

## 5.2 IDENTIFICATION OF NATURAL HAZARDS OF CONCERN

To provide a strong foundation for mitigation strategies considered in Section 6, Greene County focused on considering a full range of natural hazards that could impact the area, and then identified and ranked those hazards that presented the greatest concern. The natural hazard of concern identification process incorporated input from the County and participating jurisdictions; review of the 2008 New York State Hazard Mitigation Plan (NYS HMP) and previous hazard identification efforts; 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** is defined as 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 natural 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 386-1, “Understanding Your Risks, Identifying Hazards and Estimating Losses; FEMA’s “Multi-Hazard Identification and Risk Assessment – The Cornerstone of the National Mitigation Strategy”), and consideration of hazard grouping in the NYS HMP.

The “Flood” hazard includes riverine flooding, flash flooding, ice-jam flooding, and dam flooding (overtopping or breaching from natural causes). Other types of flooding such as coastal or urban drainage do not generally occur within this county; therefore, they were not further considered for inclusion within this HMP. 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 Storm” hazard includes windstorms that often entail a variety of other influencing weather conditions including thunderstorms, hail, and tornados. While there is no history or significant risk of Greene County experiencing a full-force hurricane, residual tropical storms and depressions do impact the County as severe storm events and thus have also been included under this hazard category.

The “Severe Winter Storm” hazard includes heavy snow, blizzards, sleet, freezing rain, ice storms and Nor’Easters. Since extreme cold temperatures are generated during winter weather months and/or accompany winter storms, extreme cold events have also been grouped with this hazard. This grouping is consistent with that used in the NYS HMP, as well as the “Severe Winter Storm” hazard used in FEMA’s “Multi-Hazard Identification and Risk Assessment” guidance.

These groupings do not change the definition of the included specific events/hazards, as defined within FEMA guidance and other risk assessment documents, and does not affect the hazard analysis conducted through the use of HAZUS-MH, either directly or as a risk assessment support tool.

Due to the limited availability of budget resources, this mitigation planning effort has, at least initially, limited consideration to natural hazards. The County may attempt to expand the scope of this HMP to include other less frequent natural hazards and/or technological (for example hazardous material incidents)e.g. hazardous material incidents] and man-made (for example terrorism, man-made dam breaches/failures) hazards as resources permit.

SECTION 5.2: RISK ASSESSMENT – IDENTIFICATION OF HAZARDS OF CONCERN

Table 5.2-1 – Identification of Natural Hazards of Concern for Greene County, New York

Hazard	Step 1	Step 2	Step 3	
	Is this a hazard that may occur in Greene 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"> <li>The NYS HMP does not identify avalanche as a hazard of concern for New York State.</li> <li>The topography and climate of Greene County does not readily support the occurrence of an avalanche event.</li> <li>NYS in general has a very low occurrence of avalanche events based on statistics provided by National Avalanche Center – American Avalanche Association (NAC-AAA) between 1950 and 2006.</li> <li>The Planning Committee and the Greene County HAZNY identifies avalanches as low hazards to the County.</li> </ul>	<ul style="list-style-type: none"> <li>NYSDPC</li> <li>Review of NAC-AAA database between 1950 and 2006.</li> <li>Input from Planning Committee</li> <li>Greene County HAZNY</li> </ul>
Coastal Erosion / Coastal Storm	No	No	<ul style="list-style-type: none"> <li>The NYS HMP does not identify coastal erosion/coastal storms as a hazard of concern within the vicinity of Greene County.</li> <li>Greene County is not bound by coastal waters; therefore, not directly impacted by coastal storms that result in coastal erosion. However, stream bank erosion does occur throughout the county as a result of flooding generated during coastal storms.</li> <li>The Planning Committee and the Greene County HAZNY did not identify coastal erosion or coastal storms as a significant hazard affecting the County.</li> </ul>	<ul style="list-style-type: none"> <li>NYSDPC</li> <li>Input from Planning Committee</li> <li>Greene County HAZNY</li> </ul>
Drought (including Extreme Heat)	Yes	No	<ul style="list-style-type: none"> <li>The NYS HMP identifies drought and extreme heat events as hazards of concern for New York State.</li> <li>Many statewide drought events, resulting in issued NYS DEC drought warnings/watches, have occurred, which impacted all counties, including Greene County:                             <ul style="list-style-type: none"> <li>September – November 1895 (Drought)</li> <li>November – December 1899 (Drought)</li> <li>August 1900 – February 1901 (Drought)</li> <li>November 1908 – January 1909 (Drought)</li> <li>November – December 1909 (Drought)</li> <li>July 1910 – September 1911 (Drought)</li> <li>August – September 1913 (Drought)</li> <li>April – June 1915 (Drought)</li> <li>November – December 1916 (Drought)</li> <li>September 1921 – February 1922 (Drought)</li> <li>May 1923 – January 1924 (Drought)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>NYSDPC</li> <li>NYSEMO CEMP</li> <li>USGS</li> <li>NOAA-NCDC</li> <li>Drought Reporter</li> <li>SHELDUS</li> <li>U.S. Drought Monitor</li> <li>Input from Planning Committee</li> <li>Greene County HAZNY</li> <li>The Weather Channel</li> </ul>



