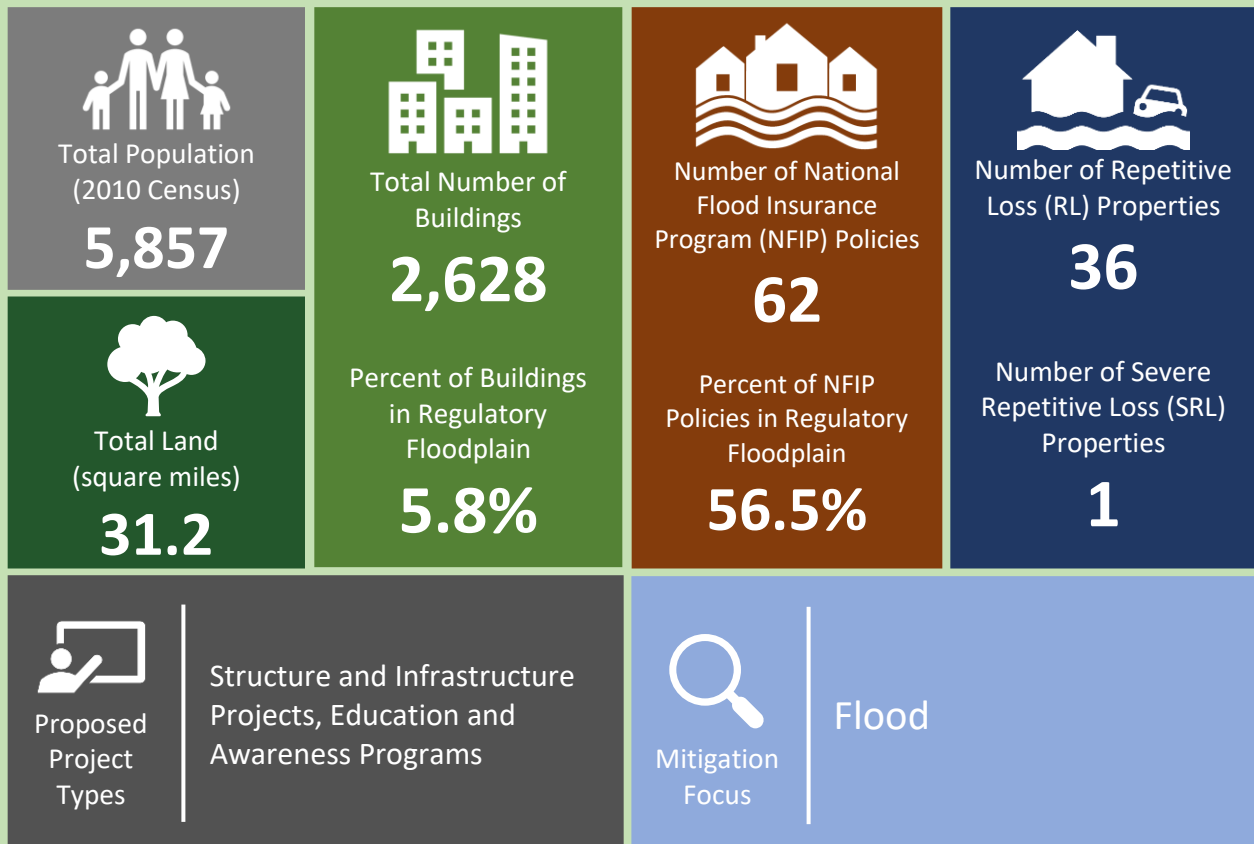
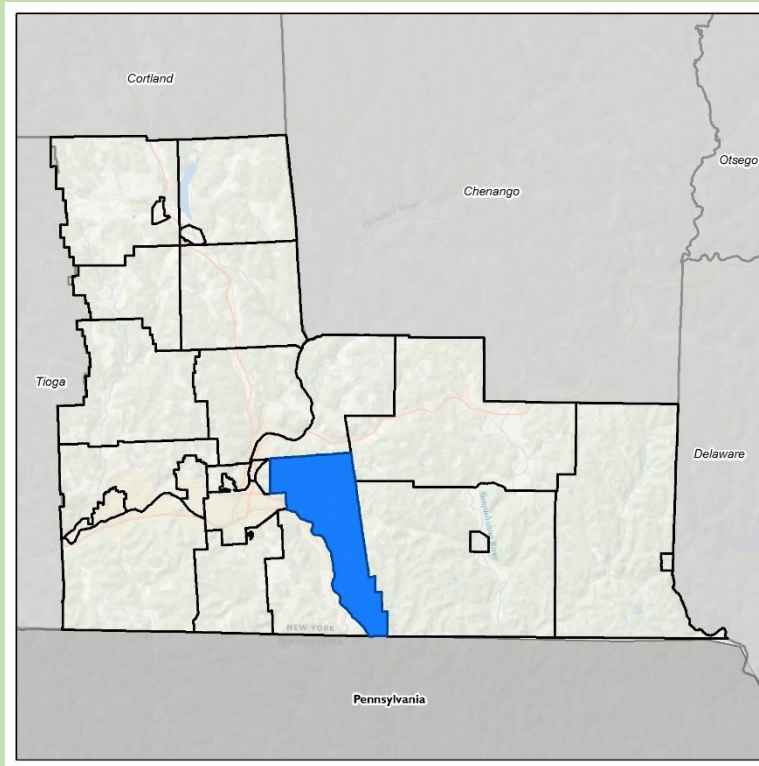




MUNICIPAL ANNEX | Town of Kirkwood





9.13 Town of Kirkwood

This section presents the jurisdictional annex for the Town of Kirkwood. It includes resources and information to assist public and private sectors to reduce losses from future hazard events. This annex is not guidance of what to do when a disaster occurs. Rather, this annex concentrates on actions that can be implemented prior to a disaster in order to reduce or eliminate damage to property and people. This annex includes a general overview of the municipality and who in the Town participated in the planning process; an assessment of the Town of Kirkwood’s risk and vulnerability; the different capabilities utilized in the Town of Kirkwood; and an action plan that will be implemented to achieve a more resilient community.

9.13.1 Hazard Mitigation Planning Team

The following individuals have been identified as the Town of Kirkwood’s hazard mitigation plan primary and alternate points of contact.

Primary Point of Contact	Alternate Point of Contact
Name: Chad Moran Title: Building and Code Inspector Phone Number: 607-775-4313 Address: 70 Crescent Drive Kirkwood, NY 13795 Email: chad@townofkirkwood.org	Name: John Mastronardi, P.E. Title: Town Engineer Phone Number: 607-724-2400 Address: 13 S. Washington Street Binghamton, NY 13903 Email: jmastronardi@griffithsengineering.com
NFIP Floodplain Administrator	
Name: Chad Moran Title: Building and Code Inspector Phone Number: 607-775-4313 Address: 70 Crescent Drive Kirkwood, NY 13795 Email: chad@townofkirkwood.org	

9.13.2 Municipal Profile

The Town of Kirkwood is located in the south-central part of Broome County, NY. The Town of Kirkwood has a total area of 31.2 square miles. The Town is located in the south-central part of Broome County, NY. The south town line is the state line of Pennsylvania’s Susquehanna County and is southeast of Binghamton, NY. The Susquehanna River forms the western border and New York State Route 17 passes across the northern part of the Town. The Town of Kirkwood includes the hamlets of Riverside, Kirkwood Village, Langdon, Kirkwood Centre, and Brookvale. The 2016 estimated population was 5,735, a 2.1% decrease from the 2010 Census (5,857).

Home rule is strong in New York State and thus, each town and village has its own governing body. The Town of Kirkwood is governed by a Supervisor and Town Council.

Data from the 2016 U.S. Census American Community Survey estimates that 6.7% of the town population is five years of age or younger, and 19.3% is 65 years of age or older.

History and Cultural Resources

Town of Kirkwood was formed in 1859 but early settlers began to arrive and settled along the river in the late 1700s. The town was formed when the Town of Conklin was split, with Conklin on the south side of the Susquehanna River and Kirkwood to the north. The town was named after James P. Kirkwood, a town engineer responsible for constructing the local railroad.





In 2006 and 2011, parts of the town were damaged when the Susquehanna River overflowed its banks.

Growth/Development Trends

Table 9.13-1 summarizes major residential/commercial development that as of August 2018 and any known or anticipated major residential/commercial development and major infrastructure development that is likely to be occur within the municipality in the next five years. Refer to the map in 9.13.8 of this annex which illustrates the hazard areas along with the location of potential new development.

Table 9.13-1. Growth and Development

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (address and/or Parcel ID)	Known Hazard Zone(s)	Description/Status of Development
Recent Development from 2013 to present					
Nealon Transportation	Commercial	1	5 Pine Camp TM# 162.01-1-18	1% and 0.2% floodplain	New Business/ Building
Lange	Residential	1	22 Ruth Street TM# 163.03-1-33.12	None	2 Story Home w/ Walkout Basement
Brown	Residential	1	694 Colesville Rd TM# 147.01-2-23	None	New Home and Pole Barn
Padbury	Residential	1	34 Woodhill Ct. TM# 146.17-2-38	None	Modular Home w/ Garage and Breezeway
Webb	Residential	1	31 Haskins Rd 162.12-1-5	None	New Home. One Family
Russell	Residential	1	57 Victoria Dr. TM# 146.03-2-23	None	New Home
Sharp	Residential	1	285 Fox Hollow TM# 130.02-1-45.2	None	1749 sq. ft. One Family Dwelling
Vaseleck	Residential	1	36 Service Road TM# 162.02-2-39	None	One Family Dwelling
Shumaker	Residential	1	100 Johnson Road TM# 179.01-2-6.1	None	2000 sq. ft. One Family Dwelling
Acquisto	Residential	1	91 Hiner Road TM# 145.02-1-71	None	One Family Dwelling, 3,550 sq. ft.
Bump	Residential	1	30 Ruth Street TM# 163.03-1-33.2	None	28'x32' Dwelling
Baker	Residential	1	1347 NY Rt. 11 TM# 179.03-4-44.1	None	Install 28'x32' Modular Home
Gorman	Residential	1	160 Gorman Road TM# 211.00-1-32.2A	None	Single Family Residence
Lake	Residential	1	282 Ostrum Road TM#163.03-2-28	None	Storage Building
Rogers	Residential	1	1323 NY Rt. 11 TM# 179.03-4-30	None	Construct New Home
Known or Anticipated Development in the Next Five (5) Years					
None Anticipated					

* Only location-specific hazard zones or vulnerabilities identified.





