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REASSESSMENT OF A
COMMUNITY MITIGATION PLAN POST-DISASTER:
A CASE STUDY OF THE UNIVERSITY OF NEW ORLEANS
DISASTER RESISTANT UNIVERSITY PROJECT

A Thesis

Submitted to the Graduate Faculty of the
University of New Orleans
in partial fulfillment of the
requirements for the degree of

Master of Public Administration
In
The College of Urban and Public Affairs
Hazards Policy and Emergency Management

by

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B.A. University of New Orleans, 2003

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ABSTRACT

The following is a case study of the University of New Orleans Disaster Resistant University project. The Disaster Resistant University project involved the creation, adoption, and implementation of an all-hazards campus mitigation plan. On August 29, 2005 Hurricane Katrina struck the City of New Orleans. This disaster caused the need for a reassessment of the original campus mitigation plan. Both the original plan, and its reassessment, are the subject of this case study.

INTRODUCTION

Disasters increasingly affect higher education institution communities. They sometimes cause death or injury, but always pose monetary losses and disruption of the institution's teaching, research, and public service. For example, in June 2001, Tropical Storm Allison overwhelmed the Houston Area universities and colleges with 10 to 24 inches of rain. Texas at Houston Medical School Building had 22 feet of water in it, causing the hospital to close for the first time in its history and damages to the Medical School has been estimated at more than \$205 million. In January 1994, the Northridge earthquake damaged three universities in the Los Angeles area. All of the California State University, Northridge buildings were damaged and the university was forced to close for an entire month. The university reopened with 450 temporary trailers serving as the only classrooms. Damages totaled over \$380 million. In 1992, Hurricane Andrew caused \$17 million in damage to the University of Miami. The campus was forced to close for almost one month because there was no water or electricity. The university even had to purchase round-trip tickets to send students home during the hiatus. University insurance premiums went up dramatically after the storm. Losses such as these could be substantially reduced or eliminated through comprehensive pre-disaster planning and mitigation actions (*Building a Disaster-Resistant University*, 2003, p.iii-3).

To compensate for losses incurred from disasters, the Federal Emergency Management Agency (FEMA) has awarded millions of dollars in disaster assistance to public and private universities and colleges throughout the United States over the last decade. FEMA subsequently developed an initiative to help universities and colleges

avoid future property and economic damage from disasters known as the Disaster Resistant University project (DRU). The goal of a disaster-resistant university is to create a campus with the ability to withstand the effects of probable hazard events without unacceptable losses or interruptions, by mitigating against future disasters.

The terrorist attacks on September 11, 2001 caused many communities to review their disaster plans and begin to reconsider issues such as safety and security. Since higher education institutions are themselves communities, the creation, adoption, and implementation of an all-hazard campus-based mitigation plan will yield substantial benefits.

In October 2004, UNO was granted the funds to participate in FEMA's Disaster Resistant University project. The ultimate goal of the plan is to identify and reduce risks throughout UNO's campus (*UNO DRU Grant Proposal, 2004, pp.1-6*). Before the plan was officially adopted, the City of New Orleans was struck by Hurricane Katrina. The impact of Hurricane Katrina on the City of New Orleans and UNO created the need for reassessment of the plan post-disaster.

CHAPTER 1

PURPOSE OF THE STUDY

Overview

Natural and human-caused disasters increasingly pose monetary losses and disruption to university communities throughout the United States. These losses could be substantially reduced or eliminated through comprehensive pre-disaster planning and mitigation actions. The Federal Emergency Management Agency (FEMA) developed an initiative to promote mitigation measures for universities throughout the country, known as the Disaster Resistant University program (DRU). The University of New Orleans applied for and received a DRU grant. Grant funds were used to develop a comprehensive, all-hazards campus mitigation plan. Before the final plan could be officially adopted and implemented, Hurricane Katrina struck the New Orleans area. This caused the need for a reassessment of the original plan post-disaster, which is the topic of this case study. Once a final, post-disaster plan is developed and implemented, the knowledge discovered throughout the process can be used by other universities and communities to assist with their own mitigation planning. Universities and communities can reassess their own mitigation plans in light of the events and developments that surround the University of New Orleans and Hurricane Katrina. The purpose of this case study is to examine the original creation of a campus mitigation plan, and its reassessment post-disaster, in hopes of contributing knowledge and lessons learned for future research and mitigation by other universities and communities.

Background

Disasters, both natural and human-caused, have increasingly affected higher education institution communities over the last decade. Disasters sometimes cause death or injury, but always pose monetary losses and disruption of the institution's teaching, research, and public service. Damage to buildings and infrastructure result in losses that can be measured in decreases in the number of faculty, staff, and students, degree programs offered, and decreases in research funding. These losses could be substantially reduced or eliminated through comprehensive pre-disaster planning and mitigation actions (*Building a Disaster-Resistant University*, 2003, p.iii).

Hazard mitigation¹ planning is a systematic, four-phased process for identifying and implementing actions to reduce or eliminate loss of life, property, and function due to natural and man-made hazards, including: organizing resources, hazard identification and risk assessment, plan development, and mitigation plan adoption and implementation. Phase one includes organizing resources necessary and available for completing the project. Phase two involves the identification of hazards that pose a threat to the campus and the assets that are most vulnerable to those hazards. Phase three consists of the planning and development of a campus mitigation plan. Phase four includes official adoption and implementation of the newly developed campus mitigation plan. Emergency Management also consists of four phases: mitigation, preparedness, response, and recovery. Phase one, mitigation, refers to activities that eliminate or reduce the chance of occurrence of the effects of disasters. Phase two, preparedness, includes the development of plans and preparations made to save lives and property

¹ Hazard mitigation is defined as any sustained action taken to reduce or eliminate long-term risk to life and property from a hazard event (FEMA).

and to facilitate response operations. Response, the third phase, includes actions taken to provide emergency assistance and effective recovery immediately following a disaster. The final phase, recovery, includes actions taken to return to normal or improved operating conditions post-disaster (*Building a Disaster-Resistant University*, 2003, p.1-3).

To compensate for losses incurred from disasters, the Federal Emergency Management Agency (FEMA) has awarded millions of dollars in disaster assistance to public and private universities and colleges throughout the United States over the past ten years. Losses include measurable interruptions to their instruction and auxiliary services, including hospitals or sports arenas, and immeasurable losses to research and the generation of knowledge. FEMA subsequently developed an initiative to help universities and colleges avoid future property and economic damage from disasters known as the Disaster Resistant University project (DRU). The goal of a disaster-resistant university is to create a campus with the ability to withstand the effects of probable hazard events without unacceptable losses or interruptions. These higher education institutions recognize the threats posed by natural and human-caused hazards to their campuses and missions and formulate policies, programs, and practices to assess the risk and implement these across all of its teaching, research, and public services activities. Therefore, the institution strives to be resilient. This does not mean that there will be no damage from disasters, since the amount of damage from natural and human-caused disasters varies by force and location of the event. However, a disaster-resistant university mitigates this damage (*Building a Disaster-Resistant University*, 2003, p.1).

Statement of Purpose

In the aftermath of the September 11, 2001 terrorist attacks, many communities reviewed their disaster plans and began to reconsider issues of safety and security. Higher education institutions are themselves communities, and can draw on important lessons from the efforts of federal, state, and local agencies and organizations to reduce disaster risks. The addition or improvement of an all-hazard campus-based mitigation plan will yield substantial benefits. Regardless of an institution's mission or focus, hazard mitigation is an important investment (*Building a Disaster-Resistant University*, 2003, p.2).

On October 30, 2000, President George W. Bush signed the Disaster Mitigation Act of 2000. This Act requires state and local governments to create a hazard mitigation plan that must be approved by FEMA. The law encourages and rewards local and state pre-disaster planning, promotes sustainability as a strategy for disaster resistance, and is intended to integrate State and local planning with the aim of strengthening statewide mitigation planning. This collaborative approach facilitates cooperation among state and local authorities, prompting them to work together. Colleges and universities can plan for the reduction of hazard losses in conjunction with similar planning efforts within their host community and/or state (*Building a Disaster-Resistant University*, 2003, p.1).

In accordance with the Disaster Mitigation Act of 2000, the City of New Orleans developed the Orleans Parish Hazard Mitigation Plan, which was approved by FEMA in early 2006. Vulnerability studies conducted by the City prior to Hurricane Katrina illustrated that New Orleans is extremely vulnerable to a myriad of disasters, some of

which include flooding, hurricanes, tornadoes, strong storms, hail, subsidence, drought, levee failure, epidemics, acts of terrorism and nuclear accidents (*Orleans Parish Hazard Mitigation Plan*, 2006, pp.1-25). These vulnerabilities were further exemplified when Hurricane Katrina hit New Orleans on August 29, 2005. Also subject to these disasters is the University of New Orleans (UNO), and nine other major universities and colleges located throughout the City of New Orleans.

Natural and human-caused disasters not only produce damaging effects to university and college campuses, they also cause monetary impact to the city and state in which the institution resides. For example, UNO has a substantial influence on the economy of the City of New Orleans as well as the State of Louisiana. The University employs 1,541 faculty and staff making it the 19th largest employer in Louisiana. The contribution of UNO to the community is also emphasized by the fact that the majority of all UNO graduates remain in the New Orleans area after graduation (*University of New Orleans Catalog*, 2004, p.7).

Overall, effects of a disaster extend far beyond the university community, and impact the City of New Orleans and the State of Louisiana. Considering the large academic population and the economic impact and potential hazards that face the City of New Orleans, UNO has successfully sought funding from FEMA to reduce and manage their vulnerability to these disasters. In October 2004, UNO was granted the funds to participate in FEMA's Disaster Resistant University project, which involves the development and implementation of a comprehensive all-hazards campus mitigation plan. In January 2005, a mitigation plan was started. Although the plan targets natural hazards, it also focuses on multiple hazards, including those that are human-caused,

whether intentional or accidental. The ultimate goal of the plan is to identify and reduce risks throughout UNO's campus (*UNO DRU Grant Proposal*, 2004, p.1-6). Before the plan was officially adopted, the City of New Orleans was struck by Hurricane Katrina. The impact of Hurricane Katrina on the City of New Orleans and UNO created the need for reassessment of the plan post-disaster, before a final plan can be officially adopted and implemented.

