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Fifty Years of Weathering the Storm: Are the Louisiana Gulf Coastal Parishes Prepared for Another Major Hurricane?

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Fifty Years of Weathering the Storm: Are the Louisiana Gulf Coastal Parishes Prepared for
Another Major Hurricane?

A Thesis

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

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in
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by

Danielle Boudreau

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To my family and friends who were patient throughout this process- your support is astounding and I could not have completed the study without you.

Lastly, to the anonymous couple overheard in line of a French Quarter tour in 2008, who stated, "Everyone talks about New Orleans when it comes to Katrina, and how it devastated the city... what about those of us who lived in the surrounding areas who lost everything?" Your feelings are not unfounded. Perhaps this research will prompt a greater emphasis on the preparation for hurricanes in all coastal parishes of Louisiana.

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Acronyms

DAP	Disaster Accountability Project
DHS	Department of Homeland Security
EOP	Emergency Operations Plan
EOC	Emergency Operations Center
ESF	Emergency Support Functions
FEMA.....	Federal Emergency Management Agency
FRP	Federal Response Plan
GOHSEP	Governor’s Office of Homeland Security and Emergency Preparedness
LTCRP	Long Term Community Recovery Plan
MRGO	Mississippi River Gulf Outlet
NFIP	National Flood Insurance Plan
NHC.....	National Hurricane Center
NOAA.....	National Oceanic and Atmospheric Administration
NRP	National Response Plan
PPP/PCP	Parish Pick-up/Collection Point

Abstract

This thesis examines ten major storms that have affected Louisiana in the last fifty years, beginning with Hurricane Betsy in 1965. The goal is to determine if the nine coastal parishes are prepared adequately for another major hurricane impact. It examines storms that have affected the state physically, in terms of property and ecological damages. It also considers storms that provided non-physical influences, by way of mitigation policy changes and social, economical, ecological, and political policy alterations. The main focus is on the transformations, if any, of social vulnerability in light of emergency preparedness in the areas impacted, particularly along the Louisiana coast. I argue that, while the state has come a long way, Louisiana is not currently prepared adequately to handle another major storm by 2015. Furthermore, I offer recommendations for improvement in preparedness measures for the future.

(Key words) hurricane preparedness, hazard mitigation, disaster policy, emergency operations plans, Louisiana Gulf Coast, natural disasters, Louisiana hurricanes, social vulnerability

Chapter 1

PURPOSE OF THIS STUDY

Introduction

By 2015, fifty years will have passed since Hurricane Betsy devastated the Gulf Coast of Louisiana. Since Betsy (1965), there have been numerous storms, of which nine stand out as the most significant hurricanes. These include: Hurricanes Camille (1969), Andrew (1992), Georges (1998), Ivan (2004), Katrina (2005), Rita (2005), Gustav (2008), and Ike (2008), as well as Tropical Storm Allison (2001) which have all brought about major changes in Louisiana communities. Some have changed the landscape, and some have caused massive damages, resulting in numerous deaths, destruction of property, and destruction of infrastructure. Others fortunately missed the state, yet provided valuable lessons for changes in disaster policy or mitigation strategies. With all of these changes, the question that remains is, is the Gulf Coast of Louisiana ready to withstand and recover from another major disaster by the year 2015?

Statement of Purpose

According to the United States Census Bureau, in 1960 the population of the nine coastal parishes of Louisiana was estimated to be approximately five hundred and twenty six thousand people. By the 2010 Census, the population rose almost sixty nine percent, to eight hundred ninety two thousand.¹ Thus, more lives, and by association, more property will be affected by another major hurricane. The purpose of this study is not merely to address the physical, engineering, or structural changes that have developed over the last

¹ Table 1 displays a breakdown of populations by each individual parish.

fifty years, even though their relevance to hurricane preparedness certainly warrants some discussion, but to examine the issue of social vulnerability along the Louisiana Gulf Coast.

Disaster vulnerability is most commonly referred to as “social vulnerability” in disaster research, because “it is socially constructed; it arises out of social and economic circumstances of everyday living” (Morrow 1999, 1). It is a component/description of groups who are more prone to be “at risk” before, during, and after disasters due to lack of support, resources, and a contributing “voice” in society. Socially vulnerable populations include low-income households, the elderly, children, female headed households, those who are infirm, the physically and/or mentally disabled, ethnic minorities, those who do not speak English, and visitors to the area (Bolin and Stanford 1999, 91). The ways in which this group of people proves to be more vulnerable than other residents vary.² For instance, those who are poor or are of a lower income bracket typically live in housing that is inadequately built and maintained (which would allow for more damage if a storm hits), they often live in more vulnerable areas, such as floodplains, if they are working in jobs that are tied to coastal enterprises (tourism, fishing, and oil industries), and they have less access to transportation to heed evacuation warnings (Morrow 1999,3). Those who do not speak English or who are visiting and thus are unfamiliar to the area or about the hazards of hurricanes may not understand what is going on or what it is that they need to do to remain safe from a storm. Including provisions for the socially vulnerable is particularly important for coastal parishes to include in their emergency operations plans (EOPs).

² The entire population of the Gulf Coast is vulnerable to hurricanes, but for the entirety of the thesis, it is understood that the term “socially vulnerable” refers to the residents who retain the qualities listed in the above definition

How do the emergency operation plans of each parish handle the needs of these vulnerable residents when a hurricane hits? The specific questions to be addressed in this thesis are:

- 1.) What policies are in place to protect those who retain the qualities of being counted as “socially vulnerable” along the Gulf Coast?
- 2.) What provisions have been made to assist these people both in preparation and in recovery from another major storm?
- 3.) What lessons have been learned from storms following Hurricane Betsy that have initiated these changes, and what still needs to be addressed?

This thesis conducts a historical analysis of each of the selected storms.³ Hurricane preparedness and disaster mitigation policies in the nine coastal parishes, both structural and non-structural, are discussed. These parishes are Cameron, Vermilion, Iberia, St. Mary, Terrebonne, Lafourche, Jefferson, Plaquemines, and St. Bernard.⁴ Furthermore, strategies aimed toward socially vulnerable residents of the regions affected by the storms are addressed, and the ecological and environmental changes in the state are assessed. After the examination of each storm, the existing nine parishes’ emergency management strategies are analyzed and recommendations for future mitigation and the research subject are provided.

³ Table 2 reflects the storms, the parishes that were highly affected by them, and other pertinent information to the research

⁴ Figure 1 displays a map of the Louisiana parishes

Table 1

Population of Selected Parishes 1960 & 2010

Parish Name	Year: 1960	Year: 2010
Cameron	6,909	6,839
Iberia	51,657	73,240
Jefferson	208,769	432,552
Lafourche	55,381	96,318
Plaquemines	22,545	23,042
St. Bernard	32,186	35,897
St. Mary	48,833	54,650
Terrebonne	60,771	111,860
Vermilion	38,855	57,999
<i>TOTAL POPULATION OF COASTAL PARISHES</i>	525,906	892,397
<i>TOTAL POPULATION OF LOUISIANA</i>	3,257,022	4,533,372

Source: "1900 to 2010 State and Parish Census Counts." *Historical Census Information, Louisiana State Data Census Center*. Web.
http://louisiana.gov/Explore/Historical_Census/ Accessed 14 February 2014.

Table 2

Storm Damages Per Parish

Storm	Year	Damages \$\$ LA	Deaths	Primary Causes	Highly Affected Coastal Parishes
Betsy	1965	\$1.4B	58	Wind, storm surge, levee breaches	Terrebonne, Lafourche, St. Bernard
Camille	1969	\$199M	3	Wind, storm surge	Plaquemines, St. Bernard
Andrew	1992	\$1B	7	Wind, rain	St. Mary, Iberia, Vermilion, Terrebonne, Lafourche
Georges	1998	\$25M	2	Wind, storm surge	Plaquemines, St. Bernard
T.S. Allison	2001	\$65M	1	Rain	Cameron, St. Bernard, Lafourche
(Ivan)	2004	n/a	n/a	n/a	n/a
Katrina	2005	\$81B	1577 ⁵	Wind, storm surge, levee breaches	Plaquemines, St. Bernard
Rita	2005	\$10B	1	Wind, rain, storm surge	Cameron, Iberia, Vermilion
Gustav	2008	\$4-10B ⁶	7	Wind, rain, storm surge	Terrebonne, St. Mary, Iberia, Vermilion
Ike	2008	\$19B	2	Wind, storm surge	Cameron

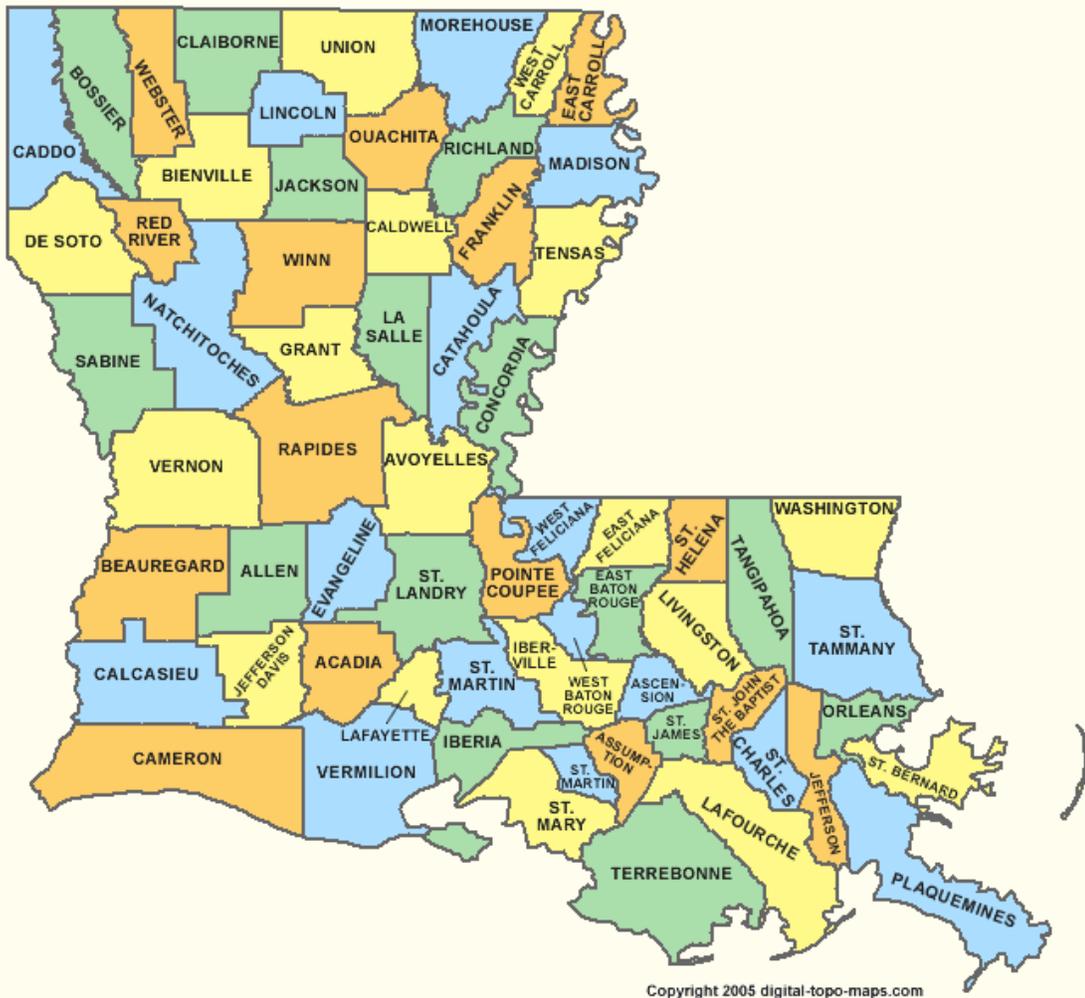
Source: Roth, David. "Louisiana Hurricane History". *National Weather Service*. Camp Springs, MD (April 2010). Accessed 26 Nov 2013
<http://216.38.80.20/images/lch/tropical/lahurricanehistory.pdf>

⁵ Orleans Parish is not included in the nine coastal parishes, yet it is important to note the severity of Katrina- the death toll was mostly in this parish, due to flooding after levee breaches. It is difficult to distinguish the death and damages caused by this storm from the other nine parishes, and a majority of the current research focuses on Orleans Parish

⁶ Estimations vary for both Gustav and Ike as calculations still have not been completed

Figure 1

Map of Louisiana Parishes



Why is this study important?

This study is important for several reasons. First of all, aid from the federal government in the form of financial assistance is virtually non-existent, should another major hurricane strike the Louisiana Gulf Coast. According to the Robert T. Stafford Act, “the President is authorized to make grants to States, not to exceed \$250,000, for the

development of approved plans,⁷ programs, and capabilities for disaster preparedness and prevention” (FEMA 2013, 4: Title II, Sec. 201). In addition, if, after a state governor has petitioned the President and it has been approved for an area that has been hit by a hurricane to be declared a major disaster, the Stafford Act provides for emergency supplies, personnel, and emergency financial funding to be allocated as assistance for the area (FEMA 2013, 26: Title IV, Sec. 403).