9.13.3 Hazard Event History Specific to the Town of Kirkwood

Broome County has a history of natural events as detailed in Volume I, Section 5.0 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events that have affected the County and its municipalities. The Town of Kirkwood’s history of federally-declared (as presented by FEMA) and significant hazard events (as presented in NOAA-NCEI) is consistent with that of Broome County. Table 9.13-2 provides details regarding municipal-specific loss and damages the Town experienced during hazard events. Information provided in the table below is based on reference material or local sources. For details of these and additional events, refer to Volume I, Section 5.0 of this plan.

Table 9.13-2. Hazard Event History

Dates of Event	Event Type (Disaster Declaration if applicable)	Broome County Designated?	Summary of Event	Municipal Summary of Damages and Losses
October 27- November 8, 2012	Hurricane Sandy (EM-3351)	Yes	The remnants of Hurricane Sandy moved over the area bringing high winds and precipitation	While the County was impacted, the Town did not report damages.
June 26-July 10, 2013	Severe Storms and Flooding (DR-4219)	Yes	The County was impacted by a series of severe storms and flash flood events.	The Town suffered \$18,106.09 in costs due to the flooding of roads and pipe washouts.
June 14, 2015	Flash Flood	No	A warm front stalled across New York and northern Pennsylvania, providing the focus for repeating clusters of thunderstorms in the Finger Lakes and Southern Tier NY regions. A tropical-like airmass was in place allowing for a stripe of 2-4 inches of very heavy rain to fall in a narrow band extending from near Watkins Glen to areas north of Binghamton. Severe flash flooding was encountered with numerous roads and culverts destroyed by raging water.	While the County was impacted, the Town did not report damages.
March 14-15, 2015	Severe Winter Storm and Snowstorm (DR-4322)	Yes	A record snowfall of between 25 and 35 inches of snow fell. Snowfall rates reached up to 5 inches per hour especially during the onset of the storm. The Greater Binghamton Airport broke an all-time daily snowfall record with 32.4 inches and a 2-day snowfall record of 34.9 inches.	The Town suffered \$60,738.55 in costs as a result of Storm Stella which included the cost to run additional equipment, pay employee overtime, additional fuel, sand and salt. Funds were also needed to cover the cost of a fire hydrant that was damaged
July 23-24, 2017	Flash Flood	No	Heavy rain producing thunderstorms developed during the late afternoon and evening hours as an upper level jet stream punched into the area. Widespread thunderstorms produced swaths of 3 to 4 inches of rain in just a few hours’ time during the late evening and overnight hours. Rapid rises of area streams and creeks resulted in severe flash flooding.	The Town’s Highway Garage suffered minor flash flooding during this event. The Highway Garage had several inches of flood water which destroyed some equipment and required clean-up costs. The flood insurance claim was for \$38,154.47



Dates of Event	Event Type (Disaster Declaration if applicable)	Broome County Designated?	Summary of Event	Municipal Summary of Damages and Losses
August 2018	Severe Storms and Flooding (DR-4397)	Yes	A slow-moving storm tracked north from New Jersey to northern New York. This system triggered several rounds of heavy rain producing thunderstorms which caused severe flash flooding and major damages in several locations.	Most homes had water in the homes; about 10 were severely damaged; business area by Loughlin Road sustained damages. Roads were damaged, businesses were closed

Notes:

- EM Emergency Declaration (FEMA)
- FEMA Federal Emergency Management Agency
- DR Major Disaster Declaration (FEMA)
- N/A Not applicable

9.13.4 Hazard Ranking and Jurisdiction-Specific Vulnerabilities

The hazard profiles in Section 5.0 (Risk Assessment) of this plan have detailed information regarding each plan participant’s vulnerability to the identified hazards. The following summarizes the hazards of greatest concern and risk to the Town of Kirkwood. For additional vulnerability information relevant to this jurisdiction, refer to Section 5.0.

Vulnerability Assessment

This section provides a summary of exposure and impacts from significant hazards of concern as identified the Town.

- All creek beds in the town are vulnerable to flood damage – when not constantly maintained, more prone to flooding and damages (depends on the type of road on who is responsible)
- Main Street – basement flooding due to hydrologic pressure
- August flooding Route 11 and Trim Street and Kirkwood Ave – water elevation went up to three to four feet within three hours – all related to creek beds.

Hazard Risk Ranking

This section presents a County-level ranking of all hazards of concern as included in Volume I of this hazard mitigation plan as well as the community specific identification of the primary hazard concerns based on identified problems, impacts and the results of the risk assessment as presented in Section 5 of the plan. The ranking process involves an assessment of the likelihood of occurrence for each hazard, along with its potential impacts on people, property, and the economy as well as community capability and changing future climate conditions. This input supports the mitigation action development to target those hazards with highest level of concern.

During the review of the hazard/vulnerability risk ranking, the town indicated the following:

- Flood is the town’s major hazard of concern.
- The town agreed with the calculated risk rankings.





Table 9.13-3. Town of Kirkwood Municipal Hazard Ranking Input

HAZARD	Drought	Earthquake	Extreme Temperature	Flood	Invasive Species	Severe Storm	Severe Winter Storm	Wildfire
RELATIVE RISK FACTOR	Medium	Low	High	High	Low	Medium	Medium	Low

Notes: The scale is based on the following hazard rankings as established in Section 5.3.
 High = Total hazard priority risk ranking score of 5 and above
 Medium = Total hazard priority risk ranking of 3.9 – 4.9
 Low = Total hazard risk ranking below 3.8

Critical Facilities Flood Risk

New York Department of Environmental Conservation (DEC) Statute 6 CRR-NY 502.4 sets forth floodplain management criteria for State projects located in flood hazard areas. The law states that no such projects related to critical facilities shall be undertaken in a Special Flood Hazard Area (SFHA) unless constructed according to specific mitigation specifications, including being raised 2’ above the Base Flood Elevation (BFE). This statute is outlined at <http://tinyurl.com/6-CRR-NY-502-4>. While all vulnerabilities should be assessed and documented, the State places a high priority on exposure to flooding. Critical facilities located in an SFHA, or having ever sustained previous flooding, must be protected to the 500-year flood even, or worst damage scenario. For those that do not meet this criteria, the jurisdiction must identify an action to achieve this level of protection (NYS DHSES 2017).

The table below identifies critical facilities in the community located in the 1-percent and 0.2-percent floodplain and presents Hazards United States (HAZUS) – Multi-Hazards (MH) estimates of the damage and loss of use to critical facilities as a result of a 1-percent annual chance flood event.

Table 9.13-4. Potential Flood Losses to Critical Facilities

Name	Type	Exposure		Potential Loss from 1% Flood Event		Addressed by Proposed Action
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage	
Five Mile Point Station 1	Fire	X	X			T. Kirkwood-3
BINGHAMTON TRAVEL CENTER	Hazardous Materials	X	X			-
DECAROLIS TRUCK RENTAL INC	Hazardous Materials	X	X			-
FRITO LAY	Hazardous Materials	X	X			-
MIRABITO #78	Hazardous Materials		X			-
American Pipe & Plastics, Inc.	Hazardous Materials	X	X			-
AMREX CHEMICAL CO. INC.- COURT STREET	Hazardous Materials	X	X			-
Frito-Lay, Inc.	Hazardous Materials	X	X			-
NYS Police Kirkwood Barracks	Police Station	X	X			T. Kirkwood-4
WELL #1, MIDDLE WELL	Potable Well	X	X			T. Kirkwood-5



Name	Type	Exposure		Potential Loss from 1% Flood Event		Addressed by Proposed Action
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage	
WELL #2, SOUTH WELL	Potable Well	X	X			T. Kirkwood-6
WELL #3, NORTH WELL	Potable Well	X	X			T. Kirkwood-7
Kirkwood Pump Station	WW Pump	X	X			T. Kirkwood-8
Town of Kirkwood	DPW	X	X	25%	75%	T. Kirkwood-1
Kirkwood Town Hall	Municipal Hall		X			-
Kirkwood Town Hall	Polling		X			-
Five Mile Point Fire Station 1	Polling	X	X			T. Kirkwood-3
Kirkwood Post Office	Post Office		X			-

Source: Hazus 4.2

The Town of Kirkwood reviewed the list of critical facilities and determined that hazardous material facilities were not critical for the purpose of essential services. As a result, the Town of Kirkwood did not develop mitigation actions to protect those facilities to the 500-year flood level.

Identified Issues

The municipality has identified the following vulnerabilities within their community:

- *The Town’s Highway Garage/Yard, Post Office and State Police Barracks are subject to chronic flash flooding events due to its low-lying topography and proximity to a major tributary of the Susquehanna River.*

Specific areas of concern based on resident response to the Broome County Hazard Mitigation Citizen survey include:

- Upper Court Street at Broad Avenue to Fairview Ave
- Route 17C at Endwell to Johnson City
- Watson Boulevard at Fairmount Park to Country Club Road
- Main Street at Route 201 to Oakdale Road

9.13.5 Capability Assessment

This section identifies the following capabilities of the local jurisdiction:

- Planning and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community classification
- National Flood Insurance Program
- Integration of mitigation planning into existing and future planning mechanisms

Planning and Regulatory Capability

The table below summarizes the regulatory tools that are available to the Town of Kirkwood.