SECTION 5.2: RISK ASSESSMENT – IDENTIFICATION OF HAZARDS OF CONCERN

Hazard	Step 1	Step 2	Step 3	
	Is this a hazard that may occur in Greene 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"> <li>○ August 1930 – June 1931 (Drought)</li> <li>○ November – December 1931 (Drought)</li> <li>○ August 1939 – February 1940 (Drought)</li> <li>○ May – June 1941 (Drought)</li> <li>○ September 1941 – May 1942 (Drought)</li> <li>○ October – December 1949 (Drought)</li> <li>○ August – November 1957 (Drought)</li> <li>○ October – December 1963 (Drought)</li> <li>○ May 1964 – September 1966 (Drought)</li> <li>○ August 1964 – February 1966 (Drought)</li> <li>○ July – August 1966 (Drought)</li> <li>○ July 1966 (Record Heat)</li> <li>○ January – February 1967 (Drought)</li> <li>○ April – May 1985 (Drought)</li> <li>○ July 1988 (Record Heat)</li> <li>○ October 1993 (Record Heat)</li> <li>○ January 1995 (Record Heat)</li> <li>○ August 1995 (Record Heat)</li> <li>○ August – September 1995 (Drought)</li> <li>○ March 1998 (Excessive Heat)</li> <li>○ December 1998 (Record Warmth)</li> <li>○ June – July 1999 (Excessive Heat)</li> <li>○ August 1999 (Record Heat)</li> <li>○ March 2000 (Record Warmth)</li> <li>○ August 2001 (Record Heat)</li> <li>○ November 2001 – January 2002 (Drought)</li> <li>● The Planning Committee identified drought and extreme temperatures as hazards affecting the county, both posing a moderately high risk; however, the impacts of these events are relatively minor upon the County.</li> <li>● The Greene County HAZNY identified drought and extreme heat temperatures as low hazards affecting the County.</li> </ul>	