As of July 2014, the Federal Emergency Management Agency’s “Disaster Relief Fund: Monthly Report” states there is approximately \$15.226 million available for all of the United States, in the event of a disaster (2014, 4: Appendix A). As of 2013, the agency still maintained relief fund obligations to the state of Louisiana alone for \$31.594 million (2014, 8: Appendix B). This demonstrates that not only is there zero money available in the budget for aid if another hurricane strikes, but there is actually a one hundred percent deficit in the funds. Funding from state and local governments alone will not be able to cover the costs of recovery along the Gulf Coast. It does not imply that there will be no financial assistance from the federal government if another storm hits, rather, it means that an even greater debt will be created when a disaster strikes again. In theory, this could affect other government programs, non-disaster related, simply because the funding needs to be borrowed or taken from other ventures. According to Thomas Birkland, “natural disasters cause about \$20 billion each year in direct damage and \$35 billion in indirect damage” (2006, 105). Parish emergency operations plans should be extensive in their preparations for a storm. This preparedness will not only keep federal, state, and local governments from going into further debt, but, even if financial aid is in abundance, efficient EOPs will

⁷ “approved” plans must meet requirements that are discussed Chapter 5

help mitigate against damages and loss of life. This study will demonstrate which parishes have comprehensive plans and which do not, in order to bring to light improvements that should be made to reach the goal of being abundantly prepared.

Second, the wetlands surrounding most of the coastal parishes act as a natural barrier to hurricanes (Costanza, et al. 2008, 241). As a general rule of thumb, for approximately every two and a half miles of marshes or wetlands that have disappeared, there is a corresponding increase of one foot of storm surge (Morgan 2014). S. Jeffress Williams of the U.S. Geological Survey predicts “Louisiana will have lost this crucial habitat in about 200 years.” This may not mean much now, but it is conceivable that in the future, Arkansas will be the southern “coast.” From there it will continue to move north, if nothing is done to preserve the wetlands. Emergency operations plans for all hazards mitigation must include provisions for protecting the wetlands that are left. This study exposes the plans that are lacking these provisions, so that amendments can be made.

The third reason why this study is important is due to the nature of a major problem that the world is facing presently-- that of climate change. According to Holli Riebeek of the Intergovernmental Panel on Climate Change, an increase of greenhouse gases in the atmosphere will probably boost temperatures over most land surfaces...[with] outcomes of an increase in global temperatures, increased risk of drought and increased intensity of storms, including tropical cyclones with higher wind speeds, a wetter Asian monsoon, and, possibly, more intense mid-latitude storms” (2005, 4). Obviously, this issue is much bigger than can be tackled by a local parish emergency plan, yet, it demonstrates the imperative need for comprehensive attention to what is imminent: larger, more damaging, and more frequent storms. This concept is particularly brought to light under the Disaster Incubation

Theory, discussed momentarily more in depth, which focuses on a lack of attention to warning signs, communication breakdowns, human reluctance to “fear the worst”, out of date precautions, and/or violations of formal rules (Turner 1978). Emergency operations plans that function under any of these pretenses leave their parishes in extreme danger. Those that adhere to warning signs and prepare offensively instead of defensively, in retrospect of historical data, and that acknowledge past faults and attempt to rectify them are better prepared.

Furthermore, the dangers that the selected nine coastal parishes face in light of a storm are different from the inland coastal parishes. There is currently a state emergency operations plan, but it contains an all-encompassing standard for Louisiana. This should not be the case. The nine coastal parishes should have separate standard operating procedures. In fact, there should be a separate coastal coalition for these parishes, which the state should recognize and address. This idea is elaborated upon in the discussion section of the study (Chapter 6). This thesis can only enhance the information already available. There must be continuous awareness and continuous improvement, and this study will provide another perspective that may be taken into account in the overall field of disaster preparedness.

Lastly, and perhaps most importantly, in 2005 Hurricane Katrina brutally exposed what happens to socially vulnerable populations when a disaster strikes. Less funding available from federal, state, and local governments, erosion of the wetlands exposing residents to harsher storms, and the severity and frequency of such storms due to climate change are only going to make things worse for those who are socially vulnerable. They will have less resources and less protection, making resiliency almost impossible. The

United States does not need another Katrina. This in itself seems like an impossible burden to prevent, given the fact that Mother Nature and not the government controls hurricanes. However, steps can be taken to ensure that one day the Gulf Coast of Louisiana will be more efficiently prepared. The first step is simple; each parish should at least, if not yet in practice, then assuredly on paper, have an efficient emergency operations plan. The plan should also be available and easily accessible so the public and policy makers alike can be aware of what needs to be done, in order to discuss what might be missing. This will allow for a continuous flow of amendments and improvements. This thesis is important because it evaluates this 'first step' by critiquing each parish's emergency preparedness plans.

Scope of the study

This study has three goals. The first and most important is to demonstrate that the Louisiana coastal parishes are not yet entirely ready to withstand another "super-storm", so that they may be educated about what they still need to address. Federal, state, and local emergency management teams have certainly improved disaster policies and provisions for mitigation strategies, but there is a large amount of work to accomplish in the years ahead. This incorporates goal number two, which is to prove that the Disaster Incubation Theory, currently reserved for technological disasters (Turner 1976, 1978; Pidgeon and O'Leary 2000; Healey 2006; McKelvey and Andriani 2010; Pidgeon 2010; Adeola 2011; Dekker and Prochnicki 2013) can be appropriately applied to natural disasters, as well, at least in the realm of hurricane mitigation strategies. Lastly, the argument is made that there ought to be a separate set of emergency operational procedures and plans from the rest of the state of Louisiana that are standard for the nine coastal parishes. A coalition

amongst the nine parishes should be formed in order to better care for their environment and socially vulnerable residents, in light of another major hurricane.

This thesis is divided into six chapters. Following the introductory chapter one, chapter two reviews the literature on major hurricanes in the U.S. and especially within the Gulf Coast. It also reviews the literature on Disaster Incubation Theory, and gives an account of the applied/technical literature that is available. Chapter three provides the historical background of the important storms that have taken place over the last fifty years, beginning with Hurricane Betsy in 1965 and ending with Hurricane Ike in 2008. It explains with each storm any national and state policy changes or other developments that occurred, after ascertaining lessons learned from the past, and it remarks upon success or failure of each improvement. Chapter four addresses the methodology used in the study, including delimitations, limitations, and conceptual definitions that are pertinent. Chapter five presents Louisiana state emergency mitigation policies, the nine coastal parish plans for mitigation practices as presented by “Louisiana Speaks: Long Term Community Recovery Planning (LTCRP)” in 2006, and examples of emergency operation plans as provided by several parishes. It then allows for an analysis of the results presented particularly noting successes or failures. Chapter six ends the research with a summary of what has been presented, along with a discussion of the limitations of the study, such as inaccessibility to certain parish plans and a lack of direct communication with directors of each parish Department of Homeland Security (DHS). It reiterates the three goals of the study and reflects upon accomplishment of each. This proves to solidify the hypothesis that the Louisiana Gulf Coast is not ready to withstand another major storm by 2015.

It also provides recommendations for future work in both this field of research and in the field of hurricane preparedness in the state of Louisiana.

Chapter 2

LITERATURE REVIEW

Previous Investigations

The literature on major U.S. hurricanes, particularly in current studies, focuses primarily on Hurricane Katrina. As for the preparedness of Louisiana for another major storm, there was much critique, but very little dialogue about predictions. In fact, few scholars made any outright predictions as to whether or not the state was ready. No one claimed Louisiana was one hundred percent able to handle another storm. However, there were several subjects in the critiques that appeared time and again. Scholars focused on the concepts of complacency, the erosion of critical ecological defenses (such as the loss of the wetlands), and the need for stronger infrastructure as the reasons Louisiana has been affected intensely by these past storms (Morrow 1999; Laska 2004; Snyder 2005; Azcona 2006; Iversen and Armstrong 2008; Morrish 2008; Tierney 2008; McGuire and Schneck 2010; Colten and Giancarlo 2011). Others agreed that the social vulnerabilities in regions affected contributed to the disastrous results (Morrow 1999; Snyder 2005; Iversen and Armstrong 2008; Morrish 2008; Elliot and Pais 2010). They believed that more comprehensive, inter-disciplinary, cooperative plans were needed to prepare for the future (Azcona 2006; Morrish 2008; McGuire and Schneck 2010).

Michael McGuire and Debra Schneck believe, “there is always the possibility that human error and hubris over recent successes can envelop an agency and make it complacent” (2010, S206). Various researchers believe that, over time, the “fading of social memory” of a disaster displaces the urgency needed to rectify the problems that

contributed to it in the first place (Morrish 2008; Colten and Giancarlo 2011). That is, they save it for “another day.” Sometimes this is due to budget deficits or for the sake of political expediency, and other times it is because people rebuild, recover, and move on with their lives.

It is in this sense, that, after a storm, plans to restore the Louisiana wetlands or to refurbish decimated ecological and environmental systems fall by the wayside. However, several scholars have determined that these are conditions that should be of top priority (Laska 2004; Snyder 2005; Morrish 2008; Tierney 2008; Elliot and Pais 2010). It is generally agreed upon amongst scientists that for approximately every two and a half miles of marshes or wetlands that have disappeared, there is a corresponding increase of one foot of storm surge (Morgan 2014). Since the coast of Louisiana is prone to hurricanes and erosion, and is encompassed by these ecological systems, the “stability, safety, and survival... depends entirely on the continuous gardening and tending of [the] landscape” (Morrish 2008, 1001).

The environment includes infrastructure that is not yet stable enough to provide the support residents of Louisiana require to make it through a disaster (Azcona 2006; Iversen and Armstrong 2008; Morrish 2008). The renewal of a devastated infrastructure “needs much more than a customary patch and pray approach to individual public works improvements” (Morrish 2008, 1006). Disaster prevention and mitigation not only needs stronger infrastructure planning, but this planning must be inclusive (Iversen and Armstrong 2008, 186). That is, the community must be involved as well as local, state, and federal government agencies.

Louisiana faces environmental and physical vulnerability without any doubt, but researchers agree that social vulnerability is a major factor as to whether or not people in the state are able to possess the resiliency to weather another strong storm (Morrow 1999; Snyder 2005; Iversen and Armstrong 2008; Morrish 2008; Elliot and Pais 2010). “Socially disadvantaged residents are vulnerable not just to disasters, but also to post-disaster recovery,” James Elliot and Jeremy Pais assert (2010, 1188). If an individual or community is at risk due to environmental factors, on both an infrastructural and ecological level, and they also do not have the socioeconomic means to either prepare or rebuild, they are left in a situation from which they can never recover. Hurricanes are inevitable in Louisiana. The authors propose that disenfranchised citizens be protected under policies and programs that will remove them from their vulnerable situations long before a disaster strikes. These citizens would then have the opportunity to face the storm on an even playing field, along with all others affected. This, of course, poses a much larger problem than is simply related to disaster situations. Thus, it may be the most difficult to rectify.

Most importantly, social scientists believe that there must be an integrated, multidisciplinary approach to disaster preparedness and mitigation (Azcona 2006; Morrish 2008; McGuire and Schneck 2010). William Morrish upholds, “the logics of ecology, culture, economics, politics and civil society exist side by side, and cannot be reduced or collapsed into one another” (2008, 1002). Others add that “emergency managers and those who study the emerging field within public administration need to understand and appreciate a variety of disciplines, [because] if viewed from one discipline or viewpoint, it is highly likely that important information, data, and insights will be missed, inhibiting our ability to completely understand individual catastrophes” (McGuire and Schneck 2010, S205). It

seems logical that there needs to be an understanding amongst emergency planners, policy makers on all levels, urban planners, and especially individual residents. Each has important information to contribute, from different perspectives, covering *all* aspects of a disaster when it strikes. This ensures that all bases are covered in the future.

Currently, few researchers offer their outright opinions as to whether or not the Gulf Coast would recover from another storm. Craig E. Colton and Alexandra Giancarlo (2011), as well as Shirley Laska (2004, 2008) assert that the Louisiana coastline is nowhere near the capacity to withstand and recover from another disaster. Michael McGuire and Debra Schneck (2010), however, suggest that progress is being made every day. They conclude that the state is better prepared than ever, yet admit that there is still much work to be done.

