

Jurisdictional Annex

Town of Sullivan

1. Contacts

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

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2. Municipal Profile

2.1 Population

The 2020 Census estimated that 14,794 people live in the Town of Sullivan. The Town's population has decreased by 3.55% since the 2010 Census (15,399) (U.S. Census Bureau, 2020). The median age in the Town is 43.9 years and 15.3% of the population is over the age of 65. The Town covers approximately 40 square miles. The Town has an equalized assessed value of approximately 705 million dollars spread across a variety of property classes.

2.2 Location

The Town of Sullivan is located in the northwestern corner of Madison County and is bordered by Oneida Lake to the north, the Towns of Lenox and Lincoln to the east, the Towns of Fenner and Cazenovia to the south, and the Towns of Manlius and Cicero (Onondaga County) to the west. More populated portions of the Town include the Village of Chittenango and Hamlets of Bridgeport and Lakeport. The Town of Sullivan is shown in Figure 1 (Attachment A).

2.3 Governing Body

The Town of Sullivan is governed by a five-member Town Board, which includes the Supervisor and four council members.

2.4 Recent and Anticipated Future Development

Since the last County HMP (2017), development has progressed at the Harbor Lights Business Park (located at 2000 State Route 31). This facility is not in a floodplain. A new residential subdivision is planned near Pool's Brook within the next two years and, a new 30 unit subdivision on State Route 31 is planned for 2024. The reported 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 Sullivan	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 Grading Schedule (BCEGS) Evaluation	No	Updated building code fees
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	

Table 1. Planning Mechanisms and Capabilities		
Planning Mechanism	Town of Sullivan	Notes
General Obligation Bonds and/or Special Tax Bonds	Yes	
Impact Fees for New Development	No	
State Funding Programs (i.e., NYSEFC, NYSOCR, NYSDEC, others)	Yes	
Utility Fees (i.e., water, sewer, stormwater, gas, electric)	Yes	Water and sewer districts
Land Use Regulations		
Density Controls	Yes	Local zoning covers
Flood Insurance Rate Maps	Yes	
Floodplain Ordinance	Yes	
Hillside Development Regulations	No	
Open Space Preservation	Yes	Under subdivision regulations
Stormwater Management Regulations	Yes	State Regulations Apply
Streambank Setback Regulations	Yes	State Health dept. rules for septic
Subdivision Regulations	Yes	
Transfer of Development Rights	Yes	State and Federal Programs Available for Agriculture
Zoning Ordinance	Yes	
Natural Resources		
Forest/Vegetation Management	Yes	Section 319 of Forest Tax Law available through NYSDEC
Stream Corridor Management	Yes	Logjam Clearing Program for Chittenango Creek
Stream Dumping Regulations	Yes	State rules apply
Urban Forestry and Landscape Management	Yes	Town Highway Department
Watershed Management	Yes	Oneida Lake Program
Wetland Regulations	Yes	State and Federal rules apply
Plans		
Capital Improvement Plan	No	
Comprehensive Emergency Management Plan	No	County has this plan in place
Comprehensive Plan	Yes	
Continuity of Operations Plan	No	County has this plan in place
Economic Development Plan	Yes	In Comprehensive Plan
Other Plans (specify)	Yes	Adopted Public Health Plan in response to COVID-19 pandemic (required by NYS)
Programs/Organizations		
Climate Smart Community	No	
Local Emergency Preparedness/Disaster Response Organizations	Yes	Three fire departments
Local Environmental Protection Organizations	Yes	MS4 stormwater program
National Weather Service StormReady Certification	No	

Table 1. Planning Mechanisms and Capabilities		
Planning Mechanism	Town of Sullivan	Notes
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	Yes	Parks and Rec programs for citizens
Staff Positions		
Civil Engineer	No	Consultant on retainer
Code Enforcement Officer	Yes	
Emergency Manager	Yes	Town Supervisor, County OEM
Floodplain Administrator	Yes	Code Enforcement Officer
Planner/GIS Coordinator	No	County assists
Technical Abilities		
Grant Writing	Yes	
Hazard Information Centers	Yes	Facebook website
Hazard Warning Systems	Yes	