Description of the Area of Study

The University of New Orleans was established by the Louisiana Legislature in 1956. It was created to bring public-supported higher education to the state's largest urban community. The Board of Supervisors acquired a 195-acre site in New Orleans, Louisiana on the south shore of Lake Pontchartrain. The property was a former United States Navy air station (*University of New Orleans Catalog*, 2004, p.7).

A number of the buildings remaining on the property were renovated for academic purposes during the winter and spring of 1958. In September 1958, Louisiana State University in New Orleans opened. It was renamed the University of New Orleans in 1974. By 1962, the University was operating as a full four-year, degree-granting institution. Today, programs of study are offered through six academic undergraduate colleges, including Business Administration, Education and Human Development, Engineering, Liberal Arts, Sciences, and Urban & Public Affairs. There is also a Graduate School and a Metropolitan College. The Metropolitan College offers educational extension, professional development, and international education activities (*University of New Orleans Catalog*, 2004, p.7).

The main campus now consists of 200 acres that include an arena with the seating capacity for 10,000 people, sports facilities, and one administrative building. UNO is a public university with an approximate enrollment of 17,000 students (13,000 undergraduates and 4,000 graduate students) resulting in its ranking as the largest public university in the City and the second largest in the State. The student body is diverse with 56% white, 22.3% black, 6% Hispanic, 5% Asian, and approximately 800 international students (*www.uno.edu*, 2005). The University grants bachelor degrees in 47 programs, Master's Degrees in 38 areas, and Doctorates in 12 areas (*University of New Orleans Catalog*, 2004, p.7).

The University of New Orleans is classified as a Southern Regional Education Board Four-Year II institution, as a Carnegie Doctoral/Research Intensive University, and as a Southern Association of Colleges and Schools Level VI institution. It is a member of the Louisiana State University System. The University of New Orleans has become a comprehensive urban university that provides academic support for the enhancement of the educational, economic, cultural, and social well-being of the New Orleans metropolitan area (*University of New Orleans Catalog*, 2004, p.7).

Why UNO Applied for the Disaster-Resistant University Grant

The University of New Orleans has created and implemented emergency plans in case of a hurricane, fire, bomb threats, and other disasters that could affect the University. However, no comprehensive all-hazards mitigation plan existed. Lack of a comprehensive all-hazards mitigation plan increased the University's vulnerability to hazards, put the students, faculty and staff in danger of a natural or human-caused

disaster, and potentially cost the University millions of dollars in lost research projects and damaged infrastructure. Therefore, when the Disaster-Resistant University Grant was first proposed to the UNO Center for Hazards Assessment, Response, and Technology (CHART), the University's Chancellor agreed that it was time for a comprehensive campus emergency plan to be developed. Moreover, the creation of the plan gives the University an opportunity to improve the campus and promote sustainability.

Furthermore, UNO would have the potential to provide an opportunity to raise risk awareness and reduce the disaster losses through mitigation planning and mitigation actions. The plan would also support prior efforts made by UNO to reduce its vulnerability. In addition to the development of the plan, the University would have the potential to seek out additional funding sources to further implement identified mitigation activities. Even more funding is now available to the University post-Katrina through Public Assistance Grants (PA) as well as Hazard Mitigation Grant Program (HMGP) funds, but UNO must have a FEMA-approved plan before these funds can be received (*UNO DRU Grant Proposal*, 2004, pp.1-17).

Assessment of the Plan Post-Disaster

The original draft of the University of New Orleans Hazard Mitigation Plan was developed after a thorough Risk Assessment was conducted and a Vulnerability Assessment was prepared. A team of UNO experts representing various offices and departments including the Environmental Health and Safety Office, CHART, the College of Urban and Public Affairs (CUPA), the Engineering Department, University

Administration (e.g., Chancellor's Office, Facilities Services, and Human Resources), Faculty Senate, and Student Government participated in these activities. Input from other members of the faculty and the staff, as well as students, was included. Also included in the planning efforts were the New Orleans Emergency Manager, Emergency Medical Services, the State Hazard Mitigation Officer, local utilities, and local organizations and agencies (*UNO DRU Grant Proposal*, 2004, pp.2-6).

Post-disaster, this draft must be reassessed with the actual impacts of Hurricane Katrina in mind. Participants and key stakeholders must be re-visited. The Risk Assessment and Hazard Vulnerability must be re-evaluated. Following thorough data analysis and interpretation specifically relating to the post-disaster reassessment of the original comprehensive campus mitigation plan, a final plan will be proposed, adopted, and implemented after first-hand knowledge has been obtained and considered in wake of a natural disaster that has recently struck and impacted the City of New Orleans and UNO. The purpose of this case study is for other universities and communities to be able to utilize UNO's experiences with mitigation planning pre- and post-disaster throughout the development of their own mitigation plans.

CHAPTER 2

LITERATURE REVIEW

Introduction

The literature collected for purposes of this case study relates to disaster-resilient communities and the characteristics and qualities that these communities encompass to mitigate the effects of natural and human-caused disasters. Theories found throughout the literature can easily relate and lend themselves to the formation of a disaster-resistant university. An overview of the history of hazard mitigation and communities is presented, followed by a description of the principles associated with disaster resiliency. Next, the concepts of capacity, collaboration, education and outreach, and an ongoing approach are discussed in regards to their impact on creating a long-term mitigation plan. Other reassessments of mitigation plans are observed, as well as reconstruction used as a tool for sustainable development of communities. Literature involving all of these topics can therefore be used to theorize that if a university has the characteristics of a disaster-resilient community, then it can be characterized as disaster resilient.

Hazard Mitigation and Communities

There is a long history of hazard mitigation planning in the United States. Mitigation plans were first proposed by the noted geographer Gilbert White in a 1936, *Planners Journal* article. Then, the Tennessee Valley Authority began helping communities prepare flood prevention plans. These flood prevention plans originally focused on corrective measures, but in 1956, began to include preventative measures

such as land-use regulations. By 1960, the U.S. Army Corps of Engineers started assisting communities across the country with the development of floodplain plans. Most recently, the Federal Emergency Management Agency (FEMA) initiated the “Community Rating System” to offer community-wide reductions in flood insurance rates in exchange for various local government actions to reduce losses from flood. To date, many local governments participating in the National Flood Insurance Program (NFIP) have prepared such plans (Burby, 1999, p.249).

Besides flood prevention, planning has also been advocated as an approach for dealing with other natural and human-caused hazards. After the San Fernando earthquake in 1971, the State of California began requiring local governments to prepare a seismic safety element component as an addition to local comprehensive plans. Florida and North Carolina now require that hurricane hazards be identified and addressed in the preparation of local comprehensive plans. And in 1997, FEMA launched Project Impact to gain attention to natural hazards at the local level (Burby, 1999, p.249).

In the gulf coast region, FEMA also promotes the development of local comprehensive plans by distributing Public Assistance (PA) and Hazard Mitigation Grant Program (HMGP) funds post-disaster to communities that had begun to develop a mitigation plan pre-Katrina. These communities have one-year from the award date for completion and approval of a mitigation plan, and then they are eligible to receive government funding for mitigation measures identified throughout the planning process. Since the University of New Orleans started its mitigation plan prior to Hurricane Katrina, the University is eligible to apply for the additional funding as its own separate

community. The original Disaster Resistant University mitigation plan must be reassessed post-Katrina, and then approval by FEMA must be granted before funds can be received and identified mitigation projects can be implemented (www.fema.gov, 2006).

Raymond J. Burby (1999, p.248) states that “planning programs reduce losses by affecting both the location and design of urban development and by helping to create a knowledgeable constituency of citizens who support hazard mitigation programs.” In localities where hazardous areas have advantages for development that cannot be foregone, such as New Orleans since it is a major U.S. port, planning programs help to reduce potential losses by guiding development to the least vulnerable parts of the area and by modifying pre-existing structures so that risk is reduced. To further limit this risk after development has taken place, planning controls set standards to reduce the magnitude of a disaster. Furthermore, by involving citizens in all phases of the planning process, planning programs can help to raise citizen awareness of the risks posed by natural and human-caused disasters. This helps to create a base of citizen support for mitigation efforts and aims to combat the perceived risk complex² (Burby, 1999, pp.247-258).

“Recent reviews indicate that where they have been adopted, stand-alone plans and the hazard mitigation elements of comprehensive plans have a positive effect in fostering more robust local government hazard mitigation programs and a reduction in property damage in natural disasters” (Burby, 1999, p.249). Despite this evidence, some communities still do not adopt mitigation plans. This can be attributed to several

² *Perceived risk complex* can be defined as a person’s perception of vulnerability to a disaster that is much lower than is actually the case.

factors such as failure of federal policies to enforce land-use regulations in hazard zones, low perceived risk of loss from disasters, and that costs of avoiding risks by not building in danger zones are immediate whereas the benefits of avoiding losses are only realized at some future date after a disaster has taken place. As a result, hazard mitigation planning is not attractive to many local governments or citizens. However, when planning is undertaken in a community, comprehensive plans have the advantage of taking into account a broader array of community goals, involving a large number of citizens, and of discovering the potential for economic development and population growth in less vulnerable areas (Burby, 1999, pp.247-258).

