

= Hurricane Liza (1976) =

Hurricane Liza is considered the worst natural disaster in the history of Baja California Sur . The seventeenth tropical cyclone , thirteenth named storm , and eighth hurricane of the 1976 Pacific hurricane season , Liza developed from an area of disturbed weather southwest of the Mexican coast on September 25 . Slowly intensifying , the system attained tropical storm strength the following day . In favorable conditions , Liza continued to intensify , reaching hurricane strength on September 28 after developing an eye . The hurricane peaked in intensity as a Category 4 hurricane on the Saffir ? Simpson hurricane scale on September 30 , with winds of 140 mph (225 km / h) and a minimum barometric pressure of 948 mbar (hPa ; 28 @. @ 00 inHg) . Liza weakened as it moved northward into the Gulf of California . Shortly thereafter , the hurricane made its second landfall north of Los Mochis , Sinaloa with winds of 115 mph (185 km / h) , making it one of 13 storms to make landfall as major hurricanes in the basin . Inland , the hurricane rapidly weakened and dissipated on October 2 .

Prior to the arrival of Liza , residents along the Gulf of California coastline were evacuated , although some refused to leave their homes . Radio stations warned all nearby ships to remain at harbor . Liza brought heavy rainfall to the area , which caused significant flash flooding . Following a dam burst by the El Cajoncito Creek along the outskirts of La Paz , hundreds of people were swept away by flood waters . In La Paz , the capital of the state , 412 people died and 20 @, @ 000 were left homeless . Nearly one @- @ third of the homes in the town were destroyed . Throughout the state , a variety of death tolls were reported , but officials estimated that 1 @, @ 000 people had perished . In the states of Sinaloa and Sonora , Liza caused moderate damage and left 30 @, @ 000 to 54 @, @ 000 homeless . Along the Gulf of California , 108 people were presumed dead after 12 boats were lost . The remnants of the storm later affected the United States , bringing moderate rainfall

In the aftermath of the storm , rescue workers spent days digging through mud to find victims of the hurricane until the search was disbanded on October 6 . The government received criticism for the tragedy , citing that the dam that broke had been poorly built . Overall , at least 1 @, @ 108 fatalities and \$ 100 million (1976 USD) in damage are attributed to the hurricane , making it one of the deadliest tropical cyclones on record in the eastern Pacific , as well as one of the few Pacific hurricanes to kill more than 1 @, @ 000 people .

= = Meteorological history = =

Hurricane Liza originated from a very large area of intense thunderstorms that developed about 400 mi (645 km) southwest of the Mexican coast on September 25 . Later that day , satellite imagery indicated that the system had developed a cyclonic circulation . It is estimated that a tropical depression developed at 1800 UTC on September 25 , centered about 485 mi (780 km) east @- @ northeast of Zihuatanejo , Guerrero . The depression gradually intensified as it tracked west @- @ northwestward , and became Tropical Storm Liza at 1800 UTC on the following day . Thereafter , Liza turned to the north at 7 mph (11 km / h) and began to strengthen while moving through sea surface temperatures of 85 ° F (29 ° C) . Within 48 hours of the storm 's formation , the Eastern Pacific Hurricane Center (EPHC) reported winds of 65 mph (105 km / h) , and Liza intensified into a hurricane early on September 28 . Around this time , the hurricane had developed an eye that was 17 mi (27 km) in diameter , though it was initially not visible on satellite imagery . Operationally , however , Liza was not upgraded to a hurricane until 18 hours later .

During the afternoon hours of September 28 , a Hurricane Hunters aircraft made its first flight into Liza , recording a minimum barometric pressure of 971 mbar (28 @. @ 7 inHg) ; despite the low pressure , maximum sustained winds of just 45 mph (70 km / h) were reported . Hours later , a second flight into the hurricane revealed winds of 75 mph (120 km / h) and slightly lower pressures . Liza continued to intensify , attaining winds of 80 mph (130 km / h) by early September 29 . Later that morning , the hurricane reached Category 2 intensity on the Saffir @- @ Simpson Hurricane Wind Scale (SSHWS) . By midday , Hurricane Hunters recorded a pressure of 948 mb (28 @. @ 0

inHg) as the eye became visible on infrared satellite imagery , prompting the EPHC to upgrade Liza to a major hurricane , a Category 3 or higher on the SSHWS .

