

### 10.2.39 Town of Wawayanda

This section presents the jurisdictional annex for the Town of Wawayanda. The Town Board has decided not to submit any mitigation actions at this time.

#### 10.2.39.1 Contacts

Primary and secondary contacts regarding this plan are identified as follows:

- Denise Quinn – Deputy Supervisor/Councilperson  
80 Ridgebury Hill Road  
Slate Hill, NY 10973  
(845) 355-5700
- Kathryn A. Sherlock – Town Clerk  
(845) 355-5700
- John R. Razzano – Town Supervisor  
80 Ridgebury Hill Road  
Slate Hill, NY 10973  
(845) 355-5700

#### 10.2.39.2 Municipal Profile

##### *Population*

According to the U.S. Census, the 2010 population for the Town of Wawayanda was seven thousand, two hundred sixty-six (7,266), with a population density of approximately two hundred eight (208) persons per square mile. The population has increased by approximately 15.8% from the 2000 census of six thousand, two hundred seventy-three (6,273).

##### *Location*

Wawayanda is located in the western part of Orange County. The Town's southern boundary borders the Town of Warwick. Bordered by the Towns of Greenville and Minisink to the west, the Towns of Goshen and Warwick to the east, and the Town of Wallkill and the City of Middletown to the north, Wawayanda encompasses an area of 35.0 square miles.

##### *Brief History*

The area known today as Wawayanda was originally inhabited by Native Americans. In 1835 the Erie Railroad was completed and ran through New Hampton, this allowed the region to become a place for business. The Town of Wawayanda was officially established in 1849 from the Town of Minisink for political reasons. The Town received its name from a land grant dating back to 1703 the Wawayanda Patent. Through the 1800's the Town of Wawayanda experienced steady economic growth and population increases. In the early 1900's the population and local

economy took a slight downward trend. This has changed of the last three decades, due to the suburban expansion surrounding New York City.

### *Governing Body*

The Town of Wawayanda's governing body consists of five (5) elected officials consisting of a Town Supervisor and four (4) councilpersons. The Town Clerk and the Highway Superintendent are also elected positions.

### *Future Growth*

No future growth opportunities were identified by Town planners during the planning phase of the 2016 Orange County HMP update.

## 10.2.39.3 Hazard Vulnerabilities and Ranking

Orange County has a history of natural hazard events which have historically impacted the County. During the 2016 HMP planning process Orange County selected natural hazards which have impacted the County or could potentially impact the County. Section 5.0 of this Plan update provides a summary of natural hazards which were selected by the Orange County HMP planning committee. The Town of Wawayanda identified 12 natural hazards as follows:

- Drought
- Floods
- Severe Winter Storm
- Landslide
- Earthquake
- Ice Storm
- Severe Storm/Thunderstorm
- Ice Jam
- Hurricane
- Extreme Temperatures
- Wildfire
- Tornado

### *Risk Ranking*

To rank the hazards of concern for the Town of Wawayanda factors such as historical occurrences, municipal vulnerability, probability of future occurrences, historical damages and potential future damages were all reviewed. This risk ranking value helps to systematically identify which hazards are of the most concern for each jurisdiction. The table below ranks the hazards which were identified by the Town of Wawayanda during the hazard mitigation planning process. For further information about these hazards as well as other identified hazards in Orange County please refer back to Section 5.0 of this report for in depth review of all hazard profiles.

<b>Table 10.2.39a: Hazard Vulnerability Ranking for the Town of Wawayanda</b>			
<b>Hazard</b>	<b>Vulnerability</b>	<b>Damage Potential</b>	<b>Future Probability</b>
Drought	Moderate	Moderate	High
Earthquake	Low	High	Low
Hurricane	Low	Moderate	Moderate
Ice Storm	Low	Low	Moderate
Ice Jam	Low	Low	Low
Severe Storm/Thunderstorm	High	High	High
Wildfire	Moderate	Moderate	Moderate
Severe Winter Storm	High	Moderate	High
Extreme Temperatures	Moderate	Low	Moderate
Floods	Moderate	High	High
Landslide	Low	Moderate	Low
Tornado	Low	Moderate	Low

*Critical Facilities*

A list of community critical facilities was generated to aid in mitigation planning. Critical facilities were identified by the Town as meeting this definition: “Any structure(s) and/or infrastructure within a community whose incapacity or destruction would:

- Have a debilitating impact on the defense or economic security of that community.
- Significantly hinder a community’s ability to recover following a disaster.”

Discretion was left up to the participating jurisdiction to select these facilities. Addresses and names for the identified critical facilities are noted in the table below.

<b>Table 10.2.39b: Critical Facilities located in the Town of Wawayanda</b>	
<b>Facility Name</b>	<b>Address</b>
<b>Government</b>	
Town Hall	80 Ridgebury Hill Road
Wawayanda Town Court	80 Ridgebury Hill Road
<b>Emergency Services</b>	
New Hampton Fire Department	5024 State Route 17M
Slate Hill Fire Department	1969 State Route 284
Wawayanda DPW	74 Ridgebury Hill Road
<b>Education</b>	
Minisink Valley Intermediate School	2320 US Route 6
Minisink Valley Elementary School	2320 US Route 6
Minisink Valley High School	2320 US Route 6
Minisink Valley Middle School	2320 US Route 6

<b>Table 10.2.39b: Critical Facilities located in the Town of Wawayanda</b>	
<b>Facility Name</b>	<b>Address</b>
AHRC	11 Hillside Road
<b>Community Services</b>	
Wawayanda Nursery	2051 US Route 6
Post Office New Hampton	5070 State Route 17M
Post Office Slate Hill	1990 State Route 284
Shannen Park	1918 State Route 284
First Presbyterian Church	22 County Route 56
Holy Cross Church	626 County Route 22

The Town of Wawayanda does not have any critical facilities within the special flood hazard area or high hazard Landslide Rating<sup>1</sup> area.