3.2 Emergency Communications, Routes, and Shelters

The Town of Sullivan utilizes the Town's Facebook website for emergency communications. The Town is also covered by Madison County's emergency notification system. Major transportation routes within the Town include State Route 5, State Route 13, and State Route 31. 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
Chittenango Jr./ Sr. High School	150 East Genesee St., Chittenango	Chittenango CSD	Yes	Yes	No	No 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 Sullivan 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**
 - Chapman Park - 1463 NY-31, Bridgeport, NY 13030
 - Harbor Lights Business Park - 2000 State Route 31, Chittenango, NY 13037
- **Potential Permanent Housing Locations**
 - 220 building lots approved and located throughout Town

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	Overall Vulnerability	Jurisdiction Rank
Flood	2	2	2	3	9 - High	1
Ice Jam	2	3	2	2	9 - High	2
Severe Thunderstorm/Wind/Hail	3	1	2	2	8 - Moderate	3
Severe Winter Storm	3	1	2	2	8 - Moderate	4
Landslide	2	3	1	2	8 - Moderate	5
Ice Storm	3	1	3	1	8 - Moderate	6
Drought	3	1	3	1	8 - Moderate	7
Tornado	2	2	3	1	8 - Moderate	8
Extreme Temperatures	3	1	2	2	8 - Moderate	9
Earthquake	3	3	1	1	8 - Moderate	10

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 Sullivan. Table 5, below, denotes the types and locations of critical facilities within the Town. Critical facilities are shown on Figure 1 (Attachment A).

Table 5. Critical Infrastructure in the Town of Sullivan

Facility Name	Address	Located in Floodplain
Bolivar Road Elementary School	6983 Bolivar Rd	No
Bridgeport Elementary School	9076 North Rd	No
Bridgeport Volunteer Fire Dept.	427 Route 31	No
Bridgeport Volunteer Fire Dept. Station 1	2219 Route 31	No
Cell Tower	7702 Bridgeport Kirkville Rd	No
Cell Tower	1927 Clay Hill Rd	No
Cell Tower	2181 Tag Rd	No
Cell Tower	2428 Clark Rd	No
Cell Tower	4910 Cheesefactory Rd	No
Cell Tower	4910 Palmer Manlius	No
Cell Tower	4910 Palmer Manlius	No
Cell Tower	605 Route 31	No
Cell Tower	7758 Gee Rd	No
Cell Tower	915 Route 31	No
Cell Tower	Kinderhook Rd	No
Chittenango CSD Bus Garage	1856 New Boston Rd	No
Chittenango Middle School	1732 Fyler Rd	100-year (maintenance garage only)
Chittenango WWTP	6987 Lakeport Rd	100-year
Communications Tower	1912 Clay Hill Rd	No
Cornell Biological Field Station	823 Shackleton Point Rd	No
Electrical Substation	Bridgeport Kirkville Rd	500-year
Electrical Substation	1730 Smith Ridge Rd	No
Electrical Substation	Fyler Rd	No
Electrical Substation	Perryville Rd	No
Madison County Landfill Transfer Station	7480 Bolivar Rd	100-year
Natural Gas Metering Station	7335 Wheeler Rd	100-year
North Chittenango Volunteer Fire Dept.	1699 Fyler Rd	No
Rural Metro Ambulance	7507 Lakeport Rd	No
Sewage Pump Station	1802 Route 31	No
Sewage Pump Station	8881 Camp Rd	No
Sewage Pump Station	9020 Coulter Cove Rd	No

Table 5. Critical Infrastructure in the Town of Sullivan

Facility Name	Address	Located in Floodplain
Sewer Pump Station	Whisper Ridge Dr	No
Sewer Pump Station	4007 Brick Kiln Dr	No
Sewer Pump Station	Whisper Ridge Dr	No
Sullivan Free Library	8979 North Rd	No
Sullivan Town Highway Dept.	7500 Bolivar Rd	No
Sullivan Town Offices and NYS Police	7507 Lakeport Rd	No
Verizon	739 Route 31	No
Water Pump Station	6890 Bolivar Rd	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).

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. The Town of Sullivan chose not to profile wildfire in their annex even though this hazard was profiled for the County. The Town does not have a history of nor do they have any significant concerns regarding this hazard.

