

10.2.2 Town of Blooming Grove

This section presents the jurisdictional annex for the Town of Blooming Grove.

10.2.2.1 Contacts

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

- Robert C. Jeroloman – Town Supervisor
6 Horton Road, P.O. Box 358
Blooming Grove, NY 10914
(845) 496-5223

10.2.2.2 Municipal Profile

Population

The population of the Town of Blooming Grove was reported to be eighteen thousand, twenty-eight (18,028) by the 2010 U.S. Census. The population at the 2000 census was seventeen thousand, three hundred fifty-one (17,351) for an increase of approximately 3.8%.

Location

The Town of Blooming Grove is located in the central portion of Orange County. The Town is bordered to the west by the Towns of Chester and Goshen, to the east by the Towns of Woodbury and Cornwall, to the north by the Towns of New Windsor and Hamptonburgh, and to the south by the Town of Monroe and the Village of Kiryas Joel.

Brief History

The Town of Blooming Grove was first settled in the early 1720's, the land area was previously named Cornwall Township in 1799 (Town of Blooming Grove Multi-Jurisdictional Hazard Mitigation Plan, August 2013). Parts of the Town were used to create the towns of Hamptonburgh, in 1830, and Chester, in 1845.

Governing Body

The governing body is the Town Board. The Town Board consists of a Town Supervisor, a Deputy Supervisor and five Councilpersons.

Future Growth

Town of Blooming Grove indicates that development within the Town will include both residential and commercial development. Potential development identified in the single jurisdiction annex for the Town of Blooming Grove Planning Area, is shown in Table 10.2.2.a.

Address	Project	Type	Number of Potential Structures	Description of Status
Lake Road	Lake Blooming Grove	Residential	37 Lots	Final Planning Board Approval
Tuthill Road	Tuthill Park	Residential	180 Attached Homes	Concept
Murry Road	Mountco	Residential and Commercial	900	Concept

Such growth will be guided away from areas vulnerable to flooding through the development review process, NYS building codes, and NYSDEC floodplain regulations. Any new development will comply with current state building codes, stormwater management best practices per the Orange County Planning Department, and the Town's Comprehensive Plan. Thus, these mechanisms will help mitigate hazard vulnerability that could accompany such future growth.

10.2.2.3 Hazard Vulnerabilities and Ranking

Risk Ranking

The Town of Blooming Grove used analysis and information collected during the planning process for the *Town of Blooming Grove Multi-Jurisdictional Hazard Mitigation Plan (2013)*. There were no additional hazards identified for inclusion in this updated Plan. Section 5.0 of this County Mitigation Plan update provides a summary of natural hazards which were selected by the Orange County HMP planning committee. The Town of Blooming Grove identified seven natural hazards which impact the municipality and did not identify any technological hazards during the hazard mitigation planning process. The seven (7) identified natural hazards which impact the municipality are:

- Severe Storm
- Floods
- Severe Winter Storm
- Drought
- Earthquake
- Extreme Temperature
- Wildfire

Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking
Flood	1% Annual Chance: \$57,316,000 0.2% Annual Chance: \$73,062,000	Frequent	30	High
Severe Storm	100-Year MRP: \$ 969,508	Frequent	18	Medium
	500-Year MRP: \$ 6,279,060			
	Annualized Loss: \$ 66,773			
Severe Winter Storm	1% of GBS: \$ 8,506,130	Frequent	39	High
	5% of GBS: \$42,530,650			
Earthquake	500-Year MRP: \$ 770,641	Rare	6	Low
	2,500-Year MRP: \$14,582,543			
	Annualized Loss: \$ 12,716			
Drought	Not available	Occasional	12	Medium
Extreme Temperature	Not available	Occasional	12	Medium
Wildfire	Not available	Occasional	22	High

Critical Facilities

The Town of Blooming Grove completed a review of critical facilities within the 100-year and 500-year floodplains for the 2013 hazard planning efforts. A result of this analysis is indicated in Table 10.2.2c.

As indicated in Section 2.8, participating municipalities did not wish to disclose the locations of public water systems facilities due to security concerns. However, they acknowledge the criticality of such facilities. While it is assumed that most municipal water systems facilities are not located within the floodplain, these jurisdictions will explore hardening/relocation opportunities for those that are located within the floodplain should such actions become necessary due to the incidence of flooding impacts.

By necessity, critical wastewater facilities are located within the 500-year floodplain due to discharge requirements and gravity-fed systems optimization. While relocation is neither desired nor feasible, participating municipalities will seek to harden these facilities where feasibly and fiscally possible.

Table 2.8a – Orange County NPDES Data lists all wastewater facilities in the County, including the Town of Blooming Grove, with a NPDES (National Pollutant Discharge Elimination System) permit. In the case of New York State, NPDES permit listing match State Pollutant Discharge Elimination System (SPDES) permit listings.

Table 10.2.2c: Critical Facility Damage Estimate										
Name	Municipality	Type	Exposure		Potential Loss from 1% Flood Event			Potential Loss from 0.2% Flood Event		
			1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage	Days to 100%	Percent Structure Damage	Percent Content Damage	Days to 100%
Salisbury Mills Fire	Blooming Grove (T)	Fire	X	X	11	41	480	15	72	630
Tappan Sewer	Blooming Grove (T)	WW		X	-	-	-	-	-	-
Tappan Water	Blooming Grove (T)	Potable	X	X	-	-	-	-	-	-

The vulnerability of these critical facilities is addressed in the following proposed mitigation actions by the Town of Blooming Grove:

- BG-22, BG-23, & BG-24 (Salisbury Mills FD)
- BG-41 (Potable water and wastewater systems)

The Town of Blooming Grove has nine (9) critical facilities within the 500-year floodplain or the high hazard Landslide Rating¹ area. The following table identifies the structures and hazard issues.

Table 10.2.2d: Town of Blooming Grove Critical Facilities and Infrastructure in Hazard Areas			
Critical Infrastructure	500-Yr Floodplain	Landslide Rating Area	Associated Mitigation Action
Salisbury Mills Fire Department	Y	N	TBG-2, TBG-5
Salisbury Mills Post Office	Y	N	TBG-2, TBG-5
Blooming Grove Pond Dam	Y	N	TBG-2, TBG-6
Lake George Dam	Y	N	TBG-2, TBG-6
Lake Hildegard Dam	Y	N	TBG-2, TBG-6
Peddler Hill Road Dam	Y	N	TBG-2, TBG-6
Tomahawk Lake Dam	Y	N	TBG-2, TBG-6
William Curtis Dam	Y	N	TBG-2, TBG-6
Willow Brook Dam	Y	N	TBG-2, TBG-6

National Flood Insurance Program (NFIP) Summary

The Town of Blooming Grove has been a participant in the NFIP since 1974. Details of NFIP policies within the Town of Blooming Grove are provided in Table 10.2.2e. The Town of Blooming Grove has six (6) properties which have experienced repetitive losses, and two (2) severe repetitive loss properties. The Town is reported as having the fifth most repetitive loss properties of all jurisdictions in Orange County, as shown in Table 8.2c. 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 (Local Law #1 of 2009). The Town Floodplain Administrator has been provided an NFIP best practices guidance package 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.

Table 10.2.2e: NFIP Statistics for the Town of Blooming Grove (FEMA)				
NFIP Loss Statistics as of January 31, 2018				
Total Losses	Closed Losses	Open Losses	CWOP Losses	Total Payments
156	123	0	33	\$1,991,054.25
NFIP Policy Statistics As of December 31, 2015				
Policies in-force	Insurance in-force		Written Premium in-force	
67	\$14,741,400		82,734	
CWOP= Losses that have been closed without payment				

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

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 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 Blooming Grove. This anticipated increase results from the expected increase in weather volatility associated with climate change. The waterbodies of the Moodna Creek Watershed, including the Cromline Creek, Tomahawk Lake, and Otterkill Creek, also contributes to increased flooding occurrences.