Disaster Resilience Principles

Communities are complex, dynamic systems in which social and technological components interact. Disaster resilience requires combinations of opposites including redundancy and efficiency, diversity and interdependence, strength and flexibility, autonomy and collaboration, and planning and adaptability (Godschalk, 2002, p.5). Harold D. Foster has identified thirty-one principles necessary for achieving resilience (Godschalk, 2002, p.5). He organizes these principles into categories such as the following: general systems, physical, operational, timing, social, economic, and environmental. Others including Harold Foster (1997), Louise K. Comfort (1999), Kathleen Tierney (2002), and Rae Zimmerman (2001) have studied the response of resilient systems to disasters and find that they tend to be:

- *Redundant* – with a number of functionally similar components so that the entire system does not fail when one component fails;

- *Diverse* – with a number of functionally different components in order to protect the system against various threats;
- *Efficient* – with a positive ratio of energy supplied to energy already delivered by a dynamic system;
- *Autonomous* – with the capability to operate independently of outside control;
- *Strong* – with the power to resist attack or outside force;
- *Interdependent* – with system components connected so that they support each other;
- *Adaptable* - with the capacity to learn from experience and the flexibility to change; and
- *Collaborative* – with multiple opportunities and incentives for broad stakeholder participation (Godschalk, 2002, pp.5-6).

Capacity

Burby (1999, pp.247-258) argues that local governments have used two approaches in planning to cope with hazards. The first approach encompasses the undertaking of hazard mitigation through stand-alone hazard mitigation plans. The second approach involves hazard mitigation as one component of a broader comprehensive plan for an entire jurisdiction or region. Stand-alone plans usually involve greater technical details, but they also inadvertently promote increased occupancy of vulnerable areas by making them safer for development. This occurs since stand-alone hazard mitigation plans focus solely on the areas exposed to hazards. Comprehensive plans have the advantage of taking into account a broader array of community goals by involving a large number of stakeholders.

Comprehensive plans developed through a capacity building approach help a community build internal resources to carry on its development plans with a minimum of

outside assistance. A systematic view toward capacity building seeks to build capacity of state and local governments to determine needs, seek solutions, process information, change priorities, programs and procedures, provide feedback, and modify behavior on the basis of evaluation (Honadle, 1981, pp. 575-580).

Capacity can be defined by the ability to do the following:

- anticipate change;
- make informed decisions about policy;
- develop programs to implement policy;
- attract and obtain resources;
- manage resources; and
- use current activities to guide future actions (Henstra, et al, 2004, pp.1-10).

Beth Walter Honadle (1981, pp. 575-580) argues that without the ability to anticipate change, an organization is incapable of influencing the future. Whether and how an organization responds to these signals, determines its influence on changes that occur over time. Thus, capable entities have the ability to make policy decisions based on organized, relevant information that influence their future. These entities develop programs to implement these goal-oriented policies.

Honadle (1981, pp. 575-580) goes on to describe capacity in that organizations must be able to attract resources from the environment. Resources include community support and acceptance, as well as citizen participation in decision-making. The ability to absorb resources may be difficult for small communities since not all organizations have the ability to attract resources, as well as spend them. A community can obtain a grant to perform a planning function or build a facility, but still lack in time, staff, skills, and instruments need to effectively utilize available funds. Capable organizations have the ability to attract and manage physical, human, informational, and financial resources.

Furthermore, without a community's use of capacity building, any mitigation effort will likely be a one-time event. Thus, if capacity includes the ability to anticipate and influence change, there must be an ongoing assessment of what the organization is currently doing. This assessment should include:

- monitoring performance;
- evaluating how well measures are doing; and
- assessing whether or not the current level of effort is appropriate over time (Honadle, 1981, pp. 575-580).

Information obtained from an assessment can be used to improve future organizational performance and must be utilized in order to effectively build capacity. Organizational requirements for capacity include the following:

- the ability to forge effective links with other organizations;
- processes for solving problems;
- coordination among disparate functions; and
- mechanisms for institutional learning (Honadle, 1981, pp. 575-580).

The framework presented above also advocates approaches to capacity building that favor the incorporation or institutionalization of capacity into the permanent structure of the target locale. This suggests less direct involvement of consultants, circuit riders, and similar external and transient actors in everyday administration, and focuses more on transferring their knowledge, skills, and thoughts to local managers. Honadle (1981, p. 580) sums the capacity building approach up by stating, "if there is one thing that capacity building does not mean, it is creating dependency on outsiders for expertise."

Collaboration

The most effective way to assist a community in the creation of a successful project is to utilize the skill and knowledge of specialists within the community and to

collaborate with these diverse experts. James E. Austin (2000, pp.16-39) identifies key components necessary for successful collaboration within a community, entitled the *Seven C's of Strategic Collaboration*. His criteria should be applied to community mitigation planning and include:

- *Connection with purpose and people* – alliances are successful when key individuals connect personally;
- *Clarity of purpose* – vagueness and ambiguity will cloud the vision of the undertaking and may breed confusion or conflict;
- *Congruency of mission, strategy, and values* – the closer the alignment, the greater the potential gains from collaboration;
- *Creation of value* – collaborations are about mobilizing and combining multiple resources and capabilities to generate benefits, and systematically focus on defining, balancing and renewing value;
- *Communication between partners* – good communication is essential in building trust, and trust is the intangible that makes collaboration cohesive;
- *Continual learning* – partners should view alliances as learning laboratories and cultivate a discovery ethic that supports continual learning, enabling continual improvement; and
- *Commitment to the partnership* – a strategic and sustainable alliance institutionalizes the collaboration process while building a deep relationship and long-term perspective (Austin, 2000, pp.16-39).

Education and Outreach

One of the greatest long-term challenges to disaster resistance is diminishing interest in hazard mitigation. One of the most effective ways to maintain momentum on mitigation planning and projects is to publicize progress and successes. By publicizing the community's plan and efforts at disaster resistance, implementation of goals and priorities is more easily achievable. One of the FEMA DRU guidelines involves initiatives aimed at public education and awareness. These initiatives may include actions such as outreach projects, hazard information centers, and technical assistance (*Building a Disaster Resistant University*, 2003, p.41).

According to Tina-Marie Christian (2003, p.12), “the ultimate goal of participative education is to create a critically shared consciousness of analysis and strategies, and the recognition that each action is linked.” Through conscious critical analysis, community members can determine that the process used to develop policy and programs is linked to strategic planning that is influenced by the external and internal environments. By involving as many stakeholders as possible, diverse threads of knowledge and experiences become evident and contribute to the policy and planning processes.

A major element of the effectiveness of emergency management is the degree of ownership by the community. According to John Lunn (2003, p.44), “if something is done ‘to’ the community, it will be less effective than something that is done ‘with’ or ‘by’ the community.” This principle remains true for all aspects of hazards policy.

Lunn (2003, pp.44-45) addresses two types of listening and community consultation within risk management. One type is known as “covert listening” and is currently used by many organizations within communities. Surveys, questionnaires, and polls are examples of this approach. This is a typical example of organizations hearing what they want to hear, but it does not necessarily represent the overall situation. Often, pollsters or surveys simply tell the client what they want to hear and do not provide a result that may hinder the organization’s reputation.

The second type of listening is known as “overt.” It is open and public listening which provides a forum for people who want a voice. The fact that stakeholders want to have a voice often means that they are passionate about the issues at hand. The basis

of stakeholders views should not impair his or her chances of being heard (Lunn, 2003, pp.44-45).

Covert and overt listening both have their place, benefits, and limitations within hazard mitigation planning. Each form of listening forms part of an overall holistic approach. Lunn (2003, p.44) states, “consideration of each needs to impact the other for ultimate survival, growth, and prosperity.” Engaging campus stakeholders throughout the mitigation planning process, provides for added opportunities of utilizing resources and networks. This includes obtaining support from campus administrators, faculty, staff, and students. Education and outreach should also extend to the surrounding communities, municipality, and parish (Charvat, 2005, p.4). By informing and involving stakeholders, support for mitigation planning and projects is increased and the perceived risk complex is combated.

An Ongoing Approach

Dan Henstra (2004, pp.9-11) prescribes core elements that must be ongoing to effectively design and develop a disaster resilient community. His model incorporates the following concepts:

- *Cultural attitudes must accommodate resilience* – Communities must realize and accept that we cannot control many aspects of the hazard variable such as timing, duration, and magnitude. Instead, community efforts should focus on elements that are controllable, such as mitigating vulnerability to hazards, reducing potential losses, and planning for speedy recovering in the aftermath of a disaster. This concept allows communities to become more sustainable without having to know what cannot be predicted.
- *Disaster resilience is a philosophy, a process and a condition* – Disaster resilience must be seen as an ongoing process and not just an ideal condition that can be achieved and then forgotten. A holistic approach is required to incorporate input from a broad range of stakeholders in order to develop a

workable and lasting strategy that can be integrated into community long-term plans and implemented with minimal resistance.

- *Resilience requires an all-hazards approach* – An approach that includes natural and human-caused hazards must be incorporated in order for a community to become disaster resilient. A community should first identify potential hazards and assess the level of risk for each.
- *Resilience requires an all-vulnerabilities approach* – After hazards are identified, community vulnerability must be identified and addressed. According to Henstra, “vulnerability takes many forms, including physical vulnerability, social vulnerability, economic vulnerability, and cultural vulnerability. Steps must be taken to reduce existing vulnerability, but current decisions and policies should not augment or hinder future vulnerability (Henstra, p.10, 2004). Reduction of these vulnerabilities is a consistent theme across various models. It must be reduced in order to facilitate disaster resistance at the community level.
- *Communities require greater resistance to hazard stresses* – A disaster resilient community must incorporate a greater ability to resist or withstand stress resulting from hazards. Existing buildings must be hardened to withstand disaster damage, and regulations may need to be imposed on new construction.
- *Community systems must be flexible* – Disaster resilient communities require flexibility to absorb hazard stress without failure. Flexibility of systems can be enhanced by building capacity through designing for uncertainty and by incorporating diversity to reduce susceptibility to site-specific threats. Likewise, policies such as land-use regulations and building codes should be flexible enough to allow for adjustment and adaptation based on disaster experiences.
- *Recovery capacity must be enhanced* – An essential component of a disaster resilient community is the ability to recover quickly following a disaster. Recovery is a complex process which occurs at many different levels. The ability to recover quickly after a disaster relies on many variables such as individual recovery capacity of households and businesses, financial resources, community participation, and intergovernmental relations. To promote community sustainability, disaster recovery should include rebuilding to reduce future losses instead of simply fixing what was damaged. Planning for recovery can strengthen flexibility in post-disaster decision-making and minimize discontinuity between policy objectives.
- *Communities must develop an adaptive capacity* – There will always be uncertainty regarding hazards in our environment. This uncertainty can be counteracted by developing an adaptive capacity and the flexibility to cope with unanticipated events. The disaster resilient community concept incorporates an adaptation element, which requires the adaptation of new policies and practices based on lessons learned during the event (Henstra, pp. 9-11, 2004).

