

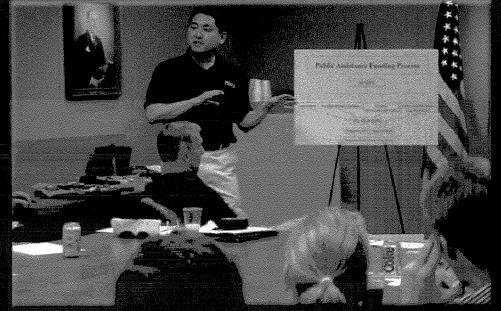
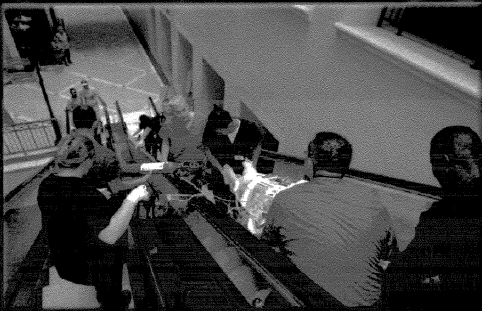
Final Report



May 2002

Texas Medical Center Task Force

A Novel Approach to a Healthy Recovery



Tropical Storm Allison

Texas Medical Center

Houston, Texas

June 2001



Copies of this report are available from:

Federal Emergency Management Agency

Region VI

800 North Loop 288

Denton, TX 76209

www.fema.gov

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A Message from Emergency Management Directors

W*e are pleased to present this final report by the Texas Medical Center Task Force. The report, "A Novel Approach to a Healthy Recovery," details the unique concept of operations that the Task Force developed to deliver federal assistance to Texas Medical Center institutions and Christus St. Joseph Hospital after Tropical Storm Allison.*

The Texas Medical Center and the city of Houston did a remarkable job responding to the devastation caused by Allison. The weekend of June 9-10, 2001, will be remembered for the heroic efforts of the Houston medical community and the many volunteers who came together to safely evacuate several hospitals and ensure continued health care for the metropolitan area.

The remarkable rallying of resources to meet the emergency medical needs was matched by the medical institutions' intense recovery efforts to clean up, make repairs, and restore affected services as quickly as possible. The national and international public health implications of the disaster challenged the Texas Medical Center Task Force to manage the federal assistance process with the same level of intensity and urgency.

We also praise the institutions for taking advantage of opportunities during the recovery process to make their facilities safer from future disasters. Their focus on incorporating mitigation measures into repair and rebuilding work carried over into the review of their long-term capital improvement plans. Many of the institutions revisited these plans in light of Allison and are making changes to add more mitigation projects to address the lessons learned from the storm.

The cooperative manner in which federal, state and local governments, medical institutions, and elected officials came together to coordinate the recovery process is highly commendable. Their efforts are a model of effective public-private partnership for future disaster operations.

One of the key lessons we take away from the Texas Medical Center recovery effort is that federal and state governments need to continue their flexibility by tailoring disaster operations to the specific needs of the victims and institutions affected. One participant in a CEO applicant briefing gave the Task Force the ultimate compliment when he said, "This is how government is supposed to work."

We extend this compliment to all the hospitals, medical schools, organizations, and individuals who were at the center of this tremendous recovery effort. Their spirit and commitment made a successful recovery from Tropical Storm Allison inevitable.

Ron Castleman
Director, Region VI
Federal Emergency Management Agency

Tom Millwee
State Coordinator
State of Texas Department of Public Safety,
Division of Emergency Management



Executive Summary

A Novel Approach to a Healthy Recovery



Introduction

On Friday and Saturday, June 8 and 9, 2001, Tropical Storm Allison drenched Houston, Texas with 15 inches of rain.

The ground was already saturated from record amounts of rainfall that had fallen on the metropolitan area for three days and caused devastation throughout southeast Texas. Some parts of Texas had received up to 40 inches of rain. More than 48,000 homes and 70,000 vehicles were flooded.

One of the areas in Houston hardest hit by the storm was the Texas Medical Center. The Texas Medical Center is the world's largest concentration of medical institutions dedicated to medical care, health care, education, and research. Its member institutions are renowned for their specialized patient care and breakthrough medical research.

Tropical Storm Allison's impact on the Texas Medical Center resulted in a medical emergency that

went far beyond the city of Houston. The Texas Medical Center is a national and international medical resource. The damaged hospital facilities, the lost research data that took years to collect, and the disruption of ongoing medical studies had not only national but global public health implications.

This Final Report of the Texas Medical Center Task Force is about the novel approach the Federal Government and State of Texas developed to assist the affected medical institutions recover from the devastation of Tropical Storm Allison.

Background: The Texas Medical Center

The Texas Medical Center's 42 member institutions include 13 renowned hospitals, two medical schools, four nursing schools, and schools of dentistry, public health, and pharmacy. Since its inception in 1948, the Texas Medical Center has become a significant member of the Houston community, providing approximately 61,000 jobs on a campus of more than 100 buildings with 22 million square feet.

For all practical purposes, the Texas Medical Center entities constitute a "city within a city." And like any city, it requires extensive planning coordination and support services to run efficiently. Providing the coordination and services is the job of the Texas Medical Center Corporation. While the 42 member institutions operate largely autonomously, the Texas Medical Center Corporation provides a forum for the institutions to come together to discuss important coordination and planning issues that affect the Texas Medical Center's day-to-day operations as well as its long-term growth. The Texas Medical Center Corporation also manages the 700-acre campus, which includes private roads, parking facilities, and parks.

The Flooding: A Heroic Response to Tropical Storm Allison

Early Saturday morning, Tropical Storm Allison dropped 8.5 inches of rain in 2 hours. Water quickly filled the streets around the Texas Medical Center and began to flow into underground parking garages, beneath doors, and into ventilation ducts.

The rising floodwaters shorted out electrical equipment housed in basement and sub-basement levels causing emergency generators to switch on. All but two Texas Medical Center hospitals were able to continue to function on auxiliary power. Memorial Hermann and St. Luke's Episcopal remained without power, as did Christus St. Joseph Hospital (which is not part of the Texas Medical Center) located just north of the Texas Medical Center campus.

These hospitals were without electricity to run vital medical equipment, and life support and life safety systems. They were also without lights, refrigeration, air conditioning, running water, or elevators, thereby making patient care impossible. In the early hours of Saturday June 9, they were forced to evacuate patients.

The Methodist Hospital also experienced severe flooding. Fortunately, the emergency power functioned in all but one of its buildings. Although an evacuation was not necessary, most of the patients were able to be discharged in the days following the storm and Methodist stopped admitting new patients to the hospital for five weeks.

Hospital staff and residents of Houston responded heroically to the crisis. People waded through gushing water to reach the darkened hospitals. Patients were carried down dozens of flights of stairs while hospital staff manually operated medical equipment.

Floodwaters also poured into the basement levels of Baylor College of Medicine, where many of

Baylor's research laboratories are located. More than 30,000 genetically engineered mice and rats were lost to the waters that reached 24 feet. In addition to these animals, years of scientific research and carefully documented data were severely impacted in just a matter of hours.

A Health Emergency: The Medical Community Responds

In response to Governor Perry's request for federal assistance, President Bush declared Harris County (which includes Houston) and 27 other Texas counties federal disaster areas (three other counties were added later). The flooding at the Texas Medical Center had caused a serious health emergency in the country's fourth largest city.

Area hospitals were in constant contact with one another trying to locate available hospital beds for the hundreds of patients being evacuated. Trauma centers, intensive care units, emergency rooms and other critical care operations were disrupted for weeks. Ambulances brought new patients to an Air Force field hospital and to four ambulatory care facilities that the Federal Government had set up around Houston to take the pressure off the overwhelmed hospitals.

The initial hours and days after the flooding saw unprecedented partnering between members of Houston's medical community. Despite the catastrophic impact of Allison, doctors, nurses, and other health care providers ensured the continued delivery of high quality medical care to those in need.

Damage to the Texas Medical Center was estimated at nearly \$2 billion. It became clear that just as the Texas Medical Center is a "city within a city," it had become a "disaster within a disaster."

Texas Medical Center Task Force: Setting Priorities

The recovery needs of the Texas Medical Center

institutions were very unique and differed greatly from those of homeowners, renters, small businesses, and municipalities damaged by Allison. Federal Emergency Management Agency (FEMA) and state officials recognized that the institutions would require focused intensive coordination and very specialized technical assistance.

The Texas Medical Center Task Force (Task Force) was formed on June 23, 2001, with the mission of developing a comprehensive plan to coordinate the delivery of federal and state assistance to the Texas Medical Center and other severely damaged hospitals in the area. The Task Force's orders were straightforward: do whatever it takes, within existing laws and regulations, to help the Texas Medical Center get back on its feet. Its priorities were:

- To review **insurance coverage** for all eligible applicants.
- To provide effective **Public Assistance** support.
- To **coordinate** all federal/state pre-disaster and post-disaster funding.
- To encourage applicants to pursue **mitigation measures**.
- To provide **timely information** to government agencies, Congressional members, and to the news media.

There were many characteristics and factors that combined to make the Texas Medical Center Task Force different from standard disaster recovery operations, including:

- Task Force recovery operation was for a "disaster within a disaster."
- Well-defined applicant group geographically near each other.
- Specially appointed Deputy Federal Coordinating Officer (DFCO) and Deputy State Coordinating Officer (DSCO).

- Satellite Disaster Field Office (DFO) close to the applicants.
- DFCO had “signature authority” to approve Public Assistance grants.
- Accountable to FEMA Headquarters and State while reporting to the Federal Coordinating Officer (FCO) and State Coordinating Officer (SCO).
- Established separate DFO operations including Public Assistance Program.
- Dedicated public affairs and Congressional liaison staff for external relations support.
- Selected program staff with skills to match Texas Medical Center business culture.
- Assembled a multi-disciplined team of technical experts.
- Utilized experienced group of Public Assistance Program specialists to resolve complex issues.

The Task Force established itself as a “one-stop shopping” source of information regarding recovery assistance to the Texas Medical Center. The Task Force members worked hard to maintain a unified message as they interacted with the applicants and various interest groups.

A multi-tiered communication strategy was developed to proactively disseminate information and identify issues. The strategy was directed at all levels of applicant staff and addressed general information needs as well as very specific technical topics. The multi-tiered approach included sessions with large groups of applicants followed by one-on-one personalized meetings.

The Texas Medical Center Corporation provided the perfect vehicle for getting information out quickly to its 42 members and Christus St. Joseph Hospital. It coordinated the various Task Force briefings and

helped to facilitate the on-going flow of information and resolution of common issues.

The Task Force remained in close contact with elected officials and their staff, answering questions and providing status reports to ensure the officials and their constituents were well informed and any potential issues were quickly addressed.

Task Force Recovery Assistance

Fifteen of the Texas Medical Center institutions and Christus St. Joseph Hospital were determined eligible to receive FEMA Public Assistance. Assisting these applicants in the Public Assistance process proved very challenging in two areas – determining damage eligibility and replacement cost estimation. In most disasters, Public Assistance teams deal with structural damage to roads, bridges, and public facilities. The Task Force was now in a position of having to determine the eligibility and replacement costs of genetically engineered laboratory animals and million dollar pieces of equipment with names like cyclotron and linear accelerator.

The day-to-day technical and administrative support provided to the applicants differed depending on each applicant’s needs. The Public Assistance teams tailored their approach accordingly, bringing in additional technical expertise as needed.

The Task Force mitigation team identified more than 100 mitigation measures for the applicants to consider, including installing heavy watertight submarine doors in the tunnel system, constructing exterior floodwalls to protect building parameters, and floodgates to close off garage entrances.

The State of Texas traditionally reserves Hazard Mitigation Grant Program (HMGP, also referred to as 404 hazard mitigation) money for residential buyout programs. However, the State recognized the need to address the tremendous impact that Allison had on the

city of Houston and the Texas Medical Center in order to prevent the disruption of essential services in the future. The State's final HMGP priority list included several significant flood mitigation projects in the city and around the Texas Medical Center campus.

Applicant institutions had extensive insurance coverage. However, approximately half of the applicants had damage, in excess of their coverage, that was eligible under FEMA's Public Assistance Program. Task Force insurance specialists worked with applicants and Public Assistance teams to review and interpret insurance policies and determine which damages and expenses could be covered by insurance and which were eligible for federal assistance. The insurance specialists' work was also important for calculating applicant eligibility for FEMA mitigation projects.

The location of the Texas Medical Center in the floodplain presented additional challenges to the Task Force insurance team. Each applicant's buildings had to be reviewed individually for compliance with FEMA flood insurance regulations. Those facilities that lacked the appropriate level of insurance were required to increase their coverage.

As of April 1, 2002, Public Assistance and mitigation funding for Task Force applicants was estimated at \$816 million.

National Institutes of Health Partnership

At the time of the storm, Baylor College of Medicine and University of Texas (UT) Health Science Center had approximately 750 active grants, worth \$275 million, from the National Institutes of Health (NIH), an agency of the U.S. Department of Health and Human Services (HHS).

HHS initiated a number of actions to help restore Baylor and UT's research capability and to assist the damaged hospitals. The emergency initiatives included

the extension of grant deadlines, emergency funding to replace damaged research equipment, and the extension of timeframes for projects affected by the storm.

HHS's expressed support for the hospitals and research institutions, along with NIH's strong Texas Medical Center ties and technical understanding of the impacted research, quickly made NIH an invaluable Task Force member. By working within its statutory programs, NIH was able to creatively adapt its grants to help meet the institutions' emergency needs by providing more than \$21.6 million.

FEMA and NIH staff worked closely together to identify grantee needs, avoid duplication of assistance, and maximize the amount of relief provided through insurance, NIH, and FEMA. The NIH partnership allowed the Federal Government to speak with one voice on assistance issues related to the Texas Medical Center. It gave the Task Force instant access to the medical research expertise that neither FEMA nor the State possessed. It also enabled the Task Force to better tailor its operations to the unique medical culture of the applicants and maintain a "one-stop shopping" structure that was integral to its concept of operations.

