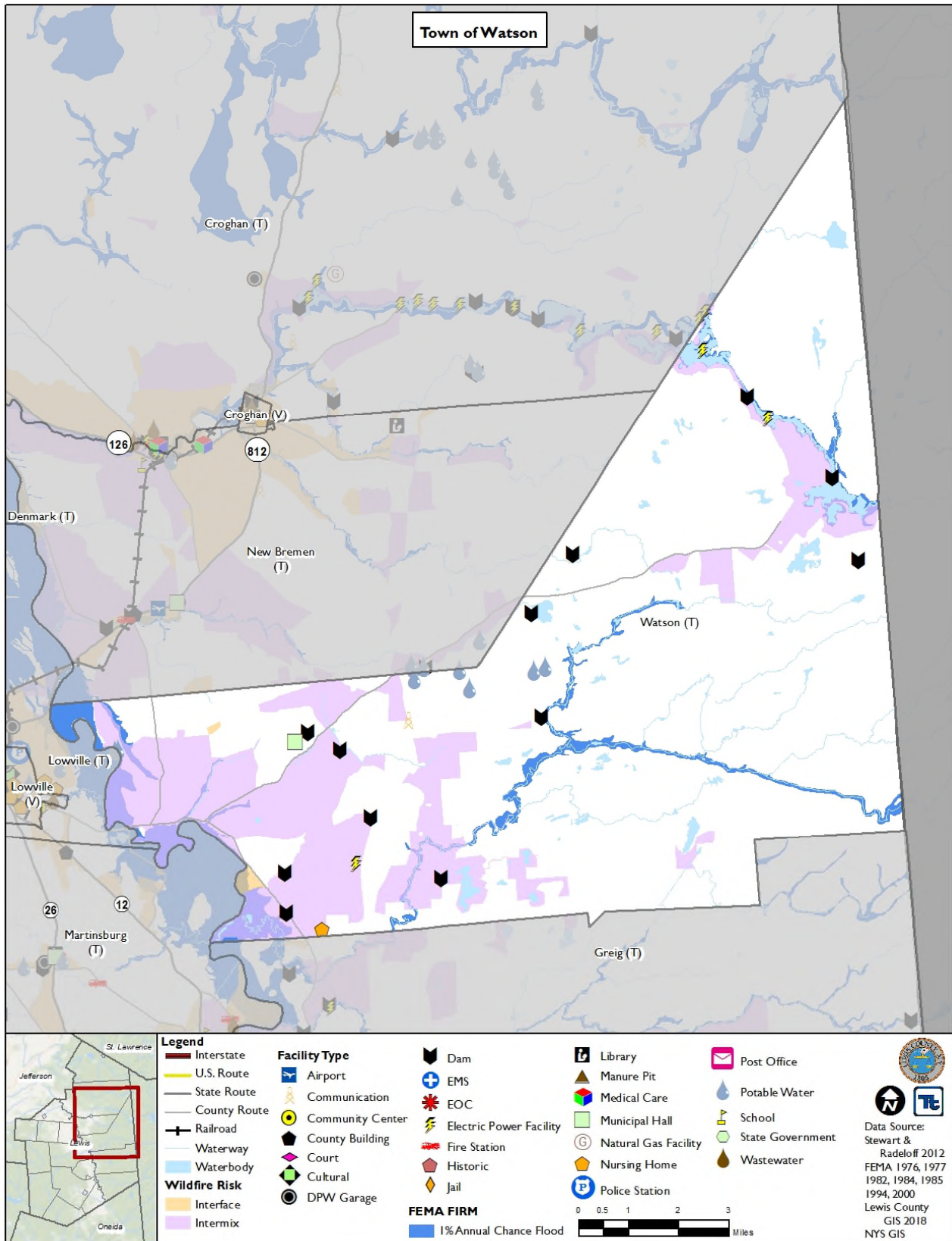
### 9.25.9 Hazard Area Extent and Location

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Hazard area extent and location maps have been generated for the Town of Watson that illustrate the probable areas impacted within the Town of Watson. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps were generated only for those hazards that can be clearly identified using mapping techniques and technologies and for which the Town of Watson has significant exposure. A map of the Town of Watson hazard area extent and location is provided on the following page. This map indicates the location of the regulatory floodplain, as well as identified critical facilities within the Town of Watson.



Figure 9.25-1. Town of Watson Hazard Area Extent and Location Map





Town of Watson Action Worksheet			
<b>Project Name:</b>	Protect the Erie Blvd Hydropower LP facility to the 500-year flood level.		
<b>Project Number:</b>	T. Watson-1		
Risk / Vulnerability			
<b>Hazard(s) of Concern:</b>	Flood		
<b>Description of the Problem:</b>	The facility is located in the 100-year floodplain. The town does not have jurisdiction over the facility and cannot mitigate themselves.		
Action or Project Intended for Implementation			
<b>Description of the Solution:</b>	The town will contact the facilities manager and discuss options for protecting the facility to the 500-year flood level. Possible mitigation actions include raising electrical components above the 500-year flood level, floodproofing to the 500-year flood level, and preventing scouring during the 500-year event. The town will then assist with locating possible grant assistance for mitigation actions.		
<b>Is this project related to a Critical Facility?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	500-year flood level	<b>Estimated Benefits (losses avoided):</b>	Facility protected from flood levels
<b>Useful Life:</b>	Dependent on selected action	<b>Goals Met:</b>	3
<b>Estimated Cost:</b>	Outreach costs for municipality: \$100, Mitigation costs TBD	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project, Education and Awareness Project
Plan for Implementation			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 6 months
<b>Estimated Time Required for Project Implementation:</b>	Within 6 months	<b>Potential Funding Sources:</b>	Operating budget for outreach, HMGP/FMA for mitigation
<b>Responsible Organization:</b>	FPA	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
Three Alternatives Considered (including No Action)			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Encourage non-profit groups to conduct outreach.	\$0	Costly, non-profits might not be interested.
	Rely on property owners to educate themselves without municipal assistance.	\$0	Property owners might not be aware of need to educate.
Progress Report (for plan maintenance)			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Protect the Erie Blvd Hydropower LP facility to the 500-year flood level.	
<b>Project Number:</b>	T. Watson-1	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project will assist in protection of property.
Cost-Effectiveness	1	
Technical	0	
Political	1	
Legal	0	Town does not have legal jurisdiction over the facility.
Fiscal	1	
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	0	Flood
Timeline	1	Within 6 months
Agency Champion	1	FPA
Other Community Objectives	1	
<b>Total</b>	10	
<b>Priority (High/Med/Low)</b>	High	