Liza continued to rapidly intensify and attained winds of 140 mph (220 km / h) late on September 29 , making it a mid @-@ level Category 4 hurricane . Though Liza encountered warm sea surface temperatures of 88 ° F (31 ° C) , it did not strengthen further the following day . Late on September 30 , Liza brushed the Baja California Peninsula , passing about 65 mi (105 km) east of Cabo San Lucas while still at peak intensity . Early on October 1 , Liza entered the Gulf of California exactly 52 mi (84 km) east of La Paz , Baja California Sur . By 1300 UTC that day , Liza made landfall about 50 mi (80 km) north of Los Mochis , Sinaloa with winds of 115 mph (185 km / h) , still a Category 3 storm . Operationally , however , Hurricane Liza was estimated to have made landfall with winds of 100 mph (160 km / h) and gusts up to 150 mph (240 km / h) . The storm continued quickly inland while weakening , dissipating the following day . The remnants of Hurricane Liza later entered the United States near El Paso , Texas .

= = Preparations = =

Prior to the arrival of the hurricane , many residents in shanty towns failed to hear tropical cyclone warnings and watches . Some did hear the warnings , but they did not believe them as the same warning had been issued several weeks before and nothing had happened . In addition , city officials warned the residents living near the dam to take shelter in public buildings though most refused to leave . The government ignored all requests to shore up an earthen dam , as they did not believe Liza would pose a significant threat of damage to the Baja California Peninsula . Along the Gulf Coast , troops evacuated residents , and radio stations warned all nearby ships to remain at harbor . During the afternoon hours of September 29 , the education department suspended classes as it began to rain .

As the remnants of Liza moved across the western United States , National Weather Service posted flash flood watches for much of deserts of California , southern Utah , and a portion of Colorado . For the higher areas of Colorado , a snow watch was in effect . In addition , motorists were warned of very hazards driving conditions within 100 mi (160 km) of the border .

= = Impact = =

In all , Liza brought a total of \$ 100 million in damage in Baja California Sur , which receives catastrophic flooding from hurricanes every 50 years or so . The hurricane was considered the worst natural disaster in the history of the peninsula , which at the time held 130 @, @ 000 occupants . Furthermore , Liza was at that time considered the worst hurricane to affect the entire country in the 20th century .

= = = Baja California Sur = = =

Hurricane Liza caused extensive damage and loss of life in the Mexican state of Baja California Sur . Although the Hydrometeorological Prediction Center (HPC) suggests that Liza brought only light to moderate rains to the area , peaking at around 1 in (25 mm) , newspaper accounts claim that 11 @. @ 8 in (300 mm) fell (more than a year 's worth of rainfall) in some areas in a mere 3 hours . Moreover , 22 in (559 mm) was measured in El Triunfo and San Antonio , along the southern portion of the peninsula . In La Paz , Baja California , a storm surge of 8 ft (2 @. @ 4 m) was reported .

The El Cajoncito Creek along the extreme southeast portion of the state grew into a raging torrent . During night of October 1 , waters burst a three @-@ year @-@ old and 30 ft (9 @. @ 1 m) dike . A 5 ft (1 @. @ 5 m) wall of water spilled over a small shanty town of 10 @, @ 000 , thousands of which lived in cardboard shacks . Some shacks were swept 6 mi (9 @. @ 7 km) away from their initial location . The ensuing mudslide is regarded as the worst in the History of Mexico . Most of the deaths from the hurricane were due to the dam failure ; streets also received flooding from the dam

burst .

Initially , government officials denied that the dam was poorly built ; many politicians and an engineer for the nation 's water company blamed the dam 's poor construction as the source of the extreme death toll . Prior to the arrival of the storm , many residents had repeatedly requested that a stone wall be built to protect their homes . After the storm , they said that the deaths could have be prevented . According to one account , two master planned communities were situated in the middle of the drainage and were thus deluged by the storm . The water department head took the blame for the construction , but also said that the disaster was a natural phenomenon .

" Dozens " of people were also swept away into the Gulf of California when Hurricane Liza destroyed a 600 ft (185 m) sea wall , which , ironically , had been built to prevent flooding from such storms . Nine children got swept under mud . The highway that connected Baja California with California was also destroyed in many places , more than originally anticipated . In fact , there were holes in the asphalt pavement . Bridges up to 600 ft (185 m) long were twisted .