5.1 Flood

5.1.1 *Description*

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

5.1.2 *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, Canaseraga Creek, and Cowaselon Creek. FEMA provides flood insurance rate maps for the Town of Sullivan. 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 floodplains within the Town. Table 6 summarizes the amount of land within the Town of Sullivan that is located within 100-year and 500-year floodplains, as mapped by FEMA. The Chittenango WWTP, Madison County Landfill Transfer Station, Chittenango Middle School (maintenance garage only), and a natural gas metering station on Wheeler Rd are all located in a 100-year floodplain. An electrical substation on Bridgeport-Kirkville Rd is located in the mapped 500-year floodplain.

Table 6. Summary of Areas in Floodplains <i>(Source: FEMA Q3 Digital Floodplain Data, 1996)</i>		
Town of Sullivan Total Area	Percent of Total Area	
	100-Year Floodplain	500-Year Floodplain
45,265 acres	25.2%	3.7%

5.1.3 *Historical Hazard Occurrences and Damage Estimates*

According to the NCDC, in the past five years, one flash flood occurred in the Town of Sullivan. This event occurred on July 1, 2017 in Fyler Settlement and was caused by heavy rain. The NCDC estimated that this event caused \$160,000 in property damages. The Town reports local records of flooding along Oneida Lake in the summer of 2021. Flooding along the lakeshore is common and typically results in flooded yards of residential properties. Water levels on Oneida Lake were higher than normal in 2021, which exacerbated flooding issues. The Town has not experienced flood damages at any of the critical facilities located in mapped floodplains described in Section 5.1.2, above.

As described in Section 6.0 of this annex, NFIP loss claim data were requested from FEMA and a response is pending. According to the County's 2017 HMP, there are six repetitive loss properties in the Town, all single-family homes. Each property has experienced two flood losses as of 12/31/2016, with total payments of \$285,581.

5.1.4 *Future Potential Impacts*

The Town's overall vulnerability for a flood remains high. Properties along Chittenango Creek, Canaseraga Creek, Cowaselon Creek, and Oneida Lake are most vulnerable to flooding. The Town proposed two flood-related mitigation actions for the HMP update, which are detailed in Section 7 of this annex. Once implemented, these projects will reduce the Town's vulnerability to flood damages along Chittenango Creek and Canaseraga Creek. The frequency and magnitude of flood events may increase due to climate change.

5.2 Ice Jam

5.2.1 *Description*

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

5.2.2 *Hazard Vulnerability*

- The Town's overall vulnerability for an ice jam is high, as documented in their hazard analysis in Section 4.1. Properties along Chittenango Creek, Canaseraga Creek, and Cowaselon Creek are most vulnerable to ice jams.

5.2.3 *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 within the past five years. The Town reports a local ice jam record that occurred in 2022 on Chittenango Creek. There are no specific damage estimates related to ice jams for the Town.

5.2.4 *Future Potential Impacts*

The Town's overall vulnerability for an ice jam remains high. Properties along Chittenango Creek, Canaseraga Creek, and Cowaselon Creek remain most vulnerable to ice jams. The Town proposed one ice jam-related mitigation action for the HMP update, which is detailed in Section 7 of this annex. The project involves dredging the outlet of Chittenango Creek at its confluence with Oneida Lake to improve flows. Once implemented, this will reduce the Town's vulnerability to ice jam damages along Chittenango Creek. The frequency and magnitude of ice jam events may increase due to climate change.

5.3 Severe Thunderstorm, Windstorm, or Hail

5.3.1 *Description*

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

5.3.2 Hazard Vulnerability

The Town's overall vulnerability for a severe thunderstorm, windstorm, or hail event is moderate, 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. Damages to the Town's critical infrastructure or primary evacuation routes (State Routes 5, 13, and 31) would be most impactful to Town residents. Storm damages would primarily impact the more populated portions of the Town, including the Village of Chittenango and Hamlets of Bridgeport and Lakeport. 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.

