HAZARD MITIGATION PLAN UPDATE
ANNEX FOR THE TOWN OF PRESTON

Southeastern Connecticut Council of Governments
Multi-Jurisdictional Hazard Mitigation Plan

December 20, 2012

MMI #3570-05

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1.0 INTRODUCTION

1.1 Purpose of Annex

The purpose of this HMP annex is to provide an update to the hazard risk assessment and capability assessment provided in the previous HMP, and to evaluate potential hazard mitigation measures and prioritize hazard mitigation projects specific to mitigating the effects of hazards to Preston. Background information and the regional effects of pertinent hazards are discussed in the main body of the Southeastern Connecticut Council of Governments (SCCOG) Multi-Jurisdictional Hazard Mitigation Plan. Thus, this annex is designed to supplement the information presented in the Multi-Jurisdictional HMP with more specific detail for Preston and is not to be considered a standalone document.

The primary goal of this hazard mitigation plan annex is to identify particular vulnerability to hazards and potential mitigation measures for such hazards in order to ***reduce the loss of or damage to life, property, infrastructure, and natural, cultural, and economic resources.*** This includes the reduction of public and private damage costs. Limiting losses of and damage to life and property will also reduce the social, emotional, and economic disruption associated with a natural disaster.

1.2 Setting

Preston is a rural community in the north-central region of New London County that was settled and incorporated in 1687. The community has since grown to a population of 4,688 as of the 2000 census. Additional growth over the next decade brought the total population of the town to 4,726 as of the 2010 census. The town is approximately 31.7 square miles in area and includes the historic villages of Preston City, Poquetanuck, and Long Society as well as the minor communities of Hallville, Happyland, and Shewville (Preston Plains). The Town is bordered by Lisbon to the north, Griswold to the northeast, North Stonington to the southeast, Ledyard to the south, Montville to the southwest, and Norwich to the west.

Several major transportation corridors traverse the town. Major roads include Route 2, Route 2A, Route 12, Route 164, and Route 165. One rail line belonging to the Providence/Worcester line travels through Happyland along the eastern shore of the Thames River and connects Norwich to Groton. The rail line allows goods to travel between communities throughout southeastern Connecticut and the eastern seaboard.

Major waterways include the Quinebaug River (which drains from Lisbon and Griswold and forms the boundary of Preston with Lisbon to the north), the Shetucket River (which forms part of the boundary between Norwich and Preston), and the Thames River (which forms the boundary between Preston and Montville). Shipping is only conducted on the Thames River due to the presence of dams upstream in Norwich.

1.3 Plan Development

The 2005 HMP and its annexes were developed through a series of meetings and the completion of written questionnaires, personal interviews, and workshops as described in the Multi-Jurisdictional HMP update. Since that time, the HMP has been available in local governmental offices and available to emergency personnel. Residents were encouraged to contact the First

Selectman with any concerns regarding emergency response or potential projects related to natural hazard damage.

Based on the existing plan, existing information, and hazards that have occurred since 2005, SCCOG determined that the following data collection program would be sufficient to collect data to update the Multi-Jurisdictional plan and each annex.

- The SCCOG issued a press release on November 20, 2011 announcing a public information meeting on the multi-jurisdictional HMP update. This press release was published in the Norwich Bulletin and The Day. This notice was also posted on the SCCOG website and the *Patch* (a popular internet newspaper). The public information meeting was held on December 13, 2011 at the SCCOG office.

- A data collection meeting was held with the town on January 24, 2012 to discuss the scope and process for updating the plan and to collect information. The First Selectman, Fire Chief, and Building Inspector represented the local planning team. The meeting focused on reviewing each section of the existing hazard mitigation plan and annex, critical facilities, and various types of hazards that have affected the town and that should be addressed in the update.

- The draft that is sent for State review will be posted on the Town website (http://www.preston-ct.org/) as well as the SCCOG website (http://www.seccog.org) for public review and comment. In addition, a hard copy will be made available in the SCCOG office in Norwich. A press release will announce the availability of the HMP for review. This will provide residents, business owners, and other stakeholders throughout the SCCOG region the opportunity to review and comment on a relatively complete draft with all annexes. Comments received from the public will be incorporated into the final draft where applicable following State and Federal comments.

The adoption of this HMP update by the Town of Preston will be coordinated by SCCOG and the First Selectman. The HMP update must be adopted within one year of conditional approval by FEMA, or the Town will need to update the HMP and resubmit it to FEMA for review. The adoption resolution is located in Appendix A of this annex.

1.4 Progress Monitoring

Following adoption, the First Selectman will continue to administer this HMP under the authority of the Board of Selectmen and will be the local coordinator of the HMP. The First Selectman will coordinate with responsible departments as listed in Table 11-1 and ensure that the recommendations of this HMP are considered or enacted. Refer to Section 1.8 of the Multi-Jurisdictional HMP for a description of how the local coordinator will perform progress monitoring. The majority of recommendations in this annex can be accomplished within or with only a slight increase in the operating budgets of the various departments. Projects that require capital improvements or additional funding will need to be approved by the Board of Selectmen. By Town ordinance, any expenditure over $100,000 by the Town of Preston must be approved by town referendum.

The HMP will be on file with the First Selectman and at the Planning & Zoning Department to assist in guiding growth decisions. See Section 2.5 for recommendations related to integrating

the findings of this HMP into other Town planning documents. The Town will encourage residents to contact the First Selectman with concerns related to natural hazards or emergency response via the Town's website. Such announcements will also state that the HMP is available for public review at the Town Hall as well as available on the Town's and the SCCOG's website.

The Town of Preston will review the status of plan recommendations each year. The First Selectman will be in charge of overseeing recommended projects and coordinating an annual meeting with applicable departments (those listed in Table 11-1) and other interested departments. Refer to Section 1.8 of the Multi-Jurisdictional HMP for a list of matters to be discussed at the annual meeting, including a review of each recommendation and progress achieved to date, or reasons for why the recommendation has not been enacted. The First Selectman will keep a written record of meeting minutes and the status of the recommendations. These records of progress monitoring will form the basis for the next HMP update.

The Town of Preston understands that the multi-jurisdictional HMP and this annex will be effective for five years from the date of FEMA approval of the first SCCOG jurisdiction regardless of the date of adoption by the Town. The First Selectman will coordinate with SCCOG for the next HMP update which is expected to occur in 2016-2017.

2.0 COMMUNITY PROFILE

2.1 Physical Setting

The Town of Preston is located in the north-central section of the SCCOG. Elevations range from approximately sea level along the Thames River and Poquetanuck Cove to just over 530 feet on Lambert Mountain in the southeast corner of the town. Commercial development is located sporadically along the State roads and concentrated in the village districts, with the largest commercial areas being associated with seasonal campgrounds.

Geology is important to the occurrence and relative effects of natural hazards such as earthquakes. Thus, it is important to understand the geologic setting and variation of bedrock and surficial formations in lands underlying Preston.

Preston lies in an area of Connecticut where many fault lines intersect. Several fault lines traverse the town, creating contacts between bedrock formations or denoting areas where the formations have shifted or fractured over time. Many of the faults are unclassified, but some are high angle or thrust faults believed to be Jurassic, Devonian, or Ordovician in origin. The majority of the fault lines trend northwest to southeast, while smaller intersecting faults trend northeast to southwest.

Preston contains several bedrock formations. The majority of the central area of the town is underlain by the Tatnic Hill Formation, while most of the eastern area is underlain by the Quinebaug Formation and its felsic sub-formation. The Happyland area is underlain by west-east bands of the Waterford Group, Hope Valley Alaskite Gneiss, and the Plainfield Formation. These bedrock formations consist primarily of gneiss and schist which are relatively hard metamorphic rocks. The Quinebaug Formation includes intrusions of diorite, and the far eastern area of town is underlain by the Preston Gabbro. These are both relatively hard igneous rocks.

The Town's surficial geologic formations include glacial till and stratified drift. Refer to the Multi-Jurisdictional HMP for a generalized view of surficial materials. The majority of the Town is underlain by glacial till. Till contains an unsorted mixture of clay, silt, sand, gravel, and boulders deposited by glaciers as a ground moraine. Areas adjacent to the Quinebaug River, the Shetucket River, the Thames River, Broad Brook, Crowley Brook, Shewville Brook, Hewitt Brook, Poquetanuck Brook, Halsey Brook and Amos Lake have fairly extensive areas underlain by sand, sand and gravel or floodplain alluvium. In addition, several unnamed streams also have fairly significant areas of associated sand and gravel deposits, as do areas west of Preston City and in the vicinity of Swantown Road that are not directly associated with a major water body. The amount of stratified drift present is important as areas of stratified materials are generally coincident with floodplains. These materials were deposited at lower elevations by glacial streams, and these valleys were later inherited by the larger of our present day streams and rivers. However, the smaller glacial till watercourses can also cause flooding. The amount of stratified drift also has bearing on the relative intensity of earthquakes and the likelihood of soil subsidence in areas of fill.

2.2 Land Use and Development Trends

According to the 2002 *Plan of Conservation and Development*, Preston has been a rural community for all of its history. After World War II, the proliferation of the automobile and

regional growth spurred Preston to become a bedroom community as the population almost doubled between 1960 and 2000. The *Plan of Conservation and Development* notes that most Preston residents work in Norwich or Groton.

Preston continues to be a relatively undeveloped residential community. Most of the town (approximately two-thirds) is undeveloped woodlands or lands utilized for agriculture. Residential land uses comprise 10% of the town's land area. Commercial land uses comprise approximately 1% of the total land area and include campgrounds, a golf course, automotive-related businesses, convenience stores, restaurants, home goods stores, bed & breakfasts, and wireless communication towers. Industrial activities comprise less than 1% of the total land area and include manufacturing, sand and gravel excavation, and a waste to energy plant. There is no area of the town with concentrated industrial development, and some of these activities are located outside of industrial zoning. Several different water companies provide public water supply to different areas of the town, and sewer service is provided in southwestern Preston by the City of Norwich.

The center of Preston is located approximately in Preston City near the intersection of Routes 165 and 164 close to the North Stonington town line. Preston's historical society and the Preston City Fire Station are located in this area. The town hall and library are located in Shewville near the Ledyard town line. A small area of the Pachaug State Forest and Rose Hill Wildlife Management Area are located in the town. The Preston Community Park, located near the Ledyard town line, is open to residents for recreational use and includes ballfields, walking paths, and a pavilion.

The majority of housing units in Preston are single family homes (90%). The 2002 Plan identified approximately 4,300 acres of land in Preston that is currently vacant and not subject to development limitations (including wetlands, floodplains, steep slopes, shallow depth to water or bedrock, or other protected areas). Development of this land could sharply increase the number of residents of Preston, and such an increase would require a noticeable increase in municipal services particularly with regard to emergency services.

Local employment in Preston is approximately 900 non-agricultural jobs. These include construction and mining, manufacturing, retail and wholesale, and service occupations. According to the town's *Plan of Conservation and Development*, additional commercial development is to be prioritized along the Route 2 corridor and at the former Norwich State Hospital site.

Since the last HMP was written in 2005, development has slowed due to the recent economic downturn. Approximately 100 new housing units were constructed in Preston between 2005 and 2010, but 40% of these were constructed in 2005. No new industry has been developed over the last five years, and new commercial development is limited to a new four-story hotel that is being built on Route 2 near Foxwoods Resort Casino. This structure will have 125 rooms when completed. The Town is also soliciting proposals for redevelopment of the 390-acre former Norwich State Hospital Property adjacent to the Thames River but no agreements are in place at this time.

2.3 Drainage Basins and Hydrology

All land in the town eventually drains to the Thames River, although approximately half of the town first drains to the Quinebaug River. The northwestern corner of Preston in the vicinity of

Long Society drains to the Shetucket River via an unnamed stream. In addition, a few acres of Preston drain to Pachaug Pond in Griswold which eventually drains to the Quinebaug River.

Broad Brook and Choate Brook are the major tributaries of the Quinebaug River in Preston. Ayers Brook, Rattlesnake Brook, Folly Works Brook, and Prentice Brook are all tributaries of Broad Brook in the northeastern section of Preston. Choate Brook in the northern section of Preston is fed by waters from Cedar Swamp and Folwix Brook and impounded by Ayer Pond. The southern section of Preston drains to the Thames River via Poquetanuck Cove which is an estuary of the Thames River. Halsey Brook, Poquetanuck Brook, and Joe Clark Brook (from Ledyard) each drain into the cove. Poquetanuck Brook is formed by the confluence of Myers Brook, and Shewville Brook, has a major tributary in Crowley Brook, and is impounded by Hallville Pond and Gates Pond. Shewville Brook has its headwaters in Shewville and is joined by Indiantown Brook and waters from Cedar Swamp on the Mashantucket Pequot Indian Reservation, as well as Hewitt Brook, before entering Gates Pond. Main Brook is a primary tributary of Indiantown Brook entering from North Stonington.