The post-disaster period provides a window of opportunity for support for mitigation policies as well as stronger disaster management policies. Since disasters expose community vulnerabilities which may have not been originally identified, these vulnerabilities can be noted and addressed in anticipation of a future hazard event (Henstra, 2004, p.11).

Henstra's (2004, pp.9-11) core concepts of ongoing disaster resilience as a philosophy, process, and a condition and developing an adaptive capacity are extremely applicable to UNO's reassessment of its original campus mitigation plan post-Katrina. The University Community realized the need to address vulnerabilities which were not originally identified and then incorporate newly identified vulnerabilities into a final plan to submit for approval by FEMA. FEMA further promotes the development of community mitigation plans, by the eligibility of communities with plans to apply for HMGP and PA grants.

Hurricane Katrina provides the most evident and prominent example of hazard impacts which can be used to mitigate future damages through the reassessment of the campus mitigation plan. David R. Godschalk (2002, p.2) states that "designed in advance to anticipate weather, and recover from the impacts of natural or technological hazards, resilient cities are based on principles derived from past experience with disasters in urban areas." He proposes a sustainable mitigation policy system where the overall goal is developing a resilient community, capable of managing extreme events. Godschalk envisions an intergovernmental system in which federal sustainable development policy is implemented and FEMA regions help to create state and local mitigation commitment and capacity. The various stakeholders, such as the University

of New Orleans, prepare mitigation plans and carry out mitigation projects and actions aimed at creating resilient communities. Henstra also advocated the drawing of lessons learned from past events in mitigation planning. He notes that “one particularly useful case study would be an analysis of how a community was impacted by and dealt with a disaster event” (2004, p.19).

Other Reassessments

The reassessment of a community mitigation plan has previously been performed in other areas around the world. In particular, the Caribbean islands of Antigua, Barbuda, Dominica, St. Kitts, and Nevis have all participated in the Caribbean Disaster Mitigation Project (CDMP). According to the December 1999 CDMP Progress Bulletin (p.1), “while the preferred mode for providing technical assistance in disaster mitigation is to incorporate vulnerability reduction measures into all aspects of development projects, the reality is that often a disaster must strike before there exists sufficient institutional and technical interest in mitigating against future losses.” The CDMP was created for this purpose and provides disaster-affected members of the Organization of American States (OAS) access to technical specialists to assist in the design of mitigation activities and their incorporation into reconstruction plans and projects (*CDMP*, 1999, pp.1-2).

Both Hurricanes Luis and Marilyn affected the Caribbean islands in 1995. Following the passage of both hurricanes, the CDMP Regional Coordinator visited the islands to discuss possible mitigation actions post-disaster. The Regional Coordinator’s visit resulted in the development of a series of training workshops that would train local

carpenters, artisans, builders, and homeowners in hurricane resistant construction. In addition, three consultants were hired to share their expertise regarding structural problems throughout these workshops. CDMP also prepared and printed booklets with instructions for practical roof construction and retrofitting of existing buildings. More than 80 artisans and homeowners attended the workshops (*CDMP*, 1999, pp.1-2).

The overall response of these CDMP workshops was enthusiastic from both homeowners and builders. Overall, people were willing to change their old building practices based on what they were taught at the workshops. The booklets and training materials enhanced and promoted the workshop teachings. After its initial successes, the CDMP planned on possible future training initiatives including:

- 1) preparing training materials that address key issues and priorities;
- 2) building codes should exist that can be enforced by building inspectors trained in disaster resistant construction;
- 3) provisions should be made to update training materials on a regular basis;
- 4) organization of evening training workshops; and
- 5) invite local contractors by letter to participate (*CDMP*, 1999, p. 2).

As the above third initiative points out, the CDMP realized the need for regular reassessments of its plans and objectives.

Reconstruction as a Tool for Sustainable Development

Ranganath (2000, p.2) defines mitigation as “a statement of intent or plan of action to reduce significant hazard risks while incorporating sustainable values.” A major goal of mitigation measures is to make a community sustainable. In order for this to occur, it is necessary for land-use planning and hazard mitigation projects to promote the avoidance of high-risk areas. Disasters tend to motivate people, provide the chance

to alter the physical development patterns to reduce future hazard vulnerability, and often lead to a comprehensive survey of vulnerable areas that provides a more accurate understanding of hazard risks. This eases the initiation of long-term measures and new development plans for that area. Surveys and reassessments of communities, such as UNO, allow for damage assessments and pre-existing mitigation and development plans to be reevaluated in retrospect of a disaster and in preparation of another. Therefore, any assessment performed during reconstruction can be used as a tool to make a community more disaster-resilient.

Conclusion

In summary, a disaster-resistant university is an ongoing process that must be reassessed often, especially in post-disaster times, to promote efficiency and effectiveness of mitigation measures. The ability to build capacity and collaboration within a community, such as a disaster-resistant university, can further enhance and promote the policies and procedures developed and implemented during the community's mitigation planning process. As Burby (1999, 247-258) states, UNO's undertaking of developing a comprehensive mitigation plan gives the university the advantage of taking into account a broader array of community goals, involving a large number of citizens, and of discovering the potential for economic development and population growth in less vulnerable areas.

As Lunn theorizes (2003), by involving many stakeholders and listening to their input, both covertly and overtly, chances of community acceptability and prosperity are increased. Henstra's (2004, pp.9-11) core concepts of ongoing disaster resilience as a

philosophy, process, and a condition and developing an adaptive capacity provide detailed guidelines and insight into the reassessment of UNO's mitigation plan post-Katrina. Tina-Marie Christian's (2003) theory of participative education and Steven J. Charvat's (2005) theory of extending public outreach initiatives to surrounding communities and area, both provide information to the university which can be used to promote substantial benefits by helping to link actions of the policy and program together and keeping the stakeholders and public informed.

In addition, lessons learned and best practices found by researching other reassessments, such as the Caribbean Disaster Mitigation Project, can also be used to provide information for the revision of a pre-existing mitigation plan post-disaster (*CDMP*, 1999, pp. 1-2). Periods of reconstruction, and the assessments that the period yields, can be used as a tool to make a community more disaster-resilient. Ranganath (2000, p.2) argues that a major goal of mitigation is to yield sustainable values throughout a community. Since a major goal of mitigation measures is to make a community sustainable, it is necessary for land-use planning and hazard mitigation projects to promote the avoidance of high-risk areas.

UNO can utilize all of the above theories and incorporate them to promote its own campus sustainability.

CHAPTER 3

METHODOLOGY

Introduction

“Hurricane Katrina dealt a devastating blow to New Orleans and the University of New Orleans” (Strategic Planning Survey email, Chancellor Timothy Ryan, February 15, 2006). The University has experienced sharp cuts in state funding and a significant decline in self-generated revenues. Prior to Hurricane Katrina, UNO enrolled over 17,200 students. In Fall 2005, the University was able to enroll 6,900 students in online courses. Spring 2006 enrollment was over 12,000 students and most classes were held on the main Lakefront campus. Nevertheless, this projected loss of more than 2,000 students continues to have damaging impacts on the functioning of the University. These factors, many of which could have been mitigated through the FEMA DRU initiative, may force UNO to restructure and realign its academic programs and services. The following chapter describes the methodology used to create the original campus mitigation plan, as well as reassess the plan post-Katrina.

UNO Case Study - Methodology

The history of case study research is marked by periods of intense use and disuse (Tellis, 1997, p.2). The earliest use of this type of research can be traced back to Europe. The methodology in the United States was most closely associated with the University of Chicago Department of Sociology, where various aspects of immigration of different nation groups to the city were studied and reported on. A case study is done by

giving special attention to the completeness in observation, reconstruction, and analysis of cases under study. According to Winston Tellis (1997, p.3), “case study is done in a way that incorporates the views of the ‘actors’ in the case under study.”

Although case studies are used throughout many areas, the field of sociology is most strongly associated with this type of research. As a result of issues raised by researchers in other fields, there was a movement to make the case study more scientific. This meant providing some quantitative measurements to the research design and analysis. After the use of quantitative methods was advanced, the decline of the case study increased rapidly. In the 1960’s, there was a renewed interest in the case study form of research when researchers were becoming concerned with the limitations of quantitative methods (Tellis, 1997, p.3).

According to Tellis (1997, p.3), Yin explains that the case study can be seen to satisfy the three tenets of the qualitative method: describing, understanding, and explaining. This particular case study takes into account the development of a comprehensive campus mitigation plan pre-disaster, and its reassessment post-disaster. Potential hazards affecting the University of New Orleans were identified through the creation of a hazard profile which covered several aspects of campus-wide mitigation strategies through field observation, focus group and interview discussions pre-disaster. Post-Katrina, the vulnerabilities of the University were exposed, causing a necessary reassessment of the mitigation plan post-disaster. Vulnerabilities and hazards were reprioritized, new hazards were identified, and the plan was rewritten to comply with FEMA’s DRU grant requirements as well as those outlined in FEMA’s

community mitigation plan program. This allowed the University to be eligible for further funding as a community entity.

The background and related history of UNO is given within the context of this case study in order to create a clear understanding of the importance of this project. Yin (2003) identifies the requirement for multiple methods of evidence; whereas through the analysis of secondary data, the original and post-Katrina focus group discussions, and key-informant interviews, this case study fulfills his concept of multiple methods.