### **Priority Hazard Events**

The following sections detail the priority hazard events identified by the jurisdiction. Additional information about each hazard including frequency, history, and severity within Orange County is included within Section 5.0 of the main body of the Hazard Mitigation Plan (Volume I).

The probability of climate-related hazard events is generally expected to increase in the future within the Town of Wawayanda. This anticipated increase results from the expected increase in weather volatility associated with climate change. The Walkill River Watershed also contributes to increased flooding occurrences along the Town's eastern border.

Past occurrences of hazard events are indicated in their respective profiles below. Some hazards may not have locally available documentation of past occurrence, but are nonetheless profiled in this annex to instill future mitigation planning consideration.

#### *Flood*

Floods are natural events for rivers, lakes and streams where excess water from snowmelt, rainfall, or storm surges accumulates and overflows onto the banks and adjacent floodplains of these waterbodies. The land which includes the Town of Wawayanda drains north into the Walkill River Drainage Basin. Certain areas of this watershed have experienced major damages due to flooding. Information on these hazards and impacts to Orange County are provided in Section 5.0 of this plan update.

<sup>1</sup> Areas with a landslide rating in of greater than 37 are considered hazardous. The data was derived from HAZUS software analysis.

<b>Table 10.2.39c: Summary of Land Areas in Flood Hazard Areas in the Town of Wawayanda</b> (Source: FEMA DFIRM Data, 2016)					
<b>Total Land Area (Acres)</b>	<b>High Flood Risk (Acres)</b>	<b>Moderate Flood Risk (Acres)</b>	<b>Low Flood Risk (Acres)</b>	<b>Land in High Flood Risk %</b>	<b>Land in Moderate Flood Risk %</b>
	<b>A, AE, AH, AO</b>	<b>X500</b>	<b>X</b>	<b>A, AE, AH, AO</b>	<b>X500</b>
22,520	3,541	322	18,658	16%	1%

A review of NCDC Storm Events data identified the following flood events within the Town:

- December 17, 2000 – In Orange County, rainfall amounts from available locations ranged from 2.11 inches at Gardnerville to 2.80 inches at Sterling Forest.
- October 8, 2005 – heavy rain resulted in significant flooding on some rivers, most small brooks and streams, and throughout urban areas in low lying and poor drainage areas. Rainfall amounts ranged from 5.58 inches at Gardnerville to 12.05 inches at New Windsor.
- June 30, 2009 – an approaching cold front produced thunderstorms and flash flooding across portions of the Lower Hudson Valley. Route 6 was closed due to flooding in Slate Hill.
- August 9, 2011 – a pre-frontal trough triggered scattered heavy showers and thunderstorms with heavy rainfall that resulted in flash flooding in Orange County. In New Hampton, I-84 was closed at Dolson Ave. due to flooding. Additionally, a portion of Dolson Ave. was closed due to flooding, including the intersection of Dolsontown Rd. and Dolson Avenue.
- September 28, 2011 – moderate to heavy showers in association with this system resulted in isolated flash flooding in Orange County. Route 6 near Interstate 84 was closed due to flooding in Ridgebury.
- The following table illustrates the value of property in the Town of Waywayanda that is located within the 500-year floodplain and is categorized by land use type. This table was derived from FEMA floodplain mapping and parcel data from the Orange County Property Assessor.

Table 10.2.39d: Structures in the Town of Wawayanda Vulnerable to 500-year Flood Events and Their Estimated Values		
Type of Structure	# Structures in Hazard Area	Value of Structures (in millions)
Residential	227	\$39.3
Commercial	12	\$76.3
Industrial	0	\$0
Agricultural	18	\$1.8
Religious/Non-profit	0	\$0
Government	0	\$0
Education	0	\$0
Utilities	0	\$0
Dams	0	\$0
Parks	0	\$0
<b>Total</b>	<b>257</b>	<b>\$117.4</b>

### *Extreme Temperatures*

Extreme temperatures include extended periods of excessive hot or cold weather with a serious impact on human and/or animal populations. Cascading effects can include enhanced fire/wildfire potential, drought, and even food shortages. A 2010 report by the NYS Office of Emergency Management ranked Orange County as among the counties with the smallest percentages of vulnerable populations, with 10% aged 65 and above and 7% younger than age five (5).

### Historical Occurrence:

In the past ten (10) years, the following extreme heat and cold events were reported to NOAA's Storm Events Database in Orange County.

- August 2006 – Excessive heat occurred mainly from noon to midnight each day for three (3) consecutive days. High temperatures ranged mainly from the upper 90s to around 100 degrees. Heat indices ranged from 105 to 115 degrees.
- July 2011 – Heat between 95 and 105 degrees, along with heat indices in excess of 105 degrees occurred for a couple of days. The heat index was as high as 115 degrees at Stewart Field Airport (KSWF) in Newburgh at 1 p.m. and 2 p.m. on July 22. One (1) death in Orange County was attributed.
- July 2012 – Excessive Heat- The heat index reached or exceeded 107 degrees at Newburgh airport (Stewart Field).
- July 2013 – Excessive Heat- The combination of high heat and humidity resulted in heat index values between 105 and 110 degrees for a few hours during the afternoon at Montgomery Airport and at Newburgh International Airport.

- September 2013 – Excessive Heat- At Stewart International Airport in Newburgh, the heat index reached 105 degrees at 2 p.m. At nearby Poughkeepsie Airport, the heat index also reached 105 degrees. This occurred at 3 p.m.
- February 2015 – Cold/wind Chill- Wind chills fell to 26 degrees below zero (-26°F) at 6 a.m. at both Orange County Airport and Stewart International Airport.

