4.2 Profiles of Hazards

As presented in Section 4.1, the Town of Clay considered all natural hazards of potential interest based on its geographic location. As detailed in Section 4.1, three hazards that could occur in the area (landslides, droughts, and earthquakes), were considered and screened out from further consideration based on their low probability of occurrence and limited potential loss impact. Terrorism and both the human and agricultural epidemic hazards also were considered but these hazards are addressed through other agencies and requirements (for example, these are under the purview of the Town of Clay Emergency Management, Onondaga County Health Department, and the Onondaga County Soil and Water Conservation District, respectively). Therefore, these three hazards are not considered in depth in this plan, which is required to focus on primarily natural hazards. Other hazards of more limited concern also are evaluated, but fewer resources were expended on evaluating these hazards, based on their lower priority and potential risk for this study area. Also, some hazards initially considered were consolidated with, or separated from, other hazards to avoid redundancy or best facilitate conceptualization of the hazards for the Town of Clay. Based on initial efforts, 8 hazards of concern were retained for profiling in this section, as summarized below:

- Severe Storm (wind, including hurricane and tornado)
- Severe Winter Storm (snow)
- Ice Storm
- Flood
- Extreme Temperatures
- Fire (urban and wild)
- Infestation (primarily disease-carrying mosquitoes)
- Hazardous Materials - Fixed Facility

The first 7 hazards are natural hazards. The Hazardous Materials – Fixed Facility hazard is man-made. This section presents hazard profiles for each of these 8 hazards. Each type of hazard has unique characteristics that vary from event to event. That is, the impacts associated with a specific hazard can vary depending on the magnitude and location of each event (a hazard event is a specific, uninterrupted occurrence of a particular type of hazard). Further, the probability of occurrence of a hazard in a given location impacts the priority assigned to that hazard. Finally, each hazard will impact different communities in different ways, based on geography, local development, population distribution, age of buildings, and mitigation measures already implemented. Hazard profiles assist communities in evaluating and comparing hazards that can impact them by comparing a number of these hazard factors.

Profile information, combined with data regarding the people and structures at risk (Section 4.3, Inventory of Assets), prepares a community to develop risk scenarios and estimate potential damages and losses for each hazard (Section 4.4, Loss Estimates).

For this mitigation plan, a range of resources were used to compile information to profile the hazards. Public input also was requested by posting the HAZNY Report for the Town of Clay and asking for e-mail input. Verbal input from meetings was also provided and is incorporated. Further, standard resources such as FEMA, NOAA, and other climate and storm databases were accessed and used to compile the profiles. Sources of information and data and maps showing vulnerable areas are provided with each profile, as applicable. Each hazard profile includes text addressing the following risk factors:

Risk Factors are characteristics of a hazard that contribute to the severity of potential losses in the study area.

HAZNY Risk Factors are those risk factors addressed using the HAZNY scoring system and are summarized in the upper right hand corner of each hazard profile.

1) Background and local conditions
2) Historic frequency and probability of occurrence
3) Severity
4) Historic losses and impacts
5) Designated hazard areas

Some of the data for these profiles was obtained from the HAZNY Report for the Town of Clay. Therefore, each profile also includes a summary of the HAZNY risk factors for each hazard. The HAZNY ground rules and process are described below.

The HAZNY program provides "Ground Rules" that guide the user in the correct facilitation and application of the program. The ground rules guide users in evaluating the hazards and in making decisions when facilitating a group of participants applying the program. In addition, the rules assist in maintaining the integrity of the program and provide a sound foundation to compare results across different municipalities in the state. It is important to understand these ground rules to understand the risk factors presented for each hazard in this section. Table 4-2-1 summarizes the HAZNY risk factors, lists the descriptions of each factor, and provides the specific descriptor choices for each risk factor and description.

Table 4-2-1. HAZNY Risk Factors and Descriptions

Risk Factor	Description	Descriptors
Scope	Extent - Defines the area impacted by a hazard event	Single location
		Several individual locations
		Small region – impact would be limited to a neighborhood or downtown section of a city
		Large region – impact would extend for miles and comprise a significant portion of the jurisdiction
	Cascade Effects - A particular hazard's capability of triggering additional hazards	No, highly unlikely
		Yes, some potential
		Yes, highly likely
Frequency	Prediction of how often a hazard will occur in the future	Rare event - occurs less than once every 50 years
		Infrequent event - occurs between once every 8 years and once every 50 years (inclusive)
		Regular event - occurs between once a year and once every 7 years
		Frequent event - occurs more than once a year
Onset	Period of time between initial recognition of an approaching hazard and when the hazard begins to impact the community	No warning
		Several hours warning
		1 day warning
		Up to 1 week warning
		More than 1 week warning
Hazard Duration	How long the hazard remains active	Less than 1 day
		1 day
		2 to 3 days
		4 days to a week
		More than 1 week
Recovery Time	Time emergency operations will continue once the hazard is inactive	Less than 1 day
		1 to 2 days
		3 days to 1 week
		1 to 2 weeks

Source: HAZNY Ground Rules (NYSEMO Planning Section and ARC - no date)

Each profile also includes a profile ranking of the hazard (ranging from no/low risk to severe risk). The planning group determined this initial profile ranking based on all of the hazard identification and profile research summarized in Sections 4.1 and 4.2 and group discussion and evaluation of all of the data. The profile ranking for each hazard is presented as a hazard risk gauge at the start of each hazard profile.

For the 8 selected hazards, the profile ranking is as follows:

- Moderately High – Severe Storm (wind, including hurricane and tornado), severe winter storm (snow), ice storm, and flood
- Moderately Low – extreme temperatures, fire (urban and wildfire), and infestation (primarily disease-carrying mosquitoes)
- Low – Hazardous Materials – Fixed Facility

Based on hazard identification and profiling results and consideration of existing efforts to address mitigation and prevention for specific hazards, particular emphasis in this plan is placed the severe storm (wind, including hurricane and tornado), severe winter storm (snow), ice storm and flood hazards. Infestation was included due to the occurrence of West Nile Virus (WNV) and Equine Encephalitis (EE) and the ubiquitous mosquito population in the Town of Clay.

Implementation of mitigation actions through these existing agencies was identified in Section 2 of this plan. Specific mitigation strategies, goals, objectives, and activities are addressed in Section 5 of this plan. Close coordination with all relevant agencies will be implemented to ensure proper planning, resource distribution, and mitigation for the hazards of concern in the Town of Clay.

4.2.1 Natural Hazards

This section presents profiles of the seven natural hazards of concern selected for further profiling and evaluation.

4.2.1.1 Severe Storm (Wind, Including Hurricane and Tornado)

HAZNY Summary of Risk Factors

Potential Impact:	Large region
Onset:	No warning
Frequency:	Frequent event
Hazard Duration:	Less than 1 day
Cascade Effects:	Some potential
Recovery Time	More than 2 weeks

Profile Ranking

SEVERE STORM HAZARD PROFILE

Background and Local Conditions

Per HAZNY, the severe storm hazard includes windstorms, hailstorms, and severe thunderstorms (with associated severe wind events such as derechos, gustnados, tornados and downbursts. As previously discussed, for the purposes of this Plan, hurricanes have been included with this hazard. These types of events can occur concurrently or individually in this area and are often accompanied by heavy rains.

NOAA classifies a thunderstorm as a storm with lightning and thunder produced by cumulonimbus clouds. Thunderstorms usually produce gusty winds, heavy rain, and sometimes hail. Thunderstorms are usually short in duration (seldom more than two hours). Heavy rains associated with thunderstorms can lead to flash flooding during the wet or dry season. According to the American Meteorological Society Glossary of Meteorology, thunderstorms are reported as light, medium, or heavy according to the following characteristics: (1) nature of the lightning and thunder, (2) type and intensity of the precipitation, if any, (3) speed and gustiness of the wind, (4) appearance of the clouds, and (5) effect on surface temperature.

Windstorms are generally short-duration events involving straight-line winds or gusts in excess of 50 miles per hour (mph). These gusts can produce winds of sufficient strength to cause property damage. Windstorms are especially dangerous in those areas with significant tree stands, and areas with exposed property, poorly constructed buildings, mobile homes (manufactured housing units), major infrastructure, and above ground utility lines. A windstorm can topple trees and power lines, cause damage to residential, commercial, critical facilities, and leave tons of debris in its wake. Lightning and hail are usually associated with thunderstorms and are generally short in duration.

A hurricane is a severe tropical storm that forms in the southern Atlantic Ocean, Caribbean Sea, Gulf of Mexico, or eastern Pacific Ocean under the following conditions: warm, tropical oceans; moist air; and light winds. If the right conditions last long enough, a hurricane can result and can produce violent winds, enormous waves, torrential rains, and floods. Hurricanes have wind speeds of at least 74 miles per hour. On average, six Atlantic hurricanes occur each year. Full force hurricanes are not likely to occur in the Town of Clay due to latitude and distance from the Atlantic Ocean. Of greater impact in the Town of Clay is the secondary flooding associated with hurricanes that hit areas closer to the coast. A tornado is a violently rotating column of air extending from a thunderstorm to the ground. Approximately 1,000 tornadoes are reported annually in the United States, resulting in about 80 deaths and over 1,500 injuries. The most violent tornadoes, with wind speeds of 250 miles per hour or more, are capable of tremendous destruction. Damage paths can be more than 1 mile wide and 50 miles long. Tornados are another high air speed event and also can impact the Town of Clay. The average severe storm warning time in Onondaga County is twenty minutes according to NWS statistics, considered by the Town of Clay planning group to be essentially no warning with respect to the ability to take actions that would prevent damage other than personal injury.

Severe storms in the Town of Clay tend to damage building roofs and windows, vehicles, fences, signs, utility lines, and trees. Serious injuries or fatalities do not typically occur. Severe windstorms can result in power outages, disruptions to transportation corridors and equipment, restricted workplace access, significant property damage, injuries, loss of life, and the need to shelter and care for individuals impacted by the events. Most of the Town of Clay experiences windstorms frequently, and large-scale events tend to affect the entire jurisdiction without prejudice for particular areas. The magnitude and frequency of severe storm events in the Town is up to six events per year according to NWS statistics.