Table 9.13-5. Planning and Regulatory Tools

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Planning Capability				
Comprehensive Plan	Yes	Local	Comprehensive Plan Committee	Town of Kirkwood Comprehensive Plan
Capital Improvements Plan	No	-	-	-
Floodplain Management / Basin Plan	Yes, 4/4/2006	Local or Watershed	Code Enforcement Office/Engineer	Page 2341
Stormwater Management Plan	Yes, 8/7/2007	Local	Code Enforcement Office/Engineer	Stormwater Management and Erosion & Sediment Control Page 4861
Open Space Plan	Yes	Local or County	Code Enforcement Office	All acquired properties through the HMGP process are required to forever remain undeveloped open space
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	No	-	-	-
Economic Development Plan	No	-	-	-
Comprehensive Emergency Management Plan	Yes	Local or County	Code Enforcement Office	Emergency Preparedness Plan
Emergency Operation Plan	Yes	Local or County	Code Enforcement Office	Emergency Response Plan
Evacuation Plan	No	-	-	-
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	No	-	-	-
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	No	-	-	-
Regulatory Capability				
Building Code	Yes, July 1985	Local	Code Enforcement Office	Page 2201
Zoning Ordinance	Yes, Nov. 1986	Local	Code Enforcement Office	Page 7001
Subdivision Ordinance	Yes, Oct 1, 1963	Local	Code Enforcement Office	Page 5001



Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
NFIP Flood Damage Prevention Ordinance	Yes, Oct 7, 2003	Local	Code Enforcement Office	Page 2301
NFIP: Cumulative Substantial Damages	Yes	Local	Code Enforcement Office	NYS Bldg. Code
NFIP: Freeboard	Yes	Local	Code Enforcement Office	State mandated BFE+2 for all construction, both residential and non-residential
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	Yes, Page 7047	Local	Code Enforcement Office/Engineer	Zoning Section 502
Stormwater Management Ordinance	Yes, 08-07-2007	Local	Code Enforcement Office/Engineer	Stormwater Management and Erosion & Sediment Control Page 4861
Municipal Separate Storm Sewer System (MS4)	Yes	Local	Code Enforcement Office, Engineer	NYS DEC
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	Code Enforcement Office	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	No	-	-	-

Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the Town of Kirkwood.

Table 9.13-6. Administrative and Technical Capabilities

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Administrative Capability		
Planning Board	Yes	5 Members on the Board, Meet Once a Month
Mitigation Planning Committee	No	-
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	No	-
Maintenance programs to reduce risk	Yes	Highway Department Programs
Mutual aid agreements	Yes	Agreement with Neighboring Towns





Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Flood Committee	No	-
Technical/Staffing Capability		
Planner(s) or engineer(s) with knowledge of land development and land management practices	Yes	Engineering Services through consultant upon retainer Contract - Griffiths Engineering, LLC 13 S. Washington Street Binghamton, NY 13903
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Engineering Services through consultant upon retainer Contract - Griffiths Engineering, LLC 13 S. Washington Street Binghamton, NY 13903
Planners or engineers with an understanding of natural hazards	Yes	Engineering Services through consultant upon retainer Contract - Griffiths Engineering, LLC 13 S. Washington Street Binghamton, NY 13903
NFIP Floodplain Administrator (FPA)	Yes	Chad Moran, Code Enforcement Officer
Surveyor(s)	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	No	-
Scientist familiar with natural hazards	No	-
Warning systems/services	No	-
Emergency Manager	Yes	Supervisor
Grant writer(s)	No	-
Staff with expertise or training in benefit/cost analysis	No	-
Professionals trained in conducting damage assessments	No	-

Fiscal Capability

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

Table 9.13-7. Fiscal Capabilities

Financial Resources	Accessible or Eligible to Use (Yes/No)
Community development Block Grants (CDBG, CDBG-DR)	No
Capital improvements project funding	Yes
Authority to levy taxes for specific purposes	Yes
User fees for water, sewer, gas or electric service	Yes
Impact fees for homebuyers or developers of new development/homes	No
Stormwater utility fee	No
Incur debt through general obligation bonds	Yes
Incur debt through special tax bonds	Yes
Incur debt through private activity bonds	No
Withhold public expenditures in hazard-prone areas	No
Other federal or state Funding Programs	Yes
Open Space Acquisition funding programs	Yes
Other	No



Community Classifications

The table below summarizes classifications for community programs available to the Town of Kirkwood.

Table 9.13-8. Community Classifications

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	Yes	10	-
Building Code Effectiveness Grading Schedule (BCEGS)	No	-	-
Public Protection (ISO Fire Protection Classes 1 to 10)	No	-	-
NYSDEC Climate Smart Community	No	-	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Natural disaster/safety programs in/for schools	No	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-
Public education program/outreach (through website, social media)	Yes	Electronic Sign Board	-
Public-private partnership initiatives addressing disaster-related issues	No	-	-
Other	No	-	-

Note:

- N/A Not applicable
- NP Not participating
- Unavailable

The classifications listed above relate to the community’s ability to provide effective services to lessen its vulnerability to the hazards identified. These classifications can be viewed as a gauge of the community’s capabilities in all phases of emergency management (preparedness, response, recovery and mitigation) and are used as an underwriting parameter for determining the costs of various forms of insurance. The CRS class applies to flood insurance while the BCEGS and Public Protection classifications apply to standard property insurance. CRS classifications range on a scale of 1 to 10 with class 1 being the best possible classification, and class 10 representing no classification benefit. Firewise classifications include a higher classification when the subject property is located beyond 1000 feet of a creditable fire hydrant and is within 5 road miles of a recognized Fire Station.

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule (<https://www.isomitigation.com/bcegs/>)
- The ISO Mitigation online ISO’s Public Protection website at <https://www.isomitigation.com/ppc/>
- New York State Climate Smart Communities (<http://www.dec.ny.gov/energy/56876.html>)
- The National Weather Service Storm Ready website at <https://www.weather.gov/stormready/communities>
- The National Firewise Communities website at <http://firewise.org/>





Self-Assessment of Capability

The table below provides an approximate measure of the Town of Kirkwood’s capability to work in a hazard-mitigation capacity and/or effectively implement hazard mitigation strategies to reduce hazard vulnerabilities.

Table 9.13-9. Self-Assessment Capability for the Municipality

Area	Degree of Hazard Mitigation Capability		
	Limited (If limited, what are your obstacles?)	Moderate	High
Planning and regulatory capability		X	
Administrative and technical capability		X	
Fiscal capability		X	
Community political capability		X	
Community resiliency capability		X	
Capability to integrate mitigation into municipal processes and activities		X	

National Flood Insurance Program

This section provides specific information on the management and regulation of the regulatory floodplain.

NFIP Floodplain Administrator (FPA)

Chad Moran, Building and Code Inspector

National Flood Insurance Program (NFIP) Summary

The following table summarizes the NFIP statistics for the Town of Kirkwood.

Table 9.13-10. NFIP Summary

Municipality	# Policies	# Claims (Losses)	Total Loss Payments	# RL Properties	# SRL Properties	# Policies in the 1% Flood Boundary
Kirkwood (T)	62	205	\$7,914,451	36	1	35

- Source: FEMA 2018
- Notes: Policies, claims, repetitive loss, and severe repetitive loss statistics provided by FEMA Region 2, and current as of May 31, 2018. The total number of repetitive loss properties does not include severe repetitive loss properties
- RL Repetitive Loss; SRL Severe Repetitive Loss

Resources

The Building and Code Inspector is responsible for floodplain administration in the Town of Kirkwood. The town assists in the update of floodplain (FIRM) maps. Specific assistance is provided in the area of attending map update meetings held by FEMA, NYDEC and USGS and identification of flood-prone areas outside of currently designated areas. The town maintains flood insurance for the Town Hall and Highway buildings. The town obtains and archives elevation certificates.

Compliance History

The Town’s most recent compliance audit (community assistance visit [CAV]) took place on August 17, 2015. The Town maintains compliance with and good-standing in the NFIP through adoption and enforcement of





floodplain management requirements (e.g. regulating all new and substantially improved construction in Special Hazard Flood Areas), floodplain identification and mapping, and flood insurance outreach to the community.

Regulatory

Flood Damage Prevention Law: The Town of Kirkwood Flood Damage Prevention Law (Local law #11 of 2003) was adopted to promote the public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed to:

- Regulate uses which are dangerous to health, safety and property due to water or erosion hazards, or which result in damaging increases in erosion or in flood heights or velocities;
- Require that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;
- Control the alteration of natural floodplains, stream channels, and natural protective barriers which are involved in the accommodation of floodwaters;
- Control filling, grading, dredging and other development which may increase erosion or flood damages;
- Regulate the construction of flood barriers which will unnaturally divert floodwaters, or which may increase flood hazards to other lands; and
- Qualify for and maintain participation in the National Flood Insurance Program.

The Law aims:

- To protect human life and health;
- To minimize expenditure of public money for costly flood control projects;
- To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;
- To minimize prolonged business interruptions;
- To minimize damage to public facilities and utilities, such as water and gas mains, electric, telephone, and sewer lines, streets and bridges located in areas of special flood hazard;
- To help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future flood blight areas;
- To provide that developers are notified that property is in an area of special flood hazard; and,
- To ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.

Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

For a community to succeed in reducing long-term risk, hazard mitigation must be integrated into the day-to-day local government operations. As part of this planning effort, each community was surveyed to obtain a better understanding of their community's progress in plan integration. A summary is provided below. In addition, the community identified specific integration activities that will be incorporated into municipal procedures, which is also indicated below.

Planning

Existing Integration

Comprehensive Plan: The Town of Kirkwood's Comprehensive Plan includes areas of natural hazard risk.

Stormwater Management Plan: The Town of Kirkwood is an MS4 Regulated Community and has a formal Stormwater Management Plan. The Plan specifies projects/actions/initiatives to reduce the volume of stormwater, or otherwise mitigate stormwater flooding.



Comprehensive Emergency Management Plan: The Town of Kirkwood's Comprehensive Emergency Management Plan does not refer to the Hazard Mitigation Plan. The town works to complete ongoing updates of the plan.

Broome County Hazard Mitigation Plan: The Town of Kirkwood continues to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0.

