

Jurisdictional Annex

Town of Nelson

1. Contacts

The contacts for the Town of Nelson regarding this plan are identified as follows:

- Jim Cunningham – Town Supervisor
Address: 4085 Nelson Road Cazenovia, NY 13035
Phone: (315) 655-8582
Email: SupervisorNelsonJimC@gmail.com

Town Website: <https://www.townofnelson-ny.com/>

2. Municipal Profile

2.1 Population

The 2020 Census estimated that 1,890 people live in the Town of Nelson. The Town's population has decreased by 4.55% since the 2010 Census (1,980) (U.S. Census Bureau, 2020). The Town currently encompasses approximately 44 square miles. The Town has an equalized assessed value of approximately 205 million dollars, which is distributed across a variety of property classes.

2.2 Location

The Town of Nelson is located in central portion of Madison County and is bordered by the Towns of Fenner and Smithfield to the north, the Town of Eaton to the east, the Town of Georgetown to the south, and the Town of Cazenovia to the west. More populated areas in the Town include the hamlets of Erieville and Nelson.

2.3 Governing Body

The Town of Nelson is governed by a five-member Town Board, which includes the Supervisor and four councilors.

2.4 Recent and Anticipated Future Development

Since the last County HMP (2017), several residential structures around Tuscarora Lake and Eaton Reservoir were completed. Additionally, the Route 20 water district was constructed in 2021, and there was expansion at the Town's industrial park. The Town recently extended their one-year moratorium on commercial solar/wind projects for another six months. None of the reported developments are located in the Special Flood Hazard Area, and these developments have not changed the Town's vulnerability to natural hazards.

3. Capability Assessment

3.1 Planning and Regulatory Capability

The Town has considered the 2017 HMP when implementing their existing plans and regulations and progressing projects. The Town's HMP update will be incorporated into and referenced by future updates of the plans, policies, ordinances, programs, studies, and reports listed in Table 1, below.

Table 1. Planning Mechanisms and Capabilities		
Planning Mechanism	Town of Nelson	Notes
Administration		
Maintenance Programs	Yes	
Mitigation Planning Committee	Yes	
Mutual Aid or Shared Services Agreements	Yes	
Planning Board	Yes	
Zoning Board	Yes	
Development Approvals		
Building Code	Yes	
Building Code Effectiveness	No	
Grading Schedule (BCEGS) Evaluation		
Fire Department ISO Rating		
Site Plan Review Requirements	Yes	
Special Use Permits	Yes	
Funding Resources		
Authority to Levy Taxes	Yes	
Capital Improvement Project Funds	Yes	
Federal Funding Programs (i.e., USDA, FEMA, others)	Yes	
General Obligation Bonds and/or Special Tax Bonds	Yes	
Impact Fees for New Development	Yes	
State Funding Programs (i.e., NYSEFC, NYSOGR, NYSDEC, others)	Yes	
Utility Fees (i.e., water, sewer, stormwater, gas, electric)	Yes	Water/Sewer
Land Use Regulations		
Density Controls	Yes	Subdivision Rules
Flood Insurance Rate Maps	Yes	
Floodplain Ordinance	Yes	
Hillside Development Regulations	Yes	Construction allowed up to a % grade
Open Space Preservation	Yes	Subdivision Rules
Stormwater Management Regulations	Yes	State Regulations Apply
Streambank Setback Regulations	Yes	State Health dept. rules for septic

Table 1. Planning Mechanisms and Capabilities		
Planning Mechanism	Town of Nelson	Notes
Subdivision Regulations	Yes	
Transfer of Development Rights	Yes	State and Federal Programs Available for Agriculture
Zoning Ordinance	Yes	
Natural Resources		
Forest/Vegetation Management	Yes	NYSDEC 480A program available
Stream Corridor Management	Yes	Part of land use regulations
Stream Dumping Regulations	Yes	State rules apply
Urban Forestry and Landscape Management	Yes	Forested hired to work at some Town properties
Watershed Management	Yes	Watershed Management Committee
Wetland Regulations	Yes	State and Federal rules apply, part of land use regulations
Plans		
Capital Improvement Plan	Yes	
Comprehensive Emergency Management Plan	No	County has this plan in place
Comprehensive Plan	Yes	2018
Continuity of Operations Plan	No	County has this plan in place
Economic Development Plan	Yes	
Other Plans (specify)	Yes	Adopted Public Health Plan in response to COVID-19 pandemic (required by NYS)
Programs/Organizations		
Climate Smart Community	Yes	Scored high
Local Emergency Preparedness/Disaster Response Organizations	Yes	Earlville and Cazenovia Fire Departments, CAVAC, SEVAC
Local Environmental Protection Organizations	Yes	Watershed Management Council, Lake Association
National Weather Service StormReady Certification	No	Covered by County
Outreach Programs	Yes	Education of Elected to NIMS Standards
Partnerships with private entities addressing mitigation or disaster response	No	
School Programs or Adult Educational Programs	No	
Staff Positions		
Civil Engineer	Yes	Contracted out
Code Enforcement Officer	Yes	
Emergency Manager	Yes	Town Supervisor
Floodplain Administrator	Yes	Code Enforcement Officer
Planner/GIS Coordinator	Yes	Planning Board, County for GIS Services
Technical Abilities		

