

**PROTOCOL DEVELOPMENT FOR PRO-ACTIVE EMERGENCY RESPONSES BY
VETERINARY CLINICS AND HOSPITALS**

A Thesis

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By
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ABSTRACT

The Gulf Coast hurricanes of 2005 necessitated the development of a guidance document concerning emergency preparedness and response for veterinary clinics and hospitals. The aftermaths of the largest natural disasters in United States' history, namely Hurricanes Katrina and Rita, brought to light the need for a protocol designed specifically for veterinarians and veterinary practitioners. Disaster management information was synthesized and modified to be subject-specific for the veterinary community. This synthesis resulted in the creation of the Veterinary Emergency Preparedness and Response (VEPR) manual and website.

Two types of data were collected to develop the emergency protocol; interviews with veterinarians and staff and site visits to affected clinics and hospitals were conducted to gather primary data for inclusion in the preparedness and response document, and preexisting information concerning disaster management from an array of sources was compiled and reviewed. A preliminary manual was provided to affected individuals for feedback and input and the subsequent comments were formatted and incorporated into a final protocol recommendation.

Two deliverables resulted from the current study including a hardcopy VEPR manual and website based on the information from the manual, <<http://info.envs.lsu.edu/vepr/>>. The guidance document provides pertinent information for pre-hurricane planning, weathering the physical storm, and post-hurricane recovery. Together the manual and website facilitate the widespread distribution of the emergency recommendations to the veterinary community and are expected to be a comprehensive source for specific disaster management materials. The VEPR manual and website are resources that can be used as tools to mitigate damaging affects

particularly to lessen the post-disaster burden on the staff and operations of veterinary clinics and hospitals.

VEPR provides a foundation for the development of viable emergency preparedness and response protocols for other types of natural disasters. Updates of VEPR will be needed so as to assure that the recommended protocol continues to be timely for national and global applications.

INTRODUCTION

1.1 Research Purpose

In August and September of 2005, the Gulf Coast of the United States experienced two of the most severe storms in recent history, hurricanes Katrina and Rita. All aspects of life in the region were affected, including the functioning of veterinary clinics and hospitals. Veterinarians in Louisiana, Mississippi, and Alabama attempted to continue clinical operations, often without aid of any kind after the major hurricanes. Until conditions stabilized, these individuals lived day-to-day, caring for their families and homes, caring for their patients and clients, and attempting to preserve a semblance of order and normalcy in the clinics and hospitals.

The aftermath of the storms brought to light the need for a guidance document designed specifically for veterinarians and veterinary practitioners following such disasters. Information concerning animal preparedness and response existed in various places including the Internet, handouts, pamphlets, and other manuals. Spread over an assortment of mediums, it was necessary to synthesize the emergency protocol material into a single, comprehensive, highly readable, useful source created to meet the particular needs of veterinary clinics and hospitals. As a result, the Veterinary Emergency Preparedness and Response (VEPR) manual was developed for use in the emergency planning and response situations faced by veterinary clinics and hospitals in the event of major natural catastrophes. The guidance document provides pertinent information for pre-hurricane planning, weathering the physical storm, and post-hurricane recovery. The manual is a tool that can be used to reduce the damaging effects that hurricanes and other natural disasters have on the individuals and operations of veterinary clinics and hospitals.

1.2 Overview of the Development of Emergency Management Protocol

With first-hand experience in emergency situations generated by impending and subsequent occurrence of hurricanes, veterinarians were, and continue to be, the best source of information for a manual concerning preparedness and response. The VEPR Manual was created, in part, by conducting interviews with veterinarians who practiced in the affected areas. The interview processes aided in identifying the critical emergency situation issues that needed to be addressed in a preparedness and response manual. The most important topics were determined based on the number of veterinarians who spoke about the subject, their emotion concerning the matter, and other such indicators of significance. Each topic was given a specific section in the emergency preparedness and response manual. The VEPR manual endeavors to cover the subject thoroughly, providing all information pertinent for a successful response to natural disaster induced emergency situations.

The creation of the VEPR manual is a part of a large-scale study currently undertaken by the Louisiana State University Hurricane Center to assess and remediate public health impacts due to hurricanes and major flooding events (APPENDIX A). Representatives from the Governor's Office of Coastal Activities, the Louisiana Department of Environmental Quality, the Louisiana Office of Mental Health, the Louisiana Office of Public Health, Louisiana State University Medical Schools and Hospitals, and New Orleans emergency preparedness managers form the committee conducting research toward the completion of the study. The research, started in 2002, is a five-year comprehensive pilot study comprised of many aspects including extensive data collection and modeling (Figure 1.1). In the framework of this multi-disciplinary approach and with an understanding of the immense impacts of hurricanes Katrina and Rita on the veterinary community, the development of the VEPR document is included as a part of the

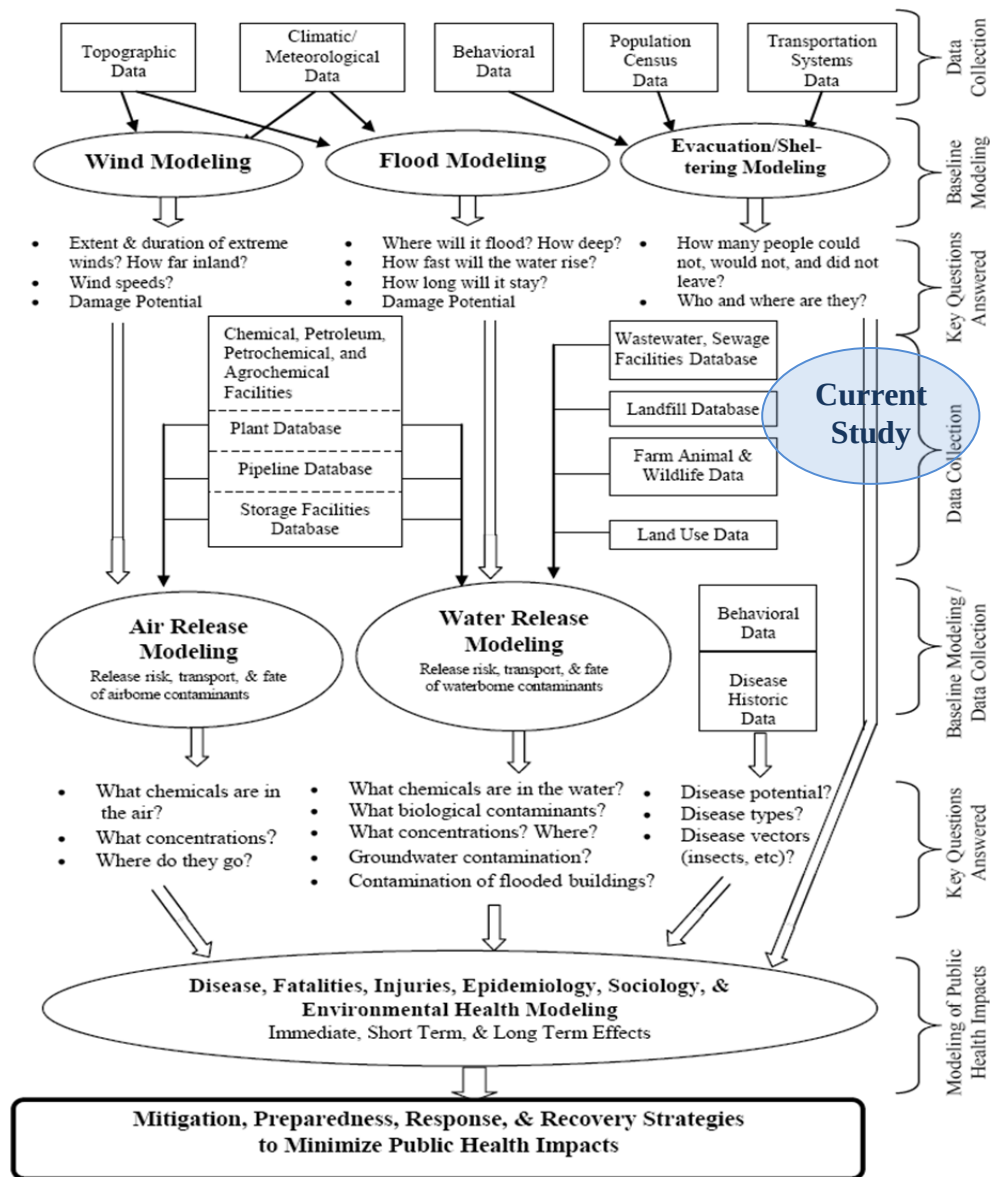


Figure 1: Comprehensive flowchart of research activities

Figure 1.1 Flow Chart From Original Work Plan; Blue Oval Describes the Involvement of the Current Study.

Source: Board of Regents (BoR) Health Excellence Fund (HEF) Project, LSU Hurricane Center

(Note: The flow chart is a summary diagram from the original BoR HEF project, describing the course of action for a five-year pilot study. The current research, namely the creation of the Veterinary Emergency Preparedness and Response (VEPR) manual, is not directly indicated in the scope of the original work plan as the funding for the protocol development was appropriated several years into the study. The blue oval indicates the input of the current project into the original study as it contributes data concerning the impacts of natural disasters on the veterinary community in order to better model health impacts over a range of circumstances.)

mitigation efforts in emergency management. Ultimately, the VEPR manual is a set of recommendations for veterinarians and practitioners intended to lessen the impacts of future natural disasters.

BACKGROUND RESEARCH

2.1 Storm Events

The 2005 Atlantic hurricane season was one of the most active storm season on record. Twenty-eight storms formed between the 1 June and 30 November, including twenty-seven named storms and one unnamed, breaking the previous record of twenty-one storms set in 1933 (Beven, 2006). Fifteen storms developed into hurricanes and seven of the hurricanes were Category 3 or higher; four reached Category 5 status, occurring for the first time since record-keeping began in 1851. Seven of the storms made landfall in the United States, the worst of which was Hurricane Katrina followed by Rita several weeks later. The storms resulted in over 100 billion dollars worth of damage and the loss of more than 2,280 lives (Brinkley, 2006).

2.1.1 Hurricane Katrina

Hurricane Katrina, potentially the most devastating natural environmental calamity in United States history, was an extraordinarily powerful and deadly storm. Katrina was formed by the interaction of a tropical wave that departed the west coast of Africa on 11 August 2005, and the remnants of Tropical Depression 10 (Beven, 2006). The two systems consolidated east of the Turks and Caicos and satellite classifications of the storm began in the afternoon of 22 August (NHC-Katrina, 2005). Tropical Depression 12 was designated on 23 August as the system organized over the southeastern Bahamas (NHC-Katrina, 2005). Early in the morning of 24 August, a distinct band began to wrap around the north side of the storm's circulation center and the cyclone became the eleventh tropical storm of the 2005 Atlantic hurricane season, Katrina (Beven, 2006). After initially moving northwestward, Katrina turned west toward southern Florida, strengthening until reaching Category 1 hurricane status on the Saffir-Simpson hurricane

scale less, than two hours before its center made landfall (Beven, 2005).

Katrina made landfall for the first time in the United States near the border of Miami-Dade County and Broward County at approximately 2230 UTC August 25 (NHC-Katrina, 2005). The storm moved west-southwestward over the Everglades with maximum sustained winds of sixty knots and emerged as Tropical Storm Katrina over the warm waters of the southeastern Gulf of Mexico on 26 August (Figure 2.1) (NHC-Katrina, 2005). Katrina quickly regained hurricane status as it moved into the warm waters of the Gulf and embarked on two periods of intensification (NHC-Katrina, 2005). With 100 knot winds, Katrina became a Category 3 hurricane 365 nautical miles southeast of the Mississippi River in the morning of 27 August (NHC, 2005). A new outerwall formed producing a significant expansion of the storm's wind field; Katrina nearly doubled in size and tropical force winds extended about 140 nautical miles from the hurricane's center (NHC-Katrina, 2005). Within twelve hours Katrina progressed from a low-end Category 3 hurricane to Category 5 storm, reaching its peak intensity of 150 knot winds on 28 August (NHC-Katrina, 2005). Hurricane force winds reached ninety nautical miles

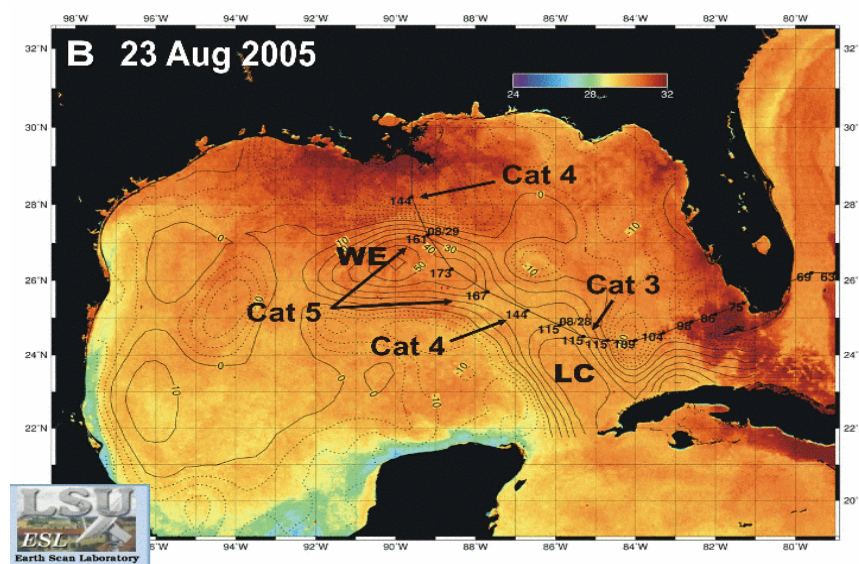


Figure 2.1 Water Temperature in Gulf of Mexico During Hurricane Katrina Event.
Source: Louisiana State University Earth Scan Laboratory

from Katrina's center, and tropical storm winds were felt 200 nautical miles away from the eyewall (NHC-Katrina, 2005).

Approximately forty-five hours before landfall on 27 August, a hurricane watch was issued for the Louisiana coast from Morgan City to Pearl River (NHC-Katrina, 2005). Seven hours later, the hurricane watch was extended eastward to include the entire coastline of Mississippi and Alabama (NHC-Katrina, 2005). The Federal Emergency Management Agency (FEMA) stated approximately 1.2 million people in the Gulf Coast region were under an evacuation order; the evacuation orders proved to be prudent considering the hurricane's far-reaching winds and storm surge as well as its rapid path to the coastline (NHC-Katrina, 2005).

Late on 28 August, Katrina turned northward and made landfall as a Category 3 hurricane with maximum sustained winds of 110 knots near Buras, Louisiana (Beven, 2006). The storm continued north and made its final landfall on 29 August at the mouth of the Pearl River as hurricane-force winds remained nearly constant (NHC-Katrina, 2005). Katrina moved inland over southern and central Mississippi quickly falling to a Category 1 storm and soon after, decreasing to tropical storm status northwest of Meridian, Mississippi (Beven, 2006). On 30 August, moving through the Tennessee Valley, Katrina was reduced to a hurricane depression and continued to move northward until it was completely absorbed by a frontal zone over the eastern Great Lakes on 31 August (Figure 2.2) (NHC-Katrina, 2005).

The eye of Hurricane Katrina made its closest approach to downtown New Orleans, Louisiana at about twenty nautical miles to the east (NHC-Katrina, 2005). The metropolitan area experienced Category 1 to Category 2 strength winds but the major damage to the city was the result of a massive storm surge (NHC-Katrina, 2005). Data indicates a storm surge of fifteen to nineteen feet in eastern New Orleans, St. Bernard, and Plaquemines Parish while the south shore

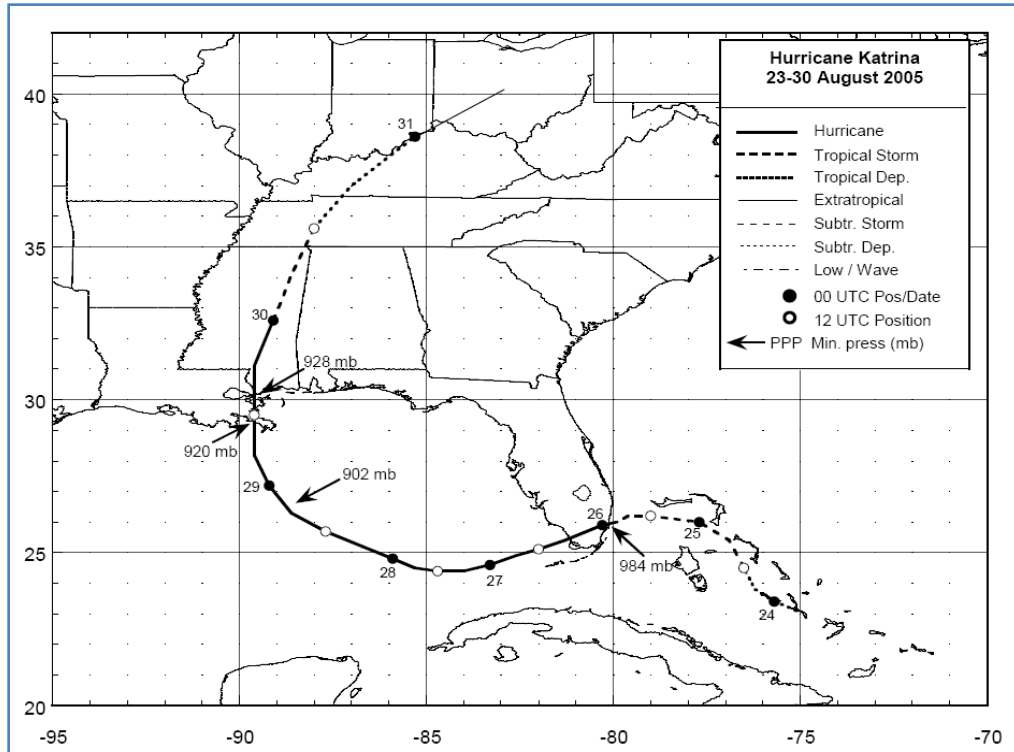


Figure 2.2 Track and Development of Hurricane Katrina.

Source: Tropical Cyclone Report Hurricane Katrina, National Hurricane Center

of Lake Pontchartrain and western New Orleans experienced ten to fourteen feet of water (Beven, 2006). The surge severely compromised the city's levee system and several embankments were breached or overtopped on the day of landfall. Water was pushed into the Intracoastal Waterway, the Industrial Canal, and Lake Pontchartrain and as a result, the London Avenue Canal and the 17th Street Canal were breached (Table 2.1). Within a day of Katrina's landfall, approximately eighty percent of the city of New Orleans was flooded with varying depths up to twenty feet (NHC, 2005). Forty-three days later, the Army Corps of Engineers reported all of the water had finally been removed from the city (NHC-Katrina, 2005).

Katrina produced seven to ten inches of rainfall in the New Orleans metropolitan area. If the rainfall had been the only source of water, the overtopping of levees throughout the city would have been substantially less damaging (van Heerden, 2006). Catastrophic flooding,

particularly in the Orleans Metro area, would not have occurred. Instead, eighty-eight percent of the flooding in the area, by volume, was a direct consequence of the breaches in the 17th Street and London Avenue canals (van Heerden, 2006).

Table 2.1 Summary of Levee Failures and Subsequent Flooding in Greater New Orleans on Monday August 29, 2005 (amended).

Source: *The Storm*, Ivor van Heerden (2006)

Time	Canal Breach/Overtopping and Result
4:30 A.M.	• Minor breach at intersection of CSX Railroad and northern arm of Industrial Canal • 13 hours of flooding in New Orleans East and Orleans Metro
5:00 A.M.	• MR-GO levees fail • Water floods St. Bernard Parish continuously for several days
6:10 A.M.	• Katrina makes landfall; storm surge overtops levees on east and west banks of river • Water floods into neighborhoods of Plaquemines Parish
6:30 A.M.	• Levees in the Funnel are overtopped • New Orleans East and St. Bernard are flooded
6:50 A.M.	• Levees on both sides of Industrial Canal are overtopped • Water floods Orleans East, St. Bernard, and Orleans Metro
7:30 A.M.	• Levees on west side of Industrial Canal are breached • Flooding lasts 12 to 15 hours
7:45 A.M.	• Levee on east and southern end of Industrial Canal breaches in two sections • Wall of water is sent in the Lower Ninth Ward and St. Bernard
8:15 A.M.	• Embankment at the foot of Orleans Canal is overtopped • City Park floods for 3 hours
8:30 A.M.	• Levee behind Lakefront Airport is overtopped by storm surge • Water floods area for 3 hours
9:30 A.M.	• Levee on east side of London Avenue Canal is breached • Catastrophic flooding in Orleans Metro
9:45 A.M.	• East side 17th Street Canal breaches • Orleans Metro is flooded
10:30 A.M.	• West side of London Avenue Canal is breached • Orleans Metro is flooded

In addition to the disastrous flooding of New Orleans proper and the surrounding area, widespread wind and water damage was experienced along the Mississippi coastal zone. Hurricane force winds extended seventy-five nautical miles east of Katrina's center during landfall. As a result, a storm surge of twenty-four to twenty-eight feet, reaching twenty miles wide and centered roughly on Bay St. Louis, Mississippi, assailed the Mississippi Gulf Coast (NHC-Katrina, 2005). Hancock and Harrison Counties were devastated as the storm surged

penetrated six to twelve miles inland of the coast, crossing Interstate-10 at many locations. Waveland, Mississippi lost eighty percent of its city's buildings (*MMRW*, March 2006). The storm surge reached even farther east, affecting areas from Pascagoula, Mississippi to Dauphin Island, Alabama; flooding was reported along Mobile Bay and storm gauges recorded six feet of surge along the western Florida panhandle (NHC-Katrina, 2005).