In addition to the ponds noted above, Amos Lake, the largest lake in the town, is situated near the town center. This lake drains eventually to Indiantown Brook. There are several other ponds and swamps scattered throughout the town including Bates Pond, Cooks Pond, and Avery Pond.

The headwater streams of the Shetucket River are heavily flood controlled such that widespread flooding is no longer an issue along this watercourse. Three significant dams are located on Shetucket River in Norwich at Occum, Taftville, and Greenville, but they do not offer any flood abatement capacities. Similar to the Shetucket River, the upper reaches of the Quinebaug River are also heavily flood controlled such that flooding along this watercourse is also not an issue in Preston.

2.4 Governmental Structure

Preston is governed by a Town Meeting and Board of Selectmen form of government. The authority of Town officials is granted by Connecticut General Statutes. The Town Meeting is the legislative body of the Town and the Board of Selectmen is responsible for the administration of Town policies. The First Selectman is the chief elected official and is responsible for the day-to-day administration of the Town. The Public Works Department oversees the building and maintenance of all roads including plowing and sanding in the winter and cleanup following wind events. In addition to the First Selectman and the Public Works Department, the Building Department, Planning and Zoning Department, and the Volunteer Fire Department also have an active role in hazard mitigation.

The Town of Preston has several commissions that can take an active role in hazard mitigation, including the Conservation Commission, the Planning and Zoning Commission, and the Zoning Board of Appeals. Departments and commissions common to all municipalities in SCCOG and were described in Section 2.8 of the Multi-Jurisdictional HMP. More specific information for the departments and commissions of the Town of Preston is noted below:

- The Building Department reviews plans for new development and significant redevelopment and inspects the work to ensure it meets current building codes. The Town of Preston utilizes the Connecticut Building Code.

- The Inland Wetlands & Watercourses Commission is the Inland Wetlands Regulatory Agency for the Town of Preston and reviews plans for compliance with said regulations and maintains the Town's inland wetlands map.

- The Planning & Zoning Commission reviews land use applications, zoning regulation amendments, planning and development projects, and grant opportunities to ensure that development and growth in the town is consistent with existing land use, environmental policy, and the objectives of the *Plan of Conservation and Development*. They are assisted by the Zoning Enforcement Officer and the Town Planner in the Planning & Zoning Department.

- The Public Works Department consists of a Road Foreman and several staff overseen by the First Selectman. They provide services including safe, efficient and well-maintained infrastructure of roads, bridges, snow removal and deicing on roads; tree and tree limb removal in rights-of-way; and maintain and upgrade storm drainage systems to prevent flooding caused by rainfall. The Road Foreman is also Preston's tree warden.

- The two Volunteer Fire Departments in Preston provide fire suppression, fire prevention, rescue, emergency medical services, and hazardous materials response services to the town. Patients are transported to Backus Hospital in Norwich.

- The Zoning Board of Appeals reviews projects that were denied by the Planning & Zoning Commission or were cited by the Zoning Enforcement Officer, as well as those that require variances.

The roles of Town departments have not changed since the time of the previous HMP. Thus, the Town of Preston remains technically, financially, and legally capable of implementing mitigation projects for natural hazards to the extent that funding is available.

2.5 Review of Existing Plans and Regulations

The Town has several Plans and regulations that suggest or create policies related to hazard mitigation. These policies and regulations are outlined in the Emergency Operations Plan, *Plan of Conservation and Development*, Zoning Regulations, Subdivision Regulations, Inland Wetland Regulations, and the Coastal Management Plan. The Zoning and Subdivision Regulations were both recently updated to incorporate new NFIP requirements.

Emergency Operations Plan

The Town has an Emergency Operations Plan (EOP) that is updated and certified by the First Selectman annually. This document provides general procedures to be instituted by the First Selectman and/or designee and the Fire Department in case of an emergency. Emergencies can include but are not limited to natural hazard events such as hurricanes and nor'easters as outlined in the Severe Weather Annex of the EOP. The EOP is directly related to providing emergency services prior to, during, and following a natural hazard event.

Plan of Conservation and Development (2002)

The *Plan of Conservation and Development* was adopted in 2002 with contributions from local boards and commissions, citizens, and citizen groups. The Plan did not specifically consider the potential impacts of natural hazards other than noting the presence of the 1% annual chance floodplain and the existence of flood hazard area regulations. The Plan instead outlines areas that could not be built upon due to natural features that restrict development. The purpose of the plan is to balance growth with maintaining the quality of life that citizens within the Town embrace. The current plan notes that the Town will seek to promote economic development along the Route 2 corridor, redevelop the Norwich State Hospital area, and promote a small-business friendly environment. The *Plan of Conservation and Development* further suggested a number of recommendations related to natural hazard mitigation of which many have been enacted such as the open space program. The next *Plan of Conservation and Development* update should include elements of this HMP.

Zoning Regulations

The Zoning Regulations of the Town of Preston were last formally updated in June 2008 but have been amended since that time. The recent amendments include updated NFIP regulations associated with the recent release of the FIS and DFIRM for New London County in July 2011 and include a variety of preventative regulations pertinent to mitigating flooding hazards. These regulations are applied during the permitting process for new construction and during substantial improvement of existing structures. The regulations meet the minimum requirements required under the NFIP.

In addition to the Special Flood Hazard Area Regulations (Section 13.23), the Zoning Regulations contain several other entries applicable to hazard mitigation. For example, certain types of development such as condominiums and communication towers must locate utilities underground. No new mobile homes are permitted in the town except in areas that have been continuously occupied by a mobile home since the 1960's. All substantial renovations must meet all Connecticut Building Codes for mobile homes, providing an additional level of protection for these structures. In addition, the Zoning Regulations contain the Coastal Area regulations for Preston.

Subdivision Regulations

The Subdivision Regulations of the Town of Preston were last updated in January 2005. Several of the design standards are pertinent to hazard mitigation, including encouraging the creation of through streets, avoidance of steep grades for new roads, and that new facilities and utilities are designed to minimize flood damage. New developments are also required to set aside buildable land as open space.

Inland Wetland and Watercourses Regulations

The Inland Wetlands and Watercourses Regulations in the Town of Preston were last amended in September 2010. The regulations require a permit for certain regulated activities which take place within 100 feet of a wetland or watercourse or that may impact a wetland or watercourse. These regulations build on the preventative flood mitigation provided by the Zoning and

Subdivision regulations by preventing fill and sedimentation that could lead to increased flood stages.

Coastal Area Management Plan

The Town of Preston completed a Coastal Area Management Plan in 1981. The Thames River and Poquetanuck Cove are considered to be estuarine embayments which are protected coastal water bodies that empty into Long Island Sound. Lands located within 1,000 feet of the Thames River and Poquetanuck Cove are considered to be in Connecticut's Coastal Area Management Zone, and applications for development in this area are subject to an additional level of permitting to demonstrate that there will be no impact to coastal resources.

2.6 Critical Facilities, Sheltering Capacity, and Evacuation

The Town of Preston considers several facilities to be critical to ensure that emergencies are addressed while day-to-day management of the Town continues. Critical facilities are presented on figures throughout this annex and summarized in Table 2-1. No critical facilities are located within the 1% annual chance floodplain, except for a small portion of the parking lot at the Public Works garage. In addition, critical facilities are not located in areas that could be impacted by hurricane storm surge. These facilities are described in more detail below.

The Town also considers its commercial properties and the new hotel to be critical facilities as these structures require additional types of assistance during an emergency. The Town further considers its electrical, water, and sewer infrastructure to be critical facilities although this infrastructure is owned and maintained by others.

TABLE 2-1
Critical Facilities

Facility	Address or Location	Emergency Power?	Shelter?	In 1% Annual Chance Floodplain?	In Hurricane Surge Zone?
Lincoln Park Elderly Housing	Lincoln Park Road Extension				
Poquetanuck Fire House	87 Route 2A				
Preston City Fire Station*	412 Route 165	✓			
Preston Plains School	1 Route 164	✓	✓		
Public Works Garage	423 Route 2			✓	
Town Hall	389 Route 2				

*Emergency Operations Center

Public Works Garage

The Town Public Works garage is located near Preston Plains School. It is used for vehicle and equipment storage and the facility also houses the Town's salt and sand supply. Only a portion of the parking lot is located in the 1% annual chance floodplain.

Town Hall

The Preston Town Hall houses records, plans, and other documents important for administering the Town. It does not have emergency backup power. Two Resident State Troopers operate out of the Town Hall and provide police services to the town.

Preston Volunteer Fire Departments

The Preston City Fire Department and the Poquetanuck Fire Department provides fire suppression, rescue, and emergency medical services out of two fire stations located in the respective village areas. The Preston City Fire Station also includes the Town's Emergency Operations Center and has a generator for emergency power. The Fire Departments and town staff perform emergency services training with local utilities each year.

Shelters

Preston Plains School is the Town's shelter and can hold approximately 100 people. The school has a generator and the shelter is American Red Cross certified. The Town does not have a secondary or backup shelter, although the other school or the fire houses could be used if necessary. In addition to Town departments, the American Red Cross and the Salvation Army provide services related to mitigation and emergency management. The American Red Cross and the Salvation Army help provide shelter and vital services during disasters and participate in public education activities. If additional space was needed, the Town would send evacuees to a regional American Red Cross shelter.

Communications

The Town's communication capability is considered adequate for most circumstances. Emergency communications are good except during long power outages. The Town relies on radios, cellular phones and email for much of its communications. The Town is also part of the CT Alerts "Everbridge" Reverse 9-1-1 system for emergency notification of residents. Typically, Town personnel post notifications on bulletin boards and on the Town website prior to major storms and also utilize local media (newspapers, television, and radio) to pass information during and after storms. Residents can also contact the First Selectman directly with comments related to natural hazards or emergency response.

Communication was difficult during the power outages following Hurricane Irene and Winter Storm Alfred due to downed trees and power outages at the nearby cellular towers. Town personnel made personal contact with residents by going door-to-door during the outage to pass along necessary information.

Health Care and Senior Living Facilities

The Town's Housing Authority owns 40 units of Elderly Housing at Lincoln Park in Hallville. Preston does not have any convalescent or nursing homes.

Evacuation Routes

Preston does not have a published evacuation map; residents utilize State roads or local roads to exit the town. The highest capacity egress routes from Preston include Route 2 into Norwich or Ledyard, Route 2A into Montville, Route 12 into Ledyard or Norwich, Route 164 into Griswold, or Route 165 into Norwich or Griswold.

2.7 Status of 2005 Plan Recommendations

The previous HMP included several general recommendations related to mitigating natural hazards. The recommendations and a summary of actions taken over the past several years towards those actions are listed below. Where progress was indicated, the progress was paid for out of the Town's operating budget. Updated recommendations are presented in Section 11 of this annex.

