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Each town or village is broken down into separate sections to clarify for users what needs to be addressed in each town or village. These individual sections contain a table representing mitigation strategies to be undertaken by jurisdiction, as well as a map of the jurisdiction. For clarity each section begins on the following page number.

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## **1. Section 1: Introduction**

#### **Background:**

There are four phases of emergency management. Preparedness, response, recovery, and mitigation. A summary of the four phases is described below; information was obtained from the Federal Emergency Management Agency (FEMA) website.

Preparedness includes all actions that are taken before the crisis occurs. Preparedness is making plans and having the needed equipment and supplies to save lives during and after a disaster event. It's also knowing what the warning signs are for a pending emergency or disaster. It includes stocking supplies, conducting drills (fire drills and table top exercises, for example), installing smoke detectors, posting emergency numbers by the telephone and so on. Preparedness is the most time consuming, as it is comprised of many tasks.

Response is taking immediate action upon the occurrence of a disaster or emergency; by taking this action, you are attempting to protect yourself and others from harm or further harm. How you respond depends on the onset of the event. The period of time you have between knowing a disaster will occur, and it occurring are known as the onset time; this timeframe can vary widely based on the event. A hurricane has a long onset because the National Weather Service can track these storms with the use of satellites and post watches and warnings before they make landfall. An earthquake has virtually no onset because it happens so quickly without any warning. The duration of a disaster is the time from when it starts to when it ends. Blizzards, droughts, and hurricanes have durations that can last days, weeks, or longer. Conversely, earthquakes, tornadoes and avalanches last only minutes or even seconds.

Recovery includes all actions you take to keep yourself safe and return your life to normal. Some actions will be immediate, like those taken to stop life-threatening bleeding, or to protect yourself from further injury. Other actions will take longer. If your home has been damaged, it will need to be repaired or replaced and you'll need to start submitting claims on those items covered by insurance. How difficult your recovery depends on how much preparedness you have done. A person who has prepared well and has enough food, water and other supplies, including things like having the proper amount of insurance, will fare much better than someone who has prepared little or not at all.

Mitigation is preventing disasters or taking steps to lessen the impact of unavoidable disasters. Ideally, mitigation should occur before an emergency happens. However, mitigation and preparedness sometimes do not occur until after a disaster happens and repairs are being made; this is quite common in the corporate world. This is also often seen in government agencies where there is a tendency not to notice a potential disaster until it strikes. All too often, it is after the confusion dies down and things start to return to normal when governments make plans for the next disaster.

Across the United States, natural and man-made disasters have led to increasing levels of deaths, injuries, property damage, and interruption of business and government services. The time, money, and effort needed to recover from these disasters exhausts resources, diverting attention from important public programs and private agendas. Since 1960 there have been 14 Presidential Disaster Declarations and five Presidential Emergency Declarations in Essex County. The Essex County Department of Emergency Services, municipal staff, citizens, elected officials and other stakeholders in Essex County recognize the impact of disasters on their municipalities and support proactive efforts needed to reduce the impact of natural and human-made hazards.

*Hazard mitigation* describes sustained actions taken to prevent or minimize long-term risks to life and property from hazards and create successive benefits over time. Pre-disaster mitigation actions are taken in advance of a hazard event and are essential to breaking the disaster cycle of damage, reconstruction, and repeated damage. With careful selection, successful mitigation actions are cost-effective means of reducing risk of loss over the long-term.

Hazard mitigation planning has the potential to produce long-term and recurring benefits by breaking the cycle of loss. A core assumption of mitigation is that current dollars invested in mitigation practices will significantly reduce the demand for future dollars by lessening the amount needed for recovery, repair, and reconstruction. These mitigation practices will also enable local residents, businesses, and industries to re-establish themselves in the wake of a disaster, getting the economy back on track sooner and with less interruption.

The Essex County Hazard Mitigation Advisory Committee (MAC) was composed of emergency management and county agency staff from Essex County. The group worked in cooperation with the elected officials of the County; and its municipalities to develop this Hazard Mitigation Plan (HMP) update.

The Plan is the result of work by Essex County and jurisdictional staff to develop a predisaster multi-hazard mitigation plan that will not only guide the county towards greater disaster resistance, but will also respect the character and needs of each municipality.

Funding from Federal Emergency Management Agency (FEMA) and New York State Division of Homeland Security and Emergency Services (DHSES) enabled Essex County to hire **Mountain View Planning** as a consultant to assist in updating this hazard imitation plan. The president of Mountain View Planning was the Lead Community Planner in FEMA Region 3 for six years, and has a history of working with the Hazard Mitigation Planning Program since 2002.

#### Purpose:

The purpose of this All-Hazard Mitigation Plan Update (HMP) is:

- \* To protect life, safety, and property by reducing the potential for future damages and economic losses that result from natural hazards';
- \* To qualify for additional grant funding, in both the pre-disaster and the post-disaster environment;
- \* To speed recovery and redevelopment following future disaster events;
- \* To demonstrate a firm local commitment to hazard mitigation principles; and
- \* To comply with both state and federal legislative requirements for local hazard mitigation plans.

#### Scope:

The Essex County 2019 Hazard Mitigation Plan update has been prepared to meet requirements set forth by the Federal Emergency Management Agency (FEMA) and New York State Division of Homeland Security and Emergency Management (NY DHSEM). This updated plan will enable Essex County to be eligible for funding and technical assistance from state and federal hazard mitigation programs. It will be updated and maintained to address both natural and one man made hazards determined to be of significant risk to the County and/or its local municipalities. Updates will take place at minimum every five years.

#### Authority and References:

Authority for this plan originates from the following federal sources:

- Robert T. Stafford Disaster Relief and Emergency Assistance Act, 42 U.S.C., Section 322, as amended;
- Code of Federal Regulations (CFR), Title 44, Parts 201 and 206;
- Disaster Mitigation Act of 2000, Public Law 106-390, as amended; and
- National Flood Insurance Act of 1968, as amended, 42 U.S.C. 4001 *et seq.*

The requirement for jurisdictions to develop and adopt hazard mitigation plans will result in mitigation projects that when implemented will reduce the effects from hazard events on these jurisdictions. The projects will enable our communities to be more resilient to disaster.

# **Section 2. Planning Process**

## **Update Process and Participation Summary**

The County obtained funds to update the Hazard Mitigation Plan in 2017. **Mountains View Planning** was selected as the contractor to assist in the plan update. **Mountain View Planning** specializes in hazard mitigation planning and has 13 years of experience in hazard mitigation plans while employed at FEMA.

The 2019 Hazard Mitigation Plan update used a similar format to the previous plan for the planning process as the plan was updated. Forms were provided at meetings and by email to obtain jurisdictional specific information for this plan update. Meetings were held with all towns and villages as the plan was updated. County agency meetings were held to obtain information on programs and projects that they implement.

Essex County Department of Emergency Services staff coordinated on all aspects of the hazard mitigation plan update process.

The Essex County Hazard Mitigation Advisory Committee (MAC) was reestablished to assist in the updating of the plan. MAC members are key staff of Essex County Agencies. These staff members interact with Town and Village staff on a regular basis as they implement their county agencies duties. The hazard mitigation plan was discussed often by county staff as they interacted with towns and villages. This interaction has led to many successful outcomes. Their historical and situational awareness leads to improved coordination with Towns and Villages. The majority of the staff are long term local residents, this awareness and sense of community in a rural county leads to interdependent cooperation and coordination. See Section 5 for an example of programs that are implemented by Essex County agencies in towns and villages of Essex County.

MAC members were emailed invitations to the July 17, 2017 and October 22, 2018 meeting. This second MAC meeting included completing the HMP forms for the county. This included ranking of hazards, reviewing county agency projects that were completed and developing new mitigation projects for the county. County projects were reviewed at the October meeting. Hazards were ranked for the updated plan. A discussion of the programs that each agency implements occurred. This discussion led to the profiling of county agencies in the capability section.

In order to obtain information from municipalities and other stakeholders, forms and surveys were distributed and collected throughout the planning process. The table below on page 4 and 5 indicates town and village meetings that occurred as the plan was updated. Sign-in sheets for each meeting with individual names are available in the appendix along with all completed forms and surveys.

The 2019 hazard mitigation plan update incorporated changes and additions to mitigation projects from the municipalities. The updated municipal project information was provided at each meeting and forms were returned after the meeting to be incorporated into the updated plan. All documents from the 2019 plan update can be located in the appendix section of the plan.

The updated hazard mitigation plan incorporates pertinent information that became available since the approval and adoption of the Hazard Mitigation Plan in 2011. This process updated the plan to better incorporate new hazard and project information that occurred in between the 5-year plan updates.

The capability section of the plan was created for the 2019 plan update. This section now includes detailed information on county agencies and the programs and projects they implement to reduce effects of hazards in Essex County. Several county agencies implement projects that have drastically increased water and sewage services, education and awareness efforts, and water quality related projects. Essex County agencies should continue to implement projects that continually improve mitigation efforts in Essex County.

The mitigation strategy section has also been updated in this 2019 plan update. Each of the 20 jurisdictions will be able to easily identify projects specific to their jurisdiction. This format will also make annual reporting and updating of the plan in five years a more easily implemented task. The mitigation table also include a status of the 2011 projects, new projects developed during this 2019 plan update and completed projects for jurisdictions.

New hazards were fully profiled for this 2019 updated plan. The 2014 New York State Plan list of hazards was profiled for this plan. One non-natural hazard was profiled. Several County and local officials wanted rail events to be profiled. This hazard may impact Essex County as goods are shipped in the eastern part of the County.

Many of the town and village data maps were reused as data has not been updated from the 2011 version of the plan. The Work Cited appendix includes a list of documents that were used in the 2019 version. Data from local plans, state and federal sources are utilized mainly in the risk assessment section. These data sources are either cited in the text, maps or appendices.

Brochures that address hazards are included in the appendix. These brochures can be printed by town, village and County staff to place in their offices and other places as an education and outreach effort. They were created as a word document that allows each town and village to place their town or village information on the brochures. The draft plan was delivered to the Essex County Department of Emergency Services on December 5. A press release notified residents that a copy of the draft plan was available at the Essex County Department of Emergency Services building or on the Essex County website. These press releases ran twice in two local newspapers. No comments were received from members of the general public.

Neighboring counties will be provided a draft of the FEMA approved pending adoption plan. This will be the final version of the plan, prior to adoption by any jurisdiction.

Maintenance of the plan during the five year approval period has been an issue in the past. Many plans indicate that annual meetings will occur, but few annual meetings occur. Essex County has been involved dealing with Tropical Strom Irene since 2011, and annual meetings did not occur due to the County still currently recovering from that event. The contractor will hold annual meetings as a resident of Essex County. Essex County will not incur any additional costs for these meetings.

The following table indicates the meeting that occurred as the plan was update. The table also indicates the jurisdictional participation in the 2019 plan update.

## The Planning Team

The Hazard Mitigation Advisory Committee consisted of a well-diversified planning team which included county agency staff, county officials, emergency coordinators, and non governmental organizations. These individuals were invited to participate in the Hazard Mitigation Plan update process. The Mitigation Advisory Committee worked throughout the process to attend meetings, provide information and provide guidance to the contractor.

The following County Staff comprised the Mitigation Advisory committee. They provided guidance and data that was used in this updated plan.

The 2019 HMP had the following MAC members.

- 1. Don Jaquish, Director, Essex County Department of Emergency Services
- 2. Wendy Sayward, Principal Account Clerk, Essex County Department of Emergency Services
- 3. Krissy Leerkes, Acting Director Essex County Office for the Aging,
- 4. Alice Halloran, District Manager, Essex County Soil and Water Conservation District
- 5. Michael Blair, Essex County Department of Emergency Services

6. Kelly Tucker, Director Ausable River Association,

7. Anita Demmings, Director Boquet River Watershed Association.

## **Meetings and Documentation**

The following meetings were held during the planning process. All invitations, agendas, and sign-in sheets for these meetings are included in Appendix Meeting and Other Participation Documentation.

**June 29, 2017: Internal County Kickoff Meeting** with Department of Emergency Services staff to discuss scope, schedule, project goals, invitees, available resources, and planning standards.

**July 18, 2017: Mitigation Advisory Committee (MAC) Kick off meeting** held at the Essex County Department of Emergency Services building to introduce the project to MAC members. The update process and schedule were discussed, and review their roles in the plan update process.

**August 21, 2017 Board of Supervisor's Meeting:** A presentation to all supervisors occurred at the weekly Board of Supervior's meeting. The presentation provided a review of the update process, time frame of the project, and discussion occurred concerning the individual town and village meetings that would occur for the updated plan.

September 6, 2017. Board of Supervisor's Meeting. A second presentation was provided at the BOS meeting to educate additional officials of the plan update process.

**October 22, 2018. MAC meeting.** Meeting reviewed forms for county agencies. MAC ranked hazards, reviewed 2011 mitigation projects, developed new goals, developed new mitigation projects.

December 5, 2018. Draft plan delivered to Department of Emergency Services Director.

The following county agencies met with the contractor to discuss their programs and projects.

March 22, 2018 Soil Water Conservation District (SWCD)

March 27, 2018 County Highway Supervisor Meeting

April 24, 2018 Department of Aging (DOA)

May 9, 2018 GIS

May 9, 2018 Department of Public Works (DPW)

## May 10, 2018 Department of Community Resources (DCR)

## May 14, 2018 American Red Cross (ARC)

Towns and villages met with the contractor to supply information specific to their towns and villages. Forms were reviewed, and discussion on all aspects of the town or village and of hazard that occur in the town or village. Supervisors were able to understand the planning process, and what was expected from them in reference to providing information for the plan update.

The following table indicates when these meeting occurred. Additional information on attendees of each meeting is noted in the individual town and villages files in section 6.

Town and Village Meetings		
Town or Village	Dates of Meetings	
Town of Chesterfield	June 6 and October 29	
Town of Crown Point	June 19 and May 22, 2019	
Town of Elizabethtown	May 24, and November 20	
Town of Essex	May 11	
Town of Jay	June 27	
Town of Keene	June 21 and October 4	
Village of Lake Placid	August 7 and May 13, 2019	
Town of Lewis	June 22	
Town of Minerva	June 6 and May 19, 2019	
Town of Moriah	May 28 and November 8	
Town of Newcomb	August 14	
Town of North Elba	August 7 and May 13, 2019	
Town of North Hudson	May 18	

Town of Saint Armand	June 21
Village of Saranac Lake	August 29
Town of Schroon	June 14
Town of Ticonderoga	May 29 and June 29
Town of Westport	May 7 and July 12 and August 9
Town of Willsboro	June 8
Town of Wilmington	December 17

# **Public & Stakeholder Participation**

Each stakeholder was given multiple opportunities to participate in the Hazard Mitigation Plan update process through invitations to meetings, correspondences by email, phone call, reviews of risk assessment results and mitigation actions, and an opportunity to comment on the draft Hazard Mitigation Plan update. Towns and Villages were encouraged to discuss this plan update with local residents, business and others. The draft plan was available on the Department of Emergency Services website in December. Legal notices were placed in two newspapers to notify residents of the availability of the draft plan.

The five tools listed below were distributed at meetings to solicit information, data, and comments from both local municipalities and other keystakeholders. Responses to these worksheets and surveys are included in the Appendix, Meeting and Other Participation Documentation.

- 1. Identified Hazards and Risk Worksheet: Capitalizes on local knowledge to evaluate the change in the frequency of occurrence, magnitude of impact, and/or geographic extent of profiled hazards, and allows municipalities to evaluate hazards not previously profiled in the 2011 version of the hazard mitigation plan.
- **2. Capability Assessment Survey:** Collects information on local planning, regulatory, administrative, technical, fiscal, and political and resiliency capabilities that can be included in the hazard mitigation plan.
- **3. 2011 Project Review:** municipalities were asked to evaluate the status of projects submitted in the previous plan, indicating if there had been progress, if a project had been discontinued or completed, and whether each project should be carried over into the 2019 Plan.

- **4.** New Mitigation Project table: Allows towns and villages to propose new mitigation actions for the Hazard Mitigation Plan and include information about each action such as a lead agency/department, implementation schedule, priority, estimated costs, and potential funding source(s).
- **5.** Other completed projects: Several towns and villages also included other projects that have been completed. While these projects may not fit the traditional definition of mitigation, any permanent action to reduce risk, these projects do mitigate hazards and show that towns and villages mitigate risks each and every day as they conduct daily operations.

Municipal participation and comments were encouraged throughout the planning process, most notably through contact with county Emergency Services staff or with the contractor.

## **Existing Planning Mechanisms**

There are numerous existing regulatory and planning mechanisms in place at the state, county, and municipal level of government which support hazard mitigation planning efforts. These tools include the New York All-Hazard Mitigation Plan, local floodplain management ordinances, the Essex County Comprehensive Plan, Essex County Emergency Operations Plan, Essex County Hazard Vulnerability Analysis, local Emergency Operation Plans, local zoning ordinances, local subdivision and land development ordinances, local comprehensive plans, and watershed and other environmental plans. These mechanisms were discussed at municipal meetings and are described in Section 6 in each town and village mitigation section.

Information from several of these documents has been incorporated into this plan. Efforts to identify plans that were utilized in each section to provide a source of the data has been completed. Mitigation actions have been developed to further integrate these planning mechanisms into the hazard mitigation planning process. Continued effective planning and implementation of a variety of grants by the county and the 20 jurisdictions will enable the hazards to be addressed and mitigated. These programs will continue to produce results that mitigate hazards to the county and the 20 jurisdictions in Essex County and more importantly, the residents and others in Essex County.

# **Section 3: County Profile**

Essex County lies on the western shore of Lake Champlain, in the northeastern part of New York State. The county is bounded on the north by Clinton County; on the south by Warren County; and on the west by Franklin and Hamilton Counties.

The county is mainly rural. It covers an area of 1,225,900 acres, or about 1,937 square miles, of which 69,700 acres is water. Elevations range from 95 feet at Lake Champlain (mean lake level), to 5,344 feet at the summit of Mount Marcy. Elizabethtown is the county seat and is situated in the eastern foothills area between the Adirondack High Peaks Region on the west, and the Champlain Valley on the east. The entire county is located inside Adirondack Park.

## **County Facts:**



The 2010 census reports that the county had a population of about 39,170, and has more or less steadily grown since 1900, when the population was approximately 31,000. About two thirds of the population resides within the hamlets and villages of the county. Seven Essex County municipalities have seen a small increase in population since 2000. A small decrease in population was seen in eleven municipalities, see the table below.

There were 23,115 housing

units at an average density of 13 per square mile (5/km<sup>2</sup>). There were 15,028 households out of which 29.20% had children under the age of 18 living with them, 52.20% were married couples

living together, 8.90% had a female householder with no husband present, and 34.60% were non-families. 28.30% of all households were made up of individuals and 12.60% had someone living alone who was 65 years of age or older. The average household size was 2.39 and the average family size was 2.93.

In the county, the population age range is spread out with 22.80% under the age of 18, 6.90% from 18 to 24, 29.80% from 25 to 44, 24.50% from 45 to 64, and 16.00% who were 65 years of age or older. The median age was 39 years. For every 100 females there were 107.60 males.

The median income for a household in the county was \$34,823, and the median income for a family was \$41,927. Males had a median income of \$30,952 versus \$22,205 for females. The per capita income for the county was \$18,194. Of the population, 11.60% of individuals, 7.80% of families, 14.50% of those under the age of 18, and 8.60% of those 65 and older, were living below the poverty line.

Essex County NY Population			
Municipality	Population	Population	Population 2010
	(1990)	(2000)	
Town of Chesterfield	3,159	2,409	2,245
Town of Crown Point	1,963	2,119	2,024
Town of Elizabethtown	1,314	1,315	1,163
Town of Essex	687	713	671
Town of Jay	2,244	2,306	2,506
Town of Keene	908	1,063	1,105
Town of Lewis	1,057	1,200	1,382
Town of Minerva	758	796	809
Town of Moriah	7,887	4,879	4,798
Town of Newcomb	544	481	436
Town of North Elba	11,559	8,661	8,957
Town of North Hudson	266	266	240
Town of St. Armand	1,479	1,321	1,548
Town of Schroon	1,721	1,759	1,654
Town of Ticonderoga	7,919	5,167	5,042
Town of Westport	1,446	1,362	1,312
Town of Willsboro	1,736	1,903	2,025
Town of Wilmington	1,020	1,131	1,253
Village of Lake Placid	2,485	2,638	2,521
Village of Saranac Lake	5,377	5,041	5,406
Essex County	47,667	38,851	39,170

New development in Essex County is very limited. The population has continually decreased in the majority of Towns and Villages with only slight increases in populations in Jay, Keene, Lewis, Minerva, North Elba, Saint Armand, Willsboro and Wilmington. While actual numbers of new structures were not obtained for this plan update, anecdotal information from town supervisors indicates that any new development is not in flood hazard areas. The flood vulnerable towns encourage development to be outside of any flood hazard areas. These towns having been impacted by Tropical Storm Irene or the high-water flood event on Lake Champlain now understand their flood risk and are not in support of new development in flood hazard areas. Areas outside of the flood hazard areas are also seeing little development. These areas have similar vulnerabilities to other natural hazards, besides floods. Please see Section 4 for a complete narrative of vulnerability to natural hazards.

Essex County Facts			
County Seat	Elizabethtown		
Number of Towns	18		
Number of Incorporated Villages	(2) Lake Placid & a portion of Saranac Lake		
Number of Hamlets	25, designated by Adirondack Park Agency		
Population	39,170 (2010 Census)		
Land Area	1,937 sq. miles/1,224,583 acres		
Land Classified Village & Hamlet (APA)	18,859.1 acres		
Land Classified Industrial Use (APA)	6,074 acres		
Largest Lake Bordering County	Lake Champlain, eastern boundary		
Largest Lake within County	Schroon, borders on Warren Co. to south		
Highest Elevation	Mt. Marcy 5,344'		
Largest Rivers	Boquet, Au Sable, Hudson, Saranac & Schroon		
Interstate Highway	I-87 north/south		
State Roads	3, 9, 9N, 22, 28N, 73, 74, 86, 373, 431 & 903		
State Road Mileage	334.32		
County Road Mileage	359.32		
Town Road Mileage	571.63		
Railways	Canadian Pacific Rail - north/south		
	along eastern border, Conrail – between		
	Lake Placid & Saranac Lake		
Ferry Terminals to Vermont	Essex to Charlotte, Port Kent to Burlington		
	(seasonal) & liconderoga to Shorenam,		
	(seasonal)		

#### Climate Data:

Essex County climate consists of four distinctive seasons, with winter conditions occurring in all four. The Town of North Elba had up to three feet of snow on Memorial Day 2013. Mount Marcy and other high peaks in the Adirondack Mountains can see snow in July and August. In winter, average temperatures recorded (in Fahrenheit) in Peru (21.2), Elizabethtown (19.2), Lake Placid (18.1), and Newcomb (17.4) are all below freezing. Average daily minimum temperatures in winter are 11.6, 7.9, 7.3, 6.7 and 4.0 degrees, respectively. The lowest temperature recorded in the county, -32 degrees Fahrenheit, was at Lake Clear on February 18, 2013.

In summer, average temperatures in Fahrenheit at each location are: Peru (67.6), Elizabethtown (66.3), Lake Placid (62.2), Newcomb (62.5) and Mt. Mansfield (56.3). Average daily maximum temperatures in summer are 79.1, 79.1, 74.4, 74.5 and 63.4 degrees, respectively. The highest recorded temperature, 102 degrees Fahrenheit, was recorded in Elizabethtown on July 18<sup>th</sup>, 1953.

Average annual precipitation over Essex County ranges from 34 to 40 inches over eastern sections, to between 40 and 48 inches over higher terrain in the west, including around 70 inches on Mt. Marcy Of this precipitation, about 45 to 51 percent usually falls during the May through September growing season. Thunderstorms occur on roughly 23 days a year, and most occur in July. The heaviest one-day precipitation amount, 5.7 inches, fell in Peru on June 16<sup>th</sup>, 1987.

Average seasonal snowfall is also highly dependent on elevation, with about 60 inches falling annually along Lake Champlain, and as much as 150 inches or more over the highest terrain, including near Mt. Marcy. On average, about 75 days per year have at least 1 inch of snow on the ground near Lake Champlain, but western parts of the county average around 140 days, and the highest mountains see snow on the ground about 180 to 200 days per year, on average. The greatest snow depth at one time was recorded in Newcomb on March 8<sup>th</sup>, 1971 at 53 inches; the greatest snowfall recorded in one day, 28 inches, was in Peru on March 6<sup>th</sup>, 2001.

The sun shines about 62 percent of the time in summer and about 40 percent in winter.

The prevailing wind is from the south at lower elevations, especially near Lake Champlain, but is from the west at higher elevations. Average wind speed is highest in the winter and spring, when it is about 10 miles per hour in the valleys, but averages about 30 mph on the higher ridges near Mt. Marcy.

#### Drainage Systems:

The drainage system of Essex County is separated into two major systems: The Lake Champlain-St. Lawrence River system and the Hudson River system. The drainage from the northern half



and southeastern edge of the county flows northward and eastward into the Lake Champlain-St. Lawrence River system. The Ausable and Boquet Rivers originate in the Adirondack High Peaks Region, flow northeast toward Lake Champlain, and drain most of the northern half of the county. The Ausable River enters the lake just north of Keeseville and the Boquet River enters the lake at Willsboro. The drainage from most of the southern half of the county flows southward into the Hudson River system. The Upper Hudson watershed drains about 42 percent of the county south into the main Hudson River. The principal sub-basins originate in the southern High Peaks Region

and in the low mountains south of the High Peaks Region, flow generally southward, and drain most of the southern half of the county. A very small portion of the county lies in the Lake George basin. The Saranac River, which originates in the central Adirondack Upland near Saranac Lake, drains a small area (about 5 percent) of the county in the very northwest corner. A very small portion of the county (about 3 percent) lies within the Raquette River watershed which drains northwest into the St. Lawrence River. The principal sub-basin of the Raquette watershed that lies in Essex County is the Cold River basin. The Cold River originates in the southern High Peaks Region and flows generally westward into the Raquette River north of Long Lake.

#### History and Development:

The following information was obtained from the Essex County Soil Survey. The earliest inhabitants of the area we now know as Essex County were Paleoindians who migrated here shortly after deglaciation of the Champlain Valley about 11,300 years ago (9300 BCE). They were semi-nomadic, hunter-gatherers who presumably followed caribou, woolly mammoth, and other Pleistocene megafauna as they exploited the new periglacial, tundra-like grasslands. The final pre-European period of habitation is known as the Woodland Period lasting from about 2,900 to 400 years ago. This period is characterized by establishment of substantial settlements along flood plains of major streams and rivers as they entered the lake, and technological advancements such as agriculture, pottery, and metal tools. As the Woodland Period progressed, Lake Champlain became a boundary between the Iroquois people to the west, and the Western Abenaki people to the east. By the end of the Woodland Period, the Champlain Valley was home to the St. Lawrence Iroquois, the Western Abenaki, the Mohican, and the Mohawk peoples. There is also evidence that late in the Woodland Period, the region was a contested area between the Five Nations Iroquois of central New York and the Algonquin of the St. Lawrence and Ottawa River Valleys, over access to hunting and fishing grounds. This conflict persisted into the time of European settlement over competition for the fur trade.

European contact in the area began with the French explorer Jacques Cartier in 1534, when he entered the mouth of the St. Lawrence River looking for the Northwest Passage. In July 1609, French explorer Samuel de Champlain, seeking to develop the fur trade, entered the Champlain Valley and was the first European to see the lake that now bears his name, claiming the region for France. With two of his men and a war party of Algonquin, Huron, and Montagnais peoples, they confronted and defeated a group of Mohawk Iroquois warriors at Ticonderoga, thus setting the tone for continued conflict in the region for the next two centuries. The Dutch, led by explorer Henry Hudson, had claimed the lands north of Albany up into the Champlain Valley. Although both colonial powers never initially settled the land in the Champlain Valley, they were very interested in its resources, heavily involved in the fur trade, and dependent on the Native Americans in the valley to supply them with furs.

By 1664, the British had captured the colony of New Amsterdam (New York City); at this time, and continuing for the next one hundred years, the British (with the aid of their Iroquois allies), battled the French and their Native American allies over control of the Champlain Valley and its

environs. The French held control of the valley for most of this period, establishing forts at Isle La Motte (Quebec) in 1666, Crown Point in 1690 (Fort St. Frederic), and at Ticonderoga in 1755 (Fort Carillon). In 1759, the British defeated the French at Fort Carillon, and by the following year had completely driven the French out of the valley. Very little European settlement had occurred prior to 1763, except adjacent to the forts, because of the turmoil.

The first important settlement of Essex County was established by William Gilliland at the mouth of the Boquet River at Willsboro in 1765. Gilliland had acquired several thousand acres between the Boquet and Split Rock in Essex, and engaged tenants to clear the land for farming, and establish industries along the river. A similar settlement was being established by Samuel Deall along the La Chute River at Ticonderoga around the same time. Other early settlers were former soldiers who had served in the valley during the wars and were granted land in return for their service. This short period of stability was disrupted by the Revolutionary War (1775–1783).



Ethan Allen and Benedict Arnold attacked and captured Forts Ticonderoga and Crown Point in order to retrieve the British cannon for siege, and drive the British out of Boston. This was possible due to an early freeze  $of^1$ the ground that allowed troops to tow the canons over frozen ground. In 1776, the British and Americans built up their fleets in preparation for the Battle of Lake Champlain, which took place off Valcour Island on October 11, 1776. Benedict Arnold commanded the American fleet.

British troops assumed control of the lake after the Americans lost a battle. The British held

<sup>&</sup>lt;sup>1</sup> Essex County, circa 1858

control of the lake until the end of the war in 1783, and used it as a staging area to launch raids into the Hudson and Mohawk Valleys for the remainder of the conflict.

Many settlements loyal to the Americans were abandoned and destroyed after the British regained control of the lake, including Gilliland's estate at Willsboro, and once again conflict served to suppress settlement of the region. Just after the Revolution, only a few hundred people occupied the Champlain Valley, but by 1810, the population in the valley grew to over 140,000 people including entrepreneurs, land speculators, and new settlers. The War of 1812 (1812–1815) resulted in one battle in Essex County, when a small British raiding party sailed up the Boquet River at Willsboro and were subsequently driven off by a local militia.

When counties were established in New York State in 1683, what is currently known as Essex County was part of Albany County, an enormous county including northern New York and all of Vermont. After several subdivisions, the New York part of Albany County was split into Albany and Charlotte counties in 1772. Charlotte County, which was later renamed Washington County, was subdivided into Washington and Clinton counties in 1788. Essex County was finally split from Clinton County in 1799.

Development in Essex County has continued to evolve over time. Areas that are part of the Adirondacks have varied economies that rely on several different industries to be economically viable. While these industries are smaller than more developed/populated areas, they are critical in making the area viable for the residents who live in them. Tourism and hospitality, forestry and forest products, mining, and agriculture are some of the more important industries in the county.

#### Forestry:

Forest products became the most important early industry of the county, and use of the county's timber resources began with erecting forts and adjacent settlements in the Champlain Valley. The construction of warships and commercial vessels that plied Lake Champlain during the seventeenth, eighteenth, and early nineteenth centuries also occurred in Essex County. Commercial shipyards were located in the villages of Willsboro, Essex, Crown Point, and Ticonderoga, and were viable until around 1875. Commercial lumbering expanded rapidly after the Revolutionary War, and by 1850, every town in the county had established numerous

sawmills producing lumber for local consumption and export. Timber was cut in the winter, and whole logs banked along rivers for spring drives, or sawn into lumber at local mills and sledded by horse teams to points along the lake. In 1824, the Champlain Canal opened the markets south to Albany and New York City and the lumber trade increased dramatically. By 1840, most of the old growth timber used for lumber production had been cut over in the towns bordering Lake Champlain. About the same time, the interior towns, particular Newcomb, North Hudson, Minerva, and Schroon, were just approaching their peak in timber harvesting for lumber production. Logging was a seasonal occupation with timber being felled, skidded by horse teams and sleds to the banking grounds adjacent to rivers, lakes, and ponds, and in spring driven down the rivers running full from the spring snow melt (Welsh, 1995).

The lumber industry was in sharp decline by 1870; and the pulp and paper industry began its ascension. The Ticonderoga Pulp and Paper Co. and the Glens Falls Pulp Co. both established mills in Ticonderoga in the late 1870s. Both mills were later acquired by the International Paper Co., and in 1968 the mill moved to its present location north of Ticonderoga on Lake Champlain. The Champlain Fibre Company was established in Willsboro in 1881, and operated until the early 1960s. The J. J. Rogers Paper Mill was established in Ausable Forks in 1903, and operated until 1971. Finch, Pruyn, and Co. began buying up timberland in the Upper Hudson Basin after 1865, and continued to transport pulpwood in log drives down the Hudson and its tributaries to their mill in Glens Falls until 1950.

New York State led the nation in pulpwood production in 1912. The forest products industry is still an important part of the county's economic base. Essex County is 92 percent forested, and of this, approximately 50 percent is private commercial forestland, and the remainder is Adirondack Forest Preserve. Timber harvesting for lumber, and wood pulp for paper products, occur on over half a million acres of private forest lands. Forest products account for about seven percent of the private workforce including loggers, foresters, lumber mill operators, specialty products manufacturers and furniture makers, retail and wholesale forest products outlet operators, and one paper mill which employs about 700 workers (Essex County IDA, 2009).

Important paper producing tree species include sugar and red maple, yellow birch, beech, red oak, and white pine. Saw timber for lumber that is harvested in the county mainly consists of

white pine, red pine, red oak, black cherry, white ash, and sugar maple. Due to uncertain energy prices, demand for firewood is growing rapidly. Hardwoods make the best firewood and include cherry, oak, beech, maple, birch, and hop hornbeam. Examples of specialty products produced in Essex County forests are fence posts from eastern white cedar and ginseng.

By the 1870s, concern about the condition of forest resources in the Adirondacks by conservation groups led to discussions of preservation. Poor logging practices, land clearing for charcoal and potash manufacturing, subsequent fires, and accelerated soil erosion and sedimentation of streams led to watershed and fisheries degradation, and aesthetically displeasing landscapes in some areas. In 1872 the Commission of State Parks was formed to study the forests condition in the Adirondacks, and in 1885 the Forest Preserve was created. Seven years later, in 1892, the Adirondack State Park was established, and in 1895 "forever wild" legislation prohibited sale, lumbering, or development of any kind on current state-owned lands, and any new lands added to the Forest Preserve within the "Adirondack Park". The park was created to preserve the water resources for New York City, and more importantly to preserve water for use in the Erie Canal system.

#### Adirondack Park Agency:

Essex County falls entirely within the boundaries of the Adirondack Park. Upon its creation in 1971 the Adirondack Park Agency's first task was to develop, in consultation with the Department of Environmental Conservation, a management plan for the administration of all State land in the Adirondack Park. The resulting plan, the Adirondack Park State Land Master Plan (Master Plan), is a refinement of the previous studies and by law, still governs the management of State land. The Master Plan classifies State land within the Adirondack Park according to its characteristics and its ability to withstand use into seven basic categories: Wilderness, Primitive, Canoe, Wild Forest, Intensive Use, Historic and State Administrative. The New York State Department of Environmental Conservation administers state land within the park boundary. The following state land classification definitions are taken from the Adirondack Park State Land Master Plan.

**Wilderness:** A wilderness area, in contrast with those areas where man and his own works dominate the landscape, is an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. A wilderness area is further defined to

mean an area of state land or water having a primeval character, without significant improvement or permanent human habitation, which is protected and managed so as to preserve, enhance and restore, where necessary, its natural conditions, and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least ten thousand acres of contiguous land and water or is of sufficient size and character as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological or other features of scientific, educational, scenic or historical value.

**Primitive** A primitive area is an area of land or water that is either:

1. Essentially wilderness in character but, (a) contains structures, improvements, or uses that are inconsistent with wilderness, as defined, and whose removal, though a long-term objective, cannot be provided for by a fixed deadline, and/or, (b) contains, or is contiguous to, private lands that are of a size and influence to prevent wilderness designation; or,

2. Of a size and character not meeting wilderness standards, but where the fragility of the resource or other factors require wilderness management.

**Canoe:** A canoe area is an area where the watercourses or the number and proximity of lakes and ponds make possible a remote and unconfined type of water-oriented recreation in an essentially wilderness setting.

**Wild Forest:** A wild forest area is an area where the resources permit a somewhat higher degree of human use than in wilderness, primitive or canoe areas, while retaining an essentially wild character. A wild forest area is further defined as an area that frequently lacks the sense of remoteness of wilderness, primitive or canoe areas and that permits a wide variety of outdoor recreation.

**Intensive Use** An intensive use area is an area where the state provides facilities for intensive forms of outdoor recreation by the public, i.e campground or day use areas.

**Historic:** Historic areas are locations of buildings, structures or sites...that are significant in the history, architecture, archeology or culture of the Adirondack Park, the state or the nation; that

fall into one of the following categories;-- state historic sites;-- properties listed on the National Register of Historic Places;-- properties recommended for nomination by the Committee on Registers of the New York State Board For Historic Preservation; and that are of a scale, character and location appropriate for designation as an historic area under this master plan and the state has committed resources to manage such areas primarily for historic objectives.

**State Administrative:** State administrative areas are areas where the state provides facilities for a variety of specific state purposes that are not primarily designed to accommodate visitors to the Park.

Additionally, in 1973, the New York State legislature adopted the Adirondack Park Land Use and Development Plan and Map. The text of the Plan is found in the Adirondack Park Agency Act. Section 805 of the Act describes the different private land use area classifications as follows:

**Hamlet areas:** range from large, varied communities that contain sizable permanent, seasonal and transient populations with a great diversity of residential, commercial, tourist and industrial development and a high level of public services and facilities, to smaller, less varied communities with a lesser degree and diversity of development and a generally lower level of public services and facilities.

**Moderate intensity use areas:** those areas where the capability of the natural resources and the anticipated need for future development indicate that relatively intense development, primarily residential in character, is possible, desirable and suitable. These areas are primarily located near or adjacent to hamlets to provide for residential expansion. They are also located along highways or accessible shorelines where existing development has established the character of the area. Those areas identified as moderate intensity use where relatively intense development does not already exist are generally characterized by deep soils on moderate slopes and are readily accessible to existing hamlets.

Low intensity use areas: those readily accessible areas, normally within reasonable proximity to a hamlet, where the physical and biological resources are fairly tolerant and can withstand development at an intensity somewhat lower than found in hamlets and moderate intensity use areas. While these areas often exhibit wide variability in the land's capability to support

development, they are generally areas with fairly deep soils, moderate slopes and no large acreages of critical biological importance. Where these areas are adjacent to or near hamlets, clustering homes on the most developable portion of these areas makes possible a relatively high level of residential units and local services.

**Rural use areas:** those areas where natural resource limitations and public considerations necessitate fairly stringent development constraints. These areas are characterized by substantial acreages of one or more of the following: fairly shallow soils, relatively severe slopes, significant ecotones, critical wildlife habitats, proximity to scenic vistas or key public lands. In addition, these areas are frequently remote from existing hamlet areas or are not readily accessible. Consequently, these areas are characterized by a low level of development and variety of rural uses that are generally compatible with the protection of the relatively intolerant natural resources and the preservation of open space. These areas and the resource management areas provide the essential open space atmosphere that characterizes the park.

**Resource management areas:** those lands where the need to protect, manage and enhance forest, agricultural, recreational and open space resources is of paramount importance because of overriding natural resource and public considerations. Open space uses, including forest management, agriculture and recreational activities, are found throughout these areas. Many resource management areas are characterized by substantial acreages of one or more of the following: shallow soils, severe slopes, elevation of over twenty-five hundred feet, flood plains, proximity to designated or proposed wild and scenic rivers, wetlands, critical wildlife habitats or habitats of rare and endangered plant and animal species. Other resource management areas include extensive tracts under active forest management that are vital to wood-using industry and necessary to insure its raw material needs. Important and viable agricultural areas are included in resource management areas, with many farms exhibiting a high level of capital investment for agricultural buildings and equipment. These agricultural areas are of considerable economic importance to segments of the park and provide for a type of open space which is compatible with the park's character.

**Industrial use areas:** those areas that are substantial in size and located outside of hamlet areas and are areas (1) where existing land uses are predominantly of an industrial **or** mineral

extraction nature or (2) identified by local and state officials as having potential for new industrial development.

## **Development and Land Use:**

The Adirondack Park Agency regulates development in accordance with these classifications. Future development in the region is regulated by the APA plan/permit review process. The APA provides land-use and density maps and comprehensive technical assistance and oversight for commercial and residential development proposals within their jurisdiction; local zoning regulations still apply both inside and outside of the Park. While a detailed full review of Agency development guidelines is beyond the scope of this plan, it should be noted that the permitting process is administered according to project classification and land use classification.

In regard to land use, within the Park, the APA is the preeminent authority. The Adirondack Park Agency Act allows any local government within the Park to develop its own local land use programs which, if approved by the Agency, may transfer some permitting authority from the Agency to the local government's jurisdiction. Four towns in Essex County have APA approved land use plans- Newcomb, Chesterfield, Willsboro and Westport. In 2010, the NYS legislature proposed an Adirondack Park Local Government Planning Fund. The APA encourages the use of NYS Smart Growth opportunities.

#### Agriculture:



Agriculture did not become commercially important in Essex County until lumber began to slow down, sometime around the mid nineteenth century. There are reports that shipments to Canada of area cattle, beef, pork, butter and cheese were being made as early as 1811 (Cunnion, 1991). Land in farms grew steadily from just after the Revolutionary War

until 1870. Historically, the most important agricultural commodities produced in Essex County

have been dairy products, wool, wheat, corn, forage crops, birdsfoot trefoil seed, apples, potatoes, and maple sugar. Agriculture is still an important part of Essex County's economy. Most of the active agricultural land is located in the Champlain Valley along the eastern edge of the county. Dairy farms, and some small vegetable operations, are distributed throughout the valley, and two major apple growing areas lie in the towns of Chesterfield and Crown Point. Some dairying and vegetable crops are grown in the Ausable River valleys (west and east branches), and potatoes are grown on the gently sloping till plains south of Lake Placid. The following information was obtained from the US Department of Agriculture. This information provides a snapshot of the agriculture market in Essex County over a 5-year period up to 2012. The 2017 agricultural data, which was not available at the time of writing, should be available in 2019 <sup>2</sup> on the USDA website.

Census of Agriculture Essex County 2012				
	2007	2012	Percent change	
Number of farms	243	261	+7	
Land in farms	50,226	54,837	+9	
Ave size of farm	207	210	+1	
Market value of	\$11,459,000	\$11,709,000	+2	
product sold				
Crop sales	\$5,851,650	\$5,573,000	-5	
Livestock sales	\$7,608,640	\$6,136,000	-24	
Average per farm	\$47,156	\$44,863	-10	

<sup>&</sup>lt;sup>2</sup> Picture taken at Essex Farm

Land in Farms by Land Use 2012			
Woodland	24,017 acres	43.8%	
Cropland	20,015 acres	36.5%	
Pastureland	6,306 acres	11.5%	
Other	4,496 acres	8.2%	
Total	54,834 acres	100	

Essex County has experienced an increase of community supported agriculture (CSA) based farms, as well as small farm operations in the last 15 years. This industry continues to see small increases in both the number of farms, acreage in farm use and market value of products.

## Mining:

Mining was a very important part of the county's development. The earliest accounts tell of Phillip Skene mining exposed beds of iron ore just north of Port Henry village in 1766. Major James Dalliba and John Dickenson erected the first furnace at Port Henry in 1822, obtaining the ore from a vein nearby. The Town of Moriah was a major producer of iron ore for many years.



The Witherbee, Sherman Company mines operated from 1851 to until 1938, eventually becoming the largest producer of iron ore in the nation prior to World War II. The Republic Steel Corporation then acquired the mines in 1938, and operated them until 1971. The Macintyre Development began near

Tahawus, in the Town of Newcomb, when iron ore was discovered in 1826. Macintyre and his partners started producing iron in 1838 and continued until 1855. An attempt to revive the

operation in 1894 by the Macintyre Iron Company was unsuccessful after only 20 years, and in 1941 the National Lead Company acquired the deposits and operated the mi<sup>3</sup>ne until 1982. Ilmenite, the titanium bearing mineral that had been such a problem to the previous owners, had become the focus of the operation, and the site became one of the world's largest titanium mines, with iron just a co-product. Titanium oxide became important as a pigment in many products, and as a main ingredient in the production of chemical smokes used in warfare.

In the town of Crown Point, iron ore was discovered in 1821 and developed by Charles Hammond, and again in 1826 near Ironville and developed by Allen Penfield. The operation produced iron ore until 1893, and was noted for being the site of the first industrial application of electricity being employed in the ore separating process (Allen, 1967). Wollastonite was first discovered in 1810 in the town of Willsboro; one of the first applications was the manufacture of electric insulators for use on the Manhattan Project (Cunnion, 1985). Northern Minerals was established just after the war, and in 1979, NYCO Minerals assumed operation of the mines and processing center in Willsboro. NYCO Minerals still produces wollastonite today, which is used in paints and coatings, construction and welding materials, ceramics, and automotive parts. Graphite was discovered on Lead Hill in the town of Ticonderoga in 1815, which was used in polishes, and eventually the manufacture of the familiar Ticonderoga pencil by the American Graphite Company.

The Port Henry iron ores were especially prized since their high percentage of magnetite facilitated the smelting process, and mining played a major role in the region for nearly two centuries. Essex County ore was utilized in forging iron hardware for American ships that participated in the Revolutionary War Battle of Lake Champlain in October, 1776. The construction of the Champlain Canal in 1823 greatly increased the ability of Essex County to exploit its mineral resources, since the canal linked the lake with the Hudson River, permitting the shipment by water of ore and pig iron to urban and industrial centers in the Northeast and in the Midwest (via the Erie Canal).

According to William T. Hogan in the Economic History of the Iron and Steel Industry in the United States, Vol. 1, between 1860 and 1880 there were seven principal industries that

<sup>&</sup>lt;sup>3</sup> Mineville Miners

consumed iron and steel—railroads, machinery, construction, shipbuilding, agriculture, containers, and the oil and gas industry. In 1860, the railroad industry consumed 235,107 tons of iron, mostly in rails, but also for locomotives, axles, freight cars, and cast iron wheels. A postwar construction boom increased the total mileage of the nation's railroads to 93,267 miles by 1880. The Port Henry and Moriah mines supplied the iron ore that was used in manufacturing thousands of miles of iron and later steel rail for the railroads in the nineteenth century. The Port Henry mines continued to be worked, but by 1905, of the 7.5 million tons of ore produced in the U.S., the Mineville operation accounted for only 1.3% of national production. The Mineville mines stayed open until 1971, but never regained the prominence they had once held.

Forges that processed the iron mined in Essex and adjacent counties were established in every town in the county except one (Smith 1885). Tanneries existed in the towns of Ticonderoga, Willsboro, Chesterfield, Schroon, Essex, Lewis, Westport, Minerva, and North Hudson and consumed enormous quantities of hemlock bark in their operations. Tanneries operated in the county from the 1840s until the 1870s.

Quarrying has also been a notable venture in the county's history in the towns of Willsboro, Essex, and Jay. In 1869, S. W. Clark and Company's limestone quarry on Ligonier Point in the town of Willsboro supplied foundation stones for New York's state capitol building, and stone for piers of the Brooklyn Bridge (Essex County Historical Society, 2009). Additional information on the mining industry is located in the subsidence section of the hazard identification and risk assessment section of this plan.

#### Tourism:

Tourism has also been important to the development of Essex County. Keene Valley, Lake Placid, and Saranac Lake have been hosting visitors since the late 1800s. In order to experience the beauty of the Adirondack's mountains and lakes, grand hotels were established in several locations around the county in the late nineteenth century including the Leland House on Schroon Lake, the Deer's Head Inn and Windsor Hotel in Elizabethtown, and the Lake Placid Club and Grand View House in Lake Placid. Newcomb was the home of two of the "Adirondack Great Camps", Santanoni and the Huntington Estate (now the Adirondack Ecological Center).
Camp Dudley, the oldest operating YMCA camp in the nation, was established on Lake Champlain south of Westport in 1891.

Wilderness resorts such as the Elk Lake Preserve (now Elk Lake Lodge) in the town of North Hudson, the Adirondack Mountain Reserve (now the Ausable Club) in the town of Keene, and the Tahawus Club in the town of Newcomb were established around the beginning of the twentieth century. In 1870, Ausable Chasm on the Ausable River north of Keeseville, began operation as a tourist attraction (Essex County Historical Society, 2009). Several art and music schools were established in the early to mid 1900s which still operate today, including the Seagle Colony in Schroon Lake, the Old Mill Art School in Elizabethtown, and the Meadowmount School in Lewis. In the 1940s and 1950s, during the heyday of the "theme park", several parks were established in the county including "Santa's Workshop" in Wilmington (which is still in operation), Arto Monaco's "The Land of Make Believe" in Upper Jay, and "Frontier Town" in North Hudson. Unfortunately, these parks have closed.

Tourism and hospitality account for a major portion of the employment within the county. Natural attractions such as the Adirondack High Peaks Region, over a half a million acres of New York State Forest Preserve lands, nearly 77,000 acres of lakes and ponds distributed over 390 water bodies, and approximately 200 miles of scenic rivers help to draw nearly three quarters of a million visitors annually to the county. Nearly 20 percent of the private workforce is employed in accommodation and food services, arts, entertainment, recreation, rental and



leasing, retail sales, and all supporting at least in part the tourism economy (SUNY Potsdam, 2004).

<sup>4</sup>Historical attractions such as Fort Ticonderoga and Fort Crown Point along Lake Champlain, and the John Brown Farm near Lake Placid also support the local economy. Lake Placid was home of two winter Olympics, 1932 and 1980. The Olympic Regional Development Authority operates the Whiteface Mountain Ski Center, the Olympic Arena, Bob Sled Run and Ski Jumps, and Olympic Training Facility in Lake Placid, which all contribute to the local economy. Whiteface Memorial Highway was constructed during the great depression and provides automobile access to the top of the mountain. The New York State Department of Environmental Conservation administers ten public campgrounds and numerous boating and



fishing access sites throughout the county. Tourism is an anchor of the economic industry in Essex County.

#### Transportation:

Travel in Essex County is served along its eastern edge by Interstate 87, US Route 9, the Amtrak rail line, and Lake Champlain. Interstate 87 (also known as the Adirondack Northway) runs north from Albany, NY to the US-Canadian border, and connects to the city of Montreal, Quebec. The railroad, which runs adjacent to Lake Champlain in Essex County, consists of both the Amtrak New York City to Montreal, Quebec passenger service, with stations at Ticonderoga, Port Henry, Westport, and Port Kent; and the freight service owned by Canadian-Pacific Railroad. Maritime service connects Lake Champlain to the Hudson River and Albany, NY via the Champlain Canal on the south, and to the St. Lawrence River and Montreal, Quebec on the north via the Richelieu River and Chambly Canal. Ferry service across Lake Champlain from Essex County to Vermont connects Burlington, Vermont to Port Kent, New York and Charlotte, Vermont to Essex, New York.

Local routes running along Lake Champlain consist of NYS Routes 22 and 9N. US Route 9 runs roughly parallel to the Adirondack Northway south to north from Schroon Lake to Keeseville. Travel routes to points in the western part of Essex County are split by the Adirondack High

<sup>&</sup>lt;sup>4</sup> Lake Placid Ski Jump and Whiteface Memorial Highway

Peaks Region. In the southern part of the county, NYS Route 74, the Blue Ridge Road, and NYS Route 28N connect Ticonderoga to Schroon Lake and Newcomb. In the central part of the county, NYS Routes 9N, 73, and 86, connect Westport to Elizabethtown, Keene, Lake Placid, and Saranac Lake. In the northern part of the county, NYS Routes 86 and 9N connect Saranac Lake to Lake Placid, Wilmington, Jay, and Ausable Forks. The economic base of Essex County is still to a large degree dependent on its natural resources.

Essex County and The Adirondack Park are special places. It is populated by people who are strong and independent, as they have to be in a rural area where sometimes even the best planning goes awry and people are stuck without power for hours or days, and one of its assets is the ability of people here to band together in times of trouble, as communities used to do in the old days. And it is breathtakingly beautiful place enough to draw others in to see its environmental splendor.



## Section 4: Hazard Identification and Risk Assessment

#### **Update Process Summary:**

The risk assessment section provides a factual and scientific base to justify activities proposed by Essex County in their mitigation strategy section. The two sections are linked by this understanding and are additionally informed by the hazard rankings, to formulate a plan of action for the county.

Hazards that may affect Essex County are identified and defined in terms of their location and extent, magnitude of impacts, previous events, and probability of future events. Five hazards are ranked as high hazards, seven are ranked as medium hazards and three hazards are ranked as low hazards. This ranking does not predict the future; a low ranked hazard could be the next major disaster to befall a location, and so due weight should be given to each hazard, and to the potential loss estimates for each hazard.

Data sources are noted in the narrative, map or tables. The Works Cited Appendix provides full bibliographic information for each source used in the updated plan. The National Center for Environmental Information (NCEI), what in the past was called National Climatic Data Center (NCDC), site was used to update hazard events from 2011 to 2018. Maps were utilized from the 2014 State Hazard Mitigation Plan. The raw NCEI data can be located in the Appendix.

The following tables indicate the hazards that were addressed in the 2011 Essex County Hazard Mitigation Plan. The 2019 Essex County Hazard Mitigation Plan includes hazards that were not addressed in the 2011 plan. The 2014 New York State Hazard Mitigation Plan was reviewed to provide a list of the hazards that are considered in the updated plan. Rail events are the only non-natural hazard that will be addressed in the updated plan.

Hazards addressed in 2011			
Essex County Hazard Mitigation Plan			
Floods			
Winter Storms			
Windstorms			
Ice Strom			
Wildfire			
Drought			
Dam Failure			

Hazards Addressed in 2019 Essex County Hazard Mitigation Plan			
Avalanche	Climate Change		
Droughts	Dam Failures		
Extreme Temperatures	Earthquakes		
Floods	Hail Events		
Hurricanes	Ice Storms		
Landslides	Land Subsidence		
Rail Events	Severe Winter Storms		
Wind Events	Wildfires		

## Hazard Identification:

Presidential Disaster Declarations

Presidential Disaster and Emergency Declarations are issued when it has been determined that state and local governments need assistance in responding to a disaster event. The following Table identifies Presidential Disaster and Emergency Declarations issued between 1974 and 2018 that have affected Essex County. Additional declarations information can be found on the FEMA website at: http://www.fema.gov/disasters. It is important to note that for instances where hurricanes or tropical storms initiated a disaster declaration, it was largely as a result of the damage caused by the excessive precipitation and flooding effects of coastal storms, not the damaging wind speeds. For some events, there is no cost data available.

<b>Disaster Declarations for Essex County 1974 to 2018</b>				
Number	Туре	Incident Dates	Declaration Date	Cost
DR4322	Severe Winter	March 14 –	July 12 <sup>th</sup> 2017	Public
	Storm and	March 15 2017		\$22,468,462.22
	Snowstorm			
DR4129	Severe Storms	June 28 – July 4	July 12th 2013	Public
	and Flooding	2013		\$57,139,375.79
DR4085 /	Hurricane Sandy	October 27 <sup>th</sup> –	October 30 2012	
EM3351		November 8 <sup>th</sup>		
		2012		
DR4020	Hurricane Irene	August 26 <sup>th</sup> –	August 31st 2011	Individual
		September 5 <sup>th</sup>	-	\$102,888,713.10
		2011		Public
				\$551,424,149.21

DR1993	Severe Storms, Flooding, Tornados and Straight-Line Winds	April 26 – May 8 <sup>th</sup> 2011	June 10 <sup>th</sup> 2011	Public \$34,404,603.07
DR1692	Severe Storms and Inland and Coastal Flooding	April 14 <sup>th</sup> – April 18 <sup>th</sup> 2007	April 24 <sup>th</sup> 2007	Individual \$12,307,474.22 Public \$85,489,609.26
EM 3262	Hurricane Katrina Evacuation	August 29 <sup>th</sup> – October 1 <sup>st</sup> 2005	September 30 <sup>th</sup> 2005	
EM 3186	Power Outage	August 14 <sup>th</sup> – August 16 <sup>th</sup> 2003	August 23 <sup>rd</sup> 2003	
DR 1415	Earthquake	April 2002	May 16 <sup>th</sup> 2002	
DR 1391	Fires and Explosions – World Trade Center	September 11 <sup>th</sup> 2001	September 11 <sup>th</sup> 2001	Public \$4,732,560,097.40
EM 3155	West Nile Virus	May 22 <sup>nd</sup> – November 1 <sup>st</sup> 2000	October 11 <sup>th</sup> 2000	Public \$4,668,512.48
DR 1355	Storms and Flooding	May 3 <sup>rd</sup> – August 12 <sup>th</sup> 2000	July 21 <sup>st</sup> 2000	Public \$31,020,492.12
DR 1296	Hurricane Floyd	September 15 <sup>th</sup> – September 18 <sup>th</sup> 1999	September 19 <sup>th</sup> 1999	Public \$41,182,922.07
DR 1233	Flooding	June 25 <sup>th</sup> – July 10 <sup>th</sup> 1998	July 7 <sup>th</sup> 1998	
DR 1196	Ice Storm	January 5 <sup>th</sup> – January 17 <sup>th</sup> 1998	January 10th 1998	
DR 1148	Storms and Flooding	November 8 <sup>th</sup> – November 15 <sup>th</sup> 1996	December 9 <sup>th</sup> 1996	
DR 1095	Flooding	January 19 <sup>th</sup> – January 30 <sup>th</sup> 1996	January 24 <sup>th</sup> 1996	
EM 3004	Barge Canal Flooding		November 2 1974	

Since 1974, declarations have been issued for a variety of hazard events, including hurricanes, severe winter storms, and flooding. One presidential disaster was declared for the 2002 earthquake that impacted Essex County and surrounding areas. A unique Presidential Emergency Declaration was issued in September 2005; through Emergency Declaration 3235, President George W. Bush declared that a state of emergency existed in the whole of New York and ordered federal aid to supplement the State and local response efforts to help people evacuated from their homes due to Hurricane Katrina. All counties within New York, including Essex County, were indirectly affected by Hurricane Katrina as a result of evacuee

assistance.

A ranking of the hazards by the mitigation advisory committee took place. They ranked the hazards for its impact to the entire area of Essex County. Disaster declarations and NCDC data was used during this ranking of hazards. Some of the hazards can and do occur annually, such as severe winter weather and flood events. Extreme flood and winter events can incur financial impacts to the jurisdictions and residents in Essex County. Earthquakes and ice storms may not occur annually, but when events do occur, the county can be impacted financially from the event. Dam failures are not expected to occur, but when do dams fail, impacts can be to a wide or specific area of the county. Climate Change was not ranked as a hazard, but the effects and impacts to the profiled hazards are addressed in the plan. It is important to note that these rankings are not predictive, and just because a hazard earned a low hazard ranking, it could be the next hazard to befall a locality.

The following criteria describe the probability/frequency ratings for each hazard:

- Low probability (less than once every 50 years)
- Medium probability (once every 8-50 years)
- High probability (once every 1-7 years)

2019 Hazard Ranking			
High Ranked	Floods	Severe Winter	
Hazard		Weather	
	Extreme Temperatures		
	High Wind Events		
Medium Ranked	Drought	Hurricanes	
Hazard			
	Earthquakes	Ice Storms	
	Landslides	Wildfire	
	Rail Events		
Low Ranked	Avalanche	Land Subsidence,	
Hazards		Expansive Soils	
	Dam Failures	Hail events	

Towns and villages also completed hazard event rankings for their individual towns and

villages. This ranking may be different from the overall county hazard ranking, as more specific geographic areas (towns and villages) are performing the hazard ranking. Individual town and village rankings may also be influenced by specific local disasters; i.e. a location that had a event a few years ago, may be more likely to give that event more weight in the hazard rankings.

A review of the previous vulnerability assessment, combined with analysis of new data and information was conducted for each hazard to identify the impact of both natural and manmade hazard events on people, buildings, infrastructure, and the municipality. County, town and village officials believed that this could be a potential hazard and wanted it included as a hazard in this updated plan.

Each hazard is discussed in terms of its potential impact on individual municipalities, including the types of structures that may be at risk. This assessment allows the county and its municipalities to focus on and prioritize local mitigation efforts on areas that are most likely to be damaged, or to require early response to a hazard event. A vulnerability analysis was performed which identifies structures, critical facilities, and/or populations that may be impacted during hazard events and describes what events can do to physical, social, and economic assets. Depending upon data availability, assessment results consist of an inventory of vulnerable structures or populations.

The individual towns and village mitigation sections describe flood vulnerability in that the total structures value in each town and village is identified. The number of flood insurance policies per jurisdiction is also described for each jurisdiction in the flood section. This provides a complete flood vulnerability for each jurisdiction, as well as a county wide comparison for flood vulnerability.

## Avalanche:

Avalanche is defined as a downhill fall of snow, a rapid downhill flow of a large mass of snow or ice dislodged either from a mountainside or on top from a precipice.

#### **Description:**

Avalanches generally occur on slopes greater than 20 degrees. Snow accumulates on mountainsides, and creates conditions conducive to have an avalanche occur. Avalanche hazard increases as snow accumulates after major snowfall events, as well as freeze-thaw conditions on slopes. These freeze-thaw conditions result in slip surfaces for new snow accumulations to slide down the mountainside. More than eighty percent of these occur during or just after large snowstorms. The most avalanche-prone months are, in order, February, March, and January. Avalanches caused by freeze-thaw occur most often in April.

When the snow cover is very unstable, nature often broadcasts clear danger signals. Fresh avalanches are the best clue. Snow that cracks, collapses, or makes hollow sounds is also unstable. Weak layers that are found by digging snow pits are signs of unstable snow. Snow that has become wet from thaw or rain can be dangerous.

About ninety percent of all avalanches start on slopes of 30-45 degrees; about ninety-eight percent of all avalanches occur on slopes of 25-50 degrees. Avalanches release most often on slopes above timberline that face away from prevailing winds. This is because leeward slopes collect snow blowing from the windward sides of ridges. Avalanches can occur, however, on small slopes well below timberline, such as gullies, road cuts and small openings in the trees. Very dense trees can anchor the snow to steep slopes and prevent avalanches from starting, however, avalanches can release and travel through a moderately dense forest. Most avalanches occur in the backcountry, outside of developed ski areas.

#### Extent:

Avalanches can catch skiers, snow shoers, and hikers off guard and can cause them to be buried by snow. These events can cause loss of life or injuries ranging from broken bones and bruising to frostbite.

#### Location:

The High Peaks areas of Essex County are vulnerable to avalanches.

#### **Previous Occurrences:**

The following is a narrative on Avalanche Lake. The European discovery of the lake dates to an 1833 surveying party led by Judge John Richards and Major Reuben Sanford; it was named by William C. Redfield. A large avalanche occurred on August 20, 1869, that created a number of the landslides on Mount Colden, the rubble from which substantially raised the level of the lake. Another avalanche in 1942 caused further slides that raised the lake level by 10 feet (3 m).

Avalanches can impact large areas of the Adirondack Mountain areas, as described in a local newspaper in March 2018. Heavy recent snowfall has prompted the National Weather Service to issue an avalanche warning for the Adirondack and Green Mountains. The warning about "increased risk for avalanches" on steep, open backcountry slopes came from the NWS office in Burlington, Vermont. In New York it covers in western Essex, southern Franklin, southeastern St. Lawrence and western Clinton counties, ranging from Star Lake to Dannemora, including the Tri-Lakes area. *Adirondack Daily Enterprise March 15, 2018*.

Avalanches have occurred in the back-country areas of Essex County. The high peaks areas of western Essex including North Elba, Keene, and Newcomb have had avalanches in the past Avalanche Lake is located between the cliff areas of Avalanche Mountain and Mount Colden. This area has been the location of two previous avalanches. An avalanche occurred on August 20, 1869 which caused the elevation of Avalanche Lake to increase. Additional slides occurred in 1942 that caused the lake to raise an additional 10 feet. (NYS HMP 2014).

The NCEI reports one avalanche. This avalanche occurred on Saturday, February 19, 2010 on Wright Peak which is southwest of Mt. Van Hovenberg. The avalanche occurred at about the 3500 foot level, and was about 400 feet in length. There was one person killed and 5 injured while skiing.

Additional unconfirmed occurrences reports a total of fourteen avalanches (A Short History)" *a* short history of Adirondack avalanches " Phil Brown, The Adirondack Alamac, Feb 1, 2010.

1. March 8, 1975: Three ice climbers were injured while caught in an avalanche on a cliff near Chapel Pond.

2. March 15, 1975: A slide occurred on Macomb Mountain where a snowshoe was swept 500 feet. He was partially buried but managed to escape injury.

3. April 1990: A ice climber was buried by a slide at the bottom of the North Face of Gothics Mountain. He was able to dig himself out of the snow pack from the slide.

4. March 1997: A slide on Mount Colden swept two skiers down a steep slope, but trees prevented them from being swept to the bottom and they were able to ski out.

5. February 27, 2010: A slide occurred on Wright Peak impacting two skiers.

#### Probability of future events:

Based upon the historical avalanche events in Essex County, avalanches will continue to occur in Essex County when conditions are favorable.

- **Low probability** (less than once every 50 years)
- Medium probability (once every 8-50 years)
- High probability (once every 1-7 years)

This hazard is considered a medium probability in the back-country areas of the Adirondacks, but has little if any impact to the structures in these areas. The DEC monitors snow conditions in the back-country areas and will issue avalanche warnings based upon daily conditions as was issued in March of 2018. Local hiking clubs and retail camping stores post daily conditions of trails and other areas and provide educations to back county users.

#### **Potential loss:**

Historic avalanches have occurred in the back-county areas of Essex County where structures are prohibited by the APA. No potential loss was calculated for avalanches due to this fact. Other areas of the county where structures are located have not been impacted by avalanches.

#### Additional information:

DEC had developed an Avalanche preparedness brochure for visitors and tourists who recreate in back country areas in the winter. The brochure provides the following basic awareness considerations. (Avalanche Preparedness)

1. Know basic avalanche rescue techniques.

- 2. Check snow depth and conditions before venturing into the back country.
- 3. Check new snow fall amounts.
- 4. Practice safe route finding.
- 5. Verify degree of slope intended to hike or climb.
- 6. Check the terrain.
- 7. Carry basic avalanche rescue equipment, including a loud whistle.
- 8. Never travel alone.
- 9. Let someone know your route, and expected return time.
- 10. Use common sense.
- 11. Don't be afraid to turn around.

Knowledge and awareness of avalanche probability and conditions will lessen the impact to skiers and people who snowshoe in Essex County. Hikers, residents and other need to be aware that avalanches can occur in Essex County and be prepared for these types of events.

## Climate Change:

Climate change is a shift in long-term weather patterns: temperature, precipitation, wind, and more. While the body of scientific evidence that the climate is changing has been universally accepted by scientist, laymen and others, the complexities within this field of study make it difficult to precisely define the full scope and magnitude of its consequences. However, climate change experts are in agreement that one of the greatest threats posed by global warming is sea level rise, which is expected to increase coastal flood frequency and severity from tropical cyclones, extra tropical cyclones and other severe coastal storms.

This section is not intended to provide a comprehensive review of current scientific evidence and data on climate change, on either a global or jurisdictional scale. It is intended to serve as a guide for identifying potential mitigation activities for New York State agencies and local jurisdictions, and to link these activities to strategies, goals and objectives that address mitigation to the impacts and consequences of climate change. For the purpose of profiling climate change for this plan update, hazards affected by climate change or its consequences are addressed in this section.

While climate change may be due in part to natural processes and forces, it is extremely likely (i.e., with 99-100% certainty) that a significant portion of climate change is due to the influence of human beings on nature. (ClimAID 2011).

This change in climate will result in altering the current probability of natural hazard events for several hazards. Each of the following hazard events will see in increase of the probability of the event occurring in Essex County and the towns and villages of Essex County.

Conditions related to climate change are expected to alter both average climate and the frequency and intensity of extreme weather events in New York State, which will, in turn, exacerbate what in the past were considered to be "expected" impacts and consequences of weather events. These conditions will significantly increase the risk to people, property, environment, and the economy. In addition, indirect impacts on infrastructure may be greater than the direct impacts.

New York State Department of Environmental Conservation Policy CP-49 identifies types of environmental variables vulnerable to climate change as:

• Temperature (air, water and ground)

- Precipitation
- Water quantity/quality
- Snow/ice
- Sea level rise
- Storm frequency and intensity
- Humidity
- Evaporation
- Wind speed and direction

These environmental factors also link to other natural hazards and their impacts that are outlined in this plan, which include coastal erosion, flooding, drought, and wildfire.



#### NYS Hazard Mitigation Plan 2014

The following issues highlighted in the ClimAID reports are also identified in the

National Climate Assessment Report (September 2013) as issues likely to affect New York State in general, and Essex County more specifically / importantly.

• Heat waves, coastal flooding due to sea level rise, and river flooding due to more extreme precipitation events will pose a growing challenge to the region's environmental, social, and economic systems. This will increase the vulnerability of the region's residents, especially populations that are already most disadvantaged.

• Infrastructure will be increasingly compromised by climate-related hazards including sea level rise and coastal flooding, and intense precipitation events.

• Agriculture and ecosystems will be increasingly stressed by climate-related hazards, including drought, higher temperatures, sea level rise and coastal flooding, and more extreme precipitation events. A longer growing season may allow farmers to explore new crop options, but this and other adaptations will not be cost or risk-free, and inequities exist in the capacity for adaptation.

• While a majority of states and several municipalities have begun to incorporate the risk of climate change into their planning activities, implementation of adaptation measures is still at early stages.

Climate change will be addressed here as to the effects on the hazards that are profiled in this plan.

#### Drought:

Climate change will result in the probability of occurrence of drought to be highly likely. Rising summer temperatures, along with little change in summer rainfall patterns, is projected to increase the frequency of short-term (one to three month) droughts. This scenario will lead to impacts on the natural and managed ecosystems across the state. Water management and hydrology are also affected.

Essex County experienced a small drought event in 2018, because normal rains have not occurred. Farmers first hay crop was reduced by half. Farmers who produce vegetables for sale also had to rely on watering of crops to ensure a harvest. The apple crops north of Essex County were smaller than normal in size due to the drought. This is anecdotal information the contractor obtained from conversations with a local cattle operations' manager, farmers and apple crop operations.

Essex County should anticipate that drought will be impacted by climate change in the future. These droughts may have a longer duration and intensity. Historic drought data can be found in the relevant section of the hazard identification and risk assessment chapter.

#### **Extreme Temperatures:**

Climate change will result in the probability of occurrence of extreme temperature to be highly likely. Temperatures in the Northeast are projected to increase an additional 4.0 to 9.0 degrees Fahrenheit in New York State by the year 2080. Consequences of this change will lead to increased energy usage with direct impact on energy demand and supply.

Since 1970, the annual average temperature in the Northeast has increased by 1.5°F, with winter temperatures rising twice as much. Warming has resulted in many other climate- related changes, including:

- More frequent days with temperatures above 90°F
- A longer growing season
- Increased heavy precipitation

The Northeast is projected to face continued warming and more extensive climate-related changes, some of which could dramatically alter the region's economy, landscape, character, and quality of life. Also, as more northern areas warm up, non-native insects and pathogens thrive and expand territory, which may lead to an increasing use of pesticides as the number of affected areas grows. Earlier springs and warmer winters will also encourage growing insect populations, as a greater percent survive the winter cold spells.

In addition, changing temperatures will encourage weed-growth to move farther northward, competing with, and sometimes overcoming, agricultural crops and significantly increasing the costs to produce food. (Confronting Climate Change)

The following graphic displays the effect of changing climates.



Source: Confronting Climate Change in the U.S. Northeast: Science, Impacts, and Solutions, Northeast Climate Impacts Assessment (2007), Union of Concerned Scientists

Impacts from this change in climate would include the following.

• Winters in the Northeast would be much shorter with fewer cold days and more precipitation.

• The length of the winter snow season would be cut in half across northern New York, and reduced to a week or two in southern parts of the region.

• Cities that today experience few days above 100°F each summer would average 20 such days per summer.

• Short-term (one- to three-month) droughts are projected to occur as frequently as once each summer in the Catskill and Adirondack Mountains, and across the New England states.

• Hot summer conditions would arrive three weeks earlier and last three weeks longer into the fall.

Essex County has recently experienced higher winter temperatures than in the past. December 25th 2016 was 60 degrees Fahrenheit. Snows have been less than in the past, with extreme snow

events, or rain during the normal snow period. Anecdotally, snowfalls have been occurring less frequently and generally with less accumulation than in the past, but with extreme weather events being more likely in warming environments, it increases the likelihood of catastrophic winter precipitation events (either rain or snow depending on specific weather patterns).

Summer temperatures have also been increasing. The summer season of 2018 saw record setting heat on 19 days. Frequent temperatures of 92 to 97 have occurred regularly in the summer of 2018.

Essex County may experience longer and more intense heat waves in the summer. Essex County can anticipate milder winters and less consistent snow cover, but may experience more extreme snow events.

#### Precipitation, Flooding and Landslides:

Climate change will result in the probability of occurrence of precipitation, flooding to be highly likely. Landslides are considered to be highly unlikely due to climate change. Precipitation patterns related to climate change are expected to shift in the coming decades. The following figure illustrates the potential increase in precipitation that could impact New York State by the end of the century. Based on this projection, areas of New York State could see an increase of 3 to 6 inches of rainfall per year. Additionally, this precipitation is projected to occur more often as heavy downpours. A new term, rain bombs, has been coined to reflect these extreme rainfall events. These rain bomb events are characterized by extreme rain fall events over a short period of time, leading to flash floods and impacts to the built environment with these extreme rain events. Increased precipitation and downpours will lead to more flooding, impacting people, property, and the environment. It can also potentially increase landslides due to higher moisture levels in soils. In addition, changes in precipitation will impact crop production and other segments of the agricultural economy.

Essex County will see an increase in rain bomb events as well as an increase in rain amounts. Many of the recent flood events in New York and in the nation have been extreme events characterized by intense rainfall over smaller geographic areas that leads to extreme flash floods.



## Change in Precipitation by the End of 21st Century

#### Winter Events:

Climate change will result in the probability of occurrence of winter events to be highly likely. The Northeast Region is also projected to see an increase of approximately 20% to 30% in winter precipitation. Projections are based on lower- or higher-emissions scenarios, which also identify the potential number of "snow-days" across the state. In a high- emission scenario, the Adirondack region could see the snow season cut in half; a low- emission scenario would retain about three-quarters of its snow season, or two to three weeks of snow cover per winter month; either scenario would carry over and impact the region's winter tourist economy.

#### **Confronting Climate Change:**

Long-time Essex County residents with forty plus years of residency have anecdotally spoken of milder winters, and higher temperatures with less overall snow amounts and more rain events during the winter.

#### **Tropical Storms:**

Climate change will result in the probability of occurrence of tropical storms to be highly likely. Although climatologists are unsure whether the increasing cycle of tropical storm events since 1995 is part of a multi-decadal cycle that will eventually decline, or whether the cycle will be influenced by climate change leading to increases in the cycle, projections indicate that the severity of all storms and their impacts are increasing and will continue to do so.

Studies link increased tropical storm energy and duration to warmer ocean temperatures. Return intervals of severe storms may also be shortened, resulting in high tide peaks, for example, that occur once every ten years rather than once every hundred years.

Essex County may be impacted by tropical storm events, as these have also increased in number and intensity. Tropical Strom Irene impacted Essex County and other counties with historic damages. Irene and its effects are discussed more broadly in the relevant HIRA chapter.

#### Wildfire:

Climate change will result in the probability of occurrence of wildfires to increase. Climate changes directly and indirectly affect the growth and productivity of forests. Directly, due to changes in atmospheric carbon dioxide and climate, and indirectly through complex interactions in forest ecosystems. Climate also affects the frequency and severity of many forest disturbances, such as insect outbreaks, invasive species, wildfires, and storms.

Forests cover approximately 60% of the New York State's total land area. As temperatures increase, the suitability of a habitat for specific species of trees changes. In addition, there is growing evidence that prolonged heat waves are likely to lead to a greater incidence of wildfires.

The following graphic illustrates the relationship between conditions related to climate change, including extreme temperatures and drought, to wildfires, which can subsequently lead to impacts to the population, environment, and agriculture.

## **CLIMATE CHANGE AND WILDFIRES** Stronger winds from bigger storms will mean more fallen branches for wildfires to consume. Increased extreme climate change will wet weather primes d to more hot forests for fire by s compared to growing more fuel d. Higher temps cause fiercer fires. Drought and warmer springs mean smaller snow packs and drier forest fuel. CLIMATE DESK

#### Power failures:

Power failures have occurred on numerous occasions in various locations throughout the state and Essex County, due to a variety of causes. Since a power failure has the potential of being a result of conditions caused by climate change, the probability of failure of the energy system increases as the intensity of extreme events increases. This type of incident, depending on severity, could pose significant health and safety risks and would normally require the involvement of local emergency management organizations to coordinate provisions for food, shelter, water, and heating. Climate change will result in the probability of occurrence of power failures due to wind, wind storm events and other hazards to be highly likely.

#### Conclusion:

The entire state is potentially vulnerable to the overall effects of climate change related to extreme temperatures and precipitation.

Because of the difficulty in attributing the scope and severity of any particular event to climate

change, it has not been identified as a specific hazard in relation to Federal Disaster Declarations, nor is it likely to be in the next several years. Climate change involves interrelated complexities of multiple hazards and conditions, as well as impacts and consequences. Although some industries (such as insurance companies) have started developing methodologies for taking climate change into account, tracking occurrences of climate change over time from a disaster impact probability and severity analysis will be difficult. Future studies and research may result in an accepted methodology for measurement.

There is little disagreement within government, academic, and scientific circles that changes occurring in the atmosphere over multiple decades are impacting the earth's climate. Based on research studies, reports, records of historical events over long periods of time, and predictive models, it is highly likely that climatic changes that New Yorker's have been experiencing will occur much faster in the coming years. Although the extent and magnitude of its impact is not fully determined, ongoing research may further refine predictions for probability and severity.

Essex County will also be impacted by climate change. With warmer summers, Essex County can expect a rise in the number of extreme rain events as well as droughts, and with warmer winters, less snowfall accumulation alongside the increased possibility of extreme snow and ice events. Also, there will be an increased incidence of rainfall instead of snow in winter leading to less snowpack on the mountains and a risk of drought and wildfires in summer. This seasonal uncertainty will affect the decisions of farmers, business owners, residents, and tourists, who, in the absence of the historic weather patterns they relied upon to make decisions, will be left flying blind into a future that becomes more unpredictable each year.

Droughts will be affected and we can expect to see more short term seasonal droughts. Winters will be impacted in that historic normal snows will continue to be impacted in less normal snow and more extreme snow events. Rains during the winter will continue to occur and may even increase as the temperature increases. Ice storms may increase due to the rising annual temperatures. Floods will be impacted as more extreme rain bomb events may occur. Extreme summer and winter temperature will also be impacted by climate change. Summer temperatures have increased in the recent past, with more records broken each year. Wildfires will also be impacted by climate change. Essex County can anticipate additional wildfires that may increase in size due to observed droughts.

Climate Smart Communities is a state-local partnership to reduce greenhouse gas emissions, save taxpayer dollars, and advance community goals for health and safety, economic vitality, energy independence and quality of life. Communities that enroll in the program are asked to do several key activities such as: identifying sources of greenhouse gases in the community; setting goals for emission reduction; and developing a climate action plan. They are also expected to implement their plans and encourage "go green" activities with businesses, institutions and individuals. The Climate Smart Community Program released "Climate Smart Resiliency Planning: A Planning Evaluation Tool for New York State Communities" in September 2013. This document, based on a similar program initiated in New Jersey, is a comprehensive self-assessment tool to address climate change effects and risks in future community-level plans, and to help local decision-makers identify planning and adaptation opportunities to reduce their community's vulnerability to climate hazards. Essex County and two towns – Lewis and Schroon - participate in this program.

Individuals, local governments, state governments, the federal government, and most importantly businesses can implement projects and programs to reduce the effects of climate change. Now is the time for action, as scientists are continually analyzing this hazard and promoting initiatives to reduce the effect of climate change.

## **Dam Failure:**

A dam is a barrier across flowing water that obstructs, directs, or slows down water flow. Dams provide benefits such as flood protection, power generation, drinking water, irrigation, and recreation. Failure of these structures results in an uncontrolled release of impounded water. Failures are relatively rare, but immense damage and loss of life is possible in downstream municipalities when such events occur. Aging infrastructure, hydrologic, hydraulic and geologic characteristics, population growth, and design and maintenance practices should be considered when assessing dam failure hazards.

### Location and:

Dam failures most often occur during or after a massive rainfall, flooding, or spring thaws,



sometimes with little to no warning. Depending on the size of the water body where the dam is constructed, water contributions may come from distant upstream locations.

Essex County has 133 dams listed on the New York State DEC website. In addition to the dams located within Essex County, dams in other counties may have the potential to inflict severe loss of life and property to residents of Essex County.

#### Extent:

Dam failures can pose a serious threat to municipalities located downstream from major dams. The impact of a dam failure is dependent on the volume of water impounded by the dam and the amount of population or assets located downstream. Catastrophic failures are characterized by the sudden, rapid, and uncontrolled release of impounded water or any other fluid or semi- fluid from a dammed impoundment or water body.

The federal government has a limited role in dam safety. Besides being responsible for federal dams, the U.S. government regulates nonfederal dams used to generate hydroelectric power and those used in mining. However, most dams are not subject to federal oversight. States bear most of the responsibility for dam safety regulation in the United States. In New York State, DEC is responsible for regulating most dams.

Owners are generally responsible for inspecting and maintaining their dams. However, DEC has the authority to inspect dams out of concern for public safety, and to order owners to repair or even remove those posing a threat of personal injury or substantial damage to property or natural resources. DEC aims to inspect most high-hazard dams every two years and the intermediate hazard ones every four years.

Certain state-owned dams are not subject to DEC dam safety regulations. However, DEC's practice is to inspect State-owned dams and monitor their safety programs as if they were subject to DEC regulation.

In the wake of a 2008 audit of DEC's dam safety program by the Office of the New York State Comptroller (OSC), DEC strengthened its dam safety regulations. The new regulations, which took effect in 2009, include a requirement that most owners of high-hazard and intermediate-hazard dams have an engineering assessment (EA) conducted at least every ten years and submit the report to DEC. These regulations do not apply to certain state-owned and public authority-owned dams. Also, at DEC 's discretion, owners of dams regulated by the Federal Energy Regulatory Commission (FERC) may file equivalent EA reports prepared for FERC. For those subject to DEC regulations, the first EA reports were due between 2012 and 2015, depending on the structure's size and hazard classification. However, DEC's data indicates that more than 30 local high-hazard and over 100 local intermediate-hazard dams have no EA report on file. High-hazard dams are much more likely than those rated as intermediate-hazard to have an EA.

The dam safety regulations implemented in 2009 also require most owners of intermediate- and high-hazard dams to file an Emergency Action Plan (EAP) with DEC and certify annually their compliance with certain safety regulations. These include requirements pertaining to EAP reviews and updates, as well as the development and implementation of maintenance and

inspection plans.

Dam failures may or may not leave enough time for evacuation of people and property, depending on their abruptness. Seepages in earth dams usually develop gradually. Seepages occur when water leaks into the earthen levee or dike. If the embankment damage is detected early, downhill residents have at least a few hours or days to evacuate. Failures of concrete or masonry dams tend to occur suddenly, sending a wallof water and debris down the valley at more than 100 mph. Survival would be a matter of having the good fortune not to be in the flood path at the time of the break. Dam failures due to the overtopping of a dam normally give sufficient lead time for evacuation.

#### **Previous Occurrence:**

There has been one dam breach in Essex County. Tropical Storm Irene rains caused the failure of a dam in the forever wild areas of the Adirondack Park. Warren County had a dam failure and is included in this plan update due to the dam failure being close to Essex County.

#### The Hadlock Pond Dam Failure (Town of Fort Ann, Warren County, 2005)

In 2005, a newly repaired dam on Hadlock Pond, a 220-acre recreational lake in the Town of Fort Ann in Washington County, collapsed. Nearby homeowners had to evacuate as local roads and downstream homes flooded. A new replacement costing \$4.3 million was completed in 2007. In 2011, after years of litigation, a settlement was reached between the Town of Fort Ann and the firm that built the failed structure, that required the firm to pay the Town a total of \$3.48 million. Property owners also pursued legal action against the Town and others to recover damages stemming from the failure.

#### Marci Dam Breach from Tropical Storm Irene

Marcy Dam is a wooden dam on the Marcy Brook in the Adirondack High Peaks in North Elba, New York, United States; it impounds Marcy Dam Pond. An early version of the dam was constructed by the Conservation Corps during the 1930s. It was rebuilt most recently during the early 1970s. Marcy Dam can be reached only by hiking; it lies 2.1 miles (3.4 km) from the Adirondack Loj at an elevation of 2,362 feet (720 m) surrounded by Whales Tail Mountain, Wright Peak, Algonquin Peak, Avalanche Mountain, Mount Colden, TR Mountain, and Phelps Mountain. During Hurricane Irene, the dam was damaged due to flooding and the pond was partially drained. The trail that went over the dam has been rerouted downstream. The dam will not be repaired or replaced.



Marcy Dam after Tropical Storm Irene

#### **Probability of Future Events:**

Provided that adequate engineering and maintenance measures are in place, the future occurrence of dam failures in Essex County can be considered a low probability, but possible.

