

PLANES DE MITIGACIÓN CONTRA PELIGROS NATURALES

Resiliencia Planificada



JUNTA DE PLANIFICACIÓN

2020

# Municipality of Hatillo

Natural Hazard Mitigation Plan

Executive Summary

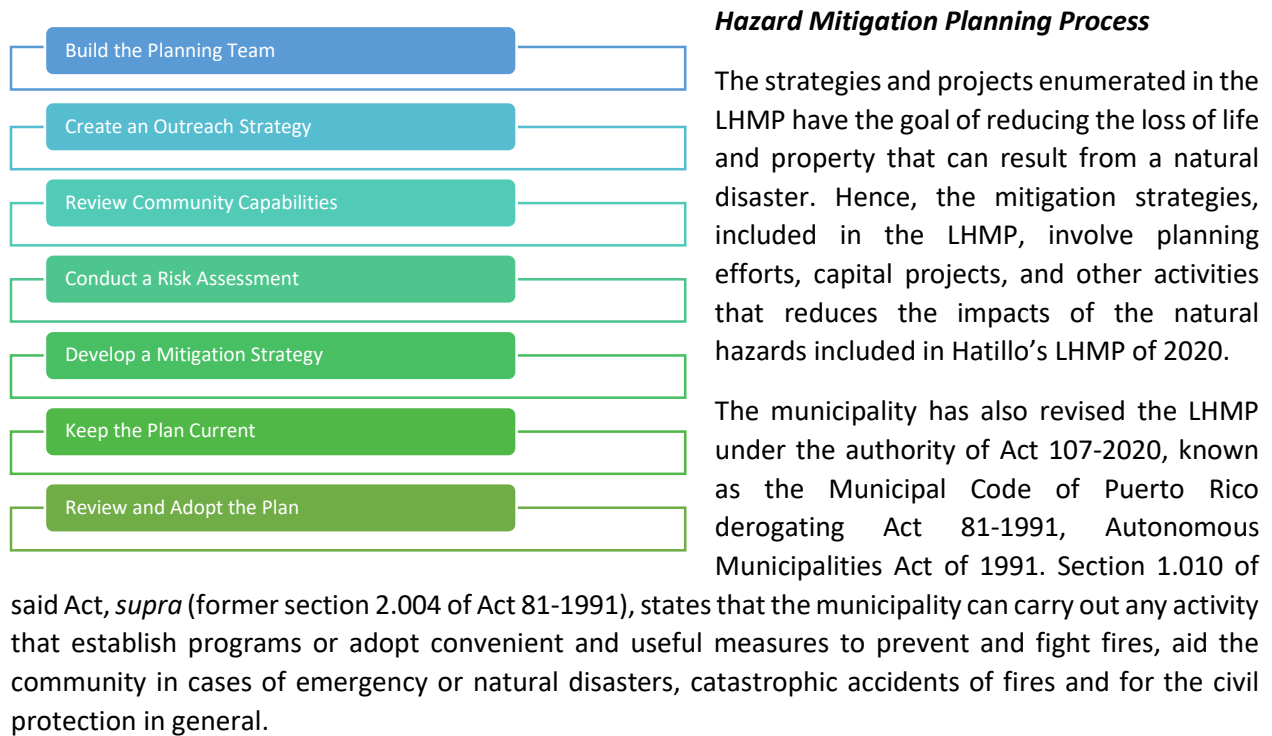


# 1 Introduction

The Municipality of Hatillo has revised its Local Hazard Mitigation Plan (LHMP)<sup>1</sup> in accordance with the federal Disaster Mitigation Act of 2000 (DMA2K), which was signed into law to amend the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988. One of the requirements that this legislation establishes is that in order for the municipality to receive federal mitigation funds, it must elaborate and adopt a Federal Emergency Management Administration (FEMA) approved LHMP.<sup>2</sup> Also, the DMA2K promotes that the local government, together with the State, work on pre disaster planning and encourages the development of sustainable hazard mitigation activities.