Historic Frequency and Probability of Occurrence

SEVERE STORM HAZARD PROFILE

Windstorms and thunderstorms occur relatively frequently in Onondaga County and the Town of Clay; however, only a small fraction of all storms are considered severe. The NCDC web site lists severe storm events as for Onondaga County as shown in Figure 4-2-1.

According to the NCDC statistics for Onondaga County, 196 thunderstorm wind, lightning, hail and high wind events were recorded within the County since 1980 (avg. 5.5 events/year); most of these events were recorded as affecting the County in general, while 3 of these events were identified as specific to Clay. According to the NCDC, no hurricanes were reported for Onondaga County since 1950. However, the county has felt the peripheral landward effects, including high winds, heavy rains, and flooding associated with several hurricanes and tropical storms in recent history. For example, flooding impacts were associated with Hurricane Agnes in 1972 (see flood hazard). Onondaga County experiences tornados of low to moderate force (F0 or F1), with an average of about one event every 3 years according to the NWS statistics. Severe tornados (F2 or stronger, sometimes called "killer tornados") occur in Onondaga County about once every 20 years (NWS).

With respect to the probability of future severe storm hazard events, the HAZNY group reviewed available data and categorized the severe storm hazards as a "frequent event". The ground rules for the program quantify this descriptor as an event that occurs more than once a year.

Severity

The severe storm hazard is of moderate severity due to the fact that it affects the entire town, allows little or no warning time, and occurs regularly. Damages tend to be relatively minor (such as damaged building roofs), but are widespread and can be intense in some instances. The hazard duration is less than 1 day, with a recovery time of more than two weeks (Town of Clay, HAZNY - 2004). Severe storm and hurricane hazards tend to disproportionately affect elderly and infirm persons because they are less able to prepare their homes for storms and are often immobile and unable to evacuate when necessary.

Historic Losses and Impacts

The NCDC database for Onondaga County identified the following specific thunderstorm and wind events resulting in property damage in Onondaga County: (1) 8/28/1994 thunderstorm and winds resulting in $50,000 property damage; (2) 6/2/1995 thunderstorm and winds resulting in $3,000 property damage; and (3) 8/24/1998 - thunderstorm and winds resulting in $25,000 property damage. Specific hail events and losses in Clay were not recorded in the NCDC database. One lightning event is recorded for Clay, on 6/27/2002 resulting in one injury and $1,000 damage. No tornado events specific to Clay were identified in this database. A tornado on May 2, 1983 collapsed homes and trees along Bonstead Road and destroyed businesses in Clay and Wicks Lumber in Schroeppel. A 1986 tornado caused damage in a trailer park. The HAZNY group also identified the Labor Day storm of 1998 as a severe storm event that occurred in the early morning hours (about 1 am) and resulted in over $450,000 of reported losses to the Town of Clay (see excepts from article entitled "The Labor Day 1998 Syracuse Derecho" at the end of this section). The NWS found widespread straight line wind speeds of 70 to 90 miles per hour, with localized gusts up to 115 miles per hour. A high wind event in Onondaga County in November 2003 included winds up to 45 to 55 mpg with tens of thousands of electric customers losing power, including in Syracuse. Another high wind event is recorded for the county in October 2003.

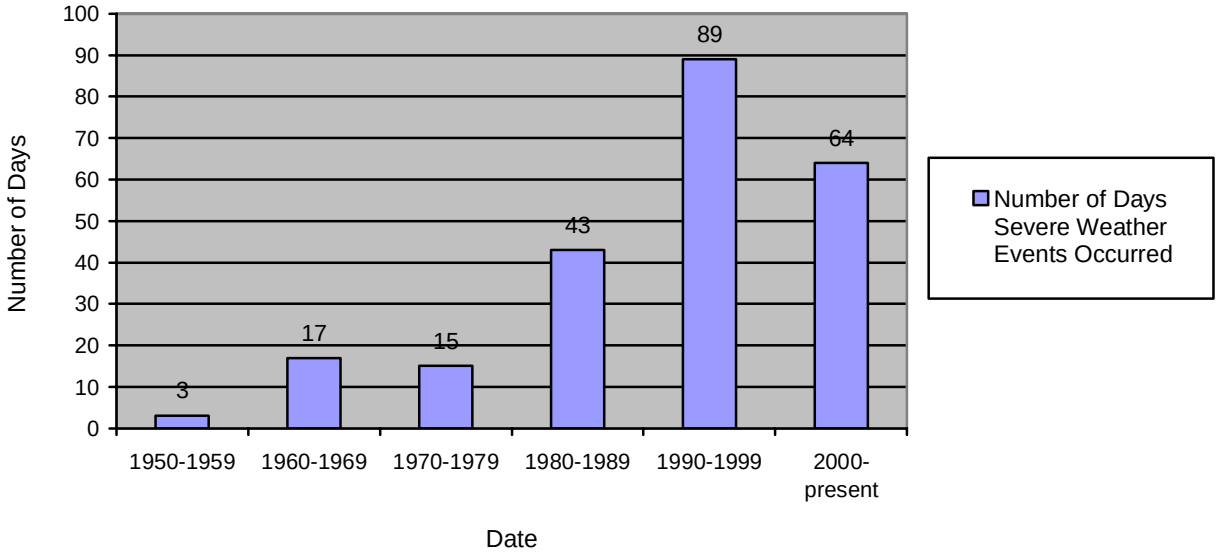
It appears that loss data has been recorded for such events since 1993. Based on this eleven year period there were 76 reported events impacting Onondaga County resulting in a total of over $98,000,000 in property losses.

Designated Hazard Areas

Severe storms and associated wind may occur throughout the Town of Clay; however the impacts to property may be greatest to manufactured homes, vehicles, and other nonpermanent structures. Figure 4-2-2 shows historic North Atlantic Storm Tracks. Figure 4-2-3 indicates those areas with manufactured homes (mobile homes/parks). Figure 4-2-4 indicates that the Town of Clay falls in a Wind Zone III area that could experience winds up to 200 mph (FEMA).

The entire town should be considered a designated severe storm hazard area. Vulnerable structures include older buildings (less able to withstand high winds), mobile home communities, power grid hubs (loss or damage of which could affect large numbers of people), critical facilities subject to power outages, and areas near rivers or lakes subject to flooding.

Figure 4-2-1. Onondaga County Severe Storm Events (1950-present)



Source: NOAA NCDC Storm Event Database for Severe Storms, 2004

Note: The figure above depicts the total number of days that severe weather events occurred during the decade indicated. NOAA tracks the storm events by type of storm event and location. Because the data set above includes all of Onondaga County, some of the events occurred outside of the study area and in some instances more than one event is recorded for some days. For this figure, all days storm events occurred are tabulated, so repetitive dates are not included. It is considered likely that significantly more events were reported since 1990 due in large part to improved meteorological equipment and reporting, as well as revised definitions of severity for the various types of storm.

Table 4-2-2. Presidential Disaster Declarations in Onondaga County

Type of Event	Date	Declaration Number	Cost of Losses (approx.)
Tropical Storm	June 1972	DR 338	$82,099.88
Heavy Rain	October 1975	FDAA 487 DR	$1,581.60
Blizzard	March 1993	FEMA 3107 EM NY	$72,510.35
Storm	September 1998	FEMA 1244 DR NY	$579,253.38
Storm / Flooding	May 2000	FEMA 1335 DR NY	$19,748.91
Ice Storm	April 2003	FEMA 1467 DR NY	$155,659.62
Total Cost			$910,853.74

Notes: Recorded losses indicate the dollar value of losses in the Town of Clay, made available through public records reviewed for this risk assessment. Source: Town of Clay Archives

Figure 4-2-2. Historical North Atlantic Tropical Cyclone Tracks (1851-2002)

