



9.5 Town of Kent

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

9.5.1 Hazard Mitigation Plan Point of Contact

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

Primary Point of Contact	Alternate Point of Contact
Maureen Fleming; Supervisor 25 Sybils Crossing, Carmel (845) 225-3943 mfleming@townofkentny.gov	Richard Othmer, Highway Superintendent 62 Ludingtonville Ct., Kent Lakes, NY (845) 225-7172 rothmer@townofkentny.gov

9.5.2 Municipal Profile

This section provides a summary of the community.

Population

According to the 2010 U.S. Census, the population of the Town of Kent was 13,507.

Location

The Town of Kent is located in north-central Putnam County, just south of Dutchess County, bordered on the east by Patterson, on the south by Carmel and on the west by Putnam Valley and Philipstown. It is comprised of about 23,000 acres; it is 15 miles wide from east to west and 6 miles from north to south. Much of Kent is rocky and steeply sloped, and western Kent in particular has areas of significant relief, or slopes in excess of 25% grade. Several lakes, ponds, the Boyd's Corner Reservoir, a portion of the West Branch Reservoir and, of course, Lake Carmel, form prominent natural features that have shaped the town's development pattern. These water bodies also function as a critical element in New York City's drinking water supply, comprising part of the Croton system.

Brief History

The Town of Kent was originally a part of Frederickstown, which was established March 7th, 1788, and was separated from it and made a new town, under the name of Fredericks in 1795. Its name was changed to Kent in honor of the Kent family in 1817. The major population center of the township is Lake Carmel, a settlement around an artificial lake of the same name developed in the 1920s. Historically the population centers had been Farmer's Mills and Ludingtonville, little of which remain, and Cole's Mills, none of which remains.

Much of early Kent's economy was based on dairy farming for the New York City market, but with many reservoirs being constructed in the late 19th century for drinking water for the same city, most of the farms were submerged, and the dairy industry was all but abandoned by the 1920s. At that point, and because of the advent of the automobile, Kent started to attract new residents from the city.

The town is served by the Carmel Central School District and, for the majority of residents, by the Carmel Post Office. Kent is home to the 80-foot-tall (24 m) Mt. Ninham Fire Tower, located in the Taconic Hills. Built by the State of New York and the Civilian Conservation Corps in 1940, it is the tallest remaining fire tower in New York State and appears on the National Historic Lookout Register.



Governing Body Format

The Town is governed by a town supervisor and four councilpersons. The Town Supervisor is the highest elected official in the Town of Kent government. The Supervisor acts as the Chief Executive Officer and the Chief Financial Officer of the Town. The Supervisor is also the "chairman" of the Town Board. The Supervisor sets the agendas for all public meetings and workshop sessions of the Town Board and conducts these meetings. The Supervisor's Office is responsible for the day to day operation of the Town, including such functions as accounting, budgeting, payroll and personnel.

Growth/Development Trends

The following table summarizes major development that occurred in the municipality over the past five years, as well as known or anticipated future development in the next five (5) years. Refer to the map in section 9.5.8 of this annex which illustrates the hazard areas along with the location of potential new development.

Table 9.5-1. Growth and Development

Property Name	Type (Residential or Commercial)	Number of Structures	Address /Parcel ID(s)	Known Hazard Zone*	Description / Status
Frangle Realty Corp. - Sewer Installation	Non-Residential	10,000 sq. ft. sewer lateral installation	NYS Rt. 52 33.48-1-6	Wildfire: Intermix	Pending Approval, Under Review
Route 52 Sewer District	Municipal	Sewer conveyance system with 3 pump stations	NYS Route 52		Built
Hilltop Estates Subdivision	Mixed Use	10 lot residential subdivision, with 1 commercial lot, for a 2 story, 20,000 sq. ft. office/commercial building	Peckslip Rd. 12.-1-38 & 42	Steep Slopes; Wildfire: Intermix	Pending Approval, Under Review
Patterson Crossing (entrance in T/ Kent – Project in T/ Patterson)	Non-Residential	382,560 sq. ft. retail center, with management and meeting space, a substation for the Putnam County Sheriff's Dept. and 28,000 sq. ft. garden center	NYS Rt. 311 & I-84 22.-2-47 & 48	Wildfire: Intermix; Karst: Long 1	Approved but not built
Route 311 Plaza	Non-Residential	15,200 sq. ft. retail center	NYS Rt. 311 & Old Ludingtonville Rd. 22.-2-17	Wildfire: Intermix; Karst: Long 2	Approved but not built
Kent Manor	Residential	200+ Residential nits	245 Nichols Street	Steep slopes	Approved but not built

* Only location-specific hazard zones or vulnerabilities identified.

Source: June 2014 "Large Development Projects Report", Putnam County Department of Planning, Development and Transportation; as amended by municipality



9.5.3 Natural Hazard Event History Specific to the Municipality

Putnam County has a history of natural hazard 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 table below presents a summary of natural events that have occurred to indicate the range and impact of natural hazard events in the community. Information regarding specific damages is included if available based on reference material or local sources. For details of events prior to 2008, refer to Volume I, Section 5.0 of this plan.

