

**9.17 VILLAGE OF LIVERPOOL**

This section presents the jurisdictional annex for the Village of Liverpool.

**A.) HAZARD MITIGATION PLAN POINT OF CONTACT**

Primary Point of Contact	Alternate Point of Contact
Bill Reagan, Code Enforcement Officer 310 Sycamore Street, Liverpool, NY 13088 315-457-3441 <a href="mailto:codes@villageofliverpool.org">codes@villageofliverpool.org</a>	Kurt Field, Fire Marshall 310 Sycamore Street, Liverpool, NY 13088 315-457-3441 <a href="mailto:codes@villageofliverpool.org">codes@villageofliverpool.org</a>

**B.) VILLAGE PROFILE**

***Population***

2,365 (estimated 2007 U.S. Census)

***Location***

The Village of Liverpool is bordered on three sides by the Town of Salina in the north-central part of Onondaga County. It is immediately north of the City of Syracuse on the eastern shore of Onondaga Lake. The village covers an area less than 1.0 square mile and is mainly residential, with some commercial use and park development running along the entire Onondaga Lake shoreline. Bloody Brook rises in the Town of Salina just to the east of Liverpool. Two small segments of the stream are located in the eastern part of the village. Onondaga Lake Park is one of the most prominent locales in Liverpool, known for its several trams that travel the length of the park. It attracts over one million visitors each year. New York State Route 370 is an east-west highway that runs through the village. The New York State Thruway (Interstate 90) passes through the northern part of the village.

According to the U.S. Census Bureau, the village has a total area of 0.8 square miles (1.9 km<sup>2</sup>), all of it land.

***Climate***

Onondaga County generally experiences seasonable weather patterns characteristic of the northeastern U.S. Cyclonic systems and cold air masses affect the County’s weather, making winters cold with snow. During the summer and parts of spring and autumn, temperatures rise during the daytime and fall rapidly after sunset. Summer temperatures typically range from about 76°F to 81°F (Fahrenheit). Winter high temperatures are usually in the middle to upper 30°F, with minimum temperatures of 14°F expected. Overall, the average high temperature for the County is approximately 57°F and the average low temperature is approximately 37°F. Snow accumulates to an average depth of 121 inches each year.

***Brief History***

The Liverpool area was originally inhabited by the Iroquois Indians, starting in the 16<sup>th</sup> century. In the mid-17th century, Canadian French Jesuits visited the area, setting up missions. These were not very permanent, however. An example of these missions is Ste. Marie among the Iroquois, just outside the village. Once the Erie Canal and Oswego Canals were built, the area was settled by Irish canal workers,

Yankee settlers, and, later, German immigrants. The early recorded name for the village was "Little Ireland."

The Village of Liverpool was incorporated in 1830 and named after the City of Liverpool in England. This was because Liverpool produced salt and wanted to capitalize on the name of another famous salt-producing region thus forming John's Salt. Early industries included several salt works in the 19th Century and a saw mill. A history of the area's salt mining can be found at the Salt Museum.

For many years the village was supported by the willow weaving industry. This was reputedly started in the early 1850s by a German salt boiler named John Fischer. By 1870, the industry had grown, using mostly German workers, to produce baskets and furniture. Otherwise poor land was planted with the trees, providing a growing industry which gave the area an economic boost as the salt industry was in decline. At its peak in 1892, around 360,000 baskets were shipped across the country. The depression era was the death knell for the industry in the 1930, although some weavers were still active as late as the 1960s. In 1918, the Oswego Canal was closed. The Onondaga Lake Park, established in 1931, is now the location of much of the old canal bed.

***Governing Body Format***

The Village of Liverpool is governed by a mayor, a deputy mayor and three trustees.

***Growth/Development Trends***

At this time, no major residential/commercial development or major infrastructure development has been identified for the next five (5) years.