2.1.2 Hurricane Rita

Approximately three weeks after Katrina devastated the Gulf Coast region, Hurricane Rita, a Category 3 storm, made landfall in southwest Louisiana near Sabine Pass on 24 September 2005. Two million people, the largest evacuation in United States' history, left southwest Louisiana and east Texas (NHC-Rita, 2005). The hurricane produced a storm surge that entirely destroyed southwest coastal communities of Louisiana including Holly Beach, Cameron, Creole, Grand Cheniere, and Pecan Island (NHC-Rita, 2005). Further inland, homes and businesses in Lake Charles and Vermillion Parish Louisiana as well as Jefferson County Texas were flooded and damaged (NHC-Rita,2005). Tornadoes, fresh water flooding, storm surge, and winds caused additional destruction to Katrina-affected regions of east Texas, Louisiana, Mississippi, Alabama, and the Florida Keys.

2.2 Post-Storm Dynamics of the Gulf Coast Region

The cost of Hurricanes Katrina and Rita, both monetarily and in human lives, was tremendous. According to the current figures given by the Louisiana Department of Health and Hospitals, the death toll stands at 1,464 individuals in the state of Louisiana (LDHH, 2006). The total number of fatalities related directly or indirectly to Hurricane Katrina, including deaths in Florida, Alabama, and Mississippi, has reached approximately 2,000 people (NHC-Katrina, 2005). The storm was the deadliest of the last seventy-nine years and third most deadly

hurricane ever experienced in the United States. Seven deaths were directly attributed to Hurricane Rita (NHC-Rita, 2005).

Half a million people resided in shelters in the first two weeks after Hurricane Katrina, and one million people were displaced in the following months (van Heerden, 2006). 354,000 homes along the Gulf Coast were destroyed beyond repair (Manuel, 2006). Thousands of businesses and critical infrastructure was lost throughout the region making Hurricane Katrina generated eighty billion dollars worth of damage (Beven, 2006). Far and away, Katrina caused the largest damages in real dollar terms of any hurricane in United States history (Baade, 2007). Rita was responsible for a ten billion dollar loss, adding to the existing economic strain in the coastal states caused Katrina (NHC-Rita, 2005). Accounting for a major component of the region's economy, the hurricanes caused disruption in oil and gas production and infrastructure; ninety percent of manned platforms and eighty-five percent of working rigs were evacuated at some time during the storms. Based on estimates, 457 pipelines equaling 22,000 miles were damaged and 113 of the approximate 4,000 oil-drilling platforms in the Gulf of Mexico were destroyed as a result of hurricanes Katrina and Rita (MMS, 2006). Between August and September 2005, thirty percent of America's refining capabilities were interrupted, resulting in losses of 396,000 barrels of oil and 1.8 billion cubic feet of natural gas per day.

Health and environmental hazards were rampant after the storm including standing flood water, lack of potable water, sewage treatment, and electricity, chemical and oil spills, insects, food contamination, tainted fish and shellfish populations, mold growth, tremendous amounts of debris, and more (Manuel, 2006). As a result of the massive evacuations, large numbers of displaced peoples lived in crowded conditions in evacuation centers. Damage to health care infrastructure, human public health concerns included infectious disease outbreak, injury, mental

health disorders, and exacerbation of preexisting chronic conditions (*MMWR*, July 2006). Many individuals were without jobs or job prospects and therefore, no health insurance (Manuel, 2006). Mental health illnesses have persisted in the aftermath of the storm with instances of post-traumatic stress disorder increasing in the two years following Katrina. This does not follow normal trends for post-traumatic stress disorder, causing concern in the medical health community concerning the overall mental well-being of the Katrina affected populations (Kessler, 2007).

2.3 Federal Response to Hurricane Katrina

Federal responsibility in emergency management situations, like those following a major natural disaster such as hurricanes, is defined in the United States National Response Plan (NRP) as intervention following the outstripping of local and regional resources (US Department of Homeland Security, 2004). The Federal Emergency Management Agency (FEMA), a response organization within the Department of Homeland Security, is responsible for taking the lead to provide supplies and support to affected areas. Federal assistance occurs after local governmental resources are no longer sufficient to meet the demands of the post-disaster situation. Support from the federal government includes immediate post-disaster aid and cleanup as well as long-term assistance in regions whose communities are destroyed. (Bourget, 2005). The Department of Defense can also be enlisted by the federal government for troop support as well as sea and airlifts help for search and rescue missions (Bourget, 2005).

With Katrina looming in the Gulf of Mexico, President George W. Bush declared the Gulf Coast a national disaster area on 25 August 2005. The declaration authorized the distribution of federal disaster assistance through FEMA to the region (Chandler, 2007). Under the Stafford Act the funds and materials are distributed to governmental and nonprofit

organizations as well to individuals to supplement the cost of recovery. On Friday, 26 August 2005, Louisiana Governor Kathleen Babineaux Blanco issued a state of emergency declaration for Louisiana effective through Sunday, 25 September 2005 (Proclamation No. 48 KBB, 2005). As Katrina approached, FEMA placed fifty medical assistance teams and twenty-five search-and-rescue task forces at predetermined staging sites in the Gulf Coast region (Bourget, 2005). 1,700 trucks loaded with Meals Ready to Eat (MREs), water, and ice were mobilized to enter the region after the storm made landfall. Eight Navy ships loaded with supplies and personnel were also positioned in the Gulf of Mexico (Bourget, 2005). After landfall, the American Red Cross established shelters for victims and the United States Coast Guard executed more than 33,000 rescues; twenty-eight FEMA Urban Search and Rescue teams were deployed, several on more than one occasion (Halton, 2006). The United States Army Corps of Engineers, supported by FEMA, began repairing levees, pumping water from the city, installing emergency generators, removing debris, and installing tarps over damaged buildings, and other types of disaster response functions (Bourget, 2005).

The destruction resulting from Hurricane Katrina exceeded the capacity of the response that federal, state, and local officials were ready to deploy (Halton, 2006). In an attempt to correct the shortcomings, Michael Chertoff, Secretary of the Department of Homeland Security, officially took over federal, state, and local emergency response operations on 30 August 2005 (Brinkley, 2006). Ultimately, Katrina caused 93,000 square miles of destruction, displaced more than 770,000 people, and account for more than 1,400 deaths and 2,000 missing persons (Halton, 2006). More than 1.3 million households were directly impacted by the storm.

Glaring errors in the response to Hurricane Katrina were exhibited in the lack of communication between federally controlled organizations. The amount of resources available

for use were more than sufficient, however, the distribution of these resources was poorly executed resulting in the crisis situations faced by those remaining in New Orleans after the storm's landfall and returning to the region in the months following.

2.4 Veterinary Community Impact

As it has been poignantly stated, Hurricane Katrina was an equal-opportunity storm. All aspects of life in the Gulf South region were impacted, including the veterinary community. Approximately 1,100 veterinarians and 250 practices were affected by the storm, and almost all of the clinics in the heavily impacted areas of closed for a period of time after the event (JAVMA News, 2006). Only fifteen percent of the veterinary clinics and hospitals in coastal Mississippi survived Katrina (Tremayne, 2006). Four practices in Slidell and thirty-six in New Orleans were completely destroyed by the storm (Figure 2.3). As of 19 November 2005, nineteen clinics in Louisiana, made up of thirty veterinarians, were still not operational. Most of the veterinarians, however, remained in the state, practicing elsewhere, with hopes of eventually returning to their practices (JVMA News, 2006).



Figure 2.3 The Inside of Lakeview Veterinary Hospital After Hurricane Katrina.
Source: Veterinary Relief Fund Image.

Many veterinarians did not qualify for governmental loans or grants and as a result private foundations like the American Veterinary Medical Foundation (AVMF) provided most of the financial assistance to the veterinary community (DVM, 2006). Through the 2005 Relief Hurricane Relief for Veterinarians Program of the AVMF, 2,000 dollar grants were awarded to individual veterinarians who experienced personal and business losses as a result of the storm (DVM, 2006). This “direct-to-DVM” aid was one of the few available resources but the funds were no longer available nine month after August 2005. Other organizations such as the Texas Veterinary Medical Foundation (TVMF) raised funds totaling approximately 32,000 dollars; this aid was distributed to shelters and clinics throughout the region (DVM, 2006).

However charitable the funding, it was, in many instances, insufficient to cover the damages sustained by many of the clinics of the coastal zone (Figure 2.4). A number of veterinarians in the southeastern region lost both their homes and veterinary practices. As governmental assistance could not be relied upon in recovery efforts and the charitable giving of private organizations did not equal the need, the infrastructure of the veterinary community was rebuilt through the hard work of resourceful individuals. In order to aid in recovery and mitigate



Figure 2.4 Veterinary Clinics of Slidell, LA (left) and Waveland, MS (right).
Source: Veterinary Relief Fund Image.

damages like those seen from hurricanes Katrina and Rita, the Veterinary Emergency Preparedness and Response (VERP) manual was created. Using the VEPR manual as a resource, the veterinary community will be better prepared to tackle pre-storm planning and post-storm recovery efforts in the future.

DATA AND METHODS

3.1 Defining the Problem

After evaluating the major issues resulting from hurricanes Katrina and Rita, it was determined that an interdisciplinary approach should be taken to rectify blatant shortcomings in the Gulf Coast region's natural disaster emergency preparedness and response. The federal and local governments proved insufficient in supporting pre-storm planning, post-storm responsive actions, and long-term recovery efforts, particularly in the case of small-business veterinary clinics and hospitals. Veterinarians, whose physical buildings were not completely destroyed, relied on individual resources and willpower to sustain their practices; those who lost everything regained, or are attempting to regain their footing, largely on their own.

Understanding the severity of such shortcomings, the Louisiana State Board of Regents allocated funds to support the research and development of physical systems modeling by the Louisiana State University Hurricane Center. The physical models provide the necessary inputs for public health impact models which in turn, produce the data, case studies, and scenario outputs on which emergency protocol recommendations are based. Within this broader scope, specific issues came to light, including the need for a comprehensive emergency preparedness document, formulated specifically for use by veterinary professionals. The veterinary-specific research is a component of a larger undertaking, designed to fully address post-hurricane deficiencies in all aspects of public health.

3.2 Objectives

After establishing the need for a hurricane/natural disaster preparedness and response document for veterinary clinics and hospitals, five main objectives were determined:

- 1) Collect primary data through interviews with veterinarians in affected areas; implement their stories, observances, and expertise as the primary input for the document.
- 2) Evaluate existing emergency preparedness and response material including: Internet websites, handouts and pamphlets, as well as other disaster management manuals.
- 3) Synthesize the various materials into a single, comprehensive, veterinary-specific emergency preparedness and response manual.
- 4) Create both hardcopy and electronic versions of the manual, and establish the document in user-friendly interfaces.
- 5) Provide access to the manual for immediate use by veterinarians and practitioners.

With these goals in mind, the process of data collection began. Two types of data were compiled. First, interviews with veterinarians and staff, and site visits to affected clinics and hospitals were conducted to gather primary data for inclusion in the protocol development. Second, preexisting information concerning disaster management from an array of sources was collected and reviewed. Together the data was incorporated into a single, comprehensive emergency protocol document.

3.3 Data Description

Early in the course of the study, it was determined that veterinarians and veterinary personnel would be the best source of information from which to develop an emergency protocol. These individuals immersed themselves in clinical operations, both day-to-day events, and in the summer of 2005, an extraordinary natural disaster occurrence. As a result, their first-hand knowledge was essential for correctly constructing an emergency preparedness and response manual. Researchers identified initial topics requiring inclusion the emergency preparedness and response document, based on background research. The issues of real-life

importance, those that were actually faced by the practices leading up to Katrina and Rita, were verified through the primary source, the veterinarians and their staff.

The second collection of data was gathered from pre-existing emergency information. Now more than ever as a direct result of the 2005 hurricane season, recommendations and resources for natural disaster preparedness exist in great quantities. However, the database lacks robustness and specificity in regard to small business protocol, and for the purposes of this research, particularly veterinary practices. The VEPR manual is intended to address emergency protocol as completely as possible therefore, it was critical to identify the topics that required further input as well as those that did not exist in the literature at all. Reviewing the information available to and specific for a veterinary staff, further established priority subject matter. The evaluation also served as starting point and ultimately, an indicator for the final document as to its completeness.

Together the primary and secondary data most completely accomplished the objectives of the current research. The different components provided the data needed to assemble a comprehensive and relevant document for the target audience. Expertise from veterinarians themselves laid the foundation for the manual, and the existing material supplemented the primary data, filling holes and serving as the base from which to work.

3.3.1 Interviews and Site Visits

With the awareness that primary source data would contribute the most valuable information and perspective for the development of emergency preparedness and response protocol, interviews with Gulf Coast-region veterinarians were arranged. A total of five interviews were conducted with veterinarians of different practice types and in locations of dissimilar areas within the affected region. Each veterinarian had his or her own story; they

experienced many of the same issues but also many unique ones. These divergences in circumstance leading to specific needs in emergency preparedness resources were the basis on which the manual was ultimately created. The selection of the interview participants was intended to cover a spectrum of veterinarians in order to collect data that would increase the relevancy of the manual to a larger portion of the veterinary community.

3.3.1.1 Selection of Interview Participants

The current study gathered information from veterinarians in many areas of the hurricane-affected region. Heavily damaged areas such as Lakeview and Slidell, Louisiana characterized a highly-affected community, providing insight and data from a population of completely destroyed veterinary clinics and hospitals; two veterinarians, Dr. Daniel Brennan and Dr. Gary Levy, represented this demographic. Less affected regions, such as the clinics and hospitals north of Lake Pontchartrain, represented a different veterinarian demographic. Three veterinarians, Dr. Pete Hendry, Dr. Bettie Fauntleroy, and Dr. Darren Schilling were interviewed from these areas. Location of the veterinary practice was a determining factor in the selection interview participants.

The individuals were chosen both at random, based on the need to cover different demographics, as well as on personal association. One of the selected contributors, Dr. Pete Hendry, was the personal veterinarian of the researcher; he in turn recommended a second veterinarian for interview, Dr. Bettie Fauntleroy. Both Dr. Hendry and Dr. Fauntleroy suggested that Dr. Darren Shilling be interviewed for contribution to the manual based on his location slightly north of the affected area and the large-animal aspect of his practice. The veterinary from Slidell, Louisiana, Dr. Daniel Brennan, was chosen at random from the local phonebook. He was willing to participate in the interview and the practice was situated in an area greatly

affected by Hurricane Katrina. The fifth participant, Dr. Gary Levy, was selected based on his status as a past president of the South Louisiana Veterinary Association (SLVA) as well as his location in the Lakeview region of New Orleans, Louisiana, another area of hurricane devastation.

3.3.1.2 Interview Format

In order to standardize the material covered in the interviews and to ensure that all essential topics were addressed, a questionnaire was created before the process began (APPENDIX B). The questions were formulated based on several factors including:

- The need for particular data describing the pre-existing condition of emergency preparedness at the clinic or hospital. For example, “Does the clinic/hospital accept animals for board in the face of an impending hurricane?” or “Is there a pre-determined evacuation location for animals and staff?”
- The need for veterinarian expertise in particular aspects of clinical emergency operations and procedures. For example, “What is the best method to evaluate animals without medical records in post-disaster areas?” or “How is the integrity of refrigerated vaccines and medicines protected during a power outage?”
- The veterinarian’s assessment of the most important topics that must be addressed in a preparedness and response manual. For example, “When returning to the clinic after the hurricane, which storm impact was the most difficult for your practice to overcome?”

The document was brought to the interview and offered to the veterinarians for their perusal before the question session began. A letter of introduction, written by Dr. Robert Gros of the SLVA, was also presented at each interview to formally communicate the purpose of the

research (APPENDIX C). The sessions were approximately one hour long depending on the time availability of the veterinarian and their willingness to speak about the hurricane experience. Notes were taken during the interview to make certain that the answers given by the veterinarians were faithfully represented in subsequent reports. Each veterinarian was visited at their clinic or hospital location, allowing for the observation of the physical building and surrounding areas.

3.3.1.3 Veterinarian Demographics

It was critical that the current study collect data from veterinarians in several regions of the hurricane-affected areas to serve as representative of their communities. The five veterinary practices were located within a seventy mile radius, but the individual locations experienced varying degrees of storm impact (Figure 3.1). Each clinic provided care to different animal types

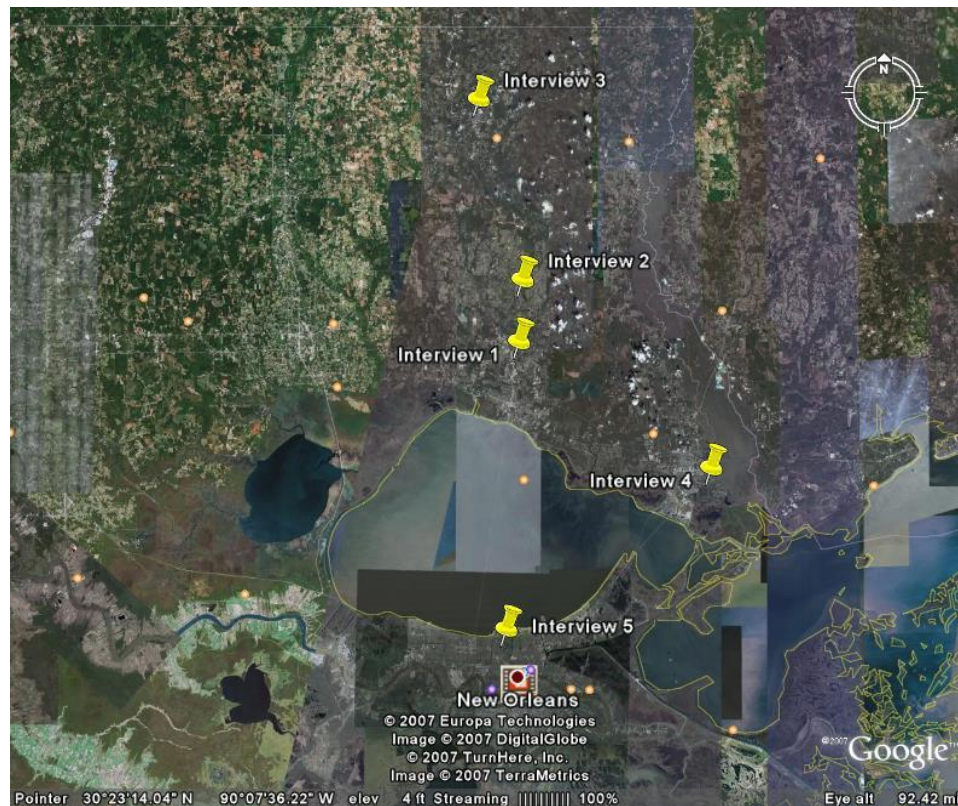


Figure 3.1: Distribution of Interviewed Veterinarians.

Source: Google Earth, 2007

and the demographic makeup in which their client populations existed, were diverse as well.

Of the five interviewed veterinarians, three practiced small animal medicine exclusively. Dr. Hendry, a veterinary of more than twenty years experience, was located in the Covington-Mandeville area, north of Lake Pontchartrain in St. Tammany Parish (APPENDIX D). Specializing in small animal medicine, the clinic served a relatively affluent community of approximately 22,000 residents. Many clients from the area evacuated Hurricane Katrina with their animals. Even so, more than sixty cats and dogs were boarded at the clinic. After the storm, the building was without power for about three weeks, and staff members alternated trips to Baton Rouge, Louisiana to collect supplies. The physical clinic did not experience structural damage, but the surrounding area faced a range of hurricane destruction. Businesses and homes near the lakefront in Mandeville flooded as a result of the storm surge, and large portions of Covington sustained wind damage and some flooding.

Dr. Brennan, a veterinary in Slidell, Louisiana, city of approximately 28,000 people, also specialized in small animal medicine (APPENDIX E). As a result of flooding from a previous storm, the Honey Island Animal Clinic did not board animals in the threat of a hurricane. The clinic was located south of Interstate-12 near Honey Island Swamp, a region hit particularly hard by Katrina. Approximately 80 percent of residential homes in Slidell were damaged, and Dr. Brennan was one of four veterinarians in the area whose clinics were completely destroyed by the storm. Six weeks after Katrina, Dr. Brennan had gutted and remodeled the clinic and it was opened for regular business. However, the area's overall infrastructure was severely impacted, and recovery efforts continue even today.