Table 9.5-2. Hazard Event History

Dates of Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
August 1990	Flooding	N/A	N/A	Putnam and Westchester Counties had \$5 M in property damage
March 13 -17, 1993	Severe Blizzard	EM-3107	Yes	Severe Snow Storm - Snow Plowing
January 6-12, 1996	Blizzard Of 96 (Severe Snow Storm)	DR-1083	Yes	Severe Snow Storm - Snow Plowing
July 9, 1997	Thunderstorm / Wind	N/A	N/A	\$30K in property damage in Lake Carmel
September 16-18, 1999	Hurricane Floyd Major Disaster Declarations	DR-1296	Yes	\$1.9 M in property damage Countywide
May 22 – November 1, 2000	West Nile Virus	EM-3155	Yes	Town required to perform mitigation methods in support of County.
September 11, 2001	Fires And Explosions	DR-1391	Yes	Response to incident of national security
November 2001 – January 2002	Drought	N/A	N/A	NYC's combined storage in water system reservoir systems was at a low 41% capacity
April - October 2002	Drought	N/A	N/A	Groundwater and water storage facilities were below normal. NYC reservoir system reached a low of 64.5%
February 17-18, 2003	Snow	EM-3184	Yes	Excessive snow
May 13 – June 17, 2004	Severe Storms & Flooding	DR-1534	Yes	Damage drainage to infrastructure – road repairs
April 2-4, 2005	Severe Storms & Flooding	DR-1589	Yes	Damage drainage to infrastructure – road repairs
April 14-18, 2007	Severe Storms & Inland & Coastal Flooding	DR-1692	Yes	Damage drainage to infrastructure – road repairs
August 11, 2008	Lightning	N/A	N/A	Lightning struck and destroyed a barn in Milltown; approximately \$75 K in property damage.
December 11-31, 2008	Severe Winter Storm	EM-3299	Yes	Excessive snow
September 30, 2010	Strong Wind	N/A	N/A	Strong winds downed power lines and trees; power outages; approximately \$50 K in property damage
August 26 – September 5, 2011	Hurricane Irene	DR-4020	Yes	Severe floodwater runoff washed out shoulder, roadbed and the culvert on Old Forge Drive. FEMA PA totaling \$14k. Damage to concrete spillway and the gate valve at Lake Carmel Dam (Class C – High Hazard Dam). FEMA PA totaling \$18k.



Dates of Event	Event Type	FEMA Declaration # (If Applicable)	County Designated?	Summary of Damages/Losses
October 27 – October 8, 2012	Hurricane Sandy	DR-4085	Yes	Power outages. Property damage and road closures due to fallen limbs.
December 2013 – April 2014	Severe snow, ice – Numerous Events	N/A	N/A	Frost and road heaving, asphalt damage

Notes:

EM Emergency Declaration (FEMA)
 FEMA Federal Emergency Management Agency
 DR Major Disaster Declaration (FEMA)
 IA Individual Assistance
 N/A Not applicable
 PA Public Assistance

9.5.4 Hazard Vulnerabilities and Ranking

The hazard profiles in Section 5.0 of this plan have detailed information regarding each plan participant's vulnerability to the identified hazards. The following summarizes the hazard vulnerabilities and their ranking in the Town of Kent. For additional vulnerability information relevant to this jurisdiction, refer to Section 5.0.

Hazard Risk/Vulnerability Risk Ranking

The table below summarizes the hazard risk/vulnerability rankings of potential hazards for Town of Kent.

Table 9.5-3. Hazard Risk/Vulnerability Risk Ranking

Hazard type	Estimate of Potential Dollar Losses to Structures Vulnerable to the Hazard ^{a, b, e}	Probability of Occurrence ^c	Risk Ranking Score (Probability x Impact)	Hazard Ranking
Earthquake	100-Year GBS: \$0 500-Year GBS: \$562,101 2,500-Year GBS: \$10,706,395	Occasional	12	Low
Extreme Temperature	Damage estimate not available	Frequent	21	Medium
Flood	1% Annual Chance: \$17,993,277	Frequent	18	Medium
Landslide	RCV Exposed: \$294,872,785	Occasional	14	Medium
Severe Storm	100-Year MRP: \$1,961,731 500-year MRP: \$14,014,037 Annualized: \$150,114	Frequent	48	High
Severe Winter Storm	1% GBS: \$13,295,128 5% GBS: \$66,475,638	Frequent	51	High
Wildfire	Estimated Value in the WUI: \$2,027,573,597	Frequent	42	High

- a. Building damage ratio estimates based on FEMA 386-2 (August 2001)
 b. The valuation of general building stock and loss estimates was based on the custom inventory developed for Putnam County and probabilistic modeling results and exposure analysis as discussed in Section 5.
 c. The earthquake and hurricane wind hazards were evaluated by Census tract. The Census tracts do not exactly align with municipal boundaries; therefore, a total is reported for each Town inclusive of the Villages within the Town boundary.
 d. Frequent = Hazard event is likely to occur within 25 years.
 Occasional = Hazard event is likely to occur within 100 years
 Rare = Hazard event is not likely to occur within 100 years
 e. The estimated potential losses for Severe Storm are from the HAZUS-MH probabilistic hurricane wind model results. See footnote c.
 GBS = General building stock
 MRP = Mean return period
 RCV = Replacement cost value



National Flood Insurance Program (NFIP) Summary

The following table summarizes the NFIP statistics for the municipality.

Table 9.5-4. NFIP Summary

Municipality	# Policies (1)	# Claims (Losses) (1)	Total Loss Payments (2)	# Rep. Loss Prop. (1)	# Severe Rep. Loss Prop. (1)	# Policies in 100-year Boundary (3)
Town of Kent	26	12	\$28,811	0	0	2

Source: FEMA Region 2, 2014

- (1): Policies, claims, repetitive loss and severe repetitive loss statistics provided by FEMA Region 2, and are current as of 2/28/14. Please note the total number of repetitive loss properties excludes the severe repetitive loss properties. The number of claims represents the number of claims closed by 2/28/14.
- (2): Information regarding total building and content losses was gathered from the claims file provided by FEMA Region 2.
- (3): The policies inside and outside of the flood zones is based on the latitude and longitude provided by FEMA Region 2 in the policy file. FEMA noted that where there is more than one entry for a property, there may be more than one policy in force or more than one GIS possibility.

Critical Facilities

The table below presents HAZUS-MH estimates of the damage and loss of use to critical facilities in the community as a result of a 1- and 0.2-percent annual chance flood events.

Table 9.5-5. Potential Flood Losses to Critical Facilities

Name	Type	Exposure		Potential Loss from 1% Flood Event	
		1% Event	0.2% Event	Percent Structure Damage	Percent Content Damage
Ludington Court 1	Highway Bridge	X	X	-	-
Ludington Court 2	Highway Bridge	X	X	-	-

Source: HAZUS-MH 2.1

Note: Please note it is assumed the wells and pump stations have electrical equipment and openings are three-feet above grade. If depth of water is less than 3 feet, no estimated damages are calculated.

