



## [ADVISORY ADDENDUM #1 Base Flood Elevations for St. Charles Parish, Louisiana](#)

On November 30, 2005, following Hurricanes Katrina and Rita landfall in Louisiana, the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) provided advisory information concerning coastal flood elevations for areas outside the protection of levees that were recommended for use to guide recovery efforts. This guidance was necessary because Hurricanes Katrina and Rita, along with other recent storms, have created concerns about the accuracy of the flood risk information for St. Charles Parish (including incorporated areas) and whether the risk may be understated.

Assessing flood hazards for areas within the protection of levees in St. Charles Parish is challenging due to the existence of numerous flood control facilities in the coastal region. Even though levees within St. Charles Parish were not damaged, other facilities experienced damage of varying degrees throughout southeastern Louisiana as a result of Hurricanes Katrina and Rita, and the U.S. Army Corps of Engineers (USACE) is on an aggressive path to repair and improve the flood control system. The USACE is on schedule to have repairs to damaged areas completed by June 2006, to have all federal levees constructed to authorized heights by September 2007, and to have fully authorized levels of protection and improvements to the system completed by 2010.

Although USACE improvements to the flood control system will make St. Charles Parish safer than it was before the storms, they will not eliminate the potential for flooding. **In fact, based on analyses recently completed by the USACE, the flood control system will not meet the standards necessary for providing protection against the 1 percent-annual-chance (100-year) flood, which is also referred to as the base flood.** The National Flood Insurance Program (NFIP) uses the base flood as the standard for floodplain management.

FEMA and the USACE have worked together to develop flood hazard data and formulate recommendations to be considered by State and local governments as they begin to make recovery decisions. This updated information is being utilized in this addendum (for inside levee protected areas) to the previously released information (for outside levee protection), and is both reliable and current, and aimed at assisting in the recovery process as it moves forward. Owing to the differences in flood risk information for areas inside and outside of levees, this Flood Recovery Guidance addendum for areas located within the protection of levees has been developed separately to treat these two physical settings based on the best available technical information.

### **Inside of Levee-Protected Areas**

For areas in the Parish located within the existing levee between Lake Pontchartrain and the Mississippi River, FEMA has determined that eventual levee certification is likely. In the levee area of Sub-Basin "a" located in the northern part of the Parish (see Figure 1), FEMA recommends the following: new construction and substantially damaged homes and businesses within a designated FEMA floodplain should be elevated to either the Base Flood Elevation (BFE) shown on the current effective Flood Insurance Rate Map (FIRM) **or** at least 3 feet above the highest adjacent existing ground elevation at the building site, whichever is higher; and new construction and substantially damaged homes and businesses not located in a designated FEMA floodplain should be elevated at least 3 feet above the highest adjacent existing ground elevation at the building site.

For the Parish Advisory BFE (ABFE) inside levees, this Guidance is similar to NFIP rules for areas protected by levees being restored to provide 1-percent-annual-chance base flood protection. If the requirements necessary for the application of these rules fail to materialize, flood elevations in this area would be based on a "without levee" scenario and

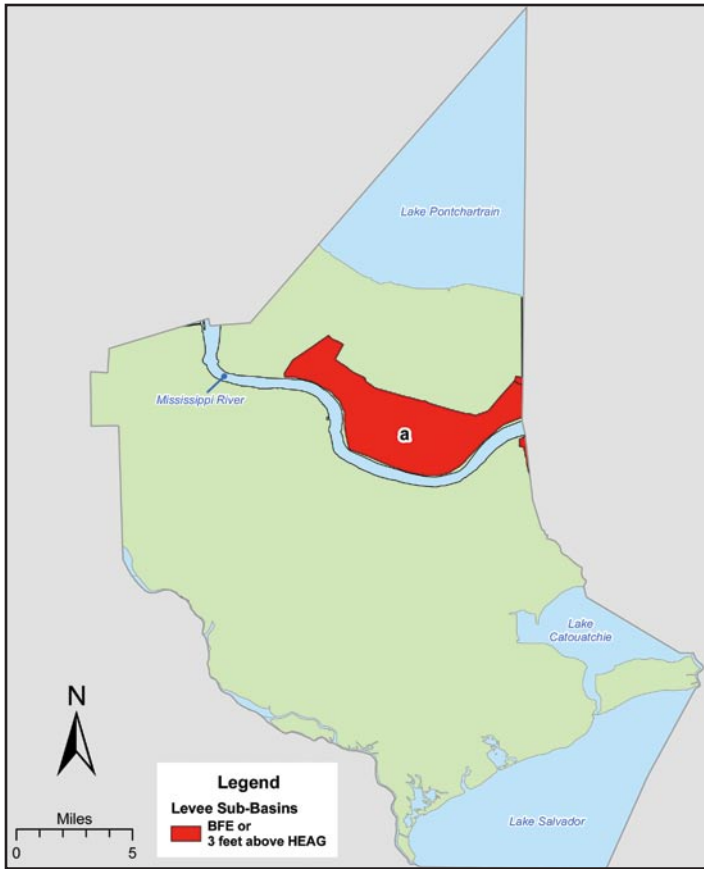


Figure 1. ABFE guidance and levee sub-basin locations for St. Charles Parish.

could exceed an elevation of 9 feet north of the Mississippi River referenced to the National Geodetic Vertical Datum of 1929 (NGVD29).