Due to flooding , troops evacuated dozens of communities along the Gulf coast . Many desert communities throughout the state were left without any telephone or electrical service ; wood , tarpaper , and cardboard were all scattered . Dozens of scores of huts were destroyed . Many humans were swept into the gulf . Sixteen people died inside the remains of a building . Moreover , the Piojillo river overflowed its banks , killing many people and resulting in considerable damage . Elsewhere , destruction was reported in San Jose del Cabo , Cabo San Lucas , San Lucas , and Puntas Arena ; Pichilinague also received moderate damage . However , there are no known reports of any casualties in all four of those places . Hurricane Liza was also one of six hurricane to directly impact Los Cabos .

South of La Paz , communications and telephone services were cut off to 13 smaller communities . A highway that extends as far south as Cabo San Lucas was blocked . Further north , a highway that links La Paz to places along the northern part of the peninsula such as Mexicali were badly damaged in four places . Offshore , officials reported that 75 boats including nine owned by Americans had sunk during the hurricane . Most notably , the ship Salvatierra ' s cabin and most of its upper deck were ripped off while its hull rolled over . Multiple trucks smashed the ship ; however , they were later salvaged . In addition , a 88 ft (27 m) vessel sunk during the storm , in which the owner had to pay for the damage , but later earned \$ 50 @, @ 000 settlement . Overall , several ports along the coast were destroyed by the storm .

In La Paz , a town that at that time had a population of around 85 @, @ 000 , 20 @, @ 000 were left homeless (nearly one third of the towns population) , and an additional 4 @, @ 000 were injured . It is estimated that one out of five homes were destroyed in the city . Widespread flooding was reported throughout the city with mud filling up the first floor of many houses . This flash flooding led to many homes and automobiles being destroyed . Several roofs fell off of homes and landed deep in the mud . Many roads were blocked due to fallen trees while numerous homes were pushed off their foundation ; some cars were also abandoned when Hurricane Liza struck . Some cars were reportedly piled against damaged building and debris . Nine people died when a car was swept away in the floodwaters .

Also , electrical lines and drinking water supplies were cut in La Paz . Also , communication lines were extensively damaged . The La Paz airport received damage during the hurricane ; however , by the afternoon of October 1 , the airport re @-@ opened , thus allowing the military to provide much @-@ needed aid to victims . Wood , tarpaper , and cardboard were all scattered throughout La Paz . By October 2 , rescue teams had covered 38 sq mi (100 sq km) to configure the damage . Throughout the city , a total of 412 people had been killed , 150 were missing people within the resort city , five of which were later presumed dead . Overall , nearly a third of the houses in La Paz were leveled .

A wide variety of death tolls were reported by many different sources . Then @-@ Mexico president Luis Echeverria as well as the HPC and EPHC claimed that 435 people died during the hurricane . It was initially stated that 630 people had died during the storm ; however , this total does not include victims discovered by the Mexican army . During the afternoon of October 2 , the local government had placed the confirmed death toll at 397 . Two days later , the Bangor Daily News reported that

the number of bodies found dead ranged from 400 to 750 . By late October 3 , Mexican officials and a Red Cross spokesperson reported that 650 bodies had been found . Meanwhile , a military search operation claimed that the death toll of the hurricane was 1 @, @ 050 . By October 6 , local officials had abandoned efforts to retrieve additional bodies , citing safety reasons . Even though 650 people were confirmed to have died during Hurricane Liza , officials estimated that at least 1 @, @ 000 people died . Within a week after Hurricane Liza , some feared 10 @, @ 000 people perished . In addition , some modern estimates suggest that the toll could have been as high as 7 @, @ 000 .

The Red Cross estimated that 75 % of the deaths from the storm were children under 12 . At first , most of the bodies found by the army were buried normally though due to the high death toll , some were just buried under debris . Some dead bodies were later burned to prevent disease . According to preliminary estimates by officials , 40 @, @ 000 people were made homeless and an addition 20 @, @ 000 were injured , 126 of which were considered significant . Within another day , the homeless total rose to 70 @, @ 000 . Total damage from the hurricane was estimated at \$ 100 million (1976 USD) .

= = = Sinaloa = = =

In the state of Sinaloa , heavy rainfall was recorded along the northern portion of the state near the Sonoran border . A peak total of 4 @. @ 61 in (0 @. @ 117 m) was measured in both Hults and Choix . Upon making landfall in the state , Liza became one of six tropical system to making landfall in the state at tropical storm intensity during the 1968 @- @ 1995 time frame . Offshore Topolobampo , 12 ship boats were reported missing , and the 108 crewman were feared dead . On the mainland , some damage was reported . Some flooding was recorded and at least 1 @, @ 000 homes were evacuated . Along the southern portion of the state , in Yavaros , 155 people died , mostly adults . Roughly 80 % of the town was flooded ; it would take three years for the town to recover fully . In Los Mochis alone , 4 @, @ 000 people were left without a home . Damage in the city totaled \$ 300 @, @ 000 .