**C.) NATURAL HAZARD EVENT HISTORY SPECIFIC TO THE VILLAGE**

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Snowstorm / Extreme Cold	Not applicable	February, 1961	\$80,000 (countywide)
Flood	Not applicable	July, 1970	\$250,000 (countywide)
Snowstorm	Not applicable	March, 1971	\$806,000 (countywide)
Snowstorm / Extreme cold	Not applicable	February, 1972	\$803,000 (countywide)
Flood (Tropical Storm Agnes)	DR-338	June, 1972	\$1,600,000 (countywide)
Flood	Not applicable	March, 1973	\$200,000 (countywide)
Snowstorm	Not applicable	December, 1973	\$83,000 (countywide)
Severe Storms and Flooding	DR-447	July, 1974	\$7,200,000 (countywide); drive-in theatre inundated with over 4 feet of water
Severe Storms, Heavy Rain, Landslides, Flooding	DR-487	September, 1975	\$6,300,000 (countywide)
Flood	Not applicable	April, 1976	\$313,000 (countywide)
Blizzard	Not applicable	January, 1977	\$2,100,000 (countywide)
Flood	Not applicable	October, 1981	\$833,000 (countywide)
Snowstorm / Extreme Cold	Not applicable	January, 1982	\$5,000 (countywide)

**SECTION 9.17: VILLAGE OF LIVERPOOL**

Type of Event	FEMA Disaster # (if applicable)	Date	Preliminary Damage Assessment
Tornado (F3)	Not applicable	May, 1983	\$2,500,000 (countywide)
Snowstorm	Not applicable	February, 1984	\$156,000 (countywide)
Tornado (F1)	Not applicable	July, 1986	\$250,000 (countywide)
Blizzard and Extreme Cold	EM-3107	March, 1993	\$455,000 (countywide)
Snowstorm	Not applicable	April, 1993	\$100,000 (countywide)
Thunderstorm / Winds	Not applicable	August, 1993	\$600,000 (countywide)
Severe Storm and Flooding	DR-1095	January, 1996	\$7,600,000 (countywide)
Flood	Not applicable	November, 1996	\$100,000 (countywide)
Thunderstorm / Winds / Tornado	Not applicable	May, 1998	\$200,000 (countywide)
Thunderstorm / Winds	Not applicable	August, 1998	\$200,000 (countywide)
Severe Storm	DR-1244	September, 1998	\$90,000,000, 3 fatalities, 7 injuries (countywide)
Thunderstorm / Winds	Not applicable	July, 1999	\$750,000 (countywide)
Severe Storms	DR-1335	May/September, 2000	Not available
Snowstorms	Not applicable	December, 2002 / January, 2003	\$353,000 (countywide)
Flood	Not applicable	June, 2002	\$2,000,000 (countywide); Mother's Restaurant flooded
Snowstorm (President's Day Storm)	Not applicable	February, 2003	\$153,000 (countywide)
Ice Storm	DR-1467	April, 2003	\$2,900,000 (countywide)
Severe Storms and Flooding	DR-1564	August / September 2004	\$2,000,000 (countywide)
Severe Storm and Flooding	Not applicable	April, 2005	\$100,000 (countywide)
Flood	Not applicable	July, 2005	\$500,000 (countywide)
Severe Storms and Flooding	Not applicable	June/July, 2006	\$29,000 (countywide); road closures
Lake Effect Snowstorm / Extreme Cold	Not applicable	February, 2007	\$3,000,000 (countywide)

Notes: N/A = Not applicable.

**Number of FEMA Identified Repetitive Flood Loss Properties: 0**  
**Number of FEMA Identified Severe Repetitive Flood Loss Properties: 0**

Source: FEMA Region II, 2009

Note: Repetitive loss and severe repetitive loss data as of February 2009.



## D.) NATURAL HAZARD RISK/VULNERABILITY RISK RANKING

Rank #	Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard <sup>a,c</sup>	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking <sup>b</sup>
3	Earthquake	\$12,332,742 <sup>c,e</sup>	Rare	16	Low
2	Flood	\$1,844,000 <sup>c,e</sup>	Frequent	33	Medium
4	Ground Failure	Not available <sup>f</sup>	Rare	6	Low
1	Severe Storm	\$0 <sup>c,d,g</sup>	Frequent	48	High
1	Severe Winter Storm	\$11,157,950 <sup>c,d</sup>	Frequent	48	High

- a. Building damage ratio estimates based on FEMA 386-2 (August 2001)
- b. High = Total hazard priority risk ranking score of 40 and above  
Medium = Total hazard priority risk ranking of 20 - 39  
Low = Total hazard risk ranking below 20
- c. The valuation of general building stock and loss estimates determined in Onondaga County were based on the default general building stock database provided in HAZUS-MH MR3 (RSMeans 2006).
- d. Severe storm and severe winter storm hazard 500-year MRP loss estimate is structural value only; does not include the value of contents. For severe winter storm, the loss estimate is 5% of total general building stock value.
- e. Loss estimates for both structure and contents (500-year MRP for the flood hazard and 2,500-year MRP for the earthquake hazard).
- f. Approximately 0% of the Village's general building stock is located within the landslide hazard area.
- g. Potential losses for severe storm are underestimated by HAZUS.

