

9.7 VILLAGE OF HAVERSTRAW

This section presents the jurisdictional annex for the Village of Haverstraw.

9.7.1 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
Michael Kohut, Mayor 845-429-0300 Michael.Kohut@vohny.com	Patrick McNamee, Fire Inspector 845-429-0300 Patrick.McNamee@vohny.com
Local Floodplain Administrator (FPA)	
Ruben Berrios, Building Inspector 845-429-0300 Ruben.Berrios@vohny.com	

9.7.2 Municipal Profile

The Village of Haverstraw is located in the southeastern section of the Town of Haverstraw, and is bordered on the northwest by the Village of West Haverstraw, on the south by the Town of Clarkstown, and on the east by the Hudson River. The Village covers a total of 5.1 square miles, of which 3.1 square miles is water. According to the 2010 Census, the community's population was 11,910.

Waterways of significance in the village include Bowline Pond and the Hudson River along the village’s eastern boundary, and Minisceongo Creek along the northern corporate limits and in the lowland areas east of Samsondale Avenue.

Growth/Development Trends

The following table summarizes recent residential/commercial development since 2010 to present and any known or anticipated major residential/commercial development and major infrastructure development that has been identified in the next five years within the municipality. Refer to the map in 9.7.8 of this annex which illustrates the hazard areas along with the location of potential new development.

Table 9.7-1. Growth and Development

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (Section block and lot designation on Village tax maps)	Known Hazard Zone(s)	Description/Status of Development
Recent Development from 2010 to present					
Harbors Haverstraw – A waterfront development project that may yield up to 850 market rate units in a combination of townhome and apartment-style condominiums was ongoing. Additional	Residential	550 units 12+ bldgs.	27.18-1-1.5-1.8	NEHRP: E; WUI: Interface	Started in 2003, to date 500 units have been built. Project is not yet complete.

Property or Development Name	Type (e.g. Res., Comm.)	# of Units / Structures	Location (Section block and lot designation on Village tax maps)	Known Hazard Zone(s)	Description/Status of Development
coordinated development includes a riverfront esplanade, ferry pier and parking garage and a restaurant/catering hall. An additional 170 scattered-site affordable housing units are required to be built or rehabbed in the Village.					
Known or Anticipated Development in the Next Five (5) Years					
Admirals Cove	Residential	200+ units	27.62-2-7.2, 8	Flood: 1% Chance; NEHRP: E	Not yet planned or approved
Maple Terrace redevelopment	Residential	100 units	27.62-2-17.2, 17.3	NEHRP: E; WUI: Interface	Not yet planned or approved
Chair factory development	Residential/commercial	150+ units and commercial	27.09-1-3	Flood: 1% Chance; NEHRP: E; WUI: Interface	Not yet planned or approved
Dowd St. apartments	Residential	18 units	26.50-1-5	None Identified.	Not yet planned or approved

* Only location-specific hazard zones or vulnerabilities identified.

9.7.3 Natural Hazard Event History Specific to the Municipality

Rockland County has a history of natural and non-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. For the purpose of this plan update, events that have occurred in the County from 2008 to present were summarized to indicate the range and impact of hazard events in the community. Information regarding specific damages is included, if available, based on reference material or local sources. This information is presented in the table below. For details of these and additional events, refer to Volume I, Section 5.0 of this plan.

Table 9.7-2. Hazard Event History

Dates of Event	Event Type (Disaster Declaration if applicable)	Rockland County Designated?	Summary of Damages/Losses
August 10, 2009	Thunderstorms	N/A	Village DPW and Fire Departments responded to calls, and DPW crews worked overtime hours. There were \$25,000 in damages throughout County.
January 25, 2010	High Wind	N/A	Village DPW and Fire Departments responded to calls. There were \$100,000 in damages throughout County.
December 26-27, 2010	Severe Winter Storm and Snowstorm	Yes	Village Department of Public Works (DPW) crews were dispatched to plow/clean snow, accruing 42.5 hours of overtime per worker for plowing and snow removal.

Dates of Event	Event Type (Disaster Declaration if applicable)	Rockland County Designated?	Summary of Damages/Losses
	DR-1957		
March 2011	Heavy Rains	N/A	Multiple Fire Department responses in the Village for pump-outs due to heavy rains.
August 25 – September 5, 2011	Hurricane Irene DR-4020	Yes	<p>The Village of Haverstraw undertook preventive measures of filling and distributing sandbags to vulnerable locations. The storm forced one person to shelter at the Village Community Center. The Village DPW salt shed incurred structural damage due to wind and storm surge. At Emeline Park, gravel walkways washed away due to tide. Riverside Avenue was closed for 3 hours due to flooding. Members of the Village police department and fire department were deployed for numerous requests for assistance.</p> <p>Other costs incurred included materials and labor to clean up storm debris and cleaning of catch basins and the stormwater system.</p>
October 2011	“Halloween Storm”	N/A	Village DPW and Fire Departments responded to calls.
October 27 – November 8, 2012	Hurricane Sandy DR-4085	Yes	<p>The Village of Haverstraw undertook preventive measures of filling and distributing sandbags to vulnerable locations and cleaning out catch basins before the storm.</p> <p>Riverside Avenue and Dr. Girling Drive in the Village were closed for several hours during the storm. Both roads were reopened when tide receded. Storm damage throughout the region led to power outages in the Village for up to five days. Overland flooding completely washed out the Village Greenway trail, and damaged/clogged Village sanitary sewer pump stations.</p> <p>Public facility damages in the Village included 3+ feet of water flooded the Department of public works (DPW) facility; damage to Emeline Park where paths and playgrounds were washed out, trees toppled, and debris deposited; flooding to Village owned restaurants; and equipment damage to a number of small DPW tools.</p> <p>Reports from private residences included damage to 70-80 vehicles when two parking garages below residential apt buildings were flooded.</p> <p>Members of the Village police department, fire department, and Department of Public Works were deployed for numerous requests for assistance.</p> <p>Other costs incurred included materials and labor to clean up storm debris and cleaning of catch basins and the stormwater system.</p>

Notes:

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

9.7.4 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 Village of Haverstraw. For additional vulnerability information relevant to this jurisdiction, refer to Section 5.0.

Natural Hazard Risk/Vulnerability Risk Ranking

The table below summarizes the hazard risk/vulnerability rankings of potential natural hazards for the Village of Haverstraw.

Table 9.7-3. 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
Drought	Damage estimate not available	Frequent	39	High
Earthquake	100-Year GBS: \$23,171 500-Year GBS: \$2,688,809 2,500-Year GBS: \$41,016,643	Occasional	32	High
Extreme Temperature	Damage estimate not available	Frequent	30	Medium
Flood	1% Annual Chance: \$34,376,000	Frequent	36	High
Landslide	RCV Exposed: \$1,839,969,000	Occasional	36	High
Severe Storm	100-Year MRP: \$634,737 500-year MRP: \$2,502,211 Annualized: \$38,980	Frequent	48	High
Winter Storm	1% GBS: \$13,060,450 5% GBS: \$65,302,250	Frequent	51	High
Wildfire	Estimated Value in the WUI: \$1,932,259,000	Frequent	54	High

Notes:

- 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 custom inventory for the municipality.
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
- c. Loss estimates for the severe storm and severe winter storm hazards are structural values only and do not include the value of contents.
- d. Loss estimates for the flood and earthquake hazards represent both structure and contents.
- e. The HAZUS-MH earthquake model results are reported by Census Tract.

National Flood Insurance Program (NFIP) Summary

The following table summarizes the NFIP statistics for the Village of Haverstraw.

