

PLANES DE MITIGACIÓN CONTRA PELIGROS NATURALES
Resiliencia Planificada



J U N T A D E P L A N I F I C A C I Ó N

2020

Municipality of Vieques

Local Hazard Mitigation Plan

Executive Summary



1 Introduction

The Municipality of Vieques has revised its Local Hazard Mitigation Plan (LHMP).¹ This complies 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.² 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. Updating requirements offer 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 and updates need to be incorporated to the Plan. This Plan complies with said regulations.

Hazard Mitigation Planning Process



The strategies and projects enumerated in the LHMP have the goal of reducing the loss of life and property that can result from a natural disaster. Hence, the mitigation strategies included in this LHMP involve planning efforts, capital projects, and other activities that reduce the impact of natural hazards included in Vieques 2020 LHMP.

The municipality has also revised the LHMP under the authority of Act 81-1991, known as the Autonomous Municipalities Act of 1991, as amended.³ As stated in Section 2.004 of said Act 81-1991, the municipality can carry out any activity that establishes programs or

adopt convenient and useful measures to prevent and fight fires, offer assistance to the community in cases of emergency or natural disasters, catastrophic fire accidents and for civil protection in general, pursuant to Act No. 211-1999, as amended, known as the Commonwealth of Puerto Rico Emergency Management and Disaster Administration Agency Act.⁴

¹ Please note that the 2020 Revised LHMP was written in Spanish as per agreement between the Municipality of Vieques, the Planning Board, the Governor's Authorized Representative (GAR) and FEMA.

² 42 U.S.C 5165; 44 C.F.R. § 201.6.

³ It is important to mention that after the approval of the LHMP, Act 81-1991 was derogated by Act 107-2020, known as the Municipal Code of Puerto Rico (hereinafter, Municipal Code). However, the Municipal Code incorporated former Act 81-1991, section 2.004, into its section 1.010, stating that the municipality can carry out any activity that establish programs or adopt convenient and useful measures to prevent and fight fires, aid the community in cases of emergency or natural disasters, catastrophic accidents of fires and for the civil protection in general.

⁴ 21 L.P.R.A § 4054

This Executive Summary will provide an overview on:

- Vieques's social characteristics;
- Public engagement, participation and outreach efforts with the community during the LHMP planning process;
- A risk assessment for the Municipality of Vieques;
- A review of the mitigation strategies, goals and LHMPs action plan; and
- Plan maintenance and how to keep the Plan current.

2 Vieques: Main Characteristics and Profile

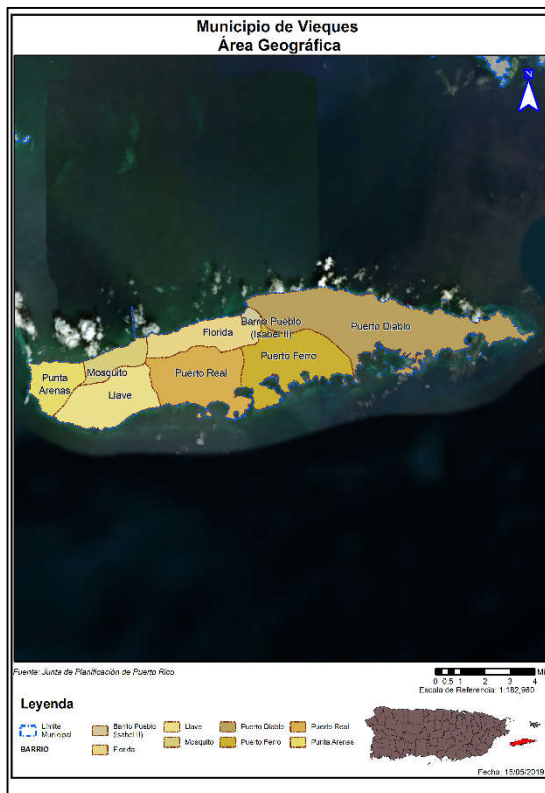


Figure 1: Municipality of Vieques and its wards

The Municipality of Vieques is an island-municipality of Puerto Rico and is currently organized in eight (8) wards: (1) Pueblo (Isabel II); (2) Florida; (3) Llave; (4) Mosquito; (5) Puerto Diablo; (6) Puerto Ferro; (7) Puerto Real; and (8) Punta Arenas. Each of these wards are subdivided into sectors. The municipality is commonly known as “Isla Nena” and its residents are called viequenses.