- Evaluate the Hazard Resistant Nature of Critical Facilities – This is ongoing as part of the Town's annual EOP update. No critical facilities are believed to be more or less susceptible to natural hazards. *This recommendation remains valid but has been subsumed into the EOP update.*

- Comprehensive Evaluation of Emergency Communication Capabilities Throughout the Town – This is ongoing along with the annual EOP update. The Town has communication capability with surrounding communities. *This recommendation remains valid.*

- Develop a Flood Audit Program – The Town has identified watch areas during heavy rainfall. Any changes to the watch areas are included in the EOP update. The Town is aware of floodprone areas and a formal flood audit program is not proposed due to the expense involved. *This recommendation will not be pursued further and is replaced in favor of adding floodprone areas to the Reverse 9-1-1 database.*

- Structural Assessment of Hallville Pond Dam and Plan for Maintenance and Repair – The State is repairing this privately-owned, moderate hazard dam and installing a fish ladder. More details are presented in Section 10. *This recommendation has been completed and is not carried forward.*

- Property Protection Study for Drainage Improvements / Culvert Replacement of Matthewson Mill Road near Shewville Brook – This study is ongoing. This low-lying area is a watch area during heavy rains. All culverts in Town are maintained annually. *This recommendation remains valid.*

- Drainage Improvements / Study to Determine Feasibility of Roadway Elevation on Poquetanuck Road – This State road (Route 2A) is outside of the Town's jurisdiction. It is not known if the State has plans for such studies. The Town keeps an eye on this area during

heavy rains. *This recommendation has been replaced with a new recommendation as noted in Section 11.*

- Drainage Improvements / Study to Determine Feasibility of Roadway Elevations on Stanton Lane near Choate Brook and Lynn Drive near Avery Pond – Both areas are floodprone. Elevation of the road is not believed to be the best option, since the homes will still flood. Culvert replacement would help with Stanton Lane, but Lynn Drive would require other measures. *This recommendation has been replaced to consider other mitigation options as outlined in Section 3 and Section 11.*

- Drainage Improvements and Roadway Study of Route 2 and Route 2A – Both of these roads are State roads and outside of the Town's jurisdiction. *This recommendation has been updated as noted in Section 11.*

- Review of Transportation Facilities to Identify Critical Risks – This is ongoing annually as part of the Emergency Operations Plan update. The Town has lots of casino traffic. *This recommendation remains valid but has been subsumed into the EOP update.*

- Hazardous Materials Spills on Major Roadways – The Town is part of CERRIT, the regional hazardous materials response team. The Town participates but doesn't have supplies (these are stored nearby at Mohegan Sun). They have automatic notification to DEEP and participate in training exercises. *This recommendation will not be pursued further.*

- Implement a Reverse 9-1-1 System to Automatically Call Telephones Throughout Town, Relaying Important Information During an Emergency – The Town is part of the statewide CT Alerts "Everbridge" System. *This recommendation has been completed and the Town will continue to encourage residents to participate.*

- Distribute or Post Public Information Regarding Hazards in the Town – Notifications are posted on bulletin boards at the transfer station, town buildings, and the Town website. Local media is utilized to pass information during storms, including newspaper, television, and radio. Town employees made personal contact with residents during power outages. *This recommendation remains valid and there are additional opportunities such as providing brochures at the Town Hall and posting of preparedness information on the Town's webpage.*

- Evaluate Emergency Shelters, Update Supplies, and Check Communication Equipment – This is done at least quarterly or following any use of the facilities. *This recommendation remains valid.*

- Maintain Emergency Personnel Training as Well as Maintaining and Updating Emergency Equipment and Response Protocols – Training is performed monthly, with equipment upgrades occurring to the extent the budget will allow. *This recommendation remains valid.*

- Evaluate and Consider Burying Power Lines Underground and Away from Possible Tree Damage – This is encouraged for new projects but only required for certain types of development. There are no plans to move existing utilities underground because the utilities are not owned by the Town. *This recommendation remains valid for future developments and should be placed into an ordinance for new development or substantial redevelopment regardless of zoning.*

- Complete an Earthquake Survey of all Critical Facilities and Infrastructures – The Town does not have any facilities that are greater than two stories. The new hotel will be four stories high but will be constructed to current Connecticut State Building Code requirements. A formal survey is not proposed. *This recommendation will not be pursued further due to the low occurrence of this hazard type.*

- Complete Catch Basin and Culvert Surveys to Identify Structures in Need of Maintenance or Replacement – Inspections are performed annually by Public Works. Public Works also inspects catch basins in floodprone areas for blockages prior to major storms. *This recommendation remains valid.*

- Complete a Survey of Fire Hydrants to Assess Vulnerabilities and Capabilities for Fire Protection – Fire protection capabilities are reviewed twice per year with the respective water companies. The Town also has 19 dry hydrants and several draft sites. The Town believes that its fire protection level is more than adequate. *This recommendation remains valid.*

3.0 INLAND FLOODING

3.1 Setting / Historic Record

Flooding is the primary hazard that impacts the town each year as documented in the previous HMP. While riverine flooding is a concern, nuisance flooding and poor drainage have also created flooding issues at several locations in the town. Flooding is typically caused by heavy rainstorms, but can also be caused by relatively light rains falling on frozen ground. Flooding of roadways is more common than damage to structures.

The March 2010 storms produced the most widespread flooding in Preston since the last HMP, causing some roadway flooding, a significant amount of nuisance flooding, and some structural flooding as noted below.

- Lewis Road was overtopped by Broad Brook, Lake of Isles Road was overtopped by Main Brook and its tributary, Swantown Road overtopped (it also overtops during smaller storms), and Route 2A experienced poor drainage flooding.

- Five to seven basements in the vicinity of Schoolhouse Road and Cemetery Road flooded, as did basements on River Road, Watson Road, and Hollowell Road. Many homes that were affected had never needed pump outs previously.

- Matthewson Mill Road was overtopped by Shewville Brook and one nearby home was flooded.

3.2 Existing Programs, Policies, and Regulations

The Town attempts to mitigate inland flood damage and flood hazards by utilizing a wide range of measures including restricting activities in floodprone areas, replacing bridges and culverts, promoting flood insurance, acquiring floodprone structures, maintaining drainage systems, through education and outreach, and by utilizing warning systems. Many mitigation measures are common to all hazards and therefore were listed in Section 2.5 and Section 2.6. Additional mitigation measures have been put in place by the State and Federal government upstream of Preston that helps to reduce flooding downstream, including several protection projects.

Flood Control Structural Projects

As noted in Section 3.4.4 of the Multi-Jurisdictional HMP, several significant flood control projects have been constructed by the USACE upstream of Preston on the Shetucket and Quinebaug Rivers. These flood protection projects were completed in the 1950's and 1960's and greatly reduce the incidence and severity of flooding in Preston along those major watercourses, as well as along the Thames River.

Bridge Replacements, Drainage, and Maintenance

The Department of Public Works cleans and inspects catch basins and culverts at least annually or more often if problems are noted. When flooding occurs, the Public Works department or the Fire Department would handle the complaints depending on the location. For example, Public Works would inspect bridges and culverts and erect barricades to close roads, while the Fire

Department responds to calls requesting help for flooded basements. The Department of Public Works recently performed culvert upgrades on Lake of Isles Road to mitigate flooding in that area. The Town fields phone calls related to drainage complaints. Drainage complaints are directed to the First Selectman.

Regulations, Codes, and Ordinances

The Town of Preston has planning and zoning tools in place that incorporate floodplain management. The Town has recently updated its flood protection regulations in its Zoning and Regulations in April 2011 as noted in Section 2.5. The Town utilizes the 1% annual chance floodplain as defined by FEMA to regulate floodplain and floodway activities and requires 100 percent compensatory storage for any encroachment in the floodplain. The Town also requires new construction or substantial renovations to be located at an elevation greater than the base flood elevation.

The Town's Subdivision Regulations require that adequate drainage be provided to reduce exposure to flood hazards and that buildings and utilities be located to minimize the effects of flood damage. Regulations covering development in or within 100 feet of inland wetland or watercourse areas were last updated in 2010 and are enforced by the Town's Inland Wetlands and Watercourses Commission. The Town has also adopted a map prepared by the Conservation Commission which regulates building in wetland areas.

Acquisitions, Elevations, and Property Protection

The Town of Preston has not performed acquisitions or elevations of floodprone property. Property protection has focused instead on preventive measures and maintaining and upgrading drainage systems. The Town is not opposed to performing acquisitions if property owners were willing and grant funding was available.

Flood Watches and Warnings

The First Selectman and the Fire Department access weather reports through the National Weather Service and local media. Residents can also sign up for the Statewide Reverse 9-1-1 to receive warnings when storms are imminent. The Town can telephone warnings into potentially affected areas using this system. The Town has a list of "watch" areas that they monitor for flooding during heavy rainfall.

3.3 Vulnerabilities and Risk Assessment

This section discusses specific areas at risk to inland flooding within the Town. Nuisance flooding and poor drainage and overbank flooding are about equal in occurrence in the Town, with additional areas affected during more severe events.

3.3.1 Vulnerability Analysis of Areas along Watercourses

Major inland watercourses and water bodies in Preston have the 1% annual chance floodplain defined by FEMA. The Shetucket River, the Quinebaug River, the Thames River, Halsey Brook, and Poquetanuck Cove are mapped as Zone AE, indicating that flood elevations are available. The remaining streams are mapped as Zone A and include Poquetanuck Brook, the lower reach of

Crowley Brook, Shewville Brook, Hewitt Brook, Cedar Swamp, Indiantown Brook, Main Brook, Lake of Isles Brook, Choate Brook, Broad Brook, Prentice Brook, and Miller Brook, as well as several other unnamed streams and swamp areas. Refer to Figure 3-1 for the location of the 1% annual chance floodplains within Preston.

Based on the information in the previous HMP and that provided by Town officials, the following areas along watercourses are vulnerable to flooding damage as shown in Table 3-1. Ice jams have not previously been an issue along the rivers in Preston. Instead, this flooding occurs due to insufficient culvert sizes at crossings or due to overbank flooding.

TABLE 3-1
Roads in the 1% Annual Chance Floodplain in the Town of Preston

Watercourse or Water Body	Floodprone Road
Avery Pond	Lynn Drive
Ayers Brook	Route 164
Broad Brook	Route 164, Route 165, Parks Road, Lewis Road
Choate Brook	River Road, Prodell Road
Cooks Pond Outlet Stream	Cooktown Road
Hewitt Brook	Route 2, Route 164
Indiantown Brook	Route 2
Main Brook	Lake of Isles Road, Watson Road
Poquetanuck Brook	Schoolhouse Road, Hallville Road, Poquetanuck Road (Route 2A), Lincoln Park Road
Poquetanuck Cove	Route 2A
Shewville Brook	Matthewson Mill Road, Route 2
Tributary to Choate Brook	Stanton Lane
Unnamed Tributary to Quinebaug River	Old Jewett City Road near McClimon Road

Out of the roads listed in Table 3-1, Matthewson Mill Road, Poquetanuck Road (Route 2A), Stanton Lane, Lynn Drive, Swantown Road, and Lewis Road are the areas that are the most susceptible to being overtopped by flooding. Route 2A has particular issues with poor drainage exacerbating flooding conditions. The remaining roads would be affected by an extreme flood event.

Quinebaug River

Choate Brook

Broad Brook

Shetucket River

Long Society

Halsey Brook

Shewville Brook

Poquetanuck Cove

Foxwoods Resort Casino

Thames River

Legend

Critical Facilities

- Fire
- Governmental
- Public Works
- School
- Senior Housing
- Shelter

FEMA Special Flood Hazard Areas

- 0.2% Annual Chance Floodplain
- 1% Annual Chance Floodplain
- 1% Annual Chance Floodplain with Flood Elevations
- Floodway
- Preston

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SOURCE(S): Town of Preston, FEMA, Microsoft (basemap)

FEMA Special Flood Hazard Areas

SCCOG HMP Update
Town of Preston Annex
Preston, Connecticut

Map By: scottb
MMI#: 3570-05
MXD: H:\3570-05\GIS\Maps\Preston\Figure3-1.mxd
1st Version: 7/7/2012
Revision: 7/7/2012
Scale: 1 in = 3,667 ft

Figure 3-1

3.3.2 Vulnerability Analysis of Private Properties

As noted in Table 3-4 of the Multi-Jurisdictional HMP, a total of 50 structures in Preston appear to be located in the 1% annual chance floodplain. A total of 29 are located in Zone A, 17 are located in Zone AE, and two appear to be located in the floodway. The majority of these structures are residential but some commercial and industrial structures are also located in the floodplain. Table 3-2 presents the number structures that are within the 1% annual chance floodplain by watercourse.

TABLE 3-2
Structures within the 1% Annual Chance Floodplain in the Town of Preston

Watercourse or Water Body	Flood Zone	Number of Structures
Avery Pond	Zone A	5
Broad Brook	Zone A	1
Choate Brook	Zone A	10
Halsey Brook	Zone AE	4
Hewitt Brook	Zone A	1
Poquetanuck Brook	Zone A	3
Poquetanuck Cove	Zone AE	11
Quinebaug River	Zone AE	4 (2 in floodway)
Shewville Brook	Zone A	2
Thames River	Zone AE	2
Tributary to Quinebaug River (Jewett City Road)	Zone A	4
Unnamed Tributary to Broad Brook (Krug Road)	Zone A	3
Total		**50**

The Town of Preston has several "watch areas" that they monitor for flooding during heavy rainfall. These watch areas include the areas in Table 3-2 as well as homes that are susceptible to basement flooding. Such homes are located in the vicinity of Schoolhouse Road and Cemetery Road, River Road, Wattson Road, and Hollowell Road and not necessarily within the 1% annual chance floodplain. Structures most frequently affected by overbank flooding are located along Matthewson Mill Road, Stanton Lane, and Lynn Drive. While the flooding along Matthewson Mill Road and Stanton Lane is related to Shewville Brook and Choate Brook respectively, the flooding along Lynn Drive is related to Avery Pond. Thus, while culvert upgrades may mitigate flooding along the first two areas, homes along Lynn Drive will need to consider floodwalls, berms, or floodproofing to protect their property.

Note that repetitive flood insurance claims have not been filed at any properties in Preston over the past twenty-five years, suggesting that the flood damage to structures may be relatively minor.

However, homes in the vicinity of Shewville Brook on Matthewson Mill Road have erected berms to attempt to control flooding suggesting that flooding in this area is a recurring issue.