Agriculture related disasters which pertain to extreme temperatures are quite common. The Secretary of Agriculture is authorized to designate counties as disaster areas to make emergency loans (EM) to producers suffering losses in those counties and in counties that are contiguous to a designated county. Table 10.2.39f presents USDA declared drought, excessive heat, frosts and freeze events impacting Orange County.

<b>Incidence Period</b>	<b>Event Type</b>	<b>USDA Declaration Number</b>	<b>Losses/Impacts</b>
March 1, 2012 and continuing	Frosts & Freeze	S3249	Physical and production losses attributed to frost and freezing temperatures
March 26 to April 8, 2012	Frosts & Freeze	S3251	Physical and production losses attributed to frost and freezing temperatures
June 2, 2012 and continuing	Drought and Excessive Heat	S3427	Production losses were attributed to drought and excessive heat
June 28 to November 8, 2012	Drought and Excessive Heat	S3487	Production losses were attributed to drought and excessive heat
April 1-September 29, 2015	Drought and Excessive Heat	S3930	Production losses were attributed to drought and excessive heat

*Severe Storm/Severe Thunderstorm*

Severe thunderstorms are common across the northeast; these storms typically form during the spring and summer months. A severe storm hazard event includes hail storms, windstorms, and severe thunderstorms. Serious injury or death is likely due to this hazard’s relationships to motor vehicle accidents, wind damage, or other cascading effects. A severe storm may also result in moderate damage to private property and public facilities.

Historical Occurrence:

It is important to note that these events often affect large geographic areas and reports specific to municipalities aren’t often recorded. Searching NOAA’s Storm Events Database with the queries “Thunderstorm Wind”, “Lightning”, and “Hail” yielded six (6) events within the Town of Wawayanda over the last two (2) decades.

- June 2, 2000 – lines of severe thunderstorms swept southeast across the region. In Orange County, a 60 mph wind gust was reported at the Plattekill Service Area along the NYS Thruway, just north of Leptondale. There were numerous reports of wires down,

trees down on houses and cars and trees blocking roads in the vicinity of Wawayanda, Middletown, Cornwall, Goshen, Chester, and Newburgh.

- April 19, 2002 – severe thunderstorms produced large hail in Orange County, 0.88-inch diameter hail in Gardnerville (Central Portion of Orange County), 0.75-inch diameter hail in Chester, and 0.88-inch diameter hail in Blooming Grove.
- July 23, 2002 – a spotter reported that severe thunderstorm winds knocked numerous trees down in Ridgebury, Warwick, Goshen, and Newburgh. This resulted in downed power lines and an interruption in service for about 36,000 electricity customers.
- September 9, 2003 – as a severe thunderstorm moved from Northern New Jersey into Orange County, New York, it produced damaging winds that knocked numerous wires down, resulting in the loss of power for portions of Slate Hill.
- November 25, 2004 – an unusually strong cold front moved into the Lower Hudson Valley Thanksgiving morning. Thunderstorms developed along this cold front, and were accompanied by strong gusty winds at a few locations. About three (3) miles west of Goshen, in the town of New Hampton, the same line of thunderstorms tore apart a small barn owned by a farmer, and scattered the pieces a hundred yards from where the barn originally stood. Several large trees were uprooted in New Hampton as well. About 3,300 customers in Central Orange County experienced power outages due to the thunderstorm's winds.
- April 19, 2013 – a line of strong to isolated severe thunderstorms formed ahead of a cold front that moved across Orange County during the evening. In the Town of Wawayanda, a tree was downed on Jogee Road by 52 knot winds, causing \$100,000 in property damage. In the City of Port Jervis, another large tree limb was blocking Canal Street at Hamilton Street, causing another \$100,000 in property damage.

### *Tornado*

For a description of this hazard, please see section 5.2.

#### Historical Occurrence:

In the past ten (10) years there is no record of any tornados that have explicitly impacted the Town of Wawayanda. However, there have been a number of recorded occurrences within Orange County. The information can be found in the main body of the document

### *Hurricane*

Due to the inland location of the Town of Wawayanda, the majority of hurricanes that reach the area are classified as tropical storms and risk of true hurricanes is relatively low. However, due to the severe nature of these storms, numerous costly damages can occur due to high winds, rainfall, landslides, and lightning.



Historical Occurrence:

Table 10.2.39f: Hurricane Related Events: 1950-2012		
Date	Name	Category at Impact
8/18/1952	Able	Category 1
8/25/1954	Carol	Category 3
10/5/1954	Hazel	Category 4
8/3/1955	Connie	Category 3
8/7/1955	Diane	Category 1/Tropical Storm
6/25/1957	Audrey	Category 4
9/20/1959	Gracie	Category 3
8/29/1960	Donna	Category 3/Tropical Storm
6/23/1972	Agnes	Tropical Storm
8/6/1976	Belle	Category 1/Tropical Storm
8/25/1979	David	Tropical Storm
8/29/1979	Frederic	Category 3
9/16/1985	Gloria	Category 3/Hurricane
9/10/1989	Hugo	Category 4
8/16/91	Bob	Category 2/Hurricane
8/14/94	Beryl	Tropical Depression
7/5/96	Bertha	Tropical Storm
9/7/99	Floyd	Tropical Storm
9/18/04	Ivan	Tropical Depression
8/28/08	Hanna	Tropical Storm
8/21/11	Irene	Category 1/Tropical Storm
9/13/11	Lee	Tropical Storm
10/22/12	Sandy	Major Hurricane/Extratropical

*Drought*

A drought is defined as a prolonged period of limited precipitation affecting the supply and quality of water (HIRA-NY Definitions of Hazards). An absolute drought consists of a period of at least 15 consecutive days where none of the days experience 0.01 inches of rain or greater. A partial drought is a period of at least 20 consecutive days where the mean daily rainfall does not exceed 0.01 inches. A dry spell consists of a period of at least 15 consecutive days where none of the days experience 0.04 inches or more of rainfall (USGS, 2009). Drought periods progress through stages and drought intensity may vary considerably during the drought period. The time of occurrence and duration of a drought event can cause significant variations in drought impacts (HIRA-NY Definitions of Hazards).