The Town of Kirkwood does not have a Re-Development Plan, Growth Plan, Economic Development Plan, Open Space Plan, Watershed or Stream Corridor Management Plan, Local Waterfront Revitalization Plan, Continuity of Operations/Continuity of Government (COOP/COG) plan(s), Post-Disaster Recovery Plan, Post-Disaster Redevelopment Plan, Strategic Recovery Plan, resilience plan/strategy, or Climate Adaptation Plan/strategy.

Opportunities for Future Integration

Updates to existing plans or new planning documents could include information on natural hazards and resilience and refer to the Hazard Mitigation Plan.

Regulatory and Enforcement (Ordinances)

Existing Integration

Zoning Law: The Zoning Law for the Town of Kirkwood (Local law #6 of 2009) was adopted to guide the future growth and development of the Town of Kirkwood in accordance with a comprehensive plan of land use and population distribution. It represents and promotes beneficial and convenient relationships among residential, agricultural, business, industrial development, planned development, aquifer protection, mining and public areas within the Town. It considers the suitability of each area for such uses as indicated by existing conditions, trends in population and mode of living and future needs for various types of land development. It strives to promote the health, safety and general welfare of the inhabitants of the community. It promotes the effective and efficient use of the Town's wind energy resource and regulates the placement, siting and installation of wind turbines.

Subdivision Regulations: The Town of Kirkwood Subdivision Regulations empower the Town Planning Board to approve subdivision plats within that part of the Town outside the limits of any incorporated city or village and enacts regulations and rules in addition to any applicable rules, regulations, ordinances and laws of the State of New York, and for the County of Broome, and for the Town of Kirkwood, New York.

Stormwater Management and Erosion and Sediment Control Ordinance: The Stormwater Management and Erosion and Sediment Control ordinance (Local law #7 of 2007) established minimum stormwater management requirements and controls to protect and safeguard the general health, safety, and welfare of the public residing within this jurisdiction. This local law seeks to meet those purposes by achieving the following objectives:

- Meet the requirements of Minimum Measures 4 and 5 of the State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s), Permit No. GP-02-02 or as amended or revised;
- Require land development activities to conform to the substantive requirements of the NYS Department of Environmental Conservation State Pollutant Discharge Elimination System (SPDES) General Permit for Construction Activities GP-02-01, or as amended or revised;
- Minimize increases in stormwater runoff from land development activities in order to reduce flooding, siltation, increases in stream temperature, and stream bank erosion and maintain the integrity of stream channels;



- Minimize increases in pollution caused by stormwater runoff from land development activities which would otherwise degrade local water quality;
- Minimize the total annual volume of stormwater runoff which flows from any specific site during and following development to the maximum extent practicable; and
- Reduce stormwater runoff rates and volumes, soil erosion and nonpoint source pollution, wherever possible, through stormwater management practices and to ensure that these management practices are properly maintained and eliminate threats to public safety.

The Town of Kirkwood’s municipal zoning, subdivision regulations, and site plan review process consider natural hazard risk and require developers to take additional actions to mitigate natural hazard risk. The Town’s Planning Board and/or ZBA are provided with the Broome County Hazard Mitigation Plan and access to Broome County’s GIS department to guide their decisions with respect to natural hazard risk management

Opportunities for Future Integration

The Town of Kirkwood will consider incorporating information on natural hazards when updating or writing new ordinances.

Operational and Administration

Existing Integration

Planning Board: The Planning Board is comprised of Town of Kirkwood residents appointed by the Kirkwood Town Board. The main duty of the Planning Board is giving recommendations regarding zoning referrals within the Town. The Planning Board also conducts site plan reviews, approves subdivision plots within the town, and takes part in approving almost all other development within the Town of Kirkwood. While rendering approvals and recommendations the Planning Board weighs the community’s goals, desires, and policies heavily in order to provide best for the town and its residents. The Planning Board meets regularly on the second Monday of each month in the Kirkwood Town Hall.

Zoning Board of Appeals: The Zoning Board of Appeals is a five member “quasi-judicial” board comprised of Town of Kirkwood residents appointed by the Town of Kirkwood Town Board. It is the function of the Zoning Board of Appeals to give applicants permission to do something contrary to the Zoning Regulations, provided the applicant provides sufficient evidence to justify the variance. The Board of Appeals has the legal power to issue “use” and “area” variances, and resolve issues concerning disagreements with the decision of the Building Official. The Zoning Board of Appeals also is the body that interprets the meaning of the Zoning Ordinance.

Mutual Aid Agreements: The Town maintains and updates mutual aid agreements with the surrounding communities for continuity of operations.

Critical Facility Flood Insurance: The Town continues to maintain flood insurance for the Town Hall and Highway Department buildings.

Vegetation Management: The Town of Kirkwood maintains and enhances programs to keep trees from threatening lives, property, and public infrastructure during storm events.

Post Disaster Procedures: The Town of Kirkwood works to identify and develop agreements with entities that can provide support with FEMA/SOEM paperwork after disasters. The town works with regional agencies (i.e. County and SOEM) to help develop damage assessment capabilities at the local level through such things as training programs, certification of qualified individuals (e.g. code officials, floodplain managers, engineers).



Structure Datasets and Inventories: The Town of Kirkwood participates in local, county and/or state level projects and programs to develop improved structure and facility inventories and hazard datasets to support enhanced risk assessment efforts.

The Town of Kirkwood does not have a municipal planner or contract planning firm. The Town does not have any other Boards or Committees that include functions with respect to managing natural hazard risk. Stormwater Management functions in the Town are performed by the Town Engineer. NFIP Floodplain Management functions are performed by the Code Enforcement Officer/Town Engineer. The Town has staff that can perform Substantial Damage Estimates and contracts with firms that have experience with developing Benefit-Cost Analysis and preparing grant applications for mitigation projects. While no Town staff have job descriptions that specifically include identifying and/or implementing mitigation projects/actions or other efforts to reduce natural hazard risk, staff receive training or continuing professional education which supports natural hazard risk reduction. Additionally, Town staff participate in the Broome County Flood Task Force. The Town does not have any other hazard management programs in place.

Opportunities for Future Integration

The Town will continue to provide training for staff on natural hazard risk reduction. The Town is also prepared to participate in the Storm Ready program administered by NOAA and county/state level projects and programs to develop improved structure and facility inventories and hazard datasets to support enhanced risk assessment efforts if Broome County takes the lead.

Funding

Existing Integration

The Town of Kirkwood's municipal/operating budget includes line items for mitigation projects/activities. The Capital Improvements Budget also includes funding for mitigation-related projects. The Town has pursued grant funding in the past and is currently in the process of applying for the NYSDEC Consolidated Funding Application and the NYS EFC WIA Drinking Water Grant. The Town does not have any other mechanisms to fiscally support hazard mitigation.

Opportunities for Future Integration

The Town can continue to allocate municipal funding and apply for grant funding to support hazard mitigation.

Education and Outreach

Existing Integration

The Town of Kirkwood conducts public outreach through the Kirkwood Newsletter, Electronic Sign Board, and the municipal webpage (<http://www.townofkirkwood.org/>) which hosts community information and news. The Town conducts and facilitates community and public education and outreach for residents and businesses to include, but not be limited to, the following to promote and effect natural hazard risk reduction:

- Provide and maintain links to the HMP website, and regularly post notices on the County/municipal homepage(s) referencing the HMP webpages.
- Prepare and distribute informational letters to flood vulnerable property owners and neighborhood associations, 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.



- Work with neighborhood associations, civic and business groups to disseminate information on flood insurance and the availability of mitigation grant funding.

Opportunities for Future Integration

The Town could expand outreach activities.

Sheltering, Evacuation, and Temporary Housing

Temporary housing, evacuation routes, and sheltering measures must be in place and available for public awareness to protect residents, mitigate risk, and relocate residents, if necessary, to maintain post-disaster social and economic stability.

Refer to Section 4.6.5 of Volume 1 of this plan for a description of resources identified by the county to support municipalities with the identification of evacuation, sheltering, and temporary and permanent housing.

Temporary and Permanent Housing

The Town of Kirkwood has not identified potential sites for the placement of temporary housing for residents displaced by a disaster or potential sites suitable for relocating houses of the floodplain and/or building new homes once properties in the floodplain are acquired.

Evacuation and Sheltering Needs

The Town of Kirkwood has not designated emergency shelters, evacuation routes, or evacuation procedures.

9.13.6 Mitigation Strategy and Prioritization

This section discusses past mitigations actions and status, describes proposed hazard mitigation initiatives, and their prioritization.

Past Mitigation Initiative Status

The following table indicates progress on the community's mitigation strategy identified in the 2013 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under 'Capability Assessment' presented previously in this annex.