Multiple Methods

A prime strength of case study research is the opportunity to use many different sources of evidence (Yin, 2003). An increasing number of researchers are using multi-method approaches towards case studies, which is also known as “triangulation.” Triangulation can be described as two or more different research methods used to address the same issue in an effort to confirm findings and to obtain expanded depth of information (Krueger, 1994). Throughout the triangulation process, a researcher may use several methods in various combinations (Denzin & Lincoln, 1995). In this particular case, the multiple methods that were used to create the original plan and reassess it post-disaster included field observation, analysis and review of secondary, focus groups discussions, advisory group meetings, and individual interviews.

Multiple methods used in triangulation are typically referred to as a combination of observation, interview, and document review. In the UNO DRU case study, validation was increased through direct observation of records and verification of findings during focus group sessions and individual interviews, as well as on-site observation of the

damage to the University resulting from Hurricane Katrina. Findings or conclusions resulting from a case study are likely to be convincing and accurate if they are based on several different sources of corroboratory information (Yin, 2003). Multiple approaches within a single case study are likely to exemplify or nullify some unrelated influences, and likely to confirm and reiterate the related results as seen in the affirmation of similar hazard concerns in the focus groups and interviews pre- and post-disaster (Stake, 1995).

Document Review

Yin (2003) explains that for many case studies, archival records, or secondary data such as records, articles, and computer files, are relevant. Analysis of secondary data was the initial step in the development of the University's comprehensive campus mitigation plan. Review of newspaper articles, Internet searches, records available from the UNO Office of Risk Management and the State of Louisiana Office of Risk Management, and hazard profiles composed by the City of New Orleans and the State of Louisiana, provided ample information needed to start the DRU initiative at UNO.

Post-disaster, secondary data was again used to reassess the University's comprehensive campus mitigation plan. Statistics and records from the damage resulting from Hurricane Katrina were observed and utilized to edit the mitigation plan. Review of these documents helped reorganize the prioritization of potential hazards and vulnerabilities to the University, and even brought some new threats, such as mold and civil unrest, to the forefront.

Fieldwork

Fieldwork and observation of the University were performed to analyze the campus' weaknesses both pre- and post-disaster. Yin states that in order to increase the reliability of observational evidence, case study investigations should allow for the use of multiple observers. By incorporating several observers, the validity of what is observed can be strengthened and different viewpoints can be incorporated. Field visits to the case study sites allowed for direct observation, thereby increasing the reliability of observational evidence (Yin, 2003). Direct observation of damage to the campus post-disaster illustrated the dire need for adoption and implementation of the comprehensive campus mitigation plan.

Focus Groups

A focus group is a group interview utilizing carefully planned discussion to develop insight on a defined area of interest in an inviting environment. They usually consist of five to ten people led by a skilled moderator. The moderator uses open-ended questions that allow individuals to respond, comment, explain, and share experiences. Each participant is welcomed to share his or her individual ideas and perceptions throughout the discussion (Krueger, 1994).

After an extensive period of research and investigation, the UNO Research Team held a mitigation plan focus group. The focus group consisted of four UNO Facility Services workers, and was essentially a qualitative data gathering technique run by a moderator who directed the participant interaction and inquiry in an open-ended

manner. This resulted in an abundance of qualitative information and suggestions for a comprehensive mitigation plan.

The same focus group was revisited post-Katrina. Again, the discussion was open-ended and the prior information and suggestions were re-evaluated in light of the recent disaster. New vulnerabilities were noted and old ones were re-prioritized. The information obtained in the second round of this focus group was vital for the reassessment of the UNO mitigation plan.

Individual Interviews

Individual interviews can provide another level of gathering data or a different perspective on the research problem not available through focus groups. A principle use of case study interviews is to obtain the description and interpretations of others. Those offices interviewed during UNO's reassessment include representatives from several campus offices and departments: the Student Housing, the Center for Hazards Assessment, Response and Technology (CHART), Environmental Health and Safety Office, University Administration including the Chancellor's Office, Facility Services, University Computing and Communications, Lakefront Arena, Campus Police (*University of New Orleans' Campus Mitigation Plan, 2006*). In the reassessment of UNO's mitigation plan, the interviewees had similar concerns and suggestions as the focus group participants. Post-Katrina, these concerns and suggestions were elevated due to the disaster situation in New Orleans.

Interviews can be one of the most essential sources of case study information (Yin, 2003). Interviews should be structured around a guided conversation rather than a

question and answer session. Like focus groups, case study interviews should be mostly open-ended in nature. The interviewer can ask the respondents for the facts and opinions about the subject at hand. The interviewer may even ask the respondent for his or her own insights into certain occurrences, which can lead to further inquiry and discussion. Throughout an individual interview, respondents provide the interviewer with insights into a matter and may suggest sources of evidence in favor of or in opposition to the research subject.

Original Plan Development - Methodology

Upon receiving a Disaster Resistant University (DRU) grant from the Federal Emergency Management Agency (FEMA), the University formed a DRU Research Team and a DRU Advisory Committee. The Research Team consisted of five members of UNO faculty and staff representing CHART, CUPA, the Environmental Health and Safety Office, the College of Engineering, two Research Associates from CUPA, and one graduate student from the College of Geography, all of whom worked together to conduct the above-mentioned campus-wide mitigation activities.

University of New Orleans decided to develop local, “in-house” expertise in disaster resiliency to ensure sustainability and build capacity at the University Community level. Rather than contracting an external agency to develop the mitigation plan, the DRU Research Team decided to utilize the disaster expertise already residing within the UNO Community. At the same time, the DRU Researchers viewed it as essential to use a methodology in developing a mitigation plan that would ensure representation from a broad range of stakeholders.

Several members of the DRU Research Team conducted a risk assessment and hazard analysis, which identified potential hazards that threaten UNO. Next, an extensive hazard profile was created. The various hazards identified through the risk assessment were prioritized based on the likelihood of occurrence, severity of the hazard, and cost of damage to the University. This data provided the basis for the original campus mitigation plan.

The Advisory Committee was comprised of a team of UNO experts representing various campus offices and departments including the Environmental Health and Safety

Office, the Center for Hazards Assessment, Response and Technology (CHART), the College of Urban and Public Affairs (CUPA), University Administration including the Chancellor's Office, Academic Affairs, Facility Services, Human Resources, University Computing and Communications, the Kiefer Lakefront Arena, and Campus Police. These individuals were selected since they were already part of an established UNO Emergency Preparedness Committee created by the Chancellor. They were also already established within the UNO community and had experience dealing with past campus emergency situations and operations and had a vested interest in trying to mitigate events like those of the past. All of these entities met at an initial Disaster-Resistant University kick-off meeting in February 2005.

The Advisory Committee's main role was to be available for continuing input and participation during the DRU planning process and to assist the DRU Research Team. The Advisory Committee provided the DRU Research team with important data during committee meetings and reviewed and provided comments as the mitigation plan chapters were developed. In addition to this, most of the Advisory Committee members were interviewed on an individual basis to provide detailed information regarding the vulnerabilities of their specific administrative departments, as well as identify any potential mitigation measures.

A full Geographic Information System (GIS) map of the UNO main campus was also developed. The map provided detailed information and descriptions of all buildings on campus. The GIS map is a working map and readily supplies information to emergency personnel about campus facilities and infrastructure. The map also provides the locations of emergency responders and emergency response equipment, in addition

to the location of hazardous materials present on campus. Following mitigation planning efforts, this map would be made available to University Administration to assist in maintaining the mitigation plan and to emergency responders in an effort to coordinate response in the event of an emergency.

Next, a detailed inventory of campus assets was conducted. A vulnerability assessment was done based on the created hazard profiles and the inventory of assets of the University. This was completed using information provided by the UNO Department of Property Control in addition to data collected on research facilities, etc. The vulnerability assessment was used to determine what the actual risk is from an identified hazard. It also allowed the DRU Research Team to estimate potential property damage and monetary losses while assisting in the prioritizing of mitigation plan components.

The vulnerability assessment revealed three critical structures: the Administration Annex, the University Communications and Computing Center (UCC), and the Central Utility Plant. These buildings were deemed critical by the Research Team since in the event of a disaster, UNO would not be able to fully serve its faculty, staff, or students if one of these structures was not functioning or available for use. Moreover, the Administration Annex acts as a potential shelter for top University administrators during certain disasters, the UCC houses all campus-wide communications equipment, and the Central Utility Plant controls all of the University's maintenance such as electricity and air conditioning to all facilities on campus. An in-house University Engineer conducted detailed engineering surveys of these critical buildings.

Focus group discussions and individual interviews were conducted after the hazard profiling and vulnerability assessments were completed. The focus group and individual interviews provided opportunities to clarify alternative mitigation measures, develop additional strategies, and prioritize strategies that were identified previously to mitigate UNO against potential natural and human-caused hazards. The group discussions and individual interview sessions seemed to yield similar focus and outcome of concern. Most importantly, all those interviewed agreed that the University of New Orleans has significant weaknesses to hazards that need to be addressed.

The DRU Research Team established and prioritized goals and objectives in order to develop the original comprehensive campus mitigation plan. Actions were identified to achieve mitigation goals and objectives. The focus was mainly on prevention, protection of property and infrastructure, public education and programs, emergency services, and identification of potential mitigation projects. A plan of action was developed for implementation and maintenance of mitigation projects. Once the plan was drafted, it was reviewed by the DRU Advisory Committee.

Hurricane Katrina

On the morning of August 29, 2005, Katrina passed over the City of New Orleans as a category 4 hurricane (www.noaa.org, 2006). Extreme winds and water surges caused catastrophic damage along the entire Gulf Coast region. However, the high winds and rainfall were only the beginning of ongoing problems resulting from the disaster in Orleans Parish.

Within hours after the storm passed over the area, three levees failed in Orleans Parish. One of the breached levees was located along the London Avenue Canal, near the southwest perimeter of the UNO Lakefront main campus. Waters flooded most of the City, including parts of the campus. The University was surrounded by flood waters for several weeks. The City of New Orleans and surrounding parishes were left without power for over a month due to the widespread flooding and the extent of wind damage to the electrical supplier, Entergy. On-campus electrical power was not restored for over six weeks. Water entered some of the buildings on campus through roofs that had blown off, broken windows, leaky seals, and from flooding. In some structures, such as Lafitte Village and Bienville Hall (both residential facilities), water rose to over four feet. Most of the flooding on campus was limited to the south and southwest perimeters, which is approximately eight feet in elevation. There is a steep incline in elevation towards the north ends of campus, so these areas were generally protected from flood waters (Vice-Chancellor Joel Chatelain, 2006).