Lessons Learned

The Task Force and applicants worked hard to facilitate a successful recovery effort under circumstances that were new and challenging for both the institutions and emergency managers. There were parts of the recovery effort that went extremely well and others that provide valuable lessons for improving future operations.

What Worked Well

- Creating a Task Force at a Satellite DFO with Separate Operations and Staff
- Strong Task Force Leadership

- Selecting Task Force Staff
- Continuity of Task Force Staff
- Task Force Satellite DFO near Applicants
- Communication Strategy
- Consistency of Information and Assistance among Applicants
- Congressional Relations
- NIH Partnership

Areas for Improvement

- Expedite Requests for Generators
- Begin the Public Assistance Information Process Sooner
- Delay Staffing of PAC Teams
- Better Explanation of the HMGP (404 Hazard Mitigation) and Public Assistance Program Hazard Mitigation (406 Hazard Mitigation)
- Address Implications of the Freedom of Information Act
- Maintain Close Coordination between Task Force and Main DFO Operations

Suggestions for Future Disaster Applicants

Some of the Task Force applicants had suggestions for institutions around the country that are similarly impacted by future disasters and require federal assistance.

- Be Proactive and Contact the State and FEMA
- Photograph all Damages and Open a Disaster Bank Account
- Develop a Staffing Strategy for Managing the Federal Assistance Process
- Coordinate Insurance and FEMA Public Assistance Processes
- Conduct Pre-disaster Planning

Future Task Forces

In looking ahead to future disasters, emergency managers may want to review the factors that led to the creation of the Texas Medical Center Task Force and use them as a guide while considering the benefits of establishing their own task force. The factors are:

- There is a defined group of applicants within a disaster who have similar or unique recovery needs.
- Recovery needs and eligibility issues are complex and require focused attention by a dedicated staff.
- There is unusual public, political, and news media interest in a group of applicants.
- The FCO, SCO, and program staff risk becoming overextended in a large disaster.

The Task Force's final operational structure provides additional lessons and recommendations for establishing future task forces.

- Develop a clear mission and priorities.
- Assign Task Force leaders who are flexible, creative, and can establish strong relations with applicants, other federal and state agencies, and stakeholders.
- Assemble staff assigned solely to Task Force operations.
- Select staff with personalities and skill sets that are a good match for the applicants and stakeholders.
- Locate Task Force near applicants; establish a satellite DFO if main DFO is not convenient to applicants.
- If a satellite DFO is needed, establish separate DFO operations but maintain good coordination with the main DFO.
- Delegate administrative and program decision-making to the task force DFCO and DSCO so they are in charge of the operation.

Background

The Texas Medical Center



Texas Medical Center Mission

“To promote the highest quality health status for all people by assisting member institutions to achieve individual and collective goals of the highest possible standards of patient and preventive care, of research and education, and of local, national and international community well-being.”

The Texas Medical Center is the world's largest concentration of medical institutions dedicated to medical care, health care, education, and research. Its 42 member institutions include 13 renowned hospitals, two medical schools, four nursing schools, and schools of dentistry, public health, and pharmacy. Since its inception in 1948, the Texas Medical Center has become a significant member of the Houston community, providing approximately 61,000 jobs on a campus of more than 100 buildings with 22 million square feet.

For all practical purposes, the Texas Medical Center entities constitute a “city within a city.” And like any city, it requires extensive planning coordination and support services to run efficiently. Providing the coordination and services is the job of the Texas Medical Center Corporation. While the member institutions operate largely autonomously, the Texas Medical Center Corporation provides a forum for the institutions to come together to discuss important coordination and planning issues that affect the Texas Medical Center’s day-to-day operations as well as its long-term growth.

The Texas Medical Center Corporation also manages the 700-acre campus, which includes 12 miles of private roads, dozens of parking facilities, seven parks, a conference center, and an apartment building. The location of the campus in the middle of Houston requires extensive interaction with city and county agencies, which the Texas Medical Center

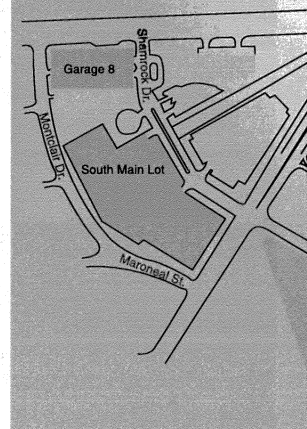
Corporation does on behalf of its members.

The Texas Medical Center is also a prominent member of the world medical community. Its institutions are renowned for their specialized patient care and breakthrough medical research. Genetics, cancer, heart disease, and bone fabrication are but a few of the fields where Texas Medical Center institutions have led international research efforts. Some of the first coronary bypass and heart transplant surgeries were performed at the Texas Medical Center, and today more heart surgeries are performed there than anywhere else in the world.

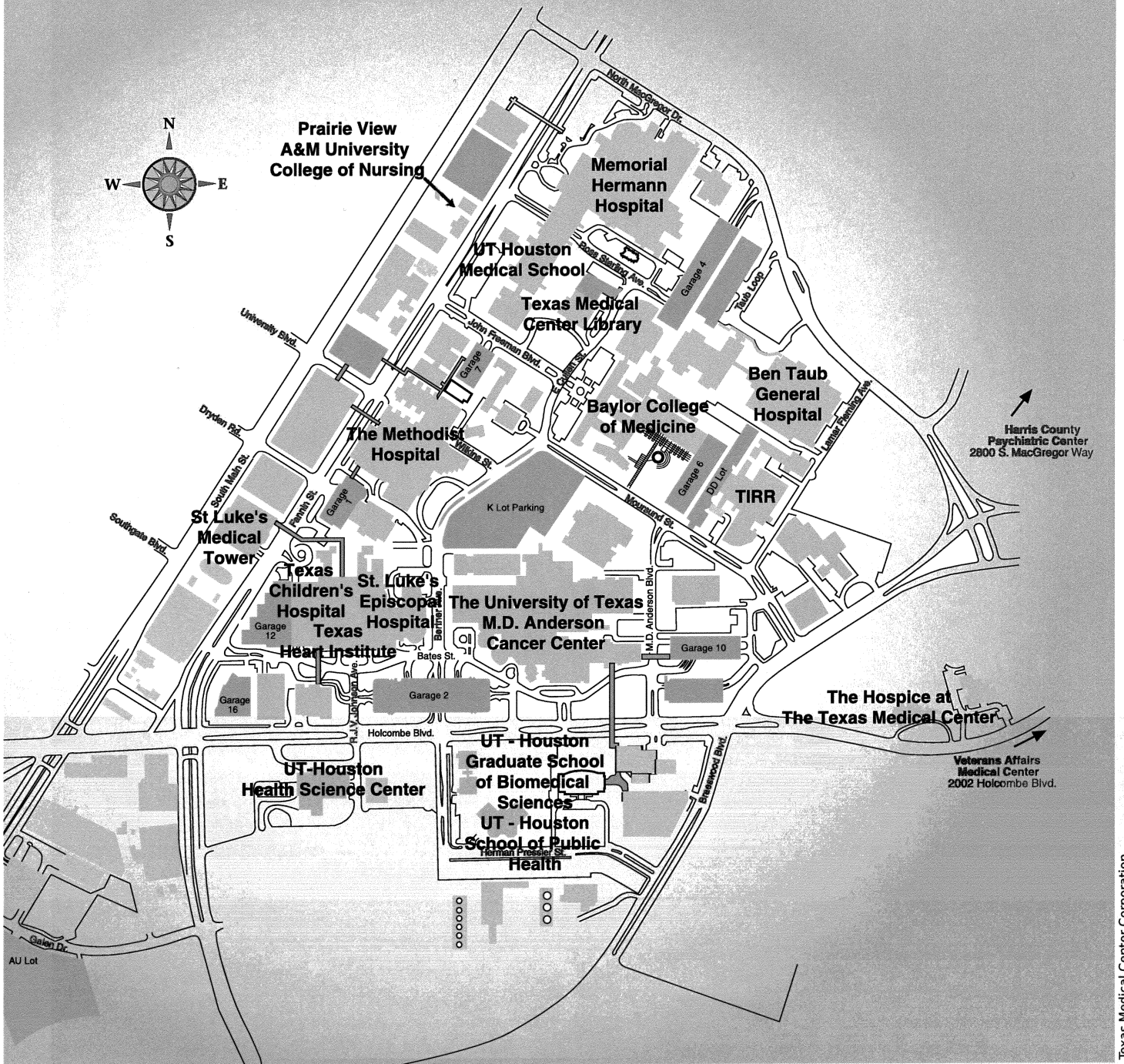
Texas Medical Center Profile

- 42 member institutions including:
 - 13 hospitals
 - 2 medical schools
 - 4 nursing schools
- \$4.6 billion combined member operating budget
- 700+ acres that include:
 - 100+ buildings
 - 22 million gross square feet of building space
 - 12 miles of roadway
 - 42,000 parking spaces
- 5.4 million patient visits in 2000, which includes 19,307 international patients
- approximately 61,000 employees (largest employer in Houston)
- 11,535 volunteer workers
- 6,014 hospital beds and 426 baby bassinets
- 16,547 medical students
- \$11.5 billion impact on the Houston economy
- \$2.2 billion+ received in research grants over the past five years

*All figures are as of 2001 unless otherwise noted.



Texas Medical Center Campus



Texas Medical Center Corporation



The Flooding

A Heroic Response to Tropical Storm Allison



On Friday, June 8, 2001, Tropical Storm Allison hovered over the city of Houston, Texas. Between 6 p.m. Friday and 3 a.m. Saturday, the country's fourth largest city was inundated with 15 inches of rain. The ground was already saturated from record amounts of rain that had fallen on the metropolitan area for three days and caused devastation throughout southeast Texas. Some areas had received up to 40 inches of rain. More than 48,000 homes and 70,000 vehicles were flooded.

Impact of Tropical Storm Allison on southeast Texas

- Up to 40 inches of rain in the hardest hit areas
- 23 storm-related deaths
- \$5 billion in damage
- More than 48,000 homes damaged
- 70,000 vehicles flooded
- 31 counties declared federal disaster areas

The Texas Medical Center had been carefully monitoring the storm all week, but despite adhering to flood warnings and taking precautionary measures, the rain that fell on Friday and Saturday simply proved too much. Under normal conditions, rainwater around the Texas Medical Center flows into area culverts that feed into the Brays Bayou. However, on Friday night 8.5 inches of rain fell in just 2 hours. So much rain had fallen in such a short period of time, the Brays



Baylor College of Medicine

The flooded streets made the Texas Medical Center campus inaccessible during the height of the flooding.

Bayou was overwhelmed and drainage systems backed up, causing the streets of Houston and the Texas Medical Center campus to flood.

From midnight Friday until 2 a.m. Saturday morning, Tropical Storm Allison unleashed the worst of its fury. Water quickly filled the streets around the Texas Medical Center and began to flow into underground parking garages, beneath doors, and into ventilation ducts. Doors, windows, and walls burst

from the growing pressure of the floodwaters. The underground tunnel system that makes travel between many of the Texas Medical Center buildings so convenient channeled the rising water into facility basements throughout the campus. The streets had become rivers, making the

Underground parking garages were a primary entry point for Allison's floodwaters.



Texas Medical Center Library



Without power, Memorial Hermann elevators and escalators were not working. Hundreds of evacuated patients had to be carried down flights of stairs while staff manually operated medical equipment.

Texas Medical Center campus inaccessible until 8 a.m. Saturday morning.

It did not take long for the rising water to short out electrical equipment housed in basement and sub-basement levels. As power shut down to all the hospitals, emergency backup generators switched on. All but two Texas Medical Center hospitals were able to continue to function on auxiliary power. Memorial Hermann and St. Luke's Episcopal remained without power, as did Christus St. Joseph Hospital (which is not part of the Texas Medical Center) located just north of the Texas Medical Center campus. These hospitals' auxiliary power sources were ineffective because the protective measures around the electrical switching equipment located on underground floors were engulfed by the unprecedented floodwaters.

St. Luke's, Christus St. Joseph, and Memorial Hermann hospitals were suddenly without power to run vital medical equipment, and life support and life safety systems. They were also without lights, refrigeration, air conditioning, computers, running water, or elevators, thereby making patient care

impossible. In the early morning hours of Saturday, June 9, the evacuation of patients began.

Hospital staff and the residents of Houston responded heroically to the crisis. Doctors and nurses, former patients, and volunteers from off the street waded through gushing water to reach the darkened hospitals.

At St. Luke's Episcopal Hospital, approximately 50 critical patients were evacuated to the hospital's neighboring Medical Towers building, where outpatient surgery facilities were converted to intensive care units. Additional critical patients were moved to other area hospitals, including 13 patients to the Houston Veterans Affairs (VA) Medical Center. The Institute for Rehabilitation and Research (TIRR) accepted 16 patients, nearly all of St. Luke's rehabilitation unit. A "human chain" of hospital staff and volunteers was formed to deliver food, water, and supplies to the remaining St. Luke's patients on each of the hospital's 25 floors.

Christus St. Joseph Hospital had more than 300 patients in one of its main patient care buildings when

St. Luke's Episcopal Hospital Tropical Storm Allison Chronology

Tuesday, June 5, 2001

Tropical Storm Allison approaches Houston.
St. Luke's establishes Emergency Operations Command Center for round-the-clock monitoring.

Friday, June 8

6:30 p.m. St. Luke's begins holding and calling in additional staff.
10:00 p.m. Staff begin installing hospital flood logs and other prevention measures.
12:00 midnight Texas Medical Center is inaccessible; minor flooding in the hospital.

Saturday, June 9

2:00 a.m. Normal power is shut off and emergency power switched on.
3:00 a.m. Rising water in basement tunnel; decision made to evacuate critically ill patients.
4:00 a.m. Extensive flooding in the hospital occurs.
4-8:00 a.m. Systematic loss of emergency power as flooding spreads through basement levels.
8:00 a.m. First pumps and generators arrive to begin water removal.
9:00 a.m. Loss of all utilities; evacuation completed of critical patients.
Mid-day Volunteers assist in delivery of food, water, and supplies to patients and staff.

