

9.13 TOWN OF KIRKWOOD

This section presents the jurisdictional annex for the Town of Kirkwood.

A.) HAZARD MITIGATION PLAN POINT OF CONTACT

Primary Point of Contact	Alternate Point of Contact
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B.) PROFILE

Population

5,857 (estimated 2010 U.S. Census)

Location

The Town of Kirkwood 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. According to the U.S. Census Bureau, the town has a total area of 31.4 square miles, of which, 31.0 square miles is land and 0.4 square miles is water.

Brief History

The 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.

Governing Body Format

Home rule is strong in New York State and thus, each town and village has its own governing body. Towns are made up of a Town Board and Supervisor. Villages generally have a Mayor, Clerk, and Council. Along with town and village roads, any public water and sewer systems are operated by the local municipality, though they may cooperate with County departments. Each municipality has charge over its own planning and zoning and uses the County personnel as a resource.

Growth/Development Trends

None growth or development is projected at this time.



C.) NATURAL HAZARD EVENT HISTORY SINCE 2006

Broome County has a history of natural hazard events as detailed in Volume I, Section 5 of this plan. A summary of historical events is provided in each of the hazard profiles and includes a chronology of events affecting the County and its municipalities. Below is presented a summary of events dating from the year 2006 to indicate the range and impact of natural hazard events in this community. Specific damages have been indicated if available from reference or local sources. For details of events prior to 2006, refer to Volume I, Section 5 of this plan.

Type of Event	FEMA Disaster # (if applicable)	County Designated?	Date	Approximate Damage Assessment
Severe Storms and Flooding	DR 1650	Yes - IA, PA	June 26 – July 10, 2006	<p>Many residents had to evacuate, seek refuge, and some were rescued by boat.</p> <p>Utility outages lasted for several days after the event, as did town wide road closures, and business closures. Many culverts were damaged or destroyed and roadways were damaged. Sanitary sewer pump stations and the water well/treatment facility were damaged.</p> <p>Flooding in the Five Mile Point area caused damage to critical town facilities and many public parks.</p> <p>Many residential, commercial, and industrial properties were damaged or destroyed. Town staff, the Army Reserve, Broome County Sheriff's Dept. and NYS Police all participated in clean-up/recovery activities. There were no reported deaths, but many injuries resulted during the cleanup and recovery phase.</p>
Severe Storms and Flooding	DR 1670	Yes - IA, PA	November 16-17, 2006	<p>There were town wide road closures, and many culverts were damaged or destroyed. Roadways, shoulders, and drainage ditches were damaged from overtopping culverts and stormwater erosion. There were a number of residential properties that suffered damage mostly from basement flooding. Town staff worked many hours including overtime cleaning up and repairing damaged roadways, shoulders, culverts, bridges, and drainage courses.</p>
April Nor'easter	DR 1692	No	April 14 - 18, 2007	No
Severe Storms and Flooding	DR 1710	No	June 19, 2007	No
Severe Winter Storm	EM 3299 DR 1827	No	December 11-31, 2008	No
Severe Storms and Flooding	DR 1857	No	August 8-10, 2009	No
Severe Winter Storm and Snowstorm	DR 1957	No	December 26-27, 2011	No
Severe Storms,	DR 1993	Yes - PA	April 26 – May 8,	There were town wide road closures to due to overtopped culverts, eroded roadways and

Type of Event	FEMA Disaster # (if applicable)	County Designated?	Date	Approximate Damage Assessment
Flooding, Tornado and Straight Line Winds			2011	shoulders, debris obstructions, and ponding water. Many trees throughout various locations in the Town were toppled by high winds and obstructed roadways and drainage courses. Dozens of culverts were damaged or destroyed. Roadways, shoulders, and drainage ditches were damaged from overtopping culverts and stormwater erosion. There were a number of residential properties that suffered damage mostly from basement flooding. Town staff worked many hours including overtime cleaning up and repairing damaged roadways, shoulders, culverts, bridges, and drainage courses.
Hurricane Irene	EM 3328 DR 4020	Yes - IA, PA	August 26 – September 5, 2011	There were town wide road closures to due to overtopped culverts, eroded roadways and shoulders, debris obstructions, and ponding water. Many culverts were damaged or destroyed. Roadways, shoulders, and drainage ditches were damaged from overtopping culverts and stormwater erosion. The Fallbrook Road Bridge suffered scouring and debris deposits. A large box culvert on Foley Road overtopped which caused scouring and the collapse of its downstream wingwalls. There were a number of residential properties that suffered damage mostly from basement flooding. Town staff worked many hours including overtime cleaning up and repairing damaged roadways, shoulders, culverts, bridges, and drainage courses.
Remnants of Tropical Storm Lee	EM 3341 DR 4031	Yes - IA, PA	September 7-11, 2011	Many residents had to evacuate, seek refuge, and some were rescued by boat or helicopter. Utility outages lasted for several days after the event, as did town wide road closures, and business closures. Many culverts were damaged or destroyed and roadways were damaged. Sanitary sewer pump stations and the water well/treatment facility were damaged. The Post Office, NYS Police Barracks, and Town Highway Garage including its auxiliary buildings were also severely damaged by flooding. Valley Park, Veterans River Park, and Grange Hall Park were all damaged by the flood waters. The parks suffered damage to its buildings, electrical systems, pavilions, covered walking bridge, and athletic facilities. Town staff, the Army Reserve, Broome County Sheriff's Dept. and NYS Police all participated in clean-up/recovery activities. There were no reported deaths, but many injuries resulted during the cleanup and recovery phase.