Historical Occurrence:

The NCDC storm events database identified 10 drought events which impacted Orange County between 1950 and 2012. The table below identifies drought events which have impacted the Orange County which includes the Town of Wawayanda between 2001 and 2015. Sources used to obtain this information were the Orange County HMP, NCDC storm events data, and USDA historical loss data.

<b>Table 10.2.39g: Drought Events Town of Wawayanda (2001-2015)</b> (NYS NHP, 2010, Orange County HMP, 2011, NCDC Storm Events Database, USDA Historical Loss Database)			
<b>Dates of Event</b>	<b>Event Type</b>	<b>Losses/ Impacts</b>	<b>Source(s)</b>
November 2001 – January 2002	Water Shortage	The combined storage in the New York City water supply reservoir system was 41% of capacity (normal for this time is 71%).	NYS HMP, Orange County HMP, NCDC
April – October 2002	Drought and Water Shortage	Ground water and water storage facilities were below normal. The New York City reservoir system reached a low of 64.5%, which was 34% below normal. Orange County Officials claimed that this was the worst drought in almost 30 years.	NYS HMP, Orange County HMP, NCDC
June 1 to October 24, 2012	Drought and Excessive Heat (USDA Designation Number S3427)	USDA Disaster Designation information indicates that drought and excessive heat conditions resulted in production losses. USDA historical loss data indicates that onion and corn crop impacts resulted in approximately \$23,750 worth of damages in Orange County.	USDA
Winter 2013	Drought (USDA Designation Number S3487)	Drought conditions were observed over the winter of 2013, no associated crop losses occurred due to the timing of the drought.	USDA
August 15, 2014- Continuing	Drought (USDA Designation Number S3759)	USDA Disaster Designation information indicates that drought conditions caused agricultural damages across Orange County. USDA historical loss data indicates that onion crop impacts resulted in approximately \$10,350 worth of damages in Orange County.	USDA
April 1, 2015- September 29, 2015	Excessive Heat and Drought (USDA Designation Number S3930)	USDA Disaster Designation information indicates that drought conditions caused agricultural damages across Orange County. USDA historical loss data indicates that corn crop impacts resulted in approximately \$7,725 worth of damages in Orange County.	USDA

Landslide

Landslides occur when a slope fails and moves downward due to gravity; this can be caused by anything that disrupts ground stability, from storms to acts of man. The New York State Geological Survey denotes areas with steep slopes and glacial lake clay soils. Several locations in the north and east portions of the Town are mapped as having a higher susceptibility to landslides, based on local slopes and soils. These areas are mapped near Kirby Town Road,

County Route 49, County Route 12, Guinea Hill Road, Route 284 and Interstate 84. Based on overall landslide susceptibility and the number of historic events, Orange County is ranked in the NYS HMP as the 14<sup>th</sup> most threatened by landslides of the 62 Counties.

No recorded landslides have impacted the Town of Wawayanda, it is important to be prepared for the possibility of future landslide events. Analysis of critical facilities that fall into these high landslide rating areas can be found in Table 10.2.39c and in Attachment I.

None of the Town's critical facilities are located within the high landslide hazard area. The Town will utilize its emergency alert system (CodeRED) to establish and disseminate hazard-event-specific shelter and emergency route/detour information. The Town will also pursue assistance from Orange County given the proximity of the Orange County Emergency Operations Center at 22 Wells Farm Road, Goshen, NY.

Below is a table that illustrates the value of property in the Town of Wawayanda that is located within the landslide rating area and is categorized by land use type. This table was derived from GIS mapping and parcel data from the Orange County Property Assessor.

<b>Type of Structure</b>	<b># Structures in Hazard Area</b>	<b>Value of Structures (in millions)</b>
Residential	227	\$39.3
Commercial	12	\$76.3
Industrial	0	\$0
Agricultural	18	\$1.8
Religious/Non-profit	0	\$0
Government	0	\$0
Education	0	\$0
Utilities	0	\$0
Dams	0	\$0
Parks	1	Unknown
<b>Total</b>	<b>258</b>	<b>\$117.4</b>

### *Earthquake*

Earthquakes can result in mass damage depending on severity; they also lack much forewarning. The Ramapo Fault Zone spans 185 miles between the Northern Appalachian Mountains in the east through New York, New Jersey, and Pennsylvania. Earthquakes in this region rarely exceed 3.0 on the Richter Scale. Earthquakes in the Town of Wawayanda are not common. The 2011 Orange County HMP identifies records that show several minor earthquakes were actually epicentered in Orange County between 1737 and 1986.

Historical Occurrence:

According to the NYSOEM, New York State may expect to experience a damaging earthquake event once every 22 years.

A review of the USGS Earthquake information database indicated that there have been five (5) earthquakes with epicenters in Orange County over the last 60 years; none of these were located within the Town of Wawayanda. The following table provides details of these historical earthquake events. No damages are reported within the Town of Wawayanda as a result of these minor earthquakes.

<b>Date</b>	<b>Latitude</b>	<b>Longitude</b>	<b>Distance (miles)</b>	<b>Magnitude</b>
3/5/1978	41.352°N	74.146°W	15.97	2.1
4/20/2003	41.361°N	74.370°W	4.64	2.3
10/14/2004	41.392°N	74.000°W	23.62	2.7
3/14/2008	41.336°N	74.452°W	5.77	2.3
3/15/2008	41.337°N	74.463°W	5.77	1.9

*Severe Winter Storm*

Winter storms create damage due to snowfall and winds, with occasional sleet, freezing rain, or hail occurring. Snowfall impairs visibility, obstructs roadways and facilities, and cause tree limbs to fall and roofs to collapse due to weight. It also creates slick roadways which can be compounded further by sleet or freezing rain events. Numerous winter storm events have affected the Town of Wawayanda and remain a high risk storm event.