3.3.3 Vulnerability Analysis of Critical Facilities

As noted in Section 2.6, no critical facilities in Preston are located within the 1% annual chance floodplain. Only a portion of the parking lot at the Public Works garage is located within the 1% annual chance floodplain, but it has not flooded in recent memory. However, given the relatively limited development in Preston the closure of roadways and major transportation routes due to flooding is a concern for emergency personnel. For example, flooding along Hewitt Brook at Route 2 would cause a lengthy detour around the area via William Miller Road.

3.4 Potential Mitigation Measures, Strategies, and Alternatives

Potential mitigation measures for reducing or eliminating the impact of inland flooding fall into the categories of prevention, property protection, emergency services, public education and awareness, natural resource protection, and structural projects. General potential mitigation measures that can be taken to reduce the effects of inland flooding were discussed in Section 3.7 and in Section 11.2.2 of the Multi-Jurisdictional HMP. General recommendations pertinent to all natural hazards that could affect the town are listed in Section 11 of this annex, as are specific measures pertinent to reducing inland flooding in the Town of Preston.

4.0 COASTAL FLOODING & SHORELINE CHANGE

4.1 Setting / Historic Record

Despite being located well-inland from the Connecticut shoreline, the Town of Preston has coastal resource areas that are tidally influenced. The coastal area of Preston consists of nearly 5.4 miles of riverfront associated with the Thames River and Poquetanuck Cove. The shoreline of Preston contains estuarine embayments (defined as a protected coastal water body with a direct connection to Long Island Sound) along both of these water bodies.

Homes and businesses are located in close proximity to the shorefront along the coastal area. However, the town's location near the headwaters of the Thames River places many properties at higher elevations than low-lying areas adjacent to Long Island Sound. As such, the town does not typically experience coastal flooding, and only a few areas are at risk of coastal storm surge from hurricanes.

While coastal flooding is relatively infrequent in the town, hurricanes and tropical storms have the potential to induce coastal flooding and storm surge that can impact structures. No coastal flooding or storm surge events have occurred since the time of the previous HMP. However, the Town is concerned with the potential long-term effects of sea level rise and its potential to exacerbate coastal flooding conditions in the future.

4.2 Existing Programs, Policies, and Regulations

The Town primarily attempts to mitigate coastal flood damage and flood hazards by controlling and restricting activities in floodprone areas and the coastal management area, encouraging the elevation of homes and roadways, maintaining hard structures in good condition, and providing signage and warning systems. Many of the existing programs, policies, and mitigation measures utilized in the town for inland flood mitigation (Section 3.2) are also applicable to coastal flood mitigation, and additional programs were listed in Section 2.5.

As noted in Section 3.2 and Section 2.5, the City utilizes the 1% annual chance floodplains delineated by FEMA. These consist of the 1% annual chance floodplain with elevations (Zone AE) including floodway areas. As noted by the Zoning Regulations, building activities in the floodplain are restricted and new construction or substantial redevelopment must prove that the lowest horizontal member of the new construction will be above the base flood elevation. In addition, the Town requires the submission of a coastal site plan for any project located within the coastal area management boundary.

The shoreline of Preston contains many coastal flood control structures. Small, private bulkheads can be found in Happyland residential neighborhoods along Poquetanuck Cove. Larger structures such as the Mohegan Dike are also located on the Thames River and provide a modicum of shoreline protection. In addition, the railroad embankment at the entrance to Poquetanuck Cove provides a slight delay in floodwaters entering (and draining from) Poquetanuck Cove.

Like many communities, the Town lacks existing policies and mitigation measures that are specifically designed to address sea level rise. Although the Preston does not currently have

a specific plan to address sea level rise, important pieces are in place in the form of the codes and regulations cited in this HMP that have been enacted to minimize storm, erosion, and flood damage to structures, such as requiring that new buildings located in the floodplain are located above the base flood elevation.

4.3 Vulnerabilities and Risk Assessment

This section discusses specific areas at risk to coastal flooding within the town. This flooding can be the result of astronomical high tides, hurricanes, nor'easters, or storm surge. As noted above in the historic record, coastal flooding typically only occurs due to storm surge. Refer to Figure 4-1 for a depiction of areas susceptible to storm surge.

Note that *HAZUS-MH*, FEMA's hazard loss estimation software, was utilized to calculate the potential damages to the Town of Preston from a combined 1% annual chance riverine and coastal flood. Results were presented in Section 3.5.2 of the Multi-Jurisdictional HMP.

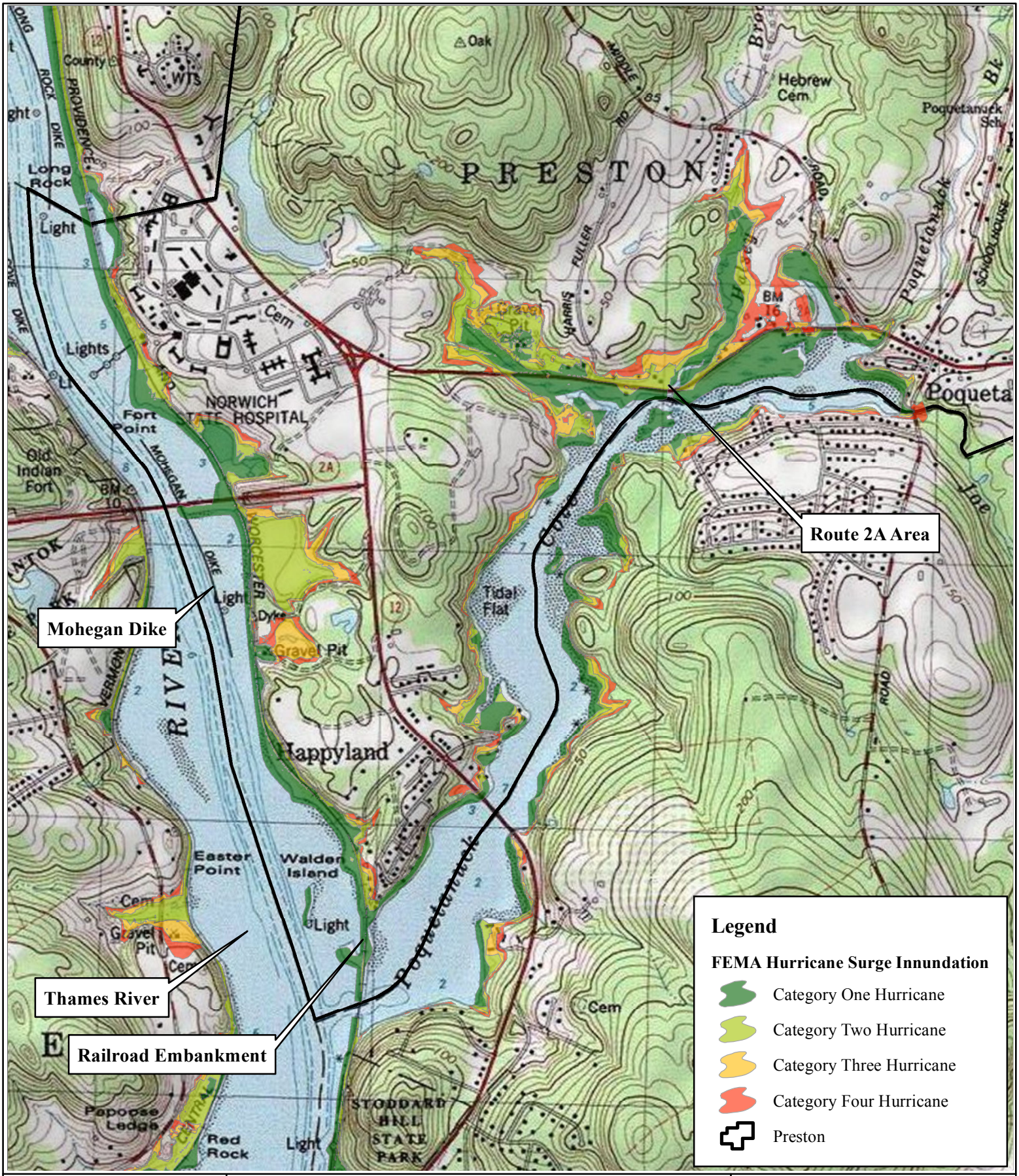
4.3.1 Vulnerability Analysis of Areas along Coastal Waters

The area potentially flooded by storm surge approximates the area of the 1% annual chance floodplain. In general, the coastal area affected by storm surge is limited to areas immediately within and adjacent to the Thames River, Poquetanuck Cove, and the lower reaches of Halsey Brook. Due to the similarity of the areas, it may be difficult for Town officials to judge whether an area is being affected by inland flooding or coastal storm surge during a particularly heavy rainfall associated with a hurricane or nor'easter.

Based on the 2008 FEMA mapping, low-lying areas adjacent to the Thames River will be affected by storm surge. Homes on Kendall Road and Drawbridge Road could be affected by storm surge from a Category Two hurricane, with additional homes affected by stronger storms. Up to eight homes could be affected by storm surge from a Category Four hurricane. Just inland from the Thames River, up to 12 homes could be affected by storm surge along Route 12 and on Cove Road.

As noted in Section 3, the area of Route 2A in the vicinity of Poquetanuck Cove is floodprone with several structures located in the 1% annual chance floodplain. Storm surge from a Category Two hurricane approximates the 1% annual chance floodplain in this area, while storm surge from a Category Three hurricane approximates the 0.2% annual chance floodplain. Storm surge from a Category Four would reach even higher than the 0.2% annual chance floodplain. A business and seven homes could be affected by storm surge along Route 2A near Harris Fuller Road, while an additional 16 could be affected east of Halsey Brook. A business near the southern terminus of Middle Road could also be affected. Fortunately, there do not appear to be any structures located in storm surge areas upstream of Route 2A along Halsey Brook.

In general, it is assumed that as sea level rises, the frequency and magnitude of coastal flooding in the town will increase, with structures and roadways closest to existing sea level being affected more quickly. Areas adjacent to Poquetanuck Cove are likely to be affected first.



SOURCE(S): FEMA, USGS Topographic Map (ESRI)	**Figure 4-1: FEMA Hurricane Surge Zones**	**LOCATION:** **Preston, CT**

N

SCCOG HMP Update
Town of Preston Annex

Map By: scottb
MMI#: 3570-05
MXD: H:\3570-05\GIS\Maps\Preston\Figure4-1.mxd
1st Version: 7/7/2012
Revision: 7/7/2012
Scale: 1 inch = 1,500 feet

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Coastal erosion is generally not an issue in Preston since the majority of the shorefront is protected from direct wave action either by the railroad bridge at the mouth of Poquetanuck Cove or by the Mohegan Dike. However, as sea level rises, the effectiveness of the dike could be undermined such that erosion will be able to occur landward of this structure.

4.3.2 Vulnerability Analysis of Private Properties

The coastal areas of the Town of Preston have properties that are inhabited year-round. This intensifies risk to life and property in coastal areas. Waterfront properties are very susceptible to damage from storm surge although FEMA has not established any coastal velocity zones in Preston. Shoreline erosion is a relatively minor concern for private property owners at this point in time since coastal flooding is very infrequent.

Buildings located in flood hazard areas are primarily residential with some businesses as noted in Section 4.3.1. Most of the structures that are threatened by coastal flooding are also located within the 1% annual chance floodplain, although some are located within the 0.2% annual chance floodplain or even at higher elevations.

Preston has no formalized program currently in place to identify the location or the number of structures that are susceptible to flooding. Such information would be valuable in directing hazard mitigation efforts to locations with the greatest risk. Town planners should use the recently released FEMA storm surge mapping to identify the structures in the town that are at risk for storm surge. This could provide a list of areas to inspect following a storm event and allow for the Town to track building permits from repairs following a natural hazard. This information, in turn, would provide supporting data for future grant applications.

4.3.3 Vulnerability Analysis of Critical Facilities

As shown on Figure 4-1, critical facilities are not located in coastal storm surge areas and therefore are not considered susceptible to coastal flooding. However, sections of Route 2A could be susceptible to the affects of storm surge. This could lengthen emergency response times due to detours around this area.

4.4 Potential Mitigation Measures, Strategies, and Alternatives

Potential mitigation measures for reducing or eliminating the impact of coastal flooding and sea level rise fall into the categories of prevention, property protection, emergency services, public education and awareness, natural resource protection, and structural projects. General potential mitigation measures that can be taken to reduce the effects of coastal flooding were discussed in Section 4.7 and in Section 11.2.2 of the Multi-Jurisdictional HMP. General recommendations pertinent to all natural hazards that could affect the town are listed in Section 11 of this annex, as are specific measures pertinent to reducing inland flooding in the Town of Preston.