- Low probability (less than once every 50 years)
- Medium probability (once every 8-50 years)
- High probability (once every 1-7 years)

The presence of structural integrity and inspection programs significantly reduces the potential for major dam failure events to occur.

#### **Potential loss:**

Property and populations located downstream from any dam are vulnerable to dam failure. Dams are classified by size and the amount of loss of life and economic loss expected in a failure event. The text below describes the dam classification; and although the size of a dam may result in varying impacts, the hazard potential classification of Category C dams is most important, since they have the potential to cause substantial loss of life and excessive economic loss.

New York State uses a dam downstream hazard classification system similar to that of many states and federal agencies. The following three classification levels are used in New York. They are listed in order of increasingly adverse consequences from a dam failure. These classification levels build on each other, with the higher levels adding to the consequences of the lower levels. These downstream hazard classifications are defined in 6 NYCRR Subpart 673.5(b), and are repeated here for reference.

(1) **Class "A" or "Low Hazard" dam**: A dam failure is unlikely to result in damage to anything more than isolated or unoccupied buildings, undeveloped lands, minor roads such as town or county roads; is unlikely to result in the interruption of important utilities, including water supply, sewage treatment, fuel, power, cable or telephone infrastructure; and/or is otherwise unlikely to pose the threat of personal injury, substantial economic loss or substantial environmental damage.

(2) **Class "B" or "Intermediate Hazard" dam:** A dam failure may result in damage to isolated homes, main highways, and minor railroads; may result in the interruption of important utilities, including water supply, sewage treatment, fuel, power, cable or telephone infrastructure; and/or is otherwise likely to pose the threat of personal injury and/or substantial economic loss or substantial environmental damage. Loss of human life is not expected.

(3) **Class "C" or "High Hazard" dam:** A dam failure may result in widespread or serious damage to home(s); damage to main highways, industrial or commercial buildings, railroads, and/or important utilities, including water supply, sewage treatment, fuel, power, cable or telephone infrastructure; or substantial environmental damage; such that the loss of human life or widespread substantial economic loss is likely.

A fourth classification is provided in 6 NYCRR Subpart 673.5(b) to track the files of structures

that were never built or are no longer dams:

(4) **Class ''D'' or ''Negligible or No Hazard'' dam**: 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. The department may retain pertinent records regarding such dams.

Dams that have not been assigned a classification of failure damage potential are assigned a 0 rating by the state. These dams should be assessed as to their potential impact on downstream communities.

Public and Private Dams in Essex County				
Name	Hazard Code	River or Stream Name	Municipality	Owner Type
Powell Mill Dam	0	Boquet	Lewis	n/a
Meadow Farm Dam	0	TR-Bouquet	Lewis	n/a
JD's Dam #1	0	Phelps Brook	Lewis	Private
JD's Dam #2	0	Phelps Brook	Lewis	Private
Smallwood Dam	0	Phelps Books	Lewis	n/a
Richard Sherman Pond Dam	0	TR-Boquet	Westport	n/a
Edwin Barber Fish Pond Dam	0	TR-Hammond Brook	Westport	n/a
Paradox Lake Dam	0	TR-Schroon	Schroon	Not found
Pyramid Lake Dam	0	Pyramid Brook	Schroon	Private
Wolf Pond Dam	0	Wolf Pond Brook	North Hudson	State
(203-0788)	0	West Branch Trout Brook	Schroon	Not found
Cosmo Pacetta Dam	0	Minerva Stream	Minerva	n/a
Kiln Pond Dam	А	TR-Trout Pond Brook	Chesterfield	Private
Nx2hvn	А	TR-N BR Bouquet River	Lewis	n/a
Eric Johnson Pond Dam	А	TR-Ausable River	Chesterfield	n/a
Geideiko Pond Dam	А	TR-Ausable River	Jay	n/a
Sweatt Dam	А	TR-Bouquet River	Lewis	n/a
North Pond Dam	А	TR-Bartlett Brook	Moriah	Local Government
Witherbee Reservoir Dam	А	Mill Brook	Moriah	Local Government
Tub Mill Pond Dike	А	Mill Brook	Moriah	n/a
Rockport Pond Dam	А	TR-Mill Brook	Moriah	Private
Rosenberg Trout Pond Dam	А	Falls Brook	Elizabethtown	n/a
Moss Pond Dam #2	А	Moss Pond Brook	North Hudson	Private
Finch Pond Dam	А	Moss Pond Brook	North Hudson	Private
Underwood Dam	А	New Pond Brook	North Hudson	Private
New Pond Brook Dam	A	New Pond Brook	North Hudson	Private

Name	Hazard Code	River or Stream Name	Municipality	Owner Type
New Pond Dam	А	New Pond Brook	North Hudson	Private
Bartlett Pond Dam	А	Bartlett Brook	Moriah	Local
				Government
Upper Feeder Pond Dam	А	TR-Mill Brook	Moriah	Public Utility
Walter Baumann Dam	А	TR-Falls Brook	Elizabethtown	n/a
Pharaoh Lake Dam	А	Pharaoh Brook	Schroon	State
Eagle Lake Dam	А	Paragon Brook	Ticonderoga	State
Palmer Lake Dam	А	The Branch	North Hudson	State
C H Walker Dam	А	Black Brook	North Hudson	State
Augur Lake Dam	A	Mud Brook	Chesterfield	Local Government
Burnham Dam	А	TR-Lake Champlain	Chesterfield	Private
Highlands Forge Lake Dam	А	TR-Lake Champlain	Willsboro	Private
Saw Mill Dam	А	Bouquet River	Willsboro	State
Gay Pond Dam	А	Derby Brook	Lewis	n/a
Essex County Park Dam	А	Burpee Brook	Lewis	Not found
Friend Cross Dam	А	TR-N Branch Bouquet River	County, Willsboro	n/a
Lewis Farmhouse Dam	А	None	Essex	n/a
Foley Dam	А	Bouquet River	Westport	Private
Fire Dam Reservoir Dam	А	Hammond Brook	Westport	n/a
(238-0589)	А	TR-Hammond Brook	Westport	Not found
Port Henry Reservoir Dam	А	Bartlett Brook	Moriah	n/a
Republic Steel Dam	А	TR-Bartlett Brook	Moriah	n/a
Defense Plant Corp Pond Dam (mill #7)	А	Bartlett Brook	Moriah	n/a
Bradamant Corporation Pond Dam	А	TR-Hoisington Brook	Westport	Private
Fieldston Pond Dam	А	Bouquet River	Westport	n/a
Westport Dam	А	TR-Hoisongton Brook	Westport	n/a
Lower Falls Dam	А	Ticonderoga Creek	Ticonderoga	Private
International Paper C. Dam #1	А	Ticonderoga Creek	Ticonderoga	Private
Mill C Dam	А	Ticonderoga Creek	Ticonderoga	Private
Mill B Dam	А	La Chute River	Ticonderoga	Local Government, Private
Crammond Pond Dam	А	Chilson Brook	Ticonderoga	n/a
Jay Water District Dam	A	Rock Branch Brook	Jay	Local Government
Doyle Wildlife Pond Dam	А	TR-E Branch Ausable River	Jay	Private
Daniels Dam	А	TR-Ausable River	Jay	n/a
Gooseneck Reservoir Dam	А	TR-Eagle Lake	Ticonderoga	State
Putnam Pond Dam	А	Putnam Creek	Ticonderoga	State

Name	Hazard Code	River or Stream Name	Municipality	Owner Type
Sawmill Pond Dam	А	Paradox Creek	Crown Point	Private
Hammond Pond Dam	А	Black Brook	North Hudson	State
Flemings Pond	А		Crown Point	Not found
Guide Board Dam	А	Hudson River	Newcomb	Private
Goodnow Flowage Dam	А	Goodnow River	Newcomb	Private
Arbutus Pond Dam	А	TR-Rich Lake	Newcomb	n/a
Wolf Pond Dam	А	TR-Ray Brook	North Elba	n/a
Camp Adirondack Dam	А	Ray Brook	North Elba	State
Mckillip Slough Dam	А	TR-Saranac River	St. Armand	State
Kelley's Slough Dam	А	TR-Saranac River	St. Armand	State
Mckenzie Pond Dam	А	Mckenzie Brook	North Elba	Private
Chubb River Dam	А	Chubb River	North Elba	n/a
Camp Adirondack Dam	А	TR-Ray Brook	North Elba	State
Mckenzie Pond Dam	А	Mckenzie Brook	North Elba	Local Government
Oliver Pond Dam	А	TR-Minerva Stream	Schroon	State
Labier Dam	А	Boreas River	North Hudson	State
Henderson Lake Dam	А	Indian Brook	Newcomb	Private
National Lead Company Dam	А	Hudson River	Newcomb	Private
Gladd Pond Dam	А	Lincoln Brook	St. Armand.	n/a
White Brook Reservoir Dam	А	White Brook	Wilmington	Local Government
Red Brook Reservoir Dam	А	Red Brook	Wilmongton	Local Government
Mill Pond Dam	A	Chubb River	North Elba	Local Government
Mirror Lake Dam	А	TR-W Branch Ausable	Lake Placid	Local Government
Adirondack Mountain Reserve Dam	A	East Branch Ausable	Keene	n/a
Gill Brook Dam	А	Gill Brook	Keene	n/a
Lake Colden Dam	А	Calamity Brook	Newcomb	State
Marcy Dam	А	Marcy Brook	North Elba	n/a
Last Chance Ranch Pond Dam	A	TR-Indian Pass Brook	North Elba	n/a
Elk Lake Dam	А	TR-The Branch	North Hudson	Private
Flowed Lake Dam	A	Opalescent River	Newcomb	State
Boreas Pond Dam	A	Boreas River	North Hudson	State
Nowicki Pond Dam	A	TR-Dart Brook	Keene	n/a
Indian Pass Ranch Dam	A	Ausable River	North Elba	Private
Smith Pond Dam	А	Rogers Brook	Schroon	n/a
Minerva Lake Dam	A	Jones Brook	Minerva	Local
				Government
Steinhoff Dam	А	West Branch Ausable	Wilmington	n/a

Name	Hazard Code	River or Stream Name	Municipality	Owner Type
Upper Jay Reservoir Dam	А	Lewis Brook	Wilmington	n/a
Lake Placid Dam	А	Outlet Brook	North Elba	Private
Moxham Pond Dam	А	TR-Kelso Brook	Minerva	n/a
Kelso Brook Dam	А	Kelso Brook	Minerva	n/a
Lyon Wildlife Pond Dam	А	TR-Schroon Lake	Schroon	n/a
O'Brien Wildlife Marsh	А	TR-Kelso Brook	Minerva	n/a
Dam				
Griffin Pond Dam	А	TR-Harris Lake	Newcomb	n/a
Moose Pond Dam	А	Wolfe Creek	Minerva	Private
Crocker Pond Dam	А	TR-Hudson River	Newcomb	n/a
Beaver Flow Dam	А	Beaver Brook	Newcomb	Private
Dam ate West End of	А	W. Branch Goodnow	Minerva	Private
Goodnow Lake				
Upper Desjardins Pond	A		Jay	Not found
Lower Desjardins Pond	A		Jay	Not found
Moriah Shock Correctional	А		Moriah	State
Facility Dam				D.I.
Balfour Lake Dam	A	Stony Pond Brook	Minerva	Private
Waltz Pond Dam	A	TR-Black Brook	Elizabethtown	Private
Tub Mill Pond Dam	В	Mill Brook	Moriah	Private
Moss Pond Dam #1	В	Moss Pond Brook	North Hudson	Private
D Mill at Ticonderoga Dam	В	La Chute River	Ticonderoga	Private
Penfield Pond Dam	B	Putnam Creek	Crown Point	Private
Wilmington Dam	В	W. Branch Ausable River	Wilmington	Local Government
Lower Ausable Lake Dam	В	E Branch Ausable River	Keene	Private
Olmstedville Pond Dam	B	Trout Creek	Minerva	Local
	2	Tiour creek		Government
Horseshoe Pond Dam	В	Horseshoe Pond Brook	Schroon	State
Sharron Pond Dam	В		Minerva	Private
Kingdom Dam	С	Black River	Elizabethtown	State
Lake George Outlet Dam	С	Ticonderoga Creek	Ticonderoga	Private, State
Rome Dam	С	W. Branch Ausable River	Jay	Local
				Government
Prescott Marsh Dam	D	Mud Brook	Chesterfield	Not found
Big Pond Dam	D	Derby Brook	Lewis	Private
Grist Mill Dam	D	Bouquet River	Westport	n/a
Mill Brook Lower Dam	D	Mill Brook	Moriah	Local
				Government,
				Private
Thew Pond Dam	D	Spruce Mill Brook	Lewis	n/a
Lake Placid Village Dam	D	Chubb River	Lake Placid	Local
				Government
Piper Pond Dam	D	TR-Deer Creek	Minerva	n/a
Ausable Quarry Dam	D	Ausable River	North Elba	State

Communities downstream of high-hazard and intermediate dams should pay particular attention to inspection and maintenance activities that keep their communities safe. With these activities and oversight from the DEC, vulnerability decreases significantly.

#### **Potential loss:**

Dam inundation mapping determines the potential number of structures that would be impacted from a dam failure. Many of the dams in Essex County lack these inundation maps. There is a total of 232 dams in Essex County according to the DEC. Only 10 dams have inundation mapping completed. **Potential loss could not be determined due to a lack of inundation mapping on 222 dams.** 

Residents and other may not be aware of dams upstream of their locations. The County should consider an education and outreach campaign to educate residents downstream of dams on actions to take if a failure would occur. This would potentially reduce the potential for loss of life if a dam failure occurred in Essex County.

### DROUGHT:

Drought is defined as the following: "Drought is a natural climactic condition which occurs in virtually all climates, the consequence of a natural reduction in the amount of precipitation experienced over a long period of time, usually a season or more in length. High temperatures, prolonged winds, and low relative humidity can exacerbate the severity of drought. This hazard is of particular concern due to the presence of farms as well as water-dependent industries. A prolonged drought could severely impact these sectors of the local economy, as well as residents who depend on wells for drinking water and other personal uses. (National Drought Mitigation Center, 2006)."

#### **Description:**

Droughts are regional climactic events, and when these events occur in Essex County the impacts can be felt across the County, as well as areas outside the County boundaries. The spatial extent for areas of impact can range from counties and areas in New York to the entire Mid-Atlantic region. Areas with extensive agricultural land use (farmland) are most vulnerable to an economic impact from drought. Are they any more vulnerable, or is it that impacts are more apparent there as opposed to, say a suburb? Suburbs are equally vulnerable, as California showed last year in imposing water restrictions all over the place – so I don't know if I would say vulnerable here. Farms and farming activities are scattered throughout the Essex County. Additionally, areas that are heavily forested can be negatively impacted by drought. Droughts can also impact the water resources that are utilized for human activities. Droughts can impact natural systems and have effects on these natural systems.

The impacts of drought can include:

**Hydrologic effects** – lower water levels in reservoirs, lakes, and ponds; reduced streamflow; loss of wetlands; estuarine impacts; groundwater depletion and land subsidence; effects on water quality such as increases in salt concentration and water temperature.

**Damage to animal species** – lack of feed and drinking water; disease; loss of biodiversity; migration or concentration; and reduction and degradation of fish and wildlife habitat.

**Damage to plant communities** – loss of biodiversity; loss of trees from urban landscapes and wooded conservation areas, increased number and severity of fires, reduced soil quality. **Air quality effects** – dust and pollutants, loss of quality in landscape.

#### Extent:

The magnitude of droughts can depend on many factors such as length or duration, intensity, geographic area or extent, and the demand on the water resources of the area.

The ability to monitor droughts can be accomplished using many methods. To quantify drought and monitor its development, many drought indices have been developed and applied. Among them, the Palmer Drought Severity Index (PDSI) is the most prominent index of meteorological drought used in the United States for drought monitoring and research, and its variants have been used to quantify long-term changes in aridity over land in the 20th and 21st century. The PDSI has also been widely used in tree-ring based reconstructions of past droughts in North America and other regions. This PDSI is best at monitoring drought conditions of 12 months or more, but can underestimate the effects of short term droughts such as a drought during one single growing season.

The PSDI was developed in 1965 and indicates long term and abnormal moisture deficiency or excess. The following table lists the classifications used in the PDSI. Normal conditions are shown as zero, whereas drought conditions are indicated by negative numbers. The higher negative numbers represent more adverse drought conditions.

Palmer Drought Severity Index (PSDI) classifications (NDMC, 2009).			
SEVERITY CATEGORY	PSDI VALUE		
Extremely wet	4.0 or more		
Very wet	3.0 to 3.99		
Moderately wet	2.0 to 2.99		
Slightly wet	1.0 to 1.99		
Incipient wet spell	0.5 to 0.99		
Near normal	0.49 to -0.49		
Incipient dry spell	-0.5 to -0.99		
---------------------	---------------		
Mild drought	-1.0 to -1.99		
Moderate drought	-2.0 to -2.99		
Severe drought	-3.0 to -3.99		
Extreme drought	-4.0 or less		

The New York State Department of Environmental Conservation also monitors drought conditions throughout the state. The New York State Drought Index compares four parameters to historic or "normal" values to evaluate drought conditions; these are stream flows, precipitation, lake and reservoir storage levels, and groundwater levels. New York's Drought Management Task Force uses those factors as well as water use, duration of the dry period, and season to assess drought in different parts of the state.

New York also uses the Palmer Drought Index, a measure of soil moisture calculated by the National Weather Service. The two indices show us different things about drought. The Palmer Index, with its emphasis on soil moisture, helps us understand agricultural impacts. The State Index helps assess the impact on human welfare and the regional economy.

There are four stages of drought that can be declared in New York State. The Drought Plan describes the actions to be taken during each drought stage by water purveyors, towns and villages, water authorities, and other agencies with water supply responsibilities.

**Drought Watch** - The least severe of the stages, a drought watch is declared when a drought is developing. Public water suppliers begin to conserve water and urge customers to reduce water use.

**Drought Warning -** Voluntary water conservation is intensified. Public water suppliers and industries update and implement local drought contingency plans. Local agencies make plans in case of emergency declaration.

**Drought Emergency** - The Governor may declare emergency. The Disaster Preparedness Commission coordinates response. Mandatory local/county water restrictions may be imposed. Communities may need to tap alternative water sources to avoid depleting water supplies, protect public health and provide for essential uses.

**Drought Disaster** - Disaster plans are implemented. Water use is further restricted. The Governor may declare disaster and request federal disaster assistance. Emergency legislation may be enacted. The state provides equipment and technical assistance to communities.

#### Location:

New York is divided into nine drought management regions based roughly on drainage basin (watershed) and county lines. DEC monitors precipitation, lake and reservoir levels, stream flow, and groundwater level at least monthly in each region, and more frequently during periods of drought. DEC uses this data to assess the condition of each region, which can range from "normal" to "drought disaster".

Essex County is located in area 5 of the NYS drought management areas. The entire county is located in this area. Droughts can impact Essex County differently. The eastern part of the county along the Lake Champlain area can see more of the effects from droughts, when compared to the western areas of the county. The western part of the county is more mountainous and sees more rainfall based on the topography. As clouds laden with rain rise to clear these mountainous areas, the water vapor cools and is deposited as rain on the windward side of the mountains.

The following map indicates the drought management regions in New York State.



#### **Previous Occurrences:**

Essex has never been declared as a presidential disaster for droughts. The National Center for Environmental Information (NCEI) has no records of recorded drought. The following data on droughts was obtained from the United States Drought Monitor website.

Long term drought is tracked by the DEC. This data records the number of weeks in each of the five drought categories, DO to D4, as well as recording the weeks of no drought occurring. This data provides a long term as well as short term analysis of drought conditions. Comparisons can be made on an annual to weekly basis to see drought conditions in Essex County. The data provided is a summary of each year based on weeks of time in which any part of the county was in a particular drought category.

	Dryness Categories
D0	Abnormally Dry-used for areas showing dryness but not yet in drought, or for areas recovering from drought.
	Drought Intensity Categories
D1	Moderate Drought
D2	Severe Drought
D3	Extreme Drought
D4	Exceptional Drought

D	Prought Con	ditions in E	ssex Count	y NY from	2000 to 201	8
Year	None	D0	D1	D2	D3	D4
2018	29	21	13	5	0	0
2017	46	11	8	0	0	0
2016	24	25	16	10	0	0
2015	38	31	0	0	0	0
2014	52	10	0	0	0	0
2013	51	37	0	0	0	0
2012	34	42	0	0	0	0
2011	52	9	0	0	0	0
2010	51	5	0	0	0	0
2009	52	0	0	0	0	0

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Year	None	D0	D1	D2	D3	D4
2008	52	0	0	0	0	0
2007	47	9	6	1	0	0
2006	52	0	0	0	0	0
2005	51	4	0	0	0	0
2004	52	6	0	0	0	0
2003	52	6	0	0	0	0
2002	39	22	7	0	0	0
2001	37	26	8	0	0	0
2000	52	0	0	0	0	0

Droughts can impact Essex County. In the summer of 2018, areas of New York and Essex County saw drought conditions that saw water use restrictions of the lowest levels. These restrictions prohibited water for watering lawns, and washing vehicles. First cutting of hay crops in the Champlain Valley of Essex County were approximately half the normal yields, as stated by a manager of a cattle operation in Willsboro.

#### **Probability of future events:**

Essex County will see additional minor droughts in the future, as it has in the past. Towns and villages have ranked drought as a low hazard. This may be due to the fact that droughts have a short time span of effect on Essex County. Drought generally ends due to a return to the normal precipitation levels, either through rainfall or snow fall. These drought events are considered to be likely in the future, but having minimal impact to Essex County.

- Low probability (less than once every 50 years)
- Medium probability (once every 8-50 years)
- High probability (once every 1-7 years)

### **Potential loss:**

The 2014 New York State plan determined potential loss for drought events in Essex County. The following table from that plan is included to provide the potential loss from a drought event in Essex County.

Drought events Historical Record (1960-2012)							
County	Future Probability %	Recurrence Interval	Number of Events	Fatalities	Injuries	Property Damage	Crop Damage
Essex	2	52	1	0	0	\$16,667	\$1,666,667

Drought can impact Essex county, but in the past, they have been minor events mainly impacting the agriculture sector of the county. These drought end quickly as normal rainfall patterns return.

# **Earthquakes:**

An earthquake is defined as: "The motion or trembling of the ground produced by sudden displacement of rock usually within the upper 10-20 miles of the Earth's crust. Earthquakes result from crustal strain, volcanism, landslides, or the collapse of underground caverns. Earthquakes can affect hundreds of thousands of square miles, cause damage to property measured in the tens of billions of dollars, result in loss of life and injury to hundreds of thousands of persons, and disrupt the social and economic functioning of the affected area. Most property damage and earthquake-related deaths are caused by the failure and collapse of structures due to ground shaking which is dependent upon amplitude and duration of the earthquake. (FEMA, 1997)."

### Description:

The seismic waves caused by earthquakes can potentially destroy buildings, infrastructure, and cause loss of life. Aftershocks, which follow mainshocks, are normally smaller and can continue for a period of weeks, months, or years after the initial shock hits. In addition to creating ground acceleration, earthquakes can trigger surface faulting, volcanic activity, tsunamis, landslides, and liquefaction Soil liquefaction occurs when a saturated or partially saturated soil substantially loses strength and stiffness in response to an applied stress such as shaking during an earthquake or other sudden change in stress condition, in which material that is ordinarily a solid behaves like a liquid. Environmental impacts of earthquakes can be numerous, widespread, and devastating, particularly if indirect impacts like economic impacts are considered.

#### Extent:

The Richter Scale is the most commonly used scale to measure earthquakes. This scale is based on a logarithmic scale. This means because of the logarithmic basis of the scale, each whole number increase in magnitude represents a tenfold increase in measured amplitude; as an estimate of energy, each whole number step in the magnitude scale corresponds to the release of about 31 times more energy than the amount associated with the preceding whole number value This scale was developed in 1932. It has no upper limit for earthquakes. This scale does not

Richter so	Richter scale magnitudes and associated earthquake size effects.				
RICHTER MAGNITUDE	EARTHQUAKE EFFECTS				
Less than 3.5	Generally, not felt, but recorded.				
3.5-5.4	Often felt, but rarely causes damage.				
Under 6.0	At most, slight damage to well-designed buildings; can cause major damage to poorly constructed buildings over small regions.				
6.1-6.9	Can be destructive in areas where people live up to about 100 kilometers across.				
7.0-7.9	Major earthquake; can cause serious damage over large areas.				
8.0 or greater	Great earthquake; can cause serious damage in areas several hundred kilometers across.				

address damages from earthquakes.

The modified Mercalli Scales is used to express the damage potential of earthquakes as well as how people experience the effects of the earthquake.

Although numerous intensity scales have been developed over the last several hundred years to evaluate the effects of earthquakes, the one currently used in the United States is the Modified Mercalli (MM) Intensity Scale. This scale, composed of increasing levels of intensity that range from imperceptible shaking to catastrophic destruction, is designated by Roman numerals. It does not have a mathematical basis; instead it is an arbitrary ranking based on observed effects.

The Modified Mercalli Intensity value assigned to a specific site after an earthquake has a more meaningful indication of severity to the nonscientist than the magnitude, because intensity refers to the effects actually experienced at that place. The lower numbers of the intensity scale generally deal with the manner in which the earthquake is felt by people. The higher numbers of the scale are based on observed structural damage. Structural engineers usually contribute information for assigning intensity values of VIII or above.

	Modified Mercalli Intensity Scale with associated impacts.						
SCALE	INTENSITY	DESCRIPTION OF EFFECTS	CORRESPONDING RICHTER SCALE MAGNITUDE				
I	Instrumental	Detected only on seismographs	<4.2				
II	Feeble	Some people feel it <4.2					
ш	Slight	Felt by people resting; like a truck rumbling by	<4.2				
IV	Moderate	Felt by people walking	<4.2				
V	Slightly Strong	Sleepers awake; church bells ring	<4.8				
VI	Strong	Trees sway; suspended objects swing; objects	<5.4				
		fall off shelves					
VII	Very Strong	Mild alarm, walls crack, plaster falls	<6.1				
VIII	Destructive	Moving cars uncontrollable, masonry fractures, poorly constructed buildings damaged	<6.9				
IX	Ruinous	Some houses collapse, ground cracks, pipes break open	<6.9				
X	Disastrous	Ground cracks profusely, many buildings destroyed, liquefaction and landslides widespread	<7.3				
	Very	Most buildings and bridges collapse, roads, railways,					
XI	Disastrous	pipes and cables destroyed, general triggering of <8.1					
		other hazards					
XII	Catastrophic	Total destruction, trees fall, ground rises and	>8.1				
		falls in waves					

#### Location:

Essex County is underlaid by fault lines where earthquakes can occur.

Peak ground acceleration is one method of indicating the systemic hazard of an area. PGA is what is experienced by a particle on the ground. This PGA indicates three things, the geographic area affected, the probability of an earthquake and level of severity, and the strength of the ground movement. The map, from 2007, is still accurate because these hazards don't change frequently. (USGS).



There are numerous faults throughout New York State. The following figure illustrates the faults relative to Essex County (NYS Museum, 2012). These fault lines are where earthquakes can occur.



#### **Previous Occurrences:**

The following information is provided for the previous earthquakes that have occurred in Essex County. Areas in and near Essex have experienced earthquakes, and these minor quakes can be felt in Essex County. Essex has had one earthquake declared a presidential disaster.

New York State Declared Earthquake Disasters from 1950-2012					
Disaster # and Date	Counties Affected				
FEMA: DR: 1415, 5/16/2002	Washington, Warren, Hamilton, Franklin, Essex, and Clinton				

A 5.1 earthquake struck near Au Sable Forks in 2002. Many residents of New York State and the northeast United States awoke the morning of April 20, 2002 to the rumbling of an earthquake.

According to the United States Geological Survey (USGS), the earthquake struck at 6:50 a.m. (EDT), approximately 15 miles southwest of Plattsburgh, New York. The USGS reported a preliminary magnitude of 5.1. Shaking was felt throughout New England, and as far west as Cleveland, Ohio; as far south as Baltimore, Maryland; and as far north as Quebec, Canada. The earthquake epicenter was at 44 degrees 5 minutes north latitude and 73 degrees 7 minutes west longitude. It was measured at a shallow depth of five kilometers. There were reports of minor damage in the epicentral area. A bridge was damaged in Jay, and road damage was reported in Keeseville. A chimney was reported damaged in Lake Placid, and a window and foundation were cracked in Au Sable Forks. The earthquake was similar in size to one which occurred approximately 80 miles to the southwest, near Blue Mountain Lake, New York, in October of 1983.

Another earthquake occurred in 1931, an almost forgotten earthquake. The 1931 quake was centered near Warrensburg, south of Essex County, where more than 20 chimneys collapsed and the spire of a church was twisted, but the damage was widespread. Residents of Lake George Village reported great rumblings and of hearing "a load roar that lasted several seconds." The Postmaster of Whitehall reported dishes broken, and the District Attorney in Saratoga reported that the ceiling of his office collapsed. Fearful residents of Ticonderoga fled from their shaking homes. R.L. Baker's general store in New Russia, up in Essex County, shook considerably, rattling the goods on the shelves and the customer's nerves. Shelves and homes were shaken in Lewis County and vibrations were felt in Vermont and Western Massachusetts, where a telephone pole snapped and crushed a car. (*Adirondack Earthquake Anniversaries – The 1931 Warren County Quake*)

Earthquake History Throughout New York State 1737-2005					
Date	Location	Size	Damage Estimates		
November 4, 1877	Lyon Mountain Clinton County	VII	Chimneys down, walls cracked, window damaged, crocks overturned		

March 18, 1928	Saranac Lake	4.0	No reference and/or No damage reported
October 7, 1983	Goodnow, Adirondack Mountains	5.1	Tombstones rotated, some cracked chimneys, windows broken, walls damaged
April 20, 2000	Newcomb	3.8	Aftershock of the 1983 event. No damage reported
April 20, 2002	Au Sable Forks	5.1	Cracked walls, chimneys fell, road collapsed, power outages
May 24, 2002	Au Sable Forks	3.1	Aftershock of the April 20, 2002 event, no damage reported

The following map was obtained from the New York State Hazard Mitigation Plan and shows the historic earthquakes in the state.





The following map shows areas of Essex County that are most vulnerable to an earthquake event. The red and darker areas show areas that can be most impacted by the event.



### Probability of future events:

Future earthquake events in Essex county are considered to be medium probability, but are generally of a magnitude that has little impact to the built environment of Essex County.

- Low probability (less than once every 50 years)
- Medium probability (once every 8-50 years)
- High probability (once every 1-7 years)

#### **Potential loss:**

The following table was obtained from the 2014 New York State Hazard Mitigation Plan. HAZUS was used to determine the potential loss from an earthquake in Essex County. Number are noted in the thousands of dollars for the potential loss from an earthquake.

County	Structural	Non Structural	Contents	Inventory	Relocation	Capital	Wage	Rental Income	Total
	Damage	Damage	Damage	Loss	Loss	Related Loss	Loss	Loss	Loss
Essex	\$62	\$209	\$72	\$2	\$47	\$21	\$31	\$26	\$470

### Potential Loss to Earthquakes in Essex County

Source: Hazus-MH 2.1, Values are in thousands of dollars

Essex County has a history of experiencing earthquakes. Most are minor events, and may not be felt by the general public. Occasionally, these earthquakes impact structures with toppled chimney and impacts to walls of structures. We can expect these events to occur in the future.

# **Extreme Temperatures:**

Extreme heat is defined as temperatures which hover 10 degrees or more above the average high temperature for a region, and last for several weeks. Humid or muggy conditions, which add to the discomfort of high temperatures, occur when a "dome" of high atmospheric pressure traps hazy, damp air near the ground. Excessively dry and hot conditions can provoke dust storms and low visibility. Droughts occur when a long period passes without substantial rainfall. A heat wave combined with a drought is a very dangerous situation. (NY HMP 2014)

Extreme Cold conditions typically accompany winter storm events, and it is recommended to review the winter storm hazard profile of this plan for additional information. The National Oceanic and Atmospheric Administration (NOAA) acknowledge that extensive exposure to extreme cold temperatures can cause frostbite or hypothermia and can become life-threatening. Infants and elderly people are most susceptible to the effects of the extreme changes in temperatures.

#### Extent:

Although extreme heat event may not be as notable as other hazards events which affect New York State, its effects can have devastating consequences.

While it is hard to quantify the exact total number of deaths which are advanced by heat wave weather, in a normal year documented records indicate about 162 people nationwide succumb to the conditions of summer heat.

Displayed below is the heat index chart, created by the National Weather Service. The Heat Index (HI) is a chart that accurately measures apparent air temperature as it increases with relative humidity. The Heat Index can be used to determine what effects temperature and humidity can have on the population. The table also describes the adverse effects that prolonged exposures can have on individuals.

#### Location:

All of Essex County can be impacted by extreme heat and extreme cold events.



# Heat Index Chart.

The National Weather Service (NWS) provides alerts when Heat Index approach hazardous levels. The following provides the alert procedures for NWS. In the event of an extreme heat advisory, NWS does the following:

- Includes HI 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 HI values.
- Provides assistance to state/local health officials in preparing Civil Emergency Messages in severe heat waves.

Alert	Criteria
Heat Advisory	Issued 12-24 hours before the onset of the following conditions: heat index of at least 100F but less than 105F for at least 2 hours per day.
Excessive Heat Watch	Issued by the National Weather Service when heat indices of 105°F (41°C) 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

#### **National Weather Service Alerts**

Source: NOAA, National Weather Service

#### National Weather Service Extreme Cold Hazards

Health Hazard	Symptoms
Wind Chill	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. Animals are also affected by wind chill; however, cars, plants and other objects are not.
Frostbite	Frostbite is damage to body tissue caused by extreme cold. A wind chill of -20 degrees Fahrenheit (F) will cause frostbite in just 30 minutes. Frostbite causes a loss of feeling and a white or pale appearance in extremities, such as fingers, toes, ear lobes or the tip of the nose. If symptoms are detected, get medical help immediately! If you must wait for help, slowly re-warm affected areas. However, if the person is also showing signs of hypothermia, warm the body core before the extremities.
Hypothermia	Hypothermia is a condition brought on when the body temperature drops to less than 95 degrees Fahrenheit (F). It can kill. For those who survive, there are likely to be lasting kidney, liver and pancreas problems. Warning signs include uncontrollable shivering, memory loss, disorientation, incoherence, slurred speech, drowsiness and apparent exhaustion. Take the person's temperature. If below 95 degrees F, seek medical care immediately!

Extreme Cold- Although no specific definition exists for Extreme Cold, the following are characteristics of an Extreme Cold event in New York State: temperatures at or below zero degrees for an extended period of time. Note that Extreme Cold events are usually part of Winter Storm events but can occur during anytime of the year and have devastating effects on New York State agricultural production.

These extreme cold events impact Essex County more than extreme heat events.

#### **Previous Occurrences:**

The National Center of Environmental Information (NCEI) describes the following events.

**January 2007**, An arctic cold front moved across northern New York on the 24th and delivered very cold temperatures of 10 to 25 degrees below zero by the morning of the 25th. However, on the night of the 25th into the morning of the 26th, a secondary cold front combined with a strengthening area of low pressure near New Brunswick, and accounted for the combination of brisk northwest winds of 10 to 15 mph, and temperatures 10 to 20 degrees below zero. Wind chill readings of 25 to 35 degrees below zero were recorded. Morning lows on the 25th were as

low as -26 degrees (Saranac Lake); morning lows on the 26th were as low as -18; however, northwest winds of 10 to 15 mph created wind chill values of 25 to 35 degrees below zero. The cold wave diminished slightly on the 27th-29th, due to a slight airmass modification and clouds across the region, but it still remained some 10 to 20 degrees below normal. However, another arctic front pushed across the area on the 29th with a replenishment of arctic air that brought early morning low temperatures on the 30th of 15 to 30 degrees below zero. Morning low temperatures on the 30th of 15 to 30 degrees below zero.

The **March 2007** event was described in the following manner. Arctic high pressure settled across New England during the night of the 8<sup>th</sup> and morning of the 9<sup>th</sup>, with more frigid temperatures, similar to a few days earlier across northern New York. Morning lows on the 9th were 15 to 30 degrees below zero. Morning lows on the 9th were as low as -29 degrees (Saranac Lake).

**January 2009** An arctic cold front moved across northern New York during the late evening of January 13th which delivered some of the coldest temperatures across the region in several years. As the arctic front passed across northern New York on the night of the 13th, temperatures plummeted over 20 degrees within a few hours. Massena reported a 20 degree temperature drop within an hour...going from 30 degrees at 9 pm EST to 10 degrees at 10 pm EST.

Temperatures averaged 20 to 25 degrees below normal values, which were already at climatological winter minimums. Daytime maximum temperatures ranged from single digits above and below zero during this stretch while nighttime minimums were 10 to 30 below zero.

Massena (St. Lawrence county) experienced temperatures at or below zero for 76 consecutive hours, between 1 am EST January 14th to 5 am EST January 17th.

These extremely cold temperatures led to numerous cold weather related problems including numerous dead vehicle batteries and broken water pipes.

The **January 2015** cold event was described in the following manner. Arctic high pressure settled across New England during the night of the 8th and morning of the 9th with more frigid temperatures, similar to a few days earlier across northern New York. Morning lows on the 9th were 15 to 30 degrees below zero. Some morning lows on the 9th included: -29 degrees at Saranac Lake (Franklin), -23 degrees at Tupper Lake (Franklin) and Newcomb (Essex), -20 degrees in Ogdensburg (St. Lawrence), -19 degrees in Chazy (Clinton) and Malone (Franklin), -18 degrees at Massena and Canton (St. Lawrence) and -16 degrees in Plattsburgh (Clinton).

#### **Probability of future events:**

Extreme temperature events are considered likely to occur, but will have minimal impact to the built environment of Essex County.

Extreme cold events are considered more likely then extreme heat events mainly due to the location of Essex County.

Extreme cold events have the following probability of occurring in the future.

- Low probability (less than once every 50 years)
- Medium probability (once every 8-50 years)
- **High probability** (once every 1-7 years)

Extreme heat events have the following probability of occurring in the future.

- **Low probability** (less than once every 50 years)
- Medium probability (once every 8-50 years)
- High probability (once every 1-7 years)

#### **Potential Loss**:

The monetary impact from heat events is additional cost for cooling purposes, and medical costs associated with being treated from the heat. The monetary impact from extreme cold events can be impacted water lines, and additional use of heating fuels.

This extreme heat and cold can impact Essex County, but is a minor event compared to other hazards.

The following table was obtained from the 2014 New York State Hazard Mitigation Plan. This table describes the potential loss from extreme temperature events.

Extreme Temperature Events and Losses from 1960-2012												
Historical Record (1960-2012)							Re	ecent	Reco	ord (20	10-2012)	
FutureProbability %RecurrenceRecurrenceIntervalNumber ofEventsFatalitiesInjuriesDamageCrop Damage						Number of Events	Fatalities	Injuries	Property Damage	Crop Damage		
Essex	0	0	21	0	1	\$806	\$500,00	2	0	0	\$0	\$500,000

Values are in thousands of dollars

# **Floods:**

Flooding is defined as: "the temporary condition of partial or complete inundation on normally dry land and it is the most frequent and costly of all hazards in New York. Flooding events are generally the result of excessive precipitation. The severity of a flood event is dependent upon a combination of stream and river basin topography, and physiography, hydrology, precipitation and weather patterns, present soil moisture conditions, the degree of vegetative clearing as well as the presence of impervious surfaces in and around flood-prone areas (NOAA, 2009). All forms of flooding can damage infrastructure. (US Army Corp of Engineers, 2007)."

#### Description:

Three types of floods are common in Essex County

1. Riverine flooding is typically experienced when precipitation occurs over a given river basin for an extended period of time.

2. Flash flooding is usually a result of heavy localized precipitation falling in a short time period over a given location, often along mountain streams and in urban areas where much of the ground is covered by impervious surfaces.

3. Ice jam flooding can occur when warm temperatures and heavy rain cause snow to melt rapidly. Snow melt combined with heavy rains can cause frozen rivers to swell, which breaks the ice layer on top of the river. The ice layers often break into small chunks, which float downstream, piling up in narrow passages and near other obstructions such as bridges and dams.

The following are terms that describe these flood events and are used in public service announcements issued to the public:

- Flood Watch Flooding is possible. Residents should listen to local radio or television weather stations.
- Flash Flood Watch Flash flooding is possible. Residents should be prepared to move to higher ground, continue to listen to local radio or television weather stations.
- Flood Warning Flooding is occurring or will occur soon; if advised to seek higher ground, residents should do so immediately.
- Flash Flood Warning A flash flood is occurring; residents should seek higher ground on foot immediately.

These warnings are issued to inform the general public of the severity of floods and are also motivate residents of frequently flooded areas to act to preserve their property and/or their lives.



Damage from Tropical Storm Irene in Keene, NY.

#### Location and extent:

Essex County is vulnerable to floods, flash floods, and floods from ice jams. This area is flood prone due to the mountainous terrain and because most of the municipalities are located along streams and river valleys. Essex County, like many other areas of New

York, developed near waterways because they were used for power to operate mills, transportation of people and goods, waste disposal, and water sources. Many of the most vulnerable communities can trace their development near waterways over the past hundred years.

Floodplains are lowlands adjacent to rivers, streams, and creeks that are subject to recurring floods. The size of the floodplain is described by the recurrence interval of a given flood. Flood recurrence intervals are explained in more detail in later in this section. Maps of flood vulnerable areas are included in the Town and Village section of the plan.



### National Flood Insurance Program:

The National Flood Insurance Program (NFIP) is the nation's oldest mitigation of hazard program. It was established by Congress in 1968 to help control the growing cost of federal disaster relief. The National Flood Insurance Program is administered by the Federal Emergency Management Agency (FEMA), part of the U.S. Department of Homeland Security. The National Flood Insurance Program offers federally-backed flood insurance in municipalities that adopt and enforce effective floodplain management ordinances to reduce future flood losses.

Floodplain managers say that the NFIP is like a three legged stool. The legs of the NFIP consist of maps, flood insurance policies and local floodplain ordinances. These legs must be working together to support the overall program.

**Flood insurance rate maps** (FIRM) are produced by FEMA and are the regulatory floodplain maps. These maps indicate vulnerable flood areas known as the 1% and .02% floodplain. In the past these areas were commonly called the 100 and 500 year floodplain. The FIRM are used by commercial lenders to determine who must purchase flood insurance. Flood insurance must be purchased if their property is located in a flood zone and the mortgage is backed by the federal government. These maps are also used by planners and code enforcement officers to determine if proposed new development (structures) are constructed complaint with local floodplain ordinances.



#### Damage to home in Jay, NY.

The Essex county FIRM's are currently (as of the writing of this plan update) going through the updating process by FEMA. Discovery meetings were held in July of 2018. These discovery meetings are the first step in the remapping process. The new maps will be issued in 2 to 3 years. These new maps will be in electronic format and will enable local GIS departments to use these maps to determine if structures are

in flood zones as well as determine flood heights on structures for a variety of flood events. Once these maps are produced, towns and villages will have to adopt these new regulatory flood maps and revise floodplain ordinances to ensure compliance with federal and state standards to reduce damages from floods.

Watersheds that will be remapped include: Saranac River, Ausable River, Upper Hudson River and Sacandaga River. Towns that will be in the study area include the towns of Chesterfield, Crowne Point, Elizabethtown, Jay, Keene, Lewis, Minerva, Moriah, Newcomb, North Elba, North Hudson, Saint Armand, Schroon, Ticonderoga, Willsboro, and Wilmington. Villages include Lake Placid and Saranac Lake.

Lake Champlain remapping efforts for new FIRMs began with Discovery Meetings in 2016. These maps should be available in 2019 or early 2020. The Boquet River watershed is part of this remapping effort by FEMA. Towns that will be in the study area include the towns of Chesterfield, Crowne Point, Elizabethtown, Essex, Lewis, Moriah, Ticonderoga, Westport and Willsboro.

The following table indicates the probability of floods to occur on the FIRM. The new flood insurance rate maps will enable local officials to accurately determine the flood zone of areas.

Recurrence intervals and associated probabilities of occurrence (FEMA, 2001).								
RECURRENC	CHANCE OF OCCURRENCE IN ANY GIVEN YEAR (%)							
E								
INTERVAL								
10	10							
10 year	10							
50 year	2							
100 year	1							
500 year	0.2							

**Flood insurance** is available to all structures in towns and villages that are participating members of the NFIP. Insurance can be obtained for the actual structure, and a separate policy can be purchased for the contents of the structure. The maximum amount of a structure policy is \$250,000. A policy that is insuring the structure includes the mechanical components of the structure; items such as furnace, heaters, water softeners, or air conditioning units would be covered under the structure policy. The content policy covers up to \$100,000. This policy would cover losses to the personal property in the structure.

**Floodplain ordinance**s are required if the jurisdiction participates in the NFIP. These ordinances include provisions for new construction, and substantial improvements to structures located in the special flood hazard areas (SFHA). At a minimum, new structures must be constructed at or above the flood height of the 1% flood height. New York State has a model floodplain ordinance that includes 2 feet of freeboard. This freeboard mandates that new construction is 2 feet above the height of the 1% flood height. This gives an additional level of protection above the 1% flood height.

Each jurisdiction must have a floodplain administrator designated for the town or village. This person is responsible for enforcing the provisions of the local floodplain ordinance. Commonly in New York and in Essex County towns and villages, the code enforcement officer is designated as the floodplain administrator. This person inspects all construction inside and outside of the

SFHA to ensure that local provisions are adhered to when new structures are built in the town or village.

Common provisions of a town or village floodplain ordinances can include:

\* Review and permitting of all development in the special flood hazard areas

- \* Elevate new and substantially improved residential structures above the Base Flood Elevation
- \* Elevate or dry floodproof new and substantially improved non-residential structures
- \* Limit development in floodways

\* Locate or construct all public utilities and facilities so as to minimize or eliminate flood damage; and

\* Anchor foundations or structures to resist floatation, collapse, or lateral movement.

If the local floodplain ordinance is enforced by the local government, structures will be less vulnerable to flood damages.

The following table indicates the number of flood insurance policies for each town and village in Essex County. Claims that have been paid on these policies indicate where most of the damage has occurred from floods.

Chesterfield, Elizabethtown, Essex, Keene, Lake Placid, Minerva, Newcomb, North Elba, North Hudson, Saranac Lake, and Westport have seen an increase in flood policies from 2011 to 2018. Crowne Point, Jay, Lewis, Schroon, Ticonderoga, Willsboro, and Wilmington have seen a decrease in flood policies in these towns during the same time frame.

Flood Insurance Claims Essex County								
Town or Village	Number of policies 2011	Number of Policies 2018	Total amount of claims					
CHESTERFIELD	11	9	\$230,558					
CROWN POINT	17	14	\$7,014					
ELIZABETHTOWN	13	14	\$276,267					
ESSEX	3	4	\$17,651					
JAY	38	31	\$3,123,361					
KEENE	27	33	\$922,336					
LAKE PLACID	3	7	0					

		1	
LEWIS	2	1	\$81,087
MORIAH	5	2	0
MINERVA	2	4	\$6,418
NEWCOMB	7	11	\$210,148
NORTH ELBA	7	9	\$235,799
NORTH HUDSON	1	3	\$36,803
SAINT ARMAND	3	3	0
SARANAC LAKE	15	17	\$10,248
SCHROON	41	29	\$269,020
TICONDEROGA	17	4	\$41,614
WESTPORT	7	17	\$169,545
WILLSBORO	19	9	\$104,698
WILMINGTON	7	3	\$17,136
Total		219	\$5,759,703

• Keeseville and Port Henry have been added to Chesterfield and Moriah 2011 totals

Repetitive loss properties are defined as 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 \$1000 each have been paid within any 10-year period since 1978.

These structures are the most historically vulnerable, and multiple claims have been paid for damages from floods. These structures are a priority to mitigate and reduce damages to these structures. These structures historically been an economic drain on the NFIP. FEMA has specific grant funds to mitigate these structures.

When comparing the 2011 numbers to the 2018 repetitive loss property numbers, we see that six towns have increased their repetitive loss properties. This is most likely due to the April 2011 flood and the impacts from Tropical Storm Irene.

Repetitiv			
Jurisdiction	Number of repetitive loss properties up to 2011	Number of repetitive loss properties 2012 to 2018	Type of structure
Chesterfield	1	1	1Single family
Elizabethtown	3	3	2 single family, 1 other residential
Jay	8	15	11 single family, 1 non residential, 1 2-4 family, 2 condo
Keene	2	3	3 single family
Newcomb	2	3	3 single family
North Elba	0	1	1 single family
Schroon	0	2	2 single family
Westport	1	1	1 Non residential
Willsboro	1	2	1 single family, 1 non residential
Essex County	21	34	

The severe repetitive loss properties consist of any NFIP-insured residential property that has met at least 1 of the following paid flood loss criteria since 1978, regardless of ownership:

• 4 or more separate claim payments of more than \$5,000 each (including building and contents payments); or

• 2 or more separate claim payments (building payments only) where the total of the payments exceeds the current value of the property. These claims must be in ten years period.

FEMA has specific grant funds to mitigate these structures. The only **severe repetitive loss** property in Essex County currently is in Chesterfield.

#### **Previous Occurrences:**

Presidential disaster declarations have been declared for flood events in Essex County. Tropical Strom Irene was one of the worst floods to impact Essex County in the recent past.

Declared Disasters in Essex County								
Disaster	Mitigation	Individual Assistance	Public Assistance	Total				
January 1996 Flood #1095	\$1,421,754.00	\$246,946.00	\$877,967.00 Federal \$141,017.00 NYS	\$2,687,684.00				
November 1996 Flood #1148	\$1,120,979.00	\$489,961.00	\$1,980,753.00 Federal \$320,039.00 NYS	\$3,911,732.00				
June 1998 Flood #1233	-	\$285,124.00	\$1,147,365.00 Federal \$185,615.00 NYS	\$1,618,104.00				
Spring 2000 Floods #1335	-	-	\$25,935.00 Federal \$4,156.00 NYS	\$30,091.00				
April 2011 DR 1993	-	-	\$34,404,603.07	\$34,404,603.07				
August 2011 DR4020 (Irene)	-	\$102,888,713.10	\$551,424,149.21	\$654,312,862.31				
June 2013 DR 4129	-	-	\$57,139,375.79	\$57,139,375.79				

The following flood events are a partial list of events that have impacted Essex County. The National Center of Environmental Information was the source of data for the events. Appendix 6 contains the raw data that was used in this plan update. Descriptions of flood events from 2011 to the present are presented after the table in narrative form.



Damage from Tropical Storm Irene in Keene Valley.

Flood Events in Essex County 1993 to 2018								
Description	Area(s)	Date of	Property	Anecdotal Information	Source			
of Event	Affected	Onset	Damage (\$)					
Flood	Willsboro,	4/16/93	\$5,000,000	Melting snow and heavy	NCDC			
	Westport			rainfall caused Lake				
				Champlain shoreline				
				flooding, erosion of Amtrak				
				tracks and roads.				
Flood	Countywide,	1/19/96	\$6,600,000	Heavy rains, ice jams,	Press			
	Jay, AuSable			flooded along AuSable and	Republican,			
				Boquet Rivers. Federal	NCDC			
				disaster declaration				
Flash	Lewis,	6/18/98	\$3,100,000	Road washouts, railroad	NCDC			
Floods	Willsboro,	6/25/98		tracks in Chesterfield washed				
	Chesterfield,	7/1/98		out causing derailment.				
	Lake Placid,	8/11/98						
	Ticonderoga,							
	Moriah							
Flood	Countywide	6/27/98	\$4,000,000	State of emergency declared,	Press			
				numerous road and bridge	Republican,			
				washouts, sinkhole near Port	NCDC			
				Kent.				
Flood	Countywide	2/28/00	\$50,000	Snowmelt and rains created	NCDC			
				washouts and ice jams along				
				AuSable River.				
Flood	Countywide,	3/28/00	\$1,000	Snowmelt, ice jams, and	Press			
	AuSable,			heavy rain along Boquet and	Republican,			
	Willsboro			AuSable Rivers	NCDC			
Flood	Keene, Upper	3/21/03	\$1,000	Snowmelt and ice jams along	NCDC			
	Jay			east branch of AuSable River				

Flash Flood	Eastern and	6/16/05	\$500,000	Numerous roads closed,	NCDC
/ Flood	southern			including portions of Rt. 9.	
	portions of			State of emergency declared.	
	Essex County				
Flash Flood	Schroon Lake	5/30/06	\$100,000	Wind, hail, and rains caused	NCDC
				road washouts, eroded	
				culverts and caused	
				rockslides.	
Flash Flood	Bloomingdale,	8/1/06	\$100,000	Road and culverts washed	NCDC
	Lake Placid, St.			out.	
	Armand				
Flood	Jay, AuSable	3/15/07	\$25,000	Snowmelt and ice jams at the	Press
	Forks			confluence of the East and	Republican,
				West Branch of the AuSable	NCDC
				River.	
Flash Flood	Port Henry,	4/27/11	\$150,000	Heavy rain and snowmelt	NCDC
	Minerva		\$75,000	caused flash flooding; two	
				bridges collapsed.	
Flood	Wilmington,	4/26/11	\$3,000,000	Snowmelt and heavy rain	NCDC
	AuSable Forks	4/28/11	\$1,000,000	caused flooding of AuSable	
				River and Boquet River.	
Lakeshore	Eastern Essex	5/1/11	\$500,000	Extensive rain caused lake	NCDC
Flooding	County			flooding, closing ferries,	
				flooding structures.	
Flash Flood	Keene	5/28/11	\$100,000	Flash flooding leads to road	NCDC
				washouts and rockslides.	
Heavy Rain	Ray Brook	8/9/12	\$25,000	Thunderstorn produced hail	NCDC
				and damaging wind gusts;	
				basement flooding.	
Flash	Upper Jay	1/31/13	\$10,000	Ice jams caused flooding and	NCDC
Floods				evacuations.	
Flash	Willsboro	7/3/13	\$125,000	Flash flooding caused road	NCDC
Floods				washouts and hampered an	
				Amtrak train.	
Flood	Tahawas	4/14/13	\$125,000		NCDC

**Wilmington flood** 4-26-2011. Runoff from heavy rain and snowmelt caused flooding along the East and West Branches of the AuSable River, as well as the upper reaches of the Boquet River. The West Branch of the AuSable flooded route 86 between Lake Placid and Wilmington Village, and portions of River Road in Lake Placid. The East Branch of the AuSable flooded Route 9N from Jay Village to AuSable Forks. In AuSable Forks village, water flooded the Grand Union parking lot. The river gage on the East Branch of the AuSable River at AuSable Forks crested at 10.20 feet at 5:30am on April 27. The Boquet River flooded Route 9 near New Russia.

**Port Henry 4-27-2011** flash flood event. Runoff from heavy rain and snowmelt caused flash flooding in the town of Moriah NY. Numerous roads were closed due to mudslides, and the Broad Street Bridge in Moriah collapsed at approximately 3am. Later that day, Titus Road Bridge collapsed at approximately 6pm.

**AuSable Forks 4-28-2011** flood event. Runoff from heavy rain and snowmelt during the early morning hours of April 28 renewed flooding along the East Branch of the AuSable River, as well as on the main stem of the AuSable near the confluence of the East and West Branches. In AuSable Forks, homes in the Jersey area, the Grand Union parking lot, and park land in the village flooded. Water covered portions of Route 9N Downstream in Keeseville, the wastewater treatment plant and river side businesses flooded.

**Minerva 4-28-2011** flash flood event. Rainfall of one to 1.5 inches fell across the northern Adirondacks. The region was had already experienced flooding from rain and snowmelt during prior days, and the additional rainfall renewed flood problems and created new flooding. Runoff from heavy rainfall and snowmelt caused flooding of numerous roads in Minerva, and the closure of Route 73 from Keene to Interstate 87 in Essex County.

**Keene 5-28-2011** flash flood event. Unstable weather patterns led to flash flooding in northeast New York during the afternoon as well as early morning of May 28th. Rock slide along Route 73 near Cascade Lake as well as other water covered and partially washed out sections of Route 73 in Keene.

**Ray Brook 8-9-2012** heavy rain event. A stationary weather front developed scattered thunderstorms across portions of northern New York. An isolated thunderstorm produced penny sized hail and a very localized damaging wind gust. Heavy rain fell over Lake Placid Village the afternoon. Runoff quickly overwhelmed storm drains, and resulted in some basement flooding.

**Upper Jay 1-31-2013** flash flood event. Warm temperatures and rainfall beginning January 30 caused rivers to swell and the breakup of ice cover. Ice jams resulted on January 31, primarily on the Ausable River and its tributaries. An ice jam formed between Keene and Jay and moved downstream. Evacuations were necessary in Jay. The jam moved downstream through Ausable Forks and caused the East Branch Ausable River to spike above flood stage briefly.

**Willsboro 7-3-2013** flash flood event. . Record rainfall in May and June saturated the ground and elevated water levels in rivers and streams, making the region vulnerable to flooding, then thunderstorms developed. Some storms produced over two inches of rain in one to two hours, resulting in flash flooding. Flash flooding closed Route 9 and 22, and washed out portions of Highland Road. A northbound Amtrak train was halted because of fear of a track washout near its crossing with Route 22 in Willsboro.

**Newcomb 4-14-2014** flood event. Snowmelt from a late season snowpack combined with heavy rain produced widespread flooding across northern New York. Four to six inches of water was released from the snowpack between April 10 to 15alongside unseasonably warm temperatures; rivers were brought to near bank full or minor flood levels from snowmelt alone. Rain developed

along and ahead of a cold front on April 15, and forced rivers out of their banks. Freezing temperatures returned by the morning of April 16, which slowed or halted the runoff, and flooding gradually subsided. The Ausable and Boquet river basins were the hardest hit. The West Branch of the Ausable River flooded River Road near Lake Placid, while the East Branch flooded portions of Route 9N and other local roads between Keene and Ausable Forks NY. The river gage on the East Branch of the Ausable at Ausable Forks at 9.37 feet at 7:45pm on the 16<sup>th</sup>. In the Boquet River basin, sections of Route 9 and local roads flooded in New Russia and downstream toward Elizabethtown.

#### **Detailed Narratives of Major Events:**

**Eastern Essex County 5-1-2011** lakeshore flooding. Record flooding occurred along the shores of Lake Champlain from mid-April to mid-June. National Weather Service Flood Stages for the United States Geological Survey (USGS) gages on Lake Champlain at the ECHO Center in Burlington, VT and Rouses Point, NY is 100.0 feet, and was surpassed on April 13th and finally receded below flood stage on June 18th.

Major flooding occurs with lake levels at or above 101.5 feet, which occurred from April 27<sup>th</sup> to June 8<sup>th</sup>. Further, the lake level exceeded its previous flood of record of 102.1 feet on April 28th and crested at 103.26 feet on May 6th.

In addition, strong south to southeast winds of 25 to 35 mph (greater at times) caused extensive damage due to 3 to 5 foot wave action as well as 0.5-1 foot seiches on windward facing shores (New York and Vermont). These episodes occurred on April 23rd, May 2nd, May 22-23rd and June 1st. North to northwest winds of 20 to 30 mph caused extensive damage due to 2 to 4 foot waves and seiches around a half foot on windward shorelines (Vermont) on May 9-10th and June 1st-2nd.

These record lake levels were attributed to a combination of a 125-150 percent of normal winter snowfall, subsequent melting of that snow pack and an abnormally wet meteorological spring (March, April and May). Normal precipitation for meteorological spring within the Lake Champlain basin is 8.5-10 inches, yet observed precipitation was 16 to 26 inches.

There was serious and extensive flooding to dozens of lake shore roads, 500-1000 houses and



dozens of businesses. In addition, it caused periodic closing of the Lake Champlain ferry from Grand Isle, Vermont to Plattsburgh, New York and the delayed opening of two additional ferry crossings.

Damage estimates will be incorporated into the May storm data, representing the crest of the flood waters, thus the time of the most significant impact and damage.

Flooding at the Essex Ferry, Essex, NY. April 2011.

**Tropical Strom Irene 8-28-2011.** Tropical Storm Irene moved across southeast New York and southwest New England during the morning hours of August 28<sup>th</sup>, and then proceeded to track north along the Connecticut River Valley in Vermont during the afternoon and evening.

Strong-to-damaging winds in excess of 60 mph were observed within several miles of Lake Champlain, and wind gusts approaching 50 mph downed trees elsewhere in the Champlain Valley of New York during the afternoon hours.

The main, devastating impact from Irene, especially for Essex and southern Clinton counties, was torrential rainfall and subsequent devastating flash and river flooding. Widespread rainfall amounts of 2-4 inches occurred across the Champlain Valley of New York as well as eastern Franklin County. However, rainfall amounts of 4 to 7+ inches were common across the eastern slopes of the Adirondacks in Essex and Clinton counties.

Devastating flash flooding occurred in mountain valleys, especially in the AuSable River valleys with a record crest on the AuSable River of 18.43 feet at 10:30 PM August 29. Flood stage is 7.0 feet, and the previous record was 15.22 feet set on November 9, 1996.

Tropical Storm Irene deposited 3 to 7+ inches of rainfall to Essex county during the morning and afternoon hours. The greatest rainfall amounts and impact were across central and northern Essex county along the eastern slopes of the Adirondacks. Severe flash flooding occurred within the AuSable River valleys with numerous roads (local and State including Route 3, 9N, 73, 28N), bridges, homes and businesses washed out in towns like Lake Placid, Jay, Keene, AuSable, Wilmington. Local Emergency Managers have determined this is the greatest natural disaster in the county.

Appendix 5 contains video and other materials on flood events that have impacted Essex County.

#### **Potential loss:**

Each town and village section have data on the potential loss determined for each jurisdiction. Please see the town and village information later in this document. The potential loss to the entire Essex County was documented in the 2014 New York State Plan and it included in the table below.

**Historic Record of Flood Damages 1960-2012** 

Future Probability No. of Events Recurrence Interval Fatalities roperty Damage Injuries % County 116 223 0 0 7 76,223,498 Essex \$

Values are in thousands of dollars

#### **Recent Record of Flood Damages 2010-2012**

County	No. of Events	Fatalities	Injuries	Property Damage	Crop Damage
Essex	17	0	0	\$ 47,420,000	\$2,000,000

Values are in thousands of dollars

#### **Probability of future events:**

Floods will continue to occur in Essex County as they have in the past. We can determine the most vulnerable towns and villages from historic flood claim data, as the ones that have the most flood insurance policies are the most vulnerable.

The FIRMs have determined the probability of future occurrences. The 1% chance flood has the probability of occurring once every year. Previously, people used the term "100-year flood", this was misleading, in that it implied the flood would occur only once every 100 years.

A better way to explain the statistic is as follows. If you put 99 white stones (that represent a time without a 100-year flood) and 1 black stone (that represents a time with a 100-year flood) into a bag and remove one each day, the chances that the stone you draw is black (1 out of 100) is the chance of flood occurring.
But the next day you reset the draw, and again start with 99 white stones and 1 black stone, so the odds are the same that you will draw the black stone that day. Because the odds of a flood for a given timeframe do not depend on the results of previous timeframes, it becomes impossible to state that since a region had a 100-year flood last year, it won't have one next year. This is an easy method to illustrate the chance of a 1% chance flood.

The FIRM have determined the probability of occurrence for floods. What the public refers to as the 100 year flood is similar to the stone in a bag game referenced above. This flood should be called the 1% chance flood to more accurately indicate that it has a statistical probability of 1% chance of occurring each year. What was called the 500 year floodplain, is more accurately called the .02% chance flood since it has a statistical probability of .02% chance of occurring each year. Floods overall in Essex County have a high probability of occurring.

- Low probability (less than once every 50 years)
- Medium probability (once every 8-50 years)
- **High probability** (once every 1-7 years)

Floods will continue to occur and impact Essex County as they are highly probability to occur as they have in the past. Many towns and villages in Essex County have developed near waterways and will continue to see impacts from floods. Mitigation of this hazard will increase as more floods impact the areas, and as more funds are available to mitigate the flood risks in towns and villages.

## Hail events:

- <u>*Hail*</u> A showery precipitation in the form of irregular pellets or balls of ice more than 5 mm in diameter, falling from a cumulonimbus cloud.
- <u>*Hail Index*</u> An indication of whether the thunderstorm structure of each storm identified is conducive to the production of hail.
- <u>*Hail Size*</u> Typically refers to the diameter of the hailstones. Warnings and reports may report hail size through comparisons with real-world objects that correspond to certain diameters.

#### Location:

Hailstorm events can occur anywhere within New York State independent of, or during, a tornado, thunder or lightning storm event. All of Essex County has the potential to be impacted by a hail event.

Hailstorm occurrences are typically localized in scale, and while past occurrences have resulted in loss of life, the severity is not considered likely to cause a life safety threat to large populations. In addition, there is not a cost-effective method to mitigate future property and crop damage caused by hailstorms. Impacts to structures, and automobiles can be severe. Damage to agricultural crops can be the largest impact from a hail event.

#### Extent:

The following information was obtained from the New York State Hazard Mitigation Plan of 2014. There are two schools of thought about hail formation. In the past, the prevailing thought was that hailstones form by colliding with supercooled water drops. Supercooled water will freeze on contact with ice crystals, frozen rain drops, dust or some other nuclei. Thunderstorms that have a strong updraft that lifts hailstones to the top of the cloud where they encounter more supercooled water and continue to grow. The hail falls when the thunderstorm's updraft can no longer support the weight of the ice or when the updraft weakens. The stronger the updraft the larger the hailstone can grow.

Recent studies suggest that supercooled water may accumulate on frozen particles near the back-side of the storm as they are pushed forward, across, and above the updraft by the prevailing winds near the top of the storm. Eventually, the hailstones encounter downdrafts and fall to the ground.

Hailstones grow two ways: by wet growth or dry growth processes. In wet growth, a tiny piece of ice is in an area where the air temperature is below freezing, but not super cold. When the tiny piece of ice collides with a supercooled drop, the water does not freeze on the ice immediately; instead, liquid water spreads across tumbling hailstones and slowly freezes. Since the process is slow, air bubbles can escape, resulting in a layer of clear ice.

Dry growth hailstones grow when the air temperature is well below freezing and the water droplet freezes immediately as it collides with the ice particle. The air bubbles are "frozen" in place, leaving cloudy ice.

Hailstones can have layers like an onion if they travel up and down in an updraft, or they can have few or no layers if they are "balanced" in an updraft. Scientists can tell how many times a hailstone traveled to the top of the storm by counting the layers. Hailstones can begin to melt and then re-freeze together- forming large and very irregularly shaped hail. (NOAA/NSSL)

Hail Diameter Description							
Description	Diameter (inches)						
Pea	0.25						
Marble or Mothball	0.50						
Penny or Dime	0.75						
Nickel	0.88						
Quarter	1.00						
Half Dollar	1.25						
Walnut or Ping Pong Ball	1.50						
Golf Ball	1.75						
Hen's Egg	2.00						
Tennis Ball	2.50						
Baseball	2.75						
Tea Cup	3.00						
Grapefruit	4.00						
Softball	4.50						

Source: National Weather Service

#### **Potential Loss:**

It is estimated that damage from hail approaches \$1,000,000,000 in the U.S. annually. U.S. Agriculture is typically the most affected by such hailstorms, because it causes severe crop damage, and even a minor storm with relatively small size hailstones can have a devastating effect. Vehicles, roofs (residential/commercial), and landscaping are the other things most commonly damaged by hail. It is recommended that jurisdictions that have agricultural markets and industries take into account the vulnerability of the jurisdiction in regards to the

effects of hail. Hail has also been known to cause injuries and occasionally has been fatal. The deadliest hailstorm on record occurred in India on April 30, 1988, and it killed 246 people and 1600 domesticated animals. Hail has been a minor hazard to Essex County.

The following table was obtained from the 2014 New York State Hazard Mitigation Plan and included the potential loss from hail events in Essex County.

Historical and Resent Hail Events and Losses												
Historical Record (1960-2012)						Rec	ent Re	cord (2010-2	2012)			
County	Future Probability %	Recurrence Interval	No. of Events	Fatalities	Injuries	Property Damage	Crop Damage	Crop Damage No. of Events Fatalities Injuries Property Damage			Crop Damage	
Essex	56	2	29	1	0	\$80,311	\$10,663	0	0	0	\$0	\$0

Values in thousands of dollars



Hail will continue to impact residents, structures and the agriculture industry. Obtaining adequate insurance from crop to auto to homeowner, will ensure funds are available to mitigate damages from hail events.

#### **Probability** of future events:

Essex County considers the probability of future hail events to be low probability to occur in the future.

- **Low probability** (less than once every 50 years)
- Medium probability (once every 8-50 years)
- High probability (once every 1-7 years)

Past hail events have had little economic impact to Essex county.

# Hurricanes, Tropical Storms, and Nor'easters

Hurricanes, Tropical Storms, and Nor'easters are defined as: "cyclones and are any closed circulation developing around a low-pressure center in which the winds rotate counter-clockwise (in the Northern Hemisphere) and whose diameter averages 10-30 miles across. While most of New York is not directly affected by the devastating impacts cyclonic systems can have on coastal regions, many areas in the state are subject to the primary damaging forces associated with these storms including high-level sustained winds, heavy precipitation, and tornadoes. The majority of hurricanes and tropical storms form in the Atlantic Ocean, Caribbean Sea, and Gulf of Mexico during the official Atlantic hurricane season (June through November). (FEMA, 1997)."

#### **Description:**

Essex County is most often affected by the rains from hurricanes events, **and is less impacted by the winds from these tropical events.** 

The following terms are used to describe hurricanes and other tropical events.

• **Nor'easter -** An intense storm that can cause heavy rain and snow, strong winds, and coastal flooding. Nor'easters have cold, low barometric cores.

• **Tropical Storm** - An organized system of strong thunderstorms with a defined surface circulation and maximum sustained winds of 39-73mph.

• **Tropical Cyclone** - An organized, rotating, low-pressure weather system of clouds and thunderstorms that develops in the tropics.

• **Tropical Depression** - A tropical cyclone with sustained winds of 38 mph or less.

• **Hurricane** - Tropical cyclones, formed in the atmosphere over warm ocean areas, in which wind speeds reach 74mph or more and blow in a large spiral around a relatively calm center or "eye". Circulation is counterclockwise in the Northern Hemisphere.

• **Storm Watch** - A warning issued by the National Weather Service indicating that a Hurricane or Tropical Storm is possible in the specified area, usually within 36 hours.

• **Storm Warning** - A warning issued by the National Weather Service indicating that Hurricane or Tropical Storm conditions are expected in the specified area, usually within 24 hours.

#### Location:

Essex County does not have any open-ocean coastline. However, the impacts of coastal storm systems such as hurricanes, tropical storms, and nor'easters can extend well inland. Tropical storm systems (i.e. hurricanes, tropical storms, tropical depressions) impacting Essex County and the rest of New York develop in tropical or sub-tropical waters of the Atlantic Ocean, Gulf of Mexico, or Caribbean Sea. Nor'easters are extra-tropical storms which typically develop from low-pressure centers off the Atlantic Coast of North Carolina during the winter months. Extra-tropical is a term used to describe a hurricane or tropical storm whose cyclone has lost its 'tropical' characteristics. While an extra-tropical storm denotes a change in weather pattern and how the storm is gathering energy, it may still have winds that are tropical storm or hurricane force.

In some cases, the center of circulation for these storm systems, where wind and precipitation effects are often most intense, can track inland and move directly through New York and Essex County. Essex County can be affected by these events even when the circulation centers pass at a distance of several hundred miles, due to the size of these events. In either case, these storms are regional events that can impact very large areas, hundreds to thousands of miles across over the life of the storm. In general, coastal storm systems affect Essex.

#### **Extent:**

Intense precipitation and wind resulting in flood and wind damage are the most common impacts associated with coastal storm systems in Essex County. Nor'easters develop as extra-tropical cyclonic weather systems over the Atlantic Ocean and are capable of producing winds equivalent to hurricane or tropical storm force; precipitation from these storms may also come in the form of heavy snow or ice.

The impact tropical storm or hurricane events have on an area is typically measured in terms of wind speed. Expected damage from hurricane force winds is measured using the Saffir-Simpson Scale categorizes hurricane intensity linearly based upon maximum sustained winds, barometric pressure and storm surge potential, which are combined to estimate potential damage. The following table lists Saffir-Simpson Scale categories with associated wind speeds and expected damages. Categories 3, 4 and 5 are classified as "major" hurricanes. While major hurricanes comprise only 20% of all tropical cyclones making landfall, they account for over 70% of the damage in the United States. While Essex County usually is not impacted by the extreme winds from a hurricane or tropical storm, Essex can be impacted minimally by these winds in that trees can be knocked down and utility lines can be impacted by tress being compromised by these winds.

Saffir-Simpson Scale categories with associated wind speeds and damages (NHC, 2009).							
Storm Category	Wind Speed (mph)	DESCRIPTION OF DAMAGES					
1	74-95	<i>MINIMAL</i> : Damage is limited primarily to shrubbery and trees, unanchored mobile homes and signs. No significant structural damage.					
2	96-110	<i>MODERATE</i> : Some trees are toppled; some roof coverings are damaged and major damage occurs to mobile homes. Some roofing material, door and window damage.					
3	111-130	<i>EXTENSIVE</i> : Some structural damage to small residences and utility buildings, with a minor amount of curtain wall failures. Mobile homes are destroyed. Large trees are toppled. Terrain may be flooded well inland.					
4	131-155	<i>EXTREME</i> : Extensive damage to roofs, windows and doors; roof systems on small buildings completely fail. More extensive curtain wall failures. Terrain may be flooded well inland.					
5	>155	<i>CATASTROPHIC</i> : Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Massive evacuation of residential areas may be required.					

#### **Previous Occurrence:**

The following map from the New York State Hazard Mitigation Plan of 2014 indicates tracks of tropical events in New York State and Essex County. Only one event tracked directly over Essex County; it was Tropical Storm Irene in 2011.

Essex County has had two hurricane events that received a presidential disaster declaration.

#### Hurricane Events in Essex County

Disaster Number	Date Declared	Incident Type	Location Affected
4020	8/31/2011	Hurricane Irene	Essex County
1296	9/16/1999	Tropical Strom Floyd	Essex County



The effects of Hurricane Irene in New York were the worst from a hurricane since Hurricane Agnes in 1972. Hurricane Irene formed from a tropical wave on August 21, 2011 in the Atlantic Ocean. It moved west-northwestward within an environment of light wind shear and warm waters. Shortly before becoming a hurricane, Irene struck Puerto Rico as a tropical storm. Thereafter, it steadily strengthened to reach peak winds of 120 mph (195 km/h) on August 24. Irene then gradually weakened and made landfall on the Outer Banks of North Carolina with

winds of 85 mph (140 km/h) on August 27. It slowly weakened over land and re-emerged into the Atlantic on the following day. On August 28, Irene was downgraded to a tropical storm and made two additional landfalls, one in New Jersey and another in New York. The storm quickly began to lose tropical characteristics and became extratropical in Vermont.

Irene did significant damage in the Adirondack Mountains. A section of NY 73 was washed out, isolating the hamlets of Keene and St. Huberts in the High Peaks region of Essex County. DEC reported that "landslides too numerous to count" had taken place on many of the High Peaks themselves, all of which are located on State Forest Preserve land. It closed the Dix and Giant wilderness areas and the eastern zone of the High Peaks Wilderness Area to the public due to the threat of additional landslides and damage to trail infrastructure. Marcy Dam was damaged by Irene, and Marcy Dam Pond was partially drained. On September 8, DEC reopened some trails and trailheads in the High Peaks and Giant areas, warning hikers that there was still major damage in some areas. The same day, it closed all trails on property it managed in the Catskill Park in Greene and Ulster counties.

Irene produced heavy damage over much of New York, totaling to \$296 million (2011 USD). The storm is ranked as one of the costliest in the history of New York, after Hurricane Agnes in 1972. Much of the damage occurred due to flooding, both from heavy rainfall in inland areas and storm surge in New York City and on Long Island. Tropical storm force winds left at least 3 million residents without electricity in New York and Connecticut. Ten fatalities are directly attributed to the hurricane.

In the towns of Jay and Black Brook, Hurricane Irene destroyed a water line that served 650 homes. With a \$1 million HELP loan, a new water line – encased in concrete and buried six feet below the Ausable River – was constructed in January 2012, according to Town of Jay Supervisor. "The HELP loan was desperately needed," Douglas said, noting that town residents had been relying on a fire hose to deliver water to homes and businesses.

#### **Probability of future events:**

Although hurricanes and tropical storms can cause flood events consistent with 1 percent and 2 percent level frequency, **their probability of occurrence is measured relative to wind speed.** The following table shows the probability of winds reaching the strength of tropical storms and

hurricane conditions in Essex County and surrounding areas, based on a statistical sample region of more than 30,000 square miles over a period of 46 years. The towns of Jay and Keene were the towns most impacted by flooding from Tropical Storm Irene. Measures to mitigate future damages are continuing to this day to mitigate future damages to these communities.

Annual probability of tropical storm and hurricane strength wind speeds for Essex County (FEMA, 2000).								
WIND SPEED (mph)	WIND SPEED (mph) CORRESPONDING SAFFIR-SIMPSON TROPICAL STORM/HURRICANE CATEGORIES							
45-77	Tropical Storms and Category 1 Hurricanes	91.59						
78-118	Category 1 to 2 Hurricanes	8.32						
119-138	Category 3 to 4 Hurricanes	0.0766						
139-163	Category 4 to 5 Hurricanes	0.0086						
164-194	Category 5 Hurricanes	0.00054						
195+	Category 5 Hurricanes	0.00001						

- Low probability (less than once every 50 years)
- Medium probability (once every 8-50 years)
- High probability (once every 1-7 years)

Essex County can anticipate being impacted by low level winds from tropical events in the future. The probability of extreme negative impacts from the winds of tropical storms is considered highly unlikely.

#### **Potential Loss:**

The New York State Plan of 2014 indicates losses from hurricane/tropical events. HAZUS is a computer-based program that can determine potential loss to counties for hurricanes. This program uses census data to predict the damages. The first table estimates the damage to physical structures for Essex County. The table above the map indicates other losses associated with tropical events in Essex County.

The map shows total annualized losses by county for New York from a HAZUS-MH 2.1®MH probabilistic hurricane hazard run. The annualized loss total is the sum of direct building losses from capital stock and income losses.

HAZUS-MH 2.1 was also used to provide hurricane building and transportation loss estimates for the State of New York. The following table provides building inventory value for the Essex County. The loss estimates results use this default data to generate loss estimates; values are in millions of dollars. The table lists direct economic building losses for a probabilistic 100- year hurricane event; values are represented in thousands of dollars.

#### **Building Inventory Value (millions of dollars)**

County	Residential	Non-Residential	Total	
Essex	\$2,512	\$659	\$3,171	

The 2014 New York State plan also listed annualized loss from a hurricane.

#### **Hurricane Annualized Losses**

County	Structural Damage	Contents Damage	Inventory Loss	Relocation Loss	Capital Related Loss	Wages Loss	Rental Income Loss	Total Loss
Essex	\$24	\$13	\$0	\$1	\$0	\$0	\$0	\$38

Values in thousands of dollars

The following maps from the 2014 New York State Hazard Mitigation Plan is a visual representation of the annualized loss table from above. It shows that Essex, like large areas of New York, are minimally impacted from hurricanes.



Essex County has been impacted by hurricanes in the past. These events will continue to occur and impact Essex County. Floods from hurricanes are more problematic than the winds from hurricanes in Essex county.

# **Ice Storms**

An ice storm is when accumulation of ice is expected during freezing rain conditions. Significant ice can impact trees and utility lines, and result in a loss of power and communications. Ice can impact road surfaces and make travel difficult to impossible due to the accumulation of ice. Businesses can be impacted by loss of power and restricted travel.

Sleet is defined as ice pellets comprised of water droplets or refrozen partially melted snowflakes. Sleet generally bounces upon impact with hard surfaces.

Freezing rain is rain that falls as a liquid then freezes upon contact with ground surfaces. Both sleet and freezing rain can cause significant impacts to a community.

Ice storms are considered as a separate hazard due to the extreme ice storm of 1998.

#### Extent:

Ice storms can result in the closing of major or secondary roads, particularly in rural locations, stranded motorists, transportation accidents, loss of utility services, and depletion of oil heating supplies. Environmental impacts often include damage to shrubbery and trees due to heavy ice build-up which can break limbs or even bring down large trees. Gradual melting of ice provides excellent groundwater recharge. However, high temperatures following an ice storm can cause rapid surface water runoff and severe flooding.

#### Location:

The entire area of Essex County is vulnerable to ice storms.

#### **Previous occurrences:**

The National Center for Environmental Information (NCEI) center reported two ice storm events. The following is provided to describe the impact of those two ice storm events.

Northern New York, Vermont, New Hampshire and Canada experience an ice storm of epic proportions on **January 6, 1998**. North Country Public Radio published a 20-year retrospective of the 1998 ice storm in 2018. The following information was obtained from that publication. North Country Public Television also had a thirty minute show that can be accessed on their website.

The largest ice storm to impact the Essex County occurred in January of 1998. Five days of freezing rain, which led to: ten thousand utility poles down in the north country of New York State. All power distribution lines disabled. Travel bans were declared and roads impassable. Trees snapped with a sound like gunfire. Five counties in northern New York were almost brought to a standstill. But not quite. Overnight, volunteer shelters took in thousands of people whose homes were cold and dark. The National Guard lent a hand to fire departments, schools, churches and innumerable organizations mounting local relief efforts. Neighbors helped neighbors in a remarkable spontaneous generation of survival strategies, sharing food, fuel and comfort.

Niagara Mohawk technician Dave Seymour said he'd never seen anything like it. Treetops came down in an agonizing succession of sounds: first the break, like a rifle shot, then a shattering as the ice fell, then the percussive thump. Utility poles snapped like pencils. Tangles of branches and wires blocked highways. Plows couldn't get through and roads quickly disappeared under deep, icy ruts. On Thursday, January 8<sup>th</sup> 1998, approximately 100,000 Niagara Mohawk customers were without electricity. The utility predicted it would take five or six days to restore power. But it was more than three weeks before the last 100 homes had lights again. Jefferson, St. Lawrence, northern Lewis, Franklin, Clinton and Essex counties were affected. States of emergency were declared at all levels of government. The following picture was obtained from the Press Republican Newspaper.



The National Center for Climatic Information (NCEI) database had the following information on the **January 6, 1998** ice storm. A storm system moved from the Tennessee Valley on Wednesday, January 7, and Thursday, January 8, into New England. A cold front across New England and New York associated with an Arctic High-Pressure system across Canada resulted in a flow of low level cold air into northern New York. Warm moist air riding over this cold air resulted in a major ice storm across northern New York. During Friday afternoon, January 9, a few thunderstorms with gusty winds and small hail moved across the Champlain Valley of northern New York.

Ice accumulations during this event were generally between 1 and 3 inches with the greatest amounts along the New York and Canadian border regions. The impact on the region was dramatic. The ice accumulations resulted in damage to tens of thousands of trees. Trees and power lines snapped due to the weight of the ice, with 100 thousand reported without power for several days. Damage to the utility companies ran in the millions. The economic impact ranged from stores closed for several days, and banks closed with ATMs not working due to lack of power to the agricultural community being unable to milk cows with loss of income and damage to cows. Automobile and air travel were dramatically impacted with Massena International Airport closed for a period. Many roads and bridges were closed due to ice and fallen trees. There were numerous traffic accidents. Several radio stations were knocked off the air with no power.

There were five indirect deaths due to carbon monoxide poisoning while improperly using generators. One direct death occurred when an individual slipped on accumulated ice and received head injuries. The National Guard assisted with cleanup operations after the storm. Falling tree limbs and other debris was a significant hazard during and following the storm.

Damages from this event were impacted in all areas of the storm. The following table lists the damages according to FEMA. The National Center of Environmental Information (NCEI) reported \$1,000,000 worth of property damages from the 1998 ice storm.

Economic Impact of Ice Storm in Northern Counties of New York State									
Disaster	Mitigation	Individual	Public	Total					
		assistance	Assistance						
January 1998	\$622,517.00	\$522,898.00	Federal	\$3,426,018.00					
Ice Storm			\$1.965,952.00						
# 1196			State						
			\$314,651.00						

The **December 20, 2013** ice storm was described in the NCEI database as follows. A stationary collision of air fronts across the Adirondacks of New York and portions of central and northern New England from December 20<sup>th</sup> through 22<sup>nd</sup>, with several storms delivering precipitation. A battle between mild and warm moist air south of the boundary, with temperatures in the 50s, overriding a very cold, dense shallow air mass with temperatures in the teens and 20s in New York, but single digits just north across the border into Canada.

The first round of wintry precipitation fell across northern New York, primarily along the Canadian border during Friday afternoon (December 20th). Most of the precipitation fell as freezing rain, approximately 1/4 to 1/3 inches of ice accumulation, along with some sleet. The second round began during the late morning and early afternoon hours of December 21<sup>st</sup>, and peaked during the evening and overnight hours. An additional 1/2 to 1 inch of ice accumulation as well as 1 to 2 inches of sleet occurred in portions of northern New York.

The greatest impact was along the Canadian border, especially the St. Lawrence River Valley, with widespread tree and utility line damage as well as numerous vehicle accidents. Scores of customers were without power from hours or days across the region. This event had a similar area as the Ice Storm of January 1998, but not the severity, as precipitation and ice accumulation was half of the 1998 storm.