Searching the NCDC Storm Events Database with the queries “Blizzard”, “Heavy Snow”, “Sleet”, “Winter Storm”, and “Winter Weather” yielded 97 events that impacted Orange County (1/1/1950-12/31/2015). Damages were not reported for these storm events; however, one death and one injury are attributed to these severe winter storm events. Specific damages for the Town of Wawayanda were not identified within the NCDC Storm Events database. One (1) storm event record identified that Ridgebury Road between County Road 12 and Greeves Road was closed for several hours due to numerous downed trees during a winter storm event on October 29, 2011.

The Town will utilize its emergency alert system (CodeRED) to establish and disseminate hazard-event-specific shelter and emergency route/detour information. The Town will also pursue assistance from Orange County given the proximity of the Orange County Emergency Operations Center at 22 Wells Farm Road, Goshen, NY.

### *Ice Storm*

The NWS uses the term “ice storm” to describe occasions when damaging accumulations of ice are expected during freezing rain situations. Significant accumulations of ice pull down trees and utility lines resulting in the loss of power and communications. Such accumulations of ice pose a risk to walking and driving. Damage from such events could include structural damage, utility failures, and tree damage as a result of excessive weight.

#### Historical Occurrence:

According to NCDC’s Storm Events Database, eight (8) ice storm events have been recoded for Orange County since 1998.

- January 3, 1999 – At least one-half inch of liquid rain fell with temperatures at or below the freezing mark by the times indicated above. Widespread significant icing occurred across the region.
- December 14, 2000 – This mixture of freezing rain and sleet created treacherous travel for the morning commute on December 14. In addition, power outages resulted as tree limbs fell due to significant ice accretion. Ice accumulated at least ¼” throughout the area, with some locations receiving up to ½” of ice.
- February 25, 2001 – Total ice accumulations ranged from ¼” to 1/3”, which resulted in some power outages. In Middletown, a blown transformer on Wawayanda Avenue, near the Mount Carmel School, took out power in much of downtown. Several minor traffic accidents were reported along Route 17 in Orange County.
- December 16, 2005 – ½” of ice was recorded in the City of Middletown. Numerous traffic accidents occurred as a result.
- February 1, 2008 – Light to moderate freezing rain broke out across the Lower Hudson Valley and northeast New Jersey Friday morning ahead of a warm front over the middle Atlantic states. The precipitation went over to rain from south to north by late afternoon, leaving about ½” of ice across Orange and Putnam counties in southeast New York.
- December 11, 2008 – Major automobile accident on the Newburgh-Beacon Bridge in Orange County with eight (8) injuries. There were also scattered reports of trees and power lines down with the American Red Cross opening a shelter in Central Valley the following day.
- January 6, 2009 – Orange County, 0.30” in Warwick to 0.80” in Middletown and Monroe. Emergency management officials in both Orange and Putnam counties reported trees and wires down during the late morning hours.

### *Wildfire*

A wildfire is defined as an uncontrollable combustion of trees, brush, or grass involving a substantial land area which may have the potential for threatening human life and property. Dry conditions at various times of the year can increase the potential for wildfire events. Often, wildfires begin abruptly and spread quickly, creating a dense smoke that can fill the surrounding

area for miles. Humans start four out of every five wildfires, typically due to debris burns, arson, or carelessness. Lightning strikes are also a leading cause of wildfires (NYS DEC, 2016).

One of the major contributing factors to severity of wildfires depends on the presence of humans within areas where wildfires would typically occur. The Wildland/Urban Interface (WUI) is the area where houses and wildland vegetation meet. Housing developments alter the structure and function of forests. The 2014 Annual Report for the NYSDEC Division of Forest Protection indicates that there were 23 wildfires within Zone 3B which includes the Town of Wawayanda. These wildfires burnt a total of 239.0 acres; none of these wildfires were over 100 acres in size. The 2013 Annual Report for the NYSDEC Division of Forest Protection indicates that there were 11 wildfires in Zone 3B that year. Two of these wildfires were over 100 acres in size, a total of 672.6 acres were burnt during wildfires during the 2013 wildfire season. The 2012 Annual Report for the NYSDEC Division of Forest Protection shows that there were seven wildfires in Zone 3B that year. One of these wildfires was over 100 acres in size with a total of 507.6 acres burning during wildfires in the 2012 wildfire season.

The Town of Wawayanda has an elevated risk of wildfire occurrences within its jurisdiction because of the tracts of undeveloped land within the Town. The Town will utilize its emergency alert system (CodeRED) to establish and disseminate hazard-event-specific shelter and emergency route/detour information. The Town will also pursue assistance from Orange County given the proximity of the Orange County Emergency Operations Center at 22 Wells Farm Road, Goshen, NY.

### *Ice Jam*

An ice jam is described as a large accumulation of ice in rivers or streams that interrupts the normal flow of water and often leads to flooding conditions and/or damage to nearby structures (HIRA-NY, Definitions of Hazards). Ice jams include those that form in early winter as ice formation begins (freeze-up jams), those that form as a result of the breakup of ice (break-up jams), and those that contain elements of both types (combination jams). Ice jam events can include ice jams, the formation of an ice cover which raises water levels upstream or decreases water levels downstream, or ice cover breakup (U.S. Army Corps CRREL, 2004). Freeze-up jams typically occur early to mid-winter and are made up of slush ice that freezes in place.

Although a large amount of information associated with ice jam events has been collected since the early 1900's, documentation of the actual rate of occurrence of such events is not easily obtained. The lack of information on ice jams can be attributed, in part, to the fact ice jam events are often short-lived and often affect only a localized reach or area of a body of water (U.S. Army CRREL, 2004).