Table 1. Planning Mechanisms and Capabilities		
Planning Mechanism	Town of Nelson	Notes
Grant Writing	Yes	
Hazard Information Centers	Town Clerk distributes Health Department Information	
Hazard Warning Systems	Yes	

3.2 Emergency Communications, Routes, and Shelters

The Town of Nelson is covered by Madison County's emergency notification system. The Town's main transportation route is U.S. Route 20. The Town's emergency shelter location is summarized in Table 2, below.

Table 2. Emergency Shelters						
Facility	Address	Owner/ Occupant	Support medical needs?	ADA Compliant?	Pets accepted?	Notes
Erieville Fire Department	3653 Eaton Brook Road, Erieville, NY 13061	Erieville Fire District	Yes	Yes	Yes	Backup power available

3.3 Temporary and Permanent Housing Locations

The potential temporary and permanent housing locations listed below were identified for displaced residents in the Town of Nelson based on the 2017 NYS Hazard Mitigation Planning Standards. It is noted that formal agreements would need to be established in order to use privately owned properties.

- **Potential Temporary Housing Locations**
 - Open space at Town Office - 4085 Nelson Rd, Cazenovia, NY 13035
- **Potential Permanent Housing Locations**
 - Erieville Park - Tinsley Hill Rd, Nelson, NY 13061

4. Hazard Vulnerabilities and Ranking

4.1 Risk Assessment

The Town reviewed multiple natural hazards to include in the HMP update. The hazard analysis criteria is summarized in Table 3. The Town's natural hazard analysis results are provided in Table 4.

Table 3. Hazard Analysis Criteria						
Score	Extent	Onset	Impact	Frequency	Total Score	Overall Vulnerability
1	One location	Days of warning	Minor damages/injuries	Rare	4 to 5	Low
2	Several locations	Hours of warning	Moderate damages/injuries	Infrequent	6 to 8	Moderate
3	Large area	No warning	Severe damages/injuries	Regular	9 to 12	High

Table 4. Natural Hazard Vulnerability and Risk Assessment						
Hazard Event	Extent	Onset	Impact (Damages and Injury)	Frequency	Total Score and Overall Vulnerability	Jurisdiction Rank
Severe Thunderstorm/Wind/Hail	3	1	3	3	10 - High	1
Earthquake	3	3	3	1	10 - High	2
Flood	2	2	3	2	9 - High	3
Severe Winter Storm	3	1	2	3	9 - High	4
Ice Storm	3	2	2	2	9 - High	5
Wildfire	2	3	3	1	9 - High	6
Tornado	2	2	3	1	8 - Moderate	7
Drought	3	1	2	2	8 - Moderate	8
Extreme Temperatures	3	1	1	2	7 - Moderate	9
Landslide	2	3	1	1	7 - Moderate	10
Ice Jam	2	1	1	1	5 - Low	11

4.2 Critical Facilities

Critical facilities include any facility that is critical for emergency response or that requires special emergency response in the event of hazardous incidents as identified by the Town of Nelson. Table 5, below, denotes the types and locations of critical facilities within the Town.

Table 5. Critical Infrastructure in the Town of Nelson		
Facility Name	Address	Located in Floodplain
Cell Tower	2893 Route 20	No
Cell Tower	Route 20 W	No
County Radio Tower Site 12	2855 Chaphe Hill Rd	No
Damon Road Water Pump Station	Intersection of Damon Rd & Erieville Rd	No
Erieville Fire Dept.	3653 Eaton Brook Rd	100-year
Nelson Town Highway Dept.	3985 Dugway Rd	No
Nelson Town Offices	4085 Nelson Rd	No
SUNY Morrisville Equine Rehabilitation Center	4414 Route 20	No
Water Storage Tank	U.S. Route 20	No
Windstream	3260 Route 20	No
Route 20 Water System	Along U.S. Route 20 corridor	No
Erieville Water System	Throughout Hamlet of Erieville	No

5. Priority Hazard Events

The following sections detail the priority hazard events identified by the jurisdiction. Additional information about each hazard including frequency, history, and severity within Madison County is included within Section 5.0 of the main body of the Hazard Mitigation Plan. Historical tornado and earthquake records are reported for the last ten years (2012-2022). All other hazard profiles report events that have occurred in the last five years (2017-2022).