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 Town of Blooming Grove is located within the Moodna Creek Watershed. Certain areas of this watershed have experienced major damages due to flooding. The 2013 Town of Blooming Grove Multi-Jurisdictional All-Hazard Mitigation Plan indicated several locations within the Town which are most susceptible to flooding. Flooding as a result of dam failure and ice jams were also incorporated into the flood hazard profile in the 2013 Plan. Information on these hazards and impacts to Orange County are provided in Section 5.0 of this plan update.

Historical Occurrences:

Many sources provided historical information regarding previous occurrences and losses associated with flooding throughout New York State, Orange County and the Town of Blooming Grove. With so many sources reviewed for the purpose of this HMP, loss and impact information for many events could vary depending on the source. Therefore, the precision of monetary data discussed is based only on the available information identified during research for this HMP.

Table 10.2.2f summarizes the FEMA Presidential Disaster (DR) or Emergency (EM) Declarations for flood events for the area which encompasses the Town of Blooming Grove in Orange County. Many of these federal disasters were the remnants of severe storms or tropical or extra tropical disturbances (hurricanes, tropical storms, Nor'Easters) either passing over or located within proximity to the State. Because flooding was the primary impact of many of these types of hazard events, only the severe flooding impact of major events are discussed in this Hazard Profile and are also mentioned in their designated sections of this HMP, Severe Storm and Severe Winter Storm sections. Further information about flooding events which impacted Orange County is provided in Section 5.0 of this plan.

Table 10.2.2f: Presidential Disaster Declarations for Flooding and Related Events in Orange County				
Type of Event	Date	Declaration Number	Cost of Losses (approximate)	Source (s)
Hurricane and Flood (Hurricane Connie and Diane)	August 1955	DR-45	Flooding throughout the Town of Blooming Grove that caused evacuations. Flooding caused damage to residential and commercial properties, road closures, and power outages.	Town of Blooming Grove Input
Severe Storms and Flood (Tropical Storm Doria)	August 1971	DR-311	This storm caused seven deaths and \$147.6 M in damage throughout its path (1971 USD, \$735 M 2006 USD). New York State experienced approximately \$7.4 M in total eligible damages. Orange County experienced approximately \$29 K in property and crop damages. Estimated damages for the Town of Blooming Grove are unknown.	FEMA, Orange County HMP
Coastal Storms and Flood	April 1984	DR-702	Flooding occurred across southeastern New York State, and a federal disaster designation was declared on April 17. Flooding caused road closures in the Blooming Grove Planning Area. Orange County experienced approximately \$11.9M in total eligible damages.	FEMA, Orange County HMP, Town of Blooming Grove Input
Severe Storm and Flooding	January 1996	DR-1095	Severe storms and flooding across the region from January 19-30 th led to road damage across Orange County. Orange County was among many counties in New York State that became eligible for Individual and Public Assistance under Federal Disaster Declaration DR-1095. Storm-induced damages to County roads at 32 locations resulted in approximately \$330,000 in damages. Estimated storm damages to Town of Blooming Grove are unknown.	FEMA, NOAA-NCDC, Orange County HMP
Remnants of Hurricane Floyd Flooding	September 1999	DR-1296	Heavy rain caused flooding which damaged private properties, local bridges, roads, culverts, the Tappan Water and Wastewater Plants, Moffat Library, and Mays Field Recreational Complex.	NOAA-NCDC, Orange County HMP, Town of Blooming Grove Input
Severe Storms and Flooding	August-September 2004	DR-1564	The remnants of a tropical system combined with thunderstorms moved over Western Orange County, where hourly rainfall estimates in the 3-5" range was observed at times. Houses were damaged, roads were destroyed, and buildings collapsed throughout Western Orange County. A federal disaster declaration was made on October 1. Damage estimates were \$2.2 M in public and \$1.8 M in private property. As of April 2013, \$2.8 M in FEMA Individual Assistance and \$14 M in Public Assistance Grants were approved and obligated throughout New York State. Estimated storm damages to Town of Blooming Grove are unknown.	FEMA, Orange County HMP
Remnants of Hurricane Ivan and Flooding	September 2004	DR-1565	Remnants of Hurricane Ivan dropped up to 5" of rainfall in some areas of Orange County. This amount of rainfall caused flash flooding of roadways and highways across the region. The total damages within New York State were approximately \$15.10 M. Specific damages totals for the Town of Blooming Grove are unknown.	NOAA-NCDC, Orange County HMP

Table 10.2.2f: Presidential Disaster Declarations for Flooding and Related Events in Orange County				
Type of Event	Date	Declaration Number	Cost of Losses (approximate)	Source (s)
Severe Storms and Flooding	April 2005	DR-1589	Heavy rain caused widespread urban flooding throughout Orange County. Most small streams and rivers overflowed their banks. In addition, high wind gusts from 46 to 57 mph, associated with heavier showers, downed trees. Select rainfall amounts for Orange County included 2.00 inches at the Town of Blooming Grove to 3.80 inches at the Town of Monroe.	FEMA, NOAA-NCDC, Orange County HMP
Severe Storms and Flooding	June / July 2006	DR-1650	A federal disaster was declared on July 1. Orange County experienced approximately \$246.3 M in total eligible damages.	FEMA, Orange County HMP
Severe Storms and Flooding (also identified as a Nor'Easter)	March 2010	DR-1899	New York State experienced millions in eligible damages (FEMA). Specific damages in for the Town of Blooming Grove are unknown. FEMA gave out more than \$76 million in assistance to affected counties within the State. Disaster assistance to Orange County totaled \$4.37 M. In the Town of Blooming Grove Planning Area, rainfall totals on the 13th included 1.63 inches in the Village of Washingtonville. In the Village of Washingtonville, widespread flooding damaged 150 private properties, school facilities, the police and fire stations, Village offices, and recreational facilities. In the Village of South Blooming Grove, flooding from the storms damaged five private properties, local bridges, roads, culverts, and the sewer pump station.	NOAA-NCDC, FEMA, Town of Blooming Grove Input
Remnants of Hurricane Irene and Flooding	August 2011	DR-4020	Hurricane Irene made landfall over New York City on August 28, 2011 and traveled north through New York State. FEMA indicates the total public assistance for NYS relating to this storm event was over \$465.5 million. Moodna Creek overflowed its banks resulting in water rescues at Udderly Fresh Farms on Rt. 94 near Farmview Lane in the Village of Washingtonville. In addition, the raging waters from the creek burst holes in the foundations of houses on Patricia and Beverly Lanes and inundated the Washingtonville Manor and Brookside. Acres mobile home parks, south of Main St. The surge of water also engulfed the first floor of a residence on Cardinal Drive. Rt. 94 near Goshen Ave. in the Village of Washingtonville was also closed due to flooding. In the Village of South Blooming Grove, flooding from the storm damaged eight private properties, multiple local bridges, roads, culverts, Village recreational facilities, dams and the Village Hall roof. Damages to just the Village of South Blooming Grove was estimated at over \$1 M.	NWS, NOAA-NCDC, FEMA, Town of Blooming Grove Input
Remnants of Tropical Storm Lee and Flooding	September 2011	DR-4031	The remnants of Tropical Storm Lee impacted the county two weeks after Hurricane Irene made landfall. Combined damages for Hurricane Irene and Tropical Storm Lee exceeded \$ 55 million for Orange County. Specific damages for the Town of Blooming Grove were not available for this storm event.	NOAA-NCDC, FEMA,

Type of Event	Date	Declaration Number	Cost of Losses (approximate)	Source (s)
Remnants of Hurricane Sandy and Flooding	October 2012	DR-4085	Much of the worst impacts during this storm were felt along the eastern portion of the County, and downstate. In Town of Blooming Grove, there were widespread power outages and downed trees. The water and wastewater plants were inaccessible due to road closures. In the Village of South Blooming Grove, the Village water system pumps were damaged from flooding and one injury was reported.	NOAA-NCDC, FEMA, Planning Area Input

Agriculture-related flood disasters are quite common. The Secretary of Agriculture is authorized to designate counties as disaster areas to make emergency loans to producers suffering losses in those counties and in counties that are contiguous to a designated county (Town of Blooming Grove Multi-Jurisdictional Plan, 2013).