NP Not provided by HAZUS

x Facility located within the DFIRM boundary.

- No loss calculated by HAZUS

NA Not calculated in HAZUS

NF HAZUS estimate the facility will not be functional

(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).

(2) 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.

(3) Dams located in the floodplain are not listed in the table above. HAZUS does not calculate potential losses to a dam as a result of a flood event.

Other Vulnerabilities Identified by Municipality

The 2013 FEMA Flood Insurance Study (FIS) for Putnam County did not indicate any floodprone areas in the Town.

In addition to those identified above, the municipality has identified the following vulnerabilities:

- Bridge into main Highway Garage on Ludington Court needs to be rebuilt. It is over a 20' span so Putnam County is responsible. The water from the stream below has risen over the bridge during hurricanes. If this bridge fails Department vehicles are trapped, this is a potential disaster. DPW currently will transfer certain critical vehicles when a major storm is imminent to the Smokey Hollow Garage to maintain a skeleton force.



- Restoration/replacement of “Little Fills” causeway on Nichols Street. Causeway spans NYC reservoir and provides alternative emergency evacuation/ hospital access from Putnam County Park should the Route 301 causeway be inaccessible due to incident on either Gypsy Trail road of Route 301.
- Currently the town is evaluating bridges under 20’ in span to determine fitness and the degree of damage caused by weather events. N. Horsepound Road partially closed due to bridge determined to be unsafe. Bridges are of varied age and origin (including at least one cattle pass) and primarily field stone and mortar construction. If these small bridges are washed out it will isolate the rural sections of the Town’s population. Bridges under 20’ for which the town is responsible are:
 - Whangtown & Schrade
 - Dean Road
 - Mooney Hill Road
 - Ludington Court
 - Nimham Road
 - Sagamore Road
 - N. Horsepound Road
 - South Lake
 - East Boyds Road
- The town-owned dams for the Lake Carmel Park District and the Lake Tibet Park district require upgrades to meet new standards designed to meet the increasing severe weather events.
- The Town is comprised of a number of private lake communities, many of which have wholly owned bridges and dams which may need repair and/or upgrades to meet new standards designed to withstand the increasing severe weather events.
- There is a privately owned Wastewater Treatment Plant which is set to accept flow from properties within the newly formed Kent Route 52 Sewer District. The vulnerability of such has not been established but damage to such would impact not only the properties it serves but also could severely impact Palmer Lake into which the treated effluent will flow.



9.5.5 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 municipality.

Table 9.5-6. Planning and Regulatory Tools

Tool / Program (code, ordinance, plan)	Do you have this? (Y/N)	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, date of adoption, name of plan, explanation of authority, etc.)
Building Code	Y	Local	Building Department	Ch. 27, adopted 1/28/2008
Zoning Ordinance	Y	Local	Zoning Board of Appeals	Ch. 77, adopted 12/28/78, amended 11/24/2008
Subdivision Ordinance	Y	Local	Planning Board	Ch. 66A, adopted 1/24/2012
Site Plan Review Requirements	Y	Local	Planning Board	Ch. 77, adopted 12/28/78, amended 11/24/2008
National Flood Insurance Program (NFIP) Flood Damage Protection Ordinance	Y	Federal, State, Local	Building Department	Ch. 39, adopted 7/6/87, amended 1/29/13
NFIP - Freeboard	Y	State, Local	Building Department	State mandated freeboard or BFE+2 for residential construction Ch. 39 in local code
NFIP - Cumulative Substantial Damages	N	Local		
Comprehensive Plan / Master Plan	Y	Local	Town Board	Kent Comprehensive Plan, adopted 11/2008
Capital Improvements Plan				The Town is working on developing a Capital Plan, which could include funding to support mitigation activities for public property and infrastructure
Stormwater Management Plan/Ordinance	Y	Local	Building Department	Ch. 66. Adopted 4/8/05, amended 1/14/08
Floodplain Management / Basin Plan		Local	Building Department	Ch. 39, adopted 7/6/87, amended 1/29/13
Open Space or Greenway Plan	N			
Emergency Management and/or Response Plan	Y			
Economic Development Plan				
Local Waterfront Revitalization Plan (for waterfront communities)	N/A		N/A	
Post Disaster Recovery				



Tool / Program (code, ordinance, plan)	Do you have this? (Y/N)	Authority (local, county, state, federal)	Dept. /Agency Responsible	Code Citation and Comments (Code Chapter, date of adoption, name of plan, explanation of authority, etc.)
Plan and/or Ordinance				
Growth Management				
Real Estate Disclosure req.				
Habitat Conservation Plan				
Special Purpose Ordinances (e.g. wetlands, critical or sensitive areas)	Y			Combined Steep Slope Protection and Stormwater Management Local Law (2005)

(1) NYS Subdivision laws provide a general framework, but allow room for local ordinances and interpretation.

The 2008 Comprehensive Plan also notes the following plans created at a county or regional level that have significance for the Town of Kent:

- Putnam County Groundwater Protection and Utilization Plan (September 2004)
- An Agricultural & Farmland Protection Plan for Putnam County (August 2004)
- Hudson River Valley Greenway Program (1991).
- Vision 2010 (February 2000).
- Watershed Memorandum of Agreement (MOA).