The most important literature to date that contributed to this thesis is the work carried out by the Disaster Accountability Project (DAP) of 2009, which is a “non-partisan, non-profit organization dedicated to the improvement of the United States disaster management systems through public accountability, citizen oversight and empowerment, whistle blower engagement, and policy research advocacy.” In this study, twenty-two southern Louisiana parishes were contacted to find out about public accessibility to emergency operations plans and to evaluate the effectiveness of the plans through a series of criteria. This thesis used the information obtained in 2009 to compare to present information gathered, and it used several of the criteria pertaining to social vulnerability for the research.⁸

⁸ See Appendix A for criterion used for this thesis. The DAP also served as a benchmark to see if the parish plans had been updated since 2009

Disaster Incubation Theory

In relation to theory, this thesis uses the concept of the Disaster Incubation Theory (DIT), which was introduced by Barry A. Turner, a professor of Organization Studies at Exeter and a chemical engineer. Numerous scholars have followed DIT on disaster theory in the years since. In his original work through studying similarities across three different disasters, Turner declared that problems of handling information (obscurities, disregard for change, communication), rigid perceptions, influence and ignorance through involvement of outsiders, neglect of complaints, a tendency to minimize emergent danger, and poor management all contribute to the incubation of a disaster (1976). Basically, there is a chain of errors that build up over time, accompanied by other misinterpreted or ignored signals, which contradict societal beliefs. Eventually, these errors exacerbate a disaster when it strikes (Turner 1976, 1978; Pidgeon and O'Leary 2000; Healey 2006; McKelvey and Andriani 2010; Pidgeon 2010; Adeola 2011; Dekker and Prochnicki 2013).

Some scholars add their own variation to the theory. While Turner believed it was due to poor management systems (1978), others argue it is because management systems are actually too efficient; they are constantly checking to make sure that they are doing things "right" and therefore do not see or think "outside the box" (Pidgeon and O'Leary 2000; Healy 2006; McKelvey and Andriani 2010; Dekker and Prochnicki 2013).

Organizations and individuals both must constantly play the "what if?" game, in order to always be prepared to prevent a disastrous event.

Though usually reserved for anthropogenic disasters, it is conceivable that the Disaster Incubation Theory (DIT) can be applied to the concepts of hurricanes, particularly in vulnerable areas, such as the Louisiana Gulf Coast. Levee breaches, failure of pump

stations, and failure of other structural barriers in New Orleans, for example, during Hurricane Katrina, are anthropogenic factors relevant to DIT. This theory suggests that there is a “diachronic element of disaster often overlooked by other perspectives...which incubate over long gestation periods, during which warnings and signs of problems are either ignored, misunderstood, or not taken seriously” (Adeola 2012, 45). If educators, emergency management personnel, policy makers, planners, citizens and the like are not currently prepared one hundred percent for a disaster, then they have been overlooking historical, repetitive occurrences. They are failing to fix problems that continuously contribute to unpreparedness. As Francis Adeola stresses, “warning signals and previous incidents are registered very often as official reports... but their significance as warnings or signals are denied or discounted in such a manner that no corrective measure is taken” (2012, 45). The urgency or importance of a storm is minimized, as, in Louisiana, hurricanes are “commonplace.” Many weather predictions in the past, such as for Hurricane Ivan in 2004, ended up completely inaccurate. This creates a “crying wolf” scenario, contributing to complacency.

The public, which includes both residents and outsiders⁹ are “difficult to brief and difficult to define,” thus, “information and desired procedures are challenging to distribute and communicate effectively,” which leads to disaster (Turner 1976, 390). This indicates both the importance of a standard emergency operations plan for the nine coastal parishes, as well as easy accessibility to the public who needs it, both residents and visitors. There is certainly a difference between experiences of a disaster for those who have economic

⁹ Outsiders, in this case may include relief workers, state and federal emergency management workers and policy makers, and military members who are not residents of the area. It can be anyone who comes to aid after a disaster or makes preparedness policies or recommendations before who is not a resident of the area

resources and those who do not, but also, those who may be socially vulnerable, which include non-English speaking residents, minorities, the elderly, the physically and mentally disabled, homeless people, and those who are a part of single family households, also “depend upon social organizations, social links, and the manipulation of kinship systems” (Garcia-Acosta 2002, 62). When a disaster strikes their social networks are disjointed, as they may be displaced and forced to live in unfamiliar places away from these networks (Schwab, et al. 2007, 14). It has also been recorded that incidents of domestic violence and substance abuse increase, as these disjointed citizens are both traumatized and haven’t the means to recover or even afford the resources (food, shelter, and clothing) to cope during the immediate aftermath of a storm (Schwab, et al. 2007, 14). A comprehensive emergency operations plan that specifically addresses these socially vulnerable communities will not only help to eliminate some of these factors, but it will provide guidance for the aforementioned “outsiders” to be able to assist these communities more effectively.

As noted earlier, another contribution to disaster, such as a hurricane, is a lack of a multidisciplinary approach in planning and policy making. The Disaster Incubation theorists’ “think outside the box” mentality could be achieved through the ideas of various individuals and organizations providing numerous viewpoints about possible scenarios, so that everyone is prepared for anything. This would also eliminate the concept of complacency. Barry Turner is emphatic that, “when existing danger signs are not perceived, given low priority, treated as ambiguous or as sources of disagreement, and considered insignificant because of psychological dispositions or for other reasons, another avenue is provided for the accumulation of events which may combine to lead to disaster” (1976,

394). Each of these factors could contribute to the destruction that a hurricane causes. Thus, this theory is applicable to this type of natural disaster.

Technical/Applied Literature

The Federal Emergency Management website, as well as the Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP) website provided standard operational procedures, laws, and databases that were used in this research. Also, textbooks concerning protocol for emergency preparedness expanded upon this information (Drabek and Hoetmer, eds.1991; Schwab, et al. 2007). Emergency operations plans, discussed later in this thesis, were obtained directly from the parishes involved, which provided the information needed for this study for short-term recovery. "Louisiana Speaks" long term community recovery plans were also used and were accessible to the public directly on-line through the "Louisiana Speaks" website. Both contributed to the analysis as to whether or not the parishes were prepared for a hurricane both immediately and in the future.

In order for states to receive appropriate funding for disaster assistance and/or relief after a storm from the Federal Emergency Management Agency, each are required to have an approved emergency operations plan that establishes a "road map" for decision making during the hurricane (or other disaster); it must proclaim a chain of command in emergency management, along with clearly designated duties, it must have an established emergency operations center (EOC) designated for the time of the disaster, and it must provide information on evacuation procedures and emergency shelters (Schwab, et al.

2007, 20). In addition to the above information, the FEMA Civil Preparedness Guide¹⁰ maintains that local plans must elaborate upon the personnel, equipment, facilities, supplies, and other resources available within the jurisdiction, as well as exactly how it's people and property are protected (2010, 1-1). It typically does not dictate long-term recovery planning, which is another reason the long term community recovery plans for each parish were examined for this thesis.

Most interesting, is the remark in the FEMA Civil Preparedness Guide that announces, "planning must be community-based, representing the whole population and its' needs" (2010, 1-1). If both state and local plans must meet certain requirements, in order to be approved by the proper authorities, and funding is limited, "this often results in plans that meet funding requirements rather than community needs" (Drabek, et al. 1991, 168). If, for example, in order to receive hazard mitigation aid or financial reimbursement (i.e. "funding") from the federal or state government for the recovery process after a disaster, a local municipality must have a pre-designated emergency evacuation shelter, they may take a portion of their budget to build such a structure in order to meet "requirements." However, in order to save money, the same municipality may not provide this structure with handicap ramps, adequate sanitation facilities, child friendly or pet friendly facilities, adequate room for food/water storage or emergency supply back-ups, or transportation vehicles to bring those without resources to and from the evacuation structure. Technically, the local government has met the "requirements" to receive aid, but they are not actually providing adequately for those who do not have the means to leave town and who will be living in the said required structure for an unspecified amount of

¹⁰ This is also interchangeable with the "FEMA Comprehensive Preparedness Guide"

time. If actual community needs are not met, not only is a plan in disagreement with FEMA regulations, but it also leaves socially vulnerable residents in a state of ill preparedness. It means that political and financial agendas supersede the needs of the residents. This is what piqued the interest in this thesis.

Chapter 3

HISTORICAL BACKGROUND

In this chapter, major hurricane events along the Gulf Coast of Louisiana from 1965 to 2008 are presented. In chronological order, the named hurricanes include Betsy, Camille, Andrew, Georges, Tropical Storm Allison, Ivan, Katrina, Rita, Gustav, and Ike.

Hurricane Betsy 1965

On September 9, 1965, Hurricane Betsy made landfall at Grand Isle, Louisiana as a category 3 storm with an exceptionally large eye of forty miles in diameter. Winds gusted above 100mph, and some places across southeast Louisiana recorded 145mph winds. Hurricane-force winds were recorded as far inland as Lafayette, Louisiana and points north. At the time, the use of radar had been in effect, and the polar-orbiting weather satellite TIROS III was used to provide continuous images of the forthcoming storm. Unfortunately, they were not fully aware of the power behind Betsy (Public Affairs Office, National Weather Service).

A ten-foot storm surge occurred in both Lake Pontchartrain and the Mississippi River Gulf Outlet (MRGO),¹¹ instigating the failure of the levees on both sides of the Industrial Canal. Thousands of homes were flooded particularly in the Ninth Ward of New Orleans and in the adjacent St. Bernard Parish. People fled to their rooftops, awaiting rescue (Ouchley 2013, entry 1046). People began keeping an ax in their attic because of

¹¹ The Mississippi River Gulf Outlet (MRGO) is an emergency outlet that extends from the Inner Harbor Navigational Canal (IHNC) to the Gulf of Mexico. It was authorized in 1956 by an Act of Congress (Public Law 84-455) for both National Defense and general commerce by providing a safer and shorter route from the Port of New Orleans to the Gulf of Mexico (http://www.mrgo.gov/MRGO_History.aspx)

this storm, and still do today. This especially saved many lives when the Katrina hit, in 2005. It took over ten days before the water receded from homes and people could return, and it took longer for those affected to recover (Hurricanes: Science and Society 2010-2013).

In terms of economic and physical toll, Betsy was the first billion-dollar hurricane, causing \$1.4 billion dollars in damage and fifty-eight reported fatalities in Louisiana. As for agricultural impacts, sugarcane, cotton, and pecan crops were ruined, among others, and many livestock drowned. Also, “offshore and coastal oil installations, along with public utilities, reported unprecedented damage” (Roth 2010, 41). According to *The Times Picayune* archives, the fishing villages of Yscloskey and Delacroix Island were washed away, in St. Bernard Parish (2011). This damage from Betsy would have a major effect on the economy of southeastern Louisiana.

As a result of Betsy, however, something positive happened. The United States Congress ordered the U.S. Army Corps of Engineers to build a hurricane protection system in New Orleans, and the Corp’s “Hurricane Protection Program” was developed. They built new levees that were supposed to specifically reduce the risk of fast moving category 3-type hurricanes. At the time, hurricane intensity scales had not been developed and categories had not been assigned to storms yet. Therefore, the levees were specifically built to protect residents from storms comparable to Betsy (Hurricanes: Science and Society 2010-2013). On the federal level, Congress enabled the National Flood Insurance Program (NFIP) in 1968, which is attributed to the damage caused by Betsy (Colten and Giancarlo 2011, 13).

This policy requires communities to adopt building and planning standards in floodplains before they are able to purchase federally subsidized insurance policies (Birkland 2006, 107). This federal policy is still in effect today and still stirs up much controversy, especially in areas of coastal Louisiana where the flood zone maps were revamped in 2013 and many people found that their insurance rates had skyrocketed (Schliefsstein 2013).

Hurricane Camille 1969

Since southeast Louisiana was hit four years prior with a major storm, they should have learned lessons that would prepare them for the future. No one was ready for Hurricane Camille's impact on August 17th, 1969. In his report for the National Weather Service on the History of Louisiana Hurricanes, David Roth notes that Camille was "the most intense hurricane known to ever make landfall in the United States [with] almost total destruction from Venice to Buras, as winds estimated at 160 mph moved into lower Plaquemines and St. Bernard parishes" (2010, 42). As one can imagine, homes, businesses and land were devastated. Residents of Plaquemines Parish returned to find "all traces of civilization removed" (ESSA 1969a). The fishing, oil, and tourism industries, still scarred from Hurricane Betsy, were once again affected along the Gulf Coast. Oil industries may have had the resources to recover, along with the owners amongst the tourism industry, but victims who were socially vulnerable were largely affected and left to fend for themselves. Small fishing villages along the coast are not known for economic stability, even in non-disaster periods, due to a reliance on the complexities of Mother Nature, and many people lost their livelihood. This is the same for any of the employees of the tourism industry who relied on an hourly wage and found themselves jobless, and more than likely, homeless, as well.

One would think that policy makers and emergency planners would have learned from two devastating storms taking place in relatively the same area in such a short period of time, but “hazard scholars lament the lost opportunities for comprehensive redevelopment following Camille, as well as the lack of emphasis on hazard mitigation policies” (Colten and Giancarlo 2011, 14). These storms started a trend on emphasis of immediate recovery, rather than on efficient mitigation strategies (Birkland 2006). The years passed and the importance of the storms’ messages faded, but several policies and changes came to pass, indirectly, in the next two decades.