### Historical Occurrence:

The Town of Wawayanda did not have any ice jam incidents reported by the U.S. Army Corps of Engineers (USACE) Cold Regions Research and Engineering Laboratory (CRREL) Ice Jam Database. The USACE-CRREL database indicates there are six (6) ice jam records for Gardnerville, a hamlet in the Town of Wawayanda, dating back to 1948:

- March 17, 1948 – maximum annual gage height of 8.1 feet, affected by backwater from ice, reported at USGS gage Rutgers Creek at Gardnerville, on March 17, 1948.
- January 22, 1959 – maximum annual gage height of 5.83 feet, affected by backwater from ice, reported at USGS gage Rutgers Creek at Gardnerville, on January 22, 1959, discharge 1,140 cfs.
- February 26, 1961 – maximum annual gage height of 5.99 feet, affected by backwater from ice, reported at USGS gage Rutgers Creek at Gardnerville, on February 26, 1961, discharge 1,550 cfs.
- March 12, 1962 – Rutgers Creek in Gardnerville, NY, the maximum annual gage height of 6.19 ft. and maximum annual discharge of 1,640 cfs were recorded on March 12, 1962, due to backwater from ice jam.
- March 14, 1963 – the maximum annual gage height observed on Rutgers Creek at Gardnerville, NY was 5.20 ft., on March 14, 1963, caused by an ice jam, the associated discharge was 350 cfs.
- January 25, 1964 – USGS reported the maximum annual gage height of 4.98 ft. on Rutgers Creek at Gardnerville, NY discharge was 560 cfs.

### 10.2.39.4 Capability Assessment

#### *Planning and Regulatory Capability*

A series of worksheets were provided to the community to identify local mitigation capabilities which are already in place within Town of Wawayanda. These policies, programs and resources can reduce hazard impacts and can be used to implement hazard mitigation activities. A summary of these are shown in the table below. The complete Capability Assessment Worksheets are included as an appendix to this Jurisdictional Annex.

Table 10.2.39j: Planning and Regulatory Capabilities for the Town of Wawayanda		
Regulatory Tools for Hazard Mitigation	Description	Responsible Department/Agency
Codes	<ul style="list-style-type: none"> <li>• <b>Town of Wawayanda- Local Law, Building Code</b>, includes zoning, subdivision ordinance, floodplain, and natural hazard specific ordinances.</li> </ul>	<ul style="list-style-type: none"> <li>• Building inspector, Zoning Board, Planning Board</li> </ul>
	<ul style="list-style-type: none"> <li>• <b>Codes of New York State</b>, includes provisions for development and activities within floodplain areas</li> </ul>	<ul style="list-style-type: none"> <li>• NYS Laws</li> </ul>
Ordinances	<ul style="list-style-type: none"> <li>• <b>Zoning Ordinance</b></li> <li>• <b>Subdivision Ordinance</b></li> <li>• <b>Natural Hazard specific Ordinance</b></li> <li>• <b>Flood Ordinance</b></li> </ul>	<ul style="list-style-type: none"> <li>• Zoning Board Clerk</li> <li>• Planning Board Clerk</li> <li>• Town Engineer</li> </ul>
Plans, Manuals, and/or Guidelines	<ul style="list-style-type: none"> <li>• <b>Comprehensive Master Plan</b></li> </ul>	<ul style="list-style-type: none"> <li>• Town Planning Board</li> </ul>
	<ul style="list-style-type: none"> <li>• <b>Local Emergency Management Operations Plan</b></li> </ul>	<ul style="list-style-type: none"> <li>• Town Planning Board</li> </ul>
	<ul style="list-style-type: none"> <li>• <b>Stormwater Management Plan</b></li> </ul>	<ul style="list-style-type: none"> <li>• Town Planning Board</li> </ul>
Studies	<ul style="list-style-type: none"> <li>• <b>FIRM Flood Insurance Rate Maps</b></li> </ul>	<ul style="list-style-type: none"> <li>• FEMA</li> </ul>

*Administrative and Technical*

This section provide a summary of available technical and administrative resources in place within the Town of Wawayanda which can be used in pre-disaster planning and mitigation as well as mobilized in the event of a disaster.

<b>Table 10.2.39k: Summary of Administrative and Technical Staff Capabilities for the Town of Wawayanda</b>		
<b>Staff/Personnel Resources</b>	<input checked="" type="checkbox"/>	<b>Department/Agency - Position</b>
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	Planning Board, Town Engineer (Part time)
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	<input checked="" type="checkbox"/>	Planning Board, Town Engineer (Part time)
Planner(s) or engineer(s) with and understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	Planning Board, Town Engineer (Part time)
NFIP Floodplain Manager	<input checked="" type="checkbox"/>	Part time
Emergency Management	<input checked="" type="checkbox"/>	Part time
Person skilled or trained in "GIS" applications	-	-
Grant writer	<input checked="" type="checkbox"/>	

*Fiscal*

The table below summarizes financial resources available to the Town of Wawayanda.

<b>Table 10.2.39l: Fiscal Capabilities for the Town of Wawayanda</b>		
<b>Financial Resources</b>	<b>Accessible or Eligible to Use (Yes, No, Don't Know)</b>	<b>Comments</b>
Community Development Block Grants (CDBG)	Yes	
Capital Improvements Project funding	Yes	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric service	N/A	
Impact fees for new developments/homes	Yes	
Incur debt through general obligation bonds	Yes	
Incur debt through private activities	No	
Withhold public expenditures in hazard-prone areas	No	
State mitigation grant programs	Yes	Various grant opportunities



*NFIP: Administrator, Vulnerability, Resources, Compliance*

The Town of Wawayanda has participated in NFIP (ID# 360639) since 05/10/1974. Administration is provided through the Town Planning Board. The Town has a floodplain development permit which is administered by a Town of Wawayanda’s Building Inspector/Planning Board. This individual is responsible for reviewing floodplain impacts, granting permits, maintaining construction compliance, and reviewing post construction impacts. There are no properties within the Town that qualify as repetitive flood loss properties. Details of NFIP policies within the Town of Wawayanda are provided in the following table.