Note: N/A = Not applicable

D.) NATURAL HAZARD RISK/VULNERABILITY RISK RANKING

Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard ^{a, c}	Probability of Occurrence	Risk Ranking Score (Probability x Impact)	Hazard Ranking ^b
Flood	1% Annual Chance: \$37,838,338 0.2% Annual Chance: \$66,749,437	Frequent	42	High
Severe Winter Storm	1% of GBS: \$8,879,193 5% of GBS: \$44,395,967	Frequent	39	High
Severe Storm	100-Year MRP: \$0 500-Year MRP: \$188,894 Annualized Loss: \$2,082	Frequent	30	Medium
Earthquake	500-Year MRP: \$241,428 2,500-Year MRP: \$3,184,539 Annualized Loss: \$3,079	Occasional	12	Low
Drought	Not available	Frequent	18	Low
Extreme Temperature	Not available	Frequent	18	Low

- Building damage ratio estimates based on FEMA 386-2 (August 2001)
- High = Total hazard priority risk ranking score of 31 and above
Medium = Total hazard priority risk ranking of 20-30
Low = Total hazard risk ranking below 20
- The valuation of general building stock and loss estimates was based on custom inventory for Broome County.
- Loss estimates for the severe storm and severe winter storm hazards are structural values only and do not include the value of contents.
- Loss estimates for the flood and earthquake hazards represent both structure and contents.
- The HAZUS-MH earthquake model results are reported by Census Tract.

E.) CAPABILITY ASSESSMENT

This section identifies the following capabilities of the local jurisdiction:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability
- Community resiliency
- Community political capability
- Community classification.

The town indicates that it has moderate planning, regulatory, administrative, and technical capability; limited fiscal, community resiliency, and community political capability; with a moderately willing political capability to enact policies or programs to reduce hazard vulnerabilities in the community.

E.1) LEGAL AND REGULATORY CAPABILITY

Regulatory Tools (Codes, Ordinances., Plans)	Do you have this? (Y or N)	Enforcement Authority	Code Citation (Section, Paragraph, Page Number, Date of adoption)
1) Building Code	Y	Local	July 1985, Page 2201
2) Zoning Ordinance	Y	Local	Nov. 1986, Page 7001
3) Subdivision Ordinance	Y	Local	Oct 1, 1963, Page 5001
4) NFIP Flood Damage Prevention Ordinance	Y	Local	Oct 7, 2003, Page 2301
4a) Cumulative Substantial Damages	Y	Local	NYS Bldg. Code
4b) Freeboard	Y	Local	NYS Bldg. Code
5) Growth Management	Y	Local	
6) Floodplain Management / Basin Plan	Y	Local or Watershed	04-04-2006, Page 2341
7) Stormwater Management Plan/Ordinance	Y	Local	08-07-2007, Stormwater Management and Erosion & Sediment Control Page 4861
8) Comprehensive Plan / Master Plan/ General Plan		Local	
9) Capital Improvements Plan		Local or County	
10) Site Plan Review Requirements	Y	Local	Zoning Section 502 Page 7047
11) Open Space Plan	Y	Local or County	All acquired properties through the HMGP process are required to forever remain undeveloped open space
12) Stream Corridor Management Plan	N	Local or Watershed	
13) Watershed Management or Protection Plan	N	Local or Watershed	
14) Economic Development Plan	N	County	
15) Comprehensive Emergency Management Plan	Y	Local or County	
16) Emergency Response Plan	Y	Local or County	
17) Post Disaster Recovery Plan	N	Local	
18) Post Disaster Recovery Ordinance	N	Local	
19) Real Estate Disclosure Requirement	Y	State	State Requirement
20) Other [Special Purpose Ordinances (i.e., critical or	N	Local or County	

Regulatory Tools (Codes, Ordinances., Plans)	Do you have this? (Y or N)	Enforcement Authority	Code Citation (Section, Paragraph, Page Number, Date of adoption)
sensitive areas)]			

