



## SECTION 6. MITIGATION STRATEGIES

This section presents mitigation actions for Putnam County to reduce potential exposure and losses identified as concerns in the Risk Assessment portion of this plan. The Planning Committee reviewed the Risk Assessment to identify and develop these mitigation actions, which are presented herein.

This section includes:

1. Background and Past Mitigation Accomplishments
2. General Mitigation Planning Approach
3. Mitigation Goals and Objectives
4. Capability Assessment
5. Mitigation Strategy Development

**Hazard mitigation** reduces the potential impacts of, and costs associated with, emergency and disaster-related events. Mitigation actions address a range of impacts, including impacts on the population, property, the economy, and the environment.

**Mitigation actions** can include activities such as: revisions to land-use planning, training and education, and structural and nonstructural safety measures.

### 6.1 Background and Past Mitigation Accomplishments

In accordance with DMA 2000 requirements, a discussion regarding past mitigation activities and an overview of past efforts is provided as a foundation for understanding the mitigation goals, objectives, and activities outlined in this Plan. The County, through previous and ongoing hazard mitigation activities, has demonstrated that it is pro-active in protecting its physical assets and citizens against losses from natural hazards. Examples of previous and ongoing actions and projects include the following:

- All municipalities participating in this Plan participate in the NFIP, which requires the adoption of FEMA floodplain mapping and certain minimum construction standards for building within the floodplain.
- The county has been incorporating stormwater management into its infrastructure and building improvement projects, where applicable, including practices to detain and absorb stormwater runoff. It also has partnered with other governmental entities to leverage its efforts, largely through grants, to install stormwater practices at other county and municipal facilities. Examples include:
- Rehabilitation of the Putnam County Golf Course, including a stormwater detention basin and a newly paved parking lot designed to include a subsurface infiltration system and drainage infrastructure which ensured the removal of a significant amount of phosphorus and other pollutants.
- Renovation project at Tilly Foster Farm which included dredging of its pond and dam repair to ensure long-term, proper and adequate stormwater management on the site.
- Various studies have been conducted by Federal, State, County and local agencies/entities to examine natural hazards affecting Putnam County, and have been reviewed and incorporated into this plan as appropriate.
- Many municipalities in Putnam County have adopted regulatory standards regarding land-use and zoning that exceed minimum requirements and provide the communities with greater capability to manage development without increasing hazard risk and vulnerability. Examples of these standards are presented in the Capability Assessment subsection later in this chapter.
- The County and municipalities have actively participated in available mitigation grant funding opportunities to implement mitigation projects, including the ongoing New York Rising Hazard Mitigation Grant Program.
- The County and municipalities have implemented mitigation actions to protect critical facilities and infrastructure throughout the planning area.





## 6.2 General Mitigation Planning Approach

The overall approach used to create the County and local hazard mitigation strategies are based on FEMA and NYS regulations and guidance regarding local mitigation plan development, including:

- DMA 2000 regulations, specifically 44 CFR 201.6 (local mitigation planning) and 44 CFR 201.7 (Tribal mitigation planning)
- FEMA “Local Mitigation Planning Handbook”, March 2013
- FEMA “Integrating Hazard Mitigation into Local Planning”, March 2013
- Identifying Mitigation Actions and Implementing Strategies (FEMA 386-3)
- FEMA “Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards”, January 2013

The mitigation strategy approach includes the following steps that are further detailed in later sections of this section:

- Develop mitigation goals [and objectives]
- Identify mitigation capabilities, and evaluate their capacity and effectiveness to mitigate and manage hazard risk
- Identify past and ongoing mitigation activities throughout the County
- Identify appropriate county and local mitigation strategies to address the regions risk to natural hazards
- Prepare an implementation strategy, including the prioritization of projects and initiatives in the mitigation strategy.

## 6.3 Mitigation Goals and Objectives

This section documents the efforts to develop hazard mitigation goals and objectives established to reduce or avoid long-term vulnerabilities to the identified hazards.

### 6.3.1 Goals and Objectives

According to CFR 201.6(c)(3)(i): “The hazard mitigation strategy shall include a description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.” Currently, the Steering and Planning Committees have developed mitigation goals based on the risk assessment results, discussions, research, and input from amongst the committee, existing authorities, polices, programs, resources, stakeholders and the public.

For the purposes of this plan, goals are defined as follows:

**Goals** are general guidelines that explain what is to be achieved. They are usually broad, long-term, policy-type statements and represent global visions. Goals help define the benefits that the plan is trying to achieve. The success of the plan, once implemented, should be measured by the degree to which its goals have been met (that is, by the actual benefits in terms of hazard mitigation).

FEMA defines **Goals** as general guidelines that explain what should be achieved. Goals are usually broad, long-term, policy statements, and represent a global vision.

FEMA defines **Objectives** as strategies or implementation steps to attain mitigation goals. Unlike goals, objectives are specific and measurable, where feasible.

FEMA defines **Mitigation Actions** as specific actions that help to achieve the mitigation goals and objectives.

The Putnam County goals were developed based in part on a review of the hazard mitigation goals and objectives established in the NYS HMP, as well as other local hazard plans and related documents in the region. Further, these goals were selected to be compatible with the needs and goals expressed in other available County and





local community planning documents. Achievement of these goals helps to define the effectiveness of a mitigation strategy.

The County will work to develop objectives during the plan monitoring, maintenance and update program for this plan, as identified in Section 7.

Table 6-1 presents the hazard mitigation goals for the 2015 plan:

**Table 6-1. Putnam County Hazard Mitigation Plan Goals**

Goal Number	Goal Statement
G-1	Identify and implement mitigation actions and initiatives that address life-safety issues.
G-2	Protect property, including public and private property, critical facilities and infrastructure. (Modified from NYS 2014 HMP – Goal 2)
G-3	Increase education and awareness, and promote relationships with stakeholders, citizens, elected officials, and property owners to develop opportunities for mitigation of natural hazards. (Modified from NYS 2014 HMP – Goal 3)
G-4	Encourage the development and implementation of long-term, cost-effective, and resilient mitigation projects to preserve or restore the functions of natural systems. (NYS 2014 HMP – Goal 4)
G-5	Enhance or develop programs to build regional, county and local mitigation and related emergency management capabilities.
G-6	Support comprehensive county and local mitigation through the integration of hazard mitigation planning into related county and local plans and programs.

## 6.4 Capability Assessment

According to FEMA 386-3, a capability assessment is an inventory of a community's missions, programs and policies; and an analysis of its capacity to carry them out. This assessment is an integral part of the planning process. The assessment process enables identification, review and analysis of local and state programs, policies, regulations, funding and practices currently in place that may either facilitate or hinder mitigation.

During the original planning process, the County and all municipalities identified and assessed their capabilities in the areas of planning and regulatory, administrative and technical, and fiscal. By completing this assessment, the Planning Committee and each jurisdiction learned how or whether they would be able to implement certain mitigation actions by determining the following:

- Limitations that may exist on undertaking actions;
- The range of local and/or state administrative, programmatic, regulatory, financial and technical resources available to assist in implementing their mitigation actions;
- Action is currently outside the scope of capabilities;
- Types of mitigation actions that may be technically, legally (regulatory) administratively, politically or fiscally challenging or infeasible;
- Opportunities to enhance local capabilities to support long term mitigation and risk reduction.