The Municipality of Vieques has many surface and underground bodies of water. It is estimated that the municipality has about twelve (12) coastal lagoons, most of them bordered by mangroves. The lagoons are known as Playa Grande, Ensenada-Sombe, Puerto Ferro, La Chiva, Yanuel, Anones, Mosquito Bay and Tapón. The last two (2) lagoons are recognized among the best bioluminescent bays. To the north of the municipality are located the lagoons Monte Largo, el Pobre and Kiany and to the east area, the Arenas lagoon. In addition to these bodies of water, the Municipality of Vieques has two (2) large aquifers that have been used to meet the demand for water on the island. In the western region, there is the aquifer Valle de Resolución and in the south, formed by an area of 10.36 Km², is the aquifer Valle de Esperanza,

between Villa Comunidad de Esperanza and the former Camp García. As for the municipality coastal and marine ecosystems, due to the large extension of coastal area Vieques has almost all the typical ecosystems of the region, such as beaches, wetlands, mangroves and lagoons.

The Municipality of Vieques also has a national wildlife refuge, which is divided into two (2) large segments between east and west of the island-municipality. The western area segment of the region received this designation on May 1, 2001, while the east area designation was on May 1, 2003. These segments of land cover an area of approximately 15,005 acres, delivered by the U.S. Navy to the Federal Fish and Wildlife Service. This national refuge is considered to be one of great value for its ecological diversity and for being one of the largest in the Caribbean. The refuge contains diverse ecosystems such as sandy beaches, coastal lagoons, mangroves and subtropical dry forest.

According to the official 2010 Census, the Municipality of Vieques had 9,301 residents. On the other hand, the 2017 American Community Survey (ACS) estimates a population decrease of 3.98%, thus, it is estimated that by 2017, the municipality had 8,931 inhabitants. Based on the 2010 Census, the ward with the most population is Florida with 3,821 inhabitants. On the other hand, the ward with less population, as stated by 2010 Census, is Mosquito with no population. It should be noted that, in 2017, the island of Puerto Rico suffered the devastating effects of two (2) Hurricanes; Irma and Maria, which drastically affected all of Puerto Rico's municipalities, therefore, many residents of Puerto Rico chose to emigrate to the United States of America. Also, in terms of demographic changes between the years 2010 and the trend reflected on 2017 estimates by age, we can perceive that although the total population decreased by 3.98%, the population over 65 years of age increased by 14.22%. Further details, regarding the profile of the municipality, can be found in Chapter 3, Section 3.2 of the updated 2020 LHMP.

Table 1: Vieques Population Change

Population	2010 Census	2017 ACS Estimates	% Percentage change
5 years of age or <	640	538	-15.94%
5 to 19 years of age	1,831	1,541	-15.84%
20 to 64 years of age	5,248	5,045	-3.87%
65 years of age or >	1,582	1,807	14.22%
Total	9,301	8,931	-3.98%

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

This profile highlights the population that could be potentially vulnerable to natural hazards in the municipality, particularly individuals whose age ranges from 65 or more reflecting an increase during a seven-year period (2010 to 2017).

3 Outreach and Public Participation

In order to guide the development of this Plan, the Municipality of Vieques appointed the following officials to constitute the Local Hazard Mitigation Planning Committee. This Committee represents various instrumentalities of the municipal government.