These LHMPs must be revised and updated every five (5) years to remain in compliance with regulations and Federal mitigation grant conditions. This updating requirement offers the municipality an opportunity to reevaluate recommendations, monitor the implementation of mitigation strategies included in the previous Plan, monitor the impact of mitigation actions that have been implemented, and determine if any changes to the Plan need to be incorporated. This Plan complies with said regulations.

Figure 1: Hazard Mitigation Planning Process



<sup>1</sup> Please note that the 2020 Revised HMP was written in Spanish as per agreement between the Municipality, the Planning Board, the Governor’s Authorized Representative (GAR) and FEMA.

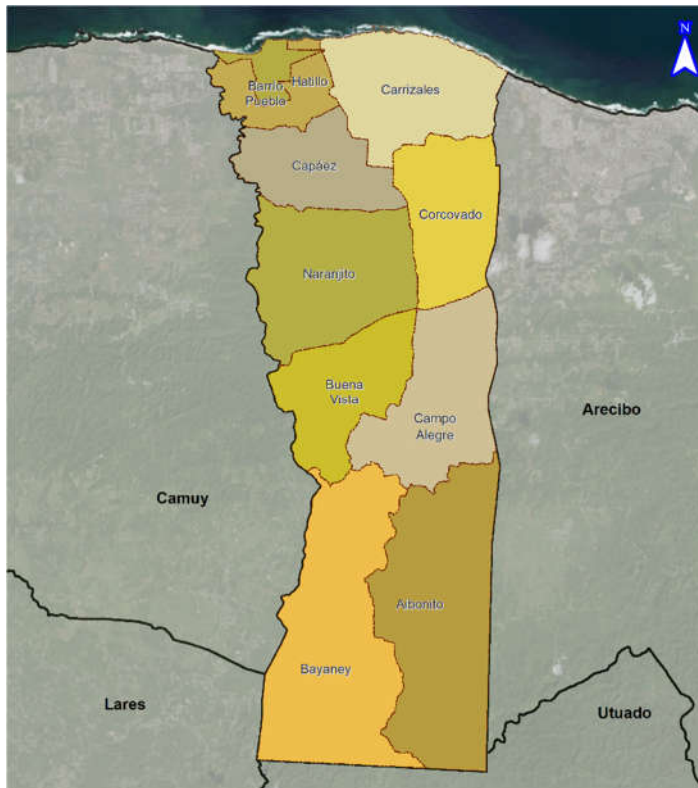
<sup>2</sup> 42 U.S.C 5165; 44 C.F.R. § 201.6.

This Executive Summary will provide an overview on:

- Hatillo’s population characteristics;
- The public participation and outreach efforts with the community during the LHMP planning process;
- Hatillo’s risk assessment;
- A review of the mitigation strategies, goals and LHMPs action plan; and
- Plan maintenance, and how to keep the Plan current.

## 2 Hatillo’s Profile: Main Population Characteristics

Figure 2: Hatillo and its wards



The Municipality of Hatillo is located in the northwest of Puerto Rico. Its northern border is the Atlantic Ocean, to the west are the municipalities of Camuy and Lares, to the south is the Municipality of Utuado, and to the east is the Municipality of Arecibo. The Municipality of Hatillo has a territorial area of approximately 42 square miles (109 square kilometers).

The Puerto Rico Planning Board, according to the most recent area delimitation, divides the island into eleven areas, grouping the different municipalities by their demographic trends and human settlements, infrastructure endowment, socioeconomic variables, sociodemographic characteristics, internal cohesion, and the resources and development potential of each. The Municipality of Hatillo belongs to the Functional Area of Arecibo, which is composed of the municipalities of Arecibo, Hatillo, Camuy, Lares, Quebradillas and

Utuado.

The municipality has ten (10) official *barrios* or wards: Aibonito, Bayaney, Buena Vista, Campo Alegre, Capáez, Carrizales, Corcovado, Hatillo, Pueblo and Naranjito.