Table 9.7-4. 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)
Village of Haverstraw	22	3	\$7,768	0	0	2

Source: FEMA Region 2, 2016

- (1) Policies, claims, repetitive loss and severe repetitive loss statistics provided by FEMA Region 2, and are current as of 06/30/2016. The total number of repetitive loss properties does not include the severe repetitive loss properties. The number of claims represents claims closed by 06/30/16.
- (2) Total building and content losses 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.



Notes: 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. A zero percentage denotes less than 1/100th percentage and not zero damages or vulnerability as may be the case. Number of policies and claims and claims total exclude properties located outside county boundary, based on provided latitude and longitude.

Critical Facilities

The table below presents the critical facilities identified in the HMP that are located in the FEMA-delineated 1- and/or 0.2-percent annual chance floodplain. The table also summarizes the Hazards United States (HAZUS) – Multi-Hazards (MH) damage estimates (if any) to each critical facility as a result of the 1-percent annual chance flood event. According to the Mayor, the Bowline Point Generating Station is located in the unincorporated portion of the Town, and the facility itself is not located in the Village. Refer to the Town of Haverstraw’s annex for the mitigation action to address the station’s flood vulnerability.

Table 9.7-5. 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
No facilities identified at this time					

Source: Hazus-MH 3.2, Rockland County

Other Vulnerabilities Identified

The municipality has identified the following vulnerabilities within their community:

- The Warren Avenue peninsula in the Village of Haverstraw is considered vulnerable to storm surge and associated impacts such as erosion. Some land has been lost in recent years and the shoreline armoring has had to be reinforced by the Village in some locations.
- The Village of Haverstraw is presently subject to flooding in areas adjacent to the Hudson River. Minisceongo Creek floods along the northern corporate limits and in the lowland areas east of Samsondale Avenue near the confluence with the Hudson River.
- Riverside Avenue through Tilcon quarry becomes inundated in heavy rain or high tide events as it is below sea level.

9.7.5 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 Village of Haverstraw.

Table 9.7-6. Planning and Regulatory Tools

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Department /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
Planning Capability				
Master Plan	Yes, 1980's	Local	Village Board	Master Plan
Capital Improvements Plan	No	-	-	-
Floodplain Management / Basin Plan	Yes	Federal	Building Department	
Stormwater Management Plan	Yes	County	Brooker Engineering; Department of Public Works	
Open Space Plan	No	-	-	-
Stream Corridor Management Plan	No	-	-	-
Watershed Management or Protection Plan	No	-	-	-
Economic Development Plan	No	-	-	-
Comprehensive Emergency Management Plan	No	-	-	-
Emergency Operation Plan	Yes	Local, County	-	MOA with Rockland County
Post-Disaster Recovery Plan	No	-	-	-
Transportation Plan	No	-	-	-
Strategic Recovery Planning Report	No	-	-	-
Other Plans:	Yes	Local	Village Board	2003 Village of Haverstraw Local Waterfront Revitalization Program
Regulatory Capability				
Building Code	Yes	State & Local	Building Department	Chapter 137: Fire Prevention and Building Construction
Zoning Ordinance	Yes	Local	Building Department	Zoning (Chapter 245), 1993
Subdivision Ordinance	Yes	Local	Building Department	Subdivision of Land (Chapter 210), 1970
NFIP Flood Damage Prevention Ordinance	Yes	Federal, State, Local	Building Department	Flood Damage Prevention (Chapter 141), 2014
NFIP: Cumulative Substantial Damages	No	-	-	-
NFIP: Freeboard	Yes	State, Local	Building Department	State mandated BFE+2 for single and two-family residential construction, BFE+1 for all other construction types
Growth Management Ordinances	No	-	-	-
Site Plan Review Requirements	Yes	Village	Building Department	Also Architectural Review Board (Chapter 13), 1987
Stormwater Management Ordinance	Yes	Village	Brooker Engineering; Department	Stormwater Management and Erosion and Sediment Control (Chapter 197), 2007

Tool / Program (code, ordinance, plan)	Do you have this? (Yes/No) If Yes, date of adoption or update	Authority (local, county, state, federal)	Department /Agency Responsible	Code Citation and Comments (Code Chapter, name of plan, explanation of authority, etc.)
			of public works	
Municipal Separate Storm Sewer System (MS4)	Yes	State	Building Department	Stormwater Management and Erosion and Sediment Control (Chapter 197), 2007
Natural Hazard Ordinance	No	-	-	-
Post-Disaster Recovery Ordinance	No	-	-	-
Real Estate Disclosure Requirement	Yes	State	-	NYS mandate, Property Condition Disclosure Act, NY Code - Article 14 §460-467
Other (Special Purpose Ordinances [i.e., sensitive areas, steep slope])	Yes	Village	Building Department	Ordinance restricting development on steep slopes/ Mountain protection zone; Waterfront Consistency Review (Chapter 242), 2003

Administrative and Technical Capability

The table below summarizes potential staff and personnel resources available to the Village of Haverstraw.

Table 9.7-7. Administrative and Technical Capabilities

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
Administrative Capability		
Planning Board	Yes	Building Department
Mitigation Planning Committee	No	-
Environmental Board/Commission	No	-
Open Space Board/Committee	No	-
Economic Development Commission/Committee	No	-
Maintenance programs to reduce risk	Yes	DPW
Mutual aid agreements	Yes	Fire Department, NYSDOT, DPW
Technical/Staffing Capability		
Planner(s) or engineer(s) with knowledge of land development and land management practices	Yes	Consultants to Building Department / Mayor
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Yes	Consultants to Building Department / Mayor
Planners or engineers with an understanding of natural hazards	Yes	Consultants to Building Department / Mayor
NFIP Floodplain Administrator (FPA)	Yes	Building inspector
Surveyor(s)	No	-
Personnel skilled or trained in GIS and/or Hazards United States (HAZUS) – Multi-Hazards (MH) applications	No	-
Scientist familiar with natural hazards	No	-
Emergency Manager	No	-
Grant writer(s)	Yes	Mayor and Brooker Engineering, Sylvia Welch

Resources	Is this in place? (Yes or No)	Department/ Agency/Position
		(grant writer)
Staff with expertise or training in benefit/cost analysis	No	Brooker Engineering, as needed
Professionals trained in conducting damage assessments	Yes	Engineers, Brooker Engineering

Fiscal Capability

The table below summarizes financial resources available to the Village of Haverstraw.

Table 9.7-8. Fiscal Capabilities

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

Community Classifications

The table below summarizes classifications for community program available to the Village of Haverstraw.

Table 9.7-9. Community Classifications

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Community Rating System (CRS)	No	-	-
Building Code Effectiveness Grading Schedule (BCEGS)	Yes	N/A	2010
Public Protection (ISO Fire Protection Classes 1 to 10)	Yes	4	2015
NYSDEC Climate Smart Community	Yes	Member, Community Pledge	-
Storm Ready Certification	No	-	-
Firewise Communities classification	No	-	-
Natural disaster/safety programs in/for schools	N/A	-	-
Organizations with mitigation focus (advocacy group, non-government)	No	-	-

Program	Do you have this? (Yes/No)	Classification (if applicable)	Date Classified (if applicable)
Public education program/outreach (through website, social media)	Yes	MS4	N/A
Public-private partnership initiatives addressing disaster-related issues	No	-	-

Note:

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

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

Criteria for classification credits are outlined in the following documents:

- The Community Rating System Coordinators Manual
- The Building Code Effectiveness Grading Schedule
- The ISO Mitigation online ISO’s Public Protection website at <https://www.isomitigation.com/ppc/>
- The National Weather Service Storm Ready website at <http://www.stormready.noaa.gov/index.html>
- The National Firewise Communities website at <http://firewise.org/>

Self-Assessment of Capability

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

Table 9.7-10. Self-Assessment Capability for the Municipality

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

National Flood Insurance Program

NFIP Floodplain Administrator (FPA)

Ruben Berrios, Building Inspector

Flood Vulnerability Summary

The Village does not keep track of all properties that have been flood damaged, but reports that 50 structures were damaged during Hurricane Floyd, none during Irene, and 10 during Superstorm Sandy. The Village does not perform substantial damage estimates and therefore does not maintain lists/inventories of properties that have been substantially damaged. No Village residents have approached the FPA with interest in mitigation activities, and the FPA is unaware of any residents currently in the process of mitigation.