Table 2: Hazard Mitigation Planning Committee

Name	Position	Local agency	Email
Héctor Olivieri Cano	Director	Municipal Emergency Management Office	holiviericano@gmail.com
Daisy I. Cruz Christian	Vice Mayor	Municipality of Vieques	cruzchristiandaisy@yahoo.com
Arlene Cruz Ledesma	Director	Municipal Planning Office	arlene721@hotmail.com
Theudys Martínez Alvarado	Sub Director	Municipal Emergency Management Office	theudysmartinez@gmail.com
Luz Landró Maldonado	Director	Federal Funds Office	lucylandro@gmail.com
Ángel M. Cordero Sanes	Director	Municipal Public Works Office	cordersanes@gmail.com
Carlos R. Jirau Vélez	Consultant	Municipality of Vieques	cjirau@yahoo.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 engagement, participation and outreach efforts for stakeholders at large such as the community, neighboring municipalities, governmental agencies; (5) announce the municipality's LHMP efforts to agencies, stakeholders, receive public feedback on Vieques 2020 LHMP draft version and incorporate such comments into the Plan. Accordingly, the Planning Committee reviewed and provided comments on the 2020 LHMP preliminary, draft, and final versions.

On September 3, 2019, a public notice was published at the local newspaper Primera Hora informing all stakeholders about the first Community Planning Meeting to be held at Vieques. As requested by the municipality and informed in the public notice, the first community meeting was held on September 13, 2019. On November 21, 2019, a second notice was published, on the aforementioned newspaper, informing about a second Community Planning Meeting to be held on December 6, 2019. This second notice, besides informing all readers about the second meeting, also notified the publication and/or availability of the 2020 LHMP draft version for review and the 20-day term to submit comments. A digital copy of the draft version of the 2020 LHMP was made available through the Puerto Rico Planning Board's (PRPB) website (jp.pr.gov), while a hard copy was made available for public review at the Mayor's Office of Vieques on Monday, Wednesday, and Friday, from 1:00 p.m. to 4:00 p.m.

4 Vieques Risk Assessment

After reviewing the natural hazards identified as priorities on the previous Vieques 2013 LHMP, Land Use 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) earthquake; (4) flooding; (5) landslides; (6) high winds; (7) tsunamis; (8) storm surge; (9) costal erosion; and (10) wildfires . Discussion of these natural hazards are included in the 2020 LHMP's Chapter 4. Furthermore, the 2020 LHMP includes a quantitative vulnerability analysis, based on the best available data, for Vieques and Puerto Rico accounting for future development to assess mitigation strategies in order to prevent repetitive and severe repetitive property loss caused by a natural disaster.

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 the 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 Committee and the residents and business owners of Vieques.

The following table shows the conclusion of the Planning Committee based on the risk assessment.

Table 3: Natural Hazard Ranking

Natural hazard	Risk to individuals	Risk to facilities	Risk to operations	Classification
Sea Level Rise	Moderate	Moderate	Bajo	Moderate
Drought	High	High	High	High
Earthquake	High	High	High	High
Flooding	High	Moderate	Moderate	High
Landslides	Low	Low	Low	Low
High winds	High	High	High	High
Tsunami	High	Moderate	Moderate	High
Storm surge	High	Moderate	Moderate	High
Coastal erosion	Moderate	High	Low	Moderate
Wildfires	Moderate	High	High	High

The risks with the highest classification for the municipality are drought, earthquakes, flooding, high winds, tsunamis, storm surge and wildfires. Please note that natural events, associated with high winds, such as hurricanes or tropical storms exacerbate the occurrence of flooding, storm surge and coastal erosion in Vieques. Also, an earthquake will most likely cause several damages to property and loss of life especially in areas susceptible to liquefaction. These natural hazards, together with the dangers associated with the presence of numerous structures that does not meet the minimum construction standards, exacerbate the probability of loss of life and property in Vieques. Thus, these natural hazards pose a great risk for the population, buildings, stock, critical facilities and infrastructure. For example, during the hurricane María, on September 20, 2017, which brought around 37 inches of rain in a 48-time period, the municipality was impacted by natural hazards such as flooding, high winds, storm surge and coastal erosion. Consequently, the communities experienced roadblocks, destruction of railway lines and disruption of essential emergency services and communication, as well as multiple life and property losses.

The natural hazards with a moderate risk classification are sea level rise and coastal erosion. This does not mean that these hazards pose less risks than those mentioned above, but the impact they may have on the municipality represents a lower degree of severity as stated by the Planning Committee.