Town of Watson Action Worksheet			
<b>Project Name:</b>	Outreach Program		
<b>Project Number:</b>	T. Watson-2		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Flood		
<b>Description of the Problem:</b>	The Town of Watson lacks an outreach program related to natural hazards, preparedness, and what to do during a hazard event. This limits how information is provided to residents.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The town will develop an outreach program to educate the public about hazards. This will include information in a municipal newsletter, encouraging residents to review the HMP, and developing hazard-related flyers. Educational materials will include generator operation, driving in severe weather conditions, and how to be prepared for long-term power outages.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	N/A	<b>Estimated Benefits (losses avoided):</b>	Public educated and better prepared for hazard events.
<b>Useful Life:</b>	5 years	<b>Goals Met:</b>	3
<b>Estimated Cost:</b>	\$4,000	<b>Mitigation Action Type:</b>	Education and Awareness Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	1 year
<b>Estimated Time Required for Project Implementation:</b>	Within 1 year	<b>Potential Funding Sources:</b>	Operating budget
<b>Responsible Organization:</b>	Town Board	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Hazard Mitigation
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Encourage non-profit groups to conduct outreach.	\$0	Non-profits may not be interested/capable.
	Rely on property owners to educate themselves without municipal assistance.	\$0	Property owners may not be aware of need to educate.
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			





Action Worksheet		
<b>Project Name:</b>	Outreach Program	
<b>Project Number:</b>	T. Watson-2	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Public aware of how to protect life from hazards.
Property Protection	1	Public aware of how to protect property from hazards.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The Town has the legal authority to conduct outreach.
Fiscal	1	
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	All hazards to be addressed
Timeline	1	
Agency Champion	1	FPA
Other Community Objectives	1	Public education
<b>Total</b>	14	
<b>Priority (High/Med/Low)</b>	High	



## 9.26 TOWN OF WEST TURIN

This section presents the jurisdictional annex for the Town of West Turin. It includes resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions that can be implemented prior to a disaster to reduce or eliminate damage to property and people. This annex includes a general overview of the municipality and who in the town participated in the planning process, an assessment of the Town of West Turin’s risk and vulnerability, the different capabilities used in the town, and an action plan that will be implemented to achieve a more resilient community.

### 9.26.1 Hazard Mitigation Planning Team

The following individuals have been identified as the Town of West Turin’s hazard mitigation plan primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Douglas Salmon Title: Highway Superintendent Phone Number: 315-397-2231 Address: 5968 James Street, Constableville, NY 13325 Email: dssalmon17@yahoo.com	Name: Edward Hayes Title: Town Supervisor Phone Number: 315-397-2595 Address: 5438 Kessler Road, Boonville, NY 13302 Email: snap252@frontier.com
Floodplain Administrator	
Name: Ward Dailey Title: Lewis County Codes Phone Number: 315-376-5377 Address: 7660 N State Street Lowville, NY 13620 Email: <a href="mailto:permits@lewiscounty.ny.gov">permits@lewiscounty.ny.gov</a>	

### 9.26.2 Municipal Profile

The Town of West Turin is situated in the south-central portion of Lewis County. The Town of West Turin encompasses 102.40 square miles including 102.05 square miles of land, and 0.34 square miles of water. Hamlets that are a part of the town are Collinsville, Fish Creek, Michigan Mills, and Mohawk Hill. The estimated 2017 population was 739, a 4.1 percent decrease from the 2010 Census (771).

Data from the 2017 U.S. Census American Community Survey estimates that 2.8 percent of the town population is five years of age or younger, and 11.2 percent is 65 years of age or older. Communities must deploy a support system that enables all populations to safely reach shelters or to quickly evacuate a hazard area.

#### History and Cultural Resources

The Town of West Turin was settled in 1796 and incorporated in 1830 from part of the Town of Turin. The size of the Town of West Turin was reduced by the formation of the Town of Montague and the Town of Osceola.

#### Growth/Development Trends

Table 9.26-1 summarizes major residential/commercial development that known or anticipated to take place prior to 2023. The map in 9.26.9 of this annex illustrates the hazard areas along with the location of potential new development.



**Table 9.26-1. Growth and Development**

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
<b>Recent Development from 2010 to present</b>					
Verizon	Cell Tower	1	Adam Road	None	Cell Tower
<b>Known or Anticipated Development in the Next Five (5) Years</b>					
None identified.					

*\* Only location-specific hazard zones or vulnerabilities identified.*

### 9.26.3 Hazard Event History Specific to the Town of West Turin

Lewis County has a history of natural hazard events as detailed in Volume I, Section 5.0 (Risk Assessment). A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. The Town of West Turin’s history of federally-declared disasters (as presented by FEMA) and significant hazard events (as presented in NOAA-NCEI) is consistent with that of Lewis County. Table 9.26-2 provides details regarding municipal-specific loss and damages the Town experienced during hazard events. Information provided in the table below is based on reference material or local sources.

