



5.2 IDENTIFICATION OF HAZARDS OF CONCERN

To provide a strong foundation for mitigation actions considered in Sections 6 and 9, Suffolk County focused on considering a full range of hazards that could impact the area, and then identified and ranked those hazards that presented the greatest concern. The hazard of concern identification process incorporated input from the County and participating jurisdictions; review of the New York State Hazard Mitigation Plan (NYS HMP); research and local, state, and federal information on the frequency, magnitude, and costs associated with the various hazards that have previously, or could feasibly, impact the region; and qualitative or anecdotal information regarding natural hazards and the perceived vulnerability of the study area’s assets to them. Table 5.2-1 documents the process of identifying the natural hazards of concern for further profiling and evaluation.

Hazards of Concern are those hazards that are considered most likely to impact a community. These are identified using available data and local knowledge.

For the purposes of this planning effort, the Planning Committee chose to group some hazards together, based on the similarity of hazard events, their typical concurrence or their impacts, consideration of how hazards have been grouped in Federal Emergency Management Agency (FEMA) guidance documents (FEMA 386-2, “Understanding Your Risks, Identifying Hazards and Estimating Losses; FEMA’s “Multi-Hazard Identification and Risk Assessment – The Cornerstone of the National Mitigation Strategy”; FEMA’s Local Mitigation Planning Handbook), and consideration of hazard grouping in the NYS HMP.

Tropical cyclones (hurricanes, tropical storms and tropical depressions) shall be grouped under the “Hurricane” hazard. Due to the great amount of post-Katrina and post-Sandy media attention on the exposure and risk of Long Island to hurricanes, the planning committee felt that having hurricanes identified separately from extra-tropical storms and other severe storm events was prudent. Extra-tropical cyclones (Nor’Easters and severe winter low-pressure systems) shall be grouped under the “Nor’Easter” hazard.

The “Severe Storm” hazard includes windstorms that often entail a variety of other influencing weather conditions including thunderstorms, hail, lightning, and tornadoes. Tropical and extra-tropical cyclones, sometimes grouped together under a coastal storms hazard (FEMA 386-2), are being grouped in separate hazard categories as explained above.

The “Flood” hazard includes riverine flooding, flash flooding, urban flooding (local drainage problems), and coastal flooding (including storm surges). Inclusion of the various forms of flooding under a general “Flood” hazard is consistent with that used in FEMA’s “Multi-Hazard Identification and Risk Assessment” guidance.

The “Severe Winter Storm” hazard includes heavy snowfall, blizzards, and ice storms. This grouping is consistent with that used in the NYS HMP.

Please note that technological [e.g. hazardous material incidents] and man-made hazards (e.g. terrorism) are not being addressed in this planning process. The DMA 2000 regulations do not require consideration of such hazards, these were not chosen for inclusion in this plan update by the County and planning participants.