Herbert Saffir, a structural engineer, was hired by the United Nations to study low cost housing in hurricane prone areas. He discovered that “there was no simple scale for describing the likely effects of a hurricane” and devised a plan with meteorologist Bob Simpson to create a comprehensive scale to measure hurricane intensities. The scale took into account wind speed, storm surge, and flooding, assigning each storm a number ranging from 1-5, with 5 being the most severe. The Saffir-Simpson Hurricane Scale came into fruition in 1971 and was put into permanent use after 1974 (Saffir-Simpson Hurricane Scale, 1). The following years, in 1975 and 1976, the first "hurricane hunter" Geostationary Operational Environmental Satellite (GOES) was launched into orbit, and warnings using the Doppler radar system were put into use. Both meteorological advancements provided vital information in notifying residents in a timely manner of the impending doom of a storm (Public Affairs Office, National Weather Service).

Also in the above time frame, the Disaster Relief Act was put into place in 1974 (and later amended and renamed the Robert T. Stafford Disaster Relief Act in 1988). This Act “constitutes the statutory authority for most federal disaster response activities especially

as they pertain to FEMA and FEMA programs”(FEMA 2013). Basically, this act directs the federal protocol for action pertaining to a disaster and relief afterward. It dictates mitigation requirements, emergency management standard operational procedures, procedures for declaring a disaster and applying for funding, among many other helpful regulations in the event of a major disaster. McGuire and Schneck argue, “successful emergency preparedness, response, and recovery in the future are largely functions of the degree to which government leaders possess strategic management capacity” (2010, S201). This act provided the necessary legislation to regulate and manage disasters.

Hurricane Andrew 1992

Though other storms took place in the twenty-three years since Hurricane Camille, the next major storm to pose a threat to the Louisiana Gulf Coast was Hurricane Andrew in 1992. The storm will always be remembered for the destruction it caused in Homestead and Florida City, Florida, but Andrew also hit the Louisiana coastline west-southwest of Morgan City in St. Mary Parish on August 26th, 1992. It caused an eight-foot storm surge in both this parish and Iberia Parish. It tore roofs off homes, overturned trailer homes, and left over 230,000 people without power (Applebome 1992). With better meteorological interpretation available for this storm, however, people were warned effectively and lives were saved. Approximately 1.5 million people evacuated, across southern Louisiana. Unfortunately, damages were estimated near one billion dollars in the state (Roth 2010, 47). People were safe but the environment was not spared. One hundred and eighty two million fish were killed in Louisiana’s Atchafalaya Basin, as their habitat was destroyed. An eight-foot storm surge in Hammond, Louisiana destroyed corn, soybeans, and sugar crops,

once again injuring the livelihoods of farmers in the area (Hurricanes: Science and Society 2010-2013).

After the implementation of the Stafford Act, it would seem that everyone would have adequate planning in place. Response teams should have been ready to help relieve and rebuild the affected areas of Hurricane Andrew. This was not the case. In Florida, the government was slow to provide aid to those desperately in need. The act did not provide for food, shelter, and other essential services needed by people who lost everything when the state's resources were depleted. This was because the current legislation deemed that federal aid could not begin until a Presidential Disaster Declaration was in place, as requested by the governor of the state in which the disaster occurred (Hughes 2012). While the bureaucratic standards looked good on paper, local, state and governmental agencies were not on the same page. In Florida, where FEMA's inadequacies were exemplified, not only were 180,000-250,000 people left homeless, particularly those who were of low income, due to "shoddy workmanship" on homes that were built with cheap materials, but a phone system was set up for disaster victims to apply for aid- this was a time before cell phones and those who were left homeless were also left without phone service, thus negating their use of this system (Miskel 2008, 81). The plight of the socially vulnerable was not taken into consideration.

Hurricane Georges 1998

Hurricane Georges was another storm that fortunately missed causing massive destruction to Louisiana. This did not seem to be the case as it took dead aim at New Orleans before veering to the east. Though some fishing camps were destroyed, the majority of the damage in Louisiana happened when substantial erosion occurred in the

Chandeleur Islands (Roth 2010, 50). Also, though the levees held, there was significant storm surge that inundated areas with flooding just outside the hurricane protection levees of both Plaquemines and St. Bernard Parishes (National Weather Service Weather Forecast Office, NOAA National Weather Service). It would seem that this would be one of the “warning signs” ignored, as per the Disaster Incubation Theory. Levees should have been thoroughly inspected at this point to ensure they would hold, should another major storm hit the area. This lack of inspection would prove fatal for residents of St. Bernard Parish seven years later.

What is most significant about this storm is the lesson that it brought to light for coastal Louisiana. It highlighted how ill prepared the people were for a major hurricane, as evacuation was “uncoordinated and chaotic”. Each parish had their own emergency plan and handled them accordingly, rather than communicate with other parishes. The results of ill-timed evacuations caused clogged roadways, and there were no provisions in place in emergency operations plans for the most vulnerable of residents who had no means of evacuating (Eosco et al. 2009). Those in authority realized that they must begin to create integrated plans, in order to most effectively mitigate against and respond to a disaster situation, should they not be so lucky the next time around. This is a good example of where the concept of a coastal coalition among the nine Gulf Coast parishes would have been helpful, as there would have been a standard agreement and cooperation plans already in place to aid with an effective evacuation.

On a positive note, there were advancements in meteorology in 2000, as the Advanced Weather Interactive Processing System (AWIPS), a high-tech, interactive weather computer and communications system was put into effect, allowing for

improvement in weather forecasting at 152 National Oceanic and Atmospheric Administration sites across the country (Public Affairs Office, NOAA National Weather Service). The Disaster Mitigation Act was implemented, as well, which “encouraged state and local hazard mitigation, and required enhanced state and local mitigation planning (Birkland 2006, Table 4.1).

Tropical Storm Allison 2001

The next event, Tropical Storm Allison (TSA), never made it to hurricane strength. Nevertheless, this storm caused extensive flooding in southwestern Louisiana. Several days of rain in early June bombarded Thibodaux in Lafourche parish and Morgan City in St. Mary parish with over twenty-nine inches of rain. Over one thousand houses in St. Tammany Parish, eighty houses in Saint Bernard Parish, and hundreds of houses in other parts of the state were flooded. Allison caused a 2.5-foot storm surge in the southern town of Cameron, Louisiana, which resulted in the flooding of several sections of Louisiana Highway 82. Overall, TSA caused estimated at \$65 million in damage to Louisiana (Public Affairs Office, National Weather Service). In a sense, the lesson learned from this storm was that destruction could come whether or not an event was labeled “hurricane” or was assigned an ominous “category”. Better to be prepared at all costs, and better to implement mitigation policies that are structured toward the alleviation of this type of occurrence, rather than be caught off guard. This type of economic and environmental damage to Louisiana was a hard lesson learned.

Also important to note is that between T.S. Allison and the next storm, Hurricane Ivan, the terrorist attacks of 9/11 took place. FEMA was integrated into the Department of

Homeland Security (DHS) in 2002, so it was no longer autonomous (Birkland 2006, Table 4.1). This will prove to be significant in the discussion part of this thesis.

Hurricane Ivan 2004

At the time it hit, Hurricane Ivan became the tenth most intense Atlantic hurricane ever recorded. At its peak in the Gulf of Mexico, Ivan was the size of the state of Texas. Hurricane Ivan was gunning for Louisiana at category 5 intensity, with 170mph sustained winds. At the last minute, it suddenly veered right and missed the state. However, Louisiana officials had vastly improved coordination of its state and parish evacuation plans, as it implemented the first use of contraflow on the highways. This doubled the number of people that were able to make it away from the coast (Eosco et al. 2009). Unfortunately, the weaknesses included a “late” evacuation announcement and not coordinating with evacuation plans in the state of Mississippi. Once Louisiana residents crossed the boarder, a massive bottleneck of traffic ensued. Also learned were lessons on how to incorporate reverse 911 calling and how to build communities; new construction standards now take into account higher standards for wind and higher elevation standards in flood zones (Sealls 2004).

Evacuation surveys after the storm showed that two-thirds of non-evacuees with the means to evacuate chose not to leave because they felt safe in their homes. Other non-evacuees with means relied on a cultural tradition of not leaving or were discouraged by negative experiences with past evacuations (Laska 2004, 176). Though fortunate, the near misses of Hurricane Georges and Andrew, as well as the evasion of Ivan, created a “crying wolf” scenario for residents of Louisiana. Evacuation can be a very costly procedure, and people do not have the means to leave town or close down their businesses every time

there is the potential for a storm. This is not a particularly positive attitude, as it is better to be safe than sorry, some may say. It also lessened the severity of the warnings in 2005, when the landfall of Hurricane Katrina was imminent.

Policy-wise, the National Response Plan (NRP) super-ceded the Federal Response Plan (FRP) in December of 2004. The Federal Response Plan had broad disaster relief policies supplementing assistance to states in need. It documented twenty-six agencies, with twelve functional groups for relief efforts. This existed on paper, but was ignored in practice, as demonstrated with the response to Hurricane Andrew. The NRP developed operations and communications capabilities originally envisioned in the FRP, and it also expanded the number of agencies to twenty-nine, with fifteen sub-agencies specifically organized into Emergency Support Functions (ESF). It displayed clearer communication protocols and specific agreements about functions, which, in theory, would make relief more effective (Miskel 2008, Chapter 1). This new framework “aligned federal coordination structures, capabilities, and resources into a unified, all-discipline, and all-hazards approach to domestic incident management” (FEMA 2013).

Hurricane Katrina 2005

The next major storm occurred at the end of August 2005. Katrina has been recorded as the worst natural disaster in the history of the United States. To try and convey the utter horror that reigned upon southeastern Louisiana at the time would be a paper in itself. However, it provided myriad lessons for the people of Louisiana and the nation. Katrina produced catastrophic damage and untold casualties in the New Orleans area, St. Bernard Parish, and along the Mississippi Gulf Coast. As of August 10, 2006, the death toll was stated as 1577 within the borders of the Pelican state. Damages totaled \$81 billion

within the United States. (Roth 2010, 54). A good portion of this damage can be attributed to the failure of the levees at the 17th Street Canal, the Industrial Canal, and the London Avenue Canal in Orleans Parish. The inundation from the Mississippi River Gulf Outlet (MRGO) caused fishing communities in eastern St. Bernard Parish to be wiped out, and 100% of their housing units were either destroyed or damaged enough to be considered uninhabitable (LTCRP, St. Bernard Parish 2006, 2). It proved the “improvements” made to the new levee system forty years ago could not, in fact, withstand a category 3 hurricane.

The horrors of Hurricane Katrina became the “face” Louisiana (in New Orleans, in particular), displaying the failure at preparedness for the socially vulnerable. These people were brought to the forefront and exhibited the abhorrent “holes” in disaster policies when it came to the elderly, sick, incarcerated, poor, and otherwise vulnerable residents. William Morrish states, “a disaster's swift currents not only alter the familiar topological contours of the distressed community; they also reveal major gaps in civic practices and social justice, surprising changes in local culture and ecologies, and a swarm of unsettling questions about the viability of the entire civil infrastructure network” (2008, 993).

In Lafourche Parish, 35,000 residents and 6,000 off shore oil workers were evacuated. They lost infrastructure, homes, barrier islands, and protective wetlands. It also forced many businesses to close, causing numerous bankruptcies and nearly destroyed the parish economy (LTCRP, Lafourche Parish 2006, 2). Plaquemines Parish reported eighty percent of the citrus orchards destroyed, a seven million dollar industry and the source of work for many residents. Their fishing industry was nearly destroyed, as well, with the loss of icehouses, docks, marinas, fishing vessels, and thousands of residents’ houses (LTCRP, Plaquemines Parish 2006, 47).

Both rich and poor learned just how far a situation had to go before an insurance policy would not cover the damage, or would cheat them out of rightly earned compensation. The evils of human kind were exposed, testing the “solidarity” theory underlying natural disasters, but great feats of human kindness were witnessed, as well. It also showed that in Louisiana, particularly in New Orleans, people were willing to fight to rebuild and return to the culture of their “home”, no matter how many years it might take them. The nation learned of the importance of the oil industry on home turf, as prices skyrocketed, affecting their pockets (Waple 2005, 6). Our government received a hard lesson in the ways of better organizing our Federal Emergency Management Agency, as well as revisiting long forgotten zoning maps that would affect the National Flood Insurance Plan. This last item, as has been developing since Katrina, is actually affecting the socially vulnerable in an extreme way; skyrocketing insurance policies, with the reevaluation of flood plain maps, may force thousands of people out of their homes (Schleifstein 2013). The list is endless, but it is safe to say that Katrina, by far, taught the greatest lessons this nation could learn when it came to disaster policy, mitigation needs, and the reality of the situation of the poor in this area.