5.3.3 Historical Hazard Occurrences and Damage Estimates

The NCDC reports three severe storm events that occurred in the Town of Sullivan within the past five years. One of these records was a hail event, and two were thunderstorm winds. The hail record occurred on the same date as one of the thunderstorm winds. Estimated damages for the Town of Sullivan ranged from \$0 to \$7,000 per event (Table 7). Actual damages were likely greater than those estimated by the NCDC.

Table 7. Severe Storm Event Records for the Town of Sullivan

Event Type	Date	Magnitude	Estimated Property Damage	Estimated Crop Damage
Thunderstorm Wind	8/17/2019	50 knots	\$5,000	-
Hail	8/17/2019	1 inch	\$0	-
Thunderstorm Wind	5/26/2021	50 knots	\$2,000	-
Total			\$7,000.00	None reported

5.3.4 Future Potential Impacts

The Town's overall vulnerability for a severe thunderstorm, windstorm, or hail event remains moderate. 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.

5.4 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 moderate, 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 Sullivan 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 primary evacuation routes (State Routes 5, 13, and 31) would be most impactful to Town residents. Storm damages would primarily impact the more populated portions of the Town, including the Village of Chittenango and Hamlets of Bridgeport and Lakeport.

5.4.3 *Historical Hazard Occurrences and Damage Estimates*

The Town of Sullivan 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 Sullivan.

5.4.4 *Future Potential Impacts*

The Town's overall vulnerability for a severe winter storm remains moderate. The severity and frequency of severe winter storms may increase due to climate change.

5.5 Landslide

5.5.1 *Description*

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

5.5.2 *Hazard Vulnerability*

The Town's overall vulnerability for landslide is moderate, as documented in their hazard analysis in Section 4.1. The northern portion of the Town of Sullivan is mapped as an area of moderate susceptibility/low incidence, and the southern portion of the Town is mapped as 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 are most susceptible to landslides, such as Creek Road and Olmstead Road. Steep slopes are generally limited to the southern portion of the Town. The topography in the northern portion of the Town is much flatter.

5.5.3 *Historical Hazard Occurrences and Damage Estimates*

The Town reports two recent landslide events on Creek Road and Olmstead Road that caused damage to the roadways. Landslides occur in these locations annually. The damaged area on Creek Road will be repaired. A portion of Olmstead Road is currently closed and will be permanently closed due to repeated landslide issues to ensure public safety. A landslide has the potential to cause hundreds of thousands of dollars in damages.

5.5.4 *Future Potential Impacts*

The Town's overall vulnerability for landslide remains moderate. Areas with steep slopes in the Town, such as Creek Road and Olmstead Road may be susceptible to landslides in the future. A portion of Olmstead Road will be permanently closed due to repeated landslide issues.

5.6 Ice Storm

5.6.1 *Description*

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

5.6.2 *Hazard Vulnerability*

The Town's overall vulnerability for an ice storm is moderate, 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 Sullivan is susceptible to damages from an ice storm event. 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.

5.6.3 *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 related to ice storms are reported specific to the Town of Sullivan. Damages to the Town's critical infrastructure or primary evacuation routes (State Routes 5, 13, and 31) would be most impactful to Town residents. Storm damages would primarily impact the more populated portions of the Town, including the hamlets of Bridgeport and Lakeport.

5.6.4 *Future Potential Impacts*

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

5.7 Drought

5.7.1 *Description*

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

5.7.2 *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. Many developed areas in the Town are connected to the municipal water system operated by the Onondaga County Water Authority (OCWA). However, some residents rely on private wells which may be susceptible to low water yields during a drought. Agricultural areas are located throughout the entire Town, but are most concentrated in the southern and eastern portions of the Town.

5.7.3 *Historical Hazard Occurrences and Damage Estimates*

The NCDC reports no specific drought events for the Town of Sullivan. The Town also did not note any local records of drought events; there are no damage estimates available for this hazard.

5.7.4 *Future Potential Impacts*

The Town's overall vulnerability for drought remains moderate. Droughts are likely to increase in frequency and magnitude in the future due to climate change.

5.8 Tornado

5.8.1 *Description*

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

5.8.2 *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 Sullivan 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.

Topography varies from generally flat to gently sloping in the northern part of the Town to steeper hills in the southern portion of the Town. A tornado in the northern portion of the Town could form a longer pathway of damage; a tornado in the southern portion of the Town is more likely to touch down along topographic high points and affect more localized areas at once. 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.