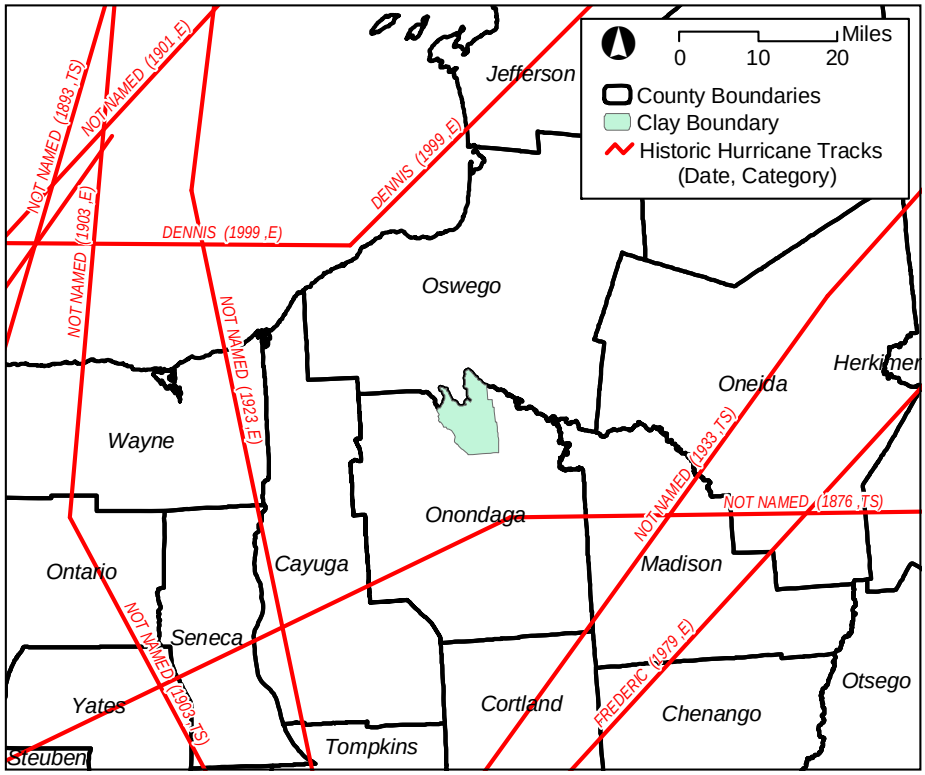
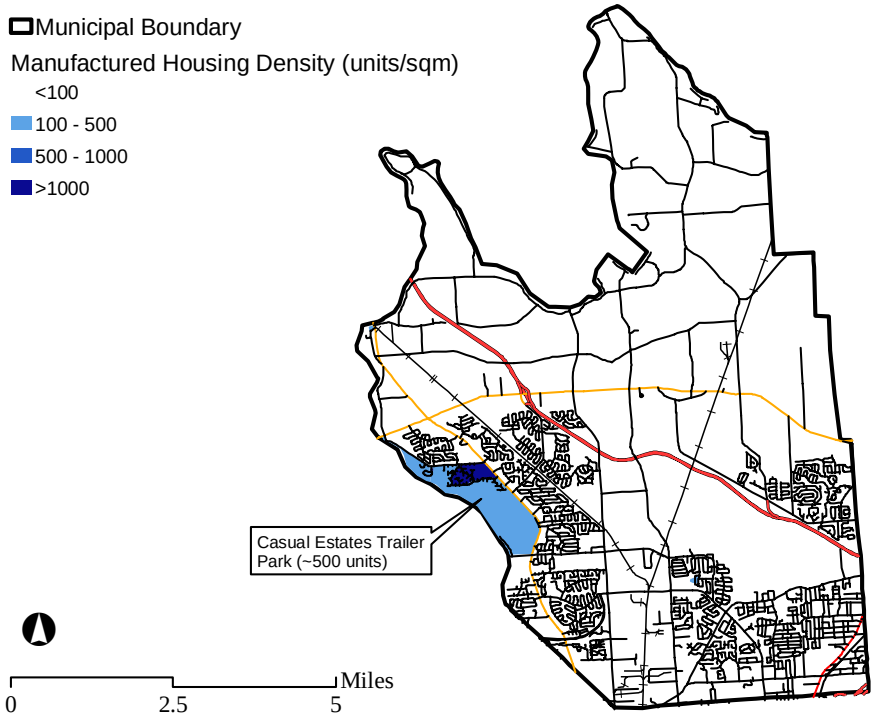


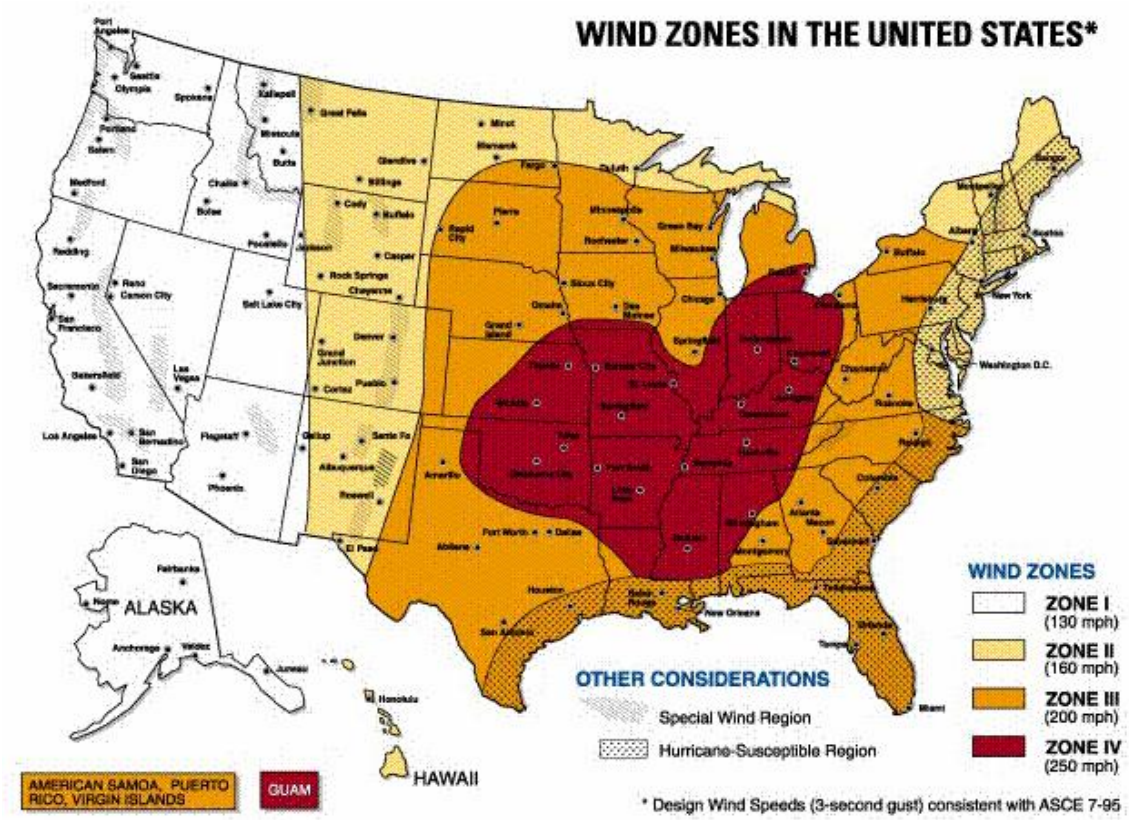
Figure 4-2-3. Manufactured Homes in the Town of Clay.



Source: HAZUS-MH (FEMA, 2004))

A Central New York camper damaged in Labor Day 1998 Severe Storm Event

Figure 4-2-4. Wind Zones in the United States



Source: FEMA

The following are excerpts from an article entitled “The Labor Day 1998 Syracuse Derecho”, from the National Weather Service Forecast Office, Binghamton, NY website:

During the early morning hours (between 12:30 and 2:30 am), an intense cluster of thunderstorms moved across the New York State Thruway corridor from Rochester, across Waterloo and Auburn, to Syracuse, Oneida and Clinton. The storms continued to race eastward through the Mohawk Valley, then across southern Vermont and southern New Hampshire...reaching the coast of Massachusetts north of Boston shortly before 6:00 am.

Long lived, intense convective wind storms such as this one are called derechoes. The last derecho to move across central New York occurred on July 15, 1995. Derechoes typically move at speeds of 40-60 MPH or faster, and often produce wind gusts in excess of 100 mph.

The city of Syracuse, including the New York State Fairgrounds, were particularly hard hit. A wind gust of 77 MPH was measured at the Syracuse International Airport - Hancock Field in North Syracuse. During the day, a National Weather Service Team surveyed the damage. A National Weather Service post storm damage survey confirmed the damage in Onondaga County into Madison County as a downburst of F1-F2 intensity. The found widespread straight line wind damage of 70-90 mph, with localized wind gust of up to 100-115 mph.

Substantial Damage in Onondaga County was found in a 30-mile long swath that was 6-7 miles wide, with additional damage back to the west across Seneca and Cayuga Counties and to the east in Madison and Oneida Counties. In addition to thousands of downed trees, damage to many structures, especially roofs, was noted and there were numerous windows blown in throughout the region.

Roof Damage at Syracuse University from Labor Day 1998 Severe Storm

Although not as widespread, this even event was similar to the July 15, 1995 event that caused major damage across the Adirondacks and also produced damage across much of Central New York.

4.2.1.2 Severe Winter Storm

HAZNY Summary of Risk Factors

Potential Impact:	Large region
Onset:	Several hours warning
Frequency:	Frequent event
Hazard Duration:	2 to 3 days
Cascade Effects:	Highly likely, including utility failure and transportation accidents
Recovery Time	3 days to 1 week

Profile Ranking

SEVERE WINTER STORM HAZARD PROFILE

Background and Local Conditions

A Severe Winter Storm is one that develops in late fall to early spring and deposits wintry precipitation, such as snow, sleet, or freezing rain, with a significant impact on transportation systems and public safety. For the purposes of the HAZNY analysis, the following could meet this definition:

- Heavy Snow: Twelve inches in 12 hours or less (the Town of Clay chose to increase the amount from 6" to 12" as they are located in an area of high snowfall and can manage greater amounts of snowfall than areas who receive less amounts of snow typically).
- Blizzard: Characterized by low temperatures, winds 35 mph or greater, and sufficient falling and/or blowing snow in the air to frequently reduce visibility to ¼ mile or less for a duration of at least three hours.
- Severe Blizzard: Characterized by temperatures near or below 10 degrees F, winds exceeding 45 mph, and visibility reduced by snow to near zero for a duration of at least three hours.