Sunday, June 10

4:00 a.m. Power restored above the 8th floor of the hospital.
6:00 p.m. Water and sewer pumps restored.
10:00 p.m. 98% of water removal completed; assessments and repair of mechanical equipment underway.

Ongoing Saturday, June 9 through Tuesday, June 19

Removal of damaged furniture, equipment, doors, drywall and flooring.
Water and air quality tested.
Inspection, cleaning and repairs to transformers, switches, pumps, motors, and filters.
Inspection and certification of medical equipment.
Daily bulletins to physicians, employees, board of directors and news media.

Wednesday, June 20

Texas Department of Health certifies St. Luke's Hospital to resume normal services.

Chronology from "St. Luke's and the Great Flood of 2001," by Diane Callen; fall issue of St. Luke's Episcopal Hospital's Innovator Magazine.

the power went out and the emergency room, basement, and kitchen facilities were flooded by 24 feet of water. Hospital staff worked in dark hallways and stairwells to transfer 140 patients to adjacent St. Joseph Hospital buildings. Volunteers and Salvation Army workers arrived to prepare food for the remaining patients and nearly 400 workers.

The most severely impacted hospital was Memorial Hermann, which is one of Houston's two Level I trauma centers. At 4:00 a.m. Saturday morning, the hospital's auxiliary power shut down

leaving 540 nervous patients (150 of which were children and newborn babies) in darkness. Doctors, nurses, and volunteers from all over Houston worked feverishly in the heat to transfer 400 patients (140 patients were discharged) to other hospitals while continuing to administer medical care. Remarkably, not one life was lost during the evacuation. This was the first time the hospital had to close its doors since it was founded in 1925.

The Methodist Hospital also experienced severe flooding. Fortunately, the emergency power functioned



Military helicopters were used to transport evacuated patients from Memorial Hermann to other hospitals in the greater Houston area.

The Evacuation of Memorial Hermann Hospital

“We set up sort of a battle triage area in front of the emergency room in the parking lot,” Dr. Craig Fischer said. “There were gurneys, ambulances and choppers . . . a runner would run to the ICU and ask the charge nurse ‘who’s next?’ . . . We’d get volunteers, some who were just walking down the street, and would run upstairs with flashlights and get the patients.”

“The drama was beyond imagination. We hand-ventilated patients for more than 12 hours while awaiting transport, carried them down 10 flights of stairs on backboards and loaded them onto Blackhawk Army helicopters greeted by young men in green camouflage outfits.” [Dr. Kim Connelly]

“. . . assisting hospitals couldn’t take patients unless a nurse accompanied them . . . so nurses would jump into the ambulances and helicopters and head to neighboring and

distant hospitals, never giving a thought to how they would get back.” [Dr. Craig Fischer]

“. . . one of the women who had just had a C-section the night before . . . walked down 12 flights of stairs while one of us carried her newborn baby and others held on to her.” [Jason Carter, second-year UT-Houston medical student]

On the neonatal intensive care unit on the seventh floor, staff continued to hand-ventilate babies until they could take them down dark stairwells and move them to the 22 hospitals that “opened their arms and welcomed our babies,” Dr. Jose Garcia said.

By Sunday, all the patients had been evacuated, and the doctors and nurses who had worked 24 to 36 hours were finally ready to take a break.

Excerpts from “Heroes of the Storm, Part One and Two,” by Meredith Raine-Middleton; The University of Texas Health Science Center at Houston.

Example of Baylor College Research Affected by the Storm

For more than 30 years, Baylor College has conducted studies on infectious diseases with an emphasis on respiratory ailments. The studies have involved more than 30,000 participants as researchers worked to develop methods of prevention and treatment. As a result of water damage and power outage, research was disrupted and massive amounts of data affected, including:

- 260,000 serum samples
- 90,000 virus samples
- 45,000 nasal wash samples
- Repository of clinical specimens (e.g. blood serum, plasma, nasal secretions)
- Loss of half of a breeding colony of cotton rats
- Loss of 250 mice, including mice over the age of 2 years involved in an aging study

in all but one of its buildings. However, because power was limited, elevator service, running water, and air conditioning were affected making patients and visiting families uncomfortable. Physicians evaluated patients daily and were able to discharge over 650 patients home, to other Methodist hospitals, and to other area hospitals in the days following the storm. Methodist rented hotel rooms for patients who were unable to return to their homes because of damage caused by Allison. Although an evacuation was not necessary, Methodist stopped admitting new patients to the hospital for five weeks.

Across the Texas Medical Center campus at Baylor College of Medicine, another type of emergency was underway. Baylor is widely recognized around the world for its excellence in education, research, and patient care. On Friday night, floodwater poured into the basement levels where many of its research laboratories are located. The power went out, leaving the few staff who were able to reach the buildings in humid darkness as they frantically worked to rescue laboratory animals and salvage temperature-sensitive research samples.

Many animals were carried to safety up stairwells to dry offices, restrooms, and conference rooms on upper floors. However, more than 30,000 animals, many of them hard to replace genetically engineered mice and rats, were lost to the waters that reached 24 feet. In addition to these animals, years of scientific research and carefully documented data with national and international public health implications were severely impacted in just a matter of hours.

The floodwaters made it difficult for staff and volunteers to reach Texas Medical Center buildings during the crisis.

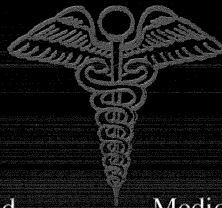


Baylor College of Medicine



A Health Emergency

The Medical Community Responds



The toll that Tropical Storm Allison had taken on Houston was evident Saturday morning when dawn revealed the full extent of the flooding. In response to Governor Perry's request for federal assistance, President Bush immediately declared Harris County (which includes Houston) and 27 other Texas counties federal disaster areas (three other counties were added later). The Federal Emergency Management Agency (FEMA) began coordinating federal emergency assistance with state and local agencies. The flooding at the Texas

Medical Center had caused a serious health emergency throughout the metropolitan area.

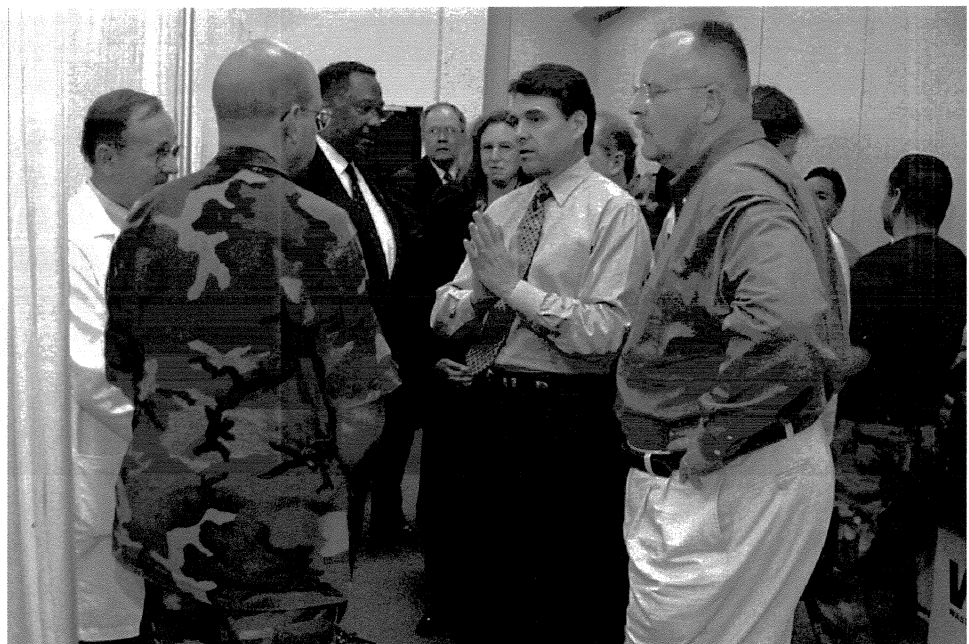
Area hospitals were in constant contact with one another trying to locate available hospital beds for the hundreds of patients being evacuated from the hospitals without power. Trauma centers, intensive care units, emergency rooms, and other critical care operations were disrupted for weeks. Ambulances brought new patients to an Air Force field hospital and four ambulatory care facilities that the Federal Government had set up around Houston to take the pressure off the overwhelmed hospitals.

The initial hours and days after the flooding saw unprecedented partnering between members of Houston's medical community. The Methodist Hospital sent approximately 400 staff to 14 area hospitals to help out for several weeks. The Houston VA Medical Center and Texas Children's Hospital temporarily provided Methodist doctors and staff with operating rooms and care facilities so they could continue to treat patients. Despite the catastrophic impact of Allison, doctors, nurses, and other health care providers ensured the continued delivery of high quality medical care to those in need.

Federal, state, and local officials quickly began assessing the widespread damage caused by the five days of rain. Thousands of homes and businesses had been flooded and roads, schools, and other important parts of the region's infrastructure had been severely impacted. FEMA activated its teleregistration hotline to help affected homeowners, renters, and small businesses, and damage assessment teams began working with local officials to provide public infrastructure assistance.

Before the rain had stopped, hospital officials were on the phone with vendors and contractors, finding generators and pumps and arranging for cleanup and repair crews to restore operations as soon as possible. "Anything we needed, we went after.

FEMA Director Joe Allbaugh (right) and Governor Rick Perry (center) visit with medical staff at the Air Force emergency field hospital set up at the Houston Astrodome.



FEMA/Michael Rieger

Federal Government Emergency Medical Assistance

- An Air Force Expeditionary Medical Support Hospital was deployed to provide emergency room medical assistance. The mobile surgical unit included 25 beds, X-ray equipment, lab capabilities, ventilators, and medical monitors.
- Four Disaster Medical Assistance Teams (DMATs) were requested by the State to set up ambulatory care facilities.
- The U.S. Public Health Service sent 120 nurses, nurse practitioners, and other critical care personnel to assist Texas Medical Center hospitals and the temporary medical facilities set up around the city.

Rented pumps had to remove 10 million gallons of water from the basement and first floor of the UT-Houston Medical School building.



UT-Houston

Nothing was absurd,” said Jack Lynch, CEO of St. Luke’s Episcopal Hospital. “Our priorities were to protect the patients, protect the staff and buildings, and bring operations back as soon as possible. If that meant calling the CEO of General Electric to request transformers, we did it.” In addition to General Electric, other corporations like ExxonMobile and

Dell responded to calls for assistance from hospital CEOs.

The U.S. Army Corps of Engineers brought in generators to help provide temporary power to parts of three hospitals. FEMA and state officials met with institution leaders to determine the extent of the damage and begin explaining eligibility requirements

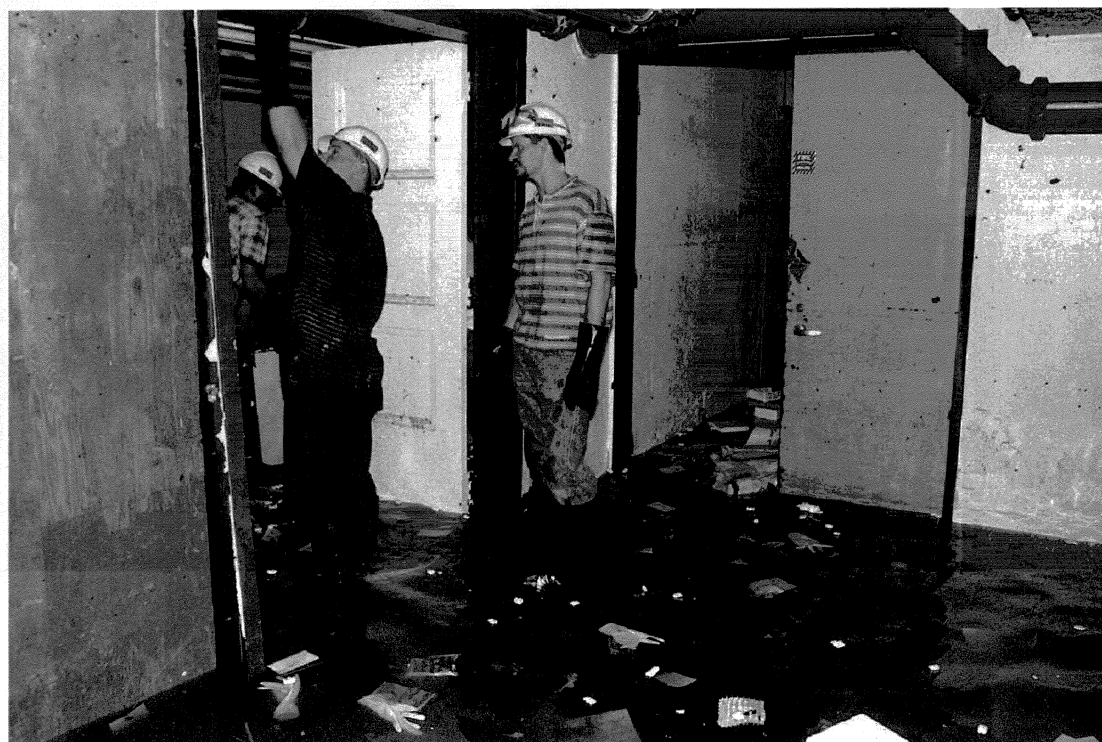
Assistance Provided by Houston’s VA Medical Center

- A unified medical command post for the city was established at the VA Medical Center to facilitate patient transfers, and to distribute federal health and medical assets for the local community.
- The VA received transfer patients from area hospitals, including 13 patients and staff from St. Luke’s Hospital, as well as from the U.S. Air Force field hospital, and the DMATs.
- It housed laboratory animals and stored 14 freezers of irreplaceable research specimens rescued from Baylor College of Medicine.
- The VA provided flooded Methodist Hospital with temporary use of two operating rooms, seven intensive care beds, and a nursing unit.
- The VA even delivered a baby girl (believed to be only the second delivery in the 50-year history of the Houston VA Medical Center) when the mother could not make it through flooded streets to the intended hospital.