Hurricane Rita 2005

Residents of southeast Louisiana had barely begun clearing the debris from Katrina when Hurricane Rita, the fourth most intense Atlantic hurricane recorded in history, came along in September of 2005, offering to provide symmetrical problems for southwest Louisiana. The towns of Holly Beach, Cameron, Creole, Grand Chenier, and Pecan Island were nearly completely destroyed, and damages from the storm totaled approximately ten billion dollars (Roth 2010, 55). For Cameron Parish, the fifth largest fishing port in the

United States, the loss of revenue devastated the population.¹² Vermilion Parish saw a loss of agricultural production nearing fifty million dollars, which caused nearly ten million dollars in lost income for parish residents (LTCRP, Vermilion Parish 2006, 32). Iberia Parish, along with the loss of over two hundred homes, saw the loss of millions of dollars of income with the destruction of shrimping, sugarcane, rice, and crawfish industries (LTCRP, Iberia Parish 2006, 2).

The approach of Hurricane Rita prompted one of the largest urban evacuations in U.S. history, at that time: Texas and Louisiana officials evacuated over three million residents (Public Affairs Office, National Weather Service). It (along with Katrina) also prompted amendments to be made to the Stafford Act, which include expanding FEMA's authority to expedite emergency assistance to stricken areas, impose new planning and preparedness requirements on federal administrators, increase federal assistance to victims and communities, provide assistantships for student grants, and even make special provisions for pets in the case of an emergency (Bea 2007).

Hurricane Gustav 2008

Perhaps a demonstration of preparedness was best exemplified in late August of 2008, almost three years to the anniversary of Katrina. Gustav brought 117mph winds and heavy rains back to southeast Louisiana, dropping twenty-one inches of rain at Larto Lake. There were bits of flooding through the new levees between Orleans Parish and St. Bernard Parish, but it was not widespread (Roth 2010, 56). Most parishes reported wind damage and power outages. Mandatory evacuations were ordered two days ahead of time, and an

¹² See decrease in population in Table 1, page 3 of this thesis. All other parishes have seen an increase in population

estimated two million people had already left before the warning. The state stepped in with preemptive measures, which included the use of the MyState Emergency Notification System, The Emergency Alert System (EAS), the establishment of “shelter mass feeding,”¹³ a unified command group,¹⁴ and emergency generators¹⁵ (Cooper 2008, 6).

Basically, Gustav was a lesson to everyone that a successful preparation effort could be accomplished, if people worked together (Eosco et al. 2009). At this point, as well, federal grants for structural mitigations for many residents (for example, the elevation of houses), paid off. People saw that their efforts were not in vain. It solidified the imperativeness of hurricane mitigation in this area, if people chose to rebuild after Katrina.

Hurricane Ike 2008

Ike was the last major storm event in Louisiana, causing a massive storm surge in certain areas. Extensive rain was an issue simply because the land was still drenched from Gustav. It was a conundrum to meteorologists, as the wind speed registered at a category 2 while storm surge was recorded as close to a category 5. Lafourche Parish and Terrebonne Parish were devastated with water when a nine and a half foot storm surge inundated them, flooding 2,500 homes in Terrebonne Parish, alone (Dupre 2008, 1). Also, this flooding devastated additional barrier islands- islands needed to help serve as a natural protection against hurricanes.

¹³ Private and public partnerships stepped in with donations, coordinated their organizations and were able to successfully distribute food and to house those in need of assistance

¹⁴ State and local agencies coordinated efforts to generate an efficient command base to aid those in need and to assist in preparation and immediate recovery

¹⁵ Provided by the state, these generators were used to immediately get key areas of infrastructure back up and running while power was out, to ensure swift and efficient recovery.

This flooding led to the National Weather Service re-evaluating their methods, unveiling the new Saffir-Simpson Hurricane Wind Scale in 2010. The scale keeps the same wind speed ranges as the original Saffir-Simpson Scale for each of the five hurricane categories, but no longer ties specific storm surge and flooding effects to each category (Public Affairs Office, National Weather Service). In this sense, the concept of complacency is battled, as people can no longer rely upon the concept of a “category” to deem whether or not to take action. Each storm is different and must be taken seriously, in order to protect life and property.

In summary, the major hurricane events described above represent fifty years of weathering the storm in the Louisiana Gulf Coast parishes. What the next fifty years will bring is difficult to predict. Based on the lessons learned over this time frame, one can hope for more resilient communities capable of weathering adverse hurricanes and other natural disaster events in the future. Comprehensive short-term and long-term planning is a necessity to aid in this resilience.

Chapter 4

METHODS

Statement of Methodology

As previously stated, the three research questions of this thesis are:

- 1.) What policies are in place to protect those who retain the qualities of being counted as “socially vulnerable” along the Gulf Coast?
- 2.) What provisions have been made to assist these people both in preparation and in recovery from another major storm?
- 3.) What lessons have been learned from storms following Hurricane Betsy that have initiated these changes, and what still needs to be addressed?

As this information could be conducted using existing documents, the research was conducted using secondary sources. Multiple existing databases and archives were consulted, especially those provided by the National Hurricane Center (NHC), the National Oceanic and Atmospheric Administration (NOAA), and the Federal Emergency Management Agency (FEMA). Books and peer-reviewed articles pertaining to the subject matter were also assessed, both sociological and historical, in order to investigate each storm and their resulting consequences. Secondary information provided scientific and documented facts, as well as information collected at the time the hurricanes took place.

Emergency operations plans were obtained from the nine coastal parishes.¹⁶ This was done through Department of Homeland Security websites, e-mail correspondence, and

¹⁶ UNO’s IRB was contacted in order to see if approval and review was needed. See email correspondence in Appendix C with Robert Laird.

telephone calls made to the respective parish.¹⁷ Of the nine parishes, Cameron was completely unresponsive to repeated attempts to obtain the plan.¹⁸ The first parish to respond, almost immediately, was St. Mary. The Head of the Homeland Security department agreed to the request and said he would email it or mail it. Though there were several follow-up attempts, it was not received. St. Bernard Parish emailed the plan within two days of the request. Iberia Parish emailed the plan after the follow up phone call. Both Lafourche Parish and Terrebonne Parish's plans were easily accessible online, in PDF form, on their Department of Homeland Security websites. Vermilion Parish mailed a copy of their plan on CD, three weeks after the request and follow-ups. Of the nine parishes, two blatantly refused the request: Plaquemines Parish and Jefferson Parish.¹⁹ This was an important part of the methodology, since plans are supposed to be accessible public documents. The ease of access and responses to requests are discussed in chapters five and six, as a component of preparedness; the public, first of all, must know what mitigation strategies they (and policy makers) should be engaging in before a storm strikes, as well as have an idea of what the protocol is during the event itself, in order for a plan to be successful. Otherwise, what is the purpose of these procedures being documented?

As noted previously, there was a prior study of this nature conducted by the Disaster Accountability Project (DAP). This demonstrates that the study can be replicated and can be conducted for further research at a later date. Questions from the DAP study that were originally addressed, concerning residents who fit the category of "socially

¹⁷ Appendix C displays e-mail correspondence

¹⁸ Two emails as well as two phone calls were placed, with no response

¹⁹ Plaquemines Parish cited legal reasons for denying the request. Jefferson Parish said the request was both "vague" and "burdensome"

vulnerable,”²⁰ were modified and used in this thesis. The comparisons of results from the DAP study and this thesis are discussed in chapters five and six. Also consulted were the Louisiana long term community recovery plans, as presented by the state organization “Louisiana Speaks”. The Disaster Accountability Project studied emergency operation plans, which are the immediate standard operational procedures when a hurricane is at large. By contrast, Louisiana long term community recovery plans present actual recovery and mitigation plans for hurricanes for each parish, which is in the form of a public website. Again, criterion concerning social vulnerability was used to assess each of these plans.²¹

²⁰ Any questions the DAP previously asked the parishes that fit in with the criteria previously listed in this thesis describing socially vulnerable populations/individuals were replicated

²¹ See Appendix B for Louisiana’s long term community recovery plans’ criteria.

CHAPTER 5:

RESULTS AND ANALYSIS

Parish Emergency Operations Plans (EOPs) Results

The Federal Emergency Management Agency's "State and Local Guide for All Hazards Emergency Operations Planning" suggests that all EOPs contain information pertaining to the chain of command and its successions, along with designated duties during an emergency. EOPs also should describe how people and property will be protected in emergencies and in disasters and should address mitigation concerns both prior to and during the recovery period of a disaster. Local plans should take a step further by explaining measures that will be taken during an emergency pertaining to warnings, emergency public information, evacuation, and shelter. Most importantly, the guide stresses that an emergency operations plan is a public document. The following information is all reported directly from the emergency operations plans obtained from the State of Louisiana and the five of the Gulf Coast parishes, following the criterion stated in the appendix. Plaquemines, Jefferson, St. Mary, and Cameron Parishes are not included in this, as their emergency operations plans were not obtainable.²² When the Disaster Accountability Project (DAP) requested parish EOPs, access was also refused for Plaquemines Parish, and there was no response from a request made to St. Mary Parish, as in this study. They were able to access the Jefferson Parish emergency operations plan online in 2009, but it is no longer available in that format. For reasons unspecified, the DAP

²² The reasons for not obtaining these plans are noted in the Methods section of this thesis

did not include Cameron Parish in their study, though it is a coastal Gulf parish in a high-risk situation.

The Louisiana state operations plan has been updated as recently as July 2014. It has been approved by FEMA and meets the criteria put forth by the federal agency. As for the individual parish plans, they, too, meet the minimum requirements suggested by FEMA. Some elaborate and have more extensive planning strategies for their parishes, while others present a general, if not vague, idea of what their emergency management team will do in light of a hurricane. The following information provided comes directly from the relevant parish being discussed. The answers are from the criterion used in this thesis to evaluate the plans, as previously described, and they are compared to the previous 2009 study undertaken by the DAP.²³ Plans are listed from the least comprehensive to the most comprehensive, beginning with positive aspects and ending with aspects that are lacking.

Terrebonne Parish

Terrebonne Parish's plan can be obtained easily on-line. It was last updated in 2010. In 2009 when the Disaster Accountability Project tried to access it, it was not on-line, and their requests for a copy were refused twice.

- Provisions for evacuation are listed for those without transportation, the elderly, hospital facilities, nursing homes, and correctional institutions²⁴
- A transportation system is in place to pick up those who cannot make it to the parish pick-up points (PPP) for evacuation, but they must be pre-registered

²³ See Appendix A

²⁴ The evacuations for the elderly, nursing homes, and hospitals are left to the protocol of the individual institutions, but are noted in the plan as to who is in charge of each

- Extensive media cooperation is used for warning systems to convey to the public, through TV, radio, telephone, Internet and fax. This is how daycare centers and schools are notified. There is no back up plan in place should power be out or telephone lines down. However, a “door to door” warning system is in place for flood emergencies only
- Shelters are available for evacuees only for tropical storms- category 2 hurricanes, and the shelters are listed
- A food and supply distribution station is listed, but there are no details as to the protocol of the distribution process
- There is a detailed re-entry and recovery process, but it only pertains to infrastructure, not evacuee return
- Human Services provides post storm crisis counseling, mental health services, short and long term housing assistance, rental assistance (monetary), and loans for replacement and rebuilding of primary residences, but no detail as to what this process entails or how a citizen can apply for aid
- There is no current levee system in place to protect the residents in Terrebonne Parish from storm surge
- There are no evacuation routes or maps listed in the plan

- There are no provisions for correctional facilities, non-English speaking people, those who are physically or mentally impaired, visitors/tourists the homeless, or pets²⁵
- There are no agreements listed with adjoining parishes for aid, shelter, or use of resources
- There is nothing noted about public education or a plan for it pertaining to hurricane preparedness in the parish

Even though the Disaster Accountability Project was refused access to the plan, the EOP listed above represents an update since the DAP's research. However, they were told that the plan was in the process of being updated and would soon be available on-line, which was proven to be correct (DAP 2009, 58).

Lafourche Parish

The Lafourche Parish emergency operations plan is also obtainable on-line, and it was updated as of 2011. This plan was last updated in 2004, when the Disaster Accountability Project tried to obtain a copy. There is an improvement in the fact that it was updated, yet it is unclear as to what exactly was amended.