## E.) CAPABILITY ASSESSMENT

This section identifies the following capabilities of the local jurisdiction:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification.

## E.1) Legal and Regulatory Capability

Regulatory Tools (Codes, Ordinances., Plans)	Local Authority (Y or N)	Prohibitions (State or Federal) (Y or N)	Higher Jurisdictional Authority (Y or N)	State Mandated (Y or N)	Code Citation (Section, Paragraph, Page Number, date of adoption)
1) Building Code	Y	N	Y	Y	Village Code Chapter 43
2) Zoning Ordinance	Y	N	N	N	Village Code Chapter 136
3) Subdivision Ordinance	Y	N	N	N	Village Code Chapter 118
4) NFIP Flood Damage Prevention Ordinance	Y	Y	Y	Y	Village Code Chapter 68
5) Growth Management	Y	N	N	N	
6) Floodplain Management / Basin Plan	Y	Y	Y	N	Village Code Chapter 68
7) Stormwater Management Plan/Ordinance	Y	N	N	Y	Village Code Chapter 115
8) Comprehensive Plan / Master Plan/ General Plan	Y	N	N	N	"Comprehensive Plan 2025" (August, 2006)
9) Capital Improvements Plan	Y	N	N	N	Identified in Comprehensive Plan – Chapter III
10) Site Plan Review Requirements	Y	Y	Y	N	Village Code Article XIV
11) Open Space Plan	Y	N	N	N	Village Code
12) Economic Development Plan	N	N	N	N	
13) Emergency Response Plan	Y	N	N	Y	Village of Liverpool EO Plan
14) Post Disaster Recovery Plan	N	N	N	N	
15) Post Disaster Recovery Ordinance	N	N	N	N	
16) Real Estate Disclosure req.	N	N	Y	N	
17) Other [Special Purpose Ordinances (i.e., critical or sensitive areas)]	N	N	N	N	

**E.2) Administrative and Technical Capability**

<b>Staff/ Personnel Resources</b>	<b>Available (Y or N)</b>	<b>Department/ Agency/Position</b>
1) Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	Code Enforcement Officer
2) Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Code Enforcement Officer
3) Planners or engineers with an understanding of natural hazards	Y	Code Enforcement Officer
4) NFIP Floodplain Administrator	Y	William B. Reagan, Code Enforcement Officer
5) Surveyor(s)	Y	Clough Harbor
6) Personnel skilled or trained in "GIS" applications	Y	Clough Harbor
7) Scientist familiar with natural hazards in the Village of Liverpool.	N	
8) Emergency Manager	Y	Chief, Liverpool Police Department
9) Grant Writer(s)	Y	Chief, Liverpool Police Department
10) Staff with expertise or training in benefit/cost analysis	N	

**E.3) Fiscal Capability**

<b>Financial Resources</b>	<b>Accessible or Eligible to use (Yes/No/Don't know)</b>
1) Community development Block Grants (CDBG)	Yes
2) Capital Improvements Project Funding	Yes
3) Authority to Levy Taxes for specific purposes	Yes
4) User fees for water, sewer, gas or electric service	Yes
5) Impact Fees for homebuyers or developers of new development/homes	No
6) Incur debt through general obligation bonds	Yes
7) Incur debt through special tax bonds	Yes
8) Incur debt through private activity bonds	No
9) Withhold public expenditures in hazard-prone areas	No
10) State mitigation grant programs (e.g. NYSDEC, NYCDEP)	Yes
11) Other	No

#### E.4) Community Classifications

Program	Classification	Date Classified
Community Rating System (CRS)	NP	N/A
Building Code Effectiveness Grading Schedule (BCEGS)	-	-
Public Protection	-	-
Storm Ready	NP	N/A
Firewise	NP	N/A

N/A = Not applicable. NP = Not participating. - = Unavailable.

