

**HAZARD MITIGATION PLAN UPDATE
ANNEX FOR THE
MASHANTUCKET PEQUOT TRIBAL NATION**

**Southeastern Connecticut Council of Governments
Multi-Jurisdictional Hazard Mitigation Plan Update**

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ADOPTED

MMI #3570-09



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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 natural 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 natural hazards on the Mashantucket Pequot Tribal Nation. Background information and the regional effects of pertinent natural 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 the Mashantucket Pequot Tribal Nation and is not to be considered a standalone document.

The primary goal of this hazard mitigation plan annex is to identify risks to natural hazards and potential mitigation measures for such natural 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.

Unlike the municipalities in the SCCOG region, an Indian Tribal Government with an approved Tribal Mitigation Plan in accordance with 44 Code of Federal Regulations (CFR) 201.7 may apply for assistance from FEMA directly as a grantee under the various grant programs. Because the Mashantucket Pequot Tribal Nation has coordinated with the State of Connecticut through SCCOG in the development of this multi-jurisdictional HMP, the Tribe also has the option of applying as a subgrantee through the State. The Mashantucket Pequot Tribal Nation can determine on a case-by-case basis how it wishes to apply with respect to each grant program offered under each Presidential Disaster Declaration.

Given the "Tribal Multi-Hazard Mitigation Planning Guidance" that was released by FEMA in March 2010, a major rewrite of the HMP annex was determined by SCCOG to be the best method of updating the 2005 HMP to address all the requirements of 44 CFR 201.7. FEMA is currently developing a "Tribal Mitigation Plan Review Guide" that will supersede that document; review of the January 2017 draft determined that continuing to maintain this annex within the SCCOG regional plan was the best course of action moving forward. For the purposes of this plan, the term "public" includes but is not limited to tribal residents, tribal members, those employed on the reservation, and visitors to tribal lands.

1.2 Setting

Prior to the settlement of Connecticut by Europeans, the Pequots had approximately 8,000 members and inhabited 250 square miles in southeastern Connecticut which they had occupied for thousands of years. The Pequot War of 1636-1638 had a devastating effect on the Pequots. Following the war, the Mashantucket Pequot Tribe was recognized by the Connecticut Colony in the Treaty of 1638 where the Treaty divided the Pequots into two Tribes: The Pawcatuck

Pequots and the Mashantucket Pequots. The Mashantucket Reservation was established on 989 acres in its present location in 1666, making it one of the oldest, continuously occupied Indian reservations in North America.

Over the next 200 years, the Tribe battled to keep its land. The 1774 Colonial census indicated that there were 151 tribal members in residence at Mashantucket. The Tribal population was further reduced in the 19th century as tribal members moved from the Reservation in search of work. By 1856, illegal land sales had reduced the size of the Reservation to 213 acres, limiting the amount of land available to the Tribe.

By the 1970's, only two residents remained on the Reservation. The Mashantucket Pequots began to encourage tribal members to move back to the Reservation under the impetus to restore their land base and community, develop economic self-sufficiency, and revitalize tribal culture. The Tribe filed suit against neighboring land owners in 1976 to recover the land illegally sold by the State of Connecticut in 1856. The neighboring land owners concurred that the sale was illegal and with the assistance of the State of Connecticut the Mashantucket Pequot Indian Land Claims Settlement Act was enacted by the U.S. Congress in 1983. This granted the Tribe Federal recognition, provided funds for the purchase of 800 acres of land, and enabled the Tribe to place in trust the land covered in the Settlement Act.

The Tribe began several economic ventures over the next two decades, including agriculture (sale of cord, wood, maple syrup, garden vegetables, and swine, as well as establishing a hydroponic greenhouse), began a sand and gravel operation, and opened a restaurant. In 1986 the Tribe opened its first bingo hall, and followed this venture into high stakes gaming by opening the first phase of the Foxwoods Resort Casino in 1992, which attracts tourists from around the world. Visitors utilize Route 214 and Route 2 to access tribal lands from larger highways in Connecticut.

The Mashantucket Pequot Tribal Reservation is comprised of approximately 2,261 acres of Settlement and Trust lands surrounded almost entirely by parcels within the northeastern section of Ledyard, with a small portion of the Reservation surrounded by parcels in southern Preston. Approximately 330 tribal members live on the Reservation, with additional tribal members living on lands located nearby the Reservation in Ledyard, Preston, and North Stonington. As the Mashantucket Pequot Tribal Nation has approximately 800 members, the majority of tribal members do not live on the Reservation or on fee lands but rather in outlying communities.

The Mashantucket Pequot Tribal Nation owns an additional 3,805 acres of land considered as fee lands outside the Reservation in the municipalities of Ledyard, Preston, and North Stonington. These lands are considered as part of their respective towns and are therefore also discussed, where appropriate, in the annexes for Ledyard, Preston, and North Stonington. However, given the magnitude of land owned by the Mashantucket Pequot Tribal Nation outside of the Reservation, the discussion in this annex includes a discussion of fee lands where appropriate. The figure within this annex depicts the boundaries of the Reservation (Settlement and Trust land) and fee lands outside the Reservation that constitute the tribal planning area.

1.3 Plan Development

The 2012 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 Tribal governmental offices and available to emergency personnel. Tribal residents were encouraged to contact the Public Safety Department or the Department of Public Works in the Planning & Community Development Department 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 2012, 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 4th, 2016 announcing two public information meetings on the multi-jurisdictional HMP update. This press release was published in the Norwich Bulletin and The Day, as well as in relevant local "Patch" news websites. This notice was also posted on the SCCOG Facebook page and website. The public information meetings were held on November 28 and December 1, 2016, at the Town of Groton Library and the SCCOG office, respectively.
- ❑ A survey soliciting public input was hosted at www.surveymonkey.com/r/SCCOGHazard from October 17, 2017 through March 17, 2017. Topics addressed by the survey included the types of natural hazards that concern participants, the assets, infrastructure, and government services they feel are most at risk, and the types of mitigation measures they support. The survey link was publicized along with the public meetings in The Day, The Norwich Bulletin, and local *Patch* websites, and at all public meetings.
- ❑ A data collection meeting was held with the Mashantucket Pequot Tribal Nation on March 6, 2017 to discuss the scope and process for updating the plan and to collect information. The Fire Inspector/Emergency Manager coordinated the local planning team which included the Fire Chief, Deputy Fire Chief, Director of Public Works and Planning and Community Development, and the Director of Natural Resources Protection and Regulatory Affairs. 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 Tribe and that should be addressed in the update.
- ❑ The draft that is sent for State review will be posted on the Tribal website (<http://www.mashantucket.com/publicsafety.aspx>) as well as the SCCOG website (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, tribal members, 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.

Public notices distributed regarding this plan were delivered to the general public via SCCOG and to tribal residents and tribal members by Tribal personnel.

The adoption of this HMP update by the Mashantucket Pequot Tribal Nation will be coordinated by SCCOG and the Public Safety Department. The HMP update must be adopted within one year of conditional approval by FEMA, or the Tribe 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 Emergency Manager will administer this HMP under the authority of the Tribal Council and will be the local coordinator of the HMP. This is a change since the previous HMP caused by a reorganization of the tribal government. The Director of Planning and Community Development will serve as deputy local coordinator and assist the Emergency Manager. The Emergency Manager 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 Tribal Council.

The Mashantucket Pequot Tribal Nation plans to incorporate this HMP as a direct annex to its Emergency Management Plan (EMP). This will occur at the next EMP update following HMP adoption. The HMP will also be on file in the Planning & Community Development Department to assist in guiding growth decisions. See Section 2.5 for recommendations related to integrating the findings of this HMP into other Tribal planning documents. The Tribe will continue to encourage Tribal residents to contact the Public Safety Department or the Planning & Community Development Department with concerns related to natural hazards via the Tribal safety newsletter which is distributed monthly. Such announcements will also state that the HMP is available for public review at the Planning & Community Development Department and the Fire Department. This level of public coordination is believed sufficient given the relatively disaster-resilient nature of the Reservation and the relatively low number of residents.

The Mashantucket Pequot Tribal Nation will review the status of plan recommendations each year. The Emergency Manager 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 Emergency Manager 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 Mashantucket Pequot Tribal Nation 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 Tribe. The Emergency Manager will coordinate with SCCOG for the next HMP update which is expected to occur in 2022.

1.5 Assurances

Should Federal grant funding be available for a particular project, the Emergency Manager will secure permission from the Tribal Council to apply for funding. The Mashantucket Pequot Tribal Nation understands that it must comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding. The Mashantucket Pequot Tribal Nation further understands that they will need to amend their plan to reflect new or revised Federal regulations or statutes, or changes in Tribal law, organization, policy, or tribal agency operation. The amendment can be added as an annex and later incorporated directly during the next HMP update. Adoption of this HMP update at the Tribal level indicates that the Mashantucket Pequot Tribal Nation agrees to these Federal assurances.

2.0 COMMUNITY PROFILE

2.1 Physical Setting

The Mashantucket Pequot Tribal Nation is located in the vicinity of Cedar Swamp, a large forested wetland located along Indiantown Brook and Shewville Brook. The commercial developments associated with the Foxwoods Resort Casino and MGM Grand are located east of Cedar Swamp along Route 2. Tribal homes are located to the west and southwest of Cedar Swamp and north of Route 214 on lands that characterized by small hills and valleys that is predominantly wooded. Elevations range from approximately mean sea level near the Thames River to approximately 100 feet above sea level along Shewville Brook to approximately 350 feet among the Tribal residences.