E.2) ADMINISTRATIVE AND TECHNICAL CAPABILITY

Staff/ Personnel Resources	Available (Y or N)	Department/ Agency/ Position
1) Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	Engineering Services through consultant upon retainer Contract - Griffiths Engineering, LLC 13 S. Washington Street Binghamton, NY 13903
2) Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Same as above
3) Planners or engineers with an understanding of natural hazards	Y	Same as above
4) NFIP Floodplain Administrator	Y	Scott Russell, Code Enforcement Officer
5) Surveyor(s)	N	
6) Personnel skilled or trained in "GIS" applications	N	
7) Scientist familiar with natural hazards	N	
8) Emergency Manager	Y	Supervisor
9) Grant Writer(s)	N	
10) Staff with expertise or training in benefit/cost analysis	N	

E.3) FISCAL CAPABILITY

Financial Resources	Accessible or Eligible to use (Yes/No/Don't know)
1) Community Development Block Grants (CDBG)	N
2) Capital Improvements Project Funding	Y
3) Authority to Levy Taxes for specific purposes	Y
4) User fees for water, sewer, gas or electric service	Y
5) Impact Fees for homebuyers or developers of new development/homes	N
6) Incur debt through general obligation bonds	Y
7) Incur debt through special tax bonds	Y
8) Incur debt through private activity bonds	N
9) Withhold public expenditures in hazard-prone areas	N
10) State mitigation grant programs (e.g. NYSDEC, NYCDEP)	Y
11) Other	N

E.4) COMMUNITY CLASSIFICATIONS

Program	Classification	Date Classified
Community Rating System (CRS)	10	-
Building Code Effectiveness Grading Schedule (BCEGS)		
Public Protection		
Storm Ready		
Firewise		

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

The classifications listed above relate to the community's effectiveness in providing services that may impact its vulnerability to the natural 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 one (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
- The ISO Mitigation online ISO's Public Protection website at <http://www.isomitigation.com/ppc/0000/ppc0001.html>
- The National Weather Service Storm Ready website at <http://www.weather.gov/stormready/howto.htm>
- The National Firewise Communities website at <http://firewise.org/>

F. MITIGATION STRATEGY**F.1) PAST MITIGATION ACTIONS/STATUS**

The Town has acquired 16 flood prone properties through the FEMA HMGP-DR-NY-1650-0016 project. Recently the town has submitted another HMGP application which if approved, would acquire 4 more properties.

Other completed mitigation actions include:

- Complete mapping of storm sewer infrastructure in GIS to identify needs for enhancements to critical infrastructure.
- Completed acquisition/relocation or elevation of flood hazard mitigation alternatives for at risk properties within the floodplain, including those that have been identified as repetitive loss properties in the Riverview Road Area.
- The town has received approval to acquire 4 floodprone properties under HMGP-DR-4020 Upgraded twin culverts on Barlow Road to allow for peak storm water flow. Completed using funding from the American Recovery and Reinvestment Act (ARRA)

At this time, the town reports that it has not yet incorporated actions into its planning and land use mechanisms based on recommendations listed in the 2007 Hazard Mitigation Plan.

The progress of mitigation actions from the 2007 Broome County Hazard Mitigation Plan is indicated in Section F.3. Actions that are in not yet complete or are ongoing have been carried over to this plan update.

F.2) HAZARD VULNERABILITIES IDENTIFIED

During the past 6 plus years the town has suffered damages/losses from two major riverine floods and three major flash floods. Both floods affected widespread areas throughout the town. Generally during riverine flooding, all areas located within the 0.2% annual exceedance probability zone (500 year flood plain) suffered damages/losses. During the flash flooding events, the Valley Park area suffered damage mainly to the Highway Garage and auxiliary structures.

It is estimated that in the Town of Kirkwood, 2,724 residents live within the 1% annual chance flood area (NFIP Special Flood Hazard Area). Of the municipality's total land area, 6.4% is located within the 1% annual chance flood area. \$214,967,979 (13.3%) of the municipality's general building stock replacement cost value (structure and contents) is located within the 1% annual chance flood area. There are 83 NFIP policies in the community and there are 40 policies located within the 1% annual chance flood area. FEMA has identified 11 Repetitive Loss (RL) including 3 Severe Repetitive Loss (SRL) properties in the municipality.

Further information regarding the community's participation in the NFIP is provided in the table below.