**Table 9.26-2. Hazard Event History**

Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
April 26- May 8, 2011	Severe Storms, Flooding, Tornadoes, and Straight-Line Winds (DR-1993)	Yes	A slow moving cold front generated showers and severe thunderstorms across the region.	Flooding 96” culvert Herman Bush Road, 48” culvert on Wynn Road, 18” culvert on Kessler Road all washed out due to the heavy rains. Damage to road surfaces, shoulders, and ditches of Lyman Road, Smith Road, and Crofoot Hill Road.
August 26- September 5, 2011	Hurricane Irene (DR-4020, EM-3328)	No	Hurricane Irene tracked northeast along the Atlantic Coast and brought gusty winds to the eastern sections of the area. Measured winds gusted to 40 to 45 mph.	While the county suffered losses, the town did not report losses.
September 7-11, 2011	Tropical Storm Lee (DR-4031, EM-3341)	No	Remnants of Tropical Storm Lee caused heavy rain and flooding in the region.	While the county suffered losses, the town did not report losses.
June 26- July 11, 2013	Severe Storms and Flooding (DR-4129)	No	A line of thunderstorms developed along a pre-frontal trough and moved across the entire region from west to east from mid-morning through early afternoon.	While the county suffered losses, the town did not report losses.
May 13- 22, 2014	Severe Storms and Flooding (DR-4180)	Yes	Snowmelt resulted in flooding on area rivers.	A weak surface low drifted across the North Country and produced slow moving thunderstorms. The thunderstorms produced three-quarter inch hail near Turin and Port Leyden. The storms also dropped very heavy rains with radar estimating between eight and nine inches in some





Dates of Event	Event Type (Disaster Declaration if applicable)	Lewis County Designated?	Summary of Event	Municipal Summary of Damages and Losses
				locations. A State of Emergency was declared, and the resulting damages were enough to warrant the county inclusion in a State Disaster Declaration. While the county suffered losses, the town did not report losses.
November 17-27, 2014	Severe Winter Storm, Snowstorm, and Flooding (DR-4204)	Yes	Heavy lake effect snow bands from Lake Ontario, with one centered over northernmost Jefferson County and the other over the northern slopes of the Tug Hill and northern Lewis County. Snowfall rates of 2 to 4 inches an hour helped to produce an average of a foot to a foot and half of snow within this band leading up to daybreak Friday.	Combined heavy lake effect snow events from Lake Ontario qualified the area for a Federal Disaster Declaration. The storm caused road closures. The town needed to pay overtime for excess snow removal. Snow removal costs totaled \$19,828.64.
March 14-15, 2017	Severe Winter Storm and Snowstorm (DR-4322)	No	Low pressure over the Great Lakes combined with low pressure lifting north along the Atlantic coast to bring significant snowfall to the entire region.	While the county suffered losses, the town did not report losses.
January 12, 2018	Flooding, Snow, Mud Slides	Yes	A developing winter storm brought first a wintry mix of precipitation during the evening of the 12th and then heavy snow through the morning of the 13th. Rain changed to a mix of freezing rain and snow during the evening. Ice accumulations up to a tenth of an inch were reported along the lake shore counties	Damage to road surfaces, road shoulders, and ditches along Lyman Road, Crowfoot Hill Road, Plumber Road, Michigan Mills Road, Meyer Road, Hoskins Road, and Harris Road.

Notes:

EM Emergency Declaration (FEMA)

DR Major Disaster Declaration (FEMA)

### 9.26.4 Hazard Ranking and Jurisdiction-Specific Vulnerabilities

The hazard profiles in Section 5.0 (Risk Assessment) have detailed information regarding each plan participant’s vulnerability to the identified hazards. This section provides a summary of exposure and impacts from significant hazards of concern as identified by the Town of West Turin.

#### Hazard Risk Ranking

This section includes the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 (Risk Assessment). The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

As discussed in Section 5.3 (Hazard Ranking), each participating town or village may have differing degrees of risk exposure and vulnerability compared to Lewis County as a whole. Therefore, each municipality ranked the degree of risk to each hazard as it pertains to their community. The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Town of West Turin. The Town of West Turin



has reviewed the county hazard risk/vulnerability risk ranking table, as well as its individual results, to reflect the relative risk of the hazards of concern to the community.

During the review of the hazard/vulnerability risk ranking, the town indicated the following:

- The Town of West Turin agreed with the risk/vulnerability risk rankings.

Table 9.26-3. Hazard Risk/Vulnerability Risk Ranking

Hazard of Concern	County Hazard Ranking	Community Hazard Ranking
Agricultural Spills	High	High
Drought	Medium	Medium
Earthquake	Medium	Low
Extreme Temperature	High	High
Flood	Medium	Low
Hazardous Material Incidents	Medium	Medium
Landslide	Low	Low
Severe Storm	High	High
Severe Winter Storm	High	High
Wildfire	High	High

Notes: The hazard ranking calculation is based on probability of occurrence and impacts on population, property, and the economy. Refer to Section 5.3 (Hazard Ranking) for the hazard ranking methodology.

Critical Facilities Flood Risk

NYS DEC Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for State projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a SFHA unless constructed according to specific mitigation specifications, including being raised 2 feet above the BFE. This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the state places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 500-year flood event or worst damage scenario. For those that do not meet these criteria, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain and presents HAZUS-MH estimates of the damage and loss of use to critical facilities as a result of a 1-percent annual chance flood event.

Table 9.26-4. Potential Flood Losses to Critical Facilities

Name	Type	Exposure		Potential Loss from 1% Flood Event		Addressed by Proposed Action
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage	
City of Rome Water Dept	Potable Pump	X	X	40	-	T. West Turin-11

Source: Lewis County Real Property 2018, FEMA 1976, 1977, 1982, 1984, 1985, 1994, 2000





**Identified Issues**

The municipality has identified the following vulnerabilities within their community:

- Lyman Hill Road is prone to washouts during periods of heavy precipitation and snowmelt.
- Crofoot Hill Road is prone to washouts during periods of heavy precipitation and snowmelt.

**9.26.5 Capability Assessment**

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms

**Planning and Regulatory Capability**

The table below summarizes the regulatory tools that are available to the Town of West Turin.