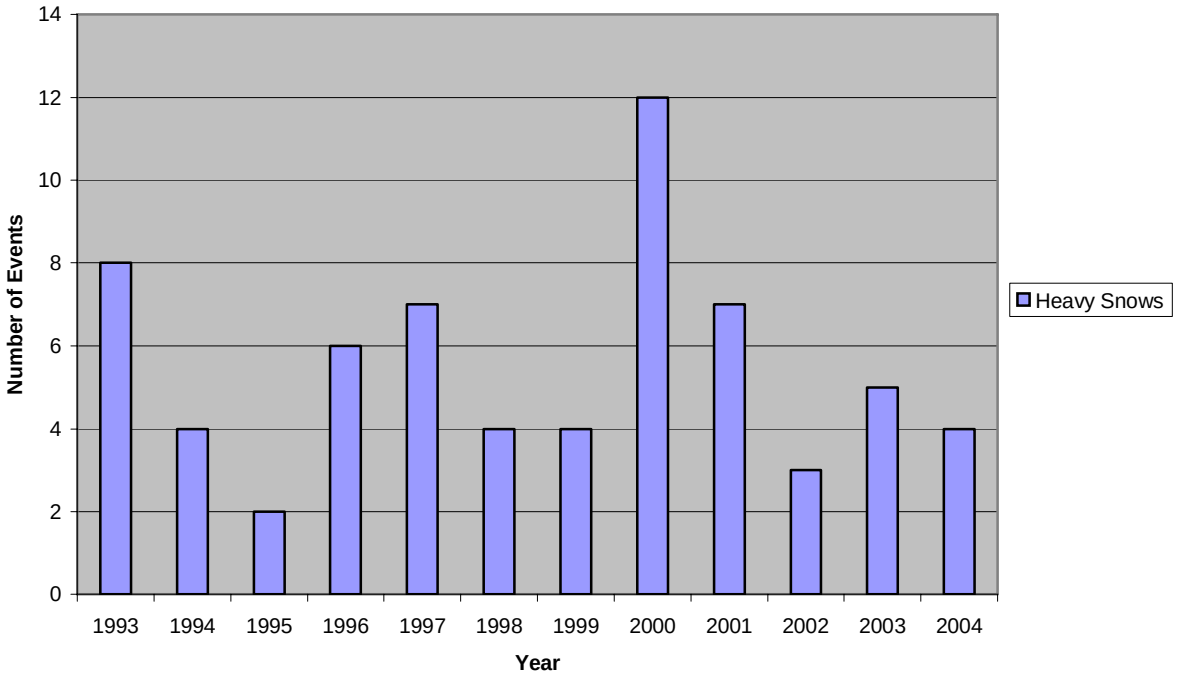
The climate of Upstate New York, with its northern latitude and high precipitation rate, is conducive to the regular occurrence of severe winter weather. The Town of Clay is also subject to the lake effect weather impacts associated with the Great Lakes. For these reasons, severe winter storms present a significant hazard to life and property in the Town of Clay. Heavy snowfall, coupled with low temperatures, often results in increases in traffic accidents; disruptions in transportation, commerce, government, and education; utility outages due to falling trees, branches, and other objects; personal injuries associated with slippery surfaces and freezing temperatures; and numerous other problems. Of particular concern in the Town of Clay is the increased likelihood of cascade effects from snow and ice, including utility failures, increased frequency and magnitude of transportation accidents, increased risk of injuries and death due to overexertion and falls, hypothermia, and reduced access to emergency services (poor road conditions, downed lines, call-loading).

Power outages associated with severe winter storms also can impact water supply and waste treatment systems. Severe winter storms can cause numerous impacts to the social, political, and public safety infrastructure, as well, causing lost productivity and work time, school cancellations, transportation delays, increased road maintenance, and higher demands on community services. The elderly, infirm, homeless, impoverished, and other vulnerable populations are at increased risk of adverse impacts associated with severe winter storms. Large snow accumulations can result in significant damage to trees and structures. The freeze/thaw cycle, salts, sand, and heavy use of plows and trucks that often accompanies severe winter storms results in formation of potholes, damaged roads and bridges, and increased maintenance costs to the affected communities.

SEVERE WINTER STORM HAZARD PROFILE

Historic Frequency and Probability of Occurrence
Town of Clay is subject to the lake effect weather systems of the Great Lakes to the west and is located in the northern U.S. It experiences the effects of severe winter storms frequently (average of six times per year in Onondaga County per NWS statistics). The average warning time for a severe winter storm event in Onondaga County is 12 to 24 hours (NWS). With respect to the probability of future severe winter storm hazard events, the HAZNY process categorized the severe winter storm hazard as a "frequent event." The ground rules for the program quantify this descriptor as an event that more than once a year. Based on historical information found on the NOAA website it is estimated that the Town of Clay will continue to experience an average of 6 severe winter storm events annually (Figure 4-2-5), with secondary effects causing possible utility failure, structural collapse, and transportation accidents.
Severity
The intensity of the impact from severe weather can range from minor to severe damage in a localized area or regional damage affecting property and the economy.
Historic Losses and Impacts
Snow events are frequent in the Town of Clay. Historically, minor damages and impacts are not recorded. For reference, the blizzard of 1993 indicates the potential impacts of such events on the town and surrounding area. FEMA Emergency Declaration 3107 EM NY on March 17, 1993, was associated with a blizzard where the area received 43 inches of snowfall over the course of four days. Losses were estimated at nearly $73,000 for the Town of Clay.
Designated Hazard Areas
Essentially, all of the Town of Clay is susceptible to winter storms. However, areas at particular risk include: certain areas with elderly, impoverished, or otherwise vulnerable populations; areas that are remote from community services and transportation corridors; antiquated or poorly constructed facilities (e.g., mobile homes); structures susceptible to power or telecommunications failure; and steep or hilly areas adjacent to water bodies, or served water from electric pumped-powered wells. Demographics, population density, transportation and considerations regarding construction, well usage, and topography in the region are presented throughout this plan and described in detail in Section 4.3, Inventory of Assets.

Figure 4-2-5. Number of Heavy Snow Events in Onondaga County (1993– 2004)



Source: NOAA NCDC Storm Event Database for Heavy Snow, 2003

4.2.1.3 Ice Storm

HAZNY Summary of Risk Factors

Potential Impact:	Large region
Onset:	Several hours warning
Frequency:	Regular event
Hazard Duration:	1day
Cascade Effects:	Some potential
Recovery Time	More than 2 weeks

Profile Ranking

ICE STORM HAZARD PROFILE

Background and Local Conditions
The National Weather Service and the HAZNY classifies an ice storm as one producing an accumulation of one-half inch of ice or more. Damages and losses associated with ice storms are similar to those for severe winter storms (snow). Given the town's northern location and the impact of the Great Lakes, ice storms are relatively common in the area and can have a significant impact.
Historic Frequency and Probability of Occurrence
Five ice storms are listed for Onondaga County between 1993 and the present, including one that had significant associated property damages ($28.5 million in total damages for a range of counties in 2003 - NCDC, 2005). With respect to the probability of future ice storm hazard events, the HAZNY report categorized the ice storm hazard as a "regular event." The ground rules for HAZNY ranking quantify this descriptor as an event that occurs between once a year and once every 7 years. According to the National Weather Service, the Town of Clay experiences ice storms an average of less than one a year.
Severity
The intensity of the impact from severe weather could be minor to total damage in a localized area or regional damage affecting property and the economy. At times, ice can be mixed with snow and categorized as a heavy snow event. In such cases, impacts of the combined events (snow and ice) can be more significant. The most severe ice storm in recent history impacted Chenango, Madison, Northern Oneida, Onondaga, Ostego, Schuyler, Seneca, Southern Cayuga, Southern Oneida, Steuben and Yates Counties and was caused by a stationary front that passed from west to east across Pennsylvania and into New York. Ice accumulations were 0.25-inches in most areas with some ice accumulation of up to one inch. States of emergencies were declared for most of the counties and Presidential Disaster Declaration was issued for Onondaga, Cayuga, Chenango, Oneida, and Yates Counties.
Historic Losses and Impacts
Five ice storms are listed for Onondaga County between 1993 and the present, including one that had significant associated property damages ($28.5 million in total damages for a range of counties in 2003) (NCDC, 2005). Ice storms that have impacted the Town of Clay identified by the group include an April 2003 event declared FEMA 1467-DR-NY that impacted thirteen of the NY counties including Onondaga. Impacts included a power outage for 6 days. The Town received $155,700 of federal disaster relief for losses due to this storm. Total damages for a range of New York Counties were estimated at $28.5 million (NCDC, 2005).
Designated Hazard Areas
All of the Town of Clay is susceptible to ice storms. However, areas at particular risk include: certain areas with elderly, impoverished, or otherwise vulnerable populations; areas that are remote from community services and transportation corridors; antiquated or poorly constructed facilities (e.g., mobile homes); structures susceptible to power or telecommunications failure; and steep or hilly areas adjacent to water bodies, or served water from electric pumped-powered wells. In particular, citizen input to the Town of Clay plan noted that rapid snow and ice melt have caused flooding in isolated areas (for example, along Foster Road) and that the impacts can be rapid and unexpected (Barrett 2005).

4.2.1.4 Flood

HAZNY Summary of Risk Factors

Potential Impact:	Several locations
Onset:	Several hours warning
Frequency:	Frequent event
Hazard Duration:	4 days to 1 week
Cascade Effects:	Some potential
Recovery Time	3 days to 1 week

Profile Ranking

FLOOD HAZARD PROFILE

Background and Local Conditions

Riverine flooding occurs when a waterbody overflows its normal banks, resulting in potentially violent and/or destructive conditions. A flash flood is a sudden transformation of a small stream into a violent waterway after heavy rain and/or rapid snow melt.

Floods result in greater property losses and damage and cause more casualties and fatalities each year than any other natural hazard. Several 100-year and 500-year floodplains are located within the Town of Clay along its streams, creeks, and rivers. These areas are prone to relatively frequent floods and/or inundation, as the town receives high amounts of precipitation and subsequent run-off. Annual average precipitation for the town varies from 43 inches in the northeast part of town to 39 inches in the southeast portion of town. The majority of the town receives about 41 inches of precipitation per year. When severe thunderstorms or storms associated with hurricanes or tropical storms occur, they often result in floods in the Town of Clay. Flash floods also occur relatively frequently within the town. Flood hazard areas are defined as areas that would be inundated by a flood of a given magnitude. These areas are determined using statistical analyses of flood discharge data and hydraulic and topographic analyses. Tools such as FEMA's Flood Insurance Rate Maps (FIRM) show flood hazard areas. A 100-year flood has a 1-percent chance of being equaled or exceeded in any given year. This flood event is also referred to as the base flood. A flood that has a 0.2-percent chance of being equaled or exceeded in any one year is called a 500-year flood. See Sections 4.3 and 4.4 for data on homes and other buildings located within 100- and 500-year flood zones in the Town of Clay Study Area. Because the flood hazard is significant in this area, the FEMA Flood Mitigation Program (404) was established to help municipalities fund flood mitigation projects.