NFIP Summary

Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in 1% Flood Boundary (3)	# Policies in 0.2 % Flood Boundary (3)	# Policies Outside the 500- year Flood Hazard (3)
Kirkwood (T)	83	196	\$7,107,908	11	3	40	14	29

Source:

- (1) Policies, claims, repetitive loss and severe repetitive loss statistics provided by FEMA Region 2, in April 2012 using the "Comm_Name". These statistics are current as of January 31, 2012. Please note the total number of repetitive loss properties includes the severe repetitive loss properties.
- (2) Total building and content losses from the claims file provided by FEMA Region 2 (current as of January 31, 2012).
- (3) The policy locations used are based on the latitude and longitude provided by FEMA Region 2.

HAZUS-MH estimates that for a 1% annual chance flood, \$37,838,338 (2.3%) of the municipality's general building stock replacement cost value (structure and contents) will be damaged, 467 people may be displaced, 277 people may seek short-term sheltering, and an estimated 11,940 tons of debris could be generated. HAZUS-MH estimates the following damage and loss of use to critical facilities in the community as a result of a 1% annual chance flood event:

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 ⁽¹⁾	Percent Structure Damage	Percent Content Damage	Days to 100-Percent ⁽¹⁾
Five Mile Point Station 1	Kirkwood (T)	Fire Station	X	X	8.0	12.2	480	11.3	43.9	480
Kirkwood Post Office	Kirkwood (T)	Post Office		X	-	-	NA	0.0	0.0	NA
Kirkwood Town Hall	Kirkwood (T)	Poll		X	-	-	NA	0.0	0.0	NA
Town of Kirkwood Highway Garage	Kirkwood (T)	Public Works	X	X	34.5	42.0	NA	45.4	57.8	NA
WELL #1, MIDDLE WELL	Kirkwood (T)	Potable Water	X	X	40.0	-	NA	40.0	-	NA
WELL #2, SOUTH WELL	Kirkwood (T)	Potable Water	X	X	2.9	-	-	19.3	-	NA
WELL #3, NORTH WELL	Kirkwood (T)	Potable Water	X	X	40.0	-	-	40.0	-	NA

Source: HAZUS-MH 2.1

Note: NA = Not available; T = Town

= No loss calculated by HAZUS-MH 2.1

X = Facility located within the DFIRM boundary.

(1) HAZUS-MH 2.1 provides a general indication of the maximum restoration time for 100% operations. Clearly, a great deal of effort is needed to quickly restore essential facilities to full functionality; therefore this will be an indication of the maximum downtime (HAZUS-MH 2.1 User Manual).

Please note in some cases, a facility may be located in the DFIRM flood hazard boundary; however HAZUS did not calculate potential loss. This may be because the depth of flooding does not amount to any damages to the structure according to the depth damage function used in HAZUS for that facility type.

Please refer to the Hazard Profiles for additional vulnerability information relevant to this jurisdiction.

F.3) PROPOSED HAZARD MITIGATION INITIATIVES

Note some of the identified mitigation 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.

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	2007 Action Status
1.	Continue training in the National Incident Command System (ICS), under the National Incident Management System (NIMS).	N/A	All	4-1 4-3 4-8	Town of Kirkwood DPW	High	Low	Municipal Budget	On-going	Medium	ES	Ongoing
2.	Maintain and enhance programs to keep trees from threatening lives, property, and public infrastructure during storm events	N/A	Severe Storms	3-1 4-2	Town of Kirkwood DPW, NYSE&G	Medium	Low	Municipal Highway Dept. Annual Budget	On-going	Medium	PP	Ongoing
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	N/A	Flood	1-1 1-3 2-3	FEMA, NYSDEC, Town of Kirkwood	High	High	Municipal Budget	Short Term	High	PR	Ongoing
4. (5.)	Continue participation in the National Flood Insurance Program (NFIP).	N/A	Flood	1-2 1-7 2-1	FEMA, Town of Kirkwood	High	Low	Municipal Budget	On-going	High	PR	Ongoing
5.	Submit application for participation in the CRS.	N/A	Flood	1-2 1-7 2-1	Town of Kirkwood, FEMA, NFIP	Medium	Low	Town General Fund	Short Term	Medium	PR, PE	
6. (7.)	Continue to maintain flood insurance for the Town Hall and Highway buildings.	Existing	Flood	1-1 1-4 1-6	Town of Kirkwood Town Board	High	Low	Town General Fund	On-going	High	PR	Ongoing
7. (11.)	Encourage review of site plans by fire fighting companies and emergency service	New & Existing	All	4-2 4-3	Town of Kirkwood Fire Department	High	Medium	Municipal Budget	Short Term DOF	Medium	PR, ES	Ongoing