During the 2014 planning process, all participating jurisdictions were tasked with developing their capability assessment, paying particular attention to evaluating the effectiveness of these capabilities in supporting hazard mitigation, and identifying opportunities to enhance local capabilities.

County, municipal and tribal capabilities in the areas of planning and regulatory, administrative and technical, and fiscal may be found in the Capability Assessment section of their jurisdictional annexes in Section 9. Further, within each annex participating jurisdictions have identified how they have integrated hazard risk





management into their existing planning, regulatory and operational/administrative framework (“integration capabilities”), and how they intend to promote this integration (“integration actions”). A further summary of these continued efforts to develop and promote a comprehensive and holistic approach to hazard risk management and mitigation is presented in Section 7.

#### **6.4.1 Summary of Plans, Programs and Resources Available to Support Mitigation**

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A summary of the various Federal, State, County and local planning and regulatory, administrative and technical, and fiscal programs available to promote and support mitigation and risk reduction in Putnam County are presented below.

##### **National Flood Insurance Program (NFIP)**

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The U.S. Congress established the NFIP with the passage of the National Flood Insurance Act of 1968 (FEMA’s 2002 National Flood Insurance Program (NFIP): Program Description). The NFIP is a Federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for State and community floodplain management regulations that reduce future flood damages. Please refer to Section 5.4.5 for information on recent legislation related to reforms to the NFIP.

There are three components to the NFIP: flood insurance, floodplain management and flood hazard mapping. Communities participate in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage. In exchange, the NFIP makes federally backed flood insurance available to homeowners, renters, and business owners in these communities. Community participation in the NFIP is voluntary. Flood insurance is designed to provide an alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods. Flood damage in the U.S. is reduced by nearly \$1 billion each year through communities implementing sound floodplain management requirements and property owners purchasing flood insurance. Additionally, buildings constructed in compliance with NFIP building standards suffer approximately 80% less damage annually than those not built in compliance (FEMA, 2008).

All municipalities in Putnam County actively participate in the NFIP. As of March 31, 2014, there were 380 NFIP policyholders in Putnam County. There have been 224 claims made, totaling nearly \$5 million for damages to structures and contents. There are 14 NFIP Repetitive Loss (RL) properties, and 2 NFIP Severe Repetitive Loss (SRL) properties in the County. Further details on the County’s flood vulnerability may be found in the flood hazard profile in Section 5.

Municipal participation in and compliance with the NFIP is supported at the Federal level by FEMA Region II and the Insurance Services Organization (ISO), at the state-level by the New York State Department of Environmental Conservation (NYSDEC) and New York State Office of Emergency Management (NYS DHSES). Additional information on the NFIP program and its implementation throughout the County may be found in the flood hazard profile (Section 5).

The State and communities may adopt higher regulatory standards when implementing the provisions of the NFIP. Specifically identified are the following:

**Freeboard:** By law, NYS requires Base Flood Elevation plus 2 feet (BFE+2) for all single- and two-family residential construction, and BFE+1 for all other types of construction. Communities may go beyond this State requirement, providing for additional freeboard or requiring BFE+2 for all types of construction. Further, a number of communities have supported property owners meeting and exceeding freeboard requirements through the site plan review and zoning board of approvals process; for instance, allowing overall structure heights to be determined from BFE+2 rather than grade within NFIP floodplains.





**Cumulative Substantial Improvements/Damages:** The NFIP allows improvements valued at up to 50% of the building's pre-improvement value to be permitted without meeting the flood protection requirements. Over the years, a community may issue a succession of permits for different repairs or improvement to the same structures. This can greatly increase the overall flood damage potential for the structure and within a community. The community may wish to deme "substantial improvement" cumulatively so that once a threshold of improvement within a certain length of time is reached, the structure is considered to be substantially improved and must meet flood protection requirements.

**Limit of Moderate Wave Action (LiMWA):** LiMWA depicts the Limit of the Area of Moderate Wave Action (MOWA), the portion of the 1% annual chance coastal flood hazard area referenced by building codes and standards, where base flood wave heights are between 1.5 and 3 feet, and where wave characteristics are deemed sufficient to damage many National Flood Insurance Program (NFIP)-compliant structures on shallow or solid wall foundations. Coastal communities may adopt what is commonly referred to as the "LiMWA standard" where they enforce "V zone" construction standards within coastal LiMWA "A zones".

### **NFIP Community Rating System (CRS)**

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As an additional component of the NFIP, the Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS: (1) reduce flood losses; (2) facilitate accurate insurance rating; and (3) promote the awareness of flood insurance (FEMA, 2012).

Currently there are no communities in Putnam County participating in the CRS program. The Town of Philipstown has indicated their intent to join the CRS program, and the County intends to support awareness of the program through the promotion of CRS workshops or other programs provided by FEMA, NYS DHSES or others within the County.

Municipalities and the County as a whole could expect significant cost savings on premiums if enrolled in the CRS program. For example: if all the municipalities in the County were enrolled in the CRS program and maintained an average CRS rate class of 8 (10% reduction in flood insurance premiums) policyholders in the County would save approximately \$37,000 dollars.

### **New York State Flood Plain Management**

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There are two departments that have statutory authorities and programs that affect floodplain management at the local jurisdiction level in New York State: the New York State Department of Environmental Conservation (NYSDEC) and the Department of State's Division of Code Enforcement and Administration (DCEA).

In 1992, the New York State Legislature amended an existing law, finding that "it is in the interests of the people of this state to provide for participation" in the NFIP (New York Laws, Environmental Conservation, Article 36). Although the Legislature recognized that "land use regulation is principally a matter of local concern" and that local governments "have the principal responsibility for enacting appropriate land use regulations," the law requires all local governments with land use restrictions over SFHAs to comply with all NFIP requirements. The law clearly advises local governments that failure to qualify for the NFIP may result in sanctions under Federal law, and specifies that the State "will cooperate with the federal government in the enforcement of these sanctions."

The 1992 law that provides for local government participation in the NFIP also requires State agencies to "take affirmative action to minimize flood hazards and losses in connection with state-owned and state-financed buildings, roads and other facilities, the disposition of state land and properties, the administration of state and





state-assisted planning programs, and the preparation and administration of state building, sanitary and other pertinent codes.” In particular, the commissioner of the NYSDEC is to assist State agencies in several respects, including reviewing potential flood hazards at proposed construction sites.

The NYSDEC is charged with conserving, improving, and protecting the State’s natural resources and environment, and preventing, abating, and controlling water, land, and air pollution. Programs that have bearing on floodplain management are managed by the Bureau of Flood Protection and Dam Safety, which cooperates with Federal, State, regional, and local partners to protect lives and property from floods, coastal erosion, and dam failures. These objectives are accomplished through floodplain management and both structural and nonstructural means.

The Coastal Management Section works to reduce coastal erosion and storm damage to protect lives, natural resources, and properties through structural and nonstructural means. The Dam Safety Section is responsible for “reviewing repairs and modifications to dams, and assuring [sic] that dam owners operate and maintain dams in a safe condition through inspections, technical reviews, enforcement, and emergency planning.” The Flood Control Projects Section is responsible for reducing flood risk to life and property through construction, operation, and maintenance of flood control facilities.

