



# Limit of Moderate Wave Action

## Identifying Inland Coastal Flood Risk

The Federal Emergency Management Agency (FEMA) is nearing the completion of the most comprehensive analysis of the Texas coastal flood hazards ever performed. By integrating the latest topographic data sets with state-of-the-art storm modeling techniques, FEMA will provide citizens and community officials in the Gulf coastal counties of Texas with the most up-to-date flood hazard information possible. The resultant flood hazard maps may be used as a tool for communities and residents to determine the flood risk to their communities and personal property. This allows residents, businesses and community officials to proactively prepare for the next hurricane landfall.

These updated flood hazard maps (known as Flood Insurance Rate Maps, or FIRMs) and studies will allow communities and property owners to make more informed decisions about reducing their coastal flood risk. To help communities and individuals to understand their coastal flood risk even more, a new informational layer—the **Limit of Moderate Wave Action (LiMWA)**—will now be depicted on the FIRMs.

## Background

During the last several decades, the coastal population in the United States increased significantly. This population increase led to increased coastal development, increasing the number of structures at risk. The Gulf of Mexico has long been susceptible to strong storms. Low lying areas are especially vulnerable to damage from erosion, waves, and storm surge.

The National Flood Insurance Program (NFIP) depicts coastal flood hazards in two different zones on its FIRMs:

- Zone VE, where the delineated flood hazard includes wave heights **equal to or greater than** three feet
- Zone AE, where the delineated flood hazard includes wave heights **less than** three feet

Post-storm field visits and laboratory tests have confirmed that wave heights as low as 1.5 feet can cause significant damage to structures when constructed without consideration to the coastal hazards. Additional flood hazards associated with coastal waves, include floating debris, high velocity flow, erosion, and scour, can cause damage to Zone AE-type construction in these coastal areas.

To help community officials and property owners recognize this increased potential for damage due to wave action in Zone AE, FEMA issued guidance in December 2008 that identified and mapped the 1.5-foot wave height line, referred to as the **Limit of Moderate Wave Action (LiMWA)**. The LiMWA alerts property owners on the coastal side of the line that although their property is in a Zone AE, their property may be adversely affected by waves as low as 1.5 feet high. Consequently, property owners and community officials need to be aware of the high flood risk in the area between this inland limit and the Zone VE boundary, although the risk is not as high as in Zone VE (see Figure 1).