Floods are problematic in numerous ways, including but not limited to water-related damage to the interior and exterior of buildings, especially homes; destruction of electrical and other expensive and difficult to replace equipment; loss of life; injury; proliferation of disease vectors; disruption of utilities, including water, sewer, electricity, and communications networks and critical facilities; loss of agricultural crops and livestock, placement of stress on emergency response and healthcare facilities and personnel, loss of productivity, and displacement of persons from homes and places of employment. Flood events require responses (such as pumping of basements and barricading roads) above and beyond the typical daily operations of emergency response organizations and fire departments. Developments and resources in the bottoms of valleys and at the foot of steep slopes; mobile homes and mobile home parks in low-lying lands; and riverfront and lakefront properties are particularly hard-hit by floods.

Historic Frequency and Probability of Occurrence

Flooding is a major persistent hazard that affects the Town of Clay, posing significant risk and resulting in repetitive loss and mitigation costs to the town. According to the National Oceanic and Atmospheric Administration (NOAA) National Climate Data Center (NCDC) storm events database, 18 significant floods were reported for Onondaga County between June 1994 and June 2002, including 6 major flood events, 8 flash flood events, and 3 events of urban/small-stream flood events. The HAZNY ranking process characterized flooding as a "frequent event." The ground rules for the program quantify this descriptor as an event that occurs more than once a year. National Weather Service (NWS) statistics indicate that the frequency of flooding in Onondaga County is about two flood events per year. FEMA's Flood Insurance Study for the Town of Clay indicates "floods that cause water levels greater than 1 foot above the banks will, on the average, occur every three years." Based on NWS statistics, historical information found on the NOAA website and data provided by FEMA, including Presidential Declared Disasters, it is estimated that the Town of Clay will continue to experience significant flooding each year (both in terms of frequency and impact).

FLOOD HAZARD PROFILE

Severity

According to a recent NWS study, flooding (including flash flooding) is the most costly hazard facing the Town of Clay. The Town of Clay is home to a mobile home park, Casual Estates. Residents of these types of homes are generally more vulnerable to flood impacts. Although injuries are unlikely, the impact on property and public infrastructure is moderate and can be highly destructive. Historic data on Town of Clay documented disasters indicate that flooding associated with Hurricane Agnes in 1972 resulted in storm sewer collapse in Cherry Heights, impacts to the Bayberry Sewer District, impacts to the Dey Road drainage system and Walnut Street Drainage Ditch, and other significant impacts. Flooding in 1993 triggered the State Emergency Assistance Program and required debris pick up and road repair. The severity of this flood was significant and the State required the Town of Clay to prepare an Emergency Plan. Additional severe flooding is discussed below.

Historic Losses and Impacts

Damages typically include structural damages (to private and public structures such as roads, homes, businesses, etc.) and losses of thousands of dollars per event for private residences, business owners, and municipal governments. The Town of Clay has received numerous Presidential Disaster Declarations and State Emergency Assistance Program support for flooding and other severe events (See Section 4.0 and Tables 4-2-2 and 4-2-3).

The Town received over $82,000 of federal disaster aid (DR 399) for losses experienced in flooding from Hurricane Agnes in June of 1972. In April of 1993, extended river flooding required road work and recovery efforts costing more than $400,000; about $250,000 of which was funded by the State Emergency Assistance Program. In order to receive that funding, the State required development of the Town of Clay Emergency Plan.

A flood and windstorm in May 2000 resulted in FEMA funding of $19,748.91 for damages in the Town of Clay. For the broader area, the NCDC reports damages of more than $10 million from the 17 flood events in the Onondaga County between June 1994 and May 2004. A countywide severe weather analysis for the period between 1993 and 2000 reported that flooding, while not the most frequent of the extreme weather events, is associated with the highest costs of any hazards in Onondaga County (NWS 2004). A flash flood in June 2002 caused nearly $2 million of property losses in Onondaga County alone (NCDC 2002).

Designated Hazard Areas

Riverine flooding typically occurs along the floodplains of the Seneca and Oneida Rivers. The Seneca and Oneida Rivers form the northern boundary of the Town of Clay and are also part of the New York State Canal System. Flooding in the Town of Clay occurs primarily along the central west side of the Seneca (Foster Road and Wetzel Road areas), the northwest branch of the Oneida River (Horseshoe Island area) and along the west side of northeast branch of the Oneida (Riverview Road, Black Creek Road, Riviera Drive areas. When river levels are high, the backwater effects increases flooding along Mud Creek and Willow Stream. Specific areas that are regularly impacted by flooding include the Seneca River, Foster Road, Wetzel Road, Horseshoe Island, Clay Marsh (aka. Hamlin Marsh, Peat Swamp), and the Riverview area. The Planning Group also noted that the central part of the town includes lowlands with extensive marshes that become inundated during periods of heavy rain. Some of these areas include critical facilities such as water supply and waste treatment plant facilities that can be impacted by flood events.

A FEMA Flood Insurance Study for the area notes that northern part of town and the Clay Marsh area are primarily rural. However the southern portion of the town is generally developed. The Horseshoe Island area, on the northern part of town, is a residentially developed area that is located within the 100-year floodplain; this area is a repetitive loss area (where flooding has damaged property more than one time) and has been the subject of previous mitigation activities. For example, a project to raise homes in this area was funded by FEMA in 2002 ($55,110 was received under a 404 Hazard Mitigation Grant to raise 9648 Horseshoe Island Road). In addition a number of agencies and the Town of Clay are working to improve land management and implement code enforcement along waterways to prevent over-development in flood-prone areas. In addition, bonds and grants have been used to improve sanitary sewer systems along the rivers. This reduces the future impact of floods in flood prone areas.

Runoff and drainage from the Rt. 57 corridor flows into the woods, wetlands, and river along Foster Rd. and Bel Harbor areas. Increased development and impermeable surface (pavement and concrete) have likely increased runoff.
Flooding starts from inland woods and wetland areas towards Rt. 57 well before the river spills over its banks.

Approximately two years ago there was a flash flood in the Bayberry Area and the west side of town after approximately six inches of rain, which overran storm sewers and caused a pump station at the end of Bel Harbor to fail (since rebuilt). When flooding occurs, there is the possibility of additional health hazards.

Flooding from Hurricane Agnes in June of 1972 (up to 18" of rain across New York over a period of two days) impacted the Bayberry Sewer District, Foster Road, Cherry Heights storm sewer (collapsed 200'), Horseshoe Island Road, Riverside Drive, Dey Road drainage system, and the Walnut Street drainage ditch. Pumping of sanitary sewer was required at Route 57 and Orion Path, and surface water pumping was required at Riegel Course at Sagmore Drive North. In April of 1993 there was an extended river flood lasting 4 to 7 days. Debris pick up lasted into the end of June. Road work to Wetzel Road, Foster Road and Horseshoe Island Road was required.

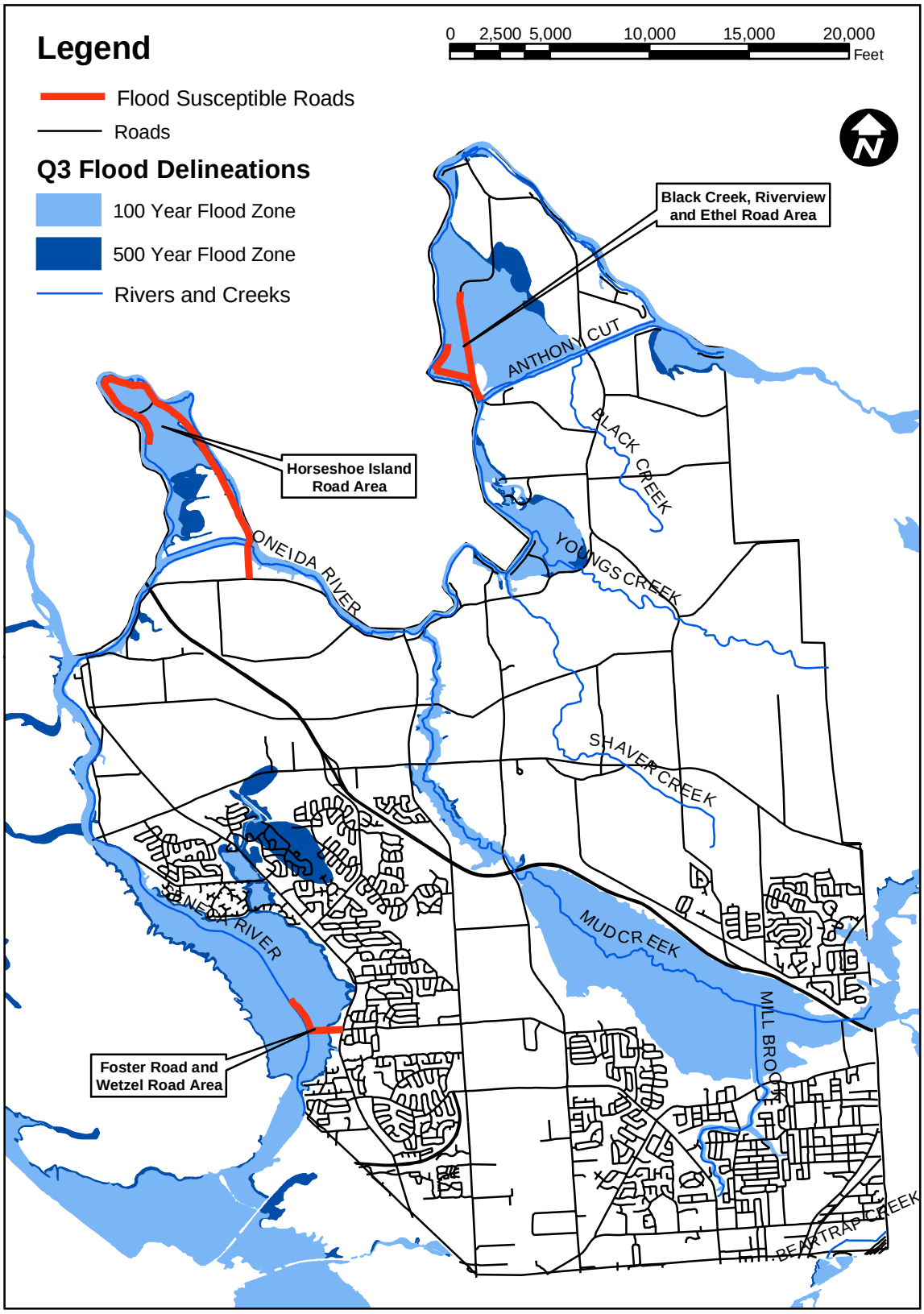
Figure 4-2-6 shows the areas within the Town of Clay within the designated 100-year and 500-year flood zones, and highlights certain road sections that have been noted by the planning group as being particularly susceptible to flooding.