The probability of climate-related hazard events is expected to increase in the future within the Town of Nelson. Climate change is expected to cause an increase in weather volatility, rising sea level, and greater temperature extremes.

Past occurrences of hazard events are indicated in their respective profiles below. Some hazards do not have historical records, but they were profiled for future mitigation planning consideration.

5.1 Severe Thunderstorm, Windstorm or Hail

5.1.1 *Description*

For a description of these hazards, please see Section 5.1 of the main body of the plan.

5.1.2 *Hazard Vulnerability*

The Town's overall vulnerability for a severe thunderstorm, windstorm, or hail event is high, as documented in their hazard analysis in Section 4.1. The entire Town is susceptible to damages from a severe thunderstorm, windstorm, or hail event. Fallen trees from severe winds can damage overhead utility lines, resulting in power outages. In addition, these events are likely to result in damages to private and public infrastructure and property. The Town Highway Department completes tree maintenance within Town road right of ways to minimize potential damages to overhead utility lines, which is common during ice storms. Private utility right of ways are generally maintained by the individual utility companies. Damages to the Town's critical infrastructure or primary evacuation routes (U.S. Route 20) would be most

impactful to Town residents. Storm damages would primarily impact the more populated portions of the Town, including the Hamlets of Erieville and Nelson.

5.1.3 Historical Hazard Occurrences and Damage Estimates

The NCDC reports one specific severe storm event that occurred in the Town of Nelson within the past five years, which is summarized in Table 6, below. Actual damages were likely greater than those estimated by the NCDC.

Table 6. Severe Storm Event Records for the Town of Nelson				
Event Type	Date	Magnitude	Estimated Property Damage	Estimated Crop Damage
Thunderstorm Wind	5/18/2017	50 knots	\$4,000.00	-
Total			\$4,000.00	None reported

5.1.4 Future Potential Impacts

The Town's overall vulnerability for a severe thunderstorm, windstorm, or hail event remains high. The Town Highway Department and private utility companies will continue to address tree maintenance along roads and utility corridors to mitigate potential storm damages. The frequency and magnitude of severe storm events may increase due to climate change.

5.2 Earthquake

5.2.1 Description

For a description of this hazard, please see Section 5.5 of the main body of the plan.

5.2.2 Hazard Vulnerability

The Town's overall vulnerability for an earthquake is high, as documented in their hazard analysis in Section 4.1. According to Figure 5.8 of the main body plan, the Town of Nelson has a peak ground acceleration (PGA) Hazard rating of 8-10%g. An earthquake could impact any location within the Town, though historically, the Town has not experienced significant earthquake damages. Earthquakes that damage the Town's critical infrastructure or emergency

evacuation routes would result in the most significant impacts to the Town and its residents.

5.2.3 Historical Hazard Occurrences and Damage Estimates

According to the USGS Earthquake Catalog, there are no historical records of earthquakes occurring specifically in the Town of Nelson. An earthquake has the potential to cause hundreds of thousands of dollars in damages.

5.2.4 Future Potential Impacts

The Town's overall vulnerability for an earthquake remains high due to the lack of warning and large potential impact area associated with this hazard. However, the Town is within an area of light seismic activity, and is not likely to experience significant earthquake damages.

5.3 Flood

5.3.1 Description

For a description of this hazard, please see Section 5.2 of the main body of the plan.

5.3.2 Hazard Vulnerability

The Town's overall vulnerability for a flood is high, as documented in their hazard analysis in Section 4.1. The Town is drained by Chittenango Creek and its tributaries. FEMA provides flood insurance rate maps for the Town of Nelson. The 100-year floodplain corresponds with areas that are at high risk for flooding (1% likely to flood any given year), and areas within a 500-year floodplain are at moderate flood risk (0.2% likely to flood in any given year). Figure 1 (Attachment A) shows FEMA mapped 100-year floodplains and high hazard dams within the Town. Table 7 summarizes the amount of land within the Town of Nelson that is located within 100-year and 500-year floodplains, as mapped by FEMA. The Erieville Fire Dept. is located in the 100-year floodplain.