Resources

The current FPA assumes the responsibilities of floodplain administration with support from contract engineers. Plan review and inspections are the primary responsibilities of the Village FPA. There are currently no education or outreach programs to the community regarding flood hazards/risk, and flood risk reduction through NFIP insurance, mitigation, etc.

The FPA feels empowered and capable to run an effective floodplain management program in the Village, and is adequately supported and trained to fulfill the responsibilities of municipal floodplain administrator. However, the FPA would consider attending continuing education and/or certification training on floodplain management if it were offered in the County for all local floodplain administrators.

Compliance History

The Village is in good standing with the NFIP. As of June 30, 2016, there are 22 policies in force in the Village of Haverstraw, 2 of which are in the 100-yr flood boundary. There are no repetitive loss or severe repetitive loss properties in the Village. Since 1978, 3 claims have been paid totaling \$7,768. According to the NFIP Policy Statistics report, the policies in the Village insure approximately \$47,525,600 of property with total annual insurance premiums of \$62,448.

Regulatory

The Village Flood Damage Prevention Law meets, but does not exceed, the FEMA and State minimum requirements. Although not specifically detailed in the zoning and planning regulations administered by the Village ZBA and Planning Boards, the Boards do consider flood risk and flood risk mitigation when reviewing any application for subdivision, site plan, variance, special permit or other appeal.

The community would consider joining the Community Rating System (CRS) program to reduce flood insurance premiums for their insured, and would attend a CRS seminar if offered locally.

Integration of Hazard Mitigation into Existing and Future Planning Mechanisms

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

Planning

Village Master Plan: The Village adopted a Master Plan in the 1980's, and recently received grant funding to update that plan. The current plan does include areas of natural hazard risk (e.g. flood-prone areas, steep slopes), and refers to a local or Countywide Hazard Mitigation Plan.

Stormwater Management Plan: The Village is an MS4 Regulated Community, and do you have a formal Stormwater Management Plan. The plan is updated regularly, and specifies projects/actions/initiatives to reduce the volume of stormwater, or otherwise mitigate stormwater flooding.

Local Waterfront Revitalization Plan, 2003: The plan provides an analysis of the key waterfront issues in the Village and includes a comprehensive inventory of the Waterfront Revitalization Area to identify important resources, problems, and opportunities relating to the Hudson River. The inventory identifies water dependent and water related or enhanced uses; surface water use; flooding, erosion, and siltation problem areas; underutilized, deteriorated or vacant properties; non-point source pollution; scenic resources; historic resources; water quality; public access and recreation; and natural habitats.

Rockland County Stormwater Consortium: The Village is a member of the Rockland County Stormwater Consortium, which works with other municipalities and the county to keep waterways clear of pollutants. The Stormwater Consortium consists of those municipal separate stormwater system (MS4) municipalities within Rockland County who have joined together with Cornell Cooperative Extension for the purpose of implementing the federal and state requirements for stormwater management. MS4 municipalities are responsible for meeting the Phase II stormwater management requirements of the National Pollutant Discharge Elimination System (SPDES) regulations.

Regulatory and Enforcement (Ordinances)

The Village code includes municipal zoning and subdivision regulations, site plan review and other municipal processes that require developers to take additional actions to mitigate natural hazard risk. The Village enforces a floodplain management ordinance as well as a mountain protection zone which acts similarly to a steep slope ordinance.

The Village has comprehensive zoning in place that limits development on the mountainside portion of the Village, as well as flood zone mitigation in the waterfront development district. Both are somewhat dated. Village building codes follow the state code and are not more stringent.

Flood Damage Prevention (Chapter 141): The purpose of this ordinance is to promote public health, safety, and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed to:

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

The objectives of this ordinance include:

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

The Village Building inspector is the appointed local floodplain administrator to administer and implement the ordinance by granting or denying floodplain development permits in accordance with its provisions.

Site Plan Review: Application for site plan approval is required for a building permit for any structure, building or use other than a single-family or two-family residence. The Planning Board is the approving authority for all applications, which must include the following:

1. A map showing the parcel in relationship to adjacent parcels, railroads, streams, all drainage and watercourses, street rights-of-way and street intersections and all other structure uses or markings as indicated on any Official Map hereafter adopted by the Village of Haverstraw.
2. A map of the entire parcel showing the location, dimensions and proposed use of all buildings, parking and loading areas and ingress and egress thereto; all site improvements, including proposed grades, walkways, driveways, lights, fences, walls, signs, drainage facilities, benches and landscaped areas, including trees and other plants; and all other structures and improvements other than the natural state of the land.

Subdivision of Land (Chapter 210): This ordinance sets forth procedures and requirements for how land within the Village of Haverstraw may be subdivided into lots, blocks or sites, with or without streets or highways, and appoints the Planning Board to review and approve or disapprove subdivision plans. The purpose of this ordinance is to ensure land subdivisions are part of a plan for the orderly, efficient and economical development of the Village. Land to be subdivided shall be of such character that it can be used safely for building or development purposes without danger to health or peril from fire, flood or other hazard and without damaging local ecological and environmental resources. It ensures that proper provisions shall be made for drainage, water, sewerage, electric, telephone, gas and other needed improvements. The proposed streets of any subdivision shall compose a convenient and safe system and shall be properly related to potential streets on adjoining properties. Streets shall be of such width, grade and location as to accommodate the prospective traffic, to afford adequate light and air and to facilitate fire and police protection.

Stormwater Management and Erosion and Sediment Control (Chapter 197): The purpose of this chapter is to establish minimum stormwater management requirements and controls to protect and safeguard the general health, safety, and welfare of the public residing within the Village. The objectives of this article are:

- A. Meet the requirements of minimum measures 4 and 5 of the SPDES general permit for stormwater discharges from municipal separate stormwater sewer systems (MS4s), Permit No. GP-02-02 or as amended or revised;
- B. Require land development activities to conform to the substantive requirements of the New York State Department of Environmental Conservation State Pollutant Discharge Elimination System (SPDES) general permit for construction activities GP-02-01, or as amended or revised;
- C. Minimize increases in stormwater runoff from land development activities in order to reduce flooding, siltation, increases in stream temperature, and streambank erosion and maintain the integrity of stream channels;
- D. Minimize increases in pollution caused by stormwater runoff from land development activities which would otherwise degrade local water quality;
- E. Minimize the total annual volume of stormwater runoff which flows from any specific site during and following development to the maximum extent practicable; and
- F. Reduce stormwater runoff rates and volumes, soil erosion and nonpoint source pollution, wherever possible, through stormwater management practices and to ensure that these management practices are properly maintained and eliminate threats to public safety.

