

**PLANES DE MITIGACIÓN CONTRA PELIGROS NATURALES**

Resiliencia Planificada



**JUNTA DE PLANIFICACIÓN**

# 2020 Municipality of Ciales

Executive Summary

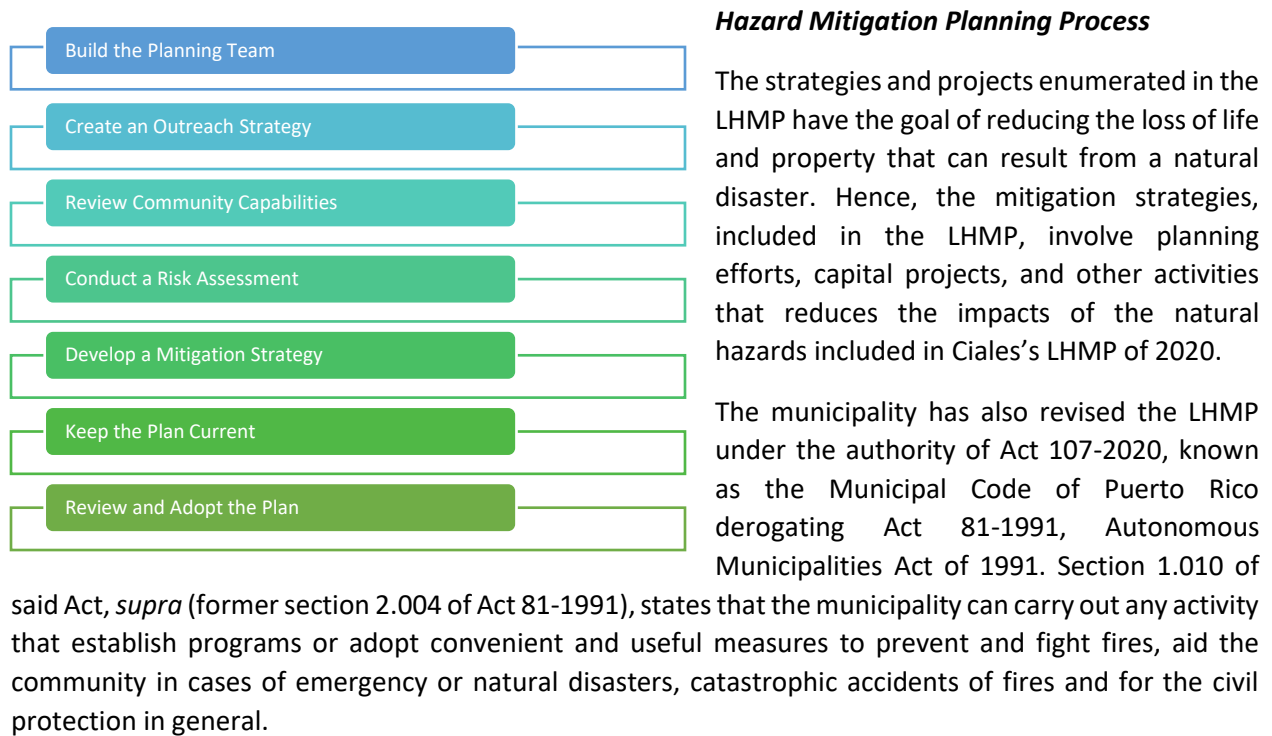


# 1 Introduction

The Municipality of Ciales 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.

