Hurricane Bret
Post-Storm Assessment:
A Review of the Utilization of Hurricane Evacuation Studies and Information Dissemination

Prepared for
Texas Division of Emergency Management
and
Federal Emergency Management Agency Region VI

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Executive Summary

Hurricane Bret came onshore in Kenedy County, Texas on the evening of August 22nd, 1999. Although the storm was at one point a Category 4 hurricane, its impact was minimal, because the storm decreased in strength before landfall and it made landfall at a thinly populated section of the coast. No fatalities were directly attributed to the storm, and direct damages were estimated at about 60 million dollars.

This report was undertaken by the Hazard Reduction and Recovery Center of Texas A&M University under contract to the Governor's Division of Emergency Management of the State of Texas and FEMA in order to study the accuracy and effectiveness of hurricane planning and studies completed prior to the event. In order to do so, interviews were conducted with local emergency managers, elected officials, State agency personnel, and member of the media in 12 counties along the Texas coast. In addition, a mail survey of a random sample of residents in the most affected areas was undertaken. The results of this study show that problems with evacuation, while localized, were serious enough to merit further attention. Evacuation participation rates were low for the most part, but the barrier islands evacuated almost completely.

The following recommendations resulted from this study:

Chapter 3

- **Media**

3.1. Make sure all media outlets understand the policies on hurricane evacuation shelters, and have the necessary information to pass on to the public.

3.2. The media outlets we interviewed do not have accurate information on the circumstances under which I-37 will be reversed. They are thus not able to accurately inform the public on this important policy. DPS needs to make sure they have contacted all mass media outlets in the Corpus Christi area to explain the constraints on I-37 reversal, so the public does not expect automatic reversal in the case of any hurricane's approach.

3.3. EOCs should speak with a unified voice. A public information officer should be available to answer all questions from the media, so as to avoid the confusion of contradictory messages going out to the media.

3.4. In areas with numerous media outlets, some effort should be made to distinguish between the message from emergency management and the opinions of media personalities. The latter can vary, and it is not possible to require them

all to say the same thing. They should, however, make an effort to coordinate their messages so as to avoid unnecessary confusion among the public.

3.5. Information coming from official sources should be couched in non-technical language, so as to minimize the need for interpretation by the media, which can allow errors to creep into the message.

3.6. Official sources should establish contact with the media as early as possible in an event, so as to minimize the amount of time the public does not know what emergency management officials are doing and advising.

3.7. As much as possible, media outlets should be encouraged to provide all viewing/listening areas with information specific to their needs. This would help local emergency management officials of the smaller communities surrounding large media markets to distinguish between their recommendations and those of the larger city emergency managers.

3.8. Because of the demographics of the impact area, a serious effort must be made by state and local elected officials and emergency management officials to cultivate a working relationship with Spanish-language television and radio stations, in order to ensure that they have the most accurate and timely information possible.

3.9. Media outlets could capitalize on public interest in hurricanes to gain market share by billing themselves as the place to get accurate information in an emergency. This is an opportunity for cooperation between DEM and commercial media outlets.

- **Shelter Management**

3.10. Private entities such as nursing homes should be informed of the state requirement that they plan for relocation of their patients in case of an evacuation, and a review process should be developed to ensure that they have emergency plans that are current, frequently reviewed, updated, and exercised.

3.11. The Red Cross needs to publicize its policy on providing shelter in coastal counties, and explain the logic of its position. This will hopefully encourage people to take an emergency seriously and more likely to evacuate. A reevaluation of its shelter policy is recommended in light of the varying potential for surge-related flooding along the Texas coast.

3.12. Lists of items required by evacuees should emphasize bedding and prescription medications, because shelter providers frequently mentioned that evacuees did not bring these.

3.13. Shelter locations must be communicated accurately. Reliance on coded lists, in which the number of a facility on the list of shelter locations was not related to the order in which it was opened, caused unnecessary confusion.

3.14. Smaller communities along evacuation routes should be included in shelter planning.

3.15. Plans need to be made to cover the requirements of special needs populations in case of emergencies. Such plans may involve local churches, hospitals, or other organizations, as well as, or instead of the Red Cross.

