Module 2: SLP#2: Planning for Emergencies: NIMS; Hazard and Vulnerability Analysis

Student’s Name

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Date

**Part A**

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| **Hazard** | **Magnitude** | **Frequency** | **Seasonal Pattern** | **Duration** | **Speed of Onset** | **Priority** |
|  Wildfire |  Catastrophic(More than 55%) |  Highly likely |  Wildfires in California are seasonal and mainly occur in July and November when the climate is hot and dry. |  Several hours to a few days. |  Minimal warning. 6-12 hours warning. |  First(High) |
|  Earthquake |  Catastrophic(More than 50%) |  Highly likely |  An earthquake can occur any day, anytime. Therefore, they have no season. They are influenced by weather conditions (wet, hot, sunny and cold) without any specific tendency |  A few seconds to a minutes |  Minimal warning (No warning time.) |  Second(High) |
|  Flooding |   Critical(25% - 50%) |  Likely |  There are no specific flood seasons. However, in specific regions during the rainy seasons, flooding may occur, with most of them caused by riverine flooding. |  Several hours to a few days. |  6 to 12 hours of warning. | Third(Medium) |

**Part B**

**Wildfire in California**

Wildfires are a longstanding and frequent threat to the state of California. The community is highly vulnerable to wildfire disasters due to the increased forest and wildfire crisis facing in the State. Wildfires have a high occurrence frequency, with hundreds and thousands of cases being observed every year, causing severe destruction to thousands of homes, acreage, and valuable natural reserves. Wildfire contributes to the destruction of leaving higher financial losses to the community members (Jaffe et al., 2020). Additionally, wildfires also jeopardize the lives of persons and animals living in the state. California's population is vulnerable to wildfires since they can occur without warning and any time of the year, but mainly during hot and dry weather conditions. With the current global warming and climate change cases, wildfires are becoming common and more dangerous, putting the population lives at higher risk. Unless a solution to somehow put wildfires into control, California's wildfire situation will continue to worsen every year. The most recent devastating wildfire referred to as Camp Fire, murdered 85 people in the city of Paradise in 2018.

In terms of property damage, wildfires can cause significant damage to land and property. In the 2020 California wildfire season, it is reported that over 1.4 million acres of land were burned and more than 3,114 structures. According to Frost (2020), the Camp Fire caused the damage of tens of thousands of grazing land, which left the ground free of brush, trees, and their roots. This makes it easy for soil erosion to occur, which will cause further damage to the land, farms, and ranches. In addition, the Campfire destroyed Paradise town and Concow towns, with both of the cities losing almost 95 percent of their infrastructure. Other towns such as Magalia and Butte Creek Canyon faced extensively damaged, and by 2019, the estimated damage value was estimated at $16.5 billion (Miller & Lin II, 2019). The Campfire is a complete testament to how much damage wildfires can cause. The significant impact of wildfires on the community threatens individual lives, contributing to the death of various community members. Wildfire smoke contributes to different infections in the community members, such as shortness of breath which contributes to the death of different members of the community suffering from different illnesses such as asthma, diabetes, and other respiratory infections, including adults and children.

**Earthquakes in California**

The state of California has a higher earthquake threat exposure when equated to other states in the US. According to Federal Emergency Management Agency (FEMA), “the average annual projected losses to the building stock are about four billion dollars in California or seventy-five percent of all the country's annualized risk.” One of the main reasons California has a high prevalence of earthquakes is its strategic position sitting between two main tectonic plates that tend to “move past each other at a rate of two inches annually” (United States Geological Survey, 2019). In addition, 70 percent of California inhabitants live within 30 miles of a fault. As a result, some of the dangerous earthquakes tend to cause significant damage. Earthquakes contribute to numerous impacts which affect the individuals, community, and economic status of the state. For example, an earthquake causes collapsing bridges that impact individual and community movements (Foulger et al., 2018).

In the last few decades, California has suffered destructive earthquakes causing major destructions and losing a life. According to Miller & Lin (2019), the US Geological Survey reported that almost 800 people could lose their lives and “18,000 others injured if a hypothetical magnitude seven earthquake ruptures on the Hayward fault through Oakland, Richmond, and Fremont”. One of the recent earthquakes in California is the Ridgecrest earthquake, which occurred in 2019. According to United States Geological Survey, the 2019 Ridgecrest earthquake involved a sequence of earthquakes ranging from a magnitude of 6.6 to 7.1 and is estimated to cause damage of $1 billion. While the quake only resulted in the death of one person, more than 25 people were severely injured. Some of the homes were torn off foundations, some of the houses’ chimney’s collapsed, gas lines leaked, and there are reports that some houses caught fire. Road infrastructure and property damage were tremendous as the earthquake stretched tens of kilometers. The quake also left effects such as loss of running water for days, instability in electricity, and those whose homes were rendered inhabitable were forced to sleep in their cars or yards. Earthquakes can also result in fumes from underground, which can cause respiratory illnesses. With earthquakes being unpredictable and the risk of causing significant damage to homes and infrastructure, it is clear that earthquakes can be deadly and disastrous.

**Flooding in California**

 California also has a history of destructive flooding in almost every county in the state. Despite local, state, and federal agencies' efforts to take action and make continuous investments, flooding in California continues to cause extensive damage. According to the Public Policy Institute of California (2020), Northern California, which is where a majority of California’s water supply comes from, is mainly frequented by floods. The institute also argues that the changing climate of California, characterized by spectacular swings among wet and dry environments, plays a crucial role in increasing the risk of floods.

Additionally, the rising sea levels are causing an increased risk of coastal inundating, which is often linked with extreme storms. Most of the storms in California occur due to the state’s unpreparedness to handle vast volumes of rain and snow. Such floods end up damaging California roads and highways. For instance, the 2017 California floods resulted in road and infrastructure damage of over $1.05 billion in 2017 USD (Miller, C. & Lin, 2019). It also resulted in the evacuation of over 180,000 people. The floods also damage properties in their way, which resulted in thousands of people being left homeless. Also, most of the communities living near rivers are likely to experience flooding in the event of heavy rains. Flooding can also contribute to the spread of diseases such as cholera and typhoid, especially if the floodwater gets in contact with sewage and then contaminates water reservoirs (Nofal & Van De Lindt, 2020).

**Strengths and Weaknesses of the Hazard and Vulnerability Analysis**

**Strengths**

One of the strengths of the Hazard and Vulnerability Analysis is that it gives options for analyzing hazards prone to the state of California. The table also utilizes a type of scale to identify the magnitude and frequency of the disasters. The scales are well balanced to ensure one can pick an appropriate rate.

**Weaknesses**

One weakness of the analysis is that it does not assign values to the entries to consider the average points, which can be used to establish the hazard’s priority. Therefore, in the current table, one has to measure and gauge the priority of the hazards mentally. For instance, in my analysis, I considered the magnitude and frequency of the hazards to establish their priority. However, all the items should be considered when determining the importance of the dangers.

**How To Improve The Table**

The table can be improved by assigning points to the entries in the tables, which one can then add together to determine which hazard should be prioritized, ensuring safety and security on the individual properties. It can also be improved through training new staff and improve their skills toward response and recovery process. The emergency action plan can also be improved through the successful implementation of the media in sharing vital information related to the disaster. The other improvement strategy on EAP is the effective implementation of resources and assets to support the recovery success from the disaster.

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