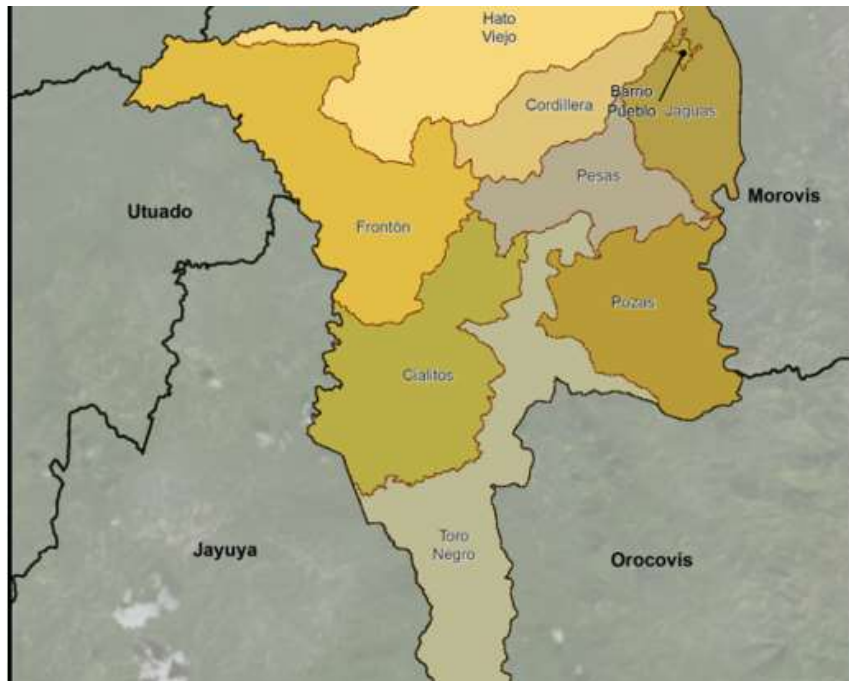
<sup>2</sup> 42 U.S.C 5165; 44 C.F.R. § 201.6.

This Executive Summary will provide an overview on:

- Ciales’s population characteristics;
- The public participation and outreach efforts with the community during the LHMP planning process;
- Ciales’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 Ciales’ Profile: Main Population Characteristics

Figure 1 Ciales and its wards



The Municipality of Ciales is located in the north-central interior of the Island and is one of the fifteen (15) municipalities that make up the Central Region of Puerto Rico. It comprises an area of approximately 172.84 km<sup>2</sup> (66.73 mi<sup>2</sup>). To the North, it is bounded by the Municipalities of Manatí, Florida and Arecibo, to the East by the Municipality of Morovis, to the Southeast by the Municipality of Orocovis, and to the West by the Municipalities of Utuado and Jayuya. The Municipality of Ciales is part of two of the

three physiographic regions of Puerto Rico. Those that comprise the municipality include the Province of Carso Norteño that dominates the northern portion, and the central mountainous interior that comprises the central and southern region of the municipality.

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 Ciales belongs to the Functional Area of Manatí, which is composed of the municipalities of Ciales, Barceloneta, Florida, Manatí, Morovis, Orocovis and Vega Baja.

The Municipality of Ciales is made up of nine wards or “barrios”: Hato Viejo, Frontón, Cordillera, Pesas, Jaguas, Cialitos, Toro Negro, Pozas and Ciales Pueblo. The Municipality of Ciales belongs to the Central Region that includes fifteen municipalities of the central mountainous interior that together occupy 23% of the surface of the Island.

Table 1: Population by age group: 2010 and 2018

Population	2010 Census	2018 ACS Estimate	% Rate of Change
Younger than 5 years age	1,188	911	-23.32%
5 to 19 years of age	4,235	3,085	-27.15%
20 to 64 years of age	10,843	9,805	-9.57%
65 years of age and older	2,516	3,111	23.65%
<b>Total</b>	<b>18,782</b>	<b>16,912</b>	<b>-9.96%</b>

Source: US Census Bureau, Census 2010; American Community Survey 2014-2018 Estimates

According to the 2010 Census, Ciales has a population of 18,782. The American Community Survey (ACS) of 2018 estimated that the population of Ciales had decreased to 16,912.

Accordingly, the only demographic group that increased in the period between the 2010 Census and the 2018

ACS was that of those 65 years of age and older, which increased by 23.65%, or 595 individuals. The rest of the groups studied show decreases as follows: those under 5 years of age decreased by 23.32%, or 277 individuals, those between 5 and 19 by 27.15%, or 1,150 individuals, and those between 20 and 64 years by 9.57%, or 1,038 individuals. Together, these numbers point to a population that is declining and aging, which requires mitigation strategies that consider the increase in this population with special needs.