Emergency Power

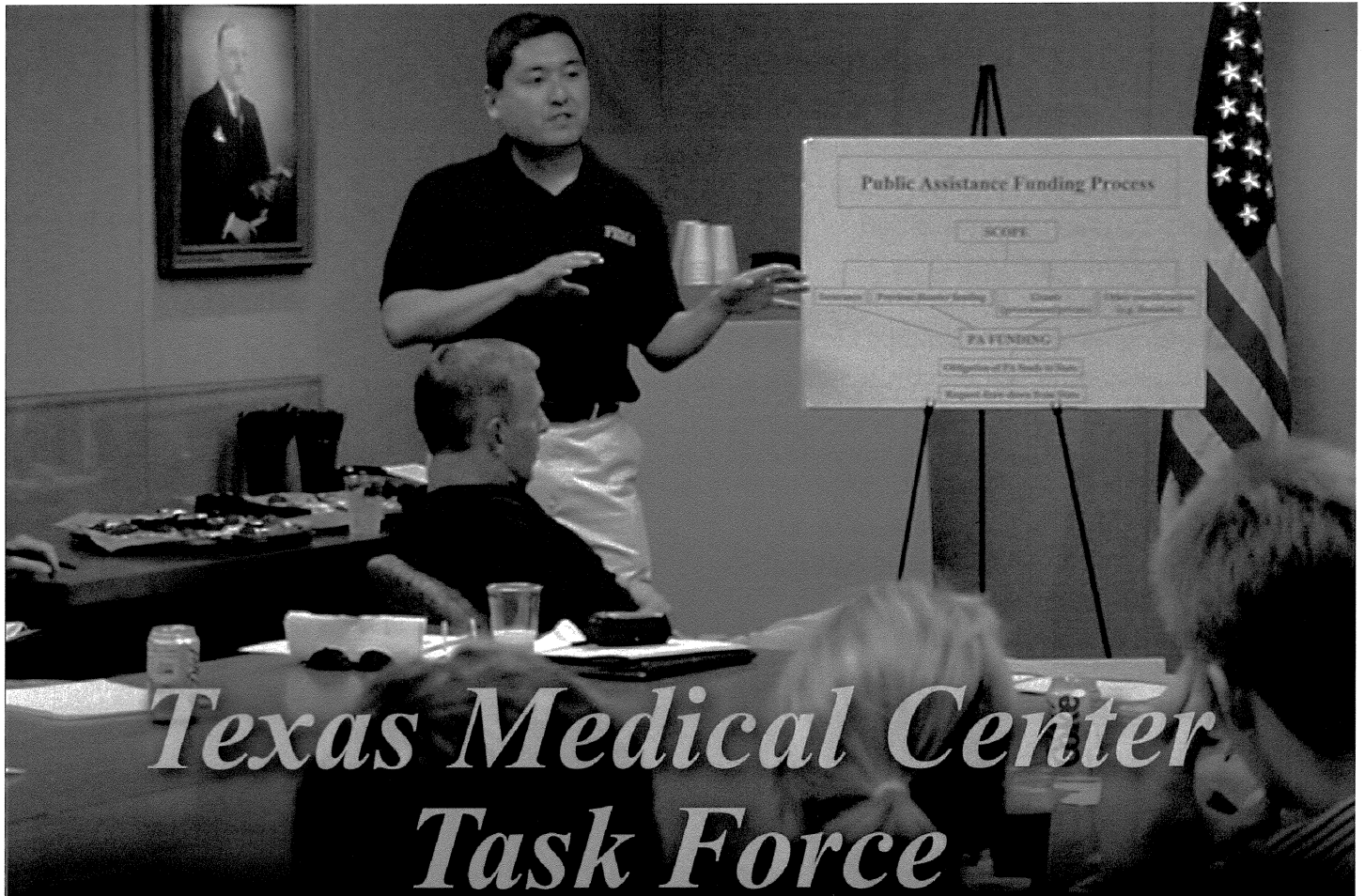
When all five of Memorial Hermann Hospital's cardiac catheterization laboratories were destroyed by floodwaters, the U.S. Army Corps of Engineers came to the hospital's aid. The Army installed a mobile electrical sub-station to power two temporary catheterization laboratories set up in the hospital's parking lot. Catheterization labs are essential for the proper diagnosis of cardiovascular conditions. It took several months to rebuild the \$15 million laboratories and without the temporary labs the Level I trauma hospital would not have been able to provide vital heart-related services.

for federal assistance. Damage to the Texas Medical Center was estimated at nearly \$2 billion. It became clear that just as the Texas Medical Center institutions are a "city within a city," they had become a "disaster within a disaster."



Cleanup and repair crews arrived quickly on the scene to begin recovery operations.

Baylor College of Medicine



Texas Medical Center Task Force

Setting Priorities



The recovery needs of the Texas Medical Center institutions were very unique and differed greatly from those of homeowners, renters, small businesses, and municipalities damaged by Tropical Storm Allison. The storm's impact on the Texas Medical Center resulted in a medical emergency that went far beyond the city of Houston. Specialized health care facilities that serve not only city residents but also patients from around the world were damaged. Research equipment, animals, and

laboratories used to conduct studies with national and international public health implications were destroyed and needed to be replaced. Subsequently, there was a great deal of public, news media, and Congressional interest in the recovery effort.

FEMA Headquarters and the Federal and State Coordinating Officers (FCO and SCO) in charge of the disaster recognized that the Texas Medical Center's 42 institutions would require focused intensive coordination and very specialized technical assistance

Texas Medical Center Task Force

Mission

To develop a comprehensive recovery plan to coordinate the delivery of federal and state assistance to the Texas Medical Center and comparably damaged hospitals and medical facilities in the greater Houston metropolitan area.

| | | | |
|---------------|---|-------------------|--|
| GOAL 1 | Identify and address unique Public Assistance Program requirements. | PRIORITY 1 | To review insurance coverage for all eligible applicants in order to identify anticipated needs. |
| GOAL 2 | Provide " knowledge management ;" build upon and share knowledge gained from other major disasters. | PRIORITY 2 | To provide effective Public Assistance support to all applicants. |
| GOAL 3 | Provide " anticipatory management ;" identify and anticipate potential issues and critical areas that require attention. | PRIORITY 3 | To coordinate all federal/state pre-disaster and post-disaster funding. |
| GOAL 4 | Serve as a link between FEMA Regional Office and FEMA Headquarters. | PRIORITY 4 | To encourage each applicant to pursue mitigation measures throughout the recovery process. |
| GOAL 5 | Serve as qualified, experienced resources to Disaster Field Office (DFO) managers. | PRIORITY 5 | To provide timely information on recovery efforts to FEMA/state agencies, Congressional members, and to the news media. |

in applying for FEMA Public Assistance grants. The challenge was to find a way to successfully meet the needs of the Texas Medical Center without detracting from the complex issues surrounding the delivery of assistance to other damaged facilities and disaster victims throughout southeast Texas.

The solution was to establish the Texas Medical Center Task Force (Task Force). The Task Force was formed on June 23, 2001, with the mission of developing a comprehensive plan to coordinate the delivery of federal and state assistance to the Texas Medical Center and other severely damaged hospitals in the area. Within 24 hours, the Task Force had developed a concept of operations. Task Force goals and priorities were established along with a staffing strategy to bring together a multi-disciplinary team of

federal and state personnel with a wide range of expertise such as planning, building assessments, engineering, architecture, cost analysis, insurance, and mitigation.

There were many characteristics and factors that combined to make the Texas Medical Center Task Force unique from standard disaster recovery operations. The Task Force structure and operations evolved as hospitals and institutions became Public Assistance grant applicants and their individual needs were identified.

The Task Force concept of operation had its origins in the Northridge, California and Nisqually, Washington, earthquake recovery operations. However, Tropical Storm Allison was the first time the concept had been deployed so fully as part of a large disaster.

Unique Characteristics of the Task Force

- Task Force recovery operation was for a “disaster within a disaster.”
- Well-defined applicant group geographically near each other.
- Specially appointed DFCO and DSCO.
- Satellite DFO close to the applicants.
- DFCO had “signature authority” to approve Public Assistance grants.
- Accountable to FEMA Headquarters and State while reporting to FCO and SCO.
- Established separate DFO operations including Public Assistance Program.
- Dedicated public affairs and Congressional liaison staff for external relations support.
- Selected program staff with skills to match Texas Medical Center business culture.
- Assembled a multi-disciplined team of technical experts.
- Utilized experienced group of Public Assistance Program specialists to resolve complex issues.

The Texas Medical Center Task Force was, in essence, a recovery effort within the larger Tropical Storm Allison disaster operation.

A special Deputy Federal Coordinating Officer (DFCO) and Deputy State Coordinating Officer (DSCO) were appointed to lead the Task Force. The Task Force’s orders were straightforward: do whatever it takes, within existing laws and regulations, to help the Texas Medical Center get back on its feet.

To accomplish this, the DFCO and DSCO were given the authority to manage the day-to-day operations associated with the Task Force. This included public and Congressional affairs, logistics, information and planning, staffing, and most importantly “signature authority” for FEMA’s Public Assistance Program. Having signature authority was significant for several reasons: 1) it made the DFCO responsible for approving Public Assistance grants to eligible applicants; 2) it streamlined the decision-making process by keeping it at the Task Force level; 3) it made the Task Force directly accountable to FEMA Headquarters and the State in addition to its reporting responsibilities to the FCO and SCO.

The Task Force initially operated out of the main Tropical Storm Allison DFO, which was about 20 miles from the Texas Medical Center. On July 9, the Task Force relocated to more convenient office space near the Texas Medical Center campus. This made it easier for the growing staff (which peaked at 71 in July) to hold daily meetings with applicants, but it also meant physical separation from the other DFO operations. The separation made it even more necessary for the Task Force to maintain its own program and support functions.

Another unique characteristic of the Task Force was the innovative approach it took to staffing. The Task Force was responsible for coordinating all federal assistance to the Texas Medical Center. This included managing the delivery of FEMA’s Public Assistance Program and resolving a number of related complex eligibility issues. Five Public Assistance teams were created. Each team was led by a Public Assistance Coordinator (PAC) who was assigned three to four grant applicants. The teams consisted of technical experts with a variety of specialized backgrounds.

In selecting these teams, priority was placed on staff who not only had the technical knowledge to get the job done but had the coordination and communication skills that were a good match for the Texas Medical Center's business environment. In some cases, this meant PACs were chosen who had little previous disaster program experience but strong skill sets. The lack of program knowledge was not a concern since many of the program issues were unique to the Texas Medical Center applicants and are not routinely dealt with in other disasters. In addition, extensive Public Assistance training was provided to the teams throughout the recovery operations.

The PAC teams had a wide range of experts to whom they could turn for help on highly technical issues. There was a Task Force mitigation team that coordinated the state administered Hazard Mitigation Grant Program (HMGP, also referred to as 404 hazard mitigation) and FEMA's Public Assistance Program hazard mitigation (406 hazard mitigation; see appendix D for an explanation of the programs) as well as all floodplain related matters. A pool of in-house specialists was formed from which the PACs could assemble multi-disciplined Building Assessment Teams (BATs) and supplement their own PAC teams with specific technical experts. The technical pool included specialists from diverse disciplines, including insurance, cost estimating, bio-medical equipment, telecommunications,

architecture, and mechanical, structural, and electrical engineering.

The PACs also had a group of very experienced Public Assistance Program specialists to turn to for help in working through the complex program issues. This group was devoted primarily to identifying, anticipating and addressing unique Public Assistance eligibility and regulatory issues. They drew upon experiences and knowledge gained from other major disasters to research program regulations and develop recommendations. These specialists also provided on-going training and mentoring to PAC teams and participated in applicant meetings to clarify federal regulations and facilitate issue resolution. Their involvement freed up the PAC teams to spend more time working with the applicants and ensured that the applicants received the maximum grant assistance possible by law.

This was the first time most Texas Medical Center officials had worked with FEMA and state representatives to apply for federal disaster assistance. Some Texas Medical Center administrators initially searched the FEMA internet website to learn about federal disaster grant programs. Others, called out-of-

Facilities located in basement and sub-basement building levels suffered the brunt of Tropical Storm Allison's floodwaters.



FEMA/Andrea Booher

state hospitals that had previous experience working with FEMA and asked for advice. As the individual institutions began cleanup and repair work, they were not sure what to expect in the way of assistance from federal and state agencies.

The Task Force set out to clarify expectations. The 42 Texas Medical Center institutions perform a variety of services and some of the groups by law were not eligible to receive federal assistance. The Task Force wanted to explain the eligibility requirements and grant process as soon as possible in order to prevent groups from developing unrealistic expectations. It was also important for each institution to know, for its own planning purposes, whether or not it would be eligible for federal assistance, the steps it should take to begin applying, and how long the grant process usually takes.

To accomplish this, the Task Force leadership developed a multi-tiered communication strategy focused on proactively disseminating information and identifying issues and concerns. The strategy was directed at all levels of applicant staff and addressed general information needs as well as very specific technical topics. The multi-tiered approach included sessions with large groups of applicants followed by one-on-one personalized meetings.

The Task Force started the process by conducting high-level briefings for the Texas Medical Center CEOs. These briefings were conducted every few weeks and included roundtable question and answer sessions. Task Force program messages were crafted into each session presentation to address current applicant issues and to explain the next stage of the grant process. The Task Force then conducted applicant staff level briefings. Regular meetings were also held with each individual institution to provide applicants with the opportunity to discuss their specific issues and needs in private.

Eligibility for FEMA Public Assistance

State and local governments and certain private nonprofit organizations are eligible for federal assistance when the President has made a disaster declaration. Eligible private nonprofit organizations must deliver educational, utility, emergency, medical, custodial or other essential governmental type services (such as museums, zoos, community centers, libraries, homeless shelters, senior citizen centers, shelter workshops and health and safety related services).