Zoning (Chapter 245): The Zoning Chapter is adopted pursuant to the Village Law of the State of New York to promote and protect public health, safety and general welfare; to guide and regulate the orderly growth, development and redevelopment of the Village of Haverstraw based on a comprehensive plan with long-term objectives, principles and standards beneficial to the interests and welfare of the people; to protect the established character and social and economic well-being of both private and public property; to promote, in the public interest, the utilization of land for the purposes for which it is most desirable and best adapted; to secure safety from fire and other dangers to provide adequate light, air and convenience of access; to prevent overcrowding of the land and excessive density of population; to minimize and, where possible, prevent traffic congestion on public streets and highways; to conserve the value of buildings and enhance the value of land throughout the Village in furtherance of the Village of Haverstraw Master Plan as adopted by the Village of Haverstraw Planning Board.

The law designates 13 zoning classifications, including Waterfront Development and Mountain Protection, each of which is accompanied by a set of regulations guiding development in the zone.

Waterfront Consistency Review (Chapter 242): The purpose of this chapter is to provide a framework for agencies of the Village of Haverstraw to consider the policies and purposes contained in the Village of Haverstraw Local Waterfront Revitalization Program when reviewing applications for actions or direct agency actions located in the coastal area; and to assure that such actions and direct actions are consistent with the said policies and purposes. The Village of Haverstraw seeks to guide the preservation, enhancement, and utilization of the unique coastal area of the Village in a coordinated and comprehensive manner to ensure a proper balance between natural resources and the need to accommodate population growth, economic development, and attract the traveling public. This chapter is intended to achieve such a balance.

Operational and Administration

Planning Board: The Village of Haverstraw Planning Board reviews and grants approvals for site plans and subdivisions. They also make recommendations to the Zoning Board of Appeals on various zoning and planning matters. The Planning Board refers to and relies on local code, NFIP maps, continuing education, and NYS building codes to guide their decisions with respect to natural hazard risk management. The Planning Board also plays a role in enforcing compliance with related natural hazard regulations. The Board makes referrals to Rockland County planning, Rockland County drainage, New York State Department of Transportation (NYSDOT), and Joint Regional Sewerage Boards (JRSB).

Zoning Board: The Village of Haverstraw Zoning Board considers appeals for variances from the zoning ordinance, appeals of the Building Inspector, special permit applications and requests for zoning interpretations.

Building Department: The Building Department ensures proper compliance of both NYS and local building code and zoning. It also processes all paper work for the Village Planning, Zoning, and Architectural Review Boards. Staff in the department of public works and building department receive MS4 training or continuing professional education which supports natural hazard risk reduction.

Building Department officials regularly are educated in NYSBOC courses. DPW takes annual MS-4 training. The Village Engineer is on the County MS-4 committee.

DPW: The DPW has a continuing program of tree maintenance on village property and within village right of way to minimize damage from high winds, etc. The DPW also has a catch basin cleanout program to reduce problems with stormwater.

Funding

Operating Budget: The municipal budget contains line items including road/infrastructure improvements, and snow/ice removal.

Grants: The Village pursued and was awarded \$125,000 in grant funding for the Dutchtown Stormwater Management Project, NYS Assembly member item and mitigation-related project. The Village also received a NYS Assembly grant of \$50,000 to install generator for 3 firehouses.

Education and Outreach

The Village maintains a website has links to the municipal newsletter, local laws and documents, county websites, and emergency services.

Rockland County has two alert notification systems (CodeRED and NYAlert) that they manage. These two notification systems are accessible to the municipalities to send out messages. The National Weather Service also sends out tornado, high wind, and flooding alerts regarding forecasted weather. The Village utilizes these notification systems and also sends out email blasts to residents as needed.

Rockland County provides Towns and Villages palm-cards on winter storms; information regarding flooding; hurricane; high-winds, tornadoes via email and social media (Twitter and Facebook). Rockland County also has a pamphlet organizer with safety tips on various hazards. At the Village's request the County will speak to an organization/school/non-profit on emergency preparedness and mitigation.

9.7.6 Mitigation Strategy and Prioritization

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

Past Mitigation Initiative Status

The following table indicates progress on the community's mitigation strategy identified in the 2010 Plan. Actions that are carried forward as part of this plan update are included in the following subsection in its own table with prioritization. Previous actions that are now on-going programs and capabilities are indicated as such in the following table and may also be found under 'Capability Assessment' presented previously in this annex.

Table 9.7-11. Status of Previous Mitigation Actions

2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status	Next Step (Include in 2018 HMP or Discontinue)	Describe Next Step
Review and update floodplain management ordinance.	Village Board, Legal	Complete	Ordinance updated in 2014.	Discontinue	N/A
Bank stabilization and de-silting of Mineceongo Creek	Engineering	No Progress	0% The Village would like to keep this action on the County's 5 yr mitigation planning cycle as it is controlled by them and traverses the Town and 2 Villages.	Include in 2018 HMP	Bank stabilization and de-silting of Mineceongo Creek. Work needed from Section/Block/Lot 26.34-2-1 east through 26.36-1-25 following the southern bank of the Minisceongo Creek from Route 9W to Samsondale Avenue. The stream is under the control of the County of Rockland.
Shoreline protection armoring of bank of Bowline Pond – end of Warren Avenue	Engineering	In Progress	McLaren Engineering is designing plans to fortify this area as part of a promenade project	Include in 2018 HMP	Shoreline protection armoring of bank of Bowline Pond – end of Warren Avenue. Complete permitting, then building and construction.
Hillside drainage improvement	Engineering	No Progress	N/A	Discontinue	N/A
1.B Ensure that local comprehensive plans incorporate natural disaster mitigation techniques through a courtesy review or draft plans by the County Planning Department.	CPG member; Village Trustee; Village Board	In progress	Recently awarded grant funding to update comprehensive plan and LWRP.	Include in 2018 HMP	Hire consultant to update Village comprehensive plan and LWRP.
2.A Expand and disseminate GIS and other hazard information on the internet.	CPG member; Village Trustee	No Progress	Villages in Rockland County have access to the County's GIS web portal and they are moving toward adding more data through the Stormwater Consortium.	Include in 2018 HMP	Update Village website to expand and disseminate information on natural hazards, including links to Rockland County's GIS web portal and adding more data through the Stormwater Consortium.

2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status	Next Step (Include in 2018 HMP or Discontinue)	Describe Next Step
Work with local municipalities to pursue the development of an Emergency Notification System call perimeter for high risk locations of natural hazards with delineable hazard areas. Rockland County staff will make aerial mapping available, along with GIS mapping for natural hazards that was completed as part of the hazard mitigation planning project. The County will also facilitate the utilization of the Emergency Notification System by municipalities.	CPG member; Village Trustee	Complete	Rockland County has two alert notification systems (CodeRED and NYAlert) that they manage. These two notification systems are accessible to the municipalities to send out messages. The National Weather Service also sends out tornado, high wind, and flooding alerts regarding forecasted weather. The Village utilizes these notification systems and also sends out email blasts to residents as needed.	Discontinue	Operational capability
Hold periodic workshops regarding zoning and planning issues that arise regarding natural hazards and hazard mitigation.	CPG member; Village Trustee	No Progress	N/A	Discontinue	N/A
4.F Continue to implement best management practices for floodplain areas.	CPG member; Village Trustee	In Progress	Ongoing	Discontinue	Operational capability
4.G Identify and document repetitively flooded properties. Work with owners to explore mitigation opportunities for repetitively flooded properties, and if appropriate and feasible, carry out acquisition, relocation, elevation and floodproofing measures to protect these properties.	CPG member; Village Trustee	No Progress	The Village does not keep track of all properties that have been flood damaged, but has records of how many structures were damaged during Floyd, Irene, and Sandy. No Village residents have approached the FPA with interest in mitigation activities.	Include in 2018 HMP	Identify and document repetitively flooded properties. Work with owners to explore mitigation opportunities for repetitively flooded properties, and if appropriate and feasible, carry out acquisition, relocation, elevation and floodproofing measures to protect these properties.