- There are provisions for those without transportation, and citizens who cannot make it to the parish collection points (PCP) will be picked up at their homes, in order to be evacuated.
- A map of the evacuation route is provided, but evacuation routes are not listed for those who may be unfamiliar with maps. However, it states that

²⁵ A mention of animals is in conjunction with the Animal Control Office and Health Department attempting to evaluate disease that may be a result of the storm that could affect residents or domestic/agricultural animals

there is a public education program for evacuation procedures, PCPs, and PPPs

- There is a list of shelters for evacuation in various points throughout the parish, as well as a list of PCPs
- It provides for post storm crisis counseling, mental health services, short and long term housing assistance, rental assistance (monetary), and loans for replacement and rebuilding of primary residences
- There are no provisions for daycare facilities, schools, hospitals, the elderly, those with mental or physical impairment, correctional facilities, the homeless, visitors and/or tourists, or pets
- There is no clear re-entry process noted
- There is no back-up plan for loss of power or telephone, or for those who may not have access to television, radio, or the Internet for information
- There are no agreements listed with adjoining parishes for aid, shelter, or use of resources
- Other than the evacuation program, there are no programs for public education about hurricane preparedness

When the DAP conducted their research in 2009, they found that there were “partial” provisions allotted for the daycare facilities, schools, hospitals, the elderly, those with mental or physical impairment, and correctional facilities. In this plan the responsibilities are assigned to random associations throughout the parish with no detail whatsoever about the actual plans for these people. Perhaps this is the same information as this thesis research found, but the DAP acknowledged it in 2009 as having at least a

“partial” attempt to help the people. For the purpose of this paper, “no plan” means that they are not prepared. Neither study found any evidence of preparations for the care of the homeless, visitors/tourists, or pets in the event of a storm. Both studies also concluded that in the event of a power outage, many residents will not be able to access any pertinent information as to their safety.

Iberia Parish

Iberia Parish last updated their plan in 2008 and it was obtained via e-mail by directly calling the Iberia Parish Office of Homeland Security and Emergency Preparedness. The Disaster Accountability Project was denied their request for a copy of the plan in 2009, after being told, “the parish is in the process of updating the emergency plan and it will be available in a few weeks” (17). Fortunately, Iberia Parish agreed to furnish a copy for this thesis’ purposes, for reasons unknown, but it is assumed that it has not been updated since they last spoke to the DAP, because the date is 2008.

- It has provisions for the safety of all physically and mentally disabled, the elderly, and non-English speaking residents, using door-to-door warning, if necessary, through the parish Community Action Program
- It provides for transportation for the elderly, the handicapped, the infirm, and for those without means to evacuate
- Evacuation routes are listed (without a map) and parish pick-up points are listed for those without transportation
- It provides for a resource pool of interpreters for non-English speaking people, to be used during a time of emergency, yet does not elaborate upon this plan

- The plan condones first-aid training with residents of the parish, as well as education in the use of the public warning system, yet does it not elaborate
- Shelters are listed, with plans for “Mass-feeding” that depend upon volunteers from the evacuee pool
- Additional shelters are anticipated through the generosity of local residents who will open their homes to evacuees
- It provides for “financial services” for those who “need emergency help” but does not elaborate upon this process
- No formal re-entry plan is listed
- It mentions that pets are allowed to evacuate separately from owners, yet states no protocol or provisions
- There are no provisions for evacuation or care for the homeless or visitors/tourists
- There is no public education plan about hurricane preparedness (other than the programs previously mentioned)
- There are no agreements with adjoining parishes for aid or resources, yet states the plan is in place to also assist other parishes in need after a significant storm

Vermilion and St. Bernard Parishes

Vermilion Parish and St. Bernard Parish have the most comprehensive EOPs of the study, with St. Bernard being ranked number one, as per the criteria listed for this thesis.

Vermilion was updated in July of 2011, and St. Bernard was updated in 2013,²⁶ which are both significant improvements since the Disaster Accountability Project, which was given copies of plans from 2003 and 2008, respectively.

- Both have provisions for the evacuation and preparation for daycare facilities, schools, hospitals, nursing homes, correctional facilities, the elderly, the physically and/or mentally disabled, those who are without transportation, non-English speaking residents, and pets.²⁷
- St. Bernard Parish has a separate, specific annex dealing with visitors and tourists
- Both plans state efficient and clear destination points for food/supply distribution, with corresponding plans
- Both plans provide several clear evacuation options, along with maps
- Both plans include a list of shelter points, with back-up shelters in place should the presently designated ones lay in the “danger zone” of a storm
- Both plans provide back up systems, in light of power outages, for the dissemination of warnings and information pertaining to the storm or evacuations- they have officers from several departments deployed on foot traveling door to door
- Both plans have agreements with adjoining parishes for aid, resources, shelter back-ups and additional man-power

²⁶ St. Bernard Parish has an additional, separate Hurricane Annex for 2015, which is the reason the plan is placed in the forefront for most comprehensive.

²⁷ Vermilion Parish not only includes a plan for domestic pets, but has one for large agricultural animals

- Vermilion parish has a Public Awareness Program to educate the community on emergency preparedness, emergency classifications, emergency operations center overview (with guided tours), chemical safety, and natural vs. man-made disasters
- Neither plans have provisions for the homeless

As for the Disaster Accountability Project, plans have improved considerably since their study. In 2009, Vermilion Parish's plan did not have provisions for daycare facilities, and there were only partial provisions made for tourists, those who are disabled, and the elderly. Also at that time, St. Bernard Parish did not have provisions yet for daycare facilities, nursing homes, schools, hospitals, those who are mentally or physically disabled, tourists, or non-English speaking individuals. It did not have a back up plan (i.e. going door to door) to notify those without access to television, radio, or the Internet, or in the event of a power outage. Also, St. Bernard, in 2009, only contained a partial evacuation plan, and it was not available to any individual of the public who requested the EOP- only those under special circumstances. This demonstrates the relevance of this concept as an ongoing study, in order for parishes to be prepared for emergencies and hurricanes, in particular.

Analysis of Parish Emergency Operations Plans

The plan of the State of Louisiana, as noted, meets the requirements suggested by the Federal Emergency Management Agency (FEMA) to be a comprehensive emergency operations plan. It is very detailed, spelling out the chain of command, its line of succession, and all of the duties involved for each individual and/or organization. Unfortunately, it does not exactly declare what the state will do; it delegates responsibilities to the individual parishes to elaborate upon resources, food and supplies,

evacuation plans, shelters, and volunteer organizations. Of course, it is certainly not a requirement of FEMA for it to include such information, and it might be more pertinent for residents to look for guidance from their respective parishes, but the fact of the matter is that when local parishes run out of resources, personnel, and funding, or if they are simply too damaged to actually use their EOP, they will be looking to the state to step in and step up to the plate. There are different needs and requirements for different geographical locations in the state of Louisiana. Perhaps the state should reflect this in its plan and make provisions for the different regions. Funding stipulations dictate that they allocate responsibilities to each individual parish first, but the state should be more pro-active, in order to be “prepared.”

It is assumed that the Governor’s Office of Homeland Security and Emergency Preparedness (GOHSEP) website has not been updated. According to their website, Terrebonne Parish and Jefferson Parish are the only two local parishes with FEMA approved emergency operations plans (“FEMA Approved Plans,” Plans Index 2014). First of all, if the website is not updated, it is at a disservice to the residents of Louisiana who are looking for guidance in hurricane preparedness, after all of the hardships during the past fifty years since Hurricane Betsy. If it is, in fact, updated, then this is an entirely different situation. If only two parishes out of nine coastal parishes have been approved, the state is in some serious trouble.²⁸ Especially since, as demonstrated in the results and soon to be analyzed, Terrebonne Parish certainly does not demonstrate a comprehensive emergency operations plan, to date.

²⁸ twenty-one out of sixty four total parishes have FEMA approved EOPs, to date

First of all, functions are listed for each of Terrebonne parish's departments as to what is protocol when a hurricane hits, but they are all extremely general. The emergency operations plan states that this is due to a need both to be "flexible" and due to the fact that it is "impossible to predict if a certain hazard will occur" (2010, Basic-3). Hurricanes are an assured part of Louisiana. They are located on the coast, meaning if a hurricane is to hit, and Terrebonne Parish is in its path, it will most certainly run through the parish before hitting any parishes behind it. Also, they have an entirely separate "Flood Response Plan" as a part of their EOP, indicating that they are at least aware of one certain hazard that frequents their area. They indicate that shelters are only available for tropical storms through category 2 hurricanes. What happens when a category 3 storm or higher hits the parish? There is a "registration process" for those without transportation to get picked up at their homes when an evacuation is mandatory. How is the public notified of this process? When does it take place? What if one is not registered? Do they get left behind due to bureaucracy? As noted, Terrebonne Parish is approximately ninety percent wetlands, and it is located on the Gulf Coast. There is no levee system in place, possibly because of their devotion to conservation of the wetlands. It is argued that a "natural flow regime" (i.e. a lack of infrastructure harnessing ecological and water systems) is the only way that the wetlands can be restored and conserved (Poff, et al. 1997, 769). It is understandable that the parish would have concerns about damaging the already fragile ecosystem surrounding the community, as the wetlands are deemed their first priority, but there must be a way to compromise to promote both immediate safety as well as nurture natural safety barriers for the future. Here is where the interdisciplinary approach as discussed by Azcona (2006), Morrish (2008), McGuire and Schneck (2010) comes in. Various groups of environmental

scientists and engineers should work together to create a situation where both needs and priorities are met. There cannot only be one “right” solution. Building levee systems will protect residents in the immediate future, but it is only contributing to Birkland’s (2006) idea that future mitigation strategies are being ignored in lieu of a “quick fix”. On the other hand, levee systems remaining completely non-existent could potentially wipe out any residents that would one day have benefitted from wetland restoration. Either way, from this situation as well as the rest of the reasoning listed, it is certainly clear that residents in this parish are not safe until comprehensive plans are adapted.

Lafourche Parish is in no better predicament. Daycare children, schools, those hospitalized or incarcerated, the elderly, and visitors (at least while in Louisiana) are socially vulnerable groups, particularly in a time of crisis. How is it possible that there are no provisions for these groups in the emergency operations plan? If there are not enough resources to figure out a way to aid these citizens, then perhaps they should engage in an agreement (which is not currently present) with other adjoining parishes to help them assist these people. There is no re-entry process noted, which leads one to believe that coming back home after an evacuation is utter chaos. For a potentially destroyed area after a hurricane, there needs to be an orderly return process, including time frames for infrastructure to be in working order (water, sewerage, electricity, transportation...etc.), and a sequence of citizen return, in order to ensure efficient recovery and not pandemonium.

Iberia’s plan is slightly more comprehensive, but there are some quirky stipulations that leave questions as to whether or not they are fully prepared. First of all, they list parish pick-up points for those without transportation, but leave no indication of how

those who have no transportation in the first place will get to those points. Granted, an able-bodied individual could walk, if needs be, but what about the elderly or infirm or disabled? They rely upon evacuees to help assist in “mass-feeding”, which is an innovative way to save their budget, yet what if this is not possible? What if people are traumatized from their experience or simply do not want to volunteer, or are unable to do so? Will they be forced to “work” to earn their shelter? They need a stronger plan as to feeding evacuees in this situation.

They also need to re-evaluate their shelter situation. Presently, in the case of mass evacuation and shelter provisions, they rely upon residents to open their homes to those in need. While this may seem like a hopeful and positive outlook, having faith in their fellow community members, many questions are left unanswered: 1.) What if the people who could evacuate did, and thus there are no “open homes” to house people in? It would seem that if there were reason to evacuate people to shelters, then the residents with the means to do so would have left town. If there was a mandatory evacuation for them to leave town, then their homes are not safe to use to shelter people anyway. 2.) Is it reliable to assume people will house strangers in their homes and feel safe? Are they safe? It is unlikely that there will be background checks performed on evacuees or relocated citizens before people open their homes to complete strangers. 3.) Is there any compensation for those who feed and house strangers and neighbors alike, when they may be facing financial hardships from the storm themselves? None of these questions are answered because the concept is mentioned in passing with no elaboration. The plan also states that evacuees bring a minimum of a three-day supply of food, water, and bedding for all of their family members who evacuate. If one is of a low-income status, they might not have these resources on

hand to bring. What happens then? Does the parish provide supplements for these residents? This is not noted in the plan.

They identify those in the parish who may be able to serve as interpreters for non-English speaking residents. There is no elaboration on this concept. What if these interpreters evacuate? Who is on duty as a local official to help with this process? Also, it talks of hospital and residential (nursing homes, group homes, and half-way houses) people who are deemed “non-relocatable” during a storm or evacuation, but, again, does not elaborate. If they cannot be moved, what is the protocol to take care of them? Are they left behind? This is yet another emergency operations plan that needs copious amounts of work, in order to be deemed “prepared” for another major storm.

As shown in the results, Vermilion Parish and St. Bernard Parish have the most comprehensive plans, so little discussion is warranted. In fact, St. Bernard Parish even has a provision for writing “Thank You” notes to vendors, volunteers, aiding parishes, organizations, and the like, after they have assisted the parish in its recovery. The old adage “you get more bees with honey” may not be a scientific fact, but from a public relations standpoint it is a brilliant strategy to procure fast, easy, and efficient aid for future storms.