Ice jams also developed during this time period as runoff from melting snow and rainfall swelled area rivers. River rises were enough to break up and move ice cover, resulting in scattered ice jams.

Freezing rain accumulated between 1/2 to 3/4 inch, along with some minor accumulations of sleet across eastern Essex county causing numerous vehicle accidents, tree and utility line damage.

The NCEI reported damages of \$100,000 from this 2013 ice event.

The following maps indicates the ice accumulations from the 1998 ice storms.



### Ice Accumulations 1998 Ice Strom



#### Probability of future events:

Ice storms are a regular occurrence in Essex County and should be considered likely.

- Low probability (less than once every 50 years)
- Medium probability (once every 8-50 years)
- High probability (once every 1-7 years)

Damages similar to the ice storm event of 1998 are highly unlikely to occur on an annual basis, but we can anticipate devastating ice storms sometime in the future. The last ice storms that caused extreme damage and weeks of power loss was in 1998, 21 years ago.

#### **Potential loss:**

Based on the information available and past experiences, all municipalities in Essex County are essentially equally vulnerable to the direct impacts of ice storms. Residents of the mountainous areas of the County may be more susceptible to negative effects, especially when emergency medical assistance is required. In addition, some very rural areas of the County are susceptible to isolation caused by ice storms. Ice storms can cause road closings in the county, especially I-87, along with the county and town roads that become virtually impassable.

Ice storms in the county may cause business losses to stores and factories. There could be property losses and roof damages as a result of ice loading, and from falling tree limbs. During ice storms, Essex County households become vulnerable to interruptions in utility services for heat and electricity. In the ice storm of 1998, some homes were without electricity for 30 days until electric companies could put the lines back up.

Many residents purchased generators after the ice storm of 1998. This has provided temporary power during ice storms and other events such as the power outage of May 2018. A large percent of county residents have auxiliary heat sources that do not rely on electric power, such as woodstoves. This will provide a heating source in residential homes during ice storms.

While potential loss from ice storm events was not calculated, the past indicates that ice storms that have an economic impact to Essex County are rare, but can negatively impact Essex County.

Ice storms will continue to be an issue in Essex County. Extreme damage from these events can be considered rare or unlikely. Preparedness is often the best method for addressing issues associated with ice storm events.

# Land subsidence

Subsidence is a natural geologic process that commonly occurs in areas with underlying limestone bedrock and other rock types that are soluble in water. Water passing through naturally occurring fractures dissolves these materials leaving underground voids. Eventually, overburden on top of the voids causes a collapse which can damage structures with low strain tolerances. This collapse can take place slowly over time or quickly in a single day. . Karst topography describes a landscape that contains characteristic structures such as sinkholes, linear depressions, and caves. In addition to natural processes, human activity such as mining, water, natural gas, and oil extraction can cause subsidence and sinkhole formations. (FEMA, 1997).

#### **Description:**

Subsidence and sinkhole events may occur gradually or abruptly, and events could result in a range of impacts from minor elevation changes to deep or gaping holes in the ground surface. These kinds of events can cause severe damage in populated areas, though gradual events can be addressed before large-scale damage occurs. Subsidence and sinkhole events that are not immediately addressed may cause fractures or the complete collapse of building foundations and roadways.

#### Location:

The following map is located in the New York State Hazard Mitigation Plan of 2014 and indicates the areas in New York that are vulnerable to subsidence due to the under lying rock forms that are prone to subsidence incidences.



# Land Subsidence in the United States

Essex County lacks any of the three types of rock formations that lead to subsidence. This hazard will not be considered a hazard and will not be profiled.

Shrinking and swelling soils can also be considered a hazard in certain areas. The following map was located in the 2014 New York State Hazard Mitigation Plan. This map indicates that Essex County lacks the clay soils that lead to shrinking and swelling of soils. This hazard will not be addressed in this updated plan, due to the fact that there is little potential for shrinking and swelling of soils.



Expansive Soils Map from the New York State Hazard Mitigation Plan of 2014.

Over 50 percent of these areas are underlain by soils with abundant clays of high
swelling potential.
Less than 50 percent of these areas are underlain by soils with clays of high
swelling potential.
Over 50 percent of these areas are underlain by soils with abundant clays of
slight to moderate swelling potential.
Less than 50 percent of these areas are underlain by soils with abundant clays of
slight to moderate swelling potential.
These areas are underlain by soils with little to no clays with swelling potential.
Data insufficient to indicate the clay content or the swelling potential of soils.

#### Mine subsidence:

Essex County has a rich history in the mining operations industry. Essex County has been the site of numerous mining operations, including Cheever Mines and National Lead Company. Large mining enterprises created large, often diversely populated settlements of workers to operate their mines, and many Adirondack settlements began life as these sorts of company towns.

Subsidence can also occur due to mining activities. Subsidence induced by mine collapse is a different story. Mine collapse and resulting subsidence can be sudden and unpredictable. An iron mine collapse in Mineville, Essex County in April of 2004 is one of an indeterminate number of similar occurrences reported in the last few years. No other incidences of mine subsidence could be found.

The following table was obtained from The DEC website and indicates the current mines in Essex County. Not all of these resources are extracted by subsurface access of the resources however, so their vulnerability to subsidence vary.

Mineral	Active	Reclaimed	Life of	Affected	Reclaimed	Net
	Mines	Mines	Mine	Acres	Acres	Affected
			Acres			Acres
Clay	0	1	3	3	3	0
Granite	4	0	443	189	1	188
Iron Ore	0	1	138	138	138	0
Limestone	1	2	21	9	4	5

**Essex County Mine Commodities 2015** 

Sand and	36	45	958	598	256	342
Gravel						
Topsoil	0	2	17	27	27	0
Wollastonite	3	0	270	270	2	268
County Totals	33	51	1850	1234	431	802

#### **Probability of future events:**

One documented incidence has occurred due to a mine collapse, but little information could be verified about the event. Issues may occur in the future, but this hazard is considered a low hazard in the updated hazard mitigation plan.

- **Low probability** (less than once every 50 years)
- Medium probability (once every 8-50 years)
- High probability (once every 1-7 years)

#### **Potential loss:**

Land subsidence events are considered to be highly unlikely in the future in Essex county. One event was noted in 2004, no other information could be located. Damage from these types of events was not determined due to a lack of information on the one incident that occurred in Essex County in 2004.

# Landslides

A landslide is the downward and outward movement of slope-forming soil, rock, and vegetation reacting to the force of gravity. Landslides may be triggered by both natural and human-caused changes in the environment, including heavy rain, rapid snow melt, steepening of slopes due to construction or erosion, earthquakes, and changes in groundwater levels. Mudflows, mudslides, rockfalls, rockslides, and rock topples are all forms of a landslide. Areas that are generally prone to landslide hazards include previous landslide areas, the bases of steep slopes, the bases of drainage channels, developed hillsides, and areas recently burned by forest and brush fires. (Delano & Wilshusen, 2001).

#### **Description:**

Landslides are due to both the geology of the land and human-induced factors. Rockfalls, rockslides, debris slide, earth flow, mud flow, and other slope failures usually occur in areas of Essex County with moderate to steep slopes and high precipitation rates.

The following definitions were obtained from the NYS Hazard Mitigation Plan 2014.

1. Rockfalls - Blocks of rocks fall away from a bedrock unit without a rotational component.

2. Rock topple - Blocks of rock fall away from a bedrock unit with a rotational component

3. Rotational slump - blocks of fine grained sediment rotate and move down a slope.

4. Translational slide - sediments move along a flat surface without a rotational component.

5. Earth flow - fine grained sediments flow downhill and typically form a fan structure.

6. Creep - Slow moving landslide often only noticed through crooked trees and disturbed structures.

7. Block slide - A block of rock slides along a slip plane as a unit down the slope.

8. Debris avalanche - Predominately gravel, cobble, boulder sediments and trees move quickly down the slope.

9. Debris flow - Coarse sediment flow downhill and spread out over relatively flat areas.

In New York, many slope failures are associated with precipitation events – periods of sustained above-average precipitation, specific rainstorms, or snowmelt events. Areas experiencing erosion, decline in vegetative cover, and earthquakes are also susceptible to landslides. Human activities that may induce slope failure include altering the natural slope

gradient, increasing soil water content, and removing vegetation from steep slopes.

#### Location:

The US Geologic Survey (USGS) has identified and defined the overall landslide susceptibility of all areas in Essex County. As seen in the Figure below, the majority of Essex County falls into low **susceptibility** to landslides. The north west part of Essex falls into the **high susceptibility** to landslides. This map shows the overall susceptibility to this hazard based on climate factors, whereas areas of higher slopes that have a higher susceptibility are highly localized and are not shown on this scale map.



#### Previous occurrences:

Essex County has a high susceptibility and moderate incidence for landslides. This means that landslides can and do occur, but are relatively minor to impacting property in the county. The majority of the area denoted on the previous map is the forever wild areas of the Adirondack

Park and have few physical structures in the area. Other areas of the county have a low probability to be impacted by landslides.

Essex county has experienced landslides. North Hudson has an area along the Schroon River that is susceptible to earth flows or landslides. There have been several meetings with the Army Corp of Engineers and DEC staff to discuss mitigation for this slide area. The concern is that a total failure of the steep fine grained sand bank would deposit a large amount of sediment in the river, potential blocking or altering the river channel.

Roads are also susceptible to rock falls and slope failures. Auger Lake Road in Chesterfield is protected by gabion baskets filled with stones. These protective measures are continually being compromised as the slope above slowly erodes. Keene has experienced a landslide that has compromised one residential structure. Wilmington had one mud flow event in 2004 due to heavy rains.

Additional areas of the County will be exposed to landslides due to steep slopes, and a variety of soil types that lead to slope failure.



#### **Potential Loss:**

Potential loss was determined in the 2014 New York State Hazard Mitigation Plan. The following table indicates potential loss in Essex County. Essex County has seen minor historic impact from previous events, mainly due to the most vulnerable areas in Essex having few if any structures.

Historical Record (1960-2012)								
County	Future Probability %	Recurrence Interval	No. of Events	Fatalities	Injuries	Property Damage (\$)	Crop Damage (\$)	
Essex	6	17	3	0	0	\$56,000	\$0	

### Probability of future events:

Essex County considered future landslide events to be likely, but the areas where they occur is in the back country areas that has no structures.

- Low probability (less than once every 50 years)
- Medium probability (once every 8-50 years)
- High probability (once every 1-7 years)

Roads that can be prone to failure due to slides are protected to reduce the chance of slides impacting these roads. The slide area in the Schroon River will be addressed and a project will be developed to address this hazard area.

# **Rail Accidents**

Rail accidents can result from human cause or mechanical equipment failure. It is unlikely that small accidents would significantly impact the larger county area, but can impact the town where the event occurred. However, certain accidents could have secondary county or regional impacts such as a hazardous materials release or disruption in critical supply/access routes, especially if vital transportation corridors or junctions are present. (US DOT, 2009). This hazard should be carefully evaluated during emergency planning since it is a key factor in timely disaster or hazard response, especially in areas with high population density.

#### Extent:

A report titled *Danger on the Tracks: Oil by Rail's Threat to Lake Champlain and the Adirondack Region* was referenced for most of the information in this section.

Significant rail accidents can result in death or serious injury, as well as extensive property loss or damage. Railway accidents have the potential to result in hazardous materials release also, if the accident involves a vehicle carrying hazardous materials. A worst-case scenario for transportation accidents in Essex County would be a rail accident involving trains carrying oil from Canada.

The oil being shipped by rail through the region is Bakken crude oil, a light unrefined oil extracted by hydraulic fracturing in the North Dakota region. Bakken crude is an exceptionally volatile substance more prone to explosion than other types of crude oil. At the recent peak of oil-by-rail shipments in 2014, millions of gallons of Bakken crude oil were being transported along Lake Champlain. Low oil prices have recently made such levels of shipment uneconomical for the moment, but as gas prices creep back up, the region could see increased levels of traffic again, but even current levels of shipping present a risk. The rail infrastructure used in shipping is aging in several places. The tracks run through dozens of New York communities and along Lake Champlain for nearly 100 miles, within feet of the shoreline in many areas. Bridges that cross ravines and rivers that flow into the lake are exceptionally old, with most of the retrofits occurring in the early 1900s.

The extreme threat posed from oil-by-rail to communities in the region is embodied by the Lac-Mégantic tragedy. On July 6, 2013, an unsecured train in Lac-Mégantic, Quebec rolled down a

grade, derailed, and released 1.6 million gallons of Bakken crude from its cars. The Bakken crude, much more volatile than conventional crude oil, caught fire and fueled explosions that left 47 dead, destroyed a substantial part of the town, and contaminated a portion of the nearby lake and river.

In April 2016, the National Wildlife Federation, the Lake Champlain Committee, and the Adirondack Council announced the delivery of a letter to the New York and Vermont Congressional delegations calling for a "federal legislatively imposed ban on the transport of oil along Lake Champlain and the Hudson River." The letter had signers from more than 80 New York and Vermont environmental, business, recreational, and other organizations, in addition to former members of state agencies, current and former state legislators, and both the Plattsburgh and Burlington City Councils. Town and city resolutions have also been passed in key communities calling for varying levels of action to protect communities against the risks of oilby-rail, including the Towns of Plattsburgh, Westport, Keene, Champlain, Saranac, and Clinton and Ulster Counties.

In an attempt to put the cost of an oil spill on the polluter, the New York state legislature has, since 2014, proposed the New York Surety Bill 19. The bill would require that major facilities, vessels, and railroad companies demonstrate that they have the financial security to cover the cost of an oil spill. This bill has consistently passed the Assembly, but has never passed the Senate. It is important that this bill pass in order to put the financial risk of an oil spill on those responsible for the spill.

Rail shipments from Canada to the East Coast have ranged from the peak of 3,128,000 barrels in May 2014, to a low of 22,000 thousand barrels in July 2017; subsequently an uptick started in August 2017 that jumped to 1,963,000 barrels in December 2017 before declining back to 881,000 thousand barrels in March 2018

The New York Department of Transportation, along with the Federal Railroad Administration, have been conducting inspections of New York track, including CSX mainline track, and crude oil tank cars since late 2014. There have been at least twelve inspections conducted since this time. Each inspection includes the number of critical defects that must be addressed immediately, and non-critical defects that must be fixed within 30 days found on the different sections of track. The inspections focus on track, track hardware, and tank car mechanical safety

equipment, including wheels, brakes, and couplers. A recent track inspection, conducted in February 2017, found four critical defects and forty-two non-critical defects. While track inspections are important, the number of defects being found highlights the poor condition of state's railways.

### Location:

Seven towns in Essex County are vulnerable to rail accidents, due to the Amtrak line being in these towns. The seven towns are as follows; Ticonderoga, Crown Point, Moriah, Westport, Essex, Willsboro and Chesterfield. The rail line runs mainly near Lake Champlain. This transportation network brings visitors into the region.

The following map, from the New York State Department of Transportation, shows the railways throughout the state.



#### **Previous occurrences:**

According to the Pipeline and Hazardous Materials Safety Administration (PHMSA) database, there have been 11 incidents nationwide involving a tank rail car carrying petroleum between January 2016 and October 2017.

An incident is defined by PHMSA as the unintentional release of hazardous material; structural damage to cargo tank; or when a person is killed or injured, the public is evacuated for over an hour, or a major transportation artery or facility is shut down for more than an hour during transportation (including loading, unloading and temporary storage). Of these 11 incidents, nine resulted in a spill. In addition, two of these incidents resulted in fire, and what PHMSA deems environmental damage. One resulted in a public evacuation. The total response cost for the incidents was \$867,300 and the remediation cost for the incidents totaled \$7,800,000.

Historically, there have been at least two rail accidents in Essex County.

Westport had a rail accident on October 3, 1912. The New York, New Haven & Hartford's "Springfield Express" derailed near Davenport Avenue, just west of the train station. The engineer failed to slow down. The steam locomotive derailed — followed by a baggage car, mail car, 4 parlor cars, 3 coaches, and a smoking car. Seven people died, and 50 were injured.

On June 18, 1998, a rain event lead to a train accident. Specifically, in and around Port Douglas, roads and railroad tracks were washed out. During the late night hours, a train engine and five train cars derailed with extensive damage. No other information could be located on this event. Data was obtained from the National Center of Environmental Information database.

#### Training:

Intentions to develop New York geographic response plans were announced by the governor in 2015. These geographic response plans, in which DEC would be the lead agency, would be location-specific guides to oil spill response for the 21 counties affected by crude oil transport. These are not easily accessible to the public and it is unclear if they have been implemented. While there have been some efforts to prepare towns for an oil train disaster, like an oil spill response training session in Plattsburgh in 2016, and the several emergency response trailers

dispatched along the oil-by-rail corridor by the state, these actions do not remove the threat of oil-by-rail, though they can better prepare a community to respond to it.

Ironically, this protective action could have long-term consequences for water-quality in the communities along the railroad tracks inside the Adirondack Park. Among other emergency response items inside these trailers is a supply of firefighting foam. This foam can be spread on the ground to suppress explosions during railroad accidents, by covering pools of oil that gather on the ground around the accident site. Local officials agreed that distribution of the foam would boost public safety in the event of a spill and fire. However, this foam also contains a class of chemicals called Per- and Polyfluoroalkyl Substances (PFAS) that are known to the U.S. EPA to be a health hazard at very low levels when found in drinking water. Those health hazards include cancer. The EPA is developing a national action plan for the identification and remediation of PFAS contamination.

Rail accidents will continue to be a hazard in the future. Preparedness and response actions will reduce the effects of this hazards. State and Federal agencies must continue to regulate the rail industry to ensure the safety of residents and property in Essex County.

#### **Probability of future events:**

Rail events are considered by Essex County to be an event that is highly unlikely to occur,

- **Low probability** (less than once every 50 years)
- Medium probability (once every 8-50 years)
- High probability (once every 1-7 years)

but could have the potential to impact life and property if one should occur in the wrong location.

#### **Potential loss:**

Potential loss was not determined due to a lack of information concerning number of structures near the rail lines that may be impacted by a rail accident.

### Severe winter storms:

Winter storms may include snow, sleet, freezing rain, or a mix of these wintry forms of precipitation. A winter storm can range from a moderate snowfall or ice event over a period of a few hours, to blizzard conditions with wind-driven snow that lasts for several days. Many winter storms are accompanied by low temperatures and heavy and/or blowing snow, which can severely impair visibility and disrupt transportation.

Blizzards are characterized by low temperatures, sustained wind gusts of 35 miles per hour, falling or blowing snow that reduces visibility to less than <sup>1</sup>/<sub>4</sub> miles for an extended time of three or more hours. (NWS 2009)

#### Description:

Winter storms consist of cold temperatures, heavy snow or ice, and sometimes strong winds. They begin as low-pressure systems that move through New York either following the jet stream or developing as extra-tropical cyclonic weather systems over the Atlantic Ocean called nor'easters. Due to their regular occurrence, these storms are considered hazards only when they result in damage to specific structures or cause disruption to traffic, communications, electric power, or other utilities. A winter storm can adversely affect roadways, utilities, business activities, and can cause frostbite or loss of life.

#### Extent:



Lake Placid New York, March 2017.

Severe winter storms can result in the closing of major or secondary roads, particularly in rural locations, stranded motorists, transportation accidents, loss of utility services, and depletion of oil heating supplies. Environmental impacts often include damage to shrubbery and trees due to heavy snow

loading, ice build-up and/or high winds which can break limbs or even bring down large trees. Gradual melting of snow and ice provides excellent groundwater recharge. However, high
temperatures following a heavy snowfall can cause rapid surface water runoff and severe flooding.

The Northeast Snowfall Impact Scale describes snow events in the northeast. The following table includes ranking categories of the NESIS.

Northeast Snowfall Impact Scale								
Category	Description	NESIS Range	Definition					
1	Notable	1.0 - 2.49	These storms are notable for their large areas of 4-inch accumulations and small areas of 10-inch snowfall.					
2	Significant	2.5 – 3.99	Includes storms that produce significant areas of greater than 10-inch snows while some include small areas of 20-inch snowfalls. A few cases may even include relatively small areas of very heavy snowfall accumulations (greater than 30 inches).					
3	Major	4.0 - 5.99	This category encompasses the typical major Northeast snowstorm, with large areas of 10-inch snows (generally between 50 and $150 \times 103 \text{ mi}^2$ – roughly one to three times the size of New York State with significant areas of 20-inch accumulations					
4	Crippling	6.0 – 9.99	These storms consist of some of the most widespread, heavy snows of the sample and can be best described as crippling to the northeast U.S, with the impact to transportation and the economy felt throughout the United States. These storms encompass huge areas of 10-inch snowfalls, and each case is marked by large areas of 20- inch and greater snowfall accumulations.					
5	Extreme	10+	The storms represent those with the most extreme snowfall distributions, blanketing large areas and populations with snowfalls greater than 10, 20, and 30 inches. These are the only storms in which the 10-inch accumulations exceed $200 \times 103 \text{ mi}^2$ and affect more than 60 million people.					

Source: Kocin and Uccellini, 2004

The following map indicates the annual average snowfall in New York State.



## Location:

The entire area of Essex County is vulnerable to severe winter storms. Areas of the western part of the county such as Saranac Lake, Lake Placid and other towns have a higher degree of vulnerability due to the topography of the mountain areas. The eastern parts of the county have a lower vulnerability due to lower elevation and effect of Lake Champlin tempering the climate near the lake. Ice storms are addressed in a separate hazard section.

### **Previous occurrences:**

The National Center of Environmental Information was used to the obtain historic number of winter storm events. This database had numerous categories of winter events and all categories have been displayed in the following table.

NCEI Data on Winter Events in Essex County 1960 – 2018								
Event type	Years of reports	Number of reports						
Extreme cold/wind chill	1960-2018	10						
Cold/wind chill	1960-2018	24						
Winter Storm	1996-2018	165						
Blizzard	1960-2018	2						
Frost/freeze	1960-2018	5						
Heavy snow	1960-2018	11						
Ice Storm	1960-2018	2						
Lake effect snow	1960-2018	3						
Winter weather	1960-2018	188						

Essex County has experienced many winter events. The following is a description of one of those events.

A **blizzard** impacted Essex County in March 2017. The following information was obtained from the NCEI database.

A major nor'easter developed off the North Carolina/Virginia coast during the early morning hours of March 14th and intensified as it moved north-northeast across southeast New England during the night into central Maine by the morning of March 15th.

Snow developed across northern New York by mid-morning on the 14th and intensified to at least 1 to 3 inches per hour for several hours during the late afternoon and early overnight hours before gradually diminishing on the 15th. There were numerous sites that witnessed 4 to 5 inches per hour snowfall rates for more than one hour. In addition, blizzard to near blizzard conditions developed around the time of the heaviest snowfall and lasted for 3-4 hours. Total snowfall across northern New York was 15 to 40 inches with Clinton, Essex and Franklin counties witnessing a few reports of greater than 3 feet.

States of Emergencies were declared for all four northern counties with schools, businesses and local government offices closed. Snowfall totals across Essex county generally ranged from 18 to 36 inches. Some specific amounts include 42 inches in Lake Placid, 35 inches in Au Sable Forks,

32 inches in Keene Valley, 28 inches in Wilmington and 18 inches in Schroon Lake. Blizzard conditions impacted many locations of the Champlain Valley of Essex county between 4 pm and 11 pm as wind gusts of 40 to 45 mph were observed.

### **Probability of future events:**

Essex county is located in the northern reaches of New York State. The county will continue to be impacted by winter storm events. Essex County considers these events to have high probability of occurring in the future. This is due to the high northern latitude, previous occurrences and the fact that snow events can and do occur in every month of the year. The high peaks such as Mount Marci and Algonquin can have snow any month of the year.

- Low probability (less than once every 50 years)
- Medium probability (once every 8-50 years)
- **High probability** (once every 1-7 years)

Towns and Villages in Essex County consider winter storms as a normal predicted event, and have the equipment and manpower to manage these snow events.

### **Potential loss:**

The New York State Hazard Mitigation Plan of 2014 calculated potential loss from snow events. The following table addresses the potential loss from these events in Essex County. Losses would be minor to structures as building codes consider snow loads on structures. A large economic impact is the man hours needed to clear and plow roads, and the placement of salt and or sand on roadways.

Historical Record (1960-2012)							R(	ecent 2010	: Reco -2012	ord 2)		
County	Future Probability%	Recurrence Interval	No. of Events	Fatalities	Injuries	Property Damage	Crop Damage	No. of Events	Fatalities	Injuries	Property Damage	Crop Damage
Essex	627	0.16	326	3	35	\$24,292,48	\$1,077,9	33	0	0	\$282,00	\$50,000

Essex County will continue to be impacted by severe winter events such as blizzards and other snow events. Residents have assisted each other in the past when these events occur. We can anticipate that in the future, residents will continue this tradition of assisting others during extreme winter events.

# Wind and High Wind Events

A wind storm can occur during severe thunderstorms, winter storms, coastal storms, or tornadoes. Straight-line winds, such as a downburst, have the potential to cause wind gusts that exceed 100 miles per hour. A tornado is a violent windstorm characterized by a twisting, funnel-shaped cloud extending to the ground. Waterspouts are weak tornadoes that form over warm water and are relatively uncommon in New York. Each year, an average of over 800 tornadoes are reported nationwide, resulting in an average of 80 deaths and 1,500 injuries (NOAA, 2002).

## **Description:**

Wind, in general, is caused by the interaction of different temperatures of air masses. Thunderstorms, for example, are caused by the interaction of a cold front colliding with a warm front, with the cold air sinking under the warm mass of air. This explains the winds and cooling off of temperatures commonly seen immediately prior to a thunderstorm.

Tornadoes are most often generated by thunderstorm activity (but sometimes result from hurricanes or tropical storms) when cool, dry air intersects and overrides a layer of warm, moist air forcing the warm air to rise rapidly. The damage caused by a tornado is a result of high wind velocities and wind-blown debris. According to the National Weather Service, tornado wind speeds can range between 30 to more than 300 miles per hour. They are more likely to occur during the spring and early summer months of March through June, and are most likely to form in the late afternoon and early evening. Most tornadoes are a few dozen yards wide and touchdown briefly, but even small, short-lived tornadoes can inflict tremendous damage. Destruction ranges from minor to catastrophic depending on the intensity, size, and duration of the storm. Structures made of light materials such as mobile homes are most susceptible to damage.

The following information is provided to further define and describe wind events.

• <u>Tornado</u>- local atmospheric storm, generally of short duration, formed by winds rotating at very high speeds, usually in counterclockwise direction.

• <u>Straight-line Winds</u>- wind that comes out of a thunderstorm, but is not associated with rotation like a tornado wind.

• <u>Downdraft</u>-is a small-scale column of air that rapidly sinks toward the ground.

• <u>Downburst</u> strong downdraft with horizontal dimensions larger than 4 km (2.5 mi) resulting in an outward burst or damaging winds on or near the ground.

• <u>Microburst</u>- small, short lived, concentrated downburst that produces an outward burst of damaging winds at the surface.

• <u>Gust Front</u>– a wind shift, temperature drop, and gusty winds out ahead of a thunderstorm. Sometimes the winds push up air above them, forming a shelf cloud or detached roll cloud.

• <u>Derecho</u>- widespread wind storm that is associated with a band of rapidly moving showers or thunderstorms, it consists of numerous microbursts, downbursts, and downburst clusters.

• <u>Haboob</u>– wall of dust that is punched out along the ground from a thunderstorm downdraft at high speeds.

## Extent:

Tornadoes and wind storms can occur throughout Essex County, though events are usually localized. Severe thunderstorms may result in conditions favorable to the formation of numerous or long-lived tornadoes. General wind events are included in this hazard section due to the fact that thunderstorms generally have favorable conditions that can develop into tornadoes. Tornadoes can occur at any time during the day or night, but are most frequent during late afternoon into early evening, the warmest hours of the day, and most likely to occur during the spring and early summer months of March through June.

Tornado movement is characterized in two ways: direction and speed of spinning winds, and forward movement of the tornado, also known as the storm track. The forward motion of the tornado path can be a few hundred yards or several hundred miles in length. The width of tornadoes can vary greatly, but generally range in size from less than 100 feet to over a mile in width. Some tornadoes never touch the ground and are short-lived, while others may touch the ground several times.

Straight-line winds and windstorms are experienced on a more region-wide scale. While such winds usually accompany tornadoes, straight-line winds are caused by the movement of air from areas of higher pressure to areas of lower pressure. Stronger winds are the result of greater differences in pressure. Windstorms are generally defined with sustained wind speeds of 40 mph or greater lasting for one hour or longer, or winds of 58 mph or greater for any duration.

Damages and deaths can be especially significant when tornadoes move through populated or developed areas. The destruction caused by tornadoes ranges from light to extreme, depending on the intensity, size and duration of the storm. Typically, tornadoes cause the greatest damages to structures of light construction such as mobile homes. The Enhanced Fujita Scale, also known as the "EF-Scale," measures tornado strength and associated damages. The EF-Scale is an update to the earlier Fujita Scale, also known as the "F-Scale," that was published in 1971. It classifies United States tornadoes into six intensity categories, as shown in the Table below, based upon the estimated maximum winds occurring within the wind vortex. Since its implementation by the National Weather Service in 2007, the EF-Scale has become the definitive metric for estimating wind speeds within tornadoes based upon damage to buildings and structures. F-Scale categories with corresponding EF-Scale wind speeds are provided in Table below since the magnitude of previous tornado occurrences is based on the F-Scale.

Enhanced Fujita Scale (EF-Scale) categories with associated wind speeds and description of damages.						
EF-SCALE NUMBER	WIND SPEED (mph)	F-SCALE NUMBER	TYPE OF DAMAGE POSSIBLE			
EF0	65–85	F0-F1	<b>Minor damage</b> : Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over. Confirmed tornadoes with no reported damage (i.e., those that remain in open fields) are always rated EF0.			
EF1	86-110	F1	<b>Moderate damage</b> : Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.			
EF2	111–135	F1-F2	<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	136–165	F2-F3	<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	166–200	F3	<b>Devastating damage</b> : Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.			
EF5	>200	F3-F6	<b>Extreme damage</b> : Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 m (300 ft); steel reinforced concrete structure badly damaged; high-rise buildings have significant structural deformation.			

# Location:

The National Weather Service has determined wind zones for the United States. The following map indicated that Essex County is located in the Zone 2 which can experience winds up to 160 miles per hour.



### **Previous occurrences:**

The National Center of Environmental Information (NCEI) was used to obtain information on wind events that have impacted Essex County.

Wind Events in Essex County 1950-2018								
Wind Type	Years	Number of events						
Tornadoes	1952,1958,1978	3						
High Winds	1950-2018	40						
Strong Winds 1950-2018 39								
Thunderstorm Winds	1950-2018	162						

Three **tornadoes** have impacted Essex County. The 1978 tornado touched down in Port Henry. The 1958 tornado touched down in Jay. The 1952 tornado had a north east path from west of Moose Island in Lake Placid to Wilmington. The NCEI had no data on the economic impact from these three tornadoes that impacted Essex County.

The following narratives serve as examples of some wind events in Essex County. This is not an exhaustive listing of wind events. Additional information on other wind events can be obtained from the storm events database from the NCEI website.

The **November 1998** wind event. A strong storm system in the western Great Lakes region Tuesday (November 10) moved into southern Canada late Tuesday night and Wednesday (November 11). Strong southerly winds occurred across the area Tuesday evening into early Wednesday before shifting to the west Wednesday. Across Essex county, strong winds blew down several trees and power lines with power outages reported. The winds were strongest in eastern portions of the county, with a metal storage building blown off its foundation in Elizabethtown during the overnight hours.

The **November 1999** wind event. A storm system formed over the Tennessee Valley Tuesday morning (November 2) and moved northeast into the St. Lawrence Valley Wednesday morning (November 3). Strong winds developed ahead of this system. The strongest wind reported was an estimated 46 knots (53 mph) in Saranac Lake, New York at 10PM. Trees and power lines were blown down with approximately 5000 people without power in and around the Lake Placid area. Trees were blown down with roads closed in the towns of Raybrook, Minerva and Newcomb.

The **February 2001** wind event. A strong storm system moved across the Canadian Province of Quebec Friday night, February 9th and Saturday, February 10th. The associated cold front was accompanied and followed by very windy conditions. In the town of Bloomingdale, trees and

power lines were blown down around 5:30 AM while in Ticonderoga, trees were blown down around 9AM.

On **May 4 2018** a thunderstorm and wind event impacted 90% of Essex County. An electric trunk line was put out of service. An almost complete power loss event occurred throughout the county. Essex County Department of Public Works was moving generators to facilities to provide temporary power. The Essex County Fish Hatchery lost three years of fish stock due to a lack of a generator at the site. The Town of Lewis water supply was almost lost without the sharing of generator resources. This loss of water would have impacted the county jail and emergency services building. Towns and Villages informed residents of the situation by the use of municipal Facebook pages. Residents assisted other residents by sharing water, food and generators to preserve food in freezers.

## Probability of future events:

Essex County has been impacted by wind events in the past. These wind events will continue into the future. Residents can expect yearly events and the impact from these events in the future. The wind events have a likely probability of occurring in Essex County.

- Low probability (less than once every 50 years)
- Medium probability (once every 8-50 years)
- **High probability** (once every 1-7 years)

These wind events can impact electric power, but residents and local officials possess generators and heat sources other than electric to manage times without power.

## **Potential Loss:**

The 2014 New York State Hazard Mitigation Plan determined the potential loss from wind events. The following table indicates the potential loss in Essex County from these wind events.

Historical Record (1960-2012)								Recent Record (2010-2012)				
County	Future Probability %	Recurrence Interval	No. of Events	Fatalities	Injuries	Property Damage	Crop Damage	No. of Events	Fatalities	Injuries	Property Damage	Crop Damage

Essex         373         0.27         194         0         1         \$6,143,993         \$117,97         42         0         0         \$899,000         \$50,000	993 \$117,97 42 0 0 \$899,000 \$50,000
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Damage from wind events to residential homes or businesses would be covered under a home owner or commercial insurance policies. Electric power providers cover the cost of reestablishment of the power grid.

## Wildfires:

A wildfire is a raging, uncontrolled fire that spreads rapidly through vegetative fuels, exposing and possibly consuming structures. Wildfires often begin unnoticed and can spread quickly, creating dense smoke that can be seen for miles. Wildfires can occur at any time of the year, but mostly occur during long, dry hot spells. Any small fire in a wooded area, if not quickly detected and suppressed, can get out of control. Most wildfires are caused by human carelessness, negligence, and ignorance. However, some are precipitated by lightning strikes and in rare instances, spontaneous combustion. Wildfires in New York can occur in fields, grass, brush, and forests. 98% of wildfires in New York are a direct result of people. DEC 2016

### Extent:

Wildfires take place in less developed or completely undeveloped areas, spreading rapidly through vegetative fuels. They can occur any time of the year, but mostly occur during long, dry, hot spells. Wildfires in New York and Essex County can occur in open fields, grass, dense brush, and forests.

## Location:

New York State is 30.9 million acres in size with 18.9 million acres of non-federal forested lands. Many areas in New York, particularly those that are heavily forested or contain large tracts of brush and shrubs, are prone to fires. Several towns have large areas of land in the Adirondack preserve and are owned and managed by the State of New York.

A majority of Essex County land cover is forested and State owned, the potential geographic extent of wildfires is quite large. Under dry conditions or droughts, wildfires have the potential to burn forests. The greatest potential for wildfires is in the spring months of March, April, and May, and the autumn months of October and November; 83% of all wildfires occur in these two time periods. In the spring, bare trees allow sunlight to reach the forest floor, drying fallen leaves and other ground debris. In the fall, dried leaves are also fuel for fires.

The following picture was taken as the fires were fought in Altona, Clinton County New York.



## **Previous Occurrences:**

The Adirondacks and Essex County have a history of devastating wild fires.

**1903** Adirondack wildfires: The development of the Adirondacks depended mainly upon the mining, lumbering, tourist, and agricultural industries. Early industry in the region consisted of mining operations and lumber operations. In 1903, the Delaware and Hudson Company, after acquiring the Chateaugay and Lake Placid Railway Company, secured control of the Chateaugay Ore and Iron Company, with the view of increasing the mining and smelting operations at Lyon Mountain and Standish and, subsequently, freight movements on its railroad lines. Shortly after these acquisitions, during the summer and fall of 1903, destructive forest fires burned over approximately three-fourths of the Chateaugay Company's forest. A portion of the acreage, burned clean of timber, was later considered as entirely denuded. The major portion of the burned area was probably affected by serious ground fires, which did not entirely damage the remaining stands of timber, but necessitated placing this timber on an early market. Forest fires continued burning year after year. These fires, most severe in 1903, 1908, 1911, 1913, and

1915, destroyed practically all timber that was ready for market and scorched the ground so badly that the humus, needed by the soil to establish another ground-cover of valuable hard and soft woods, was burned down to sand and stones, on which a fire cover of inferior woods began to grow in order to assist nature in enriching the soil cover. The Dock and Coal Company continued cutting in the burned areas from which salvage could be obtained, and from the lands which had not been burned until 1918, when operations ceased as the timber supply was exhausted. There remained only scattered areas of cull hardwoods that had been lumbered once and burned over several times. Other than such hardwoods, nothing remained but undersized swamp balsam and spruce which, because of its location in wet areas, had not been badly burned. Adirondack Museum website was the source of this data.

### **Adirondack Fires of 2002**

New York Department of Environmental Conservation (DEC) Forest Rangers, along with the State Police Aviation Unit, Department of Correction Services inmate crews, and Local volunteer fire departments fought more than 36 active forest fires, encompassing more than 320 acres in the Adirondack Mountains during August of 2002. Dry summer conditions made forest fires easy to start, and when coupled with the gusty winds, the fires spread quickly. Certain regions of the Adirondacks received less than two inches of rain in July and less than one inch in the month of August.

DEC banned campfires on all State Forest Preserve lands in the Adirondack Park, except DEC campgrounds. In addition, to prevent additional human-caused wildfires, the DEC suspended all burn permits issued by the Agency in the counties comprising DEC Region's 5 and 6, which include Clinton, Essex, Franklin, Hamilton, Fulton, Saratoga, Warren, Washington, St. Lawrence, Jefferson, Lewis, Herkimer, and Oneida counties. While the majority of the fires were caused by lightning strikes, unattended campfires were the cause of at least twelve of the fires in the month of August. The majority (28), and largest (6 fires ranging from 4 to 75 acres in size), of the fires were located in Essex (15) and Warren (13) Counties. Fires also burned in Clinton, Hamilton, Lewis, Saratoga, and Washington Counties.

The six largest fires were:

• 75 acres on Huckleberry Mountain, Town of Johnsburg, Warren County;

- 45 acre Gooseneck Fire, Town of Ticonderoga, Essex County;
- 25 acre Ridge Fire on Hail Mountain, Town of Crown Point, Essex County;
- 8 acres on Whiteface Mountain, Town of Wilmington, Essex County;
- 7 acre fire on Hail Mountain, Town of Crown Point, Essex County;
- 4 acres on Beach Mountain, Town of Bolton, Warren County

### Altona Fire of 2018:

Clinton County experienced a large wildfire in the summer of 2018. A wildfire raged over 328 acres in Altona Flat Rock, with a massive effort underway to stem its tide. The blaze was still miles away from any structure on Friday, and no evacuations were in the works, said Eric Day, director of Clinton County Emergency Services. At least 20 fire departments are involved in the continuing efforts to control the blaze, which started out as a 60-acre fire when it was first reported to Clinton County Dispatch at about 1 p.m. Thursday. About 120 people are fighting the fire from multiple directions, including the Altona Fire Department and 18 other departments from Clinton County, northern Vermont and southern Quebec. Three other fire departments are covering the Altona Fire Station. About 10 State Police officers, 25 Department of Environmental Conservation forest rangers and inmate and town crews are also pitching in, along with two Huey helicopters equipped with 300-gallon buckets to drop water on the blaze. Gov. Andrew Cuomo sent eight National Guard soldiers and two UH-60 Blackhawk helicopters, which are on standby, each equipped with a 660-gallon Bambi bucket. "Fire department crews, working in lockstep with forest rangers, worked fire lines with hand tools and chainsaws and also with brush trucks hauling water into the woods to wet the fire line," Day said. Bulldozers from the towns of Altona and Mooers and Todd Devo Construction contributed to the effort. Inmate hand crews were also what Day described as "a full-court press to work the fire."Water was being brought in from nearby Dead Sea and Miner Lake. The Salvation Army was delivering snacks and water to the crews

The Forest Rangers division of the DEC is the state's lead agency for the control and prevention of wildfires. In 2017, Forest Rangers reported 55 wildfires, which burned a total of 191 acres, the lowest total acres in Ranger history. During the last 25 years, Rangers responded to an average of 209 wildfires per year, which burned an average of 2,001 acres per year. More than 1,700

volunteer and career fire departments are the primary first responders to wildfires throughout the state. Combined, fire departments and Rangers responded to 1,401 wildfires that burned a total of 474 acres in 2017. The past 15-year average occurrence of wildfires in New York is 5,420 fires, burning 5,335 acres per year.

The following map indicates wildfires in New York State from 2003 to 2017.



New York State is a "home-rule" state where local emergency services have primary authority for any and all emergencies. In the case of wildfire, the local fire department has the primary responsibility (incident command) for the control and containment of wildfires in their jurisdiction.

The Forest Ranger Division has a statutory requirement to provide a forest fire protection system for 657 of the 932 townships throughout New York. This area excludes cities and villages and covers 23.5 million acres of land including state-owned lands outside the 657 towns.

Historically, local fire companies have mutual aid agreements to assist other jurisdictions in the suppression of wildland fires. DEC staff also provide invaluable resources for fire suppression in the Adirondacks and Essex County.

### **Probability of future events:**

Wildfires will continue to occur in Essex County as large areas of land are forest resources. These fires will be extinguished by local fire departments with assistance from the State through the DEC. These resources will continue to respond to wildland fires in Essex County and elsewhere in the Adirondack Park.

- Low probability (less than once every 50 years)
- Medium probability (once every 8-50 years)
- High probability (once every 1-7 years)

These wildfire events have a medium probability of occurring in Essex County, but will have minor impacts to the built environment of Essex County.

### **Potential Loss:**

The potential for wildfires to affect structures is minimal due to the most vulnerable areas being forest areas with no structures. Areas near these resources may see limited impact to structures, but fire response would diminish the vulnerability due to their ability to extinguish wildland fires.

### **Conclusion:**

The residents of Essex County are a community minded population, and assist other residents in time of need. Many residents have generators to supply temporary power until regular power sources are restored. Residents take care of each other by verifying if they are in need of supplies. This sense of community has ensured that residents in an emergency are not alone, and are provided needed supplies and comfort. However, this cannot be an excuse to ignore needed

mitigation and preparedness activities on a community scale; at some point, an event may occur that overwhelms even this generosity of spirit.

# Section 5: Capability Assessment

Essex County is a rural county where the County agencies provide assistance to the 18 towns and 2 villages with a variety of services and grants. This has worked well in the past, as the town and villages often lack the expertise and staff to accomplish these tasks. Several county agencies are profiled to document programs and projects that mitigate hazards.

Essex County has a number of resources it can utilize to implement hazard mitigation initiatives including: emergency response measures, local planning and regulatory tools, administrative assistance and technical expertise, fiscal capabilities, and participation in local, regional, state, and federal programs. The presence of these resources enables municipal resiliency through actions taken before, during, and after a hazard event.

Capability assessment looks at the resources available to local municipalities to reduce disaster risks. These resources can be defined into five categories. They are listed below.

- 1. **Human Resources**: local police, fire and ambulance, emergency management, utility providers, medical assistance personnel, teachers, clergy, social workers, etc.
- 2. Physical Resources: equipment, vehicles, public lands, facilities and buildings, etc.
- 3. **Technological Resources**: Early warning systems, weather alert radios, streamlevel monitoring, etc. Using the Geographic Information Systems (GIS) can produce sophisticated map images. When coupled with other information databases, GIS provides a wealth of visual and factual information for disaster planning, response, and recovery. The Internet is home to hundreds of web pages and home sites related to all types of disaster, emergency management and hazard mitigation.

## 4. Informational Resources and Public Awareness and Education Efforts

- a. National Weather Service
- b. American Red Cross-Disaster Education
- c. Salvation Army
- d. Business groups
- e. Existing public outreach of Emergency Management Agency
- f. Local Emergency Planning Committee's
- g. Regional Groups
- h. School District Plans
- i. Brochures on hazards to be distributed to various locations throughout the county.

- 5. **Financial Resources**: "Where will we get the money for hazard mitigation in our municipality?" Current federal and state sources of funding include:
  - a. Hazard Mitigation Grant Program (FEMA)
  - b. Pre-Disaster Mitigation Program (FEMA)
  - c. Flood Mitigation Assistance Program (FEMA)
  - d. Flood Mitigation Assistance Planning Grant (FEMA)
  - e. USACE Water Resource Development Block Grant
  - f. Small Business Administration Loan Program
  - g. DOT (Transportation Enhancement Program)
  - h. DEC (Dam safety program, Stormwater Management Program)
  - i. Community Development Block Grants (CDBG)
  - j. Department of Agriculture

The following Essex County agencies and several non-governmental organizations conduct mitigation of hazards as part of their daily operations.

# **Boquet Watershed Association**

The Boquet River Association (BRASS) is a small, membership-based and volunteer-oriented non-profit organization dedicated to enhancing the quality of water and life in the 280-squaremile Boquet River watershed. BRASS uses a collaborative, non-regulatory approach to watershed management, and works with individuals, organizations, local governments, state agencies, and federal agencies to solve problems affecting the river.



Formed in 1984, BRASS has a long-standing involvement in issues related to land use, point and non-point source pollution, in-stream and riparian species and habitats, wetlands, water quality monitoring, recreation, and the economy. In 2010, BRASS updated its strategic plan outlining its response to new and existing challenges in the watershed. Other recent projects include a culvert assessment study to identify structures prohibiting fish passage, and monitoring vegetation (including

invasive species) in wetlands throughout the watershed. It also continues to conduct its annual

events including river cleanups, planting projects, informal BRASS Rambles throughout the watershed, and several educational fundraising events.

BRASS serves the Boquet watershed populations and municipalities, including residents and visitors in Elizabethtown, Essex, Lewis, Willsboro, and Westport, N.Y. Local landowners and businesses are its members, and the Board of Directors is composed of appointees from the five watershed towns as well as Directors elected by the membership. To maintain its operation, BRASS relies on membership dues, generous donations and individual contributions of time, talents, skills, and resources. Special projects, like the culvert assessment, wetland monitoring, and the watershed management plan, are funded by various state and federal agencies, regional organizations, or trusts.

Watershed management planning is one way Boquet River citizens can work together to help protect habitat, as well as the roads, bridges, businesses, and homes in our communities. By working together to write a plan that reflects our needs, we can achieve the goals of sustainable economic development, community enhancement, government efficiency, improving recreational opportunities, and restoring the environment.

This map is Major Erosion Control Projects by BRASS.



The watershed management plan of 2013 has the following goals:

**Goal 1**: Expose residents of the Boquet watershed to facts and issues about the river and its riparian corridor. Subjects would include water and habitat quality measures, BRASS strategic issues, why the Boquet River behaves as it does, the interdependent relationships between aquatic and terrestrial plants and animals, and enjoyable pursuits the river environment offers.

**Goal 2**: Improvement of invertebrate and fish habitat to sustain natural reproduction of native and re-introduced fish species and maintenance of minimum water quality standards to meet the NYS DEC requirements of the "Wild, Scenic & Recreational Rivers" act designation.

**Goal 3**: Continuous and varied projects keeping the public informed and engaged in a variety of watershed issues.

**Goal 4**: Reduce nutrient loads to the river and Lake Champlain, and reduce waste and toxic substances in the watershed.

**Goal 5**: Increase public awareness of river behavior, the special propensity for the Boquet River to flood, and specific measures and projects to mitigate flood damages.

Goal 6: Protect, maintain, and enhance biodiversity in the watershed.

**Goal 7**: Promote public access sites along the river for a variety of recreational pursuits and preservation of age-old "swimming holes" without landowner liability.

**Goal 8**: Establish BRASS as a vibrant, energetic, and self-sufficient organization with varying sources of income and administrative continuity.

**Goal 9**: A completed Boquet Watershed Management Plan and a revised, updated BRASS Strategic Plan based on priorities identified in the Watershed Management Plan.

BRASS has accomplished a variety of programs and projects to meet their overall goals of the watershed management plan. Since its inception, BRASS has:

• Planted more than 270,000 tree and shrub seedlings along the river for erosion and flood control.

• Pioneered the planting of large, native tree cuttings for streambank erosion control in the Lake Champlain Basin.

- Worked with farmers to stem soil loss and increase buffer zones and wildlife habitat.
- Built over 1,400 feet of low-cost log cribbing and log terrace structures for erosion control.
- Partnered with local highway departments to develop runoff controls.
- Produced a stream erosion control booklet titled How to Hold up Banks: Using All the Assets

• Implemented runoff controls with local road departments and produced a 24-minute video titled *Looking for Answers: Developing Partnerships for the Control of Sediment Runoff from Rural Roads.* 

• Implemented pilot projects for invasive plant control, and rain gardens for stormwater runoff control.

• Helped re-design FEMA flood zones.

• Conducted studies in water quality, sediment embeddedness, aquatic insects, native mussels, riparian buffer zones, and stream morphology (the research into sediment embeddedness, with assistance from the Fisheries Department of NYSDEC, is one of the most complete and long-term studies in the Northeast).

• Helped towns in alternative sewage disposal methods.

• Hosted "Rambles" to encourage people to explore the Boquet River watershed.

• Conducted the annual Boquet River Clean-up and Trashy Art Day.

• Conducted teacher training workshops in Vermont, New York, and Canada; produced a watershed board game; and developed curriculum and instituted the raising of trout and salmon in seven public schools.

• Designed river-side public access parks totaling over 600 acres; and cleared mountain trails for hiking and cross-country skiing.

• Turned an industrial waste area into an attractive salmon fishing access; helped create a new public park on Lake Champlain; and sponsored international volunteers for public trail work.

• Developed several bicycling and historical tour maps, and initiated natural and historical tours to help the area's economy.

• Provided project information to members, and to over 100 agencies, schools, libraries, museums, and local governments, through its newsletter.

BRASS has a history of implementing projects that mitigate hazards to residents and others in the watershed of the Boquet River. They will continue to implement project and will continue to make the Boquet River a rich resource in Essex County. Additional information of BRASS can be obtained on their website.

## **Essex County Department of Health:**

The Essex County Department of Health is a county agency focused on health. The mission statement of the agency on the agency website is "to prevent disease, promote health, and protect life by contributing to the conditions within our communities such that people can be healthy". This mission is achieved by:

- 1. Assessing and responding to public health needs;
- 2. Educating and empowering people about health issues;
- 3. Mobilizing community partnerships;
- 4. Assuring effective programming and practices;
- 5. Linking people to health services.

New York is one of 26 states where the provision of public health services is decentralized. The Essex County Health Department (ECHD) is one of fifty-seven local public health departments (plus the New York City Department of Health and Mental Health) in NYS that operates under the administrative authority of local government. The Essex County Health Department has been in operation since the inception of Essex County in 1877

There are currently four major program delivery units

- 1. Public Health
- 2. Children's Services
- 3. Women, Infants & Children (WIC)
- 4. Home Health

Public Health Agency-Wide Education and Outreach									
	2017	2016	2015						
Community Outreach Events	72	57	33						
Web Hits	12,984	14,164*	21,581						
Facebook Reach	59,594	37,966	25,212						
Facebook Engagement	5776	3679	1845						
Paid Advertising	51	56	67						
Earned Media/Press Releases	20	18	13						
Essex County Worksite Wellness	13	13	13						

\*Web stats unavailable for two months (July & August) of 2016 due to migration to new web platform.

Essex County Health Department (ECHD) relies on multiple funding sources to fulfill its mission including: NYSDOH State Aid Grants (~70%), NYS Department of Education, Billed

Revenue, and Local Appropriations (~30%). The Agency also has a fiscal group managing all funds, billing and reimbursement collection for programs and services.

The public health preparedness and response program is responsible for ensuring local ability to respond to ever evolving public health threats such as communicable disease outbreaks; natural disasters; bioterrorism; hazardous substance release or accidents; or events requiring mass care. There are six categories to achieve this,

1. Bio surveillance: Lab Testing; Surveillance & Epidemiological Investigation

2. Community Resilience: Community Preparedness; Community Recovery

3. Countermeasures & Mitigation: Medical Countermeasure Dispensing; Medical Material Management & Distribution; Responder Health & Safety

4. Incident Management: Emergency Operations Coordination

5. Information Management: Public Information & Warning; Information Sharing

6. Surge Management: Mass Care; Medical Surge; Fatality Management; Volunteer Management.

### **2017 PROGRAM HIGHLIGHTS**

\* Community Engagement/Coalition Building - active participation in the North Country Health Emergency Preparedness Coalition (HEPC), Voluntary Organizations Active in Disaster Adirondack Region (VOAD-ADK) & Local Emergency Preparedness Coalition.
\* Training – 23 face-to-face, webinars or online trainings were attended by staff. A wide variety of things were discussed, including access & functional needs, crisis and emergency response communication; mass casualty incident triage, non-pharmaceutical interventions and the launch of a new quantitative fit testing device to ensure proper fitting of N95 respiration masks.
\* Planning – development of an Emergency Communications Plan and complete revision of the department Emergency Operations Plan (including continuity of operations during emergencies).
\* Exercises/Real Event Responses - engaged with a total of 16 exercises of real-world events including extreme weather, influenza outbreak, chemical response and emergency communications.

\* Volunteer Management – rolled out a new version of the volunteer management system; conducted three sessions each of drills, activations and trainings.

The Essex County DOH can be utilized during disasters for information about specifics resident's needs. The Essex County DOH will continue to implement programs to mitigate hazards in the County.

## **Essex County Department of Public Works**

The EC DPW has responsibility of all county roads, county bridges, and all of the county government buildings. Bridges on town roads are also considered Essex County bridges and the DPW has responsibility over those bridges as well. They perform essential services such as paving of roads, installations of culverts, replacement of county bridges, maintenance of building, and assisting all towns and villages during times of disasters. Staff are instrumental in keeping Essex County rolling.

The DPW staff tracks town road paving projects that will be completed in the future, and will time their culvert, bridge or other projects as these town projects are begun. This ensure roads paving is needed only once as projects are coordinated.

The AuSable River experienced two ice jam events in the winter on 2019. Meetings were held with ACE, DEC, County and Town of Jay officials on actions that could be taken to reduce the impact from ice jam flooding. The DPW Deputy Superintendent implemented removal of ice from the river. The many large piles of ice were placed on the river edge. Over half a mile of ice was placed outside the river. Although not mitigation, it reduced the overall flood threat to areas of Jay. Coordination of the Essex County DPW and Essex County Towns and Villages is a normal way of operating. What needs to get done is done!

The philosophy of the Essex County Department of Public Works (EC DPW) is to balance public safety with the natural environment. A bridge in North Elba was in need of replacement. The Nature Conservancy wanted the bridge two feet wider at the base to allow pools and riffle areas to develop which would be favorable to native fish species to move higher in the watershed for spawning purposes. This project allowed the bridge replacement to be constructed in such as manner to coordinate with environmental organizations and promote native fish species.

The DPW uses a variety of funds to complete their projects. Federal highways funds and New York bridge banks funds are two of the most used funding sources for projects. FEMA provided a large amount of funding for projects needed after TS Irene in 2011. Several of these TS Irene projects are still being completed today. Highlights from 2102 and 2013 provide specific projects that have been implemented by the DPW.

### 2012:

1. Moriah Center Bridge, Town of Moriah. (RED FLAG REPAIR)

On August 2, 2012 ECDPW was alerted by NYSDOT of a "PIA red flag" issuance on Moriah Center Bridge. This bridge was replaced within 2 weeks.

2. Elk Drive Bridge, Town of Ticonderoga.

This highly visible bridge located in the scenic and historic town park is stated for replacement. The project will be sensitive to the visual aspects of the area while providing an unlimited and safe crossing over the LaChute River

3. Reber Bridge, Mountain View Drive, Town of Willsboro.

Mountain View Drive is designated as a federal aid highway and is therefore eligible for federal funding. The existing 18 foot span culvert will be replaced with a 30 foot wide structure capable of handling the heavy truck traffic on this road.

4. Tahawus Road Bridge, Town of Newcomb

This bridge over the Hudson River is scheduled for rehabilitation.

5. Sprague Mill Bridge, Town of Moriah.

This bridge was damaged by the spring event storm event (DR1993) in 2011. The structure is on a federal aid highway and eligible for funding from FHWA. The bridge is not FEMA eligible because of the FHWA funding. After 17 months of waiting, Federal authorization was received in September to proceed with the bridge replacement. An Engineering design consultant has been selected and design has begun. The project is scheduled for replacement in 2014.

## **Disaster Projects:**

Recovery from the two declared disasters in 2011, Tropical Storm Irene (DR4020) and the Spring Storm (DR1993) continued in 2012. There were still six disaster projects remaining that are progressing to completion. The following are disaster projects worked on in 2012.

1. Hulls Falls Road CR 69), Town of Keene.

Preliminary design and concepts were developed in 2012 for the reconstruction of the washed out section of this road. The road is currently reduced to one lane of traffic.

2. Styles Brook Road (CR-52), Town of Keene.

This road was completely washed away and reconstructed in 2011 leaving only the placement of asphalt for 2012. This project was completed.

3. Witherbee Road (CR-70), Town of Moriah.

The final course of hot mix asphalt top was placed by county forces completing this project. The major parts of this project were completed the previous year.

4. Pilfershire Road (CR-54). Town of Moriah. A storm damaged culvert was replaced.

5. New Hague Road (CR-38), Town of Ticonderoga. hot mix asphalt paving was installed completing this project. The majority of the project as completed the previous years.

6. Shore Airport Road (CR-49), Town of Ticonderoga. Three large deteriorated culverts were lined with concrete extending their life. The work was performed by contracted forces.

## **Miscellaneous Capital Projects:**

1. Old Military Road (CR-35), Town of North Elba. This project is funded through the HBRR program. The project will address several substandard features of this highly travelled road that is used as a by-pass of the village of Lake Placid. The project includes road realignments and a new bridge over the Chubb River.

2. Moriah Center Bridge (BIN 3501800), Town of Moriah. Moriah Center Bridge is the most heavily traveled bridge on the county's inventory. The project will replace the old steel and timber structure with a new precast concrete three sided box. Design for this project began design in 2011. The project is federally funded with the county paying 5% of the total cost.

3. Highlands Road (CR-28), Town of Chesterfield. Drainage repairs were completed.

4. Essex Storm Server, Lakeshore Road (CR-80), Hamlet of Essex. Drainage upgrades to the Hamlet of Essex storm server began in 2012. The project will address the lack of a functioning drainage system in the hamlet area by installing new drainage structures and treating the storm water before it enters the lake. Design of the drainage system was completed by the Essex County Engineering staff and materials were purchased. Installation of the drainage structures will begin in the spring of 2013.

5. Morehouse Bridge (B.I.N.3-31760), Town of Willsboro. Red flagged timber deck components have necessitated the replacement of the deck and steel repairs in the rehabilitation of this bridge on Sunset Drive (CR-68).

### **2013**:

1. Essex Storm Sewer continued in 2013

2. Old Military Road (CR-35), Town of North Elba. Projects continued in 2013.

3. Moriah Center Bridge, project started 2012 was completed in 2014.

4. Elk Drive Bridge, Town of Ticonderoga. Project was completed in 2014.

5. Reber Bridge, Mountain View Drive, Town of Willsboro. Project completed in 2013.

6. Tahawus Road Bridge., Town of Newcomb. This project was completed in 2013.

7. Otis Bridge, Town of Elizabethtown. This project started in 2012 was finished after winter shutdown and is in use. Project was completed in 2013.

8. Ford Bridge, Town of Schroon. This Red flagged bridge was replaced with a "next-beam" pre-cast concrete bridge system on new poured in place concrete abutments by County and Contracted forces.

9. Adirondack Loj Bridge, Town of North Elba

This red flagged and flood damaged bridge was replaced with a "next-beam" pre-cast concrete bridge system on new poured in place concrete abutments on this heavily traveled road that

accesses a major trail head to the high peaks region. The new bridge is open to traffic and has some finish work to be completed in the spring.

10. Letsonville Bridge completed in 2014.

11. Martins Bridge, Town of Schroon. Replacement of this red flagged structure was completed in 2013.

12. Grove Road Bridge, Town of Jay. Design of a new two lane bridge replacing the old one lane bridge at this very busy crossing began in 2013.

13. Bartlett Bridge Town of Keene. This red flagged bridge that was closed and a temporary bridge owned by Essex County was installed.

14. Molly Bridge Town of Keene, bridge replaced.

15. Stickney Bridge, Town of Jay. Completed

16.Cemetary Bridge, Town of Jay. Bridge replaced.

17. H Weight Bridge Town of Crowne Point. Completed.

### **Disaster Projects**

Recovery from the two declared disasters in 2011, Tropical Storm Irene (DR4020) and the Spring Storm (DR1993) continued in 2013. There are still five FEMA eligible disaster projects and one FHWA eligible project remaining.

1. Sprague Mill Bridge, Town of Moriah.

This bridge was damaged by the spring event storm event (DR1993) in 2011. The structure is on a federal aid highway and eligible for funding from FHWA. Federal authorization to begin was received in September 2013 to proceed with the bridge replacement. An Engineering design consultant has been selected and design has begun. The project is scheduled for bidding in 2014.

2. Hulls Falls Road (CR-69), Town of Keene. This flood damaged road that cuts through rock ledge was reduced to one lane of traffic after the storm event. Alternatives have been developed and right of way acquisition is being negotiated.

3. DR4020) Hasseltine Bridge Town of Jay. This bridge was temporarily reduced to one lane of traffic pending replacement of the structure. This project is currently being appealed.

4. (DR4020) Lobdell Bridge, Town of Elizabethtown. The east abutment of this bridge collapsed from flood waters during Tropical Storm Irene. Essex County installed a temporary bridge until the bridge is replaced. Unstable stream banks require relocation of the bridge. Negotiation for right of way, Environmental permits and design were progress in 2013.

5. DR4020) St. Hubert's Bridge, Town of Keene. This bridge was completely washed away during Tropical Storm Irene. Design for replacement is near completion and the project is expected to be bid in 2014.

6. (DR4020) Dr. Ray Pedestrian Bridge, Town of Keene. This old lenticular truss pedestrian bridge was washed away during Tropical Storm Irene. DPW plan to re-use the trusses at Rolling Mill Bridge in Jay for this bridge. Rolling Mill is scheduled for construction in 2014. When this project is completed with the new bridge open the trusses from Rolling Mill Bridge will be installed at Dr. Ray replacing the pedestrian bridge.

The department staff ensure that people are safer by implementing projects as funds are available. The County department will continue its current implementation of projects.

## **Essex County Department of Emergency Services:**

Essex County Department of Emergency Service's Mission is "to protect the lives and property of our citizens and that of the visitors to Essex County from the harmful effects of natural and man-made disasters, through our experience, training, knowledge and resources. This is accomplished through planning, response, recovery, and mitigation efforts. Coordination of the Enhanced 911 Communications System for the protection and safety of the citizens and visitors to Essex County is vital to accomplishing the agency mission."

Essex County Emergency Service's mission is achieved by many specific programs:

- 1. Emergency Scene Coordination (Fire, EMS, HAZMAT, Cause and Origin)
- 2. Hazardous Materials / WMD Response Team Operation
- 3. Operation of the County Emergency Operations Center (EOC)
- 4. Operation and Maintenance of a County-Wide Public Safety Radio System

5. Development and Maintenance of Emergency Planning Documents



6. Development and Maintenance of Emergency Mutual Aid Agreements

7. 911 System Coordination, Public Safety Answering and Radio Dispatch

Emergency Services Training Programs consists of the following:

1. Fire prevention and suppression

2. Emergency Medical Service (EMS)

3. HAZMAT / WMD Response

4.Incident command and management training

The Emergency Services Office has 6 budgets within its department. They are Communications, Fire Coordinator, Emergency Services, Homeland Security, Enhanced 911 and Emergency Medical Services.

The following information was obtained from the Department of Emergency Services Annual report from 2014. Annual reports from the three years prior (2011, 2012, 2013) report similar achievements through the year.

In 2014 the agency completed the following programs or projects.

- Participated in Lake Champlain Coalition Meetings with the EPA (Environmental Protection Agency).
- Coordination and Organization of the Tri-County Animal Response Team, along with Clinton County and Franklin County.
- Development of an Incident Action Plan for the Lake Champlain Rail Corridor.
- Coordination of Planning and Response Drills with Canadian Pacific Railway.
- Director, Deputy Director and Chairman of the Board attended New York State Emergency Management required Tier I and II Certification Program for Emergency Managers.
- Continuously updating Pictometry Images to match upgraded Communications Center Reporting System, which is now accessible online.

- Participated in the Lake Champlain Marine Response South (LCMRS) group meetings with Vermont Fire Departments and the United States Coast Guard in preparation for marine rescues or any other emergencies on or around Lake Champlain.
- Attend monthly New York State Emergency Management meetings and trainings in Queensbury.
- Continuously working on inventory and distribution of the new mobile radios to the appropriate Police, Fire, and EMS Agencies.
- Appointed, and are in the process of obtaining training for, Essex County Emergency Service's Intelligence Liaison Officers as directed by Homeland Security.
- Obtained a Fiber Connectivity Grant by working with the DANC (Developmental Agency of the North Country) organization to provide a vital backup link to Essex County's single point of failure radio communications site – Wells Hill and Belfry Mountain.
- Worked on NYS Interoperability/PSAP Grants with Mike Mascarenas.
- Office is Primary Coordinator of the Essex County Radio Project.

-Performed numerous site visits and inspections on radio transmitter sites and helped coordinate work and meetings.

-Obtained a Mutualink interoperable communications system from New York State Office of Interoperable and Emergency Communications (OIEC) that shares voice, video, data and text horizontally with other County, State and Federal agencies and jurisdictions.

- Installed a Motobridge system with grant funds that will eventually allow Essex County to operate their radio system remotely in an emergency.
- Worked with NYSP in the integration of the entire Troop B Communications into our Communications Center. Approximately half of this project is done, with the other half to come.
- Ongoing recruitment and retention of Firefighters on a joint committee with Essex and Clinton County Fire Departments.
- Participated in Active Shooter Drill with the NYSP at Willsboro Central School.
- Training of the newly issued Foam Trailers from NYS.

• TIER II Reporting and Coordination of the LEPC (Local Emergency Planning Committee).

-Attended 2-day EPlan Training.

- Worked with The National Weather Service on Advanced Warning and Reporting. This entails a weekly briefing Conference Call.
- File NIMSCAST Reports as required annually.
- Responded to the many emergency situations and numerous fire investigations within the County of Essex during the year.

## **Planning:**

The Essex County Department of Emergency Services accomplished the following planning activities in 2015.

- Applied for grant to update the Hazard Mitigation Plan
- The following Essex County plans underwent annual updates:
  - -Comprehensive Emergency Management Plan

-HAZMAT -Sheltering Plan -Terrorism Incident Plan -County Fire Mutual Aid Plan -Mass Fatality Plan -County Animal Response Plan -Debris Management Plan -Hazard Mitigation Plan

- Updated individual Town CEMPs (Comprehensive Emergency Management Plans) when asked.
  - 15 towns have existing CEMPS at this time.
  - Scheduling remaining towns in 2016.

## **Grants Management:**

The Essex County Department of Emergency Services administered many grants in 2015.

The office completed 3 grants and applied for 2 new grants in addition to the annual grants.

## HAZMAT and special operations:

HAZMAT is one area that the DES is responsible for. Essex County Hazardous Materials Response Team responded to Saranac Lake for a Radioactive Material Incident which was concluded successfully. • Developed and conducted twelve training drills, three tabletops, and one exercise this

past year on such topics as:

-Mask fit -CP Rail Oil Spill -Chemical Suicides -HAZMAT Technician Refresher -Decontamination -Level A Communications -Meters -Incident Command -Administrative Business -Compressed Natural Gas -Foam Trailer Training -Chempack -Anthrax -Bioterrorism Attack Exercise -Industrial HAZMAT Tabletop -Technician Crude Oil Rail Incident Tabletop -Agricultural Tabletop held at a local apple orchard

• Team members attended a number of training programs and conferences.

In May, a contingent from the team attended the International Association of Fire Chief's Hazardous Materials Conference in Baltimore, Maryland. -Four-day conference where members attended classes in Leak and Spill Control, Bonding and Grounding, Chemical Identification, Management, Cost Recovery, Cargo Tank Emergencies, Air Monitoring, and Responder Safety among others. -SERTC Training in Pueblo, CO on response to Crude Oil Fires, Emergency Response to Domestic Biological Incidents, Air Monitoring Emergencies, Properties of Natural Gas Training.

• Coordinator attended workshops/trainings that are directly related to the funding future of

the program as well as the management of the program as it pertains to the New York

State Homeland Security Strategy.

-HAZMAT Leadership Conference hosted by Division of Homeland Security and Emergency Services (DHSES) -CPR and AED Program -ICS 300, 400

- Coordinator also completed five Hazardous Chemical Site Visits within Essex County -International Paper Mill, Ticonderoga
  - -Crown Point Facility
  - -Gunnison Apple Orchard, Crown Point
  - -Olympic Arena, Lake Placid
### -Griffith Oil

### **Communications and dispatch:**

Communication and dispatch is also a responsibility of the Department of Emergency

Services. Answered 71,104 calls for assistance in 2015, which includes 13,887 calls for the 911 call line.

#### **Emergency medical services:**

- EMS providers handled 4,258 calls ranging from motor vehicle crashes, to medical and psychosocial emergencies, as well as coverage of large-scale public events that took place in their coverage area.
- There were 15 volunteer and 2 paid agencies serving the citizens and visitors of Essex County. North Country Life Flight is the primary Air Medical transport for the County.
- Coordinated the EMS aspect of the following events:
  - -Ironman Approximately 21 agencies covered this event.
  - -Wilmington-Whiteface 100k in June
  - Essex County Fair

#### Fire investigation:

- Deputy Fire Coordinators responded to 52+ incidents.
- Fire Investigators responded to 28+ (still pending input to Fire Investigation Database) fire investigations throughout 2015 in Essex County.

### **R.A.C.E.S. (RADIO AMATEUR CIVIL EMERGENCY SERVICE)**

- R.A.C.E.S. members participated in quarterly hospital communications drills and daily weather NETS.
- When all other forms of communications fail, R.A.C.E.S . provides a vital link to hospitals, EOCs and other critical infrastructures.

The department is a critical component of mitigating hazards in Essex County. When considering the four phases of emergency management – preparedness, response, recovery and mitigation – the department is critical in ensuring residents and others are prepared for an emergency, can respond to an emergency, can recover from the emergency, and mitigate that emergency or hazard.

Essex County Department of Emergency Services will continue to implement their programs to reduce the effects of hazards to residents in Essex county.

## **Essex County Office for the Aging:**

Essex County Office for the Aging Our mission is to provide leadership and advocacy which creates an environment enabling the County's aging residents to determine their own destiny in a positive productive manner.

Outreach workers help to identify older adults who are in need and aid them in accessing services. Staff will provide home visits and help in completing paperwork which may include, but not limited to, applications for Lifeline, insurance forms, Medicare, SNAP (food stamps), Medicaid, HEAP, and other programs.

Office for the Aging also works closely and makes referral s to other agencies such as Adult Protective Services, Cornell Cooperative Extension, Public Health Nurses, Coordinated Care Unit, Retired Seniors Volunteer Program (RSVP), Third Age Adult Day Care, Social Services.

The Agency provides the following to older residents of Essex County:

- Congregate Meal Sites: There are 13 congregate meal sites throughout the county where older adults enjoy a hot meal as well as socialization and educational, recreational and health related programs.
- Home Delivered Meals are available for those older adults who are home bound or have a nutritional need. The program covers all the towns in Essex County and provides a healthy, hot meal as well as the benefit of a daily check on the senior's well -being.
- Medical Transportation Clients 60 and over can contact the Transportation Department to arrange rides to medical appointments.
- EISEP (Expanded In -Home Services for the Elderly Program) Directed at elderly individuals and couples who need homemaker or personal care services as well as a Lifeline unit .
- Health Insurance Counseling Staff can assist with health insurance such as enrollment into Medicare plans, Prescription drug plans, etc.
- Employment Opportunities Our office can help coordinate employment opportunities for individuals 55 and older.

- Home Rehabilitation We can help older adults apply for home rehabilitation programs for those who cannot make necessary repairs.
- Legal Services Office for the Aging contracts with a local lawyer to provide older adults basic legal assistance. Call us for an appointment.
- Respite Care Office for the Aging can assist in connecting families to short term care that can help provide a break from the daily routine and stress involved with care giving.

The Department also is critical during emergencies. They keep and maintain a list of all Essex County residents who receive their assistance. A separate list indicates older residents and other who require medical needs at home such as kidney dialysis or oxygen. The agency supports the Emergency Operation Center during a disaster as a resource for person who many need additional or specific assistance such as medical needs. They are instrumental in ensuring the older residents of the Essex County survive disasters.

### **Essex County Soil and Water Conservation District**



The Essex County Soil and Water Conservation District was formed in 1965, and was authorized under NYS law to develop and carry out programs of soil, water, and related natural resource conservation by providing technical assistance and programs to residents, land owners, and governmental entities. The Essex District is run out of a

DPW offices in Lewis. Cooperative Extension, run through Cornell in New York as New York's land-grant university, are state-wide entities that provide a myriad of services to persons and entities in a state, including, but not limited to, informational programs and classes for residents, assistance for agricultural entities in the state, and a voice for natural resource conservation.

The Essex County Soil and Water Conservation District (hereafter SWCD) has at any point multiple programs occurring to benefit the county. Here are the highlights of the past several years.

**Agricultural Environmental Management:** It is a voluntary, incentive- based program, to help farmers to address natural resource concerns through the help of conservation agencies. The benefits provided by AEM help to establish Best Management Practices (BMPs), increase

awareness of impacts on the environment and protect drinking water, on top of several other benefits. Several funding sources are available to Essex AEM farms in order to implement BMPs and conservation stewardship. The SWCD also works closely with the USDA's Natural Resource Conservation Service to help landowners secure cost sharing for their conservation efforts.

**Conservation Reserve Enhancement Program:** The New York State Conservation Reserve Enhancement Program (CREP) encourages farmers to reduce nutrients and sediments that enter water bodies to improve water quality, protect public water supplies and uphold good farming practices. CREP provides an economic incentive to farmers who participate in the program by renting less productive areas of land that are placed into vegetative cover near sensitive water bodies. CREP practices include tree plantings, creating wildlife habitat, riparian buffer, filter strips, restoring wetlands, and many others.

**Forestry Management Advice**: Managing a forest provides several tangible benefits, including protecting both the natural beauty and wildlife habitat that draw people and animals to a location, and the economic value provided by timber or forest farming to the landowner. The SWCD provides forestry assistance to county forest lands, several towns, and from some participating AEM farms.



**Stormwater Management**: With the goal of reducing rainwater runoff and excess sedimentation entering waterways, the District has made educational programs available to residents and construction projects completed. Some examples of these are rain barrel construction classes (to capture runoff from roofs), roadway temporary storage tanks to ease sedimentation, properly sizing and constructing culverts near roadways, and hydroseeding ditches.

These two pictures are during, and two years after a successful hydroseeding project.

**Informational Brochures**: There is a brochure on their website from pond management – how and why ponds are built, as well as information about how to choose a good pond site and how different elements of the environment affect these choices. There is also a post-flood stream rehabilitation handout, that outlines the basics of debris removal and stream channel reworking that can be necessary after a flood event. These brochures are useful for those who are undertaking these sorts of projects.

**Habitat Enhancement Programs:** Programs to enhance natural habitats include educational classes like Salmon in the Classroom, designed to teach schoolchildren about environmental lifecycles, assistance to landowners in providing habitat on their properties, i.e. birdhouses and native shrubs, and a culvert inventory program. The culvert inventory is part of a larger regional program, and it designed to assess county inventories and decide which culverts may need upgrades due to under sizing or being in poor condition.

**Equipment Rental:** There are some specialized pieces of equipment that the average landowner needs infrequently enough that owning it is a bad choice or are too expensive to own for the average landowner. The SWCD has the ability to rent some of these pieces out and thus allow landowners access to this equipment that makes jobs easier and faster. Examples include broadcast seeders, trailer or tractor mounted post pounders, and straw bale mulchers.

**Tree and Shrub Sale**: A yearly event that allows residents to purchase young trees and shrubs for their lands.

The Soil Water Conservation District has completed many projects over the years. The following information was obtained from annual reports from the agency.

#### Specific examples of projects completed in 2014:

- \$1,175,000 invested from multiple revenue streams for eight stream stabilization projects.
  2850 feet of streams stabilized including Jay Bridges, Gulf Brook, Elizabethtown Fish and Game Club, Rivermede, two projects on Styles Brook, and two on private lands.
- 2- \$44,050 invested for 1800 feet of riparian buffers on East Branch Au Sable River, West Branch Au Sable River, Boquet River, Gulf Brook, Lake Champlain, and Styles Brook.

- 3- \$45,000 invested in habitat rehabilitation in the form of culvert retrofitting to promote fish and wildlife habitat on .63 acres.
- 4- \$500,000 invested in 700 foot of Bulwagga Bay shoreline stabilization.
- 5- Continuing repairs and stabilization at Gulf Brook following the storms of 2011. 4000 willow cuttings were planted this year to mitigate the risks to the community when the next flood occurs.
- 6- Solar watering system at several AEM farms, to help keep livestock out of the stream proper. This protects the stream and water quality downstream.
- 7- 20 acres of cover crop planted at AEM farms.
- 8- Timber harvesting on well managed properties brought in \$40,000 this year for the county. This was a new program for this year.
- 9- Environmental Field Days were hosted in 12 school districts. These educational programs benefit not only the student attendees, but parents as well when the students bring what may be new knowledge home with them.

#### Specific examples of projects completed in 2015:

- \$550,000 invested in two stormwater management projects to prevent sediment incursion in both Lake Champlain and Schroon Lake.
- \$440,00 invested in 700 feet of stream stabilization on East Branch Au Sable River and Boquet River.
- 3- \$4000 invested in septic tank pump outs on 28 systems within 300 feet of Schroon Lake.
- 4- Removal of two dams Willsboro Dam in Willsboro and Marcy Field Dam in Keene Valley. One dam mitigation occurred at Petro Dam in Port Henry. Funds provided by FEMA.
- 5- \$1,300,000 invested in culvert replacement.
- 6- On Agricultural Environmental Management (AEM) farms, a 1.5 million gallon manure pit was dug to prevent deleterious water quality affect in Lake Champlain. Fencing and stream crossing was provided to another, to keep livestock out of the stream. Also, 52 acres of cover crops were planted this year.
- 7- Environmental Field Days were held at 12 school districts.
- 8- \$11,547 invested in 4150 feet of riparian buffer in Essex County.

- 9- 10.85 critical areas broadcast or hydroseeded this year, including at the new Moriah Health Building, the Willsboro bank stabilization project and a tributary that crosses Springfield Road in Wilmington.
- 10-Installing a dry fire hydrant in Keene. \$1200 was invested in this public safety project.

#### Specific projects completed in 2016:

- 1- \$39,000 invested in stormwater management in Jay, Ticonderoga, and the Fairgrounds.
- \$112, 467 invested in 400 feet of bank stabilization along the McKenzie Brook, North Branch Boquet River, and Rocky Branch.
- 3- \$6,900 invested in anti-invasive species efforts on 4,146 acres of lands and waters.
- 4- \$1,256,987 invested in culvert assessment and replacements. Five culverts replaced.
- 5- \$15,000 invested around Lake Champlain for soil testing and cover crops.
- 6- 100 acres of cover crop planted on AEM farms. Also obtained high tunnels for some farms, to extend the growing season of agricultural crops.
- 7- \$2,400 invested in planting 1.5 acres of riparian buffers on 5 separate projects.
- 8- 10.6 acres of critical areas were seeded.

#### Specific projects completed in 2017:

- \$38,00 invested in stream stabilization funded by US Fish and Wildlife, Ausable River Association, and land owners.
- 2- \$23,000 in stormwater management programs for Lenny Preston Road.
- 3- \$10,000 in raingardens in the county.
- 4- 1 culvert replacement on Nugent Road in Jay.
- 5- Planted 4.06 acres of riparian buffers in nine locations throughout county.
- 6- Seeded 10.3 acres of critical areas near roads, businesses, and streambanks in 24 locations throughout the county.



7- Helped mitigate the Stickney Bridge Road slope failure through the use of geoweb to help ground stabilization.

8- Held a Low Impact Logging workshop in conjunction with the Cornell Cooperative Extension Program, to educate landowners about the possibility and impact of low impact logging on small woodlots. Low impact logging allows logging on land with minimal environmental effects, allowing timber to be harvested sustainably.

The Essex County Soil and Water Conservation District has completed many projects that improve the natural resources of Essex County and make the County less vulnerable to disaster events.

## **Office of Community Resources:**

The Office of Community Resources was developed to better serve the residents of Essex County by combining the offices of Planning and Grant administration. By combining these offices, the county is able to better utilize staff to better manage the grants of the towns and county.

Primary responsibilities are

- 1. To provide grant services to towns and villages
- 2. To provide grant services to County agencies
- 3. Claim administration
- 4. Project management
- 5. fiscal services for grants
- 6. Report to the County Manager
- 7. Environmental permitting and review
- 8.General Municipal Law Review.

The table below indicates grants that the agency has managed to increase mitigation actions and projects in Essex County.