**Table 9.26-5. Planning and Regulatory Tools**

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
<b>Planning Capability</b>				
Comprehensive Plan	No	-	-	-
Capital Improvements Plan	No	-	-	-
Floodplain Management / Basin Plan	No	-	-	-
Stormwater Management Plan	No	-	-	-
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	No	-	-	-
Economic Development Plan	No	-	-	-
Comprehensive Emergency Management Plan	No	-	-	-
Emergency Operation Plan	No	-	-	-
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	No	-	-	-
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-
<b>Regulatory Capability</b>				
Building Code	Yes	Lewis County Codes	Lewis County Codes	NYS Building Code





Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
		Department		
Zoning Ordinance	Yes	Town	Lewis County Codes	Town of West Turin Zoning Law
Subdivision Ordinance	Yes	Town	Lewis County Codes	Town of West Turin Subdivision Law
NFIP Flood Damage Prevention Ordinance	Yes	Federal, State, Local	Lewis County Codes	Flood Damage Prevention Ordinance
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	Yes	State, Local	Lewis County Codes	State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	Yes	Town	Town Planning Board	Site Plan Review
Stormwater Management Ordinance	No	-	-	-
Municipal Separate Storm Sewer System (MS4)	No	-	-	-
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	NYS, Real Estate Agents	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

### Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the Town of West Turin.

**Table 9.26-6. Administrative and Technical Capabilities**

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
<b>Administrative Capability</b>		
Planning Board	Yes	Town Planning Board
Mitigation Planning Committee	No	-
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	No	-
Maintenance programs to reduce risk	No	-



Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Mutual aid agreements	Yes	Fire Department, County, Villages of Lyons Falls and Constableville
<b>Technical/Staffing Capability</b>		
Planner(s) or engineer(s) with knowledge of land development and land management practices	No	-
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	No	-
Planners or engineers with an understanding of natural hazards	No	-
NFIP Floodplain Administrator (FPA)	Yes	-
Surveyor(s)	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	No	-
Scientist familiar with natural hazards	No	-
Emergency Manager	Yes	County
Grant writer(s)	No	-
Staff with expertise or training in benefit/cost analysis	No	-
Professionals trained in conducting damage assessments	No	-

### Fiscal Capability

The table below summarizes financial resources available to the Town of West Turin.

**Table 9.26-7. Fiscal Capabilities**

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	Yes – Town
Capital improvements project funding	No
Authority to levy taxes for specific purposes	Yes – Town budget
User fees for water, sewer, gas or electric service	No
Impact fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	No
Incur debt through general obligation bonds	Yes – Town
Incur debt through special tax bonds	Yes – Town
Incur debt through private activity bonds	Yes- Town
Withhold public expenditures in hazard-prone areas	No
Other federal or state Funding Programs	Yes – Town
Open Space Acquisition funding programs	No
Other	No

### Community Classifications

The table below summarizes classifications for community programs available to the Town of West Turin.







**Table 9.26-8. Community Classifications**

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	9	-
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	Yes	Tax Bills	-
Public-private partnership initiatives addressing disaster-related issues	No	-	-
Other	No	-	-

Note:

- Unavailable

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery, and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance, while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10, with class 1 being the best possible classification and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized fire station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual.
- The Building Code Effectiveness Grading Schedule (<https://www.isomitigation.com/bcegs/>).
- The ISO Mitigation online ISO’s Public Protection (<https://www.isomitigation.com/ppc/>).
- New York State Climate Smart Communities (<http://www.dec.ny.gov/energy/56876.html>).
- The National Weather Service Storm Ready (<https://www.weather.gov/stormready/communities>).
- The National Firewise Communities (<http://firewise.org/>).

**Self-Assessment of Capability**

The table below provides an approximate measure of the Town of West Turin’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

**Table 9.26-9. Self-Assessment Capability for the Municipality**

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Planning and regulatory capability	X – limited staff and funding		
Administrative and technical capability	X – limited staff and funding		





Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Fiscal capability	X – limited staff and funding		
Community political capability	X – limited staff and funding		
Community resiliency capability	X – limited staff and funding		
Capability to integrate mitigation into municipal processes and activities	X – limited staff and funding		

### National Flood Insurance Program

This section provides specific information on the management and regulation of the regulatory floodplain.

#### NFIP Floodplain Administrator (FPA)

Ward Dailey, Lewis County Codes Department

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

The following table summarizes the NFIP statistics for the Town of West Turin.

**Table 9.26-10. NFIP Summary**

Municipality	# Policies	# Claims (Losses)	Total Loss Payments	# RL Properties	# SRL Properties	# Policies in the 1% Flood Boundary
West Turin (T)	0	0	\$0	0	0	0

Source: FEMA Region 2 2018.

(1) Policies, claims, RL, and SRL statistics provided by FEMA Region 2 and are current as of June 30, 2018. Total number of RL properties does not include SRL properties. Number of claims represents claims closed by July 31, 2018.

(2) Total building and content losses from the claims file provided by FEMA Region 2.

(3) Number of policies inside and outside of flood zones is based on latitude and longitude coordinates provided by FEMA Region 2 in the policy file. FEMA noted that for a property with more than one entry, more than one policy may have been in force or more than one Geographic Information System (GIS) specification was possible. Number of policies and claims, and claims total, exclude properties outside Lewis County boundary, based on provided latitude and longitude coordinates.

RL Repetitive Loss  
SRL Severe Repetitive Loss

### Resources

The Lewis County Codes Department is responsible for the floodplain administration in the Town of West Turin. The town has very low flood exposure.

### Compliance History

The Town of West Turin is in good standing in the NFIP. According to records from the NYS DEC, the town has not had a compliance audit (e.g. Community Assistance Visit [CAV]).

### Regulatory

The Flood Damage Prevention Ordinance is enforced by the Lewis County Codes Department. The town is not a member of the Community Rating System (CRS) program.



## Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

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For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community's progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures, which is also indicated below.