Both could serve as a rubric for other parishes’ emergency operations plans, and from the research prepared for this study, it would make all parishes more than adequately prepared to “weather the storm” in 2015, if the Louisiana Gulf Coast was hit with another major hurricane. On a positive note, all parishes do have provisions for running full-scale drills at least once a year to simulate an emergency. This is extremely important so as to fit in with the Disaster Incubation Theory’s “thinking outside the box” scenario, if they were to prepare the drills in a best case/worst case scenario. Schwab, et al. avow, “to keep plans up

to date local governments must conduct real-life exercises based on actual risk scenarios” (2007, 274).

The one negative thing that all plans do have in common is that none have provisions for the homeless. It is conceivable that this group of socially vulnerable people is included in the “persons without transportation” or “disabled” group, but there are no specific, standard operational procedures to take care of them. This may be an error on part of all of the parishes, or as stated, may be assumed into another category. If it is intentional it displays a much deeper state of our society to deem these socially vulnerable people unworthy of aid or a provision in a plan that is specifically devised to keep the residents of the community safe.

The last concept is that of the accessibility of these plans. As noted earlier, the Federal Emergency Management Agency proclaims that emergency operations plans are a public document. Certain plans are easily available on-line, some are obtainable through myriad requests, and others are denied entirely to be obtained. This study was actively looking to research the plans and ran into “road-blocks.” What does it say about the preparedness of the parishes if residents do not have easy access to the plans that are to dictate their futures, while living in an area that is prone to hurricanes, especially when they are legally entitled to inspect them?

Results of the Long Term Recovery Plans (LTCRP)

As noted in the historical background section of this thesis, Louisiana, particularly in the Gulf coast parishes, has always been susceptible to hurricanes. However, it took the recent destruction of hurricanes Katrina and Rita to impart some harsh reality for everyone. The parishes have finally realized that they need to engage in some long-term

planning, in order to make sure the residents are safe from future super storms. The following information is from “Louisiana Speaks”, a long term community recovery planning (LTCRP) organization which is a tool that allows parish emergency teams, federal and state agencies, local parish governments, the general public, and displaced Louisianans access to the long-term planning process of each parish. As of July 2014 all information from this project is deemed current.

There is a general pattern of the parishes putting certain issues as their highest priorities. The first involves environmental and coastal protections. Each parish acknowledges the importance of the wetlands and has a plan for preservation, conservation, and restoration, in one form or another. Some acknowledge this more than others. For example, Terrebonne parish is the second largest parish, made up of 90% wetlands, “a restaurant for a half the hemisphere’s migratory birds, a hatching area for a third of the nation’s seafood and, more important than ever, a vital link in a chain of support for America’s supply of oil and natural gas.” They have made this issue their top priority and are attempting full force to make it a national issue, as well.

In terms of structural and non-structural mitigation strategies, most mentioned improved levee systems. Some parishes such as Cameron, Vermillion, St. Mary, and Plaquemines were also concerned with the construction of storm resistant transportation systems, particularly for local highways in the danger zone.

Others, such as Terrebonne, Lafourche, and Plaquemines Parishes were concerned with better evacuation procedures. They are working on north to south routes that will assist in better organizing in the process, rather than using the traditional east to west routes, particularly US 90 highway.

Iberia, Vermillion, Lafourche and Jefferson Parish are enacting stricter land use policies that will encourage people to build and re-build in safer, alternative flood plain zones, while still maintaining residency in the area they love. Each of the parishes are concerned with constructing better houses and buildings that meet structural requirements (such as elevation) in order to protect residents and assure them of their safety. This also ensures people who will provide for the local economy, and attracts visitors who will contribute to it.

As far as economic redevelopment goes, the parishes seem to realize that all of these mitigation strategies are intertwined in securing their economy. Places that were damaged agriculturally will benefit from infrastructure that protects them from flooding. Affordable, safe housing will encourage the fishing and oil industries to return, as well. For many, this provides the means for the local economy to thrive. Iberia Parish and Vermillion Parish see retention of their residents as a retention of their culture, which they think will also bring revenue from the tourism industry, with visitors wanting to experience “authentic Cajun culture.”

Analysis of Louisiana Long Term Community Recovery Planning

Unfortunately, few of the parishes actually acknowledge that a high concentration of socially vulnerable residents need to be addressed, which is odd, given that Vermillion Parish and St. Bernard Parish both have comprehensive short term planning strategies for such people in their emergency operations plans. Iberia Parish acknowledges a high rate of poverty. Their concerns for the erosion of their coastland and lack of jobs available for residents show that they are trying to rectify the situation. They want to implement individual and business emergency operations plans and education on emergency

situations for all. They also believe that protection measures need to be implemented for those who are elderly and infirm. Unfortunately they do not list what these specific plans entail.

The only other parish that mentioned this demographic was Lafourche, and this thorough plan is most surprising, considering their lack of planning procedures for the socially vulnerable in their emergency operations plan. They want to create an emergency database of the location of people with special needs or who are elderly or sick, in order to expedite evacuation during disaster situations. They would also like to education for safety to be provided in public schools. Lafourche Parish plans on developing a series of training programs focusing on family and residential emergency preparedness, and they want to provide transportation for residents who do not have their own means of transportation in a more efficient manner. If they would follow up on these ideas and include them in their EOP, as well, they would be better prepared.

Aside from this, all of the Lafourche Parish long term community recovery plans included the aforementioned strategies for better infrastructure and flood protection, coastal preservation and conservation, land use and zoning policies, evacuation strategies, and increased shelter capacities. It remains to be seen if these long-term plans will be implemented by 2015 or in the near future.

Chapter 6

DISCUSSION AND CONCLUSION

Discussion

If a hurricane of massive proportion were to bear down on Louisiana fifty years after Hurricane Betsy, would the Gulf Coast parishes be prepared? After careful research, this study agrees with McGuire and Schneck (2010) that, while the nine coastal parishes have come a long way, they are still ill prepared to face this type of disaster. First of all, meteorological improvements have made vital warnings available in advance, but it is almost as if there is too much technological information to make predictions accurate. That is, there is so much data made available that weather forecasters are inundated with copious possibilities as to how a storm could possibly play out, but can impart no definitive results. This, coupled with the availability of social media, is not only confusing for residents, but it creates a type of scenario where people do not know what to believe. One minute they are facing a possible category 3 hurricane destroying everything they have worked for, the next minute it is downgraded to a tropical storm, and the next it is about to hit full force in the town next door. Particularly for those who have grown up in hurricane areas, people become desensitized to the danger. Possibly, if there is a way to advance technologically further, so that a very specific forecast can be determined, and if newscasts are not reporting every single instance of pressure change or wind speed, people will take things more seriously. Otherwise, perhaps there is a way that social media can be used to a better advantage, particularly in educating residents about preparedness. It may be pertinent to create a “layman’s” education about hurricanes (for example, gauging coastal

tides, or helping to understand “pressure” readings) so that people don’t just hear a jumble of confusing numbers when listening to a forecast. They will feel more confident about what is going on and what the possible outcomes may be. If nothing else, a briefing of this nature could be included in “Hurricane Preparedness” educational programs or flyers that become an integrated part of the local communities in the Gulf Coast parishes of Louisiana. Pielke, et al. believe that, “given the large costs involved with over-warning, both in unnecessary preparations and in potential public response, it would seem to be in the best interests of forecasters, policy officials, and the general public to obtain a greater understanding the use of hurricane forecasts” (1999).

Advancements in evacuation procedures, as well as a concentrated endeavor to communicate and work with other parishes, seem to be on the right track. An effort to coordinate local, state, and federal procedures is positive, too. Hurricane Gustav demonstrated this type of coordination in 2008. However, there is always room for improvement, so there must be a continued urgency in keeping this relationship integrated. Residents, policy makers, engineers, and the like cannot become complacent. Unfortunately, after recent Hurricanes Katrina and Rita, there is no danger of “forgetting” in Louisiana, at least not for a while. In keeping with the Disaster Incubation Theory, emergency management teams, planners, policy makers, and even residents must constantly and actively look for warning signs, faults, and areas that can be improved in their local hurricane preparedness plans. They must play out various “what if” scenarios, in order to always remain a step ahead. If the concepts of mitigation and preparedness are constantly on the front line of political, economic, and social policy planning, there is a chance that the efforts will only improve.

Most troubling is the concentration of social vulnerability in this state, and the exclusion of community and individual voices being accounted for when it comes to hurricane mitigation planning. Brian Azcona states, “neighborhoods, residents, lower classes included, need a voice in development and all levels of decision making; it cannot be only the elite involved in government decisions and policies. The past traged[ies] and their historical precursors confirm the need for meaningful democratic oversight of the unaccountable growth coalitions active in every American community.”(2006, 100).

Everyone needs to remember that hurricanes do not only affect engineering, meteorological, environmental and political agendas. First and foremost, they affect the human population, and this must always be a top priority. According to Betty Morrow, “effective hazard mitigation and emergency response must begin with an acknowledgement and understanding of the complex ways in which social, economic and political structures result in important differences in the vulnerability of those they are meant to protect and serve” (1999, 12). Sadly, social vulnerability is an issue that is greater than within the context of hazard mitigation and resiliency. At this point these broader problems cannot magically change over night.

The Louisiana State Emergency Operations Plan maintains, “the State encourages close cooperation among tribes, parish governments, and state agencies to ensure protection of people’s lives and property” (2014, 3). The state should become more actively involved, at least through the designation of a “Coastal Coalition,” which would include members of emergency management teams from the nine coastal parishes. These parishes have experienced and know the severity of a storm when it hits. They can empathize and be prepared to better know what the other parish in trouble needs, and they can pool

resources in order to have a more efficient system of funding, aid, food and water distribution, volunteer organizations, and manpower. Anthony Oliver-Smith and Susanna Hoffman assure, “failure to understand regional realities almost inevitably results in poor articulation among the various national and local governmental and non-governmental organizations and institutions involved in disaster management” (2002, 16). People in Washington D.C. may not understand the nuances of need that are experienced when a hurricane hits the Gulf Coast. It is even conceivable that legislators in Baton Rouge haven’t ever fully experienced a major storm, other than to visit and assess damages. The people of the nine coastal parishes have lived through numerous hurricanes and experienced them first hand. Only they can truly understand what is needed, in order to be fully prepared for a natural disaster in their area. In addition, in order to be prepared, these parishes should heed the concept of the Disaster Incubation Theory, since they are constantly in danger of being hit by major storms.

Terrebonne Parish’s EOP and LTCRP provide the perfect examples as to how the Disaster Incubation Theory is applicable to natural disasters. Turner (1976) lists “rigid perceptions” as a component of DIT. As previously discussed, Terrebonne Parish has no levee system in place, more than likely due to a fervent desire to restore and conserve their surrounding wetlands. The parish authorities also “minimize emergent danger” (Turner 1976) by believing that there are no “predictable hazards” in the area (although hurricanes, as known, are an indisputable part of life along the Louisiana coast). Thus, they do not have a door to door warning system in place in case of a power outage, nor does the parish have plans for evacuees shelter and transportation above a category 2 hurricane. Also a major part of Turner’s theory is the concept of poor management, which includes problems of

handling information, and poor communication and miscommunication, and misinterpretations. Terrebonne Parish boasts of plans for better evacuation procedures in its LTCRP, yet the EOP has no evacuation map or routes listed. Residents without transportation are supposed to “pre-register” to be picked up, yet there is absolutely no information listed as to how to proceed with this process, nor does it list what happens in the event of people not pre-registering. Lastly, the DIT deals with the concepts of influence and ignorance through the involvement of outsiders. If there is not an efficient EOP, how are outside people supposed to know how to help aid the citizens of Terrebonne Parish? How are policy makers at the state and federal level to know what the parish needs? They will end up making decisions about a situation of which they know nothing about. Terrebonne Parish has no agreement with outside parishes, either, leaving important decisions to be made concerning additional emergency back up, shelters, and evacuation procedures outside the parish (including transportation assistance) to the last minute. This is most likely when people are not thinking clearly. By 2015 Mother Nature could provide a massive storm and these inconsistencies continuously incubating will only provide for possible catastrophic outcomes.

With all of the information provided here, by a still inexperienced graduate student, why haven't seasoned politicians, policy makers, and emergency management personnel taken action to correct these measures? As mentioned before, in 2002 FEMA was integrated into the U.S. Department of Homeland Security. They no longer had autonomous authority over disasters, but instead fell under the jurisdiction and protocol of DHS. At the time, the wounds from 9/11 were still fresh and the concept of terrorism became the country's major concern. Scholars Thomas Birkland (2006) James F. Miskel (2008) both

speculate that it was due to this merger that mitigation for natural disasters got put on hold. That is, “terrorism” is something the American public and the rest of the world are exposed to and in danger of every single day. A hurricane might or might not happen in any given year. They believe that “immediate threats” are deemed more worthy of resources than are “possibilities.” Also, they lament, the issue of terrorism is one of national security, as opposed to a hurricane which will affect only selected parts of the population. It may not seem fair to those who have their lives devastated by a storm, but their theory presents some logic. What is not clear, however, is how this sense of logic has not changed over the past twelve years. FEMA was incorporated into DHS in 2002. Hurricanes Katrina and Rita (and even Gustav and Ike) have come and gone since then, proving that natural disasters can, too, have a massive effect on our country. This is certainly a top priority to be addressed within the field as it grows.