Table 5.2-1. Identification of Hazards of Concern for Suffolk County

Hazard	Is this a hazard that may occur in Suffolk County?	If yes, does this hazard pose a significant threat to the County?	Why was this determination made?	Source(s)
Avalanche	No	No	<ul style="list-style-type: none"> The topography and climate of Suffolk County does not support the occurrence of an avalanche event. New York State, in general, has a very low occurrence of avalanche events based on statistics provided by National Avalanche Center – American Avalanche Association (NAC-AAA) between 1998 and 2013. Avalanche was identified as a hazard in the NYS HMP; however, there have been no occurrences in Suffolk County. 	<ul style="list-style-type: none"> NYS DHSES Input from Planning Committee Review of NAC-AAA database between 1998 and 2013.
Coastal Erosion	Yes	Yes	<ul style="list-style-type: none"> The NYS HMP identifies coastal erosion as a hazard of concern for the State. Counties bounded by coastal waters are most affected by coastal erosion. Suffolk County is bounded to the north, south, and east by coastal waters; therefore, coastal erosion was identified as a hazard of concern by the Planning Committee. The NYS HMP states that multiple local jurisdictions along the Atlantic Coast are highly susceptible to coastal erosion and areas have been identified as Coastal Erosion Hazard Areas (CEHA). Suffolk County has been identified as a CEHA. Documented coastal erosion has occurred in the Town of Babylon, Fire Island, Mattituck Creek/Inlet in the Town of Southold, Moriches Inlet and Sound Beach in the Town of Brookhaven, Shinnecock Bay / Inlet and the Westhampton Groin Field in the Town of Southampton, Asharoken Beach in the Town of Huntington, Town of Southold along County Road 48, Village of Saltaire (Town of Islip), the hamlet of Montauk in the Town of East Hampton, and the Town of Shelter Island. Two FEMA declarations, since 2008, were issued for Suffolk County and resulted in coastal erosion damages to the County: <ul style="list-style-type: none"> FEMA-DR-4020 (Hurricane Irene) – August 28, 2011 FEMA-DR-4085 (Hurricane Sandy) – October 29, 2012 According to the NYS HMP, between 2010 and 2012, Suffolk County had four weather events that caused coastal erosion. Those four events resulted in three fatalities, one injury, and approximately \$31 million in property damage. 	<ul style="list-style-type: none"> NYS DHSES Input from Planning Committee FEMA NOAA-NCDC
Coastal Storm (tropical and extra-tropical cyclones)	Yes	Yes	For tropical cyclones, please see “Hurricane/Tropical Storms. For extra-tropical cyclones, please see “Nor’Easters”	
Drought	Yes	Yes	<ul style="list-style-type: none"> The NYS HMP identifies drought as a hazard of concern for the State. Suffolk County has been impacted by many drought events that have occurred in New York State. Since 2008, the County has been impacted by two drought events: <ul style="list-style-type: none"> August-September 2010 April 2012 – first drought on Long Island in 13 years 	<ul style="list-style-type: none"> NYS DHSES Input from Planning Committee NRCC -Coastal Climate Division



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			<ul style="list-style-type: none"> • There are more than 1,100 active private wells in Suffolk County that get water from three major aquifers. Drought conditions have the potential to impact these private wells. • According to the NRCC, Suffolk County is located within the Coastal Climate Division, which has been impacted by periods of severe and extreme drought and include the following events: <ul style="list-style-type: none"> ○ September 1910 – July 1911 ○ March 1930 – February 1931 ○ November 1931 – February 1932 ○ November 1949 – January 1950 ○ September – December 1964 ○ May 1965 – August 1966 ○ March – April 1985 ○ July – August 1999 ○ January – May 2002 ○ August – September 2010 • The Planning Committee identified the drought hazard as impacting agriculture, drinking water, and exacerbating wildfire concerns, in certain parts of the County. 	
Earthquake	Yes	Yes	<ul style="list-style-type: none"> • The NYS HMP identified earthquake as a hazard of concern for the State. • USGS indicates that the 2008 PGA for Suffolk County is between 2 and 4%. According to FEMA, any jurisdiction that has a PGA of 3% or greater is required to fully profile the earthquake hazard. • According to the NYS HMP, between 1973 and 2012, there have been 189 earthquakes epicentered in the State. Of those 189 events, only one had an epicenter in Suffolk County. • According to the NGDC, New York State has only had eight significant earthquakes between 1823 and 2014. Only one of those earthquakes was within the vicinity of Suffolk County in 1871. No damages or reported deaths were reported for this incident. • Since 2008, no earthquakes have been epicentered in Suffolk County; however, many earthquakes occurred in surrounding areas and residents of the County reported having felt those events. 	<ul style="list-style-type: none"> • NYS DHSES • Input from Planning Committee • NOAA – Review of NGDC Earthquake Database from 1800 to present • USGS – Earthquake Hazards Program, Review of USGS Seismic Maps
Expansive Soils	Yes	No (affects Town of Smithtown)	<ul style="list-style-type: none"> • USGS indicated that Suffolk County does not have the type of soils (swelling clay) that would result in expansive or swelling soils; therefore, Suffolk County has little to no swelling potential. • Expansive soils are not identified as a hazard in the NYS HMP. • The Town of Smithtown identified a localized problem with expansive soils, on or near a golf course. 	<ul style="list-style-type: none"> • NYS DHSES • Input from Planning Committee • Review of USGS 1989 Swelling Clays Map of the Conterminous United States.
Extreme Temperature	Yes	No	<ul style="list-style-type: none"> • The NYS HMP identified extreme temperatures as a hazard of concern for New York State. 	<ul style="list-style-type: none"> • NYS DHSES