Special technical sessions were held to discuss complex issues in more depth. They included program topics like FEMA hazard mitigation grants, insurance issues, and building codes and standards. Some of the presentations were aimed at specific staff audiences. A session was conducted for Texas Medical Center lawyers to discuss applicant information provided to the Task Force and the Freedom of Information Act (FOIA). Other sessions included briefings for public affairs staff, auditors, and financial officers.

Regardless of the audience, the Task Force focused on presenting consistent information and communicating key messages. It also was careful to capture applicant concerns and to address them in the next round of talking points.

The dissemination of information was a top priority for the Task Force, and the Texas Medical Center Corporation provided the perfect vehicle for getting information out quickly to the 42 members. (The Texas Medical Center Corporation included St. Joseph Hospital in its communications and notice of meetings with the Task Force.) It coordinated the

various Task Force briefings and helped to facilitate the ongoing flow of information. The Texas Medical Center Corporation even worked with Task Force public affairs officers to publish articles in the bi-weekly newspaper *Texas Medical Center News*.

By working in partnership with the Texas Medical Center Corporation, the Task Force was able to quickly obtain large amounts of information about the Texas Medical Center and had a forum for addressing common issues and concerns. The openness of the information sharing provided by the Texas Medical Center Corporation helped ensure applicants that they were all receiving the same level of attention and technical assistance from the Task Force regardless of their size and eligible damage costs.

As in any disaster, the prospective grant applicants were not the only groups requiring timely information. State and local officials and U.S. Congressional Representatives and Senators from Texas were concerned with the damage to the medical facilities. They were eager to become partners in the recovery

effort and to support the Task Force. Congressman Bentsen had close ties to the Texas Medical Center and was instrumental in establishing the vital relationship between the Task Force and Texas Medical Center Corporation.

On June 25, a Congressional delegation toured the damaged Texas Medical Center and met with the Task Force and institution CEOs to discuss recovery needs. The delegation included Senator Kay Bailey Hutchison, and Representatives Ken Bentsen, Kevin Brady, John Culberson, Tom DeLay, and Sheila Jackson Lee. Before returning to Washington, the delegation members pledged their commitment to work with Congressional committees and federal agencies to provide whatever assistance was necessary.

The Task Force remained in close contact with the elected officials and their staff, answering questions and providing status reports to ensure the officials and their constituents were well informed and any potential issues were quickly addressed. The Task Force helped coordinate several additional

Texas Senator Kay Bailey Hutchison addresses the news media after leading a Congressional tour of damaged Texas Medical Center facilities on June 25, 2001. This was the first of several visits that Senator Hutchison and her staff made to the Texas Medical Center in support of the recovery efforts.



FEMA/Andrea Booher



St. Luke's Episcopal Hospital

The walls and ceiling of this St. Luke's laboratory buckled from the tremendous pressure of the floodwaters.

Congressional visits in the months following the storm. These efforts were greatly facilitated by having a Congressional liaison officer assigned to the Task Force. This individual served as a central point-of-contact for Congressional offices and coordinated with the other Congressional liaison staff at the main DFO.

The Task Force established itself as a "one-stop shopping" source of information regarding recovery assistance to the Texas Medical Center. The goal was to ensure that anyone—applicant CEOs, doctors, managers, Congressional leaders, the news media—could call to get information or have their questions answered and regardless of who called, the information and answers would be the same.

The Task Force members worked hard to maintain a unified message as they interacted with the applicants and various interest groups. The operational vision, program priorities, and other key messages were consistently repeated in press releases, interviews, presentations, and meetings. Staying on message helped the Task Force manage expectations and develop credibility. It also allowed it to maintain a proactive operational strategy and limit reactionary staff time needed to address rumors and miscommunication.

Books, research data, institution records, and other valuable documents were lost and damaged in the flood.





Task Force Recovery Assistance

Texas Medical Center



As in most disasters, Public Assistance “kick-off” meetings were used to begin the actual grant application process. The meetings were scheduled at the earliest convenient date for each grant applicant. The June 25 Memorial Hermann Hospital meeting was the first one held. The purpose of the kick-off meeting was to discuss individual applicant damage, assess recovery needs, and chart a plan of action. The meetings provided more in-depth information about the Public Assistance grant process

than the initial information sessions and CEO briefings. The kick-off meetings walked through the grant process from start to finish, providing applicants with examples for collecting the various financial, facility, equipment, and insurance information they would need to receive approved federal assistance.

Fifteen of the Texas Medical Center institutions and Christus St. Joseph Hospital were determined eligible to receive Public Assistance. Each applicant was assigned a Task Force PAC who continued the

Eligible Public Assistance Grant Applicants

1. Baylor College of Medicine
2. Christus St. Joseph Hospital*
3. Harris County Hospital District
4. Hospice at the Texas Medical Center
5. Houston Academy of Medicine
6. M. D. Anderson Cancer Center
7. Memorial Hermann Healthcare System
8. Methodist Health Care System
9. Prairie View A&M University, College of Nursing
10. St. Luke's Episcopal Health System
11. Texas Children's Hospital
12. Texas Heart Institute
13. Texas Medical Center Library
14. TIRR Systems (The Institute for Rehabilitation and Research)
15. University Care Plus
16. University of Texas Health Science Center

*Christus St. Joseph Hospital is not part of the Texas Medical Center. It is located just north of the Texas Medical Center campus.

work begun at the initial informational and kick-off meetings. The PACs' job was to provide applicants with day-to-day support documenting damage, determining eligible repair work, estimating costs, developing work projects, and identifying issues requiring special attention such as insurance coverage.

Assisting the applicants in this process proved very challenging for the PACs in two areas- determining damage eligibility and replacement cost estimation. The damage to the hospitals included the loss of specialized research and medical equipment, laboratory specimens, and years of data. In most disasters, federal and state PAC teams deal with structural damage to roads, bridges, and public facilities. In the case of the Texas Medical Center,

there was little structural damage but considerable damage to facility contents. The PACs were in a position of having to determine the eligibility and replacement costs of genetically engineered laboratory animals and million dollar pieces of equipment with names like cyclotron and linear accelerator.

The PACs brought issues to the Public Assistance Program specialists for review. Once an issue had been researched, it was presented to Task Force managers for resolution. Guidance was then developed for each significant issue and distributed throughout the Task Force in the form of an internal newsletter. The newsletter along with weekly PAC coordination meetings provided a means for maintaining knowledge consistency among the various teams interacting with the applicants. More than 15 newsletters were published, covering topics ranging from the eligibility of medical records and damaged automobiles to research animals and equipment.

The day-to-day technical and administrative support provided to the applicants by the PAC teams differed depending on each applicant's needs. The PAC teams tailored their approach accordingly, bringing in additional technical expertise as needed.

Like all the applicants, The Methodist Hospital needed to provide the Task Force with a detailed description of damages as part of the Public Assistance process. More than 40 feet of water had flooded the first two basement levels of the hospital, destroying 300,000 square feet. The pharmacy, kitchen, medical records, supply room, therapy facilities, information systems, and major medical equipment, including four MRIs, two linear accelerators, and five nuclear cameras, were damaged or destroyed.

The problem confronting Methodist staff was that much of the information needed to document the equipment and facility structure prior to the storm was destroyed by the floodwaters. The facilities

Public Assistance Program Eligible and Ineligible Applicant Costs

The Federal Government will pay for:

Emergency protective measures
 Building damage
 Cleanup
 Equipment damage
 Temporary facilities & relocation (limited)
 Contract costs
 Regular time and overtime for permanent work
 Overtime to perform emergency work

The Federal Government cannot pay for:

Loss of intellectual property
 Value of work
 Business interruption
 Research
 "Goodwill"

department, which maintained building drawings, was located in the flooded basement levels. Damaged building drawings were sent for freeze-drying recovery treatment that took several months to complete. In the meantime, hospital staff were faced with the monumental task of recreating the information for the federal assistance process.

Methodist staff gathered building information from archived architect, engineer, and contractor records as well as from hospital department heads. They assembled binders detailing basement level conditions pre- and post-Allison. Documentation included furnishings, office contents, floor plans, and pictures of damaged areas. Methodist and Task Force technical specialists worked side by side to review the information for all federally eligible disaster costs.

Mitigation

One of the Task Force's top priorities was to encourage each applicant to pursue mitigation measures throughout the recovery process. The Task Force assembled a mitigation team to support the PACs and advise the applicants. The Texas Medical Center Corporation and many of the applicants were in

the process of developing and implementing long-term expansion plans when Tropical Storm Allison hit. The impact of the storm provided an opportunity for the groups to work with Task Force mitigation specialists to revise their plans and incorporate additional mitigation measures to protect the facilities from future disasters.

The mitigation team visited each of the damaged facilities and conducted a survey to verify potential floodwater entry points for a 500-year flood event. This information was essential for conducting cost benefit analyses to determine the feasibility of proposed applicant mitigation projects.

The mitigation team identified more than 100 mitigation measures for the applicants to consider. The Texas Medical Center's interconnecting underground tunnel system was the source of much of the flooding. By installing heavy watertight submarine doors, buildings can be shut off from the tunnels and block a significant floodwater entry point. Some of the institutions had plans to install these doors prior to the storm but only Texas Children's Hospital had done so. Children's Hospital had installed five submarine doors as the first phase of a three-phase flood protection

Example of a Task Force Public Assistance Newsletter

Medical Records Guidance

Issue:

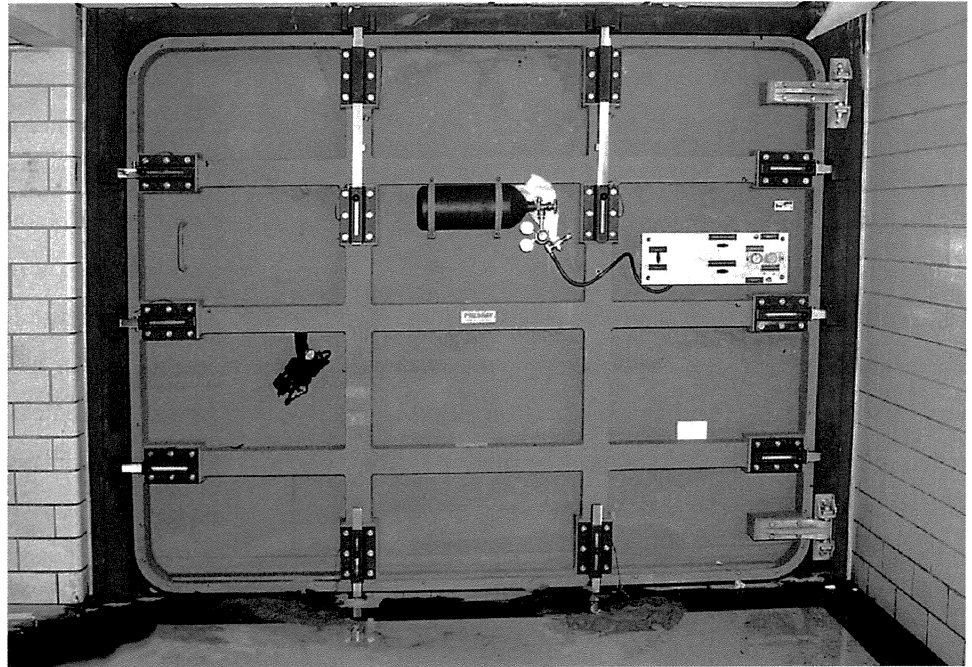
Many of the institutions lost medical and research records. Each institution will recover these documents as much as possible and re-establish its files.

Item

Eligibility

- | | |
|---|--------------|
| <p>(1) Recovery of damaged hard copies. - Labor - Materials such as bags, boxes, containers, etc.</p> | Eligible |
| <p>(2) Stabilizing the damaged hard copies, such as through freeze-drying.</p> | Eligible |
| <p>(3) Sanitizing the damaged hard copies.</p> | Eligible |
| <p>(4) Photocopy damaged hard copies to re-establish files capable of being handled by staff. - Labor - Materials such as new folders and paper.</p> | Eligible |
| <p>Note: When the applicant takes the clean and safe copies and begins to decipher the water-damaged information, eligibility ends.</p> | |
| <p>(5) Rescue data from water-damaged computer hard-drives by specialists.</p> | Eligible |
| <p>(6) Establish new information database by performing medical physicals on patients.</p> | Not Eligible |
| <p>(7) Manually re-entering medical data lost in damaged computers into new computers.</p> | Not Eligible |
| <p>(8) Scan new medical file hardcopies into computer as 406 hazard mitigation.</p> | Not Eligible |

The installation of watertight submarine doors is among the more than 100 Task Force recommended mitigation measures to protect the Texas Medical Center from future flooding.



St. Luke's Episcopal Hospital

project. The doors were activated during Allison and were critical in preventing the hospital from losing power and keeping the floodwaters from causing more widespread damage to the Texas Medical Center complex.

Underground parking garages and ground level building entrances were also significant floodwater entry points. Constructing exterior floodwalls to protect building parameters and floodgates to close off garage entrances were recommended Task Force

mitigation measures. Many of the facilities already had floodgates in place but because the flooding occurred late on a Friday night, staff had gone home for the weekend and some of the manual gate systems were never closed.

Residential buyout programs are traditionally the State of Texas' top priority for HMGP money (which is calculated at 15% of the total disaster grant amounts provided under the FEMA Individual and Public Assistance programs). However, the State recognized

Employee Recovery Assistance

Compounding the already significant challenges at the Texas Medical Center was the fact that many of its 61,000 employees were Tropical Storm Allison disaster victims. Thousands of homes and vehicles in the Houston area had been damaged. The Task Force worked with the Texas Medical Center Corporation to locate a FEMA/State mobile disaster recovery center on the Texas Medical Center campus to help affected employees. Representatives from FEMA, the U.S. Small Business Administration (SBA), and State of Texas staffed the mobile center and addressed questions about federal assistance for individuals, as well as provided information about disaster assistance available from other organizations. A FEMA community relations specialist was also assigned to the Texas Medical Center. The specialist went from institution to institution meeting with disaster victims and coordinating with the institutions, which established their own initiatives to assist impacted employees.

the need to address the tremendous impact that Allison had on the city of Houston and the Texas Medical Center in order to prevent the disruption of essential services in the future. The State's final HMGP priority list included several significant flood mitigation projects in the city and around the Texas Medical Center campus. The state team collected a list of potential HMGP projects from the applicants and worked with the PAC and Task Force mitigation teams to determine which projects should be funded under HMGP and which under 406 hazard mitigation in order to maximize the number of approved Texas Medical Center mitigation projects.