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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	2007 Action Status
	providers to ensure capacity exists to support development.											
8. (12.)	Encourage adoption of zoning ordinances amendments that ensure developments served by private wells have adequate well recharge area	N/A	Drought	1-4 1-8	Town of Kirkwood Code Enforcement, Zoning Board	Medium	Low	Municipal Budget	Short Term	Low	NR	Ongoing
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 remove the property from the NFIP Repetitive Loss category.	Existing	Flood	1-1 1-5 4-2 4-5	Highway Department; Town Board, FEMA, NYSOEM	High	High	FEMA PDM Grant with Town bonding to cover remaining 25% cost share.	Short Term DOF	High	PP, ES	
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.	N/A	Flood	1-1 1-3 1-11	Town Engineering; NYSDEC & Broome County SWCD	High	High	Federal, State, County grant opportunities, private sector	Long Term DOF	Medium	PP, NR	
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											



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	2007 Action Status
	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 property owners toward implementation of that action based on available funding from FEMA and local match availability.											
	Please see above.	Existing	Flood, Severe Storm	1-1 1-2 2-1 2-2 3-2	Municipality (via Municipal Engineer/NFIP Floodplain Administrator) with support from BCPD, NYSOEM, FEMA	High	High	FEMA Mitigation Grants	Long Term DOF	Medium	PP	
	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-2	Please see above.	N/A	Flood, Severe Storm	1-1 1-2 1-4 1-5 1-6 1-7 2-1 2-2 3-2	Municipality (via Municipal Engineer/NFIP Floodplain Administrator) with support from NYSOEM, FEMA	High	Low-Medium	Municipal Budget	On-going	High	PR, PE	
	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 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. 											
Flood-3	Please see above.	N/A	All Hazards, Or Flood	1-2 1-7 1-9 2-1 2-2 3-2 3-4 4-6	Municipality with support from Planning Partners, BCPD, NYSOEM, FEMA	Medium	Medium	Municipal Budget, HMA programs with local or county match	Short Term	Medium	PE	
Flood-4	Obtain and archive elevation certificates	N/A	Flood, Severe	1-1 1-2	NFIP Floodplain	Medium	Low	Municipal Budget	On-going	High	PR	

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	2007 Action Status
			Storm	1-4 1-5 4-1	Administrator							
Flood-5	Continue to support the implementation, monitoring, maintenance, and updating of this Plan, as defined in Section 7.0	New and Existing	All Hazards	All Goals and Objectives	Municipality with support from Planning Partners, BCPD, NYSOEM, FEMA	High	Low – High (for 5 year update)	Municipal Budget, FEMA planning grants	On-going	High	PR	
Flood-6	Support ongoing updates of County Comprehensive Emergency Management Plan	New and Existing	All Hazards	1-1 1-10 4-2	County with support from Municipality	Low	Low	Municipal Budget	On-going	High	PR	
Flood-7	Create/Enhance/Maintain Mutual Aid agreements with neighboring communities for continuity of operations	N/A	All Hazards	3-1 3-3 4-5	Municipality with support from County, NYSOEM, FEMA and surrounding communities	Medium	Low	Municipal Budget	Short Term	High	PR, ES	
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	N/A	All Hazards	1-4 1-5 2-2 3-1 4-1	Municipality with support from County, NYSOEM and FEMA	Medium	Medium	Municipal Budget	Short Term	Medium	PR, ES	
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 officials, floodplain	N/A	All Hazards	1-5 2-2 2-3 3-1 4-1 4-3	Municipality with support from County, NYSOEM and FEMA	Medium	Medium	Municipal Budget, FEMA HMA and HLS grant programs	Short-Long Term DOF	Medium	PR	

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	2007 Action Status
	managers, engineers).											
Flood-10	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: <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. Improved structural and facility inventories could incorporate flood, wind and seismic-specific parameters (e.g. first floor elevations, roof types, 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.											
	Please see above.	N/A	All Hazards	1-1 1-3 1-8 2-2 3-1 4-1	Hazard Mitigation Plan Coordinator	Medium-High	Medium-High	FEMA Mitigation Grant Programs with local match	Long Term DOF	Medium	PR	
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 "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.											
	Please see above.	N/A	Severe Storm	1-1 1-2 2-1 2-2 2-6	Municipality with support from County, NYSOEM and FEMA	Medium	Low	Municipal Budget	Short Term DOF	Medium	PE	
Earthquake-1	Obtain training and conduct rapid screening assessment of critical facilities for earthquake vulnerability.	N/A	Earthquake	1-1 4-2 4-3	Municipal Emergency Management, Fire, PD with support from County, NYSOEM	Medium	Medium	Municipal Budget, State and County grant opportunities	Long Term DOF	Low	PR, ES	
Earthquake-2	Develop a post-earthquake management plan to address building safety inspections, gas leaks, and other elements to protect public safety.	N/A	Earthquake	1-11 4-5 4-6	Municipal Emergency Management, Fire, PD with support from County, NYSOEM	Medium	Medium	Municipal Budget, State and County grant opportunities	Long Term DOF	Low	ES	

Notes:

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



()-For reference, action numbers from the Broome County 2007 Multi-Jurisdictional All-Hazards Plan are indicated in parentheses.