5.0 HURRICANES AND TROPICAL STORMS

5.1 Setting / Historic Record

Several types of hazards may be associated with tropical storms and hurricanes including heavy or tornado winds, heavy rains, and flooding. Flooding hazards are discussed in Section 3 and Section 4 of this annex. Wind hazards are widespread and can affect any part of the town. However, some buildings in the town are more susceptible to wind damage than others.

The last major hurricane or tropical storm wind event to affect the town was associated with Hurricane Irene in August 2011. Trees fell throughout the town and the region causing power outages that lasted up to seven days in Preston.

5.2 Existing Programs, Policies, and Mitigation Measures

Wind loading requirements for new buildings are addressed through the Connecticut Building Code which is utilized by the Town. Effective December 31, 2005, the design wind speed for the Town of Preston is 110 miles per hour for areas north of Route 165, and 115 miles per hour for areas south of Route 165. Town personnel note that recently constructed buildings all meet the Connecticut Building Code standard wind loading, but that to their knowledge no buildings (including critical facilities) have been constructed to exceed wind loading requirements.

Parts of trees (limbs) or entire tall and older trees may fall during heavy wind events, potentially damaging structures, utility lines, and vehicles. The Road Foreman in the Public Works Department is also the Town's tree warden who can post notification and schedule tree removal. The Public Works staff also monitors trees as part of their normal rounds, performs informal inspections for the tree warden, and has a small budget for minor tree maintenance. The Town hires outside contractors for larger jobs and those near power lines. Connecticut Light & Power is the local electric utility and provides tree maintenance near its power lines. Algonquin Gas, Yankee Gas, and Norwich Public Utilities also perform trimming near their utilities.

Certain types of new development such as condominiums and communication towers are required to place utilities underground in order to mitigate storm-related damages. Placing utilities underground is also encouraged for other new developments. Utility lines are located underground in only a few areas of the town.

Warning is one of the best ways to prevent damage from hurricanes and tropical storms, as these storms often are tracked well in advance of reaching Connecticut. The Town can access National Weather Service forecasts via the internet as well as listen to local media outlets (television, radio) to receive information about the relative strength of the approaching storm. This information allows the Town to activate its EOP and encourage residents to take protective or evacuation measures if appropriate.

Prior to severe storm events, the Town ensures that warning/notification systems and communication equipment are working properly and prepares for the possible evacuation of

impacted areas. Residents can sign up to receive warnings from the statewide CT "Everbridge" Reverse 9-1-1 system to receive critical information. Although hurricanes that have impacted Preston have historically passed in a day's time, additional regional shelters could be outfitted following a storm with the assistance of the American Red Cross on an as-needed basis for long-term evacuees.

5.3 Vulnerabilities and Risk Assessment

The entire Town is vulnerable to hurricane and tropical storm wind damage and from any tornadoes (Section 6) accompanying the storm, as well as inland and coastal flooding (Section 3 and Section 4). Of particular concern are the blockage of roads and the damage to the electrical power supply from falling trees and tree limbs. The Town had extensive outages in some areas because of tree damage to utility lines following Hurricane Irene in August 2011.

Direct wind damage to newer buildings from hurricane or tropical storm-level winds is rare in the Town since the new buildings were constructed to meet or exceed current building codes. Many buildings in the Town are historic and many were built prior to the 1970s and do not meet current building codes. Older buildings in the Town, mobile homes, and camp trailers at the large campgrounds are particularly susceptible to roof and window damage from high wind events. This risk to structures will be reduced with time as these buildings and trailers are remodeled or replaced with structures that meet current codes.

The strength of a large hurricane could cause a moderate economic impact to the town. The potential economic effect of wind damage to SCCOG was evaluated in the Multi-Jurisdictional HMP. A separate analysis was not performed specifically for Preston.

5.4 Potential Mitigation Measures, Strategies, and Alternatives

Potential mitigation measures for reducing or eliminating the impact of wind damage fall into the categories of prevention, property protection, emergency services, public education and awareness, natural resource protection, and structural projects. General potential mitigation measures that can be taken to reduce the effects of wind damage from hurricanes and tropical storms were discussed in Section 5.7 and in Section 11.2.3 of the Multi-Jurisdictional HMP. General recommendations pertinent to all hazards that could affect the town are listed in Section 11 of this annex, as are specific measures pertinent to reducing wind damage to the Town of Preston.

6.0 SUMMER STORMS AND TORNADOES

6.1 Setting / Historic Record

Similar to hurricanes and winter storms, wind damage associated with summer storms and tornadoes has the potential to affect any area of the town. Furthermore, because these types of storms and the hazards that result (flash flooding, wind, hail, and lightning) might have limited geographic extent, it is possible for a summer storm to harm one area within the town without harming another. Such storms occur in the town each year, although hail and direct lightning strikes to the town are rarer. For example, the NCDC reported that a severe thunderstorm on July 2, 2008 produced hail and heavy winds that knocked down two trees and wires on River Road. No tornadoes have occurred in the town since the last HMP.

6.2 Existing Programs, Policies, and Mitigation Measures

Warning is the most viable and therefore the primary method of existing mitigation for tornadoes and thunderstorm-related hazards. The NOAA National Weather Service issues watches and warnings when severe weather is likely to develop or has developed, respectively. The Town can access National Weather Service forecasts via the internet as well as listen to local media outlets (television, radio) to receive information about the relative strength of the approaching storm. This information allows the Town to activate its EOP and encourage residents to take protective measures if appropriate.

Aside from warnings, several other methods of mitigation for wind damage are employed by the Town as explained in Section 5.2 within the context of hurricanes and tropical storms. In addition, the Connecticut Building Code includes guidelines for the proper grounding of buildings and electrical boxes to protect against lightning damage.

6.3 Vulnerabilities and Risk Assessment

Summer storms are expected to occur each year and are expected to at times produce heavy winds, heavy rainfall, lightning, and hail. All areas of the town are equally likely to experience the effects of summer storms. The density of damage is expected to be greater near the more densely populated villages in town, and at campgrounds which have trailers and tents that are more vulnerable to summer storm damage than other structures.

Most thunderstorm damage is caused by straight-line winds exceeding 100 mph. Experience has generally shown that wind in excess of 50 miles per hour (mph) will cause significant tree damage during the summer season as the effects of wind on trees is exacerbated when the trees are in full leaf. The damage to buildings and overhead utilities due to downed trees has historically been the biggest problem associated with wind storms. Heavy winds can take down trees near power lines, leading to the start and spread of fires. Such fires can be extremely dangerous during the summer months during dry and drought conditions. Fortunately, most fires are quickly extinguished due to the town's strong fire response.

Lightning and hail are generally associated with severe thunderstorms and can produce damaging effects. All areas of the town are equally susceptible to damage from lightning and hail, although lightning damage is typically mitigated by warnings and proper grounding of buildings and equipment. Hail is primarily mitigated by warning, although vehicles and watercraft can often

not be secured prior to the relatively sudden onset of a hailstorm. Lightning and hail are considered likely events each year, but typically cause limited damage in the town. Older buildings and mobile homes are most susceptible to lightning and hail damage since many were constructed prior to current building codes.

Although tornadoes pose a threat to all areas of Connecticut, their occurrence is least frequent in New London County as compared with the rest of the State. Thus, while the possibility of a tornado striking the town exists, it is considered to be an event with a very low probability of occurrence.

6.4 Potential Mitigation Measures, Strategies, and Alternatives

General potential mitigation measures that can be taken to reduce the effects of wind damage were discussed in Section 5.7 and in Section 11.2.3 of the Multi-Jurisdictional HMP. No additional recommendations are available specific to reducing damage from summer storms and tornadoes. Refer to Section 11 of this annex for recommendations related to wind damage and general recommendations related to emergency services.

7.0 WINTER STORMS AND NOR'EASTERS

7.1 Setting / Historic Record

Similar to hurricanes and summer storms, winter storms have the potential to affect any area of the town. However, unlike summer storms, winter storms and the hazards that result (wind, snow, and ice) have more widespread geographic extent. In general, winter storms are considered highly likely to occur each year (major storms are less frequent), and the hazards that result (nor'easter winds, snow, and blizzard conditions) can potentially have a significant effect over a large area of the town.

Winter storms and nor'easters have affected the town since the last HMP, as reported to the NCDC and reported by Town officials. However, only the winter storms of 2010-2011 and Winter Storm Alfred had a significant effect on the town. The winter of 2010-2011 produced significant snowfall in Preston. The Town checked all flat-roofed buildings and shoveled the schools and the fire departments as they have flat roofs. Many residents also cleared their own roofs or hired contractors. The Building Department inspected a few homes per resident request but found no structures in danger. There were no reported failures on private property. Winter Storm Alfred in late October 2011 caused minor to moderate tree damage, with power outages lasting up to two days.

7.2 Existing Programs, Policies, and Mitigation Measures

Existing programs applicable to winter storm winds are the same as those discussed in Sections 5.2 and 6.2. Programs that are specific to winter storms are generally those related to preparing plows and sand and salt trucks; tree trimming and maintenance to protect power lines, roads, and structures; and other associated snow removal and response preparations.

As it is almost guaranteed that winter storms will occur annually in Connecticut, it is important to locally budget fiscal resources toward snow management. Snow is the most common natural hazard requiring additional overtime effort from Town staff, as parking lots and roadways need constant maintenance during storms. The Public Works Department oversees snow removal in the Town and stores salt and sand at the Public Works Garage. The Town has established plowing routes that prioritize access to and from critical facilities. The Connecticut Department of Transportation (DOT) plows State roads. As a Connecticut DOT garage is located in Preston, plowing is generally timely.

The Connecticut Building Code specifies that a pressure of 30 pounds per square foot be used as the base "ground snow load" for computing snow loading for roofs. The Town monitors the roofs of municipal buildings when snow loads accumulate and shovel if necessary, and many residents and businesses also shovel or plow their roofs.

7.3 Vulnerabilities and Risk Assessment

Severe winter storms can produce an array of hazardous weather conditions, including heavy snow, blizzards, freezing rain and ice pellets, flooding, heavy winds, and extreme cold. Further "flood" damage could be caused by flooding from frozen water pipes. Often, tree limbs on roadways are not suited to withstand high wind and snow or ice loads.

This section focuses on those effects commonly associated with winter storms, including those from blizzards, ice storms, heavy snow, freezing rain, and extreme cold. Warning and education can prevent most injuries from winter storms. Most deaths from winter storms are indirectly related to the storm, such as from traffic accidents on icy roads and hypothermia from prolonged exposure to cold. Damage to trees and tree limbs and the resultant downing of utility cables are a common effect of these types of events. Secondary effects can include loss of power and heat.

The majority of buildings in Preston were constructed within the past several decades and therefore not particularly susceptible to damage from heavy snow. While some Town buildings could be susceptible to heavy snow loads, they will be cleared quickly if safety is a concern. For example, both schools and both fire stations have flat roofs which make them more susceptible to snow load damage.

Icing is not a significant issue in the Town. In general, there are few steep slopes such that extra sanding and salting of the roadways in necessary locations alleviates any trouble spots. In addition, there are no issues with ice jams on any of the streams in the town. Town officials further note that no areas of town are difficult to access in the winter.

7.4 Potential Mitigation Measures, Strategies, and Alternatives

Potential mitigation measures for flooding caused by nor'easters include those appropriate for flooding that were discussed in Section 3.7 and Section 4.7 of the Multi-Jurisdictional HMP and Section 11 of this annex. General potential mitigation measures that can be taken to reduce the effects of wind damage were discussed in Section 5.7 and in Section 11.2.3 of the Multi-Jurisdictional HMP and Section 11 of this annex. However, winter storm mitigation measures must also address blizzards, snow, and ice hazards. These were discussed in Section 7.7 and Section 11.2.4 of the Multi-Jurisdictional HMP and Section 11 of this annex.

8.0 EARTHQUAKES

8.1 Setting / Historic Record

An earthquake is a sudden rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. Earthquakes can cause buildings and bridges to collapse; disrupt gas, electric, and telephone lines; and often cause landslides, flash floods, fires, avalanches, and tsunamis. Earthquakes can occur at any time and often without warning. Detailed descriptions of earthquakes, scales, and effects can be found in Section 8 of the Multi-Jurisdictional HMP. Despite the low probability of an earthquake occurrence, earthquake damage presents a potentially catastrophic hazard to the town. However, it is very unlikely that the town would be at the epicenter of such a damaging earthquake. No major earthquakes have affected the town since the last HMP.

8.2 Existing Programs, Policies, and Mitigation Measures

The Connecticut Building Codes include design criteria for buildings specific to each region as adopted by Building Officials and Code Administrators (BOCA). These include the seismic coefficients for building design in Preston. The Town has adopted these codes for new construction, and they are enforced by the Building Inspector.