### Planning

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#### Existing Integration

The Town of West Turin does not have a Comprehensive Plan, a Stormwater Management Plan, Continuity of Operations/Government Plan, Re-Development Plan, Growth Plan, Economic Development Plan, Open Space Plan, Watershed/Stream Management Plan, or Local Waterfront Revitalization Plan. The town is covered by the Lewis County Comprehensive Emergency Management Plan.

#### Opportunities for Future Integration

The town could develop and implement their own municipal plans. The Town could ensure that local comprehensive plans incorporate disaster mitigation techniques through a courtesy review of all draft plans by the County Economic Development and Planning Department.

### Regulatory and Enforcement (Ordinances)

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#### Existing Integration

The Town of West Turin's zoning and subdivision regulations/site plan review process does not consider natural hazard risk.

#### Opportunities for Future Integration

The town could create and revise ordinances which specifically consider natural hazard risk.

### Operational and Administration

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#### Existing Integration

The Town of West Turin does not have municipal planner or contract firm. Lewis County provides NFIP Floodplain Administration, Benefit Cost Analysis, and Substantial Damage Estimates, and planning to the town. The town does not have other boards or committees that includes functions with respect to managing natural hazard risk. The town does not have staff or contracts with planning firms that have experience in preparing hazard mitigation grant applications.

#### Opportunities for Future Integration

The town could investigate the implementation and expansion of hazard-related GIS capabilities to collect and develop hazard mapping and loss estimate capabilities. This information could be included into future plans and provided to the public and other local agencies.



## Funding

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### Existing Integration

The Town of West Turin's municipal budget does not include line items for mitigation projects/activities. There is a Capital Improvements Budget which includes sets aside a limited budget for debris management. The town received grant funding through New York State's Consolidated Local Street and Highway Improvement Program (CHIPS).

### Opportunities for Future Integration

The town could seek additional grant funding for hazard mitigation initiatives.

## Education and Outreach

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### Existing Integration

Other than information included in tax bills, the town does not have any public outreach mechanisms/programs in place to inform citizens on natural hazards and did not identify any enhancements that would promote public outreach and education.

### Opportunities for Future Integration

The Town of West Turin could develop an outreach program that would include brochures at the town hall and information that could be dispersed at community events.

## Sheltering, Evacuation, and Temporary Housing

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Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

### Evacuation and Sheltering Needs

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The Town of West Turin has not designated emergency shelters, evacuation routes, or evacuation procedures. If needed, local municipal buildings or fire departments can serve as warming and cooling centers for residents. Primary roads can be used as evacuation routes in and out of the Town. At the time of an emergency event, evacuation routes, sheltering, and other emergency procedures are determined by working with Lewis County.

### Temporary and Permanent Housing

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The Town of West Turin has identified the following site for the placement of temporary housing for residents displaced by a disaster:

- Temporary housing following a disaster could be erected in farm fields near the incident. The capacity will be dependent on the individual field size, and Lewis County would be responsible for ensuring conformance with NYS Uniform Fire Prevention and Building Codes.

The Town of West Turin has not pre-identified sites for the placement of temporary housing for residents displaced by a disaster or potential sites suitable for relocating houses of the floodplain and/or building new homes once properties in the floodplain are acquired.



### 9.26.6 Mitigation Strategy and Prioritization

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This section discusses past mitigations actions and status and describes proposed hazard mitigation initiatives and their prioritization.

#### **Past Mitigation Initiative Status**

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The following table indicates progress on the community’s mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under ‘Capability Assessment’ presented previously in this annex.



Table 9.26-11. Status of Previous Mitigation Actions

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2020 HMP or Discontinue 2. If including action in the 2020 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protections	
	Culvert replacement on Crofoot Hill Road between town line and Smith Road	The chance of a plugged pipe, and a possible flood to the Village of Constableville	If pipe plugged could cause flooding	Highway Department Town of West Turin	No progress	Cost		<ol style="list-style-type: none"> <li>1. Include in 2020 HMP.</li> <li>2. Culvert Replacement 1, Crofoot Hill Road</li> <li>3.</li> </ol>
						Level of Protections		
						Damages Avoided; Evidence of Success		
	Culvert replacement on Crofoot Hill Road just west of Smith Road	The chance of a plugged pipe, and a possible flood to the Village of Constableville	If pipe plugged could cause flooding	Highway Department Town of West Turin	No progress	Cost		<ol style="list-style-type: none"> <li>1. Include in 2020 HMP.</li> <li>2. Culvert Replacement 2, Crofoot Hill Road</li> <li>3.</li> </ol>
						Level of Protections		
						Damages Avoided; Evidence of Success		
	Replace old concrete box culvert on Crofoot Hill Road between Plummer Road intersection and Mackey Road	The chance of a plugged pipe, and a possible flood to the Village of Constableville	If pipe plugged could cause flooding	Highway Department Town of West Turin	No progress	Cost		<ol style="list-style-type: none"> <li>1. Include in 2020 HMP.</li> <li>2. Culvert Replacement 3, Crofoot Hill Road</li> <li>3.</li> </ol>
						Level of Protections		
						Damages Avoided; Evidence of Success		
	Purchase land for wider right of way in high wind drifting area. Plant trees as living snow fence.	Reduce white out conditions	Blowing snow	Highway Department Town of West Turin	No progress	Cost		<ol style="list-style-type: none"> <li>1. Discontinue.</li> <li>2.</li> <li>3. No longer a priority.</li> </ol>
						Level of Protections		
						Damages Avoided; Evidence of Success		



### **Completed Mitigation Initiatives Not Identified in the Previous Mitigation Strategy**

The Town of West Turin has not identified any mitigation projects/activities that were completed but were not identified in the previous mitigation strategy in the 2010 Plan:

### **Proposed Hazard Mitigation Initiatives for the Plan Update**

Table 9.26-12 summarizes the comprehensive-range of specific mitigation initiatives the Town of West Turin would like to pursue in the future to reduce the effects of hazards. Some of these initiatives might be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and can be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6, 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.26-13 provides a summary of the prioritization of all proposed mitigation initiatives for the plan update.