Table 7. Summary of Areas in Floodplains <i>(Source: FEMA Q3 Digital Floodplain Data, 1996)</i>		
Town of Nelson Total Area	Percent of Total Area	
	100-Year Floodplain	500-Year Floodplain
28,231 acres	5.3%	0%

5.3.3 Historical Hazard Occurrences and Damage Estimates

According to the NCDC, in the past five years, one flood record was noted to specifically impact the Town of Nelson. This event on July 1, 2017 was caused by heavy rains and was responsible for an estimated \$22,000 of damages to the Town of Nelson. In addition, the Town reports flash flooding typically being more of an issue than flooding along Tuscarora Lake and the Eaton Reservoir; however, lakeshore flooding has damaged the shoreline and docks in the past. Furthermore, the Town reports flooding in 2019 (declared Presidential Disaster 4472) that caused a lot of damage within the Town. Flood damages related to this storm caused erosion at private properties along Corkinsville Road and Davis Hill Road. Although the Erieville Fire Dept. is located in the mapped floodplain, the Town has not experienced flood damages at this facility to date. As described in Section 6.0 of this annex, NFIP loss claims data were requested from FEMA and a response is pending. According to the County's 2017 HMP, there are no repetitive loss properties in the Town.

5.3.4 Future Potential Impacts

The Town's overall vulnerability for a flood remains high. Properties along Chittenango Creek, Tuscarora Lake, Eaton Reservoir, and their tributaries remain most vulnerable to flooding. The Town is likely to experience more flash flooding along streams than lake flooding, as they do currently. The Town proposed one flood-related mitigation action for the HMP update, a culvert upgrade project on Sunrise Blvd. Once implemented, this project will reduce the Town's vulnerability to flood damages in this location. This action is described further in Section 7 of this annex. The frequency and magnitude of flood events may increase due to climate change.

5.4 Severe Winter Storm

5.4.1 *Description*

For a description of this hazard, please see Section 5.3 of the main body of the plan.

5.4.2 *Hazard Vulnerability*

The Town's overall vulnerability for a severe winter storm is high, as documented in their hazard analysis in Section 4.1. These storms typically affect more than one area within the County. The entire Town of Nelson is susceptible to damages from a severe winter storm event. The Town Highway Department clears Town streets during heavy snow events, and the Town works with the Madison County Highway Department and NYS Department of Transportation for clearing of other roadways. Roadway safety is a major concern during severe winter storm events. Damages to the Town's critical infrastructure or along U.S. Route 20 would be most impactful to Town residents. Storm damages would primarily impact the more populated portions of the Town, including the Hamlets of Erieville and Nelson. The Town Highway Department completes tree maintenance within Town road right of ways to minimize potential damages to overhead utility lines, which is common during ice storms. Private utility right of ways are generally maintained by the individual utility companies.

5.4.3 *Historical Hazard Occurrences and Damage Estimates*

The Town of Nelson has been affected by a number of severe winter storm events reported for Madison County, which are described in Section 5.3 of the main body of the plan. These storms typically affect more than one area within the County. The NCDC does not report any winter storm damage estimates specific to the Town of Nelson.

5.4.4 *Future Potential Impacts*

The Town's overall vulnerability for a severe winter storm remains high. The Town Highway Department and private utility companies will continue to address tree maintenance along roads and utility corridors to mitigate

potential storm damages. The severity and frequency of severe winter storms may increase due to climate change.

5.5 Ice Storm

5.5.1 *Description*

For a description of this hazard, please see Section 5.7 of the main body of the plan.

5.5.2 *Hazard Vulnerability*

The Town's overall vulnerability for an ice storm is high, as documented in their hazard analysis in Section 4.1. An ice storm typically affects most or all of the County. The entire Town of Nelson is susceptible to damages from an ice storm event. Damages to the Town's critical infrastructure or along U.S. Route 20 would be most impactful to Town residents. Storm damages would primarily impact the more populated portions of the Town, including the hamlets of Erieville and Nelson. The Town Highway Department completes tree maintenance within Town road right of ways to minimize potential damages to overhead utility lines, which is common during ice storms. Private utility right of ways are generally maintained by the individual utility companies.

5.5.3 *Historical Hazard Occurrences and Damage Estimates*

The NCDC reports one ice storm in Madison County within the past five years, which was reported for the entire County. This event occurred on February 10, 2021 and is described in Section 5.7 of the main body of the plan. No damage estimates or records related to ice storms are reported specific to the Town of Nelson.

5.5.4 *Future Potential Impacts*

The Town's overall vulnerability for an ice storm remains high. The Town Highway Department and private utility companies will continue to address tree maintenance along roads and utility corridors to mitigate potential storm damages.