5.8.3 *Historical Hazard Occurrences and Damage Estimates*

Three tornados have occurred in Madison County within the past ten years, but none of these events occurred in the Town of Sullivan. There are no damage estimates specific to the Town.

5.8.4 *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.

5.9 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 Sullivan 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 4.3% of the population in the Town is under 5 years old, and 15.3% of the population is over 65 years old. Approximately 9.4% of the Town's population is below the poverty level. As electricity costs rise, more people in the Town may fall into this vulnerable population. 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 countywide. 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 Sullivan.

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 Earthquake

5.10.1 *Description*

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

5.10.2 *Hazard Vulnerability*

The Town's overall vulnerability for an earthquake is moderate, as documented in their hazard analysis in Section 4.1. According to Figure 5.8 of the main body plan, the Town of Sullivan has a PGA Hazard rating of 8-10%g. No earthquakes have been reported by the USGS Earthquake Catalog for the Town. 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.

5.10.3 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 Sullivan. An earthquake has the potential to cause hundreds of thousands of dollars in damages.

5.10.4 Future Potential Impacts

The Town's overall vulnerability for an earthquake remains moderate. The Town is within an area of light seismic activity and is not likely to experience significant earthquake damages.

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 Sullivan currently participates in the NFIP (community ID 360409). The Town joined the NFIP on 4/3/1985, and its FIRM(s) became effective on 5/15/1986. NFIP loss claims data were requested from FEMA and a response is pending. According to the County's 2017 HMP, there are six repetitive loss properties in the Town, all single-family homes. Each property has experienced two flood losses as of 12/31/2016, with total payments of \$285,581. 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 four 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 <i>Town of Sullivan</i>			
Proposed Mitigation Action	Hazard(s) Mitigated	Implementing Agency	Status
Chittenango Creek Long-jam Clearings	Flood, Ice Jam	Town of Sullivan Highway	Ongoing action with Madison County SWCD. \$10,000 spent a year; debris is removed until the bridge in Bridgeport, but cleanout should be extended into the Village of Chittenango. Ongoing action that is routinely addressed by Town and SWCD; not re-included in HMP update.
Raise Elevation of Houses Above Floodplain Elevation	Flood	Town of Sullivan Highway	Private owners to address; not re-included in HMP update.
Chittenango Creek Outlet Excavation	Flood	Town of Sullivan Highway	Not progressed; re-included in HMP update.
Elevation of Utilities for Houses along Chittenango Creek	Flood	Town of Sullivan Code Enforcement	Not progressed, but no longer a priority. Not re-included in HMP update.

The Town has completed additional projects to mitigate impacts from natural hazards. The Town Highway department completed multiple projects in 2021 and 2022 to address roadway flooding/damage, including:

- Cheese Factory Road - upsized culvert to 60" from 48" single structure - completed in 2021
- Kinderhook Road - upsizing culvert to 48" - construction progressing summer 2022
- Weaver Road - double 36" culvert replaced with single 48" culvert- SWCD assisted with design and replacement; construction progressing summer 2022

In addition, the Town extended sanitary sewer service to flood-prone areas, including the Fisher Bay subdivision, Woods Road, and Damon Point. An additional sanitary sewer extension is proposed for lakeshore properties along the State Route 31 corridor.