Table 9.26-12. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
T. West Turin-1	Culvert Replacement 1, Crofoot Hill Road	<b>Problem:</b> Potential for plugged pipe and possible flood to the Village of Constableville.	<b>Solution:</b> Culvert replacement on Crofoot Hill Road between town line and Smith Road.	Flood, Severe Storm	2	No	None	Within 5 years	Highway Department	\$30,000	Flood risk and flood damages reduced	HMGP, PDM, CHIPS, Town budget	High	SIP	SP
		<b>Solution:</b> Culvert replacement on Crofoot Hill Road between town line and Smith Road.													
T. West Turin-2	Culvert Replacement 2, Crofoot Hill Road	<b>Problem:</b> Potential for plugged pipe and possible flood to the Village of Constableville.	<b>Solution:</b> Culvert replacement on Crofoot Hill Road just west of Smith Road.	Flood, Severe Storm	2	No	None	Within 5 years	Highway Department	\$30,000	Flood risk and flood damages reduced	HMGP, PDM, CHIPS, Town budget	High	SIP	SP
		<b>Solution:</b> Culvert replacement on Crofoot Hill Road just west of Smith Road.													
T. West Turin-3	Culvert Replacement 3, Crofoot Hill Road	<b>Problem:</b> Potential for plugged pipe and possible flood to the Village of Constableville.	<b>Solution:</b> Conduct feasibility assessment to replace old concrete box culvert on Crofoot Hill Road between Plummer Road intersection and Mackey Road.	Flood, Severe Storm	2	No	None	Within 5 years	Highway Department	TBD by feasibility assessment	Flood risk and flood damages reduced	HMGP, PDM, CHIPS, Town budget	High	SIP	SP
		<b>Solution:</b> Conduct feasibility assessment to replace old concrete box culvert on Crofoot Hill Road between Plummer Road intersection and Mackey Road.													
T. West Turin-4	Michigan Mills Road bridge #1 just past North Road	<b>Problem:</b> Potential for flooding due to ice jams or damage to bridge from ice.	<b>Solution:</b> Raise bridge elevation after conducting feasibility assessment.	Flood, Severe Storm	2	No	None	Within 5 years	Highway Department	TBD by feasibility assessment	Flood risk and flood damages reduced	HMGP, PDM, CHIPS, Town budget	High	SIP	SP
		<b>Solution:</b> Raise bridge elevation after conducting feasibility assessment.													
T. West Turin-5	Michigan Mills Road bridge #2 by Page Road intersection	<b>Problem:</b> Potential for flooding due to ice jams or damage to bridge from ice, including a house impacted by flooding.	<b>Solution:</b> Raise bridge elevation after conducting	Flood, Severe Storm	2	No	None	Within 5 years	Highway Department	TBD by feasibility assessment	Flood risk and flood damages reduced	HMGP, PDM, CHIPS, Town budget	High	SIP	SP
		<b>Solution:</b> Raise bridge elevation after conducting													







Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
		feasibility assessment.													
T. West Turin-6	Schwenk Road bridge	<b>Problem:</b> Potential for flooding due to ice jams or damage to bridge from ice. <b>Solution:</b> Raise bridge elevation after conducting feasibility assessment.		Flood, Severe Storm	2	No	None	Within 5 years	Highway Department	TBD by feasibility assessment	Flood risk and flood damages reduced	HMGP, PDM, CHIPS, Town budget	High	SIP	SP
T. West Turin-7	Sweeny Road Bridge #1	<b>Problem:</b> Potential for flooding due to ice jams or damage to bridge from ice. <b>Solution:</b> Conduct feasibility assessment regarding expansion of box culvert carrying capacity.		Flood, Severe Storm	2	No	None	Within 5 years	Highway Department	TBD by feasibility assessment	Flood risk and flood damages reduced	HMGP, PDM, CHIPS, Town budget	High	SIP	SP
T. West Turin-8	Sweeny Road Bridge #2	<b>Problem:</b> Potential for flooding due to ice jams or damage to bridge from ice, including box culvert-deck under 20 feet. <b>Solution:</b> Conduct feasibility assessment regarding expansion of box culvert carrying capacity.		Flood, Severe Storm	2	No	None	Within 5 years	Highway Department	TBD by feasibility assessment	Flood risk and flood damages reduced	HMGP, PDM, CHIPS, Town budget	High	SIP	SP
T. West Turin-9	Sweeny Road Bridge #3	<b>Problem:</b> Potential for flooding due to ice jams or damage to bridge from ice. <b>Solution:</b> Raise bridge elevation after conducting feasibility assessment.		Flood, Severe Storm	2	No	None	Within 5 years	Highway Department	TBD by feasibility assessment	Flood risk and flood damages reduced	HMGP, PDM, CHIPS, Town budget	High	SIP	SP
T. West Turin-10	Dolan Road Bridge	<b>Problem:</b> Potential for flooding due to ice jams or damage to bridge from ice. <b>Solution:</b> Conduct feasibility assessment regarding expansion of box culvert carrying capacity.		Flood, Severe Storm	2	No	None	Within 5 years	Highway Department	TBD by feasibility assessment	Flood risk and flood damages reduced	HMGP, PDM, CHIPS, Town budget	High	SIP	SP
T. West Turin-11	Protect City of Rome Water Department	<b>Problem:</b> The City of Rome Water Department facility is located in the 100-year floodplain.		Flood	2	Yes	None	Within 6 months	FPA	<\$100	Facility manager aware of methods to	Operating budget	High	EAP	PI





Project Number	Project Name	Description of the Problem	Description of the Solution	Hazard(s) Mitigated	Goals Met	Critical Facility (Yes / No)	EHP Issues?	Estimated Timeline	Lead and Support Agencies	Estimated Cost	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
	to 500-year flood level	<b>Solution:</b> The Town FPA will contact the facility manager and discuss options for protecting the facility to the 500-year flood level.									protect to 500-year flood level				

Notes:

Not all acronyms and abbreviations defined below are included in the table.