The classifications listed above relate to the community's effectiveness in providing services that may impact its vulnerability to the natural hazards identified. These classifications can be viewed as a gauge of the community's capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class one (1) being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO's Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

## F.) PROPOSED HAZARD MITIGATION INITIATIVES

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals / Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Time-line
VLP-1a	Where appropriate, support retrofitting of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for retrofitting based on cost-effectiveness versus relocation. Where retrofitting is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Flood, Severe Storm	1-1, 1-2, 1-6; 2-5, 2-6; 3-2, 3-5; 6-1	Municipality (likely through NFIP Floodplain Administrator)	High	FEMA Mitigation Grant Programs and local match	Long-term
VLP-1b	Where appropriate, support purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority. Identify facilities that are viable candidates for relocation based on cost-effectiveness versus retrofitting. Where relocation is determined to be a viable option, consider implementation of that action based on available funding.	Existing	Flood, Severe Storm	1-1, 1-2, 1-6; 2-5, 2-6; 3-2, 3-5; 6-1	Municipality (likely through NFIP Floodplain Administrator)	High	FEMA Mitigation Grant Programs and local match	Long-term
VLP-2	Consider participation in incentive-based programs such as CRS.	New & Existing	Flood	1-1, 1-3, 1-7; Goal 2 – All Objectives	Municipality (likely through NFIP Floodplain Administrator)	Low - Medium	Local Budget	Long-term DOF
VLP-3	Continue to support the implementation, monitoring, maintenance, and updating of this	New & Existing	All Hazards	All Goals and Objectives	Municipality (through mitigation planning point of contacts)	Low	Local Budget, possibly	Ongoing

**SECTION 9.17: VILLAGE OF LIVERPOOL**

Initiative #	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals / Objectives Met	Lead Agency	Estimated Cost	Sources of Funding	Time-line
	Plan, as defined in Section 7.0						FEMA Mitigation Grant Funding for 5-year update	
VLP-4	Strive to maintain compliance with, and good-standing in the National Flood Insurance program.	New & Existing	Flood	2-4; 3-5, 3-6	Municipality (likely through NFIP Floodplain Administrator)	Low	Local Budget	Ongoing
VLP-5	Continue to develop, enhance, and implement existing emergency plans.	New & Existing	All Hazards	1-4; 5-5; Goal 6 – All Objectives	Municipal Emergency Manager with support from County OEM and SEMO	Low - Medium	Local Budget	Ongoing
VLP-6	Create/enhance/ maintain mutual aid agreements with neighboring communities.	New & Existing	All Hazards	3-3; 5-2, 5-3, 5-5, 5-6; 6-5, 6-6	Local Emergency Management, DPW and Roads	Low - Medium	Local Budget	Ongoing
VLP-7	Support County-wide initiatives identified in Section 9.1 of the County Annex.	New & Existing	All Hazards	All Goals and Objectives	Local departments (as applicable for specific initiative)	Low - Medium	Local Budget	Ongoing
VLP-8	Support/Participate in the Stream Team program offered by the Onondaga County SWCD, to assist in the removal of debris, log jams, etc. in flood vulnerable stream sections.	N/A	Flood, Severe Storms	1-3, 1-7; 2-3; 4-1,4-4; 5-1, 5-2, 5-3	County, OCSWCD (Mark Burger)	Medium	Local Budget	Short-term
VLP-9	Develop and implement an enhanced program of cleaning and maintenance of storm drains and catch basins.	N/A	Flood, Severe Storms	1-2, 1-7; 2-3; 3-2, 3-4	Municipality (DPW and Roads)	Medium	Local Budget	Short-term

Notes: DOF = Depending on Funding. FEMA = Federal Emergency Management Agency. Long = 5 years or greater. N/A = Not applicable. Short = 1 to 5 years. TBD = To be determined

\*Does this mitigation initiative reduce the effects of hazards on new and/or existing buildings and/or infrastructure?



## G.) ANALYSIS OF MITIGATION ACTIONS

This table summarizes the participant's mitigation actions by hazard of concern and the six mitigation types to illustrate that the Village has selected a comprehensive range of actions/projects.