Administrative and Technical Capability

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

Table 9.5-7. Administrative and Technical Capabilities

Staff/ Personnel Resources	Available (Y or N)	Department/ Agency/Position
Planner(s) or Engineer(s) with knowledge of land development and land management practices	Y	Planning
Engineer(s) or Professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Planning
Planners or engineers with an understanding of natural hazards	Y	Planning
NFIP Floodplain Administrator	Y	Building Inspector (currently William Walters)
Surveyor(s)	N	
Personnel skilled or trained in “GIS” applications	Y	Wetlands/Stormwater Consultant Stormwater Management Committee
Scientist familiar with natural hazards in the County.	N	
Emergency Manager	N	
Grant Writer(s)	N	
Staff with expertise or training in benefit/cost analysis	Y	Director of Finance

Fiscal Capability

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

Table 9.5-8. Fiscal Capabilities

Financial Resources	Accessible or Eligible to Use (Yes/No/Don't Know)
Community Development Block Grants (CDBG)	Y
Capital Improvements Project Funding	Y
Authority to Levy Taxes for specific purposes	Y



Financial Resources	Accessible or Eligible to Use (Yes/No/Don't Know)
User fees for water, sewer, gas or electric service	N
Impact Fees for homebuyers or developers of new development/homes	Y
Incur debt through general obligation bonds	Y
Incur debt through special tax bonds	Y
Incur debt through private activity bonds	
Withhold public expenditures in hazard-prone areas	N
Mitigation grant programs	Y
Other	Multi-Modal Road Infrastructure grants for severely damaged through roads connecting Townships. The Town is submitting one for Horton Town Road this January.

Community Classifications

The table below summarizes classifications for community program available to the Town of Kent.

Table 9.5-9. Community Classifications

Program	Classification	Date Classified
Community Rating System (CRS)	NP	N/A
Building Code Effectiveness Grading Schedule (BCEGS)	TBD	TBD
Public Protection	TBD	TBD
Storm Ready	NP	N/A
Firewise	NP	N/A

N/A = Not applicable. NP = Not participating. - = Unavailable. TBD = To be determined.

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
- 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/>

National Flood Insurance Program

The following section provides details on the National Flood Insurance Program (NFIP) as implemented within the municipality:



NFIP Floodplain Administrator: Building Inspector (currently William Walters)

The Town of Kent is currently an active member of the NFIP, in good compliance. The Town's regulatory and enforcement programs at least meet the Federal and State requirements.

As of July 31, 2014 there are 27 policies in force, insuring \$7.6 million of property with total annual insurance premiums of \$18,914. Since 1978, 12 claims have been paid totaling \$28,811. Overall, the Town does not have significant areas of flood risk. As of February 28, 2014 there no Repetitive Loss or Severe Repetitive Loss properties in the Town.

The Town has site plan review, permitting and inspection process that insures that new development and substantial improvements are conducted in compliance with all regulations and ordinances, including consideration of natural hazard risk areas.

The Town's building inspector would make substantial damage estimates as needed, however this has not been needed historically. He is the sole person assuming the responsibilities of compliance with the NFIP in the Town. The NFIP related services the Town provides includes permitting, inspection, and providing current NFIP flood mapping.

The Town is currently updating their website, and will include links to information regarding natural hazard risk, mitigation and the NFIP.

The current NFIP FPA has not had formal training in floodplain management, but would be very interested in attending training, certification, etc. if offered locally.

Due to their relatively low flood risk and small policy base, the Town does not believe that participation in the NFIP's Community Rating System (CRS) program would be cost-effective.

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 have been/will be incorporated into municipal procedures which may include former mitigation initiatives that have become continuous/on-going programs and may be considered mitigation 'capabilities'

Land Use Planning: Per the 2008 Comprehensive Plan, the following:

Planning Policy 1: Steep Slope Protection - Establish appropriate development controls to avoid environmental degradation of steep slopes.

In addition to the existing Steep Slope and Erosion Control Ordinance, the town should further guide potential development and address the visual impact of development on steep slopes. The recommendations are:

- Hillside Protection Ordinance. This would limit the percentage of an area which could be disturbed significantly and would regulate the cutting and filling required to place development on hillsides. Such a regulation is particularly important for commercial areas in which large level areas are required for both the building footprint and parking. Finished grades could also be addressed by such a regulation.
- Ridgeline Protection Ordinance. This could take the form of a ridge overlay district or ridge zoning ordinance. This would limit or prohibit building on or near a ridgeline.
- Discount the area of land on any site which is located on steep slopes in the calculation of total developable area. For example, if only 25-50% of steep slope areas were included in the calculation of developable area, for



a property containing 10 acres of steep slopes, only 2.5 – 5 acres would count toward the allowable density of the parcel.

Site Plan Review: The Town has site plan review, permitting and inspection process that insures that new development and substantial improvements are conducted in compliance with all regulations and ordinances, including consideration of natural hazard risk areas.

Capital Planning: Per the Town's Comprehensive Plan, the Town is working on developing a Capital Plan, which could include funding to support mitigation activities for public property and infrastructure.

Building Local Mitigation Capabilities: The Town has included an initiative within the proposed mitigation strategy to support and participate in county-led initiatives intended to build local and regional mitigation and risk-reduction capabilities.

Floodplain Management: The current NFIP FPA has not had formal training in floodplain management, but would be very interested in attending training, certification, etc. if offered locally.



9.5.6 Mitigation Strategy and Prioritization

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

Past Mitigation Activity

The municipality identifies the following mitigation projects and/or initiatives have been completed in the past:

- Replaced the flood vulnerable and damaged North Horsepound Road Bridge in 2014.
- Vulnerabilities of the privately owned Wastewater Treatment Plant within the newly formed Kent Route 52 Sewer District have recently been addressed. Potential impacts to such would impact not only the properties it serves but also could severely impact Palmer Lake into which the treated effluent flows.
- The Town recently replaced the salt dome at the Route 301 Highway Garage (severe winter storm), and will be replacing the sale dome at the Route 311 Highway Garage (2015).
- The Town has an active, ongoing program to replace rotting steel stormwater culverts (stormwater management, potential flood reduction).
- The Town recently approved purchased of a new plow truck to support severe winter storm clean up.

Proposed Hazard Mitigation Initiatives for the Plan

The Town of Kent identified mitigation initiatives they would like to pursue in the future. Some of these initiatives may be previous actions carried forward for this plan. 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. Table 9.5-11 identifies the municipality's updated local mitigation strategy.