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 controlled by the Mashantucket Pequot Tribal Nation.

The Reservation contains eight bedrock types which lie in fairly west-east bands across the Reservation. These include the Quinebaug Formation, Dioritic phase of Preston Gabbro, Preston Gabbro, Waterford Group, Hope Valley Alaskite Gneiss; Plainfield Formation, Quartzite unit in Plainfield Formation, and the Mamacoke Formation. The formations are dominated by gneiss, a relatively hard metamorphic rock.

A total of four fault lines are mapped on the Reservation. The Honey Hill Fault tracks northwest to southeast across the northern section of the Reservation, running beneath Cedar Swamp, MGM Grand, and the Foxwoods Resort Casino. The Honey Hill Fault is a thrust fault, mostly Devonian or Ordovician in origin. An unnamed high angle fault believed to be Jurassic in origin passes the western edge of the Reservation, intersecting the Honey Hill Fault near the Preston-Ledyard boundary. A minor unnamed fault tracks from this area to intersect with the Honey Hill Fault beneath Foxwoods Resort Casino. Finally, a minor unnamed fault tracks along Route 2 in east of the Foxwoods Resort Casino. Refer to the Multi-Jurisdictional HMP for the general location of these fault lines.

The Reservation's surficial geologic formations are dominated by glacial till and swamp formations. Refer to the Multi-Jurisdictional HMP for a generalized view of surficial materials. MGM Grand is underlain by glacial till, while Foxwoods Resort Casino is underlain by a combination of glacial till, sand, sand and gravel, and gravel. Cedar Swamp consists of swamp formations, which change to alluvium and sand and gravel along Indiantown Brook and Shewville Brook. The southern and western portions of the reservation are almost entirely glacial till with some areas of swamp. Till contains an unsorted mixture of clay, silt, sand, gravel, and boulders deposited by glaciers as a ground moraine. 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

Prior to 1983, development on the reservation was relatively sparse and predominantly residential. Following Federal recognition in 1983, the Tribe began to develop new buildings for residences and for its commercial enterprises.

Today, the overall land use patterns of the Reservation are well-established. The Mashantucket Pequot Tribal Nation employs some 10,000 local employees through its various enterprises. The Planning and Community Development Department manages approximately 8.5 million square feet of building space. The water and sewer systems of the Tribe are capable of supporting all existing growth and anticipated growth per its Water Supply Plan. The Foxwoods Resort Casino and the Fox Tower are the commercial fixtures of the reservation, providing gaming, hotel, and entertainment amenities. They are located in the eastern portion of the Reservation along Route 2. Revenues from the Foxwoods Resort Casino have enabled the Tribe to perform infrastructure projects in the area of the casino, to establish a transit system for their employees, and to develop a plan to convert their fleet of vans and buses to natural gas. In addition to creating thousands of jobs for the region, the Tribe has also invested in regional history and culture with the opening of a museum and research center that has allowed the tribe to recover artifacts dating back to the 17th century.

The Fox Tower, previously named MGM Grand, was completed in 2008. This casino has over three million square feet of interior space. Subsequent to the adoption of the previous HMP in 2012, Tanger Outlets was constructed between the Fox Tower and Foxwoods facilities with frontage near Route 2. Tanger Outlets is a large retail outlet center. A gasoline service station and convenience store called the "Pequot Outpost" was completed on October 12, 2012, at the intersection of Route 2 and Route 214. This is the first gas station located on MPTN tribal land. No industry is located on the reservation, and a sand and gravel operation previously located on fee lands in North Stonington no longer exists.

The Mashantucket Pequot Tribal Nation has several areas that they deem sacred. One notable site on the Reservation is the Mashantucket Pequot Burial Ground located on Fanning Road; funding from Hurricane Sandy relief money helped pay for the installation of a fence around this historic burial ground. Other areas are located on fee lands outside of the reservation. Another site of interest is an active cemetery on Shewville Road. Interested parties may contact the Tribal Historic Preservation Officer in the Natural Resources Protection & Regulatory Affairs Department for more information regarding sacred sites on the Reservation.

2.3 Drainage Basins and Hydrology

The Reservation drains to two regional basins: the Thames Main Stem and the Southeast Eastern Complex. The majority of the Reservation associated with Cedar Swamp drains towards the Thames River through Indiantown Brook and Shewville Brook. While Indiantown Brook drains a relatively large area of Preston and North Stonington prior to entering the Reservation, the large capacity of Cedar Swamp mitigates watercourse flooding issues.

The southern portion of the Reservation drains to Williams Brook in Ledyard. A very small section along Route 214 drains to Lantern Hill Brook in North Stonington.

2.4 Governmental Structure

The Mashantucket Pequot Tribal Nation is governed by its Tribal Council and its Elders Council. Each member of the seven-member Tribal Council is elected by Tribal membership to three-year terms and collectively makes the laws governing the Tribe and its properties, manages its natural resources, and maintains relationships with local, State, and Federal governments as well as with other Tribal nations. The Tribal Council has the authority to enact laws and adopt resolutions such as that required for this HMP. The Chairman of the Tribal Council is the de facto Chief Executive Officer of the Tribe.

The Elders Council is comprised of all Tribal members aged 55 or older and representing all families of the Tribe. It provides advice and recommendations to the Tribal Council and Tribal membership, determines questions of membership, and adjudicates access to Tribal properties. The Elders Council also hears matters referred to it by the Tribal Council and proposes amendments to the Tribal Constitution. The Elders Council has three elected members who serve as Chair, Vice Chair, and Secretary / Treasurer who manage day-to-day issues.

The Mashantucket Pequot Tribal Nation has several departments that manage the various facets of Tribal life. Departments directly related to natural hazard mitigation include the Finance Department, the Natural Resources Protection & Regulatory Affairs Department, the Fire Department, the Tribal Police Department, and the Tribal Government Administration Department. Additionally, the Department of Public Works, Community Planning, and Property Management (DPWCPPM), created in 2016, is involved in hazard mitigation. Since the previous HMP, the Public Safety Department has been disbanded and its roles incorporated into other departments.

These departments are described below:

- ❑ The Finance Department tracks Tribal expenditures and oversees budgets. Coordination with this department is important for long-term capital projects.
- ❑ The Natural Resource Protection & Regulatory Affairs Department oversees several offices.
 - Building Code Enforcement mitigates potential damages by ensuring that construction is to industry standards, identifies deficiencies in existing buildings through property inspections, and ensures that preparedness activities do not violate applicable building codes.
 - The Natural Resources Protection office, the Tribal Land Use Commission, and the Tribal Historic Preservation Officer review all development plans and ensure that it is performed in an environmentally sound manner and will not have impacts that are detrimental to the Tribe's natural resources or sacred sites. These groups work closely with the Planning & Community Development office on these issues. The Tribe also has

a full-time environmental monitor in the Natural Resources Protection office who patrols Tribal land for any issues.

- ❑ The Tribal Police Department provides Dispatch, Police, and Security services on the Reservation and to fee lands owned by the Tribe. They maintain peace and ensure the protection and safety of all persons on Tribal land and all Tribal property. Duties related to natural hazard mitigation include planning and coordination of personnel, equipment, shelters, and other resources necessary during an emergency.
 - Dispatch (Mashantucket Pequot Tribal Police Law Enforcement Radio Communications Center) is responsible for continually monitoring weather conditions and distributing weather messages to the Emergency Manager and other personnel. They issue bulletins to notify the Tribe, State, and surrounding Towns when Reservation roads will be closed for repairs or emergencies, and broadcast again when work is completed. They also activate the Reverse 9-1-1 system when necessary to deliver severe weather warnings.
 - Day-to-day duties of the Police Department include crime prevention, criminal investigations, traffic enforcement, motor vehicle accident investigations, and patrols. Prior to a hazard event, they will patrol all trust lands advising residents to seek shelter from the impending event if time allows. They isolate areas damaged by natural hazards such that only authorized emergency personnel or investigators can access the area.
- ❑ The Fire Department is the primary agency involved with hazard mitigation through emergency services and public education. Emergency Medical Services are contracted out and operate out of the Emergency Operations Center. Patients are delivered to Tribal Health Services or to Backus Hospital if advanced care is necessary. The Emergency Manager position, designated as the local HMP coordinator, is held by the Fire Inspector.
- ❑ The Department of Public Works, Community Planning and Property Management (DPWCPPM) was created in 2016 by consolidating the Department of Public Works and the Department of Planning & Community Development. This department oversees many day-to-day operations of the Tribe. It is responsible for public works, planning, infrastructure management, landscaping, wastewater treatment, and water service. The Director of this department has been designated as the deputy local HMP coordinator. During emergencies, the DPWCPPM is responsible for isolation of damaged areas and utility shutoff.

In addition to the departments described above, the Tribe has several other departments similar to surrounding municipalities, including Records Management, Education, Tribal Health Services, Human Resources, attorneys, etc.

The Mashantucket Pequot Tribal Nation is technically, financially, and legally capable of implementing mitigation projects for natural hazards.

As discussed in the next section and the historic record throughout this annex, the Reservation is relatively disaster-resilient and as such has not focused on mitigation activities. Instead, the Mashantucket Pequot Tribal Nation has made a concerted effort to perform environmentally-friendly building solutions and utilize best management practices in construction. These practices have had the secondary effect of reducing vulnerability to natural hazards (e.g., utilities have been placed underground, and no development has occurred in floodplains) such that hazard mitigation is minimally addressed in Tribal land use regulations except as noted below.