The Floodplain Management Section is responsible for reducing flood risk to life and property through management of activities, such as development in flood hazard areas, and for reviewing and developing revised flood maps. The Section serves as the NFIP State Coordinating Agency and in this capacity is the liaison between FEMA and New York communities that elect to participate in the NFIP. The Section provides a wide range of technical assistance.

### **Land Use Planning, Comprehensive/Master Plans**

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Comprehensive planning is a term used in the United States by land use planners to describe a process that determines community goals and aspirations in terms of community development. The outcome of comprehensive planning is the Comprehensive Plan which dictates public policy in terms of transportation, utilities, land use, recreation, and housing. It is not a law in itself, but state statutes require that all land use laws in a municipality be consistent with a comprehensive plan. A municipality is authorized to develop and adopt a comprehensive plan by New York State Town Law Section 272-a.

The following Putnam County communities have recently updated their Comprehensive Plans, or are in the plan update process:-

- Town of Southeast – recently released draft
- Village of Brewster – update in progress
- Cold Spring – recently adopted
- Philipstown – adopted within last several years

The County Planning Department supports the Village of Brewster with Comprehensive Planning under a Memorandum of Agreement.

### **6.4.2 Administrative and Technical Capabilities - Local**

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#### **Putnam County Bureau of Emergency Services (PCBES)**

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In addition to providing emergency assistance to residents and visitors of the County, the Putnam County Bureau of Emergency Services (PCBES) maintains a county-wide communications organization and is responsible for the operations & maintenance of the Enhanced 911 system. The Bureau Emergency Management directorate





plans for response, remediation / mitigation and recovery from natural and manmade disasters including those resulting from biological, nuclear, incendiary, chemical and explosive causes.

The Bureau manages and administrates a program of quality training for Fire and EMS agencies in accordance with State and Federal guidelines, manages an advanced life support system, maintains a stockpile of emergency Supplies and Equipment as may be required and oversees a variety of special response teams – who are prepared and equipped to respond to any situation of event.

The PCBES – Office of Emergency Management provides the following services:

**Emergency Planning** - The OEM plans for all large-scale emergencies within the County, such as snowstorms, floods, hurricanes, tornadoes, hazardous material incidents, radiological and public health emergencies.

**Emergency Operations Center Activation** – We are responsible for activation and operation of the County Emergency Operations Center for long-term, large-scale emergencies to manage the emergency through coordination, communication and sharing of resources, all through the National Incident Management System.

**Small Business Administration Disaster Assistance** – They document and coordinate this program which assists small businesses after severe damage from flooding, high winds or fire. Small businesses and homeowners may be eligible for low interest, long-term loans from the SBA.

**Presidential Disaster Declaration** – The OEM gathers documentation for submission to federal and state governments for monetary disaster relief.

**Emergency Equipment Stockpile** - The OEM can access the state's emergency equipment stockpile during emergency situations, if needed.

**Weather Alerts for Schools and Public Officials** – The OEM relays severe weather alerts to Putnam school districts and notifies police, county agencies and local governments during other watches and warnings.

**County Energy Coordinator** - They act as County Energy Coordinator during fuel emergencies and applies to the New York Energy Office for emergency fuel allocations.

**Radiological Emergency Response Planning and Exercises** - The OEM annually trains over 500 people involved in the Radiological Emergency Response Plan relating to the Indian Point nuclear power plants, and conducts a full-scale exercise of the Plan.

**Putnam Emergency and Amateur Repeater League (PEARL)** - The OEM cooperates with PEARL by providing space in its communications building on Mount Nimham for PEARL's radio equipment and office space for its monthly meetings and training sessions. In return, PEARL participates in the Radio Amateur Civil Emergency Service (RACES) and cooperates during the annual exercises and actual emergencies which occur in Putnam.

**Enhanced 911 Telephone System** – The OEM is responsible for the coordination of address changes initiated by towns and villages and which are required for the operation of E-911.

### **Putnam County Department of Planning, Development and Public Transportation**

The Planning Department leads or supports the following programs and activities that directly support hazard mitigation within the County:

- Assisting the County Executive in executive planning and capital budgeting
- Performing Land Use Case Reviews and approval authority





- Performing State Environmental Quality Review Act (SEQR) reviews
- Providing technical assistance to municipalities of the county on matters of planning and zoning, including training seminars Information, referral and database management for the New York State Data Center, disseminating demographic information on the County from the US Census
- Delivering environmental education and training seminars, research studies of natural resources, and technical assistance to local municipalities and the public
- Securing federal and state grants to help achieve departmental programs and fund new initiatives
- Watershed Implementation – implementing the Watershed Agreement with New York City
- Working in liaison with the Soil and Water Conservation District, which is part of the Planning Department.

### Putnam County Soil & Water Conservation District (PCSWCD)

The Soil and Water Conservation District was created in 1967 to develop and carry out a program of soil, water and related natural resource conservation by providing technical assistance and programs to residents, landowners and units of government. Mitigation related services provided include:

- Soil survey interpretation
- Site reviews
- Technical assistance related to erosion and sediment control
- Water management
- Conservation planning
- Agricultural assessments
- Pond site investigations
- Educational information and outreach
- Interpretation and sale of maps, and sale of publications
- Annual Tree Program
- Hudson Valley Regional Envirothon
- MS4 Stormwater Education and Outreach Materials.

### Putnam County Highways and Facilities (PCHF)

The PCHF Department is responsible for the administrative duties to ensure that all highway, facilities and park division's daily operations are conducted in a responsive and efficient manner. The Department consists of several divisions; those with specific relevance to hazard mitigation are detailed as follows.

#### Planning & Design (Engineering)

The Division of Planning & Design provides engineering, planning and technical support services for the Department of Highways and Facilities. These services include engineering and architectural design, land surveying, generation of contract and bid documents (including drafting of plans), construction support and inspection, and contract administration. Additional duties of the Division include administering the County's highway work permit program, pavement and bridge management systems, and traffic count program; maintenance of the Division's maps, drawings, records and aerial photography; research for Freedom of Information requests and litigation cases; and coordination with the Department's design consultants.

#### Facilities

The Facilities Division of Putnam County maintains and repairs all county owned/leased facilities, performing new construction as well as renovations of existing spaces.





## Fiscal

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The Fiscal Division is directly involved with all aspects of Highways & Facilities that relate to funding issues. Annual operating and on-going capital project budgets are prepared. The Highway Department administers all major capital construction projects and most Federal Highway Administration/New York State construction projects on County roads and bridges. The Highway Department also administers many facility construction projects that involve grant reimbursement from various other agencies. These road, bridge and facility construction projects require working along with Law, Audit, Finance, Purchasing and Personnel at the County level and the Department of Transportation & Emergency Management, at the State level. For specific type grants, the Division works with the Governor's Office for Small Cities and the Office of Parks, Recreation & Historic Preservation in Albany and the Office of Housing & Urban Development in Washington, DC.