The Town of Blooming Grove Multi-Jurisdictional All-Hazard Mitigation Plan (2013) indicated several locations within the Moodna Creek Watershed which are most susceptible to flooding. This information relates to a significant rainfall event which occurred on April 15, 2007. Vulnerable locations which were identified within the vicinity of the Town include:

- Cromline Creek (Town of Blooming Grove – Closed at least half of Cherry Hill Road and a portion of Tuthill Road.
- Satterly Creek (Town of Blooming Grove and Village of South Blooming Grove) – Closed a portion of Peddler Hill Road and all of Stone Gate Drive (Village of South Blooming Grove) and Barnes Road (Town of Blooming Grove). An unnamed Tributary of Satterly Creek closed much of Prospect Road (Village of South Blooming Grove).
- Perry Creek (Town of Blooming Grove) – Closed an extensive portion of Mountain Lodge Road and all of Perry Creek Road.
- Unnamed Tributary of Youngs Brook (Town of Blooming Grove) – Flooded a significant portion of Quaker Hill Road
- Bridge crossing of Cromline Creek at Cherry Hill Road was closed for two (2) days as a result of flooding from 2007 event.
- State 94 and the bridge crossing the Tributary of Moodna Creek were inundated with flood water for one day
- Other roads which were reported closed were: Bisch Road, Main Street, Taylor Road, Otterkill Road, West Main Street, Patricia Lane, Beverly Lane, Peacock Circle, Cardinal Drive, Goodridge Road, Lee Road, State Route 208, Prospect Road, Old Windsor Road, Black Meadow Road, Kings Highway (Route 13), East Mombasha Road, Maybrook Road, Willow Lane, and Midway Road.

Table 10.2.2g indicates that approximately nine percent (9%) of the land in the Town is within high flood risk areas (Zones A, AE, AH, AO) and approximately one percent (1%) of the land in the Town is mapped as moderate flood risk areas (X500). The Town of Blooming Grove Multi-Jurisdictional All-Hazard Mitigation Plan (2013) indicated that there are approximately two

hundred eighty-one (281) people who live in 100- year floodplains within the Town of Blooming Grove, while four hundred thirteen (413) people live within 500- year flood plains. This plan also indicates that there are approximately one hundred seventy-one (171) parcels within the Town that are within 100-year floodplains and two hundred thirty (230) parcels which are within 500-year floodplains (Town of Blooming Grove, 2016).

Table 10.2.2g: Summary of Land Areas Within the Town of Blooming Grove in Flood Hazard Areas (Source: FEMA DFIRM Data, 2016)						
Municipality	Total Land Area (Acres)	High Flood Risk (Acres)	Moderate Flood Risk (Acres)	Low Flood Risk (Acres)	Land in High Flood Risk %	Land in Moderate Flood Risk %
		A, AE, AH, AO	X500	X	A, AE, AH, AO	X500
Town of Blooming Grove	21,051	1,854	277	18,919	9%	1%

Additional documentation provided by the Town of Blooming Grove in their 2013 Plan indicated that other areas which were prone to flooding were:

- Tappan Home Subdivision damage to homes, water/sewer plants, roads, drainage structures
- Mt. Lodge Park/Glenwood Community road and homes damage
- Mt. Lodge Road flooding
- Clove Road flooding
- Salisbury Mills area
- Hudson Drive
- Horton Road
- Museum Village Road
- Central Garage Flooding
- Salisbury Mills Fire Department Headquarters
- Mays Field Recreation Complex
- Bull Mine Road

The following table illustrates the value of property in the Town of Blooming Grove 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.

Type of Structure	# Structures in Hazard Area	Value of Structures (in millions)
Residential	346	\$103.8
Commercial	17	Unknown
Industrial	0	\$0
Agricultural	26	Unknown
Religious/Non-profit	0	\$0
Government	2	Unknown
Education	0	\$0
Utilities	0	\$0
Dams	7	Unknown
Parks	0	\$0
Total	398	\$103.8

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. The Town of Blooming Grove experiences the effect of severe winter storms frequently.

Historical Occurrences:

- Record Online reported of a major winter storm which impacted the County on February 13-14, 2014. This storm dropped over one (1) foot of snow and high winds to the Town of Blooming Grove. Power outages were reported within Orange and Rockland Counties.

Probability of Future Events:

Severe winter storms are common during from November thru March in the Town of Blooming Grove. Severe winter storms and associated hazards impact the entire state of New York on an annual basis. It is anticipated that severe winter storms will continue to occur, even with the predictions of increases in global temperatures. Community response and swift action is the key to reducing impacts and damages from these storm events.

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 were included in the 2013 Town of Blooming Grove Multi-Jurisdictional Hazard Mitigation Plan. Review of the Ice Jam Database, which is maintained by USACE Cold Regions Research and Engineering Laboratory (CRREL), states that there have been no ice jam events in the Town of Blooming Grove between 1857 and 2015 (CRREL, 2016). This hazard is not likely to occur in the Town of Blooming Grove; however, given the riverine resources within the Town it is worth noting as a possible source of flooding in the future. There is a potential for cascading effects as a result of ice jams including: flooding, dam failure, utility failure, structural collapse, and transportation accident.

Dam Failure

Dam failure is identified as dam structural deterioration, either gradual or sudden, that results in the inability to control impounded water as designed. This deterioration poses a danger to people and/or property in the potential inundation area. Dam failure can occur with little warning. Intense storms may produce a flood in a few hours or even minutes for upstream locations. Dams are man-made structures normally constructed of earth or concrete. There are nineteen (19) dams located within the Town of Blooming Grove planning area (includes Village of South Blooming Grove), of which ten (10) are small and do not constitute a serious threat to the downstream area if they were to fail. There are six (6) medium hazard dams and three (3) high hazard dams. Table 10.2.2i identifies medium and high hazard dams (C and B) within the Town of Blooming Grove and the Village of South Blooming Grove.