7.2 Proposed Mitigation Actions

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

Table 9. Proposed Hazard Mitigation Actions
Town of Sullivan

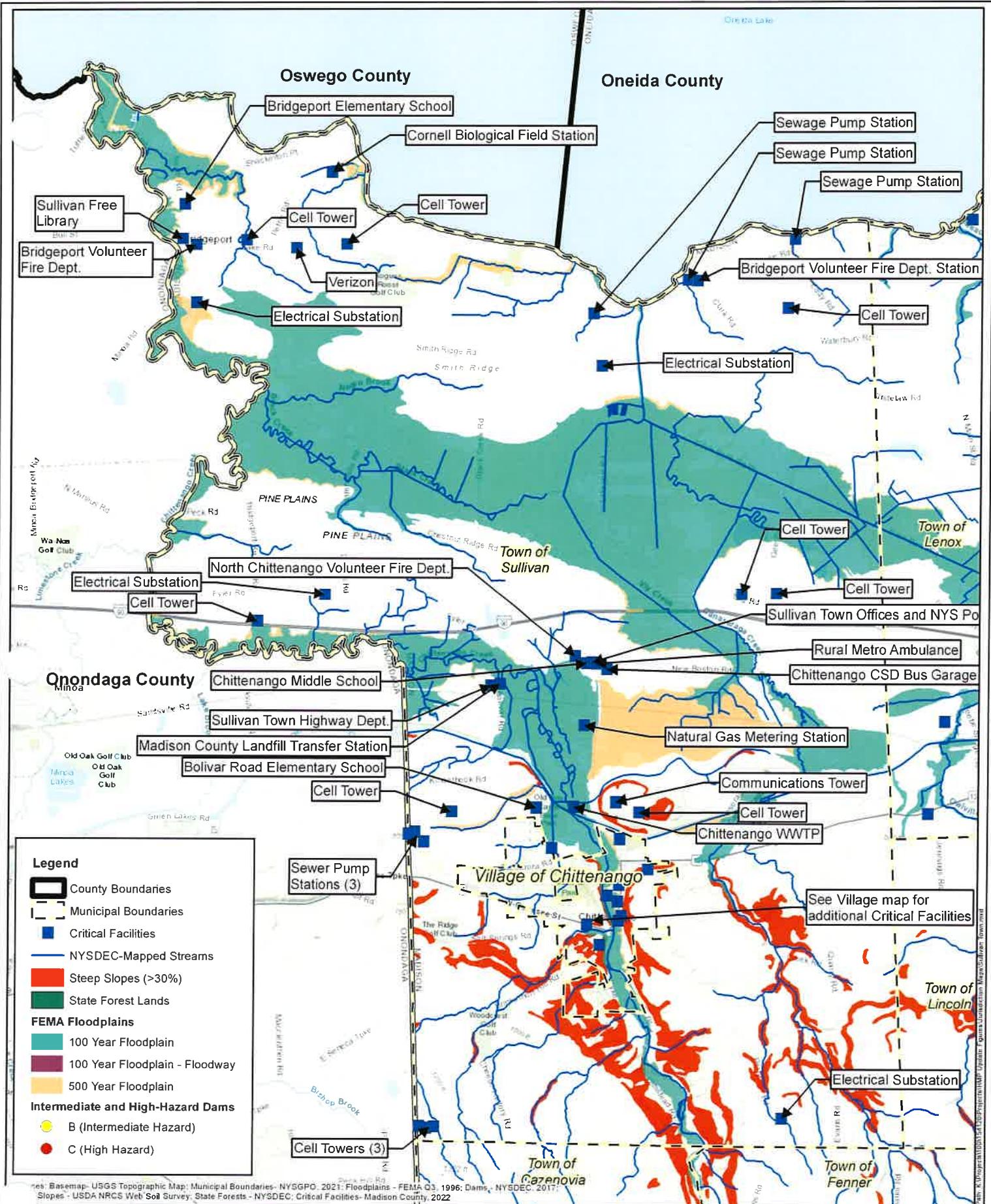
Action ID	Mitigation Action	Hazard(s) Mitigated	Implementing Agencies (Lead* & Support)	Planning Mechanism	Timeframe	New or Existing Development	Estimated Cost	Funding Source(s)	Priority
Sullivan 1 (re-included from 2017)	Lake Road and State Route 31 Flood Mitigation - Chittenango Creek Outlet Excavation and Dredging	Flood, Ice Jam	Sullivan Town Board	Resilient NY Flood Mitigation for Chittenango Creek (Ramboill)	1-3 years	New	\$320,000	FEMA (BRIC, FMA), NYSDEC - WQIP, CFA Grant	High
Sullivan 2	Canaseraga Creek Flood Analysis and Dredging	Flood	Sullivan Town Board	Resilient NY Flood Mitigation for Chittenango Creek (Ramboill)	3-5 years	New	\$300,000	FEMA (BRIC, FMA), NYSDEC - WQIP, CFA Grant	High