## Road Maintenance & Construction

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The Construction and Maintenance Division is comprised of workers ranging from laborers to heavy equipment operators. This Division is responsible for over 200 miles of roads from the Hudson River to the Connecticut border. In conjunction with snow and ice removal, these workers maintain the roadways by installing drainage pipes and basins, repairing guide rail, cutting and trimming roadside vegetation and many other projects.

## Parks and Recreation

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It is the mission of the Putnam County Parks Division to provide safe, passive recreational opportunities to the residents of Putnam County while preserving open space, protecting environmentally sensitive areas, and promoting smart stewardship of County owned lands.

## **Putnam County Department of Information Technology and GIS**

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The Putnam County Department of Information Technology is the primary agency for all of county government's technological needs. The GIS (Geographic Information Systems) Unit is responsible for state-of-the-art electronic maps and databases, enhanced 911 data, and many other IT and GIS related support services.

### **6.4.3 Administrative and Technical Capabilities – State and Regional**

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Local mitigation is further supported by county, regional, state and federal administrative and technical capabilities, including the following:

#### **New York State Department of Homeland Security and Emergency Services (NYS DHSES)**

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For more than 50 years, NYS DHSES and its predecessor agencies (most recently known as New York State Office of Emergency Management – NYSOEM) have been responsible for coordinating the activities of all State agencies to protect New York's communities, the State's economic well-being, and the environment from natural and man-made disasters and emergencies. NYS DHSES routinely assists local governments, voluntary organizations, and private industry through a variety of emergency management programs including hazard identification, loss prevention, planning, training, operational response to emergencies, technical support, and disaster recovery assistance.

NYS DHSES administers the FEMA mitigation grant programs in the state, and supports local mitigation planning in addition to developing and routinely updating the State Hazard Mitigation Plan. NYS DHSES prepared the current State Hazard Mitigation Plan working with input from other State agencies, authorities and organizations. It was approved by FEMA on January 4, 2011, and it keeps New York eligible for recovery assistance in all Public Assistance Categories A through G, and Hazard Mitigation assistance in each of the Unified Hazard Mitigation Assistance Program's five grant programs. For example, the 2008-2011 State





Mitigation Plan allowed the State and its communities to access nearly \$57 million in mitigation grants to prepare plans and carry out projects.

Every three years, NYSDHSES updates the New York State HMP. The 2014 update to the NYS HMP was used as guidance and reference in completing the Putnam County HMP.

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**New York State Department of Environmental Conservation (NYSDEC) – Division of Water - Bureau of Flood Protection and Dam Safety**

Within the NYSDEC – Division of Water, the Bureau of Flood Protection and Dam Safety cooperates with federal, state, regional, and local partners to protect lives and property from floods, coastal erosion and dam failures through floodplain management and both structural and non-structural means; and, provides support for information technology needs in the Division. The Bureau consists of the following Sections:

- Coastal Management: Works to reduce coastal erosion and storm damage to protect lives, natural resources, and properties through structural and non-structural means.
- Dam Safety: Is responsible for reviewing repairs and modifications to dams, and assuring that dam owners operate and maintain dams in a safe condition through inspections, technical reviews, enforcement, and emergency planning.
- Flood Control Projects: Is responsible for reducing flood risk to life and property through construction, operation and maintenance of flood control facilities.
- Floodplain Management: Is responsible for reducing flood risk to life and property through proper management of activities including, development in flood hazard areas and review and development of revised flood maps.

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**New York City Department of Environmental Protection (NYCDEP)**

NYCDEP and its partners at county Soil and Water Conservation Districts and Cornell Cooperative Extension work closely with local towns in the Catskill/Delaware Watershed to develop management plans for the streams that feed the City's water supply reservoirs.

Stream management plans provide comprehensive recommendations for managing streams and floodplains to achieve multiple objectives such as erosion and flood hazard mitigation, fish habitat improvement, public recreation, and water quality protection. By 2011, stream management plans will have been completed for all six reservoir basins in all "West of Hudson" watersheds.

In those reservoir basins where stream management plans have been developed and completed, communities have adopted these plans by resolution which in turn makes them eligible for City funding to implement each plan's recommendations. Locally-based watershed advisory committees are being formed in a number of stream management basins to advise the implementation of the plans and to help set priorities.

All municipalities in Putnam County lie partially or entirely within the NYCDEP watershed, with the exceptions of Philipstown and Cold Spring.

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**Department of State's Division of Code Enforcement and Administration (DCEA)**

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**Technical Bulletins for the 2010 Codes of New York State**

The DCEA publishes 14 technical bulletins including two recent bulletins with guidance related to flood hazard areas: Electrical Systems and Equipment in Flood-damaged Structures and Accessory Structures. One archived bulletin from January 2003, Flood Venting in Foundations and Enclosures Below Design Flood Elevation, refers





to the out-of-date edition of FEMA Technical Bulletin 1 and to American Society of Civil Engineers (ASCE) 24-98, which is not the edition referenced by the current codes.

### **Forms and Publications**

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The DCEA posts several model reporting forms and related publications on its web page. The Building Permit Application requests the applicant to indicate whether the site is or is not in a floodplain and advises checking with town clerks or NYSDEC. The General Residential Code Plan Review form includes a reminder to “add 2’ freeboard.” Sample Flood Hazard Area Review Forms, including plan review checklists and inspection checklists for Zone A and Zone V, are based on the forms in Reducing Flood Losses through the International Code Series published by International Code Council and FEMA (2008).

### **East of Hudson Watershed Corporation (EOHWC)**

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The East of Hudson Watershed Corporation is a local development corporation established by the municipalities in northern Westchester, Putnam and Dutchess Counties in the New York City Watershed to install stormwater retrofit projects to meet the requirements for phosphorus reduction defined by the New York State Department of Environmental Conservation (NYS DEC). The Corporation works in conjunction with the NYS DEC and New York City Department of Environmental Protection (NYC DEP) to further Storm Water MS4 quality projects in the Croton and Kensico Reservoir Basins.

### **6.4.4 Fiscal Capabilities-Federal and State**

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Mitigation projects and initiatives are largely or entirely dependent on available funding. Putnam County is able to fund mitigation projects through existing local budgets, local appropriations (including referendums and bonding), and through a myriad of Federal and State loan and grant programs.

### **Local Waterfront Revitalization Program**

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The Waterfront Revitalization of Coastal Areas and Inland Waterways Act offers local governments the opportunity to participate in the State's Coastal Management Program (CMP) (pdf) on a voluntary basis by preparing and adopting a Local Waterfront Revitalization Program (LWRP), providing more detailed implementation of the State's CMP through use of such existing broad powers as zoning and site plan review. When an LWRP is approved by the New York State Secretary of State, State agency actions are required to be consistent with the approved LWRP to the maximum extent practicable. When the federal government concurs with the incorporation of an LWRP into the CMP, federal agency actions must be consistent with the approved addition to the CMP.

Title 19 of NYCRR Part 600, 601, 602, and 603 provide the rules and regulations that implement each of the provisions of the Waterfront Revitalization of Coastal Areas and Inland Waterways Act including but not limited to the required content of an LWRP, the processes of review and approval of an LWRP, and LWRP amendments.

A Local Waterfront Revitalization Program consists of a planning document prepared by a community, and the program established to implement the plan. An LWRP may be comprehensive and address all issues that affect a community's entire waterfront, or it may address the most critical issues facing a significant portion of its waterfront.