Table 9.13-11. Status of Previous Mitigation Actions

Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2019 HMP or Discontinue 2. If including action in the 2019 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Cost	Level of Protection Damages Avoided; Evidence of Success	
1.	Continue training in the National Incident Command System (ICS), under the National Incident Management System (NIMS).	All		Town of Kirkwood DPW	No progress	Cost		1. Include in 2019 HMP The Town will explore if ICS is a beneficial program to adopt and if so, research training opportunities. 2. 3.
						Level of Protection		
						Damages Avoided; Evidence of Success		
2.	Maintain and enhance programs to keep trees from threatening lives, property, and public infrastructure during storm events	Severe Storms		Town of Kirkwood DPW, NYSE&G	Ongoing Capability	Cost		1. Discontinue 2. 3. Ongoing capability
						Level of Protection		
						Damages Avoided; Evidence of Success		
3.	Assist in the update of floodplain (FIRM) maps – Jurisdictional Level. Specific assistance can be provided in the area of attending map update meetings held by FEMA, NYDEC and USGS; and identification of flood-prone areas outside of currently designated areas	Flood		FEMA, NYSDEC, Town of Kirkwood	Ongoing capability	Cost		1. Discontinue The Town continues to attend stakeholder meetings and provide input as necessary. 2. 3. Ongoing capability
						Level of Protection		
						Damages Avoided; Evidence of Success		
4. (5.)	Continue participation in the National Flood Insurance Program (NFIP).	Flood		FEMA, Town of Kirkwood	Ongoing Capability	Cost		1. Discontinue 2. 3. Ongoing capability
						Level of Protection		
						Damages Avoided; Evidence of Success		
5.	Submit application for participation in the CRS.	Flood		Town of Kirkwood, FEMA, NFIP	No Progress	Cost		1. Discontinue 2. 3. This project was explored by the Town and found that the savings from obtaining a CRS
						Level of Protection		
						Damages Avoided;		





Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)	Next Steps 1. Project to be included in 2019 HMP or Discontinue 2. If including action in the 2019 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
						Evidence of Success	Rating would not outweigh the cost of preparing the application and maintaining participation in the program.
6. (7.)	Continue to maintain flood insurance for the Town Hall and Highway buildings.	Flood		Town of Kirkwood Town Board	Ongoing Capability	Cost Level of Protection Damages Avoided; Evidence of Success	1. Discontinue 2. 3. Ongoing capability
7. (11.)	Encourage review of site plans by firefighting companies and emergency service providers to ensure capacity exists to support development.	All		Town of Kirkwood Fire Department	No progress	Cost Level of Protection Damages Avoided; Evidence of Success	Going forward the Town planning board shall consider giving the firefighting companies an opportunity to review site plans to ensure capacity exists to serve the development as well as verifying adequate fire suppression practices (i.e. Knox Box, Fire Lane, Fire Protection Water Lines, etc.). 1. 2. 3.
8. (12.)	Encourage adoption of zoning ordinances amendments that ensure developments served by private wells have adequate well recharge area	Drought		Town of Kirkwood Code Enforcement, Zoning Board	No progress	Cost Level of Protection Damages Avoided; Evidence of Success	1. Discontinue 2. 3. Private wells and their respective recharge areas are the responsibility of the property owner and/or developer.
9.	The Town is proposing to relocate the Highway Garage to a new parcel located outside of the floodplain. During the last six years the Highway Garage has been subjected to both riverine and flash flooding events. Relocation of the Highway Garage would mitigate against future losses and	Flood		Highway Department; Town Board, FEMA, NYSOEM	In Progress	Cost Level of Protection Damages Avoided; Evidence of Success	1. Include in 2019 HMP Planning Phase: Purchased land on Frances Street, behind Town Hall for Highway Garage (location on Mary Street). 2. 3.





Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2019 HMP or Discontinue 2. If including action in the 2019 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
	remove the property from the NFIP Repetitive Loss category.							
10.	Removal of gravel/sediment deposits at the mouths of 6 major tributaries the Susquehanna River. The Town is investigating whether cleaning the mouths of the creeks near their confluence of the Susquehanna would mitigate flooding immediately upstream of and possibly lower river surface elevations during floods.	Flood		Town Engineering; NYSDEC & Broome County SWCD	In Progress	Cost		1. Discontinue COMPLETE: Woitd Engineering study looked at feasibility of removing sediment in Stratton Mill, Park and Acre Creeks and provided recommendations 2. "Feasibility study for removal of gravel/sediment at mouths of six (6) major tributaries of the Susquehanna River" In summary, the feasibility study identified that the removal of the sediment would provide only a small amount of flood relief or minor mitigation against future damages as compared to the cost of the project.
						Level of Protection		
						Damages Avoided; Evidence of Success		
Flood-1	Purchase, relocate, or elevate structures located in hazard-prone areas to protect structures from future damage, with repetitive loss and severe repetitive loss properties as priority including the Town of Kirkwood Highway Garage (see above); WELL #1, MIDDLE WELL; and WELL #3, NORTH WELL. Phase 1: Identify appropriate candidates based on cost-effectiveness versus retrofitting. Phase 2: Where relocation is determined to be a viable option, work with	Flood		Municipality (via Municipal Engineer/NFIP Floodplain Administrator) with support from BCPD, NYSOEM, FEMA	In Progress	Cost		1. Discontinue Residential properties have been acquired through FEMA Flood-prone areas including Kirkwood Gardens, Geiger Lane, River Run Lane, and Route 11 areas. 19 properties purchased by the town (in 2011). 3.
						Level of Protection		
						Damages Avoided; Evidence of Success		





Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)	Next Steps 1. Project to be included in 2019 HMP or Discontinue 2. If including action in the 2019 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.						
	property owners toward implementation of that action based on available funding from FEMA and local match availability.												
Flood-2	Maintain compliance with and good-standing in the NFIP including adoption and enforcement of floodplain management requirements (e.g. regulating all new and substantially improved construction in Special Hazard Flood Areas), floodplain identification and mapping, and flood insurance outreach to the community. Further, continue to meet and/or exceed the minimum NFIP standards and criteria through the following NFIP-related continued compliance actions identified as Initiatives below.	Flood		Municipality (via Municipal Engineer/NFIP Floodplain Administrator) with support from NYSOEM, FEMA	Ongoing Capability	<table border="1"> <tr> <td>Cost</td> <td></td> </tr> <tr> <td>Level of Protection</td> <td></td> </tr> <tr> <td>Damages Avoided; Evidence of Success</td> <td></td> </tr> </table>	Cost		Level of Protection		Damages Avoided; Evidence of Success		1. Discontinue 2. 3. Ongoing capability
Cost													
Level of Protection													
Damages Avoided; Evidence of Success													
Flood-3	Conduct and facilitate community and public education and outreach for residents and businesses to include, but not be limited to, the following to promote and effect natural hazard risk reduction: <ul style="list-style-type: none"> Provide and maintain links to the HMP website, and regularly post notices on the County/municipal 	Flood		Municipality with support from Planning Partners, BCPD, NYSOEM, FEMA	Ongoing Capability	<table border="1"> <tr> <td>Cost</td> <td></td> </tr> <tr> <td>Level of Protection</td> <td></td> </tr> <tr> <td>Damages Avoided; Evidence of Success</td> <td></td> </tr> </table>	Cost		Level of Protection		Damages Avoided; Evidence of Success		1. Discontinue 2. Town website, Facebook (Kirkwood Happenings) 3. Ongoing capability
Cost													
Level of Protection													
Damages Avoided; Evidence of Success													



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps
	<p>homepage(s) referencing the HMP webpages.</p> <ul style="list-style-type: none"> Prepare and distribute informational letters to flood vulnerable property owners and neighborhood associations, 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. Work with neighborhood associations, civic and business groups to disseminate information on flood insurance and the availability of mitigation grant funding. 							<ol style="list-style-type: none"> Project to be included in 2019 HMP or Discontinue If including action in the 2019 HMP, revise/reword to be more specific (as appropriate). If discontinue, explain why.
Flood-4	Obtain and archive elevation certificates	Flood		NFIP Floodplain Administrator	Ongoing Capability	Cost		1. Discontinue
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3. Ongoing capability
Flood-5	Continue to support the implementation, monitoring, maintenance,	Flood		Municipality with support	Ongoing Capability	Cost		1. Discontinue
						Level of Protection		2.





Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2019 HMP or Discontinue 2. If including action in the 2019 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
	and updating of this Plan, as defined in Section 7.0			from Planning Partners, BCPD, NYSOEM, FEMA		Damages Avoided; Evidence of Success		3. Ongoing capability
Flood-6	Complete ongoing updates of Comprehensive Emergency Management Plans	Flood		Municipality with support from NYSOEM	Ongoing Capability	Cost		1. Discontinue
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3. Ongoing capability
Flood-7	Create/Enhance/Maintain Mutual Aid agreements with neighboring communities for continuity of operations	All Hazards		Municipality with support from County, NYSOEM, FEMA and surrounding communities	Ongoing Capability	Cost		1. Discontinue
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3. Ongoing capability
Flood-8	Identify and develop agreements with entities that can provide support with FEMA/SOEM paperwork after disasters; qualified damage assessment personnel – Improve post-disaster capabilities – damage assessment; FEMA/SOEM paperwork compilation, submissions, record-keeping	Flood		Municipality with support from County, NYSOEM and FEMA	Ongoing Capability	Cost		1. Discontinue
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3. Ongoing capability
Flood-9	Work with regional agencies (i.e. County and SOEM) to help develop damage assessment capabilities at the local level through such things as training programs, certification of qualified individuals (e.g. code	Flood		Municipality with support from County, NYSOEM and FEMA	Ongoing Capability	Cost		1. Discontinue
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3. Ongoing capability



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2019 HMP or Discontinue 2. If including action in the 2019 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
	officials, floodplain managers, engineers).							
Flood-10	<p>Participate in local, county and/or state level projects and programs to develop improved structure and facility inventories and hazard datasets to support enhanced risk assessment efforts. Such programs may include developing a detailed inventory of critical facilities based upon FEMA's Comprehensive Data Management System (CDMS) which could be used for various planning and emergency management purposes including:</p> <ul style="list-style-type: none"> • Support the performance of enhanced risk and vulnerability assessments for hazards of concern. • Support state, county and local planning efforts including mitigation (including updates to the State HMP), comprehensive emergency management, debris management, and land use. <p>Improved structural and facility inventories could incorporate flood, wind and seismic-specific parameters (e.g. first floor elevations, roof types,</p>	Flood		Hazard Mitigation Plan Coordinator	No progress	Cost		<p>The Town is prepared to participate in these programs once the County and/or State take the lead.</p> <p>1.</p> <p>2.</p> <p>3.</p>
						Level of Protection		
						Damages Avoided; Evidence of Success		



Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2019 HMP or Discontinue 2. If including action in the 2019 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
	structure types based on FEMA-154 "Rapid Visual Screening of Buildings for Potential Seismic Hazards" methodologies). It is recognized that these programs will need to be initiated and supported at the County and/or State level, and will require training, tools and funding provided at the county, state and/or federal level.							
Severe Storm-1	Enhance the County/community resilience to severe storms (incl. severe winter storms) by joining the NOAA "Storm Ready" program and supporting communities in joining the program. "StormReady" communities are better prepared to save lives from the onslaught of severe weather through advanced planning, education and awareness. Participation in the NOAA "StormReady" program shall include providing information on the "StormReady" program, facilitating public outreach and awareness programs, and supporting community storm risk reduction activities as appropriate. Specific actions addressed by	Severe Storm		Municipality with support from County, NYSOEM and FEMA	No progress	Cost		1. Discontinue The Town is prepared to participate in this program when/if the County takes the lead on this project.
						Level of Protection		
						Damages Avoided; Evidence of Success		3. Will be listed as an opportunity for future integration.