Dam Name	Municipality	River/Stream	Maximum Storage (Acre Foot)	Dam Height (Feet)	Hazard Classification (NYSDEC)	EAP on File
Beaver Dam/Lake Dam	Town of Blooming Grove	Tributary of Moodna Creek	2,644	35	C	No
Tomahawk Lake Dam	Town of Blooming Grove	Cromline Creek	3,359	25	C	Yes
Willow Brook Dam	Town of Blooming Grove	Tributary of Merriewold Lake	955	19	C	Yes
Schoonmaker Lake	Town of Blooming Grove	Perry Creek	16	16	B	No
Hildegard Lake Dam	Village of South Blooming Grove	Tributary of Moodna Creek	87	10	B	No
Merriewold Lake Dam	Village of South Blooming Grove	Satterly Creek	96	50	B	No
William Curtis Dam	Town of Blooming Grove	Perry Creek	10	15	B	No
Stuts Dam	Town of Blooming Grove	N/A	6.2	10	B	No

Dam Name	Municipality	River/Stream	Maximum Storage (Acre Foot)	Dam Height (Feet)	Hazard Classification (NYSDEC)	EAP on File
Salisbury Mills Dam	Town of Blooming Grove	Moodna Creek	1,470	29	B	No

Probability of Future Events:

Flooding is a severe and reoccurring problem throughout nearly all of New York. Furthermore, some believe that climate change has increased evaporation which leads to increased instability in the atmosphere, leading to more intense rainfalls. It is thought that climate change will lead to more frequent floods and/or more extreme floods. Overdevelopment (particularly within flood-prone areas), the loss of wetlands and riparian buffers, and climate change could well account for the occurrence of increased flooding. Given the history of flood events that have impacted all of Orange County, including the Town of Blooming Grove, it is apparent that future flooding of varying degrees will occur and people, property and infrastructure are at risk from the flood hazard. It is estimated that Orange County and all of its jurisdictions, will continue to experience flooding annually that may induce secondary hazards such as ground failure and water quality and supply concerns and experience evacuations, infrastructure deterioration and failure, utility failures, power outages, transportation delays/accidents/inconveniences and public health concerns. Ice jams do not commonly occur within the Town of Blooming Grove, it is not expected that many future ice jam floods will have significant impacts to the Town. There is also no reported history of dam failure within the Town of Blooming Grove; although there are three (3) high hazard and six (6) medium hazard dams in the vicinity of the Town of Blooming Grove. Cascading effects would be highly likely in the event of a dam failure. These additional effects may include flood, hazmat (fixed site), oil spill, structural collapse, utility failure, and water supply contamination. Safety systems associated with hazard code C and B dams would provide an early warning to individuals downstream of these dams, making them less of a risk.

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 (4) out of every five (5) wildfires, typically due to debris burns, arson, or carelessness. Lightning strikes are also a leading cause of wildfires (NYS DEC, 2016).

FEMA indicates that there are four (4) categories of wildfires that are experienced throughout the U.S. These categories are defined as follows:

- Wildland fires – fueled almost exclusively by natural vegetation. They typically occur in national forests and parks, where Federal agencies are responsible for fire management and suppression.

- Interface or intermix fires – urban/wildland fires in which vegetation and the built-environment provide fuel.
- Firestorms – events of such extreme intensity that effective suppression is virtually impossible. Firestorms occur during extreme weather and generally burn until conditions change or the available fuel is exhausted.
- Prescribed fires and prescribed natural burns – fires that are intentionally set or selected natural fires that are allowed to burn for beneficial purposes.

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. Wildfires are common in forests they help to cycle nutrients within forests as well as remove combustible debris. However, with human lives and structures mixed into the equation, wildfires need to be controlled and manipulated. This manipulation results in fewer wildfires which results in the accumulation of combustible materials, which can lead to larger more intense wildfires. The 2014 Annual Report for the NYSDEC Division of Forest Protection indicates that there were twenty-three (23) wildfires within Zone 3B which includes the Town of Blooming Grove. These wildfires burnt a total of two hundred thirty-nine (239) acres; none of these wildfires were over one hundred (100) acres in size. The 2013 Annual Report for the NYSDEC Division of Forest Protection indicates that there were eleven (11) wildfires in Zone 3B that year, two (2) of these wildfires were over one hundred (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 (7) wildfires in Zone 3B that year, one of these wildfires was over one hundred (100) acres in size, a total of 507.6 acres were burnt during wildfires during the 2012 wildfire season.

The Town of Blooming Grove Multi-Jurisdictional All-Hazard Mitigation Plan (2013) estimated that approximately two hundred nineteen (219) people lived within the WUI in the Town which represents approximately 2.5% of the Towns total population. A number of critical facilities are located in the wildfire hazard area. Table 10.2.2j, identifies Town of Blooming Grove facilities that are located within the WUI.

Table 10.2.2j: Facilities in the WUI for the Town of Blooming Grove			
Type of Facility	Name of Facility	Type of Facility	Name of Facility
WW	Glenwood STP	Potable	Oxford WD
WW	Tappan Sewer	Potable	Mt. View WD5
Electric	Orange and Rockland	Potable	Tappan Water
Potable	Prides Crossing Water Tank	Fire	Mt Lodge Park Fire Company
Potable	Tomahawk WD	Fire	Salisbury Mills Fire
Potable	Oxford WD	Police	Blooming Grove Police Department
School	Pound Hill Elementary	DPW	DPW Blooming Grove
Courthouse	Blooming Grove Town Court House	Municipal	Blooming Grove Town Hall

Probability of Future Events:

Due to changes in climate it is anticipated that summer temperatures will likely increase the annual window of high fire risk by 10% to 30%. This will in-turn increase the amount of areas impacted by wildfire. Additionally, models suggest that an increase in lightning activity may accompany increases in temperature. This could lead to more wildfires. If the climate does in fact warm as expected it will certainly amplify the effect of droughts, and thus increase wildfire occurrences (McKenzie, 2011). It is difficult to accurately predict the impacts of climate change on wildfire risk, but it is clear that as development increases within the WUI, potential for wildfire impacts to human structures and life will increase.

Severe Storms

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 (with associated severe wind events such as derechos, gustnadoes (ground based gust vortex), and downbursts). 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. The Town of Blooming Grove identified the severe storm hazard included hailstorms, windstorms, lightning, thunderstorms, tornadoes, and tropical cyclones. Additional details of these various severe storms can be found in Section 5.0 of this report.

Historical Occurrence:

Several sources provided historical information regarding previous occurrences and losses associated with severe storm systems throughout New York State and Orange County. For severe storm damages the National Climatic Data Center (NCDC) Storm Events Database was queried. When available storm related losses specific to the Town of Blooming Grove were included. Table 10.2.2k shows damages which are the result of severe thunderstorms that impacted the vicinity of Blooming Grove. In the past five (5) years, numerous severe storms have been recorded by NOAA Storm Events Database for the Town of Blooming Grove.

Table 10.2.2k: Severe Storm Events Town of Blooming Grove (2011-2016)					
Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses/ Impacts	Source(s)
June 9, 2011	Hail	N/A	N/A	A hail storm passing through region caused \$75,000 worth of damage in Orange County.	SHELDUS
February 19, 2011	High Wind	N/A	N/A	A period of high winds, peak wind gust recorded at 58 miles per hour, caused downed tree limbs resulting in approximately \$100,000 in damage in Orange County.	NCDC
July 29, 2011	Tornado	N/A	N/A	In Lower Hudson Valley, there was at least one super cell, which produced a tornado in Orange County. The NWS confirmed an EF-1 tornado that ran from the Towns of Goshen to Blooming Grove, on Friday July 29th. The tornado touched down in the Town of Goshen, before finally lifting near Prospect Road in the Town of Blooming Grove. All along its path, trees converged into a well-defined narrow path. The most significant property damage occurred in the neighboring Town of Goshen, where two houses directly across the street from one another were impacted: roof shingles were torn off, skylight windows were blown in with glass shattering, and debris was embedded all along the sides of the house. Total property damage from this event was approximately \$50,000.	NCDC
August 25, 2011	Hurricane	EM-3328 DR-4020	Yes	Hurricane Irene created high wind and flooding causing major damage to infrastructure, widespread debris, and a need to employ emergency protective measures. Approximately \$450 million was approved for disaster recovery in New York State.	FEMA
September 7, 2011	Severe Storm	DR-4031	Yes	Tropical Storm Lee created high wind and flooding causing major damage to infrastructure, widespread debris, and a need to employ emergency protective measures. Approximately \$126 million was approved for disaster recovery in New York State	FEMA
October 27, 2012	Hurricane	EM-3351 DR-4085	Yes	Hurricane Sandy brought high winds and rain which downed trees and power lines throughout the region. Wind gusts were measured up to 61 miles per hour in Orange County. In New York State, over \$133 million was received in Individual assistance and over \$816 million was received in public assistance.	FEMA, NCDC
January 13, 2013	High Wind	N/A	N/A	Winds up to 50 miles per hour and rainfall up to 1.5 inches were recorded by trained observers in Orange County	NWS