An LWRP follows a step-by-step process by which a community can advance community planning from a vision to implementation, which is described in the Making the Most of Your Waterfront Guidebook (pdf) developed by the Department of State. Additionally, the Opportunities Waiting to Happen Guidebook (pdf), developed by





the Department of State, provides help to assist all New Yorkers to redevelop abandoned buildings as part of the overall vision for their community.

An approved LWRP reflects community consensus and provides a clear direction for appropriate future development. It establishes a long-term partnership among local government, community-based organizations, and the State. Also, funding to advance preparation, refinement, or implementation of Local Waterfront Revitalization Programs is available under Title 11 of the New York State Environmental Protection Fund Local Waterfront Revitalization Program (EPF LWRP) among other sources.

In addition, State permitting, funding, and direct actions must be consistent, to the maximum extent practicable, with an approved LWRP. Within the federally defined coastal area, federal agency activities are also required to be consistent with an approved LWRP. This “consistency” provision is a strong tool that helps ensure all government levels work in unison to build a stronger economy and a healthier environment.

Due to the proximity to the Hudson River waterfront, the only Putnam County communities applicable to the LWRP are Cold Spring and Philipstown.

### **Federal Hazard Mitigation Funding Opportunities**

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Federal mitigation grant funding is available to all communities with a current hazard mitigation plan (this plan); however most of these grants require a “local share” in the range of 10-25% of the total grant amount. The FEMA mitigation grant programs are described below.

#### **Hazard Mitigation Grant Program (HMGP)**

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The HMGP is a post-disaster mitigation program. It is made available to states by FEMA after each Federal disaster declaration. The HMGP can provide up to 75% funding for hazard mitigation measures. The HMGP can be used to fund cost-effective projects that will protect public or private property in an area covered by a federal disaster declaration or that will reduce the likely damage from future disasters. Examples of projects include acquisition and demolition of structures in hazard prone areas, flood-proofing or elevation to reduce future damage, minor structural improvements and development of state or local standards. Projects must fit into an overall mitigation strategy for the area identified as part of a local planning effort. All applicants must have a FEMA-approved Hazard Mitigation Plan (this plan).

Applicants who are eligible for the HMGP are state and local governments, certain nonprofit organizations or institutions that perform essential government services, and Indian tribes and authorized tribal organizations. Individuals or homeowners cannot apply directly for the HMGP; a local government must apply on their behalf. Applications are submitted to NYS DHSES and placed in rank order for available funding and submitted to FEMA for final approval. Eligible projects not selected for funding are placed in an inactive status and may be considered as additional HMGP funding becomes available.

The County and a number of municipalities, special purpose districts, and Private-Non-Profits (PNPs) in the County applied for mitigation grant funding for projects under the NYRising (“Sandy”) HMGP in date. These projects have been included within the relevant jurisdictional mitigation strategies in Section 9.

#### **Flood Mitigation Assistance (FMA) Program**

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The FMA combines the previous Repetitive Flood Claims and Severe Repetitive Loss Grants into one grant program. FMA provides funding to assist states and communities in implementing measures to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the NFIP. The FMA is funded annually; no federal disaster declaration is required. Only NFIP insured





homes and businesses are eligible for mitigation in this program. Funding for FMA is very limited and, as with the HMGP, individuals cannot apply directly for the program. Applications must come from local governments or other eligible organizations. The federal cost share for an FMA project is 75%. At least 25% of the total eligible costs must be provided by a non-federal source. Of this 25%, no more than half can be provided as in-kind contributions from third parties. At minimum, a FEMA-approved local flood mitigation plan is required before a project can be approved. FMA funds are distributed from FEMA to the state. NYS DHSES serves as the grantee and program administrator for FMA.

#### **Pre-Disaster Mitigation (PDM) Program**

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The PDM program is an annually funded, nationwide, competitive grant program. No disaster declaration is required. Federal funds will cover 75% of a project's cost up to \$3 million. As with the HMGP and FMA, a FEMA-approved local Hazard Mitigation Plan is required to be approved for funding under the PDM program.

#### **Federal and State Disaster and Recovery Assistance Programs**

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Following a disaster, various types of assistance may be made available by local, state and federal governments. The types and levels of disaster assistance depend on the severity of the damage and the declarations that result from the disaster event. Among the general types of assistance that may be provided should the President of the United States declare the event a major disaster are the following:

##### **Individual Assistance (IA)**

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IA provides help for homeowners, renters, businesses and some non-profit entities after disasters occur. This program is largely funded by the U.S. Small Business Administration. For homeowners and renters, those who suffered uninsured or underinsured losses may be eligible for a Home Disaster Loan to repair or replace damaged real estate or personal property. Renters are eligible for loans to cover personal property losses. Individuals may borrow up to \$200,000 to repair or replace real estate, \$40,000 to cover losses to personal property and an additional 20% for mitigation. For businesses, loans may be made to repair or replace disaster damages to property owned by the business, including real estate, machinery and equipment, inventory and supplies. Businesses of any size are eligible. Non-profit organizations such as charities, churches, private universities, etc. are also eligible. An Economic Injury Disaster Loan provides necessary working capital until normal operations resume after a physical disaster. These loans are restricted, by law, to small businesses only.

##### **Public Assistance (PA)**

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PA provides cost reimbursement aid to local governments (state, county, local, municipal authorities and school districts) and certain non-profit agencies that were involved in disaster response and recovery programs or that suffered loss or damage to facilities or property used to deliver government-like services. This program is largely funded by FEMA with both local and state matching contributions required.

##### **Small-Business Administration (SBA) Loans**

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Small Business Administration (SBA) provides low-interest disaster loans to homeowners, renters, business of all sizes, and most private nonprofit organizations. SBA disaster loans can be used to repair or replace the following items damaged or destroyed in a declared disaster: real estate, personal property, machinery and equipment, and inventory and business assets.

Homeowners may apply for up to \$200,000 to replace or repair their primary residence. Renters and homeowners may borrow up to \$40,000 to replace or repair personal property—such as clothing, furniture, cars, and appliances—damaged or destroyed in a disaster. Physical disaster loans of up to \$2 million are available to qualified businesses or most private nonprofit organizations.





### Social Services Block Grant

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To address the needs of critical health and human service providers and the populations they serve, the State of New York will receive a total of \$235.4 million in federal Superstorm Sandy Social Services Block Grant funding. The State will distribute \$200,034,600 through a public and transparent solicitation for proposals. The State is also allocating \$35.4 million in State Priority Projects, using the SSBG funding. Sandy SSBG resources are dedicated to covering necessary expenses resulting from Superstorm Sandy, including social, health and mental health services for individuals, and for repair, renovation and rebuilding of health care facilities, mental hygiene facilities, child care facilities and other social services facilities.

### Department of Homeland Security

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The Homeland Security Grant Program (HSGP) plays an important role in the implementation of the National Preparedness System by supporting the building, sustainment, and delivery of core capabilities essential to achieving the National Preparedness Goal of a secure and resilient nation. The FY 2013 HSGP supports core capabilities across the five mission area of Prevention, Protection, Mitigation, Response, and Recovery based on allowable cost. HSGP is comprised of three interconnected grant programs including the State Homeland Security Program (SHSP), Urban Areas Security Initiative (UASI), and the Operation Stonegarden (OPSG). Together, these grant programs fund a range of preparedness activities, including planning, organization, equipment purchase, training, exercises, and management and administration.