3.16. Evacuating jurisdictions should ensure that communities along their evacuation routes are advised when they issue evacuation requests. This could be accomplished by sending the evacuation requests to the DDC and the state EOC, who could then include it with other pertinent information on TLETS and other outlets.

3.17. A serious effort should be made to find shelters with air conditioning, especially for the use of the elderly and infants who are more vulnerable to the effects of heat exhaustion.

3.18. The state shelter assessment program should be expanded to include communities inside risk zones in order to support local efforts to provide adequate shelters in areas not threatened by storm surge.

- **Traffic Management**

3.19. Educate the media and the public on the specific conditions under which southbound lanes on I-37 will be reversed. Mount a public awareness campaign using all available channels of communication to deliver a unified message about the reversal.

3.20. Opening of different agencies' EOCs should be coordinated, since they rely on each other for support during hurricane operations.

3.21. Political decision-makers and technical personnel must work together on evacuation decisions in major population centers such as Corpus Christi. Decisions should not be reached in isolation from agencies charged with their implementation, and should not be announced in the absence of agreement among all the principals.

3.22. Mount a public education campaign to increase awareness of alternate evacuation routes and destinations.

3.23. Increase the number of evacuation roadway network signs on all routes to aid in public awareness, both of the need to plan for evacuation and of the variety of possible routes available to them.

3.24. Work with local radio stations to improve reporting on traffic conditions during evacuations.

- **Prison Evacuations**

3.25. Develop an evacuation plan for each TDCJ Region. The development of these plans should include both the evacuating units and the host units.

3.26. Provisions must be made for using TDCJ personnel to escort evacuation buses, because the DPS does not have enough people to cover both civilian and inmate needs.

3.27. Decentralize evacuation decision making as much as possible, including the administrators of individual prisons because they are most familiar with the populations in their care and the potential problems of an evacuation. An effort should be made to make these decisions early enough to allow most prisoners to be moved before the civilian population evacuates.

3.28. TDCJ should coordinate its operations with other agencies. This can be facilitated by such measures as maintaining a presence in key local EOCs during an event, and by reviewing TDCJ evacuation plans with local emergency managers and DPS.

3.29. Policies on wind tipping speeds of TDCJ buses should be updated based on the best technical advice available.

• Emergency Management

3.30. Emergency Management Directors must have some training in emergency management.

3.31. A study should be made of the feasibility of mandatory evacuation in Texas. The study should be performed in an open, inclusive manner so that the pros and cons of such a policy can be debated and consensus can be reached. In the absence of mandatory evacuation, guidelines should be developed that can help raise the likelihood of evacuation from Risk Areas where it is recommended.

3.32. Currently, there is one Regional Liaison Officer for a large area of South Texas, extending from San Antonio to Brownsville. This territory is too large and varied to be adequately covered by one person. Consideration should be given to splitting this territory between two or three Regional Liaison Officers.

3.33. The number of traffic counters on evacuation routes should be increased. This should be done as soon as possible, to build up a database of typical traffic on evacuation routes for the purposes of comparison with traffic during an evacuation. This will help emergency managers have a better idea of how many people are actually evacuating, when they start to leave, how slow traffic moves, and other information that is not currently available.

3.34. If possible, some means should be found for FEMA's information on hurricane damages to be shared with local emergency management coordinators to help them better prepare their jurisdictions for hurricanes, while at the same time protecting the privacy of those requesting aid. One possibility would be giving local emergency managers information on number of requests made by people living in each zip code. Moreover, household averages, by zip code, might be feasible.

3.35. DDCs must ensure that at least a two-person crew of telephone operators is always available during activation of the EOC, and that local emergency managers, county sheriffs, police departments, fire departments, mayor's offices, county judge's offices and all other agencies have the correct telephone numbers for use during an activation.

3.36. Consideration should be given to finding an alternative to TLETS that can be geared specifically to emergency management. TLETS carries many messages not of value to emergency management, which can increase confusion during an event. In some cases, the local emergency management offices are not conveniently close to the DPS location that has TLETS. In such cases, some communications link should be established by the DPS and local emergency manager. Such an emergency management network could be run over the Internet, since most local emergency managers have web access or could get it fairly easily.

