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December 16, 2008

Mr. William E. Peterson
Regional Director
Federal Emergency Management Agency
FRC 800 North Loop 288
Denton, TX 76209-3698

Mr. James Stark
Director
Louisiana Transitional Recovery Office
Federal Emergency Management Agency
1250 Poydras St. Box 43
New Orleans, LA 70113

RE: Request to suspend immediately the release of DFIRMs in order to reexamine data and models

Dear Mr. Peterson and Mr. Stark:

The Louisiana Recovery Authority (LRA), the Governor's Office of Coastal Affairs and Coastal Protection and Restoration Authority (GOCA/CPRA), and the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) request that FEMA suspend formal release of the Digital Flood Insurance Rate Maps (DFIRMs). The LRA, GOCA/CPRA, and GOHSEP request that FEMA work with the state of Louisiana to collect accurate Base Flood Elevation (BFE) data, substantially improve modeling approaches employed in the development of the DFIRMs and develop a transition plan to release the updated maps. The state is committed to rebuilding safer, stronger, and smarter. The preliminary DFIRMs do not appear to be the best available data needed for rebuilding our communities. Considering the profound social and economic consequences of these maps, we believe that accurate information must be conveyed to these communities and an appropriate transition plan be provided for the most severely impacted areas.

As part of the initial community outreach, FEMA began releasing preliminary DFIRM results to Louisiana state and coastal parish officials. After careful analysis of the results provided by FEMA, the CPRA, Louisiana State University experts, and a number of professional engineers have determined that significant problems appear to exist with the preliminary DFIRMs in terms of the data, modeling methodology, and with the models themselves. The preliminary DFIRMs examined do not meet FEMA's own requirements for accuracy and were not uniformly prepared to professional engineering standards.

According to FEMA *Guidelines and Specifications for Flood Hazard Mapping Partners - Volume 1: Flood Studies and Mapping, April 2003*, in moderate to flat terrain, where two-foot contours are required to accurately determine one-percent-annual-chance flood elevations and floodplain boundaries, the digital elevation data must have of 1.2 feet of accuracy at the 95 percent confidence level. This means

that the true or theoretical location of a point falls within \pm of that linear uncertainty value 95 percent of the time.

We are concerned about the ease with which our engineers have uncovered errors in FEMA's BFE effort. So much so, that it raises concerns to whether discrepancies are a systematic problem.

Permit us to provide you with a few examples. The land elevation data from several parishes used in surge and wave models do not meet FEMA requirements for accuracy. According to the FEMA publication *LIDAR Specifications for Flood Hazard Mapping--Appendix 4B*, "DEMs should have a maximum RMSE of 15 centimeters, which is roughly equivalent to one-foot accuracy. RMSE is the square root of the average of the set of squared differences between dataset coordinate values and coordinate values from an independent source of higher accuracy for identical points. If those differences are normally distributed and average zero, 95 percent of any sufficiently large sample should be less than 1.96 times the RMSE." The "1.96" requirement refers to a 95 percent level of statistical certainty. Our analysis shows that in Cameron Parish, only 92.5 percent of 2935 samples are within the specifications and the errors are not normally distributed, i.e., fail Kolmogorov-Smirnov test. In Orleans Parish, only 90.6 percent of 1626 samples passed and errors are not normally distributed. In St. Tammany, the errors are not normally distributed. We have also noticed significant errors in cross-section measurements and surface friction estimation.

Even with the limited data released by FEMA to the state and local governments, Cameron Parish has performed a preliminary evaluation of the output files of the FEMA WHAFIS computer model, which determines wave heights for the Digital Flood Insurance Rate Map (DFIRM) and the ADvanced CIRCulation (ADCIRC) model, which determines surge depths. Errors which have been encountered thus far include the following:

WHAFIS errors

- The starting point of each WHAFIS transect begins over the waters of the Gulf of Mexico
- Emergent lands were incorrectly modeled as open water
- A zones present in the output files were omitted from the DFIRMs
- Inland water bodies were incorrectly modeled

ADCIRC errors

- Poor resolution of the ADCIRC grid does not properly depict ridges/roads/levees and omits major features altogether, such as the Cameron-Creole Watershed Levee
- Poor calibration of the ADCIRC grid was observed as discrepancies in High-Water Marks (HWM)
- Model failed to recreate accurately the surge associated with Hurricanes Katrina and Rita

Topographic errors

- ADCIRC differs from LIDAR
- WHAFIS differs from LIDAR
- LIDAR differs from actual ground elevations

If the models have such a breadth of errors and cannot replicate the past, how do we have confidence that derivative products such as BFEs adequately assess the risk?

Because of these FEMA errors, it is premature for FEMA to release formally the DFIRMs for public comment and to begin the 90-day timeline to adoption. The communities of coastal Louisiana will continue to invest millions of dollars of recovery aid into residences, businesses, facilities, and infrastructure based upon FEMA DFIRM data; we must be confident that these recommendations for flood insurance, disaster assistance, and protection are based upon data of the highest quality and the most rigorous and appropriate methodological assumptions and applications.

FEMA regulations as found in 44 C.F.R. Part 66 require detailed consultation with state and local officials to ensure that relevant data to the attention of FEMA as they develop DFIRM information and submission from the community concerning the study is encouraged. This effort was not made with several parishes of the state. We are concerned that FEMA intends to use these unofficial maps as the best available data for purposes of implementing Stafford Act programs subsequent to Hurricanes Gustav and Ike. Temporary housing, temporary facilities for essential governmental functions, and permanent work Public Assistance projects already are being impeded by this inappropriate policy.

To help ease the transition for coastal parishes while FEMA reexamines the DFIRM base data and modeling methodology, we further request that FEMA continue to extend grandfathering rules and temporarily allow for reduced insurance rates for new construction in areas that are working toward enhanced flood protection. This approach is similar to what was extended for the urbanized areas of Los Angeles and Sacramento, California in 2007. While FEMA collects better data and develops improved modeling methodologies for the new DFIRMs, the state and parishes will work with FEMA to create long term transition plans for enhanced state coastal restoration and protection through our state Master Plan and other non-structural measures.

For Louisiana, the next formal DFIRM release by FEMA will have a profound impact on how we decide to invest our recovery dollars and where we decide to invest in state levee protection. For this reason, we request the following immediate actions:

- (1) Suspend the formal release of preliminary DFIRMs.
- (2) Immediately release all existing DFIRMs base and model data to the state and parishes to ensure transparency.
- (3) Work together with CPRA to collect better data and improve DFIRM modeling techniques.
- (4) Allow coastal Louisiana to maintain existing insurance rates on new construction until FEMA, the state, and coastal parishes have developed a transition plan for adopting new DFIRMs.
- (5) Use previously adopted DFIRMs for purposes of Stafford Act programs supporting recovery from Gustav and Ike.

We look forward to working with FEMA on this effort and thank you in advance for your prompt response. The state of Louisiana is committed to working with FEMA to achieve the responsible rebuilding and protection of coastal Louisiana.

Sincerely,



Paul Rainwater
Executive Director
Louisiana Recovery
Authority



Garret Graves
Director
Coastal Activities



Mark A. Cooper
Director
Governor's Office of
Homeland Security and
Emergency Preparedness

enclosure: FEMA FIRM Revision Presentation

cc:

Louisiana Congressional Delegation
John Podesta
Valerie Jarrett
Harvey E. Johnson
R. David Paulison