### Community Development Block Grants (CDBG)

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CDBG are federal funds intended to provide low and moderate-income households with viable communities, including decent housing, as suitable living environment, and expanded economic opportunities. Eligible activities include community facilities and improvements, roads and infrastructure, housing rehabilitation and preservation, development activities, public services, economic development, planning, and administration. Public improvements may include flood and drainage improvements. In limited instances, and during the times of “urgent need” (e.g. post disaster) as defined by the CDBG National Objectives, CDBG funding may be used to acquire a property located in a floodplain that was severely damaged by a recent flood, demolish a structure severely damaged by an earthquake, or repair a public facility severely damaged by a hazard event.

### Community Development Block Grants – Disaster Recovery (CDBG-DR)

On October 10, 2013, the New York State Homes & Community Renewal Office of Community Renewal finalized the Putnam County Floodplain Management Areawide Compliance Document in accordance with Executive Order 11988. The State of New York was awarded funding, to be administered by the New York State Homes and Community Renewal (HCR), to provide financial assistance to homeowners whose residences were substantially damaged by storms Sandy, Lee and Irene within various New York State Counties. HCR is awarding this funding in accordance with the State of New York Action Plan For Community Development Block Grant Program – Disaster Recovery (Action Plan). The Action Plan provides for, among other things, home buyout and acquisition assistance to owners of 1-2 family homes. “Buyouts” involve the purchase of properties located within a floodplain. Structures and improvements will be removed, and the parcel will be allowed to return to its natural state in perpetuity. “Acquisitions” also involve purchase of properties, however, the specific details of reuse will be determined based on site specific conditions. Reuse will be in accordance with local zoning and land use plans. This action is of fundamental importance in assisting landowners with damaged property.

Further discussion of CDBG-DR funding is provided below under the Governor’s Office of Storm Recovery section.





## **U.S. Economic Development Administration**

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The U.S. Economic Development Administration (USED) is an agency of the U.S. Department of Commerce that supports regional economic development in communities around the country. It provides funding to support comprehensive planning and makes strategic investments that foster employment creation and attract private investment in economically distressed areas of the United States. Through its Public Works Program USED invests in key public infrastructure, such as in traditional public works projects, including water and sewer systems improvements, expansion of port and harbor facilities, brownfields, multitenant manufacturing and other facilities, business and industrial parks, business incubator facilities, redevelopment technology-based facilities, telecommunications and development facilities. Through its Economic Adjustment Program, USED administers its Revolving Loan Fund (RLF) Program, which supplies small businesses and entrepreneurs with the gap financing needed to start or expand their business, in areas that have experienced or are under threat of serious structural damage to the underlying economic base.

### **Homeownership Repair and Rebuilding Fund**

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The Homeownership Repair and Rebuilding Fund provides grants of up to an additional \$10,000 to eligible homeowners who have already qualified for FEMA housing assistance's maximum grant (\$31,900) and will not receive other assistance from private insurance or government agencies that would duplicate the grant's funding. The HRRF includes \$100 million dedicated to help homeowners affected by Sandy and was provided directly from the State of New York.

### **Empire State Relief Fund**

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The Empire State Relief Fund is dedicated to providing resources to help recover from Hurricane Sandy and rebuild and restore homes. In many cases, New Yorkers face a substantial gap between the cost of repair or replacement of their home and the funds available to them to cover this cost. The Empire State Relief Fund will focus on long-term residential housing assistance to help fill the funding gap by providing up to \$10,000 in additional grants. Homeowners eligible for the funding must have received the maximum FEMA grant assistance as well as the maximum funding from HRRF (\$41,900). The ESRF is funded through donations where 100% of the money is dedicated to NYS housing programs.

### **Federal Highway Administration - Emergency Relief**

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The Federal Highway Administration Emergency Relief is a grant program that may be used for repair or reconstruction of Federal-aid highways and roads on Federal lands which have suffered serious damage as a result of a disaster. NYS is serving as the liaison between local municipalities and FHWA. \$30 Million in funding was released in October-November of 2012 for emergency repair work conducted in first 180 days following Hurricane Sandy. Another \$220 Million in additional funding became available February 2013.

### **Federal Transit Administration - Emergency Relief**

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The Federal Transit Authority Emergency Relief is a grant program that funds capital projects to protect, repair, reconstruct, or replace equipment and facilities of public transportation systems. Administered by the Federal Transit Authority at the U.S. Department of Transportation and directly allocated to MTA and Port Authority. This transportation-specific fund was created as an alternative to FEMA PA. Currently, a total of \$5.2 Billion has been allocated to NYS-related entities.





### Hurricane Sandy Coastal Resiliency Competitive Grant Program

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Interior Secretary Sally Jewell has announced that competitive grants are now available from the Hurricane Sandy Coastal Resiliency Competitive Grant Program. The program, funded by the Hurricane Sandy disaster relief appropriation, is administered by NFWF.

The Hurricane Sandy Coastal Resiliency Competitive Grants Program will award more than \$100 million in grants throughout the region affected by Hurricane Sandy, including Connecticut, Delaware, the District of Columbia, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Virginia, and West Virginia—the states that officially declared a natural disaster as a result of the storm event.

Grants from \$100,000 to \$5 million will be awarded to projects that assess, restore, enhance or create wetlands, beaches and other natural systems to better protect communities as well as fish and wildlife species and habitats from the impacts of future storms and naturally occurring events.

### Governor's Office of Storm Recovery (GOSR)

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Utilizing CDBG-DR funding and other federal funds awarded to State agencies, GOSR assists homeowners, small businesses and entire communities to re-build and make improvements to prepare for future extreme weather events. Funding focusses on 4 chief areas: infrastructure, housing, small business, and communities. With regard to infrastructure, GOSR operates the Infrastructure Program which leverages local resources and invests in a range of projects aimed at improving the State's infrastructure, transportation networks, energy supply, and coast lines, and improving weather warning and emergency management functions. With regard to housing, GOSR operates a Housing Recovery Program to support single family home owners to make repairs, and undertake rehabilitation, mitigation and elevation. It also offers funding for multi-family rental property owners, co-op and condo owners, and owners' associations, as well as disburses payments through the Interim Mortgage Assistance (IMA) program, which provides supplemental funding for families who have accrued further housing costs, and manages the State's buyout and acquisition initiative. Through the Small Business Program, GOSR provides grants and low interest loans to independently-owned and operated small businesses to repair or replace equipment and lost inventory, renovate storm-damaged facilities, and for working capital. And finally, through the Community Reconstruction Program, GOSR assists storm-impacted towns by facilitating redevelopment planning processes and offering funding ranging from \$3 million to \$25 million to implement strategies that support local recovery and resiliency.

### Empire State Development

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Empire State Development offers a wide range of financing, grants and incentives to promote business and employment growth, and real estate development throughout the State. Several programs address infrastructure construction associated with project development, acquisition and demolition associated with project development and brownfield remediation and redevelopment.