2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status	Next Step (Include in 2018 HMP or Discontinue)	Describe Next Step
4.J Develop specific mitigation solutions for floodprone road systems (roads, bridges, intersections, drainage, etc.) under the leadership of County DPW.	CPG member; Village Trustee	No Progress	Riverside Avenue through Tilcon quarry becomes inundated in heavy rain or high tide events as it is below sea level.	Include in 2018 HMP	Develop specific mitigation solutions for floodprone road systems (roads, bridges, intersections, drainage, etc.) under the leadership of County DPW, including but not limited to: <ul style="list-style-type: none"> • Riverside Avenue through Tilcon quarry • Lowland areas east of Samsondale Avenue
13.A Determine the year built and level of protection for critical emergency facilities and shelters to highlight structures built before codes and standards were put in place to provide some degree of protection from natural hazards, and pursue potential mitigation opportunities to protect these sites as funding becomes available.	CPG member; Village Trustee	No Progress	N/A	Discontinue	N/A
11.B Review existing emergency response plans for enhancement opportunities: work with social support agencies, homeowners associations and general public to develop and implement monitoring and warning systems focused on vulnerable populations and provision of adequate shelter facilities.	CPG member; Village Trustee	No Progress	N/A	Discontinue	N/A
Public awareness program on hazards, prevention and mitigation: assist CPG Chairperson in maintenance of mitigation planning web presence; assist CPG Chairperson in preparation of annual hazards and mitigation planning fact sheet and its distribution; assist CPG chairperson in preparation of hazards survey; periodic discussion of hazard mitigation and the mitigation plan at other regular local meetings; use of annual flyers, newsletters, advertisements, or radio/TV announcements, etc. at the discretion of the jurisdiction (incorporating as much free information as possible from the FEMA publications warehouse	RCOFES lead with direct participation and involvement from each jurisdiction's CPG member	No Progress	Village maintains its website with links to outside resources	Include in 2018 HMP	Improve public awareness on hazards, prevention and mitigation through increased outreach, including but not limited to: <ul style="list-style-type: none"> • Periodic discussion of hazard mitigation and the mitigation plan at other regular local meetings • Use of annual flyers, newsletters, advertisements, or radio/TV

2010 Mitigation Action	Responsible Party	Status (In progress, No progress, Complete)	Describe Status	Next Step (Include in 2018 HMP or Discontinue)	Describe Next Step
and other appropriate sources).					announcements, etc. <ul style="list-style-type: none"> Incorporating as much free information as possible from the FEMA publications warehouse and other appropriate sources on the Village website
Code update: review existing local codes and ordinances against the identified hazards to determine whether there needs to be any amendments to address identified hazards and, where a need is identified; modify/amend the codes/ordinances as applicable.	Each jurisdictional CPG member	In Progress	Ongoing	Discontinue	Operational capability
Code enforcement: enforcement of NYS and local building codes	Each jurisdictional CPG member	In Progress	Ongoing	Discontinue	Operational capability
Update/revise floodplain management ordinance to comply with latest FEMA regulations	Village Board and Village Attorney	Complete	100% The Village's floodplain management ordinance was updated in 2014.	Discontinue	Operational capability
Update/review floodplain management ordinances to be consistent with potential future new FIRMs	Village Board and Village Attorney	Complete	100% The Village's floodplain management ordinance was updated in 2014, which is when new maps were published.	Discontinue	Operational capability
Require staff involved in floodplain management and ordinance enforcement to become Certified Floodplain Managers (CFMs)	Village Board and Village Attorney	Complete	100% The Village's Building Inspector is a Certified Floodplain Manager.	Discontinue	Operational capability

Proposed Hazard Mitigation Initiatives for the Plan Update

The Village of Haverstraw participated in a mitigation action workshop in February, 2017 and was provided the following FEMA publications to use as a resource as part of their comprehensive review of all possible activities and mitigation measures to address their hazards: FEMA 551 ‘Selecting Appropriate Mitigation Measures for Floodprone Structures’ (March 2007) and FEMA ‘Mitigation Ideas – A Resource for Reducing Risk to Natural Hazards’ (January 2013).

Table 9.7-12 summarizes the comprehensive-range of specific mitigation initiatives the Village of Haverstraw would like to pursue in the future to reduce the effects of hazards. Some of these initiatives may be previous actions carried forward for this plan update. These initiatives are dependent upon available funding (grants and local match availability) and may be modified or omitted at any time based on the occurrence of new hazard events and changes in municipal priorities. Both the four FEMA mitigation action categories and the six CRS mitigation action categories are listed in the table below to further demonstrate the wide-range of activities and mitigation measures selected.

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

Table 9.7-13 provides a summary of the prioritization of all proposed mitigation initiatives for the Plan update.

Table 9.7-12. Proposed Hazard Mitigation Initiatives

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	CRS Category
VOH-1	Bank stabilization and de-silting of Mineceongo Creek. Work needed from Section/Block/Lot 26.34-2-1 east through 26.36-1-25 following the southern bank of the Minisceongo Creek from Route 9W to Samsondale Avenue. Coordinated with Rockland County and Neighboring municipalities. (The stream is under the control of the County of Rockland.)	Both	Flood, severe storm	2	Rockland County Drainage Agency, Town of Haverstraw, Village of Haverstraw	Property & infrastructure	Medium-High	FEMA (HMGP, FMA, PDM), CDBG, NYS DHSES, Village Operating Budget	TBD	High	NSP	NR
VOH-2	Shoreline protection armoring of bank of Bowline Pond – end of Warren Avenue. Complete permitting, then building and construction. McLaren Engineering is designing plans to fortify this area as part of a promenade project.	Existing	Flood, severe storm	2	Village of Haverstraw, NYS DEC	Property & infrastructure	Medium - High	FEMA (HMGP, FMA, PDM), CDBG, NYS DHSES, Village Operating Budget	Short-term	Medium	SIP	PP SP
VOH-3	Hire consultant to update Village comprehensive plan and LWRP. Ensure that local comprehensive plans incorporate natural	N/A	All hazards	6, 7	CPG member; Village Trustee	High	Low	Operating Budget, State grants	Short Term	High	LPR	PR



Table 9.7-12. Proposed Hazard Mitigation Initiatives

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	CRS Category
	disaster mitigation techniques through a courtesy review or draft plans by the County Planning Department.											
VOH-4	Update Village website to expand and disseminate information on natural hazards, including links to Rockland County’s GIS web portal and adding more data through the Stormwater Consortium.	N/A	All hazards	3	RCOFES lead with direct participation and involvement from each jurisdiction’s CPG member	Medium	Low	Village Operating Budget	Short 1-5 years	High	EAP	PI
VOH-5	Identify and document repetitively flooded properties. Work with owners to explore mitigation opportunities for repetitively flooded properties, and if appropriate and feasible, carry out acquisition, relocation, elevation and floodproofing measures to protect these properties.	Existing	Flood, severe storm	1, 2	Floodplain manager, Building Department	Medium	Medium	FEMA (HMGP, FMA, PDM), CDBG, NYS DHSES, Operating Budget	Short Term	High	LPR	PR
VOH-6	Develop specific mitigation solutions for floodprone road systems (roads, bridges, intersections,	Existing	Flood, severe storm	2	Village Highway Superintendent, County DPW	High	Medium-High	FEMA (HMGP, FMA, PDM),	Short Term	High	SIP	SP