2.5 Review of Existing Plans and Regulations

In general, the Tribe is fairly disaster resilient and as such hazard mitigation is not directly addressed in any planning documents with the exception of the Emergency Management Plan (EMP). These documents are discussed below.

Emergency Management Plan

The Tribe has an EMP that is updated annually. The Tribe is currently transferring this document to the new State Emergency Operations Plan (EOP) format.

This document provides general procedures to be instituted by the Public Safety Department and other Tribal Departments in case of an emergency. This document contains complete contact information for Tribal personnel and outside authorities and includes an inventory of all emergency equipment including vehicles, portable and stationary generators, and other equipment available for emergency repairs. It also outlines the communication capabilities and methods for contacting each Tribal Department and surrounding communities. Emergencies can include but are not limited to fires, earthquakes, or severe weather events such as tornadoes, hurricanes, snow and ice storms, and nor'easters.

The Tribe divides the EMP into annexes such that each annex addresses the responsibility of one department. The Tribe plans to incorporate this HMP into its EMP following adoption by similarly splitting the HMP into sections by responsible department and adding those sections into the appropriate EMP annex.

EMP annexes include:

- ❑ Annex I covers the responsibilities of the Department of Public Works, Community Planning, and Property Management during an emergency. This department responds as directed by the Emergency Operations Center (EOC) during an emergency. During an emergency, the DPWCMM arranges to isolate damaged areas and to disconnect utilities. Following the emergency, they coordinate utility restorations and assist the damage assessment for insurance and legal purposes. They also compile data regarding strike and incident impact areas. Following the emergency, they repair all damaged areas as rapidly as possible, and coordinate with other Tribal Departments regarding potable water, structural viability, and safe utility operation.

- ❑ Annex M is the Severe Weather Annex outlines the responsibilities of Tribal personnel during a severe weather event. These responsibilities including monitoring, broadcasting warnings (through Reverse 9-1-1 or patrols), preparing shelters, and coordinating supplies. The annex contains a list of NOAA weather watches and warnings and specific instructions to be issued to the public to ensure their long-term preparedness in case of a severe weather event such as a winter storm or a hurricane.

Emergency Mapping Book

Since the previous edition of the HMP approved by FEMA in 2012, the Tribe has put together an "Emergency Mapping Book" as part of its Emergency Management Plan. The Book includes building blueprints, building and area evacuation routes, and other maps and information. This Book allows for continued emergency operations in case of a power outage that results in a loss of access to digital information. The sections of the Book include:

- ❑ Guest Evacuation Plan
- ❑ Emergency Response Address Map
- ❑ Utility Address Map
- ❑ Latitudes & Longitudes for Crucial Buildings with Security Cameras
- ❑ Traffic Low map of Casino Campus with Parking and Exits
- ❑ Reservation Overall Map
- ❑ Wildfire Mapping - Access Road mapping
- ❑ Fire Hydrant Map of reservation
- ❑ Generators and Coverages, Critical Gas Valves and Hydrants Map
- ❑ Storm Structures Outfall Mapping
- ❑ Sanitary Infrastructure
- ❑ Gas Infrastructure
- ❑ Water Infrastructure
- ❑ Electric Infrastructure
- ❑ Available Equipment

Other Planning Documents

The Tribe does not maintain many of the planning documents typical to municipalities, such as a Plan of Conservation and Development, Zoning Regulations, Subdivision Regulations, Wetland Regulations, Open Space Plans, and Transportation Plans. Instead, they utilize other documents within the Planning & Community Development office to guide growth decisions, including Tribal regulations, Tribal planning documents, consultant reports, and regional hazard information. Within certain documents are regulations that govern new development and conservation planning. For example, open space is set aside for any development encroaching on wetlands.

The Tribe utilizes the 1% annual chance and 0.2% annual chance floodplains as defined by FEMA. No structures on the Reservation currently exist within the floodplains nor will be allowed in the future. The Tribal Council has adopted the latest revision of the FEMA Flood Maps (effective July 18, 2011).

Building Code

Following Federal recognition in 1983, the Tribe began to develop new buildings for residences and for its commercial enterprises. According to the Building Official, buildings in place prior to 1992 meet whatever Connecticut Building Code was in effect at that time. Most buildings on the Reservation were constructed in the 1990s; therefore, these buildings are constructed to the 1990 Connecticut Building Code. Buildings constructed between 1998 and 2004 are constructed to the 1996 BOCA Building Code, while more recent buildings are constructed to meet the 2003 International Building Code. Beginning in 2012 the Tribe updated its building code such that it currently enforces the 2012 BOCA Building Code.

In some cases, the Tribe's building code exceeds the State of Connecticut building code. Building Code Enforcement is part of the Natural Resources Protection and Regulatory Affairs Department. Utilities are located underground except for Coachmen's Pike where the bedrock is too shallow.

2.6 Critical Facilities, Sheltering Capacity, and Evacuation

The Mashantucket Pequot Tribal Nation considers several facilities to be critical to ensure that emergencies are addressed while day-to-day management of the Tribe continues. These include the Public Safety Building, the Community Center, the Co-Generation Plant, the Child Development Center, and Public Works facility. These are described below. Critical facilities are presented figures throughout this annex. No facilities are located within a 1% annual chance floodplain or a 0.2% chance annual floodplain as defined by FEMA.

Mashantucket Pequot Public Safety Building

The Public Safety Building is located at the intersection of Route 214 and Pequot Trail. This building houses the Tribe's Police, Fire, Emergency Services, Dispatch, and Animal Control departments, as well as the Tribal Court. The Tribe's Emergency Operations Center (EOC) is located in this building. This building has a generator that can provide 100% power and is constructed to resist 200 mile-per-hour winds. This building is no longer a backup shelter. The Tribe recently replaced the wooden shingles on the roof with 50-year asphalt.

Communication Capabilities

The Tribe utilizes radios, phones, and email to communicate during emergencies. Contact information is listed in the EMP. The Tribe's ability to communicate within the Reservation and with its neighbors is considered excellent. The Tribe stocks phone batteries in case a power outage makes it so that they can't charge phones during an emergency. The Tribe has also installed backup generators at cell Towers within its lands to maintain service during a power outage.

Emergency personnel have access to the CT Alerts "Everbridge" Reverse 9-1-1 system through personnel who also work for Groton. The Tribe utilizes its own Reverse 9-1-1 system to contact

residents that is separate from the State system. The Tribe also has mutual aid agreements through SCCOG and therefore responds to emergencies in neighboring communities.

The Tribe is also able to communicate with its residents through email. The "Pequot At Home" email listserv includes all tribe members, and a second listserv includes all Tribal employees. Many Tribe members are Tribal employees.

Prior to every forecast storm, the Tribe sends out "be prepared" flyers and emails to residents. Police go door to door if necessary. The Tribe also has a list of impaired residents, and makes sure to check on them prior to storms.

Tribal representatives note that all emergency communication methods are "opt-in" only, and therefore their effectiveness depends on the residents.

The Tribe has abandoned plans to build a backup EOC at Eagle Park in North Stonington.

Mashantucket Pequot Community Center

The Community Center, located on Matt's Path, is the Tribe's Government Center. Seniors live in homes throughout the Reservation but senior-specific activities take place at this building.

The Tribe's primary shelter is located in the gym in the Community Center. It can hold about 100 people. This shelter is not used during high-wind events due to concern over the vulnerability of the large-span gym roof to wind loads. The facility is equipped with a backup generator, and is also connected to the Tribe's Co-Generation Plan; during a regional power outage the entire facility is able to be powered with these backup systems. The Tribe recently replaced the roof's wooden shingles with a 50-year asphalt roof.

The Mashantucket Pequot Tribal Nation Co-Generation Plant

This facility, located on Muhshee Mahchaq, provides electricity, heating, and cooling to the Foxwoods Resort Casino and some other Tribal buildings. It supplies approximately 60% of the electricity utilized by the Tribe. It relies on Natural Gas provided by Yankee Gas to generate power. Eversource, which acquired Connecticut Light & Power since the previous HMP, provides the remaining electricity to the Reservation.

Since the previous HMP, a steam turbine has been added to the Co-Generation Plant, giving it an additional three megawatts of capacity.

Eversource kicks off the Co-Generation Plant during power outages as a standard procedure, so it is currently not functional as a backup power source. During Hurricane Sandy all three of the Reservation's connecting lines from Eversource were down, and power was out (this is the only time this has happened). The Public Works Department considered starting up the Co-Generation plant during that event, but power came back on before it was necessary. While the Co-Generation Plant in theory can be used as a backup power source in "island mode," the Tribe has yet to test this capacity.

The Mashantucket Pequot Tribal Nation Child Development Center

This education facility on Ephraim's Path houses up to 100 Tribal children of various ages, including several not capable of self-preservation. This site is no longer used as a shelter. It does not have a backup generator, though the Tribe is interested in installing one.

Mashantucket Pequot Public Works Facility

This facility on Pequot Trail houses all of the tools and equipment necessary for debris, snow, ice, and tree removal. It also stores salt for treating roads during the winter. It is the primary fueling station for all heavy equipment and emergency services vehicles. The Tribe has recently replaced its wooden shingle roof with a 50-year asphalt roof.

Shelters

The primary shelter facility is the Community Center. This building can house 100 people and has a generator. It is also connected to the Tribe's Co-Generation Plant. It is not used during high wind events.

The ballrooms at the Fox Tower are the backup shelter. It is also used as the primary shelter during high wind events.