### New York State Department of Transportation (NYSDOT)

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#### Damaged Roads and Signals

High winds, storm tidal surge and flooding caused significant damage to NYSDOT facilities, roads and local transportation infrastructure in the Hudson Valley, Long Island and New York City. Repair and replacement will be necessary for these facilities and infrastructure. In some cases, municipalities will be direct applicants; therefore, not all FEMA-eligible costs are included for damaged infrastructure.





### Scour around Culverts and Bridges

Scour has some of the most significant and destructive effects on roadway culverts and bridges. It is the result of fast flowing water's erosive action, which erodes and carries away foundation materials (sand and rocks from around and beneath abutments, piers, foundations and embankments). Water's intensity and velocity can quickly compromise the integrity of roadway culverts and bridges and is one of three main causes of bridge failures (the other two are collision and overloading). Superstorm Sandy, Tropical Storm Lee, and Hurricane Irene each exposed the vulnerability of the State's bridges and culverts to scour, as the storms weakened or damaged these structures across the State.

There are 20,000 bridges in New York State, with 91 state bridges, 731 local bridges and 431 culverts at risk of scour<sup>18</sup>. This program will address scoured and critical roadway culverts and bridges. It will provide replacements and/or permanent scour retrofits to facilities that are unable to protect the transportation system from storm events. \$500M will be made available for this critical work.

### Emergency Watershed Protection Program

The purpose of the Emergency Watershed Protection Program (EWP) was established by Congress to respond to emergencies created by natural disasters. The EWP Program is designed to help people and conserve natural resources by relieving imminent hazards to life and property caused by floods, fires, drought, windstorms, and other natural occurrences. The U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) administers the EWP Program; EWP-Recovery, and EWP–Floodplain Easement (FPE).

#### EWP - Recovery

The EWP Program is a recovery effort program aimed at relieving imminent hazards to life and property caused by floods, fires, windstorms, and other natural occurrences. Public and private landowners are eligible for assistance, but must be represented by a project sponsor that must be a legal subdivision of the State, such as a city, county, township or conservation district, and Native American Tribes or Tribal governments. NRCS may pay up to 75 percent of the construction cost of emergency measures. The remaining 25 percent must come from local sources and can be in the form of cash or in-kind services.

EWP work is not limited to any one set of measures. It is designed for installation of recovery measures to safeguard lives and property as a result of a natural disaster. NRCS completes a Damage Survey Report (DSR) which provides a case-by-case investigation of the work necessary to repair or protect a site.

Watershed impairments that the EWP Program addresses are debris-clogged stream channels, undermined and unstable streambanks, jeopardized water control structures and public infrastructures, wind-borne debris removal, and damaged upland sites stripped of protective vegetation by fire or drought.

#### EWP - FPE

Privately-owned lands or lands owned by local and state governments may be eligible for participation in EWP-FPE. To be eligible, lands must meet one of the following criteria:

- Lands that have been damaged by flooding at least once within the previous calendar year or have been subject to flood damage at least twice within the previous 10 years
- Other lands within the floodplain are eligible, provided the lands would contribute to the restoration of the flood storage and flow, provide for control of erosion, or that would improve the practical management of the floodplain easement
- Lands that would be inundated or adversely impacted as a result of a dam breach





EWP-FPE easements are restored to the extent practicable to the natural environment and may include both structural and nonstructural practices to restore the flood storage and flow, erosion control, and improve the practical management of the easement.

Structures, including buildings, within the floodplain easement must be demolished and removed, or relocated outside the 100-year floodplain or dam breach inundation area.

### 6.5 Mitigation Strategy Development

This subsection discusses the identification, prioritization, analysis and implementation plan of mitigation actions for the Putnam County planning partnership.

#### 6.5.1 Local Mitigation Strategy Development

At the Kick-Off and subsequent planning meetings, all participating municipalities were provided a survey (“Municipal Information Worksheet”) to assist in identifying mitigation activities completed, ongoing and potential/proposed. As new additional potential mitigation actions, projects or initiatives became evident during the plan process, including as part of the risk assessment and as identified through the public and stakeholder outreach process (see Section 3), communities were made aware of these either through direct communication (local meetings, email, phone) or via their draft municipal annexes.

The County and municipalities identified projects that have been submitted to NYS DHSES for grant funding, including projects for which Letters of Intent (LOI) and grant applications have been submitted under the New York Rising Hazard Mitigation Grant Program. In general, LOI/application-based projects submitted directly by the communities are identified within their mitigation strategies. Communities may also have included other LOI/application-based projects submitted by special-purpose districts (e.g. fire or school districts), local utilities, and hospitals and health care entities.

To help support the selection of an appropriate, risk-based mitigation strategy, each annex provided a summary of hazard vulnerabilities identified during the plan process, either directly by municipal representatives, through review of available county and local plans and reports, and through the hazard profiling and vulnerability assessment process.

Beginning in May of 2014, members of the Planning Committee, contract consultants and Mercy college graduate students worked directly with each jurisdiction (phone, email, local support meetings) to assist with the development of their annex and include mitigation strategies, focusing on identifying well-defined, implementable projects with a careful consideration of benefits (risk reduction, losses avoided), costs, and possible funding sources (including mitigation grant programs).

Concerted efforts were made to assure that municipalities develop mitigation strategies that included activities and initiatives covering the range of mitigation action types described in recent FEMA planning guidance (FEMA “Local Mitigation Planning Handbook” March 2013), specifically:

- Local Plans and Regulations – These actions include government authorities, policies or codes that influence the way land and buildings are being developed and built.
- Structure and Infrastructure Project- 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 – These are actions that minimize damage and losses, and also preserve or restore the functions of natural systems.





- Education and Awareness Programs – 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 the National Flood Insurance Program and Community Rating System, StormReady (NOAA) and Firewise (NFPA) Communities.

In consideration of federal and state mitigation guidance, the Planning Committee recognized that all municipalities would benefit from the inclusion of certain mitigation initiatives. These include initiatives to address vulnerable public and private properties, including RL and SRL properties; initiatives to support continued and enhanced participation in the NFIP; improved public education and awareness programs; and initiatives to support countywide and regional efforts to build greater local mitigation capabilities.

In July 2014, a mitigation strategy workshop was conducted in the County by a FEMA Region II representative to support the identification, evaluation and prioritization of local mitigation strategies, as well as how to present and document this process within the plan. Based on FEMA's guidance and recommendations provided at this workshop and otherwise, the approach to the mitigation strategy identification, evaluation and documentation process emphasized the following:

- An overarching effort has been made to focus local mitigation strategies to clearly defined, readily actionable projects and initiatives that meet the definition or characteristics of mitigation.
- Continuous or ongoing strategies that represent programs that are, or have become, fully integrated into the normal operational and administrative framework of the community have been identified within the Capabilities section of each annex.
- Where applicable, mitigation projects have been documented with an Action Worksheet, based on FEMA's Action Worksheet templates and recent guidance documents.