Hazard	Is this a hazard that may occur in Suffolk County?	If yes, does this hazard pose a significant threat to the County?	Why was this determination made?	Source(s)
			<ul style="list-style-type: none"> Between 2008 and 2014, Suffolk County experienced the following extreme temperature events: <ul style="list-style-type: none"> July 22-23, 2011 (Excessive Heat) The Planning Committee did not identify extreme temperatures as a significant hazard impacting the county. 	<ul style="list-style-type: none"> Input from Planning Committee NOAA-NCDC
Flood (riverine, flash, coastal and sea level rise)	Yes	Yes	<ul style="list-style-type: none"> Suffolk County is primarily bounded to the north, south and east by coastal waters Four FEMA declarations for flooding, since 2008, were issued for Suffolk County: <ul style="list-style-type: none"> FEMA-DR-1869 (Severe Storms and Flooding) – November 12-14, 2009 FEMA-DR-1899 (Severe Storms and Flooding) – March 13-31, 2010 FEMA-DR-4020 (Hurricane Irene) – August 26-September 5, 2011 FEMA-DR-4085 (Hurricane Sandy) – October 29, 2012 According to the NFIP statistics, over 31,500 flood-related claims have been made between 1978 and 2013 by Suffolk County, with over \$1 billion in flood related losses paid to the Towns and Villages of the County. Elevated (shallow) groundwater is considered a significant concern in the Lake Ronkonkoma area, Nissequogue River Basin, and the Village of Lake Grove. 	<ul style="list-style-type: none"> Input from Planning Committee NYS HMP Update FEMA
Groundwater Contamination (Natural)	Yes	Yes	<ul style="list-style-type: none"> The Planning Committee identified groundwater contamination, resulting from natural causes (e.g. nitrates and salt water intrusion), to be a concern in certain jurisdictions within the County, specifically Northport Area, North Fork, Shelter Island and Southold. 	<ul style="list-style-type: none"> Input from Planning Committee Suffolk County Department of Health
Hailstorm	Yes	Yes	Please see Severe Storm	
Hurricane (tropical cyclones, including tropical storms and tropical depressions)	Yes	Yes	<ul style="list-style-type: none"> Suffolk County is primarily bounded to the north, south and east by coastal waters, therefore, highly susceptible to tropical cyclones, including hurricanes, tropical storms and tropical depressions. Four FEMA declarations for hurricanes, since 2008, were issued for Suffolk County: <ul style="list-style-type: none"> FEMA-DR-1869 (Severe Storms and Flooding) – November 12-14, 2009 FEMA-DR-4020 (Hurricane Irene) – August 26-September 5, 2011 FEMA-DR-4031 (Tropical Storm Lee) – September 7-10, 2011 FEMA-DR-4085 (Hurricane Sandy) – October 29, 2012 Between 1842 and 2012, 33 tropical cyclone events passed with 50 nautical miles of Suffolk County. 	<ul style="list-style-type: none"> FEMA Input from Planning Committee NYS HMP Update NOAA NHC
Ice Jams	Yes	No	<ul style="list-style-type: none"> The NYS HMP includes ice jams in the flood hazard profile and identifies it as a hazard of concern for the State. However, the NYS HMP does not document any ice jam events in Suffolk County. Historically, there have been six reported ice jams along the Peconic River in the Town of Riverhead. Between 2008 and 2014, the USACE CRREL Ice Jam Database did not list any ice jam events in Suffolk County. 	<ul style="list-style-type: none"> NYS DHSES Input from Planning Committee USACE CRREL Ice Jam Database