In the case of a regional or large-scale emergency, people could be sheltered at the casino or in the hotels. These facilities are located off Route 2 and are constructed to current building codes. If the hotels needed to be evacuated for some reason, the Tribe has agreements with hotels throughout the Northeast to house evacuees. The Tribe also has mutual aid agreements through SCCOG to house shelterees if necessary.

Backup Equipment

The Tribe has 18 large backup generators to provide emergency backup power to the casino. They also have 13 portable generators for use during emergencies. In case of an extended power outage, residents would be directed to the shelter locations for showering, charging batteries, etc. If a resident had a particular medical condition that required electricity and could not be moved, the Tribe would install one of the portable generators at the residence.

Evacuation

Transportation corridors are well-developed. There are two major roads in and out of the nation (Route 2 and Route 214), many interior roads, and few areas where it would be difficult to reroute traffic during an emergency. Fee lands in Ledyard and North Stonington generally link into the Route 2 or Route 214 corridors for evacuation purposes, providing access to Interstate 95 and Interstate 395.

3.0 INLAND FLOODING

3.1 Setting / Historic Record

There are no notable flooding problems associated with watercourses on the Reservation. The majority of drainage systems are recent and oversized as compared to the specifications in the Connecticut Department of Transportation Drainage Manual. Thus, nuisance flooding occurs only in limited areas. The March 2010 storms continue to be considered the event that caused the most widespread flooding in the area since the Tribe began participating in the multi-jurisdiction hazard mitigation plan.

- ❑ Basement flooding is the most typical type of flooding to occur on the Reservation. For example, a total of 28 basements were pumped on the Reservation due to the March 2010 heavy rainfall.
- ❑ A known drainage problem has existed at the intersection of Route 214 and Trolley Line Boulevard. Extreme rainfall would cause the drainage system in the area to backup, resulting in a brief flood of four to six inches of standing water. The system may be undersized. Since the previous HMP, an impervious parking area has been replaced with the Pequot Outpost, which includes a retention basin that reduces flow to the intersection. This has addressed the flash flooding problem here.
- ❑ Flooding is known to occur at Lot D of the Casino complex.
- ❑ Tribal staff note that some minor stream bank washouts have occurred.

Areas just off the Reservation either on or near fee lands are more susceptible to inland flooding as indicated by the flooding of 2010:

- ❑ The March 2010 rains caused flooding in and around the former Silica Mine operated by the Tribe on Lantern Hill Road. The pond overflowed causing a washout of Lantern Hill Road downstream. The Tribe received federal funding to repair the road.
- ❑ The March 2010 rains also caused three washouts on the Route 2 bypass that were subsequently repaired.
- ❑ A small bridge on Shewville Road was almost overtopped during the March 2010 rains. The Tribe is coordinating repairs with the Town of Ledyard.

3.2 Existing Capabilities

The Mashantucket Pequot Tribal Nation utilizes the 1% annual chance and the 0.2% annual chance floodplains as defined by FEMA. No development exists within these floodplains, nor will development be allowed in such areas in the future. Therefore, the Mashantucket Pequot Tribal Nation does not currently budget for flood mitigation activities along

watercourses. Other programs that have the secondary benefit of providing flood mitigation were discussed in Section 2.4.

Drainage systems for new construction have all been oversized since the Tribe realizes that research has shown that the incidence of rainfall in southeastern Connecticut has been increasing over time. This policy of over-sizing drainage systems has helped to minimize flooding issues on the Reservation. The DPWCPPM cleans and inspects catch basins and culverts at least annually or more often if problems are noted. Bridge inspections are performed on a regular basis by the Bureau of Indian Affairs, about every two years.

The Tribe recently completed a \$600,000 culvert replacement on Shewville Road, partnering with the Town of Ledyard. They also replaced a culvert downstream of the Silica Mine Dam. Construction of a retention basin at the Pequot Outpost has mitigated flooding of the Trolley Line Boulevard and Route 214 intersection.

The Tribe accesses weather reports through the National Weather Service, but personnel are not typically concerned about the effects of flooding except for the largest of storm events. During such events, the Fire Department is prepared to respond to Tribal residents whose basements require pump-outs, and the DPWCPPM is prepared to put up warning signs near the floodprone intersection at Route 214 and Trolley Line Boulevard.

Summary

In general, Tribal department capabilities to mitigate flood damage have increased slightly since the 2012 edition of the hazard mitigation plan was adopted. This is because the Tribe has continued to make investments in its departments and their individual capital and planning projects.

3.3 Vulnerabilities and Risk Assessment

This section discusses specific areas at risk to flooding within the Reservation. Areas located on fee lands outside of the reservation are not considered.

3.3.1 Vulnerability Analysis of Areas along Watercourses

The major water bodies nearby the Reservation include Indiantown Brook, Shewville Brook, Cedar Swamp, and an unnamed swamp that drains to Shewville Brook located west of Cedar Swamp (Figure 3-1). These water bodies have Special Flood Hazard Areas (SFHAs) mapped by FEMA. However, no development is located in these areas on Reservation lands. Only four areas of infrastructure are located within the 1% annual chance floodplain: a portion of Trolley Line Boulevard near the Utilities Building; a portion of Muhshee Mahchaq near the waste water treatment facility, a portion of Shewville Road in the western portion of the Reservation, and part of the western filtration beds off of Muhshee Mahchaq. It is not an issue for the filtration beds to be temporarily flooded.

The Tribe's Northern Wellfield is located on the northeastern side of Cedar Swamp and is also in the SFHA. Some of the wells are located below the flood elevation. Because the Tribe utilizes a filtration plant for groundwater that meets the requirements for surface water treatment under the Safe Drinking Water Act, flooding is not a direct concern.

3.3.2 Vulnerability Analysis of Private Properties

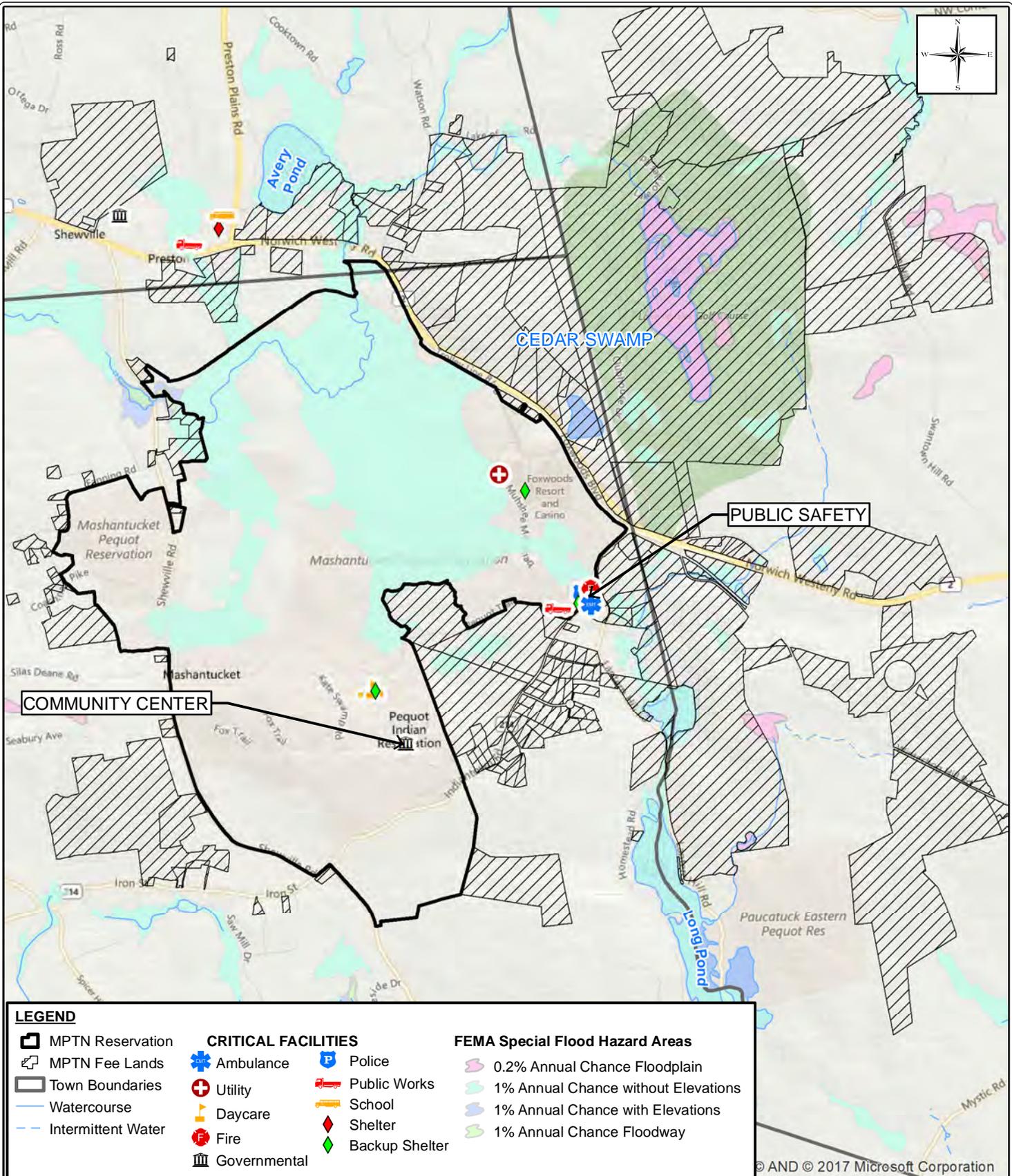
No residential, commercial, or industrial development on the Reservation is located within FEMA SFHAs, and drainage systems are all recent and oversized. The poor drainage flooding near the intersection of Route 214 and Trolley Line Boulevard does not impact any structures, and has been mitigated as explained above. Thus, there are no flood risks to structures on the Reservation. The risk of flooding is therefore considered to be minimal and the *HAZUS-MH* software was not run to calculate the economic effect of flooding to Reservation lands.