Geographically, it belongs to the northern karstic zone of the island, which accounts for the prevalence of “mogotes”, sinkholes, caves and underground rivers. In hydrographic terms, its most important feature is the Camuy River, which forms the western boundary with the Municipality of Camuy and has a watershed area of 62 square miles.

Table 1: Population by age group: 2010 and 2017

Population	2010 Census	2017 ACS Estimate	% Rate of Change
Younger than 5 years age	2,502	1,853	-25.94%
5 to 19 years of age	8,909	7,681	-13.78%
20 to 64 years of age	24,607	24,079	-2.15%
65 years of age and older	5,935	7,365	24.09%
<b>Total</b>	<b>41,953</b>	<b>40,978</b>	<b>-2.32%</b>

Source: US Census Bureau, Census 2010; American Community Survey 2013-2017 Estimates

According to the 2010 Census, Hatillo has a population of 41,953. The American Community Survey (ACS) of 2017 estimated that the population of Hatillo had decreased by 975 inhabitants. This represents a reduction of 2.32%. Nonetheless this overall reduction, four of the ten wards

were estimated to have an increase in their population for 2017: Bayaney, Capáez, Hatillo and Naranjito, with barrio Hatillo being the one with the most significant increase, 29.85% or 1,136 individuals. Further details, regarding the profile of the municipality, can be found in Chapter 3, Section 3.2, of the updated 2020 LHMP.

### 3 Outreach and Public Participation

In order to guide the development of this Plan, Hon. José A. Rodríguez Cruz, Mayor of Hatillo, appointed the following officials to constitute the Mitigation Planning Committee (henceforth, the Planning Committee). The Planning Committee is comprised by representatives from several departments and citizen involvement with key roles and experience in community planning, public works, and emergency management to serve as key components in the planning process. Please refer to Section 2.5 on the LHMP.

Table 2: Hazard Mitigation Planning Committee

Name	Position	Dependency	E-mail
Jesús H. Vázquez Osorio	Director	Planning Office	opdmhatillo@gmail.com
Anabel Ríos Santiago	Secretary	Planning Office	opdmhatillo@gmail.com
Delmaly Toledo Esteves	Secretary	Planning Office	opdmhatillo@gmail.com
Carlos Román Román	Vice-Mayor	Mayor's Office	alcalde@municipiodehatillo.com
Ismael Martínez Class	Director	Municipal Emergency Management Office	maghatillo@gmail.com
Luis A. Soto López	Director	Public Works Office	directoropmh@gmail.com
Carlos Villanueva Cordero	Commissioner	Municipal Police	policiamunicipalhatillopr@gmail.com
Ana Zahir Rosa Padilla	Director	Federal Programs	contabilidadfederal@yahoo.com

Name	Position	Dependency	E-mail
Antonio Álvarez Medina	Director	Finance Office	aalvarez@municipiodehatillo.com
José Báez	Community Representative	Hatillo, PR	jose.baez@ees-pr.com

The Planning Committee activities included: (1) updating the list of the municipality assets and local critical facilities; (2) updating the status of the previous LHMP mitigation strategies; (3) determine possible new mitigation strategies for the 2020 LHMP; (4) development and implementation of public participation and outreach activities and stakeholders at large such as neighboring municipalities, governmental agencies; (5) announce the municipality’s LHMP efforts to agencies, stakeholders and public feedback for Hatillo’s LHMP 2020 draft version and incorporate such comments on the Plan.

An initial notice was published on a local newspaper (Metro and Primera Hora). Said notice informed the public about the first Public Participation meeting to be held in Hatillo on March 5, 2020. A second notice was published regarding the publication of the 2020 LHMP draft version for review providing 20 days period for review, submit comments, and the opportunity to participate in a second community meeting held on July 21, 2020. A draft version of the 2020 LHMP was made available on the Puerto Rico Planning Board’s (PRPB) website (jp.pr.gov).