Section 5.2: Identification of Hazards of Concern

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			<ul style="list-style-type: none"> The Planning Committee does not consider ice jams as a significant hazard affecting the County. 	
Ice Storm	Yes	Yes	Please see Severe Winter Storm	
Infestation	Yes	Yes	<ul style="list-style-type: none"> The NYS HMP did not recognize and “infestation” hazard in that plan. FEMA guidance documents (FEMA 386-2 and “Multi-Hazard Identification and Risk Assessment”) do not recognize the “infestation” hazard. The Planning Committee considers infestation to be a hazard impacting localized areas in the county. 	<ul style="list-style-type: none"> NYS DHSES FEMA guidance documents Input from Planning Committee
Land Subsidence	No	No	<ul style="list-style-type: none"> NYS HMP indicates New York State is vulnerable to land subsidence; however, this hazard is “extremely localized” and poses a “very low risk to population and property.” NYS HMP does not identify Suffolk County as a community that has experienced land subsidence in the past. In general, moderate to low land subsidence susceptibility exists for New York State, however, it was identified that this hazard has a very low risk to population or property. According to USGS, Suffolk County is predominantly made up of unconsolidated aquifer systems, which excessive pumping of such aquifer systems could result in permanent subsidence and related ground failures. However, no such incidences have been reported within Suffolk County. The Planning Committee did not identify land subsidence as a hazard of concern for Suffolk County. 	<ul style="list-style-type: none"> NYS DHSES Input from Planning Committee USGS Fact Sheet 165-00
Landslide	Yes	No	<ul style="list-style-type: none"> USGS indicates within the National Atlas Map Maker program that Suffolk County is identified as having high landslide susceptibility with a low incidence along the northern and eastern shoreline. A majority of Suffolk County is identified as a low landslide incidence. The NYS HMP identifies landslide as a hazard of concern. However, the Planning Committee does not consider landslide as a significant hazard affecting the County as a whole. Please note that the erosion of coastal bluffs, particularly in the north shore towns, is being considered under the Coastal Erosion hazard. 	<ul style="list-style-type: none"> NYS DHSES Input from Planning Committee National Atlas.gov (USGS)
Nor’Easters (extra-tropical cyclones, including severe winter low-pressure systems)	Yes	Yes	<ul style="list-style-type: none"> Suffolk County is primarily bounded to the north, south and east by coastal waters, therefore, highly susceptible to Nor’Easters and other severe winter low-pressure systems. Two FEMA declarations for Nor’Easters, since 2008, were issued for Suffolk County: <ul style="list-style-type: none"> FEMA-DR-1869 (Severe Storms and Flooding) – November 12-14, 2009 FEMA-DR-1899 (Severe Storms and Flooding) – March 13-31, 2010 Millions lost from Nor’Easter damage along the coast of Suffolk County to beaches, property, roads/infrastructure, piers/docks, and businesses throughout history. 	<ul style="list-style-type: none"> FEMA NYS DHSES NOAA-NCDC SHELDUS Input from Planning Committee
Severe Storm (windstorms, thunderstorms, hail, and tornados)	Yes	Yes	<ul style="list-style-type: none"> NOAA’s NCDC storm events database indicates that Suffolk County was impacted by approximately 243 severe storm events between 1950 and 2008 causing a total of 45 injuries, 21 deaths and approximately \$1.9 M in property damage. 	<ul style="list-style-type: none"> NOAA – NCDC Storm Events Query Review of FEMA