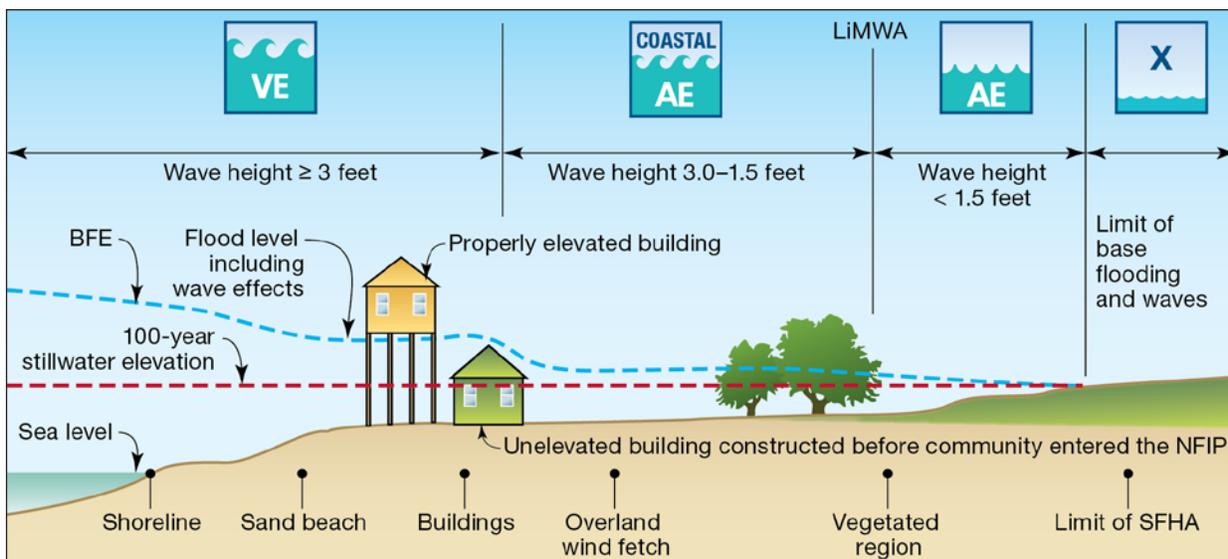


Figure 1

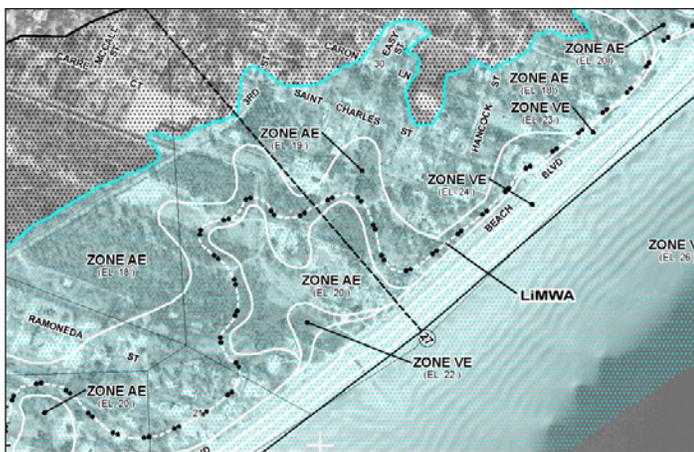
## Identifying LiMWA on the Flood Map

In the FIRM legend, the LiMWA is identified as “Limit of Moderate Wave Action” and is depicted on the FIRM as two black dots and three white dash lines in a sequential pattern as shown in Figure 2. A note will be added to the “Notes To Users” section on the map panel to explain the LiMWA boundary.



**Figure 2.**  
**Limit of Moderate Wave Action**

An example portion of a FIRM panel with the LiMWA line is shown in Figure 3. Between the LiMWA line and the Zone VE line, damaging waves of 1.5 to 3 feet can occur. This area is also referred to as the Coastal A zone. More information on building practices can be found in [Technical Fact Sheet 2.1 of FEMA P-499, Home Builders Guide to Coastal Construction](#) (Dec 2010).



**Figure 3. An example portion of a FIRM panel with the LiMWA line is shown**

## Effects on Floodplain Management

FEMA does not impose floodplain management requirements based on the LiMWA. The LiMWA is provided to communicate the higher risk that exists in the area. Because the 1.5-foot breaking wave in the LiMWA zone can potentially cause foundation failure, communities are encouraged to adopt building construction standards similar to Zone VE in those areas.

In addition, the LiMWA line is a separate digital FIRM database feature that can be exported and overlaid with additional digital data. Mapping the LiMWA will provide community officials and other stakeholders with additional important flood risk details to consider when buying/developing, mitigating or enforcing floodplain management regulations in the coastal flood hazard areas.

## Effects on Property Owners

Residents and business owners living or working in the LiMWA zone should be aware of the potential wave action along with floating debris, erosion, and scour that could cause significant damage on their property. They are encouraged to build safer and higher to minimize the risk to life and property.

While the risk of damage is higher between the LiMWA line and the Zone VE line than other parts of the coastal AE zone, the NFIP flood insurance rates currently do not differ from other AE zone rates.

The Federal mandatory purchase requirement does apply in these zones and property owners are encouraged to carry coverage equivalent to the replacement cost of their building and to include contents coverage.

If remapping results in a higher risk flood zone or a higher Base Flood Elevation,<sup>1</sup> property owners are encouraged to contact their insurance agents to discuss possible cost-saving options (e.g., grandfathering). To learn more about flood insurance, the risks of flooding, and to locate an agent, visit [www.FloodSmart.gov](http://www.FloodSmart.gov).

1 The elevation of floodwaters having a one percent chance of equaling or exceeding in any given year.

## LiMWA Quick Facts

- Waves of 1.5 feet or higher have been determined to cause significant damage to structures they come in contact with
- A Limit of Moderate Wave Action (LiMWA) line identifying the 1.5-foot wave height will be shown on FIRMs produced along the Texas Coast, where applicable
- Communities who adopt VE Zone standards and reference the LiMWA may receive CRS credits, which could lower insurance premiums for residents and business owners
- For additional background information on LiMWA, read FEMA Procedure Memo 50 at [www.fema.gov/library/viewRecord.do?id=3481](http://www.fema.gov/library/viewRecord.do?id=3481)

## What is TXCHART?

- A comprehensive approach to integrating Texas Coastal flood hazard identification and analysis with risk communication
- Uses the latest topographic data and storm modeling techniques to help communities better understand their current coastal flood risk.
- Provides a centralized location for local officials and residents to learn more about their coastal flood risk.
- For more details, visit [www.TXCHART.com](http://www.TXCHART.com).



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