SECTION 5.2: RISK ASSESSMENT – IDENTIFICATION OF HAZARDS OF CONCERN

Hazard	Step 1	Step 2	Step 3	
	Is this a hazard that may occur in Greene County?	If yes, does this hazard pose a significant threat to the County?	Why was this determination made?	Source(s)
Earthquake	Yes	Yes	<ul style="list-style-type: none"> <li>The NYS HMP identifies earthquake as a hazard of concern for New York State.</li> <li>According to the NGDC, New York State has only had 9 reported earthquakes between 1823 and 2002. None of those earthquakes were within the vicinity of Greene County.</li> <li>NYCEM indicates that no earthquakes have taken place in or immediately surrounding Greene County between 1730 and 2002. Greene County and surrounding counties to the north and west appear to be considered a <i>low hazard / low risk</i> unlike the NY-NJ-CT Metro region that have a <i>low hazard / high risk</i> with its dense population, vulnerable infrastructure and substantial economic value. Greene County does not consist of those characteristics that would make such an area a high risk from earthquake activity.</li> <li>According to the USGS online seismic hazard maps, the peak ground acceleration with a 10% probability of exceedance over 50 years for Greene County is between 8 and 16 % g.</li> <li>The Planning Committee identified the earthquake hazard as posing a low risk to the County.</li> <li>The Greene County HAZNY identified earthquake as a moderately low hazard affecting the County.</li> </ul>	<ul style="list-style-type: none"> <li>NYSDPC</li> <li>NOAA – Review of NGDC Earthquake Database from 1800 to present</li> <li>NYCEM</li> <li>USGS – Earthquake Hazards Program, Review of USGS Seismic Maps</li> <li>Input from Planning Committee</li> <li>Greene County HAZNY</li> </ul>
Expansive Soils	No	No	<ul style="list-style-type: none"> <li>The NYS HMP identifies expansive soils as a hazard of concern for New York State.</li> <li>USGS indicated that Greene County has generally less than 50% of clay having slight to moderate swelling potential that could result in expansive or swelling soils.</li> <li>Based on all sources reviewed, no known historical occurrences are reported for Greene County.</li> <li>The Planning Committee and the Greene County HAZNY did not identify expansive soils as a hazard of concern.</li> </ul>	<ul style="list-style-type: none"> <li>NYSDPC</li> <li>Review of USGS 1989 Swelling Clays Map of the Conterminous United States.</li> <li>Input from Planning Committee</li> <li>Greene County HAZNY</li> </ul>
Extreme Temperature	Yes	No	<p>Please see Drought for Extreme Heat Events Please see Severe Winter Storms for Extreme Cold Events</p>	
Flood [(Riverine, Flash, Ice Jam	Yes	Yes	<ul style="list-style-type: none"> <li>The NYS HMP identifies flooding as the main hazard of concern for New York State.</li> <li>The NYS HMP, NYSEMO, FEMA, SHELDUS and USGS indicate that Greene</li> </ul>	<ul style="list-style-type: none"> <li>NYSDPC</li> <li>NYSEMO</li> <li>FEMA</li> </ul>



SECTION 5.2: RISK ASSESSMENT – IDENTIFICATION OF HAZARDS OF CONCERN

Hazard	Step 1	Step 2	Step 3	
	Is this a hazard that may occur in Greene County?	If yes, does this hazard pose a significant threat to the County?	Why was this determination made?	Source(s)
and Dam Flooding (overtopping or breaching from natural causes)]			<p>County has been issued 9 FEMA Disaster Declarations for flood events, each event resulting in extensive damages.</p> <ul style="list-style-type: none"> <li>○ <b>FEMA DR-45</b> (August 14, 1955) - The Schoharie Creek at Prattsville had a water discharge of 25,100 cfs. Also considered a major flood event in the Batavia Kill watershed.</li> <li>○ <b>FEMA DR-52</b> (October 1955) - The Schoharie Creek at Prattsville had a water discharge of 51,600 cfs and crested to 19.14 feet (7.14 feet above 12-foot flood stage). Also considered a major flood event in the Batavia Kill watershed and East Kill watershed.</li> <li>○ <b>FEMA DR-792</b> (April 4-6, 1987) – All of the County was impacted. The Schoharie Creek at Prattsville had a water discharge of 47,600 cfs and crested to 18.37 feet (6.37 feet above 12-foot flood stage). Greene County experienced over \$2 million in flood damages in the West Kill watershed.</li> <li>○ <b>FEMA DR-1095</b> (January 18-20, 1996) - Greene County experienced \$10 M in flood damages. This event was the flood on record along the Schoharie Creek in Prattsville (the highest flood ever documented since beginning to record floods at the gage in 1904).</li> <li>○ <b>FEMA DR-1296</b> (September 14, 1999) - Greene County experienced \$3 M in flood damages. The Schoharie Creek at Prattsville had a water discharge of 42,800 cfs and crested to 17.64 feet (5.64 feet above 12-foot flood stage).</li> <li>○ <b>FEMA DR-1335</b> (May – September 2000) - Flooding and severe wind damage to residential, governmental and utility facilities. New York State had over \$34.6 million in damages. Greene County experienced \$115 K in flood damages.</li> <li>○ <b>FEMA DR-1486</b> (July - August 2003) - Flooding and severe wind damage to residential, governmental and utility facilities. FEMA approved \$5.3 million in assistance to counties in New York State. Greene County experienced \$75 K in flood damages, particularly in Catskill and Athens.</li> <li>○ <b>FEMA DR-1589</b> (April 2-4, 2005) - Greene County experienced \$1.3 M in property damages.</li> <li>○ <b>FEMA DR-1692</b> (April 2007) - Flooding and coastal erosion, debris, damage to residential and commercial structures, utility lines, roads and other infrastructure throughout New York State. FEMA gave out more than \$61 million in assistance to affected Counties. Losses in Greene County are unknown; however, public assistance to Greene County totaled \$58 K as of</li> </ul>	<ul style="list-style-type: none"> <li>• Hazards &amp; Vulnerability Research Institute (SHELDUS)</li> <li>• NOAA-NCDC</li> <li>• Greene County EMO</li> <li>• NPDP</li> <li>• NYS DEP</li> <li>• Input from Planning Committee</li> <li>• Greene County HAZNY</li> <li>• GCSWCD</li> </ul>