Date	Name of	Description	Funding	Recipient	Approved
Submitted	Grant		Source	Agency	Amount
2010	Historic Property Preservation & Planning Program	Whiteface Memorial Highway Complex – restore Tollhouse shingles, replace boilers, structural assessments, new roofs, replace water and wastewater systems, re- point masonry and highway stone guard rail.	NYS OPRHP	ORDA	\$250,000
2011	National Scenic Byway	Lake Placid to Ray Brook recreational trail construction.	Federal Highway Administration Via NYSDOT	Town of North Elba	\$1,208,708
01/02/12	Irene Recovery Strategy Grant	Town Recovery Plan	NYS Department of State	Town of Jay	\$50,000
01/02/12	Irene Recovery Strategy Grant	Town Recovery Plan	NYS Department of State	Town of Keene	\$50,000
03/15/12	Local Waterfront Revitalization Program	Watershed Management Plan	NYS Department of State	Ausable River Association	\$217,950
04/09/12	Flood Mitigation Grant	Provides funding for unmet needs due to Hurricane Irene.	DEC	Essex County	\$500,000
07/12/12	Office of Parks	Adaptive re-use of North Elba Landfill sites	NYS OPRHP	Town of North Elba	\$435,000
07/12/12	HMGP	Upper Chilson Water Main	FEMA	Ticonderoga	\$2,000,000
07/16/12	Local Waterfront Revitalization Program	Bulwagga Bay Campground Shoreline Stabilization	NYS DOS LWRP/SHPO Parks Dev.	Town of Moriah	\$249,815
10/05/12	Essex County Broadband Service Expansion	Connect NY Broadband Grant Program	Empire State Development	Town of Jay & Wilmington	\$557,00
2013	DWSRF	Drinking Water Source	EFC	Newcomb	\$2,000,000
2013	DWSRF	Drinking Water Source	EFC	Town of Essex	\$2,000,000
06/26/13	Hazard Mitigation Grant Program	Provides funding for the Emergency Operations Center	OEM	Essex County	\$0

## **Community Resources Projects**

07/12/13	HMGP	Back-up Generators for pump station	NYS Office of Emergency Management	Ticonderoga	\$0
07/19/13	Green Initiative Plant Program	Bicentennial Park Stormwater	NYS Environmental Facilities Corporation	Ticonderoga	\$539,103
07/17/13	Engineering / Planning	Engineering WWTP	NYS Environmental Facilities Corporation	Willsboro	\$18,750
07/17/13	Engineering / Planning	Engineering WWTP	NYS Environmental Facilities Corporation	Keeseville	\$30,000
07/18/13	Uihlein Sports Grant	Grove Park	ACT	Town of Jay	\$2,000
07/23/13	Parks & Rec	Rebuild Grove Road and Park	NYS OPRHP	Jay	\$54,460
08/09/13	Planning	Update to Comprehensive Plan	NYSERDA	Minerva	\$50,525
08/12/13	Engineering / Planning	Engineering WWTP	NYS Environmental Facilities Corporation	Moriah	\$30,000
08/13/13	Cleaner Greener (Round 2)	Regional Sustainability Planning Program encompassing the North Country Economic region	NYSERDA	Essex County	\$1,939,668
10/29/13	HMGP	School Generator	Emergency Management	Elizabethtown	\$0
11/05/13	HMGP	Rolling Mill Hill Stormwater retrofit	NYS Office of Emergency Management	Jay	\$0
12/13/13	WQIP	Disinfection	NYSDEC	Willsboro	\$89,250
12/13/13	WQIP	Disinfection	NYSDEC	Westport	\$433,840
12/13/13	WQIP	Disinfection	NYSDEC	Crown Point	\$378,250
12/13/13	WQIP	Disinfection	NYSDEC	Ticonderoga	\$2,500,000
06/16/14	CDBG	Street Road Improvements	NYS OCR	Ticonderoga	\$600,000
06/16/14	Park Development and Planning Program	Tennis Enhancement & Hockey Rink	NYS OPRHP	Schroon Lake	\$192,500
06/16/14	CBDG	Street Road Improvements	NYS OCR	Ticonderoga	\$600,000
06/16/14	Local Waterfront Revitalization Program	Champlain Valley Waterfront Improvements	NYS DOC	Crown Point, Newcomb, Schroon, Ticonderoga, & Wilmington	\$290,923
06/16/14	Historic Preservation	Westport Community Center Renovation Project	NYS OPRHP	Westport	\$500,000
06/16/14	Engineering / Planning	Improving the Crown Point Wastewater Treatment System	NYS EFC	Crown Point	\$19,520

06/16/14	CDBG – NY	NY Rising Initiative –	NYS OCR	Jay	\$400,000
	R1s1ng	Ausable Forks Fire			
06/16/14	Upper Hudson Recreation Hub Grant	Campground, Multi-Use Trails, Information Center, Equestrian Pole Barn, Core Improvements	The Nature Conservancy	North Hudson, Minerva, Indian Lake, Long Lake, & Newcomb	\$356, 750
11/04/14	CDBG – DR NY Rising Initiative	Mitigation Projects	NYS OCR	Jay & Keene	\$9,000,000
11/05/14	Education and Outreach	Watershed Intern	LCBP	Essex County Soil & Water	\$3,640
02/06/15	Smart Growth Grant	Blueprints	NYS DEC	Port Henry	\$24,000
02/06/15	Smart Growth Grant	vth Moriah, Willsboro & NYS DEC Essex Historic Buildings		Moriah, Willsboro, & Essex	\$63,000
02/06/15	Smart Growth Grant	Trail Development	NYS DEC	Lewis, Willsboro, & North Elba	\$74,950
04/22/15	Handicap Accessible	Iron Center	Preservation League of New York	Moriah	\$1,923
06/17/15		Roadway Enhancements for Recreation	Northern Border Regional Commission	Wilmington	\$234,153
07/13/15	Municipal Waste Recycling and Reduction (MWRR)	Provides funding for a Recycle Coordinator	NYS DEC	Essex County	\$61,289.49
07/24/15	We Can Deliver – Nutrition Building – CDBG	Provides funding for construction of a new Nutrition Building	NYS OCR	Essex County	\$400,000
07/24/15	CDBG	Water St. Main Replacement	NYS HCR	Crown Point	\$600,000
07/24/15	CDBG	Rice St. Water & Sewer	NYS HCR	Port Henry	\$600,000
07/24/15	Engineering / Planning	Sewer needs	NYS EFC	Moriah	\$24,400
07/24/15	Engineering / Planning	Sewer needs	NYS EFC	Willsboro	\$19,800
07/24/15	Water Grant	WWTP improvements	NYS DEC	Willsboro	\$746,326
08/26/15	William Petro Dam Flood Mitigation	Provides Funding for Dam Removal	HMGP	Essex County Soil & Water	\$312,642
09/21/15	Invasive Species	Invasive Species Management Plan	LCBP	Crown Point	\$9,000
02/12/16	Smart Growth Grant	Sewer District Formation	NYS DEC	Wilmington	\$40,000

02/24/16	Fishing for Opportunities Grant	Funding support for a shared Water ControlSmart GreeBuilding with the town of Crown Point		Essex County	\$75,000
06/17/16	Water Grant	Water	EFC	Crown Point	\$1,703,662
06/17/16	Sewer Grant	Sewer	EFC	Elizabethtown	\$2,137,500
06/17/16	WWTP Grant	WWTP	Northern Border Regional Commission	Elizabethtown	\$250,000
06/17/16	Essex County Fish Hatchery Improvements Grant	Essex County Fish Hatchery Improvements	Northern Border Regional Commission	Crown Point	\$139,450
07/13/16	Municipal Infrastructure Fund	Funding Support for the Nutrition Building	DASNY	Essex County	\$100,000
07/22/16	Engineering / Planning	Protecting the Boquet	NYS EFC	Westport	\$100,000
07/22/16	Infrastructure	Revitalize Elizabethtown	NYS ESD	Elizabethtown	\$500,000
07/22/16	Engineering / Planning	Wastewater Collection System Study	n NYS EFC Westport		\$100,000
07/22/16	Disinfection	Disinfection	NYS EFC	YS EFC St. Armand	
07/26/16	CDBG	More than a Meal	NYS HRC	VYS HRC Minerva	
07/27/16	CDBG	Sustainable Main St.	inable Main St. NYS OCR Crown H		\$597,414
07/27/16	CDBG	Lamos Lane	NYS OCR	Moriah	\$600,000
07/27/16	WQIP	Green Up our Streets, Clean Up our Rivers	NYS DEC	St. Armand	\$642,913
07/29/16	WQIP	Mirror Lake Drive / Mt. Whitney Rd drainage improvements	NYS DEC North Elba		\$420,00
08/30/16	Legislative Grant	Funding support to replace cooler/freezer at Nutrition Center	OCFS Essex Count		\$10,000
09/30/16		Veterans Memorial	SAM	Willsboro	\$100,000
09/30/16		Water Line Replacement	SAM	Moriah	\$100,000
09/30/16		Community Center	SAM	Keene	\$100,000
09/30/16		Sidewalk Repair	SAM	Crown Point	\$100,000
09/30/16		Nutrition Building	SAM	Essex County	\$100,000
09/30/16		Veterans Memorial	SAM	Minerva	\$50,000
09/30/16		Salt Shed	SAM	Lewis	\$100,000
09/30/16		Town Hall Renovations	SAM	Westport	\$100,000
09/30/16		Town Hall Expansion	SAM	Schroon Lake	\$100,000
09/30/16		Town Hall / Community Center	SAM	Ticonderoga	\$200,000
09/30/16		Dam Project	SAM	Wilmington	\$100,000
09/30/16		Sidewalk Repair	SAM	St. Armand	\$100,000
09/30/16		Multi Modal	DOT	Moriah	\$100,000
10/03/16	Restore NY	War Canoe Distellary	NYS ESD	Crown Point	\$500,000
10/11/16		Minerva Town Court	JCAP	Minerva	\$13,000

		Develop an EMS Plan		Essex County	\$79,500
03/20/17	Invasive Species	Butternut Pond Eurasion Milfoil	NYS DEC	Chesterfield	\$11,000
03/27/17		Building Condition Survey	PLNYS	Essex County Co-op	\$0
03/27/17	Hospitality Developer	Waterfront Development	Smart Growth	Moriah	\$75,000
03/27/17		Business Growth	DEC	Newcomb	\$220,000
03/27/17		Community Center	DEC	Minerva	\$220,000
03/27/17	Florence Hathaway	Park	Smart Growth	Willsboro	\$75,000
03/27/17		Upgrade Water for Distillery	Smart Growth	Crown Point	\$75,000
04/06/17		Minerva Lake Dam Replacement	NHT	Minerva	\$121,618.75
04/06/17		Gateway to Adirondacks Final Plans and Specs	NHT	North Hudson	\$121,618.75
06/26/2017	WQIP	Shielding our Adirondack Waters (Vac Truck)	NYS DEC	Essex County	\$296,650
07/14/17		Pickleball Equipment	Creating Healthy Places	Moriah	\$1,594
07/14/17		Asbestos Removal at Frontier Town	DANC	Essex County	\$500,000
07/14/17	Rebate Program	Electric Vehicle Car Charging Stations	DEC	Essex County	\$19,144.52
07/28/17	WQIP	Salt Shed	NYS DEC	Essex County	\$744,134
07/28/17	WQIP	Salt Shed	NYS DEC	Newcomb	\$359,643
07/28/17	WQIP	Salt Shed	NYS DEC	Keene	\$695,856
07/28/17	EPG	Decentralized WWTP	NYS Willsboro Environmental Facilities Corporation		\$37,500
07/28/17	CDBG	Water Line Reconstruction	NYS OCR	Lewis	\$750,000
09/15/17		EMS Consolidation	MRF	Essex County	\$0
12/18/17	BMP	Ground Penetrating Radar	LCBP	Essex County	\$0
05/10/18		North Elba Horseshow Grounds	NBRC	North Elba	\$0

The office of Community Resources will continue to assist towns, villages and the County to implement grants that mitigate hazards to the County.

## The Ausable River Watershed Association



AUSABLE The Ausable River watershed covers 512 square miles, and includes 94 miles of river channel. It is fed by more than 70 streams, including its two major tributaries, the Chubb River and Black Brook. Seven

towns, eight hamlets, and one incorporated village are located in the watershed, which covers portions of two counties. Except for a small area at the river's mouth on Lake Champlain, the entire watershed is located within the boundaries of the six-million-acre Adirondack Park.

The watershed contains many ecologically rich environments with vibrant human histories. Home to over 20,000 people, it is largely rural in character with its population concentrated in small communities in the downstream portions of the river. Upstream, the Ausable's two branches flow through protected forestlands that are part of the New York State Forest Preserve.

The Ausable River faces numerous threats and challenges, ranging from global issues such as climate change, to local issues including road salt migration into waterways, undersized culverts, and encroaching invasive species. The Ausable River Association is working to address each of these issues. They work collaboratively with towns, counties, other non-profits, universities, and state and federal agencies. AsRA works in partnership with landowners, municipalities, other non-profits, and government agencies. We foster collaboration and information sharing for the benefit of the Ausable River among organizations, universities, government agencies, local businesses, and individuals who care about the river.

The AsRA mission statement is: "helping communities protect our streams and lakes". The vision statement of the association is: "we envision a community of watershed residents and visitors enjoying the Ausable River, its lakes and tributaries and working to protect its clean waters, healthy free-flowing streams, and the diverse habitats that sustain its native plants and wildlife."



Goals developed by the association are as follows:

**Clean Water**: Streams, lakes, wetlands, and aquifers capable of supporting a full complement of human and ecosystem needs.

Healthy Streams: Shaded, cool waters, with ample floodplains and

self-regulating flows sustaining ecological diversity and thriving communities

**Biodiverse Habitats:** Habitats and ecosystems fostering native plant and animal species in and alongside streams, lakes, and wetlands

**Public Enjoyment:** Responsible, low-impact recreational opportunities protective of Ausable waterways and adjacent lands

**Engaged Communities:** Informed residents and visitors caring for the health of the watershed where they live, work, and play.

A Voice for the River: A strong, sustainable Ausable River Association working in partnership to achieve shared goals

The Ausable River Association (AsRA) works broadly to protect the Ausable River for its ecological value and its value to the human communities that care for and enjoy its many benefits. The association organizes work into three broad program areas:

**Identify and Understand Watershed Resources** - AsRA supports and implements science, data collection, and information sharing projects. Our goal is to understand and document current problems and measure the effectiveness of solutions to manage, protect, and restore the Ausable River watershed;

**Conserve and Steward Watershed Resources** - AsRA works to create an ethic of river stewardship - a sense of common purpose and shared goals for protecting the river among private landowners, residents, business owners, municipalities, and others;

**Restore the Ausable River** - AsRA integrates natural stream restoration planning and techniques into public storm response, infrastructure development, road maintenance, and private projects that will improve the ecology, morphology and hydrology of the river.

#### Current Restoration Projects include:

1. Climate Ready Culverts - AsRA surveys road-stream crossings and designs replacements for undersized culverts, coordinating funding, permits, and engineering, and supervising construction. Current projects include the Otis Brook system in the Town of Jay, a culvert on Ausable Drive in Jay, Beaver Brook at the Hardy Road crossing in Wilmington, and the Echo Brook system at Mirror Lake Drive in the Town of North Elba.

2. East Branch Survey - In 2016 and 2017, AsRA's staff and partners walked and measured 33 miles of the Ausable's East Branch, from St. Huberts to Au Sable Forks, to calculate the rate of erosion along its damaged banks. In 2018, we will continue other geomorphic surveys to define the causes of instability on the East Branch and identify potential solutions. Our goal: a cooperative and comprehensive protection and restoration strategy that respects the needs of our communities and the needs of the river.

3. Dream Mile Natural Channel Design Restoration, West Branch - AsRA is coordinating the restoration of a key reach on the Dream Mile that includes the outlet of Big Brown Brook, known as the Culvert Pool. The two-year project, begun in 2017, will restore sinuosity and function to this reach, ensuring the stability of the Culvert Pool. Check out past natural channel design projects, including Rocky Branch, Riverlands, Keene, and Weir.

4. J. & J. Rogers Pulp and Paper Mill Dam Removal, West Branch - AsRA is working with the Governor's Office of Storm Recovery, the Town of Jay, Essex County, and the engineering firm Milone & MacBroom to plan and implement the deconstruction of the former J. & J. Rogers Co. pulp and paper mill dam, known locally as the Rome dam.

Water quality monitoring programs include:

1. **Bi-Weekly River Monitoring**. We monitor temperature, dissolved oxygen, specific conductance, and pH at 25 stream locations throughout the watershed on a bi-weekly basis. This

effort helps us identify where major water quality problems occur and predict future problems. We are tracking two primary pollutants, chloride and sodium. Both enter the river as a result of winter road deicing practices. Specific conductance measures the ability of water to conduct an electrical current, which indirectly measures the salinity of the water.

2. Lake Monitoring. AsRA is monitoring water quality at Mirror Lake, Lake Everest, Upper Cascade Lake, Lower Cascade Lake, Taylor Pond, and Butternut Pond. This work has been supported by Mirror Lake Watershed Association, Town of Wilmington, NY State Department of State, and private donors. In addition to collecting surface water samples from each lake during the summer months, AsRA's staff also takes vertical profiles of temperature, dissolved oxygen, specific conductance, and pH. These data help us understand the impact phophorus, road salt, and climate change are having on our lakes.

3. **Chubb River Continuous Monitoring Stations**. Working in partnership with the Adirondack Watershed Institute, AsRA maintains two continuous monitoring stations on the Chubb River. One station is located above the Village of Lake Placid and the other just below the Municipal Wastewater Treatment Facility. These stations continually monitor water height, temperature, and conductivity on an hourly basis. Coupled with regular discharge readings and water chemistry sampling these stations give us a detailed picture of the total amount of nutrients and pollutants being exported from the Lake Placid area. This work is critical to understanding how road salt moves through and exported from the watershed.

4. **River Temperature Monitoring**. AsRA has placed 13 temperature data loggers in the Ausable River to provide a continuous measure of water temperature. Warmer waters seriously threaten the survival of many native Adirondack species, most notably Brook Trout. Given the challenges posed by global climate change, our goal is to understand where waters are warming in the watershed, whether our restoration efforts have a cooling effect, and the long-term suitability of the Ausable and its tributaries as habitat for Brook Trout.

#### **River Steward Programs include:**

The Ausable River Association (AsRA), with funding from the Lake Champlain Basin Program, created the river steward program in 2009 to educate river users about the threat of aquatic invasive species. Since then, the work of the river steward has broadened to include terrestrial

invasive species that also affect the Ausable River and its lakes. The river steward is an information resource to river users and the general public, educating and creating awareness, helping people to identify infestations when they happen and to mitigate their spread.

The river steward:

1. educates river users on how to prevent the spread of aquatic invasive species;

2. attends local events to educate the public on river ecology and indicators of water quality;

3. monitors the river and watershed for new invasive species infestations, both terrestrial and aquatic;

4. maintains wader wash stations throughout the watershed during fishing season.

The river steward spreads the Check-Clean-Dry message to encourage anglers to remove "invasive hitchhikers" from their gear. The steward is often on the river sharing this message with anglers. They also travel to local fly shops, visitors' bureaus and farmers' markets, providing general information about the river and watershed. The river steward serves as a liaison between AsRA and lake associations within the watershed. The river steward works closely with the Adirondack Park Invasive Plant Program sharing their tested techniques for identifying and managing invasive species with lake association members and the public.

The Ausable River Watershed Association has implemented many projects that have mitigated hazards. The association will continue to advance mitigation in the watershed as additional programs and projects are completed.

These county agencies, non governmental organization, towns and villages will continue to implement mitigation projects to increase resiliency in Essex county.

### **Section 6: Mitigation Strategy**

#### **Update Process Summary:**

The mitigation strategy section of the hazard mitigation plan describes the approach that Essex County wishes to implement to reduce the negative effects of the hazards identified in the plan. The mitigation strategy section contains mission statement, goals, objectives and projects or actions. These mitigation goals objectives and actions are based upon the hazard identification and risk assessment section of the plan.

Mission statement are the statement that sets out the overall goal of the hazard mitigation plan.

**Mitigation goals** are general guidelines that explain what Essex County wants to achieve. Goals are usually expressed as broad policy statements representing the desired long-term results.

**Mitigation objectives** describe strategies or implementation steps to attain the identified goals. Objectives are more specific statements than goals. They describe steps that are usually measurable and can have a defined completion date.

**Mitigation projects** or actions are specific projects that the community wants to implement to reduce the effects from hazards.

Action Plan describes how the mitigation actions will be implemented, including identification of lead agency, cost of the project, potential funding sources, and the time frame to implement project.

There are four categories of mitigation topics. The first is **education and awareness** projects. The second topic is **plans and regulations implementation**. The third topic is **structure and infrastructure projects**. The fourth and final topic is **natural systems protection**. These topics are fully described below. Many of the following category descriptions provide case examples concerning the flood hazard in Essex, but these categories can apply to other hazards as well.

Identification and Analysis of Mitigation Techniques:

#### 1. Local Plans and Regulations Measures.

Government administrative or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, building codes, capital improvement programs, open space preservation, and storm water management regulations.

These regulations are often based upon federal or state standards designed to protect the public. Building codes are designed for the areas prevailing winds and snow loads, which ensure structures are built to the hazards of the area.

#### 2. Structure and Infrastructure Property Protection Measures.

Actions that involve the modification of existing critical and public facilities, buildings, structures, and public infrastructure to protect them from hazards. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and infrastructure modification.

Structures, if designed to the hazard(s) of the area, can withstand the hazard(s) and continue to function as designed. Infrastructure can also be designed for the hazards of the area. For example, culverts can be increased in size to accommodate additional flood waters from extreme events, or bridges can be designed and constructed to eliminate debris accumulating on pillars in river channels.

#### 3. Natural Resource Protection Measures.

Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural protection systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration preservation.

Restoration of the natural environment can reduce the effects of hazards on the areas. For example, stable river banks do not increase sediment loads in river, and preservation or restoration of wetland provide temporary storage of flood waters.

#### 4. Education and Awareness Projects:

Actions to inform and educate citizens, elected officials, and property owners about potential ways to mitigate the hazards that can occur in the County. Such actions include outreach programs and projects, real estate disclosure, hazard information centers, and school-age and adult education programs.

Education and awareness programs and projects increase the publics understanding of hazards and what they can do to mitigate these hazards

These four categories of mitigation topics address all aspects of mitigation in Essex County.

The Essex County mitigation strategy section was updated in 2019. The mitigation advisory committee met to review and revise the vision statement, goals, objectives and projects/strategies from the 2011 County Hazzard Mitigation Plan. The County also ensured that the goals statement and objectives reflected actual progress made toward fulfilling the mitigation goals and

objectives. Projects/strategies were assessed as to the current status of the project. New projects were added for both the county projects as well as the township and village projects.

As the plan was being updated in 2019, the vision statement from the 2011 plan was reviewed. That vision statement from 2011 is stated below.

### Hazard Mitigation Vision Statement 2011

"To create communities whose daily activities reflect a comprehensive commitment by government, business, non-profit organizations and the public to eliminate or reduce risks and adverse impacts from natural, technological and human-caused hazards.".

The MAC revised that vision statement in 2019 to now state.

#### **Revised Hazard Mitigation Vision Statement 2019**

To shape our communities to eliminate or reduce risks and adverse impacts from natural, technological and human-caused hazards.

The 2011 hazard mitigation plan had four goals to provide overall guidance to the county and the towns and villages in achieving mitigation. These goals were reviewed by the MAC and were deemed appropriate as goals for the 2019 updated hazard mitigation plan.

2011 & 2019 Hazard Mitigation Plan Goals					
Reduce risk to lives and property from frequent natural, technological and					
human-caused disasters.					
Reduce costs of disaster assistance.					
Ensure safe and appropriate development avoiding hazardous locations					
when possible.					
Educate residents to play an active and informed role in hazard mitigation.					

The MAC developed the following seven objectives for the 2019 update of this hazard mitigation plan.

### New Objectives for the Essex County Hazard Mitigation Plan

1. Continue to **implement existing and new grants** by Essex County agencies to mitigate hazards to Essex County.

2. Continue to **implement structural projects** to mitigate hazard events to structures in Essex County.

3. Continue to **acquire or buy out structures** impacted by flood events, in Essex County and the towns and villages in Essex County.

4. Continue to **implement infrastructure projects** to mitigate effects of hazards to these facilities.

5. Continue to assist towns and villages in **developing and updating plans and regulations** to mitigate hazards in Essex County and the towns and villages in Essex County.

6. Continue to implement existing and new grants to increase **natural system protections projects** to mitigate effect of hazard events in Essex County and towns and villages in Essex county.

7. Continue to **implement education and awareness initiatives** to increase awareness of hazard events in Essex County.

Essex County agencies are profiled in Section 5 of this plan. Section 5 describes the programs that are implemented by these County agencies. The following information is provided to provide a consistency between County and Town and Village data in this updated plan.

Essex County has several planning mechanisms in place to assist and guide the county and the towns and villages. These long range planning documents adopted by the county provide an overall vision of the future conditions in Essex County.

The Essex County Comprehensive plan is a document that provides a long range vision for Essex County. The chapters address the natural environment, transportation issues, economic development, historic preservation and other topics that impact Essex County.

The Comprehensive Plan presents a vision for the County's future and recommendations on how the county can make that vision a reality over time. A comprehensive plan should state the aims in terms broad enough to allow application to a wide range of situations, yet with sufficient detail to serve as a long term guide as the county make decisions and take actions that will affect the county's future.

The stormwater management plan provides requirements for new development that is over 1 acre in size. This document and program are designed to limit the runoff from new development.

The Essex County Comprehensive Emergency Management Plan is designed to be the go to document in times of disaster. It addresses who is in charge during a disaster, their authority from a legal standpoint, how the public is notified during events, how agencies assist other agencies and Towns and Villages and other topics that develop during a disaster. The document addresses the four phases of emergency management: preparedness, response, recovery and mitigation. These county documents provide guidance to county agency and staff and encourage

or require these kinds of documents in towns and villages. These documents provide the vision of the future in Essex County

Essex County Planning Documents
Comprehensive Emergency Management Plan
Comprehensive Plan
Stormwater Management Plan
Transportation Plan
Economic Development Plan
Historic Preservation Plan
Farmland Preservation Plan

The physical assets of Essex County are described below. These assets have been assessed as to the vulnerability to the .02 flood (500 year). Once the new flood insurance rate maps are updated by FEMA, actual vulnerability can be determined for these two buildings that have incurred flood damage in the past.

Essex County assets 500 year Flood Vulnerability							
Facility	500 year	Flooded in the	Mitigated	Generator			
	floodplain	past					
County	Appears to not	Yes	No (relocate	Yes			
Health	be in 500-year		agency to				
Dept	floodplain		another site)				
building							
Essex	Appears to not	Yes	No (need	No			
County	be in 500-year		generator to				
Fish	floodplain		preserve fish				
Hatchery			stock)				
County	No	No	No	Servers only			
Office				have			
Building				generator.			
Complex							
Old Court	No	No	No	Yes			
House							
County	No	No	No	Yes			
Public							
Safety							
Building							

County	No	No	No	Yes
Department				
of Public				
Works				
County	No	No	No	No Nutrition
Fair				Bldg. at
Ground				complex
Complex				
County	No	No	No	Yes
Solid				
Waste				
Building				

The MAC reviewed the county projects that were included in the 2011 plan. Review of these projects includes a status of the project. Projects were also analyzed as to if they were completed, deleted or ongoing. Ongoing projects will be implemented in the future as new projects are begun. New projects are noted after the review of the 2011 projects.

Essex County Mitigation Projects 2011								
Goal	Objective	Strategy	Lead Agency	Target Date	Status	Progress	Mitigation Category	
1. Severe Snow/Ice Storms	Identify Emergency Concerns of Specific Needs Population	Survey these institutions as to their requirements, following the needs of Minerva's residents survey	County Office of Emergency Services Department, Municipal Executives	Fall 2010	Ongoing	Completed and ongoing DOA maintains emergency preparedness list which contains info on residents who receive/ require special medical or other needs.	1 Local plans and regulations	
2. Severe Snow/Ice Storms	Ensure efficient use of resources, during and after storm events	Coordinate Emergency Services, public works departments, and public utilities	Executives of each municipality, County executives	Fall 2010	Ongoing	<b>Completed and</b> <b>ongoing</b> Towns and Villages have shared service agreements with the State, County to ensure coordination during disasters and other times of needed coordination of resources.	1, 2, 3,4 Local plans and regulations, structural and infrastructure projects, natural systems protection, education and awareness.	
3. Severe Snow / Ice Storms	Ensure for debris removal as soon as possible	Develop plans for debris management after severe winter snow/ice events.	DPW (County and Towns)	Fall 2010 ongoing		<b>Completed</b> Debris management plan developed during previous disaster.	1 Local plans and regulations	

Goal	Objective	Strategy	Lead agency	Target Date	Status	Progress	Mitigation category
4. Severe Snow / Ice Storms	Connect with elderly, handicapped, low- income, during major events.	Design a network of citizens that will check in on individuals during major events	Department of Social Services, Office of the Aging, Municipal executives	Fall 2010 ongoing		Towns and Villages need to be encouraged to develop these lists. DOA will be located at EOC during disaster events.	1, 4 Local plans and regulations and education and awareness
5. Wild / Forest Fires	Review zonings and guidelines for compliance with nations "FireWise Communities" program	County Office of Emergency Services will conduct a review of "FireWise Communities" guidelines to develop a best practices summary. Each municipality will review the summary and make modifications to their zoning practices	County Office of Emergency Services and executives of each municipality	Fall 2010 through Fall 2013		No progress on project, still a valid project.	1 Local plans and regulations

Goal	Objective	Strategy	Lead agency	Target date	Status	Progress	Mitigation category
6. Wild / Forest Fires	Educate fire departments on DEC Wildfire Management Draft Plan	DEC will inform county about shared services in Draft Plan	County Office of Emergency Services and DEC	On going		<b>Completed and</b> <b>ongoing</b> DEC trains local fire departments on wildfire control procedures	1, 4 Local plans and regulations and education and awareness
7. Wild / Forest Fires	Educate fire departments on assistance from NFFPC	DEC will inform county about shared services through Northeastern Forest Fire Prevention Compact (NFFPC)	County Office of Emergency Services and DEC	On going		Status unknown, still a valid project	1, 4 Local plans and regulations and education and awareness
8. Severe Storms / Winds	Ensure existing storm related building codes are enforced and/or updated	Municipal executive to require Code Enforcement Officer to present building guideline details in the jurisdiction relating to severe storms	Executives of each municipality, county planner	Fall 2010 through 2011		Completed and ongoing. Towns and Village enforce building codes.	1, 4 Local plans and regulations and education and awareness

Goal	Objective	Strategy	Lead Agency	Target date	Status	Progress	Mitigation category
9.	Keep trees from	Develop programs to	DPW,	Fall 2010		Completed and	1
Severe	threatening	monitor trees/limbs	(County,	ongoing		ongoing.	Local plans and regulations
Storms /	lives, property,	in storm areas.	Towns)			DPW has debris plan	
Winds	and public					and implements tree	
	infrastructure					trimming program.	
	events					have tree trimming	
	events					programs Private	
						utilities need to begin	
						tree trimming	
						programs.	
10.	Ensure for	Develop plans for	DPW	Fall 2010		Completed	1
Severe	debris removal	debris management	(County and	ongoing		Debris management	Local plans and regulations
Storms /	as soon as	after severe winter	Towns)			plan developed during	
Winds	possible	snow/ice events.				previous disaster.	
11.	Ensure existing	Municipal executive	Executives	Fall		Completed and	1,4
Reduce	earthquake-	to require Code	of each	2010 to		ongoing.	Local plans and regulations
the	related building	Enforcement Officer	municipality	2011		Towns and Village	and education and awareness
impact	codes are	submit a report on				enforce building	
from	enforced.	earthquake-related				codes. Reports still	
Earthqua	Provide training	building codes in				need to be completed.	
ke	for local code	their jurisdiction					
	entorcement						
	officials						

Goal	Objective	Strategy	Lead Agency	Target Data	Status	Progress	Mitigation category
12. Earth quake	Ensure safe development	Towns of Schroon, Chesterfield, Westport Ticonderoga, Willsboro, Jay, Wilmington and Elizabethtown enforce new IBC seismic ratings, educate contractors on same	Executive of municipality, code officers	Fall 2010 Ongoing		<b>Completed and</b> <b>ongoing.</b> Towns and Village enforce building codes.	1, 4 Local plans and regulations and education and awareness
13. Flooding	Participation in the Community Rating System (CRS) by NFIP municipalities	Encourage communities to participate in CRS and inquire as to their points toward current status	Executives of individual municipalities	Sprin g 2011 to 2013		No progress on project. Towns and villages need to determine if this could be a viable program for their town or village.	1 Local plans and regulations

14. Flooding	Participation in Community Assessment visits by NFIP personnel	Encourage communities to participate with NFIP in the Community Assessments	Executives of individual municipalities	Summe r 2011- 2013	No Progress. FEN will meet with Tow and Villages once : FIRM presented to County. Floodplain ordinances will be updated. CAC and CAV will be reque for the most vulnerable flood	IA    1, 4      Vns    Local plans and regulations and education and awareness      n    sted
					communities when FIRM are updated.	
15. Flooding	Upgrade to digitized FEMA maps	Encourage the County to participate	County Planner	For 5- year update	In Progress. FEMA currently updating FIRM no will be completed 1-2 years.	1 Local plans and regulations w, in
16. Flooding	Establish and train a Floodplain Administrators for each jurisdiction	Use programs established by FEMA and NYS Floodplain / Stormwater Managers Association	County Floodplain Manager (Director of Emergency Services) Executives of each municipality	Fall 2011 -ongoing	<b>No progress.</b> Floodplain administrators will educated once FIR are updated as part mapping process.	be 1, 4 Local plans and regulations and education and awareness M of
17. Flooding	Reduce possible flooding from river ice jams	Continue program started in Willsboro to spread "black ash" on river ice to assist melting in downtown flood prone areas	Town / County DPW	2010 ongoing	<b>Discontinued</b> DEC has prohibite this action due to effect on river.	d Local plans and regulations

Goal	Objective	Strategy	Lead Agency	Target Date	Status	Progress	Mitigation Category
18. Flooding	Continue cooperative efforts to reduce impact of flooding	Maintain interest and action in Au Sable River Association's Boquet and Au Sable River Flood Feasibility Study and Flood Control Project Management Plan for the Au Sable River	Municipal executives	Ongoing		Completed and ongoing Implemented projects in Jay and Keene from NY Rising document, post TS Irene efforts. Boquet projects being completed. Projects will continue as funding is obtained.	1, 4 Local plans and regulations and education and awareness
19. Flooding	Create effective flood mitigation activities for "hot spots" within the county (see annexes)	Identify, evaluate and implement activities in flood areas	DPW (County and Towns)	Fall 2010 ongoing		Completed and ongoing DPW replacing culverts, AuSable Watershed replacing culverts, buy out occurred after TS Irene,	1, 2, 3,4 Local plans and regulations. Structural and infrastructure projects, natural systems protection and education and awareness.
20. Flooding	Ensure all jurisdictions have flood damage prevention codes, identify flood hazard areas in Town codes	Town zoning and emergency codes to be reviewed and updated	Executives of each municipality	Fall 2010 - 2012		<b>Ongoing</b> Floodplain ordinances will be updated as new FIRM are delivered to towns and villages, individual towns and villages have updated regulatory tools.	1 Local plans and regulations

Goals	Objective	Strategy	Lead Agency	Target Date	Status	Progress	Mitigation Category
21. Reduce threat from <b>extreme</b> <b>temperat</b> <b>ures</b>	Ensure awareness of location of vulnerable populations in region	Jurisdictions will locate and update information on vulnerable populations; elderly, disabled	Executives of each municipality, Emergency Services	Fall 2010 - ongoing		Completed and ongoing DOA maintains emergency preparedness list which contains info on residents who receive/ require special medical or other needs.	1 Local plans and regulations
22. Reduce the threat from tornado and hurricane	Ensure all jurisdictions provide for tree pruning, especially near utility lines	Jurisdictions will devise a consistent tree pruning plan to avoid potential power failures	Executives of each municipality	Fall 2010 - ongoing		Completed and ongoing. DPW has debris plan and implements tree trimming program. Utility companies also have tree trimming programs. Private utilities need to begin tree trimming programs.	1 Local plans and regulations
23. Reduce the threat to life and property from <b>multiple</b> hazards	Ensure consistency with the goals/objectiv es of this plan and existing local plans	Review local plans integrating goals, objectives, activities not found in existing regulatory documents as appropriate	Executives of each municipality	Fall 2010 to Fall 2011		No Progress Towns and Villages should complete efforts as regulatory tolls are updated or developed.	1 Local plans and regulations
24. Multiple hazards	Finance local and county	Identify and pursue funding for development and	Executives of each municipality	Fall 2010 ongoing		Completed and ongoing.	1, 2, 3,4 Local plans and regulations. Structural and infrastructure

	mitigation activities	implementation of mitigation activities			County agencies will continue efforts. See capability section and Town and Village mitigation section for additional information on efforts and progress	projects, natural systems protection and education and awareness.
25. Multiple hazards	Maintain a current inventory of at-risk buildings and infrastructure	Continually update inventory of at-risk structures	Executives of each municipality	ongoing	Town and Village should continue efforts to identify most vulnerable structures.	1, 2 Local plans and regulations and Structural and infrastructure projects
26. Multiple hazards	Ensure hazard mitigation is a factor in community development activities	Formalize the role of hazard mitigation in future county development	Essex county Planning Department, Municipal Execs	Fall 2010 to Fall 2011	Completed and ongoing County, towns and villages are continuing efforts to developing their jurisdictions while minimizing development in hazards areas.	1 Local plans and regulations
27. Multiple hazards	Foster involvement in communicatio n / collaboration between the County and municipalities	Develop and hold public hearings related to the inclusion of mitigation activities in local laws, encourage the public to add to the collaboration efforts	Essex County, executives of municipalitie s	Fall 2010 ongoing	Completed and ongoing. Public hearing held when required by law. Hearings can be for planning board, zoning boards and other local planning functions at town and village levels.	1, 4 Local plans and regulations and education and awareness.

Goals	Objective	Strategy	Lead Agency	Target Date	Status	Progress	Mitigation category
28. Multiple hazards	Maintain and expand emergency preparedness and response countywide	Increase communication and cooperation between County / Local DPW and County / local emergency services. Link emergency services with hazard mitigation programs	Executives of each municipality, emergency responders (County and local)	Fall 2010 ongoing		Completed and ongoing. County has excellent coordination with towns and villages during disaster events. Shared services agreement and MOA for other activities.	1, 4 Local plans and regulations and education and awareness.
29. Multiple hazards	Maintain list of year built and level of protection for each critical facility relating to all applicable hazards	Conduct a study to determine year built, and level of vulnerability for each critical facility	Essex County GIS Coordinator, Municipal Executives	Fall 2011		Completed and ongoing. DPW has data on all county facilities, culverts, county bridges, county roads. Data is continually developed and updated.	1 ,2 Local plans and regulations and structural and infrastructure projects.
30. Multiple hazards	Maintain prioritization of objectives / strategies in Plan	Make revisions and update information using the STAPLE+E criteria	Executives of each municipality, County Hazard Mitigation Officer	2013		<b>Discontinued</b> Projects will be implemented as funding is obtained. Prioritization is for planning purposes only.	1 Local plans and regulations

Goal	Objective	Strategy	Lead Agency	Target Date	Status	Progress	Mitigation Category
31. Multiple hazards	Re-evaluate mitigation action priorities and update the plan.	Update mitigation action priorities using BCA as detailed in FEMA Tool kit(FEMA 386- 5)	Executives of each municipality, County Hazard Mitigation Officer	2013		<b>Discontinued</b> . Full BCA not completed for potential projects, expert opinions determined potential cost of projects.	1 Local plans and regulations
32. Multiple hazards	Protect property development from disaster prone areas county wide	Implement zoning regulations to discourage building new structures in disaster prone areas	Executives of each jurisdiction Municipal Zoning and Flood Plain Administrat ors	Fall 2010 ongoing		Completed and ongoing. Local ordinances and regulations implemented to ensure new development in less vulnerable areas and constructed compliant with said ordinances.	1, 2 Local plans and regulations and structural and infrastructure projects
33. Multiple hazards	Protect property development from disaster prone areas county wide	Implement building codes that reflect disaster resistant construction for new structures and renovation	Executives of each jurisdiction and Code Enforcement Officer	Fall 2010 ongoing		Completed and ongoing. Local ordinances and regulations implemented to ensure new development constructed compliant with said ordinances.	1 Local plans and regulations
Goals	Objective	Strategy	Lead Agency	Target Date	Status	Progress	Mitigation Category
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34. Multiple Hazards	Maintain / adjust mitigation action priorities	Use STAPLE-E and Benefit/Cost Analysis of mitigation action projects	County Hazard Mitigation Officer, LEPC	Annually beginning 2011		<b>Discontinued</b> Projects will be implemented as funding is obtained. Prioritization is for planning purposes only. Full BCA not completed for potential projects, expert opinions determined potential cost of projects.	1 Local plans and regulations
35. Severe Snow / Ice Storms	Ensure critical facilities have needed backup power	Obtain funding for purchase or for maintenance of generators for nursing homes and other critical facilities.	County Office of Emergency Services, executives of each municipality	Fall ongoing		In progress and ongoing. County, town and village facilities have obtained generators. Additional generators are needed at a few facilities. These will be obtained as funding is available.	2 Structure and infrastructure
36. Wild / Forest Fires	Provide ample fire hydrants for each jurisdiction	Hydrants maintained, replaced and # increased in recommended areas, specifically in Town of Minerva, also throughout the county	Municipal executive assisted by Volunteer Fire Departments	Fall 2010		Ongoing Hydrants installed in Moriah, town and village completed as water systems expanded and funds are available.	2 Structure and infrastructure

Goal	Objective	Strategy	Lead Agency	Target Date	Status	Progress	Mitigation Category
37. Severe Storms / Winds	Ensure critical facilities have needed backup power	Obtain funding to purchase generators for nursing homes and other critical facilities	County Office of Emergency Services, municipality Executives	Fall 2010 ongoing		In progress and ongoing. County, town and village facilities have obtained generators. Additional generators are needed at a few facilities. These will be obtained as funding is available.	2 Structure and infrastructure
38. Flooding	Eliminate obstructions to surface water drainage	Identify and examine culverts in affected areas regularly, remove obstructions as necessary	DPW (County and Towns)	Fall 2010 ongoing		In progress and ongoing. PDW has culvert replacement list, replaces as funds are available, county, town and village clean culverts on a regular scheudule to ensure functioning of culverts, this reducing road flooding.	2 Structure and infrastructure
39. Flooding	Clean and maintain stormwater drains and catch basins	Identify and examine stormwater drains and catch basins in affected areas, follow County DPW guidelines for maintenance	DPW (County and Towns)	Fall 2010 ongoing		In progress and ongoing. DPW, towns and villages clean basin and drains on a regular schedule.	2 Structure and infrastructure

Goal	Objective	Strategy	Lead Agency	Target Date	Status	Progress	Mitigation Category
40. Landslide	Stabilization of rock slopes	Obtain funding for stabilization projects along affected roadways throughout the County, particularly Towns of Keene and Moriah	County and Town DPW, municipal executives	Spring 2011		In progress and Ongoing DPW and town and village road crews implement projects as needed.	3 Natural systems protection
41. Landslide	Eliminate slippage due to heavy rains near roadways	Monitor areas affected and take appropriate action as needed	County / Town DPW's and Municipal executives	Ongoing		In progress and Ongoing	3 Natural systems protection
42. Landslide	Create open space zones where necessary	Investigate and pursue potential land acquisition in areas where damage can be severe	Municipal executives	Ongoing		In progress and ongoing. Buy out of flooded homes after TS Irene in 2011.	3 Natural systems protection
43. Severe Snow / Ice Storms	Keep trees from threatening lives, property and public infrastructure during storm events	Develop programs to prune trees/limbs in storm prone areas.	DPW, (County, Towns)	Fall 2010 ongoing		Completed and ongoing. DPW has debris plan and implements tree trimming program. Utility companies also have tree trimming programs. Private utilities need to begin tree trimming programs.	1, 3 Local plans and regulations and Natural systems protection

Goal	Objective	Strategy	Lead Agency	Target Date	Status	Progress	Mitigation Category
44. Reduce the impact of <b>landslides</b>	Improve public awareness	Educate the community on steps to be taken to decrease the impact of Landslides	County Office of Emergency Services, municipal executives	Fall 2010		In Progress and ongoing. town and villages educate residents on landslide hazards.	4 Education and awareness
45. Reduce the impact of severe snow/ ice storms	Improve public awareness	Educate community residents regarding steps to be taken to decrease the impact of ice storms on property	County Office of Emergency Services, executives of each municipality, DPW	Fall 2010 Ongoing		In Progress and ongoing. town and villages educate residents on snow and ice hazards.	4 Education and awareness
46. Reduce the potential damage and threat to life and property from wild/fores t fires	Improve public awareness	Educate community residents regarding steps to be taken to decrease the impact of wild/forest fires on property	County Office of Emergency Services, executives of each municipality, DPW	Fall 2010 Ongoing		In Progress and ongoing. town and villages educate residents on wildfire hazards.	4 Education and awareness
47. Wild / Forest Fires	Fire fighter training / updating	Each jurisdiction will send a representative to the NYS Wildfire Academy	Executive of each jurisdiction	On going		Unknown	4 Education and awareness

Goal	Objective	Strategy	Lead Agency	Target Date	Status	Progress	Mitigation Category
48. Reduce the impact from severe storms/wi nds	Improve public awareness	Educate community residents regarding steps to be taken to decrease damage from storms on property.	County Office of Emergency Services, executives of each municipality, DPW	Fall 2010 Ongoing		In Progress and ongoing. town and villages educate residents on wind hazards.	4 Education and awareness
49. Severe Storms / Winds	Ensure efficient use of resources, during and after storm events	Coordinate emergency services, public works departments, and public utilities.	Municipal executives County executives	Fall 2010 Ongoing		Completed and ongoing. County has excellent coordination with towns and villages during disaster events. Shared services agreement and MOA for other activities.	1,2,3,4 Local plans and regulation, structure and infrastructure projects, natural system protections. Education and awareness
50. Earthqua ke	Improve public awareness	Educate community relating to steps taken to alleviate potential earthquake damage	Executives of each municipality, Office of Emergency Services, DPW	Fall 2010		In Progress and ongoing. town and villages educate residents on earthquake hazards.	4 Education and awareness
51. Reduce the impact from <b>flooding</b>	Improve public awareness	Educate community relating to steps taken to lessen potential flood damage and increase knowledge of NFIP services	Executives of each municipality, Office of Emergency Services, DPW	Fall 2010		In Progress and ongoing. town and villages educate residents on flood hazards.	4 Education and awareness

Goal	Objective	Strategy	Lead	Target	Status	Progress	Mitigation Category
			Agency	Date			
52. Flooding	Improve training and education for official and local floodplain coordinators	Encourage participation in training provided by NYSDEC Division of Water	Executives of municipalities and County Floodplain Coordinators	Summe r 2011 - 2013		<b>To be completed</b> Training will be provided as new FIRM are delivered to county, town and villages in 1-2 years.	4 Education and awareness
53. Flooding	Community outreach	Educate the community on benefits of carrying NFIP policies	County Floodplain Administrato r	Fall 2010		In progress and on going. Info delivered to community members after TS Irene.	4 Education and awareness
54. Reduce the threat from <b>drought</b>	Ensure public awareness of methods to avoid incurring drought conditions	Public will be made aware of drought resistant vegetation to be utilized to prevent cascade effects of drought	Executives of each municipality	Fall 2010 – ongoing		In Progress and ongoing. SWCD and Cornell cooperative extension deliver programs on topic.	4 Education and awareness
55. Multiple hazards	Educate citizens, public agencies, private property owners, businesses and schools on mitigating hazards and reducing risks	Develop, enhance and implement education programs, newsletters, school presentations informing groups about ways to reduce risk	Executives of each municipality, Superintende nt of area school districts	Fall 2010 ongoing		Completed and ongoing. Brochures created as HMP updated available to town, villages and county to provide to the community.	4 Education and awareness
56. Multiple hazards	Encourage homeowners to buy hazard	Develop an outreach program to inform	Executives of each municipality	2011		No progress	4 Education and awareness

	insurance when possible	public about options available					
Goal	Objective	Strategy	Lead Agency	Target Date	Status	Progress	Mitigation Category
57. Multiple hazards	Ensure code enforcement and inspection services	Provide education and updated information to CEO	Executives of each municipality	Fall 2010 ongoing		In progress sand ongoing. Code officials required to completed annual education classes, supervisors receive annual reports at town and villages.	4 Education and awareness
58. Multiple hazards	Maintain documents used and required for the mitigation plan	Create a centralized library of all documents used	County Mitigation Officer	Fall 2010 ongoing		<b>Completed</b> Essex County OES has all data related to updated HMP.	1 Local plans and regulations
59. Multiple hazards	Public awareness of hazard warning systems in county jurisdictions	Disseminate via Essex County web page of all warning systems in place and how the public should notify officials of a potential hazard	Developed by jurisdictional emergency services with the county Emergency Services Office,	Winter 2010-11		<b>In progress.</b> County, town and villages educating residents by way of Newsletter, Facebook and Twitter home pages.	4 Education and awareness

Prioritization of projects occurred as the plan was updated. These projects list the priority as high, medium and low. Generally speaking, high priority projects are projects that enable the County to be fully functional during times of disasters. Medium and low projects are to improve other functions of the county and address actual residents of the county. Implementation of project will occur as funding is obtained. Any project can be implemented as funding, political will and other aspects are addressed.

The cost of several projects has been determined and included in the table below. Other mitigation projects have estimated the costs of these projects. The potential cost to implement mitigation projects have been ranked as high, medium or low cost. Low cost projects are those projects that would cost up to \$100,00. Medium cost projects are estimated to cost between \$100,000 and \$500,000. High cost projects are those projects that would cost over \$500,000.

	New Hazard Mitigation Projects for the 2019 Essex County Hazard Mitigation Plan.								
Objective	Project	Lead Agency	Target Date	Status	Cost	Priority	Funding source	Mitigation Category	
Structural project	1. New building at office of emergency services to store emergency vehicles	EC OES	2020	New project	250,000	High	DOT, FEMA, annual budgets	3 Structure and infrastructure projects	
Structura l project	2. Construct new building for OES shop that is currently in the basement of the OES building.	EC OES	2020	New Project	250,000	High	DOT, FEMA, annual budget	3 Structure and infrastructure projects	

Objective	project	Lead Agency	Target Date	Status	Cost	Priority	Funding source	Mitigation category
Structura l project	3. Relocate the Essex Fire Training Center to other location in Essex County.	EC OES	As soon as possible	New project	Medium	High	FEMA, annual budgets	3 Structure and infrastructure projects
Structura l project	4. Construct new storage facility or building to store OES equipment	EC OES	2020	New Project	Medium	Medium	Annual budgets	3 Structure and infrastructure projects
Impleme nt grants	5. Secure new position at OES specifically for a grant administrator for OES	EC OES, County Manager, BOS	2020	New Project	Low	High	Annual budgets	2. Local plans and regulations
Infrastruct ure projects	6. Continue to upgrade culverts	DPW	ongoing	New project	Low	Medium	Annual budgets, FEMA	3 Structure and infrastructure projects
Structura l projects	7. Continue to acquire or buy out structures impacted by floods.	EC DES, towns and villages	ongoing	New Project	TBD for each structure	Medium	FEMA	3 Structure and infrastructure projects
Plans and regulatio ns	8. Continue to coordinate with DOA during disasters.	ES DES and DOA	ongoing	New project	Annual budgets	High	Annual budgets	2. Local plans and regulations

Objective	Project	Lead Agency	Target Date	Status	cost	Priority	Funding	Mitigation category
Natural resource protectio n projects	9. Continue to implement dirt and gravel road projects	SWCD	ongoing	Existin g progra m	SWCD grants	High	SWCD	2 Structure and infrastructure
Infrastru cture projects	10. Replace bridges on Transportation improvement plan at EC DPW	EC DPW	Use TIP schedule	Existin g progra m	Medium /high	High	Bridge Bank funds, federal hwy funds	2 Structure and infrastructure
Infrastru cture projects	11. Fish Hatchery generator	EC DPW	1 year	Ne project	Low	High	County funds	2 Structure and infrastructure
Infrastru cture projects	12. Nutrition Building at Fair Grounds generator	EC DPW	1 year	New project	Low	High	County funds	2 Structure and infrastructure
Natural resource protectio n projects	13. Continue current SWCD programs	EC SWCD	On going	Current progra ms	Low	High	County funds	2 Structure and infrastructure

As Essex County Agencies continue to update their county wide plan, additional documentation of completed projects will ensure Essex is reducing the effect of hazard events in Essex County.

Town and Village planning process:

Each town or village met with the contractor as the plan was updated. These meetings were to review the forms that each town and village would need to complete and return to the contractor. The forms consisted of the following topics. The planning capabilities were assessed. Administrative and technical capabilities were reviewed. The financial capabilities were analyzed. Education and outreach programs were assessed. A general self assessment of capabilities was completed. Critical facilities were analyzed and assessed. Hazards were ranked as to the most severe to least severe. Town or Village mitigation projects from 2011 were analyzed. New mitigation projects were discussed and assessed. All forms and materials supplied to the contractor are located in Appendix 3.

These meetings provided an opportunity to discuss the updated plan, recent events and issues in each town or village, as well as focusing on floods as they are ranked as a high hazard in most towns and villages. Tours of several towns occurred to have the town or village staff discuss specific issues or completed projects. The contractor was provided an in-depth view from the official's perspective of issues that occur and can be unique to each town or village.

The contractor also included additional projects that indicate that towns and villages are completing mitigation at the local level. In a certain way, all activities towns and villages complete are to mitigate a hazard or issue in towns and villages.

The following pages document mitigation efforts for each town and village in Essex County.

### **Town and Village Files**

#### **Town of Chesterfield**

#### **Introduction:**

Located in the northeastern corner of the county, Chesterfield has as its eastern boundary Lake Champlain. Its northern boundary is the highly flood-prone Au Sable River. On the west lies the Town of Jay, and on the southern boundary are the Towns of Lewis and Willsboro. The hamlet of Keeseville was incorporated into the Town in 2013. The town population is 2245 as of the 2010 census. The hamlet spans the Au Sable River so is partly in Essex and partly in Clinton County. The village of Keeseville was previously included in the FEMA approved Clinton County Multi-jurisdictional Hazard Mitigation Plan. Chesterfield, including the hamlet of Keeseville now will be covered by the Essex County Hazard Mitigation Plan.

Topographically the town is varied, having open fields and flat areas along the river and steeper, mountainous, forested areas to the south. There are several points in the town where steep slopes, streams or spring run-off threaten roadways. Mitigation projects have been completed in these areas in recent years with the help of the Essex County DPW.

Chesterfield has several cultural attractions. AuSable Chasm is a tourist attraction that has been in operation since 1870. The Poke-O-Moonshine Mountain Fire Observation Station was added to the National Register of Historic Places in 2001. The North Star Underground Railroad Museum is located in Chesterfield. The Underground Railroad was a network of secret routes and safe houses established in the United States during the early to mid-19th century, and used by African-American slaves to escape into free states and Canada with the aid of abolitionists and allies who were sympathetic to their cause.

Chesterfie	d Table of Facts
Land Area	105 square miles, 66,866.2 acres
Incorporated Village(s)	Portion of Keeseville, 327.2 acres
Hamlets	Port Douglas
Population 2010 census	2,245 (2010 Census)
Governance	Town of Chesterfield
Total Assessed Valuation	\$137,651,461
Highest Elevation	Bald Face Mt. 2220'
Largest Lake	Lake Champlain – eastern border, Auger Lake
River(s)	Au Sable
Dams	3
Bridges	9 County Road
Interstate Highway	I-87 north/south
State Routes	9, 22, & 373
County Roads	15, 16, 17, 23 & 71
Land in Agricultural Use	3,458 acres
Land Classified Industrial (APA)	NA
Classified Residential, as Hamlet (APA)	819.9 acres
Hospital / Medical Facility	
Fire & Rescue	Keeseville Fire & Rescue
Schools	Au Sable Valley Central Schools
Railroads	CP Rail north/south
Passenger Trains per day	Amtrak 68 and 69 2/day
Freight Trains per day	CP Rail approx. 5/day
Ferry Dock(s)	Port Kent to Burlington, VT (seasonal)
Interstate Bridge	NA
Largest Employer	ARC
Law Enforcement	NYSP and County Sheriff
Correctional Facility	NA
Power Utility Provider(s)	NYSEG
Water Supply Source(s)	Butternut Pond, Lake Champlain and private wells
Emergency Shelters	4
Critical Facilities	

#### **Planning Process:**

Two meetings were held with town officials and staff to obtain information for the updated plan. The first meeting occurred on June 7, and the second meeting occurred on October 29. The supervisor, water plant operator, superintendent of highways and code enforcement officer attended the meetings.

#### **Capability Assessment:**

Town of Chesterfield Planning Documents							
Floodplain regulations	1985						
Floodplain management plan	1985						
Zoning regulations	1997						
Subdivision regulations	1997						
Comprehensive plan	1997						
Building codes	1985						
Fire codes	1985						

The Town of Chesterfield has several planning mechanisms in place.

These regulations ensure that new development is constructed to minimize damage from hazard events.

This hazard mitigation plan should be integrated into other existing plans in Chesterfield. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will ensure that all enabling legislation have similar information in those documents. Integration can ensure consistency between enabling legislation

Chesterfield completed a self assessment of their capabilities as part of the plan update in 2018. Chesterfield is one of the four Essex County towns having land use approval authority granted by the APA. The town has a planning board, with APA as a backup. They use AES for engineering issues with the water system and other engineering needs. The town also uses Essex County community resources for planning and grant assistance. A board member is designated as the town emergency manager. The code enforcement officer also serves as the floodplain administrator. Land surveys needs are provided by ADK Surveyors, a private company. The APA, SWCD, DEC and AuSable River Watershed Association provide scientific and other expertise to the town. GIS assistance is provided by AES and the County system. Grant writing assistance is provided by Essex County Community Resources.

The town uses a variety of funding sources to implement programs and projects. CDBGs have been used to renovate residential housing. Special taxes have been used to control plant growth in Auger Lake. Water and sewer fees are used to maintain and expand systems when needed.

The town has used loans to fund the Port Kent water system. The town has shared services agreements with several towns and the County.

Education and outreach programs are implemented in Chesterfield. Fire prevention and school safety programs are delivered. The town also educates residents on water use issues, and fire safety programs.

The town also completed a self assessment on four areas. Planning and regulatory capabilities, financial, education and outreach, and administrative and technical capabilities were all ranked as high. If the town lacks resources to implement programs, they know the experts to ask for assistance.

	Chesterfield	<b>Critical Facilities</b>	in Floodplains	
Critical	500 year	Flooded in the	Mitigated	Generator
Facility	floodplain	past		
Town Offices	No	No	No	No
Frontier	No	No	No	Yes
Elementary	No	No	No	Yes
School				
Fire	No	No	No	Yes
Department				
Drinking water	No	No	No	Yes
plant (Town of				
Ausable)				
Drug Treatment	No	No	No	unknown
Center				

Critical facilities were also evaluated as to their flood vulnerability.

The town offices are used as an emergency operation center during disasters. Frontier is a local utility provider in town. The elementary school is also the designated shelter. The fire department can also be used as a shelter. The drinking water plant is located in the town of AuSable, Clinton County. This system provides water to residents in the hamlet of both Clinton and Essex County. The town has one drug and alcohol treatment facility that is day use only.

The town has identified one area that can be used for temporary housing needs after a disaster. The commerce park would be used if and when needed. This area has paved and unpaved areas that could be used for temporary housing units such as RV or mobile homes. Power, water and sewer are located on the site. The school is designated as the American Red Cross shelter and can be used for temporary housing of resident displaced by a hazard event. In the past displaced resident have also obtained temporary housing with friends, relatives or neighbors.

Chesterfield Temporary Hous	sing for Displaced Residents
Facility	Type of housing
Elementary School	American Red Cross shelter
Commerce Park	RV, Mobile homes

The following information concerns flood vulnerable structures in Chesterfield. The numbers of actual structures in the flood vulnerable areas is most likely larger than the number of insured structures. Once the flood insurance rate maps are updated by FEMA, these new maps will determine the actual number of vulnerable structures.

The Chesterfield will continue to manage their floodplains in the future. They will review and approve new development in the special flood hazard areas to ensure these structures are build compliant with the local floodplain ordinance. As the new FIRM are updated by FEMA, meetings will occur with floodplain managers, town supervisors to provide training on the national flood insurance program. Compliance will be discussed at these meeting. Floodplain managers of the most vulnerable communities will be encouraged to join the state floodplain manager association to continue to increase their understanding of how to manage their flood vulnerable areas.

Chesterfield Flo	ood Insurance Facts
2011	2018
Number of policies	Number of Policies
11	9
Number of Repetitive Loss	Number of Repetitive Loss
Properties	Properties
1	1
	single family

#### Hazard Rankings:

The list of hazards profiled in this updated plan were ranked.

Chesterfield Hazard Ranking					
High Hazard	Floods, High Wind Events, Wildfires				
Medium Hazard	Extreme Temperatures, Hurricanes, Ice Storms, Severe Winter Events, Rail Events.				
Low Hazard	Avalanche, Drought, Earthquakes, Hail Storms, Land Subsidence and Expansive soils, Landslides.				











Potential loss was calculated for the Town of Chesterfield. The Essex County Real Property website was used to obtain data for all parcels in the jurisdiction. Data was manipulated to determine the number and value of each structures in each of the 9 class codes. The data was then totalled for the number of structures and value of structures in each class code. The number of structures impacted from the hazard event was calculated to be 10% of the total number of structures in each class code.

Essex County Real property Tax Services website has 9 class codes for property as follow.

100 Agriculture	200 Residential	300 Vacant Lands
400 Commercial	500 Recreation and Entertainment	600 Community services
700 Industrial	800 Public Services	900 Forest, Conservation Lands and Parks

Chesterfield Potential Loss							
Class codes	Acreage	Number by	Structure	Impacted	potential loss		
		class codes	value	structures			
100	1190.22	9	\$921,400	0.9	\$92,140		
200	8720.07	1168	\$111,115,750	116.8	\$11,111,575		
300	6979.06	59	\$565,770	5.9	\$56,577		
400	202.04	64	\$9,103,400	6.4	\$910,340		
500	373.55	11	\$2,422,000	1.1	\$242,200		
600	48.28	15	\$4,726,400	1.5	\$472,640		
700	20.71	2	\$1,468,600	0.2	\$146,860		
800	78.94	10	\$4,106,621	1	\$410,662		
900	32034.03	13	\$1,070,600	1.3	\$107,060		
Total	49646.90	1351.00	\$135,500,541	135.10	\$13,550,054		

#### **Mitigation Strategy:**

Prioritization of projects occurred as the plan was updated. These projects list the priority as high, medium and low. Generally speaking, high priority projects are projects that enable towns and villages to be fully functional during times of disasters. Medium and low projects are to improve other functions of towns and villages and address actual residents of these municipalities. Implementation of project will occur as funding is obtained. Any project can be implemented as funding, political will and other aspects are addressed.

The cost to implement mitigation projects have been ranked as high, medium or low cost. Low cost projects are those projects that would cost up to \$100,00. Medium cost projects are estimated to cost between \$100,000 and \$500,000. High cost projects are those projects that would cost over \$500,000.

Chesterfield reviewed the county project list from the 2011 plan. They have included a status of efforts in Chesterfield to advance on these county mitigation project. Projects listed in the 2011 plan specific to Chesterfield were reviewed to determine if any progress has been made on implementing these projects. A status and progress are included in the table. New mitigation projects were developed by Chesterfield as the plan was being updated in 2019.

	Essex C	County Projects from 2	2011 Hazard I	Mitigatio	n Plan		
Goal	Objective	Strategy	Lead Agency	Target Date	Status	Progress	Issues
Reduce the impacts from earthquakes	Ensure safe development	Towns of Schroon, Chesterfield, Westport Ticonderoga, Willsboro, Jay, Wilmington and Elizabethtown enforce new IBC seismic ratings, educate contractors on same	Executive of municipality, code officers	Fall 2010 Ongoing	Building codes address hazards for earthquakes.	Ongoing	

Reduce the	e impacts from Creat flood activ: spots coun	e effective mitigation ities for "hot " within the ty(see annexes) of Chesterfie	Identify, evaluate Implement activit flood areas	and ties in	DPW( and To	(County owns) <b>11 hazarc</b>	Fall 2010 ongoing	Corlear Bay road, Fort Douglas, Ga Flats and Dugway rd have had projects <b>on plan</b>	y	ted
Goal	Objective	Strategy	Lead Agency	Estimate		Target Date	Priority	Status	Progress	Issues
Reduce the impact of <b>flooding</b>	Avoid road flooding/possible road closure	Lake Street in hamlet of Port Kent, near Wickham Marsh, needs a new bridge and roadbed raised	Town Supervisor and Town Highway Dept	\$650,000	0	Spring 2011 ST	М	Still needed	Project not completed	Lack of funds
Reduce the impact of <b>flooding</b>	Avoid road flooding/possible road closure, loss of bridge	Swinging Bridge area in village, off of River Street, build up area	Village Mayor/Board Highway Dept	Low		Spring 2011 ST	M	Still valid	Project not completed	Lack of funds

Town of Chesterfield mitigation project 2019									
Project # and name	Goal	Project or	Hazard	Lead	Estimate	Timefram	Potentia	Priority	Mitigation
	addressed	action	addresse	Agency	d cost	e to	1	(high,	technique
			d			complete	funding	Medium,	category
					A 4	in years.	sources	low)	~
1 CORLEAR BAY	#4	Replace	FLOOD	Town	\$1.5M	10 YRS.	EC	Low	Structure
ROAD	INFKASI	culvert		HWY			DPW		and
	RUCTURE	bridge		dept					re
2 ADDED NEW	#4		FLOOD	Town	\$7,100	DONE	ES	COMPL	Structure
CULVERT 120' 2'	INFRAST			Hwy			PDW	ETE	and
POLY CULVERT	RUCTURE			Dept					infrastructu
									re
3 GENERATOR	#4	Purchase	ALL	Town	25k	1 year	FEMA	High	Structure
TOWN HALL	INFRAST	generator		Hwy			town		and
TOWN HWY DEPT.	RUCTURE	for town		Dept			budgets		infrastructu
		hall and							re
		Dept							
4	#4	REPLACE	ALL	Town	\$10M	1-20 years	NYS	High	Structure
Hidden Creek Project	INFRAST	CULVERT		Hwy		Year 1-5	DOS	-	and
	RUCTURE	S UNDER		Dept		obtain			infrastructu
		TOWN				funding			re
		THAT				Year 6-10			
		CREEK				replace			
		FLOWS IN				under			
		S				town			
5 RIVER ST.	#4	CULVERT	Flood	Town	Low	1-5 years	EC	High	Structure
	INFRAST	on RIVER		Hwy			DPW		and
	RUCTURE	ST.		Dept					infrastructu
		NEEDS							re
		D							

6 PORT KENT COMMUNITY CENTER GENERATOR	#4 INFRAST RUCTURE	Obtain generator for facility	ALL	Town Hwy Dept	25k	1 year	Town budgets	High	Structure and infrastructu re
7 Tree trimming in Town	#4 Infrastructu re	TREE TRIMMNI NG NEEDS TO BE DONE AROUND TOWN (STATE INMATES HAVE DONE IT IN THE PAST)	ALL	Town Hwy Dept	Low	1-5 years	Town budget	Medium	Structure and infrastructu re
8 REPLACE CULVERT W/ OPEN BOTTOM BRIDGE – REALIGN STREAM TO NOT AFFECT 1 REMAINING HOUSE – BUILD UP TO HIGHER LEVEL	#4 INFRAST RUCTURE		floods		High	1-5 years	EC DPW	High	Structure and infrastructu re
9 Purchase flood damaged structures after disasters on Beach street	#3 buyouts	Purchase flooded homes	floods	Town, county	Medium	After floods	FEMA, HMGP or PDM	High	Structure and infrastructu re

Chesterfield will continue to implement projects and programs to reduce the effects of hazards to the town. Floods will continue to be an issue for the town as the AuSable River flows within its boundaries. Building codes must continue to be implemented to reduce damages from wind events. Current fire suppression programs, led by the DEC, will continue to ensure that wildfires mitigation occurs.

#### **Town of Crown Point**

#### **Introduction:**

The Town of Crown Point lies in the southeastern part of Essex County; bordered by the Town of Moriah to the north, the Towns of North Hudson and Schroon to the west, the Town of Ticonderoga to the south and Lake Champlain to the east. In the 2000 US Census the population was 2,119.

There is a complex network of roads linking three small hamlet areas: Ironville to the west, Crown Point Center, and the main commercial center of the town, Crown Point, just a mile from Lake Champlain. The Town has an area of 79 square miles, including16 named ponds, three major brooks or creeks, several unnamed tributaries and marsh areas.

There is considerable undeveloped forested area to the west of the hamlets with most of the residential development in the lower elevation areas in the eastern half of the town.

Resources in addition to town facilities such as the Fire Hall/Community Center, Crown Point Central School, and the Highway Department include several businesses, the Penfield Homestead Museum, The State Historic Site at the Crown Point Forts, and the Essex County Fish Hatchery on Putt's Creek.

State Route 22/9N runs north-south through the eastern part of town as does the Canadian Pacific Rail line which carries several freight and passenger trains each day. In the northeast corner of the town State Route 903 leads to the Crown Point Bridge to Vermont. This is a major access route in and out of the county and the town shares resources in times of emergency with various Addison County, Vermont personnel.

Crown Poir	nt Table of Facts
Land Area	79 square miles/50,218.2 acres
Incorporated Village(s)	NA
Hamlets	Crown Point & Ironville
Population 2010 census	2,024 (2010 Census)
Governance	Town
Total Assessed Valuation	\$81,264,957.00
Highest Elevation	Hail Mt. – 2,624'
Largest Lake	Lake Champlain – eastern border & Penfield Pond
River(s)	Putnam (Putt's) Creek
Dams	1
Bridges	8 County Road
Interstate Highway	NA
State Routes	22 & 903
County Roads	2, 7, 45, 46, 47, 48 & 50
Land in Agricultural Use	5,216 acres
Land Classified Industrial (APA)	NA
Classified Residential, as Hamlet (APA)	410 acres
Hospital / Medical Facility	NA
Fire & Rescue	Crown Point Fire District
Schools	Crown Point Central
Railroads	CP Rail north/south
Passenger Trains per day	Amtrak 68 & 69 - 2/day
Freight Trains per day	approx. 5day
Ferry Dock(s)	NA
Interstate Bridge	Crown Point to Chimney Point, VT
Largest Employer	Out of Town
Law Enforcement	NYSP & County Sheriff
Correctional Facility	NA
Power Utility Provider(s)	Niagara Mohawk
Water Supply Source(s)	Wells
Emergency Shelters	The Fire House, Town Hall, Methodist Church, Station 2 at Ironville, and the Visitor's Center at the Forts.
Critical Facilities	Fire Houses – CP & Ironville & Town Hall, Water Plant

#### **Planning Process:**

A meeting was held in Crown point on June 19, 2018. An additional meeting occurred on May 22, 2019. The town supervisor attended the meeting.

Crown Point has an active emergency committee that was mobilized to help the town cope with the 1998 Ice Storm and prepare for Y2K.

#### **Capability Assessment:**

The following planning mechanism are in place in Crowe Point. The town has a comprehensive emergency management plan, continuity of operations plan, disaster recovery plan, floodplain regulations, town comprehensive plan, stormwater management plan, historic preservation plan, farmland preservation plan, building and fire codes. The town uses the Essex County Economic Development plan for economic initiatives. These regulations ensure that new devotement is resistant to hazards.

<b>Crown Point Planning Documents</b>
Comprehensive emergency management plan
Continuity of operations plan
Disaster recovery plan
Floodplain regulations
Stormwater management regulations
Farmland preservation plan
Town comprehensive plan
Historic preservation plan
Building codes
Fire codes

This hazard mitigation plan should be integrated into other existing plans in Crown Point. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will ensure that all enabling legislation have similar information in those documents. Integration can ensure consistency between enabling legislation.

A self assessment of town capabilities was completed. Crown Point relies on the APA for approval of development applications. The town also uses county assets when needed. County engineering staff are used or firms are hired when needed. The town has an emergency manager and floodplain administrator who also serves as the code officer. Land surveyors are hired as needed. DEC and APA staff are used for scientific issues. County assets are used for GIS. The county staff are also used for grant writing and grant assistance.

Crown Point uses a variety of funding sources to implement projects. Community development block grants have been used for new sewer and water extensions. Water and sewer fees are used to maintain the current systems. The town has numerous partnering agreements with New York State, Essex County, and town and villages for shared usage programs.

The town assessed its educational and outreach capabilities. The fire department conducts education programs in schools in town. The school conducts programs on environmental education. Lake Champlain education efforts are conducted by Lake Champlin Basin Programs and the Darren Institution.

The town ranked several areas of abilities. Planning and regulatory capabilities were ranked as high. Administrative and technical, financial, and education and outreach efforts were ranked as moderate capabilities.

Critical facilities flood vulnerability was assessed as the plan was updated. The table below described if these facilities are located in the 500 year floodplain, if the facility has been flooded in the past, and if any kind of mitigation has been completed to reduce the flood potential to these structures. Generator capabilities was also assessed to determine if these facilities could function without electric power, a common issue for critical facilities during disaster events.

Critical facilities were assessed for flood vulnerability. The fire station is currently located in the 500 year floodplain, this facility has a generator. The remaining critical facilities: police station, critical vehicle and equipment storage facilities, emergency operations center, pumping station, town hall which is also the communication center, medical clinic, private school, Verizon building, and water plant are not located in the 500 year floodplain. All of these facilities possess a generator except the private school.

Crown Point Critical Facilities in Floodplains				
Critical facility	500 year floodplain	Flooded in the past	Mitigated	Generator
Fire station/critical vehicle and equipment storage	No	No	No	Yes
Town Hall/Emergency operations center (town Hall)	No	No	No	No
NYSEG station	No	No	No	Yes
Medical clinic	No	No	No	Yes

Crown Point Central School	No	No	No	Yes
Telephone company building	No	No	No	Yes
Water plant	No	No	No	Yes
Sewer plant	No	No	No	Yes

Crown Point has identified two areas that can be used for temporary housing sites. Monitor Bay RV Park. It has power, water and sewer. This area has paved and unpaved areas that could be used for temporary housing units such as RV or mobile homes. A private filed that lacks power, sewer and water is another location that can be used for RV or mobile homes for displaced residents. The school is designated as the American Red Cross shelter and can be used for temporary housing of resident displaced by a hazard event. In the past displaced resident have also obtained temporary housing with friends, relatives or neighbors.

Crown Point Temporary Housing for Displaced Residents			
Facility	Type of housing		
Monitor Bay Park	RV, mobile homes		
Private Land	RV, mobile homes		
Crown Point Central Schools	ARC Shelter		

The following information concerns flood vulnerable structures in Crown Point. The numbers of actual structures in the flood vulnerable areas is most likely larger than the number of insured structures. Once the flood insurance rate maps are updated by FEMA, these new maps will determine the actual number of vulnerable structures.

<b>Crown Point Flood Insurance Facts</b>			
2011	2018		
Number of policies	Number of policies		
17	14		

Crown Point will continue to manage their floodplains in the future. They will review and approve new development in the special flood hazard areas to ensure these structures are build compliant with the local floodplain ordinance. As the new FIRM are updated by FEMA, meetings will occur with floodplain managers, town supervisors and village mayors to provide training on the national flood insurance program. Compliance will be discussed at these meeting. Floodplain managers of the most vulnerable communities will be encouraged to join the state floodplain manager association to continue to increase their understanding of how to manage their flood vulnerable areas.

#### **Hazard Ranking:**

Hazards that are profiled in this plan were ranked. The table below indicates the rankings.

Crown Point Hazard Ranking		
High Hazard	No hazard considered as a high ranked hazard.	
Medium Hazard	Droughts, extreme temperatures, floods	
Low Hazard	Avalanche, earthquake, hail storms, high winds, hurricanes, land subsidence and expansive soils, ice storms, landslides, severe winter storms, wildfires, rail events	






#### **Potential Loss:**

Potential loss was calculated for Crown Point. The Essex County Real Property website was used to obtain data for all parcels in each jurisdiction. Data was manipulated to determine the number and value of each structures in each of the 9 class codes. The data was then totalled for the number of structures and value of structures in each class code. The number of structures impacted from the hazard event was calculated to be 10% of the total number of structures in each class code.

Essex County Real property Tax Services website has 9 class codes for property as follow.

100 Agriculture	200 Residential	300 Vacant Lands
400 Commercial	500 Recreation and Entertainment	600 Community services
700 Industrial	800 Public Services	900 Forest, Conservation
		Lands and Parks

Crown Point Potential Loss							
class codes	Acreage	Number by	Structure	Number of	Potential loss		
		class code	Value	impacted			
				structures			
100	2485.05	13.00	\$1,226,900	1.30	\$122,690		
200	12570.50	934.00	\$78,363,266	93.40	\$7,836,327		
300	10296.71	68.00	\$706,800	6.80	\$70,680		
400	119.44	34.00	\$4,137,540	3.40	\$413,754		
500	48.57	3.00	\$196,800	0.30	\$19,680		
600	127.36	27.00	\$7,622,700	2.70	\$762,270		
700	252.63	4.00	\$767,300	0.40	\$76,730		
800	265.43	6.00	\$2,694,401	0.60	\$269,440		
900	22628.66	11.00	\$503,800	1.10	\$50,380		
Total	48794.35	1100.00	\$96,219,507	110.00	\$9,621,951		

## **Mitigation Strategy:**

Prioritization of projects occurred as the plan was updated. These projects list the priority as high, medium and low. Generally speaking, high priority projects are projects that enable towns and villages to be fully functional during times of disasters. Medium and low projects are to improve other functions of towns and villages and address actual residents of these municipalities. Implementation of project will occur as funding is obtained. Any project can be implemented as funding, political will and other aspects are addressed.

The cost of several projects has been determined and included in the table below. Other mitigation projects have estimated the costs of these projects. The potential cost to implement mitigation projects have been ranked as high, medium or low cost. Low cost projects are those projects that would cost up to \$100,00. Medium cost projects are estimated to cost between \$100,000 and \$500,000. High cost projects are those projects that would cost over \$500,000.

The town identified one project that was noted in the 2011 plan. This project had 5 separate projects included in the one project. The original table from the 2011 is followed by a separate table of those 5 projects.

	Crown Point Mitigation Projects 2011							
Goal	Objective	Strategy	Lead Agency	Estimate	Target Date	Existing/New Buildings	Priority	Progress
Reduce	Avoid road	Larger	Town	Culverts	Spring			
the	flooding/possible	Culverts (5);	Supervisor and	total;	2011	У	М	Penfield
impact of	road closure	Penfield	Highway (Town	\$85,000	ST			
flooding		Road, Buck	and County)					
		Mountain		Bridges total;				
		Road, Old		\$275,000				
		Furnace						
		Road,						
		replace						
		bridges;						
		Breed Hill						

Road, Bus Road	n			
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Crown Point Status of 2011 projects								
Goal	Objective	Strategy	Lead Agency	Estimate d cost	Target Date.	Existing /new building	Priority	Progress
Reduce the impact of flooding	Avoid road flooding/po ssible road closure	Penfield Road	Town Supervis or and Highway (Town and County)	Culverts total; \$85,000	Spring 2011 ST	Y	М	Completed
Reduce the impact of flooding	Avoid road flooding/po ssible road closure	Buck Mountain Road	Town Supervis or and Highway (Town and County)	Culverts total; \$85,000	Spring 2011 ST	Y	М	Completed
MReduce thMe impMact of flooding	Avoid road flooding/po ssible road closure	Old Furnace Road	Town Supervis or and Highway (Town and County)	Culverts total; \$85,000	Spring 2011 ST	Y	М	completed

Reduce the impact of flooding	Avoid road flooding/po ssible road closure	Replace Breed Hill Road bridge	Town Supervis or and Highway (Town and County)	Bridges total; \$275,000	Spring 2011 ST	Y	M	completed
Reduce the impact of flooding	Avoid road flooding/po ssible road closure	Replace Bush Road bridge	Town Supervis or and Highway (Town and County)	Bridges total; \$275,000	Spring 2011 ST	Y	М	Completed
Add new water lines in town		Main street water lines expanded since 2011	Town superviso r	High			Н	Completed
New sewer plant		Sewer plant replaced since 2011	Town superviso r	High			High	completed

The following projects were identified during the plan update of 2019.

		Town of	Crown Po	oint mitiga	ation proje	ect 2019			
Project # and name	Goal addressed	Project or action	Hazard addresse d	Lead Agency	Estimate d cost	Timefram e to complete in years.	Potentia 1 funding sources	Priority (high, Medium, low)	Mitigation technique category
1. Peasley Road bridge replacement	Infrastructu re projects	Replace bridge	flooding	County PDW, town Hwy dept.	Medium	2 year	Bridge Bank	Medium	#4 implement infrastructu re projects
2. Skunk Hollow Road bridge	Infrastructu re projects	Replace bridge	flooding	County PDW, town Hwy dept.	Medium	2 years	Bridge Bank	Medium	#4 implement infrastructu re projects
3. Town Hall generator	Infrastructu re projects	Obtain generator for Town Hall	Power loss events	Town superviso r	Low	1 year	Town budgets, other grant	High	#4 implement infrastructu re projects
4. Senior Center Generator	Infrastructu re projects	Obtain generator for Senior center	Power loss events	Town superviso r	Low	1 year	Town budgets	Medium	#4 implement infrastructu re projects
5. Gas station generator	Infrastructu re projects	Obtain generator for private gas station	Power loss events	Town superviso r	Low	ASAP	Gas station owner	Medium	#4 implement infrastructu re projects
6. culvert inspection and cleaning	Infrastructu re projects	Inspect and clean culverts as needed	floods	Town Hwy dept	Low	Continue current efforts	Town budgets	Medium	#4 implement infrastructu re projects

7. Water supply back	Infrastructu	Obtain	Drought	Town	High, 3	Year 1-2	Environ	High	#4
up	re projects	back up		superviso	million	obtain	mental		implement
		water		r		grant	facility		infrastructu
		supply well				funds,	corporat		re projects
		for town				year 3-5	ion		
						obtain			
						back up			
						well			
8. Amy Hill Road	Infrastructu	Replace	Floods	County	Medium	Year 1-2	Bridge	Medium	#4
	re projects	bridge with		DPW		obtain	NY		implement
		larger				grant	funds		infrastructu
		structure				funds,			re projects
						year 3-5			
						replace			
						bridge			
9. Hamilton Road	Infrastructu	Replace	Floods	County	Medium	Year 1-2	Bridge	Medium	#4
bridge	re projects	bridge with		DPW		obtain	NY		implement
		larger				grant	funds		infrastructu
		structure				funds,			re projects
						year 3-5			
						replace			
						bridge			

Crown Point will continue to implement projects that will reduce the negative effects of hazards that impact Crown Point.

## **Town of Elizabethtown**

#### **Introduction:**

The town of Elizabethtown is the county seat of Essex County, and is centrally located in the county. It encompasses 82 square miles and is bordered by the towns of Jay and Lewis on the north, Moriah and North Hudson to the south, Keene to the west and Westport to the east.

The village of Elizabethtown was unincorporated in 1981, and the village is now part of the town. The busy downtown area includes two business districts, a central school, a hospital, the county complex, a historic district, many residences and offices, some of which are surrounded by a tributary and main branch of the flood-prone Boquet River. The base population increases by at least half during the workweek, due to the town being the county seat of government. Outside the hamlet there are tracts of forestland and mountainous areas surrounding more isolated residences.

Historically known as the Pleasant Valley, the area is a watershed for Giant Mountain (elev. 4,622') and Rocky Peak Ridge (elev. 4,375'), as well as several other lesser peaks. Seven miles upstream from Elizabethtown, the hamlet of New Russia is located on the Boquet. In that small settlement, and along the course of the river, there are clusters of residences.

State Routes 9 and 9N intersect in the former village, and there is a small network of County and Town secondary roads. A New York State campground and day use area is located in the southeast corner of town at Lincoln Pond, part of which was created when the Black River was dammed for hydroelectric purposes in the 1911. The Adirondack Northway, I-87, from Exit 30 to 31, runs through that corner of the town. The Hand-Hale Historic District and Hubbard Hall are listed on the National Register of Historic Places.

The lumber industry and processing iron ore were important in the beginning, but tourism became prominent by the end of the 19<sup>th</sup> century.

Elizabethtov	vn Table of Facts
Land Area	82 square miles/52,536.7 acres
Incorporated Village(s)	NA
Hamlets	Elizabethtown & New Russia
Population 2010 census	1,163 (2010 Census)
Governance	Town
Total Assessed Valuation	\$101,481,949.00
Highest Elevation	Rocky Peak Ridge – 4,029'
Largest Lake	Lincoln Pond
River(s)	Boquet, The Branch & Black
Dams	2
Bridges	12 County Road
Interstate Highway	I-87 north/south SE to NE
State Routes	9 & 9N
County Roads	7, 8 & 10
Land in Agricultural Use	NA
Land Classified Industrial (APA)	NA
Classified Residential, as Hamlet (APA)	470.5 acres
Hospital / Medical Facility	Elizabethtown Community Hospital, Health
	Center & Horace Nye Home
Fire & Rescue	Elizabethtown Fire & Emergency Squad
Schools	Elizabethtown-Lewis Central
Railroads	NA
Passenger Trains per day	NA
Freight Trains per day	NA
Ferry Dock(s)	NA
Interstate Bridge	NA
Largest Employer	Essex County
Law Enforcement	NYSP & County Sheriff
Correctional Facility	Essex County Jail
Power Utility Provider(s)	NYSEG
Water Supply Source(s)	Wells
Emergency Shelters	ElizLewis Central School, Eliz. Vol. Fire Dept.
Critical Facilities	

## **Planning Process:**

Two meetings occurred as the plan was updated. The first meeting occurred on May 24, the second occurred on November 20<sup>th</sup>. The Supervisor and CEO attended the first meeting. The supervisor and contractor met during the second meeting.

## **Capability Assessment:**

The town has the following planning mechanisms in place:

Elizabethtown Planning Document
Emergency Operations Plan
Comprehensive Emergency Management Plan
Continuity of Operations Pan
Floodplain Regulations
Zoning Regulations
Subdivision Regulations
Comprehensive Land Use Plan
Natural Resources Protection Plan
Economic Development Plan
Historic Preservation Plan
Farmland Preservation Plan
Building Codes
Fire Codes

These regulations ensure that new development is built compliant with these regulations, which makes these structures less vulnerable to hazards.

This hazard mitigation plan should be integrated into other existing plans in Elizabethtown. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will ensure that all enabling legislation have similar information in those documents. Integration can ensure consistency between enabling legislation.

Elizabethtown completed a self assessment of their capabilities. Essex County staff is used for planning, engineering and floodplain management and expertise. The town code officer also serves as the floodplain administrator. Land surveyors are contracted as needed. DEC and APA staff are used for scientific expertise. Finally, Essex County staff is also used for grant writing and GIS capabilities.

The town uses a variety of funding sources to implement projects. CDGB have been used for rehabilitation of structures. Water and sewer fees are used to maintain the water system. Partnering agreements are used for ambulance, fire and other needs.

Public education and outreach are conducted in town. The public works, emergency squads and public safety conduct projects in schools and other venues. NGO's such as the Boquet River Association, are also active in outreach and education efforts.

Elizabethtown ranked several categories of abilities. The town ranked planning and regulatory, administrative and technical capabilities, and education and outreach capabilities as moderate. The town ranked financial capabilities as limited.

Critical facilities flood vulnerability was assessed as the plan was updated. The table below described if these facilities are located in the 500 year floodplain, if the facility has been flooded in the past, and if any kind of mitigation has been completed to reduce the flood potential to these structures. Generator capabilities was also assessed to determine if these facilities could function without electric power, a common issue for critical facilities during disaster events.

Elizabethtown Critical Facilities in Floodplains							
Critical facility	500 year Floodplain	Flooded in the past	Mitigated	Generator			
Fire Station	Yes	Yes	Yes, Electric above BFE	Yes			
Gas Station	Yes	Yes	Unknown	Unknown			
Town Garage	No	No	No	Yes			
Town Hall/Communication Center	No	No	No	No			
Hospital	No	No	No	Yes			
High School	No	No	No	Yes, needs to be connected			
Water chlorination plant	Yes	No	No, construct berm around plant	Yes			
Utility sub station	No	No	No	Unknown			

The fire station and one privately owned gas station are located in the 500-year floodplain. The fire station has had its electric raised above the base flood elevation of the 1% chance flood height. It is not known if the gas station has a generator. The town garage serves as a critical vehicle storage area, and it has a generator. The communication center is located at the town hall. The hospital has a generator. The school is also the American Red Cross shelter. The hospital donated a generator for this facility, but funds are needed to install it permanently. There is one utility substation, it is unknown if this facility has a generator. The drinking water plant has a generator. The water chlorination plant is located in the 500 year floodplain, but has not been flooded. A berm around this facility would reduce the flood potential to this facility.