Table 9.7-12. Proposed Hazard Mitigation Initiatives

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	CRS Category
	drainage, etc.) under the leadership of County DPW, including but not limited to: <ul style="list-style-type: none"> Riverside Avenue through Tilcon quarry Lowland areas east of Samsondale Avenue 							CDBG, NYS DHSES, Operating Budget				
VOH-7	Improve public awareness on hazards, prevention and mitigation through increased outreach, including but not limited to: <ul style="list-style-type: none"> Periodic discussion of hazard mitigation and the mitigation plan at other regular local meetings Use of annual flyers, newsletters, advertisements, or radio/TV announcements, etc. Incorporating as much free information as possible from the 	N/A	All hazards	3	Village of Haverstraw, Rockland County	Medium	Low	Village Operating Budget	Short 1-5 years	High	EAP	PI



Table 9.7-12. Proposed Hazard Mitigation Initiatives

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	CRS Category
	FEMA publications warehouse and other appropriate sources on the Village website											

Notes:

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

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

Acronyms and Abbreviations:

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

Potential FEMA HMA Funding Sources:

FMA	Flood Mitigation Assistance Grant Program
HMGP	Hazard Mitigation Grant Program
PDM	Pre-Disaster Mitigation Grant Program
RFC	Repetitive Flood Claims Grant Program (discontinued in 2015)
SRL	Severe Repetitive Loss Grant Program (discontinued in 2015)

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, grants, fee increases) to implement. Existing funding levels are not

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.



Costs:

adequate to cover the costs of the proposed project.

Benefits: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

CRS Category:

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

Table 9.7-13. 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
VOH-1	Bank stabilization and de-silting of Mineceongo Creek. Work needed from Section/Block/Lot 26.34-2-1 east through 26.36-1-25 following the southern bank of the Minisceongo Creek from Route 9W to Samsondale Avenue. Coordinated with Rockland County and Neighboring municipalities. (The stream is under the control of the County of Rockland.)	1	1	1	1	1	-1	-1	1	0	-1	1	1	0	0	5	Medium
VOH-2	Shoreline protection armoring of bank of Bowline Pond – end of Warren Avenue. Complete permitting, then building and construction. McLaren Engineering is designing plans to fortify this area as part of a promenade project.	1	1	1	1	0	-1	-1	1	1	1	1	1	0	0	8	Medium
VOH-3	Hire consultant to	0	1	1	1	0	1	1	1	0	1	1	1	0	0	9	High

Table 9.7-13. 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
	update Village comprehensive plan and LWRP. Ensure that local comprehensive plans incorporate natural disaster mitigation techniques through a courtesy review or draft plans by the County Planning Department.																
VOH-4	Update Village website to expand and disseminate information on natural hazards, including links to Rockland County’s GIS web portal and adding more data through the Stormwater Consortium.	0	1	1	1	0	0	1	0	1	1	1	1	0	0	8	High
VOH-5	Identify and document repetitively flooded properties. Work with owners to explore mitigation opportunities for repetitively flooded properties, and if appropriate and feasible, carry out	0	1	1	1	0	1	-1	1	0	1	1	1	0	0	7	Medium



Table 9.7-13. 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
	acquisition, relocation, elevation and floodproofing measures to protect these properties.																
VOH-6	Develop specific mitigation solutions for floodprone road systems (roads, bridges, intersections, drainage, etc.) under the leadership of County DPW, including but not limited to: <ul style="list-style-type: none"> Riverside Avenue through Tilcon quarry Lowland areas east of Samsondale Avenue 	0	1	1	1	1	1	-1	0	0	1	1	1	1	0	8	High
VOH-7	Improve public awareness on hazards, prevention and mitigation through increased outreach, including but not limited to: <ul style="list-style-type: none"> Periodic discussion of hazard mitigation and the mitigation 	1	1	1	1	0	0	1	0	1	1	1	1	1	0	10	High



Table 9.7-13. 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
	plan at other regular local meetings <ul style="list-style-type: none"> • Use of annual flyers, newsletters, advertisements, or radio/TV announcements, etc. • Incorporating as much free information as possible from the FEMA publications warehouse and other appropriate sources on the Village website 																

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

9.7.7 Future Needs To Better Understand Risk/Vulnerability

None at this time.

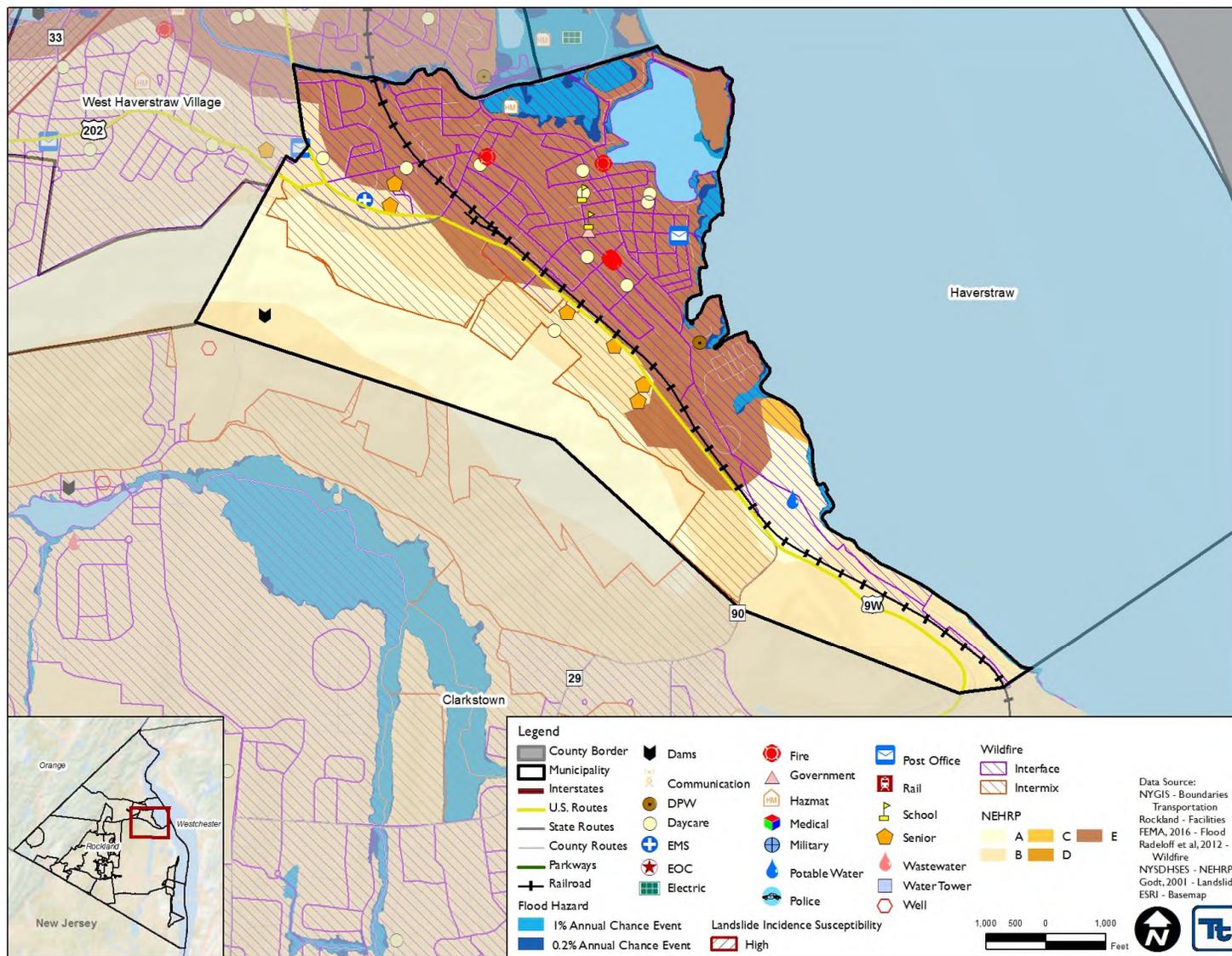
9.7.8 Hazard Area Extent and Location

Hazard area extent and location maps have been generated for the Village of Haverstraw 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 Village of Haverstraw has significant exposure. These maps are illustrated in the hazard profiles within Section 5.4, Volume I of this Plan.