SECTION 5.2: RISK ASSESSMENT – IDENTIFICATION OF HAZARDS OF CONCERN

Hazard	Step 1	Step 2	Step 3	
	Is this a hazard that may occur in Greene County?	If yes, does this hazard pose a significant threat to the County?	Why was this determination made?	Source(s)
			<p>July 11, 2007.</p> <ul style="list-style-type: none"> <li>The 2008 Draft NYS HMP indicated that Greene County has been ranked as the 20<sup>th</sup> most flood vulnerable county in New York State based on potential flood exposure and vulnerability to loss.</li> <li>The Planning Committee identified flooding as the natural hazard posing the highest risk to the County.</li> <li>The Greene County HAZNY identified flooding as the most significant hazard of concern for the County, with a moderately high risk. However, dam flooding or dam failure was identified as a moderately low hazard throughout the County.</li> <li>Ice Jams are mentioned separately in this Table but are grouped with the Flood hazard in this plan (see below).</li> </ul>	
Hailstorm	Yes	Yes	Please see Severe Storm	
Hurricane (and other Tropical Cyclones)	Yes	Yes	Please see Severe Storm	
Ice Jams (categorized as a Flood hazard in this HMP)	Yes	Yes	<ul style="list-style-type: none"> <li>The NYS HMP does identify ice jam flooding as a hazard of concern for New York State (grouped as a type of flood). New York State ranks second in the Nation for total number of ice jam events, with over 1,435 incidents documented between February 1, 1867 and March 16, 2007. Of the many streams, creeks and rivers that extend through the State, the Schoharie Creek and Hudson River (which travel through and along the eastern border of Greene County) are two of the top ten rivers within the State experiencing the most amount of ice jams between 1875 and 2007.</li> <li>The USACE CRREL Ice Jam Database and the NYS HMP, indicates that approximately 31 ice jam events have occurred within Greene County between 1936 and 2007, mostly on the Schoharie Creek In Prattsville (28 incidences).</li> <li>The Planning Committee and the Greene County HAZNY identified ice jams as posing a moderately high risk to the County.</li> </ul>	<ul style="list-style-type: none"> <li>NYSDPC</li> <li>Review of USACE CRREL Ice Jam Database</li> <li>Input from Planning Committee</li> <li>Greene County HAZNY</li> </ul>
Ice Storm	Yes	Yes	Please see Severe Winter Storm	
Infestation	No	No	<ul style="list-style-type: none"> <li>The NYS HMP does not identify infestation as a hazard of concern for New York State (grouped as a type of flood).</li> <li>Based on all sources reviewed, no known significant occurrences are reported for</li> </ul>	<ul style="list-style-type: none"> <li>NYSDPC</li> <li>Input from Planning Committee</li> </ul>