Table 4-2-3. Presidential Disaster Declarations for Onondaga County (1972 to 2003)

Type of Event	Date	Declaration Number	Cost of Losses (approx.)
Tropical Storm	June 1972	DR 338	$82,099.88
Heavy Rain	October 1975	FDAA 487 DR	$1,581.60
Blizzard	March 1993	FEMA 3107 EM NY	$72,510.35
Storm	September 1998	FEMA 1244 DR NY	$579,253.38
Storm / Flooding	May 2000	FEMA 1335 DR NY	$19,748.91
Ice Storm	April 2003	FEMA 1467 DR NY	$155,659.62
Total Cost			$910,853.74

Notes: Recorded losses indicate the dollar value of loss made available through public records reviewed for this risk assessment.
Source: FEMA website (http://www.fema.gov/library/drcys.shtm)

Figure 4-2-6. 100- and 500-Year Flood Zones within the Town of Clay



Sources: Flood delineations are FEMA Q3, prepared and distributed by FEMA. The Flood Susceptible Roads are those identified by the Planning Group throughout plan preparation as being of particular flood concern.

4.2.1.5 Extreme Temperatures

HAZNY Summary of Risk Factors

Potential Impact:	Large region
Onset:	Several days warning
Frequency:	Frequent event
Hazard Duration:	2 to 3 days
Cascade Effects:	Some potential
Recovery Time	Less than 1 day

Profile Ranking

EXTREME TEMPERATURE HAZARD PROFILE

Background and Local Conditions

Extreme temperatures are defined as extended periods of excessive cold (less than –10 degrees Fahrenheit) or excessive heat (greater than 100 degrees Fahrenheit), with a serious impact on human and/or animal populations, particularly elderly and/or persons with respiratory ailments. Temperatures in the area vary from a high of 97 degrees Fahrenheit (°F) in the summer, to a low of -26 °F in the winter. The average maximum and minimum temperatures are 72 °F and 24 °F, respectively (NOAA, "Climates of the States", 1974).

Historic Frequency and Probability of Occurrence

NCDC data indicate that 13 extreme temperature events have occurred from 1950 to 2005 in Onondaga County. Of these, 12 are associated with extreme cold and/or wind chill. One is associated with excessive heat. In addition, one drought event is recorded for the county (1999). A drought is a period without sufficient rain that impacts crops; although not necessarily associated with extreme temperatures, droughts can occur during prolonged periods of warm weather when rain is lower than average. Extreme cold events recorded for the county are discussed further under Historic Losses and Impacts. A review of Midwest Research Center data for extreme temperatures indicate that for the period from 1922 to 2003, the highest recorded temperature for Syracuse (near Town of Clay) was recorded as 102 degrees Fahrenheit (July 1936) and the lowest temperature recorded was in January 1966 at -26 degrees Fahrenheit. Given its northern location and Great Lake effects, the Town of Clay is more prone to low temperature extremes than high temperature extremes. Due to geographic location, severe cold events are considered frequent, averaging 1.1 times per years, occurring mid-December through February. From 1983-2002, temperatures of –10 degrees Fahrenheit or greater were recorded 22 times. Severe heat events are considered an infrequent event, occurring approximately once every 10 years. From 1983 to 2002, temperatures of 100 degrees Fahrenheit or greater were recorded a total of two times.

With respect to the overall probability of occurrence for future extreme temperature hazard events, the HAZNY report categorizes this hazard as a "frequent event." The ground rules for the program quantify this descriptor as an event that occurs more than once a year.

Severity

Extreme temperatures generally occur for a short duration and their impact is therefore limited over time; however, an extreme temperature can result in injury and death or property damage (through cascade effects like pipe breaks due to freezing). Past events have been severe enough to cause some school districts to cancel classes (January 1997), result in killing freezes (September 2000), result in temperatures above 100 degree Fahrenheit (August 2001), cause temperatures as low as 20 to 30 below 0 Fahrenheit (January 2004), result in winds combined with cold (wind chill events) and snow drifts associated with Lake Effect snow drift and wind (various events), and cause instances of pipe freezing (January 2004).

Historic Losses and Impacts

Property damage to the area including Onondaga County was associated with two events in January 2004 for a total of $400,000 in property damages (NCDC, 2005). Little other specific data was available to support this risk assessment. The Town will collect additional specific data over time on both historic and future impacts associated with such weather event.

Designated Hazard Areas

Essentially, all of the Town of Clay is susceptible to extreme temperatures. Although occurring for a short duration, such extremes are particularly of concern to exposed and vulnerable populations such as those without insulated homes, the elderly, and the infirm. Those unable to afford heating or cooling during extreme temperature periods and vulnerable due to age or health are particularly hard hit by these events. For the extreme heat and cold events recorded by NCDC for the county, no deaths or injuries are recorded. However, the Town of Clay is mindful that vulnerable populations must be protected during such events.

4.2.1.6 Fire (Urban and Wild)

HAZNY Summary of Risk Factors

Potential Impact:	Large region
Onset:	No warning
Frequency:	Infrequent event
Hazard Duration:	Less than 1 day
Cascade Effects:	Some potential
Recovery Time	3 days to 1 week

Profile Ranking

FIRE HAZARD PROFILE

Background and Local Conditions

The fire hazard (including, urban and wild land fire), while generally local in impact, is capable of rapidly causing complete destruction of property, assets, natural resources, and human life and health. The costs associated with fire prevention, fighting, and recovery can be very high. Urban fire protection is under the jurisdiction of local fire departments within the Town of Clay.

Wildfire is a serious and growing hazard over much of the United States. Wildfires pose a great threat to life and property, particularly when they move from forest or rangeland into developed areas. An average of 5 million acres burns every year in the United States as a result of wildfires, causing millions of dollars in damage (FEMA, 2005). A wildfire or wild land fire is any uncontrolled fire occurring on undeveloped land that requires fire suppression. The potential for wildfire is influenced by three factors: the presence of fuel, the area's topography, and air mass. Fuel may include living and dead vegetation on the ground, along the surface as brush and small trees, and aerial fuel including tree canopies. Topography includes both slope and elevation. The air mass includes temperature, relative humidity, wind speed and direction, cloud cover, precipitation amount and duration, and the stability of the atmosphere at the time of the fire. Wildfires can be ignited by lightning and, most frequently, by human activity including smoking, campfires, equipment use, and arson.

Historic Frequency and Probability of Occurrence

Historic data available in the NCDC indicate no wildfires have occurred in Onondaga County from 1950 to 2005. National Fire Incident Reporting System (NFIRS) records provided by both the Clay and Moyers Corners Fire Departments (serving about 80% of the Town) identified about 56 building/structural fire calls (NFIRS Code 11) per year, and about 31 tree/brush/grass fire calls (NFIRS Code 14) per year, for the period from 1993 to 2004. The Planning Committee indicated that a notable brush fire along the Montreal rail line occurred in 2004, as a result of track sparking, and that another similarly triggered fire occurred in Lafayette in 2005. Neither fire resulted in measurable losses, however.

Generally, the climate in this area is cool and includes adequate precipitation to prevent wildfire events. Dry weather such as drought can increase the likelihood of wildfire events. The NCDC indicates only one drought event from 1950 to 2005 for Onondaga County. Lighting can trigger wildfire and urban fire events. The NCDC database indicates only one lightning strike for Clay in 2002. This event occurred when lightning hit a house on Oswego Road. One teenager was injured and taken to a local hospital for treatment (NCDC, 2005). Generally, area conditions are not conducive to wild land fire events.

The Planning Group identified several significant urban fire events including a recent fire at the Waste Management site which contained recycling products such as cardboard and paper, resulting in losses estimated in the millions of dollars. A significant fire occurred at the Bayberry Plaza in Bayberry in the 1980's. The Planning Group also indicated that several fires have occurred in the apartments at the end of Morgan Road.

With respect to the probability of future fire (urban and wild land) hazard events, the HAZNY report resulted in a frequency description term of an "infrequent event" for major fires. The ground rules for the program quantify this descriptor as an event that occurs between occurs between once every 8 years and once every 50 years (inclusive).

Severity

Impacts to human health and safety and property from major urban fires are often severe and direct. The intensity of fire impact can range from minor to significant. Fires have significant community-wide impacts, especially when lives and homes are claimed. A fire in a manufacturing facility can result in the closing and relocating of the business elsewhere.