### **6.5.2 County Mitigation Strategy Development**

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Throughout the course of the plan process, regional and county-level mitigation actions have been identified. These were identified through:

- Review of the results and findings of the risk assessment;
- Review of available regional and county plans, reports and studies;
- Direct input from county departments and other county and regional agencies, including:
  - Putnam County Bureau of Emergency Services – Office of Emergency Management
  - Putnam County Department of Planning
  - Putnam County Soil and Water Conservation
  - Putnam County Highway and Facilities
  - Putnam County Department of Information Technology and GIS
  - Putnam County Executive's Office
  - Putnam County Health Department
  - Putnam County Sheriff Department
  - Putnam County Department of Corrections
  - Putnam County Real Property
- Input received through the public and stakeholder outreach process.

### **6.5.3 Mitigation Strategy Evaluation and Prioritization**

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Section 201.c.3.iii of 44 CFR requires an action plan describing how the actions identified will be prioritized.





Recent FEMA planning guidance (March 2013) identifies a modified STAPLEE (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) mitigation action evaluation methodology that uses a set of 10 evaluation criteria suited to the purposes of hazard mitigation strategy evaluation. This method provides a systematic approach that considers the opportunities and constraints of implementing a particular mitigation action. The July mitigation workshop presented by FEMA representatives further amplified these evaluation criteria, and indicated that communities may want to consider other factors.

Based on this guidance, the Steering and Planning Committees have developed and applied an action evaluation and prioritization methodology which includes an expanded set of fourteen (14) criteria to include the consideration of cost-effectiveness, availability of funding, anticipated timeline, and if the action addresses multiple hazards.

The fourteen (14) evaluation/prioritization criteria used in the 2014 mitigation strategy evaluation process are:

1. Life Safety – How effective will the action be at protecting lives and preventing injuries?
2. Property Protection – How significant will the action be at eliminating or reducing damage to structures and infrastructure?
3. Cost-Effectiveness – Are the costs to implement the project or initiative commensurate with the benefits achieved?
4. Technical – Is the mitigation action technically feasible? Is it a long-term solution? Eliminate actions that, from a technical standpoint, will not meet the goals.
5. Political – Is there overall public support for the mitigation action? Is there the political will to support it?
6. Legal – Does the municipality have the authority to implement the action?
7. Fiscal - Can the project be funded under existing program budgets (i.e., is this initiative currently budgeted for)? Or would it require a new budget authorization or funding from another source such as grants?
8. Environmental – What are the potential environmental impacts of the action? Will it comply with environmental regulations?
9. Social – Will the proposed action adversely affect one segment of the population? Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower income people?
10. Administrative – Does the jurisdiction have the personnel and administrative capabilities to implement the action and maintain it or will outside help be necessary?
11. Multi-hazard – Does the action reduce the risk to multiple hazards?
12. Timeline - Can the action be completed in less than 5 years (within our planning horizon)?
13. Local Champion – Is there a strong advocate for the action or project among the jurisdiction's staff, governing body, or committees that will support the action's implementation?
14. Other Local Objectives – Does the action advance other local objectives, such as capital improvements, economic development, environmental quality, or open space preservation? Does it support the policies of other plans and programs?

Participating jurisdictions were asked to use these criteria to assist them in evaluating and prioritizing mitigation actions. Specifically, for each mitigation action, the jurisdictions were asked to assign a numeric rank (-1, 0, or 1) for each of the 14 evaluation criteria, defined as follows:

- 1 = Highly effective or feasible
- 0 = Neutral
- -1 = Ineffective or not feasible





Further, jurisdictions were asked to provide a brief summary of the rationale behind the numeric rankings assigned, as applicable. The numerical results of this exercise were then used by each jurisdiction to help prioritize the action or strategy as “Low”, “Medium,” or “High.” While this provided a consistent, systematic methodology to support the evaluation and prioritization of mitigation actions, jurisdictions may have additional considerations that could influence their overall prioritization of mitigation actions.

As previously stated, throughout this planning process, there has been an effort to develop more clearly defined and action-oriented mitigation strategies. These local strategies include projects and initiatives that have been well-vetted, and are seen by the community as the most effective approaches to advance their local mitigation goals and objectives within their capabilities. As such, many of the initiatives in the mitigation strategy were ranked as “High” or “Medium” priority, as reflective of the community’s clear intent to implement, available resources notwithstanding. In general, initiatives that would have had “low” priority rankings were appropriately screened out during the local action evaluation process.

### 6.5.4 Benefit/Cost Review

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Section 201.6.c.3iii of 44CFR requires the prioritization of the action plan to emphasize the extent to which benefits are maximized according to a cost/benefit review of the proposed projects and their associated costs. Stated otherwise, cost-effectiveness is one of the criteria that must be applied during the evaluation and prioritization of all actions comprising the overall mitigation strategy.

The benefit/cost review applied in for the evaluation and prioritization of projects and initiatives in this plan process was qualitative; that is, it does not include the level of detail required by FEMA for project grant eligibility under the Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) grant program. For all actions identified in the local strategies, jurisdictions have identified both the costs and benefits associated with project, action or initiative.

**Costs** are the total cost for the action or project, and may include administrative costs, construction costs (including engineering, design and permitting), and maintenance costs.

**Benefits** are the savings from losses avoided attributed to the implementation of the project, and may include life-safety, structure and infrastructure damages, loss of service or function, and economic and environmental damage and losses.

When available, jurisdictions were asked to identify the actual or estimated dollar value for project costs and associated benefits. Having defined costs and benefits allows a direct comparison of benefits versus costs, and a quantitative evaluation of project cost-effectiveness. Often, however, numerical costs and/or benefits have not been identified, or may be impossible to quantitatively assess.

For the purposes of this planning process, jurisdictions were tasked with evaluating project cost-effectiveness with both costs and benefits assigned to “High”, “Medium” and “Low” ratings. Where quantitative estimates of costs and benefits were available, ratings/ranges were defined as:

Low = < \$10,000      Medium = \$10,000 to \$100,000      High = > \$100,000

Where quantitative estimates of costs and/or benefits were not available, qualitative ratings using the following definitions were used:



**Table 6-2. Qualitative Cost and Benefit Ratings**

Costs	
High	Existing funding levels are not adequate to cover the costs of the proposed project, and implementation would require an increase in revenue through an alternative source (e.g., bonds, grants, and fee increases).
Medium	The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
Low	The project could be funded under the existing budget. The project is part of or can be part of an existing, ongoing program.
Benefits	
High	Project will have an immediate impact on the reduction of risk exposure to life and property.
Medium	Project will have a long-term impact on the reduction of risk exposure to life and property or will provide an immediate reduction in the risk exposure to property.
Low	Long-term benefits of the project are difficult to quantify in the short term.

Using this approach, projects with positive benefit versus cost ratios (such as high over high, high over medium, medium over low, etc.) are considered cost-effective.

For some of the Putnam County initiatives identified, the Planning Committee may seek financial assistance under FEMA's HMGP or Hazard Mitigation Assistance (HMA) programs. These programs require detailed benefit/cost analysis as part of the application process. These analyses will be performed when funding applications are prepared, using the FEMA BCA model process. The Planning Committee is committed to implementing mitigation strategies with benefits that exceed costs. For projects not seeking financial assistance from grant programs that require this sort of analysis, the Planning Committee reserves the right to define "benefits" according to parameters that meet its needs and the goals and objectives of this plan.