Project #	Project	Hazard(s) Addressed	Brief Summary of the Original Problem	Responsible Party	Status (In Progress, Ongoing, No Progress, Complete)	Evaluation of Success (if project status is complete)		Next Steps 1. Project to be included in 2019 HMP or Discontinue 2. If including action in the 2019 HMP, revise/reword to be more specific (as appropriate). 3. If discontinue, explain why.
	"StormReady" participation include establishing a 24-hour Warning Point, increase number of ways EOC receives NWS warnings, increase number of ways to disseminate warnings, monitoring hydrometeorological data, providing annual weather safety talks, train weather spotters, create a formal hazardous weather plan, host annual visits by NWS to communities, etc.							
Earthquake-1	Obtain training and conduct rapid screening assessment of critical facilities for earthquake vulnerability.	Earthquake		Municipal Emergency Management, Fire, PD with support from County, NYSOEM	No progress	Cost		1. Discontinue
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3. Historically earthquakes rarely occur within the Town and when they do occur the impact is very minor or negligible.
Earthquake-2	Develop a post-earthquake management plan to address building safety inspections, gas leaks, and other elements to protect public safety.	Earthquake		Municipal Emergency Management, Fire, PD with support from County, NYSOEM	No progress	Cost		1. Discontinue
						Level of Protection		2.
						Damages Avoided; Evidence of Success		3. Historically earthquakes rarely occur within the Town and when they do occur the impact is very minor or negligible.



Completed Mitigation Initiatives Not Identified in the Previous Mitigation Strategy

The Town of Kirkwood has identified the following mitigation projects/activities that have also been completed but were not identified in the previous mitigation strategy in the 2013 Plan:

- The Town of Kirkwood has performed ongoing maintenance projects to reduce the impact of flooding but has not identified specific mitigation projects/activities that have been completed but were not identified in the previous mitigation strategy in the 2013 Plan.
- **Building Resiliency (2016):** The Broome County Department of Planning prepared Building Resiliency to document resiliency projects municipalities have completed. The Town of Kirkwood identified the following completed projects (as of 2016):
 - Broome County assisted with the acquisition of properties in the Town of Kirkwood.
 - Broome County Department of Public Works repaired bridges and culverts within the Town of Kirkwood.
 - Broome County Soil and Water Conservation District performed streambank stabilization in the Town of Kirkwood.

Proposed Hazard Mitigation Initiatives for the Plan Update

The Town of Kirkwood participated in a mitigation action workshop on October 17, 2018 and was provided the following FEMA publications to use as a resource as part of their comprehensive review of all possible activities and mitigation measures to address their hazards: FEMA 551 ‘Selecting Appropriate Mitigation Measures for Floodprone Structures’ (March 2007) and FEMA ‘Mitigation Ideas – A Resource for Reducing Risk to Natural Hazards’ (January 2013).

Table 9.13-12 summarizes the comprehensive-range of specific mitigation initiatives the Town of Kirkwood would like to pursue in the future to reduce the effects of hazards. Some of these initiatives may be previous actions carried forward for this plan update. These initiatives 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. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

As discussed in Section 6, 14 evaluation/prioritization criteria are used to complete the prioritization of mitigation initiatives. For each new mitigation action, a numeric rank is assigned (-1, 0, or 1) for each of the 14 evaluation criteria to assist with prioritizing your actions as ‘High’, ‘Medium’, or ‘Low.’ The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.13-13 provides a summary of the prioritization of all proposed mitigation initiatives for the Plan update.



Table 9.13-12. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem	Description of Solution?	Critical Facility (Yes/No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
T. Kirkwood -1 (former 9)	Kirkwood DPW Garage	1, 3, 5	Flood	Town of Kirkwood DPW Garage is located within the floodplain and been subjected to numerous flash flood events.	Land has been purchased outside of the floodplain with the intent of building a new garage. The old building will not be demolished and used only to store items that, when flooded, are not damaged.	Yes	None	1 year	Town of Kirkwood Commissioner of Public Works & Engineer	\$3.5-4 million	Operations can stay open; equipment and vehicles do not have to be moved.	FEMA HMGP, PDM, General Highway Budget	High	SIP	PP
T. Kirkwood -2	Kirkwood Rt 11 / Colesville Rd Flooding	1	Flood	The subject area is located within the floodplain and is frequently inundated with flood waters making it impassable. This area is a critical location for the Town as it serves as a gateway to the Town and access point to two major interstates.	Redirect Stratton Mill Creek to drain into stream channel along Colesville Road Ext. which ultimately empties into the Susquehanna River. Close off the drainage that flows under the properties along rt 11.	Yes	Stream redirection will require permitting	1 year	Town of Kirkwood Board & Engineer, NYSDOT	\$2.5 million	Reduce flooding to businesses and keep access open on RT 11 which is major access for the town.	PDM HMGP, NYSDOT	Medium	SIP	PP





Table 9.13-12. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem	Description of Solution?	Critical Facility (Yes/No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
				This area experiences flooding 3-4 times per year and is impassable for several hours until the stormwater drains. After a flood event NYSDOT crews clean NYS Route 11 and the creek to remove sediment, debris, and mud.											
T. Kirkwood -3	Protect the Five Mile Point Fire Station 1 to the 500-year flood level	1, 3, 5	Flood	The Five Mile Point Fire Station 1 is located in the 100-year floodplain	The Town will contact the facilities manager and discuss options for protecting the facility to the 500-year level	Yes	None	Within 1 year	Fire Department	Town Budget / Staff Time	Fire Station protected to the 500-year flood level	HMGP	High	SIP	PP
T. Kirkwood -4	Protect NYS Police Barracks to the 500-year flood level	1, 2, 3, 5	Flood	The Barracks are located in the 100-year floodplain. The Town does not have jurisdiction	The Town will contact the facilities manager and discuss options for protecting or the facility to the 500-year	Yes	None	Within 6 months	Town Floodplain Administrator working with facility operators / owners	<\$100	Provide outreach to the property owner and informing them of potential flood damage and	Municipal budget	Medium	EAP	PI



Table 9.13-12. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem	Description of Solution?	Critical Facility (Yes/No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
				over the facility and cannot mitigate themselves.	level or relocating the facility.						possible solutions				
T. Kirkwood -5	Protect Well #1, Middle Well to the 500-year flood level	1, 3, 5	Flood	The Well is located in the 100-year floodplain.	The Town will contact the facilities manager and discuss options for protecting the facility to the 500-year level	Yes	None	Within 1 year	Town, facilities manager	Town Budget / Staff Time	Well protected to the 500-year flood level	HMGP	High	SIP	PP
T. Kirkwood -6	Protect the Well #2, South Well to the 500-year flood level	1, 3, 5	Flood	The Well is located in the 100-year floodplain	The Town will contact the facilities manager and discuss options for protecting the facility to the 500-year level	Yes	None	Within 1 year	Town, facilities manager	Town Budget / Staff Time	Well protected to the 500-year flood level	HMGP	High	SIP	PP
T. Kirkwood -7	Protect Well #3, North Well to the 500-year flood level	1, 3, 5	Flood	The Well is located in the 100-year floodplain	The Town will contact the facilities manager and discuss options for protecting the facility to the 500-year level	Yes	None	Within 1 year	Town, facilities manager	Town Budget / Staff Time	Well protected to the 500-year flood level	HMGP	High	SIP	PP
T. Kirkwood -8	Protect the Kirkwood Pump Station to the 500-	1, 3, 5	Flood	The Pump Station is located in the 100-year floodplain	The Town will contact the facilities manager and discuss options for	Yes	None	Within 1 year	Town, facilities manager	Town Budget / Staff Time	Pump Station protected to the 500-year flood level	HMGP	High	SIP	PP



Table 9.13-12. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem	Description of Solution?	Critical Facility (Yes/No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
	year flood level				protecting the facility to the 500-year level										
T. Kirkwood -9 (former 1)	The Town will explore if ICS (National Incident Command System) is a beneficial program to adopt and if so, research training opportunities.	3, 4	All Hazards	The Town is uncertain if ICS participation is warranted.	The Town will explore if ICS (National Incident Command System) is a beneficial program to adopt and if so, research training opportunities.	No	None	Within 6 months	Town of Kirkwood DPW	Staff Time	Town decides to participate or not participate in ICS.	Town budget	High	LPR	ES
T. Kirkwood -10 (former 7)	Encourage review of site plans by firefighting companies and emergency service providers to ensure capacity exists to support development.	1, 4	All Hazards	Site plans need to be reviewed to determine if emergency services are supported.	Going forward the Town planning board shall consider giving the firefighting companies an opportunity to review site plans to ensure capacity exists to serve the development as well as verifying adequate fire	No	None	Within 6 months	Town of Kirkwood Fire Department	Staff time	Site plans reviewed to ensure appropriate emergency services.	Municipal budget	High	LPR	ES



Table 9.13-12. Proposed Hazard Mitigation Initiatives

Project Number	Project Name	Goals Met	Hazard(s) to be Mitigated	Description of Problem	Description of Solution?	Critical Facility (Yes/No)	Environmental and Historic Preservation (EHP) Issues	Estimated Timeline	Lead Agency	Estimated Costs	Estimated Benefits	Potential Funding Sources	Priority	Mitigation Category	CRS Category
					suppression practices (i.e. Knox Box, Fire Lane, Fire Protection Water Lines, etc.).										

Notes:

Not all acronyms and abbreviations defined below are included in the table.

*Does this mitigation initiative reduce the effects of hazards on new and/or existing buildings and/or infrastructure? Not applicable (N/A) is inserted if this does not apply.