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**



0 0.5 1 2 Miles

Town of Sullivan

Hazard Vulnerability

Figure
1
Project
No.
154.120

Madison County HMP Update Mitigation Action Worksheet

Jurisdiction: Town of Sullivan

Mitigation Action	
Project ID:	Sullivan 1
Project Name:	Lake Road and State Route 31 Flood Mitigation - Chittenango Creek Outlet Excavation and Dredging
Risk/Vulnerability	
Hazard of Concern:	Flooding, Ice Jam
Description of the Problem:	The Lake Road/State Route 31 area within the Town of Sullivan is defined as a high flood risk area per Ramboll's June 2022 Resilient NY Flood Mitigation Report for Chittenango Creek. This area contains numerous residential and commercial properties that are susceptible to flooding and have been impacted by flooding from Oneida Lake and Chittenango Creek.
Proposed Action	
Description of the Solution:	Ramboll identified a number of mitigation alternatives to reduce flood risk in this area, which are reviewed in detail in the 2022 Resilient NY Flood Mitigation Report for Chittenango Creek. The Town is primarily interested in pursuing Alternative 1-1, which involves removing deposited sediment at the Chittenango Creek outlet to Oneida Lake. This would improve the hydraulic capacity of the stream channel and reduce flooding issues.

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):	Reduced flooding issues along Chittenango Creek.
Useful Life:	10+ years		
Estimated Cost:	\$320K		

Plan for Implementation			
Priority (High, Medium, Low):	High	Responsible Organization:	Town of Sullivan- primary, NYSDEC/USACE/Village of Chittenango/NYS Canals/Madison Co SWCD - support
Desired Timeframe for Implementation:	3-5 years	Potential Funding Sources:	FEMA (BRIC, FMA), NYSDEC - WQIP, CFA Grant
Estimated Time Required to Implement:	1-3 years	Local Planning Mechanisms to be used in Implementation, if any:	Resilient NY Flood Mitigation for Chittenango Creek (Ramboll)

Three Alternatives Considered (Including No Action)			
	Action	Estimated Cost	Evaluation
Alternatives:	No Action	\$0	No change from existing conditions
	Remove Central Piers of Lake Road/NY-31	\$7.1 million	Reduced potential of debris and ice from catching on a pier and creating obstructions/jams upstream of the bridge; does not significantly improve hydraulics; high cost
	Remove Central Piers and Increase the Bridge Opening of Lake Road/NY-31	\$8.9 million	Increased flow capacity; reduced backwater from high-flow events; prevention of ice and debris buildup. High cost.

*See Ramboll report for additional alternative flood mitigation strategies considered for this area.

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 Sullivan

Mitigation Action	
Project ID:	Sullivan 2
Project Name:	Canaseraga Creek Flood Analysis
Risk/Vulnerability	
Hazard of Concern:	Flooding
Description of the Problem:	The creek channel has silted in over time, creating less capacity for flood waters. Debris blockages are also an issue, causing private property flood issues, and increased erosion and sediment inputs into waterbody, and frequent flooding of adjacent agricultural lands.
Proposed Action	
Description of the Solution:	Complete a flood analysis to identify options for increasing flood water capacity.

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:	Low	Estimated Benefits (losses avoided):	A study will provide an overview of the drainage area and will prioritize problem areas to be studied further or mitigated.
Useful Life:	Short term		
Estimated Cost:	\$30,000		

Plan for Implementation			
Priority (High, Medium, Low):	High	Responsible Organization:	Sullivan Town Board (primary), NYSDEC, SWCD
Desired Timeframe for Implementation:	3-5 years	Potential Funding Sources:	FEMA (BRIC, FMA), NYSDEC - WQIP, CFA Grant
Estimated Time Required to Implement:	1-2 years	Local Planning Mechanisms to be used in Implementation, if any:	Resilient NY Flood Mitigation for Chittenango Creek (Ramboll)

Three Alternatives Considered (Including No Action)			
	Action	Estimated Cost	Evaluation
Alternatives:	No Action	\$0	No change from existing conditions
	Elevate structures along Creek	High	Not practical or cost effective, private ownership
	Complete flood analysis study	\$30,000	Best starting point to identify potential flood and erosion mitigation options

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