Table 10.2.2k: Severe Storm Events Town of Blooming Grove (2011-2016)					
Dates of Event	Event Type	FEMA Declaration Number	County Designated?	Losses/ Impacts	Source(s)
February 18, 2013	High Wind and Snow	N/A	N/A	Wind gusts up to 44 mph, and sustained winds of 33 mph were recorded.	NWS
April 19, 2013	Thunderstorm Wind	N/A	N/A	A line of isolated thunderstorms moved across Orange County, wind gusts up to 59 mph were reported in the Town of Slate Hill.	NCDC
November 1, 2013	High Wind	N/A	N/A	High winds occurred across Orange County as a result of a cold front. A gust of 59 mph was recorded at the Orange County Airport.	NCDC
June 3, 2014	Hail	N/A	N/A	An isolated severe storm impacted eastern Orange County. Quarter size hail was observed by a trained spotter in the Town of South Blooming Grove.	NCDC
July 2, 2014	Thunderstorm Wind	N/A	N/A	A line strong, with embedded severe thunderstorms formed along the trough and push through the area. A down tree caused the closure of Farmingdale Road. Wind gusts up to 59 mph were observed during this event.	NCDC
April 4, 2015	Strong Wind	N/A	N/A	A strong northwest wind occurred behind a cold front. Reported property damage within Orange County totaled approximately \$10,000.	NCDC

Drought

For a description of this hazard, please see section 5.5.

Historical Occurrences:

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

Extreme Temperatures

For description of this hazard, please see section 5.1.

Historical Occurrences:

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

Earthquake

Earthquakes can result in mass damage depending on severity; they also lack much forewarning. According to the USGS Seismic Hazard Map for Percent Peak Acceleration, the Town of Blooming Grove is shown as being at higher seismic risk than the majority of municipalities within New York State. The Ramapo Fault Zone spans one hundred eighty-five (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 Blooming Grove 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 Occurrences:

The most recent earthquake event occurred on April 20, 2003. Measuring 2.3 on the Richter scale, no major damages were reported. This event was a Federally-declared disaster for much of southern New York State. According to the NYSDHSES, New York State may expect to experience a damaging earthquake event once every twenty-two (22) years.

10.2.2.4 Capability Assessment

Planning and Regulatory Capability

Table 10.2.2l: Planning and Regulatory Capabilities for the Town of Blooming Grove		
Regulatory Tools for Hazard Mitigation	Description	Responsible Department / Agency
Codes	Town of Blooming Grove- Local Law, Building Code , includes zoning, subdivision ordinance, floodplain, and natural hazard specific ordinances.	Building inspector, Zoning Board, Planning Board
	Codes of New York State , includes provisions for development and activities within floodplain areas	NYS Laws
Ordinances	Zoning Ordinance Subdivision Ordinance NFIP Flood Damage Prevention Ordinance	Zoning Board Clerk Planning Board Clerk Town Engineer
Plans, Manuals, and / or Guidelines	Floodplain Management/ Basin Plan , a public consensus planning document	Town Engineer
	Comprehensive Plan/ Master Plan/ General Plan , a public consensus planning document	Town Planning Board
	Open Space Plan	Town Planning Board
	Comprehensive Emergency Management Plan	Town Planning Board
	Emergency Response Plan	
Studies	FIRM Flood Insurance Rate Maps	FEMA

Administrative and Technical

This section provide a summary of available technical and administrative resources in place within the Town of Blooming Grove which can be used in pre-disaster planning and mitigation as well as mobilized in the event of a disaster. Table 10.2.2m describes the current capabilities of the Town of Blooming Grove.

Table 10.2.2m: Administrative and Technical Capabilities		
Available Staff/Personnel Resources	<input checked="" type="checkbox"/>	Department/ Agency/ Position
Planner(s) or engineer(s) with knowledge of land development and land management practices	<input checked="" type="checkbox"/>	McGoey, Hauser & Edsall Engineering, Jim Farr P.E.
Engineer(s) or professional(s) trained in construction practices related to buildings and / or infrastructure	<input checked="" type="checkbox"/>	McGoey, Hauser & Edsall Engineering, Jim Farr P.E.
Planner(s) or engineer(s) with and understanding of natural and/or human-caused hazards	<input checked="" type="checkbox"/>	McGoey, Hauser & Edsall Engineering, Jim Farr P.E.
NFIP Floodplain Manager	<input checked="" type="checkbox"/>	McGoey, Hauser & Edsall Engineering, Jim Farr P.E.
Emergency Management	<input checked="" type="checkbox"/>	Town Supervisor, Municipal Consultant Engineer
Person skilled or trained in "GIS" applications	<input checked="" type="checkbox"/>	As needed from Orange County GIS

Table 10.2.2m: Administrative and Technical Capabilities		
Available Staff/Personnel Resources	<input checked="" type="checkbox"/>	Department/ Agency/ Position
Surveyors	<input checked="" type="checkbox"/>	Municipal Consultant Engineer
Scientist familiar with natural hazards	-	N/A
Staff with expertise or training in benefit/cost analysis	<input checked="" type="checkbox"/>	McGoey, Hauser & Edsall Engineering, Jim Farr P.E.
Grant writer	<input checked="" type="checkbox"/>	Hired as needed

Fiscal

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

Table 10.2.2n: Fiscal Capabilities for the Town of Blooming Grove		
Financial Resources	Accessible or Eligible to Use (Yes, No, Don't Know)	Comments
Community Development Block Grants (CDBG)	Yes	
Capital Improvements Project funding	Yes	Town Board
Authority to levy taxes for specific purposes	Yes	Town Board
Fees for water, sewer, gas, or electric service	Yes	Town Board
Impact fees for homebuyers or new developments / homes	Yes	Parkland set-aside development fee
Incur debt through general obligation bonds	Yes	Town Board
Incur debt through special tax bonds	Yes	Town Board
Withhold public expenditures in hazard-prone areas	No	
State mitigation grant programs	Yes	Town Board
Other	No	

Community Classifications

The Town of Blooming Grove does not participate in various community classifications such as: Community Rating System (CRS), Building Code Effectiveness Grading Schedule (BCEGS), Public Protection, Storm Ready, Firewise. These classifications gauge the municipality’s capabilities in all phases of emergency management (preparedness, response, recovery and mitigation). Classifications range on a scale of 1 to 10 with class one being the best possible classification, and class 10 representing no classification benefit. The Town of Blooming Grove utilizes Blackboard Connect, an online application to alert its residents of emergency situations which may arise within the community.

NFIP: Administrator, Vulnerability, Resources, Compliance

The Town of Blooming Grove has participated in NFIP (ID# 360608) since June 7, 1974. Administration is provided through the Town Board. The Town has a floodplain development

permit which is administered by a Town of Blooming Grove Floodplain Manager/Building Official. This individual is responsible for reviewing Floodplain Development Permit Applications, granting permits, maintaining construction compliance, and reviewing post construction impacts.

Hazard Mitigation: Existing and Planning Mechanisms

Emergency Communications, Routes and Shelters:

The Town of Blooming Grove utilizes Blackboard Connect for alerting its residents and visitors. Residents can register their email address and/or cell phone number to receive alerts issued by the Town. The Town follows emergency route rules set by Orange County. The Town has two emergency shelter locations: Taft Elementary School and Round Hill Elementary School. More information on these sites can be found in Attachment III.