SECTION 5.2: RISK ASSESSMENT – IDENTIFICATION OF HAZARDS OF CONCERN

Hazard	Step 1	Step 2	Step 3	
	Is this a hazard that may occur in Greene County?	If yes, does this hazard pose a significant threat to the County?	Why was this determination made?	Source(s)
			<p>Greene County.</p> <ul style="list-style-type: none"> <li>The Planning Committee and the Greene County HAZNY did not identify infestation as a hazard of concern.</li> </ul>	<ul style="list-style-type: none"> <li>Greene County HAZNY</li> </ul>
Land Subsidence	Yes	No	<ul style="list-style-type: none"> <li>The NYS HMP indicates that New York State is vulnerable to land subsidence; however, this hazard is “extremely localized” and poses a “very low risk to population and property.” The NYS HMP does not identify Greene County as a community that has experienced land subsidence in the past.</li> <li>According to USGS, Greene County is not made up of unconsolidated aquifer systems, creating the unlikelihood of permanent subsidence and related ground failures.</li> <li>The Planning Committee and the Greene County HAZNY did not identify land subsidence as a significant hazard affecting the County.</li> </ul>	<ul style="list-style-type: none"> <li>NYSDPC</li> <li>USGS Fact Sheet 165-00 (Dec. 2000)</li> <li>Input from Planning Committee</li> <li>Greene County HAZNY</li> </ul>
Landslide	Yes	Yes	<ul style="list-style-type: none"> <li>The NYS HMP does identify landslide as a hazard of concern for New York State; however, the County is located in a low landslide incidence area.</li> <li>USGS indicates through the National Atlas Map Maker program that a majority of Greene County is identified as having a low landslide incidence in the central portion, high landslide incidence along the eastern border of the County (Hudson River) and a high susceptibility and moderate incidence.</li> <li>The NYS HMP indicates that Greene County has had 10 landslide occurrences from 1837 to 2007.</li> <li>The Planning Committee identified multiple landslide events along County Routes 2, 6, 20, 30, 61 and 67.</li> <li>The Planning Committee identified landslide as posing a medium risk to the County.</li> <li>The Greene County HAZNY identified landslide as a moderately low hazard affecting the County.</li> </ul>	<ul style="list-style-type: none"> <li>NYSDPC</li> <li>National Atlas.gov (USGS)</li> <li>Input from Planning Committee</li> <li>Greene County HAZNY</li> </ul>
Nor'easters (and other extra tropical storms)	Yes	Yes	Please see Severe Winter Storm	
Severe Storm (Windstorms, Thunderstorms,	Yes	Yes	<ul style="list-style-type: none"> <li>The NYS HMP does identify all types of severe storms as hazards of concern for New York State. The NYS HMP indicated that Greene County has been issued two FEMA Disaster Declarations. The NYS HMP indicates that Greene County</li> </ul>	<ul style="list-style-type: none"> <li>NYSDPC</li> <li>FEMA</li> </ul>



SECTION 5.2: RISK ASSESSMENT – IDENTIFICATION OF HAZARDS OF CONCERN

Hazard	Step 1	Step 2	Step 3	
	Is this a hazard that may occur in Greene County?	If yes, does this hazard pose a significant threat to the County?	Why was this determination made?	Source(s)
Hail, Lightning, Tornadoes and Hurricanes)			<p>has experienced eight tornado events between 1950 and 2007. Greene County has a medium ranking as the 24<sup>th</sup> most vulnerable county in New York State threatened by extreme wind and wind losses.</p> <ul style="list-style-type: none"> <li>• The NYS HMP, NYSEMO, FEMA and SHELDUS indicate that Greene County has been issued seven FEMA Disaster Declarations for severe storm events, each event resulting in extensive damages (some of these events have also been identified as flood events).                             <ul style="list-style-type: none"> <li>○ <b>FEMA DR-45</b> (August 12-19, 1955) – New York State had property damage, road closures, four deaths, and millions of dollars in damages. This event was considered a major flood event. Losses to the County are unknown.</li> <li>○ <b>FEMA DR-1095</b> (January 18-20, 1996) – Storm caused road closures, closed businesses and caused 10 deaths. Greene County experienced \$10 M in property damages (including flood losses).</li> <li>○ <b>FEMA DR-1296</b> (September 16, 1999) – Storm brought heavy rain to Greene County. Cairo had over 12 inches of rain fall. Greene County experienced \$3 M in property damages (including flood losses).</li> <li>○ <b>FEMA DR-1335</b> (May – June 2000) – Flooding and severe wind damage to residential, governmental and utility facilities. New York State had over \$34.6 million in damages. Greene County experienced \$248 K in property damages (including flood losses).</li> <li>○ <b>FEMA DR-1486</b> (July – August 2003) – Flooding and severe wind damage to residential, governmental and utility facilities. FEMA approved \$5.3 million in assistance to counties in New York State. Greene County experienced \$1.1 M in property damages, particularly in Kiskatom (\$1 M) and Coxsackie (\$100 K).</li> <li>○ <b>FEMA DR-1589</b> (April 2-4, 2005) - Greene County experienced \$1.3 M in property damages.</li> <li>○ <b>FEMA DR-1692</b> (April 14-17, 2007) – Flooding and coastal erosion, debris, damage to residential and commercial structures, utility lines, roads and other infrastructure throughout New York State. FEMA gave out more than \$61 million in assistance to affected Counties. Losses in Greene County are unknown; however, public assistance to Greene County totaled \$58 K as of July 11, 2007. Cairo and Catskill experienced the most damage in the County.</li> </ul> </li> <li>• NOAA’s NCDC storm events database indicates that Greene County was</li> </ul>	<ul style="list-style-type: none"> <li>• Hazards &amp; Vulnerability Research Institute (SHELDUS)</li> <li>• NOAA-NCDC</li> <li>• Input from Planning Committee</li> </ul>