9.7.9 Additional Comments

None at this time.

Figure 9.7-1. Village of Haverstraw Hazard Area Extent and Location Map



Name of Jurisdiction: Village of Haverstraw
 Name and Title Completing Worksheet: _____
 Action Number: VOH-1
 Mitigation Action Name: Bank stabilization and de-silting of Mineceongo Creek

Assessing the Risk	
Hazard(s) addressed:	Flash Flooding
Specific problem being mitigated:	Flooding and reduced stream flow
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	No action – problem persists Redirect stream – not feasible
Action/Project Intended for Implementation	
Description of Selected Action/Project	Work needed from Section/Block/Lot 26.34-2-1 east through 26.36-1-25 following the southern bank of the Minisceongo Creek from Route 9W to Samsondale Avenue. Coordinated with Rockland County and Neighboring municipalities. (The stream is under the control of the County of Rockland.)
Mitigation Action Type	Natural Systems Project
Goals Met	Protect Life and Property
Applies to existing and or new development, or not applicable	Existing & possible new
Benefits (losses avoided)	Property & Infrastructure
Estimated Cost	Medium-High
Priority*	High
Plan for Implementation	
Responsible Organization	Rockland County
Local Planning Mechanism	Rockland County Drainage Agency, Town of Haverstraw, Village of Haverstraw
Potential Funding Sources	FEMA (HMGP, FMA, PDM), CDBG, NYS DHSES, Village Operating Budget
Timeline for Completion	TBD
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

Action Number:

VOH-1

Mitigation Action Name:

Bank stabilization and de-silting of Minesceongo Creek

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Reduce risk of bank failure and roadway closure.
Property Protection	1	Reduce risk of bank failure and infrastructure damage.
Cost-Effectiveness	1	Cost to implement is less than long-term avoided losses
Technical	1	Action is technically feasible
Political	1	Leadership of multiple neighboring towns support this action
Legal	-1	Jurisdiction is Rockland County responsibility
Fiscal	-1	Jurisdiction is Rockland County responsibility
Environmental	1	Restore natural creek habitats
Social	0	
Administrative	-1	Rockland County Responsibility
Multi-Hazard	1	Flood, severe storm
Timeline	1	TBD
Agency Champion	0	
Other Community Objectives	0	
Total	5	
Priority (H/M/L)	Medium	

Name of Jurisdiction: Village of Haverstraw
Name and Title Completing Worksheet:
Action Number: VOH-2
Mitigation Action Name: Shoreline protection armoring of bank of Bowline Pond – end of Warren Avenue.

Assessing the Risk	
Hazard(s) addressed:	Flood, severe storm
Specific problem being mitigated:	Bank degradation
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	Take no action – problem persists Living shoreline project – not consistent with plans for promenade project
Action/Project Intended for Implementation	
Description of Selected Action/Project	Shoreline protection armoring of bank of Bowline Pond – end of Warren Avenue. Complete permitting, then building and construction. McLaren Engineering is designing plans to fortify this area as part of a promenade project.
Mitigation Action Type	SIP
Goals Met	Protect property, facilities and infrastructure
Applies to existing and or new development, or not applicable	Existing
Benefits (losses avoided)	Property & Infrastructure
Estimated Cost	Medium-High
Priority*	Medium
Plan for Implementation	
Responsible Organization	Village of Haverstraw, NYS DEC
Local Planning Mechanism	
Potential Funding Sources	FEMA (HMGP, FMA, PDM), CDBG, NYS DHSES, Village Operating Budget
Timeline for Completion	Short-term
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

Action Number:

VOH-2

Mitigation Action Name:

Shoreline protection armoring of bank of Bowline Pond – end of Warren Avenue.

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Reduce risk of shoreline failure and roadway closure.
Property Protection	1	Reduce risk of shoreline failure and infrastructure damage.
Cost-Effectiveness	1	
Technical	1	
Political	0	
Legal	-1	Jurisdiction is Rockland County responsibility
Fiscal	-1	May require outside funding
Environmental	1	Protect shoreline habitats
Social	1	
Administrative	1	Village has administrative capacity to implement the project
Multi-Hazard	1	Flood, severe storm
Timeline	1	Short-term
Agency Champion	0	
Other Community Objectives	0	
Total	8	
Priority (H/M/L)	Medium	

Name of Jurisdiction: Village of Haverstraw
 Name and Title Completing Worksheet: _____
 Action Number: VOH-3
 Mitigation Action Name: Hire consultant to update Village comprehensive plan and LWRP.

Assessing the Risk	
Hazard(s) addressed:	All hazards
Specific problem being mitigated:	Current comprehensive plan does not thoroughly incorporate natural disaster mitigation considerations.
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	Do not update local plans – not preferred Update local plans without integrating hazard mitigation – not preferred
Action/Project Intended for Implementation	
Description of Selected Action/Project	Hire consultant to update Village comprehensive plan and LWRP. Ensure that local comprehensive plans incorporate natural disaster mitigation techniques through a courtesy review or draft plans by the County Planning Department.
Mitigation Action Type	LPR
Goals Met	6, 7
Applies to existing and or new development, or not applicable	N/A
Benefits (losses avoided)	High
Estimated Cost	Low
Priority*	High
Plan for Implementation	
Responsible Organization	CPG member; Village Trustee
Local Planning Mechanism	
Potential Funding Sources	Village Operating Budget, State grants
Timeline for Completion	Short-term
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

Action Number:

VOH-3

Mitigation Action Name:

Hire consultant to update Village comprehensive plan and LWRP.

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Integrating hazards and vulnerabilities into other plans will ensure development occurs in safer areas
Cost-Effectiveness	1	Planning is a low cost, proactive solution
Technical	1	Technically feasible
Political	0	
Legal	1	
Fiscal	0	May require grant funding to support local budget
Environmental	1	Both comp plans and LWR plans consider environmental quality
Social	1	Comp plans and LWR plans consider the needs of all residents
Administrative	1	Village has administrative capability to implement
Multi-Hazard	1	All hazards
Timeline	1	Short-term
Agency Champion	0	
Other Community Objectives	1	Meets goals in multiple planning areas, outside of hazard mitigation
Total	11	
Priority (H/M/L)	High	

Name of Jurisdiction: Village of Haverstraw
Name and Title Completing Worksheet:
Action Number: VOH-4
Mitigation Action Name: Update Village website to expand and disseminate information on natural hazards