Acronyms

ARC	American Red Cross
BCDSS	Broome County Department of Social Services
BCOES	Broome County Office of Emergency Services
BCPD	Broome County Planning Department and Economic Development
BCSWCD	Broome County Soil and Water Conservation District
DPW	Department of Public Works
FEMA	Federal Emergency Management Agency
NFIP	National Flood Insurance Program
NYSDEC	New York State Department of Environmental Conservation
NYSDOT	New York State Department of Transportation
NYSEG	New York State Electric and Gas
NYSFSMA	New York State Floodplain and Stormwater Managers Association
NYSOEM	New York State Office of Emergency Management
USACE	United States Army Corp of Engineers
USGS	United States Geological Survey

Costs:

Where actual project costs have been reasonably estimated:

Low = < \$10,000

Medium = \$10,000 to \$100,000

High = > \$100,000

Where actual project costs cannot reasonably be established at this time:

Low = Possible to fund under existing budget. Project is part of, or can be part of an existing on-going program.

Medium = Could budget for under existing work-plan, but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.

High = Would require an increase in revenue via an alternative source (i.e., bonds, grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.

Benefits:

Where possible, an estimate of project benefits (per FEMA's benefit calculation methodology) has been evaluated against the project costs, and is presented as:

Low = < \$10,000

Medium = \$10,000 to \$100,000

High = > \$100,000

Where numerical project benefits cannot reasonably be established at this time:

Low = Long term benefits of the project are difficult to quantify in the short term.

Medium = Project will have a long-term impact on the reduction of risk exposure to life and property, or project will provide an immediate reduction in the risk exposure to property.

High = Project will have an immediate impact on the reduction of risk exposure to life and property.

Potential FEMA HMA Funding Sources:

PDM = Pre-Disaster Mitigation Grant Program

FMA = Flood Mitigation Assistance Grant Program

RFC = Repetitive Flood Claims Grant Program



SRL = Severe Repetitive Loss Grant Program
HMGP = Hazard Mitigation Grant Program

Timeline:

Short = 1 to 5 years. Long Term = 5 years or greater. OG = On-going program.
DOF = Depending on funding.

Notes (for Mitigation Type):

1. PR=Prevention: Government, administrative or regulatory actions or processes that influence the way land and buildings are developed and built Examples of these are acquisition, elevation, relocation, structural retrofits, storm shutters, and shatter-resistant glass.
2. PP= Property Protection: These actions also 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 planning and zoning, floodplain local laws, capital improvement programs, open space preservation, and storm water management regulations.
3. PE=Public Education and Awareness: 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 school-age and adult education programs.
4. NR=Natural Resource Protection: Actions that minimize hazard loss and also 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.
5. SP=Structural Projects: 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.
6. ES=Emergency Services: 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.

G.) PRIORITIZATION OF MITIGATION INITIATIVES

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)
1	3	H	L	Y	N	Y	M
2	2	M	L	Y	N	Y	M
3	3	H	H	Y	N	Y	H
4	3	H	L	Y	N	Y	H
5	3	M	L	Y	N	Y	M
6	3	H	L	Y	N	Y	H
7	2	H	M	Y	N	Y	M
8	2	M	L	Y	N	Y	L
9	4	H	H	Y	Y	N	H
10	3	H	H	Y	Y	N	M
Flood 1	5	H	H	Y	Y	N	M
Flood 2	9	H	M	Y	N	Y	H
Flood 3	8	M	M	Y	Y	Y	M
Flood 4	5	M	L	Y	N	Y	H
Flood 5	ALL	H	H	Y	Y	Y	H
Flood 6	3	L	L	Y	N	Y	H
Flood 7	2	L	L	Y	N	Y	H
Flood 8	5	M	M	Y	N	Y	M
Flood 9	6	M	M	Y	Y	Y	M
Flood 10	6	M	M	Y	Y	N	M
Sever Storm	5	M	L	Y	N	Y	M
Earthquake 1	3	M	M	Y	N	Y	L
Earthquake 2	3	M	M	Y	N	Y	L

Notes: H = High. L = Low. M = Medium. N = No. N/A = Not applicable. Y = Yes.

Explanation of Priorities

High Priority = A project that meets multiple objectives (i.e., multiple hazards), benefits exceeds cost, has funding secured or is an on-going project and project meets eligibility requirements for the Hazard Mitigation Grant Program (HMGP) or Pre-Disaster Mitigation Grant Program (PDM) programs. High priority projects can be completed in the short term (1 to 5 years).