The town has identified two area that can be used for temporary housing needs after a disaster. The town owned golf course would be used if and when needed. This area has paved and unpaved areas that could be used for temporary housing units such as RV or mobile homes. This has power and water. The school is designated as the American Red Cross shelter and can be used for temporary housing of resident displaced by a hazard event. In the past displaced resident have also obtained temporary housing with friends, relatives or neighbours.

Elizabethtown Temporary Housing Location for Displaced Residents				
Facility	Type of housing			
High School	American Red Cross shelter			
Town owned golf course	RV, mobile homes			

The following information concerns flood vulnerable structures in Elizabethtown. The numbers of actual structures in the special flood vulnerable area is most likely larger than the number of insured structures. Once the flood insurance rate maps are updated by FEMA, these new maps will determine the actual number of flood vulnerable structures.

Elizabethtown Flood Insurance Facts				
2011	2018			
Number of policies	Number of policies			
13	14			
Number of repetitive loss	Number of repetitive loss			
structures	structures			
3	3			
	2 single family, 1 other residential			

Elizabethtown will continue to manage their floodplains in the future. They will review and approve new development in the special flood hazard areas to ensure these structures are build compliant with the local floodplain ordinance. As the new FIRM are updated by FEMA, meetings will occur with floodplain managers and town supervisors to provide training on the national flood insurance program. Compliance will be discussed at these meeting. Floodplain managers of the most vulnerable communities will be encouraged to join the state floodplain manager association to continue to increase their understanding of how to manage their flood vulnerable areas.

## **Hazard Ranking:**

The hazards that are profiled in the plan were ranked for the town's vulnerability to these hazards.

Elizabethtown Hazard Ranking			
High Hazards	Extreme Temperatures, Floods, High		
	Winds, Hurricanes, Severe Winter		
	Storms,		
Medium	Drought, Hail Storms, Landslides,		
Hazard	Wildfires. Ice Storms,		
Low Hazard	Avalanche, Earthquakes, Rail Event,		
	Subsidence, Landslides.		







## **Potential Loss:**

Potential loss was calculated for Elizabethtown. The Essex County Real Property website was used to obtain data for all parcels in each jurisdiction. Data was manipulated to determine the number and value of each structures in each of the 9 class codes. The data was then totalled for the number of structures and value of structures in each class code. The number of structures impacted from the hazard event was calculated to be 10% of the total number of structures in the jurisdiction. The potential loss from the impact from hazard events was calculated to be 10% of the value of the structures in each class code.

Essex County Real property Tax Services website has 9 class codes for property as follow.

100 Agriculture	200 Residential	300 Vacant Lands
400 Commercial	500 Recreation and Entertainment	600 Community services
700 Industrial	800 Public Services	900 Forest, Conservation Lands and Parks

Elizabethtown Potential Loss						
Class code	Number of	Acreage	structure	Number of	Potential	
	structures		value	structures	Loss	
				impacted		
100.00	0	109.11	\$0	0	\$0	
200.00	665	6877.82	\$68,758,740	66.5	\$6,875,874	
300.00	55	2965.64	\$357,200	5.5	\$35,720	
400.00	63	125.42	\$10,140,100	6.3	\$1,014,010	
500.00	1	115.05	\$594,000	0.1	\$59,400	
600.00	32	213.31	\$33,118,100	3.2	\$3,311,810	
700.00	2	1.80	\$332,000	0.2	\$33,200	
800.00	3	516.89	\$1,417,953	0.3	\$141,795	
900.00	13	40075.00	\$458,000	1.3	\$45,800	
Total	834.00	51000.04	\$115,176,093	83.40	\$11,517,609	

## **Mitigation Strategy:**

Prioritization of projects occurred as the plan was updated. These projects list the priority as high, medium and low. Generally speaking, high priority projects are projects that enable towns and villages to be fully functional during times of disasters. Medium and low projects are to improve other functions of towns and villages and address actual residents of these municipalities. Implementation of project will occur as funding is obtained. Any project can be implemented as funding, political will and other aspects are addressed.

The cost to implement mitigation projects have been ranked as high, medium or low cost. Low cost projects are those projects that would cost up to \$100,00. Medium cost projects are estimated to cost between \$100,000 and \$500,000. High cost projects are those projects that would cost over \$500,000.

Elizabethtown had one project included in the 2011 HMP. This project was not completed, but is still a critical project.

	Town of Elizabethtown 2011 Mitigation Projects							
Goal	Objective	Strategy	Lead	Estimate	Target	Existing/New	Priority	Status
			Agency		Date	Buildings		
Reduce	Emergency	Elizabethtown	Town	\$90,000	Spring			Not completed due to
the	shelter at	Community	Supervisor /		2011	У	М	lack of funds, still a
impact of	Elizabethtown	Hospital	Board and		ST			valid project.
hazards	Central School	donated	Elizabethtown					
		generator	Central School					
		needs	Board					
		placement						
		and power						
		hook-up						
		-						

Town of Elizabethtown 2019 Mitigation Projects									
Project # and name	Goal addressed	Project or action	Hazard addressed	Lead Agency	Estimated cost	Timeframe to complete in years.	Potential funding sources	Priority (high, Medium, low)	Mitigation technique category
1. NYS Route 9 flood project	#4 Infrastructure projects	Raise roadway in 5 places to eliminate road flooding	Floods	County, NYS DOT	High	1-10 years Year 1-5 obtain funding year 6-10 implement project	NYS DOT	Medium	#2 Structure and infrastructure projects
2. Roaring Brook Road buy out	#3 buyouts of flooded structures	Acquire homes after flood events	Floods	County Town Hwy dept	L/M depending on structure	1-10 years Year 1-5 obtain funding year 6-10 implement project	FEMA HMGP, PDM	Medium	##2 structure and infrastructure
3. Cobble Hill Road Replace and upgrade culvert	#4 Infrastructure	Culvert upgrades	Floods	County, Town Hwy Dept	Low	1-10 years Year 1-5 obtain funding year 6-10 implement project	County Town Hwy Dept	Medium	# 2 structure and infrastructure projects
4. Simons Hills Road culvert replacement and upgrades	#4 Infrastructure	Culvert upgrades	floods	County, Town Hwy Dept	Low	1-10 years Year 1-5 obtain funding year 6-10 implement project	County, Town Hwy Dept	Medium	# 2 structure and infrastructure projects

5. Water Street bridge replacement	#4 Infrastructure	Replace bridge	Floods	County, Town Hwy Dept	High	1-10 years Year 1-5 obtain funding year 6-10 implement project	County, Town	Medium	# 2 structure and infrastructure projects
6. Hurricane Road bridge replacement	#4 Infrastructure	Replace bridge	Floods	County, Town Why Dept	High	1-10 years Year 1-5 obtain funding year 6-10 implement project	County, Town	Medium	# 2 structure and infrastructure projects
7. Rope Dell Road bridge replacement	#4 Infrastructure	Replace bridge	Floods	County, Town Hwy Dept	High	1-10 years Year 1-5 obtain funding year 6-10 implement project	County, Town	Medium	# 2 structure and infrastructure projects
8. Foot Bridge Replacement	# 4 Infrastructure	Replace foot bridge over waterway	floods	County, Town	Medium	1-10 years Year 1-5 obtain funding year 6-10 implement project	County, Town	Medium	# 2 structure and infrastructure projects
9. Ambulance equipment	# 4 Infrastructure	Purchase enhanced equipment	All	County, Town	80K	1-5 years	State	Medium	# 2 structure and infrastructure projects
10. Culvert inspection and cleaning	# 4 Infrastructure	Clean culverts	floods	Town	Low	1-5 years	Annual operating budgets	High	# 2 structure and infrastructure projects

11. Fish and Game Club bank project	#6 Natural resource projects	Stabilize banks	floods	SWCD	Medium	1-5 years	SWCD	High	#3 natural resources protection projects
12. Generators	# 4 Infrastructure	Purchase generators for critical facilities	All	Town	Low	1-5 years	NYS DOS Town budgets	High	# 2 structure and infrastructure projects

Elizabethtown will continue to implement projects and programs to reduce the effects of hazards to the town. Floods will continue to be an issue for the town. Building codes must continue to be implemented to reduce damages from flood events and wind events. Current fire suppression programs, led by the DEC, will continue to ensure that wildfires mitigation occurs. Winter storms will be responded to ensure the town can function during these events. Elizabethtown will continue to mitigate hazard as events occur and funding is available.

## **Town of Essex**

#### **Introduction:**

Essex is located in the northeastern part of the County, bordered by Willsboro to the north, Lewis to the west, Westport to the south and Lake Champlain to the east. It encompasses an area of 38 square miles, predominately farmland and residential areas interspersed with forested lands. It includes the hamlet of Whallonsburg in the south and the main hamlet area of Essex to the north, which is on the NYS Historic Register.

Essex was part of a land grant made to Louis Joseph Robart by King Louis XV of France. The land grant was lost after the British took over the region after 1763. It was an important shipbuilding location and port, but that economy collapsed after 1849 with the beginning of railroad lines in the region. The Essex Village Historic District, Foothills Baptist Church, and the Octagonal Schoolhouse are listed on the National Register of Historic Places.

The Lake Champlain Transit Company operates a ferry service to Vermont from the hamlet of Essex. Canadian Pacific Rail lines run through the Town carrying freight and Amtrak passenger trains. There are a large number of seasonal residents who own property in the town.

Essex 7	Table of Facts
Land Area	38 square miles / 23,766.1 acres
Incorporated Village(s)	None
Hamlets	Essex & Whallonsburg
Population 2010 census	671
Governance	Town
Total Assessed Valuation	\$78,178,869.00
Highest Elevation	Payne Mt. – 1,164'
Largest Lake	Lake Champlain – eastern border
River(s)	Boquet
Dams	2
Bridges	3 County Road
Interstate Highway	NA
State Routes	22
County Roads	9, 12, 55, & 66
Land in Agricultural Use	11,150 acres
Land Classified Industrial (APA)	NA
Classified Residential, as Hamlet (APA)	255 acres
Hospital / Medical Facility	NA
Fire & Rescue	Essex Fire & Rescue
Schools	Willsboro Central School
Railroads	CP Rail north/south
Passenger Trains per day	Amtrak 68 & 69 2 per day
Freight Trains per day	Approx. 5 per day
Ferry Dock(s)	Essex to Charlotte, VT (year-round, weather
	permitting)
Interstate Bridge	NA
Largest Employer	Out of Town
Law Enforcement	NYSP & County Sheriff
Correctional Facility	NA
Power Utility Provider(s)	NYSEG
Water Supply Source(s)	Lake Champlain & private wells
Emergency Shelters	Essex Vol. Fire Dept. & Willsboro Central School
Critical Facilities	

## **Planning Process:**

Two meetings took place in Town of Essex for the updating of the hazard mitigation plan. The Town Supervisor and highway supervisor were present at the meeting.

## **Capability Assessment:**

The town assessed its planning capability. These regulatory devices ensure that new development is constructed to mitigate hazards.

Town of Essex Planning Documents				
Planning Mechanism	Year adopted			
Comprehensive Emergency Management Plan	2010			
Emergency Operation Plan	2010			
Floodplain Regulations	2003			
Floodplain Management Plan	2003			
Zoning Ordinance	2003			
Subdivision Regulations	2006			
Town Comprehensive Plan	2003			
Capital Improvement Plan	2003			
Historic Preservation Plan	2003			
Farmland Preservation Plan	2003			
Building Codes	2003			
Fire Codes	2003			

The town has a planning board, but also received assistance from the County Planning agency. An engineering firm is used when needed. The Supervisor is also the designated emergency manager for the town. The code enforcement officer also serves as the floodplain administrator. Land surveyors are hired as needed. APA and DEC are used for scientific needs, Essex utilizes the County GIS department when needed. The county grant writer at the Community Planning Board is utilized for grant assistance.

This hazard mitigation plan should be integrated into other existing plans in the Town of Essex. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will ensure that all enabling legislation have similar information in those documents. Integration can ensure consistency between enabling legislation.

The Town has used a variety of funds for projects. Capital improvements funds were used to rehabilitee Town Hall. CDBG have been used to rehabilitee housing units. Special purpose

taxes are used for the EMS. Water and sewer fees are used to maintain the current systems for the Town. Essex has partnering agreements with Essex County and several towns in the area.

The education and outreach capabilities were assessed. Essex has on ongoing education effort by means of a newsletter and Town website. They have public private partnerships with The Wallonsburg Grange and fire department. These facilities are used for shelters. Essex Initiatives co team for education efforts. The fire department conducts educational sessions for school children.

Essex assessed four capability areas as the plan was updated. Planning and regulatory capabilities were ranked as high. Administrative and technical, financial and education, and outreach were ranked as moderate.

Critical facilities flood vulnerability was assessed as the plan was updated. The table below described if these facilities are located in the 500 year floodplain, if the facility has been flooded in the past, and if any kind of mitigation has been completed to reduce the flood potential to these structures. Generator capabilities was also assessed to determine if these facilities could function without electric power, a common issue for critical facilities during disaster events.

Т	Town of Essex Critical Facilities in Floodplains						
Critical Facility	500 year floodplain	Flooded in the past	Mitigated	Generator			
Fire Station Wallonsburg	Yes	Yes	No (Needs to be relocated	No			
Fire Station Essex	No	No	No	Yes			
Vehicle storage Center	No	No	No	Yes			
Emergency Operations Center	No	No	No	Yes			
Communication center	No	No	No	Yes			
Equipment storage Center	No	No	No	Yes			
Drinking plant	No	No	No	No			
Waste water plant	Yes	No	No (Needs berm around plant)	No			
Private school	No	No	No	Unknown			

Critical facilities were assessed in this plan update. The fire station in Wallonsburg is located in the 500-year floodplain. This facility should be moved from the flood vulnerable area. The fire station in Essex is not located in the 500 year floodplain. The waste water treatment plant needs a berm around the facility to prevent floodwaters from compromising the function of the plant during floods. The critical vehicle and equipment storage facility, emergency operations center, communication center, the private school is not located in the 500-year floodplain. Generators are needed at the fire station, the drinking water, and waste water plants.

The Town of Essex has one shelter, not ARC certified, that can used for sheltering of residents. The Wallonsburg Grange can be used as a temporary shelter. The Willsboro school is designated as the American Red Cross shelter and can be used for temporary housing of resident displaced by a hazard event. This ARC shelter is located in a neighbouring town, and can be used to house Town of Essex residents. In the past displaced resident have also obtained temporary housing with friends, relatives or neighbours.

Essex Temporary Housing for Displaced Resident.			
Facility	Type of Housing		
Wallonsburg Grange	Shelter, but not ARC shelter		
Willsboro School	American Red Cross shelter		

The following information concerns flood vulnerable structures in the Town of Essex. The number of actual structures in the flood vulnerable areas is likely to be larger than the number of insured structures. Once the flood insurance rate maps are updated by GFEMA, these new maps will determine the actual number of vulnerable structures in the floodplain.

Essex Flood Insurance Facts				
2011	2018			
Number of policies	Number of Policies			
13	14			
Number of Repetitive Loss Properties	Number of Repetitive Loss Properties			
0	0			

The Town of Essex will continue to manage their floodplains in the future. They will review and approve new development in the special flood hazard areas to ensure these structures are build compliant with the local floodplain ordinance. As the new FIRM are updated by FEMA, meetings will occur with floodplain managers and town supervisor and to provide training on the national flood insurance program. Compliance will be discussed at these meeting. Floodplain managers of the most vulnerable communities will be encouraged to join the state floodplain manager association to continue to increase their understanding of how to manage their flood vulnerable areas.

# Hazard Ranking:

Town of Essex Hazard Ranking 2018					
High Hazards	Floods, High Winds, Hurricanes, Ice Storms, Severe Winter Storms, Wildfires				
Medium Hazard	Drought, Earthquake, Extreme Temperatures, Land Subsidence and expansive soils, Rail Events				
Low Hazards	Avalanche, Hail Storms, Landslides				

Hazards were ranked as part of the updating process.







## **Potential Loss:**

Potential loss was calculated for the Town of Essex. The Essex County Real Property website was used to obtain data for all parcels in each jurisdiction. Data was manipulated to determine the number and value of each structures in each of the 9 class codes. The data was then totalled for the number of structures and value of structures in each class code. The number of structures impacted from the hazard event was calculated to be 10% of the total number of structures in the jurisdiction. The potential loss from the impact from hazard events was calculated to be 10% of the value of the structures in each class code.

Essex County Real property Tax Services website has 9 class codes for property as follow.

100 Agriculture	200 Residential	300 Vacant Lands
400 Commercial	500 Recreation and Entertainment	600 Community services
700 Industrial	800 Public Services	900 Forest, Conservation Lands and Parks

Essex Potential Loss								
Class code	Acreage	Number of	Structure	# impacted	Potential loss			
		structures	value					
100	6563.10	27.00	\$3,536,790	2.70	\$353,679			
200	4458.02	427.00	\$57,556,400	42.70	\$5,755,640			
300	1643.63	25.00	\$313,300	2.50	\$31,330			
400	37.73	28.00	\$3,971,180	2.80	\$397,118			
500	74.49	3.00	\$450,500	0.30	\$45,050			
600	417.14	16.00	\$3,515,900	1.60	\$351,590			
700	35.00	0.00	\$0	0.00	\$0			
800	47.86	6.00	\$5,022,565	0.60	\$502,257			
900	6279.27	8.00	\$678,400	0.80	\$67,840			
Total	19556.24	540.00	\$75,045,035	54.00	\$7,504,504			

Essex will continue to implement programs and projects to mitigate effect from hazards.

#### Mitigation strategy:

Essex reviewed the mitigation project that was included in the 2011 plan. The review of the project is noted in the table below. New mitigation projects were developed for the 2019 plan update. These new projects are included in the table below.

Prioritization of projects occurred as the plan was updated. These projects list the priority as high, medium and low. Generally speaking, high priority projects are projects that enable towns and villages to be fully functional during times of disasters. Medium and low projects are to improve other functions of towns and villages and address actual residents of these municipalities. Implementation of project will occur as funding is obtained. Any project can be implemented as funding, political will and other aspects are addressed.

Town of Essex Mitigation Plan Project 2011								
Goal	Objective	Strategy	Lead	Estimate	Target	Existing/New	Priority	Progress
<b>D</b> 1			Agency		Date	Dununigs		
Reduce	Eliminate road		Town	\$250,000	Spring	У		Still valid
the impact of	washout	grade Cook	Supervisor /		2011 ST		М	
		Road	Board Town					
flooding		East/West,	Highway,					
		increase	County DPW					
		culvert size						

Town of Essex Mitigation Projects 2019									
Project # and name	Goal addressed	Project or action	Hazard addressed	Lead Agency	Estimated cost	Timeframe to complete in years.	Potential funding sources	Priority (high, Medium , low)	Mitigation technique category
1. Sediment catch basin on Cook road	#4 Infrastructure	Eliminate flooding on road by installing catch basin	Flood	Town	Medium	5 years	NY DOT, SWCD	High	Structure and infrastructure
2. Upgrade culverts on DPW list	#4 infrastructure	Replace culverts that are undersized in town	Flood	Town	Low	5 years	County, town budgets,	Medium	Structure and infrastructure
3. Install ditches on Cross road	#4 infrastructure	Install road side ditches	Flood	Town	Low	5 years	SWCD	Medium	Structure and infrastructure
4. Buy out flood impacted structures on Cook and Leanings Road.	#3 buyout structures		Floods	Town County	L/M depending on each structure	1-5 years	HMGP or PDM	High	Structure and infrastructure.
5. Purchase generator for school	#4 infrastructure	Generator needed for private school in town	All	Town	10K	5 years	FEMA School budget	High	Structure and infrastructure

## Town of Jay

#### **Introduction:**

The town of Jay is located in the north-central portion of Essex County, and is bordered by the towns of Black Brook and Au Sable to the north, Chesterfield and Lewis to the east, Keene and Elizabethtown to the south and the town of Wilmington to the west. It encompasses 67 square miles of river bottomland and rolling hills, which rise to the peaks of the Jay Range to the east in the town of Lewis (highest elevation, 3623 ft.). The East Branch of the Au Sable River passes through the length of the town (see County Plan for a fuller description of the watershed), running beside State Route 9N, and several residential and business clusters. The three hamlets of Upper Jay, Jay and Au Sable Forks are all located along the river.

The business and population centers are in Au Sable Forks where the West and East branches meet. Alto Monaco developed The Land of Make Believe" a small amusement park that was in operation from 1954 to 1979. The park was closed due to flood of 1978, and never reopened. State Highway 86 runs west from Jay to the neighboring town of Wilmington, rising substantially in elevation on the way. There is a substantial network of secondary roads on the east side of the Au Sable River, some of which are seasonal.

Because of the history of severe flooding and ice jams, earthquake damage, and fire, the residents of Jay have an awareness of mitigation matters. The town was severely impacted by Tropical Storm Irene in 2011. The town has implemented many mitigation projects since Irene that have mitigated future damages to the town. Jay will continue to apply for grant funds to continue mitigation of their flood hazards, which will allow for future mitigation efforts.

The water system upgrades, flood mitigation measures, wildfire education and continuing public education efforts are all evidence of this. The supervisor takes an active role, and works closely with town and emergency personnel, and actively pursues projects and funding opportunities to improve services to the residents. The AuSable River Watershed Association (ARRA) is active in securing grants and implementing projects. The highway crew works well with ARRA in implementing fish friendly culverts as culverts are replaced and upgraded. Successful coordination and collaboration have resulted in hazard reduction.

The town would like to collaborate with the APA in a possible land swap. Flood vulnerable areas in Jay would be donated to the APA in exchange for safer, less flood vulnerable areas that could be developed. This would increase the viability of Jay into the future

Jay Table of Facts			
Land Area	67 square miles/43,779.8 acres		
Incorporated Village(s)	NA		
Hamlets	Jay & Upper Jay		
Population 2010 census	2,506 (2010 Census)		
Governance	Town		
Total Assessed Valuation	\$127,509,139.00		
Highest Elevation	Jay Mtn. – 3,372'		
Largest Lake	None		
River(s)	E & W branch of the Au Sable		
Dams	3		
Bridges	6 County Road		
Interstate Highway	NA		
State Routes	9N & 86		
County Roads	12, 22, 54, 64 & 65		
Land in Agricultural Use	1,200 acres		
Land Classified Industrial (APA)	114 acres		
Classified Residential, as Hamlet (APA)	1,642.7 acres		
Hospital / Medical Facility			
Fire & Rescue			
Schools			
Railroads	NA		
Passenger Trains per day	NA		
Freight Trains per day	NA		
Ferry Dock(s)	NA		
Interstate Bridge	NA		
Largest Employer	Out of Town		
Law Enforcement	NYSP & County Sheriff		
Correctional Facility	NA		
Power Utility Provider(s)	NYSEG		
Water Supply Source(s)	Lewis Brook, Rocky Branch & private wells		
Emergency Shelters	Jay Community Center		
Critical Facilities			

•

## **Planning Process:**

A meeting was held on June 27, 2018. The Town Supervisor, AuSable River Association Executive Director, and Highway Supervisor attended the meeting. Two additional calls took place with the Supervisor as the plan was updated.

Jay has a dedicated emergency committee, perhaps more experienced than any in the county, because of their experiences with flooding, earthquake, the ice storm and other events. They readily assembled to begin work on the mitigation projects. Their combined expertise added much to the product.

The AuSable Watershed association has been active in assisting Jay after Irene. New York State provided funding for completion of a post storm document called *NY Rising Community Reconstruction Plan for the Towns of Jay and Keene*. This document developed mitigation projects directly related to Irene's impact to Jay. Mitigation has been implemented after this devastating storm in Jay. Please see the Appendix for a copy of this document.

### **Capability Assessment:**

The town has the following planning mechanisms in place to reduce the effects from hazards: These ordinances ensure that new development is constructed to minimize damages from hazard events.

Town of Jay Planning Documents				
Floodplain ordinance				
Subdivision Regulations				
Comprehensive Emergency Management Plan				
Comprehensive Land Use Plan				
Building Codes				
Fire Codes				
Junkyard and Junk Storage Ordinances				
Revitalization plan.				

Jay completed an assessment of their capabilities. The town has an emergency manager and floodplain administrator/code enforcement officer. County staff are used for grant writing, GIS, engineering and planning assistance. DEC and APA are used for scientific technical expertise. Land surveyors are hired as needed.

This hazard mitigation plan should be integrated into other existing plans in the Town of Jay. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will ensure that all enabling legislation have similar information in those documents. Integration can ensure consistency between enabling legislation.

The town uses a variety of funding sources for projects. Community development block grants (CDBG) are used for housing rehabilitation, and water and sewer system upgrades. Water and sewer fees are used to maintain the systems. Special tax bonds have been used for the water and sewer system expansion. Partnering agreements with town and villages and the county are used for fire assistance as well as other types of assistance. Pump stations upgrades were funded by US AID, sewer expansion was funded by USDA. Funds used for mitigation after Irene were available through many federal and state agencies.

The town assessed education and outreach efforts in town. There are unofficial "river spotters" who monitor river condition. When necessary, these spotters relay information to local officials. The ARA conduct education programs on the AuSable River. This same NGO has been critical in implementing mitigation projects.

Jay completed a self assessment of four areas. The town ranked planning and regulatory, and administrative and technical capabilities as moderate. The ranked financial capabilities as high. Education and outreach were ranked limited.

Critical facilities flood vulnerability was assessed as the plan was updated. The table below described if these facilities are located in the 500 year floodplain, if the facility has been flooded in the past, and if any kind of mitigation has been completed to reduce the flood potential to these structures. Generator capabilities was also assessed to determine if these facilities could function without electric power, a common issue for critical facilities during disaster events.

The fire station is located in the 500-year floodplain. This facility was constructed above the BFE of the 1% chance flood height. The critical vehicle and equipment storage areas is also located in the 500-year floodplain. Equipment is relocated before a hazard event like a flood. The emergency operation center and communication center (Town Hall) is located in the 500-year floodplain. Heating and electric have been moved above the BFE of the 1% flood height. The medical clinic is located in the 500-year floodplain, but it has a generator for times of power loss. The elementary school is located in the 500-year floodplain. This facility has a generator. The new water plant is above the 500-year floodplain. It has a generator. The sewer lagoon, post treatment, is located in the 500-year floodplain. It has a generator. The sewer pump station is located in the 500-year floodplain.

Town of Jay Critical Facilities in Floodplains							
Critical facility	500 year floodplain	Flooded in the past	Mitigated	Generator			
Fire Station	Yes	Yes	Yes. Lowest floor above BFE	Yes			
Critical	Yes	Yes	No, but	No			
--------------------	-----	-----	----------------	-----			
vehicles/equipment			equipment				
storage			moved				
_			before				
			floods				
Emergency	Yes	Yes	Heating &	Yes			
operations center			electric				
(Town Hall)			above BFE				
Medical clinic	Yes	Yes	No (elevate	Yes			
			structure or				
			move to other				
			location)				
Elementary School	Yes		No	Yes			
			(floodproof				
			school)				
Water plant	Yes	Yes	Yes	Yes			
			(Lowest				
			floor above				
			BFE)				
Sewer lagoon	Yes	Yes	Yes (construct	Yes			
			berm around				
			facility)				
Sewer pump	Yes	Yes	No (construct	Yes			
station			berm around				
			facility)				
Utility station	No	No	No	Yes			

The town has identified two area that can be used for temporary housing needs after a disaster. The Town Highway Garage on Valley Road and Grove Road would be used if and when needed. This area has paved and unpaved areas that could be used for temporary housing units such as RV or mobile homes. Power and water are on site. The Upper Jay Fire Department is designated as the American Red Cross shelter and can be used for temporary housing of resident displaced by a hazard event. In the past displaced resident have also obtained temporary housing with friends, relatives or neighbours.

Town of Jay Temporary Ho	ousing for Displaced Residents
Facility	Type of Housing
Upper Jay Fire Department	American Red Cross shelter
Jay Highway Garage	RV, mobile homes

The following information concerns flood vulnerable structures in Jay. The numbers of actual structures in the flood vulnerable areas is likely to be larger than the number of insured structures.

Once the flood insurance rate maps are updated by FEMA, these new maps will determine the actual number of vulnerable structures.

Town of Jay F	lood Insurance Facts
2011	2018
Number of polices	Number of policies
38	31
Number of repetitive loss	Number of repetitive loss
structures	structures
8	15
	11 single family, 1 non-
	residential, 1 2-4 family, 2
	condo

The number of structures with flood insurance policies decreased from 2011 to 2019. Jay participated in the FEMA buyout program after TS Irene in 2011. Twenty eight structures were part of this program. The number of repetitive loss structures increased from 2011 to 2019. This most likely was the impact of TS Irene. Structures that were impacted by flooding from TS that did not participate in the buyout program still remain in Jay and are still vulnerable to floods.

The Town of Jay will continue to manage their floodplains in the future. They will review and approve new development in the special flood hazard areas to ensure these structures are build compliant with the local floodplain ordinance. As the new FIRM are updated by FEMA, meetings will occur with floodplain managers, town supervisors and village mayors to provide training on the national flood insurance program. Compliance will be discussed at these meeting. Floodplain managers of the most vulnerable communities will be encouraged to join the state floodplain manager association to continue to increase their understanding of how to manage their flood vulnerable areas.

# Hazard Raking:

Hazards profiled in this updated plan was ranked.

Jay Hazard Ranking							
High Hazards	Floods, High Winds						
Medium Hazards	Earthquakes, Extreme Temperatures, Hail Storms, Landslides, Severe Winter Storms						
Low Hazards	Avalanche, Drought, Hurricanes, Land Subsidence Ice Storms, Wildfires, Rail Events.						



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### **Potential Loss:**

Potential loss was calculated for the Town of Jay. The Essex County Real Property website was used to obtain data for all parcels in each jurisdiction. Data was manipulated to determine the number and value of each structures in each of the 9 class codes. The data was then totalled for the number of structures and value of structures in each class code. The number of structures impacted from the hazard event was calculated to be 10% of the total number of structures in each class code to be structures in each class code.

Essex County Real property Tax Services website has 9 class codes for property as follow.

100 Agriculture	200 Residential	300 Vacant Lands	
400 Commercial	500 Recreation and Entertainment	600 Community services	
700 Industrial	800 Public Services	900 Forest, Conservation	
	Lands and Pa	rks	

Jay Potential Loss										
Class code	Acreage	Number of	Structure value	Number of	Potential loss					
		structures		structures						
				impacted						
100.00	343.80	3.00	\$337,200	0.30	\$33,720					
200.00	10331.55	1368.00	\$165,479,300	136.80	\$16,547,930					
300.00	7581.16	7581.16	\$994,000	758.12	\$99,400					
400.00	283.46	46.00	\$7,288,500	4.60	\$728,850					
500.00	27.93	7.00	\$624,500	0.70	\$62,450					
600.00	81.93	24.00	\$10,263,200	2.40	\$1,026,320					
700.00	24.30	1.00	\$5,900	0.10	\$590					
800.00	39.51	11.00	\$1,701,633	1.10	\$170,163					
900.00	23637.44	17.00	\$1,763,300	1.70	\$176,330					
Total	42351.08	9058.16	\$188,457,533	905.82	\$18,845,753					

## **Mitigation Strategy:**

Jay completed a review of the mitigation projects from the 2011 plan. The status is noted in the table below. Additional completed projects are also noted in the table. New mitigation projects are noted in the second table.

Prioritization of projects occurred as the plan was updated. These projects list the priority as high, medium and low. Generally speaking, high priority projects are projects that enable towns and villages to be fully functional during times of disasters. Medium and low projects are to improve other functions of towns and villages and address actual residents of these municipalities. Implementation of project will occur as funding is obtained. Any project can be implemented as funding, political will and other aspects are addressed.

The cost of several projects has been determined and included in the table below. Other mitigation projects have estimated the costs of these projects. The potential cost to implement mitigation projects have been ranked as high, medium or low cost. Low cost projects are those projects that would cost up to \$100,00. Medium cost projects are estimated to cost between \$100,000 and \$500,000. High cost projects are those projects that would cost over \$500,000.

	Jay 2011 Mitigation Projects										
Goal	Objective	Strategy	Lead Agency	Estimate	Target Date	Existing/New Buildings	Priority	Status			
Reduce the impact of <b>flooding</b>	Eliminate road washout	Replace 8ft culvert/bridge on Carey Road, finish culvert on Haselton Road	Town Supervisor / Board Town Highway, County DPW	\$180,000	Spring 2011 ST	у	М	Completed.			

The Town of Jay has implemented several projects or programs in the past that has reduced the negative effects of hazards. The following table describes these projects. These projects were not included in the 2011 hazard mitigation plan. These projects are included to reflect the total efforts of Jay to mitigate hazards in Town.

Town of Jay Completed Mitigation Projects									
Project # and name	Goal addressed	Project or action	Hazard addressed	Lead Agency	Estimated cost	Timeframe to complete in years.	Potential funding sources	Priority (high, Medium , low)	Mitigation technique category
Stormwater management study	#5 plan s and regulations	Complete study	Floods	Town	grant	completed	DOT	m	#1 plans and regulations
Train highway department staff on BMP	#7 ed & outreach, #6 natural resource projects	Town staff training	Floods	SWCD, Town	grant	Completed	grant	m	# natural resource, #4 ed & Outreach
Jay Mountain Road	#4 infrastructure, #6 natural resource projects	Upgrade culvert with fish friendly culvert.	Floods	Town	grant	Completed	grant	Н	#2 structure & infrastructure and #3 natural resource protection
Nugent Road	#4 infrastructure, #6 natural resource projects	Upgrade culvert with fish friendly culvert.	floods	Town	Grant	Completed	Grant	Н	#2 structure & infrastructure and #3 natural resource protection
Training for stream restoration projects	#7 education and awareness	Town staff attended training	floods	F&W Town	F&W grant	Completed	grant	М	#4 education and outreach

LIDAR for planning	#1 plans and regulations	Town obtained LIDAR for planning purposes	All	Town	USGS Grant	Completed	Grant	М	#1 plans and regulations
East Branch AuSable River Ice Jam study, partial river section studied.	#5 Plans and regulations	Study to solve ice jam issues	Ice jams	Town	Grant	Completed	Grant	Н	#1 plans and regulations
Shelter upgrades	#4 infrastructure	Upgrade kitchen cooking capabilities.	All	Town	Grant	Completed	Grant	Н	#2 structure and infrastructure
Jay Firehouse	#4 infrastructure	Upgrade cooking facilities	All	Town	Grant	Completed	Grant	М	#2 structure and infrastructure
Rome Dam	#4 infrastructure	Remove dam	Floods	Town	Grant	Completed	Grant	Н	#2 infrastructure
AuSable Forks Water Building	#2 structure project	Relocated out of flood area	Floods	Town	Grant	Completed	Grant	Н	#2 structure and infrastructure
Buyout of flooded homes	#3 buy outs of flooded structures	28 residential properties acquired.	floods	Town	Varied for each structure	Completed	FEMA	Н	#2 structure and infrastructure
Buy out commercial property	#3 buy outs of flooded structures	1 commercial property bought out.	floods	Town	grant	Completed	FEMA	Н	#2 structure and infrastructure

Swift water rescue equipment and team	Preserve life during evacuations	Boat and training for teams	Floods	Town	Grant	Completed	FEMA	Н	To save lives!
Storm drainage faculties on 9N	#4 infrastructure project	Increase drainage on 9n prevent road flooding	Floods	Town	Grant	Completed	DOT	Н	#2 structure and infrastructure

Town of Jay Mitigation Projects 2019									
Project # and name	Goal addressed	Project or action	Hazard addressed	Lead Agency	Estimated cost	Timeframe to complete in years.	Potential funding sources	Priority (high, Medium, low)	Mitigation technique category
1. Install 3 culverts, Ausable Drive, Jay Mt road, Glen Road.	#4 infrastructur e project	Upgrade culverts	Floods	Town Hwy Dept	Low for each culvert	1-5 years	EC DPW	Medium	#2 structure and infrastructur e
2. AuSable River Ice Jam study	#5 plans and regulations	Solve ice jam issues	Floods	Town & Ausable River Watershed Associatio n	High	1-10 years Year 1-5 obtain funding year 6-10 implement project	DOS, ACOE	High	#1 plans and regulation
3. Springfield Road Project	#4 infrastructur e project	Minimize flooding on roadway	Floods	Town Hwy Dept.	Medium	1-5 years	DOT	Medium	#2 structure and infrastructur e

4. Update and adopt CEMP	#5 plans and regulations	Disaster preparednes s	all	Town Supervisor	Low	1-3 years	Annual operating budget	Medium	#1 plans and regulations
5. Stormwater management plan update	#5 plans and regulations	Use N Elba SWM plan as template for Jay	Floods	Town Supervisor	Low	1-3 years	Annual operating budget	Medium	#1 plans and regulations
6. Develop capital improvement plan	#5 plans and regulations	Develop plan	all	Town Supervisor	Low	1-5 years	Grant NYS DOS	Medium	#1 plans and regulations
7. Pump Statin	#4 infrastructur e	Obtain required generator	Loss of power event	Town Hwy Dept	Medium	1-2 years	DOS	High	#2 structure and infrastructur e.
8. Acquire flooded structures on rep loss list	#3 acquire flooded structures	Buy outs	Floods	Town Supervisor & county DES	L/M for each structure	1-5 years after floods	FEMA HMGP or PDM	High	#2 structure and infrastructur e.

#### Town of Keene

#### **Introduction:**

The Town of Keene is centrally located in Essex County and contains within its 38 square miles several of the highest mountains in the state, and thousands of acres of wilderness. Population is concentrated within the two hamlets of Keene Valley and Keene, located along the banks of the flood-prone Au Sable River, although there are also isolated residential pockets located on the slopes above the river.

Two thoroughfares, State Routes 73 and 9N funnel traffic to nearby Lake Placid, the Olympic Village and its year-round sports center. Historically the area attracted artists, authors and philosophers who came for the summer months and stayed in guesthouses and hotels. That tradition continues today in the presence of the Au Sable Club, a private club located in St. Hubert's in the southern part of town. The Club offers support to the town and shares assets in emergencies. As is the case with many towns in the area, the summer population swells but Keene attracts visitors year round with its excellent recreational opportunities. Many former summer visitors have become permanent residents, shown by a 15% increase in population from the 1980 to the 2010 US Census.

Geographically, steep mountains surround the town, with most commercial activity being concentrated along the two main roads, which follow the Au Sable River. The Au Sable experiences frequent flooding events, making the residents vulnerable when evacuation might be necessary. The town includes 15 of the 46 High Peaks, including Mount Marcy, New York's highest mountain, and the rest of the Great Range. It also includes the Ausable Lakes, the source of the Ausable River. Trailheads for many of the High Peaks are located within the town, along with the Johns Brook Lodge of the Adirondack Mountain Club. The Hurricane Mountain Fire Observation Station and Walton Bridge are listed on the National Register of Historic Places.

In 2010 the town's back-up wells were found to have salt contamination from a NYSDOT salt storage area. New well development occurred due to this contamination. In the process of developing the comprehensive emergency management plan (CEMP) a highly committed Emergency Committee was formed. Drawing from all segments of the community, the Committee continues to focus on improvements to the town's mitigation strategies.

Keene Table of Facts				
Land Area	38 square miles/102,821.8 acres			
Incorporated Village(s)	NA			
Hamlets	Keene, Keene Valley & St. Huberts			
Population 2010 census	1105 (2010 Census)			
Governance	Town			
Total Assessed Valuation	\$239,166,434.00			
Highest Elevation	Mt. Marcy - 5,344' (highest in NY State)			
Largest Lake	Upper Au Sable Lake			
River(s)	E. Branch Au Sable, Au Sable, Johns Brook, Spruce Hill Brook & Cascade Brook			
Dams	4			
Bridges	21 County Road			
Interstate Highway	NA			
State Routes	9N & 73			
County Roads	13, 40, 51, 52 & 69			
Land in Agricultural Use	NA			
Land Classified Industrial (APA)	NA			
Classified Residential, as Hamlet (APA)	777.6 acres			
Hospital / Medical Facility	Keene Health Center & Keene Valley Neighbourhood House			
Fire & Rescue	Keene Fire District			
Schools	Keene Central			
Railroads	NA			
Passenger Trains per day	NA			
Freight Trains per day	NA			
Ferry Dock(s)	NA			
Interstate Bridge	NA			
Largest Employer	out of Town			
Law Enforcement	NYSP & County Sheriff			
Correctional Facility	NA			
Power Utility Provider(s)	NYSEG			
Water Supply Source(s)	Town & Private Wells			
Emergency Shelters	Keene Cen. School, Keene Valley Vol. Fire Dept.			
Critical Facilities	4			

## **Planning Process:**

A meeting was held in Keene on June 21, 2018 as part of the plan update process. The Town Supervisor, Highway Superintendent, Code Enforcement Officer and AuSable Watershed staff and a member of the Essex County Department of Emergency Services attended the meeting.

Keene was severely impacted by Tropical Storm Irene in 2011. Many structures were damaged as the floodwater flowed through town. The town was temporality isolated during and after the events due to road damage. The AuSable Watershed association has been active in assisting Keene after Irene. New York State provided funding for completion of a post storm document called *NY Rising Community Reconstruction Plan for the Towns of Jay and Keene*. This document developed mitigation projects directly related to Irene's impact to Keene. Mitigation has been implemented after this devastating storm in Keene. Please see the Appendix for a copy of this document.

#### **Capability Assessment:**

Keene has the following planning mechanisms to ensure that new development is resistant to hazards. The town has: an emergency operations plan, evacuation plan, continuity of operations plan, floodplain regulations, subdivision regulations and a town comprehensive plan.

Town of Keene Planning Documents
Comprehensive Emergency Management Plan
Emergency Operations Plan
Evacuation Plan
Continuity of operations plan
Floodplain regulations
Subdivision regulations
Town Comprehensive Plan

Keene completed an analysis of several capabilities. The town relies on county staff assistance for planning and engineering issues. The code enforcement officer serves as the floodplain administrator. DEC and APA provide assistance with scientific advice and knowledge. GIS and grant writing assistance are provided by county staff.

This hazard mitigation plan should be integrated into other existing plans in Keene. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will ensure that all enabling legislation have similar information in those documents. Integration can ensure consistency between enabling legislation.

Keene uses a variety of funding opportunities to implement projects and plans in town. CDBG funds have been used for flood recovery efforts. Special purposes taxes are used for the water district. Water and sewer fees are used to maintain the existing systems. Partnering agreements and intergovernmental agreements are used for fire, EMS district, and highway shared services.

Education and outreach efforts were also assessed. Keene uses the CEMP to coordinate efforts

between the County and Keene, as well as other towns in Essex. Local citizen groups and nongovernmental organizations that focus on environmental issues are used in Keene. The AuSable River Watershed Association is highly active in town. They have been a driving force in implementing mitigation projects after Irene. Keene also has a Keene Clean Energy Committee, port a potties installed at public access points, education concerning the "leave no trace" environmental ethic, and water quality testing.

Keene also ranked four categories of abilities. Planning and regulatory capabilities were ranked high. Administrative and technical capabilities, and education and outreach capabilities were ranked as moderate. Financial capabilities were ranked as limited. This could be due to the fact that there are more mitigation projects that Keene would like to implement, than funds to implement these projects.

Critical facilities flood vulnerability was assessed as the plan was updated. The table below described if these facilities are located in the 500 year floodplain, if the facility has been flooded in the past, and if any kind of mitigation has been completed to reduce the flood potential to these structures. Generator capabilities was also assessed to determine if these facilities could function without electric power, a common issue for critical facilities during disaster events.

The Keene Valley fire station was relocated out of the 500-year floodplain and has a generator. The fire station in Keene is located in the floodplain, however this facility has a generator. The Highway Garage is also used as the communications center, emergency operation center, and critical vehicle equipment storage; it has a generator. The Keene clinic is located in the 500-year floodplain. It was not reported if this facility possesses a generator. Keene Central School, and the Little Peaks Preschool are both located in the 500-year floodplain. Both of these facilities possess a generator. One water plant is protected from the 500 year flood. One additional water plant is proposed, but not constructed yet.

Town of Keene Critical Facilities in Floodplains							
Critical Facility	500 year	Flooded in	Mitigated	Generator			
	floodplain	the past	_				
Keene Valley Fire	No	No, not in	Yes, relocated	Yes			
Station		new	out of				
		location	floodplain				
Keene fire station	Yes	Yes	No, needs to	Yes			
			be relocated				
Highway	No	No	No	Yes			
Garage/Emergency							
operations							
Center/communication							
Center							
Keene Clinic	Yes	Yes	No (Flood	Unknown			
			proofing needed)				
Keene Central School	Yes	Yes	No, (needs be	Yes			
			to moved or				
			floodproofed)				
Little Peaks Pre	Yes	Yes	No, (needs	No			

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school			another location)	
Verizon station	Yes	Yes	No (relocate facility)	Yes
Keene Water Plant	Yes	No	Yes (Placed above BFE)	Yes
Keene Valley Water plant	Not constructed yet, still in planning stages		Yes, (will be constructed to minimize flood damage)	
Keene sewer plant	Yes	Yes	No, (Needs a berm around facility)	Yes

The Keene drinking water and sewer treatment plants are both located in the 500-year floodplain. Water plant #1 in Keene is protected to the 500-year flood height. Water plant #2 in Keene Valley is in the planning stages to mitigate damage from the 500-year flood. The Verizon substation is located in the 500-year floodplain, and has a generator.

Keene has identified two areas to be used for temporary housing units after a hazard event. The Town has identified the Polo Field at the Bark Eater and Keene Valley Hose and Ladder company. Power and water are available on site. The town also has two ARC shelters. In the past residents have also obtained housing at friends, relatives and neighbors.

Town of Keene Temporary Housing for Displaced Residents				
Facility	Type of Housing			
Polo Field at the Bark Eater	RV, mobile homes			
Keene Central School	American Red Cross shelter			
Keene Valley Hose and Ladder	RV, Mobile homes & ARC shelter			
#1				

The following information concerns flood vulnerable structures in Keene. The number of actual structures in the flood vulnerable areas is most likely larger than the number of insured structures. Once the flood insurance maps are updated by FEMA, these new maps will help determine the actual number of flood vulnerable structures.

Keene Flood Insurance Facts				
2011	2018			
Number of polices	Number of policies			
27	33			

Number of repetitive	Number of repetitive loss
loss structures	structures
2	3
	single family structures

The number of structures having flood insurance policies has increased after the impact from TS Irene. The number of repetitive loss structures has also increased from flooding from TS Irene. Three structures were part of the buyout program after TS Irene.

The Town of Keene will continue to manage their floodplains in the future. They will review and approve new development in the special flood hazard areas to ensure these structures are build compliant with the local floodplain ordinance. As the new FIRM are updated by FEMA, meetings will occur with floodplain managers, town supervisors and village mayors to provide training on the national flood insurance program. Compliance will be discussed at these meeting. Floodplain manager association to continue to increase their understanding of how to manage their flood vulnerable areas. Keene must continue to manage their floodplain as they are one of the most vulnerable communities to floods in Essex County.

## **Hazard Ranking:**

Hazards profiled in this updated plan were ranked by Keene.

Keene Hazard Rankings				
High Hard	Floods, High Winds, Hurricanes, Land Subsidence, Severe Winter Storms			
Medium	Extreme Temperatures, Hail storms, Ice Storms,			
Hazards	Landslides			
Low Hazards	Avalanche, Drought, Earthquakes, Wildfires, Rail			
	Events			







#### **Potential Loss:**

Potential loss was calculated for the Town of Keene. The Essex County Real Property website was used to obtain data for all parcels in each jurisdiction. Data was manipulated to determine the number and value of each structures in each of the 9 class codes. The data was then totalled for the number of structures and value of structures in each class code. The number of structures impacted from the hazard event was calculated to be 10% of the total number of structures in the jurisdiction. The potential loss from the impact from hazard events was calculated to be 10% of the value of the structures in each class code.

Essex County Real property Tax Services website has 9 class codes for property as follow.

100 Agriculture	200 Residential	300 Vacant Lands
400 Commercial	500 Recreation and Entertainment	600 Community services
700 Industrial	800 Public Services	900 Forest, Conservation Lands and Parks

Keene Potential Loss							
Class code	Acreage	Number of	Structures Number of		Potential loss		
		structures	Value	structures			
				impacted			
100	0	0	0	0.00	0		
200	15135.42	923.00	\$195,339,671	92.30	\$19,533,967		
300	8623.63	77.00	\$879,790	7.70	\$87,979		
400	187.34	43.00	\$12,767,800	4.30	\$1,276,780		
500	6349.84	8.00	\$6,545,101	0.80	\$654,510		
600	100.50	13.00	\$18,249,300	1.30	\$1,824,930		
700	8.72	1.00	\$116,800	0.10	\$11,680		
800	55.88	5.00	\$1,547,704	0.50	\$154,770		
900	67703.96	7.00	\$876,700	0.70	\$87,670		
Total	98165.29	1077	\$236,322,866	107.7	\$23,632,287		

### Mitigation strategy:

The mitigation projects that were included in the 2011 plan was reviewed. New mitigation project developed during the plan update or after TS Irene, but not yet completed, are listed in the table below.

Prioritization of projects occurred as the plan was updated. These projects list the priority as high, medium and low. Generally speaking, high priority projects are projects that enable towns and villages to be fully functional during times of disasters. Medium and low projects are to improve other functions of towns and villages and address actual residents of these municipalities. Implementation of project will occur as funding is obtained. Any project can be implemented as funding, political will and other aspects are addressed.

The cost of several projects has been determined and included in the table below. Other mitigation projects have estimated the costs of these projects. The potential cost to implement mitigation projects have been ranked as high, medium or low cost. Low cost projects are those projects that would cost up to \$100,00. Medium cost projects are estimated to cost between \$100,000 and \$500,000. High cost projects are those projects that would cost over \$500,000.

	Town of Keene Mitigation Project 2011								
Goal	Objective	Strategy	Lead	Estimate	Target Date	Priority	Status	Progress	Issues
Reduce the impact of <b>flooding</b>	Eliminate road washout, possible road closure	Raise road height; Hulls Falls Road	Town Supervisor/Board Town Highway, County DPW	\$90,000	Spring 2011 ST	М		Complete Spring 2018	

The Town of Keene has implemented several projects or programs in the past that has reduced the negative effects of hazards. The following table describes these projects. These projects were not included in the 2011 hazard mitigation plan. These projects are included to reflect the total efforts of Keene to mitigate hazards in Town.

Town of Keene Completed Mitigation Projects 2011 to 2019									
Project # and name	Goal addressed	Project or	Hazard	Lead	Estimated	Timeframe	Potential	Priority	Mitigation
		action	addressed	Agency	cost	to complete	funding	(high,	technique
						in years.	sources	Medium	category
								, low)	
Town Culvert	#4	Replaced	Floods	Town	Varied	completed	Town,	Η	#2 structure
Replacement	Infrastructure	and			based on		FEMA		and
	project	upgrades			each				infrastructure
		culverts			culvert				
		throughout							
		town							
Residential homes	#3 Buy out	3 homes	Floods	Town,	Varied for	completed	FEMA,	Н	# 3 structure
acquires	structures	purchased,		County	each		NYS		and
		_			structure				

	impacted by floods	land deeded to town							infrastructure projects.
Rural roads Active Management Program	#4 infrastructure  natural resource protection project	Manage rural roads to limit impacts to environment	Floods	Town	Funded by FEMA and governor's office	In Process	FEMA, NYS	Н	#2 structure and infrastructure, #3 natural resources projects
Beede Brook Flood Mitigation	#4 infrastructure  natural resource protection project	Stream work and stabilization project	Floods	Town	Funded by FEMA and governor's office	In process	FEMA, NYS	Н	#2 structure and infrastructure, #3 natural resources projects
John Brook Mitigation Project	#4 infrastructure,	Restoration of secondary channel in creek	Floods	Town	Funded by FEMA and governor's office	In process	FEMA, NYS		#3 natural resources projects
County Bridge project	#2, 4, 6	Widen bridge reduce floods to homes	Floods	Town	FEMA, Governor' s office	completed			#2 structure and infrastructure, #3 natural resources projects
DEC Smart Growth project	#6 natural resource protection, #2 structural projects		Floods	Town	DEC	In progress	NYS	H	#2 structure and infrastructure, #3 natural resources projects

Hulls Mill Road	#4	Repaired	Floods	Town	FEMA,	Completed	NYS	Н	#2 structure
Project	infrastructure,	road, install			Governors				and
5	natural	pedestrian			office				infrastructure,
	resources	bridge to							#3 natural
	project	connect to							resources
	1 5	Grist Mill							projects
Swift Water Rescue	Save lives	Obtain	Floods	Town	FEMA,	Completed	NYS		Preservation of
equipment	during floods	equipment			Governors				life during
	C	& train team			office				disasters
		for rescue							
		and							
		evacuation							
		of people							
Equipment for	Communicatio	Obtained	All	Town	Town	Completed	Annual		Communicatio
Highway garage	n during	radios for			budgets	-	operating		n capabilities
	disaster	town HWY					budgets		during
		staff					C		disasters
W C i l			A 11	-					
Keene Central	#4	Obtained	All	Town	FEMA	Completed	FEMA		#2structure
School and shelters	infrastructure	generator							and
	project	for shelter							infrastructure
Salt shed storage	#4	New shed	Winter	Town	Town	In process	Annual	Н	#2 structure
e	infrastructure	for salt	weather		budget	1	operating		and
	project #6	storage			e		budgets		infrastructure
	natural	U					0		
	resource								
	protection								

Keene Mitigation Projects 2019									
Project # and name	Goal addressed	Project or action	Hazard addressed	Lead Agency	Estimated cost	Timeframe to complete in years.	Potential funding sources	Priority (high, Medium, low)	Mitigation technique category
1. 3 private homes were purchased and the property cleared of all development	#3 buyouts	Buyout, Mitigate risk to residents	flooding	County DES, Town	Medium	completed	FEMA HMGP or PDM	High	#2 structure and infrastructure project
2. Gulf Brook Phase 1	# 6 natural resources projects	Stream restoration, Mitigate flooding in downtown Keene	flooding	GOSR	High	Completed in 2013	GOSR	High	#3 Natural resources protection projects
3. Gulf Brook Phase 2&3	# 6 natural resources projects	Stream restoration, Mitigate flooding in downtown Keene	flooding	GOSR	High	Phase 2 starting now 1-10 years to complete	GOSR	High	#3 Natural resources protection projects
4. Bridge replacements	#4 Infrastructure.	Replace, widen, and raise bridges, protect transportation and reduce flooding damage	flooding	County/ Town	High	1-5 years	GOSR, EC DPW	Medium	#2 structure and infrastructure

5. Buy out structures impacted by previous floods or future floods on 9N or route 73	#3 Buy outs	Purchase structures impacted by floods and other hazards	Floods	Town, County	Medium	1-5 years	FEMA HMGP or PDM	High	#2 structure and infrastructure
6. Gulf Brook Restoration Project	#6 natural resources protection projects	Expand Gulf Brook to increase capacity	Floods	Town, AuSable River Watershed assoc.	1 million	1-5 years	NYS GOSR	High	#3 Natural resource protection project
7. Keene Master Plan	#5 plans and regulations	Update town master plan	All	Town	100K	1-5 years	NYS DOS	High	#1 plans and regulations
8. Implements Best Management Projects in Town	#6 natural resource protection projects	BMP for debris removal, bank stabilization	Floods	Town, AuSable River watershed assoc.	Medium	1-10 years Year 1-5 obtain funding year 6-10 implement project	NYS DOS	High	#3 Natural resource protection project
9. East Branch AuSable River Whole System Project	#6 natural resource protection projects	Study entire creek for flood solutions	Floods	Town of Jay and Keene	High	1-10 years Year 1-5 obtain funding year 6-10 implement project	NYS GOSR	High	#3 Natural resource protection project

10. Obtain LIDAR for Keene	# 5 plans and regulations	LIDAR for use in grant and other projects	ALL	Town	High	1-5 years	NYS GOSR, FEMA	High	#1 plans and regulations.
11. Town Hall generator	#4 infrastructure project	Obtain generator for town hall	All	Town	Medium	1-5 years	NYS GOSR FEMA	High	#2 structure and infrastructure project

Keene will continue to implement projects and programs to reduce the effects of hazards to the town. Floods will continue to be an issue for the town as the AuSable River flows within its boundaries. Floodplain ordinances must be implemented to ensure any new development is constructed to be less vulnerable to flood events in Keene. Building codes must continue to be implemented to reduce damages from wind events. Current fire suppression programs, led by the DEC, will continue to ensure that wildfires mitigation occurs.

#### Village of Lake Placid

### Introduction:

The Village of Lake Placid is a village in the northwest section of Essex County. It is surrounded by the Town of North Elba. It has an area of 1.54 square miles, with .17 being water. The highest elevation in the Village in 1801 feet.

There are three lakes in the Village, Lake Placid, Mirror Lake and Power Pond. The Chubb River flows through the village. The climate of the region features long cold winters with considerable snowfall and comparatively short summers.

In 1932 and again in 1980, Lake Placid hosted the Winter Olympics. It has since become a major venue and training center for winter sports, and in recent years for various outdoor competitions throughout the year. While this has been a boon for the local economy, it also increases the vulnerability of the town to several hazards. Unlike most other towns in the County, North Elba/Lake Placid regularly host events drawing over ten thousand people. The various venues are owned by the village but operated by the Olympic Regional Development Authority. ORDA personnel work with village emergency service staff to coordinate training and drills and are on call in the event of an emergency. Lake Placid, North Elba worked closely with ECOES to ensure the safety of residents and visitors alike.

Lake Placid Table of Facts				
Land Area	1.54 sq. miles			
Incorporated Village(s)	Lake Placid (923.1 acres)			
Hamlets	АРА			
Population 2010 census	2521 (2010 Census)			
Governance	Villages of Lake Placid			
Total Assessed Valuation	\$1,372,729,782.00			
Highest Elevation	1801'			
Largest Lake	Lake Placid, Mirror Lake, Power Pond			
River(s)	Chubb River			
Dams	1			
Bridges	4 County Road			
Interstate Highway	NA			
State Routes	73 & 86			
County Roads	23, 26,, 35			
Land in Agricultural Use	NA			
Land Classified Industrial (APA)	NA			
Classified Residential, as Hamlet (APA)	1.54 sq miles			
Hospital / Medical Facility	Placid Memorial Health Center, Adirondack			
	Medical Center			
Fire & Rescue	Lake Placid			
Schools	Lake Placid Central, 5 private schools			
Railroads	NA			
Passenger Trains per day	NA			
Freight Trains per day	NA			
Ferry Dock(s)	NA			
Interstate Bridge	NA			
Largest Employer				
Law Enforcement	NYSP, County Sheriff, Lake Placid Police Depts.			
Correctional Facility	NA			
Power Utility Provider(s)	NYSEG			
Water Supply Source(s)	Lake Placid			
Emergency Shelters	High School			
Critical Facilities				

## **Planning Process:**

A meeting occurred on August 7<sup>th</sup> with the Supervisor, code officer and highway department staff. A second meeting was held on May 13, 2019.

#### **Capability assessment:**

The following table indicates the planning mechanism that are enforced in Lake Placid. These planning mechanisms ensure that new development is constructed to be resistant to hazards.

Lake Placid Planning Documents
Comprehensive emergency management plan
Emergency operations plan
Disaster recovery plan
Continuity of operations plan
Floodplain regulations
Zoning regulations
Subdivision regulations
Land use codes
Stormwater management plan
Capital improvement plan
Economic development plan (ROOST)
Historic preservation plan
Building codes
Fire codes

Lake placid completed a self assessment of several capabilities. The village has a planner on staff. Engineering firm are hired as needed. The village has a emergency manager for dealing with hazard events. The code officer is also the floodplain administrator. Land surveyors are hired as needed. The APA and DEC serve as scientific specialist as needed. The Village uses the County GIS system when needed. The County assists the village in grant writing.

This hazard mitigation plan should be integrated into other existing plans in the Village. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will ensure that all enabling legislation have similar information in those documents. Integration can ensure consistency between enabling legislation.

Capital improvement funds have been used in the past as well as community development block grants to improve the Village. The Village has numerous inter governmental agreements and partnering agreements with surrounding towns and the County. Water and sewer fess are used to maintain the currents systems.

Education and outreach efforts were also assessed. Fire safety and school safety programs are delivered. The Ausable River Association conducts water monitoring in Mirror Lake and

includes an annual report on their website. Twitter and Facebook are used to reach residents and tourists with information.

The Village completed a self assessment in four areas. Planning and regulatory capabilities and administrative and technical capabilities are assessed as high. Financial and education and outreach capabilities were assessed as moderate.

Critical facilities vulnerability to floods were assessed. The following table indicates whether a facility is located in the 500 year floodplain, if this facility has been flooded in the past, if mitigation efforts have been completed for this facility and if the facility has a generator.

Village of Lake Placid Critical Facilities in Floodplains						
Critical facility	500 year	Flooded in the	Mitigated	Generator		
	floodplain	past				
Police station	No	No	No	Yes		
Fire Station	No	No	No	Yes		
Emergency	No	No	No	Yes		
operations						
center						
Communication	No	No	No	Yes		
Center						
Hospital	No	No	No	Yes		
Nursing Home	No	No	No	Yes		
Elementary	No	No	No	Yes		
school						
Middle school	No	No	No	Yes		
& high school						
Water plant	No	No	No	Unknown		
Sewer plant	No	No	No	Unknown		

The village has identified three areas that can be used for temporary housing needs after a disaster. The horse grounds can be used for RV or mobile homes and has water and electric on the site. The fire house snow field can be used for RV or mobile homes. The State Camp Site in Ray Brook and can be used for RV and mobile homes. The High School is designated as an ARC shelter.

Lake Placid Temporary Housing for Displaced Residents				
Facility	Type of housing			
Horse grounds	RV, mobile homes			
Fire House snow field	RV, mobile homes			
State Camp Ground Ray Brook	RV, mobile homes			
High School	ARC shelter			

The following information concerns flood vulnerable structures in Lake Placid. The numbers of actual structures in the flood vulnerable areas is most likely larger than the number of insured structures. Once the flood insurance rate maps are updated by FEMA, these new maps will determine the actual number of vulnerable structures.

Lake Placid Flood Insurance Facts				
2011	2018			
Number of policies	Number of polices			
3	7			

Lake Placid will continue to manage their floodplains in the future. They will review and approve new development in the special flood hazard areas to ensure these structures are build compliant with the local floodplain ordinance. As the new FIRM are updated by FEMA, meetings will occur with floodplain managers, town supervisors and village mayors to provide training on the national flood insurance program. Compliance will be discussed at these meeting. Floodplain managers of the most vulnerable communities will be encouraged to join the state floodplain manager association to continue to increase their understanding of how to manage their flood vulnerable areas.

## **Hazard Rankings:**

The list of hazards profiled in this updated pre	ar were ranked.			
Lake Placid Hazard Ranking				
High Hazard	High winds,			
Medium hazard	Floods, Severe winter storms,			
Low Hazard	Drought, earthquake, extreme temperatures, hail storms, hurricanes, land subsidence and expansive soils. Ice storms,			

landslides wildfires.

The list of hazards profiled in this updated plan were ranked.






## **Potential Loss:**

Potential loss was calculated for the Village of Lake Placid. The Essex County Real Property website was used to obtain data for all parcels in each jurisdiction. Data was manipulated to determine the number and value of each structures in each of the 9 class codes. The data was then totalled for the number of structures and value of structures in each class code. The number of structures impacted from the hazard event was calculated to be 10% of the total number of structures in each class code.

Essex County Real property Tax Services website has 9 class codes for property as follow.

100 Agriculture	200 Residential	300 Vacant Lands
400 Commercial	500 Recreation and Entertainment	600 Community services
700 Industrial	800 Public Services Lands and Parks	900 Forest, Conservation

Lake Placid Potential Loss							
Class codes	Acreage	Number of	Structure	Number of	Pot Loss		
		structures	Value	structures			
				impacted			
100	0	0	\$0	0	\$0		
200	310.39	2921	\$254,749,378	292.1	\$25,474,938		
300	180.43	40	\$628,220	4	\$62,822		
400	107.15	200	\$146,962,712	20	\$14,696,271		
500	85.62	13	\$251,104,600	1.3	\$25,110,460		
600	65.38	32	\$34,445,600	3.2	\$3,444,560		
700	0.9	2	\$316,000	0.2	\$31,600		
800	33.37	13	\$24,424,234	1.3	\$2,442,423		
900	3.5	4	\$5,800	0.4	\$580		
Total	786.74	3225	\$712,636,544	322.5	\$71,263,654		

## **Mitigation Strategy:**

Prioritization of projects occurred as the plan was updated. These projects list the priority as high, medium and low. Generally speaking, high priority projects are projects that enable towns and villages to be fully functional during times of disasters. Medium and low projects are to improve other functions of towns and villages and address actual residents of these municipalities. Implementation of project will occur as funding is obtained. Any project can be implemented as funding, political will and other aspects are addressed.

The cost of several projects has been determined and included in the table below. Other mitigation projects have estimated the costs of these projects. The potential cost to implement mitigation projects have been ranked as high, medium or low cost. Low cost projects are those projects that would cost up to \$100,00. Medium cost projects are estimated to cost between \$100,000 and \$500,000. High cost projects are those projects that would cost over \$500,000.

The Village had one project included in the 2011 plan.

Lake Placid Mitigation Project 2011								
Goal	Objective	Strategy	Lead Agency	Estimate	Target Date	Existing/New Buildings	Priority	Progress
Reduce the impact of <b>fire risk</b>	Participation in the "FireWise" Communities program, reviewing guidelines to develop a Best Practices summary	Village will review the summary and modifications will be made to zoning and permitting plans	Village Mayor, Board, Code Officer, Village Fire Officials	Covered in budget, staff will be utilized	Spring 2011 I	у	Η	Not complete d

Lake Placid Mitigation Projects 2019									
Project # and name	Goal addressed	Project or action	Hazard addressed	Lead Agency	Estimated cost	Timeframe to complete in years.	Potential funding sources	Priority (high, Medium, low)	Mitigation technique category
1. Lake Placid salt shed	#4 infrastructure, #6 natural resource protection project	Construct new salt shed to eliminate salt entering into Mirror and Placid lakes	Water quality issues	Village DPW dept	Medium	1—5 years	DOS	High	#2 structure and infrastructure
2. Develop education efforts for tourists	#1 education and outreach	Use brochures to educate tourists on hazards	all	Village planner	Low	Year 1	Village budgets	Medium	#4 education and outreach
3. Health Care Center expansion	Structure and infrastructure	require stormwater solutions to increased flooding from expansion of health care center	flooding	Village planner	Low	As center expands	Village budgets for planner staff	High	#2 structure and infrastructure projects
4. Bridge maintenance	#4 infrastructure	Remove debris from bridges	flooding	Village HWY dept.	Low	Year 1	Village budgets and Hwy dept	Medium	#2 infrastructure

## **Town of Lewis**

## **Introduction:**

The Town of Lewis lies in the northeastern part of Essex County, NY. It covers 84 square miles and had a population of 1382 in the 2010 census. The town is named after Morgan Lewis, the governor of New York at the time the town was established.

The western part of town has four mountains with elevations of over 2000 feet, and is quite rural and isolated. These mountains give way to a plain in the central part of the town that gradually slopes toward the Champlain Valley to the east. Streams drain east and southeast into the Branches of the Boquet, or north to Trout Pond Brook and the Au Sable River. The town supports several small businesses but the majority of residents are employed at County facilities in Lewis or nearby Elizabethtown. Health services and larger commercial needs are provided in Elizabethtown or several miles north of town.

Lewis has two main north/south transportation arteries; I-87 and State Route 9.

Iron mining was an important early industry. Both Stowersville and Deerhead were communities based on the iron industry.

The First Congregational Church and Cemetery was listed on the National Register of Historic Places in 2005. Inez Milholland Boissevain (August 6, 1886 – November 25, 1916) was a suffragist, labor lawyer, World War I correspondent, and public speaker who greatly influenced the women's movement in America. She was active in the National Woman's Party and a key participant in the 1913 Woman Suffrage Procession. She was a summer resident for many years. She is buried at the Lewis cemetery. Her family property is now the Meadowmount School of Music.

Lewis Table of Facts			
Land Area	84 square miles/54,542.7 acres		
Incorporated Village(s)	NA		
Hamlets	Lewis & Deerhead		
Population 2010 census	1,382(2010 Census)		
Governance	Town		
Total Assessed Valuation	\$82,145,406.00		
Highest Elevation	Saddleback Mtn 3,623'		
Largest Lake	NA		
River(s)	Boquet, N. Branch Boquet, Black Brook & Spruce Mill Brook		
Dams	8		
Bridges	9 County Road		
Interstate Highway	I-87 north/south eastern edge of Town		
State Routes	US Rt 9		
County Roads	10, 12, 14 & 53		
Land in Agricultural Use	NA		
Land Classified Industrial (APA)	703.6 acres		
Classified Residential, as Hamlet (APA)	104.3 acres		
Hospital / Medical Facility	Elizabethtown Community Hospital		
Fire & Rescue	Lewis Fire Department		
Schools	Elizabethtown-Lewis Central		
Railroads	NA		
Passenger Trains per day	NA		
Freight Trains per day	NA		
Ferry Dock(s)	NA		
Interstate Bridge	NA		
Largest Employer	Out of Town		
Law Enforcement	NYSP & County Sheriff		
Correctional Facility	N/A		
Power Utility Provider(s)	NYSEG		
Water Supply Source(s)	Town and Private Wells		
Emergency Shelters			
Critical Facilities			

#### **Planning Process:**

A meeting was held on June 22. The Town Supervisor and contractor attended the meeting.

#### **Capability Assessment:**

Lewis conducted a capability assessment as part of the 2019 plan update. Lewis has a town comprehensive plan which is reviewed annually. They also enforce building and fire codes. The APA approves planning proposals outside the hamlet areas of Lewis.

Town of Lewis Planning Documents
Town Comprehensive Plan
Floodplain regulations
Fire Codes
Building Codes
Comprehensive emergency
management plan

The town assessed administrative and technical capabilities. Lewis obtains assistance from Essex County agencies as follows: Community Resources are used for planning issues. Department of Public Works are used for engineering expertise. Emergency management issues are assisted by the Department of Emergency Services. Real Property are used for GUS cervices. Grant writing is assisted by Community Resources. These County agencies and staff supplement the resources of the Town of Lewis.

This hazard mitigation plan should be integrated into other existing plans in Lewis. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will ensure that all enabling legislation have similar information in those documents. Integration can ensure consistency between enabling legislation.

Financial capability was also assessed by the town. Lewis has used Community Development Block Grants, water and sewer fees, general tax revenues, and partnering agreements to supplement town resources for many types of projects.

Education and outreach capabilities were assessed as follows. Lewis has had disaster preparedness training for town staff. Lewis utilized articles on the town website to outreach to residents. Adirondack Community Action Program is a private partnership for projects and programs that reduce risk which Lewis has participated in.

Lewis ranked an assessment of their capabilities in four areas. Planning and regulatory, financial, and administrative and technical capabilities were ranked high. Utilizing county agency and staff assistance enables Lewis to rank these abilities as high. Otherwise, due

to staffing and/or financial limitations, these capabilities would not be as high. Education and outreach capabilities were ranked as moderate.

Critical facilities flood vulnerability was assessed as the plan was updated. The table below described if these facilities are located in the 500 year floodplain, if the facility has been flooded in the past, and if any kind of mitigation has been completed to reduce the flood potential to these structures. Generator capabilities was also assessed to determine if these facilities could function without electric power, a common issue for critical facilities during disaster events.

Town of Lewis Critical Facilities in the floodplain						
Critical	500 year	Flooded	Mitigated	Generator		
Facilities	Floodplain	In the past				
Police	No	No	No	Yes		
Station						
Emergency	No	No	No	Yes		
Operations						
Center						
Power	No	No	No	Yes		
Sub station						
Communication	No	No	No	Yes		
Center						
Day Care	No	No	No	No		
Center						
Drinking	No	No	No	No		
Water plant						
Waster	No	No	No	No		
Water plant						

No facilities are located in the 500-year floodplain. The following facilities have generators for backup power - the police station, emergency operations center, power substation and communication center. The day care center, drinking water plant and waste water plant do not have a generator.

Lewis has identified four areas that can be used for temporary housing site after a disaster. The town will utilize: Town Highway department lands, Fire Department lands, Lewis Fish and Gun Club lands and IMERYS Minerals. Two of these sites are public while two are private land areas. All sites have power and water. Lewis has one ARC shelter in town. This is the Lewis Fire Department.

Town of Lewis Temporary Housing for Displaced Residents					
Facility	Type of housing				
Town Highway department lands	RV, Mobile homes				
Fire Department lands	RV, Mobile homes				
Lewis Fish and Gun Club lands	RV, Mobile homes				
IMERYS Minerals	RV, Mobile homes				
Lewis Fire Department	ARC shelter				

The following information concerns flood vulnerable structures in Lewis. The number of actual structures in the flood vulnerable areas is most likely larger than the number of insured structures. Once the flood insurance rate maps are updated by FEMA, these new maps will assist in determining the actual number of flood vulnerable structures.

Town of Lewis Flood Insurance Facts					
2011 2018					
Number of policies	Number of policies				
2	1				

Lewis will continue to manage their floodplains in the future. They will review and approve new development in the special flood hazard areas to ensure these structures are build compliant with the local floodplain ordinance. As the new FIRM are updated by FEMA, meetings will occur with floodplain managers, town supervisors and village mayors to provide training on the national flood insurance program. Compliance will be discussed at these meeting. Floodplain managers of the most vulnerable communities will be encouraged to join the state floodplain manager association to continue to increase their understanding of how to manage their flood vulnerable areas.

# **Hazard Ranking:**

Hazards were ranked as the plan was updated in 2019. The table below indicates the perceived vulnerability of Lewis to the profiled hazards.

Lewis Hazard Ranking				
High Hazard	High winds, winter storms			
Medium	Drought, Earthquake,			
Hazard	Floods, Ice Storms			
Low Hazard	Avalanche, Extreme			
	Temperatures, Hail Storms,			
	Hurricanes, Land			
	Subsidence and Expansive			
	Soils, Landslides,			
	Wildfires, Rail Events			







#### **Potential Loss:**

Potential loss was calculated for the Town of Lewis. The Essex County Real Property website was used to obtain data for all parcels in each jurisdiction. Data was manipulated to determine the number and value of each structures in each of the 9 class codes. The data was then totalled for the number of structures and value of structures in each class code. The number of structures impacted from the hazard event was calculated to be 10% of the total number of structures in the jurisdiction. The potential loss from the impact from hazard events was calculated to be 10% of the value of the structures in each class code.

Essex County Real property Tax Services website has 9 class codes for property as follow.

100 Agriculture	200 Residential	300 Vacant Lands
400 Commercial	500 Recreation and Entertainment	600 Community services
700 Industrial	800 Public Services	900 Forest, Conservation Lands and Parks

Lewis Potential Loss							
Class code	Acreage	Number	Structure value	Number of	Potential loss		
		structures		structures			
				impacted			
100	535.97	2.00	\$70,600	0.20	\$7,060		
200	8891.48	554.00	\$51,920,500	55.40	\$5,192,050		
300	7429.47	48.00	\$998,200	4.80	\$99,820		
400	96.57	16.00	\$2,096,900	1.60	\$209,690		
500	181.51	3.00	\$17,200	0.30	\$1,720		
600	629.21	16.00	\$36,518,500	1.60	\$3,651,850		
700	624.73	2.00	\$242,700	0.20	\$24,270		
800	194.36	4.00	\$2,356,073	0.40	\$235,607		
900	34615.23	14.00	\$1,027,300	1.40	\$102,730		
Total	53198.53	659.00	\$95,247,973	65.90	\$9,524,797		

## **Mitigation Strategy:**

The mitigation project included in the 2011 plan was reviewed to determine if the project was completed. New mitigation projects were added for the 2019 plan update. These new projects are included in the table below.

Prioritization of projects occurred as the plan was updated. These projects list the priority as high, medium and low. Generally speaking, high priority projects are projects that enable towns and villages to be fully functional during times of disasters. Medium and low projects are to improve other functions of towns and villages and address actual residents of these municipalities. Implementation of project will occur as funding is obtained. Any project can be implemented as funding, political will and other aspects are addressed.

The cost of several projects has been determined and included in the table below. Other mitigation projects have estimated the costs of these projects. The potential cost to implement mitigation projects have been ranked as high, medium or low cost. Low cost projects are those projects that would cost up to \$100,00. Medium cost projects are estimated to cost between \$100,000 and \$500,000. High cost projects are those projects that would cost over \$500,000.

	Town of Lewis 2011 Mitigation Project									
Goal	Objective	Strategy	Lead	Estimate	Target	Existing/New	Priority	Status	Progress	Issues
			Agency		Date	Buildings				
Reduce the impact of <b>flooding</b>	Eliminate hill erosion, impacting roadway	Replace 150 ft retainer wall along Route 9 at the bottom of Congregational	Town Supervisor / Board Town Highway, County DPW	\$2,500	Spring 2011 ST	у	М		Completed	

Town of Lewis Mitigation Projects 2019									
Project # and name	Goal addressed	Project or action	Hazard addressed	Lead Agency	Estimated cost	Timeframe to complete in years.	Potential funding sources	Priority	Mitigation technique category
1. Replace culverts on DPW list.	#4 Infrastructure	Replace culverts that are undersized using PDW data for specific culverts	Floods	Town Hwy Dept	Low	1-5 years	Town, County DPW	Medium	Structure and infrastructure projects
2. Continue proper maintenance of culverts	#4 Infrastructure	Clean culverts and maintain culvert system	Floods	Town Hwy Dept	Low	1-5 and ongoing	Town budgets	High	Structure and infrastructure.
3. Obtain generator for water plant	#4 Infrastructure	Purchase generator	All	Town Public Works	Low	1-5 years	Town budget, FEMA grant	High	Structure and infrastructure.
4. Buy out structures impacted by floods on Moss Road.	#3 buy outs			Town supervisor & county DES	L/M depending on each structure	As structures are impacted by floods	FEMA HMGP or PDM	Medium	Structure and infrastructure.
5. Day care Generator	#4 Infrastructur e projects	Obtain generator for times of power loss	All	Town Supervisor	Low	1-5 years	FEMA or school budgets	Medium	#2 Structure and infrastructure projects

6. Sewage treatment plant generator	#4 Infrastructur e projects	Obtain generator for times of loss of power	All	Town DPW	Low	1-5 years	FEMA, town budgets	High	#2 Structure and infrastructure projects
7. Fire Station generator	#4 Infrastructur e projects	Obtain generator for times of loss of power	All	Town DPW	Low	1-5 years	FEMA, town budgets	High	#2 Structure and infrastructure projects
8. Facebook for Residents	#7 education and outreach project	Use Facebook for education and outreach efforts to residents	All	Town	Low	1-5 years	Annual operating budgets	High	#4 education and outreach projects.

Lewis will continue to implement projects and programs to reduce the effects of hazards to the town. The floodplain ordinance will continue to be enforced to ensure new construction is build to be resist to flood damages. Building codes must continue to be implemented to reduce damages from wind events. Current fire suppression programs, led by the DEC, will continue to ensure that wildfires mitigation occurs.

## **Town of Minerva**

## **Introduction:**

Minerva is located on the southern border of the county between Schroon to the east and Newcomb to the West. The town has numerous ponds, lakes and streams and the Hudson River forms part of its southern border with Hamilton County. State Rte. 28N bisects the town running roughly north/south.

The town has a very active and competent emergency committee and was one of the first in the county to complete its CEMP.

Minerva Table of Facts				
Land Area	158 square miles/101,534.6 acres			
Incorporated Village(s)	NA			
Hamlets	Minerva & Olmstedville			
Population 2010 census	809 (2010 Census)			
Governance	Town			
Total Assessed Valuation	\$178,397,330			
Highest Elevation	Fishing Brook Mtn 3,550'			
Largest Lake	Third Lake			
River(s)	Boreas, Hudson, Minerva & Trout Brook			
Dams	7			
Bridges	9 County Road			
Interstate Highway	NA			
State Routes	28N			
County Roads	2, 24, 34 & 37			
Land in Agricultural Use	156.18 acres			
Land Classified Industrial (APA)	NA			
Classified Residential, as Hamlet (APA)	582.8 acres			
Hospital / Medical Facility				
Fire & Rescue	Town of Minerva			
Schools	Minerva Central			
Railroads	Delaware & Hudson (discontinued)			
Passenger Trains per day	NA			
Freight Trains per day	NA			
Ferry Dock(s)	NA			
Interstate Bridge	NA			
Largest Employer	Minerva Central School			
Law Enforcement	NYSP & County Sheriff			
Correctional Facility	NA			
Power Utility Provider(s)	National Grid			
Water Supply Source(s)	Town Water System & private wells			
Emergency Shelters	Minerva Central School			
Critical Facilities				

# **Planning Process:**

A meeting was held in Minerva on June 6, 2018 to update the plan. The supervisor and code enforcement officer attended the meeting. A second meeting took place on May 15, 2019. The town supervisor attended this meeting with the contractor.

# **Previous efforts:**

The following information is provided to provide a historic perspective of mitigation efforts that have been completed in Minerva.

The Town of Minerva, in cooperation with the Minerva Service Organization and the Minerva Volunteer Fire Department and Rescue Squad, reconvened its Emergency Preparedness Committee in January 2003 for the purposes of updating the Town's Emergency Preparedness Plan (adopted in 2001) and developing a Hazard Mitigation Plan. The Committee has met monthly since then with the exception of the March 2004 meeting.

The first meeting in January 2003 was convened to address an information request from Essex County for a hazard mitigation plan. Town staff met with the consultant for Essex County Emergency Preparedness Office and over the next few months attempted to understand the requirements of FEMA's and SEMO's Hazard Mitigation planning process. It was clear to committee members that any hazard mitigation planning that we did would need to be 1) relevant to the current needs of the residents of Minerva and 2) consistent with our Emergency Preparedness Plan.

Agendas for the meetings are prepared by consensus of the group. Here are the major items that the Committee considered in its meetings over the last several months:

- Review of our initial Emergency Preparedness Plan
- Review of the HAZNY hazard ratings (developed for the initial plan)
- Review of a successful hazard mitigation plan from a community of comparable size to Minerva (population 796)
- Development of a community facilities survey (still under development)
- Development of a Vulnerable Households Registry
- Development of a Disaster Mitigation Survey (distributed and returned from residents in January 2004 and being analyzed now)
- Development of a grant proposal to obtain generator for the school
- Joint meeting with the North Creek Fire Department to discuss common hazard and emergency preparedness issues
- Power Outage Debriefing
- Development of a dry well project to improve fire response

Attendance at the emergency preparedness meetings is open to the public and is generally advertised through flyers posted at local stores and post offices as well as

through articles in the North Creek News Enterprise, the weekly newspaper serving southern Essex County. We have found coverage in the News Enterprise to be especially important and know that the initial communication that we had with North Creek was a direct result of coverage included in the newspaper that the North Creek Fire Department saw. We typically have 10-15 people attending each meeting.

Informal notes are generally kept for the meetings. We do not have a formal secretary or a formal chairperson. In spite of this, we have continued to move forward well. Here are some of the outcomes that have resulted from these meetings:

A dialogue has been initiated with a neighboring community, Johnsburg (including North Creek,), which has resulted in sharing of information, identification of common hazard mitigation and emergency preparedness issue and sharing of residential surveys and plans which will strengthen hazard mitigation and emergency preparedness in both communities.

Development of a residential survey which has helped citizens of Minerva to be more aware of what they need to do to be prepared for emergencies and has allowed us to better understands the assets that the community has in addressing hazards and emergencies.

The dialogue initiated at the committee meetings resulted in recognition that the Minerva Fire Department had a need for additional manpower during emergency situations. It was determined that volunteers from the Minerva Service Organization (most of whom are senior citizens) could provide that assistance and they were trained and now staff the communications systems during emergency situations (three times since November).

The dialogue initiated at the committee meetings resulted in recognition that Minerva lacked an emergency shelter large enough to house its residents if a major hazard occurred. The committee contacted Minerva Central School that is willing to serve that function, but lacks a generator adequate for the purpose. The committee is working with the school to identify funding sources that could assist in the purchase of a generator and also arranged for a community training by the American Red Cross on how to set up and operate an emergency shelter. Twenty-four residents (21 from Minerva, 2 from Johnsburg and 1 from Schroon Lake) were trained.

The committee recognized the need to collect real property assessment data on critical community facilities and has begun to collect that information.

## **Mitigating Power Outages and Disturbances**

The Town Supervisor, as a member of the County Board of Supervisors, is working with CPN and its sister organization, AWISH for NY, to develop a regional dialogue with neighboring communities, the utility company and the Public Service Commission to determine if additional mitigation strategies can be developed to improve service and reduce the threat created for our isolated rural community by loss of power.

In the meantime, the Town of Minerva, the Minerva Service Organization and the Minerva Volunteer Fire Department and Rescue Squad (MVFDRS) are working together to ensure that local residents are prepared for power outages and that the community emergency response is as strong as it can be. Among the steps we are taking: improving emergency equipment and communications equipment for the Fire Department and allied volunteers, developing emergency shelter capabilities, educating the public on how they can be prepared for hazard and emergency situations, helping the school obtain a generator to enhance their capacity to serve as an emergency shelter and developing a registry of vulnerable households which will allow us to check on them throughout hazard and emergency conditions. Due to the expense inherent in adding phone lines to the Fire Station and the dire need for additional phone lines during an emergency situation we have been working to identify secondary communications centers and have identified two possibilities: the Minerva Town Hall which has two phone lines and the Community Power Network of NYS which has three phone lines.