Finally, landslides are considered the lowest risk to the municipality due to the topographic characteristics of the municipality. Nonetheless, a future risk benchmark can provide a basis for understanding how future development can increase the impact and vulnerability of the population, structures, critical facilities and natural resources cause by these natural events.

This ranking methodology was adopted, in accordance with the risk assessment, the communities and Planning Committee's own experiences during a natural event, to develop the mitigation strategies. The mitigation strategies, included in Chapter 6, are divided into the following categories: (1) Prevention; (2)

Property protection; (3) Natural Resources Protection; (4) Emergency Services; and (5) Education and Public Outreach.

5 Mitigation Strategies, Goals, and Action Plan

The municipal capabilities, together with the risk assessment, serve as a foundation for the design, development and implementation of mitigation strategies. The mitigation strategies consist of a broad local goals and strategies. Moreover, the local mitigation actions were gathered from the 2013 LHMP and were incorporated into the 2020 LHMP. The chapter also provides information about the assigned implementation mechanisms and target completion dates. The sections on Chapter 6 are designed to make the Plan strategic by identifying long-term goals, but functional, by identifying short term and immediate actions that will guide the daily local decision-making process and project implementation.

Likewise, the mitigation goals consist of general guidelines that explain what the Municipality of Vieques aims to achieve in terms of hazards and loss mitigation. Accordingly, 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 Vieques.

The mitigation strategies are the activities, projects, measures, or processes that Vieques will adopt to reduce or eliminate the risk to people and property from natural hazards. Consequently, the Municipality of Vieques reviewed and revised the criteria adopted in the 2013 LHMP to analyze and prioritize potential mitigation strategies for the municipality. In order to develop 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 municipality's capacity 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 actions to increase the resiliency of the municipality and its residents. Hence, 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 2020 LHMP.

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

- High wind projects including, but not limited to, installation of windows and doors shutters in all the municipality's critical facilities;
- Storm surge projects including, but not limited to, educational campaigns to inform the communities about the areas of the municipality that are at risk of storm surge, coastal erosion and tsunamis;
- Flooding projects including, but not limited to, promote the reconstruction or retrofitting of several bridges;
- Drought projects including, but not limited to, develop a water reserve program through a water recollection system such as cisterns or other alternative water storage tools; and
- Earthquake projects including, but not limited to, the review of current requests for construction to prevent the development of land vulnerable to landslides and liquefaction.

6 Maintenance to Keep the Plan Current⁵

Chapter 7, of the revised 2020 LHMP, details the revision and monitoring process in great extent. The formal maintenance process, designed by the Planning Committee of Vieques, aims to keep the document viable and current, as it is a living document that shall reflect the hazards and realities affecting the communities. In addition, the plan maintenance process provides the procedures for evaluation and review every third quarter of each fiscal year during its 5-year life cycle. This periodical 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. In the event of a major natural disaster, affecting the island and/or municipality, an emergency meeting must be scheduled. As a result of the emergency, the municipality might choose to update or amend the 2020 LHMP if the Planning Committee determines that it is needed. The appointed Planning Committee will coordinate with the municipal dependencies, as needed, to achieve the goals and objectives stated in this 2020 LHMP.

Finally, the municipality will promote continued public participation during the plan maintenance by;

- Advising local communities about their strengths and weaknesses to deal with natural hazards and how to mitigate the associated risks;
- Advising local communities about what resources are available before, during, and after a natural disaster;
- Creating and maintaining a database of individuals that are interested in hazard mitigation in order to keep them up to date on any information that may increase their capabilities in the subject matter;
- The Local Hazard Mitigation Planning Committee shall represent the community; and
- Holding public meetings to discuss LHMP monitoring and supervision at the beginning of the last quarter of each fiscal year and/or after the occurrence of any natural disaster in the municipality.

⁵ The LHMP was adopted by the Municipality of Vieques and was approved by FEMA on September 4, 2020. This approval lasts for a period of five (5) years, or through September 3, 2025. This approval ensures that the Municipality of Vieques is eligible for grant programs, including the Hazard Mitigation Grant Program, Flood Mitigation Assistance, and Pre-Disaster Mitigation. Funding from these grant programs can be used for mitigation planning and projects that protect life and property from future disaster damages.