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			<ul style="list-style-type: none"> Suffolk County HAZNY results indicate severe storms are a frequent event. NYS HMP indicates hurricanes and tornadoes are significant hazards that impact New York State. 20 tornadoes have impacted Suffolk County from 1958 to 2007, resulting in \$1.75 M in damages Suffolk County is No. 1 County in New York State most threatened by extreme wind and vulnerable to extreme wind losses. NYS HMP also indicated that 20 tornados have occurred in Suffolk County between 1950 and 2007. The Planning Committee identified severe storms as a significant hazard affecting the planning area. 	Declared Disasters for NYS <ul style="list-style-type: none"> NYSEMO NYS DHSES Input from Planning Committee
Severe Winter Storm (heavy snow, blizzards, ice storms)	Yes	Yes	<ul style="list-style-type: none"> Three FEMA declarations for Nor'Easters, since 2008, were issued for Suffolk County: <ul style="list-style-type: none"> FEMA-DR-1827 (Blizzard) – December 19-20, 2009 FEMA-DR-1957 (Severe Winter Storm and Snowstorm) – December 26-27, 2010 FEMA-DR-4111 (Severe Winter Storm and Snowstorm) – February 8-9, 2013 	<ul style="list-style-type: none"> FEMA NYS HMP Update Input from Planning Committee
Shallow (elevated) Groundwater Flooding	Yes	No	<ul style="list-style-type: none"> Shallow Groundwater Flooding was not identified as a hazard in the NYS HMP. Shallow groundwater conditions are found throughout the County, typically in low-lying areas (e.g. coast, near surface water bodies (including wetlands, marshes and bogs), and along ancestral drainage courses) 	<ul style="list-style-type: none"> Input from Planning Committee NYS HMP Update Suffolk County Planning Department Suffolk County Department of Health Services
Tornado	Yes	Yes	Please see Severe Storm	
Tsunami	No	No	<ul style="list-style-type: none"> Tsunami is not identified as a hazard of concern in the NYS HMP. The Planning Committee does not consider tsunami to be a significant concern to the planning area. 	<ul style="list-style-type: none"> NYS HMP Update Input from Planning Committee
Volcano	No	No	There are no volcanoes located in New York State.	<ul style="list-style-type: none"> NYS HMP Update Input from Planning Committee
Wildfire	Yes	Yes	<ul style="list-style-type: none"> Severe wildfires have taken place within Suffolk County, resulting in millions in damages and significant loss to over 6,000 acres of land, particularly the “Sunrise Fires” of 1995 (FEMA FSA-2115). Suffolk County is more susceptible to wildfires due to the presence of certain environmental conditions that sustain wildfire conditions (e.g. Pine Barrens, state parks) which provide fuel needed for wildfires. The Pitch Pine, oak, and ericaceous shrub-dominated forests of the Central Pine Barrens represent an extremely volatile fuel type with a long history of severe 	<ul style="list-style-type: none"> NYS HMP Update Input from Planning Committee FEMA NYSDEC



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			fires, therefore, presenting a significant wildland-urban interface hazard. <ul style="list-style-type: none"> NYS identified the Central Pine Barrens as one of its highest wildfire hazard area (The Central Pine Barrens consists of 100,000 acres covering portions of the Towns of Brookhaven, Riverhead and Southampton in Suffolk County. An estimated 59,500 people live in 23,180 housing units within this area.) 	
Windstorm	Yes	Yes	Please see Severe Storm	

- CRREL* Cold Regions Research and Engineering Laboratory
- DR* Presidential Disaster Declaration Number
- EM* Presidential Disaster Emergency Number
- FEMA* Federal Emergency Management Agency
- NOAA* National Oceanic and Atmospheric Administration
- NRCC* Northeast Regional Climate Center
- NWS* National Weather Service
- NYSDEC* New York State Department of Environmental Conservation
- NYS DHSES* New York State Division of Homeland Security and Emergency Services
- NYS HMP* New York State Hazard Mitigation Plan
- USGS* United States Geologic Survey



In summary, a total of 13 natural hazards of concern were identified as significant hazards affecting the entire planning area, to be addressed at the county level in this plan (shown here in alphabetical order):

- Coastal Erosion
- Drought
- Earthquake
- Expansive Soils
- Flooding (riverine, flash, coastal flooding and sea level rise)
- Groundwater Contamination (natural)
- Hurricane (tropical cyclones, including tropical storms and tropical depressions)
- Infestation (Asian Longhorn Beetle, Lyme Disease and West Nile Virus)
- Nor'Easters (extra-tropical cyclones, including severe winter low-pressure systems)
- Severe Storms (windstorms, thunderstorms, hail, lightning and tornados)
- Severe Winter Storm (heavy snow, blizzards, ice storms)
- Shallow Groundwater Flooding
- Wildfire

Other natural hazards of concern that have occurred within Suffolk County, but have a low potential to occur and/or result in significant impacts within the County, and will not be further addressed within this version of the Plan include earthquakes and extreme temperatures. These hazards may be considered in future versions of the Plan.