Earlier this winter, the MVFDRS and the Minerva Service Organization worked with the American Red Cross to hold training on how to set up and operate an emergency shelter. Twenty-four people received the training (21 from Minerva).

#### **Vulnerable Households Registry**

Due to the fact that the Town of Minerva has a higher proportion of senior (18.2%) and disabled citizens (24.4%) than the national average (12.4% senior, 19.2% disabled), our community is very aware of the importance of helping these potentially vulnerable households prepare for and address the disasters and emergencies facing our community. In November 2003, we began to compile a Vulnerable Households Registry, which identifies those who may need special assistance. It includes the names, addresses, phone numbers, emergency contact and brief information on the medical conditions or special needs which make the household more vulnerable in a crisis situation. The Registry is used during a disaster situation. MVFDRS EMS personnel call those households every two hours to make sure that they are all right and to address any concerns that may occur for these households. Those deemed most vulnerable through the phone calls receive regular face-to-face check-ins from the EMS. The benefits of this new system are already evident. During one of our November power outages, EMS volunteers visited one elderly resident and her son only to discover a potentially dangerous carbon monoxide situation. They were able to convince the residents to leave their home to go to the emergency shelter until the power came back on. At the time that they went to the shelter, both were suffering from serious headaches.

# **Disaster Mitigation Survey**

The Emergency Preparedness Committee developed and distributed a disaster mitigation survey in January 2004. The survey was sent to each postal box holder in the Minerva and Olmstedville zip codes and to those Minerva residents receiving mail at other zip codes. Approximately 300 households were surveyed.

The survey had two purposes:

- To encourage residents to evaluate their own emergency preparedness and disaster mitigation strategies
- To identify resources that could become available to the community in the event of an emergency or disaster situation.

The survey included several areas: Medical Concerns, Emergency Supplies and Resources, Personal Supplies, Equipment, Household Items (CO detectors, Smoke Detectors, Cots and Folding Chairs) and Service Skills. We also asked about their willingness to volunteer in an emergency, whether they own or rent their homes, whether they have insurance coverage for natural disasters and emergency contacts for them.

Ninety-seven surveys were returned to the Committee. We expect to use the results of the survey to develop additional mitigation strategies.

The benefits of this effort are already evident to us. In February, MVFDRS received a call concerning a missing snowmobiler. The survey results were used to identify residents willing to loan their snowmobiles for search and rescue situations.

# Wildfire Mitigation Strategies

The Committee has reviewed and considered wildfire education for homeowners and small business owners (http://www.firewise.org) but has not acted on developing that option at this time. Very few of the homes in our community meet the 200-foot fire barrier recommended by that program. We have recognized that one of barriers to effectively limiting the spread of wildfire (as well as fighting regular structure fires) is the shortage of hydrants in our community combined with the inadequacy of our aging public water supply (built in the 1920s). The Town of Minerva is in the midst of upgrading a portion of the water supply that should help. The Committee is also working on a dry well project to ensure that the Fire Department has access to water Town-wide.

# **Community Facilities Survey**

It is essential that the Town of Minerva have a solid understanding of the capabilities of

the community facilities. The Emergency Preparedness Committee is currently developing a community facilities survey, which will be used to further strengthen our ability to mitigate disasters and respond to the emergencies that occur.

These efforts in the past have made Minerva less vulnerable to hazards that can impact the town. The following information was obtained as the 2019 Hazard Mitigation plan was being updated.

#### **Capability Assessment:**

Minerva conducted a capability assessment as part of the 2019 plan update. Minerva has a town comprehensive plan which is reviewed annually. Several of the chapters in that plan relate to natural resources in Minerva. They also enforce building and fire codes. The APA approves planning proposals outside the hamlet areas of Minerva. Many of the documents relate to emergency situations. Zoning ordinance also enforced in Minerva,

Town of Minerva Planning Documents
Town Comprehensive Plan
Floodplain regulations
Fire Codes
Building Codes
Comprehensive emergency
management plan
Zoning codes
Emergency Operation plans
Disaster recovery plan
Continuity of operations plan
Subdivision regulations
Open space management plan
Stormwater management plan
Natural resource protection plan
Capital improvement plan
Economic development plan
Historic preservation plan

The town assessed administrative and technical capabilities. Minerva obtains assistance from Essex County agencies as follows: Community Resources are used for planning issues. Essex County Department of Public Works are used for engineering expertise. Private firms are hired for surveying and engineering assistance for projects. Emergency management issues are assisted by the Department of Emergency Services. Real Property are used for GIS cervices. Grant writing is assisted by Community Resources. These County agencies and staff supplement the resources of the Town of Minerva.

This hazard mitigation plan should be integrated into other existing plans in Minerva. The hazard ranking can be incorporated into the comprehensive emergency management Section 6 Page 142 plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will ensure that all enabling legislation have similar information in those documents. Integration can ensure consistency between enabling legislation.

Financial capability was also assessed by the town. Minerva has used Community Development Block Grants, water and sewer fees, general tax revenues, and partnering agreements to supplement town resources for many types of projects.

Education and outreach capabilities were assessed as follows. Minerva has had disaster preparedness training for town staff. Minerva utilized articles on the town website to outreach to residents

Minerva ranked an assessment of their capabilities in four areas. Planning and regulatory, financial, and administrative and technical capabilities were ranked high. Utilizing county agency and staff assistance enables Minerva to rank these abilities as high. Otherwise, due to staffing and/or financial limitations, these capabilities would not be as high. Education and outreach capabilities were ranked as moderate.

Critical facilities flood vulnerability was assessed as the plan was updated. The table below described if these facilities are located in the 500 year floodplain, if the facility has been flooded in the past, and if any kind of mitigation has been completed to reduce the flood potential to these structures. Generator capabilities was also assessed to determine if these facilities could function without electric power, a common issue for critical facilities during disaster events.

Town of M	Town of Minerva Critical Facilities in the floodplain							
Critical	500 year	Flooded	Mitigated	Generator				
Facilities	Floodplain	In the past						
Town Hall	No	No	No	Yes				
(Emergency								
Operations								
Center/Communication								
center)								
Critical vehicle	No	No	No	Yes				
equipment storage								
facilities								
Fire Station #1	No	No	No	Yes				
Fire Station #2	No			Yes				
Drinking	No	No	No	Yes				
Water plant								

No facilities are located in the 500-year floodplain. The following facilities have generators for backup power, emergency operations center, the Town Hall that serves as EOC and the communication center. The drinking water plant does have a generator.

Minerva has identified one area that can be used for temporary housing site after a disaster. The town will utilize the Town beach area. This area serves as a camping area for RV. Minerva has one ARC shelter in town. This is the Minera Central Schools.

Town of Minerva Temporar	y Housing for Displaced Residents
Facility	Type of housing
Town Beach	RV, Mobile homes
Minerva Central schools	ARC shelter

The following information concerns flood vulnerable structures in Minerva. The number of actual structures in the flood vulnerable areas is most likely larger than the number of insured structures. Once the flood insurance rate maps are updated by FEMA, these new maps will assist in determining the actual number of flood vulnerable structures.

<b>Town of Minerva Flood Insurance Facts</b>				
2011	2018			
Number of policies	Number of policies			
2	4			

Minerva will continue to manage their floodplains in the future. They will review and approve new development in the special flood hazard areas to ensure these structures are build compliant with the local floodplain ordinance. As the new FIRM are updated by FEMA, meetings will occur with floodplain managers, town supervisors and village mayors to provide training on the national flood insurance program. Compliance will be discussed at these meeting. Floodplain managers of the most vulnerable communities will be encouraged to join the state floodplain manager association to continue to increase their understanding of how to manage their flood vulnerable areas.

# **Hazard Ranking:**

Hazards were ranked as the plan was updated in 2019. The table below indicates the perceived vulnerability of Lewis to the profiled hazards.

Lewis	Lewis Hazard Ranking				
High	No hazard was ranked as a high				
Hazard	hazard				
Medium	High winds				
Hazard					
Low	Avalanche, Drought, Earthquakes, Extreme				
Hazard	temperatures, floods, hail stroma, hurricanes, land				
	subsidence and expansive soils, ice storms.				
	Landslides, severe winter storms, wildfires, rail				
	events				







#### **Potential Loss:**

Potential loss was calculated for the Town of Minerva. The Essex County Real Property website was used to obtain data for all parcels in each jurisdiction. Data was manipulated to determine the number and value of each structures in each of the 9 class codes. The data was then totaled for the number of structures and value of structures in each class code. The number of structures impacted from the hazard event was calculated to be 10% of the total number of structures in the jurisdiction. The potential loss from the impact from hazard events was calculated to be 10% of the value of the structures in each class code.

Essex County Real property Tax Services website has 9 class codes for property as follow.

100 Agriculture	200 Residential	300 Vacant Lands
400 Commercial	500 Recreation and Entertainment	600 Community services
700 Industrial	800 Public Services	900 Forest, Conservation
		Lands and Parks

Minerva Potential Loss									
Class codes	Acreage	Number of	structure	Number of	Potential loss				
		structures	value	structures					
				impacted					
100	146.88	1.00	\$137,800	0.10	\$13,780				
200	8358.48	627.00	\$57,544,230	62.70	\$5,754,423				
300	7111.72	53.00	\$475,900	5.30	\$47,590				
400	171.72	16.00	\$3,426,000	1.60	\$342,600				
500	68.39	3.00	\$2,069,800	0.30	\$206,980				
600	145.18	10.00	\$6,626,900	1.00	\$662,690				
700	0.00	0.00	\$0	0.00	\$0				
800	258.07	6.00	\$297,100	0.60	\$29,710				
900	86623.32	11.00	\$1,006,182	1.10	\$100,618				
Total	102883.76	727.00	\$71,583,912	72.70	\$7,158,391				

# Mitigation Strategy:

Minerva had one project included in the 2011 plan. This project was to replace 5 culverts in town.

Minerva Mitigation Project 2011									
Goal	Objective	Strategy	Lead Agency	Estimate	Target Date	Existing/ New	Priority	Progress	
Reduce the impact of <b>flooding</b>	Eliminate storm water washouts beach area	Drainage improvemen t, catch basin and culvert installation in Minerva Lake beach area	Town Supervisor/Bo ard Town Highway, County DPW	\$6,400	Spring 2011	у	М	Completed	

Town of Minerva Mitigation Projects 2019									
Project # and name	Goal	Project or	Hazard	Lead	Estimated	Timeframe	Potential	Priority	Mitigation
	addressed	action	addressed	Agency	cost	to complete	funding		technique
						in years.	sources		category
1. Replace culverts on	#4	Replace	Floods	Town	Low	1-5 years	Town,	Medium	Structure and
14 <sup>th</sup> road	Infrastructure	culverts that		Hwy Dept			County		infrastructure
		are					DPW		projects
		undersized							

2. Continue proper maintenance of culverts	#4 Infrastructure	Clean culverts and maintain culvert system	Floods	Town Hwy Dept	Low	1-5 and ongoing	Town budgets	High	Structure and infrastructure.
3. Replace undersized culverts using county list for specific culverts.	#4 Infrastructure	Replace undersized culverts	Floods	Town Hwy Dept	Low	1-5 and ongoing	Town budgets	High	Structure and infrastructure
4. Facebook for Residents	#7 education and outreach project	Use Facebook for education and outreach efforts to residents	All	Town	Low	1-5 years	Annual operating budgets	High	#4 education and outreach projects.
5. Ditch the roads	#4 Infrastructure	Install roadside ditched on dirt roads for stormwater	Floods	Town Hwy dept	Low	1-5 years	SWCD	High	Structure and infrastructure
6. Town dam	#4 Infrastructure	Repair town dam that needs maintenance	Floods	Town supervisor	Medium	2019-2020	ACOE, DEC	High	Structure and infrastructure

## **Town of Moriah**

#### Introduction:

The Town of Moriah is located in eastern Essex County. Within its limits is the Hamlet of Port Henry. The Village of Port Henry was dissolved in March of 2017, these areas are now incorporated into Moriah. The Town and hamlet work closely together, and for the purposes of the All Hazard Mitigation Plan have decided to present a combined plan.

Moriah is bordered by Lake Champlain on the east, the Town of Westport and Elizabethtown to the north, North Hudson to the west, and the Town of Crown Point to the south. Port Henry is centrally located in eastern Moriah on the lakeshore.

Moriah and Port Henry have considerable frontage on Lake Champlain, which attracts visitors in the winter for ice fishing and in the summer for swimming and boating. In the western part of town there are forested areas with small ponds and several streams draining higher elevations. The Town holds an annual Champ Fest, bringing in tourists to the town. Champ is the mythical lake creature of Lake Champlain.

The hamlets of Moriah Center, Moriah Corners, Mineville and Witherbee are located in the north central part of town and were important mining centers until the mid-1960's. Canadian Pacific Rail lines run north/south through the eastern part of town.

State route 9N and 22 as well as several town and county roads link small clusters of residences and the four hamlets. South of Port Henry, Route 9N and 22 intersects with Route 903, which leads to the Crown Point Bridge, a major link to Vermont.

The discovery and mining of iron in the Adirondacks caused a boom in the local economy. This area also processed iron in smelting, and shipped products from Port Henry on Lake Champlain. These operations were conducted from 1824 until 1971. The Iron Center Museum in Port Henry recalls and interprets that past era.

Moriah	Table of Facts
Land Area	73 square miles/46,556 acres
Incorporated Village(s)	Port Henry (928.9 acres)
Hamlets	Mineville, Witherbee & Moriah Center
Population 2010 census	4798 (2010 Census)
Governance	Town and Village
Total Assessed Valuation	\$178,032,749.00
Highest Elevation	Bald Peak – 2,030'
Largest Lake	Lake Champlain of eastern border & Bartlett Pond
River(s)	Mill Brook
Dams	9
Bridges	8 County Road
Interstate Highway	NA
State Routes	9N & 22
County Roads	4, 6, 7, 42, 54 & 70
Land in Agricultural Use	NA
Land Classified Industrial (APA)	427.9 acres
Classified Residential, as Hamlet (APA)	2,094.9 acres
Hospital / Medical Facility	Moriah Health Center
Fire & Rescue	Town of Moriah & Port Henry
Schools	Moriah Central
Railroads	CP Rail north/south
Passenger Trains per day	Amtrak 68 & 69 2/day
Freight Trains per day	Approx. 5/day
Ferry Dock(s)	NA
Interstate Bridge	NA
Largest Employer	ARC
Law Enforcement	NYSP & County Sheriff
Correctional Facility	Moriah Shock Incarceration (State)
Power Utility Provider(s)	National Grid
Water Supply Source(s)	Mill Brook & Bartlett Pond – Fischer Hill Mine for Moriah Shock Incarceration & private wells
Emergency Shelters	
Critical Facilities	

## **Planning Process:**

Two meetings were held in Moriah as the plan was being updated. The first meeting was May 28, the second meeting was held on November 8. The Town Supervisor and highway department staff attended the meeting.

## **Capability Assessment:**

A capability assessment was conducted for the 2019 plan update. Moriah has several regulations that affect hazards vulnerability in the town. The Town has a comprehensive emergency management plan (CEMP), a Continuity of Government that is in the CEMP, floodplain regulations, subdivision regulations, comprehensive land use plan, stormwater management plan, economic development plan, historic preservation plan, farmland preservation plan, building code and fire codes. These regulations ensure that new development is constructed to minimize damages from hazard events.

Town of Moriah Planning Documents					
Comprehensive Emergency Management Plan (CEMP)	2008				
Continuity of Government Plan (located in the CEMP)	2008				
Floodplain regulations	1997				
Subdivision regulations	1997				
Comprehensive land use plan	2008				
Stormwater management plan	2008				
Economic development plan	1997				
Historic preservation plan	1997				
Farmland preservation plan	1997				
Building code	1997				
Fire Codes	2008				

Moriah uses a variety of County agency staff to assist the town when needed. Community resources, county engineers, and geographic information system (GIS) to supplement Town staff. The supervisor serves as the emergency manager during disaster. The building inspector also serves as the floodplain administrator. DEC and APA assist the town with scientific matters. The Town is currently beginning to develop a town GIS system.

This hazard mitigation plan should be integrated into other existing plans in Moriah. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will

ensure that all enabling legislation have similar information in those documents. Integration can ensure consistency between enabling legislation.

Financial capability was analysed. Capital improvement funds have been used for water, sewer, campground construction, shoreline erosion projects and building reconstruction. CDBG have been used for water and sewer projects. Water and sewer fees are used for operation and maintenance and debt services. Finally, partnering arrangements and intergovernmental agreement with other towns, county schools, fire district and NYS are used for daily operations and disaster operations.

Education and outreach were also analysed for Moriah. The fire department performs education programs at schools. The town website is used to educate residents. National Grid, American Red Cross, salvation army and contractors are used for disaster related programs in town. Essex County Soil and Water Conservation District and the Lake Champlain Basin Program is used to educate residents on Lake Champlain issues.

Moriah completed a self assessment of four categories. Planning and Regulatory abilities were ranked as limited. Administrative and technical capabilities, and education and outreach capabilities were ranked as moderate. Financial capabilities were ranked as high.

Critical facilities flood vulnerability was assessed as the plan was updated. The table below described if these facilities are located in the 500 year floodplain, if the facility has been flooded in the past, and if any kind of mitigation has been completed to reduce the flood potential to these structures. Generator capabilities was also assessed to determine if these facilities could function without electric power, a common issue for critical facilities during disaster events. The police station, the town highway garage, the four fire stations of Mineville, Withersbee, Moriah, and Port Henry are not located in the 500-year floodplain. The police station and Port Henry's fire station needs generators for backup power. Moriah's town Hall and fire station are both located in the 500-year floodplain. There are three power stations that are not located in the 500-year floodplain. The school is located in the 500-year floodplain and a generator is located at the school. These critical facilities are vital during disaster operations.

Moriah Critical Facilities in Floodplain					
Critical Facility	500 Year floodplain	Flooded in the past	Mitigated	Generator	
Police Station	No	No	No	No	
Highway Garage	No	No	No	Yes	
Mineville Fire Station	No	No	No	Yes	
Withersbee Fire Station	No	No	No	Yes	

Moriah Fire Station	No	No	No	Yes
Port Henry Fire Station	No	No	No	No
Moriah Town Hall	Yes	No	No (need to floodproof structure)	Yes
Moriah Fire station	Yes	Yes	No, (needs to be relocated)	No
3 Power stations	No	No	No	Unknown
Health Center	No	No	No	Yes
Moriah Central School	Yes	No	No (Need to floodproof)	Yes

Moriah has identified two areas that can be used for temporary housing needs after a disaster. The old landfill and the Mineville Industrial Park would be used if and when needed. The landfill lacks power and water. The Industrial Park has power and water. This area has paved and unpaved areas that could be used for temporary housing units such as RV or mobile homes. The Moriah Central School and Dillon Education Center are designated as the American Red Cross shelter and can be used for temporary housing of resident displaced by a hazard event. In the past displaced resident have also obtained temporary housing with friends, relatives or neighbors.

Moriah Temporary Housing for Displaced Residents				
Facility	Type of Housing			
Old landfill	RV, mobile Homes			
Mineville Industrial Park	RV, mobile homes			
Moriah Central School	ARC shelter			
Dillon Education Center, Mineville	ARC Shelter			

The following information concerns flood vulnerable structures in Moriah. The numbers of actual structures in the flood vulnerable areas is most likely larger than the number of insured structures. Once the flood insurance rate maps are updated by FEMA, these new maps will determine the actual number of vulnerable structures.
Moriah Flood Insurance Facts						
2011	2018					
Number of Policies	Number of Policies					
5	2					

Moriah will continue to manage their floodplains in the future. They will review and approve new development in the special flood hazard areas to ensure these structures are build compliant with the local floodplain ordinance. As the new FIRM are updated by FEMA, meetings will occur with floodplain managers, town supervisors and village mayors to provide training on the national flood insurance program. Compliance will be discussed at these meeting. Floodplain managers of the most vulnerable communities will be encouraged to join the state floodplain manager association to continue to increase their understanding of how to manage their flood vulnerable areas.

## Hazard ranking:

The hazards were ranked as part of the plan updating process in 2018. The table below identified the hazard rankings.

Moriah Hazard Ranking 2018							
High Hazards	Floods, High Winds, Severe Winter Storms, Rail Events						
Medium Hazards	Drought, Hail Storms, Ice Storms,						
Low Hazards	Avalanche, Earthquakes, Hurricanes, Land Subsidence and Expansive Soils, Landslides, Wildfires						













#### **Potential Loss:**

Potential loss was calculated for the Town of Moriah. The Essex County Real Property website was used to obtain data for all parcels in each jurisdiction. Data was manipulated to determine the number and value of each structures in each of the 9 class codes. The data was then totalled for the number of structures and value of structures in each class code. The number of structures impacted from the hazard event was calculated to be 10% of the total number of structures in the jurisdiction. The potential loss from the impact from hazard events was calculated to be 10% of the value of the structures in each class code.

Essex County Real property Tax Services website has 9 class codes for property as follow.

100 Agriculture	200 Residential	300 Vacant Lands
400 Commercial	500 Recreation and Entertainment	600 Community services
700 Industrial	800 Public Services	900 Forest, Conservation Lands and Parks

		Moriah Pot	tential Loss		
Class code	Acreage	Number of	Structure	Number of	Pot loss
		structures	structures value		
				impacted	
100	1006.69	11.00	\$870,505	1.10	\$87,051
200	9547.39	1961.00	\$135,132,855	196.10	\$13,513,286
300	7722.87	61.00	\$1,145,407	6.10	\$114,541
400	257.76	95.00	\$13,950,202	9.50	\$1,395,020
500	137.03	9.00	\$771,700	0.90	\$77,170
600	298.39	31.00	\$50,247,400	3.10	\$5,024,740
700	486.17	5.00	\$1,632,550	0.50	\$163,255
800	236.62	18.00	\$12,969,331	1.80	\$1,296,933
900	21226.24	9.00	\$1,860,580	0.90	\$186,058
Total	40919.16	2200.00	\$218,580,530	220.00	\$21,858,053

### Mitigation strategy:

The mitigation projects that were included in the 2011 hazard mitigation were reviewed. New mitigation projects developed during the 2019 update are noted in the table below.

Prioritization of projects occurred as the plan was updated. These projects list the priority as high, medium and low. Generally speaking, high priority projects are projects that enable towns and villages to be fully functional during times of disasters. Medium and low projects are to improve other functions of towns and villages and address actual residents of these municipalities. Implementation of project will occur as funding is obtained. Any project can be implemented as funding, political will and other aspects are addressed.

The cost of several projects has been determined and included in the table below. Other mitigation projects have estimated the costs of these projects. The potential cost to implement mitigation projects have been ranked as high, medium or low cost. Low cost projects are those projects that would cost up to \$100,00. Medium cost projects are estimated to cost between \$100,000 and \$500,000. High cost projects are those projects that would cost over \$500,000.

	Town of Moriah 2011 Mitigation Projects											
Goal	Objective	Strategy	Lead Agency	Estimate	Target Date	Priority	Status	Progress	Issues			
Reduce the impact of landslides	Educate the community on steps to be taken to decrease the impact of landslides	Provide pamphlets and information on county website.	Town. Supervisor, hwy dept. Town board, County PDW, OES	Covered in budget	Winter 2010- 1011	Н	No action	Need to complete	Lack of time to complet e project			
Reduce the impact of <b>flooding</b>	Eliminate flooded roads	Replace culverts Chipmunk St	Town Supervisor Town Highway, County DPW	\$500,000	Spring 2012 LT	L		Completed				

Reduce the impact of <b>flooding</b>	Eliminate flooded roads	Replace culverts Witherbee Road,	Town Supervisor Town Highway, County DPW	\$500,000	Spring 2012 LT	L	Completed	
Reduce the impact of <b>flooding</b>	Eliminate flooded roads	Replace culvert Fairy Lake Road near Rt. 42	Town Supervisor Town Highway, County DPW	\$500,000	Spring 2012 LT	L	Completed	
Reduce the impact of <b>flooding</b>	Eliminate flooded roads	Replace culverts 2 on Fisk Road	Town Supervisor, Town Highway, County DPW	\$500,000	Spring 2012 LT	L	Completed	

Goal	Objective	Strategy	Lead Agency	Estimate	Target Date	Priority	status	Progress	Issues
Reduce the impact of <b>landslides</b>	Educate the community on steps to be taken to decrease the impact of landslides	Provide pamphlets and information on County web site	Town Supervisor / Board Town Highway, County DPW, Office of Emergency	Covered in budget	Winter 2010 - 2011 I	у	Н	No progress	Lack of time to complet e

Moriah has implemented several projects or programs in the past that has reduced the negative effects of hazards. The following table describes these projects. These projects were not included in the 2011 hazard mitigation plan. These projects are included to reflect the total efforts of Moriah to mitigate hazards in Town.

	Town of Moriah Completed Projects												
Project # and name	Goal addressed	Project or	Hazard	Lead	Estimated	Timeframe	Potential	Priority	Mitigation				
		action	addressed	Agency	cost	to complete	funding	(high,	technique				
						in years.	sources	Medium,	category				
								low)					
Culvert	#4	25-30	Floods	Town	Varied	Completed	Town	h	Structure				
replacements	infrastructure	culverts					operating		and				
_		replaced in					budgets		infrastructur				
		town					_		e				
Petro Dam	#4	Dam	Floods	Town,		Completed			Structure				
removed	infrastructure	removed		County					and				
									infrastructur				
									e				

North Pond	#4 infrastructure	Dam removed	Floods	County, Town	Completed	Structure and infrastructur
Flooded home buy out	#3 buy outs	Home purchased after TS Irene, land is open space	Floods	County, Town	Completed	Structure and infrastructur e
Town Campsite	#6 natural systems	Shoreline erosion project	floods	Town, County	Completed	Structure and infrastructur e
Crowfoot Road	#4 infrastructure	County bridge replaced	floods	County, Town	Completed	Structure and infrastructur e
Salt storage shed	#4 infrastructure	Built new salt storage shed	floods	Town	Completed	Natural system protection
Bank stabilization on Boquet River	#6 Natural systems	Headwater stabilization project	Floods	SWCD	Completed	Natural system protection
Swift water rescue team	#4 infrastructure	Acquired team and training	Floods	Town	Completed	Structure and infrastructur e
Fire trucks in Moriah	#4 infrastructure	3 new fire trucks for Moriah, Mineville	all	Town	Completed	Structure and infrastructur e

		and Port Henry					
Titus Road Bank Project	#6 Natural systems	Bank stabilization project	flood	SWCD	Completed		Natural system protection
Forge Hollow Road	#6 Natural systems	Bank stabilization project	floods	SWCD	Completed		Natural system protection
Bartlett Road Dam	#4 infrastructure	Rehabilitati on of dam	floods	DEC, Town	Completed	FEMA	Structure and infrastructur e

	Town of Moriah 2019 Mitigation Projects											
Project #	Goal	Project or	Hazard	Lead	Estimated	Timeframe	Potential	Priority	Mitigation			
and name	addressed	action	addressed	Agency	cost	to	funding	(high,	technique			
						complete	sources	Medium,	category			
						in years		low)				
1. Fisk Road	#4	Replace	floods	Town Hwy	500K	1-5 years	County,	М	Structure and			
culvert	infrastructures	CMP with		dept			town		infrastructure			
replacement		concrete										
		block										
		structure										
2. Edgemont	#4	Increase	floods	Town Hwy	150K	1-5 years	county,	М	Structure and			
Road culvert	infrastructures	size of		Dept			town		infrastructure			
		culvert										

3. Chipmunk Street culvert	#4 infrastructures	Upsize culvert	floods	Town Hwy Dept	100K	1-5 years	County, town	М	Structure and infrastructure
4. Crowe Foot Pond Road	#4 infrastructures	Upgrade culvert and install ditches	floods	Town Hwy Dept	100K	1-5 years	County, town	М	Structure and infrastructure
5. Chenney street bank stabilization	#4 infrastructures	Install rip rap or plant stabilization for eroded bank	floods	SWCD, Town supervisor	М	1-10 years, 1-5 obtain funds 6-10 implement project	SWCD	Η	Natural system protection
6. Town Dam	#4 infrastructures	Repair town owned dam	Dam failures	DEC, town Supervisor	100K	1-5 years	DEC, SWCD	Н	Structure and infrastructure
7. Titus Road Pump Station	#4 infrastructures	Install floodwall to protect from floods	floods	Town Supervisor, DEC	М	1-10 years1-5 obtain funds 6-10 implement project	FEMA, NYS DOS	Н	Structure and infrastructure
8. Tarbo Hill Pump Station	#4 infrastructures	Install floodwall to protect from floods	floods	DEC, Town Supervisor	М	1-10 years 1-5 obtain funds 6-10 implement project	FEMA, NYS DOS	Н	Structure and infrastructure
9. Port Henry Dock Lane pump station	#4 infrastructures	Install floodwall to protect from floods	floods	DEC, Town Supervisor	М	1-10 years 1-5 obtain funds 6-10 implement project	FEMA, NYS DOS	Н	Structure and infrastructure
10. Dock Lane Bridges	#4 infrastructures	Elevate road and install drainage	floods	County, Town Hwy Dept	1 million	1-10 years 1-5 obtain funds 6-10	FEMA, NYS	М	Structure and infrastructure

						implement project			
11. Lakeside Homes	# 3 buy outs	Buy out flooded structures	Floods	County DES, Town	L/M depending on each structure	1-5 years, after flood events	FEMA HMGP, PDM	Н	Structure and infrastructure
12. N Main Street, 9N and RTE 22 and other areas of Moriah	#3 buy outs	Buy out flooded structures	floods	County DES, town	L/M depending on each structure	1-5 years after flood events	FEMA	Н	Structure and infrastructure
13. Port Henry Fire District #3	#4 infrastructures	Build new fire house current one is dilapidated	all	Town Supervisor	1 million	1-5years	FEMA Fire assistant grants, towns	Н	Structure and infrastructure

Moriah will continue to implement projects and programs to reduce the effects of hazards to the town. The floodplain ordinance will continue to be enforced to ensure new construction is built to be resist to flood damages. Building codes must continue to be implemented to reduce damages from wind events and snow loads on structures. Current fire suppression programs, led by the DEC, will continue to ensure that wildfires mitigation occurs.

#### **Town of Newcomb**

#### **Introduction:**

The town of Newcomb is the largest town in area in the county at 224 square miles. It is bordered on the north by Franklin County and North Elba, on the west by Hamilton County and Minerva, on the south by Minerva and on the east by North Hudson and Keene. The town includes vast tracts of wilderness, the upper Hudson River, many lakes and streams and three peaks over or near 4,000 ft. in elevation.

Much of the land is in preserves owned by the state, and one of two Adirondack Visitors' Interpretive Centers is located on the shores of Lake Harris. There is a long tradition of summer recreational use in the town, with many Adirondack camps dating from the 19<sup>th</sup> Century. The Historic Camp Santanoni is located on the trail to Newcomb Lake located north of the town center. The former mining community of Tahawus is located on County Route 25 some ten miles northeast of town. Originally, iron ore was mined at the site then titanium was discovered and extracted during the Second World War. The operation has been closed down since the 1980's and the area is now used primarily for access to trailheads for hiking and winter recreation.

Theodore Roosevelt was informed of the impending death of President William McKinley in September 1901 while hunting and hiking in the town. Camp Santorini and the Mount Adams Fire Observation Station, located atop Mount Adams, are listed on the National Register of Historic Places.

Newcomb Table of Facts				
Land Area	224 square miles/143,892.9 acres			
Incorporated Village(s)	NA			
Hamlets	Newcomb & Winebrook			
Population 2010 census	436 (2010 Census)			
Governance	Town			
Total Assessed Valuation	\$447,572,496.00			
Highest Elevation	Santanoni Mtn 4,621'			
Largest Lake	Newcomb Lake			
River(s)	Hudson & Opalecsent			
Dams	14			
Bridges	4 County Road			
Interstate Highway	NA			
State Routes	28N			
County Roads	2, & 25			
Land in Agricultural Use	NA			
Land Classified Industrial (APA)	3,437.6 acres			
Classified Residential, as Hamlet (APA)	1,463.3 acres			
Hospital / Medical Facility	Newcomb Health Center			
Fire & Rescue	Newcomb Fire & Rescue			
Schools	Newcomb Central			
Railroads	Discontinued			
Passenger Trains per day	NA			
Freight Trains per day	NA			
Ferry Dock(s)	NA			
Interstate Bridge	NA			
Largest Employer	Out of Town			
Law Enforcement	NYSP & County Sheriff			
Correctional Facility	NA			
Power Utility Provider(s)	NYSEG			
Water Supply Source(s)	Town & Private wells			
Emergency Shelters	Newcomb Central School			
Critical Facilities				

### **Planning Process:**

A meeting was held in Newcomb with the Town Supervisor to update the plan. This meeting occurred on August 14, 2018.

#### **Capability assessment:**

Newcomb completed a capability assessment as part of the plan update.

Newcomb has the following planning mechanisms enforced in town. Zoning ordinance, floodplain ordinance, town comprehensive plan, stormwater management plan, economic development plan for special projects, historic preservation plan, building codes, and fire codes. These planning mechanisms ensure new development is constructed to be resistant to hazards.

Newcomb Planning Documents						
Zoning Ordinance	2017					
Floodplain Ordinance	2017					
Town Comprehensive Plan	2017					
Subdivision Regulations	2008					
Stormwater Management Plan	Not determined					
Economic Development Plan	Not determined					
Historic Preservation Plan	1995					
Building Codes	Not determined					
Fire Codes	Not determined					
Comprehensive emergency	2018					
management plan						

This hazard mitigation plan should be integrated into other existing plans in Newcomb. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will ensure that all enabling legislation have similar information in those documents. Integration can ensure consistency between enabling legislation.

The town uses a variety of funding sources to implement programs and projects. Capital improvement funds have been used for water and sewer projects. CDBG have been used for Main Street Renewal projects. Water and sewer fees are used to maintain systems. Partnering and intergovernmental agreement exit with other Essex Towns and County agencies.

Newcomb uses public and private initiatives to conduct education related to hazards. The fire department conducts education programs at schools.

Newcomb assessed four areas as part of their self assessment. The Town ranked planning and regulatory capabilities, and administrative and technical capabilities as moderate. Financial, and education and outreach capabilities were rated as high.

Critical facilities flood vulnerability was assessed as the plan was updated. The table below described if these facilities are located in the 500 year floodplain, if the facility has been flooded in the past, and if any kind of mitigation has been completed to reduce the flood potential to these structures. Generator capabilities was also assessed to determine if these facilities could function without electric power, a common issue for critical facilities during disaster events.

Critical facilities were assessed as the plan was updated. The town has a fire station and rescue squad, utility and power substations, Town owned medical facility, central school, private utility companies (Frontier, NYSEG, SLIC for fibre internet) and water and sewer plants. Generator capability was not assessed.

Newcomb Critical Facilities in Floodplains							
Critical	500 Year	Flooded in	Mitigated	Generator			
Facility	Floodplain	The past					
Fire Station	No	No	No	Unknown			
Rescue Squad	No	No	No	Unknown			
Utility	No	No	No	Unknown			
Substation							
Power	No	No	No	Unknown			
Substation							
Medical facility	No	No	No	Unknown			
Newcomb	No	No	No	Unknown			
Central School							
Private utilities	No	No	No	Unknown			
Water Plant	No	No	No	Unknown			
Sewer Plant	Yes	No	No (Need berm	Unknown			
			around facility)				

The town identified three areas in town that could be used for temporary housing after a disaster. These sites are: beach parking lot, Industrial Triangle and the school field. All have power and water. The school is designated as an ARC shelter. In the past displaced resident have also obtained temporary housing with friends, relatives or neighbors.

Newcomb Temporary Housing for Displaced Residents					
Facility	Type of housing				
Town beach parking lot	RV, mobile homes				
Industrial Triangle	RV, mobile homes				
Newcomb School field	RV, mobile homes				
Newcomb Central School	ARC shelter				

The following information concerns flood vulnerable structures in Newcomb. The numbers of actual structures in the flood vulnerable areas is most likely larger than the number of insured structures. Once the flood insurance rate maps are updated by FEMA, these new maps will determine the actual number of vulnerable structures.

Newcomb Flood Insurance Facts					
2011	2018				
Number of policies	Number of policies				
7	11				
Number of repetitive loss	Number of repetitive loss				
properties	properties				
2	3 single family homes				

Newcomb will continue to manage their floodplains in the future. They will review and approve new development in the special flood hazard areas to ensure these structures are build compliant with the local floodplain ordinance. As the new FIRM are updated by FEMA, meetings will occur with floodplain managers, town supervisors and village mayors to provide training on the national flood insurance program. Compliance will be discussed at these meeting. Floodplain managers of the most vulnerable communities will be encouraged to join the state floodplain manager association to continue to increase their understanding of how to manage their flood vulnerable areas.

## Hazard Ranking:

Hazards profiled in the 2018 plan were ranked. In an informal assessment, the committee listed Wildfire and Utility Failure as hazards that might go beyond the town's ability to cope.

Newcomb Hazard Ranking				
High Hazard	Extreme Temperatures, High Winds, Severe Winter Storms.			
Medium Hazard	Droughts, Earthquakes, Hail Storms, Ice Storms, Wildfires.			
Low Hazard	Avalanche, Floods, Landslides, Rail Events			







## **Potential Loss:**

Potential loss was calculated for the Town of Newcomb. The Essex County Real Property website was used to obtain data for all parcels in each jurisdiction. Data was manipulated to determine the number and value of each structures in each of the 9 class codes. The data was then totalled for the number of structures and value of structures in each class code. The number of structures impacted from the hazard event was calculated to be 10% of the total number of structures in the jurisdiction. The potential loss from the impact from hazard events was calculated to be 10% of the value of the structures in each class code.

Essex County Real property Tax Services website has 9 class codes for property as follow.

100 Agriculture	200 Residential	300 Vacant Lands
400 Commercial	500 Recreation and Entertainment	600 Community services
700 Industrial	800 Public Services	900 Forest, Conservation Lands and Parks

Newcomb Potential Loss						
Class codes	Acreage	Number of	aber of Structure		Potential loss	
		structures	value	structures		
				impacted		
100	0.00	0.00	\$0	0.00	\$0	
200	1876.67	1876.67	\$142,310,000	187.67	\$14,231,000	
300	1822.75	1822.75	\$17,508,200	182.28	\$1,750,820	
400	9.15	9.15	\$590,200	0.92	\$59,020	
500	107.22	107.22	\$3,969,500	10.72	\$396,950	
600	12258.61	12258.61	\$43,809,900	1225.86	\$4,380,990	
700	180.00	180.00	\$640,000	18.00	\$64,000	
800	169.51	169.51	\$3,089,639	16.95	\$308,964	
900	125016.06	125016.06	\$184,732,896	12501.61	\$18,473,290	
Total	141439.97	141439.97	\$396,650,335	14144.00	\$39,665,034	

#### Mitigation strategy:

Newcomb completed a review of the 2011 mitigation project that was noted in that plan.

Prioritization of projects occurred as the plan was updated. These projects list the priority as high, medium and low. Generally speaking, high priority projects are projects that enable towns and villages to be fully functional during times of disasters. Medium and low projects are to improve other functions of towns and villages and address actual residents of these municipalities. Implementation of project will occur as funding is obtained. Any project can be implemented as funding, political will and other aspects are addressed.

The cost of several projects has been determined and included in the table below. Other mitigation projects have estimated the costs of these projects. The potential cost to implement mitigation projects have been ranked as high, medium or low cost. Low cost projects are those projects that would cost up to \$100,00. Medium cost projects are estimated to cost between \$100,000 and \$500,000. High cost projects are those projects that would cost over \$500,000.

Newcomb Mitigation Project 2011							
Goal	Objective	Strategy	Lead Agency	Estimate	Target Date	Existing/ New	Priority
Reduce the impact of <b>flooding</b>	Eliminate road flooding/possi bly isolating residents	Replace 8' culvert; Goodnow Flow Road	Town Supervisor/Boa rd Town Highway, County DPW,	\$20,000	Spring 2011 ST	у	М

The following projects were developed by the Town of Newcomb officials during the 2019 update of the plan.

		Town	n of Newcon	nb Mitigatio	on Projects	2019			
Project # and name	Goal	Project or	Hazard	Lead	Estimated	Timeframe	Potential	Priority	Mitigation
	addressed	action	addressed	Agency	cost	to complete	funding	(high,	technique
						in years.	sources	Medium,	category
								low)	
1. Generator for	#4	Obtain	all	Town	\$100,000	2 years	FEMA,	Medium	#2 Structure
highway garage	Implement	generator					County,		and
	infrastructur	for times of					town		infrastructure
	e projects	power loss					budgets		projects
2. Acquire or buy out	#3 buyouts	Buy outs	floods	County	L/M for	After	FEMA	High	#2 Structure
structures impacted by	structures			DES,	each	floods	HMGP		and
floods especially the				Town	structure		or PDM		infrastructure
repetitive loss									projects
properties									
3. Educate residents	#7 public	Brochures in	All	Town	Low	1-5 years	Annual	Medium	#4 education
and visitors on what to	education	public					budgets		and outreach
do before, during and	and outreach	places for					_		
after disasters		education							
		purposes							

Newcomb will continue to implement projects and programs to reduce the effects of hazards to the town. The floodplain ordinance will continue to be enforced to ensure new construction is built to be resist to flood damages. Building codes must continue to be implemented to reduce damages from wind events and snow loads on structures. Current fire suppression programs, led by the DEC, will continue to ensure that wildfires mitigation occurs.

### Town of North Elba

#### Introduction:

The town of North Elba has an area of 155 square miles. It is located in the northwestern part of Essex County, and is bordered on the north by the towns of St. Armand and Wilmington, by Franklin County on the west, by the towns of Keene and Newcomb on the south, and by the towns of Keene and Wilmington on the east.

Several river systems and lakes drain the high mountains surrounding the town. The West Branch of the Au Sable, famous for trophy trout fishing, originates in the southern mountains and runs northeast to the neighboring town of Wilmington. The Chubb River originates on the slopes of Street Mountain (elev. 4,216 ft.) and eventually runs through the town.

The climate of the region features long cold winters with considerable snowfall and comparatively short summers. Precipitation averages 38 inches throughout the year and temperatures can range from –40 to 100 degrees Fahrenheit.

Development is concentrated in and between the villages, and along the two major routes (State Highways 73 and 86) leading in and out of the town. In the hamlet of Ray Brook, on the route from Lake Placid to Saranac Lake, there are NYSDEC regional headquarters, NYS Police barracks, a medium-security Federal Prison housing 1,100 inmates and a NY State Correctional Facility housing 275 inmates. There is an excellent level of cooperation between the town and these facilities, with agreements in place for sharing resources in times of need.

In 1932, and again in 1980, Lake Placid hosted the Winter Olympics. Several of the Olympic venues are located in North Elba. It has since become a major venue and training center for winter sports, and in recent years for various outdoor competitions throughout the year. While this has been a boon for the local economy, it also increases the vulnerability of the town to several hazards. Unlike most other towns in the County, North Elba/Lake Placid regularly host events drawing over ten thousand people. The various venues are owned by the town but operated by the Olympic Regional Development Authority. ORDA personnel work well with town emergency service staff to coordinate training and drills and are on call in the event of an emergency. North Elba has a CEMP and has worked closely with ECOES to ensure the safety of residents and visitors alike.

North Elba Table of Facts					
Land Area	156.4 square miles				
Incorporated Village(s)	Town				
Hamlets	Ray Brook				
Population 2010 census	5,426 (2000 Census)				
Governance	Town				
Total Assessed Valuation	\$1,372,729,782.00				
Highest Elevation	Algonquin 5114'				
Largest Lake	Lake Placid				
River(s)	W. Branch of the AuSable & Chubb				
Dams	1				
Bridges	4 County Road				
Interstate Highway	NA				
State Routes	73 & 86				
County Roads	21, ,23,26,31,32				
Land in Agricultural Use	NA				
Land Classified Industrial (APA)	NA				
Classified Residential, as Hamlet (APA)	na				
Hospital / Medical Facility	Placid Memorial Health Center,				
Fire & Rescue	Lake Placid				
Schools	North County Community College, 2 private schools				
Railroads	Adirondack Scenic RR Lake Placid- Saranac Lake (seasonal) No longer running				
Passenger Trains per day	NA				
Freight Trains per day	NA				
Ferry Dock(s)	NA				
Interstate Bridge	NA				
Largest Employer					
Law Enforcement	NYSP, County Sheriff, Lake Placid & Saranac Lake Police Depts.				
Correctional Facility	Adirondack Correctional Facility – Ray Brook				
Power Utility Provider(s)	NYSEG & Lake Placid Village Municipal Electric Department				
Water Supply Source(s)					
Emergency Shelters	High school				
Critical Facilities					

## **Planning Process:**

A meeting occurred in Lake Placid Village on August 7. The Highway Superintendent of North Elba attended the meeting. A second meeting tool place on May 13, 2019. The highway superintendent attended that meeting as well.

# **Capability assessment:**

The following table indicates the planning mechanism that are enforced in North Elba. These planning mechanisms ensure that new development is constructed to be resistant to hazards.

North Elba Planning Documents			
Comprehensive emergency management plan			
Emergency operations plan			
Disaster recovery plan			
Continuity of operations plan			
Floodplain regulations			
Zoning regulations			
Subdivision regulations			
Land use codes			
Stormwater management plan			
Capital improvement plan			
Economic development plan (ROOST)			
Historic preservation plan			
Building codes			
Fire codes			

North Elba completed a self assessment of several capabilities. The town has a planner on staff. Engineering firm are hired as needed. The town has a emergency manager for dealing with hazard events. The code officer is also the floodplain administrator. Land surveyors are hired as needed. The APA and DEC serve as scientific specialist as needed. The Village uses the County GIS system when needed. The County assists the village in grant writing.

This hazard mitigation plan should be integrated into other existing plans in North Elba. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will ensure that all enabling legislation have similar information in those documents. Integration can ensure consistency between enabling legislation.

Capital improvement funds have been used in the past as well as community development block grants to improve the town. The town has numerous inter governmental agreements and partnering agreements with surrounding towns and the County. Water and sewer fees are used to maintain the currents systems.

Education and outreach efforts were also assessed. Fire safety and school safety programs are delivered. Twitter and Facebook are used to reach residents and tourists with information.

The town completed a self assessment in four areas. Planning and regulatory capabilities and administrative and technical capabilities are assessed as high. Financial and education and outreach capabilities were assessed as moderate.

Critical facilities vulnerability to floods were assessed. The following table indicates whether a facility is located in the 500 year floodplain, if this facility has been flooded in the past, if mitigation efforts have been completed for this facility and if the facility has a generator.

North Elba Critical Facilities in Floodplains					
Critical facility	500 year	Flooded in the	looded in the Mitigated		
	floodplain	past			
Police station	No	No	No	Yes	
Fire Station	No	No	No	Yes	
Emergency	No	No	No	Yes	
operations					
center					
Communication	No	No	No	Yes	
Center					
Hospital	No	No	No	Yes	
Nursing Home	No	No	No	Yes	
Elementary	No	No	No	Yes	
school					
Middle school	No	No	No	Yes	
& high school					
Water plant	No	No	No	Unknown	
Sewer plant	No	No	No	Unknown	

The town has identified three areas that can be used for temporary housing needs after a disaster. The horse grounds can be used for RV or mobile homes and has water and electric on the site. The fire house snow field can be used for RV or mobile homes. The State Camp Site in Ray Brook and can be used for RV and mobile homes. The High School is designated as an ARC shelter.

North Elba Temporary Housing for Displaced Residents			
Facility	Type of housing		
Horse grounds	RV, mobile homes		
Fire House snow filed	RV, mobile homes		
State Camp Ground Ray Brook	RV, mobile homes		
High School	ARC shelter		

The following information concerns flood vulnerable structures in North Elba. The numbers of actual structures in the flood vulnerable areas is most likely larger than the number of insured structures. Once the flood insurance rate maps are updated by FEMA, these new maps will determine the actual number of vulnerable structures.

North Elba Flood Insurance Facts			
2011	2018		
Number of policies	Number of polices		
7	9		
Number of repetitive loss properties	Number of repetitive loss properties		
0	1 single family home		

North Elba will continue to manage their floodplains in the future. They will review and approve new development in the special flood hazard areas to ensure these structures are build compliant with the local floodplain ordinance. As the new FIRM are updated by FEMA, meetings will occur with floodplain managers, town supervisors and village mayors to provide training on the national flood insurance program. Compliance will be discussed at these meeting. Floodplain managers of the most vulnerable communities will be encouraged to join the state floodplain manager association to continue to increase their understanding of how to manage their flood vulnerable areas.

## **Hazard Rankings:**

The list of hazards profiled in this updated plan were ranked.

North Elba Hazard Ranking		
High Hazard	High winds,	
Medium hazard	Floods, Severe winter storms,	
Low Hazard	Drought, earthquake, extreme temperatures, hail storms, hurricanes, land subsidence and expansive soils, Ice storms, landslides wildfires.	







### **Potential Loss:**

Potential loss was calculated for each North Elba. The Essex County Real Property website was used to obtain data for all parcels in each jurisdiction. Data was manipulated to determine the number and value of each structures in each of the 9 class codes. The data was then totalled for the number of structures and value of structures in each class code. The number of structures impacted from the hazard event was calculated to be 10% of the total number of structures in the jurisdiction. The potential loss from the impact from hazard events was calculated to be 10% of the value of the structures in each class code.

Essex County Real property Tax Services website has 9 class codes for property as follow.

200 Residential	300 Vacant Lands
500 Recreation and Entertainment	600 Community services
800 Public Services	900 Forest, Conservation and Parks
	200 Residential 500 Recreation and Entertainment 800 Public Services Lands

North Elba Potential Loss					
Class code	Acreage	Number of	Structure	Number of	Pot Loss
		structures	value	structures	
				impacted	
100	531.88	7	\$1,525,000	0.7	\$152,500
200	7459.04	2605	\$522,259,254	260.5	\$52,225,925
300	3799.04	65	\$1,577,610	6.5	\$157,761
400	444.9	96	\$58,756,391	9.6	\$5,875,639
500	2466.36	25	\$13,684,889	2.5	\$1,368,489
600	2885.68	28	\$267,106,400	2.8	\$26,710,640
700	81.5	2	\$1,836,300	0.2	\$183,630
800	316.34	41	\$27,506,930	4.1	\$2,750,693
900	75929.35	16	\$66,370,230	1.6	\$6,637,023
Total	93914.09	2885	\$960,623,004	288.5	\$96,062,300
## **Mitigation Actions:**

The project listed in the 2011 mitigation plan is listed below. The status of that project is listed in the last column. Project developed during the 2019 plan update are listed in the second table.

North Elba Mitigation Project 2011								
Goal	Objective	Strategy	Lead Agency	Estimate	Target Date	Existing/New Buildings	Priority	Progress
Reduce the impact of <b>flooding</b>	Eliminate road flooding/possib ly isolating residents concrete bridge and culvert deteriorating	Clear stream, replace bridge and culvert on Adirondack Lodge Road and Alcohol Brook Bridge	Town Supervisor / Board Town Highway, County DPW,	\$75,000	Spring 2012 ST	У	М	Not completed., still valid project

North Elba Mitigation Projects 2019									
Project # and name	Goal addressed	Project or action	Hazard addressed	Lead Agency	Estimated cost	Timeframe to complete in years.	Potential funding sources	Priority (high, Medium, low)	Mitigation technique category
1. North Elba salt shed	#4 infrastructure, #6 natural resource protection project	Construct new salt shed to eliminate salt entering into Mirror and Placid lakes	Water quality issues	Town DPW dept	Medium	1—5 years	DOS	High	#2 structure and infrastructure

2. Develop education efforts for tourists	#1 education and outreach	Use brochures to educate tourists on hazards	all	Town supervisor	Low	Year 1	Town budgets	Medium	#4 education and outreach
3. Health Care Center expansion	Structure and infrastructure	require stormwater solutions to increased flooding from expansion of health care center	flooding	Town planning board/ Town code officer	Low	As center expands	Town budgets	High	#2 structure and infrastructure projects
4. Bridge maintenance	#4 infrastructure	Remove debris from bridges	flooding	Town HWY dept.	Low	Year 1	Town budgets and staff	Medium	#2 infrastructure
5. Purchase structures or use other mitigation technique on structures impacted by floods on River Road	Structure and infrastructure	Mitigate structures impacted by floods	flooding	Town supervisor /county DES	Low	Year 1-5 or after a flood	FEMA PDM HMGP	Medium	#2 structure and infrastructure projects

### **Town of North Hudson**

## **Introduction:**

The town derives its name by being near the north end of the Hudson River. Two branches of the Schroon River, a south-flowing tributary of the Hudson River, are located in North Hudson.

The tourist trade began to dominate the industry of the town by the end of the 19<sup>th</sup> century, especially at Underwood and Elk Lake. The theme park Frontier Town, a Wild West themed family tourist attraction, operated here from 1952 to 1998. The closure of Frontier Town had a severe negative impact on the town's economy. This area is now being developed to become a southern gateway area to the Adirondacks. A state campground is currently being constructed. Businesses such as a brewery, restaurant and other establishments will be constructed in the future. These measures will increase the economic viability of North Hudson.

With a population of 240 in the 2010 US Census, North Hudson is Essex County's smallest town but it is the second largest in area, encompassing 190 square miles. It is bordered on the north by the towns of Keene and Elizabethtown, on the west by the towns of Moriah and Crown Point, on the south by the town of Schroon and on the west by the towns of Minerva and Newcomb.

North Hudson has vast wilderness areas of mountainous terrain including the Dix Range, with peaks over 4000 feet in elevation, and many lakes and streams. The Schroon River drains the area. The population is concentrated along the two major roads running north-south (US Route 9) and east-west (County Route 2). Interstate Route 87 runs parallel to both the river and Route 9 and increases the community's vulnerability to transportation accidents and hazardous materials in transit. The river has flooded in the past and the committee noted a significant ice jam event in 1955.

Recent mitigation efforts include roadwork by the County DPW in a frequently flooded residential area called Pepper Hollow. The large proportion of elderly people increases the town's vulnerability to some hazards, but emergency personnel are well trained and aware of those residents needing special consideration.

North Hudson Table of Facts				
Land Area	190 square miles/122,114.2 acres			
Incorporated Village(s)	NA			
Hamlets	North Hudson & Underwood			
Population 2010 census	240 (2010 Census)			
Governance	Town			
Total Assessed Valuation	\$132,567,796.00			
Highest Elevation	Dix Mtn 4,842'			
Largest Lake	Elk Lake			
River(s)	Boreas & Schroon			
Dams	10 (6 at Underwood)			
Bridges	8 County Road			
Interstate Highway	I-87 SSW to NE			
State Routes	9			
County Roads	2, 4, & 6			
Land in Agricultural Use	NA			
Land Classified Industrial (APA)	NA			
Classified Residential, as Hamlet (APA)	340.3 acres			
Hospital / Medical Facility	NA			
Fire & Rescue	North Hudson Fire & Rescue			
Schools	Schroon Lake Central – Schroon Lake			
Railroads	NA			
Passenger Trains per day	NA			
Freight Trains per day	NA			
Ferry Dock(s)	NA			
Interstate Bridge	NA			
Largest Employer	Out of Town			
Law Enforcement	NYSP & County Sheriff			
Correctional Facility	NA			
Power Utility Provider(s)	Niagara Mohawk			
Water Supply Source(s)	Private wells			
Emergency Shelters				
Critical Facilities				

## **Planning Process:**

A meeting was held in North Hudson on May 18, 2018. Attending this meeting was the Supervisor, Town Board Member, Highway Superintendent, and Code enforcement officer.

### **Capability Assessment:**

North Hudson has an emergency operation plan, floodplain ordinance, zoning subdivision regulations, a town comprehensive plan, building codes, and fire codes. These planning mechanisms ensure that new development is located in a suitable location and resistant to hazards.

North Hudson Planning Documents				
Emergency Operation Plan	2006			
Floodplain Ordinance	2006			
Comprehensive Emergency Management Plan	2017			
Zoning Ordinance	2008			
Subdivision regulations	2008			
Town comprehensive plan	2008			
Building codes	2008			
Fire Codes	2008			

North Hudson completed a self assessment of their capabilities as the plan was updated in 2019. The town has an emergency manager designated, and a floodplain manager who also serves as the code enforcement officer. The town uses county staff for planning matters, engineering assistance, GIS and grant writing. The town contracts with land surveyors and engineers when needed.

The town has used CDBG funds in the past for municipal water wells in town. They have intergovernmental agreements with county agencies for snow and ice removal. They also have MOU with other towns for fire suppression and other shared resources and services.

The town self-assessment also included an analysis of degree of capabilities. For planning and regulatory, and administrative and technical capabilities, they ranked themselves as moderate. Financial, and education and outreach capabilities were ranked as limited.

Critical facilities flood vulnerability was assessed as the plan was updated. The table below described if these facilities are located in the 500 year floodplain, if the facility has been flooded in the past, and if any kind of mitigation has been completed to reduce the flood potential to these structures. Generator capabilities was also assessed to determine if these facilities could function without electric power, a common issue for critical facilities during disaster events.

The town has a fire station and emergency operation center. These two critical facilities are not located in the 500-year floodplain.

North Hudson Critical Facilities in Floodplains								
Critical Facility	500 Year Floodplain	Flooded in the past	Mitigated	Generator				
Fire Station	No	No	No	No				
Emergency	No	No	No	No				
Operations								
Center/Town Hall								

The town identified two areas that could be used for temporary housing units. One is the fire department parking lot, and the second site identified is the Highway Wonderview. This is privately owned, but can be used when needed. This has power and water. The fire house is the designated ARC shelter. In the past displaced resident have also obtained temporary housing with friends, relatives or neighbors.

North Hudson temporary Housin	ng for Displaced residents
Facility	Type of Housing
Fire Department Parking lot	RV, mobile homes
Wonderview (private lands)	RV, mobile homes
Schroon Lake Fire House	ARC shelter

The following information concerns flood vulnerable structures in North Hudson. The numbers of actual structures in the flood vulnerable areas is most likely larger than the number of insured structures. Once the flood insurance rate maps are updated by FEMA, these new maps will determine the actual number of vulnerable structures.

North Hudson Floo	d Insurance Facts
2011	2018
Number of policies	Number of policies
1	3

North Hudson will continue to manage their floodplains in the future. They will review and approve new development in the special flood hazard areas to ensure these structures are build compliant with the local floodplain ordinance. As the new FIRM are updated by FEMA, meetings will occur with floodplain managers, town supervisors and village mayors to provide training on the national flood insurance program. Compliance will be discussed at these meeting. Floodplain managers of the most vulnerable communities will be encouraged

to join the state floodplain manager association to continue to increase their understanding of how to manage their flood vulnerable areas.

# Hazard ranking:

Hazards were ranked during the 2019 plan update. Hazards were ranked as high, medium or low based upon the impact to the town.

North Hudson Hazard Ranking				
High Hazard	Drought, Floods, Wind Events, Ice Storms			
Medium Hazard	Earthquake, Extreme Temperatures, Hurricanes, Landslides, Winter storms, Wildfires			
Low Hazard	Avalanche, Hail Storms, Landslides and Expansive Soils, Rail Events			







# **Potential Loss:**

Potential loss was calculated for the Town of North Hudson. The Essex County Real Property website was used to obtain data for all parcels in each jurisdiction. Data was manipulated to determine the number and value of each structures in each of the 9 class codes. The data was then totalled for the number of structures and value of structures in each class code. The number of structures impacted from the hazard event was calculated to be 10% of the total number of structures in each class code.

Essex County Real property Tax Services website has 9 class codes for property as follow.

100 Agriculture	200 Residential	300 Vacant Lands
400 Commercial	500 Recreation and Entertainment	600 Community services
700 Industrial	800 Public Services	900 Forest, Conservation Lands and Parks

North Hudson Potential Loss								
Class code	Acreage	Number of	Structure	Number	Pot loss			
		structures	Values	impacted				
100	0.00	0.00	\$0	0.00	\$0			
200	4496.94	261.00	\$20,736,098	26.10	\$2,073,610			
300	965.16	31.00	\$458,400	3.10	\$45,840			
400	115.93	8.00	\$1,622,000	0.80	\$162,200			
500	51.62	3.00	\$1,218,200	0.30	\$121,820			
600	157.11	8.00	\$1,579,300	0.80	\$157,930			
700	235.47	0.00	\$0	0.00	\$0			
800	90.90	1.00	\$2,800	0.10	\$280			
900	109928.04	5.00	\$238,700	0.50	\$23,870			
Total	116041.17	317.00	\$25,855,498	31.70	\$2,585,550			

### **Mitigation Strategy**

Prioritization of projects occurred as the plan was updated. These projects list the priority as high, medium and low. Generally speaking, high priority projects are projects that enable towns and villages to be fully functional during times of disasters. Medium and low projects are to improve other functions of towns and villages and address actual residents of these municipalities. Implementation of project will occur as funding is obtained. Any project can be implemented as funding, political will and other aspects are addressed.

The cost of several projects has been determined and included in the table below. Other mitigation projects have estimated the costs of these projects. The potential cost to implement mitigation projects have been ranked as high, medium or low cost. Low cost projects are those projects that would cost up to \$100,00. Medium cost projects are estimated to cost between \$100,000 and \$500,000. High cost projects are those projects that would cost over \$500,000.

The Town of North Hudson has implemented several projects or programs that were County wide projects in the 2011 plan. These projects have reduced the negative effects of hazards. The following table describes these County projects that were implemented in North Hudson. These projects are included to reflect the total efforts of North Hudson to mitigate hazards in Town.

Town of North Hudson Review of 2011 County Projects									
Goal	Objective	Strategy	Lead	Targe	Status	Progress	Issues		
Reduce the impact of <b>landslides</b>	Improve public awareness	Educate the community on steps to be taken to decrease the impact of landslides	County Office of Emergency Services, municipal executives	Fall 2010	Ongoing				

	Stabilization of rock	Obtain funding for	County and	Spring	Ongoing		
	slopes	stabilization projects	Town DPW,	2011			
		along affected roadways	municipal				
		throughout the County,	executives				
		particularly Towns of					
		Keene and Moriah					
	Eliminate slippage due	Monitor areas affected	County/Town	Ongoing	Ongoing		
	to heavy rains near	and take appropriate	DPW's and				
	roadways	action as needed	Municipal				
			executives				
	Create open space	Investigate and pursue	Municipal	Ongoing	Ongoing		
	zones where necessary	potential land acquisition	executives				
		in areas where damage					
Reduce the impact	Identify	Survey these	County Office	Fall 2010	Completed		
of severs snow/ice storms	emergency	institutions as to their	of Emergency	ongoing	special needs		
	concerns of specific	requirements, following	Services,		population.		
	needs populations	the lead of Minerva's	Social Services				
		residents survey	Department,				
			Municipal				
			executives				
				1		1	

Reduce the impact of severs snow/ice storms	Ensure efficient use of resources, during and after storm events	Coordinate emergency services, public works departments, and public utilities.	Executives of each municipality, County executives	Fall 2010 ongoing	Ongoing, standard operating procedures for towns and County staff.	
Reduce the impact of severs snow/ice storms	Ensure for debris removal as soon as possible	Develop plans for debris management after severe winter snow/ice events.	DPW(Count y and Towns)	Fall 2010 ongoing	Currently doing and will continue in the future.	
Reduce the impact of severs snow/ice storms	Connect with elderly, handicapped, low- income, during major events.	Design a network of citizens that will check in on individuals during major events	Department of Social Services, Office of the Aging, Municipal	Fall 2010 ongoing	Currently doing and will continue in the future	
Reduce potential damage and threat to life and property from wildfires	Review zoning and guidelines for compliance with national "FireWise Communities" program	County Office of Emergency Services will conduct a review of "FireWise Communities" guidelines to develop a Best Practices summary. Each	County Office of Emergency Services and executives of each municipality	Fall 2010 through Fall 2013	Code officer will complete in the future.	

Reduce potential damage and threat to life and property from wildfires	Provide ample fire hydrants for each jurisdiction	Hydrants maintained, replaced and # increased in recommended areas, specifically in Town of Minerva, also throughout the county	Municipal executive assisted by Volunteer Fire Departments	Fall 2010	Dry hydrants installed, completed
Reduce potential damage and threat to life and property from wildfires	Fire fighter training/updating	Each jurisdiction will send a representative to the NYS Wildfire Academy	Executive of each jurisdiction	On going	Firefighter receive training as required. Complete d and ongoing
Reduce the impact from severe storms/winds	Ensure existing storm related building codes are enforced and/or updated	Municipal executive to require Code Enforcement Officer to present building guideline details in the jurisdiction relating to severe storms	Executives of each municipality , county planner	Fall 2010 through 2011	Ongoing. Code officer enforces bldg. and other codes.
Reduce the impact from severe storms/winds	Keep trees from threatening lives, property, and public infrastructure during storm events	Develop programs to monitor trees/limbs in storm areas.	DPW, (County, Towns)	Fall 2010 ongoing	Ongoing National Grid trims along power lines

	Ensure resource after sto	efficient use of ees, during and orm events Coordinate emergency services, public works departments, and public utilities.		Municipa 1 executive s County executive s	Fall 2010 Ongoing		Ongoing. SOP for town	
Reduce the impac earthquake	t from	Ensure existing earthquake-related building codes are enforced. Provide training for local code enforcement officials	Municipal executive to require Code Enforcement Officer submit a report on earthquake-related building codes in their jurisdiction	Executives of each municipality	Fall 2010 through 2011	Town has USGS seismic monitoring device	Ongoing. Device inspected 2 a year.	
Reduce the impac	t from	Improve public awareness	Educate community relating to steps taken to lessen potential flood damage and increase knowledge of NFIP services	Executives of each municipality, Office of Emergency Services, DPW	Fall 2010		Ongoing. Codes educates residents on floods	
Reduce the impac	t from	Upgrade to digitized FEMA maps	Encourage the County to participate	County Planner	For 5 year update		FEMA currently updating county flood maps.	

Reduce the impact from <b>flooding</b>	Establish and train a Floodplain Administrators for each jurisdiction	Use programs established by FEMA and NYS Floodplain/ Stormwater Managers Association	County Floodplain Manager (Director of Emergency Services)Execu tives of each	Fall 2011 -ongoing		Ongoing. Codes currently does this.	
Reduce the impact from flooding Goal	Improve training and education for official and local floodplain coordinators Objective	Encourage participation in training provided by NYSDEC Division of Water Strategy	Executives of municipalities and County Floodplain Coordinators	Summer 2011- 2013 Target	Status	DEC will conduct training for new flood maps. Progress	Issues
Reduce the impact from	Eliminate	Identify and examine	DPW(County	Date Fall 2010	Ongoing	Hwv	
flooding	obstructions to surface water drainage	culverts in affected areas regularly, remove obstructions as necessary	and Towns)	ongoing		flushes culverts as needed	
Reduce the impact from <b>flooding</b>	Create effective flood mitigation activities for "hot spots" within the county(see	Identify, evaluate and implement activities in flood areas	DPW(County and Towns)	Fall 2010 ongoing	ongoing	Town fixes flood hot spots as they occur.	

Reduce threat from extreme temperatures	Ensure awareness of location of vulnerable populations in region	Jurisdictions will locate and update information on vulnerable populations; elderly, disabled	Executives of each municipality, Emergency Services	Fall 2010 - ongoing	Ongoing	Town currently doing.	
Multiple Hazards	Maintain and expand emergency preparedness and response countywide	Increase communication and cooperation between County/local dpw and County/local emergency services. Link emergency services with hazard	Executives of each municipality, emergency responders (County and local)	Fall 2010 ongoing	Ongoing	Town currently does this now.	
Multiple hazards.	Ensure code enforcement and inspection services	Provide education and updated information to CEO	Executives of each municipality	Fall 2010 ongoing	Ongoing	Town currently does this now.	
Multiple hazards.	Protect property development from disaster prone areas county wide	Implement zoning regulations to discourage building new structures in disaster prone areas	Executives of each jurisdiction Municipal Zoning and Flood Plain Administrators	Fall 2010 ongoing	Ongoing	Town does this through code officer.	
Multiple hazards.	Protect property development from disaster prone areas county wide	Implement building codes that reflect disaster resistant construction for new structures and renovation	Executives of each jurisdiction and Code Enforcement Officer	Fall 2010 ongoing	Ongoing	Town does this through code officer	

Reduce	Eliminate road	Replace	Town	\$15,000	Fall				
the	washouts	culverts on	Supervisor/Board		2011	У	М	Complete	
impact of		Elk Lake Road/ditch	Town Highway, County DPW,		ST			u	
flooding									

The following table includes new projects that were developed as this plan was updated.

Town of North Hudson Mitigation Projects 2019									
Project # and name	Goal addressed	Project or action	Hazard addresse d	Lead Agency	Estimated cost	Timeframe to complete in years.	Potential funding sources	Priority (high, Medium , low)	Mitigation technique category
1. Purchase homes impacted from floods on Liberty and Casa Turn Road	## 3 Buyouts	Buyout of flooded structures	Floods	County DES, Town	L/M depending on each structure	1-5 years and after flood events	FEMA HMGP, PDM	Medium	Structures and infrastructure
2. Study solution to slope failure on Schroon River	#6 natural resource protection projects	Stabilize failing river bank	Floods	Town (N Hudson &Schroon)	High	1-5 years	FEMA, ACOE, DEC	High	Natural resource protection
3. Culvert replacement	#4 infrastructur e	Replace under sized culverts	Floods	Town Hwy Dept	Low	1-5 years	Town, County DPW	Medium	Structures and infrastructure
4. Generator	#4 infrastructur e	Obtain generator for critical facilities	All hazard	Town Supervisor	Low	1-5 year	FEMA, Town Supervis or	High	Structures and infrastructure

North Hudson will continue to implement projects and programs to reduce the effects of hazards to the town. The floodplain ordinance will continue to be enforced to ensure new construction is built to be resist to flood damages. Building codes must continue to be implemented to reduce damages from wind events and snow loads on structures. Current fire suppression programs, led by the DEC, will continue to ensure that wildfires mitigation occurs.

#### Introduction:

The town was first settled around 1829. The early industry was based on lumber production. After most of the trees were harvested, farming became predominant. By the end of the 19th century, the town had become the locale for sanatoriums intended for tuberculosis (TB) cures. Dr. Edward Trudeau in 1884 was one of the first to establish a sanatorium within the town, near the village of Saranac Lake.

The Town of St. Armand encompasses an area of 57 square miles in the northwest corner of the county. The town is bordered by the Village of Saranac Lake and the town of Harrietstown to the west, the town of North Elba to the south, the town of Franklin to the north and the town of Wilmington to the east.

The population is concentrated in the village of Saranac Lake and the hamlet of Bloomingdale, both of which are located near the dynamic Saranac River. Mountains in the southwestern part of town comprise the watershed for various streams and ponds that contribute to flooding on a regular basis.

Saint Arma	nd Table of Facts
Land Area	57 square miles/36,587.8 acres
Incorporated Village(s)	portion of Saranac Lake (208 acres)
Hamlets	Bloomingdale
Population 2010 census	1548 (2010 Census)
Governance	Town & Village of Saranac Lake
Total Assessed Valuation	\$106,760,121.00 portion in Saranac Lake
	\$13,089,525.00
Highest Elevation	Moose Mtn 3,921'
Largest Lake	Franklin Falls Pond
River(s)	Saranac
Dams	3
Bridges	7 County Road
Interstate Highway	NA
State Routes	3
County Roads	18 & 20
Land in Agricultural Use	NA
Land Classified Industrial (APA)	342.5 acres
Classified Residential, as Hamlet (APA)	939.5 acres
Hospital / Medical Facility	Adirondack Medical Center – Saranac Lake
Fire & Rescue	Bloomingdale Fire Co.
Schools	
Railroads	NA
Passenger Trains per day	NA
Freight Trains per day	NA
Ferry Dock(s)	NA
Interstate Bridge	NA
Largest Employer	Out of Town
Law Enforcement	NYSP & County Sheriff
Correctional Facility	NA
Power Utility Provider(s)	NYSEG
Water Supply Source(s)	Town & Private Wells
Emergency Shelters	
Critical Facilities	

### **Planning Process:**

A meeting was held on June 21 to solicit information from the town for the plan update. The meeting was attended by the Town Supervisor, Highway Superintendent, and the Code Enforcement Officer.

## **Capability Assessment:**

Saint Armand has several regulations that affect development in the Town. The emergency operations plan was adopted in 2013. The APA assists the town with planning issues.

Saint Armand Planning Documents				
Floodplain ordinance	2006			
Emergency Operations Plan	2013			
Comprehensive Emergency Management Plan	2018			
Drinking water Plan	2013			
Emergency Response Plan	2013			
Building Code	2006			
Fire Code	2006			

This hazard mitigation plan should be integrated into other existing plans in Saint Armand. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will ensure that all enabling legislation have similar information in those documents. Integration can ensure consistency between enabling legislation.

Administrative and technical capabilities were assessed. The Town has a code enforcement officer who approves new development and ensures that it is constructed to be compliant with local laws. The Town uses Essex County agencies for assistance in the following areas: planning and grant writing, emergency management, floodplain managers, land surveyors, scientific experts, GIS, and PDW for road issues. Saint Armand has used CDBG for wastewater treatment facility upgrades.

The Town completed a self assessment of four areas. They ranked planning and regulatory capabilities; education and outreach; and administrative and regulatory capabilities as limited. They ranked financial capability as moderate.

Critical facilities flood vulnerability was assessed as the plan was updated. The table below described if these facilities are located in the 500 year floodplain, if the facility has

been flooded in the past, and if any kind of mitigation has been completed to reduce the flood potential to these structures. Generator capabilities was also assessed to determine if these facilities could function without electric power, a common issue for critical facilities during disaster events.

Critical facilities were assessed. The drinking water and waste water plants may be in the 500-year floodplain. These facilities have a generator in case of loss of electricity. The fire station and emergency operations center are not located in the 500-year floodplain; they possess generators. The school is not located in the 500-year floodplain, the town officials are not aware if this facility has a generator.

	Saint Armand Critical facilities in Floodplains					
Critical Facilities	500 year floodplain	Flooded in the past	Mitigated	Generator		
Drinking water plant	No	No	No	Yes		
Waste water plant	Yes	No	No (need berm around plant)	Yes		
Fire Station	No	No	No	Yes		
Emergency operations center	No	No	No	Yes		
School	No	No	No	Unknown		

The town has identified one area that can be used for temporary housing after a disaster; the ballfield. This site lacks power, water and sewer. The elementary school is an ARC designated shelter.

Saint Armand Temporary Housing			
for Displaced Residents			
Facility	Type of Housing		
Town ball field	RV, mobile homes		
Bloomingdale Elementary school	ARC shelter		

The following information concerns flood vulnerable structures in Saint Armand. The numbers of actual structures in the flood vulnerable areas is most likely larger than the number of insured structures. Once the flood insurance rate maps are updated by FEMA, these new maps will determine the actual number of vulnerable structures.

Saint Armand Flood Insurance Facts				
2011	2018			
Number of policies	Number of policies			
3 3				

Saint Armand will continue to manage their floodplains in the future. They will review and approve new development in the special flood hazard areas to ensure these structures are build compliant with the local floodplain ordinance. As the new FIRM are updated by FEMA, meetings will occur with floodplain managers, town supervisors and village mayors to provide training on the national flood insurance program. Compliance will be discussed at these meeting. Floodplain managers of the most vulnerable communities will be encouraged to join the state floodplain manager association to continue to increase their understanding of how to manage their flood vulnerable areas.

#### Hazard Ranking:

Hazards were ranked for perceived vulnerability in St. Armand.

St. Armand Hazard Rankings						
High Hazard	Drought, extreme temperatures, hail storms, high winds, ice storms, severe winter storms, wildfires					
Medium Hazards	Earthquakes					
Low Hazards	Avalanche, hurricanes, land subsidence and expansive soils, landslides, rail events					







## **Potential Loss:**

Potential loss was calculated for The Town of Saint Armand. The Essex County Real Property website was used to obtain data for all parcels in each jurisdiction. Data was manipulated to determine the number and value of each structures in each of the 9 class codes. The data was then totalled for the number of structures and value of structures in each class code. The number of structures impacted from the hazard event was calculated to be 10% of the total number of structures in the jurisdiction. The potential loss from the impact from hazard events was calculated to be 10% of the value of the structures in each class code.

Essex County Real property Tax Services website has 9 class codes for property as follow.

100 Agriculture	200 Residential	300 Vacant Lands
400 Commercial	500 Recreation and Entertainment	600 Community services
700 Industrial	800 Public Services	900 Forest, Conservation Lands and Parks

Saint Armand Potential Loss								
Class code	Acreage	Number of	Structure	Number of	Potential loss			
		structures	value	structures				
				impacted				
100	93.00	0.00	\$0	0.00	\$0			
200	1960.37	573.00	\$77,026,200	57.30	\$7,702,620			
300	1637.06	33.00	\$422,400	3.30	\$42,240			
400	82.49	32.00	\$5,375,100	3.20	\$537,510			
500	84.75	3.00	\$445,900	0.30	\$44,590			
600	136.26	13.00	\$10,502,600	1.30	\$1,050,260			
700	319.73	2.00	\$325,000	0.20	\$32,500			
800	40.63	8.00	\$18,815,352	0.80	\$1,881,535			
900	30723.11	3.00	\$36,300	0.30	\$3,630			
Total	35077.40	667.00	\$112,948,85	66.70	\$11,294,885			
			2					

### **Mitigation Strategy:**

The mitigation strategy included in the 2011 plan was reviewed to determine if the project was completed. This project was completed and will reduce flooding in the Town. New mitigation projects were identified for the 2019 plan update. These new projects are included in the second table.

Prioritization of projects occurred as the plan was updated. These projects list the priority as high, medium and low. Generally speaking, high priority projects are projects that enable towns and villages to be fully functional during times of disasters. Medium and low projects are to improve other functions of towns and villages and address actual residents of these municipalities. Implementation of project will occur as funding is obtained. Any project can be implemented as funding, political will and other aspects are addressed.

The cost of several projects has been determined and included in the table below. Other mitigation projects have estimated the costs of these projects. The potential cost to implement mitigation projects have been ranked as high, medium or low cost. Low cost projects are those projects that would cost up to \$100,00. Medium cost projects are estimated to cost between \$100,000 and \$500,000. High cost projects are those projects that would cost over \$500,000.

Town of Saint Armand 2011 Mitigation Project										
Goal	Objective	Strategy	Lead Agency	Estimate	Target Date	Existing/New Buildings	Priority	Status	Progress	Issues
Reduce the impact of flooding	Eliminate road washouts	Road improvement project for Moose Pond Road	Town Supervisor / Board Town Highway, County DPW,	\$5,000	Fall 2011 ST	у	Medium		Completed	

Town of Saint Armand Mitigation Project 2019									
Project # and name	Goal addressed	Project or action	Hazard addressed	Lead Agency	Estimated cost	Timeframe to complete in years.	Potential funding sources	Priority (high, Medium , low)	Mitigation technique category
1. Union Lane culvert	#4 infrastructure	Replace 15- inch culvert	Floods	Town Hwy Dept	15K	1-5 years	County DPW, Town budget	High	Structure and infrastructure
2. Mill Lane culvert	#4 infrastructure	Replace 15- inch culvert	Floods	Town Hwy Dept	15K	1-5 years	County DPW, Town budget	High	Structure and infrastructure
3. School Street Culvert	#4 infrastructure	Replace 15- inch culvert	Floods	Town Hwy Dept	15K	1-5 years	County DPW, Town budget	High	Structure and infrastructure
4. Forest Hill Avenue culvert	#4 infrastructure	Replace 15- inch culvert	Floods	Town Hwy Dept	15K	1-5 years	County DPW, Town budget	High	Structure and infrastructure
5. Main Street culvert	#4 infrastructure	Replace 15- inch culvert	Floods	Town Hwy Dept	15K	1-5 years	County DPW, Town budget	High	Structure and infrastructure
6. Goodspeed Road culvert	#4 infrastructure	Replace 15- inch culvert	Floods	Town Hwy Dept	15K	1-5 years	County DPW, Town budget	High	Structure and infrastructure

7. Vine Street Culvert	#4 infrastructure	Replace 15- inch culvert	Floods	Town Hwy Dept.	15K	1-5 years	FEMA, Town budget	High	Structure and infrastructure
8. Roosevelt Street Culvert	#4 infrastructure	Replace 18- inch culvert	Floods	Town Hwy Dept.	20K	1-5 years	FEMA, Town	High	Structure and infrastructure
9. Buy out structures on River Road impacted by floods and other hazards.	#3	Buy outs	Floods	County DES	L/M depending on each structure.	1-5 years	FEMA HMGP PDM	High	Structure and infrastructure

Saint Armand will continue to implement projects and programs to reduce the effects of hazards to the town. The floodplain ordinance will continue to be enforced to ensure new construction is built to be resist to flood damages. Building codes must continue to be implemented to reduce damages from wind events and snow loads on structures. Current fire suppression programs, led by the DEC, will continue to ensure that wildfires mitigation occurs.

### Village of Saranac Lake

### Introduction

Saranac Lake lies in the northwest corner of Essex County. Parts of the Village of Saranac Lake are largely in Franklin County; the Essex County portion of Saranac Lake are covered by this plan, whereas the Franklin County portion of Saranac Lake is covered by the Franklin County Hazard Mitigation Plan.

The village of Saranac Lake covers parts of three towns (Harrietstown, St. Armand, and North Elba) and two counties (Franklin and Essex). The county line is within two blocks of the center of the village. The village boundaries do not touch the shores of any of the three Saranac Lakes; Lower Saranac Lake, the nearest, is a half mile west of the village. The northern reaches of Lake Flower, which is a wide part of the Saranac River downstream from the three Saranac Lakes, lie within the village.

The village lies within the boundaries of the Adirondack Park, 9 miles (14 km) west of Lake Placid. These two villages, along with nearby Tupper Lake, comprise what is known as the Tri-Lakes region. The village is at the intersection of New York State Route 3 and New York State Route 86. Essex County Road 33 enters the village from the southeast, and Franklin County Road 47 joins NY-86 immediately north of the village.

The climate of the region features long cold winters with considerable snowfall and comparatively short summers. Precipitation averages 38 inches throughout the year and temperatures can range from -40 to 100 degrees Fahrenheit.

Saranac Lake was named the best small town in New York State, and ranked 11th in the United States in The 100 Best Small Towns in America. In 1998, the National Civic League named Saranac Lake an All-America City, and in 2006 the village was named one of the "Dozen Distinctive Destinations" by the National Trust for Historic Preservation. 186 buildings in the village are listed on the National Register of Historic Places. It is home to the only carousel in the Adirondack Park. It is the finish point of the 90 Milers, a non motor powered boat race that takes place over 3 days. It was home to a TB clinic, and had a population of over 8,000 at the TB height in 1880. Author Mark Twain vacationed on Lake Flower in 1901 at the height of his fame. While there, he wrote a Conan Doyle spoof, "A Double-Barreled Detective Story"

Saranac Lake Table of Facts				
Land Area	3.0 sq miles, .2 miles water			
Incorporated Village(s)	Saranac Lake (501.6 acres)			
Hamlets	NA			
Population 2010 census	5,406 (2010 Census)			
Governance	Villages of Saranac Lake			
Total Assessed Valuation	Unknown			
Highest Elevation	1,545 ft			
Largest Lake	Lake Flower, Turtle Pond, Moody Pond			
River(s)	Saranac River			
Dams	1			
Bridges	2 county			
Interstate Highway	NA			
State Routes	3 & 86			
County Roads	33 and Franklin CR47			
Land in Agricultural Use	NA			
Land Classified Industrial (APA)	NA			
Classified Residential, as Hamlet (APA)	501 acres			
Hospital / Medical Facility	Adirondack Health Center			
Fire & Rescue	Yes			
Schools	Saranac Lake HS, Central School, 1 private school, Saint Bernard's			
Railroads	No longer running.			
Passenger Trains per day	NA			
Freight Trains per day	NA			
Ferry Dock(s)	NA			
Interstate Bridge	NA			
Largest Employer	School system			
Law Enforcement	NYSP, County Sheriff, Saranac Lake Police Depts.			
Correctional Facility	NA			
Power Utility Provider(s)	NYSEG Village Municipal Electric Department			
Water Supply Source(s)	2 village wells			
Emergency Shelters	High School			
Critical Facilities	Numerous			

## **Planning Process:**

A meeting was held on August 29, 2018 with the village mayor and highway department staff.

The village has the following planning mechanisms in place. Disaster recovery plan used for dam failure scenarios, floodplain regulation (2016), zoning regulations (2016), subdivision regulations (2016) comprehensive land use plan (2013), open space plan (2016) stormwater management plan (2016), capital improvement plan (2017), historic preservation plan (2016). The village also has building and fire codes that are updated annually. The Village also has a local waterfront revitalization program that is used to secure grants.

Village of Saranac Lake Pla	nning Documents
Disaster recovery plan	2016
Floodplain regulation	2016
Zoning regulations	2016
Subdivision regulations	2016
Comprehensive land use plan	2013
Open space plan	2016
Stormwater management plan	2016
Capital improvement plan	2017
Historic preservation plan	2016
Comprehensive emergency management plan	2017
Building codes	2017
Fire codes	2017

This hazard mitigation plan should be integrated into other existing plans in Saranac Lake. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will ensure that all enabling legislation have similar information in those documents. Integration can ensure consistency between enabling legislation.