3.3.3 Vulnerability Analysis of Critical Facilities

As shown on Figure 3-1, no critical facilities associated with the Mashantucket Pequot Tribal Nation are located within FEMA SFHAs. Tribal personnel indicate that such facilities have no issues with flooding. The risk of flooding to critical facilities is therefore considered to be minimal.

3.4 Potential Mitigation Strategies and Actions

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. Recommendations pertinent to all natural hazards that could affect the Reservation are listed in Section 11 of this annex along with general and specific measures to mitigate inland flooding under the categories of prevention, property protection, emergency services, public education and awareness, natural resource protection, and structural projects.



LEGEND

- MPTN Reservation
- MPTN Fee Lands
- Town Boundaries
- Watercourse
- Intermittent Water

CRITICAL FACILITIES

- Ambulance
- Utility
- Daycare
- Fire
- Governmental
- Police
- Public Works
- School
- Shelter
- Backup Shelter

FEMA Special Flood Hazard Areas

- 0.2% Annual Chance Floodplain
- 1% Annual Chance without Elevations
- 1% Annual Chance with Elevations
- 1% Annual Chance Floodway

COMMUNITY CENTER

PUBLIC SAFETY

CEDAR SWAMP

MILONE & MACBROOM
 99 Realty Drive
 Cheshire, Connecticut 06410
 (203) 271-1773 Fax: (203) 272-9733
 www.miloneandmacbroom.com

FEMA SPECIAL FLOOD HAZARD AREAS

**SCCOG HAZARD MITIGATION UPDATE
 MASHANTUCKET PEQUOT TRIBAL NATION ANNEX**

MASHANTUCKET, CONNECTICUT

SOURCE: NATIONAL FLOOD HAZARD LAYER, FEMA, 2017

DATE: JULY 26, 2017		
SCALE: 1"=3,000'		
PROJ. NO.: 3570-09		
DESIGNED SB	DRAWN PS	CHECKED DM

DRAWING NAME:

FIG. 3-1

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4.0 COASTAL FLOODING & STORM SURGE

4.1 Setting / Historic Record

The Mashantucket Pequot Tribal Nation is not located along the coastline or along any tidally-influenced river. It is also not located in a potential hurricane surge zone. No coastal flooding or storm surge has affected the Reservation since the last HMP. Therefore, the Reservation is considered to be immune to the direct effects of coastal flooding and storm surge.

4.2 Existing Capabilities

The Tribe does not have any regulations in affect to restrict development due to coastal flooding hazards.

The Tribe understands that shelter space at the casino and hotel may need to be utilized if a regional evacuation occurred due to a coastal flooding event as managed through its mutual aid agreements with SCCOG. The Tribe is prepared for this potential circumstance.

4.3 Vulnerabilities and Risk Assessment

No areas of the reservation are vulnerable to coastal flooding or storm surge.

4.4 Potential Mitigation Strategies and Actions

No mitigation measures for reducing the impact of coastal flooding or storm surge on the Reservation are necessary or are proposed at this time.

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. Wind hazards are widespread and can affect any part of the Reservation. However, some buildings on the Reservation are more susceptible to wind damage than others.

The last major hurricane or tropical storm wind event to affect the Reservation was associated with Hurricane Sandy in October 2012. Trees were felled throughout the Reservation, and the Reservation experienced its first complete power outage in many years.

5.2 Existing Capabilities

Wind loading requirements for new buildings are addressed through the Building Code utilized by the Tribe. The Tribe currently enforces the 2012 BOCA Building Code. Tribal personnel note that recent tribal buildings all meet or exceed industry standards for wind loading, which is 115 miles per hour on the Reservation. In particular, the Public Safety Building is designed to resist wind speeds up to 200 miles per hour.

Foxwoods has recently replaced most of its ballast roofs. This has increased the capacity of these roofs to withstand wind, and has resulted in the removal of gravel from the roofs, preventing high winds from throwing rocks from the roofs and causing damage below.

Parts of trees (limbs) or entire tall and older trees may fall during heavy wind events, potentially damaging structures, utility lines, and vehicles. Utility lines are located underground throughout the Reservation. The only utility lines located above ground on the Reservation are located along Coachmen's Pike and Fanning Road; this is due in part to shallow bedrock. Coachmen's Pike and Fanning Road are currently within the jurisdiction of the Town of Ledyard; the Tribe is in the process of purchasing the properties along those roads (Tribe members reside there), and intends to bury the utilities when that occurs.

A staff member in Natural Resources Protection is in charge of maintenance and preservation of trees on the Reservation. The Tribe has changed its tree maintenance protocols over the last five years, guided by a Factory Mutual Insurance (FM Global) report on the Reservation's power grid. The tall pine trees that had been growing near the transformer station on the Reservation have been removed. The Tribe contracts with a private company to perform tree maintenance.

The Tribe has designated a "Stump Dump" area to serve as a brush disposal operation for dealing with debris following wind storms and other debris-generating events. Debris is collected at that site and chipped for re-use over time.

Since the previous HMP, CL&P has been acquired by Eversource. In response to the major power-outages caused by Tropical Storm Irene and Hurricane Sandy, as well as significant winter storm events, Eversource has taken an aggressive approach to tree maintenance and has improved communication and coordination with municipalities. Tribal staff report that Eversource has enhanced its tree clearing efforts, has updated its facilities, and has been working to strengthen the power grid and build in redundancies. "Hardening" of the lines has resulted in fewer instances of the Co-Generation Plant being shut off unnecessarily (such as when squirrels or birds are on the power lines). Communication and coordination has improved due to Eversource's liaison program.

Eversource delivers electricity and gas to the Reservation. The Mashantucket Pequot Tribal Nation is then responsible for distribution of electricity and gas throughout the reservation. The Tribe contracts RH White to distribute gas. Eversource will fix outages and reconnect lines as needed.

The Town of Ledyard is responsible for maintaining other trees near the Reservation. Yankee Gas has utilities in the area but they are located underground.

In the case of an extended power outage, residents would be directed to the shelter at the Community Center for sleeping, charging, or showering. The Tribe also has additional programs in place as noted in Section 2.6. The Tribe further understands that shelter space at the casino and hotel may need to be utilized if a regional evacuation occurred due to a hurricane event through its regional mutual aid agreement with SCCOG.

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 Tribe 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. As noted in Section 2.4, Dispatch is responsible for monitoring and relaying storm-related information to emergency personnel, Tribal residents, and neighboring communities. This information allows the Tribe to activate its EMP and encourage residents to take protective measures if appropriate as specified in the EMP.

Summary

In general, capabilities to mitigate hurricane damage have increased since the 2012 edition of the hazard mitigation plan was adopted. This is because the Tribe increased its capabilities in response to the winds of Tropical Storm Irene in 2011 and Hurricane Sandy in 2012, while also improving its facilities and buildings to be more resilient.

5.3 Vulnerabilities and Risk Assessment

Although Tribal lands are located inland from the Connecticut shoreline, the Reservation is still vulnerable to hurricane and tropical storm wind damage. One particular concern to

the Tribe is the blockage of roads and damage to the electrical power supply from falling trees and tree limbs as occurred during Hurricane Irene.

Direct wind damage to newer buildings from hurricane or tropical storm-level winds is rare on the Reservation since very few buildings on the reservation pre-date the 1970's. Commercial structures, such as the casino and hotel, were constructed to meet or exceed building codes at the time of construction. While older buildings on the reservation are particularly susceptible to roof and window damage from high wind events, this risk will be reduced with time as these buildings are remodeled or replaced with buildings that meet the current codes.

The Mashantucket Pequot Tribal Nation has several sacred sites that are vulnerable to wind damage. Some, like the Mashantucket Pequot Burial Ground, are undeveloped areas where the effects of hurricanes will not diminish the sacred nature or heritage of the site. Others, like the Mashantucket Pequot Tribal Nation Museum, are relatively resilient to wind damage as they are relatively recent construction. However, other sites may be vulnerable to the effects of wind damage although the Tribe does not wish to discuss such areas herein. Despite this vulnerability, these sites are both historic and sacred and therefore no mitigation activities are planned. Future renovation activities at these locations may take into account the effects of wind.

The potential economic effect of wind damage to SCCOG was evaluated in the Multi-Jurisdictional HMP. A separate analysis was not performed specifically for the Reservation.

5.4 Potential Mitigation Strategies and Actions

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 natural hazards that could affect the Reservation are listed in Section 11 of this annex along with general and specific measures pertinent to reducing wind damage on the Mashantucket Pequot Tribal Reservation under the categories of prevention, property protection, emergency services, public education and awareness, natural resource protection, and structural projects.

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 Reservation. 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 Reservation without harming another. Such storms occur on the Reservation each year, although hail and direct lightning strikes to Reservation lands are rarer. No tornadoes have occurred on the Reservation since the last HMP.

The following are excerpts from the NCDC database for recent summer storms that impacted the Reservation:

- ❑ An isolated severe thunderstorm caused flash flooding in July 2009, requiring basement pumpouts throughout the Ledyard area adjacent to the tribal nation.
- ❑ Multiple severe thunderstorms brought down numerous trees and wires in Ledyard in July 2010, adjacent to the tribal nation.