SECTION 5.2: RISK ASSESSMENT – IDENTIFICATION OF HAZARDS OF CONCERN

Hazard	Step 1	Step 2	Step 3	
	Is this a hazard that may occur in Greene County?	If yes, does this hazard pose a significant threat to the County?	Why was this determination made?	Source(s)
			<p>impacted by approximately 189 severe storm events between 1950 and 2008 causing a total of 6 injuries, 1 death and approximately \$36 M in property damage (these figures were calculated for all counties impacted in New York State, not just Greene County). Major events from this database include:</p> <ul style="list-style-type: none"> <li>o June 16, 1974 (F3 Tornado) – Hit near Athens, causing \$2.5 M in property damage.</li> <li>o April 2, 1977 (F1 Tornado) – Hit near Hunter, causing \$25 K in property damage.</li> <li>o July 10, 1989 (F3-F4 Tornado) (“Northeastern U.S. Tornado Outbreak”) – F3 to F4 tornadoes hit Montgomery, Schoharie, Albany and Greene Counties. F4 hit near Greenville and Durham.</li> <li>o August 23, 1994 (Lightning) – Lightning struck near Greenville, causing approximately \$500 K in property damage.</li> <li>o July 14-15, 1995 (TSTM) (“Ontario-Adirondack Derecho”) – Severe TSTMs brought 90 mph winds to the area, producing several weak tornadoes in Canada. In New York State, wind gusts reached over 100 mph. About 900,000 acres of forest land was damaged in the State. Five deaths, 11 injuries and almost \$400 M in damages was reported for New York State. Greene County had approximately \$60 K in property damages, with the most damage in Coxsackie, Greenville, Haines Falls, and New Albany.</li> <li>o October 19-20, 1996 (Heavy Rain/Flood) – Eastern New York State experienced heavy rain, brining several inches to the Catskills. In East Jewitt, 5.6 inches of rain fell. Many roadways were flooded in several counties, including Greene. Greene County had approximately \$40 K in property damage.</li> <li>o May 31, 1998 (TSTM/Winds) (“Tornado Outbreak”) – Several lines of TSTMs hit eastern New York State, resulting in three tornadoes and storm damage in every county located in this part of the State. Widespread power outages occurred in eastern New York State. Governor Pataki declared parts of the State a disaster area. Greene County had approximately \$50 K in property damage.</li> <li>o May 25, 1999 (TSTM/Lightning) – Heavy rain fell in many parts of the Catskills and eastern Mohawk Valley. Three-day rain totals ranged between 8 and 10 inches in some areas. Many creeks and tributaries flooded in several counties, including Greene.</li> </ul>	