Comprehensive Plan:

The Town’s Comprehensive/Master Plan was last updated in 2005. The Hazard Mitigation Plan will be incorporated in the next update. The Town’s planning board considers potential hazards during their review of projects, particularly in regards to stormwater control. The Town is NYSDEC regulated MS-4 stormwater entity (2013 Town of Blooming Grove Hazard Mitigation Plan).

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 10.2.2o: Incorporation of Hazard Mitigation Planning into Existing and Future Planning Mechanisms		
Planning Mechanism	Has been Utilized	May be Utilized
Capital Improvement Budget: 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	X
Operating Budget: Hazard Mitigation Actions to be considered within day-to-day operating budgets as funding permits.	X	X
Building & Zoning Ordinances: 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	X
Comprehensive Land Use Plan: 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	X

Table 10.2.2o: Incorporation of Hazard Mitigation Planning into Existing and Future Planning Mechanisms		
Planning Mechanism	Has been Utilized	May be Utilized
Human Resource Manual: Employee job descriptions may contain elements related to hazard mitigation planning and associated recommendations.		X
Grant Applications: Support for funding requests in the form of data, maps, and priority recommendations will be drawn from the hazard mitigation plan.	X	X
Fire Plan: Fire Plans for the municipality and local fire departments can utilize data and mapping in the hazard mitigation plan.	X	X
Local School Service Projects: 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
Economic Development: 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.

10.2.2.5 Mitigation Strategy and Prioritization

Past, Completed, and Ongoing Initiatives

During the planning effort for the 2013 Town of Blooming Grove Multi-Jurisdictional Hazard Mitigation Plan officials from the Town noted the following mitigation actions which have been initiated and/or completed in the past:

- The Moodna Creek Council addressed installation and maintenance of gauges and automatic level sensing devices on streams and lakes to provide for early warning of potential flooding.
- The Town is collecting an inventory of ownership and management of dams.
- Local laws are being drafted to adopt regulations for undergrounding utilities in new developments.
- The Town and Village have local laws and enforcement to maintain compliance with and good-standing in the NFIP.
- The Highway Department and Department of Public Works have implemented procedures to prevent trees from threatening lives and impacting power availability.
- The Town has mutual aid agreements setup with neighboring communities for continuity of operations.

- The Town Board implemented permit fee waivers for installation of backup power for private property.
- Elevation certificates were obtained.
- Adopted updated Emergency Management Plans in October 2017.
- Emergency Action Plans in place for Merriewold Dam, Willowbrook Dam, Tomahawk Dam. New York Rising and Governor's Office of Storm Recovery (GOSR) completed modeling of all dams and streams.
- The Planning Board and Building Department incorporate and enforce ordinances and/or zoning restrictions to control and mitigate future development in hazard areas.
- The Town has a procedure to capture and archive loss data from events.
- The Town Engineer and the Town Planner are the Floodplain Administrators for the Town.
- The Town Engineering Group work with regional agencies to help develop damage assessment capabilities at the local level.
- New York State Department of Environmental Conservation (NYSDEC) regulates privately owned dams throughout the Town.
- NYSDEC works with the Town to regulate private property stream maintenance throughout the Town.
- The Town Engineers identify and develop agreements with entities that can provide support with FEMA/NYS DHSES paperwork after disasters.
- NY Rising and GOSR relocated the Town Maintenance Garage.
- The Town attempted to purchase or elevate private residence on Barnes Road in the Tappan Subdivision but the property owners refused.
- NY Rising and GOSR relocated and evaluated structures located in hazard prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss property as priority. These structures were principally located in the extreme flood risk areas along the Moodna Creek, Cromline Creek, and Satterly Creek.
- NY Rising and GOSR installed one-way valves in the floor drain pipes at the Salisbury Mills Fire Department headquarters to prevent stormwater from backing up inside the firehouse through the drains and flooding the building.
- NY Rising and GOSR raised the existing stand-by generator at the Salisbury Mills Firehouse to a height that would prevent it from being submersed in water in a flooding situation.
- NY Rising and GOSR developed a plan for flood-proofing the Salisbury Mills Firehouse.

- NY Rising and GOSR created a committee comprised of residents, homeowner association, and municipal representatives to address stormwater problems in the Mountain Lodge area.
- NY Rising and GOSR worked with the Department of Public Works to compile and/or update the existing list of MS4 ID illicit stormwater discharges within the Town of Blooming Grove and Village of Washingtonville. The Moodna Creek Watershed Council is continuing the list.
- NY Rising and GOSR enhanced the community resilience to severe storms by joining the NOAA “Storm Ready” program and supporting communities in joining the program.
- NY Rising, GOSR, and the Highway Department have previously, and are currently, making drainage improvements on town roads identified as “Vulnerable” by Town officials.
- NY Rising and GOSR participated in an oversight committee to address stormwater storage in the Moodna Creek.
- The Highway Department has previously, and is currently, making drainage improvements in Mt. Lodge Park.
- Salisbury and South Blooming Grove fire districts, with the help of the Highway Department, developed man made fire breaks that act as barriers to slow or stop the progress of wildfires on Schunemunk Mountain.
- Contractors for the Town and FEMA replaced Lake Road and Glenwood Road bridges.
- NY Rising and GOSR looked into installing a levee along Mays Field Recreational Complex but the project was deemed not to be viable.
- The Village of Washingtonville fastened propane tanks on Hallock Drive to ensure they are secure during flood events.
- The Town improved the communication systems by implementing an e-mail and texting notification system.

None of the other proposed actions from the last local hazard mitigation plan have been completed and are thus included in this plan as re-issued proposed mitigation actions.

Proposed Initiatives

Table 10.2.2p identifies the mitigation measures which the Town of Blooming Grove selected to concentrate on, these measures will help to mitigate future hazard events in the community. Some of the identified mitigation initiatives in the following table are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities.

Table 10.2.2p: Proposed Hazard Mitigation Initiatives for the Town of Blooming Grove											
Initiative	Mitigation Initiative	Applies to New and/or Existing Structures	Hazard(s) Mitigated	Goals and Objectives Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
Mitigation Type: Prevention											
TBG-1	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 9.5 and Table 10.2.2o.	New and Existing	All Hazards	1-3 1-6 1-7	Town Board and Supervisor with support from Planning Partners, County Planning, NYSDHSES, FEMA	High	High	Municipal Budget, FEMA planning grants	On-going	H	PR
Mitigation Type: Public Education and Awareness											
TBG-2	Conduct and facilitate community and public education and outreach for residents & businesses to include, but not be limited to, the following to promote and effect natural hazard risk reduction: - Backup power - Owners of important water resources facilities - Educate property owners in stream maintenance. - Distribute informational letters to flood vulnerable property owners, explaining the availability of mitigation grant funding to mitigate their properties, and instructing them on how they can learn more and implement mitigation. - Use email notification systems and newsletters to better educate the public on flood insurance, the availability of mitigation grant funding, and personal natural hazard risk reduction measures. - Outreach should target landowners whose property includes an important water resource, such as a stream or riparian area, large or otherwise significant wetland, a lake or pond, groundwater recharge area, or public wellhead protection area	N/A	All Hazards	2-2 2-3 2-4 2-5	Town Board and Supervisor with support from Planning Partners, County Planning, NYSDHSES, FEMA	Medium	Medium	Municipal Budget, HMA programs with local or county match	Short Term	M	PE