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 actions as 'High', 'Medium', or 'Low.' The table below summarizes the evaluation of each mitigation initiative, listed by Action Number.

Table 9.5-12 provides a summary of the prioritization of all proposed mitigation initiatives for the Plan.



Table 9.5-10. Proposed Hazard Mitigation Initiatives

Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals / Objectives Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
TOK-1	Upgrade or replace earthen causeway through NYC reservoir comprising Nichols Street. Due to design failure roadway erodes and cedes clearance to reservoir as a result of major weather events. Engineering underway to determine scope of project, which should include restoration/replacement of “Little Fills” causeway on Nichols Street. Causeway spans NYC reservoir and provides alternative emergency evacuation/ hospital access from Putnam County Park should the Route 301 causeway be inaccessible due to incident on either Gypsy Trail Road or Route 301.										
	See above.	Existing	Flood, Severe Storm, Climate Change	G-1, G-2	Highway Superintendent	High – Reduced damage to public infrastructure, life safety	High – est. \$1.6MM	Currently investigating potential sources of funding	Engineering underway. Project implementation is long term, dependent on availability of funding	High	SIP
TOK-2	Currently the town is evaluating bridges under 20’ in span to determine fitness and the degree of damage caused by weather events, which includes the following: • Whangtown & Schrade • Dean Road • Mooney Hill Road • Ludington Court • Nimham Road • Sagamore Road • South Lake • East Boyds Road Bridges are of varied age and origin (including at least one cattle pass) and primarily field stone and mortar construction. Currently under review by Town Highway superintendent and county engineer.										
	See above.	Existing	Flood, Severe Storm, Severe Winter Storm, Earthquake, Climate Change	G-1, G-2, G-6	Highway Superintendent, with support of County Engineer	High - Reduced damage to public infrastructure, life safety	Medium – Ongoing evaluation of bridges. High – Implementation of bridge mitigation projects	Town budget for ongoing evaluation of bridges	Ongoing evaluation. Long term for project implementation, as determined by available funding.	Medium	LPR, SIP
TOK-3	The town owned dams for the Lake Carmel Park District and the Lake Tibet Park district require upgrades to meet new standards designed to meet the increasing severe weather events. Engineering currently underway to determine scope of project. In addition to municipally owned dams, there are several privately held dams under similar requirements. Since damage to both the general safety and welfare and publicly owned assets are at risk from a failure, sponsorship of private applications for assistance is also a possibility.										
	See above	Existing	Flood, Severe Storm, Earthquake, Climate Change	G-1, G-2	Town of Kent – Engineering and Public Works	High – Reduced chance of dam failure; life-safety	High	Federal Mitigation Grant Funding; Local Budget for match	Long term DOF	High	LPR, SIP



Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals / Objectives Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
TOK-4 (LOI 54)	Lake Carmel Dam Rehabilitation: The improvements have been divided into short term and long term categories. The short term improvements should be addressed within the next year Short Term Dam Improvements- Town is mitigating severely eroded stream bank of the spillway channel. Long term Improvements – TBD See Action Worksheet										
	See above	Existing	Flood, Severe Storm, Earthquake, Climate Change	G-1, G-2	Town of Kent – Engineering and Public Works	High – Reduced chance of dam failure; life-safety	High - \$725K	Federal Mitigation Grant Funding; Local Budget for match	Short – 1 year for spillway channel repair Long term DOF for remainder	High	SIP
TOK-5	Submit Multi-Modal Road Infrastructure grant requests for severely damaged through roads connecting Townships. The Town is currently planning to submit one for Horton Town Road this January.										
	See above.	Existing	Flood, Severe Storm, Severe Winter Storm	G-1, G-2	Town of Kent – Engineering and Public Works	Reduced road damage (essential infrastructure) from flooding and severe storm events	High	Multi-Modal Road Infrastructure Grants	Short (1 year)	High (ongoing)	SIP
TOK-6	Establish a Capital Improvements Budget (recommendation of the 2008 Comprehensive Plan), to include budget items for capital infrastructure repair, improvements, upgrades and other mitigation.										
	See above.	Both	All hazards.	G-2, G-5, G-6	Town Board	High – Improved Town capability to address vulnerable critical and essential facilities and infrastructure; life-safety	Low - High	Town Budget	Short	High	LPR, to support SIP
TOK-7 (LOI 1803)	Green Chimney's School – Clearpool Campus Back Up Power: Backup power generation to support critical facilities. See Action Worksheet										
	See above	Existing	Severe Storm, Severe Winter Storm, Climate	G-1, G-2, G-3	Green Chimneys School, Nicole Andersen, Fund Development Associate, Grants	High – Reduced vulnerability to loss of service at a facility	High - \$106,500	Federal Mitigation Grant Funding; School budget for match	Medium Term – Implementation in short-term once funding is secured	High	SIP



Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals / Objectives Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
			Change			serving vulnerable populations					
TOK-8	Privately-Owned Dam Outreach and Support: The Town is comprised of a number of private lake communities, many of which have wholly owned bridges and dams which may need repair and/or upgrades to meet new standards designed to withstand the increasing severe weather events. The Town will provide public outreach and resources (not fiscal), as appropriate, to support these communities with meeting their obligations to meet prevailing safety standards.										
	See above	Existing	Flood, Severe Storm, Severe Winter Storm, Earthquake, Climate Change	G-1, G-2, G-3	Town Supervisor, working with local lake communities	Reduced vulnerability of private property, potential life-safety	Low – Town outreach and non-fiscal support	Town Budget; Dam repair and upgrades would not be Town funded	Short for outreach; ongoing for non-fiscal resource support	High	EAP, SIP for project implementations
TOK-9	Ludington Bridge: Petition Putnam County to address the flood-vulnerable Ludington Court bridge, considered critical infrastructure for the Town and region. This would likely involve full replacement of the bridge at a higher elevation.										
	See above.	Existing	Flood, Severe Storm, Climate Change	G-1, G-2, G-6	Town Supervisor and Town Board to appeal to County	High – Failure of bridge would result in loss of access and critical services including life-safety	High	Local Budget for appeal to County for action; TBD for project implementation	Short for appeal to County; long term for project implementation, assumed depending on funding availability	High	SIP
TOK-10	Route 301 Highway Garage Improvements: Enlarge the yard, perform wetlands mitigation and build an onsite retaining wall.										
	See above.	Existing	Flood, Severe Storm, Climate Change	G-2, G-4	Highway Superintendent	Reduced vulnerability of critical public works operations from hazard events; reduced environmental impacts	High	Town Budget	Long term for full implementation	High	SIP, NRP
TOK-11	Support and participate in county led initiatives intended to build local and regional mitigation and risk-reduction capabilities (see Section 9.1), specifically: - Re-Establish Local Emergency Planning Committees (LEPCs) within the County, with an emphasis on stronger municipal level participation. (PCBES-1). - Workshops and Seminars to build local capabilities in floodplain management and disaster recovery (PCBES-11), potentially to include: - NFIP Community Rating System (CRS)										