Promoting disaster mitigation strategies instead of recovery plans needs to be the primary goal in disaster policy for decision makers in the future (Birkland 2006,106). This concept lies mostly on the shoulders of local governments, but there must be a trickle down effect of pressure ensuing from the federal government to the state government, to the local parishes. It is understandable that the urgency of a disaster situation falls by the wayside once the affected society returns to normalcy, but it will only help to reduce the cost of relief and recovery if stronger mitigation policies can remain a priority in times of non-disaster lawmaking, and residents of the areas, socially vulnerable and otherwise, will remain safer in the long run.

Limitations and Suggestions for Future Investigation

As mentioned numerous times throughout this research, there were several parish plans that were unobtainable for this study. This means there is not a truly accurate picture of whether or not all nine coastal parishes are prepared for another major storm. Given the statistics of the ones that were accessed, however, it might be safe to say that only forty percent of these parishes are adequately prepared. Ideally, future research would not only have access to all nine parish EOPs, but the plans would all be updated at least within six months of the last state plan. It would also be beneficial to interview the Heads of Parish Department of Homeland Security and Emergency Preparedness, in order to question the lack of provisions in their respective plans or to ask to explain any stipulations that are unclear. Lastly, it would be highly advantageous for a researcher to participate in or observe each of the yearly drills that each parish supposedly takes part in, simulating an emergency situation and their responses. It would prove to allay any fears about unpreparedness if an efficient response is witnessed first-hand. Also, at times, it is useful for an “outsider” to witness a scenario and observe things that those involved are too close to, to see. Perhaps any input of what is lacking could be added in order for the parishes to create a more comprehensive plan.

Conclusion

This thesis has demonstrated what policies (or lack thereof) are in place to protect the socially vulnerable populations along the Gulf Coast of Louisiana. It has shown what provisions have been made to assist these residents in both preparation and recovery from another major storm, as well as what is still needed in the planning process. It has also provided lessons learned from the major storms following Hurricane Betsy in 1965 and

addresses what is still being ignored. It has met the three goals mentioned in the introduction by arguing for a separate set of emergency operational procedures for the nine Gulf Coast parishes, in the form of a coastal coalition, proving the Disaster Incubation Theory can be applied toward natural disasters, particularly hurricanes, and it has ultimately demonstrated that the Louisiana Coastal parishes are not yet ready to weather another “super-storm”.

As mentioned, the population in Louisiana has actually increased significantly from 1960 to the present day. This means that there is more density in the high-risk area of the U.S., which is more dangerous. As of now, the Louisiana Gulf Coast parishes are not quite ready to weather another major storm in 2015. Structural mitigation cannot solely be relied upon. Stronger non-structural mitigation policies must be implemented, such as land use and zoning, particularly along the coast. This will also help to reduce the depletion of the ever-important natural protections, the wetlands, which, of course, need to be restored with a concerted effort, as well. Most importantly, provisions must be made both in the short term and in long-term recovery plans for those who are socially vulnerable along the coast. The greatest infrastructure in the world won't matter if there are not citizens to partake in its use. This is the fact, plain and simple. It might not be possible to eradicate all social vulnerability in general, although it is a goal that should be continuously addressed by everyone. The least that can be done is to have local parishes maintain impermeable plans as to how to care for these residents before, during, and in the aftermath of a major hurricane that is easily accessible and clearly understandable for all. It is within this framework that Louisiana can prove to be ready and successful if another storm should strike.

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APPENDICES

Appendix A: Criterion Used From Disaster Accountability Project to Assess Parish Emergency Operations Plans (EOPs)

1. Evacuation Plan:

- Does it include provisions for the following:
 - day care facilities/schools
 - hospitals/nursing homes/correctional facilities
 - elderly
 - disabled
 - homeless
 - those without independent transportation (including tourists)
 - pets
- Is there a clear and efficient re-entry process, once evacuation is lifted?
 - is there a clear procedure as to what to do if residents return and there are parts of infrastructure unavailable (electricity, water/sewerage, transportation)?
 - how are evacuated residents to be notified of the lift?
- if NO EVACUATION: is it clearly notated as to where residents can obtain food/water/medical assistance, if needed?
- Is there a well-defined evacuation route provided/available to those who have cars
- is there any agreement/plans with adjoining parishes for evacuation route, in order to prevent traffic jams?
- Are there pre-determined shelters available for people to evacuate to, and how is this information provided?

2. Decision Making:

- Is there a clear chain of command presented, noting specific duties?
- Is there a back-up plan in place in case anyone is unavailable for his or her duties?
- How are decisions and information transmitted to the public?
 - is there a public access telephone line or website where people may get information?
 - in the event of a power outage, how is the information conveyed?
 - how is this information conveyed to those who are hearing or visually impaired, or do not speak English?
 - How are out of state travelers (tourists or business people) notified?
 - In the event of elderly, infirm, or socially isolated residents (with no family or friends, or who choose to be secluded- or even for those without TV/radio/internet...etc.) is there a local emergency group who transmits information door-to-door?

3. Has the local parish plan been updated within the last six months of the last State plan update?
4. Is it available by request from the public? If so, how easily accessible is it?

Appendix B: Criterion Used to Assess Louisiana Recovery Project

1. Does it include any plans for economic redevelopment for those who lost their livelihood due to the storm (i.e. fishermen, agricultural employees, those employed by oil industry or tourism industry)?
2. Are there plans for safer, more affordable housing for both low-income residents and those who may have lost everything or need this type of assistance due to storm?
3. Have newer land use policies or zoning laws been made?
4. If residents have been displaced:
 - are they assisted with the process both physically and financially with relocations?
 - will homes be allotted to these people?
 - is there any form of education program or community assistance program where they can go for questions?
5. Are there plans to help assist those in need bring their homes up to new building code standards?
 - are there any legal assistance or educational programs offered in order for them to do so and to know what they need and what their rights are?
6. Is there assistance (both education and monetary) available for those who have a home in a newly re-zoned floodplain plan with insurance rate hikes?
7. Are schools/hospitals/jails...etc. being updated or rebuilt to meet building codes that are safer?
8. Are there any improvements in evacuation policies and procedures, if needed?
9. Are there plans, if needed, for better infrastructure (roadways, bridges, levees...etc.) so as to protect residents and ensure for a safe evacuation if needed?
10. Are plans in place to assist and/or eradicate any homeless residents (not due to loss of housing from storm- just in general) before the next storm? For instance, will there be shelters built and/or job programs to keep them off the street and safe in case of future storms?
11. Are there plans for improvement in healthcare services and facilities, particularly mental healthcare, for those who may be traumatized from a storm (due to storm, loss of job/family/home...etc.)?
12. In order to protect both natural resources and guard against future storms, are there plans for the restoration/preservation of the wetlands surrounding their communities?
13. Do they plan to have any community programs for the public concerning hurricane education or preparedness?

Appendix C: Email Correspondence

Initial Request:

Dear (Head of the Dept. Head of Homeland Security and Emergency Preparedness goes here):

I am currently a graduate student at the university of New Orleans in the Urban Studies department, with a concentration on Hazard Mitigation. In November, I will defend my thesis, in order to complete my Masters of Science. For this thesis, I am examining the Emergency Operations Plans of the nine coastal parishes of Louisiana.

I was able to gather information on line from the Louisiana Speaks website about the various parishes' proposed changes to plans after Hurricanes Katrina and Rita, but I have been unable to locate specific parish Emergency Operation Plans. I would be greatly honored and appreciative if you would be so kind as to send me a copy of your Parish EOP, as well as any other information that you feel might be important about your parish and/or its planning committee/procedures/recovery efforts post-storms. If it is something that can be sent on-line to me, via this email address (dlboudr3@uno.edu or daniboudreau@gmail.com), that would be wonderful. Otherwise, I am also receptive to mail via the post:

Danielle Boudreau
3322 Danneel Street
New Orleans, LA 70115

Thank you very much for your time. I appreciate any help you can give me and look forward to hearing from you.

Sincerely,

Danielle Boudreau
MSUS Candidate 2014
University of New Orleans
(310) 722-7662

Responses:

Vermilion parish:

Danielle,

I sent you a cd copy of the EOP as it is 852 pages and too large to email. Evidently you have not received it, so I will have my assistant send you another copy.

Thanks,
Rebecca M. Broussard, LEM
Director, VPOHSEP

Iberia parish:

Danielle,

This should be the whole plan. You should have received the basic plan with annexes A through V and the Household Pet Plan. If you didn't receive any of the messages, please let me know what you have missing and I'll resend it. Good luck!

Norma Hebert
Administrative Assistant
Iberia Parish Office of Homeland Security and Emergency Preparedness
337-369-4427

St. Mary parish:

Danielle,
Got your email and I will try and send you (by email) my Emergency Plan.
If not I will burn a copy on disc and send it that way. I am going to Belle
Chase Air Base next week....could I drop it off to you then...or at the UNO
Security Office???
Duval Arthur
St. Mary Parish OHSEP
985-518-8882 (cell)

Plaquemines parish:

Dear Mrs. Boudreau,

Due to our plan containing information on critical infrastructures within Plaquemines Parish we can not disseminate the plan to the general public.

I am sorry we are unable to accommodate your request.

Respectively,

Patrick A. Harvey, LEM
Deputy Director
Plaquemines Parish Government
Office of Homeland Security & Emergency Preparedness
8056 Hwy 23 Ste 308
Belle Chasse, Louisiana 70037

504-297-2477

Jefferson parish:

(CC'd)
Charlie,

The EOP is a public document. Can you email this student a copy?

Thanks,

Bob Darcey
Hazardous Materials Coordinator
Jefferson Parish
504-736-6208 (w)
504-736-6247 (f)

Good Evening Danielle,

Although the EOP is a plan for public protection, I will need to verify with our Parish Attorney's Office the allowance to release this document. The EOP is an all-hazard plan written in compliance of the LA Governors' Office of Homeland Security and Emergency Preparedness template, guiding this plan to be writing with Emergency Support Functions (ESF's) with a basic plan and several annexes for specific task. I also have to verify if a

public records request would be necessary.²⁹

Thanks,

Charles M. Hudson, LEM

Director of Jefferson Parish Emergency Management

910 3rd Street

Gretna, LA 70053

(504) 349-5360 office (504) 227-1315 fax

St. Bernard Parish:

Danielle,

Attached are 12 of 25 files that make up our EOP. This is a draft of our 2015 plan.

I will send the remaining 13 files next.

John

John Rahaim, Jr., CEM, LEM

Deputy Director,

Office of Homeland Security & Emergency Preparedness

St. Bernard Parish Government

8201 W. Judge Perez Dr.

Chalmette, LA 70043

504-278-4267(Office)

504-271-7343(Fax)

504-442-1040 (Cell)

jrahaim@sbsp.net

²⁹ Ultimately I received a large legal document from the Jefferson Parish office stating that my request for the EOP was “vague” and “burdensome”. The document is too large to include but is available upon request

IRB inquiry:

No application or approval is necessary.

----- Original message -----

From: Danielle Lea Boudreau

Date:09/03/2014 1:56 PM (GMT-06:00)

To: Robert D Laird ,UNO Institutional Review Board

Subject: Do I need IRB approval for this?

Dear Dr. Laird and Board,

I am about to finish my studies in the MSUS program by presenting my thesis this fall for graduation. I am using academic journals, books, databases...etc (basically all literature in some form or another) for my research. However, my research pertains to the hurricane preparedness of each of the nine coastal Louisiana parishes (policy-wise). I am not talking to human beings, but, rather, I would like to obtain copies of the parish Emergency Operations Plans and I need to e-mail or call the respective departments in each parish to ask for a copy of their plan. Do I need to submit an IRB application for this purpose? My committee chair suggested that I look into it, just to be on the safe side.

If you could advise me on this situation I would be greatly appreciative. Thank you for your time and I look forward to hearing from you when it is convenient.

Sincerely,
Danielle Boudreau

VITA

The author was born in Taunton, Massachusetts. She obtained her Bachelor's Degree in Anthropology from the University of Massachusetts in 2012. She joined the University of New Orleans' Urban Studies graduate program to pursue a Masters in Urban Studies with a concentration in Anthropology in 2012, as well, and obtained a Certificate of Degree in Hazard Mitigation in 2014. Recently, she was a presenter at the Rural Sociological Society conference, where she spoke about the preparation of the nine Louisiana coastal parishes in regards to hurricane preparation. She has certifications from the Federal Emergency Management Agency in "Fundamentals of Emergency Management" (2012) and "Decision Making and Problem Solving" (2012).