#### 4 Hatillo’s Risk Assessment

After reviewing the natural hazards identified as priorities on the previous Hatillo’s 2014 LHMP, the Municipal Emergency Response Plan, the municipality’s disaster history, and other literature related to potential future hazards, the Planning Committee identified the following hazards in the 2020 LHMP; (1) Sea Level Rise, (2) Drought, (3) Earthquakes, (4) Flooding, (5) Landslides, (6) Strong Winds (Tropical Cyclones), (7) Tsunami (8) Coastal Erosion, (9) Strom Surge, and (10) Wildfire. Discussion of these natural hazards are included in the 2020 LHMP’s Chapter 4. In addition, the 2020 LHMP includes a quantitative vulnerability analysis based on the best available data for Hatillo and Puerto Rico accounting for future development to assess mitigation strategies to prevent repetitive and severe property loss.

This assessment served as a key tool for the Planning Committee and the public to identify and prioritize potential mitigation strategies by focusing attention on areas that present the greatest risk of damages to people, critical facilities, and normal municipality operations. The analysis for earthquake, flood, landslides, and high winds was performed by assessing the potential impacts from each hazard using geographic information system data (GIS).

By ranking each section, the municipality was in position to determine an overall risk classification. It is important to mention that this classification exercise resulted from the municipality’s 2020 LHMP technical risk assessment along with a capability gap analysis and the local community input, which is based on previous natural events experienced by the Planning Committee and the residents and business owners of Hatillo.

The following table provides a summary of the risk classification for each identified hazard. Part of the process of completing the next appraisal required input from the community as well as from the Committee. Beyond the risk analysis, this table presents the municipality’s prioritization analysis.

Table 3: Natural Hazard Ranking

Natural Hazard	Risk to people	Risk to facilities	Risk to operations	Classification
Sea Level Rise	3	2	2	High
Drought	2	1	2	Moderate
Earthquake/Liquefaction	3	2	3	High
Flooding	2	2	3	High
Landslide	2	1	2	Moderate
Strong Winds/Tropical Cyclones	3	3	3	High
Tsunami	3	2	3	High
Storm Surge	3	3	3	High
Coastal Erosion	3	3	3	High
Wildfire	2	2	1	Moderate

Source: Planning Committee 2019-2020

High=3, Moderate=2, Low=1

Currently, the potential risks with the highest classification or greater impact identified for the municipality are: (1) sea level rise, (2) earthquake/liquefaction, (3) flooding, (4) strong winds, (5) tsunami, (6) Storm Surge, and (7) coastal erosion.

A ranking methodology was adopted to develop the mitigation strategies based on these risks as discussed on Chapter 6 and are divided into the following categories: (1) Prevention, (2) Property Protection, (3) Natural Resources Protection, (4) Structural Projects, (5) Emergency Services, and (6) Education and Public Awareness. The strategy category with most mitigation actions is “Prevention” with a total of 28 mitigation projects. Earthquake, flooding and tsunami are the natural hazards that are most addressed within the mitigation actions.

## 5 Mitigation Strategies, Goals, and Action Plan

The municipal capabilities, along with the risk assessment, serve as a foundation for the design, development and implementation of mitigation strategies. Mitigation strategies, found in Chapter 6, consist of a broad amount of local goals and strategies. The local mitigation actions were gathered from the 2014 LHMP and were incorporated into the current LHMP. This chapter provides information about the assigned implementation mechanisms and target completion dates. The sections in this chapter are designed to make the Plan strategic by identifying long-term goals, and functional, by identifying short term and immediate actions that will guide the daily local decision-making process and project implementation.

Mitigation goals consist of general guidelines that explain what the Municipality of Hatillo wants to achieve in terms of hazards and mitigation. Thus, the goals included in the 2020 LHMP, offer the Planning Committee and the communities a framework for identifying, prioritizing and implementing actions to reduce the risks associated to natural hazards in Hatillo.