Acronyms and Abbreviations:

- CAV Community Assistance Visit
- CRS Community Rating System
- DPW Department of Public Works
- FEMA Federal Emergency Management Agency
- FPA Floodplain Administrator
- HMA Hazard Mitigation Assistance
- N/A Not applicable
- NFIP National Flood Insurance Program
- OEM Office of Emergency Management

Potential FEMA HMA Funding Sources:

- FMA Flood Mitigation Assistance Grant Program
- HMGP Hazard Mitigation Grant Program
- PDM Pre-Disaster Mitigation Grant Program

Timeline:

The time required for completion of the project upon implementation

Cost:

The estimated cost for implementation.

Benefits:

A description of the estimated benefits, either quantitative and/or qualitative.

Mitigation Category:

- Local Plans and Regulations (LPR) – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project (SIP) - These actions involve modifying existing structures and infrastructure to protect them from a hazard or remove them from a hazard area. This could apply to public or private structures as well as critical facilities and infrastructure. This type of action also involves projects to construct manmade structures to reduce the impact of hazards.
- Natural Systems Protection (NSP) – These are actions that minimize damage and losses and preserve or restore the functions of natural systems.
- Education and Awareness Programs (EAP) – These are actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. These actions may also include participation in national programs, such as StormReady and Firewise Communities

CRS Category:





- *Preventative Measures (PR) - Government, administrative or regulatory actions, or processes that influence the way land and buildings are developed and built. Examples include planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.*
- *Property Protection (PP) - These actions include public activities to reduce hazard losses or actions that involve (1) modification of existing buildings or structures to protect them from a hazard or (2) removal of the structures from the hazard area. Examples include acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.*
- *Public Information (PI) - Actions to inform and educate citizens, elected officials, and property owners about hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and educational programs for school-age children and adults.*
- *Natural Resource Protection (NR) - Actions that minimize hazard loss and preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.*
- *Structural Flood Control Projects (SP) - Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, setback levees, floodwalls, retaining walls, and safe rooms.*
- *Emergency Services (ES) - Actions that protect people and property during and immediately following a disaster or hazard event. Services include warning systems, emergency response services, and the protection of essential facilities*

Critical Facility:


- Yes  - Critical Facility located in 1% floodplain



Table 9.13-13. Summary of Prioritization of Actions

Project Number	Project Name	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community	Total	High / Medium / Low
T. Kirkwood-1	Kirkwood DPW Garage	0	1	1	1	1	1	0	1	1	0	0	1	1	1	10	High
T. Kirkwood-2	Kirkwood Rt 11 / Colesville Rd Flooding	0	1	0	1	1	0	0	0	1	1	0	1	1	1	8	Medium
T. Kirkwood-3	Protect the Five Mile Point Fire Station 1 to the 500-year flood level	0	1	1	1	1	1	1	1	1	0	0	1	1	1	11	High
T. Kirkwood-4	Protect NYS Police Kirkwood Barracks to the 500-year flood level	0	1	0	1	1	1	0	1	1	0	0	0	1	1	8	Medium
T. Kirkwood-5	Protect Well #1, Middle Well to the 500-year flood level	0	1	1	1	1	1	1	1	1	0	0	1	1	1	11	High
T. Kirkwood-6	Protect the Well #2, South Well to the 500-year flood level	0	1	1	1	1	1	1	1	1	0	0	1	1	1	11	High
T. Kirkwood-7	Protect Well #3, North Well to the 500-year flood level	0	1	1	1	1	1	1	1	1	0	0	1	1	1	11	High
T. Kirkwood-8	Protect the Kirkwood Pump Station to the 500-year flood level	0	1	1	1	1	1	1	1	1	0	0	1	1	1	11	High
T. Kirkwood-9 (former 1)	The Town will explore if ICS (National Incident Command System) is a beneficial program to adopt and if so, research training opportunities.	1	1	1	0	1	1	1	1	1	1	1	1	1	1	13	High
T. Kirkwood-10 (former 7)	Encourage review of site plans by firefighting companies and emergency service providers to ensure capacity exists to support development.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High

Note: Refer to Section 6, which conveys guidance on prioritizing mitigation actions.





9.13.7 Future Needs To Better Understand Risk/Vulnerability

None at this time.

9.13.8 Staff and Local Stakeholder Involvement in Annex Development

The Town of Kirkwood followed the planning process described in Section 3 (Planning Process) in Volume I of this plan update. This annex was developed over the course of several months with input from many town departments, including: the Town Engineer and Building/Code Inspector. The Town Engineer represented the community on the Broome County Hazard Mitigation Plan Planning Partnership and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

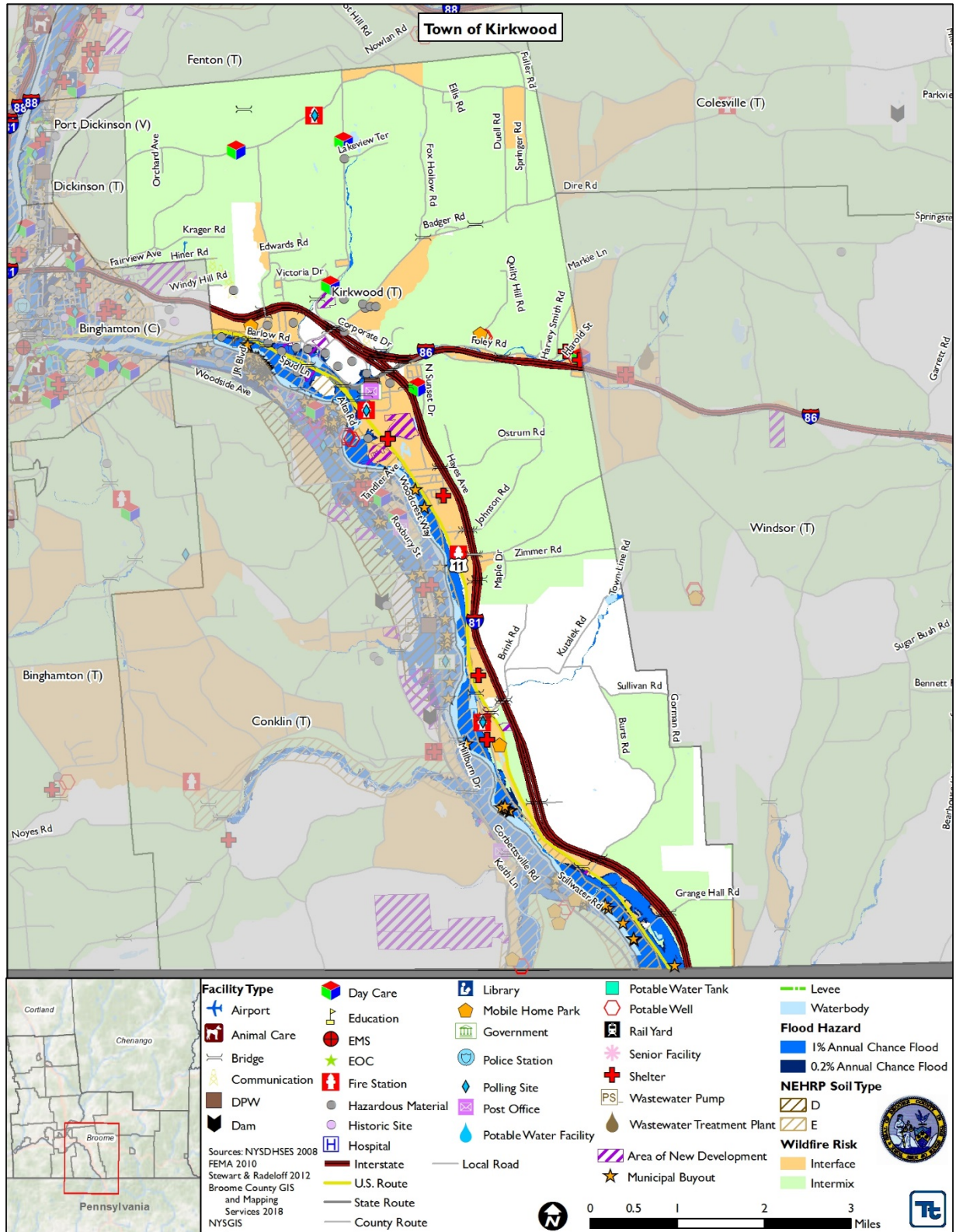
Additional documentation on the municipality's planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix C (Meetings).

9.13.9 Hazard Area Extent and Location

Hazard area extent and location maps have been generated for the Town of Kirkwood that illustrate the probable areas impacted within the municipality. These maps are based on the best available data at the time of the preparation of this plan and are considered to be adequate for planning purposes. Maps have only been generated for those hazards that can be clearly identified using mapping techniques and technologies, and for which the Town of Kirkwood has significant exposure. These maps are illustrated below.



Figure 9.13-1. Town of Kirkwood Hazard Area Extent and Location Map





9.13.10 Staff and Local Stakeholder Involvement in Annex Development

The Town of Kirkwood followed the planning process described in Section 3 (Planning Process) in Volume I of this plan update. This annex was developed over the course of several months with input from many Town departments, including: the Building Department, Code Department, and Engineer. The Building and Code Department represented the community on the Broome County Hazard Mitigation Plan Planning Partnership, Steering Committee, and supported the local planning process requirements by securing input from persons with specific knowledge to enhance the plan. All departments were asked to contribute to the annex development through reviewing and contributing to the capability assessment, reporting on the status of previously identified actions, and participating in action identification and prioritization.

Additional documentation on the municipality's planning process through Planning Partnership meetings is included in Section 3 (Planning Process) and Appendix C (Meetings).

9.13.11 Additional Comments

None at this time.