FEMA regulations require that mitigation measures protect critical facilities against a 500-year flood event. Since hospitals are critical facilities, the Task Force had to verify the 500-year floodplain for the Texas Medical Center campus in order to effectively implement the hazard mitigation program.

At the time of the storm, there were three independent studies underway to update floodplain maps covering the Texas Medical Center area. The Task Force put together a study group consisting of the

U.S. Geological Survey, Harris County Flood Control District, FEMA Region VI, Rice University, and the Texas Medical Center to consolidate and expedite the three separate efforts and establish consensus on a single set of floodplain elevation numbers. The study group was successful in generating revised floodplain data that could be used to determine 500-year base flood elevations for hazard mitigation projects.

The Texas Medical Center Corporation made a special request to FEMA for technical assistance in evaluating the Texas Medical Center's readiness against man-made as well as natural hazards. The request came as a result of the September 11, 2001 attacks on the Pentagon and World Trade Center. The Task Force will work with specialists to conduct a complete vulnerability assessment of the Texas Medical Center in order to provide recommended mitigation measures.

Insurance

Applicant institutions had extensive insurance coverage. However, approximately half of the applicants had damage, in excess of their coverage, that was eligible under FEMA's Public Assistance

Eligible Damage and Insurance Coverage of Task Force Grant Applicants

| | Estimated Amount |
|-----------------------------------|-------------------------|
| Eligible Public Assistance Damage | \$876 million |
| Insurance Coverage | \$400 million |

Federal Program Costs

| | Estimated Amount |
|------------------------------------|-------------------------|
| Public Assistance Program | \$476 million |
| 406 Hazard Mitigation | \$200 million |
| Hazardous Mitigation Grant Program | \$140 million |
| Total Federal Assistance | \$816 million |

The above estimates are as of April 1, 2002. The Public Assistance and mitigation program costs will be shared 75% by the Federal Government and 25% by the applicants. The \$140 million in HMGP funding includes \$60 million for the city of Houston to undertake drainage projects that will protect the Texas Medical Center campus.

Program. Task Force insurance specialists worked with applicants and PAC teams to review and interpret insurance policies and determine which damages and expenses could be covered by insurance and which were eligible for federal assistance. Understanding the insurance coverage was important because it allowed the PACs to advise applicants on the best way to maximize both their insurance coverage and Federal Government assistance allowed by law.

The insurance specialists' work was also important for calculating applicant eligibility for FEMA mitigation projects. For example, the damage suffered by St. Joseph's Hospital was covered entirely by insurance, which meant the hospital did not have any eligible Public Assistance costs. However, St. Joseph's PAC team and the insurance specialists worked with the hospital to determine its eligibility for 406 hazard mitigation funds based upon the eligible Public Assistance damage that was covered by hospital insurance. As a result of the insurance work, St. Joseph was eligible to receive millions of dollars for mitigation projects to prevent damage from future natural disasters.

Task Force Recommended Mitigation Measures

- Installing watertight submarine doors
- Installing floodgates
- Constructing exterior floodwalls
- Relocating electrical equipment from the basement to upper floors
- Relocating vital hospital functions and medical equipment (e.g., patient care and MRIs) from the basement to upper floors

The location of the Texas Medical Center in the floodplain presented additional challenges to the Task Force insurance team. Each applicant's buildings had to be reviewed individually for compliance with FEMA flood insurance regulations. Those facilities that lacked the appropriate level of insurance were required to increase their coverage.



The medical institutions incorporated mitigation measures into the recovery process to prevent future flood damage and costly business disruptions.



FEMA

National Institutes of Health Partnership

Texas Medical Center



The Texas Medical Center's Baylor College of Medicine and University of Texas (UT) Health Science Center, two of the country's leading medical research facilities, suffered extensive losses to their laboratories, research animals, equipment, and data. At the time of the storm, these two institutions had approximately 750 active grants, worth \$275 million, from the National Institutes of Health (NIH), an agency of HHS. When the extent of the damage from Allison became clear, Baylor and UT researchers frantically began calling NIH grant officers for guidance.

NIH officials visited the damaged facilities on June 21, and again on June 25, with a Congressional delegation. Their visits reassured nervous researchers that help was on the way and that the Federal Government would do what it could to help impacted research projects get back on track. On July 6, HHS Secretary Tommy Thompson toured the Texas Medical Center and announced a number of proactive steps that HHS agencies were taking to help restore Baylor and UT's research capability and to assist the damaged hospitals.

HHS and NIH Emergency Initiatives

- Centers for Medicare & Medicaid Services (CMS) facilitated prompt payment of Medicare claims to hospitals.
- CMS provided emergency approval for hospitals to share resources. This allowed impacted hospitals to use other hospitals' facilities to deliver specialized medical care not usually performed at the host hospital.
- NIH extended grant deadlines, including the submission dates for two programs funded by the National Center for Research Resources (NCRR). The normal requirement for institutions to provide matching funds for construction grants was waived by NCRR.
- NIH provided emergency funding for institutions to lease and later purchase research equipment damaged by the storm.
- NIH extended timeframes for projects interrupted by Tropical Storm Allison.

NIH normally does not have many opportunities to partner with FEMA and other federal agencies during disasters. In fact, NIH does not have any legislative authority to provide disaster relief. But Secretary Thompson's expressed support for the hospitals and research institutions, along with NIH's strong Texas Medical Center ties and technical understanding of the impacted research, quickly made NIH an invaluable Task Force member. By working within its statutory programs, NIH was able to creatively adapt its grants to help meet the institutions' emergency needs.

FEMA and NIH staff worked closely together to identify grantee needs and ways to optimize federal assistance. They briefed each other on their organization's legal authorities and grant programs. After becoming familiar with NIH's eligibility requirements, the Task Force was better able to advise applicants how to structure their grant requests. The goal was to avoid duplication of assistance and maximize the amount of relief through insurance, NIH and FEMA. Like FEMA, NIH was focused on providing as much assistance as possible under its existing policies and regulations.

NIH also played an important role in keeping applicant researchers and administrators informed through briefings and routine dialogue. Unlike FEMA

HHS Secretary Tommy Thompson visited the Texas Medical Center on July 6, 2001, to view first hand the damage caused by Allison. After a walk-through of heavily damaged areas, Thompson pledged at a news conference that emergency funding would be available to help Texas Medical Center institutions recover.



Methodist Health Care System

and the State, the institutions were used to dealing with NIH and had well-established relationships and lines of communication. NIH's experience helped the Task Force deliver unified messages tailored to the applicants' concerns. Through joint appearances with FEMA and the State, as well as by separate communication channels, NIH's involvement reduced the uncertainty and stress experienced by many whose work had suffered severe setbacks.

The Task Force also relied on NIH to identify specialized experts to assist the PAC teams. A former Director of NIH's Office of Laboratory Animal Research worked with the Task Force to review allowable and reasonable costs associated with the loss of research animals. Many of these animals had been genetically bred over several years and were not commercially available, making it difficult to assign a dollar value to their loss. When the PAC teams needed assistance developing a replacement cost estimate for a million-dollar cyclotron (used to produce radioactive chemicals), NIH was able to identify a national expert on cyclotrons who was willing to help.

Experienced NIH staff had a unique appreciation for the applicants' losses and were able to provide the institutions with practical advice on ways to keep projects going following the storm. They were even able to suggest alternative sources for purchasing new laboratory animals. NCR's newly created Mutant Mouse Resource Centers network assisted Texas Medical Center researchers in finding replacements for the thousands of genetically altered mice lost in the storm.

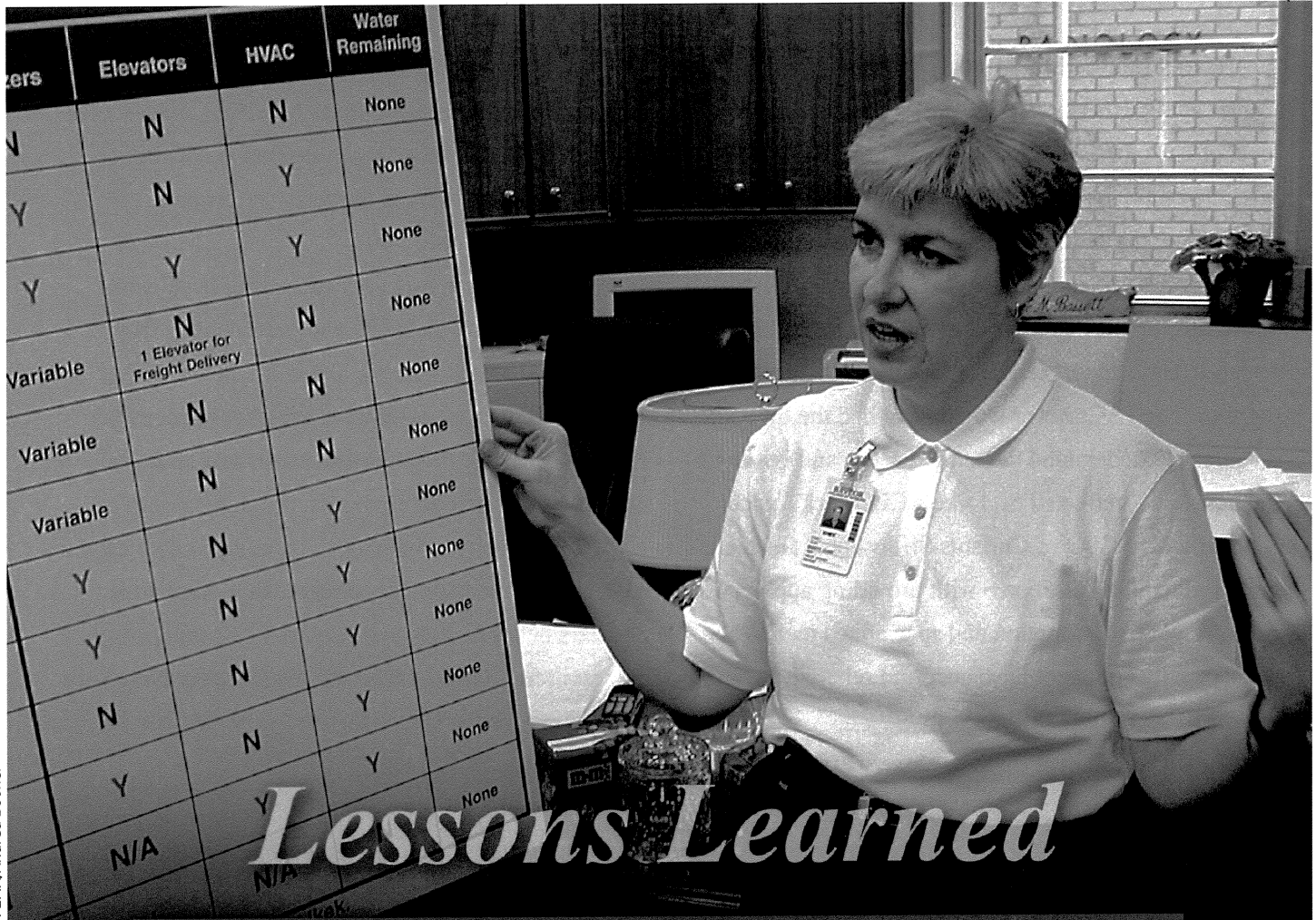
The NIH partnership allowed the Federal Government to speak with one voice on assistance issues related to the Texas Medical Center. It gave the Task Force instant access to the medical research expertise that neither FEMA nor the State possessed. It provided Task Force emergency managers with

NIH Research Grants to Assist UT Health Science Center and Baylor College of Medicine

- Issued approximately 60 administrative supplements, worth about \$14 million, to active grants. The funding allowed the replacement of equipment and supplies and supported personnel costs for researchers and technicians to replicate lost work.
- NCR grant assistance to Baylor College of Medicine included:
 - \$3,000,000 for facility repairs;
 - \$696,977 for repairs to animal research facilities;
 - \$600,000 to replace an electron microscope;
 - \$363,000 to replace a tunneling electron microscope;
- NCR provided UT Health Science Center with \$3 million to repair damaged research facilities.

The above figures are as of April 1, 2002.

contacts for each of the HHS organizations that had a role to play in the recovery process. It also enabled the Task Force to better tailor its operations to the unique medical culture of the applicants and maintain a "one-stop shopping" structure that was integral to its concept of operations.



Lessons Learned

Texas Medical Center



The Task Force and applicants worked hard to facilitate a successful recovery effort under circumstances that were new and challenging for both the institutions and emergency managers. There were parts of the recovery effort that went extremely well and others that provide valuable lessons for improving future operations.

What Worked Well

Creating a Task Force at a Satellite DFO with Separate Operations and Staff

The separate DFO operations gave the Task Force DFCO and DSCO decision-making authority for all operational and program issues. This provided a streamlined chain of command that proved very flexible and responsive.

Having staff dedicated solely to Texas Medical Center applicants allowed the Task Force to deliver a level of customer service that would not have been possible otherwise. “If the Task Force hadn’t been established, the Texas Medical Center institutions would have had to compete with all the other Public Assistance applicants in southeast Texas for the attention and support of PAC teams that were spread too thin. The PACs never would have had the time nor resources to understand the unique needs and issues of the hospitals,” reflected St. Luke’s CEO Jack Lynch. Brad Mitchell, CFO of Christus St. Joseph’s Hospital, also credited the Task Force with providing applicants with personalized attention and specialized technical assistance that may not have occurred otherwise.