Due to the infrequent nature of damaging earthquakes, Town land use policies do not directly address earthquake hazards. However, the potential for an earthquake and emergency response procedures is addressed in the Town's EOP.

8.3 Vulnerabilities and Risk Assessment

Surficial earth materials behave differently in response to seismic activity. Unconsolidated materials such as sand and artificial fill can amplify the shaking associated with an earthquake. As noted in Section 2.1, areas along the Quinebaug River, the Shetucket River, the Thames River, Broad Brook, Crowley Brook, Shewville Brook, Hewitt Brook, Poquetanuck Brook, Halsey Brook and Amos Lake are underlain by stratified drift, as are areas along minor streams. These areas are potentially more at risk for earthquake damage than the areas of the town underlain by glacial till. The best mitigation for future development in areas of sandy material is the application of the most stringent standards in the Connecticut Building Code, exceeding the building code requirements, or, if the Town deems necessary, the possible prohibition of new construction. The areas that are not at increased risk during an earthquake due to unstable soils are the areas underlain by glacial till.

Several inactive bedrock faults are located within Preston. Unlike seismic activity in California, earthquakes in Connecticut are not associated with specific known active faults. However, bedrock in Connecticut and New England in general is typically formed from relatively hard metamorphic rock that is highly capable of transmitting seismic energy over great distances. For example, the relatively strong earthquake that occurred recently in Virginia was felt in Connecticut because the energy was transmitted over a great distance through such hard bedrock.

The built environment in the town primarily includes some more recent construction that is seismically designed. However, most buildings were built before the 1990's and therefore are not built to current building codes. In addition, there are two campgrounds containing tents and

trailers that also likely have recreational buildings or shelters that may not be seismically designed. Thus, it is believed that most buildings would be at least moderately damaged by a significant earthquake. Those town residents who live or work in older, non-reinforced masonry buildings are at the highest risk for experiencing earthquake damage.

Areas of steep slopes can collapse during an earthquake, creating landslides. Preston has many areas of steep slopes and bluffs although the majority of these features occur in undeveloped areas. Thus, landslides are not a concern in the town.

Seismic activity can also break utility lines such as water mains, gas mains, electric and telephone lines, and stormwater management systems. Damage to utility lines can lead to fires, especially in electric and gas mains. Dam failure can also pose a significant threat to developed areas during an earthquake. For this HMP, dam failure has been addressed separately in Section 10.0. As noted previously, most utility infrastructure in the town is located above ground. A quick and coordinated response with Connecticut Light & Power and other utilities will be necessary to inspect damaged utilities following an earthquake, to isolate damaged areas, and to bring backup systems online. This is covered in the EOPs for these entities.

A *HAZUS-MH* analysis of the potential economic and societal impacts to the SCCOG region from earthquake damage is detailed in the Multi-Jurisdictional HMP. The analysis addresses a range of potential impacts from any earthquake scenario, estimated damage to buildings by building type, potential damage to utilities and infrastructure, predicted sheltering requirements , estimated casualties, and total estimated losses and direct economic impact that may result from various earthquake scenarios.

8.4 Potential Mitigation Measures, Strategies, and Alternatives

Due to the low probability of occurrence, potential mitigation measures related to earthquake damage primarily include adherence to building codes and emergency response services. Both of these are mitigation measures common to all hazards as noted in Section 11 of this annex. The Multi-Jurisdictional HMP also includes additional recommendations for mitigating the effects of earthquakes that are also listed in Section 11.

9.0 WILDFIRES

9.1 Setting / Historic Record

Wildfires are considered to be highly destructive, uncontrollable fires. The most common causes of wildfires are arson, lightning strikes, and fires started from downed trees hitting electrical lines. Thus, wildfires have the potential to occur anywhere and at any time in both undeveloped and lightly developed areas of Preston. Structural fires in higher density areas of the town are not directly addressed herein.

Preston typically experiences several brush fires each year. Most brush fires are small and quickly contained to a few acres maximum. No major fires could be recalled in recent history.

9.2 Existing Programs, Policies, and Mitigation Measures

Monitoring of potential fire conditions is an important part of mitigation. The Connecticut DEEP Forestry Division uses the rainfall data recorded by the Automated Flood Warning system to compile forest fire probability forecasts. This allows the DEEP to monitor drier areas to be prepared for forest fire conditions. The Town can access this information over the internet. The Town also receives "Red Flag" warnings via local media outlets.

Existing mitigation for wildland fire control is typically focused on building codes, public education, Fire Department training, and maintaining an adequate supply of equipment. The Town's EOP recommends a 30-50 foot cleared radius be maintained around homes and buildings to prevent wildfires. The Preston Volunteer Fire Departments have a strong mutual aid relationship with their neighbors to fight wildfires. The Town has off-road equipment to access distant fires, and goes to the fires as quickly as possible. The Town has good access to most areas for fire-fighting.

Fire protection water is obtained through 19 dry hydrants, several draft sites, and from public water systems located on Route 164, Route 2, and Route 12. Areas located along the southern portion of Route 164 have water service through the Preston Plains Water Company (a subsidiary of Mashantucket Pequot Tribal Nation Utilities), while water service along Route 2 into Mashantucket is provided by Mashantucket Pequot Tribal Nation Utilities. The Town believes that the Preston Plains Water Company will soon be extending a water main along Route 2 into Shewville. Norwich Public Utilities provides water service along Route 12. These agencies test fire flows regularly and inform the fire departments of the pressure available.

In areas located far from available hydrants, the fire department drafts water from the various streams, ponds, and rivers in the town, and rely on pump trucks to carry water to distant areas. Some areas, such as the Strawberry Park Campground, have their own water systems with some water storage available to fight fires. The amount of fire protection afforded by the existing hydrants and nearby water bodies is considered to be good for the development level of Preston. The Fire Departments will continue to evaluate the level of risk and the need for additional hydrants as development continues in the future.

9.3 Vulnerabilities and Risk Assessment

As Preston is largely forested, wildfires can occur almost anywhere due to the undeveloped nature of the town. The most vulnerable areas are those undeveloped areas between the major north-south roads in town and near the former Norwich State Hospital Site. The undeveloped area west of Middle Road is a particular concern for fires due to lack of access to this area. Other undeveloped areas that are not nearby public water service, dry hydrants, or water bodies are considered to be moderate risk due to the need to transport fire fighting water, and the fact that off-road equipment must be utilized to fight fires. The remaining areas of the town that are located nearby water sources are considered to be a low-risk area for wildfires. Refer to Figure 9-1 in the Multi-Jurisdictional HMP for a general depiction of wildfire risk areas within Preston.

9.4 Potential Mitigation Measures, Strategies, and Alternatives

The Town of Preston is a low- to moderate-risk area for wildfires. Potential mitigation measures for wildfires include a combination of prevention, education, and emergency planning measures as presented in Section 11.

10.0 DAM FAILURE

10.1 Setting / Historic Record

Dam failures can be triggered suddenly with little or no warning and often in connection with natural disasters such as floods and earthquakes. Dam failures can occur during flooding when the dam breaks under the additional force of floodwaters. In addition, a dam failure can cause a chain reaction where the sudden release of floodwaters causes the next dam downstream to fail. While flooding from a dam failure generally has a limited geographic extent, the effects are potentially catastrophic depending on the downstream population. A dam failure affecting Preston is considered a possible event each year with potentially critical effects. No dam failures affected the town since the time of the last HMP.

The Norwich State Hospital Dam, a moderate hazard dam, failed in 1986. Route 2A overflowed downstream but there was no significant damage. It was subsequently rebuilt by the State of Connecticut and recently acquired by the Town of Preston. This is the only dam failure that Town officials could recall in recent memory.

10.2 Existing Programs, Policies, and Mitigation Measures

The Connecticut DEEP administers the Dam Safety Section and designates a classification to each state-registered dam based on its potential hazard. As noted in the Multi-Jurisdictional HMP, Preston is home to one Class B (significant hazard) dam, and three additional Class B or Class C dams are located upstream of Preston whose failure could potentially lead to flooding within the town. These dams are listed on Table 10-1.

TABLE 10-1
High and Significant Hazard Dams Within and Upstream of the Town of Preston

Dam	Hazard Class	Location	Owner	River System
Aspinook Pond Dam	B	Jewett City / Lisbon	Private (Commercial)	Quinebaug River
Greeneville Dam	C	Norwich	Norwich Public Utilities	Shetucket River
Taftville Dam #4 (Taftville Pond)	C	Norwich	Private (Commercial)	Shetucket River
Tunnel Dam	B	Preston / Lisbon	Private (Commercial)	Quinebaug River

Dams in the region whose failure could impact Preston are under the jurisdiction of the Connecticut DEEP. The dam safety statutes are codified in Section 22a-401 through 22a-411 inclusive of the Connecticut General Statutes. Sections 22a-409-1 and 22a-409-2 of the Regulations of Connecticut State Agencies have been enacted, which govern the registration, classification, and inspection of dams. Dams must be registered by the owner with the DEEP according to Connecticut Public Act 83-38.

Owners of high and significant hazard dams are required to maintain EOPs for such dams. The Town of Preston only owns one dam, the Norwich Hospital Pond Dam (a moderate hazard dam) at the former Norwich State Hospital Site. This dam is in good condition.

The previous HMP noted that the Town had concerns about the structural integrity of Hallville Pond Dam, a privately-owned moderate hazard dam in Hallville along Poquetanuck Brook. The State of Connecticut is currently repairing this dam and installing a fish ladder.

10.3 Vulnerabilities and Risk Assessment

The potential impacts related to the failure of Class C and Class B dams within or upstream of Preston are described below. Where information was available, the descriptions below are based on information available at the Connecticut DEEP Dam Safety files.

- *Aspinook Pond Dam* – This privately-owned Class B dam impounds the Quinebaug River to provide hydroelectric power generation. Failure of this dam could cause a flood similar to the 1% annual chance flood downstream in Jewett City, Lisbon, and Griswold. Undeveloped areas of Preston could also be affected near the bend in the Quinebaug River.

- *Greeneville Dam* – Greeneville Dam is a Class C dam located on the Shetucket River and owned by Norwich Public Utilities. The dam was constructed in 1888 and is a timber crib structure used for hydroelectric power generation. Failure of this dam would likely result in an inundation area similar to the 1% annual chance flood event for areas downstream along the Shetucket River from the dam to the Thames River. Areas along the Thames River in the vicinity of the former Norwich State Hospital and Happyland could potentially be impacted by minor flooding.

- *Taftville Dam #4* – Taftville Dam #4 is a Class C dam located on the Shetucket River between Norwich and Lisbon and is privately owned. The dam impounds water for hydroelectric power generation. Failure of this dam would likely result in an inundation area similar to the 1% annual chance flood event for areas downstream along the Shetucket River from the dam to the Thames River, including undeveloped areas of Preston.

- *Tunnel Dam* – This Class B dam that impounds the Quinebaug River is privately-owned and located between Preston and Sprague just upstream of the confluence with the Shetucket River. The dam was originally constructed to provide power for industrial purposes, but now is utilized for hydroelectric power generation. Failure of this dam would likely cause minor flooding along the Shetucket River downstream to Taftville Dam #4, with no structures being affected in Preston.

10.4 Potential Mitigation Measures, Strategies, and Alternatives

Preston is considered a low-risk area for dam failure since the majority of dams are well-maintained with active coordination with the Connecticut DEEP, and very few structures are located in downstream in potential inundation areas. Potential mitigation measures for dam failure include a combination of prevention, education, and emergency planning, as well as dam removal projects as discussed in Section 11.

11.0 RECOMMENDATIONS

11.1 Summary of Specific Recommendations

The Multi-Jurisdictional HMP provided several region-wide recommendations applicable to all hazards that are also pertinent to the Town of Preston. In addition, recommendations throughout the sections of this annex are also applicable as recommendations. These recommendations are listed below:

11.1.1 Recommendations Applicable to All Hazards

Regional Coordination

- Continue to promote inter-jurisdictional coordination efforts for emergency response.
- Continue to promote local and regional planning exercises that increase readiness to respond to disasters.
- Continue to evaluate communication capabilities and pursue upgrades to communication and ensure redundant layers of communication are in place within the Town and with other SCCOG communities, New London County, and the State of Connecticut.
- Continue to promote regional transportation planning through SCCOG to balance general transportation, shipping, and potential evacuation needs.
- Work with SCCOG to perform a regional study to identify the vulnerability of critical facilities that may be unable to withstand natural hazard damage. Emphasis should be placed on critical infrastructure, shelters and other sites to ensure structural integrity against various hazards and adequacy of backup supplies.
- Work with SCCOG to develop regional evacuation scenarios that include but build upon the Millstone evacuation plan.