Initiative	Mitigation Initiative	Applies to New and/or Existing Structures*	Hazard(s) Mitigated	Goals / Objectives Met	Lead and Support Agencies	Estimated Benefits	Estimated Cost	Sources of Funding	Timeline	Priority	Mitigation Category
	- Benefit-Cost Analysis (BCA) - Substantial Damage Estimating (SDE) - NFIP Elevation Certificates (EC) - Certified Floodplain Manager (CFM) Training and Certification - County-Wide Housing Location/Relocation Planning Initiative for Disaster Displaced Residents and Structures (PCBES-12)										
	See above	New and Existing	All Hazards	All Objectives	Putnam County, as supported by relevant local department leads,	High (comprehensive improvements mitigation and risk-reduction capabilities)	Low-Medium (locally)	Local (staff resources)	Short	High	LPR, EAP

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
NYCDEP	New York City Department of Environmental Protection
NYSDEC	New York State Department of Environmental Conservation
NYS DHSES	New York State Department of Homeland Security and Emergency Services
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
RFC	Repetitive Flood Claims Grant Program
SRL	Severe Repetitive Loss Grant Program

Timeline:

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

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,

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





Costs:

grants, fee increases) to implement. Existing funding levels are not adequate to cover the costs of the proposed project.

Benefits:

and property.

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 also 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*



Table 9.5-11. Summary of Prioritization of Actions

Mitigation Action/Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
TOK-1	Upgrade or replace earthen causeway through NYC reservoir comprising Nichols Street.	1	1	0 (engineering underway)	1	1	0	-1	1	1	1	1	0	1	1	9	High (project considered High Priority despite implementation challenges)
TOK-2	Evaluate bridges under 20' for hazard vulnerability, mitigate as possible	1	1	0	1	1	1	-1	1	1	1	1	-1	1	1	9	Medium
TOK-3	Town-owned dam evaluation and rehabilitation	1	1	1 (evaluation)	1	1	1	-1	1	1	1	1	-1	1	1	10	High
TOK-4 (LOI 54)	Lake Carmel Dam Rehabilitation	1	1	0	1	1	1	-1	1	1	0	1	0	1	1	9	High
TOK-5	Submit Multi-Modal Road Infrastructure grant requests	1	1	1	1	1	1	1	1	1	1	1	0	1	1	13	High (ongoing)
TOK-6	Establish Capital Improvements Fund (Integration Action)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	14	High
TOK-7 (LOI 1803)	Green Chimney's School – Clearpool Campus Back Up Power	1	1	1	1	1	1	0	1	1	1	1	1	1	1	13	TBD
TOK-8	Privately-Owned Dam Outreach and Support	1	1	1	1	1	1	1	1	0	1	1	1	1	1	13	High
TOK-9	Ludington Bridge Mitigation	1	1	1 (to petition County)	1	1	1	1	1	1	1	1	1	1	1	14	High
TOK-10	Route 301 Highway Garage Improvements	0	1	1	1	1	1	1	1	1	1	1	1	1	1	13	High



Mitigation Action/Project Number	Mitigation Action/Initiative	Life Safety	Property Protection	Cost-Effectiveness	Technical	Political	Legal	Fiscal	Environmental	Social	Administrative	Multi-Hazard	Timeline	Agency Champion	Other Community Objectives	Total	High / Medium / Low
TOK-11	Support and participate in county led initiatives intended to build local and regional mitigation and risk-reduction capabilities	1	1	1	1	1	1	0 (will require municipality to support staff time)	1	1	0 (will require municipality to support staff time)	1	1	1	1	12	High

Note: Refer to Section 6 which contains the guidance on conducting the prioritization of mitigation actions.



9.5.7 Future Needs To Better Understand Risk/Vulnerability

None at this time.

9.5.8 Hazard Area Extent and Location

Hazard area extent and location maps have been generated for the Town of Kent 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 Kent has significant exposure. These maps are illustrated below.

9.5.9 Additional Comments

None at this time.