Saranac Village completed a self assessment of their capabilities. The village has a planner, and engineer. Engineering services are also contracted out when needed. The Village used county emergency management staff to supplement village staff when needed. The code enforcement officer also serves as the floodplain administrator. Land surveying is contracted out when needed. DEC and APA staff are used for scientific expertise. The village has a GIS system, and hopes to continue expanding the resources for their position.

They also use County GIS when needed. Grant writing is completed using county staff and resources.

The village uses a variety of funding sources to implement plans and projects. They have a limited capital improvement program. CDBG have been used to fund housing or other economic projects. Water and sewer fees are used to maintain the current system and for capital projects. The village occasionally uses development impact fees for special projects, but this is rarely utilized. General fees are used for road, sidewalks, and parks.

The village ranked several categories of capabilities. Planning and regulatory, and administrative and technical capabilities were ranked as high. Financial, and education and outreach capabilities were ranked as moderate.

Critical facilities flood vulnerability was assessed as the plan was updated. The table below described if these facilities are located in the 500 year floodplain, if the facility has been flooded in the past, and if any kind of mitigation has been completed to reduce the flood potential to these structures. Generator capabilities was also assessed to determine if these facilities could function without electric power, a common issue for critical facilities during disaster events.

The police station, the communication center at 1 Main street and the Route 3 sewer plant are located in the 500-year floodplain. A continuous dam inspection and water release are mitigation for the police station. The communication center has a generator. The sewer plant was designed to be resistant to the 500-year flood. The fire station installed a generator in 2017. The communication system has 2 back up systems with Franklin County. The critical vehicle and equipment storage area has 2 portable generators, they are looking to secure funds to install a permanent generator. The EOC is working to be moved to 95 Pisgah Street. The other communication center at 100 Broadway has generators.

Saranac Lake Critical Facilities in Floodplains						
Critical Facility	500 year	Flooded in the	Mitigated	Generator		
	floodplain	past				
Police	Yes	Yes	No, relocation	Yes		
station/communication			needed			
center						
Fire	No	No	No	Yes		
station/communication						
center						
Critical	No	No	No	Yes		
vehicle/equipment						
storage facility						
Drinking water plant	No	No	No	Yes		
Waste water plant	Yes	No	Yes, above	Yes		
			BFE			
The town has identified one area that can be used for temporary housing needs after a disaster. They have selected the Saranac Lake Central School District Field at Petrova Avenue. Water, sewage and electric are adjacent to the site. This area has paved and unpaved areas that could be used for temporary housing units such as RV or mobile homes. The school is designated as the American Red Cross shelter and can be used for temporary housing of resident displaced by a hazard event. The school is located in Franklin County. In the past displaced resident have also obtained temporary housing with friends, relatives or neighbors.

Saranac Lake Temporary Housing	g for Displaced Residents
SL Central School District field	RV, mobile homes
(Franklin County	
SL Central School District (Franklin	ARC shelter
County)	

The following information concerns flood vulnerable structures in Saranac Lake. The numbers of actual structures in the flood vulnerable areas is most likely larger than the number of insured structures. Once the flood insurance rate maps are updated by FEMA, these new maps will determine the actual number of vulnerable structures

Saranac Lake Flood Insurance Facts					
2011	2018				
Number of policies	Number of policies				
15	17				

Saranac Lake will continue to manage their floodplains in the future. They will review and approve new development in the special flood hazard areas to ensure these structures are build compliant with the local floodplain ordinance. As the new FIRM are updated by FEMA, meetings will occur with floodplain managers, town supervisors and village mayors to provide training on the national flood insurance program. Compliance will be discussed at assessed at these meeting. Floodplain managers of the most vulnerable communities will be encouraged to join the state floodplain manager association to continue to increase their understanding of how to manage their flood vulnerable areas.

# Hazard Rankings:

Hazards profiled in the plan were raked for the 2019 plan update.

Village of Saranac Lake Hazard Ranking							
High Hazard	Earthquake, Floods, Hurricanes, Ice Storms, Severe Winter Storms,						
Medium Hazard	Drought, Extreme Temperatures, Hail Storms, High Winds, Landslides, Wildfires						
Low Hazard	Avalanches, Land Subsidence, Rail Events						







# **Potential Loss:**

Potential loss was calculated for Saranac Lake Village. The Essex County Real Property website was used to obtain data for all parcels in each jurisdiction. Data was manipulated to determine the number and value of each structures in each of the 9 class codes. The data was then totalled for the number of structures and value of structures in each class code. The number of structures impacted from the hazard event was calculated to be 10% of the total number of structures in each class code.

Essex County Real property Tax Services website has 9 class codes for property as follow.

100 Agriculture	200 Residential	300 Vacant Lands
400 Commercial	500 Recreation and Entertainment	600 Community services
700 Industrial	800 Public Services Lands and Parks	900 Forest, Conservation

Saranac Lake Potential Loss							
Class code	Acreage	Number of	structure	Number of	Pot loss		
		structures	value	structures			
				impacted			
100	0	0	\$0	0	\$0		
200	138.8	407	\$39,833,400	40.7	\$3,983,340		
300	128.75	22	\$101,830	2.2	\$10,183		
400	46.69	62	\$20,313,400	6.2	\$2,031,340		
500	8.07	6	\$1,292,900	0.6	\$129,290		
600	51.59	15	\$17,415,400	1.5	\$1,741,540		
700	12.23	1	\$90,000	0.1	\$9,000		
800	17.12	8	\$845,396	0.8	\$84,540		
900	2.04	1	\$1,900	0.1	\$190		
Total	405.29	522	\$79,894,226	52.2	\$7,989,423		

# **Mitigation Strategy:**

Prioritization of projects occurred as the plan was updated. These projects list the priority as high, medium and low. Generally speaking, high priority projects are projects that enable towns and villages to be fully functional during times of disasters. Medium and low projects are to improve other functions of towns and villages and address actual residents of these municipalities. Implementation of project will occur as funding is obtained. Any project can be implemented as funding, political will and other aspects are addressed.

The cost of several projects has been determined and included in the table below. Other mitigation projects have estimated the costs of these projects. The potential cost to implement mitigation projects have been ranked as high, medium or low cost. Low cost projects are those projects that would cost up to \$100,00. Medium cost projects are estimated to cost between \$100,000 and \$500,000. High cost projects are those projects that would cost over \$500,000.

The projects included in the 2011 plan was assessed. This project was not completed due to limited staff in the village. New project developed during the 2019 plan updated is located in the second table.

	Village of Saranac Lake 2011 Mitigation Project								
Goal	Objective	Strategy	Lead Agency	Estimate	Target Date	Existing/New Buildings	Priority	Progress	
Reduce the impact of <b>fire risk</b>	Participation in the "FireWise" Communities program, reviewing guidelines to develop a Best Practices summary	Village will review the summary and modifications will be made to zoning and permitting plans	Village Mayor, Board, Code Officer, Village Fire Officials	Covered in budget, staff will be utilized	Spring 2011 I	у	Η	No progress due to lack of time for village staff	

	Village of Saranac Lake Mitigation Projects 2019								
Project # and name	Goal addressed	Project or action	Hazard addressed	Lead Agency	Estimated cost	Timeframe to complete in years.	Potential funding sources	Priority (high, Medium, low)	Mitigation technique category
1. Village of Saranac Lake Police Station	#4 Infrastructure	Police Station in 100 year floodplain, facility needs to be relocated to less flood vulnerable location	Flooding	Village of Saranac Lake, Essex County	High	1-10 Years 1-5 years obtain funds, 5-10 implement project	FEMA, NYS DOS,	High	#2 structure and infrastructure
2. Acquire structures impacted by floods using federal or state funds	#3 acquire flooded structures	Buy out of structures	flooding	Village, County DES	L/M for each structure	1-10 years or after floods Year 1-5 obtain funds, 6-10 implement project	FEMA PDM or HMGP	High after floods	#2 structure and infrastructure
3. Village of Saranac Lake Development Code update	#5 Planning and Zoning	Update Development Code	All	Village of Saranac Lake	\$20,000	Completed 12-2016	Village	Low	#1 plans and regulations

4. Upgrade culverts as they are replaced	#4 infrastructure project	Culvert replacement	flooding	Village	Low	1-5 years	Village, County DPW	Medium	#2 structure and infrastructure
5. Ensure private dams in neighboring counties are safe	#4 infrastructure project	Dam maintenance	Flooding	Other Counties and towns	High	ASAP	Property owners of dam	High	#2 structure and infrastructure
6. Village of Saranac Lake, Lake Flower Dam	Protection of flooding infrastructure project	Natural Systems protection	Assure dam safety of Lake Flower Dam	Village	\$20 Million	20 years year 1-5 obtain funds, year 6-20 implement project	DEC, NYS DOS	High	#2 structure and infrastructure
7. Village of Saranac Lake Education of Public	Identify and collect address, contact information within 500 Year FIRM for communication	500 Yr Flood Map contact list	Education	Village of Saranac Lake, Developm ent	Low	1 year	Village budgets	High	Communicat ion with individuals within the flood area #4 education and outreach

Saranac Lake will continue to implement projects and programs to reduce the effects of hazards to the town. The floodplain ordinance will continue to be enforced to ensure new construction is built to be resist to flood damages. Building codes must continue to be implemented to reduce damages from wind events and snow loads on structures. Current fire suppression programs, led by the DEC, will continue to ensure that wildfires mitigation occurs.

### **Town of Schroon**

## Introduction:

The Town of Schroon is located in the southern part of Essex County, bordered by Minerva on the west, North Hudson on the north, Crown Point and Ticonderoga on the east, and the Warren County towns of Hague, Horicon and Chester on the south. The area of the town is 142 square miles. The topography is mountainous, with Hoffman Mt. being the tallest at 3,693 ft. in elevation. It is in the Blue Ridge Range in the northwestern part of town. The lowest elevation, 810 ft. is at the shore of Schroon Lake.

Schroon Lake is the summer home of the Seagle Music Colony. It is also home to Schroon-North Hudson Historical Museum, Natural Stone Bridge & Caves, and a 9-hole golf course located on Hoffman Road. Each September, hundreds of runners compete in the Adirondack Marathon, which finishes in downtown Schroon Lake. The roads around the lake constitute an almost perfect 26.4-mile distance. The Town of Schroon maintains public docks in the village area, which makes the shops and restaurants accessible to boaters. Schroon has two free municipal boat launches. New York State has public campsites on Schroon Lake and Paradox Lake.

There are many ponds and lakes in the town, the two largest being Schroon Lake at 6.5 square miles and Paradox Lake at 1.3 square miles.

Interstate Route 87 and US Route 9 traverse the town in a north-south direction and NY State Route 74 follows an east-west direction. These are connected to a small network of town roads.

Floods can occur in any season but are more likely in late winter or early spring when melting snow combines with rainfall to increase runoff. Ice jams can threaten bridges throughout the town. Population is concentrated along Rte. 9 near the lakeshore and hamlet area, with a small commercial section and residential area. There are seasonal residences throughout the town on the Schroon River and the many other ponds and lakes. Schroon has undertaken several mitigation measures in recent years including the installation of a new public water system, wastewater treatment, storm drain system and, currently, a cooperative dam repair project with towns to the south in Warren County.

Schroon Table of Facts			
Land Area	142 square miles/91,523.3 acres		
Incorporated Village(s)	NA		
Hamlets	Schroon Lake, Severance & Paradox		
Population 2010 census	1,654 (2010 Census)		
Governance	Town		
Total Assessed Valuation	\$318,461,040.00		
Highest Elevation	Hoffman Mt. – 3,693'		
Largest Lake	Schroon Lake (northern ⅔ in Town)		
River(s)	Trout Brook & Mill Brook, Schroon, Paradox		
Dams	8		
Bridges	7 County Road		
Interstate Highway	I-87 north/south		
State Routes	9 & 74		
County Roads	24, 34 & 67		
Land in Agricultural Use	NA		
Land Classified Industrial (APA)	NA		
Classified Residential, as Hamlet (APA)	1812.5 acres		
Hospital / Medical Facility	Schroon Lake Health Center		
Fire & Rescue	Schroon Lake Fire & Rescue		
Schools	Schroon Lake Central		
Railroads	NA		
Passenger Trains per day	NA		
Freight Trains per day	NA		
Ferry Dock(s)	NA		
Interstate Bridge	NA		
Largest Employer	NA		
Law Enforcement	NYSP & County Sheriff		
Correctional Facility	NA		
Power Utility Provider(s)	National Grid		
Water Supply Source(s)	Aquifer as of 2002		
Emergency Shelters	Fire Department		
Critical Facilities			

# **Planning Process:**

A meeting was held on June 14, 2018. The town supervisor, highway superintendent and code officer attended the meeting.

### **Capability assessment:**

The Town of Schroon has the following planning mechanisms to reduce risks in town: emergency operation plan, floodplain regulations, zoning regulations, subdivision regulations, comprehensive plan, open space management plan, stormwater management plan, natural resource protection plan, economic development plan, building codes, and fire codes.

Town of Schroon Planning Documents
Emergency operation plan
Floodplain regulations
Zoning ordinance
Subdivision regulations
Comprehensive plan
Open space management plan
Stormwater management plan
Natural resource protection plan
Economic development plan
Building codes
Fire codes
Comprehensive emergency management plan

This hazard mitigation plan should be integrated into other existing plans in Schroon. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will ensure that all enabling legislation have similar information in those documents. Integration can ensure consistency between enabling legislation

Schroon completed a self assessment of their capabilities. The code officer also serves as the floodplain administrator. Essex County staff is used for planning issues, grant writing and GIS. The County is used for engineering technical assistance, or firm is hired as needed. DEC and APA are used for scientific expertise.

The town uses a variety of funding sources to implement projects. CDBG are used for stormwater and sewer projects. Water and sewer fees are used to maintain the current systems. General revenue fees are used for water and sewer projects. The town has partnering agreements with the Essex County and other towns and villages for fire response, ambulance and other needs. National Grid has a tree trimming program.

Schroon conducts a variety of education and outreach programs. Facebook is used to outreach to residents and visitors. Storm spotters are trained in town for monitoring storms. School programs are delivered by the fire company and other programs are completed in the schools.

DEC conducts ongoing education efforts to residents and visitors in town. There are several environmental organizations that implement programs in town.

Schroon ranked several categories of abilities. They ranked planning and regulatory, administrative and technical, and financial capabilities as high. They ranked education and outreach efforts as moderate.

Critical facilities flood vulnerability was assessed as the plan was updated. The table below described if these facilities are located in the 500 year floodplain, if the facility has been flooded in the past, and if any kind of mitigation has been completed to reduce the flood potential to these structures. Generator capabilities was also assessed to determine if these facilities could function without electric power, a common issue for critical facilities during disaster events.

No critical facilities are located in the 500-year floodplain. The following were defined as critical facilities and all have generators for back up power. These are: police station, fire station, critical vehicle storage areas and buildings, emergency operations center, communication center, medical facilities, schools, drinking and water plants.

Schroon Critical Facilities in Floodplains					
Critical facility	500 year	Flooded in the	Mitigated	Generator	
	floodplain	past			
Police station	No	No	No	Yes	
Fire station	No	No	No	Yes	
Critical vehicle	No	No	No	Yes	
storage areas					
and buildings					
Emergency	No	No	No	Yes	
operations center					
Communication	No	No	No	Yes	
center					
Medical	No	No	No	Yes	
facilities					
Schools	No	No	No	Yes	
Drinking water	No	No	No	Yes	
plant					
Waste water	No	No	No	Yes	
plant					

Schroon has identified one area in town that can used for temporary housing. They identified the school field. There is power and water on site. This field area has paved and unpaved areas. Other areas can be available if needed. The school is an ARC shelter for residents. In the past displaced resident have also obtained temporary housing with friends, relatives or neighbors.

Town of Schroon Temporary Housing for Displaced Residents				
FacilityType of Housing				
Schroon school field	RV, mobile homes			
Schroon Lake Fire House	ARC shelter			

The following information concerns flood vulnerable structures in Schroon. The numbers of actual structures in the flood vulnerable areas is most likely larger than the number of insured structures. Once the flood insurance rate maps are updated by FEMA, these new maps will determine the actual number of vulnerable structures.

Schroon Flood Insurance Facts						
2011	2018					
Number of policies	Number of policies					
41	29					
Number of Repetitive loss	Number of Repetitive loss					
properties	properties					
0	2, single family homes					

The Town of Schroon will continue to manage their floodplains in the future. They will review and approve new development in the special flood hazard areas to ensure these structures are build compliant with the local floodplain ordinance. As the new FIRM are updated by FEMA, meetings will occur with floodplain managers, town supervisors and village mayors to provide training on the national flood insurance program. Compliance will be discussed at these meeting. Floodplain managers of the most vulnerable communities will be encouraged to join the state floodplain manager association to continue to increase their understanding of how to manage their flood vulnerable areas.

# **Hazard Ranking:**

Hazards that are profiled in this updated plan were ranked by town officials.

Town of Schroon Hazard Ranking					
High Hazard	Floods, High Winds,				
	Ice Storms, Severe Winter Storms.				
Medium	Drought, Extreme Temperatures, Hail				
Hazard	Storms, Wildfires.				
Low Hazard	Earthquakes, Avalanches, Hurricanes,				
	Land Subsidence, Landslides, Rail Events.				







# **Potential Loss:**

Potential loss was calculated for the Town of Schroon. The Essex County Real Property website was used to obtain data for all parcels in each jurisdiction. Data was manipulated to determine the number and value of each structures in each of the 9 class codes. The data was then totalled for the number of structures and value of structures in each class code. The number of structures impacted from the hazard event was calculated to be 10% of the total number of structures in the jurisdiction. The potential loss from the impact from hazard events was calculated to be 10% of the value of the structures in each class code.

Essex County Real property Tax Services website has 9 class codes for property as follow.

100 Agriculture	200 Residential	300 Vacant Lands
400 Commercial	500 Recreation and Entertainment	600 Community services
700 Industrial	800 Public Services	900 Forest, Conservation Lands and Parks

Schroon Potential Loss									
Class codes	Acreage	Number of	Structure	Number	Pot loss				
		Structures	Value	impacted					
100	28.66	1.00	\$195,000	0.10	\$19,500				
200	9183.63	1904.00	\$257,027,940	190.40	\$25,702,794				
300	11976.35	128.00	\$1,516,400	12.80	\$151,640				
400	394.50	106.00	\$23,730,900	10.60	\$2,373,090				
500	1297.29	37.00	\$18,143,600	3.70	\$1,814,360				
600	364.57	25.00	\$15,740,800	2.50	\$1,574,080				
700	3.08	2.00	\$94,600	0.20	\$9,460				
800	290.70	10.00	\$6,484,799	1.00	\$648,480				
900	59509.71	3.00	\$206,200	0.30	\$20,620				
Total	83048.49	2216.00	\$323,140,239	221.60	\$32,314,024				

## **Mitigation Strategy:**

Schroon reviewed the County wide projects and town specific projects from the 2011 plan. A status of these projects is noted in the first two tables. Schroon developed new mitigation projects as part of this plan update process.

Prioritization of projects occurred as the plan was updated. These projects list the priority as high, medium and low. Generally speaking, high priority projects are projects that enable towns and villages to be fully functional during times of disasters. Medium and low projects are to improve other functions of towns and villages and address actual residents of these municipalities. Implementation of project will occur as funding is obtained. Any project can be implemented as funding, political will and other aspects are addressed.

The cost of several projects has been determined and included in the table below. Other mitigation projects have estimated the costs of these projects. The potential cost to implement mitigation projects have been ranked as high, medium or low cost. Low cost projects are those projects that would cost up to \$100,00. Medium cost projects are estimated to cost between \$100,000 and \$500,000. High cost projects are those projects that would cost up to so so so so so so so and s

	Town of Schroon 2011 Mitigation Project									
Goal	Objective	Strategy	Lead Agency	Estimate	Target Date	Existing/New Buildings	Priority	status	Issues	
Reduce the impact of <b>flooding</b>	Eliminate potential bridge washout	Mitigate river flooding, raise bridge height; Rt. 74 Bridge	Town Supervisor/Board Town Highway, County DPW,	\$12,000,000	Fall 2013 LT	у	L	Not completed	Lack of funds	

The Town of Schroon has implemented several projects or programs in the past that has reduced the negative effects of hazards. The following table describes these projects. These projects were included in the 2011 hazard mitigation plan as County wide projects. These projects are included to reflect the total efforts of Schroon to mitigate hazards in Town.

Town of Schroon Review of County Projects										
Goal	Objective	Strategy	Lead Agency	Target Date	Status	Progress	Issues			
Reduce the impact of severe snow/ ice storms	Improve public awareness	Educate community residents regarding steps to be taken to decrease the impact of ice storms on property	County Office of Emergency Services, executives of each municipality, DPW	Fall 2010 Ongoi ng		Town uses Facebook for outreach and education				
Reduce the impact of severe snow/ice storms	Ensure efficient use of resources, during and after storm events	Coordinate emergency services, public works departments, and public utilities.	Services, Executives of each municipality, County executives	Fall 2010 ongoing		Town does this as SOP				
	Ensure for debris removal as soon as possible	Develop plans for debris management after severe winter snow/ice events.	DPW (County and Towns)	Fall 2010 ongoing	0	Highway department does this after disasters and when needed				

	Connect with elderly, handicapped, low- income, during major events.	Design a network of citizens that will check in on individuals during major events	Department of Social Services, Office of the Aging, Municipal	Fall 2010 ongoing		Fire Dept does this and neighbors do as well	
Reduce the potential damage and threat to life and property from wild/forest fires	Improve public awareness	Educate community residents regarding steps to be taken to decrease the impact of wild/forest fires on property	County Office of Emergency Services, executives of each municipality,	Fall 2010 Ongoing		Fire Dept does this	
Reduce the impact from severe storms/winds	Ensure existing storm related building codes are enforced and/or updated	Municipal executive to require Code Enforcement Officer to present building guideline details in the jurisdiction relating to	Executives of each municipality, county planner	Fall 2010 through 2011		Code officer enforces building codes	
Reduce the impact from severe storms/winds	Keep trees from threatening lives, property, and public infrastructure during storm events	Develop programs to monitor trees/limbs in storm areas.	DPW, (County, Towns)	Fall 2010 ongoing		Highway Dept and National Grid does this	
	Ensure for debris removal as soon as possible Ensure critical facilities have needed backup power	Develop plans for debris management after severe winter snow/ice events. Obtain funding to purchase generators for nursing homes and other critical facilities	DPW(County and Towns) County Office of Emergency Services, municipality	Fall 2010 ongoing Fall 2010 ongoing	Completed	Hwy Dept does this. All critical faculties have generators	

D 1 (1 ) (C	<b>F</b>			E 11 00 1 0	a 1	D 111	
Reduce the impact from	Ensure existing	Municipal executive to	Executives of	Fall 2010	Completed	Building	
earthquake	earthquake-related	require Code	each	through		codes have	
	building codes are	Enforcement Officer	municipality	2011		e quake	
	enforced. Provide	submit a report on				standards	
	training for local	earthquake-related					
	code enforcement	building codes in their					
	Ensure safe	Towns of Schroon	Executive of	Fall 2010		Codes are	
	development	Chesterfield Westport	municipality	Ongoing		enforced	
	development	Ticonderoga	code officers	Oligonig		which	
		Willshoro Jay	code officers			ensure safe	
		Wilmington and				developme	
		Flizabethtown enforce				nt	
		new IBC seismic				III	
		ratings educate					
		Tatings, cuucate					
Reduce the impact from	Eliminate	Identify and examine	DPW(County	Fall 2010		Replaced	Culverts
flooding	obstructions to	culverts in affected	and Towns)	ongoing		culverts	replaced as
	surface water	areas regularly, remove					needed as
	drainage	obstructions as					funds are
		necessary					available.
	Create effective	Identify, evaluate and	DPW(County	Fall 2010	Projects	Ongoing	Lack of
	flood mitigation	implement activities in	and Towns)	ongoing	completed as		funds
	activities for "hot	flood areas			they are		
	spots" within the				identified		
	county(see						
	Ensura all	Town zoning and	Executives of	Fall		Undated in	
	iurisdictions have	amergency codes to be	each	2010		1072 and	
	flood damage	reviewed and undeted	municipality	2010-		1972 and 1005	
	nrou uailiage	revieweu anu upualeu	municipanty	2012		1995,	
	identify flood					ordinanas	
	hozord aroos in						
	nazaro areas in					will be	
	Lown codes		l			undated	

Reduce the threat from tornado and hurricane	Ensure all jurisdictions provide for tree pruning, especially near utility lines	Jurisdictions will devise a consistent tree pruning plan to avoid potential power failures	Executives of each municipality	Fall 2010 - ongoing	Currently done by HWY dept.
Reduce the threat to life and property from <b>multiple</b> hazards	Maintain a current inventory of at-risk buildings and infrastructure	Continually update inventory of at-risk structures	Executives of each municipality	Fall 2010 ongoing	Record kept permanentl
Multiple Hazards	Maintain and expand emergency preparedness and response countywide	Increase communication and cooperation between County/local dpw and County/local emergency services. Link emergency services with hazard	Executives of each municipality, emergency responders (County and local)	Fall 2010 ongoing	Currently being done
	Educate citizens, public agencies, private property owners, businesses and schools on mitigating hazards	Develop, enhance and implement education programs, newsletters, school presentations informing groups about ways to reduce risk	Executives of each municipality, Superintendent of area school districts	Fall 2010 ongoing	Town Newsletter used to do education and outreach
	Ensure code enforcement and inspection services	Provide education and updated information to CEO	Executives of each municipality	Fall 2010 ongoing	Code officer does this
	Maintain documents used and required for the mitigation plan	Create a centralized library of all documents used	County Mitigation Officer	Fall 2010 ongoing	Brochures as part of updated HMP will be used in town

Protect property development from disaster prone areas county wide	Implement zoning regulations to discourage building new structures in disaster prone areas	Executives of each jurisdiction Municipal Zoning and Flood Plain Administrators	Fall 2010 ongoing	Enforcement of codes and site visits do this.	
Protect property development from disaster prone areas county wide	Implement building codes that reflect disaster resistant construction for new structures and renovation	Executives of each jurisdiction and Code Enforcement Officer	Fall 2010 ongoing	Enforcement of codes and site visits do this.	

The town of Schroon developed new mitigation projects for this updated plan. These new projects are included in the table below.

Town of Schroon Mitigation Projects 2019										
Project # and name	Goal	Project or	Hazard	Lead	Estimated	Timeframe	Potential	Priority	Mitigation	
	addressed	action	addressed	Agency	cost	to complete	funding	(high,	technique	
						in years.	sources	Medium,	category	
								low)		
1.Route 74 bridge, raise height to eliminate flooding	#4 Infrastructur e projects	Raise bridge	Floods	County PDW,	High	1-10 years Year 1-5 obtain funds, year 5-10 implement project	NYS DOT, EC DPW	Medium	#2 structure and infrastructur e project	

2. Schroon River Bank project, slope failure would change river course	#6 natural resource protection project	Investigate ways to stabilize 100 foot high bank	Floods	Schroon and N Hudson Towns	High	1-10 years	ACOE, DEC	High	#3 natural system protection
3. Replace culverts	#4 infrastructur e projects	Upgrade culverts that are undersized or failing	Floods	Town Hwy Dept	Low or medium	1-5 years	Town or county budgets	Medium	#2 structure and infrastructur e project
4. Acquire or buy out flooded structures first offering to repetitive loss properties	#3 buyout flooded homes	Buyouts	Floods	County DES, Town	L/M depending on structure	1-10 years Year 1-5 obtain funds, year 6-10 implement project	FEMA PDM or HMGP	Medium	#2 structure and infrastructur e projects.
5.Continue current efforts to mitigate hazards			All	Town	L/M/H depending on mitigation efforts	1-5 years	All potential sources	High	all

The Town of Schroon will continue to implement projects and programs to reduce the effects of hazards to the town. The floodplain ordinance will continue to be enforced to ensure new construction is built to be resist to flood damages. Building codes must continue to be implemented to reduce damages from wind events and snow loads on structures. Current fire suppression programs, led by the DEC, will continue to ensure that wildfires mitigation occurs.

## **Town of Ticonderoga**

### **Introduction:**

Ticonderoga is the southernmost town in Essex County. The name comes from the Mohawk tekontaró:ken, meaning "it is at the junction of two waterways". The Town of Ticonderoga (population 5042) encompasses an area of 88 square miles in the southeastern corner of Essex County and has frontage on both Lake George and Lake Champlain.

The village area is located along the outlet of Lake George also known as the La Chute River, which drains into Lake Champlain approximately a mile and a half downstream. Ticonderoga Creek joins the La Chute in the village. The commercial district and town services are located in the village with residential areas spread sparsely throughout the town. Baldwin, on the shore of Lake George, and Chilson and Paradox, in the west along State Route 74 each have residential areas. There are numerous lakes, ponds and streams in the less populated area to the west with several small mountains around 500 feet in elevation surrounding them.

The population of the town increases in the summer as tourists and seasonal residents take advantage of the lakeshores and outdoor recreational opportunities. Several annual events bring additional visitors, which also increase the area's vulnerability to certain hazards. The Town Supervisor, emergency personnel, and the police department work effectively together to reduce the potential of all hazards to the population. Resources of Ticonderoga include its schools, business community, historic sites, medical facility and recreational areas.

The town was the setting for historic battles and maneuvers during both the French and Indian War and the American Revolutionary War. Fort Ticonderoga, constructed by the French, who called it Fort Carillon, in the 1750s, marked the location of an important portage between the two lakes. Fort Ticonderoga brings tourists into town with American Revolutionary War reenactment as well as other programs offered by the National Park Service.

Attractions to the town also include numerous other tourist opportunities. A museum called the Star Trek Original Series Set Tour is located in Ticonderoga. It has been, and continues to be, visited by cast members of the show and of its spin-off and movies. The H.G. Burleigh House was built in 1894, and it was originally owned by U.S. Congressman Henry G. Burleigh, and has been on the National Register of Historic Places since 1988. In addition to the Burleigh House, the Amherst Avenue Historic District, Black Watch Library, Central School, Clark House, Community Building, Clayton H. Delano House, Crandall Marine Railway, Ferris House, Fort Ticonderoga, Frazier Bridge, Gilligan and Stevens Block, Hancock House, Lake George Avenue Historic District, Liberty Monument, Silas B. Moore Gristmill, NYS Armory, Pad Factory, Ticonderoga High School, Ticonderoga National Bank, Ticonderoga Pulp and Paper Company Office, and United States Post Office are listed on the National Register of Historic Places

Ticonderoga Table of Facts			
Land Area	88 square miles / 56,574.9 acres		
Incorporated Village(s)	Ticonderoga (836.2 acres)		
Hamlets	Chilson		
Population 2010 census	5042		
Governance	Town		
Total Assessed Valuation	\$379,161,590.00		
Highest Elevation	Peaked Hill (1,955 feet)		
Largest Lake	Putnam Pond and northern edge of Lake George		
River(s)	La Chute and Ticonderoga Creek		
Dams	8		
Bridges	7 County Road		
Interstate Highway	NA		
State Routes	9N, 22, 74		
County Roads	2, 3, 5, 7, 11, 39, 41, 43, 49, 56		
Land in Agricultural Use	8,300 acres		
Land Classified Industrial (APA)	1,048.4 acres		
Classified Residential, as Hamlet (APA)	1,055.8 acres		
Hospital / Medical Facility	Moses Ludington Hospital & Health Center – Ticonderoga		
Fire & Rescue	Ticonderoga Volunteer Fire Dept.		
Schools	Ticonderoga Central School, St. Mary's School		
Railroads	CP Rail north/south		
Passenger Trains per day	Amtrak 68, 69 (2)		
Freight Trains per day	Approximately 5		
Ferry Dock(s)	Ticonderoga to Shoreham, VT (seasonal)		
Interstate Bridge	N/A		
Largest Employer	International Paper Co. – Ticonderoga		
Law Enforcement	NYSP & County Sheriff		
Correctional Facility	N/A		
Power Utility Provider(s)	Niagara Mohawk		
Water Supply Source(s)	Goose Neck Pond, Lake George, Private Wells		
Emergency Shelters			
Critical Facilities			

## **Planning Process**

Two meetings were held to update the Town portion of the County plan. The meetings occurred on May 29, and June 29. Meetings attendees were the Town Supervisor, and the code enforcement officer.

#### **Capability Assessment:**

The Town has several planning ordinances that affect development in the Town. The Town has adopted a CEMP (comprehensive emergency management plan), floodplain ordinance, zoning ordinance, subdivision regulations, comprehensive Town plan, farmland preservation ordinances, building and fire codes. These documents ensure that new development is constructed compliant to these regulations and make them less vulnerable to natural hazards.

Ticonderoga Planning Documents
Comprehensive emergency
management plan
Floodplain ordinance
Zoning ordinance
Subdivision regulations
Comprehensive Town plan
Farmland preservation
ordinances
Building codes
Fire codes

This hazard mitigation plan should be integrated into other existing plans in Ticonderoga. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will ensure that all enabling legislation have similar information in those documents. Integration can ensure consistency between enabling legislation.

The Town has a planning board, town engineer, and code officer who are involved in new development. The Town supervisor is also the Town emergency manager during disasters. The code enforcement officer also serves as the floodplain administrator. Essex County staff is used for GIS needs. Grant writing is performed by Pride, a private consultant. Ticonderoga also coordinates with Ticonderoga Montcalm Street Partnership and Ticonderoga Revitalization Alliance on projects to improve the Town.

The town has used a variety of fiscal resources to improve the town. Capital improvement funds were used to complete the Alfandre Study. Community Development Block Grants were used to make the Armory/Community Building ADA complaint. These funds were also used to install the Street Road water main for potable water. Water and sewer fees are used for maintenance and expansions of water and sewer systems. Other general revenue sources are used to complete other water and

sewer projects. Intergovernmental agreements are used for an intermunicipal sewer agreements. Additional MOU and agreements are with towns and the County for daily work and special projects.

Ticonderoga also conducted a self assessment of education and outreach. The Town is currently a FireWise community. They are interested in the Storm Ready program for natural hazards. The Town benefits from Essex County safety related school programs. The town also has an Everbridge Resident Awareness Program, Sewer protection right to know, and NY alert. Public private coordination and programs consist of VOAD (volunteers' organization active in disaster). which are used post disaster for helping residents impacted by natural disasters. Facebook is used for communication with town residents during a disaster.

The Town also completed a self assessment of 4 areas. Planning and regulatory; and administrative and technical capabilities were ranked as high. Financial and education and outreach capabilities were ranked as limited. The town assessed these could be improved by continuing to obtain grants to improve town and that Facebook will be used to educate and make residents aware of hazards.

Critical facilities were assessed as the plan was updated in 2018. The fire station and waste water treatment plant are located in the 500 year floodplain. These facilities have a generator. Two private utility providers (LaChute Hydro and National Grid) have substations located in the 500 year floodplain. It is unknown if they have generators. The police station, medical facility, drinking water plant are not located in the 500 year floodplain; these facilities have generators. The critical vehicle and equipment storage facilities, and schools are not located in the 500 year floodplain. It is unknown if these have generators. The communication center is not in the 500 year floodplain. This facility needs a generator.

Ticonderoga Critical Facilities in Floodplains					
Critical facility	500 year floodplain	Flooded in the past	Mitigated	Generator	
Police station	Yes	No	No (New facility needed due to condition of current station)	Yes	
Fire station	Yes	Yes	No (New facility needed due to condition of current station)	Yes	
Critical vehicle storage areas and buildings	No	No	No (Need facility needed due to condition of current station)	Unknown	

Emergency	No	No	No	Yes
operations center				
Communication	No	No	No	No
center				
Medical	No	No	No	Yes
facilities				
Schools	No	No	No	Unknown
Drinking water	No	No	No	Yes
plant				
Waste water	Yes	Yes	No (Berm	Yes
plant			needed around	
			facility)	
Utility/power	Yes	Yes	No (investigate	Most likely
stations			mitigation	
			options)	
International	Some	Yes	Unknown	Not necessary
Paper, Tier 2				due to routine
facility				operations.

The Town has identified three areas that can be used as temporary housing after a disaster. The Lowe's parking lot, Fireman's Field, and Burgoyne Triangle will be used after a disaster. All sites have power and water. The town has several ARC shelters that can accommodate Ticonderoga residents as well as residents from other towns. In the past displaced resident have also obtained temporary housing with friends, relatives or neighbors.

Ticonderoga Temporary Housing			
for Displaced Residents			
Facility	Type of		
	housing		
Lowe's parking lot	RV,		
	mobile homes		
Fireman's Field	RV,		
	mobile homes		
Burgoyne Triangle	RV, mobile homes		
Ticonderoga Central school district	ARC shelter		
Ticonderoga High	ARC Shelter		
School			
Ticonderoga Town Hall	ARC Shelter		
Ticonderoga Elementary School	ARC Shelter		
Ticonderoga Fire House	ARC Shelter		
Ticonderoga Town Armory	ARC Shelter		

The following information concerns flood vulnerable structures in Ticonderoga. The numbers of actual structures in the flood vulnerable areas is most likely larger than the number of insured structures. Once the flood insurance rate maps are updated by FEMA, these new maps will determine the actual number of vulnerable structures.

Ticonderoga Flood Insurance Facts			
2011	2018		
Number of	Number of		
policies	policies		
17	4		

Ticonderoga will continue to manage their floodplains in the future. They will review and approve new development in the special flood hazard areas to ensure these structures are build compliant with the local floodplain ordinance. As the new FIRM are updated by FEMA, meetings will occur with floodplain managers, town supervisors and village mayors to provide training on the national flood insurance program. Compliance will be discussed at these meeting. Floodplain managers of the most vulnerable communities will be encouraged to join the state floodplain manager association to continue to increase their understanding of how to manage their flood vulnerable areas.

## **Hazard Ranking:**

Hazard were ranked when the plan was updated in 2018. The following table indicates the perceived vulnerability ranking for the 2018 plan update.

Ticonderoga Hazard Ranking			
High	Flood, Hail Storms, High		
Hazard	Winds, Ice Storms, Rail		
	Events		
Medium	Drought, Extreme		
Hazard	Temperatures,		
	Hurricanes, Landslides,		
Low	Avalanche, Earthquakes,		
Hazard	Land Subsidence and		
	expansive soils, Severe		
	Winter Storms, Wildfires.		

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# **Potential Loss:**

Potential loss was calculated for each town and village in Essex County. The Essex County Real Property website was used to obtain data for all parcels in each jurisdiction. Data was manipulated to determine the number and value of each structures in each of the 9 class codes. The data was then totalled for the number of structures and value of structures in each class code. The number of structures impacted from the hazard event was calculated to be 10% of the total number of structures in each class code. The potential loss from the impact from hazard events was calculated to be 10% of the value of the structures in each class code.

Essex County Real property Tax Services website has 9 class codes for property as follow.

100 Agriculture	200 Residential	300 Vacant Lands
400 Commercial	500 Recreation and Entertainment	600 Community services
700 Industrial	800 Public Services Lands and Parks	900 Forest, Conservation

Ticonderoga Potential Loss					
Class code	Acreage	Number of	Structure	Number of	Potential
		structures	Value	impacted	Loss
				structures	
100	3341.53	18	\$1,199,800	2	\$119,980
200	8749.32	2053	\$188,305,540	205	\$18,830,554
300	6452.37	94	\$1,057,000	9	\$105,700
400	1939.45	169	\$41,277,100	17	\$4,127,710
500	399.77	19	\$3,314,300	2	\$331,430
600	512.47	40	\$79,508,400	4	\$7,950,840
700	725.15	5	\$15,239,300	1	\$1,523,930
800	491.44	14	\$11,901,796	1	\$1,190,180
900	29201.36	6	\$268,301	1	\$26,830
Total	51812.86	2418.00	\$342,071,537	241.80	\$34,207,154

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### **Mitigation Strategy:**

The mitigation strategy included in the 2011 plan was reviewed to determine if the project(s) were completed. The one project was completed and will reduce flooding. New mitigation projects were identified for the 2019 plan update. These new projects are included in the table below.

Prioritization of projects occurred as the plan was updated. These projects list the priority as high, medium and low. Generally speaking, high priority projects are projects that enable towns and villages to be fully functional during times of disasters. Medium and low projects are to improve other functions of towns and villages and address actual residents of these municipalities. Implementation of project will occur as funding is obtained. Any project can be implemented as funding, political will and other aspects are addressed.

The cost of projects	The cost of several projects has been determined and included in the table below. Other mitigation projects have estimated the costs of these projects. The potential cost to implement mitigation projects have been ranked as high, medium or low cost. Low cost projects are those									
Goal	Objective	Strategy	L	Estimate	Target	Existing/	Priority	Status	Progress	Issues
Reduce the impact of <b>flooding</b>	Eliminate road flooding / possible road closure.	Replace and increase size of culvert on Hayford Road and replace three concrete box culverts on Charbonneau Road.	Town Supervisor, Board Town Highway, County DPW.	\$80,000	Fall 2012 ST	y	М	Completed		

Town of Ticonderoga Mitigation Projects 2019									
Project # and name	Goal addressed	Project or action	Hazard addressed	Lead Agency	Estimated cost	Timeframe to complete in years.	Potential funding sources	Priority (high, Medium , low)	Mitigation technique category
1. Fire Hydrant Mapping	#5 plans & regulations	Map fire hydrants and determine pressure capabilities	Fires (wildland or structures)	Fire Dept.	Low	2019	None, current town budgets	High	Plans and regulations or Infrastructure
2. Develop Safety Committee	#5 plans & regs	Develop comm. for coordination of mitigation actions	All concerns	Town Supervisor	Low	2020	None, current town budget	High	Education Outreach Plans
3. Develop Newsletter as outreach	#7 education & outreach	Newsletter for ed to public	All	Town	Low	2019	Town budgets	High	Education Outreach Plans
4. Coordinate with EC DPW to clean up debris under bridges	#4 infrastructure	Maintenance of bridges	Flooding	Town Hwy Dept & County DPW	Low	2020	Town budgets	High	Infrastructure
5. Autumn culvert maintenance program (remove leaves)	#4 infrastructure	Maintenance of culverts	Flooding	Town Hwy dept.	Low	2020	Town budgets	High	Infrastructure

6. Construct new police station	#4 infrastructure	New police station	all	Town Supervisor and County	1 million	Unknown	NYS DOS	High	Infrastructure
7. Construct new fire station	#4 infrastructure	New fire station	all	Town	1 million	1-10 years year 1-5 obtain funds year 6-10 build fire station	FEMA fire grants, NYS DOS	High	Infrastructure
8. Obtain generator for communications center	#4 infrastructure	Critical facility needs back up power	all	Town supervisor	10K	2020	FEMA Town budgets	High	Infrastructure

Ticonderoga will continue to implement project and programs to reduce the effects from disasters that impact the Town.

# **Town of Westport**

# **Introduction:**

The Town of Westport (pop. 1312, 68 sq. miles in area) is located in eastern Essex County. It is bordered by Lake Champlain on the east, the Towns of Essex and Lewis to the north, Elizabethtown to the west, and the Town of Moriah to the south. Westport has considerable frontage on Lake Champlain, which lends to its appeal as a seasonal resort. The summer brings an increase in population and use of town facilities, with summer residents, visitors and two established children's summer camps on the shores of Lake Champlain. There are forested areas with small ponds and several streams draining higher elevations.

The Boquet River flows roughly northeast through the riverside hamlet of Wadhams. The Canadian Pacific Rail lines run north/south through the eastern part of town and Interstate Route 87 cuts through the northwestern corner for approximately 4 miles near Wadhams. State routes 9N and 22 as well as several town and county roads link small clusters of residences and farms and the two hamlet areas.

Westport is home to Camp Dudley, the oldest summer camp in continuous operation in the United States. Westport is known as the ice fishing capital of Essex County. Westport is home of one of the only two professional theatres in the Adirondacks proper. The Depot Theatre was founded in 1979, and operates out of the historic Amtrak railway station. The 136-seat, air-conditioned theatre hosts plays and musicals on its main stage during the summer months, as well as an annual gala.

The Camp Dudley Road Historic District, Champlain II Shipwreck, Essex County Fairgrounds, First Congregational and Presbyterian Society Church of Westport, Lake View Grange No. 970, and Vergennes Canal Boat are listed on the National Register of Historic Places.

Several sites on the Lake Champlain Birding Trail are located in Westport:

- Coon Mountain Preserve (administered by The Nature Conservancy)
- Webb Royce Swamp
- Westport Boat Launch

Westport, like many towns and villages in Essex County has been a lake based tourist economy for over 100 years.

Westport Table of Facts			
Land Area	68 square miles/4,916 acres		
Incorporated Village(s)	NA		
Hamlets	Westport & Wadhams		
Population 2010 census	1,312 (2010 Census)		
Governance	Town		
Total Assessed Valuation	\$134,304,825.00		
Highest Elevation	Campbell Mt. – 1,939'		
Largest Lake	Lake Champlain – eastern border		
River(s)	Boquet, Stacey Brook & Hoisington Brook		
Dams	10		
Bridges	2 County Road		
Interstate Highway	I-87 northwestern edge of Town		
State Routes	9N & 22		
County Roads	8, 9, 10, 44, 59 & 60		
Land in Agricultural Use	14,000 acres		
Land Classified Industrial (APA)	NA		
Classified Residential, as Hamlet (APA)	759.1 acres		
Hospital / Medical Facility	Westport Health Center		
Fire & Rescue	Westport Fire & Rescue & Wadhams Fire Dept.		
Schools	Westport Central		
Railroads	CP Rail north/south		
Passenger Trains per day	Amtrak 68 & 69 2/day		
Freight Trains per day	Approx. 5/day		
Ferry Dock(s)	NA		
Interstate Bridge	NA		
Largest Employer	General Composite		
Law Enforcement	NYSP & County Sheriff		
Correctional Facility	NA		
Power Utility Provider(s)	Niagara Mohawk		
Water Supply Source(s)	Lake Champlain, Springs & Private wells		
Emergency Shelters	Westport Central School		
Critical Facilities			

# **Planning Process:**

Three meetings were held in Westport, one May 7<sup>th</sup>, one July 12<sup>th</sup> and one August 9<sup>th</sup>. The Town Supervisor, Superintendent of the Department of Public Works, and Code Enforcement Officer were present at all three meetings.

# **Capability Assessment:**

The Town has the following planning mechanism for Westport. Emergency operations Plan (2017), Disaster Recovery Plan (2017), floodplain regulations (1987), zoning regulations (1995), subdivision regulations ((1987), comprehensive plan (1995), open space plan (1995) stormwater management plan (2016), natural resource protection plan (1995), economic development plan (2016), farmland preservation plan (2016), building code (1985), and fire codes (1985), comprehensive emergency management plan (2018). These codes ensure that new development is located in a proper location and constructed to minimize damage from hazard events.

Westport Planning Documents				
Emergency operations Plan	2017			
Disaster Recovery Plan	2017			
Floodplain regulations	1987			
Zoning regulations	1995			
Subdivision regulations	1987			
Comprehensive plan	1995			
Open space plan	1995			
Stormwater management plan	2016			
Natural resource protection plan	1995			
Economic development plan	2016			
Farmland preservation plan	2016			
Building code	1985			
Fire codes	1985			
Comprehensive emergency management plan	2018			

This hazard mitigation plan should be integrated into other existing plans in Westport. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will ensure that all enabling legislation have similar information in those documents. Integration can ensure consistency between enabling legislation.

Westport completed a self-assessment of their capabilities. The town has building code staff who is well versed on construction practices, and serves as the floodplain administrator. The Supervisor serves as the emergency manager during disasters. The town coordinates with the county resources of GIS, planners, grant writers, and engineering as needed for projects. The town hires other professionals, such as land surveyors, as needed. The DEC and APA assist the town with environmental or scientific data needs.

The town uses a variety of funding sources to implement projects. They have used capital improvement funds for water, sewer, and road infrastructure projects. Community development block grants, CDBG, have been used for housing rehabilitation and visitor center building rehabilitation. Special taxes have been used in the past for sewer and water projects. Water and sewer fees are also used for operation and maintenance of existing water and sewer systems. Special tax bonds have been used for upgrades to existing water and sewer systems. Westport has a variety of intergovernmental agreements with towns and the County for sharing of resources during normal day-to-day projects, as well as during times of disasters.

Westport conducts a variety of education and outreach projects. The fire department conducts seminars on a variety of topics. Flyers are distributed on water quality and use, fire safety, and hazardous chemical pick up. The town coordinated with the Boquet River association and Lake Champlain Watershed Advisory Group of on water quality issues.

The town ranked several categories of abilities. Planning and regulatory capability; administrative and technical capabilities; and financial capabilities were all ranked as high. Education and outreach were ranked as a medium capability.

Critical facilities flood vulnerability was assessed as the plan was updated. The table below described if these facilities are located in the 500 year floodplain, if the facility has been flooded in the past, and if any kind of mitigation has been completed to reduce the flood potential to these structures. Generator capabilities was also assessed to determine if these facilities could function without electric power, a common issue for critical facilities during disaster events. The town has fire stations, critical vehicle equipment storage facilities, emergency operation centers, communications center, health care facilities, schools, public and private utility facilities. These facilities are not located in the 500-year floodplain, and all of these facilities have a generator. The town sewer plant is located in the 500-year floodplain of Lake Champlain. A study needs to be completed to determine effects of the 500-year flood to this facility. The new updated FIRM will be able to determine depth of the 500-year flood to this facility. Mitigation measures can be developed once the vulnerability is assessed to the 500-year flood.

Westport Critical Facilities in Floodplains								
Critical facility	500 year floodplain	Flooded in the past	Mitigated	Generator				
Police station	No	No	No	Yes				
Fire station	No	No	No	Yes				
Critical vehicle storage areas and buildings	No	No	No	Yes				
Emergency operations center	No	No	No	Yes				
Communication center	No	No	No	Yes				
Medical facilities	No	No	No	Yes				
Schools	No	No	No	Yes				
Drinking water plant	No	No	No	Yes				
Waste water plant	Yes	Yes	No (need to determine inundation level of 500 year flood)	Yes				

The town has identified one area that can be used for temporary housing needs after a disaster, the site of the old landfill. No power, water or sewer is located at the site. The school is designated as the American Red Cross shelter and can be used for temporary housing of resident displaced by a hazard event. In the past displaced resident have also obtained temporary housing with friends, relatives or neighbors.

Westport Temporary Housing for Displaced Residents				
Facility	Type of housing			
Old landfill	RV, mobile homes			
Mental Health Association of Essex County	ARC shelter			
Westport Central Schools	ARC shelter			

The following information concerns flood vulnerable structures in Westport. The numbers of actual structures in the flood vulnerable areas is most likely larger than the number of insured structures. Once the flood insurance rate maps are updated by FEMA, these new maps will determine the actual number of vulnerable structures.

Westport Flood Insurance Facts					
2011	2018				
Number of policies	Number of policies				
7	17				
Number of repetitive loss properties	Number of repetitive loss properties				
1	1 non residential				

Westport will continue to manage their floodplains in the future. They will review and approve new development in the special flood hazard areas to ensure these structures are build compliant with the local floodplain ordinance. As the new FIRM are updated by FEMA, meetings will occur with floodplain managers, town supervisors and village mayors to provide training on the national flood insurance program. Compliance will be discussed at these meeting. Floodplain managers of the most vulnerable communities will be encouraged to join the state floodplain manager association to continue to increase their understanding of how to manage their flood vulnerable areas.

# **Hazard Ranking:**

Hazards profiled in this updated plan were ranked. The following table indicates the vulnerability to these hazards to Westport.

	Westport Hazard Ranking
High	Flood, High Wind, Ice Storms, Severe Winter
Hazard	Storms, Rail Events
Medium Hazard	Drought, Hail storms, Hurricanes, Wildfires
Low	Avalanche, Earthquakes, Land Subsidence Extreme
Hazard	Temperature Events, and xpansive soils,







# **Potential Loss:**

Potential loss was calculated for the Town of Westport. The Essex County Real Property website was used to obtain data for all parcels in each jurisdiction. Data was manipulated to determine the number and value of each structures in each of the 9 class codes. The data was then totalled for the number of structures and value of structures in each class code. The number of structures impacted from the hazard event was calculated to be 10% of the total number of structures in each class code.

Essex County Real property Tax Services website has 9 class codes for property as follow.

100 Agriculture	200 Residential	300 Vacant Lands
400 Commercial	500 Recreation and Entertainment	600 Community services
700 Industrial	800 Public Services Lands and Parks	900 Forest, Conservation

Westport Potential Loss									
Class code	Acreage	Number of	Structure	Number of	Pot Loss				
		Structures	Value	structures					
				Impacted					
100	5597.01	21.00	\$1,967,100	2.10	\$196,710				
200	8742.73	759.00	\$101,170,505	75.90	\$10,117,051				
300	4640.76	47.00	\$487,200	4.70	\$48,720				
400	118.59	37.00	\$5,317,700	3.70	\$531,770				
500	751.55	14.00	\$11,276,200	1.40	\$1,127,620				
600	81.92	24.00	\$6,976,400	2.40	\$697,640				
700	54.31	3.00	\$344,600	0.30	\$34,460				
800	1533.15	13.00	\$2,142,222	1.30	\$214,222				
900	15142.05	11.00	\$634,200	1.10	\$63,420				
Total	36662.07	929.00	\$130,316,127	92.90	\$13,031,613				

# Mitigation strategy:

Prioritization of projects occurred as the plan was updated. These projects list the priority as high, medium and low. Generally speaking, high priority projects are projects that enable towns and villages to be fully functional during times of disasters. Medium and low projects are to improve other functions of towns and villages and address actual residents of these municipalities. Implementation of project will occur as funding is obtained. Any project can be implemented as funding, political will and other aspects are addressed.

The cost of several projects has been determined and included in the table below. Other mitigation projects have estimated the costs of these projects. The potential cost to implement mitigation projects have been ranked as high, medium or low cost. Low cost projects are those projects that would cost up to \$100,00. Medium cost projects are estimated to cost between \$100,000 and \$500,000. High cost projects are those projects that would cost over \$500,000.

Westport officials reviewed the County wide projects included in the 2011 plan. They provided a status of these projects for Westport. These projects were implemented in addition to the specific projects for Westport. The mitigation projects that were included in the 2011 hazard mitigation were reviewed. This project was not completed as funding for the generator was not obtained for the project. New mitigation projects developed during the 2019 update are noted in the table below.

Essex County Mitigation Projects 2011 Hazard Mitigation Plan									
Goal	Objective	Strategy		Target Date	Status	Progress	Issues		
Reduce the	Eliminate slippage due	Monitor areas affected	County/Town	Ongoing	Completed	Done	Need to		
Impact	to heavy rains near	and take appropriate	DPW's and		River Road		Monitor area		
of <b>landslides</b>	roadways	action as needed	Municipal executives		Stabilization.				
Reduce the impact	Create open space	Investigate and pursue	Municipal executives	Ongoing	Completed Acquired Property for				

of <b>landslides</b>	zones where necessary	potential land acquisition in areas where damage can be severe			Open space on River Road		
Reduce the impact of severe snow/ ice storms	Improve public awareness	Educate community residents regarding steps to be taken to decrease the impact of ice storms on property	County Office of Emergency Services, executives of each municipality, DPW	Fall 2010 Ongoing	Need to create public awareness Program.	Ongoing	Need funds And personnel personnel
Reduce the impact of severe snow/ ice storms	Keep trees from threatening lives, property, and public infrastructure during storm events	Develop programs to prune trees/limbs in storm prone areas.	DPW,(County, Towns)	Fall 2010 ongoing	Town DPW has <b>On going</b> Program to Maintain trees In storm areas.		
Reduce the impact of severe snow/ ice storms	Ensure critical facilities have needed backup power	Obtain funding for purchase or for maintenance of generators for nursing homes and other critical facilities	County Office of Emergency Services, executives of each municipality	Fall 2010 ongoing	Need standby Generator at Town Hall, DPW Building		Need funding

Reduce the	Identify	Survey these	County Office	Fall 2010	Fire Dept ladies	Ongoing	Need to
impact of	emergency	institutions as to their	of Emergency	ongoing	Auxiliary keeps		check on updated list
severe snow/ ice storms	concerns of specific	requirements, following	Services,		List of specific		Updated list
	needs populations	the lead of Minerva's	Social Services		Needs individuals		
		residents survey	Department,				
			Municipal				
Reduce the impact of severe snow/ ice storms	Ensure efficient use of resources, during and after storm events	Coordinate emergency services, public works departments, and public utilities.	Executives of each municipality, County executives	Fall 2010 ongoing	On going working co- operatively with all agencies.		
Reduce the impact of severe snow/ ice storms	Ensure for debris removal as soon as possible	Develop plans for debris management after severe winter snow/ice events.	DPW(County and Towns)	Fall 2010 ongoing	Completed		DEC—no longer allows burning at dump for
Reduce the	Connect with elderly,	Design a network of	Department of	Fall 2010	Working with		Survey
severe snow/ ice storms	handicapped, low- income, during major events.	on individuals during major events	Social Services, Office of the Aging, Municipal	ongoing	all agencies Ongoing		population
Reduce the potential damage and threat to life and property from	Improve public awareness	Educate community residents regarding steps to be taken to decrease the impact of wild/forest fires on property	County Office of Emergency Services, executives of each municipality,	Fall 2010 Ongoing	On Going		

Goal	Objective	Strategy	Lead Agency	Target Date	Status	Progress	Issues
Reduce the	Provide ample fire	Hydrants maintained,	Municipal	Fall 2010	Fire hydrants		
potential damage	hydrants for each	replaced and # increased	executive		updated and		
and threat to life	jurisdiction	in recommended areas,	assisted by		increased in		
and property from		specifically in Town of	Volunteer Fire		2006.		
wild/forest		Minerva, also	Departments		Completed		
		throughout the county			Completed		

Reduce the	Ensure existing storm	Municipal executive to	Executives of	Fall 2010	Completed	Snow, wind,
impact from	related building codes	require Code	each	through		flood
covoro	are enforced and/or	Enforcement Officer to	municipality,	2011		building
storms/winds	updated	present building	county			codes
storms/ winus		guideline details in the	planner			currently
		jurisdiction relating to				enforced.
		severe storms				

Goal	Objective	Strategy	Lead Agency	Target	Status	Progress	Issues
				Date			
Reduce the impact	Ensure existing	Municipal executive to	Executives of	Fall 2010	Completed		Seismic
from	earthquake-related	require Code	each	through	and ongoing		Zone c
earthquake	building codes are	Enforcement Officer	municipality	2011			building
carinquake	enforced. Provide	submit a report on					codes in
	training for local code	earthquake-related					effect.
	enforcement officials	building codes in their					
		jurisdiction					
1							

Goal	Objective	Strategy	Lead Agency	Target Date	Status	Progress	Issues
Reduce the impact	Upgrade to digitized	Encourage the County	County Planner	For 5	FEMA		Need
from	FEMA maps	to participate		year	starting		maps
flooding				update	updating of		updated
nooung					FIRM for		combine
					County		former
							village &
							town
							maps.

I	Reduce the impact	Establish and train a	Use programs	County	Fall 2011	Code	
	from	Floodplain	established by FEMA	Floodplain	•	Enforcement	
	flooding	Administrators for each	and NYS Floodplain/	Manager	-ongoing	Officer is	
ľ	lioounig	jurisdiction	Storm water Managers	(Director of		the Floodplain	
			Association	Emergency		administrator	
				Services)			
				Executives of			
				each			

The following table lists the projects included in the 2011 hazard mitigation plan for Westport. A status is included in the table below.

		Town of Westp	oort Mitigation Pro	ject 2011 Haz	ard Mitig	ation Pla	n		
Goal	Objective	Strategy	Lead	Estimate	Target	Priority	Status	Progress	Issues
Reduce the impact of <b>flooding</b>	Eliminate potential road washout	Install new larger culvert on Ledge Hill Road, where Hoisington Brook crosses under road	Agency Town Supervisor/Board Town Highway, County DPW,	\$250,000	Fall 2012 ST	М	Not done yet	Waiting for approval	Waiting for grant

New mitigation projects were developed during the 2019 update. These projects are listed in the table below.

		Town o	of Westpor	rt Mitigati	on Projec	ts 2019			
Project # and name	Goal/, Objective addressed	Project or action	Hazard addressed	Lead Agency	Estimated cost	Timeframe to complete in years.	Potential funding sources	Priority (high, Medium , low)	Mitigation technique category
1. Generators for critical facilities.	#4 Infrastructure project	Town Hall DPW garage need generators	Loss of power from major storm events	Town Supervisor	\$30,000	Two years from time of application.	FEMA town budgets	High	#2 Structure and infrastructure project
2. Sewer Plant Berm Keep plant and filter beds from flooding during a flood event	#4 Infrastructure projects.	Construct Berm around Wadhams sewer 2 filter bed area.	Flooding	Town of Westport	500,000	2020	FEMA PDM NYS DOS	High	#2 Structure and infrastructure project
3. Purchase structures impacted by floods especially rep loss structure.	#3 acquire flooded structures.	Buy out flooded structures	Flooding	Town, EC DES	L/M depending on each structure	1-5 years or after flood event	FEMA HMGP PDM	High	#2 Structure and infrastructure project
4. Generator for commercial fuel provider	#4 Infrastructure projects.	Obtain generator for Suburban Propane company	All hazards	Town	Low	2 years	SBA	High	#2 Structure and infrastructure project

Westport will continue to implement projects and programs to reduce the effects of hazards that can affect the town and its residents.

#### **Town of Willsboro**

#### **Introduction:**

The Town of Willsboro is located in the northeastern part of Essex County and is bordered by the town of Essex on the south, Lewis to the west, Chesterfield to the north and Lake Champlain to the east. Like other lakeshore towns in the county, Willsboro has a varied physical topography with mountains to the west and relatively flat plains and former farmlands to the east. The eastern Adirondacks Range rises to an elevation of 1,482 feet within the town limits.

All rivers and brooks drain into Lake Champlain. There are two large lakes, Long Pond and Highlands Forge Lake, and extensive wetlands. The Boquet River, a designated Wild, Scenic and Recreational River by New York State and an important salmon fishery, empties into Lake Champlain on the southern border of the town. Its main tributaries, the North Branch of the Boquet and Spruce Mill Brook flow from the town of Lewis to the southwest. Flooding can occur at any season, but is more common in the early spring when heavy rains combine with ice jams and melting snow upstream. Flooding problems on the Boquet are largely a result of steep and narrow valleys draining high mountain peaks to the west producing rapid and concentrated runoff that fills and overflows downstream riverbanks.

Beginning in 1983, Willsboro gradually relocated critical facilities away from the floodplain. The town hall, fire department and the health center are in less vulnerable locations. More recently, the major bridge through the center of town was rebuilt. State Route 22 is the main traffic artery through the town, with a large network of secondary roads radiating from it. Canadian Pacific Rail Lines run north/south through the town carrying several daily freight and two passenger trains.

With considerable frontage on Lake Champlain, public and private property is vulnerable to damage from wave action and high lake levels in the spring and fall.

Willsbord	o Table of Facts
Land Area	42.8 square miles/46,741.3 acres
Incorporated Village(s)	NA
Hamlets	Willsboro & portion of Reber
Population 2010 census	2,025 (2010 Census)
Governance	Town
Total Assessed Valuation	\$184,267,310.00
Highest Elevation	Sugarloaf Mtn. – 1,509'
Largest Lake	Lake Champlain – eastern border & Long Pond
River(s)	Boquet
Dams	4
Bridges	4 County Road
Interstate Highway	NA
State Routes	22
County Roads	14, 27, 57, 61, 62, 66 & 68
Land in Agricultural Use	7,430 acres
Land Classified Industrial (APA)	396 acres
Classified Residential, as Hamlet (APA)	571.7 acres
Hospital / Medical Facility	Smith House Health Center
Fire & Rescue	Willsboro Fire & Rescue & Reber Fire Company
Schools	Willsboro Central
Railroads	CP Rail north/south
Passenger Trains per day	Amtrak 68 & 69 2/day
Freight Trains per day	Approx. 5/day
Ferry Dock(s)	NA
Interstate Bridge	NA
Largest Employer	NYCO Minerals
Law Enforcement	NYSP & County Sheriff
Correctional Facility	NA
Power Utility Provider(s)	NYSEG
Water Supply Source(s)	Lake Champlain & Private wells
Emergency Shelters	Willsboro Central School
Critical Facilities	

# **Planning Process:**

A meeting was held on June 8 to update the Willsboro portion of the county plan. The supervisor and code officer attended the meeting.

### **Capability assessment:**

The following planning mechanisms are in place in Willsboro, emergency operations plan, zoning ordinance, subdivision regulation, town comprehensive plan, floodplain regulations within the zoning ordinance, building codes and fire codes. These regulations ensure new development is resistant to hazards.

Willsboro Planning Documents
Comprehensive emergency management plan
Emergency operations plan
Zoning ordinance
Subdivision regulation
Town comprehensive plan
Floodplain regulations
Building codes
Fire codes

This hazard mitigation plan should be integrated into other existing plans in Willsboro. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will ensure that all enabling legislation have similar information in those documents. Integration can ensure consistency between enabling legislation.

A self assessment of capabilities was completed. The town has planners, a code officer and GIS capabilities. The town uses the county staff for the following: emergency management, land surveyors, and grant writing. DEC and APA staff are used for scientific issues. The town hires land surveyors and engineers when needed.

The town uses a variety of funding sources to implement projects. Capital improvement funds are used for water and sewer systems. CDBG are used to rehabilite housing in town. Water and sewer fees are used to maintain the current systems. General revenue sources are used for towers. The town has intergovernmental agreements with fire, ambulance and county agencies for assistance.

Willsboro assessed its education and outreach capabilities. The town is interested in public information efforts for areas such as: responsible water use, fire safety, household preparedness for disasters, and environmental education. The Boquet River Association is actively involved in projects as well as The Nature Conservancy. The town used the town Facebook page during disaster to notify residents of the loss of power event of May 2018.

The town ranked several categories of abilities. Planning and regulatory capabilities, administrative and technical capabilities, financial capabilities, and education and outreach capabilities were all ranked as moderate.

Critical facilities flood vulnerability was assessed as the plan was updated. The table below described if these facilities are located in the 500 year floodplain, if the facility has been flooded in the past, and if any kind of mitigation has been completed to reduce the flood potential to these structures. Generator capabilities was also assessed to determine if these facilities could function without electric power, a common issue for critical facilities during disaster events. Two facilities are located in the 500-year floodplain, water and sewer plants. It was not reported if these facilities have a generator. The fire station, emergency operation center and school all have generators. The critical vehicle storage facility, and medical facility do not have generators.

Willsboro Critical Facilities in Floodplains								
Critical facility	500 year floodplain	Flooded in the past	Generator					
Water plant	Yes	Yes	No (berm needed )	Unknown				
Sewer plant	Yes	Yes	Unknown					
Fire station	No	No	No	Yes				
Emergency operation center	No	No	No	Yes				
School	No	No	No	Yes				
Critical vehicle storage facility	No	No	No	No				
Medical facility	No	No	No	No				

The town has identified one area that can be used for temporary housing needs after a disaster. The town tennis court area would be used if and when needed. This site lacks power, water or sewers. This area has paved and unpaved areas that could be used for temporary housing units such as RV or mobile homes. The school is designated as the American Red Cross shelter and can be used for temporary housing of resident displaced by a hazard event. In the past displaced resident have also obtained temporary housing with friends, relatives or neighbors.

Willsboro Temporary Housing for Displaced Resident								
Facility	Type of housing							
Town tennis court areas	RV, mobile homes							
Willsboro school	ARC shelter							

The following information concerns flood vulnerable structures in Willsboro. The numbers of actual structures in the flood vulnerable areas is most likely larger than the number of insured structures. Once the flood insurance rate maps are updated by FEMA, these new maps will determine the actual number of vulnerable structures.

Willsboro Flood Insurance Facts								
2011	2018							
Number of policies	Number of policies							
19	9							
Number of repetitive loss properties	Number of repetitive loss properties							
1	2 (1 single family, 1 non- residential)							

Willsboro will continue to manage their floodplains in the future. They will review and approve new development in the special flood hazard areas to ensure these structures are build compliant with the local floodplain ordinance. As the new FIRM are updated by FEMA, meetings will occur with floodplain managers, town supervisors and village mayors to provide training on the national flood insurance program. Compliance will be discussed at these meeting. Floodplain managers of the most vulnerable communities will be encouraged to join the state floodplain manager association to continue to increase their understanding of how to manage their flood vulnerable areas.

# **Hazard Ranking:**

Hazard that are profiled in this plan were ranked. The table below indicates the rankings.

Town of Willsboro Hazard Ranking							
High Hazard	Drought, Earthquake, Flood, Hail Storms, High Winds, Hurricanes, Ice Storms, Severe Winter Weather, Rail Events.						
Medium Hazard	Extreme Temperatures.						
Low Hazard	Avalanches, Land Subsidence, Landslides, Wildfires.						







### **Potential Loss:**

Potential loss was calculated for the Town of Willsboro. The Essex County Real Property website was used to obtain data for all parcels in each jurisdiction. Data was manipulated to determine the number and value of each structures in each of the 9 class codes. The data was then totalled for the number of structures and value of structures in each class code. The number of structures impacted from the hazard event was calculated to be 10% of the total number of structures in the jurisdiction. The potential loss from the impact from hazard events was calculated to be 10% of the value of the structures in each class code.

Essex County Real property Tax Services website has 9 class codes for property as follow.

100 Agriculture	200 Residential	300 Vacant Lands
400 Commercial	500 Recreation and Entertainment	600 Community services
700 Industrial	800 Public Services	900 Forest, Conservation Lands and Parks

Willsboro Potential Loss									
Class code	Acreage	Number of	Structure	Number	Pot Loss				
		structures	Value	Impacted					
100	3255.29	17.00	\$1,233,000	1.70	\$123,300				
200	8342.83	1344.00	\$122,607,147	134.40	\$12,260,715				
300	7053.71	79.00	\$1,469,100	7.90	\$146,910				
400	285.40	47.00	\$5,228,400	4.70	\$522,840				
500	524.42	7.00	\$2,122,000	0.70	\$212,200				
600	103.07	22.00	\$17,271,000	2.20	\$1,727,100				
700	361.22	4.00	\$8,808,000	0.40	\$880,800				
800	108.12	7.00	\$2,876,696	0.70	\$287,670				
900	6699.44	11.00	\$2,877,774	1.10	\$287,777				
Total	26733.50	1538.00	\$164,493,117	153.80	\$16,449,312				

### **Mitigation Strategy:**

Willsboro had one project noted in the 2011 plan. This project was completed. Additional projects that were completed over the last several years was also documented for this plan update. The second table below describes these actions that have reduced effects of hazards in Willsboro. A table for new projects developed in 2019 is also included in a table below.

Prioritization of projects occurred as the plan was updated. These projects list the priority as high, medium and low. Generally speaking, high priority projects are projects that enable towns and villages to be fully functional during times of disasters. Medium and low projects are to improve other functions of towns and villages and address actual residents of these municipalities. Implementation of project will occur as funding is obtained. Any project can be implemented as funding, political will and other aspects are addressed.

The cost of several projects has been determined and included in the table below. Other mitigation projects have estimated the costs of these projects. The potential cost to implement mitigation projects have been ranked as high, medium or low cost. Low cost projects are those projects that would cost up to \$100,00. Medium cost projects are estimated to cost between \$100,000 and \$500,000. High cost projects are those projects that would cost over \$500,000.

	Town of Willsboro 2011 Mitigation Project									
Goal	Objective	Strategy	Lead Agency	Estimate	Target Date	Priority	Status	Progress	Issues	
Reduce the impact of flooding	Streambank stabilization	Boquet River/ Gilliland Lane, Black Ash Pond, Brownsfield Remediation wetland component	Town Supervisor / Board Town Highway, County DPW, DEC	\$200,000	Fall 2013 LT	L	Completed			

The Town of Willsboro has implemented several projects or programs in the past that has reduced the negative effects of hazards. The following table describes these projects. These projects were not included in the 2011 hazard mitigation plan. These projects are included to reflect the total efforts of Willsboro to mitigate hazards in Town.

Town of Willsboro accomplishments 2011 to 2018										
Project # and name	Goal addressed	Project or action	Hazard addressed	Lead Agency	Estimated cost	Timeframe to complete in years.	Potentia 1 funding sources	Priori ty (high, Medi um, low)	Mitigation technique category	
Public awareness during disaster event.	#7 education and outreach project	Facebook and twitter used to provide information during a 2-day power outage event of May 4-6, 2018	all	Town	Current towns budgets	On going	Town budgets	Η	#4 education and outreach project	
Restore the Bouquet River	#6 natural resource protection project	Removed dam on Boquet River	Floods, ice jams,	Town		Completed		Н	#3 Natural systems protection	
Restore the Boquet River	#6 natural resource protection project	Stabilize banks on Boquet River	3,4	Boquet River Watershed Association	BRWA funds	Ongoing efforts		Н	#3 Natural systems protection	
Prepare, respond recover and mitigate all disasters in Willsboro.	#4 infrastructure project	Obtained communication system in Town command center	All hazards	Town		ongoing		Н	#2 infrastructure, #4 education and outreach	

Upgrade failing septic systems in Willsboro Increase capacity and	#4 infrastructure, #6 natural systems protection #4	Replace failing septic systems on Lake Champlain Upgrade town	Water quality Floods,	Town	Grant obtained, ongoing effort Completed	H	#2 infrastructure, #3 natural systems protection #2
function of town Septic system plant	infrastructure	sewer plant	water quality		upgrading project		infrastructure
Reduce potential for issues to public water from low lake levels in Willsboro.	#4 infrastructure	Low lake water mitigation project for water pipes exposed during low water.	Drought,	Town	Completed	Н	#2 infrastructure
Reduce effect of frozen water lines in Willsboro	#4 infrastructure	Steam Ginny system acquired to unfreeze water lines during winter conditions.	Extreme temperatur es	Town	Completed and ongoing	Н	#2 infrastructure
Reduce floods from undersized culverts	#4 infrastructure	Culverts replaced in town to increase capacity of stormwater conveyance systems.	floods	Town	Ongoing as culverts are identified	Н	#2 infrastructure
Town salt shed rebuilt	#4 infrastructure, #6 natural resources protection		Snow storms	Town	Completed	Н	#2 infrastructure #3 natural systems protection projects

Increase response abilities for fires in Willsboro	#4 infrastructure	Acquired tanker and pumper rescue truck.		Town	Completed, and ongoing	Н	#2 infrastructure
Increase ability to manage debris in Willsboro	#4 infrastructure	Acquired brush truck for vegetative debris management	Floods, ice storms, snow storms, wind storms	Town	Ongoing	М	#2 infrastructure
Maintain infrastructure in Willsboro	#4 infrastructure	Annual maintenance program for culvert system in town.		Town	Ongoing	М	#2 infrastructure
Increase natural systems in Willsboro	#6 natural resource protection projects	Vegetative planting along river bank to stabilize bank, reduce temperature in river and other natural systems benefits		Town	Project complete, additional efforts on going.	М	#3 natural resource projects
Reduce flood threats to commercial operations in Willsboro	#2 structural projects	Indian Bay Marina restaurant and dock rebuilt at higher elevation to reduce flood damages to facility.		Town	Completed	М	Implement structural projects

Increase water quality in Town	#6 natural resource protection projects	Paul Smith's College salt study for individual wells in town and other areas in the Adirondack Park area.		Town		Completed		М	#3 natural system protection
Reduce potential for loss of water to municipal system	#4 infrastructure s projects	Reserve water tank for Town installed.		Town		Completed		Н	#2 infrastructure projects
		Town of Wil	llsboro Mi	itigation P	Projects 20	)19			
Project # and name	Goal addressed	Project or action	Hazard addressed	Lead agency	Estimated cost	Timeframe to complete in years	Potential funding sources	Prior ity (high , medi um, low)	Mitigation technique category
1. Construct new sand shed	#6 Natural resource protection projects	Construct new shed for sand storage, (salt comprises 25%) for use in winter	Snow and ice events	Town	\$750,000	1-5 year	DEC	High	#3 natural system protection
2. Water tank storage	#4 infrastructure	Construct 1 water storage tank for backup water.	Drought	Town	\$1.25 million	1-5 years	NYS DOS	Medi um	#2 infrastructure project
3. Town Hall generator	#4 infrastructure	New generator for town hall	all	Town	\$100,000	2 years	NYS DOS	Medi um	#2 infrastructure project
4. Water pump	#4 infrastructure	Secure high capacity source of water	Floods, fire, loss of power	Town	15 million	1-10 years year 1-5 obtain funds year	NYS DOS	High	#2 infrastructure project

						6-10 implement project			
5. River dry hydrant	#4 infrastructure	Install dry hydrant for firefighting capacity	fires	Town supervisor and town fire dept	High	1-2 years	NYS DOS	Medi um	#2 infrastructure project
6. Purchase structures impacted by floods on Mill Lane and Main street	#3 acquire structures damaged by floods	Buy outs of flooded structures	Floods	County DES, Town	L/M depending on each structure	1-10 years year 1-5 obtain funds year 6-10 implement project	FEMA PDM HMGP	High	#2 structure end infrastructure project

Willsboro has accomplished many projects in the last five years. Although some may not be considered "traditional" mitigation projects, these have reduced the effects from hazards to residents of Willsboro.
### **Town of Wilmington**

#### Introduction:

The Town of Wilmington is located in northern Essex County, bordered by the Town of Black Brook to the north, the Town of Jay to the east, the Town of Keene to the south, the Town of North Elba to the southwest, and the Town of St. Armand to the west. The area of the town is 65 square miles.

The topography is mountainous. Whiteface Mountain, at 4,867, feet is the tallest mountain in New York State and lies in the Stephenson Range in the northwest part of town. The mountain is the site of the Whiteface Mt. Olympic Ski Area, which is owned by the state, administered by the Olympic Regional Development Authority (ORDA) and regularly hosts international events. ORDA personnel work with town emergency service staff to coordinate training and drills, and are on call in the event of an emergency. In the southeast, the Sentinel Range has elevations exceeding 3,800 feet.

The West Branch of the Au Sable River drains the two mountain ranges, and it reaches an elevation of 800 feet where it crosses into the town of Jay. Much of the town remains beautifully undeveloped, and there is considerable state land. There are isolated residences and some seasonal homes on several roads leading to neighboring towns, but population is more concentrated near the area of commercial development along State Route 86 north of the Ski Center.

Flooding can occur in the community, and in winter there is a threat of ice jams. A dam exists on the West Branch approximately 300 feet downstream from Rte. 86, which is of concern to the town. The town has a strong spirit of cooperation as do many rural communities and town personnel work closely with emergency crews if any kind of hazard threatens. Wilmington has a CEMP and works closely with county and state agencies to improve conditions for its residents.

Wilmington is home to Santa's Workshop, one of the first American theme parks for children, is located near the community of North Pole. It has been in operation since 1949. Adirondack Wildlife Reuse is a organization that rehabilitates animals and is located in town.

Wilmington Table of Facts					
Land Area	65 square miles/4,038.3 acres				
Incorporated Village(s)	NA				
Hamlets	Wilmington				
Population 2010 census	1,253 (2010 Census)				
Governance	Town				
Total Assessed Valuation	\$30,261,240.00				
Highest Elevation	Whiteface Mtn 4,872'				
Largest Lake					
River(s)	W branch of the Au Sable				
Dams	4				
Bridges	2 County Road				
Interstate Highway	NA				
State Routes	86 & 431				
County Roads	12, 18, 19 & 63				
Land in Agricultural Use	NA				
Land Classified Industrial (APA)	NA				
Classified Residential, as Hamlet (APA)	571.7 acres				
Hospital / Medical Facility	Wilmington Health Center				
Fire & Rescue	Wilmington Fire District				
Schools	& Northern Lights School (private)				
Railroads	NA				
Passenger Trains per day	NA				
Freight Trains per day	NA				
Ferry Dock(s)	NA				
Interstate Bridge	NA				
Largest Employer	Out of Town				
Law Enforcement	NYSP & County Sheriff				
Correctional Facility	NA				
Power Utility Provider(s)	NYSEG				
Water Supply Source(s)	Red Brook, White Brook, W. Branch of Au Sable & private wells				
Emergency Shelters	Calvary Baptist Church				
Critical Facilities	(see above)				

### **Planning Process:**

A meeting was held on December 17 to update the Wilmington portion of the county plan. The Supervisor, code enforcement officer, highway staff and administrative assistance attended the meeting.

### **Capability Assessment:**

The following planning mechanism are in place in Wilmington. The town has a comprehensive emergency management plan, continuity of operations plan, floodplain regulations, zoning regulations, subdivision regulations, comprehensive master plan, historic preservation plan, building and fire codes. These regulations ensure that new devotement is resistant to hazards.

Wilmington Planning Documents
Comprehensive emergency management plan
Continuity of operations plan
Floodplain regulations
Zoning regulations
Subdivision regulations
Comprehensive master plan
Historic preservation plan
Building codes
Fire codes

This hazard mitigation plan should be integrated into other existing plans in Wilmington. The hazard ranking can be incorporated into the comprehensive emergency management plan. Mitigation projects could be incorporated into any capital improvement plan. Much of the document can be incorporated into community comprehensive plans. This integration will ensure that all enabling legislation have similar information in those documents. Integration can ensure consistency between enabling legislation.

A self assessment of town capabilities was completed. The planning board and zoning board of appeals have planning experience and knowledge, the town also uses county assets when needed. County engineering staff are used or firms are hired when needed. Wilmington has an emergency manager and floodplain administrator. Land surveyors are hired as needed. DEC and APA staff are used for scientific issues. County assets are used for GIS. The county staff are also used for grant writing and grant assistance.

Wilmington uses a variety of funding sources to implement projects. Capital improvement funds have been used at the Town Beach. Community development block grants have

been used for housing rehabilitation. Water and sewer fees are used to maintain the current systems. The town has numerous partnering agreements with New York State, Essex County, and town and villages for shared usage programs.

The town assessed its educational and outreach capabilities. Wilmington is a FireWise community. The fire department conducts education programs in private schools in town, they also partner with Lake Placid for school programs. The DEC and APA hold programs in Wilmington. The Ausable River Association holds programs in town concerning the Ausable River that flows through the town. The Visitors Bureau educated visitors to Wilmington. The Town currently has a Facebook page that will be used during disasters to provide information from the town to residents and visitors.

The town ranked several areas of abilities. Planning and regulatory capabilities as well as administrative and technical capabilities were ranked as high. Financial and education and outreach capabilities were ranked as moderate.

Critical facilities flood vulnerability was assessed as the plan was updated. The table below described if these facilities are located in the 500 year floodplain, if the facility has been flooded in the past, and if any kind of mitigation has been completed to reduce the flood potential to these structures. Generator capabilities was also assessed to determine if these facilities could function without electric power, a common issue for critical facilities during disaster events.

Critical facilities were assessed for flood vulnerability. The fire station is currently located in the 500 year floodplain, this facility has a generator. The remaining critical facilities: police station, critical vehicle and equipment storage facilities, emergency operations center, pumping station, town hall which is also the communication center, medical clinic, private school, Verizon building, and water plant are not located in the 500 year floodplain. All of these facilities possess a generator except the private school.

Wilmington Critical Facilities in Floodplains								
Critical facility	500 year floodplain	Flooded in the past	Mitigated	Generator				
Fire station	Yes	Yes	No (need to relocate)	Yes				
Police station	No	No	No	Yes				
Critical vehicle and equipment storage facilities	No	No	No	Yes				
Emergency operations center	No	No	No	Yes				

Pumping station	No	No	No	Yes
Town Hall	No	No	No	Yes
Medical clinic	No	No	No	Yes
Private school	No	No	No	No
Verizon building	No	No	No	Yes
Water plant	No	No	No	Yes

Wilmington has identified three areas that can be used for temporary housing sites. The ball park and t ball field. These sites lack power and water. The parcel of the fire house, and the town highway garage. These sites have power and water. This area has paved and unpaved areas that could be used for temporary housing units such as RV or mobile homes. The school is designated as the American Red Cross shelter and can be used for temporary housing of resident displaced by a hazard event. In the past displaced resident have also obtained temporary housing with friends, relatives or neighbors.

Wilmington Temporary Housing for Displaced Residents						
Facility	Type of housing					
Ball park and t ball field	RV, mobile homes					
The parcel of the fire house	RV, mobile homes					
Town highway garage	RV, mobile homes					
Calvary Baptist Church	ARC Shelter					

The following information concerns flood vulnerable structures in Wilmington. The numbers of actual structures in the flood vulnerable areas is most likely larger than the number of insured structures. Once the flood insurance rate maps are updated by FEMA, these new maps will determine the actual number of vulnerable structures.

Wilmington Flood Insurance Facts						
2011 2018						
Number of policies	Number of policies					
7	3					

Wilmington will continue to manage their floodplains in the future. They will review and approve new development in the special flood hazard areas to ensure these structures are build compliant with the local floodplain ordinance. As the new FIRM are updated by FEMA, meetings will occur with floodplain managers, town supervisors and village mayors to provide training on the national flood insurance program. Compliance will be discussed at these meeting. Floodplain managers of the most vulnerable communities will be encouraged to join the state floodplain manager association to continue to increase their understanding of how to manage their flood vulnerable areas.

### Hazard Ranking:

Hazards that are profiled in this plan were ranked. The table below indicates the rankings.

Wilmington Hazard Ranking					
High Hazard	Floods, extreme temperatures, high winds, ice storm, severe winter storms,				
Medium Hazard	Drought, earthquakes, hurricanes, land subsidence, wildfires				
Low Hazard	Avalanche, hail storms, landslides.				







