Advisory 1% Annual Chance Flood Elevations for Hancock County, Mississippi

Hurricane Katrina made its first landfall on August 25, 2005 between Hallandale Beach and North Miami Beach, Florida. From there, the storm continued into the Gulf of Mexico, increasing in strength to a Category 5 hurricane. Katrina made a second landfall as a Category 4 hurricane on August 29 at Grand Isle, Louisiana. The hurricane caused extensive damage along the Gulf Coast of Mississippi.

In order to minimize the impacts of future catastrophic events, the Federal Emergency Management Agency (FEMA) is providing advisory information that can be used by local officials to help guide recovery efforts (including building elevations).

The information provided is for advisory purposes only. In addition to determining site specific flood elevations, community officials should consider additional protective measures to reduce future flood risks such as coastal setbacks, freeboard and use of the Coastal Construction Manual (FEMA Publication 55). This publication contains the recommended use of coastal high hazard (VE Zone) building standards in all areas subject to 1% annual chance flood elevations caused by hurricane storm surges.

The currently effective coastal flood elevations for Hancock County are based on a study performed more than 20 years ago. Significant hurricane activity has occurred throughout the Gulf Region since that study. Additionally, observed flood levels from Hurricane Katrina suggest that the currently effective flood elevations may not accurately reflect the actual flood risks.

Consequently, FEMA has completed a preliminary assessment of the 1% annual chance flood elevations incorporating the observations from Hurricane Katrina as well as additional tide and storm data from the past 20 years. This preliminary analysis concludes that the coastal flood data depicted on the Flood Insurance Rate Map (FIRMs) for Hancock County need to be updated and that flood elevations are understated. The preliminary flood data analysis confirms that storm surge stillwater elevations (SWELs) in the current Flood Insurance Study should increase by 6 to 8 feet. It is also expected that the coastal high hazard areas (VE Zone) will move inland significantly and that the general inland extent (boundary) of the Special Flood Hazard Area will increase substantially when the FIRMs are updated.

The preliminary analysis of historic data indicates that the 1% annual chance SWELs for Hancock County should be increased to 20 feet for the Gulf Coast and 18 feet for back bay areas. The difference between these elevations is wave setup that increases SWELs in the open coast area.

To help guide the immediate needs in the recovery and rebuilding process, a simplified method has been developed to calculate a site specific advisory building elevation using the above SWELs and the ground elevation

Approximate Method for Calculating Advisory Building Elevation:

Advisory Building Elevation = SWEL + Wave

Wave = ½ depth = d/2

Example:

Back Bay SWEL = 18 ft

Ground Elevation (z) = 10 ft

Depth = SWEL – z = 18 ft – 10 ft = 8 ft

Wave = ½ (8) = 4 ft

Advisory Building Elevation = 18 + 4 = 22 feet NGVD29

at the building site. The first step in applying the method is to determine if the building site is in the open coast or a back bay area and selecting the appropriate advisory SWEL. The next step is to determine the ground elevation at the site so that the wave height for the area can be estimated. The wave height is estimated by dividing the flood depth resulting from the advisory SWEL by two. The Advisory Building Elevation is then calculated by adding the estimated wave height to the advisory SWEL.

This method is illustrated in the example below and in Figure 1.

If use of the above guidance results in elevation or foundation type requirements that appear severe, it is suggested that local community officials consider coastal setbacks and relocating homes and businesses from that area. Other factors to consider in situations like this include the frequency of flooding at higher frequencies (i.e. 20%, 10%, and 5% annual chance floods), anticipated future damages from other hazards (such as wind), and the frequency of historical flood losses in the area. High risk areas should be avoided whenever possible for all type of natural disasters.

Ultimately it will be home and business owners and state/local officials who make final decisions regarding construction type and elevation requirements during the recovery process. The guidance in this publication will assist them in making these decisions during the period in which the approximate 1% annual chance flood elevation estimates are refined and improved upon as more data is collected and analyzed.

Figure 1 shows an example of how to apply the estimate 1% annual chance flood elevation equation.