5.6 Wildfire

5.6.1 *Description*

For a description of this hazard, please see Section 5.10 of the main body of the plan.

5.6.2 *Hazard Vulnerability*

The Town's overall vulnerability for a wildfire is high, as documented in their hazard analysis in Section 4.1. Undeveloped lands such as forest and open fields and brush lands within the Town are susceptible to wildfires. Based on a review of aerial mapping, about one third of the Town of Nelson consists of forested lands. The Town of Nelson also contains 5,647 acres of state forest land. Nelson Swamp Unique Area, Tioughnioga Wildlife Management Area, and the Morrow Mountain and Stoney Pond State Forests are partially or wholly located in the Town. State forest lands are shown in Figure 1 (Attachment A). The Town is located in a NYS Forest Fire District designated under 6 NYCRR Part 191.1. Within the Fire District, the NYSDEC may maintain an approved fire protection system, including fire observation stations and other equipment necessary to prevent and extinguish forest fires.

5.6.3 *Historical Hazard Occurrences and Damage Estimates*

According to Figure 5.14 (Appendix A of the main body of the plan), the Town of Nelson experienced 0.4-0.8 wildfires per square mile from 2003 to 2017 according to reports from the NYSDEC. A wildfire has the potential to cause hundreds of thousands of dollars in damages.

5.6.4 *Future Potential Impacts*

The Town's overall vulnerability for a wildfire remains high. Wildfires are likely to increase in frequency and magnitude in the future due to climate change.

5.7 Tornado

5.7.1 *Description*

For a description of this hazard, please see Section 5.8 of the main body of the plan.

5.7.2 *Hazard Vulnerability*

The Town's overall vulnerability for a tornado is moderate, as documented in their hazard analysis in Section 4.1. The entire Town of Nelson is susceptible to damages from a tornado. A tornado can result in severe damage to homes, over-turned automobiles and leveling of utility lines. This event is highly likely to result in damages to private and public infrastructure and property. The Town of Nelson is located in the southern portion of Madison County, which has very hilly topography. Tornadoes often touch down along topographic high points in this region and affect more localized areas at one time, rather than longer swaths of damage experienced in flatter areas. Even if only a small area is affected, a tornado could result in severe damage to homes, over-turned automobiles and leveling of utility lines.

5.7.3 *Historical Hazard Occurrences and Damage Estimates*

Three tornadoes have occurred in Madison County within the past ten years, but none of these records occurred in the Town of Nelson. There are no damage estimates specific to the Town related to tornadoes.

5.7.4 *Future Potential Impacts*

The Town's overall vulnerability for a tornado remains moderate. Damages from a tornado event can be devastating, and the frequency and magnitude of tornado events may increase due to climate change.

5.8 Drought

5.8.1 *Description*

For a description of this hazard, please see Section 5.9 of the main body of the plan.

5.8.2 Hazard Vulnerability

The Town's overall vulnerability for drought is moderate, as documented in their hazard analysis in Section 4.1. Agricultural areas and properties served by private wells would experience the most significant impacts. Agricultural areas are primarily located in the northern/northwestern and southeastern portions of the Town. The Hamlet of Erieville and the U.S. Route 20 corridor are served by municipal water, but other residents throughout the Town rely on private wells that may be susceptible to low water yields during a drought.

5.8.3 Historical Hazard Occurrences and Damage Estimates

The NCDC reports no specific drought events for the Town of Nelson. The Town also did not note any specific drought events.

5.8.4 Future Potential Impacts

The Town's overall vulnerability for drought remains moderate. Properties that rely on private wells and agricultural areas (mostly in the northern/northwestern and southeastern areas of the Town) are most likely to be impacted by a drought in the future. The Hamlet of Erieville and U.S. Route 20 corridor are less likely to be impacted by a drought since they are connected to the Town's municipal water system. Drought events are likely to increase in frequency and magnitude in the future due to climate change.

5.9 Extreme Temperatures

5.9.1 Description

For a description of this hazard, please see Section 5.6 of the main body of the plan.

5.9.2 Hazard Vulnerability

The Town's overall vulnerability for an extreme temperature event is moderate, as documented in their hazard analysis in Section 4.1. Extreme temperatures typically affect most or all of the County, and the entire Town of Nelson is susceptible to this hazard. Extreme temperature events tend to have greater impacts on vulnerable populations, including older adults (over 65

years), young children (under 5 years), people with health problems, or people who cannot afford to sufficiently heat or cool their homes. Approximately 2.4% of the population in the Town is under 5 years old, and 22.8% of the population is over 65 years old. Approximately 9.5% of the Town's population is below the poverty level. These populations are at a higher risk of being impacted by extreme temperature events.