#### **Potential Loss:**

Potential loss was calculated for the Town of Wilmington. The Essex County Real Property website was used to obtain data for all parcels in each jurisdiction. Data was manipulated to determine the number and value of each structures in each of the 9 class codes. The data was then totalled for the number of structures and value of structures in each class code. The number of structures impacted from the hazard event was calculated to be 10% of the total number of structures in the jurisdiction. The potential loss from the impact from hazard events was calculated to be 10% of the value of the structures in each class code.

Essex County Real property Tax Services website has 9 class codes for property as follow.

100 Agriculture	200 Residential	300 Vacant Lands
400 Commercial	500 Recreation and Entertainment	600 Community services
700 Industrial	800 Public Services	900 Forest, Conservation
		Lands and Parks

Wilmington Potential Loss							
Class codes	Acreage	Number of	Structure	Number	Pot Loss		
		structures	Value	Impacted			
100.00	0	0	\$0	0.00	\$0		
200.00	5538.02	697.00	\$99,985,100	69.70	\$9,998,510		
300.00	2771.90	30.00	\$336,300	3.00	\$33,630		
400.00	202.12	48.00	\$10,169,140	4.80	\$1,016,914		
500.00	250.18	11.00	\$17,514,900	1.10	\$1,751,490		
600.00	110.67	11.00	\$5,037,500	1.10	\$503,750		
700.00	0	0	\$0	0.00	\$0		
800.00	45.88	3.00	\$4,560,800	0.30	\$456,080		
900.00	31699.53	13.00	\$3,306,000	1.30	\$330,600		
Total	40618.3	813	\$140,909,74	81.3	\$14,090,974		
			0				

#### **Mitigation Strategy:**

Wilmington had one project noted in the 2011 plan. This project is expected to be completed in 2019. New project developed in 2019 are listed in the third table.

Prioritization of projects occurred as the plan was updated. These projects list the priority as high, medium and low. Generally speaking, high priority projects are projects that enable towns and villages to be fully functional during times of disasters. Medium and low projects are to improve other functions of towns and villages and address actual residents of these municipalities. Implementation of project will occur as funding is obtained. Any project can be implemented as funding, political will and other aspects are addressed.

The cost of several projects has been determined and included in the table below. Other mitigation projects have estimated the costs of these projects. The potential cost to implement mitigation projects have been ranked as high, medium or low cost. Low cost projects are those projects that would cost up to \$100,00. Medium cost projects are estimated to cost between \$100,000 and \$500,000. High cost projects are those projects that would cost over \$500,000.

	Wilmington Mitigation Project 2011								
Goal	Objective	Strategy	Lead Agency	Estimate	Target Date	Existing/New Buildings	Priority	status	Progress
Reduce the impact of <b>flooding</b>	Dam Stabilization. Dam is located on Au Sable River next to Rte. 86	Repair retaining wall and install gates at Town Dam	Town Supervisor / Board Town Highway, County DPW, DEC	\$350,000	Fall 2013 LT	y	L	Project to be finished July 2019	In process

The Town of Wilmington has implemented several projects or programs in the past that has reduced the negative effects of hazards. The following table describes these projects. These projects were not included in the 2011 hazard mitigation plan. These projects are included to reflect the total efforts of Wilmington to mitigate hazards in Town.

	Т	own of Wilmin	gton Acco	mplishme	nts 2011	to 2018			
Project # and name	Goal addressed	Project or action	Hazard addressed	Lead Agency	Estimated cost	Timeframe to complete in years.	Potentia 1 funding sources	Priori ty (high, Medi um, low)	Mitigation technique category
Identify emergency concerns of special needs population	#7 education and outreach project		all	Town and county DOA	Current towns budgets	On going	Town budgets	Н	#4 education and outreach project
Ensure efficient use of resources during and after storm events	#7 education and outreach project	Coordinate emergency services, public works dept. And public utilities.	all	Town	Town budgets	On going		Н	#4 education and outreach
Ensure for debris removal	Plans and regulation	Develop plan for debris removal	all	Town	Town budgets	On going			Plan and regulation

Wilmington developed new projects for the 2019 updated plan. These projects are listed below.

Town of Wilmington Mitigation Projects 2019									
Project # and name	Goal addressed	Project or action	Hazard addressed	Lead agency	Estimated cost	Timeframe to complete in years	Potential funding sources	Prior ity (high , medi um, low)	Mitigation technique category
1. Install ditches and clean existing culverts	#6 Natural resource protection projects	Ditches and maintenance of culverts	floods	Town	Existing budgets	1	Town budgets	Н	#3 natural system protection
2. Lenny Preston Road replace existing culvert with larger culvert.	#4 infrastructure	Upgrade culvert	floods	Town	Low	1-5 years	Town budgets	М	#2 infrastructure project
3. Generator for private school	#4 infrastructure	New generator for private school	all	Town	\$50,000	2 years	School budget	М	#2 infrastructure project
4. Hardy Road culvert	#4 infrastructure	Upgrade culvert	Floods	Town	Low	1-5 years	Town budget	h	#2 infrastructure project
5. Replace culverts on county roads, Bonnie View and Hazleton Road	#4 infrastructure	Replace culverts on county roads	floods	Town	Low	1-2 years	Town budgets	М	#2 infrastructure project
6. Acquire or buy out structures impacted by floods	#3 structures	Buy out of flooded homes	Floods	County, Town	TBD for each structure	1-5 years or after floods	FEMA PDM, HMGP	Н	#3 structure projects

# Section 7. Plan Maintenance

#### **Update Process Summary**

Monitoring, evaluating and updating this plan, is critical to maintaining its value and success in Essex County's hazard mitigation efforts. Ensuring effective implementation of mitigation activities paves the way for continued momentum in the planning process and gives direction for the future. This section explains who will be responsible for maintenance activities and what those responsibilities entail. It also provides a methodology and schedule of maintenance activities including a description of how the public will be involved on a continued basis.

The 2011 Hazard Mitigation Plan stated that yearly updates and meetings would take place to maintain the plan. As described earlier in this plan, Essex County opted not to hold yearly update meetings. The County did respond, recover and mitigate from the Aril and September 2011 Presidentially Declared flood events. County agencies on behalf of the jurisdictions continued to achieve progress in a variety of projects related to mitigation of hazards.

#### Monitoring, Evaluating and Updating the Plan

The Essex County Department of Emergency Services is designated to administer the plan and the maintenance processes of monitoring, evaluation and updating with support and representation from all participating municipalities. The Essex County Department of Emergency Services will also lead in all associated plan maintenance requirements including annual reviews. They will coordinate maintenance efforts, but the input needed for effective periodic evaluations will come from County agency representatives, municipal representatives, local emergency management coordinators and planners, the general public and other important stakeholders. The Essex County Department of Emergency Services will oversee the progress made on the implementation of action items identified in the 2019 Hazard Mitigation Plan and modify actions, as needed, to reflect changing conditions. The Essex County Department of Emergency Services along with County agency staff and municipal officials will meet annually to discuss specific coordination efforts that may be needed with other stakeholders.

Mountain View Planning will hold annual meetings during the next five years. The first annual

## **Essex County Hazard Mitigation Plan**

meeting will occur near the one year anniversary of adoption of the plan. The consultant will develop or use existing documents and strives to teach the County how to hold these annual meetings. The goal is to develop a process that will encourage counties to hold annual meetings post adoption of the plan.

Each municipality will designate a municipal representative to monitor mitigation activities and hazard events within their respective municipalities. The local emergency management coordinator or Supervisor would be suitable for this role. This individual will be asked to work with the Essex County Department of Emergency Services to provide updates on applicable mitigation actions and feedback on changing hazard vulnerabilities within their municipality.

The Essex County Department of Emergency Services and Department of Community Resources will also support local and County officials in applying for post-disaster mitigation funds when they are available. All state and federal mitigation funding provided to the County or local municipalities will be reported in subsequent plan updates.

The 2019 Hazard Mitigation Plan will be updated every five years, as required by the Disaster Mitigation Act of 2000. Future plan updates will account for any new hazard vulnerabilities, special circumstances, or new information that becomes available. During the five-year review process, the following questions will be considered as criteria for assessing the effectiveness the Essex County Hazard Mitigation Plan.

- Has the nature or magnitude of hazards affecting the County changed?
- Are there new hazards that have the potential to impact the County?
- Do the identified goals and actions address current and expected conditions?
- Have mitigation actions been implemented or completed?
- Has the implementation of identified mitigation actions resulted in expected outcomes?
- Are current resources adequate to implement the Plan?
- Should additional local resources be committed to address identified hazards?

Issues that arise during monitoring and evaluation of the plan which require changes to the risk assessment, mitigation strategy and other components of the plan will be incorporated during future updates.

### Incorporation into Other Planning Mechanisms:

Based on the comprehensive nature of this plan, the Essex County Department of Emergency Services believes that this document will be highly useful when updating and developing other planning mechanisms in the County.

- Essex County Comprehensive Plan: When the County Comprehensive plan is updated, the hazard mitigation plan should be incorporated into that document. Sections that may be used could include: hazard list and ranking and the mitigation project section for both the County.
- Essex County Emergency Operations Plan: The 2019 Hazard Mitigation Plan will provide information on risk and vulnerability that will be extremely important to consider and incorporate into the next County Emergency Operations Plan. Probability and vulnerability can direct emergency management efforts and response.
  - Essex County Hazard Vulnerability Analysis: The County Emergency Services' Hazard Vulnerability Assessment and the County Hazard Mitigation Plan are mutually beneficial plans that are used together to better understand risk and vulnerability. Just as the existing County Hazard Vulnerability Assessment was used to supplement the development of this plan, the 2017 Hazard Mitigation Plan will be used to aid in goal and objective development, hazard identification, and risk assessment in the next County Hazard Vulnerability Assessment.
- Act 167 Stormwater Management Plans: Although previously the County approved their stormwater management plan, the results of the 2019 Hazard Mitigation Plan vulnerability analysis, particularly for flooding, should be taken into consideration when updating the stormwater management plan and any new stormwater management plans.

This hazard mitigation plan should also be incorporated by each town and village into existing planning mechanism. The following plans are two examples of local plans that could benefit from this plan integration. Each town and village section also address plan integration.

• **Town and Village Comprehensive Plan**: When the town or village Comprehensive plan is updated, the hazard mitigation plan should be incorporated into that document. Sections that may be used could include: hazard list and ranking and the mitigation project section for both the County and 20 towns and villages.

• Town and Village Comprehensive Emergency Management Plan: The 2019 Hazard Mitigation Plan will provide information on risk and vulnerability that will be extremely important to consider and incorporate into the next Town or Village Comprehensive Emergency Management Plan. Probability and vulnerability can direct emergency management efforts and response.

### **Continued Public Involvement:**

As was done during the development of the 2019 Hazard Mitigation Plan, the Essex County Department of Emergency Services will involve the public during the evaluation and update of the Hazard Mitigation Plan through various methods. The public will have access to the current Hazard Mitigation Plan through their local municipal office and the Essex County Department of Emergency Services office and the county website. Information on upcoming events related to the Hazard Mitigation Plan or solicitation for comments will be announced via newsletters, newspapers, mailings, and on the County website. The Essex County Department of Emergency Services will incorporate all relevant comments during the next update of the Hazard Mitigation Plan.

### Conclusion:

Essex County is vulnerable to a variety of natural hazards. These hazards have impacted residents and property in the past and will continue to impact residents and property in the future.

The philosophy of mitigation has three parts. First, one must understand the hazards that they are vulnerable to. Two, one must accept that one is vulnerable to hazards. Third, and most important, one must take steps to mitigate from those hazards. We all must build our physical environment to withstand hazard events. This cannot be done if any of the three aspects are missing.

Essex County has implemented many programs that have mitigated these hazards events. The County needs to continue its efforts to reduce the effects from hazards while maintaining and enhancing the uniqueness of Essex County.

Essex County residents possess a strength and willing to assist others when needed. Hazard events may happen, but the residents of Essex assist others when needed. This community mind set will continue in the future, as that is one of our true community strengths.

# 8. Section 8: Plan Approval and Adoption

The Plan will be submitted to the New York State Department of Homeland Security and Emergency Management Hazard Mitigation Officer for review. Any required changes will be completed and the plan will then be submitted to the Federal Emergency Management Agency for review and approval. Any changes required from the FEMA review will be incorporated into the plan. Upon receiving Approved Pending Adoption status from FEMA, the jurisdictions will then be asked to official adopt the plan.

Adoption resolution templates are provided in this section and the Appendix to assist the County and municipal governments with recommended language for adoption of the Hazard Mitigation Plan.

## Essex County 2019 Hazard Mitigation Plan County Adoption Resolution

Resolution No. \_\_\_\_\_ Essex County, New York

*WHEREAS*, the municipalities of Essex County, New York are most vulnerable to natural and human-made hazards which may result in loss of life and property, economic hardship, and threats to public health and safety, and

*WHEREAS*, Section 322 of the Disaster Mitigation Act of 2000 (DMA 2000) requires state and local governments to develop and submit for approval to the President a mitigation plan that outlines processes for identifying their respective natural hazards, risks, and vulnerabilities, and

*WHEREAS*, Essex County acknowledges the requirements of Section 322 of DMA 2000 to have an approved Hazard Mitigation Plan as a prerequisite to receiving post-disaster Hazard Mitigation Grant Program funds, and

*WHEREAS*, the Essex County 2019 Hazard Mitigation Plan has been developed by the Essex County Emergency Management Agency in cooperation with other county departments, local municipal officials, and the citizens of Essex County, and

*WHEREAS*, a public involvement process consistent with the requirements of DMA 2000 was conducted to develop the Essex County 2019 Hazard Mitigation Plan, and

*WHEREAS*, the Essex County 2019 Hazard Mitigation Plan recommends mitigation activities that will reduce losses to life and property affected by both natural and human-made hazards that face the County and its municipal governments,

NOW THEREFORE BE IT RESOLVED by the governing body for the County of Essex

- that: The Essex County 2019 Hazard Mitigation Plan is hereby adopted as the official Hazard Mitigation Plan of the County, and
  - The respective officials and agencies identified in the implementation strategy of the Essex County 2019 Hazard Mitigation Plan are hereby directed to implement the recommended activities assigned to them.

*ADOPTED*, this \_\_\_\_\_\_, 2019

ESSEX COUNTY COMMISSIONERS

ATTEST:

# **Essex County Hazard Mitigation Plan**

By	
By	
By	

# Essex County 2019 Hazard Mitigation Plan Municipal Adoption Resolution

Resolution No.

<Town/Village of Municipality Name>, Essex County, New York

*WHEREAS*, the *</Town/Village of Municipality Name>*, Essex County, New York is most vulnerable to natural and human-made hazards which may result in loss of life and property, economic hardship, and threats to public health and safety, and

*WHEREAS*, Section 322 of the Disaster Mitigation Act of 2000 (DMA 2000) requires state and local governments to develop and submit for approval to the President a mitigation plan that outlines processes for identifying their respective natural hazards, risks, and vulnerabilities, and

**WHEREAS**, the *<Town/Village of Municipality Name>* acknowledges the requirements of Section 322 of DMA 2000 to have an approved Hazard Mitigation Plan as a prerequisite to receiving post-disaster Hazard Mitigation Grant Program funds, and

*WHEREAS*, the Essex County 2019 Hazard Mitigation Plan has been developed by the Essex County Emergency Management Agency and in cooperation with other county departments, and officials and citizens of *<Town/Village of Municipality Name>*, and

WHEREAS, a public involvement process consistent with the requirements of DMA 2000 was

conducted to develop the Essex County 2019 Hazard Mitigation Plan, and

*WHEREAS*, the Essex County 2019 Hazard Mitigation Plan recommends mitigation activities that will reduce losses to life and property affected by both natural and human-made hazards that face the County and its municipal governments,

*NOW THEREFORE BE IT RESOLVED* by the governing body for the *<Town/Village of Municipality Name>*:

- The Essex County 2019 Hazard Mitigation Plan is hereby adopted as the official Hazard Mitigation Plan of the *<Town/Village>*, and
- The respective officials and agencies identified in the implementation strategy of the Essex County 2019 Hazard Mitigation Plan are hereby directed to implement the recommended activities assigned to them.

*ADOPTED*, this\_\_\_\_\_\_day of\_\_\_\_\_\_, 2019

ATTEST:

<TOWN/Village OF MUNICIPALITY NAME>

By\_\_\_\_\_

# **Essex County Hazard Mitigation Plan**

By\_\_\_\_\_

# Work Cited:

Alley, William. "The Palmer Drought Severity Index: Limitations and Assumptions" [PDF] (April 30th 1984) <u>https://journals.ametsoc.org/doi/pdf/10.1175/1520-</u> 0450%281984%29023%3C1100%3ATPDSIL%3E2.0.CO%3B2 Accessed Oct 15th 2018

Bennet, Bob and Clermont, Lois. "Altona wildfire covers hundreds of acres" The Plattsburgh Press-Republican (July 13<sup>th</sup> 2018) <u>https://www.pressrepublican.com/news/local\_news/altona-wildfire-covers-hundreds-of-acres/article\_673f21ed-340b-5491-b5cb-62b72f1a3691.html</u> Accessed Oct 15th 2018.

Dai, Aiguo & National Center for Atmospheric Research Staff. "The Climate Data Guide: Palmer Drought Severity Index (PDSI)" (July 12 2017) <u>https://climatedataguide.ucar.edu/climate-data/palmer-drought-severity-index-pdsi</u> Accessed Oct 15th 2018

Department of Environmental Conservation. "Map of Wildfires as Reported by NYS Forest Rangers and Fire Departments" (February 2018) <u>http://www.dec.ny.gov/lands/68333.html</u> Accessed October 15th 2018

DEC Advises Backcountry Recreationalists of Avalanche Risk in Adirondack High Peaks Region. (February 17, 2017) <u>http://www.dec.ny.gov/press/109303.html</u> Accessed July 10, 2018

Department of Environmental Conservation. "Drought" <u>http://www.dec.ny.gov/lands/5011.html</u> Accessed Aug 15th 2018

Federal Emergency Management Agency. "Bringing the Plan to Life: Implementing the Hazard Mitigation Plan" (August 1<sup>st</sup> 2003) <u>https://www.fema.gov/media-library/assets/documents/4283</u> Accessed Oct 15th 2018

Federal Emergency Management Agency. "Developing the Mitigation Plan: Identifying Mitigation Actions and Implementation Strategies" (April 1<sup>st</sup> 2003) <u>https://www.fema.gov/media-library/assets/documents/4267</u> Accessed Oct 15th 2018

Federal Emergency Management Agency. "Getting Started: Building Support for Mitigation Planning" (September 1<sup>st</sup> 2002) <u>https://www.fema.gov/media-library/assets/documents/4195</u> Accessed Oct 15th 2018

Federal Emergency Management Agency. "Integrating Historic Property and Cultural Resource Considerations into Hazard Mitigation Planning" (May 1<sup>st</sup> 2005) <u>https://www.fema.gov/media-library/assets/documents/4317</u> Accessed October 15th 2018

Federal Emergency Management Agency. "Integrating Manmade Hazards into Mitigation Planning" (September 1st 2003) <u>https://www.fema.gov/media-library/assets/documents/4528</u> Accessed Aug 15th 2018

Federal Emergency Management Agency. "Local Mitigation Planning Handbook" (March 1<sup>st</sup> 2013) <u>https://www.fema.gov/media-library/assets/documents/31598</u> Accessed Oct 15th 2013

Federal Emergency Management Agency. "Multi-Hazard Identification and Risk Assessment" (January 1st 1997) <u>https://www.fema.gov/media-library/assets/documents/7251</u> Accessed Oct 15th 2018

Federal Emergency Management Agency. "Multi-Jurisdictional Mitigation Planning" (August 1<sup>st</sup> 2006) <u>https://www.fema.gov/media-library/assets/documents/4481 Accessed October 15th 2018</u>

Federal Emergency Management Agency. "National Fire Incident Reporting System: Complete Reference Guide" (January 2015)

https://www.usfa.fema.gov/downloads/pdf/nfirs/NFIRS\_Complete\_Reference\_Guide\_2015.pdf Accessed October 15th 2018

Federal Emergency Management Agency. "NYS Standard Multi-Hazard Mitigation Plan" 2014. (December 2013). <u>http://www.dhses.ny.gov/recovery/mitigation/plan.cfm Accessed Aug 15th</u> 2018

Federal Emergency Management Agency. "Understanding Your Risks: Identifying Hazards and Estimating Losses" (August 1<sup>st</sup> 2001) <u>https://www.fema.gov/media-library/assets/documents/4241</u> Accessed Oct 15th 2018

Federal Emergency Management Agency. "Using Cost-Benefit Review in Mitigation Planning" (May 1st 2007) <u>https://www.fema.gov/media-library/assets/documents/10210</u> Accessed August 15th 2018

Federal Emergency Management Agency. "Using the Hazard Mitigation Plan to Prepare Successful Hazard Mitigation Plans" (August 2008) <u>https://www.fema.gov/media-</u> <u>library/assets/documents/14242</u> Accessed October 15th 2018

Federal Emergency Management Agency. "2011 NYS Standard Multi-Hazard Mitigation Plan" (2011) <u>http://www.dhses.ny.gov/recovery/mitigation/archive/hm-plan-2011.cfm</u> Accessed June 25th 2018.

Frumhoff, Peter, et al. "Confronting Climate Change in the U.S. Northeast" [PDF] July 2007 https://www.ucsusa.org/sites/default/files/legacy/assets/documents/global\_warming/pdf/confront ing-climate-change-in-the-u-s-northeast.pdf Accessed June 15th 2018

Kappel, William. "The hydrogeology of the Tully Valley, Onondaga County, New York: an overview of research", 1992-2012" (2014) <u>https://pubs.er.usgs.gov/publication/ofr20141076</u> Accessed Oct 15<sup>th</sup> 2018

Klotz, Mark. "DOW TOGS 3.1.5 – Guidance for Dam Hazard Classification" <u>http://www.dec.ny.gov/docs/water\_pdf/togs315.pdf</u> [PDF] Accessed Oct 15th 2018

National Center for Atmospheric Research (NCAR) Extreme Weather Sourcebook 2001: Economic and Other Societal Impacts Related to Hurricanes, Floods, Tornadoes, Lightning, and Other U.S. Weather Phenomena. 2001.

National Climatic Data Center. "Storm Event Database" (2011).

http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwevent~storms Accessed June 10th 2018.

National Climatic Data Center (NCDC). "United States Snow Climatology" (2011). http://www.ncdc.noaa.gov/ussc/index.jsp Accessed June 15<sup>th</sup> 2018

National Drought Mitigation Center (NDMC). University of Nebraska – Lincoln (2009). Retrieved at: <u>http://drought.unl.edu/</u>. Accessed June 15<sup>th</sup> 2018.

NYS Energy Research and Development Authority. "Responding to Climate Change in New York State (ClimAID)" [PDF] November 2011. <u>https://www.nyserda.ny.gov/-/media/Files/Publications/Research/Environmental/EMEP/climaid/ClimAID-Report.pdf</u> Accessed Oct 15<sup>th</sup> 2018

Plattsburgh Press-Republican. "Wildfire grows to more than 300 acres in state forest" (July 4<sup>th</sup> 2018). <u>https://poststar.com/news/local/wildfire-grows-to-more-than-acres-in-state-forest/article\_026d1403-fd5f-505d-b1d9-bb5c579fbeec.html</u> Accessed Oct 15th 2018

Prince, Keith, et al. "Summary of Talks, Discussions, Field Trip, and Outstanding Issues"

(November 19<sup>th</sup> 1992). <u>https://pubs.usgs.gov/of/1994/ofr94-532/</u> Accessed Oct 15<sup>th</sup> 2018

Smith, Gerald. Soil Survey of Essex County, New York. 1999.

http://www.nrcs.usda.gov/Internet/FSE\_MANUSCRIPTS/new\_york/essexNY2010/Essex\_NY.p df [PDF] Accessed Oct 1, 2018.

State of New York. "Adirondack Park State Land Master Plan" (December 2016) [PDF] www.apa.ny.gov/Documents/Laws\_Regs/APSLMP.pdf Accessed Oct 15th 2018

Tetra Tech EM, Inc. "Delaware County Multi-Jurisdictional Hazard Mitigation Plan Update Volume 1" (March 2013)

http://www.co.delaware.ny.us/departments/des/DESweb/images/EntireFinalVolume1.pdf Accessed Oct 15th 2018

Trenberth, Kevin et al. "Atlantic Hurricanes and Natural Variability in 2005" (June 27th 2006)

https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2006GL026894 Accessed July 15th 2018

United States Army Corps of Engineers Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory. (USACE). "Ice Jams and Ice Jam Flooding." <u>http://www.crrel.usace.army.mil/icejams/</u>. Accessed Oct 15<sup>th</sup> 2018.

United States Census Bureau 2005-2009 American Community Survey. (U.S. Census ACS). 2005-2009. Fact Sheet. <u>www.factfinder.census.gov</u>. Accessed June 10<sup>th</sup> 2018.

U.S. Census Bureau (1990). "Decennial Census Datasets" <u>https://www.census.gov/programs-</u> <u>surveys/decennial-census/data/datasets.1990.html</u> Accessed June 15th 2018 U.S. Census Bureau (2000). "Decennial Census Datasets" <u>https://www.census.gov/programs-</u> <u>surveys/decennial-census/data/datasets.2000.html</u> Accessed June 15th 2018

U.S. Census Bureau (2010). "Decennial Census Datasets" <u>https://www.census.gov/programs-</u> <u>surveys/decennial-census/data/datasets.2010.html</u> Accessed June 15th 2018

United States Department of Agriculture. (USDA). 2007 Census of Agriculture County Profile. <u>http://www.agcensus.usda.gov/Publications/2007/Online\_Highlights/County\_Profiles/Pennsylva</u> <u>nia/index.asp\_Accessed Oct 15th 2018</u>

United States Environmental Protection Agency. (EPA) 2009. "Natural Disaster PSAs." <u>http://www.epa.gov/naturalevents/psa.html</u> Accessed Oct 15th 2018

United States Geological Survey. (USGS). 2011. "Landslides Hazard Program." http://landslides.usgs.gov Accessed Oct 15th 2018

U.S. Geological Survey "Fact Sheet 165-00 – Land Subsidence in the US" (December 2000) <u>https://water.usgs.gov/ogw/pubs/fs00165/</u> Accessed Oct 15th 2018.

U.S. Geological Survey. "The Modified Mercalli Intensity Scale."

https://earthquake.usgs.gov/learn/topics/mercalli.php Accessed Oct 15th 2018

University of Colorado Science Policy. "Societal Aspects of Weather Injury and Damage Statistics" <u>https://sciencepolicy.colorado.edu/socasp/stats.html</u> Accessed Oct 15th 2018

Warren, John. "Adirondack Earthquake Anniversaries – The 1931 Warren County Quake" (April 17th 2006) <u>https://www.adirondackalmanack.com/2006/04/adirondack-earthquake-anniversaries-the-1931-warren-county-quake.html</u> Accessed Oct 15th 2018

# **Photo Citations**

Adirondack.net "Lake Placid Olympic Jumping Complex" <u>https://www.adirondack.net/business/lake-placid-olympic-jumping-complex-16697/</u> Accessed Nov 13th 2018

Brown, Phil. (August 29th, 2011) "Marcy Dam Washed Away" https://web.archive.org/web/20120625215322/http:/adirondackexplorer.org/outtakes/2011/08/29/marcy-dam-bridge-washed-away/ Accessed Nov 13th 2018

Essex County Emergency Services. "Fire Training Schedule" <u>http://www.co.essex.ny.us/OfficeOfEmergencyServices/index\_files/Page580.htm</u> Accessed Nov 13th 2018

Flynn, Andy. "Essex County says stay off roads amid snowstorm" (March 15th 2017) http://lakeplacidnews.com/page/content.detail/id/526621/Essex-County-says-stay-off-roadsamid-snowstorm.html Accessed November 13th 2018 Kimball, Kristin. "Essex NY Community Farm" <u>http://www.kristinkimball.com/essex-farm</u> Accessed Nov 13th 2018

Mann, Brian et al. "Five Years After Irene, recovery, scars and memories" (Sept 1, 2016) <u>https://www.northcountrypublicradio.org/news/story/32485/20160901/five-years-after-irene-recovery-scars-and-memories</u> Accessed Nov 13th 2018

Marinov, April. "Map of Wildfires as Reported by NYS Forest Rangers and Fire Departments" (February 2018) <u>www.dec.ny.gov/lands/68333.html</u> Accessed Oct 15th 2018

NCPR News. "New York, North Country assesses Irene's wake; flash flood kits Keene" (Aug 29<sup>th</sup> 2011) <u>https://www.northcountrypublicradio.org/news/story/18290/20110829/new-york-north-country-assess-irene-s-wake-flash-flood-hits-keene</u> Accessed Nov 13<sup>th</sup> 2018.

Mining artifacts.org. "New York Mines" <u>http://www.miningartifacts.org/NewYorkMines.html</u> Accessed Nov 13th 2018

Shepard, Katie. "2011 Flood of Lake Champlain Basin" (Nov 14th 2102) https://www.essexonlakechamplain.com/2011-flood-of-lake-champlain-basin/ Accessed Oct 15th 2018

Whiteface Lake Placid. "Driving Tips" <u>https://www.whiteface.com/veterans-memorial-highway-</u> <u>driving-tips</u> Accessed Nov 13th 2018

## **Appendix 2: Definitions**

**A-Zones:** A-Zones are found on all Flood Hazard Boundary Maps (FHBMs), Flood Insurance Rate Maps (FIRMs), and Flood Boundary and Floodway Maps (FBFMs). An A-Zone is an area that would be flooded by the Base Flood, and is the same as a Special Flood Hazard Area (SFHA) or a 100-year floodplain. These areas may be unnumbered as AE, AH, or AO Zones. Numbered A- Zones indicates an area's risk to flooding.

**Acquisition:** Local governments can acquire lands in high hazard areas through conservation easements, purchase of development rights, or outright purchase of property.

**Asset:** Any manmade or natural feature that has value, including, but not limited to people; buildings; infrastructure like bridges, roads, and sewer and water systems; lifelines like electricity and communication resources; or environmental, cultural, or recreations features like parks, dunes, wetlands, or landmarks.

**Base Flood:** A term used in the National Flood Insurance Program to indicate the minimum size a flood to be used by a municipal as a basis for its floodplain; management regulations; currently required by regulation to be that flood which has a one-percent chance of being equal or exceeded in any given year. Also known as a 100-year flood elevation or One-percent chance flood.

**Base Flood Elevation (BFE):** The elevation for which there is a one-percent chance in any given year that flood levels will equal or exceed it. The BFE is determined by statistical analysis for each local area and designated on the Flood Insurance Rate Maps. It is also known as 100-year flood elevation.

**Base Floodplain:** The floodplain that would be inundated by a one-percent chance (100-year) flood.

**Building:** A structure that is walled and roofed, principally above ground and permanently affixed to a site. The term includes a manufactured home on a permanent foundation on which the wheels and axles carry no weight.

**Building Code:** The regulations adopted by a local governing body setting forth standards for the construction, addition, modification, and repair of buildings and other structures for the purpose of protecting the health, safety, and general welfare of the public.

**Community Rating System (CRS):** The Community Rating System is a voluntary program that each municipality or county government can choose to participate in. The activities that are undertaken through CRS are awarded points. A municipal's points can earn people in their municipal a discount on their flood insurance premiums.

**Critical Facility:** Facilities that are critical to the health and welfare of the population and that are especially important following hazard events. Critical facilities include, but are not limited to shelters, police and fire stations, and hospitals.

**Designated Floodway**: The channel of a stream and that portion of the adjoining floodplain designated by a regulatory agency to be kept free of further development to provide for unobstructed passage of flood flows.

**Development**: Development means any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or of equipment or materials.

**Digitized**: To convert electronically points, lines, and area boundaries shown on maps into x, y, coordinates (e.g., latitude and longitude, Universal Transverse Mercator (UTM), or table coordinates) for use in computer applications.

**Disaster Mitigation Act of 2000**: (DMA 2000) (public Law 106-390) is the latest legislation to improve the planning process. It was signed into law on October 10, 2000. This new legislation reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur.

**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.

**Elevation**: The placement of a structure above flood level to minimize or prevent flood damages.

**Erosion**: Wearing away of the land surface by detachment and movement of soil and rock fragments, during a flood or storm or over a period of years, the rough the action of wind, water, or other geologic processes.

**Federal Emergency Management Agency (FEMA)**: Independent agency 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 that crests in a short length of time and is often characterized by high velocity flow. It is often the result of heavy rainfall in a localized area.

**Flood Elevation**: Elevation of the water surface above an establish datum, e.g. National Geodetic Vertical Datum of 1929, North American Datum of 1988, or Mean Sea Level.

**Flood or Flooding**: Flood or Flooding means a general and temporary condition of partial or complete inundation of normally dry land areas from: (1) the overflow of inland or tidal waters. (2) The unusual and rapid accumulation or runoff of surface waters from any source. (3) Mudslides (i.e., mudflows) which are proximately caused by flooding. The collapse or subsidence of land along the shore of a lake or other body of water, accompanied by a severe storm, or by an unanticipated force of nature, such as a flash flood or an abnormal tidal surge, or by some similarly unusual and unforeseeable event, may also be defined a flooding.

**Flood Control**: Keeping flood waters away from specific developments or populated areas by the construction of flood storage reservoirs, channel alterations, dikes and levees, bypass channels, or other engineering works.

**Flood Disaster Assistance**: Flood disaster assistance includes development of comprehensive preparedness and recovery plans, program capabilities, and organization of Federal agencies and of State and local governments to mitigate the adverse effects of disastrous floods. It may include maximum hazard reduction, avoidance, and mitigation measures, as well policies,

procedures, and eligibility criteria for Federal grant or loan assistance to State and local governments, private organizations, or individuals as the result of the major disaster.

**Flood Fringe**: That portion of the floodplain that lies beyond the floodway and serves as a temporary storage area for floodwaters during a flood. This section receives waters that are shallower and of lower velocities than those of the floodway.

**Flood Hazard** Flood Hazard is the potential for inundation and involves the risk of life, health, property, and natural value. Two reference base are commonly used: (1) For most situations, the base flood is that flood which has a one-percent chance of being exceeded in any given year (also known as the 100-year flood); (2) for critical actions, an activity for which a one-percent chance of flooding would be too great, at a minimum the base flood is that flood which has a 0.2 percent chance of being exceeded in any given year (also known as the 500-year flood).

**Flood Hazard Boundary Map (FHBM)**: Flood Hazard Flood Hazard Boundary Map (FHBM) means an official map of a municipality, issued by the Administrator, where the boundaries of the flood, mudslides (i.e., mudflow) related erosion areas having special hazards have been designated as Zones A, M, and E.

**Flood Insurance Flood Insurance Rate Map (FIRM)**: Flood Insurance Flood Insurance Rate Map (FIRM) means an official map of a municipality, on which the Administrator has delineated both the special hazard areas and the risk premium zones applicable to the municipal.

**Flood Insurance Study (FIS)**: Flood Insurance Study means an examination, evaluation and determination of flood hazards and, if appropriate, corresponding water surface elevations, or an examination, evaluations and determination of mudslide (i.e., mudflow) and/or flood-related' erosion hazards.

**Floodplain**: Floodplain or flood-prone area means any land area susceptible to being inundated by water from any source (see definition of flooding).

**Floodplain Management**: The operation of an overall program of corrective and preventive measures for reducing flood damage, including but not limited to emergency preparedness plans, flood control works and floodplain management regulations.

**Flood Management Regulations**: Floodplain Management Regulations means zoning ordinances, subdivision regulations, building codes, health regulations, special purpose ordinances (such as floodplain ordinance, grading ordinance and erosion control ordinance) and other applications of police power. The term describes such state or local regulations, in any combination thereof, which provide standards for the purpose of flood damage prevention and reduction.

**Flood proofing:** Any combination of structural and nonstructural additions, changes or adjustments to structures which reduce or eliminate flood damage to real estate or improved property, water and sanitary facilities, structures and their contents.

**Floodway**: Floodway means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

**Flood Zones**: Zones on the Flood Insurance Rate Map (FIRM) in which a Flood Insurance Study has established the risk premium insurance rates.

#### Flood Zone Symbol:

A: An area of special flood hazard without water surface elevations determined.

A1-30, AE: An area of special flood hazard with water surface elevations determined.

AO: An area of special flood hazard having shallow water depths and/or unpredictable flow paths between one and three feet.

A-99: An area of special flood hazard where enough progress has been made on a protective system, such as dikes, dams, and levees, to consider it complete for insurance rating purposes.

AH: An area of special flood hazard having shallow water depths and/or unpredictable flow paths between one and three feet and with water surface elevations determined.

B, X (shaded): An area of moderate flood hazard. C, X (unshaded): An area of minimal hazard.

D: An area of undetermined but possible flood hazard.

**Freeboard**: Freeboard means a factor of safety usually expressed in feet above a flood level for purposes of floodplain management. Freeboard tends to compensate for many unknown factors that could contribute to flood heights greater than the height calculated for a selected size flood and floodway conditions, such as wave action, bridge openings, and the hydrological effect of urbanization of the watershed.

**Fujita Scale of Tornado Intensity**" Rate tornadoes with numeric value from F0 to F5 based on tornado wind speed and damage sustained. An F0 indicates minimal damage such as broken tree limbs or signs, while F5 indicates severe damage sustained.

**Geographical Information System (GIS)**: A computer software application that relates physical features on the earth to a database to be used for mapping and analysis.

**Hazard:** A source of potential danger or adverse condition. Hazards in the context of this plan will include naturally occurring events such as flood, earthquakes, tornadoes, coastal storms landslides, and wildfires that strike populated areas. A natural event is a hazard when it has the potential to harm people or property.

Hazard Event: A specific occurrence of a particular type hazard.

Hazard Identification: The process of identifying hazards that threaten an area.

**Hazard Mitigation:** Sustained action taken to reduce or eliminate long-term risk from hazards and their effects.

**Hazard Profile**: A description of the physical characteristics of hazards and a determination of various descriptors including magnitude, duration, frequency, probability, and extent. In most cases, a municipal can most easily use these descriptors when they are recorded and displayed as maps.

**Hydrology:** The science dealing with the occurrence, circulation, distribution, and properties of the waters of the earth and its atmosphere.

**Infrastructure:** Refers to the public service of a municipal 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, and includes an area's transportation system such as airports, heliports, highways, bridges, tunnels, roadbeds, overpasses, railways, bridges, rail yards, depot, waterways, canals, locks, seaports, ferries, harbors, dry-docks, piers and regional dams.

Intensity: A measure of the effects of a hazard event at a particular place.

Landslide: Downward movement of slope and materials under the force of gravity.

**Liquefaction**: The phenomenon that occurs when ground shaking causes loose soils to lose strength and act like viscous fluid. Liquefaction cause two types of ground failure: lateral spread and loss of bearing strength.

Local Emergency Planning Committee (LEPC): LEPCs consist of municipal representatives and are appointed by the State Emergency Response Commissions (SERCs), as required by Superfund Amendments and Reauthorization Act (SARA), Title III. They develop an emergency plan to prepare for and respond to chemical emergency. They are also responsible for coordinating with local facilities to find out what they are doing to reduce hazards, prepare for accidents, and reduce hazardous inventories and releases. The LEPC serves as a focal point in the municipal for information and discussion about hazardous substances, emergency planning, and health and environmental risks.

**Magnitude**: A measure of the strength of a hazard event. The magnitude (also referred to a severity) of a given hazard event is usually determined using technical measures specific to the hazard.

Mitigate: To cause something to become less harsh or hostile, to make less severe or painful.

**Mitigation Plan**: A systematic evaluation of the nature and extent of vulnerability to the effects of natural hazards typically present in the state and includes a description of actions to minimize future vulnerability to hazards.

**Municipal**: Municipal means any State or area or political subdivision thereof, or any Indian tribe or authorized tribal organization or Alaska Native village or authorized native organization, which has the authority to adopt and enforce floodplain management regulations for the areas within its jurisdiction.

**National Flood Insurance Program (NFIP)**: The Federal program, created by an act of Congress in 1968 that makes flood insurance available in municipalities that enact satisfactory floodplain management regulations.

**National Weather Service (NWS):** Prepares and issues flood, severe weather, and coastal storm warnings and can provide technical assistance to federal and state entities in preparing weather and flood warning plans.

**New Construction:** New construction means structures for which the "start of construction" on or after the effective date of a floodplain management regulation adopted by a municipal and includes any subsequent improvement to such structures.

**Nonstructural Floodplain Management Measures**: Those measures, such as flood proofing, employed to modify the exposure of buildings to floods and use planning, warning, schemes, and insurance as opposed to structural measures (such as dams, levees, and channel modifications).

**Nor'easter**: An extra-tropical cyclone producing gale-force winds and precipitation in the form of heavy snow and rain.

**One Percent chance flood**: (Formerly called the One Hundred (100) Year Flood) The flood elevation that has a one-percent chance of being equaled or exceeded in any given year. It is also known as the base flood.

Permeability: The property of soil or rock that allows water to pass through it.

**Planning**: The act or process of making or carrying out plans; the establishment of goals, policies and procedures for social or economic unit.

**Preparedness Actions:** Actions that strengthen the capabilities of government, citizens, and municipalities to respond to disasters.

**Probability:** A statistical measure of the likelihood that a hazard event will occur.

**Recovery**: The actions taken by an individual or municipal after a catastrophic event to restore order and lifelines in a municipal.

**Regulatory Floodplain**: That portion of the floodplain subject to floodplain regulations (usually the floodplain inundated by one-percent chance flood).

**Regulatory Floodway**: Regulatory Floodway means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

**Regulatory Power**: Local jurisdictions have the authority to regulate certain activities in their jurisdiction. With respect to mitigation planning, the focus is on such things as regulating land use development and construction through zoning, subdivision regulations, design standards and floodplain regulations.

**Relocation**: The moving of a structure from a flood area to a new location, normally to one where there is no threat of flooding.

**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 \$1000 each have been paid within any 10-year period since 1978.

**Response**: The actions taken during an event to address immediate life and safety needs and minimize further damage to properties.

**Richter Scale**: A numerical scale of earthquake magnitude devised by seismologist C.F. Richter in 1935.

**Risk**: The estimated impact that a hazard would have on people, services, facilities, and structures in a municipal; the likelihood of a hazard event 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 a specific type of hazard event. It also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.

**Runoff**: That portion of precipitation that is not intercepted by vegetation, absorbed by land surface, or evaporated, and thus flows overland into a depression, stream, lake, or ocean (runoff, called immediate subsurface runoff, also takes place in the upper layers of soil).

**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.

Seismicity: Describes the likelihood of an area being subject to earthquakes.

**Severe repetitive loss structures** consists of any NFIP-insured residential property that has met at least 1 of the following paid flood loss criteria since 1978, regardless of ownership:

• 4 or more separate claim payments of more than \$5,000 each (including building and contents payments); or

• 2 or more separate claim payments (building payments only) where the total of the payments exceeds the current value of the property. In either case, 2 of the claim payments must be in a ten year period.

**Special Flood Hazard Area (SFHA):** An area ithin a floodplain having a percent or greater chance of flood occurrence in any given year (100-year floodplain) represented on Flood Insurance Rate Maps by darkly shaded areas with zone designation that includes the latter A or V.

**Special Flood Hazard Area:** Special Hazard Area means an area having special flood, mudslide (i.e., mudflow) and/or flood-related erosion hazards, as shown on a FHBM or FIRM as Zone A, AOA, A1-30, AE, A99, AH, VO, V1-30, VE, V, M, or E.

**Stafford Act**: The Robert T. Stafford Disaster Relief and Emergency Assistance Act, PL 100-107 was signed into law November 23, 1988 and 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:** Individual or group that will be affected in any way by an action or policy. They include businesses, private organizations, and citizens.

## Essex County Hazard Mitigation plan

**Standard Project Flood**: A term used by the U.S. Army Corps of Engineers to designate a flood that may be expected from the most severe combination of meteorological and hydrological conditions that is considered reasonably characteristics of the geographical area in which the drainage basin is located, excluding extremely rare combinations. The peak flow for a standard project flood is generally 40 to 60 percent of the probable maximum flood for the same location.

**State Coordinating Agency**: State coordinating agency means the agency of the state government, or other office designated by the Governor of the state or by state statute at the

## **Definitions**

request of the Administrator to assist in the implementation of the National Flood Insurance Program in that state.

**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 planning and implementation of pre- and post-disaster mitigation activities.

Stile: A set of stairs to allow access over an obstruction, such as a floodwall.

**Stream**: A body of water flowing in a natural surface channel. Flow may be continuous or only during wet periods. Streams that flow only during wet periods are termed "intermittent streams."

**Structural Mat Slab**: The concrete slab of a building that includes structural reinforcement to help support the building's structure.

**Structural Projects:** Those physical or engineering measures employed to modify the way floods behave; examples included dams, dikes, levees, channel enlargements, and diversions.

**Structure**: Something constructed (see also Building). A walled and roofed building, including a gas or liquid storage tank, that is principally above ground and affixed to a permanent site, as well as a manufactured home.

**Subdivision Regulations**: Ordinances or regulations governing the subdivision of land with respect to things such as adequacy and suitability of building sites and utilities and public facilities.

**Subsidence**: Sinking of the land surface, usually due to withdrawals of underground water, oil or minerals.

**Subsidized Rates**: Subsidized rates mean the rules established by the Administrator involving in the aggregate subsidization by the Federal Government.

**Substantial Damage**: Damage of any origin sustained by a structure in a Special Flood Hazard Area whereby the cost of restoring the structure to its before-damaged condition would equal or exceeds 50 percent of the market value of the structure before the damage.

**Substantial Improvement**: Substantial improvement means any reconstruction, rehabilitation, addition, or other improvement of a structure, the cost of which equals or exceeds 50 percent of the market value of the structure before the "start of construction" of the improvement. This term includes structures, which have incurred "substantial damage," regardless of the actual repair work performed. The term does not, however, include either: (1) Any project for improvement of

# Essex County Hazard Mitigation plan

a structure to correct existing violations of state or local health, sanitary, or safety code specifications which have been identified by the local code enforcement official and which are the minimum necessary to assure safe living conditions or (2) Any alteration of a "historic structure," provided that the alterations will not preclude the structure's continued designation as a "historic structure."

Tornado: A violently rotating column of air extending from a thunderstorm to the ground.

**Variance**: Variance means a grant of relief by a municipal from the terms of a floodplain management regulation.

### **Definitions**

**Venting**: A system designed to allow floodwaters to enter an enclosure, usually the interior of foundation walls, so that the rising water does not create a dangerous differential in hydrostatic pressure. This is usually achieved through small openings in the wall, such as a missing or rated brick or concrete block or small pipe.

**Vulnerability**: Describes how exposed or susceptible to damage an asset is. Vulnerability depends on an asset's construction, contents, and the economic value of its functions. Like indirect damages, the vulnerability of one element of the municipal is often related to the vulnerability of another. For example, many businesses depend on uninterrupted electrical power-if any electric substation is flooded; it will affect not only the substation itself, but a number of businesses as well. Often, indirect effects can be much more widespread and damaging than direct ones.

**Vulnerability Assessment**: The extent of injury and damage that may result from hazard event of a given intensity in a given area. The vulnerability assessment should address impacts of hazard events on the existing and future built environment.

**Watercourse**: A natural or artificial channel in which a flow of water occurs either continually or intermittently.

**Watershed:** An area that drains to a single point. In a natural basin, this is the area contributing flow to a given place or stream.

**Water Surface Elevation**: Water surface elevation means the height, in relation to the National Geodetic Vertical Datum (NGVD) of 1929, (or other datum, where specified) of floods of various magnitudes and frequencies in the floodplains of coastal riverine areas.

Water Table: The uppermost zone of water saturation in the ground.

**Wetlands**: Areas that are inundated or saturated at a frequency and for a duration sufficient to support a prevalence of vegetative or aquatic life requiring saturated or seasonally saturated soil conditions for growth and reproduction.

**Wildfire:** An uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures.

**Zoning Ordinance:** An ordinance under the State or local government's police power that divides an area into districts and, within each district, regulates the use of land and buildings, height and bulk of buildings or structures, and the density of population.
# Basic Disaster Supplies Kit

A basic emergency supply kit could include the following items:

Water – one gallon of water per person per day for at least three days for drinking and sanitation

Food – at least a three-day supply on nonperishable food, manual can opener, knife

- Portable gas stove or matches / lighter, cookpot

- Battery powered or hand crank radio unit, with extra batteries



- Flashlight and extra batteries
- First Aid Kit, with whistle

- Dust mask and plastic sheeting, to use if air is bad or

you need to shelter in place

- Moist towelettes, garbage bags and plastic ties
- Wrench or pliers to turn off utilities
- Local Maps

- Cell phone with chargers, inverter or solar panel charger

- Scissors, tweezers

- Basic toiletries (toilet paper, comb, multi-use soap like Dr. Bronner's, toothbrush and toothpaste, washcloth, extra hair ties if needed)

- Change of clothes, shoes

# Advanced Disaster Supplies Kit

In addition to the items for the basic disaster supply kit, consider the following items for a more advanced supply kit:

- Extra prescription medications (one-week supply) and extra prescription glasses/contacts



 Cash and change, or traveller's checks

- Copies of important documents (insurance

policies, identification, birth certificate and/or social security cards, bank numbers and accounts, etc) in a waterproof portable container

- Sleeping bag or warm blanket for each person appropriate for the climate and season

- Tent big enough for family size
- Mess kit, paper plates/bowls, eating utensils
- Additional clothing appropriate for climate and season

- Water purification pump, tablets, or drops. In a pinch, non-scented regular chlorine bleach will do, at a ratio of 16 drops per gallon of water. Do not use scented or color-safe bleaches, or bleaches with added cleaners.

- Infant formula and diapers, if applicable
- Pet food and water for three days
- Books, puzzles or travel games to stay occupied

# How to Create an Emergency Evacuation Kit



#### PLACE YOUR TOWN INFO HERE

From tornadoes to blizzards to wildfires, natural disasters can be frightening. While these emergencies come in many forms, and may require anything from a brief evacuation to a permanent evacuation, there is one thing you can do to ensure your safety – PREPARE!

If you're forced to leave your home, you may have less than a minute to grab things and go, so it is important to have your bag ready in a easily accessible location. Having it ready could mean the difference between your well being and hardship.

You can't control disasters, but you can control how prepared you are for them.

# What you'll need:

Beyond just stocking up on supplies, you'll need other important things in your evacuation kits. Personal documents are a crucial part of this. These could include:

Identification: Copies of driver's licences, social security card, birth certificate, and marriage records. Don't forget documents for other family members too!

Insurance: Copies of home, auto, and health policy information. If you or your property is damaged, these will make sorting things out afterwards so much easier.

Banking: At a minimum, banking and checking account information. Consider keeping a few checks in this file too.

Legal Documents: Copies of wills and power-ofattorney's for not only you, but anyone in your household you are responsible for.

Contact Information: Especially since most of us no longer have phone numbers memorized, having this info for close friends and family, doctors, and work contacts will be useful.

Other Important Items:

- Cash in small denominations, as you may be unable to access ATM's or banks during a emergency. Credit and debit cards may not work without internet service either.

- Medication: keep a seven-day supply of essential medication in your bag. Make sure to rotate the items as needed to ensure the stock is fresh and will work as intended. Have extra copies of prescriptions handy, or on file at a national pharmacy, or entrusted to a friend or family member who loves far enough away any local disasters will not have impacted them.

- First Aid Kit, to include: bandages in various



sizes, gauze pads, adhesive cloth tape, antiseptic wipe packets, antibiotic ointment, hydrocortisone cream, thermometer, non-latex gloves, scissors, tweezers, aspirin or another painkiller,

and allergy medication. Also include anything else you predict needing, such as a tick removal device in tick infested areas. - Connectivity: an extra cell phone charger. Be aware though that during some emergencies the cell reception will be bad or the network may be overloaded.

- Navigation: A map of your city or region, including street names. Disasters often force detours, and maps will help prevent you from getting lost.

However, maps only work if you can read them, so make sure you have some basic map reading ability at hand.

# Pulling it all together:

Use a large water-resistant backpack (or duffle bag, though it is not preferable) to hold your emergency kit in an easy to find location. Look for

bags with padded shoulder straps and waist straps to make it easier to carry long distances, and multiple pockets may come in handy.

Make sure documents are in a waterproof case inside the backpack, as

well as anything else that may be harmed by water.

Studies have shown that the more prepared someone is for an emergency, the less anxious they are during one, and the quicker and easier recovery is.



#### Why are older adults at risk?

Seniors can be at increased risk because they may live alone and have physical mobility limitations. Additionally, they might be on medication that tend to limit mobility or impair decision making. Some of them might not have ever been trained what to do in case of fire.

#### General tips for seniors:

Do not plug multiple electrical cords together, or run them under rugs, or use them to power high draw items like space heaters.

Do not use or keep cords that are frayed, loose, or have exposed internal wiring. They can shock you or cause fires.

Keep house reasonably clear of clutter, and make sure you can easily traverse the entire dwelling.

Do not use a dishtowel as a pot holder, as it may alight when in contact with the stove.

While cooking, do not wear loose or dangling clothing, as they may catch fire if in contact with the stove.

Keep fire extinguishers available in the kitchen and any room with a woodstove or fireplace. Make sure they are still good annually, and that you know how to use them.

Do not leave burning candles unattended, and watch the placement near furniture, drapes, etc.

Never smoke in bed – you may set bedclothes alight by accident.

#### First Aid for Minor Burns:

Run cool water over the burns for several minutes to ease pain and prevent further skin damage. Do not break blisters that may form.

For more serious burns and/or chemical burns, make sure patient is not in further danger of burning and call a medical professional. Serious or extensive burns can be life threatening, so do not delay.

Important Phone Numbers:

**911** is the US based emergency line, and can be used for many emergencies.

Local Police:

Your Doctor:

Local Hospital:

Nearby friend or relative:

Closest friend or relative:

Neighbors:

# Fire Safety Tips for Older Adults



#### PLACE YOUR TOWN INFO HERE

# Smoke alarms can save your life!

Make sure you have adequate warning for fires by installing smoke alarms and testing them regularly (monthly or quarterly).

Hire a qualified electrician to upgrade your alarm system to be wired together if it is not already – this ensures that if one alarm in one part of your house goes off, the rest will too.

Install a working connected alarm on each floor of your house, and make sure they are close enough to sleeping areas to be heard. Ask a friend or relative to help you test the system while you are asleep, to make sure it wakes you up.

Test your smoke alarm once a month by pressing on the button or directing smoke towards the unit. If you live in attached housing, alert your neighbors so they won't worry.

Never disconnect the smoke alarm for any reason. It is there to protect you and cannot do its job unplugged.



#### Plan your escape:

The prepare for fire, you should plan and practice your plan of escape. In the confusion of a major disaster, pre-planning helps people know how to behave and act.

Know where the exits are in your house, and the distance to them. If an area is blocked off by fire, you should be able to reroute around them.

Sometimes when a fire strikes, it is already outside the door to the room you occupy, and you can't leave by normal means. Any room that someone sleeps in should have a secondary exit, normally a window. You should not sleep in a room that does not have this secondary exit.

Know how to unlock all doors and windows in your home, so that if you have to escape, you can.

Stock the rooms people normally sleep in with escape ladders if they are on the second or higher floors of the house. These are generally sold as flexible roped ladders with solid rungs that hook under the windowsill and allow easy escape. They roll up when not in use and can be stored in a small location.

If you are in a multi-story multi-unit apartment tower, make sure you know what plans are in place in case of fire. They should have fireproof doors between levels, and accessible stairwells. Some of them might have fire suppression sprinkler systems in place.

#### In case of fire:

If you do experience a fire, do not panic. Follow the escape plan you have practiced, and egress using the door or window to the building you are in. Test any doors first by placing your hand on it to see if the fire is immediately outside. Do not open doors that feel hot.

If you have not had time to acquire an escape ladder, or you are visiting someone who does not have one, then you may have to jump out the window. This is actually a misnomer though – do not jump out!

Open the window, go out feet first and lower yourself as close to the ground as you can. Then drop, making sure to bend your knees on impact.

If escaping by interior rooms, be aware smoke will congregate towards the ceiling, making the air towards the ground more breathable.

Remember that stuff is not as important as human lives, and most of it is replaceable.

#### If you are on fire:

Stop: Stop, stand still.

**Drop:** Drop to your knees, and then lay flat on the ground.

**Roll:** Roll back and forth on the ground to extinguish the fire.

# Prevent Sewage Backflow by Installing Sewage Backflow Valves

Once you have determined that your home is in a flood prone area, you should consider installing sewage backflow valves. They stop sewage backup caused by flooding to enter your home, avoiding both the mess and hazard of raw sewage in the home (it is a severe health concern due to bacteria present in raw sewage).

There are two main types: flap valves and gate valves. Flap valves operate by closing when sewage is flowing the wrong way in the pipe, but is not as tight a seal as gate valves. Gate valves have a tighter seal, but must be initiated by hand when needed, leading to a risk of non-use if a flood happens suddenly or when you are not home.

Both must be installed by a licensed plumber under your local building codes. Gate valves are usually more expensive than flap valves. Valves should be installed on all pipes that leaves the house or are connecting to things that may be below the flood height, including washing machine drain lines, laundry sinks, fuel oil lines, rain downspouts, sewer/septic connections, and sump pumps. Sumps pumps connected to underground drain lines are especially challenging.

#### Before a Flood:

- Find out your flood hazard risk from your local emergency management agency or independent research on local flood history

This includes finding out your properties flood elevation and risk, and your local communities warning systems.

- Become prepared by following these basic emergency preparedness steps:

If you live in a flood prone area, consider making an emergency evacuation kit and plan that includes routes to get to safety. Check with your locality for the location of emergency shelters and have multiple safe routes planned, in case one is flooded.

Prepare your house for a flood with both mitigation (elevating structures, installing check valves to prevent floodwaters / sewage infiltration) and emergency supplies like plywood, plastic sheeting, sandbags, and hammers, nails, and shovels and sand.

Acquire emergency supplies such as: flashlights and batteries, battery operated radio, first aid kit and manual, emergency food and water, non-electric can opener and safe food heating source, essential medications, cash and credit cards, sturdy shoes.

# Flood and Flash Flood Safety Tips



Photo: Sadie Holbrook, NCPR NEWS

Place your town information here
Address
Line 2
Phone

# Develop an Emergency Communication Plan

Should the family be separated during a flood event, have a plan to meet at a designated location and/or have a method to communicate.

Due to possible service outage or overloading, cell phones may not be available; therefore, it may be easier to call long distance to someone outside the affected area to coordinate plans. Have this person be designated beforehand, and make sure everyone has memorized their number.

Ensure all family members know how to respond and stay safe in a flood emergency.

Teach children how to call 911, their local police and/or which to tune in to local broadcasts of information.

### Act now to be prepared

Ask your insurance agent about flood insurance; homeowner policies do not cover flood damage.

Make an itemized list of valuables in the house and keep in safe place.

Plan what to do with your pets.

Keep automobile fuelled, and have disaster supply kit in trunk.

# **During a Flood Watch**

Listen to local stations for latest information.

Fill bathtubs, sinks, and jugs with clean water in case supply becomes contaminated.

Bring outdoor furniture and décor in, if possible. Also move valuable items from lower floor to higher floors if time allows.

Keep pets indoors. Gather carrying cases.

Be prepared to evacuate, or follow other directives from local authorities.

### **During a Flood**

*If indoors*; turn on battery powered radio for information updates. Get your preassembled emergency supplies.

If told to leave, do so immediately. Bring everyone who lives there with you.

*If outside;* climb to high ground and stay there. Do not walk through floodwaters, even six inches can sweep you away if it is swift.

*If in your car;* DO NOT drive into a flooded area, turn around and try another way. Many people have drowned from driving though floodwaters they thought were safe.

If your car stalls, abandon it immediately and seek higher ground.

## **During an evacuation**

If advised to evacuate, do so immediately. It will be easier and safer earlier, and may not be possible later.

Remember to take your pets, time permitting.

#### Three ways to treat water

During a flood, water may become contaminated by harmful microorganisms. You should treat all water you are uncertain of its purity.

The methods below treat most microorganisms, but some are not removed. Other contaminants may be in flood waters.

**Boiling** is the safest method to treat water. Bring water to a roiling boil for 3-5 minutes, keeping in mind some will evaporate. Let water cool before drinking.

**Disinfection** is the method using liquid household bleach (plain bleach, not scented, color-safe, or with added cleaners).

Add 16 drops of bleach per gallon of water, stir and let sit 30 minutes. If water does not have faint bleach smell, repeat procedure and let sit for 15 minutes.

**Distillation** involves catching the vapor from boiling water and condensing it.

# Pets and Vehicles

All pets will probably have to take some car trips during their lives – getting them home, vet appointments, moving – and some take more than others, for hiking trips or to visit places. But as with humans, precautions should be taken.

In the summer, you may take your pet somewhere and realize you have to run into a non-pet friendly place. But the internal temperature of a vehicle can quickly climb to unsafe levels, endangering your pet.

So never leave your pet in the car. It doesn't matter if the car is in shade or has its windows partially open – it could cause heat stroke or death for your pet.

If you are traveling with someone, they can put the pet on a leash or move the carrier outside. If alone, you might have to forego your errand.

#### A note on restraint:

Pets should be restrained in some fashion while riding in a car – should you get into an accident, they will perform similar functions as a seatbelt for humans. And a restrained pet can not distract you by climbing on or under you while the vehicle is in motion.

If you have a bed, like in a pickup truck, your pet should not be riding in it. It is not safe, and the pet could be harmed.

# Poisonous plants

Some plants cause adverse reactions in pets, ranging from skin irritations to breathing problems and death. These plants should be avoided.

**Dogs:** Typical houseplants that are bad for dogs include the following: Pothos, Corn Stalk Plant, Philodendron, Asparagus Fern, Dieffenbachia, and Schefflera. Typical yard plants that are bad for dogs include the following: Oleander, Bird of Paradise, Calla Lilly, English Ivy, Yucca, Heavenly Bamboo, China Berry, Castor Bean, and Marijuana.

**Cats:** Typical plants that are bad for cats include the following: Amaryllis, Aloe Vera, Apple, Asparagus Fern, Baby's Breath, Belladonna, Black-Eyed Susan, Chrysanthemum, Daffodil (both plant and bulb), Easter Lily, Eggplant, Eucalyptus, Evergreen, Holly, Honeysuckle, Iris, Jasmine, Java Beans, Lily, Lily Spider, Lily of the Valley, Marigold, Mistletoe, Morning Glory, Mushrooms, Onion, Oriental Lily, Philodendron, Pointsetta, Poppy, Potato, Rhododendron, Rhubarb, Rubber Plant, Sweet Pea, Tiger Lily, Tobacco, Tulip (both plant and bulb), Umbrella Plants, and all Yews.

Remember that some plants your pets can get into, while not affecting them, can affect you! So if you are sensitive to pollen or poison ivy or similar, brush or wash your animal before coming back inside if they may have come into contact with any unusual plant.

# Summer Care Tips for You and Your Pet



#### PLACE YOUr TOWN INFORMATION HERE

# Heatstroke and your pets

Like humans, pets can succumb to the deleterious effects of heat upon their bodies. Like humans, this occurs when the animal absorbs more heat than it can dissipate safely. Unlike humans, animals have more limited means of dissipating this heat; because of their fur, cats and dogs can only sweat through their paws. Their only other method of dissipating heat is panting.

Your animal is at risk in similar situations as a human – hot, humid weather is a risk factor, as is not having shade when the sun is intense. Inadequate ventilation is also a risk factor. Obese pets are at greater risk that normal weight pets – so if your pet is obese, consider exercise and diet to control this risk.

In cats, the normal body temperature is around 101 degrees Fahrenheit, and heatstroke refers to temperatures above 103 degrees. A cat may die if its internal temperature reaches 108.5 degrees.

In dogs, the normal body temperature is around 101 – 102 degrees Fahrenheit, and heatstroke refers to temperatures above 103 degrees. A dog may die if its internal temperature reaches 106 degrees. Dogs noses should be cool and wet – if it is hot and dry there may be a problem.

Heatstroke is a serious potential problem – but do not become paranoid. Everyone seems to have known that cat who lay in the sun on the hot pavement and was fine. Given shade and water, the pet will move when it gets hot.

# How do you tell if your pet is suffering heatstroke?

The following symptoms should be looked out for in pets: acute rapid panting, drooling, weakness or unsteady movements, staggering, glazed eyes and rapid pulse, or a deep purple tongue. Your pet may appear frightened or alarmed.

Step one is to get them out of the situation that led to the heat sickness, and indoors in air conditioning if possible. Lay them down on a cool surface and pour cool (not cold) water on exposed skin under the belly, and provide cool (not cold) drinking water for the pet.

Your goal should be lowing the temperature a few degrees, to between 103 and 104 – cooling too rapidly or too fast could be harmful.

If you can cool them while at the same time transporting them to the nearest animal hospital, do so. If you cannot, you will still want to take the animal to the vet to be checked out.

If you see a pet in a locked car over summer, and it is obviously in distress, go inside the store to alert the store management. If the owner cannot be found immediately, call local animal control or the police.

#### Dehydration

Dehydration is another serious risk. To mitigate, make sure your pet has cool fresh water at all times. Be sure the water is not in sunlight, because it could get dangerously hot, and is changed often.

# Summer Treats for Pets

#### Frozen Peanut Butter Popsicles for Dogs

1 Ripe Banana
 ½ Cup peanut butter
 2 Tsp honey
 32 oz plain yogurt

Mash banana, and mix in peanut butter, honey, and yogurt. Pour into an ice cube tray, freeze for 3 or more hours, and give to pet to enjoy a cool treat. The extra can be stored in the freezer.

#### Cat Cookies

2 Cups Whole Wheat Flour
1 tsp catnip
1/3 cup Whiskas cat milk or similar
1/3 cup powdered milk
2 Tablespoons butter
¼ cup soy flour
1 egg
1 Tablespoon Unsulfured Molasses

Preheat over to 350 degrees Fahrenheit. Mix dry ingredients together. Add wet – molasses, egg, butter, and milk – and mix to combine. Roll out onto oiled cookie sheet and cut into small cat bite size pieces.

Bake 20 minutes and let cool. Store in a sealed container in refrigerator.

If cat is lactose intolerant, use lactose free milk.

If a tornado is imminent:

In a car or truck, or outdoors:

Get out of the car and into a sturdy building. If in open country, run to low ground away from any cars or other movable objects (trees, power lines, large rocks, etc) that may move and fall on you. Lie flat, with your hand protecting the back of your head.

Avoid seeking shelter under bridges – it can create traffic hazards and under the bridge may involve greater danger and pressure differentials than staying in the open.

#### In a public building:

In a large public building (retail store, church, library), move to the lowest possible level, in a room without windows, i.e. a bathroom or storage closet. When in a building with things that may become dangerous projectiles (library, etc), take that into account when hiding. Watch out for other persons who may panic and become dangerous.

#### In your home:

Follow the same precautions about lower floors and no windows, but because you know the environment, you should have a room picked out and hopefully supplied with basic necessities – bottled water, some food, etc.

Don't forget about your pets, children, and elderly persons – if you have time, find them and bring them with you.

#### Tornado Damage:

After a tornado incident, stay put until you are certain the tornado threat is gone. Check your internet or on your smartphone or portable radio for the latest updates.

After the tornado, meet your loved ones in whatever prearranged location you have chosen.

If this is near the site of tornado activity, or you have to wait for assistance there, be careful of downed electrical lines (and puddles near them), any thing that may be perched haphazardly by the tornado (i.e. a car in a tree) or broken and has the potential to damage skin.

Stay out of buildings affected by the tornado – they could collapse. Do not use open flame, in case of natural gas line ruptures.

If there is flooding, follow flood safety guidelines, and never enter water if you don't know how deep or fast it is.

#### Cleanup:

Cleaning up a building after a tornado can be an extensive process. The building may need to be levelled entirely. Be cautious looking for belongings, people, or pets in damaged buildings. Wear protective gear like sturdy shoes and pants, gloves, and long sleeves.

As in any disaster, the psychological affects may be long term and require more after care by trained mental health professionals. Keep a close eye on children, and get them help if needed.

# Tornadoes



#### PLACE YOUR TOWN INFORMATION HERE

#### What causes a tornado?

A tornado is a violently rotating column of air extending between, and in contact with, a cloud and the surface of the air. They are generally spawned by thunderstorms, but they have been known to occur without the presence of lighting. The strongest tornados can reach over 300 miles per hour windspeeds.

Tornado windspeeds are estimated after the fact by an assessment of the damage done versus set examples of windspeed damages.

The US has the highest incidence of tornadoes reported annually, at over 1000 a year. This is due to the geography of "Tornado Alley" in the Midwest, where most of these incidents occur. Polar air from Canada, tropical air from Mexico, and dry air from the desert air meet here, and spawn the sort of thunderstorms that tend to spawn these air formations.

They can come one at a time, or in clusters, and range in size; they can leave paths 50 meters to a mile wide. They have been known to touch down more than once over their lifespan, and can last from a few seconds to an hour or more.

They are unpredictable – the weather immediately preceding can be calm or wildly gusty, and either sunny or rainy.

They can make a sound like a jet engine – but there is no guarantee you will hear this sound before it's too late to flee, if it makes it at all.

#### Fujita Tornado Scale

Scale	Wind Speed	Typical
	Estimate	Damage
FO	<73	Light: chimneys,
		branches,
		signboards
		damaged.
F1	73 – 112	Moderate:
		peeled surface
		on roofs, mobile
		homes
		overturned
F2	113-157	Considerable:
		roofs torn off,
		mobile homes
		demolished
F3	158-206	Severe: trees
		uprooted,
		houses severely
		damaged, cars
		thrown around
F4	207-260	Devastating:
		houses levelled,
		foundations
		gone
F5	261-318	Incredible: whole
		neighborhoods
		demolished

In the US, tornado season is typically concentrated in the springtime, from April to July. But tornados can happen during the right weather conditions at any time of the year, and in any location.

Be alert is a tornado watch is declared for your area. Know where your pets and loved ones are, and keep them close to safety if possible.

#### Tornado Watch System:

In the US, the National Weather Service provides alerts of weather conditions. There are two relevant for tornadoes. A **Tornado Watch** means that there are storms in the area that are conducive to the development of tornadoes. A **Tornado Warning** is when a tornado has been spotted on the ground or by radar, and is occurring or imminent in the watch area.

While tornadoes can and do still occur without these alerts being active, advances in science and technology have greatly increased the ability of meteorologists to provide advance notice to the public.

If you get caught in a place and a tornado is coming towards you, do not panic.

If in a car or mobile home that you do not have sufficient distance to drive away from the tornado, leave. It is better to be outdoors than in one of these structures. Go to a sturdy building if possible, or lie down and protect your head.

If in a building, go to an internal room with no windows if possible. Cover yourself with a mattress or blankets to protect from debris. Make your way down an interior stairwell if possible, and do not take the elevator. You do not want to be trapped there if power cuts out.

Help others who may be less able to help themselves – if the situation was reversed you would want to be helped, right?

#### Weather Folklore:

If crows fly low, winds going to blow. If crows fly high, winds going to die.

A sunshiny shower won't last half an hour!



The chill is on, near and far, for all the months that have an "R".

Rainbow at noon, more rain soon.

Rainbow in the morning, shepherds take warning, rainbow at night, shepherds delight.

When the dew is on the grass, rain will never come to pass.

Rain before seven will quit before eleven.

When a cow tries to scratch her ear, it means a shower is very near.

Clear moon, frost soon.

The moon and the weather may change together, but the change of the moon does not change the weather.



The sharper the blast, the sooner it's past.



#### What is weather caused by?

In general, weather is caused by the interactions between air masses on the planet and the temperature variations caused by seasonal fluctuations, the sun, and localized activity.

For example, wind is caused when a warm air mass meets a cold air mass, and the cold air mass sinks under the warm one.

Rain is caused by the sun, which evaporates water droplets from the ground or bodies of water, and causes them to raise into the air and form clouds. Eventually, the quantity of water in a cloud becomes more than can stay suspended in the air, and it falls to the ground as rain (or snow, sleet, hail, etc.)

Some areas of the planet are warm, in the tropics, and some are cold, like at the poles. The planet wide effect of this is to cause general weather patterns over large areas – you get lots of rain in some lateral

# HOW'S THE WEATHER TODAY?



bands near the tropics and again in another band up north/south from there, and generally drier weather in the other bands.

Climate change may alter these broad patterns in significant and unpredictable ways, which is why scientists are worried about it.

#### Weather Safety for Kids



#### PLACE YOUR TOWN INFORMATION HERE

#### Heat Wave Safety

Extremely hot weather can take a toll on the human body. Every year, people suffer heat sickness, and some people die from the affects on their body. People most at risk include the elderly and the young.

Heat wave safety tips:

Slow down. On extremely hot days, do not perform strenuous outdoor activities.

Dress for the weather with lightweight lighter colored garments, and a hat to shade your face.

Drink plenty of water, as your body uses water for its cooling efforts.

If your house has air conditioning, use it responsibly. If not, use fans, as your body will sweat and the fans help with evaporative cooling. Even in air conditioning, fans can be useful, as they broaden the comfort range of the body and air conditioning can be set at a higher, more energy efficient temperature.

Watch out for too much sun exposure – sunburns are not fun, and cause long-term damage to skin.

Heat sickness is a serious condition – if you or someone you know is feeling faint, clammy, nauseous, sweating profusely, or even more seriously not sweating at all despite being too hot – seek medical attention!

Immediate steps to take are to get the person to a cooler, shaded area and provide cool water to sip. Call a medical professional.

#### Winter Weather Safety

In Essex county, cold weather is a serious danger too. Cold weather dangers include hypothermia, frostbite, and death. In extremely cold weather, everyone is at risk.

Cold weather safety tips:

Dress for the conditions outside, including a warm hat, gloves, scarf, and proper winter coat. It is important to be aware of wind chill, as that can hasten the effects of low temperature.

If it is precipitating, take extra care and try to stay dry. Wet clothes lose much of their insulative value.

Hypothermia is the dangerous condition of your bodies internal temperature dropping below 95 degrees Fahrenheit. In stages, you start to feel cold and shiver, then slow pulse and breathing, lack of coordination, and in the later stages sleepiness and unconsciousness.

If hypothermia develops, get the person to somewhere warm and dry if possible. Keep the person lying down if possible. Remove any wet clothing. Be careful to be gentle, as vigorous rubbing or movement could harm them.

Give warm (not hot) fluids of person is awake. Apply warm compresses to groin, chest or neck only. Avoid rewarming limbs first, as this can cause cold blood to move into the torso and harm them.

Call a medical professional.

#### Lightning:

Lightning, the electrical discharge of thunderstorms, can be very dangerous. If you can go inside during a lightning storm, do so.

If indoors, stay away from water activities like showering, and washing dishes or hands. Do not use a corded telephone or computer equipment, which could harm both you and the equipment.

If stuck outdoors, avoid dubiously safe shelters like baseball dugouts, sheds, and trees. Stay away from water, including puddles. Stay away from metal structures and implements.

Crouch down, on your tiptoes if possible, to minimize the contact between you and the ground. Keep 15 feet between yourself and anyone else stuck outside with you.

If struck by lightning, call a medical professional.

#### Tornadoes:

These funnel clouds form during storms, and can be hazardous. If they form, get inside on the lowest floor of the structure, in a room with no windows.

Tornadoes are frequently preceded by green looking clouds, and sometimes you can see the funnel cloud forming.

Remember that most weather problems can be prepared for. A degree of common sense and preparedness will help you know what weather is forming around you, and the appropriate steps to take.

#### What is hypothermia?

Hypothermia is the condition of the body temperature dropping in an animal because it cannot generate enough body heat for the conditions. In cats and dogs, the normal body temperature is 100 to 102 degrees, and rectal temperatures lower than 95 degrees should be a cause for concern.

Other animals have other normal temperatures, and you should look up the information for any pets you have.

Pets most at risk for hypothermia are the young, elderly, thin animals, hairless and short haired breeds, and animals with matted or wet fur. Additionally, pets with certain medical conditions like diabetes and hypothyroidism are at increased risk.

Environmental risk factors leading to potential hypothermia are exposure to cold temperatures, precipitation or the pet being wet due to bathing or swimming or falling into water, shock or trauma, and prolonged anaesthesia.



Be especially cautious with new born animals. If your pets are pregnant, make sure they have a warm safe place to give birth and during the first few weeks of their lives.

#### Pet Clothing

Recently, there has been a greater variety of pet clothes being made, from purely decorative to the supremely functional.

While there are some breeds and types of pets that are fine outdoors in moderate cold (dogs with thick coats like huskies, malamutes, and similar will likely want to go out and play in winter weather), others need some help staying warm.

Even if your pet struggles the first few times you introduce a jacket, it may be useful to continue. There are also booties you can purchase for pet's feet, to help with ice and cold ground. If your pet seems cold in the winter while outside being walked or going to the bathroom, think about buying something to help them stay warm.

#### Feeding wildlife

If you feed the birds birdseed and suet in the summer, continue this habit in the winter. Winter, due to outdoor conditions, is

harder to find food in for wildlife, and the supplementation to their diets will help more of them survive the winter in good condition.

And while wildlife are not pets, and your should not capture them and bring them indoors, they are important to think of in the winter months.

# Winter Care Tips for You and Your Pets



#### PLACE YOUR TOWN INFORMATION HERE

Winter Weather and Your Pet

Winter weather can be rough on pets; the Humane Society of the United State suggests the following tips to help avoid the damage from cold weather.

If possible, generally keep your pets indoors during cold weather. Dogs will need to go out sometimes, to use the bathroom and if they need a walk, but cats can safely be kept indoors during cold months.

Outdoors, cats can easily become lost or stolen, injured or killed by wildlife or unaware motorists, or succumb to hypothermia.

If you have outdoor cats like barn cats, ensure they have access to food and non-frozen water. Consider providing them dry bedding material and small dry enclosures to sleep in during the extreme cold.

If you have outdoor cats, make sure they are not sleeping under, or inside the engine compartment before you start your vehicle, as they could be injured when the engine starts or you move the vehicle.

With both cats and dogs, never leave them outside when temperatures drop precipitously. Bring them inside to stay warm.

Be aware of potential dry skin issues in the winter – if your pet is scratching and licking its skin, it might be because it is itchy. Consider s moisturizing pet shampoo, or adding extra fats or oils into the diet. Do not leave them in a car for a prolonged period, as they could freeze.

Some types of salt used on drives can harm animals – buy the types that are less harmful for the safety of your pet, and wipe off paws when the pet comes indoors so they don't ingest unsafe chemicals (salt, antifreeze, etc).

Antifreeze, which is essential for cars, is highly toxic to animals even in small amounts. Buy one made with propylene glycol not ethylene glycol, as it is less toxic. Antifreeze has a sweet taste that some animals are attracted to, so you must be sure to take care. Store it in a secure location, sealed, and clean up any spills immediately.

Take care if you live near a stream or lake, or have a water feature on your property. Animals have been known to slip, fall through ice, and drown or freeze to death.

Animals should be kept indoors over winter, but if you are determined to have an "outside dog" make sure their shelter is wind and waterproof, on an elevated base facing south and has a flap covering the door. Clean wood Chips or hay provide bedding and stay drier than cloth bedding. Check food and water frequently to ensure they are not frozen. Schedule frequent visits and exercise periods. Remember your dog is a social animal, and may feel depressed or isolated outside alone in the cold.

Other types of pets need extra care in winter too. Keep an eye on pets like chickens that live outdoors – make sure your coop has warming lamps if needed, and the water container has a heater so it will not freeze.

Make sure the tank heater for fish or coldblooded reptiles is working and keeping the enclosure warm enough. If you rely on ambient temperature to keep a fish tank warm (like with some betta enclosures) make sure your thermostat is set high enough to keep them comfortable. Sudden changes in temperatures can cause your fish to get sick and die. Have a backup plan in case of power loss.

Keeps birds out of draft prone locations. Be aware that even birds raised in captivity may react to the change in seasons by becoming grumpy or noisy; this is an attempt to warm other birds about the change in conditions.

## What to do if animal has hypothermia?

Signs of hypothermia include shivering, depression, and cold feel, tails and ears. They may be curled up tightly to conserve warmth. If they display these signs, the first step is to get your pet to a warmer environment. Make sure the pet is in a dry spot, and try to dry the fur out if possible – this may be challenging with dogs that have heavy double layered fur. Wrap the animal in blankets, but to not rub fur and skin, as frostbite can be present, and this damaged tissue is easily broken.

Take your animal to a vet if possible, and call and ask advice if not (i.e. you are snowed in and should not leave).

#### Necessary Equipment

An emergency situation on the road can arise at any time, and you must be prepared. In addition to making sure you have a regular tune-up, a full tank of gas, and fresh anti-freeze, you should carry the following items in your trunk at all times.

Properly inflated spare tire, wheel wrench and jack. Shovel. Jumper cables. Tow and tire chains. Bag of salt or cat litter. Tool Kit.

If you become stranded –

Do not leave your car unless you know exactly where you are, how far it is to possible help, and are certain it will improve your situation.

Call 911 if cell service is available. Follow instructions you receive from the emergency dispatchers.

To attract attention, light two flares and place one on each end of the car at a safe distance.

If you are certain the exhaust pipe is not blocked, you may run the car's heated for 10 minutes every hour, depending on the fuel level. To protect from frostbite, use woollen clothes and blankets to stay warm.

Keep at least one window open slightly, as heavy snow and ice can seal a car shut.

If you must leave your vehicle, write down your name, address, phone number and destination. Place on dashboard for easy retrieval.

#### Prepare your winter car survival kit

Preparedness ensures that should something happen, you have supplies to help. Keep the following in your car at all times:

Ice scraper and snow brush Flashlights and extra batteries. Multitool with knife Extra set of warm clothes Extra hats, gloves, scarfs Blankets Waterproof matches and candle Small can (to melt snow for drinking) Local maps & a compass Tool kit including screwdrivers, pliers, wrench, jackstand, spare tire, jumper cables, small shovel, tire chains, cat litter (to gain traction in snow or ice) Road Flares 30 or more feel of rope in case you need to exit the vehicle (to use as guideline) Toilet paper and tissues Bottled water Food – dried fruit and nuts, granola bar, jerky or similar A fully charged cell phone if in range of cell towers Spare plastic bags in multiple sizes – can be used as insulating layer, or between socks and shoes to keep socks dry, or to hold things. First aid kit, including bandages of various sizes, pain relief medication, etc as your situation demands Something to occupy your time while you wait, if that is the best option: a book, a book of puzzles,

knitting, pen and paper, etc.

# Winter Safety Driving Tips



#### PLACE YOUR TOWN INFROMATION HERE

#### Safety tips for winter driving

When the weather changes, so do driving conditions. The following tips will help keep you and others safe:

Check road conditions before you go – you can check online, on your smartphone, or listen to weather related radio alerts.

Remove snow and ice from your car before driving (including the roof) and making sure all lights are visible.

Accelerate, decelerate, and turn slowly and gradually. Keep maximum speeds congruent with conditions – which may be less than the speed limit!

Increase your following distance.

Never use cruise control while in winter driving conditions.

Do use non-freezing windshield washer fluid.

Use snow tires or chains as appropriate and legal for your area.

#### Your Car

Prepare for winter by checking the following:

Check the ignition, brakes, wiring, hoses, and fan belts. Adjust the spark plugs if necessary.

Check the air, fuel and emissions filters, and the PCV (primary control valve). Inspect the distributer.

Check the battery.

Check the tires for air, sidewall dmage and tread depth. Replace if necessary.

Check antifreeze levels and the freezing point.

#### Driving safely on icy roads

Ice or snow on the roadway decreases the amount of friction between your tires and the road, which means that corrections you attempt to make take longer than on clear roads. Adjust for this by decreasing your maximum speeds, increasing the following distance between you and the car in front, and making adjustments in speed and course gradually and in time to stop when you wanted to. Figure out how your car handles on ice – and then remember it for next time!

Turn on your lights so others can see you. Keep them and your windshield free of ice or snow.

Be especially careful on bridges, overpasses, and infrequently travelled roads, which will freeze first. Even if the temperature is just above freezing, you may encounter ice in these locations.

Do not pass snow plows and sanding/salt trucks. They have limited visibility, and the road in front of them may be entirely untreated.

#### If your rear wheels skid

Take your foot off the accelerator.

Steer in the direction you want your front wheels to go. If your rear wheels are sliding left, steer left and vice versa. If during the course of stopping, your rear wheels turn the other way, turn your front to match.

If you have anti-lock breaks (ABS), you can just keep the break pedal depressed – these will pump automatically to ensure faster stopping.

If you do not have ABS, press the break pedal repeatedly to stop faster.

#### If your front wheels skid

Take your foot off the gas and shift to neutral, but don't try to steer immediately.

As the wheels skid sideways, they will slow the vehicles and traction will return. As it does, steer in the direction you want to go. Then put the transmission in drive or release the clutch, and accelerate gently.

#### If you get stuck

Do not spin your wheels, as this only digs you in.

Turn your wheels side to side a few times to push snow out of the way. Use a light touch on the gas, to ease your car out.

If necessary, use your shovel to clear snow away from the wheels. Then spread kitty litter, gravel, or salt on the space cleared to help with traction.

Try rocking the vehicle by going from forward to reverse several times and using a bit of gas to see if you can move.

If unsuccessful call for help or flag down passing motorists for help.

#### Road safety

When winter weather hits, do not drive unless necessary. Obey all travel restrictions in effect.

If you must leave, double check essential supplies before leaving. Make sure you have a full tank of gas, food, water and blankets or sleeping bags.

Make sure your cell phone or two-way radio has power, and keep it charged. If you should become stranded, then you can call for help!