Acronyms and Abbreviations:

- CAV Community Assistance Visit
- CRS Community Rating System
- DPW Department of Public Works
- EHP Environmental Protection and Historic Preservation
- FEMA Federal Emergency Management Agency
- FPA Floodplain Administrator
- HMA Hazard Mitigation Assistance
- N/A Not applicable
- NFIP National Flood Insurance Program
- OEM Office of Emergency Management

Potential FEMA HMA Funding Sources:

- FMA Flood Mitigation Assistance Grant Program
- HMGF Hazard Mitigation Grant Program
- PDM Pre-Disaster Mitigation Grant Program

Timeline:

The time required for completion of the project upon implementation

Cost:

The estimated cost for implementation.

Benefits:

A description of the estimated benefits, either quantitative and/or qualitative.

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities.

CRS Category:

- Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.
- Natural Resource Protection (NR) - Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.





- *Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.*
- *Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.*

Critical Facility:


- Yes  - Critical Facility is located in 1% floodplain.



Table 9.26-13. Summary of Prioritization of Actions

Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
T. West Turin-1	Culvert Replacement 1, Crofoot Hill Road	0	1	1	1	1	1	0	1	1	1	1	0	1	1	11	High
T. West Turin-2	Culvert Replacement 2, Crofoot Hill Road	0	1	1	1	1	1	0	1	1	1	1	0	1	1	11	High
T. West Turin-3	Culvert Replacement 3, Crofoot Hill Road	0	1	1	1	1	1	0	1	1	1	1	0	1	1	11	High
T. West Turin-4	Michigan Mills Road bridge #1 just past North Road	0	1	1	1	1	1	0	1	1	1	1	0	1	1	11	High
T. West Turin-5	Michigan Mills Road bridge #2 by Page Road intersection	0	1	1	1	1	1	0	1	1	1	1	0	1	1	11	High
T. West Turin-6	Schwenk Road bridge	0	1	1	1	1	1	0	1	1	1	1	0	1	1	11	High
T. West Turin-7	Sweeny Road Bridge #1	0	1	1	1	1	1	0	1	1	1	1	0	1	1	11	High
T. West Turin-8	Sweeny Road Bridge #2	0	1	1	1	1	1	0	1	1	1	1	0	1	1	11	High
T. West Turin-9	Sweeny Road Bridge #3	0	1	1	1	1	1	0	1	1	1	1	0	1	1	11	High
T. West Turin-10	Dolan Road Bridge	0	1	1	1	1	1	0	1	1	1	1	0	1	1	11	High
T. West Turin-11	Protect City of Rome Water Department to 500-year flood level	1	1	0	1	1	1	1	1	1	1	0	1	1	1	12	High

Note: Section 6 (Mitigation Strategy) conveys guidance on prioritizing mitigation actions. Low (0-4), Medium (5-8), High (9-14).





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### 9.26.7 Future Needs to Better Understand Risk/Vulnerability

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None at this time.

### 9.26.8 Staff and Local Stakeholder Involvement in Annex Development

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The Town of West Turin followed the planning process described in Section 3 (Planning Process). This annex was developed over the course of several months with input from many town departments, including the Town Supervisor and Highway Superintendent. The Highway Superintendent represented the community on the Lewis County Hazard Mitigation Plan Planning Partnership and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Additional documentation on the municipality's planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix B (Meeting Documentation).

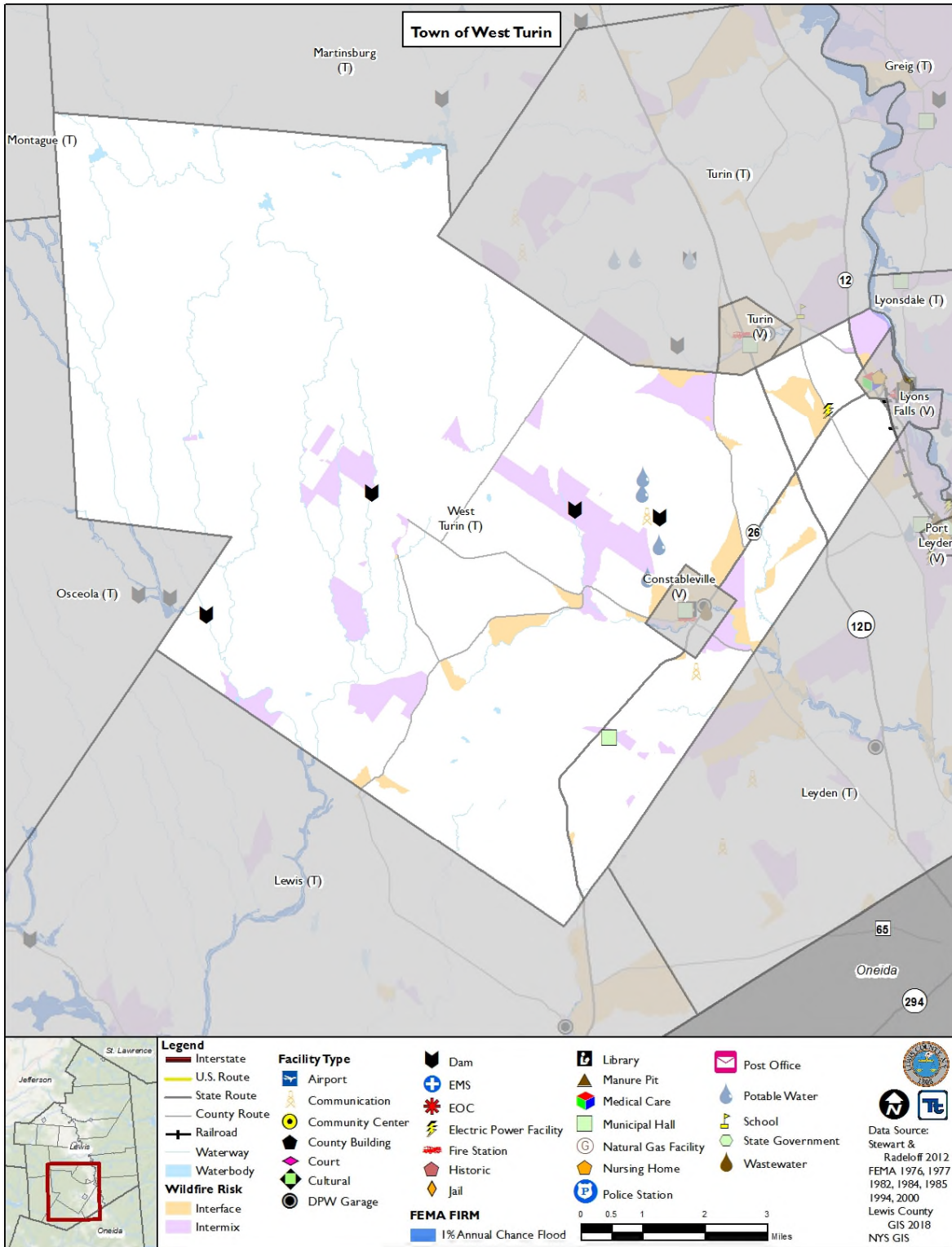
### 9.26.9 Hazard Area Extent and Location