Medium Priority = A project that meets goals and objectives, benefits exceeds costs, funding has not been secured but project is grant eligible under, HMGP, PDM or other grant programs. Project can be completed in the short term, once funding is completed. Medium priority projects will become high priority projects once funding is secured.

Low Priority = Any project that will mitigate the risk of a hazard, benefits do not exceed the costs or are difficult to quantify, funding has not been secured and project is not eligible for HMGP or PDM grant funding, and time line for completion is considered long term (1 to 10 years). Low priority projects may be eligible other sources of grant funding from other programs. A low priority project could become a high priority project once funding is secured as long as it could be completed in the short term.

Prioritization of initiatives was based on above definitions: Yes

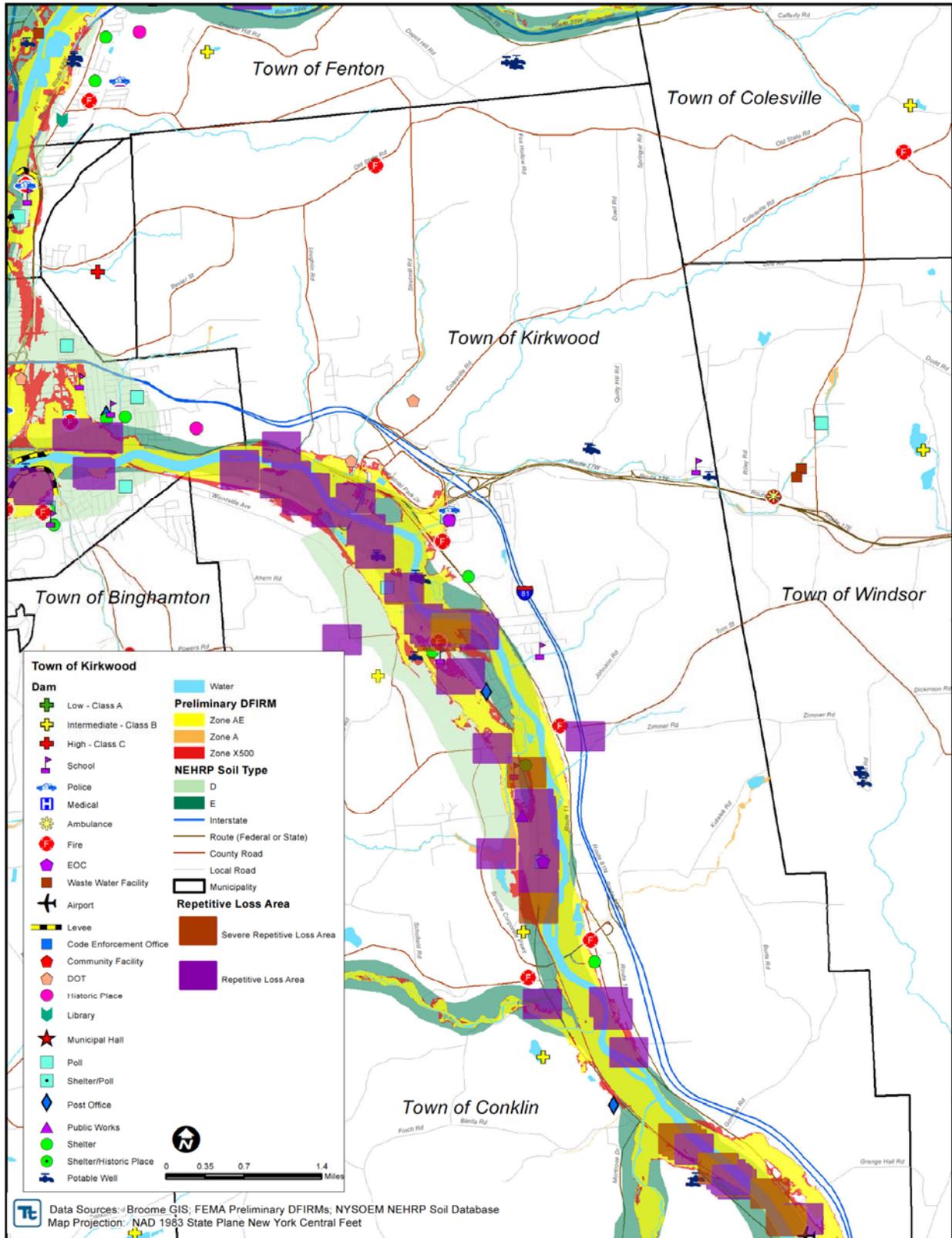
Prioritization of initiatives was based on parameters other than stated above: Not applicable.

H.) FUTURE NEEDS TO BETTER UNDERSTAND RISK/VULNERABILITY

None identified at this time.