Historic Losses and Impacts

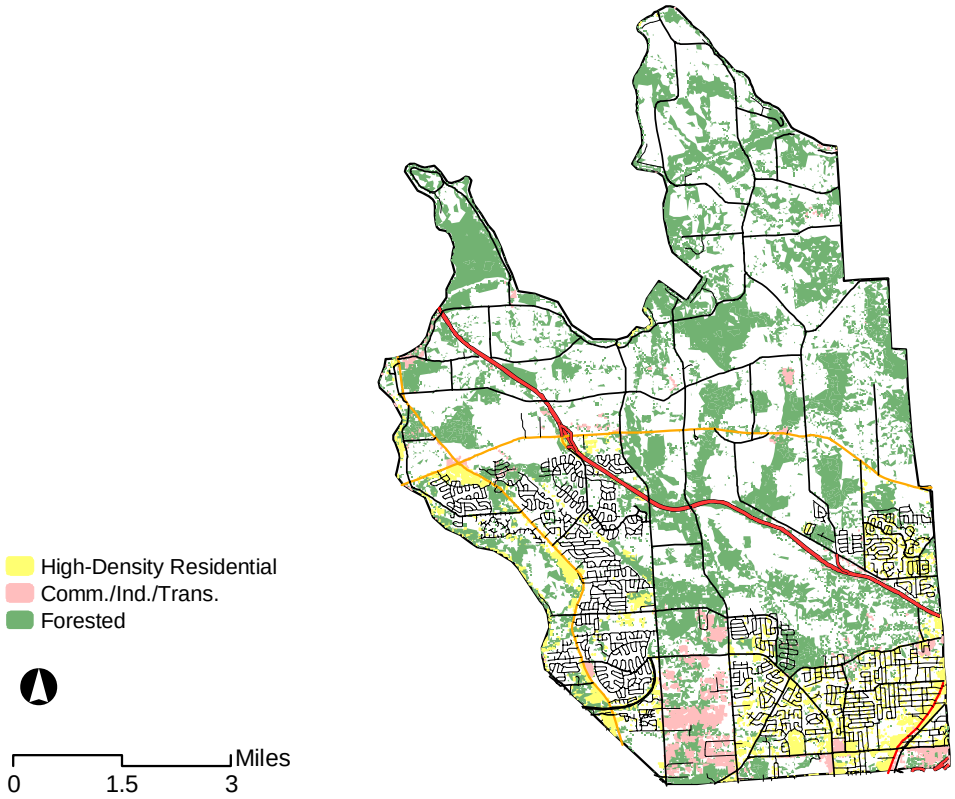
FIRE HAZARD PROFILE

As discussed under Historic Frequency and Probability of Occurrence, it appears that major wildfires are unlikely in the area; no wildfire events have been identified in the NCDC database for Onondaga County from 1950 to 2005. NFIRS fire call data provided by the Clay and Moyers Corner Fire Departments identify significant numbers of both structural and vegetative fire calls, however actual losses have yet to be compiled. The Planning Group, which includes representatives of the fire departments serving the Town, have identified no measurable losses associated with vegetative fires that have occurred in the Town in memorable history. The recent Waste Management fire resulted in "millions" of losses according to the Planning Group. As further information becomes available, it will be incorporated into subsequent revisions of this plan.

Designated Hazard Areas

Urban areas have the potential for greater damage to infrastructure, loss of life, and strain on existing healthcare facilities and emergency responders due to its higher structural and population densities. Areas of building construction and their density are presented in Section 4.3. Areas of land use prone to wildfire include areas that are wooded or forested. Figure 4-2-7 shows high-density residential, commercial/industrial, and forested areas (not including forested wetlands) in the Town of Clay. It may be assumed that any upland forested areas are susceptible to wildfire, however the risk to life and property is greatest in those areas where forested areas adjoin urbanized areas (high density residential, commercial and industrial). It is noted that a majority of the urbanized areas in Clay are adjacent to forested areas. Thus, we consider all urbanized areas within Clay to be vulnerable to urban and wildfires, however as has been noted previously the frequency of such events appears to be low.

Figure 4-2-7. Urban and Wild Land Fire Hazard Areas in the Town of Clay



Source: NLCD (2004)

4.2.1.7 Infestation (primarily disease-carrying mosquitoes)

HAZNY Summary of Risk Factors

Potential Impact:	Large region
Onset:	More than 1 week warning
Frequency:	Regular event
Hazard Duration:	More than 1 week
Cascade Effects:	Some potential
Recovery Time	Less than 1 day

Profile Ranking

INFESTATION HAZARD PROFILE

Background and Local Conditions

Infestation is included as a natural hazard in this plan based on the ubiquitous mosquito population in the Town of Clay. A high mosquito population increases the potential for West Nile Virus (WNV) and other mosquito-borne diseases to occur in the Town.

The West Nile Virus (WNV) is transmitted by mosquitoes to birds and other animals through a mosquito bite. It was first isolated in 1937 and has caused asymptomatic infection and fevers in humans in Africa, West Asia, and the Middle East. It was first identified in the Western Hemisphere in 1999. The WNV normally cycles between mosquitoes and birds. However, people also may be infected if they are bitten by a WNV-infected mosquito. Most humans infected with WNV have no symptoms; however, a small proportion develops mild symptoms including fever, headache, body aches, skin rash, and swollen lymph glands. Less than 1 percent of infected persons develop severe illness including: meningitis or encephalitis. One of about 1,000 persons that develop severe symptoms may die.

The WNV was first reported in the United States in New York State in the summer of 1999. From 1999 to 2001, 149 cases of illness and 18 deaths caused by WNV were reported in humans in the United States. In 2002, state health departments reported more than 4,100 cases and more than 280 deaths in humans based on electronic surveillance systems prepared by the Centers for Disease Control and Prevention (CDC)*. In 2003 more than 9,800 cases and 264 deaths in humans were reported.

Also of concern is Eastern Equine Encephalitis (EEE). EEE is a rare disease that is spread to horses and humans by infected mosquitoes. It is among the most serious of a group of mosquito-borne virus diseases that can affect the central nervous system and cause severe complications and even death. Other similar diseases are Western Equine Encephalitis, St Louis Encephalitis and LaCrosse Encephalitis. It is noted that horses can be vaccinated against EEE, however this is not believed to be common practice to date (source).

The increasing level of WNV cases, combined with high mosquito populations in the Town of Clay, indicate that that WNV and related illnesses should be considered as a natural hazard of concern in the Town. To control the population of mosquitoes, the Onondaga County Health Department (OCHD) performs spraying. Such spraying was conducted 6 to 8 years ago, and monitoring is an ongoing activity.

Historic Frequency and Probability of Occurrence

Data related to WNV are available on the USGS West Nile web site (http://westnilemaps.usgs.gog/2004) and the New York State Department of Health (NYSDOH) web site (http://www.health.state.ny.us/nysdoh/westnile). Given the prevalence of WNV in New York the NYSDOH has developed WNV Response Plans that are available at their WNV web site. Data regarding cases of WNV identified in New York state are posted on their website and summarized in Table 4-2-3, below. With respect to the probability of future infestation hazard events, the HAZNY report categorizes the potential frequency as a "regular event. " The ground rules for the program quantify this descriptor as an event that occurs between once a year and once every 7 years.

INFESTATION HAZARD PROFILE

Severity

Since 1964, 163 cases of WNV have been confirmed in the United States. Fewer than 5 cases are reported in most years. Although small outbreaks of human disease have occurred in the United States, epidemics in horses can be common during the summer and fall. (OCHD – 2005).

WNV first struck the northern hemisphere in Queens, N.Y. in 1999 and killed four people. In 2003, all 50 states warned of an outbreak from any of the 30 mosquito species known to carry the WNV. Since identification of WNV in New York in 1999, confirmed human cases of the virus have been identified in states through 2002, and have resulted in 284 deaths. Less than one percent of those infected with WNV develop severe symptoms. However, almost 300 deaths have occurred. The elderly appear to be at high risk for the severe aspects of the disease.

Historic Losses and Impacts

Historic data as available from the NYSDOH are included in Table 4-2-3. These data indicate that 6 humans in Onondaga County have been identified with the virus from 2000 through 2005, with no deaths. A number of mosquito pools were identified with the presence of WNV mosquitoes in the years 2002 and 2003 in Onondaga County (see table). According to the OCHD, one horse died of EEE in 2004. Data regarding WNV virus is not available for the Town of Clay or the County. This data will be included in future drafts of this plan as it is received.

Designated Hazard Areas

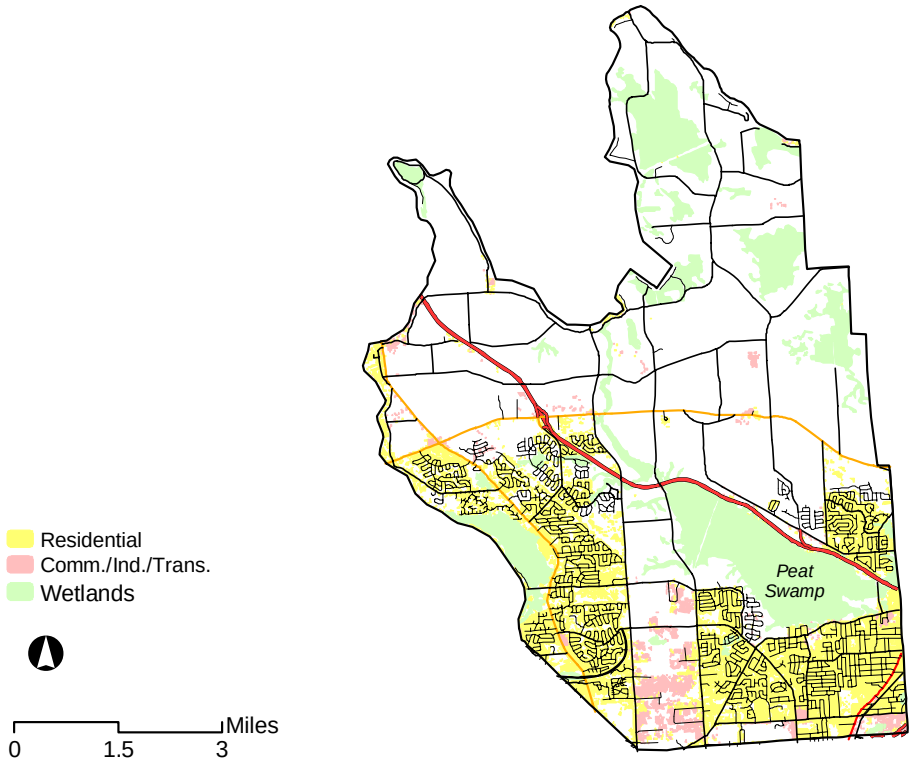
The Town of Clay has several large contiguous wetland complexes that are typical habitat for mosquitoes. Figure 4-2-8 shows wetland and urbanized areas in the town. It may be assumed that the areas of greatest risk to mosquito-borne disease in humans are where urban areas are in close proximity to major wetland complexes. Such areas are particularly noted surrounding the Peat Swamp, in the developments along Gaskin Road (Casual Estates) and the Route 57/Wetzel Road area, and along Horseshoe Island Road (Peter Scott Swamp in the town of Schroeppel to the north). The OCHD regularly places mosquito traps in areas with the greatest prevalence of mosquitoes, frequently in the Clay Marsh area. Persons over age 50 are at higher risk of severe illness following infection and areas of concentrated elderly populations (such as assisted living centers) should monitor for potential WNV impacts.