Hazard of Concern	Mitigation Type					
	1. Prevention	2. Property Protection	3. Public Education and Awareness	4. Natural Resource Protection	5. Emergency Services	6. Structural Projects
Earthquake	VLP-3, VLP-7	VLP-3, VLP-7	VLP-3, VLP-7	VLP-3, VLP-7	VLP-3, VLP-5, VLP-6, VLP-7	VLP-3, VLP-7
Flooding (riverine, flash, coastal and urban flooding)	VLP-2, VLP-3, VLP-4, VLP-7, VLP-8, VLP-9	VLP-1a and b, VLP-2, VLP-3, VLP-4, VLP-7	VLP-1a and b, VLP-2, VLP-3, VLP-4, VLP-7	VLP-3, VLP-7, VLP-8	VLP-2, VLP-3, VLP-5, VLP-6, VLP-7	VLP-3, VLP-7
Ground Failure	VLP-3, VLP-7	VLP-3, VLP-7	VLP-3, VLP-7	VLP-3, VLP-7	VLP-3, VLP-5, VLP-6, VLP-7	VLP-3, VLP-7
Severe Storms (windstorms, thunderstorms, hail, lightning and tornados)	VLP-2, VLP-3, VLP-4, VLP-7, VLP-8, VLP-9	VLP-1a and b, VLP-2, VLP-3, VLP-4, VLP-7	VLP-1a and b, VLP-2, VLP-3, VLP-4, VLP-7	VLP-3, VLP-7, VLP-8	VLP-2, VLP-3, VLP-5, VLP-6, VLP-7	VLP-3, VLP-7
Severe Winter Storm (heavy snow, blizzards, ice storms)	VLP-3, VLP-7	VLP-3, VLP-7	VLP-3, VLP-7	VLP-3, VLP-7	VLP-3, VLP-5, VLP-6, VLP-7	VLP-3, VLP-7

Notes:

- 1. Prevention:** 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, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
- 2. Property Protection:** Actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
- 3. Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.
- 4. Natural Resource Protection:** Actions that minimize hazard loss and also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.
- 5. Emergency Services:** Actions that protect people and property, during and immediately following, a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities.
- 6. Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.

## H.) PRIORITIZATION OF MITIGATION INITIATIVES

Initiative #	# of Objectives met	Benefits	Costs	Do Benefits equal or exceed Costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can Project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
VLP-1a	8	H	H	Y	Y	N	M-H*
VLP-1b	8	H	H	Y	Y	N	M-H*
VLP-2	9	M	L	Y	N	Y	H
VLP-3	38	M	M	Y	N (Yes for 5 year update)	Y	H
VLP-4	3	H	L	Y	N	Y	H
VLP-5	8	M	L	Y	N	Y	H
VLP-6	7	M	L	Y	N	Y	H
VLP-7	38	M-H	L-M	Y	Dependant on specific initiative	Dependant on specific initiative	M-H (dependant)
VLP-8	8	H	L - H	Y	Y	Dependant on specific initiative	M
VLP-9	5	M	L-M	Y	N	Y	H

Notes: H = High. L = Low. M = Medium. N = No. N/A = Not applicable. Y = Yes.

\* This initiative has a “Medium” priority based on the prioritization scheme used in this planning process (implementation dependent on grant funding), however it is recognized that addressing repetitive and severe repetitive loss properties is considered a high priority by FEMA and SEMO (as expressed in the State HMP), and thus shall be considered a “High” priority for all participants in this planning process.

### Explanation of Priorities

- **High Priority** - A project that meets multiple objectives (i.e., multiple hazards), benefits exceeds cost, has funding secured or is an on-going project and project meets eligibility requirements for the Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation Grant Program (PDM) programs. High priority projects can be completed in the short term (1 to 5 years).
- **Medium Priority** - A project that meets goals and objectives, benefits exceeds costs, funding has not been secured but project is grant eligible under, HMGP, PDM or other grant

programs. Project can be completed in the short term, once funding is completed. Medium priority projects will become high priority projects once funding is secured.

- **Low Priority** - Any project that will mitigate the risk of a hazard, benefits do not exceed the costs or are difficult to quantify, funding has not been secured and project is not eligible for HMGP or PDM grant funding, and time line for completion is considered long term (1 to 10 years). Low priority projects may be eligible other sources of grant funding from other programs. A low priority project could become a high priority project once funding is secured as long as it could be completed in the short term.

Prioritization of initiatives was based on above definitions: Yes

Prioritization of initiatives was based on parameters other than stated above: Not applicable.