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, Luis Maldonado Rodríguez, former Mayor of Ciales, appointed the following officials to constitute the Mitigation Planning Committee (henceforth, the Planning Committee). The Planning Committee is comprised by representatives from several dependencies 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
Ana A. Gerena Berrios	Director	Finances Office	gerenafinanzas66@gmail.com
Javier J. Meléndez Mateo	Director	Public Works Office	cialesop@gmail.com
Ángel G. Meléndez Mateo	Director	Municipal Emergency Management Office	ommeciales601@gmail.com
Ovilia Sepúlveda Acevedo	Municipal Secretary	Mayor’s Office	ofic.secretariamunicipal19@gmail.com
Eng. Alberto Acevedo	Consultant	Solutions Engineering	albertoacevedope@yahoo.com

Jessica Rivera Miranda	Director	Recycling Office	reciclamuciales@yahoo.com
Elsa Vázquez Figueroa	Official	Federal Programs Office	federalesciales@gmail.com
Héctor A. Torres Calderón	Consultant	Professional Advice Group	professionaladvicegroup@gmail.com
Tania García Matos	Special Assistant	Mayor's Office	taniagarcia.ciales@gmail.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 Ciales's 2020 LHMP draft version and incorporate such comments on the Plan.

An initial notice was published on a local newspaper (Primera Hora) on August 5, 2020. Said notice informed the public about the first Public Participation meeting to be held virtually via YouTube on August 20, 2020. A second notice was published on October 26, 2020 regarding the publication of the 2020 LHMP draft version for review providing a 25-day period for review, submit comments, and the opportunity to participate in a second community meeting held on November 10, 2020 held virtually via YouTube. A draft version of the 2020 LHMP was made available on the Puerto Rico Planning Board's (PRPB) website (jp.pr.gov).

## 4 Ciales' Risk Assessment

After reviewing the natural hazards identified as priorities on the previous Ciales'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) Climate Change (Extreme Heat), (2) Drought, (3) Earthquakes, (4) Flooding, (5) Landslides, (6) Strong Winds (Tropical Cyclones), and (7) Wildfires. 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 Ciales 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 Ciales.

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
Extreme Heat	Moderate	Low	Low	Low
Drought	Moderate	Low	Moderate	Moderate
Earthquake/Liquefaction	High	Moderate	Moderate	High
Flooding	High	Moderate	Moderate	High
Landslide	High	Moderate	Moderate	High
Strong Winds/Tropical Cyclones	High	High	Moderate	High
Wildfire	Moderate	Low	Low	Low

Source: Planning Committee 2020-2021

Currently, the potential risks with the highest classification or greater impact identified for the municipality are: (1) Earthquake/Liquefaction, (2) Flooding, (3) Landslides, and (4) Strong Winds.

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 “Property Protection” with a total of 11 mitigation projects, followed by “Prevention” with a total of 7 mitigation projects.

## 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 number of local goals and strategies. The local mitigation actions were gathered from the 2012 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 Ciales 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 at Ciales.

Mitigation strategies are activities, projects, measures, or processes that Ciales will adopt in order to reduce or eliminate risk to people and property from hazards. Consequently, Ciales reviewed and revised the criteria adopted in the 2014 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 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 Ciales 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.

Most of the strategies and projects in the action plan target the continuity of municipality services after a hazard event. The following summarizes some of the strategies intended to mitigate these hazards (Refer to Section 6.5 of the LHMP):

- Continue with the implementation of the Hazard Mitigation Plan
- Incorporate findings of the HMP on the Territorial Plan and Operational Emergency Plan
- Promoting the acquisition of NFIP.
- Implement structural mitigation measures.
- Installation of storm shutters on municipal critical facilities.
- Relocation of families in high prone landslide areas.
- Repairs for (roof) waterproofing, cisterns, generators and storm shutters on several facilities.
- Community training for emergency response and natural hazard awareness.
- Providing educational campaigns to educate communities against natural hazard awareness, response and preparedness.

## 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 Municipal Administrator 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 7.5 and 7.7 of the LHMP) in accordance with the 2021-2026 Calendar:



- 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 Ciales.
- Prepare the Work Plan and assign responsibilities for the Evaluation and Plan Update to take place within 60 days of that first meeting.
- 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.
- In coordination with the Mayor's Office, 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.
- In coordination with the Municipal Department of Public Works to achieve the implementation of the projects set out in the Plan.
- 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 Ciales'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 March 24, 2021. Accordingly, the Municipality of Ciales, adopted said Plan on September 10, 2021 via Resolution No. 3, Series 2021-2022.

Upon receiving the record of adoption from the municipality, FEMA approved Plan by September 16, 2021 and issued an official approval letter to municipality stating the jurisdiction has adopted said Plan thus approved and eligible for FEMA Hazard Mitigation Assistance programs. The approval letter establishes the expiration date 5 years from the date of approval, or until September 15, 2026.