Table 10.2.39m: NFIP Statistics for the Town of Wawayanda (FEMA)				
NFIP Loss Statistics as of January 31, 2018				
Total Losses	Closed Losses	Open Losses	CWOP Losses	Total Payments
11	10	0	1	\$114,248.71
NFIP Policy Statistics As of January 31, 2018				
Policies in-force		Insurance in-force		Written Premium in-force
24		\$6,287,100		14,681
CWOP= Losses that have been closed without payment				

The Town has been maintaining NFIP participation by performing the duties and actions that were listed in the local laws that their municipal boards adopted. The Town Floodplain Administrator has been provided an NFIP best practices incorporation guidance document and will be using it to improve local participation in NFIP standards going forward. This package of documents was provided by NYSDHSES and can be found in Appendix F - NFIP Floodplain Administrator Guidance Package.

*Hazard Mitigation: Existing and Planning Mechanisms*

Emergency Communications:

The Town and Orange County utilize the CodeRED Emergency Communications System. Residents and other users can subscribe to the service on the Town’s municipal website.

Comprehensive Plan:

The Town of Wawayanda has a Comprehensive Plan that was adopted in 2006. Town Zoning Code and Planning Board adopted regulations which allow Town officials to reduce flood damage through local zoning and planning. The Comprehensive Plan and Town Zoning Code will be used to inform this document and provide guidance on actions moving forward.

Planning Mechanisms:

While this annex has provided a summary and description of existing plans, policies, and regulatory mechanisms that support hazard mitigation, the 2018 Orange County Hazard Mitigation Plan Update is intended to allow for the integration of its recommendations and data

into local plans. Listed below are several planning and policy mechanisms that lend themselves to the integration of materials and objectives from this hazard mitigation plan. Columns to the right indicate whether the municipality has utilized hazard mitigation planning elements in the past (as in the aftermath of a previous local hazard mitigation plan) and whether they intend to be utilized in the future (which most, if not all, do).

Table 10.2.39n: Incorporation of Hazard Mitigation Planning into Existing and Future Planning Mechanisms		
Planning Mechanism	Has been Utilized	May be Utilized
<b>Capital Improvement Budget:</b> Hazard Mitigation Actions to be considered during the development of annual capital improvement plans. Compliance with Hazard Mitigation goals and objectives as well as the hazard vulnerability of site will be a consideration during the evaluation of infrastructure and facilities projects.		X
<b>Operating Budget:</b> Hazard Mitigation Actions to be considered within day-to-day operating budgets as funding permits.		X
<b>Building &amp; Zoning Ordinances:</b> Review of the hazard mitigation plan and hazard analyses are part of the evaluation of land use, zoning, and development review ordinances and permitted processes.		X
<b>Comprehensive Land Use Plan:</b> Elements such as hazard vulnerability and hazard area extents will be considered during the development of future land use maps and other elements of comprehensive planning.		X
<b>Human Resource Manual:</b> Employee job descriptions may contain elements related to hazard mitigation planning and associated recommendations.		X
<b>Grant Applications:</b> Support for funding requests in the form of data, maps, and priority recommendations will be drawn from the hazard mitigation plan.		X
<b>Fire Plan:</b> Fire Plans for the municipality and local fire departments can utilize data and mapping in the hazard mitigation plan.		X
<b>Local School Service Projects:</b> Municipal officials and staff can explore the possibility of collaboration with local school districts to provide avenues for student community service projects as well as educational opportunities.		X
<b>Economic Development:</b> Local chambers of commerce and other economic development agencies can utilize the hazard mitigation plan to better inform new/expanding businesses in finding a location.		X

*Summary*

This Plan will be used to inform the Town’s Comprehensive Plan, Town Codes, and provide guidance on actions moving forward.

### 10.2.39.5 Mitigation Strategy and Prioritization

#### *Past, Completed, and Ongoing Initiative*

The Town of Wawayanda did not identify any past, completed or ongoing mitigation related initiatives.

#### *Proposed Initiatives*

The Town did not submit any mitigation action worksheets as part of this hazard mitigation plan update. The Town will revisit the establishment of proposed mitigation actions at a later date.