Dr. Levy, located in the Lakeview neighborhood of Orleans Parish, also exclusively practiced small animal medicine (APPENDIX F). Like the many clinics in high-risk flood

zones, Dr. Levy did not retain animals at the facility for the hurricane event. The practice employed five veterinarians, and the small animal hospital from which they operated was completely destroyed by Hurricane Katrina. All equipment, excluding some metal examining tables, was ruined by approximately seven feet of water and debris in the clinic. The structure was gutted and two modular buildings were placed on the property while the veterinary staff decided on future plans. Most of the Lakeview area experienced severe flooding with depths ranging up to fifteen feet of water. At the time of the interview, approximately one family in every block had returned to the area however, more than seventy-five percent of the pre-Katrina client population visited the staff for veterinary services. Dr. Levy suggested that his clients gained a sense of normalcy after Katrina by returning to their personal veterinarians with their animals.

The two remaining veterinarians practiced small animal, livestock, and equine veterinary medicine. Dr. Fauntleroy, located approximately twelve miles north of Covington-proper in an area surrounded by farmland, sustained wind damage but no flooding (APPENDIX G). Animals were boarded in the clinic during Hurricane Katrina and the staff evacuated, leaving them alone for twenty-four hours. A path was cut through the local roads in order to return to the clinic after the storm. Fans, the refrigerator, and lights, operating off of generator power, were run alternately to keep animals and medicines and vaccines cool during the ten day electricity outage. Trips were made back and forth to Baton Rouge for food, fuel, and other supplies until the area was stabilized.

In Franklinton, Louisiana, Dr. Schilling practiced small animal, livestock, and equine medicine (APPENDIX H). A community in Washington Parish of about 3,500 residents, Franklinton is an agricultural region with a large number of dairy farms. Franklinton was also

the evacuation locale for horses of the New Orleans Police Department as well as Jefferson Parish's animal control service. Dr. Schilling was responsible for veterinary services to the evacuated animals as well as to his local clients. Wind damage occurred during the storm, particularly affecting fencing containing herds of cattle. In the weeks and months following the

Table 3.1 Demographic and Hurricane Impact Summary of Participating Veterinarians.

Veterinarian/ Practice	Address	Elevation	Coordinates	Description of Area	Hurricane Impact
Dr. Pete Hendry <i>General Animal Hospital</i>	71224 Hendry Avenue Covington, LA 70433	14 feet	30° 27' N 90° 04' W	Heavily developed, near Highway 1-90, substantial populated community.	Clinic without power for three weeks; no structural damage sustained.
Dr. Bettie Fauntleroy <i>Hillside Animal Clinic</i>	78290 Highway 437 Covington, LA 70435	84 feet	30° 33' N 90° 04' W	North of developed area, surrounded by rural, agricultural community.	Clinic without water for 48 hours and electricity for 10 days. Fencing surrounding kennels and runs destroyed; no structural damage.
Dr. Darren Shilling Franklinton <i>Veterinary Clinic</i>	525 11 th Avenue Franklinton, LA 70438	148 feet	30° 51' N 90° 09' W	Approximately 100 miles north of Gulf Coast, rural farming/dairy community	Clinic without power for 21 days; no structural damage sustained.
Dr. Daniel Brennan <i>Honey Island Animal Clinic</i>	40498 Hwy. 190 East Slidell, LA 70461	3 feet	30° 15' N 89° 43' W	South of Interstate-12, Suburb of New Orleans, substantial population	Flooded by water from Lake Pontchartrain. 1 foot of mud and debris throughout building; nothing salvageable. Area without power for six weeks.
Dr. Gary Levy <i>Lakeview Veterinary Hospital, Inc.</i>	6245 Memphis Street, New Orleans, LA 70124	0 feet	30° 00' N 90° 06' W	South of Lake Pontchartrain, North of Mississippi River; populous community	Flooded by 17 th Street Canal breach. 7 feet of water in the building; 98 percent of contents destroyed.

hurricane, Dr. Schilling dealt with the disease spread and other animal-health related issues resulting from the consolidation of the herds. Without power for three weeks, Dr. Schilling made trips to Baton Rouge and Mississippi for fuel and generators in order to sustain a semblance of clinical operations.

In summary, to most completely represent the Gulf Coast veterinary population, primary hurricane preparedness and response data was collected from five different demographic regions. Two locations exhibited complete destruction, Slidell and Lakeview, and the three others, the two locations in Covington and one in Franklinton, sustained wind and surrounding infrastructure damage. The communities were dissimilar in affluence and main source of income, and each veterinarian served an individual client base. As a consequence, the services provided, post-hurricane needs experience, and rebuilding and recovery efforts after the storm differed among the five veterinarians.

3.3.2 Preexisting Emergency Preparedness and Response Data

In addition to collecting primary data, disaster preparedness information was gathered from preexisting sources. Seeking animal or veterinary emergency data as well as general disaster protocol material, the internet was the main source from which information was taken. Many hardcopy items such as pamphlets, governmental documents, and more have been converted to electronic versions and are easily accessible through the appropriate websites. Existing hardcopy manuals, such as the Department of Homeland Security's *Preparedness and Response to Agricultural Terrorism: Instructor Manual*, were also utilized in the collection of secondary data.

After compiling the disaster protocol material, it was discovered that general animal preparedness data existed in great quantities. Many of the larger veterinary associations, such as

the American Veterinary Medical Association (AVMA) and the Louisiana Veterinary Medical Association (LVMA), provided public health awareness materials on their websites. However, these resources were often directed at pet owners and included the standard procedures for preparing animals for evacuation events. Protocol concerning the protection and disaster preparedness for livestock in the case of a bioterrorism event also existed in large quantities. This information was helpful for farmers and emergency response officials, but it was not specifically directed at or applicable for veterinarians and their staff members.

Broad-spectrum hurricane and other natural disaster preparedness resources were available in great amounts as well. Emergency protocol existed for almost every scenario, including pre-hurricane planning, post-hurricane recovery, mitigating hurricane damage, evacuation recommendations, and much more. Each website contained almost identical material and was again, directed at the general public. There was no specific information concerning running a veterinary practice during a natural catastrophe, dealing with animals boarded in the clinic or hospital during a storm, or how to sustain a clinic financially in the wake of a disaster, and so much more. Together however, both the primary data from the veterinary interviews, and the secondary data gathered from preexisting sources could be amended to describe a veterinary-specific protocol.

3.4 Development of Framework Document for Proposed Manual

The foremost goal of the current study was to create a comprehensive, specific emergency preparedness and response document that could be easily used and readily available to veterinarians and their staff. Such a manual could not be assembled without first establishing a foundation from which to work, specifically a broad-outline document describing the content of forthcoming protocol.

3.4.1 Establishing the Scope of Manual

After collecting data through interviewing veterinarians and evaluating preexisting resources, a preliminary table of contents was created to provide a base from which to work and aid in the progression of the document (APPENDIX I). The initial table of contents was based heavily on the interview sessions as the veterinarians were asked which issues he or she would want to see included in an emergency preparedness and response manual. Their answers were weighted heavily as the document developed. Topics on which the veterinarians, unprompted, spoke at length or with conviction, were also included. For example, each veterinary discussed the importance of the insurance policy of the clinic or hospital correctly reflecting the monetary value of all the items in the facility. They emphasized adding every new piece of equipment purchased for use in the practice to the building's policy, thereby increasing the value of the clinic or hospital. Such an action would make certain that the money could be recouped in the event of a natural disaster.

Veterinary-specific topics that were not addressed in existing resources were also incorporated into the framework of the manual. Matters such as managing additional animals brought to the clinic or hospital after a disaster and reestablishing mail service for laboratory work, were critical issues for the practices in the affected regions. No preexisting data existed for these topics, therefore they were added to the preliminary table of contents to be addressed. With recommendations and insight from the veterinarians coupled with the important issues that lacked existing data, a comprehensive table of contents was developed for the VEPR Manual. As the study progressed and new issues came to light many emendations were made to the original table of contents. The table of contents endeavored to most completely represent all of the preparedness and response issues facing veterinary clinics and hospitals.

3.4.2 Developing VEPR Manual Through Outside Involvement

After the initial components of the manual were established, the document was distributed for outside review. The final product was intended to be highly useful and relevant therefore, it was important that interested and expert parties were involved in the VEPR manual's progression. E-mail communication concerning the document was prevalent as people from varying professional backgrounds contributed their input. Individuals from the United States Department of Agriculture's (USDA) Department of Homeland Security, veterinarians on the boards of several different Veterinary Medical Associations, members of the Louisiana State Animal Response Team (LSART), the Director of Louisiana State University's Disaster Science and Management program, and many others participated in developing the protocol for veterinary preparedness and response.

Communication was not restricted solely to e-mail, as meetings were held at Louisiana State University to discuss and further improve the VEPR manual. Contributing veterinarians attended as well as faculty members and staff. Such conferences aided in maintaining the forward progress of the document, keeping those involved on track, and achieving particular objectives in the completion of the research. Additionally, the input allowed for each step in the development of the manual to be measured against its applicability in the community for which it was intended.

3.4.3 Revision of Manual Based on Feedback

The manual underwent seven major revisions, progressing from a skeleton outline of fifteen pages to a 175 page comprehensive emergency preparedness and response document. With each revision, the amount of information grew as the researchers endeavored to provide as much data as possible on the essential disaster management topics. Feedback suggestions from

veterinarians who had reviewed the document were also incorporated in the manual. Special attention was given to expert input as such information was critical to the fidelity and relevancy of the emergency protocol.

3.5 Website Development

Distributing the manual in its hardcopy form was both time consuming and costly, and ultimately not the most effective way to make available the emergency preparedness and response protocol. It was therefore determined that the best method by which to disseminate the information would be via the internet. The web is a widely used resource providing access to information to a global audience, and a way in which to circumvent the inconveniences presented by the distribution of the VEPR manual in paper form. As the manual was intended to be a tool for the entire veterinary community and in reality, anyone interested in specific veterinary-based preparedness, the electronic conversion of the document would mostly completely accomplish this goal. The VEPR manual could be hosted on a website in a more cost-effective, wide reaching manner.

3.5.1 Technical Assistance in Website Building

As the VPER research team was mostly comprised of individuals with environmental studies expertise, outside assistance was needed to build the website. A template was purchased, containing the format to which information from the manual was added electronically. Using this format as a guide, the foundation for the website was constructed by individuals with computer engineering proficiencies. The website files and all other components were returned to the primary researchers, and following the instructions of those with technical expertise, the rest of the website was constructed. Ultimately, the development of the VEPR website was the combined effort of primary researchers and individuals with the needed technical expertise.

Each section and subsection of the VEPR document was hyperlinked to the electronic version of the manual. The materials supplemental to the VEPR hardcopy manual were also included in electronic format by providing links to the personal domain files (PDF), slide presentations, text documents, and other websites. As a result, the VEPR website contained a large amount of information in both actual text from the manual as well as the numerous external resources accessible through the site. After the manual was formatted in the electronic setting, it was uploaded to computer that functioned as the VEPR website's server. The website was given a domain name and was then available for access at the internet address <http://info.envs.lsu.edu/vepr/>.

3.5.2 Providing Access to the VEPR Website

After the construction of the website and subsequent hosting of the site on its own server was completed, the VEPR manual was accessible for public consumption in an electronic format. The Environmental Studies Department of Louisiana State University first provided the link to the VEPR website. Soon after, the A to Z search tool of University mainframe hosted a link to the site. Other organizations, including the Veterinary Medical Association websites of several southern states and one Midwestern state, incorporated links to the VEPR website on their homepages. The networking further facilitated the distribution of the emergency preparedness material to additional veterinarians and personnel.

RESULTS AND DISCUSSION

4.1 Overview of Results

After completing the research process including interviewing veterinarians, reviewing existing literature, formulating a framework document, and performing subsequent revisions of the document, two main deliverables resulted. The first, a hardcopy Veterinary Emergency Preparedness and Response (VEPR) manual, formulated specifically for the veterinary clinic and hospitals was produced from the collected materials. Second, a website based on the information from the VEPR manual was established in order to facilitate widespread distribution of the emergency recommendations. The two manifestations of the protocol were the final products stemming from the necessity for a comprehensive, highly readable, and useful resource to reduce the damaging effects of hurricanes and other natural disasters on the operations and individuals of the veterinary community. Together, the hardcopy VEPR manual and VEPR website meet the five objectives established for the study.

4.2 Hardcopy Veterinary Emergency Preparedness and Response (VEPR) Manual

The third object of the study described a goal to synthesize various disaster resource materials into a single, comprehensive, veterinary-specific emergency preparedness and response manual. As a result, the first product of the current study, the VEPR manual, was generated (APPENDIX J). The hardcopy document fulfilled the objective as it offered advice concerning all topics of disaster management. Not only were many resources contained in the manual, the numerous recommendations were specific for veterinarians and covered matters of particular interest. The document, one of the first of its kind, was not merely a list of generalized, all-inclusive, protocol objectives, intended for a wide-ranging audience. There are a plethora of

these types of resources; the VEPR manual, however, is not one of them. The document was designed for a specific community, and was intended to address their needs in order to mitigate the impacts of natural disaster.

4.2.1 Contents of VEPR Manual

The VEPR manual consists of three main sections, Proactive Planning and Preparation, Planning and Preparation, and Post-Emergency Operations. The first section contains recommendations for preparing a clinic or hospital for a natural disaster well in advance of the actual event. In the months before hurricane season, many items of business should be taken care of. Such processes are described in the Section B1 of the manual and include, preparing for potential banking issues, executing staff drills and implementing a plan for post-storm procedure and responsibility, and others. Pre-planning allows a clinic or hospital to concentrate on the more immediate issues in the days leading up to a hurricane.

The second section of the manual, Planning and Preparation, deals with readying the clinic or hospital in the weeks and days before the hurricane. This time period is often one of high stress. To reduce anxiety and use time and energy wisely to ensure that the practice is ready for the storm, preparation and preventative measures must be taken. For example, food, water, and lighting provisions need to be made for clinic or hospital employees who remain at the facility. Advice in executing these plans and others is found in Section B2.

The third section of the VEPR manual, Post-Emergency Operations, addressed the issues faced by clinics and hospitals after a storm event. Hurricane's physical impacts are wide-ranging. The storms themselves can be tremendously large systems, as seen in Katrina, with a path of contact reaching several hundred miles from initial landfall. The types of damage caused by storms are also varied. Some areas experience tremendous flooding and others have greater

wind effects. As a result, recovery efforts are based on needs stemming from physical damage to the clinic or hospital as well as the influence of the storm on the surrounding community.

Section C endeavors to cover many of these issues and give guidance to the entire impacted population. Topics range from addressing mold growth and disinfecting the clinic or hospital to settling insurance claims and making proper adjustments to the existing policy.

4.2.2 Distribution of Manual

After making extensive revisions to the VEPR manual, copies of the document were produced for distribution. The contents of the manual were burned on compact discs, which along with a letter of explanation, were sent to various individuals. All of the interviewed veterinarians received copies of the manual, as well as committee members, and the other contributors to the document. The distribution of the VERP manual was intended to begin the circulation of the document outside of the immediate research area, particularly to generate feedback concerning the emergency protocol. Researchers expected to receive both negative and positive input which in turn could be translated into marked improvements for the document.

The resulting input included generally positive reactions to the document. It was determined that the manual did indeed cover the most important topics in emergency preparedness, and veterinarians found the collection of a large amount of information in one document, helpful. Recommendations were made concerning the scope of insurance preparedness. Veterinarians continued to emphasize the need to pay attention to existing policies to make sure coverage was sufficient to compensate for all damages. Suggestions were also made in regard to communication after the storm; one veterinary recommended the use of shortwave radios to stay in contact with emergency officials and updated concerning news and weather reports.

Even though a completed version of the manual was circulated for review, it was understood that the document was dynamic and would undergo further updating. The distribution of the manual enabled the researchers to gauge the effectiveness and relevancy of the disaster management recommendations in the community for which it was intended, but also to continue improving the emergency protocol document as a whole. Disaster management as a science alters as modifications are made in political, technological, societal, and other arenas. As a result, the document was modified in order to remain effective in this ever changing environment.

4.3 Veterinary Emergency Preparedness and Response (VEPR) Website

After completing the hard copy version of the Veterinary Emergency Preparedness and Response document, it was determined that the best way to share the information contained in the manual would be through the internet. The 175 page manual was a large, bulky document and therefore fairly difficult and expensive to distribute. By converting the manual to electronic for and integrating it into a website, veterinarians from all over the world could access the information.

The creation of a website containing the contents of the VEPR manual in a user-friendly interface fulfilled the fourth objective of the study. It also met the fifth objective, the desire to provide access to the information in the manual to the entire veterinarian community. In an electronic version, the VEPR manual would be available for use by all veterinarians and practitioners, including those in the Gulf Coast region, but also to those spread throughout the country and world. Hurricanes and natural disasters are not exclusive to the southeastern United States; the Atlantic Seaboard states experience tropical storms as well as Caribbean and Central American countries. Using the internet to host the VERP manual allowed for the distribution of

the preparedness and response protocol to the entire audience for which it was intended, potentially mitigating natural disaster devastation all over the globe.

4.3.1 VEPR Website Format

The website, associated with the “A to Z” search resource of Louisiana State University, incorporated all of the material from the VEPR manual in an electronic version. The electronic format allowed for user interaction, including the ability to explore links providing additional external information, as well as pertinent slide shows, images, and other materials. Formatted in what was believed to be an aesthetically pleasing manner, the VEPR website was simple to navigate and straightforward in its presentation of the material (Figure 4.1). The headings

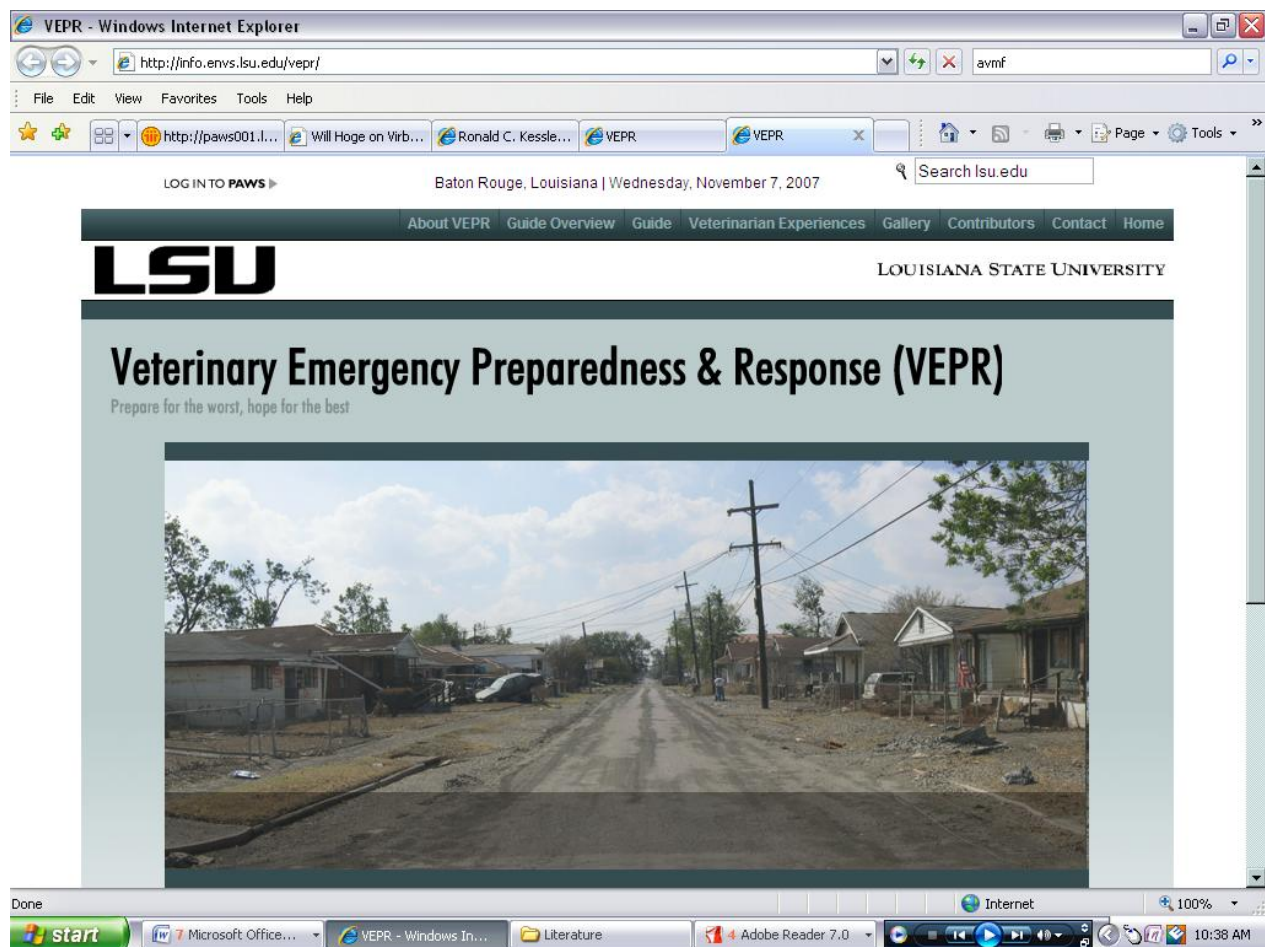


Figure 4.1 Homepage of VEPR Website.

clearly indicated the contents of each page in the site and include the tabs: About VEPR, Guide Overview, Guide, Veterinarian Experiences, Gallery, Contributors, Contact, and Home.