Local Emergency Response & Public Information

- Continue to review and update the Town EOP at least once annually.
- Continue to maintain emergency response training and equipment and upgrade equipment when possible.
- Encourage local officials to attend FEMA-sponsored training seminars at the Emergency Management Institute (EMI) in Emmitsburg, Maryland. All of these workshops are free of charge. Tuition, travel and lodging are provided by FEMA for the EMI training. Annual training sessions include emergency management, environmental reviews, the FEMA grant programs, the NFIP and CRS and others related to other hazards.
- Continue to evaluate emergency shelters, update supplies, and check communication equipment.

- ❑ Continue to promote dissemination of public information regarding natural hazard effects and mitigation measures into local governmental and community buildings. Specifically,

  - ⇨ Obtain copies of the disaster planning guides and manuals from the "Are You Ready?" series (http://www.ready.gov/are-you-ready-guide).

  - ⇨ Encourage residents to purchase NOAA weather radios with an alarm feature.

  - ⇨ Post hazard preparedness information on the Town's website. Include links to established sources at the State of Connecticut and FEMA.

- ❑ Encourage residents to submit contact information to the CT Alerts Reverse 9-1-1 system on the CT Alerts website, and continue utilizing the system to telephone warnings into affected areas.

Prevention

- ❑ Develop a checklist for land development applicants that cross-references the specific regulations and codes related to disaster resilience.

- ❑ Integrate elements of this HMP into the *Plan of Conservation and Development* during the next update of that plan.

- ❑ Require the underground installation of utilities for all new development where possible.

- ❑ Continue reviewing building plans to ensure proper access for emergency vehicles.

- ❑ Continue to enforce the appropriate building code for new building projects.

- ❑ Encourage residents to install and maintain lightning rods on their buildings.

Natural Resource Protection & Open Space

- ❑ Continue to regulate development in protected and sensitive areas including steep slopes, wetlands, and floodplains.

11.1.2 Recommendations Applicable to Inland Flooding

Prevention

- ❑ Continue to regulate new development activities within SFHAs to the greatest extent possible within the local land use regulations.

- ❑ Require developers to demonstrate whether detention or retention of stormwater is the best option for reducing peak flows downstream.

- ❑ Conduct an annual inspection of floodprone areas that are accessible to Town officials. Determine if potential flood damage is stormwater facility related and make recommendations as appropriate.

- Utilize the recently released DFIRM and 2008 hurricane storm surge mapping to compile a list of addresses with structures within the 1% annual chance floodplain and storm surge areas. Track the cost of repairs to these properties following major storm events through outreach or building permits to develop a database of information for potential future grant funding.

- Work with State and Federal agencies to ensure that flood protection regulations reflect current thinking and standards especially with regard to long-term rise in sea levels.

Property Protection

- Incorporate information on the availability of flood insurance into all hazard-related public education workshops.

- Make available FEMA-provided flood insurance brochures at public accessible places such as the local government buildings. Encourage residents to purchase flood insurance if they are located within a FEMA SFHA.

- Provide technical assistance to owners of non-residential structures that suffer flood damage regarding floodproofing measures such as wet and dry floodproofing.

- Encourage residents to submit flood insurance claims following damage events.

Emergency Services

- Pursue mutual aid agreements with such organizations as the American Red Cross and the Boy Scouts of America to provide volunteer labor during flooding to assist with response activities.

- Include structures within the 1% annual chance floodplain and storm surge areas in the Reverse 9-1-1 contact database.

Public Education and Awareness

- Visit schools (as is currently done under fire prevention) and educate children about the risks of floods (and other natural hazards) and how to prepare for them.

- Encourage builders, developers, and architects to become familiar with the NFIP land use and building standards by attending annual workshops.

Natural Resource Protection

- Pursue the acquisition of additional municipal open space in SFHAs.

- Continue to aggressively pursue wetlands protection through existing wetlands regulations. Incorporate performance standards into subdivision reviews to include additional protective measures such as conservation easement areas around wetlands and watercourses.

Structural Projects

- Encourage the use of floodplain storage, diversions, berms, dikes, and other flood control methods in new developments and at existing properties where appropriate.

- Utilize recently available extreme rainfall data to determine existing sizing of culverts. Encourage bridge replacements and culvert replacements in areas found to be undersized.

- Continue to perform catch basin and culvert surveys to perform maintenance and cleaning and to identify and prioritize structures in need of replacement.

- Determine and enact the best method for flood mitigation on Matthewson Mill Road at Shewville Brook such as a culvert replacement.

- Encourage the State to upgrade drainage along Route 2A.

11.1.3 Recommendations Applicable to Wind Damage from Hurricanes, Tropical Storms, Summer Storms, Tornados, and Winter Storms

Property Protection

- Promote the use of functional shutters for older buildings in the town to guard against window breakage which can result in structural failure.

- The Building Department should make information on wind-resistant construction techniques (such as hurricane straps) available to all building permit applicants.

Emergency Services

- Identify a location or locations in the town for a brush disposal operation for dealing with debris after wind storms. Determine how these trees can be reused within the town (chips, firewood, composting) to reduce costs of exporting.

- Consider surveying all Town-owned buildings to determine their ability to withstand wind loading, particularly Preston Plains School (shelter).

- Develop agreements, if necessary, with land owners and with companies to chop/chip in order to ensure that plans are in place prior to damage and cleanup needs (as is done for snow plow operations).

Public Education and Awareness

- Visit schools (as is currently done under fire prevention) and educate children about the risks of wind events (and other natural hazards) and how to prepare for them.

11.1.4 Recommendations Applicable to Other Damage from Winter Storms

- Consider conducting a study to identify municipal buildings, critical facilities, and commercial / industrial buildings that are vulnerable to roof damage or collapse due to heavy snow loads. This study could be included in the regional critical facility study described in Section 2.8.

- Consider drafting a written plan for inspecting and prioritizing the removal of snow from Town-owned structures.

- Continue making funding available to the Public Works Department each budget year for clearing snow from roads and parking lots.

- Provide information for generally protecting town residents during cold weather and for mitigating icing and insulating pipes at residences.

- Consider posting the snow plowing routes in local government buildings and on the Town's website such that residents and business owners may better understand their risks during winter travel.

- Continue to identify areas that are difficult to access during winter storm events and develop contingency plans for emergency personnel.

11.1.5 Recommendations Applicable to Earthquakes

- Ensure that Town departments have adequate backup supplies and facilities for continued functionality in case earthquake damage occurs to these buildings and critical facilities. This should be part of the regional critical facility study discussed in Section 2.8.

- Consider preventing residential development in areas prone to collapse such as below steep slopes or in areas prone to liquefaction.

11.1.6 Recommendations Applicable to Wildfires

- Continue to evaluate public water supply hydrants, dry hydrants and areas at risk of wildfire in the town.

- Extend fire protection to areas identified as being particularly at risk.

- Continue to support public outreach programs to increase awareness of forest fire danger, equipment usage, and protecting homes from wildfires. Educational materials should be made available at the Town Hall.

- Ensure that provisions of Town regulations regarding fire protection facilities and infrastructure are being enforced.

11.1.7 Recommendations Applicable to Dam Failure

- Continue to maintain the Norwich Hospital Pond Dam in good to excellent condition.

- Work with the Connecticut DEEP to ensure that the owners of high and significant hazard dams that could impact the town have a current EOP. The Town Hall should keep a copy of such plans.

- Provide assistance to owners of lesser-ranked dams regarding resources available for inspections and maintenance.

11.2 Prioritization of Specific Recommendations

As explained in Section 11.3 of the Multi-Jurisdictional HMP, the STAPLEE method was utilized in this annex to prioritize recommendations. Table 11-1 presents the STAPLEE matrix for the Town of Preston. Each recommendation includes the department or commission responsible for implementing the recommendation, a proposed schedule, and whether or not the recommendation is new or originally from the previous HMP. Refer also to Section 2.7 for the list of previous plan recommendations and whether or not each recommendation was carried forward into this HMP.

TABLE 11-1: TOWN OF PRESTON STAPLEE MATRIX FOR PRIORITIZING RECOMMENDATIONS

Implementation of Current Recommendations	Existing or New Recommendation?	Responsible Department [1]	Schedule	Cost [2]	Potential Funding Source [3]	Weighted STAPLEE Criteria [4]															Total STAPLEE Score
						Benefits								*Costs*							
						Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	Environmental	**STAPLEE Subtotal**	Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	Environmental	**STAPLEE Subtotal**	
ALL HAZARDS																					
Regional Coordination																					
Continue to promote inter-jurisdictional coordination efforts for emergency response	New	FD, BoS	2012-2017	Minimal	OB	1	1	1	1	1	1	1	**9.0**								**0.0**	***9.0***
Continue to promote local and regional planning exercises that increase readiness to respond to disasters	New	BoS	2012-2017	Low	OB	1	1	1	1	1	0.5	1	**8.0**								**0.0**	***8.0***
Continue to evaluate communication capabilities and pursue upgrades to communication and ensure redundant equipment is available	Existing	FS, FD	2012-2017	Low	OB, CI	1	1	1	1	1	1	1	**9.0**						-0.5		**-1.0**	***8.0***
Continue to promote regional transportation planning through SCCOG	Existing	BoS	2012-2017	Low	OB	1	1	1	1	1	0.5		**7.0**								**0.0**	***7.0***
Work with the SCCOG to perform a regional study of the vulnerability of critical facilities to natural hazard damage	New	FS	2012-2017	Low	OB	1	1	1	1	1	1		**8.0**		-0.5				-0.5		**-2.0**	***6.0***
Work with the SCCOG to develop regional evacuation scenarios that include but build upon the Millstone evacuation plan	New	FS	2012-2017	Low	OB	1	1	1	1	1	0.5		**7.0**			-0.5			-0.5		**-1.5**	***5.5***
Local Emergency Response & Public Information																					
Continue to review and update the Town EOP at least once annually	Existing	BoS, FD	2012-2017	Low	OB	1	1	1	1	1	1	1	**9.0**								**0.0**	***9.0***
Continue to maintain emergency response training and equipment and upgrade equipment when possible	Existing	BoS, FD	2012-2017	Moderate	OB, CI	1	1	1	1	1	0.5	1	**8.0**						-0.5		**-1.0**	***7.0***
Encourage Town officials to attend FEMA-sponsored training seminars at EMI	New	FS	2012-2017	Minimal	OB	0.5	0.5	1	1	1	1	0.5	**7.0**								**0.0**	***7.0***
Continue to evaluate emergency shelters, update supplies, and check communication equipment	Existing	FS, FD	2012-2017	Low	OB	1	1	1	1	1	1		**8.0**								**0.0**	***8.0***
Continue to promote dissemination of public information regarding natural hazard effects into Government buildings, with additions	Existing	FS, BD	2012-2017	Minimal	OB	1	1	1	1	1	1	1	**9.0**								**0.0**	***9.0***
Encourage residents to submit contact information to the CT Alerts Reverse 9-1-1 system and utilize it during emergencies	Existing	FS, FD	2012-2017	Minimal	OB	1	1	1	1	1	1		**8.0**								**0.0**	***8.0***
Prevention																					
Develop a checklist for land development applicants that cross-references the specific regulations and codes related to disaster resilience	New	ZEO	2012-2017	Minimal	OB	1	1	1	1	1	1		**8.0**			-0.5					**-0.5**	***7.5***
Integrate elements of this HMP into the Plan of Conservation and Development during the next update	New	PZC, ZEO	2012-2017	Low	OB	1	1	1	1	1	1	1	**9.0**			-1	-0.5				**-1.5**	***7.5***
Continue reviewing building plans to ensure proper access for emergency vehicles	New	FD	2012-2017	Minimal	OB	1	1	1	1	1	1		**8.0**								**0.0**	***8.0***
Require the underground installation of utilities for all new development	Existing	PZC	2012-2017	Minimal	OB	1	1	1	1	1	0.5		**7.0**	-0.5			-0.5				**-1.0**	***6.0***
Continue to enforce the appropriate building code for new building projects	New	BD	2012-2017	Minimal	OB	1	1	1	1	1	1		**8.0**								**0.0**	***8.0***
Encourage residents to install and maintain lightning rods on their structures	New	BD, FD	2012-2017	Minimal	OB	1	0.5	1	1	1	1	0.5	**7.5**								**0.0**	***7.5***
Natural Resource Protection & Open Space																					
Continue to regulate development in protected and sensitive areas including steep slopes, wetlands, and floodplains	New	PZC	2012-2017	Minimal	OB	1	1	1	1	1	1	1	**9.0**								**0.0**	***9.0***
FLOODING RECOMMENDATIONS																					
Prevention																					
Continue to regulate new development activities within SFHAs to the greatest extent possible within Town land use regulations	New	PZC	2012-2017	Minimal	OB	1	1	1	1	1	1	1	**9.0**								**0.0**	***9.0***
Require developers to demonstrate whether detention or retention of stormwater is the best option for reducing peak flows downstream	New	PZC	2012-2017	Minimal	OB	0.5	1	1	1	1	1	0.5	**8.0**								**0.0**	***8.0***
Conduct an annual inspection of floodprone areas that are publically accessible. Recommend drainage improvements as appropriate.	New	DPW	2012-2017	Low	OB	1	1	1	0.5	1	0.5	0.5	**7.0**								**0.0**	***7.0***
Work with State and Federal agencies to ensure that flood protection regulations reflect current standards regarding sea level rise	New	ZEO	2012-2017	Low	OB	1	1	1	1	1	1		**8.0**								**0.0**	***8.0***
Compile a list of addresses of structures within the 1% annual chance floodplain and storm surge areas, and track repair costs	New	BD	2012-2017	Low	OB	0.5	1	1	0.5	1	1		**7.0**	-0.5		-0.5					**-1.0**	***6.0***
Property Protection																					
Incorporate information on the availability of flood insurance into all hazard-related public education workshops	New	ZEO	2012-2017	Low	OB	1	1	0.5	0.5	1	1		**7.0**	-0.5							**-0.5**	***6.5***
Make available FEMA-provided flood insurance brochures and encourage residents to purchase insurance if they are in a SFHA	New	ZEO, FS	2012-2017	Minimal	OB	1	1	1	1	1	1		**8.0**								**0.0**	***8.0***
Provide technical assistance to owners of non-residential structures regarding floodproofing techniques	New	BD	2012-2017	Low	OB	1	0.5	0.5	1	1	1	0.5	**7.0**								**0.0**	***7.0***
Encourage residents to submit flood insurance claims following damage events	New	All	2012-2017	Minimal	OB	1	1	1	1	1	1		**8.0**								**0.0**	***8.0***