#### *Future Needs*

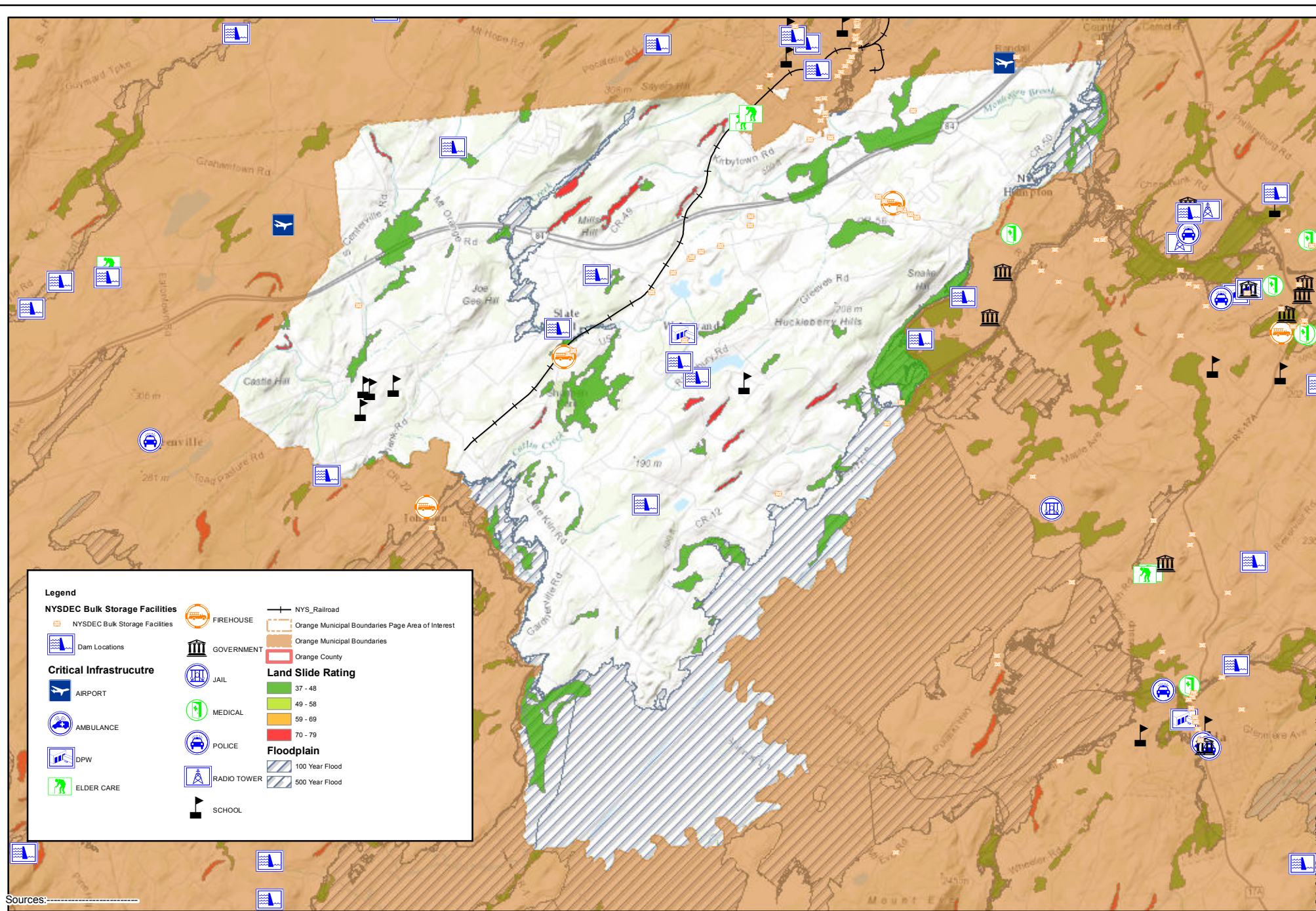
The Town of Wawayanda did not identify any future needs relating to hazard mitigation.

### 10.2.39.6 Hazard Area Extent and Location

A map demonstrating the location of certain hazard areas is attached as Attachment I.

**Attachment I**

**Hazard Area Extent and Location Map -  
Town of Wawayanda**



**Legend**

NYSDEC Bulk Storage Facilities	FIREHOUSE	NYS_Railroad
Dam Locations	GOVERNMENT	Orange Municipal Boundaries Page Area of Interest
<b>Critical Infrastructure</b>	Orange Municipal Boundaries	Orange County
AIRPORT	JAIL	<b>Land Slide Rating</b>
AMBULANCE	MEDICAL	37 - 48
DPW	POLICE	49 - 58
ELDER CARE	RADIO TOWER	59 - 69
	SCHOOL	70 - 79
		<b>Floodplain</b>
		100 Year Flood
		500 Year Flood

Sources: \_\_\_\_\_



Path: C:\GIS\Projects\Orange County Hazard Mitigation Plan\Map\Map\_Series\Map\_Series\_01.aprx

## **Attachment II**

# **STAPLEE Mitigation Action Cost/Benefit Analysis - Town of Wawayanda**



**Attachment III**

**Hazard Mitigation Worksheets -  
Town of Wawayanda**



Name of Jurisdiction: \_\_\_\_\_

**RESOLUTION  
TO AUTHORIZE THE ACCEPTANCE AND ADOPTION OF THE  
MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE FOR  
ORANGE COUNTY, NEW YORK**

**WHEREAS**, the Orange County Department of Emergency Services, with the assistance from Barton & Loguidice, D.P.C., has gathered information and prepared the Multi-Jurisdictional Hazard Mitigation Plan Update for Orange County, New York; and

**WHEREAS**, the Multi-Jurisdictional Hazard Mitigation Plan Update for Orange County, New York has been prepared in accordance with the Disaster Mitigation Act of 2000 and Title 44 Code of Federal Regulations (CFR), Part 201; and

**WHEREAS**, Title 44 CFR, Chapter 1, Part 201.6(c)(5) requires each local government participating in the preparation of a Multi-Jurisdictional Mitigation Plan or Plan Update to accept and adopt such plan; and

**WHEREAS**, the Town of Wawayanda, has reviewed the 2016 Multi-Jurisdictional Hazard Mitigation Plan Update for Orange County, has found the document to be acceptable, and as a local unit of government, has afforded its citizens an opportunity to comment and provide input regarding the Plan Update and the actions included in the Plan;

**WHEREAS**, the Town of Wawayanda, will consider the Multi-Jurisdictional Hazard Mitigation Plan Update for Orange County during the implementation and updating of local planning mechanisms, and will incorporate the hazard assessment data, hazard vulnerabilities, and mitigation actions in these mechanisms, where applicable;

**NOW THEREFORE, BE IT RESOLVED**, that the Town of Wawayanda, as a participating jurisdiction, adopts the Multi-Jurisdictional Hazard Mitigation Plan Update for Orange County, New York, dated May 2016.

This resolution was thereupon declared duly adopted on \_\_\_\_\_.

\_\_\_\_\_  
(Supervisor)

\_\_\_\_\_  
(Clerk)