**I.) FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY**

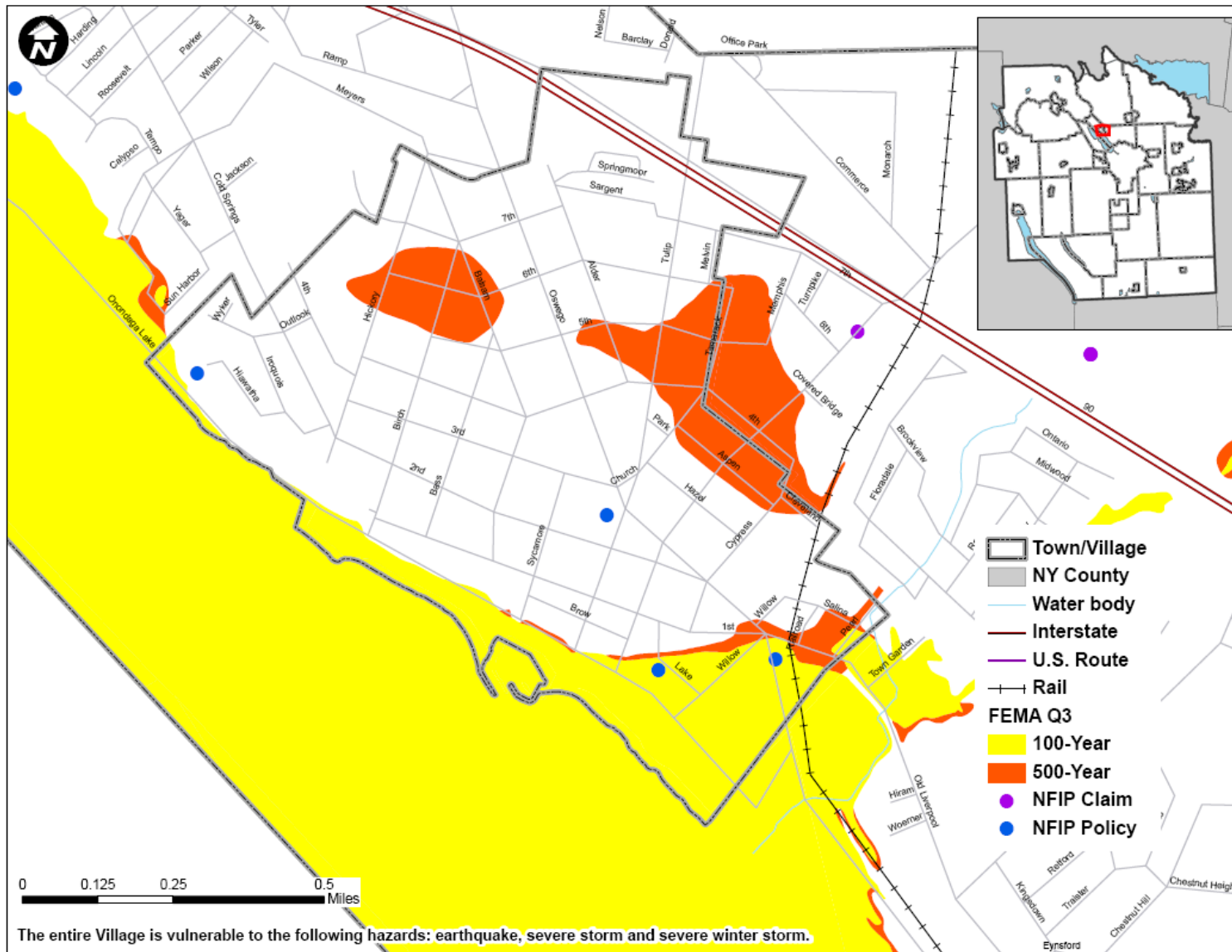
None at this time.

**J.) HAZARD AREA EXTENT AND LOCATION**

A hazard area extent and location map has been generated and is provided below for the Village of Liverpool to illustrate the probable areas impacted within the Village. This map is based on the best available data at the time of the preparation of this Plan, and is considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the Village of Liverpool has significant exposure. The County maps are provided in the hazard profiles within Section 5.4, Volume I of this Plan.

**K.) ADDITIONAL COMMENTS**

No additional comments at this time.



Sources: FEMA Q3; FEMA Region II, 2008; HAZUS-MH MR3; NYSRPC, 2008

Notes: NFIP = National Flood Insurance Program

The entire municipality is vulnerable to the following hazards: earthquake, severe storm, and severe winter storm