6.2 Existing Capabilities

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 Tribe 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 Tribe to activate its EMP and encourage residents to take protective measures if appropriate. Dispatch services are responsible for monitoring weather reports and relaying information as appropriate.

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

Summary

In general, capabilities to mitigate thunderstorm and tornado damage have increased since the 2012 edition of the hazard mitigation plan was adopted, with the many changes described in Section 5.2.

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 Reservation are equally likely to experience the effects of summer storms.

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 cable 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, the Reservation has nearly all of its utilities located underground such that downed trees are not a utility issue.

Lightning and hail are generally associated with severe thunderstorms and can produce damaging effects. All areas of the reservation 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. These are considered likely events each year, but typically cause limited damage on the reservation. The majority of buildings are well-constructed and meet 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 Reservation exists, it is considered to be an event with a very low probability of occurrence.

As discussed in Section 5.3, the Mashantucket Pequot Tribal Nation has several sacred sites that are vulnerable to summer storm damage. Hail, lightning, and heavy wind could each potentially cause damage to these areas. However, these sites are historic and sacred and no mitigation activities are planned at this time. Future renovation activities may take into account the effects of summer storms, particularly lightning.

6.4 Potential Mitigation Strategies and Actions

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 Reservation. 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 Reservation.

Winter storms and nor'easters have affected the Reservation since the last HMP, but only storms during the winter of 2010-2011 had a significant effect. Winter storm Alfred in October 2011 caused electrical outages for three days in parts of the Reservation, but this was more from wind damage than from snow load. Most trees that were damaged during Hurricane Irene were cleaned up prior to Alfred, mitigating the overall damage. Two years later, major snow events in the winter of 2013 created ice dams on the roofs of many buildings. The Tribe found it necessary to hire contractors to clear the snow and ice from roofs.

7.2 Existing Capabilities

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 Tribal staff, as parking garages, parking lots, and roadways need constant maintenance during storms. The DPWCPPM oversees snow removal on the Reservation. Employees understand that the livelihood of the Tribe depends on there being constant access to its facilities, so response to storms is quick and efficient. Salt and sand is stored at the Public Works facility.

The DPWCPPM will send out plows with emergency responders as needed during winter storms.

The 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 Tribe monitored the weight of snow on all its buildings during the winters of 2011 and 2012. They shoveled all of the roofs at the casino and as well as at many other Tribal structures. The Tribe hires contractors as needed to remove snow and ice. As noted above, major snow events in the winter of 2013 created ice dams on the roofs of many buildings. The Tribe found it necessary to hire contractors to clear the snow and ice from roofs.

The Tribe sends warnings and information about cold weather hazards as needed to its residents; see section 2.6 for information on its public communication capabilities. The Tribe also has a firewood program through which it will provide residents with firewood in case their heat goes out (if they have a fire place).

Summary

In general, capabilities to mitigate snowstorm damage have increased since the 2012 edition of the hazard mitigation plan was adopted. This is because the reservation continues to experience heavy snow each winter.

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 Tribal buildings are recently constructed and therefore not at high risk to damage from heavy snow. However, buildings have been cleared several times in recent winters.

Icing is not typically a problem on the Reservation. Ephraim's Path is very steep and as such ambulances can have difficulty getting up this road in the winter during storms. Extra sanding and salting of the roadways in necessary locations alleviates trouble spots under most winter conditions.

7.4 Potential Mitigation Strategies and Actions

Potential mitigation measures for flooding caused by nor'easters include those appropriate for flooding that were discussed in Section 3.7 of the Multi-Jurisdictional HMP and Section 3.4 of this annex. However, winter storm mitigation measures must also address blizzards, snow, and ice hazards. 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. General recommendations pertinent to all natural hazards that could affect the Reservation are listed in Section 11 of this annex along with general and specific measures pertinent to reducing damage from winter storms on the Mashantucket Pequot Tribal Reservation under the categories of prevention, property protection, emergency services, public education and awareness, natural resource protection, and structural projects.

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 Reservation. However, it is very unlikely that the Reservation would be at the epicenter of such a damaging earthquake. No major earthquakes have affected the Reservation since the last HMP.

8.2 Existing Capabilities

The Building Codes include design criteria for buildings specific to each jurisdiction as adopted by Building Officials and Code Administrators (BOCA). These include the seismic coefficients for building design on the Reservation. The Tribe has adopted these codes for new construction, and they are enforced by the Building Code Enforcement office.

Due to the infrequent nature of damaging earthquakes, Tribal land use policies do not directly address earthquake hazards. However, the potential for an earthquake and emergency response procedures is addressed in the Tribal EMP. The Tribe maintains three days' worth of food and water in case of emergencies.

Summary

In general, capabilities to mitigate earthquake damage have not increased since the 2012 edition of the hazard mitigation plan was adopted. This is because the hazard continues to pose a low risk of damage.

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, buildings in the vicinity of the Foxwoods Resort Casino are built on stratified drift, making this area potentially more at risk of earthquake damage than the areas of Reservation 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 Building Code, exceeding the building code requirements, or, if the Tribe 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.

As noted in Section 2.1, several fault lines traverse the Reservation. These faults are not believed to be active. 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 on the Reservation primarily includes relatively new construction that is seismically designed. Thus, it is believed that most tribal buildings would be able to withstand the effects of a significant earthquake with moderate damage or less. Those Tribal residents who live or work in older, non-reinforced masonry buildings that were constructed prior to the 1980's are at the highest risk for experiencing earthquake damage. Sacred sites, with the exception of the Mashantucket Pequot Tribal Museum, may also be vulnerable to earthquake damage. No mitigation is currently proposed for sacred structures, although future renovation efforts may include seismically designed building construction or protections for sacred features.

Areas of steep slopes can collapse during an earthquake, creating landslides. Fortunately, the Reservation has relatively limited areas of steep slopes and the majority of developed areas have reinforced. Thus, landslides are not a concern on the Reservation.

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, nearly all utility infrastructure on the Reservation is located underground. A rapid and coordinated response with Connecticut Light & Power and Yankee Gas 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 Tribal EMP.

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 Strategies and Actions

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 printed 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 the Reservation. Structural fires in higher density areas of the Reservation, such as at the Foxwoods Resort Casino, are not directly addressed herein.

The Mashantucket Pequot Tribal Fire Department typically battles a few small brush fires per year. No major wildfires have occurred on the Reservation since the last HMP. Tribal personnel recall a relatively large wildfire that occurred in the 1970s or early 1980s prior to the establishment of the Reservation that spread into North Stonington.

9.2 Existing Capabilities

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 Mashantucket Pequot Tribal Nation can access this information over the internet. The Tribe also receives "Red Flag" warnings via local media outlets.

The DPWCPPM sprays mulch piles regularly during dry weather to prevent fires. The Tribe is a part of the Bureau of Indian Affairs wildland fire program, which encourages the cleanout of deadfall. The Tribe has not, at this point, performed any deadfall cleanout.

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 Fire Department is well-equipped to deal with structure fires, but has limited off-road equipment to fight woodland fires. The Tribe relies on its inter-municipal agreements for support in fighting such fires. As a mitigation measure, the Natural Resources Protection office has funding to remove deadfall out of Reservation forests each year.

The Mashantucket Pequot Tribal Fire Department goes to fires as quickly as possible both on the Reservation and within surrounding communities when requested. Developed areas of the Reservation have water service through the Utility Department (within the DPWCPPM) that provides fire protection water. The coverage range of the hydrants is considered to be good and fire flow pressure is considered to be excellent. The Utility Department regularly tests hydrants and provides fire flow information to the Fire Department. The Reservation's water supply comes from groundwater, and the Tribe has many groundwater monitoring wells that it checks regularly to monitor its water supply.

The Tribe has a 100,000-gallon water storage tank located on the Reservation with additional storage in the clearwells at the Water Filtration Plant. In addition, two 2,000,000-gallon water storage tanks provide water and fire protection to the casino area. Additional storage tanks are located on fee lands in North Stonington to provide potable water, irrigation water, and fire protection in those areas. No dry hydrants are located on the Reservation, but two are located on fee lands in Ledyard and North Stonington. The Tribe is installing an additional dry hydrant at Silica Mine in the Lantern Hill area.

The Tribe is expecting to be awarded a grant to acquire a new brush truck in 2017 or 2018.

The Tribe supports public outreach programs to increase awareness of forest fire danger, equipment usage, and protecting homes. The Fire Department goes to schools to teach students, and permits are required for campfires.

Summary

In general, capabilities to mitigate wildfire damage have increased since the 2012 edition of the hazard mitigation plan was adopted, with the acquisition of new equipment and fortification of the public water system and dry hydrants.

9.3 Vulnerabilities and Risk Assessment

The risk for wildlife on the Reservation is considered to be low to moderate for several reasons. First, all developed areas on the Reservation have public water service provided by the Utilities Department. This public water service, combined with the 2.1 million gallons of water storage, provide sufficient water volume and pressure to fight nearly any fire that occurs near developed areas. Second, there are no notable dead ends or one-way roads that are difficult for firefighting equipment to access on the Reservation. Finally, the Tribe has agreements with its municipal neighbors to provide assistance in case of an emergency. Thus, if a wildfire did occur, it would likely be contained to within only a few acres.

The vicinity of Cedar Swamp, particularly the undeveloped forest to the west of Cedar Swamp, is the most vulnerable location for a wildfire to occur on the Reservation. This area has no developed roads or water sources and is difficult to access with firefighting equipment. The Tribe would need to rely on inter-municipal agreements to effectively fight a fire in this area. The delayed response time would allow the fire to grow larger. Fortunately, there are no buildings in this area, although sacred sites may be nearby.

