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PERCEPTION OF FLOOD RISK FOR VULNERABLE OVERFLOW DAM IN URBAN AREA

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1. INTRODUCTION

A dam is considered dangerous from the point of view of human life, when populations with more than 200 homes and over 1 000 people are downstream may be affected by the water displaced by the dam (ANR, 2001).

Flooding risk is a function given by threat and vulnerability (ASSAF, 2011; LARA, 2012). Urban flooding Vulnerability is a hidden interaction of factors such as social, economic and physical that makes an urban system (and its elements) is susceptible to damage before a flood event (WILCHES-CHAUX, 1993; ROBERTS *et al.*, 2009; MÜLLER *et al.*, 2011). The image that a particular social group builds on the space or territory where they live, and the conflicts that take place inside, is the overlapping and accumulation sum of individual perceptions and this perception is a fraction of reality in the technical evaluations (FERRARI, 2012).

Several authors show some differences between the proposals and technical perspectives for flood risk management and mitigation and the perception of the population (FIGUEIREDO *et al.*, 2009; SAURÍ *et al.*, 2010; LINNEKAMP *et al.*, 2011). Risk Social Perception of (RSP) is an important issue in flood risk management because it is understood that a population that identifies environmental hazards, is kept informed and know what to do in case of an emergency, it is more likely to take a preventive and reacting proper position before, during and after emergence an emergency (HO *et al.*, 2008; ARM, 2011).

2. STUDY AREA

The Baja California State is located in Mexico's northwestern region, it has 5 municipalities: Mexicali is the state capital, Tijuana, Tecate, Ensenada and Playas de Rosarito. The city and port of Ensenada, in the municipality of the same name, which is the largest municipality in Mexico, is the third largest city in the state with 511,772 inhabitants (COPLADE, 2014).

In Ensenada City, there are no permanent rivers; it has streams with intermittent runoff. But has two water bodies. An artificial one, the Emiliano Lopez Zamora dam,

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with a storage capacity of 3,000,000 m^3 fed by the Valle Verde stream, and a small natural lagoon, called "La Lagunita" located southeast of the city, whose importance is ecological. In Ensenada city two events that have caused flood disasters have occurred; in the winter of 1977-1978 and 1980 rain.

There are two urban developments in the study area: Valle Verde and Villa Fontana. Valle Verde is located 400 meters downstream of the curtain of the dam and until 1980 was made up of small farms that were outside the urban area. As a result of irregular urbanization growth of the northwest sector, landowners sold their land and in 1985, and the urban development of Villa Fontana located 100 meters from the curtain of the dam and adjacent to the edge of Ensenada stream is built.

Land developers sold the housing complex with the idea of being in a place with trees and near the stream, in a quiet landscape, with a dam curtain view. Most of the land use study area it is residential, although may include recreation and social assistance areas as well as commerce and services (IMIPb, 2014). There are 22 urban blocks in the study area, with a population of 2,070 inhabitants, the 0.40% Ensenada population (INEGI, 2010).

3. RESULTS

The present work is carried out in three stages: In the first one is based on the determination of the elements of perception; the step two is the survey design and final step is the data analysis and final report of the information gathered. As are described next.

Step 1: Determination of the elements of perception. At this stage a conductive question is made and initiates field research and aims to define what elements of perception will be analyzed. A Semi-structured in-depth interview and qualitative method of gathering information is used. Interviews consider the issues witch includes direct questions but leaves room for new or unforeseen issues. These interviewees are identified as key informants or those members who stand out for their in-depth knowledge of the context studied. In order to determine the elements of perception, field data collected are analyzed and categorized.

Step 2: Design of the survey. Is designed a data collection technique, where each question refers to the elements of the predefined perception. The survey is piloted and used a sampling method, where the population surveyed is chosen according to the degree that meets the criteria. The information collected from surveys generated a database of Flood Risk Social Perception.

Step 3: Data Analysis and final report of the information gathered. Data analysis is performed through an interpretation; the data are analyzed from a descriptive view using tables and graphs. The research process culminates with the presentation and dissemination of results.

As a result, a conducting question designed to interview key informants was obtained in step 1: What elements should be considered in the RSP flood overflow dam in an urban area? The selection of key informants was based on an interdisciplinary approach that would include technical and scientific according to the criteria of experience, profession and workplace were focused to the study of risk and / or its relationship with society. Elements of the PSR flood overflow dam in an urban area expressed by respondents are: threat identification, risk identification, prior information flood and priorities in the study area.

The analysis of the surveys in step two, regarding the identification of the threat, it is observed that the highest percentage of people (44%) consider the flood as the event

that may affect them in the place where they live. The results show that people have no formal knowledge about the cause and effects that can cause flooding by the overflowing of the dam. As the previous flood information is concerned, the percentage of people who know that there was flooding increases as the average years of living in cove. The results show that the historical memory remains in people who lived through the flood victims and most experienced disasters feel threatened by a flood event and have a greater sense of fear than those with less experience.

4. CONCLUSSIONS

It is concluded that the social aspects are perceived and considered in the different views of respondents. The opinions converge to perform colony-level studies, apples and homes to have detailed information on the risk in specific locations of the urban area. The identification of the threat and the risk of flooding as elements of social perception helped identify that there is uncertainty in the overflow dam. They identify people living in flood risk zone. However it is not a priority manage because there are more important issues facing the risk.

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