SECTION 5.2: RISK ASSESSMENT – IDENTIFICATION OF HAZARDS OF CONCERN

Hazard	Step 1	Step 2	Step 3	
	Is this a hazard that may occur in Greene 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"> <li>○ July 3-6, 1999 (TSTM/Flood) – Cluster of TSTMs produced isolated damage in the Mohawk Valley and Capital Region. Heavy rain and strong winds were associated with this storm. In Halcott, over 4 inches of rain fell, flooding roadways. Greene County had approximately \$49 K in property damage.</li> <li>○ June 20, 2001 (TSTM/Hail/Lightning) – TSTMs hit eastern New York State, bringing hail, strong winds and rain. Greene County had a lot of hail damage, with the most damage in Coxsackie and Climax. Eighty cars were damaged in Coxsackie due to hail. Catskill had dime size to ping pong ball sized hail. In Climax, 99% of the apple and peach orchards were destroyed by the hail. Two houses in Athens were struck by lightning in Athens. Greene County had approximately \$370 K in property damage and \$400 K in crop damage.</li> <li>○ August 14-16, 2002 (TSTM) – Several TSTMs moved across eastern New York State, some severe at time. In Windham and Greenville, many trees were knocked down. Lightning struck a barn in Greenville and caused a fire. Greene County had approximately \$140 K in property damage.</li> <li>● New York State has experienced 359 tornadoes (8 being in Greene County) between 1950 and 2007.</li> <li>● The Planning Committee identified severe storms as posing a moderate risk to the County. Tornadoes were identified as posing a lower risk.</li> <li>● The Greene County HAZNY identifies severe storms and tornadoes as moderately low hazards to the County.</li> </ul>	
Severe Winter Storm (Heavy Snow, Blizzards, Freezing Rain/Sleet, Ice Storms, Nor'Easters and Extreme Cold)	Yes	Yes	<ul style="list-style-type: none"> <li>● The NYS HMP does identify all types of severe winter storms as hazards of concern for New York State. The NYSDPC and NYSEMO listed Greene County as the 36th County in the State most threatened by and vulnerable to snow and snow loss, with an annual average snowfalls ranging between 30 and 75 inches. Greene County is also listed as the 53rd County in New York State most threatened by and vulnerable to ice storms and ice storm loss.</li> <li>● Greene County was declared a disaster areas for 6 FEMA Disasters (DR) or Emergencies (EM), including: <ul style="list-style-type: none"> <li>○ <b>FEMA DR-801</b> (October 1987) Snowstorm. East Jewett received 20 inches of snow, the largest amount of snowfall in the State.</li> <li>○ <b>FEMA EM-3107</b> (March 1993) Statewide Blizzard. Greene County received between 20 and 40 inches of snow, with Prattsville receiving 36 inches.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● NYSDPC</li> <li>● NYSEMO</li> <li>● FEMA</li> <li>● NOAA-NCDC Hazards &amp; Vulnerability Research Institute (SHELDUS)</li> <li>● Kocin and Uccellini</li> <li>● Input from Planning Committee</li> <li>● Greene County</li> </ul>



SECTION 5.2: RISK ASSESSMENT – IDENTIFICATION OF HAZARDS OF CONCERN

Hazard	Step 1	Step 2	Step 3	
	Is this a hazard that may occur in Greene 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"> <li>○ <b>FEMA DR-1083</b> (January 1996) Blizzard. Greene County received between 4 to 30 inches of snow and experienced approximately \$160 K in property damages. Lexington and Prattsville experienced extreme cold temperatures as well, ranging between -2 and -20°F.</li> <li>○ <b>FEMA EM-3173</b> (December 2002 / January 2003) Snowstorm. Snow totals in Greene County during both events ranged between 10 and 30 inches.</li> <li>○ <b>FEMA EM-3184</b> (February 2003) Snowstorm. Greene County received between 10 to 30 inches of snow from this event.</li> <li>○ <b>FEMA DR-1692</b> (April 2007) Coastal Storm / Nor'Easter (See Flood).</li> <li>○ <b>FEMA DR-1827</b> (December 2008) Ice Storm. A disaster declaration was declared on March 4, 2009 for the ice storm that struck many parts of New York State. Several counties were declared disaster areas, including Greene County. The County had approximately \$1.2 million in reimbursable damages.</li> <li>● NOAA-NCDC has indicated that Greene County has experienced over 101 snow and ice storm events and 7 extreme cold temperature events between January 1, 1950 and January 31, 2008. However, most events are of a regional extent rather than localized to just one county.</li> <li>● Based on all sources reviewed, approximately 114 notable winter storm and extreme cold events have impacted Greene County.</li> <li>● The Planning Committee and the Greene County HAZNY identifies severe winter storms and ice storms as moderately low hazards to the County.</li> </ul>	HAZNY <ul style="list-style-type: none"> <li>● The Weather Channel</li> </ul>
Tornado	Yes	No	Please see Severe Storm	
Tsunami	No	No	<ul style="list-style-type: none"> <li>● Tsunami is not identified as a hazard of concern in the NYS HMP</li> <li>● The Planning committee does not consider this a natural hazard of concern for the County.</li> <li>● The Greene County HAZNY does not identify Tsunami as a hazard of concern.</li> </ul>	<ul style="list-style-type: none"> <li>● NYSDPC</li> <li>● Input from Planning Committee</li> <li>● Greene County HAZNY</li> </ul>
Volcano	No	No	<ul style="list-style-type: none"> <li>● Volcanoes are not identified as a hazard of concern in the NYS HMP, because there are no known volcanoes located in the state.</li> <li>● The Planning Committee identified volcano as the natural hazard posing the lowest risk to the County.</li> <li>● The Greene County HAZNY does not identify Volcano as a hazard of concern.</li> </ul>	<ul style="list-style-type: none"> <li>● NYSDPC</li> <li>● Input from Planning Committee</li> <li>● Greene County HAZNY</li> </ul>