Areas on fee lands were considered to be relatively well-protected against wildfires, either because of the presence of public water service, the availability of dry hydrants, the proximity to streams or other water bodies, or the ability to access those lands with pumper trucks.

9.4 Potential Mitigation Strategies and Actions

Potential mitigation measures for wildfires include a combination of prevention, education, and emergency planning as provided 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.

The risk of a dam failure affecting the Reservation is considered to be minimal as no major dams exist on or upstream of the Reservation. No dam failures affected the Reservation since the time of the last HMP. However, the Tribe owns and maintains several low hazard dams located on fee lands off of the Reservation.

10.2 Existing Capabilities

The Mashantucket Pequot Tribal Nation does not have any dams on the Reservation. The Tribe does own several low-hazard dams located on fee lands in Ledyard and North Stonington. One dam, the Lake of Isles Dam, is considered to be a moderate hazard dam (Hazard Class BB). This dam is believed to be in fair to excellent condition. Prior to forecast significant rain events, the water level in the Lake of Isles is lowered.

Two Dams on Lantern Hill Pond, the Lantern Hill Pond Dam and the Silica Pond Dam (located in Ledyard and North Stonington, respectively) are also moderate hazard dams (Hazard Class BB). Each dam is believed to be in fair to excellent condition. A new spillway was built on the Silica Dam in 2012 using federal funds. A new box culvert with a larger capacity was installed downstream of that dam.

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 Emergency Action Plans (EAP) for such dams; since the Tribe does not own such dams, they do not maintain EAPs for their dams.

Summary

In general, capabilities to mitigate dam failure damage have increased somewhat since the 2012 edition of the hazard mitigation plan was adopted. Plus, changes in the State's regulation of dams have increased Statewide capabilities sharply, affecting the dams owned by the Tribe.

10.3 Vulnerabilities and Risk Assessment

The risk of dam failure impacting any areas of the Reservation is minimal. No dams are located on the Reservation, and dams located upstream of the Reservation have hazard rankings of low or moderate. If the Lake of Isles Dam failed, damage could potentially result to unoccupied structures and low volume roadways that would lead to a moderate economic loss. However, such losses would not be felt on the Reservation. In addition, if the Silica Mine Dam (a low hazard dam) failed, Lantern Hill Road could be washed out as occurred during the March 2010 rains.

10.4 Potential Mitigation Strategies and Actions

Given the fact that the Mashantucket Pequot Tribal Nation is unlikely to be affected by flooding from dam failure, only one recommendation related to mitigating damage from dam failure is believed appropriate at this time as presented in Section 11.

11.0 MITIGATION STRATEGIES AND ACTIONS

11.1 Status of Mitigation Strategies and Actions

The previous edition of the SCCOG Multi-Jurisdictional HMP and Mashantucket Pequot Tribal Nation annex listed a suite of hazard mitigation actions applicable both locally and region-wide. These actions, along with commentary regarding the status of each, are listed in the tables in this section. Additionally, new actions were developed in the process of developing this HMP update. These are listed at the end of each hazard section below.

11.1.1 Actions Applicable to All Hazards

Action	Status	Notes
Regional Coordination		
Continue to promote inter-jurisdictional coordination efforts for emergency response	Capability	<i>Protocols are in place with Preston, Ledyard, and North Stonington.</i>
Continue to promote local and regional planning exercises that increase readiness to respond to disasters	Capability	<i>Completed through local participation in regional and statewide exercises. Local Emergency Operations trainings are now performed much more regularly than in the past.</i>
Continue to evaluate communication capabilities and pursue upgrades to communication and ensure redundant equipment is available	Capability	<i>This action is reclassified as a capability and can be removed from this list of actions.</i>
Continue to promote regional transportation planning through SCCOG	Capability	<i>This action is the responsibility of, and is being performed by, SCCOG. This action is redefined as a regional capability.</i>
Work with the SCCOG to perform a regional study of the vulnerability of critical facilities to natural hazard damage	Complete	<i>This action is the responsibility of, and was performed by, SCCOG. None of the facilities in the analysis were located in MPTN.</i>
Work with the SCCOG to develop regional evacuation scenarios that include but build upon the Millstone evacuation plan	Capability	<i>This action is the responsibility of, and is being performed by, SCCOG. This action is redefined as a regional capability.</i>
Local Emergency Response		
Continue to review and update the Tribal EMP at least once annually	Capability	<i>Rewrite of base plan underway currently. Annexes are updated annually, though the Tribe may shift to an update every two years and a review every year. After rewrite the plan may be known as the "Emergency Operations Plan" for consistency with State guidance.</i>
Add the HMP update as an annex to the Tribal EMP.	Complete/ Capability	<i>The Tribe successfully completed this after adoption of the previous HMP, and has a procedure in place for completing it after the adoption of this HMP. This action is reclassified as a capability and can be removed from this list of actions.</i>
Continue to maintain emergency response training and equipment and upgrade equipment when possible	Capability	<i>Local Emergency Operations trainings are now performed much more regularly than in the past. Grants are pursued for equipment upgrades. This action is reclassified as a capability and can be removed from this list of actions.</i>
Encourage tribal officials to attend FEMA-sponsored training seminars at EMI	Capability	<i>This action is reclassified as a capability and can be removed from this list of actions.</i>

Action	Status	Notes
Continue to evaluate emergency shelters, update supplies, and check communication equipment	<i>Capability</i>	<i>Shelters were reorganized in last five years due to evaluation of vulnerabilities and needs. This action is reclassified as a capability and can be removed from this list of actions.</i>
Continue to promote dissemination of public information regarding natural hazard effects into Tribal community and Government buildings	<i>Capability</i>	<i>This action is reclassified as a capability and can be removed from this list of actions.</i>
Prevention		
Form a committee to review documents in the Planning and Community Development office and integrate appropriate elements of this HMP	<i>Capability</i>	<i>The Public Works, Planning & Community Development department is responsible for integration.</i>
Continue reviewing building plans to ensure proper access for emergency vehicles	<i>Capability</i>	<i>This action is reclassified as a capability and can be removed from this list of actions.</i>
Continue to enforce the appropriate building code for new building projects and exceed code design when possible	<i>Capability</i>	<i>This action is reclassified as a capability and can be removed from this list of actions.</i>
Encourage tribal residents and members to install and maintain lightning rods on their structures	<i>Delisted</i>	<i>Lightning strikes on buildings is not a significant concern on the Reservation.</i>

11.1.2 Actions Applicable to Inland Flooding

Action	Status	Notes
Continue to prohibit new development activities within SFHAs to the greatest extent possible within Tribal land use regulations	<i>Capability</i>	<i>This action is reclassified as a capability and can be removed from this list of actions.</i>
Make available FEMA-provided flood insurance brochures and encourage tribal members to purchase insurance if they are in a SFHA	<i>Delisted</i>	<i>There are no tribal member homes in the SFHA.</i>
Continue to regulate development in protected and sensitive areas, including steep slopes, wetlands, and floodplains	<i>Capability</i>	<i>This action is reclassified as a capability and can be removed from this list of actions.</i>
Utilize the recently available extreme rainfall data to determine existing culvert sizing and encourage upgrades where undersized	<i>Delisted / Modify</i>	<i>Tribal staff are interested in utilizing this data but have in the past not been aware of accepted data sources, or how utilizing alternative data sources will conform to State or Federal requirements. As noted in Chapter 3, drainage systems are routinely oversized. This action is dropped and replaced with the action below this table.</i>
Continue to perform catch basin and culvert surveys to prioritize upgrades and perform maintenance and cleaning	<i>Capability</i>	<i>Inspections are performed annually by the PWCPMM (rotating through catch basins and culverts such that each site is surveyed every two years.</i>
Consider resizing and upgrading the storm draining in the vicinity of the intersection of Route 214 and Trolley Line Boulevard	<i>Delisted (Intended outcome complete)</i>	<i>A retention basin was built for Pequot Outpost on formerly impervious parking area, reducing water flow to location. Previous hazard was 4-6 inches of standing water in flash storms (4 inches in an hour). Water was short-lasting. Tribal staff consider Outpost basin to have addressed issue.</i>

New actions developed during the HMP update include:

- Develop formalized guidance for culvert and bridge construction and replacement that requires utilization of the most up-to-date extreme rainfall data from <http://precip.eas.cornell.edu>

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

Action	Status	Notes
Consider being slightly more aggressive with tree-trimming activities along critical access roads	Capability	<i>Tribe has implemented a more aggressive tree-trimming regime based on guidance from their insurance company FM Global.</i>
Promote the use of shutters for older properties to guard against window breakage which can result in structural failure	Delisted	<i>Tribe maintains a Conex box (located at the Silica Mine dam) loaded full of plywood, etc. It is ready to go in case of emergency to board up windows. This is deemed sufficient protection for windows. Action can be dropped.</i>
Identify a location for a brush-disposal operation for dealing with debris following wind storms and determine potential reuse	Complete	<i>"Stump Dump" has been designated for temporary storage after an event. Chop-chip is performed on-site.</i>
Consider surveying all tribal buildings, particularly historic buildings to determine their ability to withstand wind loading	Delisted	<i>All tribal buildings are less than 25 years old. They are built to code and able to withstand high winds. Housing stock is older. Action deemed unnecessarily costly given building states.</i>
Visit Tribal schools and educate children about the risks of wind events and how to prepare for them	Delisted	<i>Prior to every forecast storm, Fire Department and C.O.S. sends out "be prepared" flyers and emails to residents. Tribe does not feel educating children about wind hazards will improve preparedness, although it should be noted that other hazard-related educational programs are in place.</i>