Strong Task Force Leadership

The Texas Medical Center recovery effort was challenging for many reasons: applicants were critical medical facilities that operate in some respects more like *Fortune 500* companies than public facilities, the research and medical-related damage was new to FEMA, and there was strong Congressional and news media interest. As Connie Wallace, Business Practices Officer for the Methodist Health Care System, pointed out, “You have to have someone in charge who is savvy and can handle the various dynamics and the Task Force leaders did a good job.”

Task Force officers were creative in finding ways to deal with applicants and damage that did not apply to existing models and guidelines. The Task Force organization was set up to complement the business culture of the Texas Medical Center. The leaders set the vision and priorities and spent the majority of their time interacting with applicants and stakeholders to deliver carefully crafted messages and to bring back applicant issues and concerns for resolution.

In the initial days of the disaster, leadership skills were more important than extensive federal assistance

program knowledge. FEMA, state and NIH Task Force leaders reassured anxious Texas Medical Center CEOs and staff and established the cooperative network of relationships that defined the recovery process.

Selecting Task Force Staff

The Task Force was very successful in selecting program staff with skill sets and personalities that were a good match with the Texas Medical Center. The Task Force also assembled very knowledgeable Public Assistance Program specialists and technical experts who were able to work through the complex eligibility issues. Assembling such talented staff might have been more difficult had there been other large disasters between June and August 2001, competing for resources. Some of the staff did leave for New York City during the fall to assist with the September 11, recovery efforts.

Continuity of Task Force Staff

Most of the Task Force leadership, PACs and PAC teams arrived within weeks of the disaster and remained for months to oversee the recovery process. The grant process would have been much more difficult if Task Force staff had changed every couple of months. As Wallace confirmed, “Having a single PAC that didn’t change was very important.” A few PACs and PAC teams did change for various reasons during the ten-month period covered by this report. The new staff tried to work through the learning curves quickly in order to limit disruptions to the grant process.

Task Force Satellite DFO near Applicants

Having the satellite DFO near the Texas Medical Center campus allowed Task Force staff to spend more time with the applicants. It was also a clear demonstration of the Federal and State Governments’ commitment to the Texas Medical Center recovery effort.

Communication Strategy

The Task Force communication strategy was successful in proactively keeping all levels of applicant management informed and in quickly addressing issues. Cyndi Jewell Baily, Associate General Counsel at Baylor, stressed the importance of a meeting the Task Force held with the college's entire faculty. "The information provided by the Task Force helped reduce anxiety levels and explain to the faculty why it was necessary for them to complete certain forms," explained Baily.

When a significant issue developed, the Task Force was quick to address it through the various briefings and one-on-one meetings. The flow of information to applicants was also greatly facilitated by the Texas Medical Center Corporation under which the applicants were used to working as a group. An indicator of the effectiveness of the Task Force's communication strategy may be the absence of critical disaster recovery stories by the news media. In fact, there was limited coverage following the initial stories immediately after the flooding, which further suggests that the Task Force and applicants were able to resolve issues through effective internal communication.

Consistency of Information and Assistance among Applicants

The 16 applicants have close ties to one another. Many of the CEOs and staff speak frequently and serve together on Texas Medical Center committees. "After speaking with other hospitals, it was clear that the Task Force did a good job consistently interpreting federal assistance regulations for applicants," said Connie Wallace. "The Task Force staff were very helpful showing us how to get all the assistance we were entitled to." The Public Assistance Program specialists and the internal Task Force Public Assistance newsletter helped to ensure consistent

dissemination of information and interpretation of policies by the five PAC teams.

Congressional Relations

Texas Senators and Congressional Representatives were very interested in the Texas Medical Center recovery effort. Task Force leaders worked hard to include the elected officials and their staff in all aspects of the recovery process. Their involvement was very beneficial in maintaining widespread Congressional and Federal Government support and for expediting the resolution of issues.

NIH Partnership

The close coordination and working relationship that developed between NIH and the other Task Force members is commendable given the fact that they had no similar previous experience partnering with one another. The strong partnership enabled the Task Force to tailor its operations to the unique medical culture of the applicants and access highly specialized medical experts. In addition, FEMA, NIH, and the State were able to develop and deliver to applicants unified messages regarding all federal assistance.

Areas for Improvement

Expedite Requests for Generators

There was an immediate need for generators to power critical facility functions and to operate water pumps. The first FEMA generators arrived at the Texas Medical Center less than 24 hours after the flooding. Hospital managers immediately approached the trucks and began making requests. Unfortunately, the generator staff on hand did not have authority to release the generators because the administrative process for receiving requests was not yet in place. Texas Medical Center managers could not wait and ended up competing with one another to get generators from local contractors. Eventually, the situation was rectified and half a dozen FEMA generators were installed.

Begin the Public Assistance Information Process Sooner

The Public Assistance Program requires applicants to follow certain guidelines for selecting contractors, documenting damage, and accounting for disaster-related expenses. There were several weeks between the disaster and the kick-off meetings during which time applicants were busy cleaning up, beginning repair work, and dealing with insurance companies. Many applicants would have documented these activities differently if they had been aware of the federal assistance requirements at the time. Those institutions that were not aware of the guidelines had to reorganize and recreate information weeks later at the beginning of the Public Assistance process.

Delay Staffing of PAC Teams

Applicants required Public Assistance information as soon as possible so they knew how to document damages and record expenses. This initial process could have been done by the PACs and Task Force leaders. The applicants were not ready to work with fully staffed PAC teams for several weeks until the initial cleanup was complete and normal operations were restored. Delaying the staffing of PAC teams until the applicants were ready might have helped reduce long deployment times, staff rotations, operational costs, and staff frustration.

Better Explanation of HMGP and 406 Hazard Mitigation

The overall implementation of the hazard mitigation programs went well. However, the initial information regarding the HMGP and 406 hazard mitigation programs could have been better explained. The fact that the programs have separate eligibility and grant processes and that HMGP is administered by the State and 406 hazard mitigation by FEMA added to the confusion of most applicants. In addition, the funding timeframes and administrative process

changed as the State and FEMA moved applicant projects from one program to the other in order to maximize the number of projects that could be funded.

Address Implications of the Freedom of Information Act

The federal assistance grant process requires applicants to provide very detailed financial and operational information. Texas Medical Center applicants are private institutions and, unlike state and local government organizations that usually receive FEMA Public Assistance, are not accustomed to public disclosure. Many applicants preferred to keep information private because of issues regarding internal security, business practices, and financial records. Applicants were concerned that if they provided sensitive information to the Task Force, the Task Force would have to release it to anyone who requested it under the Freedom of Information Act.

Maintain Close Coordination between Task Force and Main DFO Operations

The separate Task Force DFO, staff, and recovery operations sometimes made it difficult to coordinate with the main DFO. Close coordination is important for the long-term transition of operations from the Task Force to other state and FEMA regional staff.

Suggestions for Future Disaster Applicants

Upon reflecting on their Tropical Storm Allison experiences, some of the Task Force applicants had suggestions for institutions around the country that are similarly impacted by future disasters and require federal assistance.

Be Proactive and Contact the State and FEMA

The State and FEMA have a number of competing issues to deal with in the initial days of a disaster. "Applicants should be proactive and contact FEMA for assistance," said Brad Mitchell. St. Joseph's Hospital

was initially overlooked and unaware that it qualified for federal assistance. Mitchell recommends institutions begin networking with state emergency managers and regional FEMA offices before a disaster and find out if their organizations would be eligible for federal assistance if a disaster were to occur. The State and FEMA can also assist institutions with pre-disaster emergency preparedness and can recommend mitigation protection measures.

Photograph all Damages and Open a Disaster Bank Account

Begin videotaping and photographing damage as soon as possible and open a separate checking account for all disaster related expenses. The photographic documentation and bank account are helpful in providing the insurance companies and FEMA with the information they need to process claims and grant assistance. Periodic videos and photographs also provide a record of the recovery process and are helpful in showing employees and the public that the institution is getting back on its feet.

Develop a Staffing Strategy for Managing the Federal Assistance Process

Task Force applicants used various methods for managing the administrative work associated with the federal assistance process. The approaches ranged from hiring outside contractors to manage the entire process to temporarily reassigning internal staff. Future applicants should be aware of the extensive administrative workload and develop a staffing plan that makes sense for their organization. It is important to do this as quickly as possible in order to complete the grant process in an efficient and timely manner without disrupting day-to-day operations or overextending staff who already have full-time jobs.

Coordinate Insurance and FEMA Public Assistance Processes

Insurance companies and FEMA PAC teams require much of the same information regarding disaster damage and expenses. Memorial Hermann developed a consolidated approach to gathering information that met the needs of both its insurance company and the Task Force. "Coordinating the insurance and FEMA Public Assistance processes can save applicants considerable time and avoid having to duplicate paperwork collection and conduct repeat tours of the damage," suggested Jeffrey Brownawell, Vice President for Managed Care and Government Reporting at Memorial Hermann Healthcare System.

Conduct Pre-disaster Planning

"Begin thinking about emergency needs before a disaster," recommended Claire Bassett, Vice President for Public Affairs at Baylor. Institutions should identify vendors and contractors that can provide generators, pumps, cleanup and repair crews, and other resources that will be needed if power is lost and significant damage occurs. In addition, institutions should establish partnerships with other businesses for sharing resources and office space after a disaster. "You need to think about all the ramifications of having no electricity," said Bassett "and plan accordingly."



Future Task Forces

Texas Medical Center



Establishing the Texas Medical Center Task Force worked well to address the unique recovery needs of the Texas Medical Center and St. Joseph Hospital after Tropical Storm Allison. However, every disaster is different and presents federal and state officials with unique management challenges. Allison provided an opportunity to refine the task force concept and highlight the benefits that

this new management tool can bring to a large disaster operation.

There were several factors that led to the creation of the Texas Medical Center Task Force in the wake of Tropical Storm Allison. In looking ahead to future disasters, emergency managers may want to review these factors and use them as a guide while considering the benefits of establishing their own task force.

Factors Under Which Creating A Task Force May Be Beneficial

- There is a defined group of applicants within a disaster who have similar or unique recovery needs.
- Recovery needs and eligibility issues are complex and require focused attention by a dedicated staff.
- There is unusual public, political, and news media interest in a group of applicants.
- The FCO, SCO, and program staff risk becoming overextended in a large disaster.

One of the reasons why the Texas Medical Center Task Force was a success is because it was not established with a preconceived “one-size-fits-all” approach to helping the applicants. Instead, the concept of operations was tailored to the specifics of the disaster and the applicants and was allowed to evolve throughout the recovery process. The Task Force’s final operational structure provides additional lessons and recommendations for establishing future task forces.

Suggested Task Force Operational Guidelines

- Develop a clear mission and priorities.
- Assign Task Force leaders who are flexible, creative, and can establish strong relations with applicants, other federal and state agencies, and stakeholders.
- Assemble staff assigned solely to Task Force operations.
- Select staff with personalities and skill sets that are a good match for the applicants and stakeholders.
- Locate task force near applicants; establish a satellite DFO if main DFO is not convenient to applicants.
- If a satellite DFO is needed, establish separate DFO operations but maintain good coordination with the main DFO.
- Delegate administrative and program decision-making to the task force DFCO and DSCO so they are in charge of the operation.

Timeline of Task Force Events

Appendix A

| <i>Date</i> | <i>Description of Event</i> |
|-----------------------|---|
| June 8-9, 2001 | Tropical Storm Allison dumped 8.5 inches of rain in a 2-hour period on the Texas Medical Center. Total rainfall in the area was gauged at 14.8 inches. |
| June 9 | In response to Governor Perry's request, President Bush declared Harris County (which includes the city of Houston) and 27 other Texas counties federal disaster areas (three other counties were added later). FEMA began deploying generators to support the Texas Medical Center. |
| June 10 | Mission assignments were initiated for dewatering and debris removal. |
| June 17 | 350 kw generator installed at St. Joseph Hospital. |
| June 18 | 350 kw generator installed at Baylor. |
| June 20 | Disaster incident period closed. |
| June 21 | St. Luke's Hospital passed inspection and became fully operational. Seven preliminary disaster assessment teams began working with the Texas Medical Center to determine cost of damage and eligibility for federal assistance. |
| June 23 | Texas Medical Center Task Force was established at the DFO. |
| June 24 | The DFCO for the Texas Medical Center arrived on site and met with FEMA and state staff to determine the status of actions taken to date. |
| June 25 | The kickoff meeting for Memorial Hermann Hospital was held. U.S. Senator Hutchison and a Congressional delegation toured the Texas Medical Center and met with the Task Force and institution CEOs to discuss recovery needs. |
| June 27 | The Task Force developed a Recovery Plan outlining state/federal assistance and identifying potential Public Assistance applicants. Standard Operating Procedures for the Task Force were also developed along with staffing requirements. The decision was made for the Task Force to oversee all recovery operations at the Texas Medical Center and to establish a satellite DFO near the Texas Medical Center campus to accommodate separate Task Force DFO recovery operations. Task Force began reviewing insurance coverage for potential grant applicants. A CEO briefing was held by the Governor's office. |

| <i>Date</i> | <i>Description of Event</i> |
|----------------|---|
| June 28 | A 500 kw generator was installed and a 350 kw generator taken offline at St. Joseph Hospital. A Task Force insurance team was formed to fast-track potential applicant insurance reviews. |
| June 29 | Briefings for potential applicants were completed. The kickoff meeting for Methodist Health Care System was held. A CEO briefing was held for all potential applicants. |
| July 2 | Task Force public affairs held first meeting with the editor of <i>Texas Medical Center News</i> . DFCO interviewed by CBS national news program about the status of the Texas Medical Center recovery. |
| July 3 | The kickoff meeting for Baylor College of Medicine was held. |
| July 5 | A Public Assistance briefing was held to discuss issues related to the Houston VA Medical Center. A Disaster Recovery Center opened at the Texas Medical Center. |
| July 6 | First editorial submission to <i>Texas Medical Center News</i> from DFCO and DSCO regarding the Texas Medical Center recovery. |
| July 7 | 14 of the 16 applicants submitted insurance policy information for review. |
| July 9 | Texas Medical Center Task Force satellite DFO opened. |
| July 12 | Additional satellite DFO space was acquired in the Mickey Leland Federal Building near the Texas Medical Center. |
| July 16 | Task Force verified requests for Public Assistance to ensure all required documentation had been submitted. State contacted institutions reporting minor or no damage to verify that they would not be requesting Public Assistance. PAC conducted an initial visit to Christus St. Joseph Hospital. There were 45 FEMA and 14 State of Texas Task Force staff. DFCO and DSCO accompanied U.S. Representative Sheila Jackson-Lee on a tour of St. Joseph Hospital. |
| July 17 | Task Force hosted a Congressional briefing to provide an update on the Texas Medical Center recovery effort. Staff from Senator Kay Bailey Hutchison's office visited the satellite DFO. |
| July 18 | FEMA Operations II training started for Task Force staff. Kickoff meeting held for The Houston Academy of Medicine/Texas Medical Center Library. |