Table 4-2-3. WNV Documentation for New York State and Onondaga County (2000 to 2004)

Year	WNV Positive Results for New York (State/ Onondaga County)				
	Live and Dead Birds	Horses	Mosquito Pools	Humans	Others
2004	207/7	5/0	238/0	10(0)/0	1/0
2003	1,368/36	32/0	471/10	71(1)/1(0)	3/0
2002	1,455/64	36/1	445/16	83(5)/5(0)	2/0
2001	803/28	22/0	316/0	15(2)/0	0/0
2000	1,277/0	28/0	400/0	14(Not listed)/0	23/Not listed

Notes: Data obtained from http://www.health.state.ny.us/nysdoh/westnile/ on the NYSDOH web site. Data available for the years 200 through 2004. Data indicate the presence of the virus in specimens analyzed; they do not necessarily indicate ill or symptomatic specifies. Numbers in parentheses for humans indicate deaths.

Figure 4-2-8. Mosquito Hazard Areas in the Town of Clay



4.2.2 Man-Made Hazards

This section presents the profile of the single man-made hazard of concern (Hazardous Materials - Fixed Facility) selected for further profiling and evaluation.

4.2.2.1 Hazardous Materials - Fixed Facility

HAZNY Summary of Risk Factors

Potential Impact:	Several locations
Onset:	No warning
Frequency:	Rare event
Hazard Duration:	Less than 1 day
Cascade Effects:	Some potential
Recovery Time	3 days to 1 week

Profile Ranking

HAZARDOUS MATERIALS - FIXED FACILITY HAZARD PROFILE

Background and Local Conditions

Hazardous Material (Haz-Mat) facilities are defined as those facilities in a community that use and store certain substances regulated as hazardous materials. A range of environmental and emergency response regulations address these faculties to prevent the potential for incidents that can impact human health or the environment. Within the Town of Clay, the hazard identification and evaluation planning group identified industrial parks and water treatment facilities as Haz-Mat facilities that could be the cause or location of a fixed facility, Haz-Mat event. The potential events that could impact human health or the environment include spills of fuel to sensitive wetlands, impacts to groundwater, chemical releases to air that could cause a need for evacuation, potential impacts to industrial workers in such operations, releases that cause fires to which the emergency services must respond and potentially these types of facilities could be subject to terrorist events. Various reporting systems are associated with Haz-Mat facilities. For example, some facilities that store regulated chemicals must complete Tier II reporting (Community Right-to-Know Act) information to Local Emergency Planning Commissions (LEPC). LEPCs are charged with ensuring that each community is prepared to respond to Haz-Mat incidents that might occur in the community. Another reporting tool for larger facilities (those that store, use, or emit) higher volumes of materials is the Toxic Release Inventory system. This data is publicly available from EPA in terms of the number of facilities in a neighborhood that report TRI data. Given the sensitive nature of this information, it can only be obtained by the public through a FOIA request to the LEPC.

Historic Frequency and Probability of Occurrence

With respect to the probability of future Haz-Mat events, the HAZNY report resulted in a frequency description term of a "rare event". The ground rules for the program quantify this descriptor as an event that occurs less than once every 50 years. Hazardous material incidents may occur at any time in the Town of Clay given the location of businesses and industry that use hazardous materials, the presence of scattered illegitimate businesses such as clandestine drug laboratories at any given time, and the improper disposal of hazardous waste.

The Planning Group noted an explosion at the Suburban Propane facility, date to be determined, however this does not meet the HANZY and FEMA definitions of a Hazardous Material event and would be more properly included as an explosion hazard event.

Severity

The severity of hazardous material releases is directly related to the type, volume, composition, characteristics, and chemical state of the material(s) involved. Releases of highly hazardous, infectious, radioactive, flammable, corrosive, or toxic industrial chemicals, fuels, or wastes, can result in large, regional impacts if toxic gases or vapors are formed, if surface water is impacted, or if they occur in populated areas. The emergency response capabilities within the Town of Clay are considered excellent; however, location and characteristics of a spill can determine the amount of time necessary to stabilize a release and minimize the amount of damage that could result to people, assets, and resources of the community. Spills in rural areas may cause a delay in notification and the initiation of remedial action allowing the material to spread and resulting in greater detrimental effects to people or the environment. A spill of material into any of the major waterways that bound the Town to the east, north and west could result in significant water quality and aquatic ecosystem impacts.

HAZARDOUS MATERIALS - FIXED FACILITY HAZARD PROFILE

Historic Losses and Impacts

The HAZNY planning group identified no instances of Haz-Mat events having occurred in the Town of Clay. Additional information will be requested from local emergency responders and fire departments before this plan is finalized.

Designated Hazard Areas

Hazard areas related to Haz-Mat incidents would be areas in and around industrial and commercial facilities where hazardous materials are stored, used, emitted, or transported. Industrial operations are primarily centered in the town's two industrial parks (Clay Industrial Park and Woodard Industrial Park), as shown in Figure 4-2-9. According to data available in HAZUS and from the SOCPA, 27 industrial and 215 commercial buildings are located in the Town of Clay. Some number of these would include Haz-Mat substances and be considered Haz-Mat facilities.

Of the three haz-mat facilities identified in the HAZUS-MH default data, only Cargill, Inc. – Animal Nutrition at 7700 Maltage Drive is still operational (Planning Committee – 2005). EPA data for Toxic Release Inventory (TRI) facilities were used to identify major hazardous material (HazMat) facilities (fixed) in the mitigation planning study area. TRI regulations impact facilities that use, store, or emit greater than the specified amounts of TRI-regulated chemicals. The USEPA Toxics Release Inventory database identified a single listing for the Town of Clay; the Strathmore Products, Inc. on Burr Road in the Woodard Industrial Park. This facility submitted "Form Rs" for storage of toluene, xylene, n-butyl alcohol, methyl ethyl ketone, glycol ethers, and 1,2,4-trimethylbenzene. Figure 4-2-9 indicates that these facilities are all located within areas zoned industrial or commercial.

Other facilities in the town manage hazardous materials, including oil storage/distribution facilities, gas stations, and home supply and paint stores. Further, waste treatment plants and water treatment plants also may store chemicals (e.g. chlorine) that can cause incidents; these facilities are operated in accordance with applicable regulations in the Town of Clay.

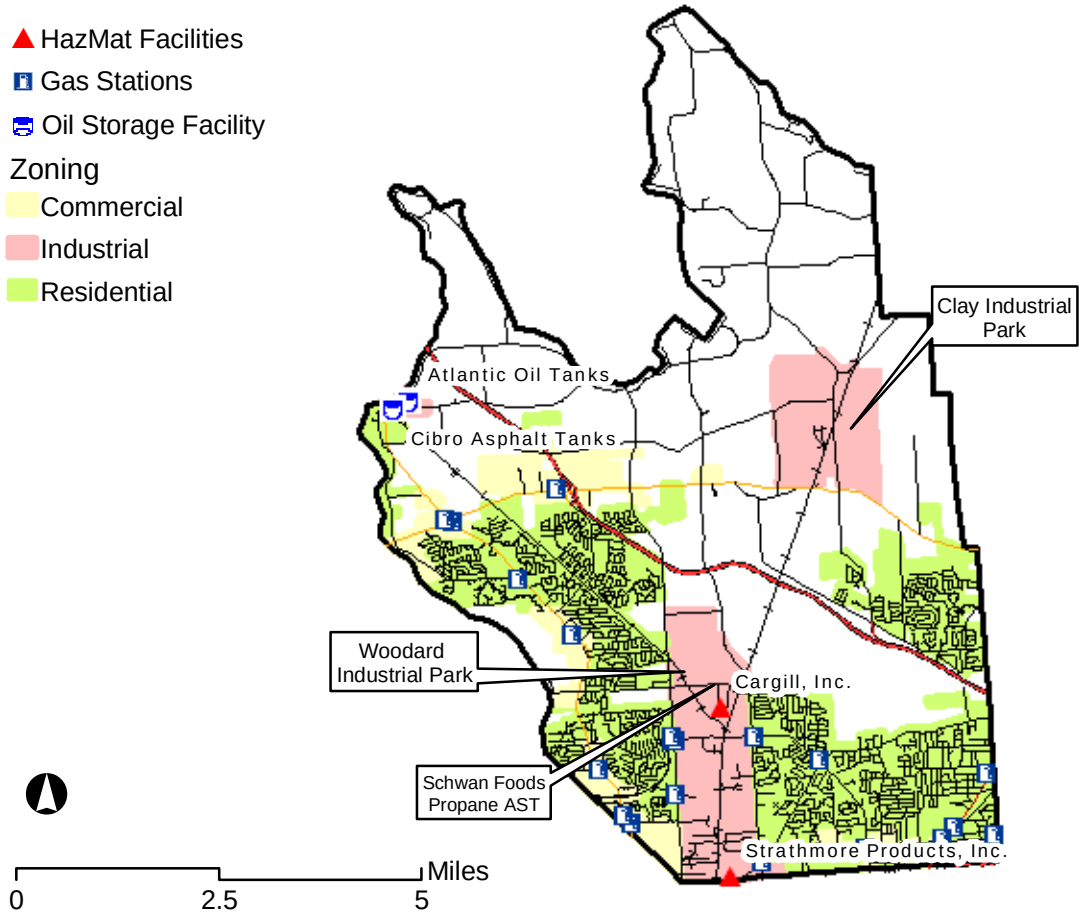



Figure 4-2-9. Haz-Mat Facilities and Zoning Classifications in the Town of Clay