A short history of the development and funding of the VEPR document was given on the website, as well as away to contact research individuals with feedback including questions, concerns, and suggestions. The website is created to be adapted to the needs of the community, therefore feedback was desired. Transcripts from veterinarian interviews post-Katrina were also included in the website and provided a personal aspect to the technical nature of protocol recommendations. As with the VEPR manual, the Guide portion of the website provided all of the disaster protocol recommendations in three main categories, Proactive Planning and Preparation, Planning and Preparation, and Operations after Hurricane (Figure 4.2). Each link on

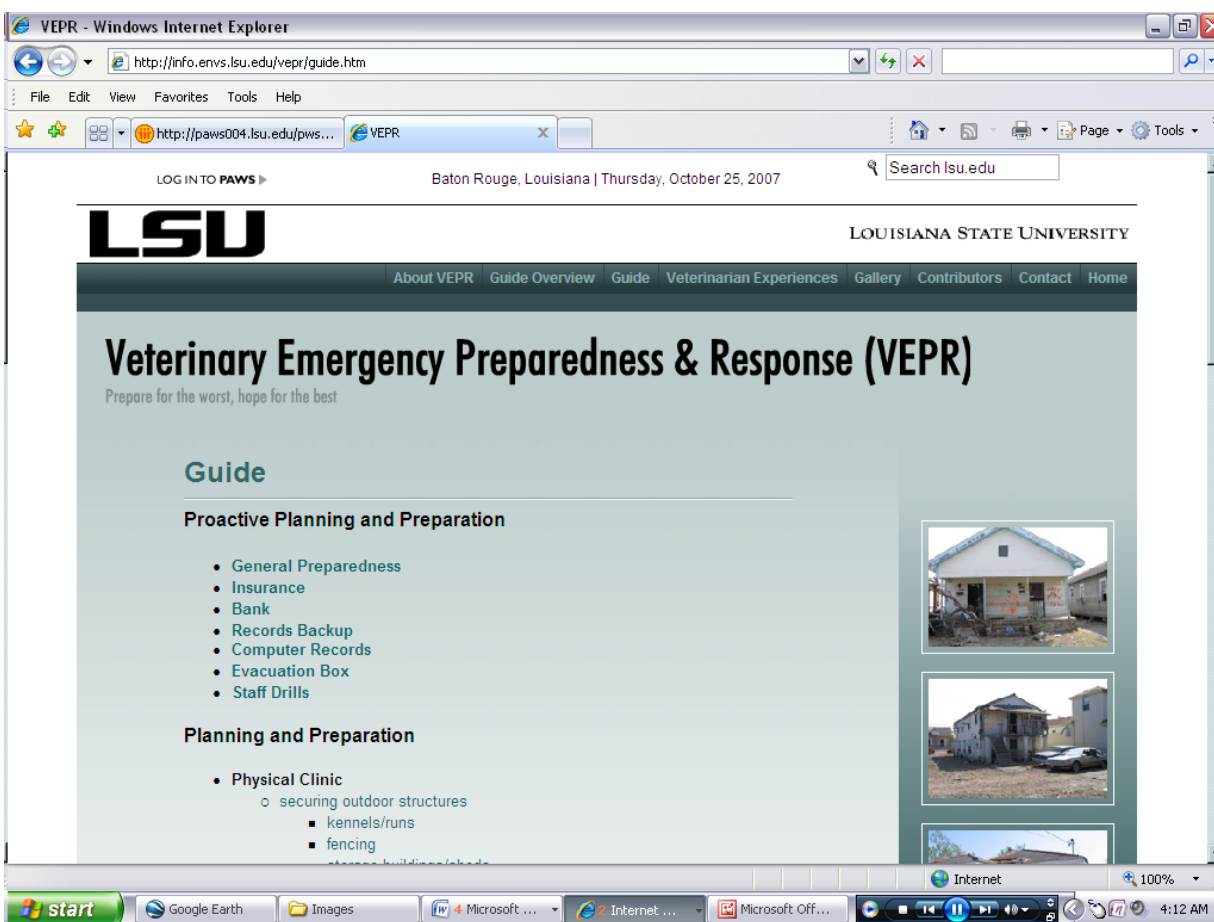


Figure 4.2 Guide Section of VEPR Website.

the guide page was live and contained specific emergency management information and additional links for supplemental material. The hardcopy manual contained links to the supplemental information as well, but these links could only be accessed through the internet. In the electronic format, a veterinarian can sit at his or her computer and examine the entire complement of available resources.

4.3.2 The Positive and Dynamic Quality of the VEPR Website

The effects of Hurricane Katrina on the Gulf Coast region were devastating and photographs of the destruction are included in the website. The photographs provide a visual foundation for understanding the necessity for an emergency preparedness and response document. However, the VEPR website is designed to be uplifting in nature. It is a tool that can be used to positively impact the veterinary community, and is not intended to be a reminder of how the storm and its aftermath devastated areas of the southeastern United States.

The website was created to be dynamic. Researchers requested feedback from visitors to the VEPR website in the form of an e-mail, phone call, or any other means of communication. The feedback was then used as a gauge to determine the effectiveness of the material contained on the site. It was important for researchers to identify the sections of the protocol that actually assisted a veterinary clinic or hospital in their preparations for hurricane season. The portions of the VEPR document that were most helpful and those which do not add to the body of knowledge needed to be distinguished. The concerns of veterinarians and technicians that were not addressed in the existing website were brought to the attention of the webmaster. With additional research, necessary sections were added to the VEPR site to aid the entire community. The dual nature of the website, the suggestions from the veterinary community and the researcher's response in the form of the desired information, increased the effectiveness of the

material and in order to maintain its relevance over time. Working together, veterinary personnel and researchers sustained the effectiveness of this powerful tool.

4.4 Discussion

The current study fulfilled all of the objectives established at the beginning of the research. Information was gathered through conducting interviews with veterinarians Dr. Pete Hendry, Dr. Bettie Fauntleroy, Dr. Darren Schilling, Dr. Daniel Brennan, and Dr. Gary Levy. Each veterinarian contributed specific information for the development of the protocol, as well as personal stories that clearly demonstrated the need for such a document and enhanced the overall research experience. Their input was invaluable and provided the foundation for which the manual was based. Preexisting data was also utilized to produce the emergency preparedness recommendations. Together with the veterinarian input, a comprehensive and robust database was generated and the VEPR document developed from this combined resource.

Using the data collected from veterinarians and from preexisting sources a single, comprehensive, veterinary-specific emergency preparedness and response manual was generated. The VEPR manual is a 173 page document that provided specific information concerning every aspect of emergency planning. The information was wide ranging but each topic had a particular bent to the needs of the veterinary community. As a source containing pertinent materials to clinical operations, the VEPR document could be placed on the shelf in the veterinarian's office and referenced as necessary.

Not every veterinarian in the region received a VEPR manual, therefore the website was established. The VEPR website contained all of the information from the manual, merely in an electronic format available to a wider audience. Using the internet, the VEPR website facilitated the use of the recommended protocol by veterinarians all over the country and throughout the

world. The website provided the necessary widespread access to the information. Both the document and website were written in easy-to-read language. The topics were logically grouped and clearly delineated and in the case of the manual, paginated. The website was aesthetically pleasing; it contained many photographs as well as the stories of veterinarians who experienced Hurricane Katrina. These aspects were intended to make the resources user-friendly, encouraging veterinary personnel to utilize the information and spread the word about the VEPR protocol to others. Ultimately, the VEPR manual and website create a valuable resource that can be used by veterinary clinics and hospitals to mitigate the effects of natural disasters.

INPUT AND FUTURE DEVELOPMENT

5.1 Continuing Adaptation and Input

In order for the VEPR manual, both the hardcopy and electronic versions, to remain applicable in the veterinary community, there must be continued updating and input of information contained within. The field of disaster and emergency science, particularly preparedness and response, is dynamic. As the Gulf region, and the rest of the United States, experience changes from year to year, one hurricane season to the next, the resultant issues of concern and importance in the varying climate will be altered. Change is not confined to one aspect instead, it is observed in the physical environment, the social and economic makeup of the country, the political situation at federal, state, and local levels, and many more facets of life.

Modifications must be made in all aspects of the VEPR project to fully acknowledge this process. The physical appearance and technical integrity of the website must be maintained and adjusted as needed. As technology changes, so must those components of the VERP manual. The information itself, in the both the manual and website, should be kept up to date. If, for example, an improved way to power lights, refrigerators, fans, and other pieces of equipment during a electricity outage is established, than the sections concerning generators and fuel storage should be amended. Compensating for, and adjusting in, a dynamic atmosphere will be most beneficial for the Veterinary Emergency Preparedness and Response Manual.

The primary methods by which to adapt the disaster management resource in order for it to maintain significance will involve others. Employing the talents and expertise of individuals outside the core group of researchers, produced the comprehensive and applicable characteristics of the VEPR manual. The first stage of the protocol development is complete, but input and a

healthy future should not be. With continuous participation, including criticisms, commendations, and suggestions, the strength and validity of the document will grow. Retaining both input and involvement will be fundamental for preserving the relevancy of the protocol in an ever-changing world.

5.2 Nation and Disaster Wide Preparedness Document

Not only should the VEPR manual remain relevant and useful into the future, the collection of individuals to which the document applies should be broadened. In the coastal regions of Louisiana, Mississippi, Alabama, Florida, and those along the southern Atlantic Seaboard, hurricanes are the primary natural disaster of concern from June to November. Hurricanes are not the only emergency scenarios veterinarians and their practice's face, however. Clinics and hospitals in the Midwest states should have a preparedness and response protocol in case of tornado events. In California, veterinarians contend with earthquakes, forest fires, and water shortages; recommendations must be developed to meet these needs. The Northeastern veterinary population must be equipped to deal with massive snow and ice storms, and the occasional hurricane. The VEPR manual should be expanded to address each of these particular disaster occurrences.

VEPR provides a foundation for the development of viable emergency preparedness and response protocols for other types of natural disasters as much of the information already contained in the manual is directly applicable to a variety of emergency preparedness issues. For example, the management and storage of animal medical records is appropriate in any situation involving potential wind and water damage. Many of the preparedness recommendations specific to hurricane-affected regions can be easily expounded on to include the needs of other veterinarians. At more northerly latitudes, generators must run heat as opposed to fans and air

condition with their storage compensating for freezing weather instead of flooding. Such distinctions to preexisting information are easily made.

The more involved process will include gathering information specific to forest-fire preparedness and response that the VEPR manual does not, to some extent, already address. In order to do so, site visits to affected areas and interviews with veterinarians of those communities must be conducted. Their input, like that of St. Tammany and Orleans Parish veterinarians in regard to hurricane matters, will be the most valuable contribution of data for correctly constructing a recommended protocol. Whether it is a trip to San Diego, California to speak with veterinarians forced to evacuate due to fire, or to Guthrie, Oklahoma to gain insight from livestock veterinarians who deal with the aftermath of tornado destruction, input directly from the source imparts the greatest usefulness to a collection of data.

5.3 Permanent Funding and Maintenance of the VEPR Website

Maintaining the VEPR site requires a large amount of time and effort. As with many technical applications, a website must be modified as problems arise and advances are made. Preserving the integrity of the site, both visually and in its contents, will ensure that the VEPR protocol recommendations remain useful for the veterinary community. An individual with computer science skills must be hired order perform the tasks of maintaining the site and incorporating new material as it is obtained. This position could potentially be filled by an undergraduate student-worker, a non-thesis graduate student, or another part-time worker.

The monetary funds to sustain the research and technological upkeep for the VEPR site, however, must extend through the conclusion of the grant for the current study. Researchers believe that the VEPR protocol is a powerful tool with the potential to positively affect hundreds

of veterinary clinics and hospitals as they prepared to face natural disaster. As such, it is a project worth continuous funding and support.

REFERENCES

- “AVMF Offers Grants to Hurricane Victims.” *DVM: The Newsmagazine of Veterinary Medicine* 37.1 (January 2006): 13-13.
- Baade, Robert A. *et al.* “Estimating the Economic Impact of Natural and Social Disaster, With and Application to Hurricane Katrina.” *Urban Studies* 44.11 (October 2007): 2061-2076.
- Beven II, John L. “Blown Away: The 2005 Atlantic Hurricane Season.” *Weatherwise* (July/August 2006): 32-44.
- Bourget, Paul. The George Washington University Institute for Crisis, Disaster, and Risk Management. “Hurricane Katrina: Dimensions of a Major Disaster.” Technical Report (Fall 2005).
- Boyd, Ezra. Louisiana State University Hurricane Public Health Center. “Preliminary Summary Report of Hurricane Katrina Deceased Victim Recovery Locations in Louisiana.” Technical Report (August 2006).
- Brennan DVM, Daniel. Personal Interview. 26 July 2006.
- Brinkley, Douglas. *The Great Deluge*. New York: William Morrow, 2006.
- Centers for Disease Control and Prevention. “Morbidity Surveillance After Hurricane Katrina—Arkansas, Louisiana, Mississippi, and Texas, September 2005.” *Morbidity and Mortality Weekly Report* 55.26 (7 July 2006): 727-731.
- Centers for Disease Control and Prevention. “Public Health Response of Hurricanes Katrina and Rita — United States, 2005.” *Morbidity and Mortality Weekly Report* 55.9 (10 March 2006): 229-231.
- Chandler, Philip J. May 2007. *Environmental Factors Influencing the Siting of Temporary Housing in Orleans Parish*. Master’s thesis, Louisiana State University.
- Coleman, Jessica. (August 2004). *Quality Assurance Testing of the Eclox-M in Detecting Terrorism Threats in Louisiana’s Public Drinking Water Systems*. Master’s thesis, Louisiana State University.
- De Goyet, Claude de Ville. “Stop Propagating Disaster Myths.” *The Lancet* 356 (26 August 2000): 762-764.
- Doherr, M. G. and L. Audige. “Monitoring and Surveillance for Rare Health-Related Events: A Review from the Veterinary Perspective.” *Philosophical Transactions: Biological Sciences* 356.1411 (29 July 2001): 1097-1106.
- Fauntleroy DVM, Bettie. Personal Interview. 30 June 2006.

- Geeraerts, Jimmy. "Wave Overtopping at Coastal Structures: Prediction Tools and Related Hazard Analysis." *Journal of Cleaner Production* 15 (2007): 1514-1521.
- Halton, Bobby. "Katrina: Size, Scope, and Significance." *Fire Engineering* (May 2006): 220-224.
- Hendry DVM, Pete. Personal Interview. 26 June 2006.
- Henstra, Dan and Gordon McBean. "Canadian Disaster Management Policy: Moving Toward a Paradigm Shift?" *Canadian Public Policy* 31.1 (September 2006): 303-318.
- Jenkins, Henry. "'People From That Part of the World:' The Politics of Dislocation." *Cultural Anthropology* 21.3 (2006): 469-486.
- Journal of American Veterinary Medical Association News* (January 2006). "Summarizing a Disaster, By the Numbers." Accessed 26 October 2007.
<<http://www.avma.org/onlnews/javma/jan06/060101e.asp>>.
- Kessler, R.C. , Galea, S., Jones, R.T. Parker, H.A. "Mental Illness and Suicidality After Hurricane Katrina." *Bulletin of the World Health Organization* 84.12 (2007): 930-939.
- Knabb, Richard D. *et al.* National Hurricane Center, 2005. "Tropical Cyclone Report—Hurricane Katrina, 23-30 August 2005." Technical Report (20 December 2005).
- Knabb, Richard D. *et al.* National Hurricane Center, 2005. "Tropical Cyclone Report—Hurricane Rita, 18-26 September 2005." Technical Report (17 March 2006).
- Levy DVM, Gary. Personal Interview. 26 September 2006.
- Louisiana Department of Health and Hospitals (2006). Hurricane Katrina: Reports of Missing and Deceased." Accessed 26 October 2007.
<<http://www.dhh.louisiana.gov/offices/page.asp?ID=192&Detail=5248>>.
- Louisiana Population Data Center (20 October 2007): Demographic Characteristics for the Affected Area; Hurricane Katrina, available online at
<<http://www.lapop.lsu.edu/Katrina%20Demo%20DP.xls>>.
- Louisiana Population Data Center (20 October 2007): Demographics for Louisiana Parishes and States Affected by Hurricane Katrina, available online at
<http://www.louisiana.gov/wps/portal/.cmd/cs/.ce/155/.s/3329/_s.155/3313/_me/1133>.
- Louisiana Population Data Center (20 October 2007): Economic Characteristics for the Affected Area; Hurricane Katrina, available online at
<<http://www.lapop.lsu.edu/Katrina%20Economic%20DP.xls>>.

- Louisiana Population Data Center (20 October 2005): Housing Characteristics for the Affected Area; Hurricane Katrina, available online at
< <http://www.lapop.lsu.edu/Katrina%20Housing%20DP.xls>>.
- Louisiana Population Data Center (20 October 2007): Labor Market Statistics Prior to Disaster for Areas Affected by Hurricanes Katrina and Rita, available online at
< <http://www.bls.gov/katrina/data.htm>>.
- Manuel, John. "In Katrina's Wake." *Environmental Health Perspectives* 114.1 (January 2006): A32-A39.
- Moehner, Annett. May 2003. *Toward a Sustainable Energy Future? A Comparison Between U.S. and European Energy Sectors*. Master's thesis, Louisiana State University.
- National Center for Biomedical Research and Training. "Preparedness and Response to Agricultural Terrorism: Instructor Manual Part 2." Technical Manual (2004).
- Pielke Jr., Roger A. "Future Economic Damage From Tropical Cyclones: Sensitivities to Societal and Climate Changes." *Philosophical Transactions of the Royal Society* 365 (2007): 271-2729.
- "Preparedness is the Best Flood Defense." *The Lancet* 370 (22 September 2007): 1008.
- Proclamation No. 48 KBB 2005, "State of Emergency—Hurricane Katrina," State of Louisiana Executive Department.
- Schilling DVM, Darren. Personal Interview. 7 July 2006.
- Sheu, Juih-Biing. "An Emergency Logistics Distribution Approach for Quick Response to Urgent Relief Demand in Disaster." *Transportation Research Part E* 43 (2007): 687-709.
- Solomon, Gina M. *et al.* "Airborne Mold and Endotoxin Concentrations in New Orleans, Louisiana, After Flooding, October Through November 2005." *Environmental Health Perspectives* 114.9 (September 2006): 1381-1386.
- "TMVF Pulls in \$32,000 for Hurricane Relief Effort." *DVM: The Newsmagazine of Veterinary Medicine* 37.9 (September 2006): 16-16.
- Tremayne, Jessica. "Katrina: The Long Road to Recovery." *DVM: The Newsmagazine of Veterinary Medicine* (March 2006). Accessed 24 October 2007.
<<http://www.dvmnews.com/dvm/article/articleDetail.jsp?id=188209>>.
- United States Department of Homeland Security. *National Response Plan*. December 2004.

United States Minerals Management Service. "MMS Releases Offshore Facilities Hurricane Impact Assessment." *Oil Spill Intelligence Report* 29.6 (2 February 2006): 1-4.

United States Minerals Management Service. "MMS Updates Hurricanes Katrina and Rita Damage." *Oil Spill Intelligence Report* 29.19 (4 May 2006): 1-1.

Van Heerden, Ivor and Mike Bryan. *The Storm: What Went Wrong and Why During Hurricane Katrina: The Inside Story From One Louisiana Scientist*. New York: Viking, 2006.

Woods, Clyde. "Do you Know What It Means to Miss New Orleans?: Katrina, Trap Economics, and the Rebirth of the Blues." *American Quarterly* 57.4 (2005): 1005-1018.

APPENDIX A: WORK PLAN FOR ASSESSMENT AND REMEDATION OF PUBLIC HEALTH IMPACTS DUE TO HURRICANES AND MAJOR FLOODING

Source: Board of Regents Health Excellence Fund Project – PI Ivor van Heerden, Ph.D. – LSU Hurricane Center (2002)

1. Project Management

An advisory committee of representatives of the Louisiana Office of Emergency Preparedness, Governor's Office of Coastal Activities, Louisiana Department of Environmental Quality, Louisiana Office of Public Health, Louisiana Office of Mental Health, LSU Medical Schools and Hospitals, and emergency preparedness managers for New Orleans will be convened. This committee will be briefed regarding the whole project at the initial meeting and will meet the researchers, who will each describe their latest research efforts. Thereafter, this committee will meet once a year and be apprised of the progress of all aspects of the study. The committee members will be encouraged to interact with the researchers and to make recommendations on the scope and directions of research tasks.

The research team will meet at least once a year to share updates on their progress and enhance linkages between the research groups. This will ensure that all researchers stay apprised of where other research members are in their tasks, and what each has still to do. Each PI will produce an annual progress report. An interactive web page will be established describing the project and providing updates on research tasks, lists of references, meeting schedules and other events, and so on. An annual overall project report will be produced and submitted to the Board of Regents. This will be an annual benchmark of progress.

At the end of the forth year, the Center will produce and host an international conference on the topic. The purpose of this conference will be twofold: to transfer knowledge to the

participants and to highlight the capabilities of the LSU Hurricane Public Health HEF Center, as a real means to enhance future funding opportunities.