3.37. The possibility of renaming the Study Areas should be considered. The purpose of this step would be to address some of the concerns of the smaller jurisdictions. For example, the area currently known as the Corpus Christi Study Area could be called the Coastal Bend Study Area, and the area currently known as the Brownsville Study Area could be called the Lower Valley Study Area.

3.38. The cities that border Mexico need to study the issues that could arise during a hurricane and develop joint emergency management plans with their cross-border neighbors. They should be assisted in this effort in any way possible.

3.39. County Judges and other political officials should take care to issue signed evacuation requests that give precise directions on which areas of their jurisdictions are being asked to evacuate. This may help increase compliance with evacuation requests.

3.40. It would be helpful to have Forecast Advisory updates from NHC at more frequent intervals. This would encourage local officials to think ahead about what responses might be needed if there are sudden changes in a storm's characteristics, such as those that occurred when Hurricane Bret changed from a Category 2 to a Category 4 storm between two updates.

3.41. Improvements to the information systems at DEM should continue. Much of the data needed for decision making could be automatically downloaded from the web to a server, and accessed by anyone who needed it. All output from DEM hurricane programs could also be made available on the web, which would simplify access by local emergency managers. DEM staff should include more specialists in information technology to adequately address these issues.

3.42. No single decision support program provides a complete picture of the situation. Therefore, it is recommended that the state and local communities further develop their capabilities in the use of several systems such as Hurrevac.

Chapter 4

• Assessments of HES Products

4.1. Redesign ESTED and DERC to be more user-friendly. The most important thing is to provide a graphical user interface, which will make it much easier to get around the program and get what is needed out of it. As part of this redesign, all calculations and algorithms should be checked for accuracy.

4.2. The process of putting all HES products on the web should be continued. This will make them easier to update, and easier to search quickly for needed information.

4.3. Make all public information available in Spanish, both on the web and in paper copies.

4.4. Put the Risk Area maps, including evacuation routes and survival tips, on the DEM website for easy public access.

4.5. Continue to supply paper copies of the Risk Area maps, with evacuation routes more clearly marked and updated survival tips. Not all households have internet access, and those that do may lose that access in a hurricane. Encourage local emergency managers to make these documents readily available to their citizens.

4.6. Improve the capabilities of DERC to include information on the type of land use that will be affected by a hurricane. This would be possible to do quickly from a GIS system. Such a system would also be useful to improve the analytic capabilities of ESTED.

4.7. Review all clearance times given by ESTED, to make sure they incorporate current road conditions, population levels, surge data and findings from the behavioral survey.

Chapter 5

• Evacuation Behavior

5.1. Local governments located on the barrier islands should continue their policies of encouraging total evacuation. They should be supported in these efforts by DEM.

5.2. Public information efforts have not yet reached the entire population, as indicated by the percent of respondents who said they had received information on hurricanes. DEM and local emergency managers should continue to distribute information at all possible opportunities. Spanish-language materials should be used where necessary. The possibility of forming partnerships with local businesses should be studied as a means to disseminate information.

5.3. Corpus Christi officials should continue to study the unique evacuation problems they face. The unfortunate side effect of a near miss like Bret could be to desensitize the population to the potential for danger. DEM should consult with Corpus Christi on evacuation clearance times, which may need to be readjusted to reflect changing settlement patterns, and local officials should be alert to the fact that an evacuation request needs to be issued well before predicted landfall in order to minimize traffic congestion.

5.4. Alternate evacuation routes should be well-publicized and marked at each major intersection. Traffic management authorities should monitor the progress of the evacuation and provide the news media with information on alternate routes that are less congested.

5.5. Specific populations or individuals may need alternate means of transportation in order to evacuate. Local emergency managers should examine their communities for such groups or individuals and try to ensure everyone who wants to leave can do so. Private hospitals and nursing homes should be required to demonstrate the viability of their evacuation plans to local emergency managers. DEM and other state agencies should be encouraged to take the lead in developing transportation programs for special needs populations.