The water, high humidity, rising temperatures, combined with a lack of air conditioning and humidity control, caused extensive mold growth throughout the campus. Also, as search and rescue efforts were underway in New Orleans, people

who were rescued from their rooftops by helicopter were dropped off on UNO's campus since it was high ground. The University suffered extensive damage due to civil unrest from these evacuees dropped off on campus. Animals in search of dry land also made their way on campus. Approximately two weeks later, Hurricane Rita passed over the area causing further damage while delaying recovery efforts. A bad situation was simply exacerbated due to these circumstances (Vice-Chancellor Joel Chatelain, 2006).

The experiences and lessons learned from Hurricane Katrina made it clear to the University Community that new and improved mitigation practices were needed to prevent future damage to the campus. The DRU Research Team, although working out of a temporary office since the CHART office on the Lakefront main campus suffered extensive mold damage, immediately began to work on reassessing the original comprehensive campus mitigation plan in light of the events surrounding Hurricane Katrina.

The Reassessment - Methodology

To assist with applying for Federal Emergency Management Agency funds made available to the areas devastated by Hurricane Katrina, the University of New Orleans contracted a private consultant with expertise in flood mitigation. The consultant was hired to assist in identifying potential mitigation projects around campus, and to apply for Public Assistance (PA) and Hazard Mitigation Grant Program (HMGP) funds on behalf of the University. Because of the evident overlap between the FEMA proposals and DRU work, the consultant also devoted time to assist with CHART's project. In

addition, one of the requirements for communities receiving these funds from FEMA is the development of an approved all-hazard comprehensive community mitigation plan.

Since the University of New Orleans had already begun its own mitigation planning prior to Katrina, it was eligible to apply as its own community, making it possible to apply for PA and/or HMGP grants. Now, the Disaster Resistant University plan had to be formatted to fit within both the FEMA DRU and FEMA community mitigation plan guidelines (www.fema.gov, 2006).

The DRU Research Team worked with the flood mitigation consultant to identify possible mitigation projects for the main campus. This was done through several comprehensive on-site visits and evaluations. Hazards in the original plan were also re-prioritized and new ones were added. For example, the original plan had levee failure as one of the last priorities. Unfortunately, this vulnerability was greatly increased as made evident by Hurricane Katrina. Newly identified hazards, not mentioned in the original plan, were added, including mold and civil unrest.

The reassessment continued with the revisiting of the original focus groups and individual interviewees. These sources were able to provide follow-up information regarding the various University departments and areas they represented. The focus group participants and interviewees also reported on what actually happened post-disaster in regard to his or her original comments.

The campus mitigation plan morphed into a ten chapter document based on pre-existing formats for community plans. Secondary data was used such as the newly approved Orleans Parish Hazard Mitigation Plan (2006), the Louisiana State Hazard Mitigation Plan (2005), and newspaper articles and reports on hazard incidents in the

area. Existing University plans and programs were also reviewed during the planning process. Reviewed items include all university emergency and evacuation plans including the Bomb Threat Response Procedure, Bomb Scare Procedures, Significant Rain Event Response Plan, Hurricane Preparedness Guidelines and Action Plan, and the University FY 2006-2007 Capital Outlay Plan.

During the planning process, contacts were made with agencies and organizations outside of the University Community (i.e. Red Cross, FEMA Region VI, Salvation Army, Lakeview Civic Improvement Association, etc). A notice was sent to each entity requesting their review of the reassessed draft plan. They were asked to review the draft on the CHART website and were asked to provide insight and comments, as well as any information regarding their own mitigation initiatives.

The DRU Research Team, in collaboration with the DRU Advisory Committee and the flood mitigation consultant, considered a wide range of strategies that could positively mitigate the impacts of the identified hazards, and developed alternatives. Five general strategies were identified to reach the goals including property protection, preventative, emergency services, structural projects, and public information. A chapter of the new mitigation plan was devoted to each of these strategies. This was achieved through several Committee meetings and correspondence.

Upon completion of the above methodology measures, the original plan had been thoroughly reassessed. The final comprehensive campus mitigation plan was then submitted to the State Board of Regents, the State of Louisiana Office of Homeland Security and Emergency Preparedness, and FEMA for official approval and adoption.

CHAPTER 4

RESULTS AND DISCUSSION

Introduction

Pre- and post-disaster, multiple methods were used to increase validity of this case study. Multiple methods utilized include fieldwork, review and analysis of secondary data, focus group discussions, and individual interviews. Generally, resulting data is likely to be more accurate since it is derived from several different sources of corroboratory information (Yin, 2003). Similar concerns about campus vulnerabilities were noted from the focus group discussions and individual interviews in the planning process for the original comprehensive campus mitigation plan. Following Hurricane Katrina, similar concerns were again identified during the reassessment of the plan. This helped to increase the validity of the case study results and findings.

The ability to build capacity and collaboration within a community such as the University of New Orleans can further enhance and promote the policies and procedures developed and implemented during the campus mitigation planning process. Theories developed by social scientists such as Raymond J. Burby, Dan Henstra, John Lunn, David Godschalk, and Beth Walter Honadle are researched and utilized due to their relevance to the formation of a disaster-resistant university. The concepts of capacity, collaboration, education and outreach, and an ongoing approach are necessary components to develop and create a long-term campus mitigation plan. Reassessments of other mitigation plans and studies of reconstruction used as a tool for sustainable development of communities provided background information, lessons

learned, and best practices which aided in the University of New Orleans' reassessment of its campus mitigation plan.

Literature involving all of these topics is used to theorize that if a university has the characteristics of a disaster-resilient community, then it can be characterized as disaster resilient. Utilizing these theories and concepts within a university atmosphere ultimately creates disaster-resiliency. A disaster-resistant university is an ongoing process that must be reassessed often, especially in post-disaster times. By doing this, efficiency and effectiveness of mitigation measures is promoted campus-wide.

The following data analysis and interpretation relates specifically to the post-disaster reassessment of the original comprehensive campus mitigation plan.

Data Analysis: Document Review

Post-Katrina statistics and records from the damage resulting from the disasters in New Orleans were observed and utilized to reassess the original mitigation plan. Secondary data was used to increase validity and included the newly approved Orleans Parish Hazard Mitigation Plan (2006), the Louisiana State Hazard Mitigation Plan (2005), and newspaper articles and reports on hazard incidents in the area. In addition review of newspaper articles from the Times-Picayune, Lexis-Nexis database, Internet websites such as the Federal Emergency Management Agency (FEMA), and the UNO risk management claim files was included to verify campus vulnerabilities following the disaster. Other reviewed secondary data included all University emergency and evacuation plans including the Bomb Threat Response Procedure, Bomb Scare

Procedures, Significant Rain Event Response Plan, Hurricane Preparedness Guidelines and Action Plan, and the University FY 2006-2007 Capital Outlay Plan.

Additional secondary data was collected from agencies and organizations outside of the University community. Because of their relevance to the University, both in terms of the services provided or their nearby location, the following agencies and organizations were contacted and asked to provide information regarding their own mitigation initiatives, as well as their comments and insights for the reassessed UNO mitigation plan:

Agencies

1. Entergy
2. Federal Emergency Management Agency Region VI
3. Louisiana Office of Homeland Security and Preparedness
4. National Flood Insurance Program
5. New Orleans Department of Transportation and Development
6. New Orleans Sewerage & Water Board
7. Orleans Parish Emergency Management
8. Orleans Levee Board
9. Orleans Parish School Board
10. Regional Transit Authority
11. U.S. Army Corps of Engineers

Organizations

1. Ben Franklin High School
2. Lakeview Civic Improvement Association
3. Lakeview Crime Prevention District
4. LSU Cooperative Extension Services
5. National Weather Service
6. New Orleans Soccer Academy
7. Southeast Louisiana American Red Cross
8. Salvation Army
9. Tulane University Emergency Management

Data obtained from secondary sources helped verify the natural and human-caused hazards that could potentially impact the University of New Orleans (UNO), aided in the reprioritization of hazards, and provided background and historical information pertinent

to each individual hazard. In particular, the prioritization of levee failure within the flood and wind hazards discussions, was very low on the list in the original campus plan. The effects of Katrina and the three resulting levee breaks in Orleans Parish led to this hazard ranking higher in the priority list. After the reassessment, termites, epidemics, mold, and civil unrest were all added to the original plan's hazard list (University of New Orleans Hazard Mitigation Plan, 2006)

Data Analysis: Fieldwork

Several post-disaster, on-campus visits provided information regarding the vulnerabilities of the University main Lakefront campus and the East campus. Damage incurred from Hurricanes Katrina and Rita exemplified previously identified campus vulnerabilities and concerns. New vulnerabilities and hazards were also exposed. Information gained also made evident the need for the reprioritization of vulnerabilities after incorporating those that were newly developed. Data obtained from the fieldwork helped to identify and verify certain campus weaknesses, provide the opportunity to photograph and document damage to the campus following a major disaster, and created the foundation for the development of future mitigation projects.

On-site visits aided in the documentation of the effects from hazards. Several photographs were taken and incorporated into the revised University mitigation plan. These photos included pictures of flood and wind damage, mold damage, and damage from termites. Photographs of the campus buildings were also added. The fieldwork conducted by the Research Team provided for a visualization of the impacts from the hazards described in the new mitigation plan.

Data Analysis: Focus Groups

The original focus group session was held in June 2005, two months prior to Hurricane Katrina. Participants included UNO Facility Services experts who had been employed by the University for several years. Questions were asked that focused on past disasters around campus, identification of possible mitigation strategies, and any additional input from the participants.