| <i>Date</i> | <i>Description of Event</i> |
|---------------------|---|
| July 19 | Kickoff meetings held for St. Luke's Episcopal Health System Corporation and Texas Heart Institute. |
| July 20 | Initial satellite DFO space is closed and all operations are located at the Mickey Leland Federal Building. |
| | Harris County Hospital District kickoff meeting was held. |
| July 24 | Mitigation project meetings held for Memorial Hermann and Methodist Health Care System. DFCO briefed the Texas Medical Center public relations advisory council. |
| July 25 | TIRR kickoff meeting held. The Community Relations Field team completed visits to 55 institutions. |
| | Kickoff meeting held for Christus St. Joseph Hospital. |
| July 26 | Kickoff meeting held for UT Health Science Center. FEMA's historic team and hospital staff toured Memorial Hermann Hospital. |
| July 27 | Texas Children's Hospital and MD Anderson kickoff meetings held. |
| July 30 | Kickoff meetings held at Prairie View A&M College of Nursing and University Care Plus. |
| August 1 | Kickoff meeting held for The Hospice at the Texas Medical Center. |
| August 2 | Task Force met with Senator Kay Bailey Hutchison staff to ensure consist information flow. |
| August 6 | Task Force mitigation, environmental and hydrology specialists attended a two-day hazard mitigation Master Planning Workshop sponsored by Texas Medical Center Corporation. |
| August 7 | Task Force DFCO briefed FEMA Headquarters staff on progress of operations and priorities. |
| August 13 | NIH staff arrived to assist the Task Force. |
| August 16 | Task Force distributed first Task Force newsletter to update all personnel on important Public Assistance issues. |
| August 22 | The first Category A and B Project Worksheets were under review and entered into the FEMA accounting system. |
| September 17 | Task Force completed a workforce Public Assistance recovery plan, which includes: management goals, priorities, program targets, staffing projections, and applicant project worksheet completion schedule. |

| <i>Date</i> | <i>Description of Event</i> |
|---------------------|---|
| September 20 | Staff visited the offices of Senator Hutchison and Representatives Jackson Lee and Bentsen to provide updates. Approval given to extend the use of the 1600 kva mobile substation at Memorial Hermann. |
| September 25 | Region VI FEMA Director, State Director, FCO and DFCO attended briefings with all applicant CEOs. Presentation of a symbolic check for \$7,000,000 was made to Memorial Hermann. |
| September 28 | Staff accompanied Congressman Green and the FCO on a walk-through of St. Joseph Hospital. |
| October 4 | FEMA Office of Inspector General briefed all applicants on federal auditing practices. |
| October 23 | Mitigation staff attended meeting with city of Houston building officials for a review of their role in code enforcement at the Texas Medical Center and the applicability of current code upgrades for flood reconstruction. |
| October 30 | The Base Flood Elevation (BFE) and 500-year floodplain issues were close to being resolved. |
| October 31 | Task Force met with Baylor College of Medicine to discuss FEMA eligibility of Codes and Standards upgrades. Met with Texas Medical Center Corporation to discuss federal guidelines for contracting. |
| November 2 | Mitigation site visits/meetings were conducted at St. Luke's Hospital, Texas Children's Hospital, Houston Academy of Medicine, and Prairie View A&M School of Nursing. |
| November 6 | Environmental Liaison Officer conducted applicant site visits to review proposed interior/exterior 406 hazard mitigation and certain HMGP projects. Task Force requested a registered Texas surveyor to acquire elevation data for each applicant's buildings. |
| November 13 | Two Task Force representatives attend a session at a Rice University sponsored 10-day conference on Tropical Storm Allison flooding. |
| November 16 | Task Force and state mitigation teams review the State's HMGP priority list for potential 406 hazard mitigation opportunities. |
| December 6 | A CEO meeting was held to discuss the status of the recovery and current issues. |

Texas Medical Center Institutions

Appendix B

Academic and Research Institutions

- Albert B. Alkek Institute of Biosciences and Technology - Texas A&M University
- Baylor College of Medicine
- Houston Academy of Medicine-Texas Medical Center Library
- Houston Community College System, Health Careers Education Division
- Houston Independent School District, High School for Health Professions
- Prairie View A&M University, College of Nursing
- Texas Heart Institute
- Texas Woman's University Institute of Health Sciences-Houston
- University of Houston College of Pharmacy
- University of Texas - Houston Health Science Center - Dental Branch, Graduate School of Biomedical Sciences, Harris County Psychiatric Center, Medical School, School of Health Information Sciences, School of Nursing, School of Public Health
- The University of Texas M. D. Anderson Cancer Center

Patient Care Institutions

- Harris County Hospital District - Ben Taub General Hospital, Lyndon B. Johnson General Hospital, Quentin Meese Community Hospital
- Harris County Psychiatric Center
- Memorial Hermann Hospital
- The Hospice at The Texas Medical Center
- The Methodist Hospital
- Methodist Diagnostic Center Hospital
- St. Luke's Episcopal Hospital
- Shriners Hospitals for Children - Houston Unit
- Texas Children's Hospital
- TIRR (The Institute for Rehabilitation and Research)

- The University of Texas M. D. Anderson Cancer Center
- Veterans Affairs Medical Center

Other Texas Medical Center Institutions

- The Doctors' Club of Houston, Texas
- Gulf Coast Regional Blood Center
- Harris County Medical Society
- Houston Academy of Medicine
- Houston Department of Health and Human Services
- The Institute of Religion
- Joseph A. Jachimczyk Forensic Center - Office of the Medical Examiner of Harris County
- LifeGift Organ Donation Center
- John P. McGovern Museum of Health & Medical Science
- Ronald McDonald House
- Rotary House International
- Texas Medical Center (Corporation)
- Texas Medical Center Central Heating and Cooling Services Cooperative Association (Thermal Energy Cooperative) (TECO)
- Texas Medical Center Central Laundry Cooperative Association
- YMCA of Greater Houston Child Care Center in the Texas Medical Center

List of Acronyms

Appendix C

| | |
|------|--|
| BAT | Building Assessment Team |
| CEO | Chief Executive Officer |
| CFO | Chief Financial Officer |
| CMS | Centers for Medicare & Medicaid Services |
| DFCO | Deputy Federal Coordinating Officer |
| DFO | Disaster Field Office |
| DMAT | Disaster Medical Assistance Team |
| DSCO | Deputy State Coordinating Officer |
| FCO | Federal Coordinating Officer |
| FEMA | Federal Emergency Management Agency |
| FOIA | Freedom of Information Act |
| HHS | U.S. Department of Health and Human Services |
| HMGP | Hazard Mitigation Grant Program |
| NCRR | National Center for Research Resources |
| NIH | National Institutes of Health |
| PAC | Public Assistance Coordinator |
| SBA | U.S. Small Business Administration |
| SCO | State Coordinating Officer |
| VA | U.S. Department of Veterans Affairs |

*Description of Federal Grant Programs**Appendix D***Federal Emergency Management Agency****Public Assistance Program**

Grants are provided to states, local governments, and eligible private nonprofit organizations to alleviate suffering and hardship resulting from major disasters or emergencies declared by the President. Program funds can be used to clear debris; apply emergency protective measures to preserve life and property in response to a declared event; and repair or replace damaged structures, such as buildings, utilities, roads and bridges, water-control facilities, and recreational facilities. Grants are generally cost-shared 75 percent federal funding and 25 percent state or applicant funding.

Applicants are encouraged to mitigate natural hazards as a condition of the grants. Public Assistance funds can be used for cost effective hazard mitigation measures (often referred to as **406 hazard mitigation**) that are necessary to protect applicant services and functions affected by the declared major disaster.

Hazard Mitigation Grant Program (HMGP, often referred to as 404 hazard mitigation)

State and local governments and certain private nonprofit organization are eligible. The purpose of the grants are to prevent future loss of lives and property due to disasters; to implement state and local hazard mitigation plans; to enable mitigation measures to be implemented during immediate recovery from a disaster; and to provide funding for previously identified mitigation measures to benefit the disaster area. Grants are generally cost-shared 75 percent federal funding and 25 percent state or applicant funding which can be cash, in-kind, or combination cash and in-kind non-federal contributions. The State administers the program. The amount of HMGP funding available to the State for a declared disaster is limited to 15 percent of the total federal share of Stafford Act disaster assistance, less administrative costs.

National Institutes of Health

National Center for Research Resources (NCRR), Research Facilities Improvement Program (RFIP)

Grants are provided to public and nonprofit private biomedical institutions to expand, remodel, and renovate or alter existing research facilities or construct new research facilities. Improvements under this program must support basic and clinical biomedical or behavioral research as well as research training. RFIP funding, provided by the NCRR Division of Research Infrastructure (DRI), supports new facilities; additions to existing buildings; completion of “shell” space; and alterations and renovations. RFIP grants do not support construction of “shell” space; instrumentation or moveable equipment, which is usually requested as part of the research project grant; or land acquisition or off-site improvements.

NCRR Animal Facilities Improvement Program (AFIP)

Grants are provided to upgrade animal facilities that support biomedical and behavioral research funded by U.S. Public Health Service agencies. In addition to upgrading the facilities, these grants assist institutions to comply with the Animal Welfare Act, administered by the U.S. Department of Agriculture, as well as Department of Health and Human Services policies related to the care and use of laboratory animals. Support, provided by the NCRR Division of Research Infrastructure (DRI), is limited to alterations and renovations to improve laboratory animal facilities, and to the purchase of equipment for animal resources, diagnostic laboratories, transgenic animal resources, or similar associated activities.

U.S. Small Business Administration

Physical Disaster Loans (Business)

The purpose of the program is to provide loans to nonprofit organizations and businesses that have uninsured losses from a declared disaster. The loans can be used to repair or replace uninsured disaster damages including real estate, machinery, equipment, inventory, and supplies. Loan amounts are based on the total disaster loss minus any insurance or other recovery assistance and are generally limited to \$1,500,000. Loan amounts may be increased by up to 20 percent for devices that mitigate damage to the real property by similar future disasters. SBA requires borrowers to obtain and maintain appropriate insurance. The Year 2000 amendments to the Stafford Act require certain previously eligible private nonprofit organizations to apply first to SBA for assistance before FEMA.

Contributors to the Report

Baylor College of Medicine

Appendix E

Point of Contact: Claire Bassett
Title: Vice President for Public Affairs
Telephone Number: 713-798-4710
E-mail: bassett@bcm.tmc.edu
Website: www.bcm.tmc.edu

Christus St. Joseph Hospital

Point of Contact: Brad Mitchell
Title: Chief Financial Officer
Telephone Number: 713-757-7535
E-mail: brad.mitchell@stjoe.sch.org
Website: www.christusstjoseph.org

Federal Emergency Management Agency

Point of Contact: David Fukutomi
Title: Federal Coordinating Officer
Telephone Number: 626-431-3510
E-mail: david.fukutomi@fema.gov
Website: www.fema.gov

Point of Contact: Sandy Coachman
Title: Federal Coordinating Officer
Telephone Number: 940-898-5399
E-mail: sandy.coachman@fema.gov
Website: www.fema.gov

Memorial Hermann Healthcare System

Point of Contact: H. Jeffrey Brownawell
Title: Vice President, Managed Care and Government Reporting
Telephone Number: 713-448-5715
E-mail: jeffrey_brownawell@mhhs.org
Website: www.mhhs.org

Methodist Health Care System

Point of Contact: Connie Wallace
Title: Business Practices Officer
Telephone Number: 713-383-5125
E-mail: cwallace@tmh.tmc.edu
Website: www.methodisthealth.com

National Institutes of Health

Point of Contact: Carol Alderson
Title: Grants Policy Officer
Telephone Number: 301-435-0931
E-mail: cal0h@nih.gov
Website: www.nih.gov

St. Luke's Episcopal Hospital

Point of Contact: Jack Lynch
Title: Executive Vice President and CEO
Telephone Number: 832-355-4614
E-mail: jlynch@sleh.com
Website: www.sleh.com

Point of Contact: Michael Reno
Title: Administrative Director for Support Services
Telephone Number: 832-355-6915
E-mail: mreno@sleh.com
Website: www.sleh.com

State of Texas Department of Public Safety, Division of Emergency Management

Point of Contact: Butch Smith
Title: State Coordinating Officer
Telephone Number: 713-592-4392
E-mail: butch.smith@fema.gov
Website: www.txdps.state.tx.us/dem

Point of Contact: Duke Mazurek

Title: State Coordinating Officer
Telephone Number: 512-424-2445
E-mail: duke.mazurek@txdps.state.tx.us
Website: www.txdps.state.tx.us/dem

Texas Medical Center Corporation

Point of Contact: Henry "Hank" Rietz
Title: Senior Vice President
Telephone Number: 713-791-6428
E-mail: hrietz@texmedctr.tmc.edu
Website: www.tmc.edu

Veterans Affairs Medical Center

Point of Contact: Edgar Tucker
Title: Medical Center Director
Telephone Number: 713-794-7100
E-mail: edgar.tucker2@med.va.gov
Website: www.houston.med.va.gov