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Hazard area extent and location maps have been generated for the Town of West Turin that illustrate the probable areas impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan and are adequate for planning purposes. Maps have been generated only for those hazards that can be clearly identified using mapping techniques and technologies and for which the Town of West Turin has significant exposure. A map of the Town of West Turin hazard area extent and location is provided on the following page. This map indicates the location of the regulatory floodplain, as well as identified critical facilities within the municipality.



Figure 9.26-1. Town of West Turin Hazard Area Extent and Location Map





Town of West Turin Action Worksheet			
<b>Project Name:</b>	Culvert Replacement 1, Crofoot Hill Road		
<b>Project Number:</b>	T. West Turin-1		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Flood, Severe Storm		
<b>Description of the Problem:</b>	The culvert on Crofoot Hill Road between town line and Smith Road is undersized. This results in chance of a plugged pipe and a possible flood to the Village of Constableville.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The Town of West Turin will upsize the culvert on Crofoot Hill Road between the town line and Smith Road.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	To be determined	<b>Estimated Benefits (losses avoided):</b>	Flood risk and flood damages reduced
<b>Useful Life:</b>	30 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$30,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	1 year	<b>Potential Funding Sources:</b>	HMGP, PDM, CHIPS, Town budget
<b>Responsible Organization:</b>	Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Capital improvement planning
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Remove culvert and roadway	\$50,000	Roadway cannot be removed
	Replace culvert with bridge	\$150,000	Costly
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Culvert Replacement 1, Crofoot Hill Road	
<b>Project Number:</b>	T. West Turin-1	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project will protect culvert from flood damages, protect neighboring area from flood risk.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	0	Within 5 years
Agency Champion	1	Highway Department
Other Community Objectives	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	





Town of West Turin Action Worksheet			
<b>Project Name:</b>	Culvert Replacement 2, Crofoot Hill Road		
<b>Project Number:</b>	T. West Turin-2		
<b>Risk / Vulnerability</b>			
<b>Hazard(s) of Concern:</b>	Flood, Severe Storm		
<b>Description of the Problem:</b>	The culvert on Crofoot Hill Road just west of Smith Road is undersized. This results in chance of a plugged pipe and a possible flood to the Village of Constableville.		
<b>Action or Project Intended for Implementation</b>			
<b>Description of the Solution:</b>	The Town of West Turin will upsize the culvert on Crofoot Hill Road just west of Smith Road.		
<b>Is this project related to a Critical Facility?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
<b>Is this project related to a Critical Facility located within the 100-year floodplain?</b>	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
<b>Level of Protection:</b>	To be determined	<b>Estimated Benefits (losses avoided):</b>	Flood risk and flood damages reduced
<b>Useful Life:</b>	30 years	<b>Goals Met:</b>	2
<b>Estimated Cost:</b>	\$30,000	<b>Mitigation Action Type:</b>	Structure and Infrastructure Project
<b>Plan for Implementation</b>			
<b>Prioritization:</b>	High	<b>Desired Timeframe for Implementation:</b>	Within 5 years
<b>Estimated Time Required for Project Implementation:</b>	1 year	<b>Potential Funding Sources:</b>	HMGP, PDM, CHIPS, Town budget
<b>Responsible Organization:</b>	Highway Department	<b>Local Planning Mechanisms to be Used in Implementation if any:</b>	Capital improvement planning
<b>Three Alternatives Considered (including No Action)</b>			
<b>Alternatives:</b>	<b>Action</b>	<b>Estimated Cost</b>	<b>Evaluation</b>
	No Action	\$0	Problem continues.
	Remove culvert and roadway	\$50,000	Roadway cannot be removed
	Replace culvert with bridge	\$150,000	Costly
<b>Progress Report (for plan maintenance)</b>			
<b>Date of Status Report:</b>			
<b>Report of Progress:</b>			
<b>Update Evaluation of the Problem and/or Solution:</b>			



Action Worksheet		
<b>Project Name:</b>	Culvert Replacement 2, Crofoot Hill Road	
<b>Project Number:</b>	T. West Turin-2	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project will protect culvert from flood damages, protect neighboring area from flood risk.
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	
Fiscal	0	Project requires funding support.
Environmental	1	
Social	1	
Administrative	1	
Multi-Hazard	1	Flood, Severe Storm
Timeline	0	Within 5 years
Agency Champion	1	Highway Department
Other Community Objectives	1	
<b>Total</b>	11	
<b>Priority (High/Med/Low)</b>	High	