TABLE 11-1: TOWN OF PRESTON STAPLEE MATRIX FOR PRIORITIZING RECOMMENDATIONS

Implementation of Current Recommendations	Existing or New Recommendation?	Responsible Department [1]	Schedule	Cost [2]	Potential Funding Source [3]	Weighted STAPLEE Criteria [4]															Total STAPLEE Score
						Benefits								*Costs*							
						Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	Environmental	**STAPLEE Subtotal**	Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	Environmental	**STAPLEE Subtotal**	
Emergency Services																					
Pursue mutual aid agreements with non-profits to provide volunteer labor for response activities	New	FS	2012-2017	Low	OB	1	1	1	1	1	1		**8.0**								**0.0**	***8.0***
Include structures within the 1% annual chance floodplain and storm surge areas within the Reverse 9-1-1 contact database	New	FS	2012-2017	Low	OB	1	1	1	1	1	1		**8.0**	-0.5		-0.5					**-1.0**	***7.0***
Public Education and Awareness																					
Visit schools and educate children about the risks of flooding and how to prepare	New	FD	2012-2017	Low	OB	1	1	1	1	1	1		**8.0**								**0.0**	***8.0***
Encourage builders, developers, and architects to become familiar with NFIP land use and building standards at annual workshops	New	ZEO, BD	2012-2017	Low	OB	1	1	1	1	1	1		**8.0**			-0.5					**-0.5**	***7.5***
Natural Resource Protection																					
Pursue the acquisition of additional open space in SFHAs	New	BoS	2012-2017	High	CI*	1	1	1	1	1	1	1	**9.0**						-1		**-2.0**	***7.0***
Continue to aggressively pursue wetlands protection and incorporate performance standards into subdivision reviews	New	PZC	2012-2017	Low	OB	1	1	1	1	1	1	1	**9.0**	-0.5		-0.5					**-1.0**	***8.0***
Structural Projects																					
Encourage the use of floodplain storage and other flood control methods in new developments and at existing properties where appropriate	New	PZC, BD	2012-2017	Minimal	OB	1	1	0.5	1	0.5	1		**7.0**		-0.5					-1	**-2.0**	***5.0***
Utilize the recently available extreme rainfall data to determine existing culvert sizing and encourage upgrades where undersized	New	DPW	2012-2017	Moderate	CI	0.5	1	1	0.5	1	1		**7.0**						-1		**-2.0**	***5.0***
Continue to perform catch basin and culvert surveys to prioritize upgrades and perform maintenance and cleaning	Existing	DPW	2012-2017	Moderate	OB	1	1	1	1	1	0.5	0.5	**7.5**								**0.0**	***7.5***
Determine and enact the best flood mitigation method for Shewville Brook at Matthewson Mill Road	Existing	DPW	2012-2017	High	CI*	0.5	1	1	1	1	0.5	0.5	**7.0**	-0.5					-0.5		**-1.5**	***5.5***
Encourage the State to upgrade culverts along Route 2A.	Existing	FS	2012-2017	Minimal	OB	1	1	1	1	1	1		**8.0**								**0.0**	***8.0***
WIND DAMAGE RELATED TO HURRICANES, SUMMER STORMS, TORNADOES, AND WINTER STORMS																					
Property Protection																					
Promote the use of functional shutters for older buildings	New	BD	2012-2017	Minimal	OB	1	0.5	1	1	1	0.5		**6.0**								**0.0**	***6.0***
Make information on wind-resistant construction techniques available to all building permit applicants	New	BD	2012-2017	Low	OB	1	1	1	1	1	1		**8.0**								**0.0**	***8.0***
Emergency Services																					
Identify a location for a brush-disposal operation for dealing with debris following wind storms and determine potential reuse	New	DPW	2012-2017	Minimal	CI	0.5	1	1	1	1	1		**7.5**								**0.0**	***7.5***
Consider surveying all Town-owned buildings to determine their ability to withstand wind loading	New	BD	2012-2017	Low	OB	1	0.5	1	0.5	1	0.5		**5.5**								**0.0**	***5.5***
Develop agreements with landowners and companies to chop/chip to ensure backup plans are in place for debris removal	New	FS	2012-2017	Low	OB	0.5	0.5	1	0.5	1	0.5		**5.0**								**0.0**	***5.0***
Public Education and Awareness																					
Visit schools and educate children about the risks of wind events and how to prepare for them	New	FD	2012-2017	Low	OB	1	1	1	1	1	0.5		**7.0**								**0.0**	***7.0***
WINTER STORMS																					
Consider conducting a study to identify buildings vulnerable to roof damage or collapse from heavy snow in the town	New	BD	2012-2017	Moderate	OB	1	1	1	0.5	0.5	1		**7.0**			-0.5			-1		**-2.5**	***4.5***
Consider drafting a written plan for inspecting and prioritizing the removal of snow from Town-owned structures	New	BD, FS	2012-2017	Low	OB	0.5	1	1	1	1	0.5		**6.5**								**0.0**	***6.5***
Continue making funding available to the Public Works Department each year for clearing snow from roads and parking lots	New	BoS	2012-2017	High	OB	1	1	1	1	1	0.5		**7.0**								**0.0**	***7.0***
Provide information for protecting Town residents during cold weather and for mitigating icing and insulating pipes at residences	New	BD	2012-2017	Low	OB	1	1	1	1	1	1		**8.0**								**0.0**	***8.0***
Consider posting the snow plowing routes in local government buildings and on the Town's website	New	FS	2012-2017	Minimal	OB	1	0.5	0.5	0.5	1			**4.0**				-0.5	-0.5			**-1.0**	***3.0***
Continue to identify areas that are difficult to access during winter storm events and develop contingency plans to access such areas	New	FD, DPW	2012-2017	Minimal	OB	1	1	1	1	1	1		**8.0**								**0.0**	***8.0***
EARTHQUAKES																					
Ensure that Town departments have adequate backup supplies and facilities for continued functionality following an earthquake	New	FS	2012-2017	Moderate	OB, CI		0.5	1	0.5	0.5			**3.0**		-0.5		-1				**-2.0**	***1.0***
Consider preventing residential development in areas prone to collapse such as below steep slopes or areas prone to liquefaction	New	PZC	2012-2017	Minimal	OB	0.5	1	1	0.5	0.5	1	0.5	**7.0**				-0.5				**-0.5**	***6.5***

TABLE 11-1: TOWN OF PRESTON STAPLEE MATRIX FOR PRIORITIZING RECOMMENDATIONS

Implementation of Current Recommendations	Existing or New Recommendation?	Responsible Department [1]	Schedule	Cost [2]	Potential Funding Source [3]	Weighted STAPLEE Criteria [4]															Total STAPLEE Score
						Benefits								*Costs*								
						Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	Environmental	**STAPLEE Subtotal**	Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	Environmental	**STAPLEE Subtotal**	
WILDFIRES																					
Continue to evaluate public water supply hydrants, dry hydrants, and areas at risk of wildfire in the town	Existing	FD	2012-2017	Minimal	OB	1	1	1	1	1	1	0.5	**8.5**								**0.0**	***8.5***
Extend fire protection to future areas identified as being particularly at-risk	New	FD, FS	2012-2017	Low	CI	1	1	1	1	1	1	1	**9.0**	-0.5					-0.5		**-1.5**	***7.5***
Continue to support public outreach programs to increase awareness of forest fire danger, equipment usage, and protecting homes	New	FD	2012-2017	Low	OB	1	1	1	1	1	0.5	1	**8.0**								**0.0**	***8.0***
Ensure that provisions of Town regulations regarding fire protection facilities and infrastructure are being enforced	New	FS	2012-2017	Low	OB	0.5	0.5	1	0.5	1	0.5		**5.0**								**0.0**	***5.0***
DAM FAILURE																					
Continue to maintain Norwich Hospital Pond Dam in good to excellent condition	New	DPW	2012-2017	Low	OB	1	1	0.5	1	1	1	1	**8.5**						-0.5		**-1.0**	***7.5***
Work with CT DEEP to ensure that the owners of high hazard dams have current EOPs and keep local copies	New	FS	2012-2017	Minimal	OB	1	1	1	1	1	1		**8.0**								**0.0**	***8.0***
Provide assistance to the owners of lesser ranked dams regarding resources available for inspections and maintenance	New	BD	2012-2017	Minimal	OB	0.5	0.5	0.5	0.5	1		0.5	**4.0**								**0.0**	***4.0***

NOTES

1. Departments:
   BD = Building Department
   BoS = Board of Selectmen
   DPW = Department of Public Works
   FD = Fire Department
   FS = First Selectman
   PZC = Planning & Zoning Commission
   ZEO = Zoning Enforcement Officer
2. Minimal = To be completed by staff or volunteers where costs are primarily printing, copying, or meetings; Low = Costs are less than $10,000; Moderate = Costs are less than $100,000; High = Costs are > than $100,000.
3. OB = Operating Budget; CI = Capital Improvement budget; a * indicates that grant funding is needed and will be pursued
4. A beneficial or favorable rating = 1; an unfavorable rating = -1. Technical and Financial benefits and costs are double-weighted (i.e. their values are counted twice in each subtotal)

APPENDIX A

ADOPTION RESOLUTION

TOWN OF PRESTON HAZARD MITIGATION PLAN UPDATE

WHEREAS, the Town of Preston has historically experienced severe damage from hazards and continues to be vulnerable to the effects of flooding, thunderstorms, high wind, winter storms, wildfires, earthquakes, and dam failure, resulting in loss of property and life, economic hardship, and threats to public health and safety;

WHEREAS, the Southeastern Connecticut Council of Governments, of which the Town of Preston is a member, has developed and received conditional approval from the Federal Emergency Management Agency (FEMA) for its Hazard Mitigation Plan Update under the requirements of 44 CFR 201.6;

WHEREAS, the Plan specifically addresses hazard mitigation strategies and Plan maintenance procedures for the Town of Preston;

WHEREAS, the Plan recommends several hazard mitigation actions/projects that will provide mitigation for specific hazards that impact the Town of Preston, with the effect of protecting people and property from loss associated with those hazards;

WHEREAS, adoption of this Plan will make the Town of Preston eligible for funding to alleviate the impacts of future hazards;

NOW THEREFORE BE IT RESOLVED by the Board of Selectmen of the Town of Preston that:

1. The Plan is hereby adopted as an official plan of the Town of Preston;

2. The respective officials identified in the mitigation strategy of the Plan are hereby directed to pursue implementation of the recommended actions assigned to them;

3. Future revisions and Plan maintenance required by 44 CFR 201.6 and FEMA are hereby adopted as a part of this resolution for a period of five (5) years from the date of this resolution.

4. An annual report on the progress of the implementation elements of the Plan shall be presented to the Board of Selectmen by October 1 of each calendar year.

PASSED by the Board of Selectmen this 20 day of December (month), 2012 (year).