In February 2006, the post-disaster focus group session was held. A majority of the same Facility Services experts participated. Questions asked during this session focused on Hurricane Katrina impacts on the campus, the identification of new vulnerabilities and hazards, and the identification of additional mitigation strategies. At this time, information obtained from the pre-disaster session was also re-evaluated. This allowed for clarification of any previous comments or suggestions in light of Hurricane Katrina.

Information gained from the revisiting of the focus groups provided references used in the reassessed plan regarding the hazard descriptions, property damage, and threat to people sections. Focus group participants provided their insights and past experiences with the listed hazards. This data provided the majority of the content used throughout the hazard descriptions in Chapter 2 of the revised plan.

Data Analysis: Individual Interviews

Original interviewees were revisited to provide follow-up information regarding the various University departments and areas that they represented. Each individual

was provided with a transcript of his or her first interview, and was asked to report on what actually happened post-disaster in regard to the original responses and comments.

Additional interviews were conducted involving particular University Administrators who played a vital role in the response and recovery efforts following Katrina. Information obtained from these interviews was extremely vital during the reassessment of the original campus mitigation plan, since these individuals witnessed first-hand the damage and campus situation resulting from the storm.

Post-Katrina information gathered during the continuation of the original individual interviews included the identification of civil unrest and mold as additional hazards to the University. These interviews also raised several questions regarding what the actual role of the University should be to the community during a disaster. In addition, several storm stories aided in the formation of future mitigation projects for the University. Of particular importance is the newly identified “North Campus Plant” mitigation project, which involves either the construction of a new building or the retrofitting of a pre-existing structure to contain a University co-generation plant and “safe house” for University first-responders and other emergency responders (Vice-Chancellor Joel Chatelain, 2006). UNO planned to apply for HMGP grant funds to cover a portion of the cost of this project.

The North Campus Plant mitigation project is of extreme importance because of its ability to help reduce the ongoing effects resulting from disasters. The co-generation plant within the structure would essentially provide back-up power for the entire main campus. Therefore, if the University lost its power, the generator would start providing

emergency back-up power. Buildings on campus would always have air conditioning, which would prevent or limit the spread of mold in the event of flooding, ensure the continuation of University operations due to functioning computer systems, and prevent additional losses such as perishable items including foods and University biology projects and test samples. In addition, the North Campus Plant would be able to house several campus representatives and other emergency personnel. By having people on campus at all times during and immediately following a disaster, civil unrest would be less of a threat for UNO (Vice Chancellor Joel Chatelain, 2006).

Interpretation of the Data

Data gained through the use of multiple methods, also known as the process of triangulation, provided the information needed to effectively reassess the original UNO comprehensive campus mitigation plan post-disaster. Statistics and records from damage incurred from Hurricanes Katrina and Rita were observed and utilized to edit the original plan. Review of pre-existing and new documents, as well as the revisiting of the focus group and individual interview participants, helped the DRU Research Team reorganize the prioritization of hazards and vulnerabilities to the University, and even made evident two new threats: mold and civil unrest.

Hazards were identified and categorized into two types: natural and human-caused. The list of hazards follows:

Natural Hazards

Floods³

Wind⁴

Hail

³ Hurricanes are included in the description of these hazards.

⁴ (see above footnote)

Lightning
Winter Storms
Subsidence
Drought
Earthquakes
Termites
Epidemics
Mold

Human-caused Hazards⁵

Hazardous materials spills
Nuclear accidents
Civil unrest
Terrorism

A section of the plan was created for each individual hazard and included the hazard data and DRU Research Team and Advisory Committee's findings throughout the reassessment of the plan. This chapter assesses each hazard – what causes it and the likelihood of occurrence. Another chapter was designed to review the impact of these hazards on UNO (*University of New Orleans Hazard Mitigation Plan, 2006*).

With this background, the Committee members participated in a goal setting exercise (see Appendix 1). Each member wrote down his or her five most important goals. Each member then posted their selections, many of which were not listed on the hand-out, and explained why they thought they were important. Much discussion followed. One key concern that arose was that much of the damage that followed Hurricane Katrina was not from “natural causes.” Much of the damage was caused by looters and evacuees on campus and the subsequent mold that developed because there were no plans, staff, or electricity to prevent the mold from growing in the buildings. Also noted was the importance for the campus to reopen as quickly as possible for the following reasons:

⁵ Human-caused hazards are defined as hazards caused by humans, whether accidental or intentional.

- Having staff on campus reduces the threat of damage by outsiders.
- Reopening classes on campus helps UNO to retain its student population and encourages students to continue their careers in Louisiana.
- Reopening dormitories provides housing for many who would have to live elsewhere, perhaps even in other states.
- Reopening revenue producing activities, such as the Arena, the gym, and the restaurants, brings money to campus, reducing the need for financial aid from the State and Federal governments.

After the Advisory Committee reviewed the hazards, it developed goals to mitigate their impacts. These are used to guide the planning and implementation of mitigation activities and projects. The Committee agreed that the many recommended goals could be organized under five general goal statements:

Goal 1. Protect the lives and health of the students, faculty and staff.

Goal 2. Reduce the exposure of the campus' existing and future buildings, contents, utilities, and infrastructure from damage by natural and human caused hazards. Pay special attention to certain special resources on campus, including the Library, student housing, and records.

Goal 3. Educate the students, faculty and staff on ways to protect themselves and their property from damage by natural and human caused hazards.

Goal 4. Have the necessary emergency response facilities, equipment, staff, and procedures in place to minimize the danger and damage to people and property during an incident.

Goal 5. Have the disaster recovery facilities, equipment, staff, and procedures in place to allow the campus to reopen immediately after an incident, with minimal reliance on outside sources of assistance (*University of New Orleans Hazard Mitigation Plan, 2006*).

Mitigation projects were identified by the Research Team, in consultation with the Advisory Committee, to reach the DRU goals. A wide range of strategies were considered that could positively affect the impact of the hazards, and developed

alternatives. They are the subject of the remaining chapters in the plan, and are organized under five general strategies for reaching the goals:

- 1.) Property protection – e.g., relocation out of harm’s way, retrofitting buildings
- 2.) Preventive – e.g., restricted access to sensitive areas, securing power plant
- 3.) Emergency services – e.g., warning, response, evacuation
- 4.) Structural projects – e.g., drainage improvements
- 5.) Public information – e.g., outreach projects

After the alternatives were reviewed, the Research Team drafted an “action plan” that specifies recommended projects, who is responsible for implementing them, and when they are to be done. The action plan is included as the final chapter of the new Hazard Mitigation Plan (*University of New Orleans Hazard Mitigation Plan, 2006*).

Conclusion

The use of multiple methods of data analysis in the case study of the reassessment of the original UNO comprehensive campus mitigation plan post-disaster, helped to increase validity of the overall plan. Upon completion of the process of triangulation and data analysis, a final comprehensive campus mitigation plan was developed that followed both the FEMA DRU guidelines and the FEMA community mitigation plan guidelines. This enabled the University of New Orleans to be eligible to receive future funding in support of post-Katrina recovery and pre-disaster mitigation projects.

CHAPTER 5

ANALYSIS OF FINDINGS

Introduction

This case study was primarily conducted to describe the theories and processes used to create an original all-hazards campus mitigation plan for the University of New Orleans (UNO), as well as reassess the original plan post-Katrina. The study was developed to explore the issues surrounding the creation of a campus-wide plan to mitigate against natural and human-caused hazards, both before and after a disaster.

Based on these evaluations, a hazard profile was created after conducting a risk assessment and holding individual interviews and focus group sessions. The result was an original campus mitigation plan. On August 29, 2005, Hurricane Katrina struck the City of New Orleans. Affects of this hazard are still ongoing. In light of the known impacts for the University, the Research Team reassessed the original plan post-disaster. Based on the information formulated throughout the plan reassessment and previous chapters of this thesis, conclusions and recommendations are presented in this chapter.

In the Aftermath of Hurricane Katrina

There is no question that the University of New Orleans has been negatively affected by Hurricane Katrina. On August 28, 2005, approximately 17,250 students were attending UNO. After Katrina made landfall, the University's main lakefront campus remained closed for the rest of the fall semester. Classes were offered online, with only about 8,000 students re-enrolling in the fall semester.

The main campus re-opened in late January 2006, and a spring semester was offered on-campus and online. The impacts from the storm were evident, with the closure of several buildings, FEMA trailers covering the main and east campuses, and even outdoor tents in which classes were held. Normal spring enrollment is approximately 16,000 students. However, only about 11,600 students were attending the newly re-opened University. Fall 2006 enrollment is projected to be between 14,000 and 15,000 students, which represents a decline in student tuition for the 2006-2007 fiscal year between \$8.5 million and \$12.5 million. In addition to these impacts, the State of Louisiana cut UNO's appropriate by nearly \$6.5 million in 2005-2006 and has announced no plans to restore its funding to its pre-Katrina levels. Therefore, the University of New Orleans must plan to operate in 2006-2007 with \$15-\$19 million less in revenue (Chancellor Timothy P. Ryan, 2006).

To deal with the fiscal distress, several faculty and staff members have already been cut. The University developed a plan to restructure itself in accordance with this budgetary shortfall. If and when the plan is submitted to and approved by the Board of Supervisors, UNO plans to eliminate degrees in two undergraduate areas and graduate areas. Seven other degree concentrations or tracks will be eliminated as well. Thus, the restructuring plan will affect 5% of the degree programs and 2% of the academic concentrations (Chancellor Timothy P. Ryan, April 8, 2006, personal email to UNO faculty, staff and students).

Some of the staggering impacts from Hurricane Katrina could have been mitigated by the creation and implementation of an all-hazards campus mitigation plan. Instead of focusing on the negative impacts of Katrina and the lack of time required to

properly create and implement the original mitigation plan before the storm, the original plan was reassessed in light of the lessons learned post-disaster. Through proper adoption and implementation of the new campus mitigation plan and utilization of FEMA funding for mitigation projects, the University of New Orleans can better prepare itself for any future natural or human-caused hazards.