To ensure that all problems are addressed in a timely manner, the Project Director Dr. Ivor van Heerden, aided by a research associate, will meet regularly with individual researchers. This will ensure that communication pathways remain open. This management team will collect information and reports for incorporation to the LSU Hurricane Center Newsletter. The Project Director will be responsible for the timely completion of all research tasks.

2. Research Tasks

A flowchart summarizing major research activities and interrelationships is given in *Figure 1*. There are two levels of data collection and modeling of the physical phenomena and community responses. These tasks provide the inputs necessary to adequately understand and model the public health threats. Most of the data and modeling will be within a GIS framework.

The focus of the physical systems modeling tasks is to provide needed inputs for the public health impacts modeling. Physical modeling tasks will begin with identification and selection of the most appropriate existing models, followed by application of chosen models to the specific problems defined by the study area. The real research challenges will be the coordination and integration with all of the other disciplines that are providing the model inputs and using the model outputs. With such a multi-disciplinary research project, this will certainly be a crucial component. Formulation of all models to work within a consistent GIS framework will also require extensive coordination and cross-disciplinary teamwork.

A key initial task, which feeds into many of the subjects on the flowchart, is the development of case studies and case histories from past floods. Multi-disciplinary teams will carefully study recent flooding events with significant public health issues. The public health, epidemiology,

and social sciences researchers will take the lead in gathering this information, with the other scientists and engineers playing a supporting role. Previous case histories and studies will also be reviewed. A social science survey that highlights mental health issues and the factors that affect them will be undertaken in the study area. Jim Diaz, Ph.D., M.D., from the LSU Medical School in New Orleans (LSUMC), will lead the LSUMC team. Dr. M. Hugh-Jones from the LSU Veterinary Medical School will lead the epidemiology component. Dr. Hugh-Jones has expertise in application of GIS technology to epidemiology. An epidemiology/disease surveillance consultant will aid Dr. Hugh-Jones. Drs. Hurlbert and Beggs, both of who have experience in the sociology of hurricanes and disasters, will lead sociological and mental health assessments. Dr. Hugh-Jones, with aid from an expert with the Baton Rouge Animal Control Center, will develop guidelines for dealing with stray pets and animals, diseased animals and special cases such as animals under rabies observation/quarantine.

GIS Systems and Data Collection Tasks

GIS technology will provide a common environment for data and model inputs and outputs. J. Snead, Manager of the Cartographic Section of the Louisiana Geological Survey (LGS), and D. Braud, Manager of the Geography and Anthropology GIS Lab, will lead a team of experienced GIS specialists. Remote sensing will be used to assist in data collection and model validation. Dr. Nan Walker, Deputy Director of the LSU Earth Scan Lab, will lead the remote sensing tasks. GIS databases will be established. A GIS database is key to the functionality of this project. A database of essential and critical spatial data layers will support decision-making, disaster assessment, risk planning, spatial analysis, and visualization of the issues addressed in this proposal. Representation of spatial features in a GIS opens extensive possibilities to portray scenarios, present the results of models, provide a basis for planning, and enable analytic and

spatial functions. The GIS also allows visualization that is unique, creative and informative in an immediate sense that exceeds the capabilities of pouring over sheets of numbers. Moreover, 3-D animation becomes possible further enhancing the visual analytical analysis component. In this context, the intent is to build a comprehensive set of spatial data layers germane to the application and research issues proposed. We envision acquiring and developing, as necessary, spatial data that are essential to perform the functions as defined, and to further identify additional layers that may be needed. Much of the information produced by the Data Collection tasks indicated on the flowchart will be stored in the basic GIS layers, which will include information such as that listed below. These layers comprise many of the basic inputs to the various models, outputs of which will be added as new GIS layers.

- 2000 Population and census data
- Location of community support facilities such as shelters, hospitals, churches, etc.
- Transportation and evacuation route data, capacities, etc.
- Topographic DEM data
- Location of water and sewerage treatment facilities, public supply wells, landfills, brine pits, and oil/gas wells.
- Location of chemical processing operations, oil/gas processing and production facilities, storage areas, pipelines, and other transportation routes. Chemical types will be classified.
- Extent and elevation of levee systems pump stations, and outfalls affecting the project area.
- Statistics and census of wildlife populations, farm livestock, and animal pets, within the study area

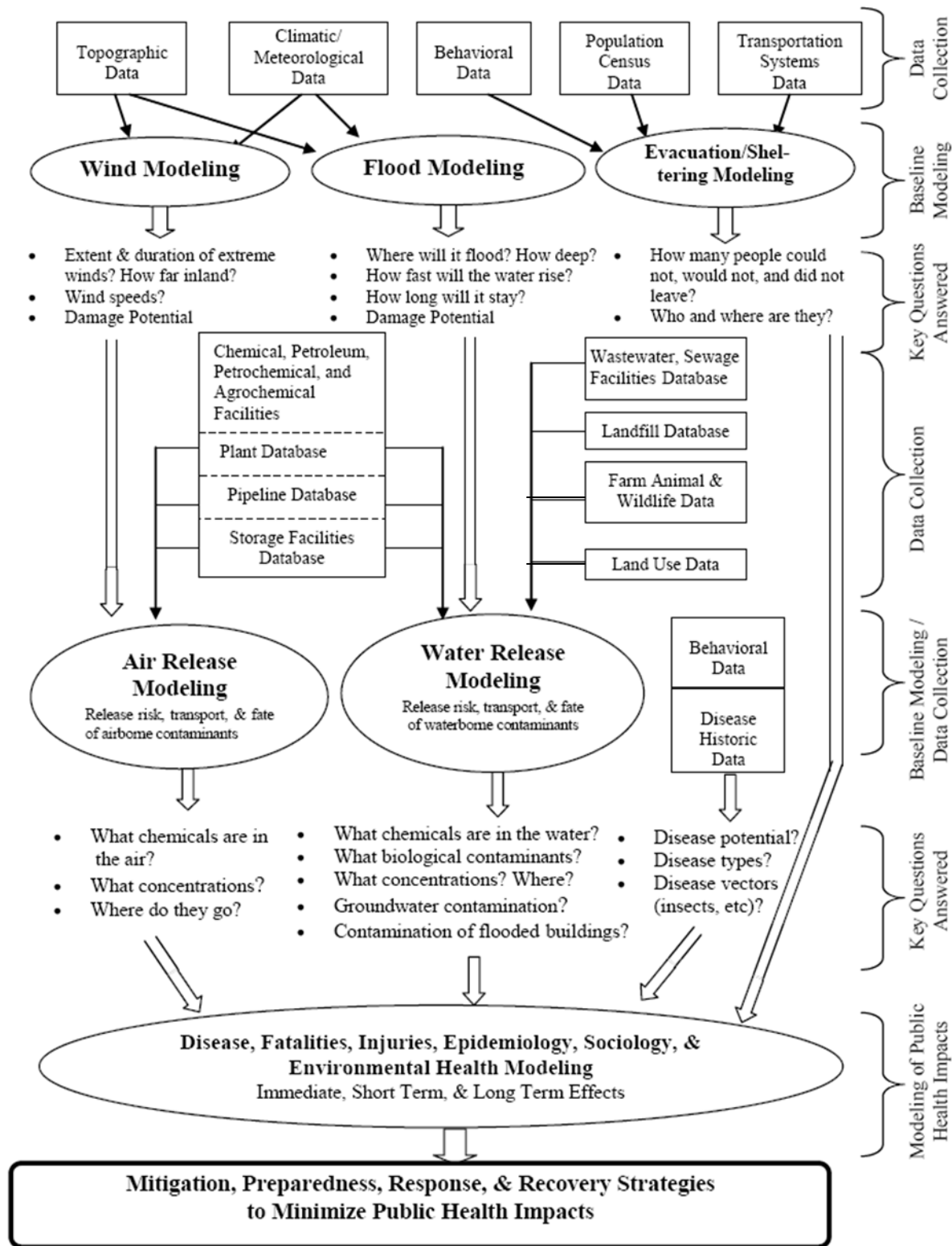


Figure 1: Comprehensive flowchart of research activities

Modeling of Physical Systems

Two levels of modeling are required. The first is to determine extent and severity of flooding and extreme winds. Primary data inputs needed are topographic data and climatic/meteorological data. Once the flood and wind scenarios are known, the second level of physical modeling can be completed. This level combines flood and wind model outputs with databases of hazardous materials sites, landfills, sewage treatment facilities, etc. Risks of damage to the containment structures are determined, with associated contaminant release risks. Then, airborne and waterborne transport and fate models are used to understand the spread of the contaminants.

Flood and Wind Modeling: The physical process/meteorology team will develop worst case scenarios for flooding events in New Orleans; their nature and variance; their probabilities and scale in terms of rainfall amounts and intensities; and aerial extent. While the physical process/meteorology team develops their database, the computer modelers will set up their storm surge and rainfall flooding and atmospheric dispersion models and calibrate all with existing flood events and related statistics. Once these calibrated storm surge and basin models are operational, the rainfall and wind statistics developed by the physical process/meteorology team will be fed into the computer models. Thus the zone of flooding, flood depth, and duration scenarios and atmospheric impact will be developed. Several faculty members will participate in this complex task. Dr. Kevin Robbins, Director of the Southern Regional Climate Center, and the State Climatologist, Jay Grymes, will lead the rainfall component. Estimates of flooding will be led Dr. John Pine, Director of the Risk Laboratory at the Department of Environmental Studies. During the first year Dr. Vijay Singh, Department of Civil and Environmental Engineering, will aid him. Finally, the storm surge modeling tasks will be subcontracted to Dr. Joannes J. Westerink, Department of Civil Engineering and Geological Sciences, University of Notre

Dame. Dr. Joe Suhayda, Department of Civil and Environmental Engineering will aid Dr. Westerink and will insure the successful importation of the models from Note Dame to LSU by the end of the project.

Contaminant Release Modeling: Risk models for release of chemicals from storage tanks and pipelines subjected to extreme winds and floods will be developed by Dr. M. Levitan, Director, LSU Hurricane Center. Dr. Levitan has expertise in wind and its effects on structures. Chemical dispersion models for both airborne and waterborne transport will be developed to predict chemical movements. These will be used to determine vulnerability zones due to dispersion of chemicals and sewerage waste. Dr. D. Reible (Chemical Engineering) and Dr. J. Pardue (Environmental Engineering) will lead the modeling of waterborne contaminant (both chemical and biological) transport and fate. Models of airborne transport will be led by Dr. E. Sajo from the Department of Physics and Dr. J. Pine (Department of Environmental Studies). Contamination of drinking water sources is a key concern. Water supplies (both surface water and groundwater) will be identified for the study area and assessed for potential contamination.

Modeling of Evacuation and Sheltering

In order to determine the number of people who will face the immediate and short term health threats, modeling of evacuation and sheltering is required. Several types of data are required for these models. Transportation availability and capacity, shelter locations and capacities, population census data, and behavioral data are all needed to determine the number of people who cannot, will not, and do not leave when an evacuation is ordered. For example, it is estimated that even facing a potential worst-case scenario (similar to Hurricane Georges or worse), hundreds of thousands of people will remain in New Orleans. Numerous factors play into this scenario, such as access to

transportation (approximately 300,000 residents do not own cars), perceived threat level, health problems, financial burden, etc.

Vertical evacuation (high rise buildings) is now being seriously considered in vulnerable cities such as New Orleans. This would be as a last resort for the masses of people who could potentially be trapped by rapidly rising floodwaters. Sheltering estimates of the number of people who could select this form of refuge will be developed. This task will be led by transportation engineer Dr. B. Wolshon and by Drs. Hurlbert and Beggs from Sociology. Dr. Wolshon is developing expertise in evacuation planning and operations and has undertaken projects on the application of Intelligent Transportation Systems (ITS) to evacuation traffic monitoring and management. Drs. Hurlbert and Beggs have worked in the area of behavioral response to evacuation situations.

Modeling of Public Health Impacts

Once the flooding and environmental risks are established, the medical researchers, epidemiologists, and public health experts come to the fore. The natural scientists and engineers will have supplied the following for the project area: zonal extent of flooding, depths of water, longevity of floodwaters; an assessment of the number of animal corpses; assessment of contaminants to be expected in water and air; expected movement of all chemicals, sewerage released; numbers and locations of persons expected to be trapped; sources of potable water and extent of contamination; inventory of public health resources available in each area.

The medical and public health experts will then chose a number of scenarios and then for each scenario assess the potential impacts, over time, of direct diseases such as dysentery, typhoid, encephalitis, pathogenic vibrio species, including *V.cholerae*; chemical impacts to those who are respiratory impaired (i.e. asthma); and any long-term potential cancer or genital (birth defects) concerns. Modeling of potential direct injuries and deaths due to drowning and similar

causes, illness due to exposure to toxic chemicals and raw sewage, illness due to vector-borne diseases, and other effects will be conducted.

Vertical evacuation presents additional threats to be studied. One scenario of concentrating many people within the confines of a high-rise building, for time frames of several days to more than a week, that creates a host of sanitation and security problems, will be investigated. It is likely that there will be little or no food, no working utilities, drinking water, electricity, sanitation, air handlers, etc. People will be surrounded by contaminated water and breathing contaminated air. Modeling the spread of disease in a scenario of this type of environment will provide answers to the feasibility of vertical evacuation, and assist in developing sample operating procedures for such shelters. Based on the scenario investigated, the following issues will be addressed: How long can people survive in such an environment before the health situation becomes acute? Should supplies and medicines be stockpiled in the buildings? What medicines? The answers to these questions will serve as a basis for communities' decision making before considering vertical evacuation as a viable alternative.

3. Hurricane and Flood Disaster Response Procedures and Remediation

Using all of the data, case studies, model, and scenario outputs, the team will develop recommendations to state and local emergency management officials, and the public health, medical, and environmental communities, for New Orleans. Recommendations will include mitigation, preparedness, response, recovery, and education strategies designed to lessen the impacts of future floods and storms.

The interactive GIS-system that will be developed could potentially be setup in the LOEP. Thus, the science of multiple disasters will be greatly enhanced to the betterment of the citizens of Louisiana. Publication of results and public education/outreach efforts are an important aspect

of this part of the study. This study will directly complement the State's existing Emergency Preparedness Manual. With the addition of public health components, Louisiana will serve as a national model in hurricane and flood related health, disaster preparedness. Our Center will use this experience to export this model elsewhere, nationally and internationally.

METHODS

1. Generation of physical data bases:

a) Potential for major rainfall events, rainfall amounts and coverage area

In addition to the array of historical and real-time data gathered and maintained by the Southern Regional Climate Center (SRCC) and Louisiana Office of State Climatology (LOSC), there are supplementary sources of weather, climatic, and hydrological data collected by various agencies operating in Louisiana. These include the United States Geological Survey, the U.S. Army Corps of Engineers, and the Louisiana Departments of Natural Resources and Environmental Quality. Several parish and municipal agencies also collect meteorological and hydrological data for local monitoring and warning purposes. To optimize response strategies and impact assessments during health emergency events, these diverse climate data need to be integrated on a real-time basis. However, there are no programs or operations currently capable of this task.

A climate data delivery tool, the Unified Climate Access Network (UCAN), is currently under development by SRCC, designed with the intent to integrate diverse weather/climate data sources and make them available to cooperating agencies. A key aspect in this data-development task requires an in-depth evaluation of the types of weather, climate, and hydrological data that would benefit emergency and health response agencies.

Meteorological features driving major natural events can be characterized using climatological data to assess rainfall distributions (both temporal and spatial) associated with

these storms. However, there is presently no evidence of efforts to develop a systematic evaluation of the extent and duration of these and similar extreme events. Nor has there been an overall evaluation of these storms in terms of flood severity and duration. Hence, little if any information is available linking major rain/flood events in Louisiana to health hazards and impacts. The results of the meteorological assessments will provide a perspective of potential and realized impacts from catastrophic flood events. The expected aerial extent, predicted rainfall amounts, and duration data will be utilized by the modeling group (task b) to define the upper boundaries of these models.

b) Flood Modeling – Rainfall

The Federal Emergency Management Agency (FEMA), through its Flood Insurance Program, assists local jurisdictions in identifying flood zones in their jurisdictions. These flood zones are based on hydrologic modeling programs developed by the U.S. Army Corps of Engineers. Flood modeling programs used by FEMA attempt to calculate flood zones for rainfall events for 100- and 500-year events. Flood elevation data drawn from these FEMA sponsored studies provide a sound basis for calculating the height of the water within a flood zone. The flood zone calculations, which are based on 100- and 500-year events, will provide the project team with appropriate estimates of the heights of water in a flood zone. New flood modeling calculations for the study area is thus beyond the scope of this project.

The flood elevation data drawn from FEMA's previous flood studies will be used with new contour maps developed as part of the LSU model. LIDAR data will be provided under a cooperative Federal and Louisiana State effort. In this cooperative effort by FEMA and the state of Louisiana, high-resolution contours are being prepared for southeast Louisiana, including the

City of New Orleans. By using these new contour data, flooding scenarios will be prepared by Dr. Pine and his team for determining flooding and health hazards.

c) Flood modeling – Storm surge

The proposed storm surge modeling strategy applies a large computational domain with a very high degree of localized refinement in the region of specific interest. This strategy is supported by the ADCIRC coastal ocean model, a highly developed and very efficient, finite element based coastal ocean circulation model. Application of a large computational domain in hurricane storm surge modeling allows for significantly more accurate tidal and wind-driven boundary conditions.

We will develop an increasingly more sophisticated flood prediction capability for Southeastern Louisiana. Each stage of this proposed research will bring in a higher level of geometric, bathymetric/topographic grid and hydrodynamic detail resulting in improvements in predictive accuracy. The computations for the domain/grid in each stage will be verified and validated. We note that the goal is to develop one integrated domain/grid for all of Southeastern Louisiana.

In the first two years of the proposed work, details for New Orleans will be progressively added to the computational domain/grid. The computations will be based on the 2D barotropic version of ADCIRC. The domain/grid and model will be validated by hindcasting two historical hurricanes that had a significant impact in that region. Then, a series of four design storms will determine a range of flooding scenarios.

In the following 3 years of the proposed work, we will further enhance the level of geometric and grid detail in the Southern Louisiana domain/grid. In particular, secondary riverine and lake, as well as levee and road systems, will be added. Bathymetry/topography will

also be refined. Hydrodynamic calculations will now be based on the baroclinic 3D version of ADCIRC. Steric effects (annual fluctuations in sea level) will be simulated in the calculations as well. Simulating the same well-documented historical hurricanes that were selected for the barotropic calculations in years 1 and 2 will again validate the grid/model. Furthermore a much larger set of up to 50 design hurricanes modified from the historical record that will have a significant impact on the study area will be simulated. Accounting for the various stages of the tidal cycle that can be encountered, this will lead to a set of 200 simulations. This larger set of hurricanes will allow the development of statistical flooding maps for Southeastern Louisiana to relate flooding to the most pertinent environmental factors. This working model will be transferred to LSU from Notre Dame greatly enhancing our state's ability to predict storm surges in the future.

d) Remote sensing and flood zone mapping

During the study period, remote sensing data will be used to synoptically map areas flooded due to hurricanes or major storms. Using actual events (i.e. T.S. Allison) will aid in ground truthing the various flood models. The Earth Scan Laboratory (ESL) will participate in the provision and analysis of satellite imagery. The ESL recently enhanced its data reception capabilities with the addition of a high-speed X-band antenna. These enhancements include the capability to receive in real-time and process TERRA Modis data. In 2002, we expect to have an operational capability for the reception and processing of RADARSAT or ERS-2 SAR data. For this project, the 250 m near-infrared channel (841-876 nm) of MODIS will be used to map flooded areas over large spatial regions. Selected scenes will be analyzed to yield quantitative information that will improve flood-modeling capabilities. Radar data will also be used to map flooded areas at a higher spatial resolution (10-100m). Radar data have the advantage of penetrating through clouds

and, therefore, are useful during storm events, when flooding is often maximized. Water level data from several gauges in coastal Louisiana will be used to select the flood events to be investigated with satellite data. The water level measurements will also be used to establish the gradient in water levels, starting at the coast and moving inland along bays and bayous. The gradient analysis can be performed for a much longer period of time and will enhance model performance substantially.

A key element in the proposed flood modeling is the display of flood zones on high quality air photos recently made available by the USGS. The display of the flood zones on the photographs allows the study team to analyze the potential short- and long-term impacts of flooding. Other members of the research team interested in clarifying contamination levels in floodwaters will be able to use both the hydrologic and hydraulic data from the FEMA flood studies as well as the air photographs of areas flooded. All flood area maps will be digitized so that they can be presented in GIS format.

e) Community response inventories

Inputs of data will be numerous and will include site visits to view governmental, parish, and municipal records, maps, and databases. Commercially available databases like Equifax contain spatially-attributed inventories of community facilities such as hospitals, schools, fire stations, police stations, government facilities, hotels, grocery stores, etc. and industrial facilities such as manufacturing, chemical plants, and refineries. These databases will be purchased to use in this project. In addition, the 2000 census will be acquired to add demographic and population data to the GIS database. Examples of the kinds of Census data that will be incorporated include information on socio-demographic characteristics of individuals (e.g., income, education, race,

availability of telephones and cars) and characteristics of housing stock (e.g., age, proportion vacant).