5.9.3 Historical Hazard Occurrences and Damage Estimates

The NCDC reports three extreme temperatures in Madison County within the past five years. Each of these events was an extreme cold/wind chill reported for the entire county. Details of these events are described in Section 5.5 of the main body of the plan. No damage estimates related to extreme temperatures are reported specific to the Town of Nelson.

5.9.4 Future Potential Impacts

The Town's overall vulnerability for an extreme temperature event remains moderate. Extreme temperatures are likely to increase in frequency and extremity in the future due to climate change.

5.10 Landslide

5.10.1 Description

For a description of this hazard, please see Section 5.11 of the main body of the plan.

5.10.2 Hazard Vulnerability

The Town's overall vulnerability for landslide is moderate, as documented in their hazard analysis in Section 4.1. The Town of Nelson is mapped as an area of low incidence for landslides (Figure 5.6, Appendix A of the main body of the plan). Areas with steep slopes throughout the Town (based on mapped soil units with slopes over 30%) are shown in Figure 1 (Attachment A). Areas with steep slopes or areas subject to erosion due to flooding are most vulnerable to landslides. Steep slopes along Tuscarora Lake, Stoney Pond, and the Eaton

Reservoir, and along Beebe Road, Jaybee Road, Corkinsville Road, and Sunrise Boulevard could experience landslides.

5.10.3 Historical Hazard Occurrences and Damage Estimates

There are no historical records of landslides occurring in the Town of Nelson. A landslide has the potential to cause hundreds of thousands of dollars in damages.

5.10.4 Future Potential Impacts

The Town's overall vulnerability for landslide remains moderate. Areas along Tuscarora Lake, Stoney Pond, and the Eaton Reservoir, Beebe Road, Jaybee Road, Corkinsville Road, and Sunrise Boulevard may be susceptible to landslides in the future.

5.11 Ice Jam

5.11.1 Description

For a description of this hazard, please see Section 5.11 of the main body of the plan.

5.11.2 Hazard Vulnerability

The Town's overall vulnerability for an ice jam is low, as documented in their hazard analysis in Section 4.1. Within the Town of Nelson, properties along Chittenango Creek, Tuscarora Lake, Eaton Reservoir, and Stoney Pond are most vulnerable to ice jams.

5.11.3 Historical Hazard Occurrences and Damage Estimates

The U.S. Army Corps of Engineers (USACE) Cold Regions Research and Engineering Laboratory (CRREL) reports no specific ice jam events for the Town of Nelson. The Town indicated that there are no local records of ice jams along Chittenango Creek within the Town; however, ice does accumulate on Tuscarora Lake, the Eaton Reservoir, and Stoney Pond and causes shoreline erosion and damage to waterfront properties.

5.11.4 Future Potential Impacts

The Town's overall vulnerability for an ice jam remains low. Properties surrounding Tuscarora Lake, the Eaton Reservoir, and Stoney Pond remain most vulnerable to ice jams. Properties along Chittenango Creek could also experience ice jams in the future, though there is not a history of ice jams in this location. The frequency and magnitude of ice jam events may increase due to climate change.

6. National Flood Insurance Program

Long-term mitigation of potential flood impacts can be best achieved through comprehensive floodplain management regulations and enforcement at a local level. The National Flood Insurance Program (NFIP), regulated by FEMA, aims to reduce the impact of flooding on private and public structures by providing affordable insurance for property owners. The program encourages local jurisdictions to adopt and enforce floodplain management regulations in order to mitigate the potential effects of flooding on new and existing infrastructure (FEMA, 2015).

Communities that participate in the NFIP adopt floodplain ordinances. If an insured structure incurs damage costs that are over 50% of its market value, the owner must comply with the local floodplain regulations when repairing or rebuilding the structure. A structure could be rebuilt at a higher elevation, or it could be acquired and demolished by the municipality or relocated outside of the floodplain. Insured structures that are located within floodplains identified on FEMA's Flood Insurance Rate Maps (FIRMs) may receive payments for structure and content losses if impacted by a flood event.

The NFIP and other flood mitigation actions are important for the protection of public and private property and public safety. Flood mitigation is valuable to communities because it:

- Creates safer environments by reducing loss of life and decreasing property damage;
- Allows individuals to minimize post-flood disaster disruptions and to recover quicker (homes built to NFIP standards generally experience less damage from flood events, and when damage does occur, the flood insurance program protects the homeowner's investment); and
- Lessens the financial impacts on individuals, communities, and other involved parties (FEMA, 2015).