Back-up Power

Many effects of Hurricane Katrina were caused and exacerbated by the inability to access campus for several weeks post-landfall. As a result, the University developed a mitigation project known as the North Campus Plant. This plant would house a back-up generator, as well as emergency personnel and first-responders. The back-up electrical power would mitigate against mold growth by regulating temperature and air flow following the flooding of buildings, and also prevent a downed campus computing and communications system. In addition, by having the campus monitored at all times with the presence of the emergency personnel and first-responders, civil unrest could be mitigated against. This would also allow for the immediate start of recovery processes since people will be already be on campus. Therefore, the University should promote this project and use any available funding from FEMA to construct this mitigation measure.

Role of a Public University to the Community During a Disaster

This issue of the University's role and responsibility to the community during a disaster has also been questioned post-Katrina. Since the University of New Orleans is

a State-owned facility, should it be a temporary shelter for evacuees? The looting and intentional damage to the campus caused by evacuees and animals in search of high ground, as well as the drop-off of rooftop rescues, dissuaded campus administrators from promoting the use of UNO as a shelter. However, the University is high ground during a severe flood, causing it to be an island of sorts. This cannot be changed, and the resulting gathering of people to the University will likely happen again when another event such as Hurricane Katrina occurs. Therefore, the University has considered preparing itself for sheltering to help combat civil unrest.

The University should consider having on-site food and water supplies, as well as bedding, to accommodate the flock of people that may once again seek shelter on-campus. By having food, water, bedding, and clothing readily available, perhaps looting and unnecessary damage can be avoided. In addition, if and when the University constructs the North Campus Plant, the presence of people on campus will help to coordinate sheltering efforts as well as keep the population under control.

Sister-City Partnerships

To help ensure the continuation of services, the University should develop “sister-city” partnerships. These partnerships should provide each University involved with a back-up educational system and facility at another location for use following a disaster. Faculty, staff, and students could be temporarily housed at the coordinating facility in the event of a short-term evacuation. In the event of a long-term mandatory evacuation and subsequent inability to return to campus, the University could operate and provide its regular services from the sister-site, as well as remain housed there.

The University of New Orleans could partner with another school within the LSU system. However, other potential sister-city partners should be explored since this may be too geographically limited in the case of a hurricane.

Review of Related Literature

As Burby (1999) argued, the ability to build capacity and collaboration within a community, such as a disaster-resistant university, can further enhance and promote the policies and procedures developed and implemented during the community's mitigation planning process. UNO's undertaking of developing a comprehensive mitigation plan gives the university the advantage of taking into account a broader array of community goals, involving a large number of citizens, and of discovering the potential for development and growth in less vulnerable areas. As Lunn theorizes (2003), by involving many stakeholders and listening to their input, both covertly and overtly, chances of community acceptability and prosperity are increased. The collaborative model used by the University of New Orleans utilized in-house capabilities and involved many stakeholders campus-wide. This collaborative model worked well for UNO since the original plan had to be reassessed post-disaster. Instead of hiring outside consultants to create the original plan, in-house expertise was used. Henstra's (2004) core concepts of ongoing disaster resilience as a philosophy, process, and a condition and developing an adaptive capacity were taken into account throughout the University of New Orleans' mitigation planning and utilization of the collaborative model. Henstra's (2004) advice and UNO's subsequent use of a capacity-building approach proved to be successful, especially post-Katrina, when the plan had to be reassessed.

Christian's (2003) theory of participative education and Charvat's (2005) theory of extending public outreach initiatives to surrounding communities and area, provided information that UNO used to promote substantial benefits by helping to link actions of the policy and program together and keeping the stakeholders and public informed. UNO's inclusion of other community agencies and organizations helped to coordinate mitigation efforts kept the faculty, staff, students, and public informed about its mitigation measures. These entities also provided input about their own mitigation plans, as well as feedback on the university's plan, both of which proved to be beneficial to the project.

Lessons learned and best practices found by researching other reassessments, such as the Caribbean Disaster Mitigation Project (*CDMP*, 1999), were used to provide information for the revision of a pre-existing mitigation plan post-disaster. The period of post-Katrina reconstruction, and the assessments that the period yielded (and continues to do so) were used as a tool to make the university community more disaster-resilient. As Ranganath (2000) argues, a major goal of mitigation is to yield sustainable values throughout a community. Since a major goal of mitigation measures is to make a community sustainable, it is necessary for land-use planning and hazard mitigation projects to promote the avoidance of high-risk areas. Mitigation projects were identified and land-use planning was refocused during the UNO disaster resistant university initiative in order to promote campus sustainability.

The literature reviewed throughout this case study contributes greatly to the University of New Orleans pre- and post-disaster mitigation planning. However, theorists Burby (1999) and Henstra (2004) provided the most insightful theories

regarding capacity-building and using a collaborative approach to the on-going process of mitigation planning. As future natural and human-caused disasters unfold, the continuous updating and revising of mitigation plans is essential, both from campus experience as well as from examining other disasters throughout the country. Lessons learned and best practices identified throughout mitigation measures can be used by any university community to aid in the reassessment of their plan post-disaster, despite whether or not that particular campus was directly impacted by the disaster. Overall, mitigation planning should be performed by using a collaborative model and is an ongoing process that must be reassessed often, especially in post-disaster times, to ensure the sustainability of a community.

Implications for Future Research

Throughout this case study, issues have emerged in regards to ensuring disaster resiliency in New Orleans. The actual utility of an all-hazards approach is questionable. The most relevant hazards are often not given as much attention as should be the case when trying to encompass all hazards that could possibly affect a community. In addition, the most pertinent hazards are generally not developed thoroughly when trying to cover so many issues. Emergency planners should reconsider the use of an all-hazards approach in order to effectively examine disasters that may impact an area.

Other major catastrophes have developed throughout this study. Levee failure, mold, termites, and civil unrest have all been introduced and added to the original campus mitigation plan in high priority ranking (*University of New Orleans Hazard Mitigation Plan*, 2006). These hazards were identified post-disaster. Their original omission may also relate to the attempt to cover an all-hazards approach.

Conclusion

The University of New Orleans has reassessed its original campus mitigation plan in light of the events surrounding Hurricane Katrina. Several theories were referred to while reassessing the plan, literature was reviewed, and interview and focus group participants were revisited. As a result, new hazards were identified, old ones were re-prioritized, and potential mitigation projects were developed. If the new all-hazards campus mitigation plan is properly adopted and implemented, the University will have the characteristics of a disaster-resilient community, and therefore be able to be classified as a disaster-resistant university.

The impacts of Hurricane Katrina are still ongoing and the full effects will not be known for years to come. However, as Chancellor Timothy P. Ryan (April 7, 2006, personal email to UNO faculty, staff and students) states, “for a time, at least, like the city in which it resides, UNO will be smaller. But it will be as educationally diverse as always, and as we go forward, students, faculty and staff together, we will not just be as good as we have been, but rather better than ever.” The University of New Orleans Hazard Mitigation Plan (2006) is a key component for the University’s future and triumph over disaster.

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Disaster Resistant University Goals Exercise

What should be the goals of our mitigation program?

Here are possible answers to this question, listed in alphabetical order. They are just food for thought. Pick the five that you think are most important. You may reword them or add new ones if you want.

You have five cards. Use one card for each of your top five answers.

- Be able to reopen for classes immediately after a disaster
- Give special attention to minorities
- Give special attention to older people
- Give special attention to people with disabilities
- Give special attention to research/revenue producing facilities
- Give special attention to student housing
- Increase faculty knowledge of the hazards and protection measures
- Increase staff knowledge of the hazards and protection measures
- Increase student knowledge of the hazards and protection measures
- Make sure future construction is protected from damage
- Maximize reliance on the City and other government agencies
- Maximize use of state and federal funds
- Minimize public expenditures
- Minimize reliance on the City and other government agencies
- Minimize student expenditures
- Minimize University expenditures
- Protect buildings from damage
- Protect building contents from damage
- Protect people in the neighborhood off-campus
- Protect people's lives
- Protect property in the neighborhood off-campus
- Protect public health
- Protect public services (fire, police, etc.)
- Protect scenic areas, open spaces
- Protect streets from damage
- Protect utilities (power, phone, water, sewer, etc.)
- Take an active role in helping faculty and staff protect themselves
- Take an active role in helping students protect themselves
- Use public/private partnerships
- Protect a particular area: _____
- Protect a particular property: _____
- Protect a particular resource: _____
- Other: _____
- Other: _____

VITA

Ashley Garrett is a native of New Orleans, in other words, a true southern girl, and proud of it! She graduated cum laude in 2003 from the University of New Orleans with a Bachelor of Arts in Communications. Her academic track was in film, where she interned on the major motion picture *Ray* (2003).

One year later, Ashley decided to pursue a master's degree in Public Administration. She again attended the University of New Orleans, and decided to take a Hazards Policy course because it seemed like an interesting elective. The course description stated that the class would study natural and human-caused hazards ranging from volcanic eruptions to bioterrorism. Ashley found this course to be everything she had expected, and continued to specialize in the emergency management field.

In the summer of 2005, she was offered the position of Research Associate for the UNO – Center for Hazards Assessment, Response and Technology. It was there that she worked on the Disaster Resistant University grant project, which is the topic of this case study. Only two weeks after starting the Research Assistantship, Hurricane Katrina struck the City of New Orleans. This emphasized the importance of the DRU project and the mitigation of disasters in general. Ashley, like most people affected by the storm, would always have a different perspective on the City she calls “home.”

She continued to work on the Disaster Resistant University project until being hired as an Emergency Management Associate by the consulting firm, Innovative

Emergency Management, in Baton Rouge, Louisiana. There, she was able to utilize her education and personal experiences to help others plan and prepare for disasters.

Ashley acknowledges that she would not be where she is today without the love and support of her family, fiancé, and friends, the knowledge gained from her professors at UNO (especially Dr. John Kiefer, Dr. Monica Farris, and Dr. Robert Montjoy), and the grace of God. A big thanks to all of you!

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