SECTION 5.2: RISK ASSESSMENT – IDENTIFICATION OF HAZARDS OF CONCERN

Hazard	Step 1	Step 2	Step 3	
	Is this a hazard that may occur in Greene County?	If yes, does this hazard pose a significant threat to the County?	Why was this determination made?	Source(s)
Wildfire	Yes	No	<ul style="list-style-type: none"> <li>• The NYS HMP does identify wildfires as hazards of concern for New York State.</li> <li>• Low reported incidences of wildfires within Greene County.</li> <li>• The NWRPD indicates that no records of wildfire incidences have been recorded for Greene County.</li> <li>• USGS indicates that no wildfires greater than 250 acres were experienced in Greene County between 1980 and 2003.</li> <li>• GeoMAC indicates that no wildfires were experienced in Greene County between 2001 and 2007.</li> <li>• The Planning Committee identified wildfire as posing an overall low risk to the County.</li> <li>• The Greene County HAZNY identified wildfire as a moderately low hazard affecting the County.</li> </ul>	<ul style="list-style-type: none"> <li>• NYSDPC</li> <li>• NWRPD</li> <li>• USGS</li> <li>• GeoMAC</li> <li>• Input from Planning Committee</li> <li>• Greene County HAZNY</li> </ul>
Windstorm	Yes	Yes	Please see Severe Storm	

CEMP	Comprehensive Emergency Management Plan	NYSEMO	New York State Emergency Management Office
CRREL	Cold Regions Research and Engineering Laboratory	PC	Planning Committee
DPC	Disaster Preparedness Commission	TSTM	Thunderstorm
DR	Presidential Disaster Declaration Number	USACE	U.S. Army Corp of Engineers
EM	Presidential Emergency Declaration	USEPA	U.S. Environmental Protection Agency
EMO	Emergency Management Office	USGS	U.S. Geologic Survey
FEMA	Federal Emergency Management Agency		
GCSWCD	Greene County Soil and Water Conservation District		
HAZNY	Hazards New York		
HMP	Hazard Mitigation Plan		
NCDC	National Climatic Data Center		
NGDC	National Geophysical Data Center		
NID	National Inventory of Dams		
NOAA	National Oceanic and Atmospheric Administration		
NPDP	National Performance of Dams Program		
NRMC	Northeast Regional Climate Center		
NWS	National Weather Service		
NWRPD	National Wildfire Programs Database		
NYCEM	New York City Area Consortium For Earthquake Loss Mitigation		
NYS	New York State		
NYSDEC	New York State Department of Environmental Conservation		



According to input from the County, and review of all available resources, a total of five natural hazards of concern were identified as significant hazards affecting the entire planning area, to be addressed at the county level in this plan:

- Earthquake
- Flood (riverine, flash, ice jam and dam flooding)
- Ground Failure
- Severe Storm (windstorms, thunderstorms, hail, tornadoes and hurricanes/tropical storms)
- Severe Winter Storm (heavy snow, blizzards, ice storms, Nor'Easters) / Extreme Cold

Other natural hazards of concern have occurred within Greene County, but typically have a low potential to result in significant impacts within the County. The County deemed these hazards as minor in comparison to those bulleted above; therefore, these hazards will not be further addressed within this version of the Plan. However, if deemed necessary by the County, these hazards may be considered in future versions of the Plan.