The Town of Nelson currently participates in the NFIP (community ID 361293), and its FIRM(s) became effective on 10/5/1984. The Town joined the NFIP on this same date. NFIP loss claims data were requested from FEMA and a response is pending. According to the County's 2017 HMP, there are no repetitive loss properties in the Town. More current repetitive loss data from FEMA is pending. The Town will continue to comply with the NFIP by enforcing floodplain management requirements and regulating new development in Special Flood Hazard Areas, among other required duties.

7. Mitigation Strategy and Prioritization

7.1 Past, Completed, and Ongoing Initiatives

The Town proposed eight mitigation actions in the 2017 Madison County HMP, and the status of each action is summarized in Table 8, below. One of the Town's 2017 mitigation actions was re-included for the 2022 update.

Table 8. Status of 2017 Mitigation Actions Town of Nelson				
Project Name	Description	Hazard(s) Mitigated	Lead Agency	Status
Jones Road Culvert Repairs	Runoff from forest land resulted in flooding damages to the culvert at Jones Road at the junction of Old State Road. The project will replace the existing 15" by 50' culvert with a 30" by 50' culvert and replace the existing 24" by 50' culvert with a 36" by 50' culvert.	Flood	Town of Nelson Highway	Complete
Hughes Road Culvert Repairs	Runoff from higher elevations resulted in flooding damages to the culvert at Hughes Road. The project will replace the existing 15" by 50' culvert with a 24" by 50' culvert.	Flood	Town of Nelson Highway	Complete
Thomas Road Culvert Repairs	Runoff from higher elevations resulted in flooding damages to the culvert at Thomas Road. The project will replace the existing 18" by 40' culvert with a 30" by 50' culvert.	Flood	Town of Nelson Highway	Not progressed, but no longer a priority. Not re-included in HMP update.
Green Road Reconstruction	Flooding resulted in damages to North Lake Road. The project will install 650' of 18" culvert with 6 drop basins, pave or riprap bank shoulders, install two concrete headwalls, replace the existing 15" by 100' culvert with a 24" by 100' culvert, and install debris catchers.	Flood	Town of Nelson Highway	Complete, funded by FEMA
North Lake Road Culvert Repairs	Build increased drainage capacity of the under-road structure reducing flooding and road erosion during severe storm events.	Flood	Town of Nelson Highway	Completed in 2021

Table 8. Status of 2017 Mitigation Actions Town of Nelson				
Project Name	Description	Hazard(s) Mitigated	Lead Agency	Status
Sunrise Boulevard Reconstruction	Runoff from higher elevations resulted in flooding damages to Sunrise Boulevard. The project will enlarge and line 200' of ditch and replace a 24" by 30' culvert with a 30" by 30' culvert.	Flood	Town of Nelson Highway	Not progressed but still a priority. Re-included in HMP update.
Eden Hollow Road Improvement	Stabilize road-side embankment to reduce erosion that deposits soil onto roadway during severe storm events.	Flood, Severe Storm	Town of Nelson Highway	Completed
Hall Road Drainage System	Prevent road shoulder washing out during severe storm events and icing conditions during the winter months.	Flood, Severe Storm	Town of Nelson Highway	Not progressed, but no longer a priority. Not re-included in HMP update.

In addition to the project progress described in Table 8, the Town has undertaken other mitigation projects to improve drainage along roadways. The Town cleaned and re-lined a ditch along Lewis Road, rebuilt the road surface and changed a culvert pipe on Davis Hill Road, and unplugged a culvert and cleaned out a ditch along Thomas Road.

7.2 Proposed Mitigation Actions

The Town proposed two mitigation actions to be included in the HMP update. One action, Nelson 2, was re-included from the 2017 HMP. These actions are described in Table 9, below and on worksheets included in Attachment A.

Table 9. Proposed Hazard Mitigation Actions Town of Nelson									
Action ID	Mitigation Action	Hazard(s) Mitigated	Implementing Agencies (Lead* & Support)	Planning Mechanism	Timeframe	New or Existing Development	Estimated Cost	Funding Source(s)	Priority
Nelson 1	Install standby generators for the Town Hall and Highway Garage	All	Nelson Town Board* , Town of Nelson Highway Department	None	1-2 years	New	\$120,000	Town Budget; USDA RD - Community Facilities; FEMA - BRIC	High
Nelson 2 (re-included from 2017 HMP)	Sunrise Boulevard Culvert Upgrade	Flood	Town of Nelson Highway Department*	None	1 year	Existing	\$40-50K	NYSDOT - CHIPS, Town Budget	Medium

7.3 Cost-Benefit Analysis

Each of the Town's proposed mitigation actions were evaluated and prioritized using the STAPLEE cost-benefit analysis described in Section 7.2.3 of the main body of the plan. The Town's STAPLEE worksheet is provided in Attachment A. The STAPLEE analysis considers the following lenses of evaluation: social, technological, administrative, political, legal, economic, and environmental. It also considers the level of overall costs and benefits of the action.