Figure 9.5-1. Town of Kent Hazard Area Extent and Location Map

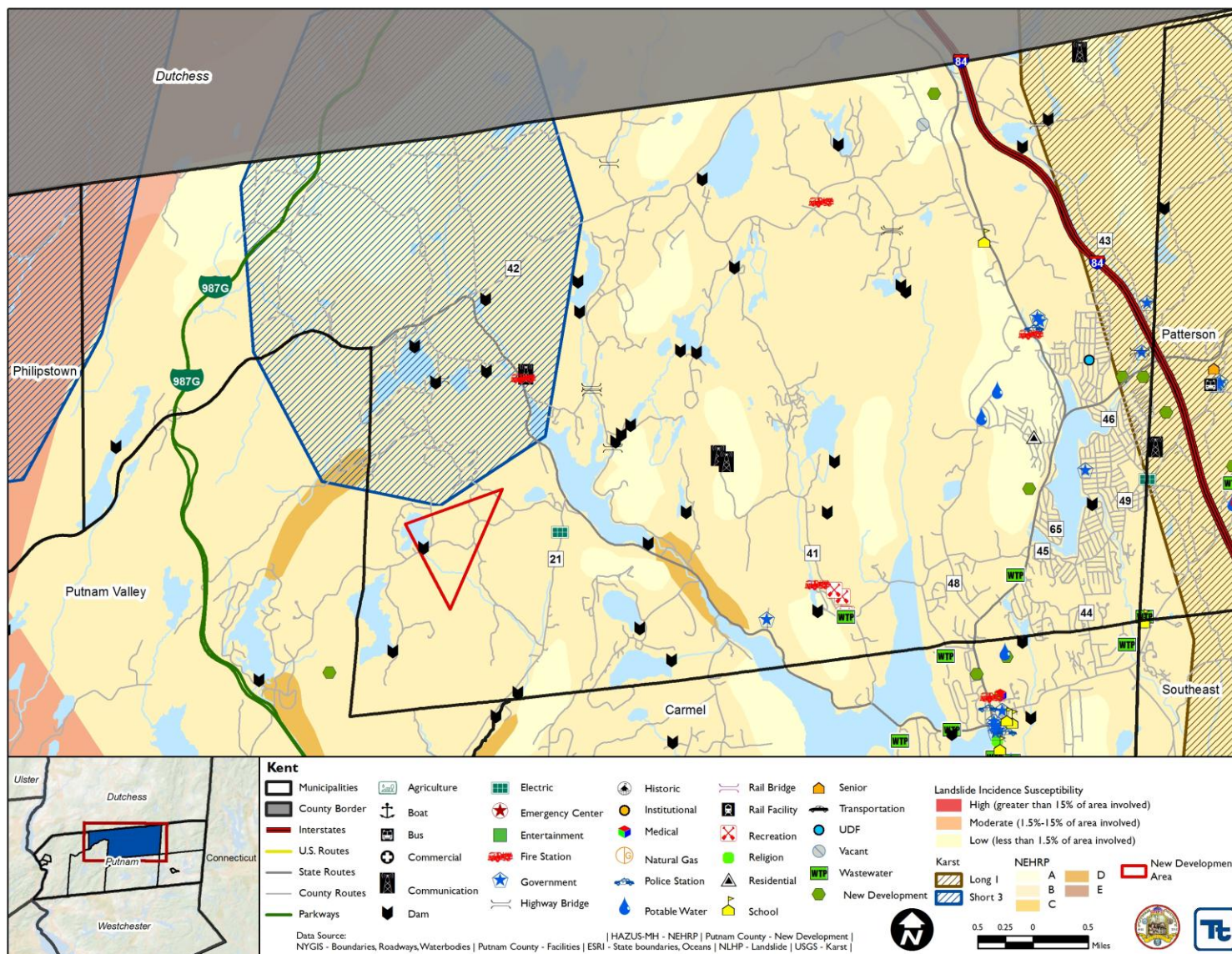
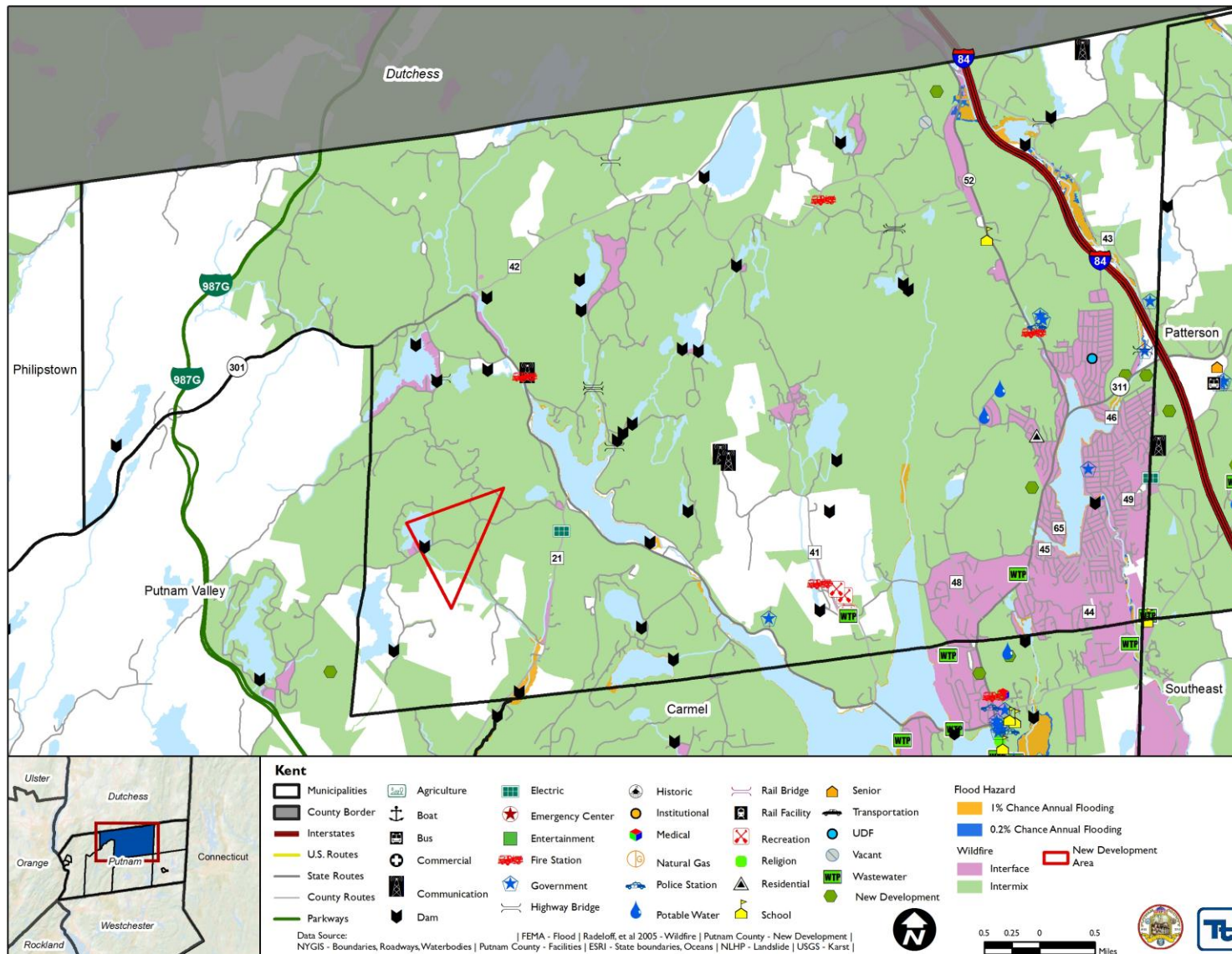