In addition to the recent USACE storm surge modeling, FEMA has also developed these recommendations based on the height and integrity of the levee system expected to be in place by September 2007. Although FEMA is confident in the results from this current assessment, the agency will continue to monitor progress made with regard to levee improvements, findings from other ongoing studies, and enhancements to the agency's understanding of the probability of flooding in this area. FEMA will adjust the recommended flood elevations as necessary as the agency prepares updated FIRMs for St. Charles Parish and its incorporated areas.

### Community Adoption

FEMA is encouraging local officials and citizens to adopt the elevation and freeboard recommendations for inside of levee-protection made in this Guidance document and to elevate structures accordingly. These added precautions will take into account increased flood risk due to subsidence, provide extra

flood protection to the structure, reduce nuisance flooding, and may result in lower flood insurance premiums. Using elevation recommendations above the 1-percent-annual-chance stillwater elevations (SWELs), and any added effects of waves, is a prudent measure for ensuring structures are rebuilt using the best available information to protect lives and property, and is also a sound floodplain management practice that communities are encouraged to adopt and enforce.

### Updated Flood Risk Information for St. Charles Parish

A FEMA coastal model study of hurricane storm surge flooding and levee flood protection is already underway at USACE, and FEMA intends to have an updated preliminary Flood Insurance Study (FIS) and updated FIRMs for coastal areas of St. Charles Parish as soon as possible. The updated FIS and FIRMs may show an increase of the SWELs, Special Flood Hazard Areas (SFHAs), and BFEs over existing flood data (including the storm data analysis and engineering studies used for this Flood Recovery Guidance), and may result in the coastal high hazard area (V Zone) moving further landward.

Until the restudy is completed, FEMA is encouraging communities within St. Charles Parish to use the Flood Recovery Guidance previously released for outside levee protection and the information described herein for areas inside levee protection. Both of these Flood Recovery Guidance methods can be used during the recovery and reconstruction of the Louisiana coastal and levee-protected areas by determining the site-specific ABFEs as described below.

#### 1. Method for Calculating ABFE Inside of Levee-Protected Areas:

ABFE = The greater of either the FIRM BFE or the highest existing adjacent grade (HEAG) at the building site + 3 feet

#### 2. Example:

Consider a site where:

St. Charles Parish FIRM BFE = Zone AE (EL 5 feet) (relative to NGVD29)

Site HEAG = 4 feet (NGVD29)

Compare FIRM BFE to Site HEAG + 3 feet:

FIRM BFE of 5 feet < 7 feet (Site HEAG of 4 feet + 3 feet)

ABFE at this site is 7 feet (NGVD29). Therefore, the structure's first floor (including basement) is recommended to be elevated to 7 feet (NGVD29) or higher.

## **Flood Recovery Guidance Method**

### **Inside of Levee-Protected Areas**

To apply the Flood Recovery Guidance provided above to determine an ABFE for inside of levee-protected areas, individuals must review the current, effective FIRM and detailed topographic data (ground elevations) for the building site. In the Parish levee Sub-Basin "a", the first floor of new construction is recommended to be elevated to the BFE shown on the FIRM or at least 3 feet above the highest adjacent existing ground elevation at the building site, whichever is higher. (A professional surveyor may need to be consulted to accurately determine the highest adjacent existing grade for the proposed site.)

### **Other Pertinent ABFE Information**

Although the information provided in this Flood Recovery Guidance addendum and in the previous Guidance document are both advisory, communities should consider its use for rebuilding in a safer manner. For additional information, community officials, residents, and other interested parties can access the FEMA website for these flood recovery advisories at <http://www.fema.gov/hazard/flood/recoverydata/index.shtm>.

In addition to determining site-specific ABFEs, community officials should consider additional protective measures to reduce future flood risks. These measures could include using additional freeboard and using the FEMA 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 and rebuilding process. The ABFEs will be a valuable tool until new model studies can be developed and incorporated into the FIS and FIRMs. Within the next one to two months, FEMA will also publish a set of maps that will show detailed event information for Hurricanes Katrina and Rita, including flood inundation boundaries and high-water elevations.

### **Datum Conversion Considerations**

Conversion of orthometric height measurements (elevations) from the NGVD29 to North American Vertical Datum of 1988 (NAVD88) is of importance to surveyors and building officials using this Guidance. Studies show some variability of the conversion factor between NGVD29 and NAVD88 over the geographic extent of St. Charles Parish, and it would appear that a Parish average conversion factor of -0.21 foot would be appropriate for application. For site-specific determinations, a tool such as CORPSCON, developed by the USACE (<http://crunch.tec.army.mil/software/corpscon/corpscon.html>), can be used. The latest information on NAVD88 elevations in Louisiana can be found on the National Oceanic and Atmospheric Administration's (NOAAs) National Geodetic Survey (NGS) website at <http://www.ngs.noaa.gov/heightmod/LouisianaControl.shtm>. Future updates to the FIS and FIRM by FEMA will include a conversion of all flood data and BFEs within the Parish from NGVD29 to NAVD88.