Attachment A

Figure 1, Mitigation Action Worksheets, and STAPLEE Worksheet

Madison County HMP Update Mitigation Action Worksheet

Jurisdiction: Town of Nelson

Mitigation Action	
Project ID:	Nelson 1
Project Name:	Install standby generators for the Town Hall and Highway Garage
Risk/Vulnerability	
Hazard of Concern:	All
Description of the Problem:	The Town Hall and Highway Garage lack backup power. Both facilities provide critical community services that could be interrupted during a power outage. The Highway Garage has a fuel center that supplies the Highway Garage and Fire Department, which needs to remain in operation during emergencies.
Proposed Action	
Description of the Solution:	Install standby generators in the Town Hall and Highway Garage so that they can continue operating during a power outage. A new electrical transfer switch will be required for the Town Hall.

Is this project related to a Critical Facility? ☒ Yes ☐ No

(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater)

Level of Protection:	High	Estimated Benefits (losses avoided):	Improved continuity of operations at Town Hall and Highway Garage
Useful Life:	30 years		
Estimated Cost:	\$120,000 (approx \$60K each)		

Plan for Implementation			
Priority (High, Medium, Low):	High	Responsible Organization:	Nelson Town Board and Town of Nelson Highway Department
Desired Timeframe for Implementation:	1-2 years	Potential Funding Sources:	Town Budget; USDA RD - Community Facilities; FEMA - BRIC
Estimated Time Required to Implement:	1 year	Local Planning Mechanisms to be used in Implementation, if any:	None

Three Alternatives Considered (Including No Action)			
	Action	Estimated Cost	Evaluation
Alternatives:	No Action	\$0	No change from existing conditions
	Purchase a portable generator for use at Town Hall and Highway Garage	\$20,000	More flexible options for use but requires additional coordination for use and may not power entire facility/limitations on run time.
	Add standby generator at both facilities	\$120,000	Best protection of Town Hall and Highway Garage operations.

Progress Report (for Plan Maintenance)	
Date of Status Report:	
Summary of Progress:	
Evaluation of the Problem and/or Solution:	

Madison County HMP Update Mitigation Action Worksheet

Jurisdiction: Town of Nelson

Mitigation Action

Project ID:	Nelson 2
Project Name:	Sunrise Boulevard Culvert Upgrade
Risk/Vulnerability	
Hazard of Concern:	Flood
Description of the Problem:	Runoff from higher elevations has resulted in recurring flood damages to Sunrise Boulevard.
Proposed Action	
Description of the Solution:	The project will enlarge and line 200' of an existing ditch along Sunrise Boulevard and replace a 24" culvert with a 30" culvert to improve its hydraulic capacity and better convey stormwater flows.

Is this project related to a Critical Facility? ☐ Yes ☒ No

(If yes, this project must intend to protect to the 500-year flood event or the actual worst damage scenario, whichever is greater)

Level of Protection:	High	Estimated Benefits (losses avoided):	Decrease flood damages to Sunrise Boulevard.
Useful Life:	50 years		
Estimated Cost:	\$40,000-\$50,000		

Plan for Implementation

Priority (High, Medium, Low):	Medium	Responsible Organization:	Town of Nelson Highway Department
Desired Timeframe for Implementation:	1 year	Potential Funding Sources:	NYSDOT - CHIPS, Town Budget
Estimated Time Required to Implement:	3-4 months	Local Planning Mechanisms to be used in Implementation, if any:	None

Three Alternatives Considered (Including No Action)

	Action	Estimated Cost	Evaluation
Alternatives:	No Action	\$0	No change; Sunrise Boulevard remains susceptible to flood
	Replace culvert in-kind	\$20,000	Short-term maintenance action to improve structural resiliency, but does not increase flood flow capacity.
	Replace existing culvert with larger culvert and line ditch	\$40,000-\$50,000	Long-term solution; reduces flood damages by increasing flood flow capacity.

Progress Report (for Plan Maintenance)

Date of Status Report:	
Summary of Progress:	
Evaluation of the Problem and/or Solution:	