Table 10.2.2p: Proposed Hazard Mitigation Initiatives for the Town of Blooming Grove											
Initiative	Mitigation Initiative	Applies to New and/or Existing Structures	Hazard(s) Mitigated	Goals and Objectives Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
Mitigation Type: Natural Resources Protection											
TBG-3	Widening Satterly Creek. The Town and Villages are participating in an oversight committee to address stormwater storage in the Moodna and widening of the Satterly Creek. At present there are ongoing discussions with the Moodna Creek Watershed Intermunicipal Council science and data committee regarding potential locations for storage.	Both	Flood	1-1 4-2	Town Board and Supervisor with support from County Planning, NYSDEC, NYSDHSES	High	Medium	Municipality with support from County Planning, NYSDEC, NYSDHSES	Long Term DOF	H	NR
Mitigation Type: Emergency Services											
TBG-4	In consultation with NYDEC, consider debris removal from Moodna Creek including identification of the location of, and potential removal of, beaver dams in the creek.	N/A	Flooding	1-1 4-2	Town of Blooming Grove with the Village of Washingtonville (via Municipal Engineer / NFIP Floodplain Administrator)	Medium	Medium	Municipal Budget	Short DOF	M	NR
TBG-5	Obtain and install backup power sources at critical facilities, including backup generators for water district facilities. The Town has procured a back-up generator for Water District #2, and is currently bonding for funds for back-up generator for Oxford Water District. Also support the funding acquisition of an emergency mobile generator for the Mountain Lodge Park community.	Existing	All Hazards	1-1 3-3 3-5	Town Board and Supervisor with support from County, NYSDHSES and FEMA	Medium	Medium	Municipal Budget, NYS Grants	Short Term DOF	M	ES

Table 10.2.2p: Proposed Hazard Mitigation Initiatives for the Town of Blooming Grove											
Initiative	Mitigation Initiative	Applies to New and/or Existing Structures	Hazard(s) Mitigated	Goals and Objectives Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
TBG-6	Purchase of a "Utility Task Vehicle" or "UTV". This is a four wheel drive vehicle used for traversing mountain trails and areas of rough terrain that normal emergency vehicles cannot travel. The UTV seats two riders and has a truck like bed for hauling rescue, police calls, and firefighting materials and can also adapt to carry a victim out of a remote location in the rear bed. This will assist in firefighting, police, and rescue efforts within the mountainous terrain within our areas of service.	N/A	All Hazards	3-2 3-3 3-6	Blooming Grove Police, Blooming Grove Ambulance, and Blooming Grove Fire Districts.	Medium	Medium	FEMA Grants with local cost share	Short Term DOF	M	ES

Prioritization of Mitigation Actions

Section 201.6 of 44 CFR requires an action plan describing how the actions identified will be prioritized. The Town of Blooming Grove Planning Committee, along with their contract consultant has developed a prioritization methodology. Table 10.2.2q prioritizes mitigation actions into three (3) categories high, medium and low priority.

Table 10.2.2q: Prioritization of Mitigation							
Initiative #	# of Objectives Met	Benefits	Costs	Do benefits equal or exceed costs? (Yes or No)	Is project Grant eligible? (Yes or No)	Can project be funded under existing programs/budgets? (Yes or No)	Priority (High, Med., Low)
Mitigation Type: Prevention							
TBG-1	3	H	L	Y	N	Y	H
Mitigation Type: Public Education and Awareness							
TBG-2	4	M	M	Y	Y	Y	M
Mitigation Type: Natural Resources Protection							
TBG-3	2	H	M	Y	Y	-	H
Mitigation Type: Emergency Services							
TBG-4	2	H	M	Y	N	-	H
TBG-5	3	M	M	Y	Y	N	M
TBG-6	3	M	M	Y	Y	N	M

STAPLEE forms were completed for each of these actions. A table with these evaluations can be found in Attachment II of this jurisdictional annex.

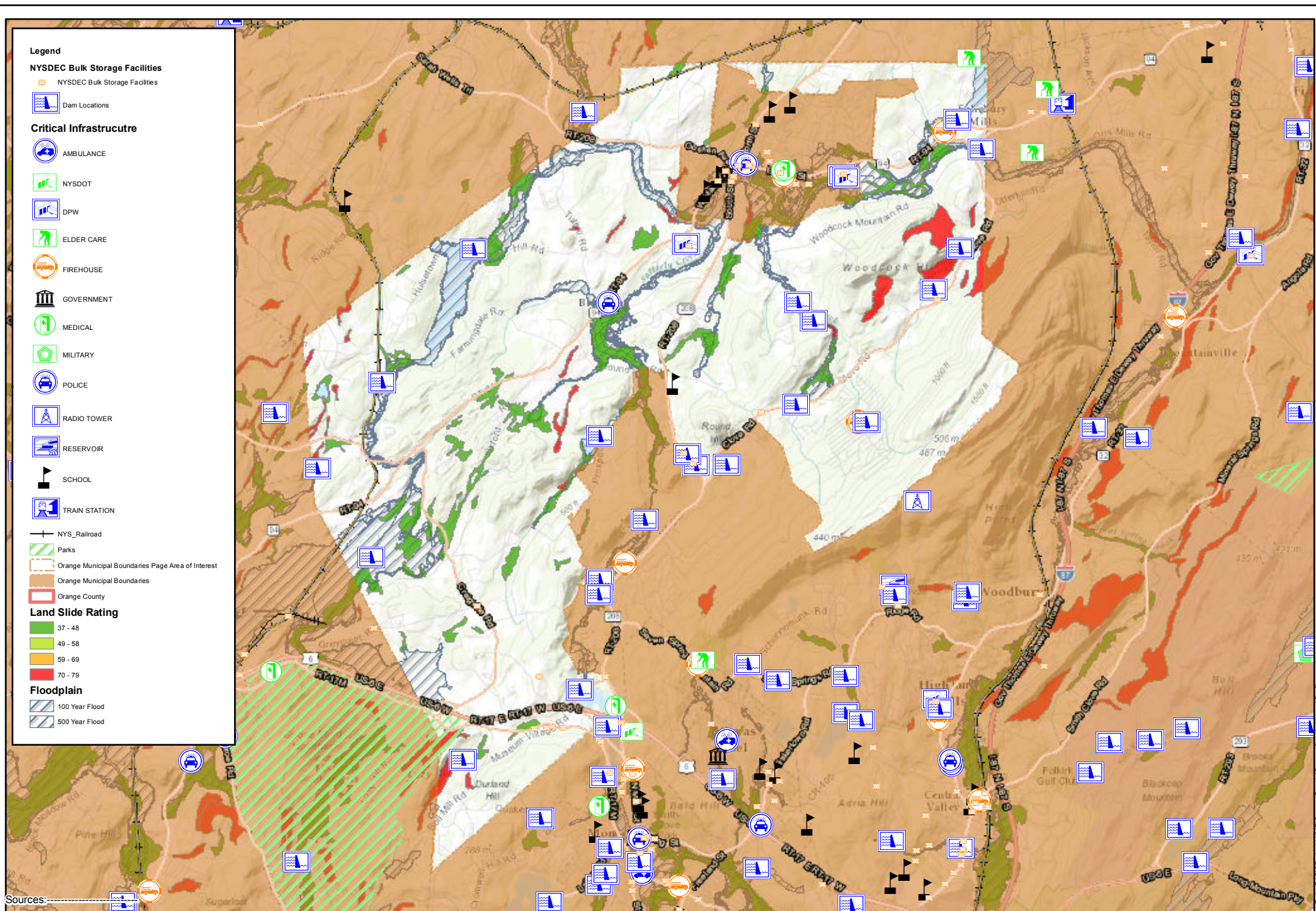
“STAPLEE” refers to the following lenses of evaluation: social, technological, administrative, political, legal, economic, and environmental.