I.) HAZARD AREA EXTENT AND LOCATION

A hazard area extent and location map has been generated for the Town of Kirkwood to illustrate the probable areas impacted within the Town of Kirkwood and is provided on the next page. This map is based on the best available data at the time of the preparation of this Plan, and is 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. The Planning Area maps are provided in the hazard profiles within Section 5.4, Volume I of this Plan.



J.) STATUS OF INCORPORATION OF MITIGATION PLANNING INTO EXISTING AND FUTURE PLANNING MECHANISMS

It is the intention of this municipality to incorporate mitigation planning as an integral component of daily municipal operations. Below is a list of planning mechanisms that have been/will be incorporated into municipal procedures.

(Check which apply and add explanation if required)

Planning Mechanisms	Has Been Utilized	Will Be Utilized
Operating Budget When constructing upcoming budgets, Hazard Mitigation Actions will be funded as budget allows. Construction projects will be evaluated to see if they meet the Hazard Mitigation goals and objectives.	X	
Capital Improvement Budget When constructing upcoming budgets, Hazard Mitigation Actions will be funded as budget allows. Construction projects will be evaluated to see if they meet the Hazard Mitigation goals and objectives.	X	
Human Resource Manual Employee job descriptions may contain Hazard Mitigation Actions.		X
Building and Zoning Ordinances A variety of building and zoning regulations are used to restrict the uses of land and establish building specifications. Prior to land use, zoning changes or development permitting the town will review the hazard mitigation plan and other hazard analysis to ensure consistent and compatible land use.	X	
Comprehensive Land Use Plan A land use plan is intended to identify land use issues and to make recommendations on how to address these issues. When applicable the Town will incorporate Hazard Mitigation Actions in the development and extent of the regulations.		X
Grant Applications Data and maps will be used as supporting documentation in grant applications	X	
Municipal Ordinances When updating municipal ordinances Hazard Mitigation will be a priority.	X	
Fire Plan The Hazard Mitigation Plan will be used as a resource for the development of future Fire Plans.		X
Capital Improvement Planning The municipality will establish a protocol to review current and future projects for hazard vulnerability. The will incorporate hazard resistant construction standards into the design and location of projects.		X
Day to Day Operations Incorporate Hazard Mitigation Actions in daily operations and all projects will be a goal of the municipality.	X	
Local School Service Projects The municipality to work closely with the local school district and assist with community service projects for the service organizations. Several of the Town's Hazard Mitigation Actions can be implemented as a joint project with the school district.	X	
Municipal Budget- Adopted annually Municipality will look at Mitigation Actions when allocating funding.	X	
Economic Development- The local economic development group will utilize the identification of hazard areas when assisting new business in finding a location.	X	

K.) ADDITIONAL COMMENTS

No additional comments at this time.

1. Planning and Regulatory

The Town of Kirkwood joined the NFIP on September 1976, and is currently an active member of the NFIP. Flood Insurance Rate Maps have been in effect for the community since June 1, 1977. *The Town of Kirkwood* is proactive in floodplain management with ordinances exceeding minimum requirements. *(The Town has adopted its own Flood Damage Prevention Code.*

(The Town of Kirkwood has completed Community Assistance Visits (CAV), with the most recent visit completed on June 2010. As of December 2012 there is no need for a CAV. The Town of Kirkwood has no outstanding compliance issues.

2. Administrative and Technical Staff

The Town of Kirkwood has identified personnel to manage and uphold the Town of Kirkwood's compliance with the NFIP. Dedicated staff include: Floodplain Manager. In addition, *The Town of Kirkwood* has supplementary staff for which NFIP is an auxiliary duty; personnel include: Town Engineer Staff members (both dedicated and supplementary) complete numerous tasks in order for *the Town of Kirkwood* to be in compliance of NFIP standards. Tasks include permit reviews, building inspections, and the request of elevation certificates.

3. Financial

As of December 31, 2012 there are 120 policies enforced within *the Town of Kirkwood*. Of the 347 insurance policies, 74 are within the Special Flood Hazard Area (SFHA), and 46 are located outside the SFHA. Repetitive loss insurance claims have been reported in several areas within *the Town of Kirkwood* including the Kirkwood Gardens Area, areas along NYS Route 11 and Main Street. As of December 31, 2012 there have been 12 of repetitive loss properties and 7 severe repetitive loss properties within *the Town of Kirkwood*.

4. Educational

The Town of Kirkwood conducts numerous educational and/or outreach activities related to the NFIP. Activities include discussions and distribution of literature to residents living in the floodplain. Discussions and literature including floodproofing, repairing and removing floodprone structures.

5. Actions to Strengthen the Program

The Town of Kirkwood has taken numerous steps to strengthen the NFIP program and its administration. Actions include requesting a recent Community Assistance Visit and beginning the application process for participation in the Community Rating System