One of the key factors in determining the potential extent of public health impacts resulting from hurricane and flooding events is the estimation of the number of people who will remain within the disaster area. Under certain natural disaster scenarios, it is likely that a substantial portion of the population will have no immediate way out and relief agencies will have no way to get in supplies. Thus, one of the initial steps in determining public health impacts of major storm events is to estimate the number of people who are willing (and unwilling) and able (and unable) to evacuate a given area under a given disaster scenario. Currently, there are several different methods for estimating the number of vehicles (and people) who are able to depart an area during an evacuation order. Most of these methods use roadway capacity evaluation techniques and transportation network modeling practices to evaluate traffic movements within the subject region (Wolshon, 2001). In this segment of the study, the research investigators will use these and other techniques to develop a high-level methodology for estimating the number of people that can be expected to be evacuated from a threatened New Orleans. The procedures will also take into account prior case studies of recent hurricane events and will use the GIS and mapping capabilities developed in the other portions of this research project. The procedures will also be dynamic, making them applicable to different storm scenarios and threat locations. The general procedure will be also developed to be opened-ended so that the process can be applied to other regions within the United States or abroad.

f) Inventory of landfills, sewerage, and chemical facilities

Inventories of hazardous waste pits, sewerage treatment facilities, chemical storage facilities, landfills, Superfund sites, and other facilities may not exist commercially and will consequently

require development from sources such as digital orthophoto quarter quads and field studies to compile an accurate and current GIS inventory. Digital orthophoto quarter quads are highly accurate, high resolution, geo-registered aerial coverage's that are being completed for the entire state of Louisiana. These data are freely distributed and will be a valuable resource for completing a GIS database relative to the information needs described. Attributes of some of these facilities will be difficult to obtain, but could be done from interviews and public records. Existing public domain database information will be acquired through various state and federal sources. This information is generally tabular in form, but can be converted to point form suitable for use in a GIS database system. As the level of confidence in some of the data may be questionable, GPS point data may be used to verify the published record or be used to obtain spatial data when none is available. The location of all chemical processing operations, oil/gas facilities, storage areas, and transportation routes will be identified and mapped. The data will include specific chemical inventories obtained from the Louisiana State Police Hazardous Materials Unit and major classification of chemical types. The data portrayed in this GIS layer will be of particular value to the chemical dispersing modeling team, who will predict chemical movement from the above sites during major flooding events. Information on currently operated and abandoned landfills (all types) will be collected including sites that are classified as Superfund or in some phase of mitigation. Sewerage facilities and chemical facilities will also be located and converted into point data. Information regarding the location of injection wells (all types) and oil and gas wells will also be collected. Elevation of wellheads, treatment plants, and storage tanks along with industrial facilities, landfills (all types, active and abandoned), and other potential contamination sites will be noted. The location of pipelines will be determined with help from the Louisiana Oil Spill Coordinator's Office. Scour and rupture of pipelines,

especially where they cross water bodies, are an ever-present flood threat in Louisiana. Once precise data points exist along with a classification of the chemicals present or potential type of contamination, these data will be merged with other geo-spacial and topographic data sets.

g) Construct baseline animal pets and wildlife inventories

Using current USDA census data with current confidentiality restrictions (to zip code level only), we can assess the presence and extent of livestock in any part of the state that will be at risk. Therefore, these census data will be imported for New Orleans. These will cover cattle, pigs, sheep, goats, and horses. In urban areas, companion animal populations will have to be estimated until hard data are available. Additionally, anecdotal evidence from previous studies suggests many rural evacuees took companion animals, but left working animals (i.e., hunting dogs). Until the confidentiality restrictions can be loosened, numbers can only be estimated based on proportionality of area flooding but this is adequate at this time. Because the USDA Census data are now GPS-based, the future potential exists for more detailed use of these data. Also, the inventories will reflect changes in status (e.g., alive and dead) resulting from the flooding.

Wildlife data will be compiled from census and statistical data held by the Louisiana Department of Wildlife and Fisheries, US Fish and Wildlife Service, US Army Corps of Engineers, the literature, and private environmental consulting groups. All animal inventory data will be GIS-based.

h) Potable water resources and aquifers

Public domain information contained in various databases will be the primary data source utilized in this investigation. If public domain databases prove inadequate, members of the project team will acquire additional point data through field investigation.

For surface water sources, water intake pipes will be located and mapped and withdrawal

volumes per day will be noted. Ancillary data such as elevation of intake pipes, treatment plants, and storage tanks will also be acquired when available. In addition, point positions of groundwater wells (municipal, commercial, industrial, and private) will be acquired for areas deemed as posing significant impacts. This task, along with task e) above, will allow an assessment of the positions of various potable water processing facilities with respect to various parameters. The finished product will be a GIS product and in electronic format.

Sources of existing contaminants will also be acquired; generally this information is available from records on file with the Louisiana Department of Environmental Quality. This approach is needed in order to evaluate the risks posed to potable water supplies by catastrophic flooding events. Regardless of the source of potable water, the impact will be similar in both scope and severity. The greatest risk posed to Louisiana's supply of fresh water from a short term, one time storm event such as a hurricane, is from contaminated surface water. Utilizing the models in task (d.) will facilitate predicting the severity of an event and the area affected.

2. Atmospheric dispersion of hazardous chemicals during flood events:

The U. S. Environmental Protection Agency (EPA) identifies 425 Extremely Hazardous Substances (EHS) as chemicals that present an immediate threat to health and safety in the event of a release. Many of these chemicals are used, stored, and routinely transported in South Louisiana. These chemicals may be potentially hazardous because of their toxicity or physical or chemical properties such as flammability or reactivity. A toxic substance has the ability to cause damage to living tissue, impair the central nervous system, and cause severe illness or death when ingested, inhaled, or absorbed by the skin. Chemicals with lethal potential may cause death after relatively short exposure periods at low dosage. In addition, the dispersion modeling team will examine the impact of biological hazards such as anthrax, cholera, smallpox and equine

encephalitis utilizing modeling capabilities developed by the Defense Threat Reduction Agency (DTRA) in collaboration with Titan Corporation. The Hazard Prediction and Assessment Capability (HPAC) provides a means of modeling the air release of biological hazards.

Analysis of potential atmospheric releases will focus on industrial corridors or concentrations in each study area that interfaces with significant population zones. This is where chemical manufacturers and refineries store and transport large volumes of hazardous chemical products or raw materials. Emergency planners, managers, and responders need information about the nature of these substances and the impact a hazardous chemical release may have on the public and responders in the event of an accident. Historical records show that in severe weather, the incidence of chemical release accidents increases significantly. This is partially due to the destructive nature of the atmospheric conditions, or due to effects of flooding.

Atmospheric dispersion models will be utilized to prepare a map of areas potentially impacted by chemicals releases. Apart from dispersion modeling, this entails two major tasks: Development of realistic models for accident source terms, and selection of representative atmospheric episodes, characteristic to major flood events.

a) Development of Realistic Incident Scenarios

Two accident scenarios will be considered: A large breach that may be due to projectiles carried by high winds, and a smaller leak that may be caused by a sheared-off flange. The former may result in a catastrophic loss of content that gives rise to a nearly instantaneous release mechanism, while the latter may last for a long period of time.

Data pertaining to typical tank sizes used in storing and transporting specific chemicals, and physical dimensions of containers are available from the relevant literature, and may also be obtained from the chemical industry and from service and transportation companies operating in

South Louisiana. Permitted fill-densities, cargo weights, and other regulatory information will be acquired from other sources including the US Department of Transportation.

The scenarios will assume that the accident happens to the most typical storage or transportation method of the particular chemicals. It is further assumed that for temperature-sensitive substances an insulated tank is used. In some cases, however, it is conceivable that the substance temperature will increase by a few degrees due to high ambient temperature or intense solar radiation. This may become a precarious situation if the storage temperature of the chemical is only a few degrees lower than its boiling point. The release mechanism and release rate of a substance whose temperature is below its boiling point are significantly different from those when the substance is above its boiling point. Therefore, in our analyses, we will account for this situation.

b) Atmospheric Dispersion of Released Substances

Weather plays a critical role in the dispersion of chemicals into the atmosphere in a variety of simultaneous processes. The chemical's physical properties in relation to the ambient conditions affect the way the chemical is released into the atmosphere. For example, if a chemical is stored as a pressurized gas (liquid), it may leak in a liquid phase and form an evaporating pool, or it may escape as a mixture of gas and liquid droplets to form an aerosol. Therefore, for this study, an adequate number of meteorological conditions must be considered to provide accurate information concerning vulnerability zones.

c) Selection of Meteorological Conditions

Representative meteorological conditions will be selected based on historical data showing a predominance during flood episodes. Important parameters will include frequency distributions of wind speed, wind direction, temperature, and related fluctuation data. Based on these

meteorological data and on the release scenarios, a map of areas potentially impacted by chemical releases will be prepared.

3. Contaminant release, transport and fate:

The hydrological modeling effort will define the zone of flooding, flood depth and duration for each scenario. Combined with the GIS information, this will provide possible sources of chemical release of organic or inorganic contaminants. In this task, the models that will be developed to predict this release quantitatively, and the resulting transport and fate processes, will be simple forms of the research tools that the investigators have developed to date to describe these environmental processes. The simplifications will be made possible by focusing on particular scenarios and by examining broad classes of chemical release scenarios. It is also possible to achieve significant simplification of the models by recognizing that only the primary release and transport paths need be assessed in an emergency situation. The primary focus of this work, however, is on development of the tools necessary for planning during and immediately after the emergency. At that time, the questions are focused on the potential acute risk of the bulk of the contaminants. The chronic risk associated with a lesser or more diffuse residual in soil or confined surface waters is not the primary effort in this work.

Further simplification can also be achieved by separation of the scenarios and models by the release, transport and fate processes that are applicable to various contaminants of concern. Example scenarios include:

- wind loading failure of a chemical storage tank or processing facility
- fuel storage tank displacement and subsequent rupture after flooding
- inundation of a wastewater treatment system
- inundation of a hazardous waste landfill
- failure of a barge, railcar or tank truck containing chemicals

These and other scenarios have specific opportunities for chemical release depending upon the conditions of the failure or breach of the system and the chemical and physical properties of the contaminants. Note that in some scenarios the volume of contaminants released to the environment may be easily estimated, for example, on the basis of the volume of liquid in a storage tank. In other scenarios, such as the amount of chemical released after flooding of a hazardous waste landfill, the release depends upon the physicochemical properties of the contaminant and its immediate environment. The analyses of the releases will need to be scenario and chemical specific. It is possible, however, to examine broad classes of chemical properties and contaminant scenarios. For example, release of a lighter than water hydrocarbon fuel will generally require assessment of evaporation and subsequent transport in the air and migration on the surface of or dissolution in the surface waters. Release of a heavier than water chlorinated solvent, however, will generally require assessment of movement and collection of the dense liquid in depressions below the surface of the flood waters, reducing migration either through the air or as a separate phase liquid. The investigators have developed models for many of these individual processes and will apply these models in the proposed work. In addition, the investigators are knowledgeable on additional models that may be applicable to other scenarios and can incorporate these models as appropriate.

The focus of all of the work will be on the integration and simplification of existing models to be able to apply them to the assessment of the acute exposure resulting from a hurricane or other major flooding event. These models will be used to evaluate the identified scenarios. They will be available to be used for other scenarios and future events, as well. In particular, these models will identify exposure scenarios that have the most acute health risks, for which we will develop mitigation measures to prevent or minimize the most harmful releases.

4. Interactive GIS Setup:

A GIS provides essential functions for spatial and overlay analysis that allows a researcher to query data by their spatial characteristics, to (a) select data based on its location or spatial attributes, (b) determine the characteristics of a spatial location, (c) relate the spatial features of entities to each other, (d) integrate information spatially to determine the proximity from features and to features, (e) perform neighborhood analysis of contiguous regions, and (f) model the spatial environment. A GIS also provides the ability to present spatial data in the form of maps, charts, perspectives, regions, and locales using selected layers, features and symbology. Such capability enables communication of relationships, events, problems, and response. The interactive GIS will be flexible enough to incorporate real time data (remotely sensed and in field) during a disaster.

a.) Remote Sensing

The world of remote sensing is changing rapidly as new satellites are revolutionizing the industry. The capability to acquire high resolution, multispectral data in a timely manner at a reasonable cost is changing the expectations and applications of remote sensing. Remote sensing data is essential as a backdrop image to spatial data and to maintain up-to-date and accurate base maps. We anticipate utilizing remote sensing imagery in this project to provide a context for the spatial mapping GIS component and for portraying the results of climatic and flooding models. It is essential in determining the full impact of critical scenarios.

Remote sensing imagery will be processed and used to enhance geographic information systems applications. It can also be analyzed using image-processing techniques to assist with damage assessment, vegetation analysis, flood extent, and the development of other indices as needed.

b.) Field Mapping

Spatial data unavailable digitally or by remote sensing techniques can be collected in the field by a GPS-equipped mapping field team and stored on laptop computers. Both cultural and physical data can be collected in this manner with great accuracy and efficiency.

5. Mental health outcomes: Effects of Social Network and Local Community Contexts on Psychological Distress

Sociologists on our project team (Beggs and Hurlbert) initiated their research on social networks, social resources, and health-related outcomes, in the hurricane context, with a study of Hurricane Andrew. Their study of individuals' responses focused on (a) the extent to which residents drew upon formal (e.g., aid from formal organizations like the Federal Emergency Management Agency (FEMA), churches, or the Red Cross) and informal (e.g., aid from individuals) sources, respectively, to help them in preparing for and recovering from the storm and (b) how these factors affected mental health outcomes (psychological distress) in the short-term recovery phase of the hurricane.

The Hurricane Andrew research extended the understanding of the receipt of formal aid by showing that not only individual factors but also individuals' social network and local community contexts affected the receipt of formal aid and that different aspects of social network structure affected different types of formal aid. It also extended our understanding of the provision and reception of informal support. In a project that Beggs and Hurlbert conducted jointly with the Louisiana Department of Health and Hospitals, they investigated these same issues with a sample of mentally ill individuals who were served by that agency.

Hurricane Georges, which struck coastal Mississippi and Alabama in September of 1998, offered an opportunity to extend the Hurricane Andrew research. First, it enabled the gathering

of valuable comparison data. The communities that were hardest hit by Hurricane Georges lie in a coastal region, yet are more urban and have a larger industrial base than communities affected by Hurricane Andrew. Second, Hurricane Georges provided an opportunity to explore the mechanisms through which personal network contexts affect (a) the receipt of formal and informal support and (b) how all of these processes affect psychological distress (depressive symptoms) in the short-term recovery phase.

Our research team thus has an understanding of (a) how the network structures and community contexts in which individuals are embedded affect where they seek assistance in preparing for and recovering from hurricanes, (b) how network structures and local community contexts affect perceived and received informal support (e.g., the perceived adequacy of the informal support and amounts of support), and (c) how all of these things affect mental health outcomes (depression).

Through these studies of Hurricanes Andrew and Georges, we have developed a sound methodology for exploring these processes. That methodology will be used to conduct a baseline survey that will provide information on community characteristics, social network structure, and individual characteristics of residents of New Orleans. This will help to measure both the vulnerability of population and its potential resources for dealing with the impacts of hurricanes.

The baseline survey will collect data from a random sample of 1,000 New Orleans residents. Here, the primary data collection technique will be telephone surveys, with the sample selected via random-digit dialing. However, New Orleans contains many areas with high concentrations of poverty that could be designated underclass, because substantial portions of the population are either below the poverty line or living in extreme poverty (which we define as

income no more than half of the poverty level). Representing the social and economic resources and the potential health needs of that segment of the population is both critical and difficult, because this segment of the population is least likely to evacuate. To include these individuals in the sample a methodology that project team members developed to study an underclass population in Baton Rouge, Louisiana, will be employed. Because it is so critical to understand the needs and health concerns of economically and socially disadvantaged areas, our sample will be stratified to include an oversample of individuals in impoverished areas.

The survey that we administer in New Orleans will include additional questions dealing with two very key issues. First, questions will take into account the physical vulnerability and unique configuration of New Orleans. Second, an expanded set of questions will be included that focuses on community integration and resources.

The survey will focus on six key types of information; most of these questions have been developed and tested in previous surveys by project team members. First, they will collect detailed information on individuals' past experiences with hurricanes and flooding. Second, they will collect information on individuals' routine social environments, or core networks. To collect these data, we will use the standard technique for collecting network data: the name generator-name interpreter sequence. Name generators elicit the names of network members, or alters; five name generators developed and tested in our previous research will be used. Name interpreters gather information on individuals' network members. We will include name interpreters that will allow us to construct a wide range of measures of the structure and composition of respondents' networks. Our third focus will be on measures that tap individuals' integration into and satisfaction with their local communities. One of our key foci will be individuals' participation in local organizations, as such has been shown to be key in gaining access to certain types of

social resources (Beggs and Hurlbert, 1997). Fourth, we will include detailed questions that tap the kinds of social and economic resources individuals would utilize if a hurricane struck their areas. Fifth, data will be collected on individuals' physical and mental health (general health condition, depressive symptoms, presence of chronic illness or disability, personal coping resources, etc.) and on major life events. Sixth, information will be collected on sources of routine social support. In addition, we will collect data on a wide range of individual (socioeconomic and demographic) characteristics. Analyses of these data will focus on estimating what types of individuals are most vulnerable to the effects of hurricanes and flooding, based upon their characteristics and those of their social network and local community interests and economic resources available to them. All data will be geo-encoded so that we can construct measures of local community characteristics.

This study will provide invaluable baseline information on this key Louisiana community regarding the potential impacts of hurricanes. It will also extend our understanding of the social processes surrounding events before, during, and after a hurricane. That information will be immensely valuable for basic research on both social resources and natural disasters. It will also be invaluable for other communities that are vulnerable to hurricanes and flooding.

6. Public health outcomes

a) Phase One - Immediate Impact

Census data will be utilized to construct base-line population databases. Case studies from a severity-range of floods and storms will provide quantitative data on what may be expected during or immediately after a major Louisiana flood. In addition, discussion with Emergency Management personnel will provide information on regional and city planning, e.g., vertical evacuation in New Orleans. The various modeling efforts will provide information on the

potential of the flooding of toxic waste sites and chemical plants. During Betsy in 1965, though the flooding was localized within New Orleans a number of people were drowned in their homes; similar experiences can be expected in future such events.

Despite the widespread flooding, there will be a significantly increased risk of household fires from barbecues, portable stoves, open cooking fires, candles, and lanterns. Remaining occupied structures, abandoned warehouses, high-rise office buildings, and all unflooded upper stories - many serving as commandeered shelters - will also face increased fire risks from downed power lines, disrupted floating gas lines, and gas pockets trapped in roofs and upper stories. Unfortunately, understaffed and inadequately equipped firefighting and EMS personnel will meet these fire risks. Local fire departments will be denied ground access to fires, will have inadequate airborne and marine firefighting equipment, and will have no water pressure except that supplied by siphon pumps.

There will be trauma cases from flying objects as well as collapsing structures and the concomitant risk of tetanus. The immediate health problems will certainly include high incidences of diarrhea and other gastroenteric problems because of contaminated water, stress, worsening personal hygiene, and chemical intoxications. Evacuation centers will have to deal with people who left home without adequate supplies of their prescribed medications. Altogether there will be a rising cycle of medical problems. The potential for criminal activities will be fulfilled.

Many storm and flood refugees will have been inadequately vaccinated for measles and influenza and unvaccinated for pneumococcal pneumonia and bacterial meningitis. These highly communicable diseases, yet vaccine-preventable, cause frequent epidemics among military recruits crowded in base camps and refugees crowded in temporary shelters. Public health

personnel will require adequate pre-existing stocks of the appropriate vaccines in order to offer timely vaccinations to large numbers of displaced persons in crowded conditions, and displaced prisoners from low-lying correctional facilities, will have significant social consequences. The communicable disease threats posed by this population would include STDs, especially HIV/AIDS, and multi-drug resistant TB. The homeless also pose these same communicable disease threats, particularly tuberculosis, and added infectious disease threats, such as typhus and hemorrhagic scabies, especially if crowded into temporary shelters with the general public.

Present Corps of Engineers predictions are that it will take 9 weeks to pump all the water out of New Orleans, assuming the necessary permits are obtained. There will be a strong push by commercial fishing interests to restrict the out pumping for fears the contaminated water will severely impact the harvestable marine and estuarine. Air evacuations by helicopter will ensure the evacuation of up to thousands a day, but at the same time there will have to be supply for mechanisms set up to get food, water and medicines to those trapped. An “Operation Dunkirk” effort will have to be launched from the north shore of Lake Pontchartrain, utilizing sport fishing and recreational boats to collect stranded New Orleans residents from the levees on the north side. On the south side, barges and commercial vessels will do their own river evacuations to centers such as Baton Rouge. Within the flooded city, where water levels in many areas will reach the eaves of houses, another small craft operation will have to be setup moving people and supplies to and from their houses etc. to the levees (high ground) and vice versa.

This “Operation Dunkirk” evacuation and supply, using mostly volunteers, is going to require significant planning. Each crew will need certain emergency supplies and radio/cellular phone communications; a stock of medicines and medical experts which whom to communicate. Insurance issues and waivers will have to be negotiated.