New actions developed during the HMP update include:

- Acquire a backup generator for the Child Development Center and convert it to a backup shelter (since the primary shelter is not usable during high wind events).
- Replace roofs as per recommendations of FM Global

11.1.4 Actions Applicable to Other Damage from Winter Storms

Action	Status	Notes
Finalize the draft written plan for applying ice melt to Reservation roofs	Delisted	<i>Tribe doesn't apply ice melt - it was deemed problematic (use of ice melt was blamed for the ice dams created in the winter of 2013). Tribe prefers to focus on snow removal. Tribe hires contractors to assist with removal as needed.</i>
Make funding available to the Public Works Department each year for clearing snow from roofs as well as from roads and parking lots	Capability	<i>This action is reclassified as a capability and can be removed from this list of actions.</i>
Provide information for protecting tribal residents during cold weather and for mitigating icing and insulating pipes at Tribal residences	Capability	<i>This is completed through Tribal public communication outlets. Additionally, the Tribe has a firewood program that provides residents with fire places with fire wood if heat goes out.</i>
Continue to identify areas that are difficult to	Capability	<i>DPW and emergency responders go out together during</i>

access during winter storm events and develop contingency plans to access such areas		<i>storms. There are no areas that are particularly difficult to access. Maintenance of egress is always a priority for property managers.</i>
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11.1.5 Actions Applicable to Earthquakes

Action	Status	Notes
Ensure that Tribal departments have adequate backup supplies and facilities for continued functionality following a sudden earthquake	<i>Capability</i>	<i>Tribe has three days'-worth of food and water in case of emergency.</i>
Consider preventing residential development in areas prone to collapse such as below steep slopes or areas prone to liquefaction	<i>Carry Forward / Modify</i>	<i>There are roads located in swampy areas that are likely vulnerable to liquefaction and collapse during an earthquake. There are homes in the southwest part of the reservation that may also be vulnerable. The fact that these areas are not ideal for construction is the main limit on development. Tribe has considered this action and wishes to determine an appropriate action to address these risks moving forward.</i>

New actions developed during the HMP update include:

- Determine roads at risk of liquefaction or other damage during an earthquake, and designate emergency access routes to circumvent those roads.
- Include language in Tribal regulations preventing further development in areas at risk of liquefaction, collapse, or isolation due to road damage, during an earthquake.

11.1.6 Actions Applicable to Wildfires

Action	Status	Notes
Continue to evaluate fire flows, available water supply, and areas at risk of wildfire on the Reservation	<i>Capability</i>	<i>This action is reclassified as a capability and can be removed from this list of actions.</i>
Extend public water supply and fire protection to future areas identified as being particularly at-risk	<i>Complete/ Delisted</i>	<i>Tribe has tankers, mutual aid agreements, and a lot of backup water. Residential areas are all served by hydrants. Multiple booster stations ensure adequate flow. Extension of water supply has occurred in the past decade and is not currently needed.</i>
Pursue other sources of firefighting water where adequate supplies do not exist, such as through the installation of dry hydrants	<i>Complete/ Capability</i>	<i>This is performed as needed. For example, the Tribe is currently installing a dry hydrant at the Silica Mine dam on Lantern Hill Pond.</i>
Continue to support public outreach programs to increase awareness of forest fire danger, equipment usage, and protecting homes	<i>Capability</i>	<i>Fire Department talks to students. Permits are required for campfires.</i>
Ensure that provisions of Tribal regulations regarding fire protection facilities and infrastructure are being enforced	<i>Capability</i>	<i>Fire protection regulations are stringently enforced.</i>

Action	Status	Notes
Continue to provide funding to the Natural Resources Protection office to remove deadfall from Reservation forests	Carry Forward / Modify	<i>The Tribe has not had the money or the personnel to complete this action. The DPWCPPM does not have the capacity with regards to staff, time, or funding to take on this task as part of its duties. Carry forward as "assign a tribal department as responsible for deadfall removal, and budget removal activities"</i>
Consider the purchase of additional off-road firefighting equipment to provide additional response capability to the Reservation	Complete	<i>Submitted grant application for brush truck in 2016, expected to receive funding in 2017.</i>

11.1.7 Actions Applicable to Dam Failure

Action	Status	Notes
Continue to maintain Tribally-owned dams in excellent condition	<i>Capability</i>	<i>This action is reclassified as a capability and can be removed from this list of actions.</i>

11.2 Prioritization of Specific Actions

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

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Action or Strategy #	Table 11-1: Mitigation Actions and Strategies for Mashantucket Pequot Tribal Nation 2016 - 2021	Status	Responsible Department ¹	Fiscal Year					Cost	Potential Funding Sources ²	Weighted STAPLEE Criteria ³														Total STAPLEE Score	Priority for Community			
				7/2018-6/2019	7/2019-6/2020	7/2020-6/2021	7/2021-6/2022	7/2022-6/2023			Benefits							Costs											
											Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)	Environmental	STAPLEE Subtotal	Social	Technical (x2)	Administrative	Political	Legal	Economic (x2)			Environmental	STAPLEE Subtotal	
1	Develop formalized guidance for culvert and bridge construction and replacement that requires utilization of the most up-to-date extreme rainfall data from http://precip.eas.cornell.edu	New	DPWCPPM		x				Low	OB	0.5	1	1	1	1	0	0	5.5	0	0	0	0	0	0	0	0.0	5.5	Medium	
2	Acquire a backup generator for the Child Development Center and convert it to a backup shelter (since the primary shelter is not usable during high wind events).	New	DPWCPPM			x			Moderate	CIB	1	1	1	1	1	0	0	6.0	0	0	0	0	0	0	-0.5	0	-1.0	5.0	Low
3	Replace roofs as per recommendations of FM Global	New	DPWCPPM			x	x	x	High	CIB	1	1	1	1	1	0.5	0	7.0	0	0	0	0	0	0	-1	0	-2.0	5.0	Low
4	Determine roads at risk of liquefaction or other damage during an earthquake, and designate emergency access routes to circumvent those roads.	New	DPWCPPM	x					Low	OB	1	1	1	1	1	0	0	6.0	0	0	0	0	0	0	0	0	0.0	6.0	Medium
5	Include language in Tribal regulations preventing further development in areas at risk of liquefaction, collapse, or isolation due to road damage, during an earthquake.	New	NRPRAD			x			Minimal	OB	1	1	1	1	1	0.5	1	8.0	0	0	0	0	0	0	0	0	0.0	8.0	High
6	Assign a tribal department as responsible for deadfall removal, and budget removal activities	New	TC		x				Moderate	OB	1	1	1	1	1	0.5	0.5	7.5	0	0	0	0	0	0	-0.5	0	-1.0	6.5	High

¹Notes
DPWCPPM = Department of Public Works, Community Planning, and Property Management
NRPRAD = Natural Resources Protection and Regulatory Affairs Department
TC = Tribal Council

²Notes
CIB = Capital Improvement Budget
EOC = EOC Grants
HMA = FEMA Grant Programs
OB = Operating Budget

³Notes
Beneficial or favorable ranking = 1
Neutral or Not Applicable ranking = 0
Unfavorable ranking = -1

Technical and Economic Factors have twice the weight of the remaining categories (i.e. their values are counted twice in each subtotal).

APPENDIX A

ADOPTION RESOLUTION

CERTIFICATE OF ADOPTION
MASHANTUCKET PEQUOT TRIBAL NATION

A RESOLUTION ADOPTING THE HAZARD MITIGATION PLAN UPDATE, 2017

WHEREAS, the Mashantucket Pequot Tribal Nation has historically experienced severe damage from natural hazards and it continues to be vulnerable to the effects of those natural hazards profiled in the plan (e.g. *flooding, high wind, thunderstorms, winter storms, earthquakes, dam failure, and wildfires*), resulting in loss of property and life, economic hardship, and threats to public health and safety; and

WHEREAS, the Mashantucket Pequot Tribal Nation approved the previous version of the Plan in 2012; and

WHEREAS, the Southeastern Connecticut Council of Governments, of whom the Mashantucket Pequot Tribal Nation is a member, has developed and received conditional approval from the Federal Emergency Management Agency (FEMA) for its Hazard Mitigation Plan Update, 2017 under the requirements of 44 CFR 201.6; and

WHEREAS, committee meetings were held and public input was sought in 2016 and 2017 regarding the development and review of the Hazard Mitigation Plan Update, 2017; and

WHEREAS, the Plan specifically addresses hazard mitigation strategies and Plan maintenance procedures for the Mashantucket Pequot Tribal Nation; and

WHEREAS, the Plan recommends several hazard mitigation actions that will provide mitigation for specific natural hazards that impact the Mashantucket Pequot Tribal Nation, with the effect of protecting people and property from loss associated with those hazards; and

WHEREAS, adoption of this Plan will make the Mashantucket Pequot Tribal Nation eligible for funding to alleviate the impacts of future hazards; now therefore be it

RESOLVED by the Mashantucket Pequot Tribal Council

1. The Plan is hereby adopted as an official plan of the Mashantucket Pequot Tribal Nation;
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 Mashantucket Pequot Tribal Council.

Adopted this _____ day of _____, 201_ by the Mashantucket Pequot Tribal Council, Connecticut

Chairman

IN WITNESS WHEREOF, the undersigned has affixed his/her signature and the corporate seal of the Mashantucket Pequot Tribal Nation this _____ day of _____, 201_.

[Insert name of Tribal Clerk, or equivalent official]

