



ADVISORY Flood Elevations for Harrison County, Mississippi

Hurricane Katrina was a strong Category 5 hurricane for several days in the Gulf of Mexico when it began pushing waters towards the Mississippi coast. Katrina made landfall on August 29, near the Mississippi-Louisiana border. The hurricane caused extensive damage along the Gulf Coast of Mississippi.

To minimize the flood impacts of future events, the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) is providing advisory information concerning coastal flood elevations that can be used to guide recovery efforts. This guidance is necessary because Hurricane Katrina and other recent storms indicate that the flood risk for Harrison County (including incorporated areas) may be understated.

FEMA has completed an early assessment of the 1%-annual-chance (or 100-year) flood elevations, incorporating Hurricane Katrina and other storm data from the past 25 years. By including the additional 25 years of data, storm surge stillwater elevations (SWELs) for the 1%-annual-chance flood are as much as 4 to 6 feet higher than the SWELs published in the effective Flood Insurance Study (FIS). Specifically, the 1%-annual-chance SWELs for Harrison County should be increased to 18 feet (relative to the National Geodetic Vertical Datum [NGVD] of 1929) for the Gulf Coast, and 16 feet NGVD29 for back bay areas.

FEMA intends to update the FIS and Flood Insurance Rate Maps (FIRMs) for Harrison County in the next 1-2 years. These updated SWELs will likely move the coastal high hazard area (V Zone) a significant distance inland and the inland extent of the Special Flood Hazard Area will increase substantially. Until such a restudy is completed, FEMA has developed a simplified method to calculate a site-specific **Advisory Flood Elevation** that can be used in place of the base flood elevation on the current effective FIRM. This will help address the immediate need for more accurate data in the recovery and rebuilding process. This method is described in detail below, including an example calculation and a graphical explanation in Figure 1.

The first step in applying the simplified method is to determine if the building site is in an open coast or back bay area, and then to select the appropriate advisory SWEL based on that finding (18 or 16 feet NGVD29, respectively). The next step is to determine the ground elevation at the site so that the wave height for the area can be estimated. Wave effects, which are a key component of coastal flood elevations, are

not included in the SWEL and must be calculated separately. The wave height is estimated by calculating the flood depth resulting from the advisory SWEL, and dividing that value by two. The Advisory Flood Elevation is then calculated by adding the estimated wave height to the advisory SWEL.

1. Approximate Method for Calculating Advisory Flood Elevation:

Advisory Flood Elevation = SWEL + Wave
Wave = $\frac{1}{2}$ depth = $d/2$

2. Example:

Back Bay SWEL = 16 ft
Ground Elevation (z) = 10 ft
Depth = SWEL - z = 16 ft - 10 ft = 6 ft
Wave = $\frac{1}{2}$ (6) = 3 ft
Advisory Flood Elevation =
16 + 3 = 19 feet NGVD29

Other factors to consider in assessing the elevation requirements and potential location or siting issues are flooding at higher frequencies (i.e., 20%-, 10%-, and 5%-annual-chance floods), anticipated future damages from other hazards (such as wind and erosion), and the frequency of historical flood losses in the area. High-risk areas should be avoided whenever possible for all types of natural hazards.

Although the information provided here is advisory, communities should consider its use for rebuilding in a safe manner.

In addition to determining site-specific flood elevations, community officials should consider additional protective measures to reduce future flood risks. These measures could include additional freeboard, and using FEMA's Coastal Construction

Manual (CCM) (FEMA Publication 55). The CCM recommends the use of V Zone building standards in all areas subject to waves and velocity floodwaters caused by hurricane storm surges. For additional information on recommended practices, see the Coastal Construction Fact Sheet Series available at: <http://www.fema.gov/fima/mat/fema499.shtm>.

Ultimately it will be local officials, working with property owners, who will make final decisions regarding construction type and elevations that will apply during the recovery process. The Advisory Flood Elevations will be a valuable tool until new FISs and FIRMs are developed. By mid-November, FEMA will publish a set of Flood Recovery Maps that will show detailed information on the Katrina flooding and the Advisory Flood Elevation.

Figure 1: How to determine the Advisory Flood Elevation based on the site's ground elevation, applicable advisory elevation, and estimated wave height.