Getting survivors out of the flooded city, and ensuring adequate food and water supplies, rapid access to medical support are essential elements of Phase One.

b) Phase Two - Initial Recovery

During the time from the end of the first week to the second month (initial recovery) there will be complex human population fluxes - people allowed home, others kept in evacuation centers, movement from one center to another, further evacuations, and possibly a floating uncontrolled criminal population. The database management should facilitate this seamlessly. The surveys will provide very useful data related to the initial recovery, and, potential new Louisiana scenarios.

In terms of health consequences, this period will be characterized by continued stress and the appearance of mental health problems. There will be an increasing incidence of stress-related infections, asthma, and other respiratory diseases and lethal pneumonias, such as Legionella and pneumococcal pneumonia, especially in the elderly, the very young, and the immunosuppressed. Various parasitic infections could emerge as additional communicable disease threats following weeks of outdoor living, inadequate sewage treatment, inadequate personal hygiene and hand washing, and vicarious defecation. There will be a potential for encephalitis, dengue, and other arboviral infections. Food delivery problems will result in contaminated food outbreaks and, because this state is fond of seafood, there will be various rotavirus, calicivirus, hepatitis A, paralytic shellfish poisoning, and Vibrio spp. outbreaks, including cholera. Chemical toxic conditions should decrease during this time; toward the end of this phase there will be a surge in infectious disease diagnoses, compounded by increasing antibiotic resistance and inadequate diagnostic laboratory capabilities. A major component of this period will be the urgent need for aggressive mental health programs and to get children

back into structured lives and school to prevent longer-term juvenile problems. Recovery will have faster and slower recovering parts. Noji (2001) stresses the need for better epidemiologic knowledge of by disasters to better facilitate relief efforts.

The Public Health and Preventive Medicine Department of the LSU health Science Center, will provide the following medical, public health, and analytical services for the project:

- Environmental Medical Officer (EMO). The EMO, a physician with specialized training in environmental and occupational medicine, will be charged with predicting and monitoring the communicable disease threats associated with flooding disasters including, but not limited to, waterborne disease epidemics (Hepatitis A, Cholera, Cryptosporidiasis, Cyclosporiasis, et al); food-borne disease epidemics (Salmonellosis, Shigellosis, toxigenic E. coli, botulism, et al); and vector and fomite-borne disease epidemics (dengue, encephalitis, anthrax, et al). In addition, the EMO will collaborate with those planning emergency first responses to provide a framework for timely public health communications regarding methods to prevent (primary prevention = vaccination, boiling water, thorough cooking, et al); to diagnose (secondary prevention = to screen with laboratory testing); and to treat (tertiary prevention = medical treatment and rehabilitation) waterborne, food-borne, and vector-borne communicable diseases. The EMO will also collaborate with basic scientists, emergency service managers, and state and federal agencies to determine the techniques that would be utilized to assess and to monitor the quality of air, water, and soil. The EMO will assist emergency managers in the issuing of alerts regarding potential contamination of water and food sources in the flood disaster areas. The EMO will develop a series of timely pronouncements, simple domestic measures that could assure the environmental quality of air, water, and food sources. The pronouncements will describe how to avoid the risks of contracting prevalent communicable diseases associated with

catastrophic environmental contamination. The EQMO will also collaborate with basic scientists, emergency service managers, and state and federal officials to assess the potential threats posed to water and wastewater treatment facilities, sewerage treatment facilities, drinking water supplies, groundwater, and drinking water aquifers. Potential threats to aquifers and potable water supplies will come from combinations of petrochemicals, volatile organic chemicals, heavy metals, pesticides, herbicides, fertilizers, animal wastes and carcasses. In the event of a flooding disaster, storm-damaged refineries, flooded oxidation ponds, and hazardous waste landfills may leak organic and inorganic toxins into and contaminate ground wells, aquifers, municipal water supplies, and water treatment plants. In addition, such toxins may enter local sewerage, wastewater, and drinking water treatment systems killing anaerobic bacteria used to detoxify human wastes and rendering sewerage and water treatment systems inoperable for prolonged periods. The potential for 'toxic mold will also be investigated. The EMO will develop techniques that emergency managers could use to monitor the multiple potential toxic threats.

- Public Health Communications Officer (PHCO). The PHCO will develop public health liaison procedures for use between the disaster first responders and the appropriate members of the parish and state medical societies and the state Office of Public Health. The PHCO will develop techniques that will prepare and deliver timely public health and medical communications regarding toxic environmental and communicable disease risks, to representatives of parish and state medical societies and to private physician practitioners. This is a vital response mechanism presently not available.

Finally, the EMO will develop the techniques to collect the epidemiologic, clinical, and laboratory data from all of the duty roles described and developed the protocols in order to conduct

cross-sectional and longitudinal analytical investigations designed to predict human toxic risks, determine individual risk factors for environmental and communicable diseases, and test preventive interventions. All three health officers will contribute to the use of the interactive GIS system, and chapters for the manual.

As a physician board-certified in occupational and environmental medicine, the PI, James H. Diaz, M.D., MPH&TM, Dr. P.H., will serve as both the EMO and the PHCO for the project in a permanent capacity. The PI is a member of the multidisciplinary faculty of the Medical Toxicology Fellowship Training program.

7. Pets/wildlife and disease

Much can be learned from others' experiences. Therefore, by discussion with emergency responders who have suffered from modest flooding to severe hurricanes, we can gain subjective and quantitative insight into the immediate problems that we can expect in Louisiana under similar situations. These will cover restrictions on animal evacuations and shelter, expected losses and subsequent disposal problems and methodologies, survivor nutrition and malnutrition, trauma, exposure and water damage, strays and owner identification and recovery, and normal health and management concerns.

The various flood scenarios developed in this study will form the basis of animal disease response. Various focus groups of experts, with major flood experience, will be contracted as to the nature of problem recognized, and how these experts prioritized the problems and their solutions. Such experts would be leading animal control offices, veterinary clinicians, cattlemen, extension officers, USDA officers, environmental experts, toxicologists, and such. A series of mitigation strategies will then be developed. The same experts will be asked to comment on the mitigation strategies.

The scenario studies above will provide some information and data on what can be expected and probable time scales. Risk and probability scales for various diseases, infections, and management concerns will be developed. For example, affected and diseased livestock will have to be quarantined from healthy.

8. Impact assessment of major floods

A critical part of the hazards analysis process is the determination of the adverse impact of hurricane flooding. Vulnerability zones will be created reflecting various hazards such as wind, storm surge, flood, as well as air and water releases of hazardous substances. These vulnerability zones will then be used to determine the potential impact of the vulnerability zones on the public health of a local community.

Outputs from hurricane storm surge, flood, air dispersion, and water modeling programs will be used to generate vulnerability zones. These zones will be categorized by water height in flooded areas from storm surge or rainfall, air concentration by chemical, water concentration by substance, and high wind level bands. These vulnerability zones will be categorized by level of risk and used as a basis for determining high risk population clusters, animal pet and wildlife animal counts, homes and businesses affected, and land areas by type (recreational, wetlands, business, residential, etc.). GIS layers reflecting the local community will be used with the vulnerability zones to further determine the potential impact of public health risks.

The human environment/community

There are two interconnected parts to this: the need for infrastructure and community rebuilding and economic recovery. The latter may not always be possible, because the damage may simply be too severe. The former is very important in the medium term, whatever the final outcome.

There will be a need for rebuilding subsidies, whether for private or public buildings, power networks, equipment, roads, and bridges, as well as of public confidence building, and reestablishing industries. This will involve the need for reliable advice on financial management and to minimize criminal activities that will come with the release of these funds.

On the health side we can expect to see an increase in congenital abnormalities in the 8 to 10 months following the flooding and exposure to chemicals, maybe longer if these lurk in the drinking water. The care of these children will have a long-time economic impact. Similarly some 6 to 15 years later we will see an increase in cancer incidences related to these chemicals. One can predict long term mental health problems in the community persisting long after the flooding.

9. Emergency response procedures and needs

We will develop very specific recommendations to the state and local emergency management, public health, medical, and environmental community, OEP, for the study area. This will include:

- Expected numbers of persons who will be impacted by large floods.
- Expected number and types of human fatalities.
- Short-term public health problems from the volumetric needs for safe drinking water to the size of expected disease outbreaks. Recommendations on the safe and efficient handling of public health issues, including the stockpiling of strategic reserves to the need for increased medi-vac facilities and transporters.
- Short-term mental and behavioral health issues, and long-term rehabilitation and counseling needs. Assessment of available social and economic resources to deal with these efforts and development of recommendations for augmenting these resources.

- Expected numbers of animal carcasses to be dealt with, and mechanisms and sites for their incineration.
- An assessment of long-term public health consequences of exposure to chemicals and contaminated air and water.
- Recommendations on improving public safety during major flood events, including but not limited to the need and size of flood-proof levees surrounding major landfills, sewerage plants, and chemical facilities to isolate these contamination sources during major flood events.
- A scenario investigating vertical evacuations to high-rise buildings will be carefully examined, and recommendations will be made. These will include the needs to stockpile food and water, deal with sanitation, and providing adequate security.
- Areas of Legislation that need to be implemented. This task will include some of the politicians who have written letters of support.

10. Final report and publications

All aspects of the project will be published in the scientific literature. Additionally, manuscripts describing the multidisciplinary consortium approach to flood-related public health issues will also be published. A web page will be established and a periodic LSU Hurricane Center newsletter will be used to report research results. All publications will make use of the latest techniques in presenting information.

a) Cartography

Accurate and well-designed maps for publication, reports, and web sites will be created using GIS data, photographs, raw data, and other information. These maps will be prepared for the printing press at high-resolution and detail, for the inkjet plotter at medium resolution, and for

the web site at screen resolution. The printing press offers a cost-effective method for the mass distribution of detailed maps and other technical documents for planners and emergency response teams in the field as well as to inform the general public, many of which may have no access to computers.

More spatial data can be depicted on a well-designed map than in any other form of technical publication. Maps tend to get more real use than volumes of technical data and reports. The results of GIS analysis can be widely distributed in great detail to a great number people who have no GIS nor access to one by compiling, designing and publishing a proper map product.

b) Graphic Design

Computer graphics for technical reports, poster sessions, journal articles, and web site distribution will be prepared to meet a wide variety of specifications. Professionally prepared graphics can greatly enhance the readability and scope of scientific and promotional publications. Image enhancement of scanned images and digital photography are routinely performed at LSU to provide high-quality photographs, both aerial and ground, for research, information dissemination, and scientific publishing purposes.

c) Technology Transfer

The dissemination of project data is essential to enable efficient coordination between teams during a project and later to share the results of the research with the academic community, the media, and the general public. Professional digital design and layout of material for publishing will be prepared to exacting specifications for the traditional printing press, Internet publishing via the web site, and for plot-on-demand products in support of the project and for individual researchers. Internet web sites offer timely access to the data on a worldwide basis and the

electronic publishing of this material is essential. CDs will be produced for some data sets. However, traditional publishing via the printing press still offers much in the way of cost-effective distribution of large quantities of maps and posters for the general public that may have little or no computer access to the information. The press also allows a degree of detail and image quality unmatched by Internet images or ink-jet plots. Affordable color inkjet printers do allow a quick-turnaround product for use during the project, for draft publications, and for print-on-demand publishing of final data although the price per sheet is many times greater than a printed product. In each style of publishing it is essential that the highest cartographic, photographic, and publishing standards for design and production be met in order that the products be widely noticed and accepted.

d) The Road Ahead: International Recognition and Opportunities for Future Funding

As these analyses evolve and continue, we will be able to seek federal funding in two ways to build upon these analyses. First, if natural disasters affect Louisiana and especially New Orleans, then, we will be able to garner federal funds to study the impact of natural disasters on the area, using most of our baseline data for comparison. Second, we will apply for federal funds to perform longitudinal studies of the individuals in our analyses of an affected community. These longitudinal studies will be invaluable in understanding the long-term mental health effects of hurricanes.

An international conference, “Human Health Impacts of Multi Disasters Due to Hurricanes and Massive Flooding Events,” will be held towards the end of year four. We believe that the conference will highlight this Health Excellence Fund (HEF) Center’s lead in this extremely important aspect of human health, and show potential funding agencies the extent of this lead.

As a consequence of sending research and assessment teams to sites of major hurricanes/flood disasters throughout the study period, we will have a full inventory of the nature of multi-disasters. This inventory, along with our thorough understanding of the science and health impacts of multi-disasters will greatly improve our marketability to other funding agencies.

During the entire project the “Hurricanes and Public Health HEF Center at LSU” will submit proposals to extend these BoR supported project concepts elsewhere in Louisiana, other U.S. coastal states and to other flood prone areas of the globe. Given the major flooding events in last few years, the impacts of sea level rise and global warming, we believe that our Center will be tasked with additional areas. The combination of modeling and GIS techniques to develop risks and to potentially manage major multi-faceted disasters will ensure that this Center will continue its activities for years to come.

e) Updating the New Orleans Data Base and Public Policy Issues.

The LSU Hurricane Center is working closely with the Louisiana Office of Emergency Preparedness (LOEP) and the Governor’s Office to secure long-term state funding for contractual support. Such support would include updating of all databases. Thus, the New Orleans database produced as a result of the research proposed herein will be continuously updated and upgraded, so that emergency managers will always have the most up-to-date data at hand.

Many planning and mitigation actions will result from this project. Examples include land use changes, zoning, building codes, and regulatory oversight of businesses that could be impacted by our modeled hazards in New Orleans, Louisiana. Where the research results indicate changes or additions to public policy, the various legislators supporting this research effort as

well as the Governor's Office will be informed thereof. In this way there will be a direct connection between our research efforts and the legislative system.

SCHEDULE OF PROJECT ACTIVITIES

The project timelines are given in Table 1. The legend for the table is as follows:

* - Case studies will also be performed as opportunities arise from new disasters.

H - High-level effort. Task will be substantially complete at the end of high level effort.

L - Low-level effort. Start-up or wrap-up efforts

x - Deliverables and project milestones

Table 1: Schedule of Work

Task	Year 1				Year 2				Year 3				Year 4				Year 5				Beyond
Problem Definition/Review of Available Science and Technology																					
Meetings w/public health and emergency officials to determine their needs/desired products	x	x	x																		
Detailed Planning - integration of disciplines/models	H	H	L	L	L	L	L	L	L	L	L	L	L	L							
Literature Review, all disciplines	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L		
Detailed Study of Case Histories	H	H	H	H	H	H	*	*	*	*	*	*	*	*	*	*	*	*	*		
Modeling																					
Identification/Development of Physical Models (flooding, chemical fate and transport, etc.)	L	H	H	H	H	H	H	H	L	L		L		L		L		L			
Adaptation of models to the 3 major studies				L	H	H	H	H	H	H	H	H	H	H	L	L	L	L	L		
Identification/Development of Epidemiology/ Toxicology/Public Health Models	L	H	H	H	H	H	H	H	L	L		L		L		L		L			
Adaptation of models to New Orleans						L	H	H	H	H	H	H	H	H	H	H	L	L	L	L	
Mental Health/Sociology	L	H	H	H	H	H	H	H	H	H	H	H	L	L	L	L	L	H	H	L	
GIS Database Development and Mapping	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	L	
Remediation/Preparedness/Response/Recovery																					
Develop Scenarios using completed models												L	H	H	H	H	H	H	L		
Develop Remediation Plans based on analysis of scenario data, working with state/local officials												L	H	H	H	H	H	H	H	L	
Technology Transfer																					
Progress/Final Reports				x				x				x				x				x	
Web Site - findings, applications f/ scientists, health professionals, emergency managers, general public		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Journal Papers/Conference Presentations				x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Host National Conference																x					
Other																					
Project Meeting of all Investigators	x				x				x				x				x				
Advisory Board Meeting	x				x				x				x				x			x	
Solicit funding from NIH, NSF, etc. for fundamental and applied research to fill gaps in knowledge base	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	
Solicit funding from other states, FEMA, int'l orgs					x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	

APPENDIX B: VETERINARIAN QUESTIONNAIRE

- Was anyone present in the clinic (employees, family members) during the storm? What provisions for food, water, and communications were taken for those who stayed?
- How was food and drinking water for the animals stored during the storm? How were large amounts of water for cleaning and other uses stored?
- How were refrigerated vaccinations and medications stored? How was the integrity of these materials assessed after the power outage?
- Did the clinic have a generator before the storm? If so, what kind? Where and how much fuel was stored? How was fuel obtained to run the generators after the storm? Is there any plan for receiving fuel if needed after a future storm? If the clinic did not have a generator during the previous hurricane season, does it have one now? If so, what kind?
- How many and what type of animals were in the clinic during the storm? Did any of the animals die? If so, why? Did the clinic take extra boarders before the storm?
- Did the clinic consider a mass evacuation of the animals? Was or is there a predetermined location to where the animals could be taken?
- Did the clinic receive supplies from an outside source after the storm? If so, what? What materials would the clinic want to receive subsequent to another storm? Is there a plan to receive such help?
- Did the clinic sustain water or wind damage from the storm? How was the damage dealt with immediately after the storm?
- What type of insurance coverage did the clinic have before the hurricane? Was a decision made to change particular aspects of the coverage after the storm? If so, how does the new coverage plan differ?
- Is the clinic on municipal water or a well? How many days was the clinic without running water after the storm? How many days was the clinic without electricity?
- How did the clinic store financial/medical records? Was there any loss of records and if so, how did it affect the practice? How did the veterinarians determine to evaluate animals who had no medical history records after the storm?
- How long after the storm was it until the clinic operated on a regular basis, such as clients returning for checkups/vaccinations, monetary aspects of the practice returning to pre-hurricane levels, and other everyday functions?

APPENDIX C: SAMPLE LETTER OF INTRODUCTION

August 28, 2006

Dr. Bettie Fauntleroy
Veterinary
Hillside Animal Clinic
78290 Highway 437
Covington, LA 70435

Dear Dr. Fauntleroy:

The purpose of this letter is to briefly introduce myself as a committee member on a project funded by the Southern Louisiana Veterinary Association. The Department of Environmental Studies, School of the Coast & Environment, at Louisiana State University has begun a project to produce a Veterinary Emergency Preparedness and Response (VEPR) Manual for use by clinics throughout the Gulf South. The research is being directed by Dr. Martin Hugh Jones and Dr. Ralph J. Portier.

I have recently met with Laura Basirico, a graduate research associate from LSU. She is conducting interviews and collecting information for use in the emergency manual document.

In order to gain relevant information concerning your clinic's hurricane preparedness and evacuation status, Laura would like to meet with you personally for about thirty minutes or so. She hopes to gain perspective on hurricane planning as well as hear your story resulting from Hurricane Katrina. The project is highly relevant to the recovery of post-Katrina veterinary clinics and hospitals, and I personally support the endeavor to create the emergency manual.

As a local from a hurricane-impacted area, I believe the construction of a veterinary hospital hurricane emergency manual is a project worth supporting. Veterinarians from the Gulf Coast area will be greatly served by such a document and it will be a valuable resource for the upcoming hurricane seasons.

Thank you for your consideration and Laura looks forward to meeting you and learning all she can from your experience.

Sincerely,

Dr. Robert Gros

APPENDIX D: TRANSCRIPT, CONTACT ONE – DR. PETE HENDRY; GENERAL ANIMAL HOSPITAL

Contact Information:

71224 Hendry Avenue Covington, LA 70433

Phone number: (985) 892-1114

Interview date: June 26, 2006

- Dr. Hendry and Dr. Greg Labranche have a small animal veterinary clinic in Covington, Louisiana.
- Dr. Hendry's clinic, established in 1968, was one of the first practices in St. Tammany parish. The clinic had never experienced anything like what they dealt with as a result of hurricane Katrina.

CLINIC:

- The clinic is a one-story, concrete building with a solid roof structure and many windowless rooms.
- The building was not built to function without air-conditioning; after the storm, the clinic was very warm and muggy inside.
- The facilities include a large kennel.

During the storm:

- Dr. Hendry and Dr. Labranche stayed at the clinic until about 4:30 the morning of the storm and then left for Baton Rouge. Both veterinarians returned to the clinic the evening after the storm.
- Several veterinary technicians stayed at the clinic during the storm as they felt safer in the building than at their own homes.
- The clinic was full of the employees' animals as well as several dogs that had been boarded by clients before the storm.

- Water was stockpiled in buckets and tubs. Extra medicine and food was on hand as well.

After the storm:

- Many of the animals that were boarded before the storm remained at the clinic for extended periods of time.
- Dr. Hendry took his animals back to his home to alleviate the problem of overcrowding.
- None of the animals at the clinic were in critical condition as the veterinarians schedule major surgeries on Monday, Tuesday, and Wednesdays. The animals had at least four days to recover before the storm hit.
- The clinic lost power for about three weeks. As a result and without generators, the clinic lost medications and vaccinations.
- The biggest concern for the veterinarians was the maintenance of sanitation in the kennel areas. Many animals were kept in confined areas and feeding areas and other places could not be hosed-down because of the lack of running water.
- The veterinarians and technicians alternated trips to areas that had running water to bring back buckets for the clinic. They also made trips to Baton Rouge every few days to pick up things that they were unable to acquire in St. Tammany Parish.
- Not a single animal was lost at the clinic during or after the storm.