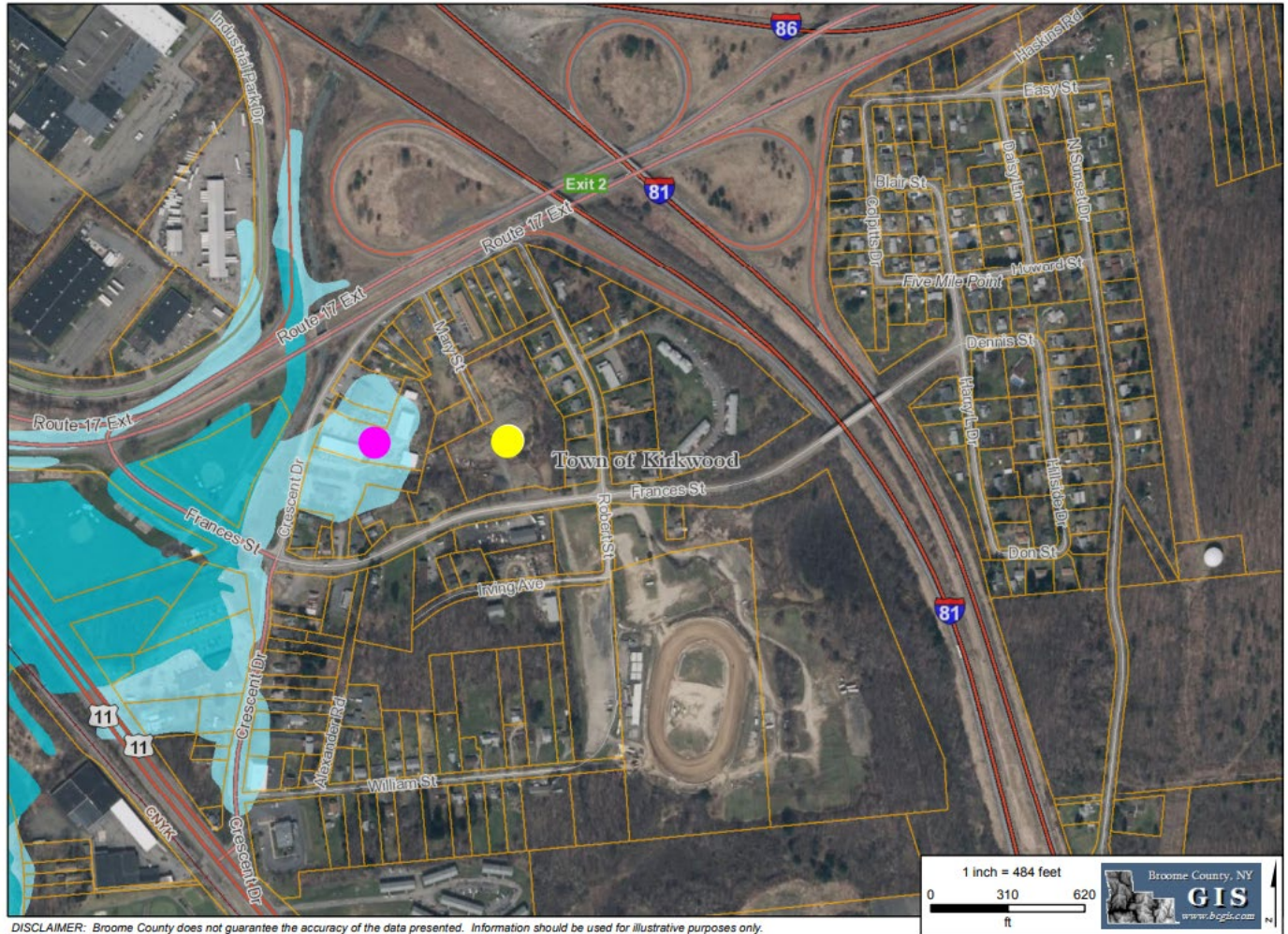
Action Worksheet			
Project Name:	Kirkwood DPW Garage		
Project Number:	T. Kirkwood- 1		
Risk / Vulnerability			
Hazard(s) of Concern:	Flooding		
Description of the Problem:	<p>Town of Kirkwood DPW Garage is located within the floodplain and been subjected to numerous flash flood events. The most recent event occurred on August 14, 2018 (DR#4397) The frequency of flooding is nearly once a year. On multiple occasions the Town's DPW equipment and vehicles are severely damaged or destroyed. Environmental issues occur due to oils, paints, solvents etc. During severe events the DPW Garage is inaccessible for at least 24 hours (or until floodwaters recede) and unusable for months at a time until it is cleaned, and its contents can be replaced. There is also a fuel tank on the property.</p> <p>Location: 72 Crescent Drive, Parcel ID #162.02-2-29.12</p>		
Action or Project Intended for Implementation			
Description of the Solution:	Land has been purchased outside of the floodplain with the intent of building a new garage. The old building will not be demolished and used only to store items that, when flooded, are not damaged.		
Is this project related to a Critical Facility?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Is this project related to a Critical Facility located within the 100-year floodplain?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
Level of Protection:	500-year	Estimated Benefits (losses avoided):	Operations can stay open; equipment and vehicles do not have to be moved.
Useful Life:	100	Goals Met:	1, 3, 5
Estimated Cost:	\$3.5-4 million	Mitigation Action Type:	Structural and Infrastructure Project
Plan for Implementation			
Prioritization:	High	Desired Timeframe for Implementation:	1 year
Estimated Time Required for Project Implementation:	18 months	Potential Funding Sources:	FEMA HMGP, PDM, General Highway Budget
Responsible Organization:	Town of Kirkwood Commissioner of Public Works & Engineer	Local Planning Mechanisms to be Used in Implementation if any:	None identified
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Continued flooding
	Wet Floodproof	\$20,000+/-	Wet flood proofing was tried in the past.
	Elevate building/utilities	N/A	Not feasible due to material of the structure.
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Kirkwood DPW Garage	
Project Number:	T. Kirkwood- 1	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	The project will relocate the DPW garage out of the flood zone, protecting critical functions
Cost-Effectiveness	1	
Technical	1	
Political	1	
Legal	1	The Town has the legal authority to complete the project
Fiscal	0	The project will require fiscal support from grants to supplement the General Highway Budget.
Environmental	1	
Social	1	
Administrative	0	
Multi-Hazard	0	Flooding
Timeline	1	
Agency Champion	1	Town of Kirkwood Commissioner of Public Works & Engineer
Other Community Objectives	1	
Total	10	
Priority (High/Med/Low)	High	



Kirkwood DPW Garage



DISCLAIMER: Broome County does not guarantee the accuracy of the data presented. Information should be used for illustrative purposes only.

Notes; repetitive loss – money from PA and flood insurance in the past.

Location of current DPW garage (pink) and new proposed location (yellow).

Current garage location. New property shown in purple.



Action Worksheet			
Project Name:	Kirkwood Rt 11 / Colesville Rd Flooding		
Project Number:	Kirkwood - 2		
Risk / Vulnerability			
Hazard(s) of Concern:	Flooding		
Description of the Problem:	<p>The subject area is located within the floodplain and is frequently inundated with flood waters making it impassable. This area is a critical location for the Town as it serves as a gateway to the Town and access point to two major interstates. This area experiences flooding 3-4 times per year and is impassable for several hours until the stormwater drains. After a flood event NYSDOT crews clean NYS Route 11 and the creek to remove sediment, debris, and mud.</p> <p>Location: Intersection of NYS Route 11 (Upper Court St.) & Colesville Road</p>		
Action or Project Intended for Implementation			
Description of the Solution:	Redirect Stratton Mill Creek to drain into stream channel along Colesville Road Ext. which ultimately empties into the Susquehanna River. Close off the drainage that flows under the properties along rt 11.		
Is this project related to a Critical Facility?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Is this project related to a Critical Facility located within the 100-year floodplain?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
(If yes, this project must intend to protect the 500-year flood event or the actual worse case damage scenario, whichever is greater)			
Level of Protection:	100 year	Estimated Benefits (losses avoided):	Reduce flooding to businesses and keep access open on RT 11 which is major access for the town.
Useful Life:	50	Goals Met:	1
Estimated Cost:	\$2,500,000	Mitigation Action Type:	Structural and Infrastructure Project
Plan for Implementation			
Prioritization:	Medium	Desired Timeframe for Implementation:	1 year
Estimated Time Required for Project Implementation:	18 months	Potential Funding Sources:	PDM HMGP, NYSDOT
Responsible Organization:	Town of Kirkwood Board & Engineer, NYSDOT	Local Planning Mechanisms to be Used in Implementation if any:	None identified
Three Alternatives Considered (including No Action)			
Alternatives:	Action	Estimated Cost	Evaluation
	No Action	\$0	Continued flooding
	Acquisition	\$3 mil	Acquiring the affected properties would permanently remove the structures from the floodplain.
	Relocation	N/A	Relocation of the structures and appurtenances are not practical due to their construction.
Progress Report (for plan maintenance)			
Date of Status Report:			
Report of Progress:			
Update Evaluation of the Problem and/or Solution:			



Action Worksheet		
Project Name:	Kirkwood Rt 11 / Colesville Rd Flooding	
Project Number:	Kirkwood - 2	
Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Project will protect Kirkwood/Rt 11 from flooding, protecting businesses and keeping access open.
Cost-Effectiveness	0	
Technical	1	
Political	1	
Legal	0	The project will require legal authority from NYS for stream redirection
Fiscal	0	Project will require grant funding
Environmental	0	The project may have temporary negative impacts to Stratton Mill Creek during redirection
Social	1	
Administrative	1	
Multi-Hazard	0	Flooding
Timeline	1	1 year
Agency Champion	1	Town of Kirkwood Board & Engineer, NYSDOT
Other Community Objectives	1	Protection of businesses
Total	8	
Priority (High/Med/Low)	Medium	



Kirkwood - Upper Court Street Flooding



DISCLAIMER: Broome County does not guarantee the accuracy of the data presented. Information should be used for illustrative purposes only.

Notes: the town has worked with NYSDOT on the issue. NYSDOT was the lead but unfortunately there was no funding for the project and it was shelved approximately two years ago.

Orange shows current location of stormwater



Kirkwood- Upper Court St Flooding - Possible Solution



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The stream would be redirected along the pink to an outlet to the Susquehanna River.