Mitigation strategies are activities, projects, measures, or processes that Hatillo will adopt in order to reduce or eliminate risk to people and property from hazards. Consequently, Hatillo reviewed and revised the criteria adopted in the 2014 LHMP to analyze and prioritize potential mitigation strategies for the municipality. In order to developed the actions, the Planning Committee used the following criteria: (1) the potential of the strategy to reduce expected future damages and/or losses; (2) the capacity of the municipality to implement the action within the 5-year cycle of the Plan; (3) support from the public, agencies, municipal departments, amongst others; and (4) the potential of the action to increase resiliency of Hatillo and its residents. Accordingly, the Planning Committee adopted these criteria, the results from the risk assessment, and the feedback from local and neighboring communities to prioritize each mitigation strategy that was contained in this LHMP.

The following summarizes some of the strategies intended to mitigate these hazards:

- Promoting the purchase of NFIP insurance to the inhabitants of flood prone areas.
- Construction of new water drainage to control flooding in different areas of the municipality.
- Making sure that all critical and governmental infrastructure incorporate non-structural mitigation elements for earthquake and liquefaction mitigation.
- Use of GIS and GPS to create detailed maps of buildings located in known hazard prone areas.
- Continue utilizing the local territorial and land use plans to protect subterranean water sources for use in case of drought events.
- Continue evaluating the need for structural and non-structural mitigation actions to protect critical and governmental facilities from the threat of strong winds and rain (storm surge).

## 6 Maintenance to Keep the Plan Current

Chapter 7 details the revision and monitoring process in great extent. The formal maintenance process, identified by the Planning Committee, aims to keep the document viable and current, as it is a living document that shall reflect the hazards and realities affecting its community, and how to plan and prepare ahead in the event of a natural disaster. The plan maintenance process provides the procedures for evaluation and review every third quarter of each fiscal year during its 5-year life cycle. Evaluation will include a review of the mitigation action plan implementation, continued public involvement through the Plan's life cycle, as required by federal legislation. As part of the review process, the members of the Planning Committee. In the event of a major natural disaster affecting the island and/or municipality, an emergency meeting must be scheduled, and the Plan should be updated or amended, as necessary, bypassing the 5-year term. The Director of Municipal Emergency Management Office with the support from the Office of Federal Programs, and the Planning Office of the municipality will coordinate with other municipal dependencies, as needed, to achieve the goals and objectives stated in this LHMP.

Finally, the municipality will promote continued public participation during the plan maintenance by, including, but not limited to (Refer to Section 7.4 of the LHMP):

- Making sure to coordinate meetings between those involved in the Plan maintenance process, which will take place at the beginning of the third quarter of each fiscal year and after each natural disaster occurring in the jurisdiction of Hatillo.

- Prepare the Reports of the Plan Progress Analysis, which will be presented and discussed in meetings with the people involved in the Plan maintenance process.
- Review whether there were changes in the Act, regulatory agency regulations, which affect the Plan in one way or another, as well as budget allocations that may affect the development of projects programmed for communities.
- Ensure that applications for funds for the development of the activities described in the Plan to be made by the municipality are included in the budget of the relevant fiscal year.
- Identify opportunities to access funds.
- Establish the program-specific Work Plan, based on the schedule and goals set out in the Plan.

## 7 Plan Approval and Adoption

The Federal Emergency Management Agency (FEMA) completed review of the Municipality of Hatillo's Hazard Mitigation Plan, based on the standards pursuant to title 44 C.F.R. Section 201 as authorized by the Disaster Mitigation Act of 2000 (DMA2k). The Plan received a satisfactory rating for all required criteria and was approved as approvable pending adoption (APA) on November 16, 2020. Accordingly, the Municipality of Hatillo, adopted said Plan on December 11, 2020 via Resolution No. 12, Series 2020-2021.

Upon receiving the record of adoption from the municipality, FEMA issued an Official Approval Letter that dates from December 21, 2020, stating the jurisdiction has adopted said Plan, thus, approved and eligible for FEMA Hazard Mitigation Assistance programs. The Plan was formally approved by FEMA on December 16, 2020. The approval letter establishes the expiration date five (5) years from the date of approval, or until December 15, 2025.