Assessing the Risk	
Hazard(s) addressed:	All hazards
Specific problem being mitigated:	Current village website is outdated and not linked to available resources
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	Do not update website – not preferred Update website without linking to other resources – not preferred
Action/Project Intended for Implementation	
Description of Selected Action/Project	Update Village website to expand and disseminate information on natural hazards, including links to Rockland County’s GIS web portal and adding more data through the Stormwater Consortium.
Mitigation Action Type	EAP
Goals Met	3
Applies to existing and or new development, or not applicable	N/A
Benefits (losses avoided)	Medium
Estimated Cost	Low
Priority*	High
Plan for Implementation	
Responsible Organization	RCOFES lead with direct participation and involvement from each jurisdiction’s CPG member
Local Planning Mechanism	
Potential Funding Sources	Village Operating Budget
Timeline for Completion	Short-term
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

Action Number: VOH-4
Mitigation Action Name: Update Village website to expand and disseminate information on natural hazards

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Make residents better informed on how to protect themselves, their families, and their property from natural hazards.
Property Protection	1	Make residents better informed on how to protect themselves, their families, and their property from natural hazards.
Cost-Effectiveness	1	Low cost solution
Technical	1	Technically feasible
Political	0	
Legal	1	Village has legal authority to post to its own website, and to use FEMA-published materials
Fiscal	1	Staff-time or Village budget to hire web designer
Environmental	0	
Social	0	Will reach a large segment of the population, but not benefit those without access to internet
Administrative	1	Village has administrative capability to implement
Multi-Hazard	1	All hazards
Timeline	1	Short-term
Agency Champion	0	
Other Community Objectives	0	
Total	9	
Priority (H/M/L)	High	

Name of Jurisdiction: Village of Haverstraw
Name and Title Completing Worksheet:
Action Number: VOH-5
Mitigation Action Name: Identify and document repetitively flooded properties.

Assessing the Risk	
Hazard(s) addressed:	Flood, severe storm
Specific problem being mitigated:	Flood damage to property
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	Do nothing – problem persists Identify areas where repetitive loss is likely – not as focused for mitigation actions
Action/Project Intended for Implementation	
Description of Selected Action/Project	Work with owners to explore mitigation opportunities for repetitively flooded properties, and if appropriate and feasible, carry out acquisition, relocation, elevation and flood proofing measures to protect these properties.
Mitigation Action Type	LPR (potential to be SIP)
Goals Met	Protect property, facilities and infrastructure
Applies to existing and or new development, or not applicable	Existing
Benefits (losses avoided)	Property & Infrastructure
Estimated Cost	Medium
Priority*	High
Plan for Implementation	
Responsible Organization	Village of Haverstraw Floodplain manager, Building Department
Local Planning Mechanism	
Potential Funding Sources	FEMA (HMGP, FMA, PDM), CDBG, NYS DHSES, Village Operating Budget
Timeline for Completion	Short-term
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

Action Number: VOH-5

Mitigation Action Name: Identify and document repetitively flooded properties.

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Data will help village and county design future mitigation actions and outreach to vulnerable residents
Cost-Effectiveness	1	Cost of buyouts is less than repeated future damages
Technical	1	Technically feasible
Political	0	
Legal	1	
Fiscal	-1	May require outside funding
Environmental	1	Return land to natural floodplain
Social	0	
Administrative	1	Village has administrative capability to implement
Multi-Hazard	1	Flood, severe storm
Timeline	1	Short-term
Agency Champion	0	
Other Community Objectives	0	
Total	7	
Priority (H/M/L)	Medium	

Name of Jurisdiction: Village of Haverstraw
Name and Title Completing Worksheet:
Action Number: VOH-6
Mitigation Action Name: Develop specific mitigation solutions for floodprone road systems (roads, bridges, intersections, drainage, etc.)

Assessing the Risk	
Hazard(s) addressed:	Flood, severe storm
Specific problem being mitigated:	Flood damage to infrastructure
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	Do nothing – problem persists Move floodprone roadways – not feasible
Action/Project Intended for Implementation	
Description of Selected Action/Project	Develop specific mitigation solutions for floodprone road systems (roads, bridges, intersections, drainage, etc.) under the leadership of County DPW, including but not limited to: <ul style="list-style-type: none"> • Riverside Avenue through Tilcon quarry • Lowland areas east of Samsondale Avenue
Mitigation Action Type	SIP
Goals Met	Protect property, facilities and infrastructure
Applies to existing and or new development, or not applicable	Existing
Benefits (losses avoided)	Property & Infrastructure
Estimated Cost	Medium - High
Priority*	High
Plan for Implementation	
Responsible Organization	Village Highway Superintendent, County DPW
Local Planning Mechanism	
Potential Funding Sources	FEMA (HMGP, FMA, PDM), CDBG, NYS DHSES, Village Operating Budget
Timeline for Completion	Short-term
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

Action Number:

VOH-6

Mitigation Action Name:

Develop specific mitigation solutions for floodprone road systems (roads, bridges, intersections, drainage, etc.)

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	0	
Property Protection	1	Protect public infrastructure
Cost-Effectiveness	1	Cost of repairs is less than repeated future damages
Technical	1	Technically feasible
Political	1	
Legal	1	Village has jurisdiction over project locations
Fiscal	-1	May require outside funding
Environmental	0	
Social	0	
Administrative	1	Village has administrative capability to implement
Multi-Hazard	1	Flood, severe storm
Timeline	1	Short-term
Agency Champion	1	DPW
Other Community Objectives	0	
Total	7	
Priority (H/M/L)	High	

Name of Jurisdiction: Village of Haverstraw
Name and Title Completing Worksheet:
Action Number: VOH-7
Mitigation Action Name: Improve public awareness on hazards, prevention and mitigation through increased outreach

Assessing the Risk	
Hazard(s) addressed:	All hazards
Specific problem being mitigated:	Increase public awareness on all hazards
Evaluation of Potential Actions/Projects	
Actions/Projects Considered (name of project and reason for not selecting):	Do not update website – not preferred Update website without linking to other resources – not preferred
Action/Project Intended for Implementation	
Description of Selected Action/Project	Improve public awareness on hazards, prevention and mitigation through increased outreach, including but not limited to: <ul style="list-style-type: none"> Periodic discussion of hazard mitigation and the mitigation plan at other regular local meetings Use of annual flyers, newsletters, advertisements, or radio/TV announcements, etc. Incorporating as much free information as possible from the FEMA publications warehouse and other appropriate sources on the Village website
Mitigation Action Type	EAP
Goals Met	3
Applies to existing and or new development, or not applicable	N/A
Benefits (losses avoided)	Medium
Estimated Cost	Low
Priority*	High
Plan for Implementation	
Responsible Organization	Village of Haverstraw, Rockland County
Local Planning Mechanism	
Potential Funding Sources	Village Operating Budget
Timeline for Completion	Short-term
Reporting on Progress	
Date of Status Report/ Report of Progress	Date: Progress on Action/Project:

Action Number:

VOH-7

Mitigation Action Name:

Improve public awareness on hazards, prevention and mitigation through increased outreach

Criteria	Numeric Rank (-1, 0, 1)	Provide brief rationale for numeric rank when appropriate
Life Safety	1	Make residents better informed on how to protect themselves, their families, and their property from natural hazards.
Property Protection	0	
Cost-Effectiveness	1	Outreach is a low cost action
Technical	1	Technically feasible
Political	0	
Legal	1	Village has legal authority to conduct outreach, and to use FEMA and County materials
Fiscal	1	Staff-time
Environmental	0	
Social	1	Will reach a large segment of the population, including vulnerable populations
Administrative	1	Village has administrative capability to implement
Multi-Hazard	1	All hazards
Timeline	1	Short-term
Agency Champion	0	
Other Community Objectives	0	
Total	9	
Priority (H/M/L)	High	