10.2.2.6 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 Blooming Grove**



Legend

NYSDEC Bulk Storage Facilities

- NYSDEC Bulk Storage Facilities

Dam Locations

- Dam Locations

Critical Infrastructure

- AMBULANCE
- NYS DOT
- DPW
- ELDER CARE
- FIREHOUSE
- GOVERNMENT
- MEDICAL
- MILITARY
- POLICE
- RADIO TOWER
- RESERVOIR
- SCHOOL
- TRAIN STATION

Other Symbols

- NYS Railroad
- Parks
- Orange Municipal Boundaries Page Area of Interest
- Orange Municipal Boundaries
- Orange County

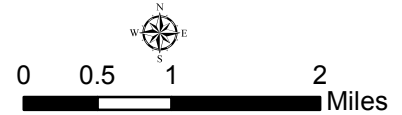
Land Slide Rating

- 37 - 48
- 49 - 58
- 59 - 69
- 70 - 79

Floodplain

- 100 Year Flood
- 500 Year Flood

Sources:



Orange County Hazard Mitigation Plan
Town of Blooming Grove
 3/14/2016
 New York

Figure
 Project No. 1724.002

Path: C:\ES\Projects\Map\Orange County\Orange County Hazard Forces.mxd

Attachment II

STAPLEE Mitigation Action Cost/Benefit Analysis - Town of Blooming Grove

STAPLEE Criteria Consideration Tables
Mitigation Action Prioritization and Comparison

Jurisdiction: Town of Blooming Grove

Action ID	Action	S	T	A	P	L	E	E	Can action be easily implemented?	Does action achieve multiple plan objectives?	Can action be quickly implemented?	Level of action benefits	Level of action overall costs	Priority ranking
		+ = benefit (favorable), - = cost (unfavorable), 0 = neutral or N/A											Levels = high, medium, or low	
TBG-1	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 9.5 and Table 10.2.2o.	+	+	0	+	+	+	0	+	+	0	Medium	Low	High
TBG-2	Conduct and facilitate community and public education and outreach for residents & businesses to include, but not be limited to, the following to: - Backup power - Owners of important water resources facilities - Educate property owners in stream maintenance. - Distribute informational letters to flood vulnerable property owners, explaining the availability of mitigation grant funding to mitigate their properties, and instructing them on how they can learn more and implement mitigation. - Use email notification systems and newsletters to better educate the public on flood insurance, the availability of mitigation grant funding, and personal natural hazard risk reduction measures. - Outreach should target landowners whose property includes an important water resource, such as a stream or riparian area, large or otherwise significant wetland, a lake or pond, groundwater recharge area, or public wellhead protection area	-	+	+	0	+	0	0	+	+	+	Medium	Medium (Staff Time)	Medium
TBG-3	Widening Satterly Creek. The Town and Villages are participating in an oversight committee to address Stormwater storage in the Moodna and widening of the Satterly Creek. At present there are ongoing discussions with the Moodna Creek Watershed Intermunicipal Council science and data committee regarding potential locations for storage.	-	0	0	-	0	-	+	0	0	0	Medium	High	High
TBG-4	In consultation with NYDEC, consider debris removal from Moodna Creek including identification of the location of, and potential removal of, beaver dams in the creek.	+	+	+	+	+	+	-	+	+	+	Medium	Low	Medium
TBG-5	Identify and install backup power sources at critical facilities, including backup generators for water district facilities. The Town has procured a back-up generator for Water District #2, and is currently bonding for funds for back-up generator for Oxford Water District. Also support the funding acquisition of an emergency mobile generator for the Mountain Lodge Park community.	+	+	-	+	+	-	0	-	+	-	High	Medium	Medium

STAPLEE Criteria Consideration Tables
Mitigation Action Prioritization and Comparison

Jurisdiction: Town of Blooming Grove

Action ID	Action	S	T	A	P	L	E	E	Can action be easily implemented?	Does action achieve multiple plan objectives?	Can action be quickly implemented?	Level of action benefits	Level of action overall costs	Priority ranking
		+ = benefit (favorable), - = cost (unfavorable), 0 = neutral or N/A											Levels = high, medium, or low	
TBG-6	Purchase of a "Utility Task Vehicle" or "UTV". This is a four wheel drive vehicle used for traversing mountain trails and areas of rough terrain that normal emergency vehicles cannot travel. The UTV seats two riders and has a truck like bed for hauling rescue, police calls, and fire-fighting materials and can also adapt to carry a victim out of a remote location in the rear bed. This will assist in firefighting, police, and rescue efforts within the mountainous terrain within our areas of service.	+	+	+	+	0	+	0	+	+	+	Medium	Low	Medium

Attachment III

**Hazard Mitigation Worksheets -
Town of Blooming Grove**

Mitigation Actions and Strategy Detail Worksheet

Action Worksheet	
Name of Jurisdiction	Town of Blooming Grove
Name of Hazard Mitigation Plan	Prevention
Potential Actions/Projects (not being implemented at this time)	
Action/Project Number	TBG-1
Name of Action/Project	Mitigation Prevention
Summary of Evaluation: Benefits (losses avoided), estimated costs, and other factors considered	All Hazards, Town wide Benefit, Cost Low – High (for 5 year update)
Plan for Implementation	
Responsible Organization	Town with support from Planning Partners, County Planning, NYSOEM, FEMA
Action/Project Priority	High
Potential Funding Sources	Municipal Budget, FEMA, planning grants
Other assisting organizations, entities, etc.	Planning Partners, County Planning, NYSOEM, FEMA
Local planning mechanisms to be used in project/action implementation, if any	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0
Progress Report	
Date of status report	04/13/2018
Report of progress	Continue to work with NY Rising / GOSR and Moodna Watershed Council
Evaluation of effectiveness	Have been successful in identifying projects and prepare for BIDS

Mitigation Actions and Strategy Detail Worksheet

Action Worksheet	
Name of Jurisdiction	Town of Blooming Grove
Name of Hazard Mitigation Plan	Natural Resources Protection
Potential Actions/Projects (not being implemented at this time)	
Action/Project Number	TBG-3
Name of Action/Project	Satterly / Moodna Creek Restoration
Summary of Evaluation: Benefits (losses avoided), estimated costs, and other factors considered	All Hazards, Town wide Benefit, Cost Medium, NYS DEC Permits, inter-municipal work
Plan for Implementation	
Responsible Organization	Town and Villages, Moodna Creek Watershed Inter-municipal council
Action/Project Priority	High
Potential Funding Sources	Municipal Budget, HMA programs with local or county match
Other assisting organizations, entities, etc.	Villages, Moodna Creek Watershed Inter-municipal council, NYS DEC
Local planning mechanisms to be used in project/action implementation, if any	Town & Villages are participating in a council to address Stormwater storage and widening of the Satterly /Moodna Creek. At present there are ongoing discussions with the Moodna Creek Watershed Intermunicipal council regarding locations of storage.
Progress Report	
Date of status report	04/13/2018
Report of progress	Continue to work with NY Rising / GOSR and Moodna Watershed Council
Evaluation of effectiveness	Have been successful in identifying projects and prepare for BIDS

Orange County
Multi-Jurisdictional All Natural Hazard Mitigation Plan
Emergency Shelter Questionnaire

Name of Your Municipality:	<u>Town of Blooming Grove</u>
Common Name of Your Emergency Shelter:	<u>Taft Elementary School or Round Hill Elementary School</u>
Street Address of Your Emergency Shelter:	<u>10 Toleman Road, Washingtonville, NY 10992</u> <u>205 Route 208, Washingtonville, NY 10992</u>
Name of the Owner of Your Emergency Shelter:	<u>Washingtonville Central School District</u>
Name of the Regular Occupant of Your Emergency Shelter:	<u>Washingtonville Central School District</u>

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 Blooming Grove, 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 Blooming Grove, 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 Blooming Grove, 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)