Figure 9.5-2. Town of Kent Hazard Area Extent and Location Map





Name of Jurisdiction: Town of Kent, Kent Lakes
Action Number: TOK-4 (LOI #54)
Action Name: Lake Carmel Dam Rehabilitation

Assessing the Risk	
Hazard(s) addressed:	Flood, Severe Storm, Earthquake, Climate Change
Specific problem being mitigated:	Putnam County is in the process of including the Town of Kent in their county-wide hazardous mitigation plan. The Lake Carmel Dam is a Class C Hazard and is in a compromised state. The state of the dam has been in a more rapid declining condition.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1. No Action – property damage and life safety vulnerabilities continue 2. Perform short and long-term dam improvements 3.
Action/Project Intended for Implementation	
Description of Selected Action/Project	The improvements have been divided into short term and long term categories. The short term improvements should be addressed within the next year. - Short Term Dam Improvements - We are mitigating severely eroded stream bank of the spillway channel. - Long term Improvements – TBD
Mitigation Action/Project Type	SIP
Objectives Met	G-1, G-2
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	High – Reduced chance of dam failure; life-safety Recent Damages: \$725,000
Estimated Cost	\$725,000
Priority*	High
Plan for Implementation	
Responsible Organization	Town of Kent, Town Supervisor
Local Planning Mechanism	Capital Improvements Budgets; Dam Emergency Action Plans
Potential Funding Sources	HMGP; Town of Kent for Local Match
Timeline for Completion	Short and Long Term
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)



Action Number:

LOI #54

Action Name:

Lake Carmel Dam Rehabilitation

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Clear life-safety implications
Property Protection	1	Will protect downstream properties from damage
Cost-Effectiveness	0	Cost-effectiveness not determined, repairs must be done
Technical	1	Within technical resources of town
Political	1	Supported politically
Legal	1	Town owned property
Fiscal	-1	Long term improvements will be pending available funding, which may require grant funding
Environmental	1	
Social	1	Benefits all populations equally
Administrative	0	Will require administrative support for grants, project implementation, etc.
Multi-Hazard	1	
Timeline	0	Long term improvements schedule will be dependent on securing funding
Agency Champion	1	
Other Community Objectives	1	
Total	9	
Priority (High/Med/Low)	High	



Name of Jurisdiction: Green Chimneys School, Brewster
Action Number: TOK-7
Action Name: Backup Power Generators for Green Chimneys School at Clearpool

Assessing the Risk	
Hazard(s) addressed:	Severe Storm, Severe Winter Storm, Climate Change
Specific problem being mitigated:	Founded in 1947, Green Chimneys is an accredited not-for-profit organization helping more than 11,000 young people ages 3-21 throughout the Hudson Valley and New York Metropolitan region each year maximize their full potential.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	1 No Action – Town continues to have limited sheltering resources
	2 Enhance facilities at other locations that already have back-up power – No suitable existing facilities identified to date, costs to upgrade such facilities believed to be cost-prohibitive and impractical.
	3 Install back-up power at suitable, existing facility.
Action/Project Intended for Implementation	
Description of Selected Action/Project	Install backup power at this critical facility. As Putnam County has been hit by recent damaging storms including Hurricane Irene, Hurricane Sandy and heavy rain and snow storms, Putnam County is in the process of adopting its county-wide hazardous mitigation plan and will be including the Town of Southeast mitigation strategy.
Mitigation Action/Project Type	SIP
Objectives Met	G-1, G-2, G-3
Applies to existing structures/infrastructure, future, or not applicable	Existing
Benefits (losses avoided)	High – Reduced vulnerability of critical and essential facilities, infrastructure and services to power outages; public and life-safety Recent Damages: \$106,500
Estimated Cost	\$106,500
Priority*	High
Plan for Implementation	
Responsible Organization	Green Chimneys School, Nicole Andersen, Fund Development Associate, Grants
Local Planning Mechanism	Comprehensive Emergency Management Plan; Sheltering Plan
Potential Funding Sources	Federal Mitigation Grant funding; local budget for match
Timeline for Completion	Medium Term – Implementation in short-term once funding is secured
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

* Refer to results of Prioritization (page 2)



Action Number:

TOK-7

Action Name:

Backup Power Generators for Green Chimneys School at Clearpool

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Maintain operation of critical during power outages
Property Protection	1	Will provide protection of school property (structural)
Cost-Effectiveness	1	Very cost-effective
Technical	1	Highly technically feasible
Political	1	Project is supported by the Town government and residents
Legal	1	No legal impediments
Fiscal	0	Grant funding sought to support project implementation
Environmental	1	No environmental impediments, minimal permitting required
Social	1	Projects benefit all segments of population
Administrative	1	Projects can be administered within existing School and Town resources
Multi-Hazard	1	Protects against all hazards that result in power outages
Timeline	1	Project can be implemented in the short term once funding is secured
Agency Champion	1	Green Chimneys School, Nicole Andersen, Fund Development Associate, Grants
Other Community Objectives	1	Supports overall public health and safety, emergency management and continuity of operations
Total	13	
Priority (High/Med/Low)	High	