= = = Sonora = = =

Across Sonora , many homes were wrecked due to flooding . Light rainfall up to 1 in (25 mm) was recorded along the southeastern region of the state which led to reports of damage . In Navjoa , heavy damage was reported . Numerous faculty homes , as well as the school barn and dining hall lost their homes at the College of Pacific . Damage totaled to \$ 300 @, @ 000 .

About 30 @, @ 000 people were left homeless statewide though other authorities estimated that 24 @, @ 000 people were left homeless in both Sonora and Sinaloa combined . Throughout the mainland , 12 communities sustained heavy damage . In all , all , there are no reports of major damage in the mainland .

= = = Southwestern United States = = =

During its demise , Liza brought heavy rains and flooding to much of the Southwestern United States . In Arizona , the tropical system brought light to moderate rain throughout the state , with maximum being 1 @. @ 48 inches (38 mm) at Willow Beach , Arizona . Further east , Liza 's remnants dropped light rainfall in New Mexico (peaking at 0 @. @ 47 in (12 mm) in White Sands National Monument) , as well as in southwestern Texas . Across Death Valley , flooding was recorded .

= = Aftermath = =

During the aftermath of the storm , rescue workers searched the La Paz harbor , but had little hope in finding any victims . Other rescue workers endured 100 ° F (38 ° C) heat while frantically searching for bodies floating on the ocean or sunk under mud . Six bulldozers worked all day and

night to extract cars , some of which were upside down while others were submerged into the flood waters . Officials estimated that it would take eight days to repair down power lines in La Paz and completely restore electrical services ; within 72 hours following the passage of Liza , there was no electricity or fresh water access to survivors . Emergency facilities were used to provide the city with drinking water . Food was rationed at hotels and restaurants . Drinking water was supplied , but water supplies rapidly went short .

Some survivors of Hurricane Liza complained that they had only received one ration of food and water within 3 days of the passage of Liza . Subsequently , armed troops guarded gangs of looters that damaged additional homes . An effort was made to cure people who were suffering from sickness , but by midday on October 3 , after treating more than 5 @,@ 000 persons , the effort had been halted due to a lack of sterile cotton vital for administering the shots . Medical workers attempted to vaccinate all survivors for typhoid fever and tetanus , but the supply of syringes ran short . A large memorial service was held on October 2 in a nearby church .

Supplies had been brought in through the air and via the Mexican navy containing food , blankets , and medicine early on October 2 . However , additional bad weather initially prevented further supplies from coming in . Around that time , President Echeverria ordered emergency aid to be sent La Paz , Los Mochis , and Ciudad Obregon , as well as three coastal Sonoran ports . In addition , officials set up tents to house 40 @,@ 000 homeless persons . Meanwhile , city officials appealed for additional food , medicine , and construction materials . Gerald Ford , who was then the U.S. president , agreed to provide aid for victims of Hurricane Liza ; the first of which arrived late on October 2 , containing food and construction materials . The next day , power had been restored to hospitals , government centers , and gas stations . The government said that it was rushing in 100 @,@ 000 meals as well as 40 @,@ 000 temporary shelters the first of which started to arrive on October 5 @.@ within a week after the storm , however , one survivor of the storm noted that plenty of food had arrived from many places .

Baja California Sur governor , Ceasar Mendoza Arambure , ordered a permanent evacuation of all low @-@ lying residents to prevent more destruction during future floods , saying " I never want to see this city menaced in this way again " . He also believed that it would take two years to completely re @-@ build La Paz . Mexican officials arranged a meeting on October 3 to make a plan to reconstruct the devastated area . The nation 's president ordered a plan to prevent a recurrence of Hurricane Liza , saying that La Paz would be built a different way . In February 1977 , houses were donated to the needy in La Paz . Many residents were upset at their government for failing to protect the dam . In the mainland , \$ 50 @,@ 000 of relief materials as well as \$ 20 @,@ 000 of cash was supplied to the Los Mochis area .

Months after the hurricane , the Mexican government launched an investigation into the dam failure . In the end , La Paz recovered , though the town had to be almost entirely re @-@ built . In 1997 , Hurricane Pauline struck southern Mexico , becoming the deadliest tropical cyclone to hit the country since Liza . As of 2006 , no hurricane in Baja California Sur has been as bad as Liza .