LOCAL POPULATION:

- Most of the clients of Dr. Hendry's clinic were able to take animals with them, or had a specific plan as to where the animals would go when they evacuated for hurricane Katrina. Not many animals in Mandeville or Covington were left unattended and the clinic did not receive any rescued or abandoned animals.

- Dr. Hendry believes that many of the animals left during the storm were the animals of individuals who did not have a specific place to evacuate to during the storm.
- Dr. Hendry's clinic does not practice livestock or equine veterinary medicine and therefore did not have to help clients move and deal with large animals.

INSURANCE:

- Dr. Hendry's clinic has full insurance coverage for the building and contents, as well as for all of the animals that would have been affected in a hurricane.

EVACUATION:

- Dr. Hendry was able to determine that the eye of the storm was not going to pass directly over the clinic and made the decision to leave the animals with the techs during the storm.
- The clinic had pre-determined locations in south Mississippi and Texas to which they would have moved all of the animals if it had been necessary. Both veterinarians felt that the animals and the employees who remained through the storm would be sufficiently safe in the building and did not make full-scale evacuations plans.

RECORDS:

- The clinic did not sustain any water damage during or after Katrina and therefore did not lose medical records.
- Problems with records occurred after the storm as clients from New Orleans brought in animals to be treated by Dr. Hendry who had lost all of their medical history documents.
- The veterinarians had to take the animal owners' word for their medical history and make educated decisions when caring for an animal in that circumstance.

In conclusion:

- Dr. Hendry believes that a manual would be highly beneficial for veterinarians around the area and he is willing to assist the project in any way possible.
- This particular clinic does not have any document to give to clients with regard to evacuation logistics for their animals. Dr. Hendry said that they would pass out such a check-list to clients during hurricane season.
- Dr. Hendry thinks that the greatest chance for a successful evacuation with animals is to know where to head and know that the animals can go as well. Good results cannot be expected from last minute decisions.
- The clinic itself has adapted for the current hurricane season as a result of Katrina. Generators have been installed at the clinic as well as a hand pump so that water can be drawn out of the well without electricity. Based on the anticipated strength of the hurricane, a decision will be made by the veterinarians a few days before landfall as to whether or not they will take outside-boarders.

APPENDIX E: TRANSCRIPT, CONTACT FOUR – DR. DANIEL BRENNAN; HONEY ISLAND ANIMAL CLINIC

Contact Information:

40498 Hwy. 190 East Slidell, LA 70461

Phone number: (985) 646-0855

Interview date: July 26, 2006

- Dr. Daniel Brennan has a small animal clinic in Slidell, Louisiana. He is the only veterinarian in the practice. Dr. Brennan is a graduate of LSU vet school and has been in practice for almost 20 years.

CLINIC/SLIDELL AREA:

- Slidell, Louisiana was heavily impacted by Hurricane Katrina. Dr. Brennan estimates that about 80 percent of residential homes in Slidell were damaged by the storm. Most businesses in the area were damaged to some degree by the hurricane.
- Located near Honey Island Swamp, south of Interstate-12, Dr. Brennan's clinic was completely destroyed by the storm. The clinic is an Acadian style home, and located in a heavily wooded area. Dr. Brennan's clinic was one of the four Slidell veterinary clinics entirely destroyed as a result of the storm.
- Dr. Brennan's home was not destroyed by the storm and he considers himself fortunate to not have lost both his house and place of business.

Before the Storm:

- Since Hurricane Gorges, Dr. Brennan does not take animal boarders during hurricanes. Dr. Brennan watched Hurricane Katrina closely, and two days before the storm hit, he began to move animals from the clinic. Dr. Brennan and his staff called clients to retrieve their animals; some animals, he brought to their respective homes himself. The

remaining animals, those who had been boarded in the previous weeks by absent owners, were evacuated with Dr. Brennan and his own animals.

- Dr. Brennan takes evacuated animals to his sister's home in Mississippi where cages and runs are available for the animals.
- Dr. Brennan also took his computers from the office and all important paper work.

After the Storm:

- Dr. Brennan returned to his clinic the day after the storm. Lake Pontchartrain literally washed onto his property and a foot of mud and debris covered the entire area. Dr. Brennan said that he was not as worried as he should have been about the toxicity of the residue. The potentially infectious conditions of the area was not his foremost concern.
- Dr. Brennan had to break the doors of his clinic down to get into the building. The wood had swollen as a result of the water.
- The water receded by the time Dr. Brennan returned to the clinic; it dislocated everything that was inside of the clinic. 2,000 pounds of dog and cat food burst in the clinic and was distributed throughout the clinic. He said that the smell was overpowering.
- Not one piece of furniture or equipment was in the same place that it had been left and as a result, almost everything was lost. Dr. Brennan saved a few examining tables, some small metal tables. No medical equipment, medicines, vaccinations, grooming products, or foods were salvageable, neither were the animal medical history files.
- Three days after the storm, Dr. Brennan went to a hardware store to acquire sheetrock, paint, wood, and other building supplies. Using a generator to power tools and fans, the clinic was gutted to the studs one week after the storm. The area was without electricity

for six weeks. Dr. Brennan had running water as he powered the clinic's well with the generator when necessary.

- Within six weeks, Dr. Brennan completed the restoration of the clinic and was open to see patients.

LOCAL POPULATION:

- The Slidell area sustained heavy damage from Katrina, but Dr. Brennan began to see animals as soon as the clinic was reopened. Unlike areas like Franklinton, many individuals in Slidell received FEMA checks and were willing to spend the money on animal care.
- Dr. Brennan set up tents in the parking lot of his clinic and sold animal care products out of boxes. Owners bought flea shampoo, grooming tools, and many other seemingly extraneous products. Cash flow returned as soon as Dr. Brennan opened the clinic to his patients again.
- The clinic is currently experiencing normal profits and business for the particular time of year. Dr. Brennan sees new patients as individuals have come from the New Orleans area after the storm.
- Dr. Brennan has run into problems in the attempt to re-staff his clinic after the storm as any types of workers were scarce. Only one pre-storm employee remained, and the current office staff was hired within the past two weeks.

INSURANCE:

- Dr. Brennan had full coverage hurricane insurance and there were many problems with the policy in the aftermath of the storm.

- The policy determined the cost of rebuilding the 2,000 square foot clinic at pre-hurricane prices. The economy and infrastructure over an 80 mile radius of the Gulf Coast was impacted by Katrina. As a result, the cost of rebuilding the veterinary clinic superseded the amount established by the insurance company before the storm.
- Dr. Brennan did not have insurance on every piece of equipment in the clinic. He should have called his insurance company and increased the coverage policy every time a new piece of equipment was purchased for the clinic. After Katrina, he calls the insurance provider for increased coverage with every purchase.
- Dr. Brennan took loans and spent his own money to rebuild his clinic. He says, “I just spent money.” His business could not apply for government grants and Dr. Brennan believes that this policy just. He believes that the government is not responsible and does not have the capacity to correct every problem in the area. It is personal responsibility and effort that must be called on in the rebuilding process. Dr. Brennan benefits from individuals who do receive grants to rebuild their homes and move back into the area.
- Financial, Dr. Brennan has made it through the worst times after the storm and believes that the clinic will be “OK.” He is not optimistic when considering the possibility of another hurricane; the area will not survive another bout of wide-spread destruction.

EVACUATION:

- Dr. Brennan’s clinic was evacuated in the days leading up to the storm. No animals or staff remained in the building during the storm.

- When Dr. Brennan evacuates for hurricanes this season, he will take not only computers, but any other equipment that can be loaded into his truck and trailer. As much as possible will be physically taken from the clinic.
- Dr. Brennan suggests that individuals not leave their animals with veterinarians during hurricanes. It is better for the animal to be evacuated with the owner than to stay in an overcrowded animal clinic and endure the stresses of a hurricane situation. It does not benefit the owner or animal or the veterinarian to board animals during the hurricane.

RECORDS:

- Dr. Brennan did save all of his electronic records. Personal notes written by Dr. Brennan during the course of evaluations were lost, but the major components of medical histories were retained.
- The clinic does see animals without records. Animals are assessed on physical examination and from the verbal medical histories given by the owners.

In Conclusion:

- Dr. Brennan has started his practice completely over in the months after Katrina. The major focus immediately after the storm was not the needs of animals, but the process of rebuilding the clinic.
- His client base has returned for the most part but he does not believe that they will return a second time if such a storm impacts the area again.
- Dr. Brennan suggests that the way humans lived before the storm was a “fairy tale” and the way it is after the storm is the “reality.”
- He became emotional when speaking about friends that lost both their homes and places of business. He was also emotional as he spoke of observing the impact that the storm

has had on elderly and younger people. Dr. Brennan believes those in his age group have recovered from the storm because they are established as individuals financially and socially for the most part.

APPENDIX F: TRANSCRIPT, CONTACT FIVE – DR. GARY LEVEY; LAKEVIEW VETERINARY HOSPITAL, INCORPORATED

Contact Information:

6245 Memphis Street, New Orleans, LA 70124

Phone number: (504) 482-2173

Email Address: BIGEASYDVM@aol.com

Website: <http://www.lakeviewvet.vetsuite.com/>

Interview date: September 27, 2006

- Dr. Levy is in practice with four veterinarians at Lakeview Veterinary Hospital, Inc. including Dr. James L. Heintz, Dr. Amy Grayson, Dr. Myron W. Smith, and Dr. Erin R. Reif. Dr. Levy graduated from Louisiana State University School of Veterinary Medicine in 1983.

CLINIC/LAKEVIEW AREA:

- The Lakeview area was highly impacted by Hurricane Katrina. According to Dr. Levy, approximately one resident per block of the area has returned to their home. He estimates that 5-10 percent of the neighborhood has come back after the storm.
- Of the five veterinarians in practice, one lost both his home and practice entirely. Dr. Levy sustained about \$20,000 worth of personal damage and his practice was relocated to Metairie from September 2005 to May 2006. The other veterinarians moved to Baton Rouge Louisiana, Tuskegee Alabama, and various places.
- On May 15, 2006, two modular buildings were opened for business at the same location as the hospital. Since the storm, the building was gutted and the process to create a new hospital has begun. Dr. Levy tentatively suggested that the hospital will reopen in May 2008.

Before the Storm:

- Since 1989, Lakeview Veterinary Hospital, Inc. has required that all pet owners sign waivers when leaving their animals at the clinic during hurricane season. The waivers ensure that all animals are picked up by a particular individual in the event of a mandatory evacuation due to an impending hurricane. As a result of this practice, there were no animals in the clinic when Katrina hit New Orleans.
- The veterinarians placed all of their equipment three feet up and evacuated the clinic on Saturday before the storm. Records were stored off-site electronically.

After the Storm:

- Dr. Levy returned to the hospital two and a half weeks after the storm. One of the veterinarians returned within days of the storm but was unable to get into the building and fully assess the damage or begin clean up.
- The hospital took on seven feet of water after the storm. 98 percent of the equipment, furniture, and other items in the hospital were destroyed. Some of the stainless steel examining tables and cages were salvageable.
- Like in many of the other clinics, water washed in debris and moved things throughout the clinic including burst-open bags of animal food. Those working in the hospital wore protection against the potential toxic conditions, but the full extent of the danger was unknown at the time.
- All of the hardcopy files were lost as well as some important, original documents. The clinic did not have a waterproof, fireproof box with tax, lease, and other essential information.

- The hospital was gutted and two modular buildings were moved into the site in the interim. The five vets are presently in agreement concerning the rebuilding of the clinic. Plans with architects, contractors, and others are in the works and Dr. Levy hopes most of the work will be complete in a year and a half.

LOCAL POPULATION:

- Less than 10 percent of the Lakeview community has returned to the area. Even so, about 75 percent of pre-Katrina clients have returned to Lakeview Veterinary Hospital. Owners commute with their pets to the clinic from wherever they relocated. Dr. Levy believes his patients need the sense of stability that comes from seeing one's own veterinarian.
- The return of patients to the hospital is steadily rising, as is the cash flow into the practice. Dr. Levy believes that his clients, humans and pets both are more anxious about hurricanes this season. He has written more prescriptions for Prozac this year than at any other time he has practiced.
- 30 to 40 percent of the staff of veterinary technicians and other office staff returned to the hospital after the storm. The hospital is still short of technicians, as workers for any type of job remain hard to find.

INSURANCE:

- Lakeview Veterinary Hospital, Inc. carried a causality insurance policy of \$300,000 through State Farm. The hospital claimed the money after the storm, but the clinic remains about \$150,000 behind 13 months after the hurricane.
- Dr. Levy's practice also carried business interruption insurance that covered a substantial portion of the debt incurred in the rebuilding process. As a result of the insurance policy,

Dr. Levy was unable to secure a Small Business Administration (SBA) grant to rebuild the hospital.

- The hospital has received loans from the Louisiana Veterinary Medical Association (LVMA) that must be used within a year and a half.

EVACUATION:

- All of the staff and animals evacuated from the Lakeview Veterinary Hospital after the mandatory order was given.
- Like many of the other veterinarians in the area, Dr. Levy advises owners to take their pets with them when they evacuate. Do not leave them at home or with their veterinarians.
- Evacuations for the future at the Lakeview Veterinary Hospital will proceed similarly, but as much as physically possible will be taken from the clinic.

RECORDS:

- Dr. Levy lost all of the handwritten notes that were kept in patient's charts. As a result of the storm, all of the records are kept electronically. Handwritten comments are scanned into a patient's file on the computer. The computers are physically backed-up periodically and the electronic records are kept off-site as well.
- All important paperwork is kept in a location away from the hospital to ensure that those documents are not lost for a second time.

In Conclusion:

- Like many of those who survived the storm, Dr. Levy's outlook on life has changed. He said that the most difficult part of dealing with the storm was maintaining the relationships among those he worked with.

- One veterinarian returned to the clinic within days and saw the death and devastation in the area firsthand. Dr. Levy says that she carries that with her, and the rebuilding process and return to work has been difficult.

Dr. Levy cared for his family as well as the practice in the aftermath of the storm, a large burden to carry. Even so, he is committed to rebuilding and returning to Lakeview.

APPENDIX G: TRANSCRIPT, CONTACT TWO – DR. BETTIE FAUNTLEROY; HILLSIDE ANIMAL CLINIC

Contact Information:

78290 Highway 437 Covington, LA 70435

Phone number: (985) 892-5325

Interview date: June 30, 2006

- Dr. Bettie Fauntleroy has a small animal clinic on Lee Road in Covington, Louisiana. She has been in practice since 1986.
- Dr. Stacey Anderson works part-time at the clinic.

CLINIC:

- Hillside animal clinic is a one-story building with the appearance of a residential home.
- The clinic is located in a substantially elevated portion of Lee Road and therefore, is not in danger of flooding.
- Because of the clinic's location on higher land, many pet-owners choose to board their animals with Dr. Fauntleroy during hurricanes. About 60 dogs and cats were boarded at the clinic for Hurricane Katrina; pets covered most of the floor space within the building. The clinic did not have the pets of employees during the storm.

During the Storm:

- Dr. Fauntleroy and her staff remained at the clinic until Sunday evening, stock-piling water and making other provisions for the storm.
- All of the staff left the clinic during the storm, with most returning to their homes in the area; no one stayed with the animals in the clinic.
- The animals were left alone for more than 24 hours until Dr. Fauntleroy was able to cut her way out of her home and back to the clinic.

After the storm:

- When Dr. Fauntleroy returned to the clinic, all of the animals were alive. She said that the animals had enough food and water as they had been so frightened during the storm, they did not eat or drink.
- The clinic had a small generator and Dr. Fauntleroy was able to alternately run the refrigerator and some lights. She borrowed large fans from a local horse farm to try and keep the clinic cool.
- No medications or vaccinations were lost and the clinic sustained no structural damage. Some of the siding was torn from the outside and the fences surrounding the kennels were damaged.
- The clinic has city water and within 48 hours, the water was restored; the electricity was restored in approximately 10 days.
- Before water was restored, the clinic was able to use the water that they had stockpiled to water the animals and maintain the kennels. Dr. Fauntleroy used sponges and large amounts of disinfectant spray to clean the kennels until she was able to spray down the areas.
- Dr. Fauntleroy reached the clinic after cutting out of her home and down Lee Road on the evening of Tuesday, August 30. One staff member joined her the same evening with more arriving to help in the days following.
- The clinic was maintained without trips to Baton Rouge or other surrounding areas. Fuel was available to the area soon after the storm and Dr. Fauntleroy would have been able to order a large drum of fuel from friends in north Louisiana if she had needed.

- Shipments of food were not delivered to the clinic for three weeks after the storm. This was a problem for animals that were on medicated diets as it was important for those animals to be on dietary regimens. The staff supplemented different foods and medicines sufficiently, but was glad when a whole truckload of food arrived.

LOCAL POPULATION:

- Many residents of the Lee Road area stayed in their homes during the storm. The area has a large number of horse and cattle farms and many owners chose to stay with their large animals as well as the smaller cats and dogs.
- Dr. Fauntleroy boarded animals from all over the area, and random or stray animals were dropped off at the clinic in the days following the storm. Even though the clinic was not opened official for several weeks after Katrina, Dr. Fauntleroy posted the hours that she and other staff would be at the clinic and many people arrived with their animals for help.

INSURANCE:

- Hillside clinic is fully insured for hurricane damage, but not flood damage. The clinic decided that no insurance claims would be filed on account of Katrina as no major damage was done to the building or any of the supplies or animals.

EVACUATION:

- Dr. Fauntleroy made the decision to board animals for the storm and keep them in the clinic during the storm.
- Dr. Fauntleroy did not have pre-planned areas to which she could evacuate all of the animals if the storm moved directly through the area. Such a large-scale evacuation was not logistically possible.

RECORDS:

- Hillside clinic did not sustain water damage and therefore was able to keep all of their records intact. Records are kept hardcopy in files as well as electronically in computers at the clinic.
- Since the storm, the clinic has treated animals with no medical history or records. Dr. Fauntleroy says she trusts the owner's word concerning the animal, and looks carefully at the animal for physical indicators of medical history in determining the best plan for care.

In conclusion:

- Dr. Fauntleroy stated that the most difficult aspect of the storm was the insistence of people to help their pets and offer no reimbursement. The clinic accepted many animals in the weeks after the storm and gave them medical treatment with or without payment. Dr. Fauntleroy would like to see a program or insurance policy that would reimburse veterinary clinics if only for medicines and foods when they take in animals after such catastrophic events.
- The clinic has since installed a larger generator that will run the air-conditioning unit during a power outage. Large containers of water are stored in a unit next to the clinic in case the clinic loses running water. Dr. Fauntleroy says that the clinic will take boarders for the next storm.

APPENDIX H: TRANSCRIPT, CONTACT THREE – DR. DARREN SCHILLING; FRANKLINTON VETERINARY CLINIC

Contact Information:

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Interview date: July 7, 2006

- Dr. Darren Schilling has a small animal clinic in Franklinton, Louisiana, and practices large animal medicine throughout the area. Dr. Schilling is a graduate of LSU vet school and has been in practice for 12 years.
- Dr. Schilling's large animal practice primarily includes food animals: cattle, pigs, goats, and others. Clients are located from Slidell to Goodbee, Louisiana, an approximate 50 mile radius.

CLINIC/FRANKLINTON AREA:

- The small animal clinic is located a few hundred meters outside of downtown Franklinton. Approximately 100 miles from the coast, the area is not in danger of flooding and has historically been a hurricane evacuation locale.
- The horses of the New Orleans police department evacuate to Franklinton as well as the animal control services from Jefferson Parish. Dr. Schilling assisted with the care of the animals from both groups in the aftermath of hurricane Katrina.

During the Storm:

- Dr. Schilling stayed in Franklinton during the storm and was back to the clinic as soon as the storm was over.

After the Storm:

- Dr. Schilling's clinic was without power for 21 days. Communication was the most difficult aspect of the power outage as no phones, fax machines, computers, or internet services were available. Cell phone communication was unreliable.
- With many of his patients located distances from the physical clinic and communication unpredictable, it was difficult for farmers to reach Dr. Schilling in case of emergency.
- A type of "pony express" system was setup the day after the storm. Sheets of paper in zip-lock bags were tacked to trees in specific locations around the area. The paper stated that Dr. Schilling was in the clinic from 9 AM to 1 PM and individuals could bring animals for help.
- Clients also left their names and addresses for the emergencies requiring Dr. Schilling aid. Dr. Schilling tried to reach the lists at least twice a day and go to the farms that needed assistance.
- Hypocalcaemia, or milk fever, is an abnormally low level of calcium in the blood most often experienced by calving mother cows. The condition is of highest priority for Dr. Schilling as without medical intervention the cow dies. A substantial number of cows died as a result of hypocalcaemia after the storm; Dr. Schilling was unable to get the messages for help.
- Five days after the storm, animals were brought to the clinic for medical assistance. Franklinton is a rural area, and much of the population depends on animals for their livelihood and Dr. Schilling knew that he had to be available to them.

- Dr. Schilling and his staff made runs to northern Mississippi and Baton Rouge for fuel for vehicles and generators. His clinic is now on a list to receive fuel in the aftermath of future hurricanes as he is an emergency responder.
- The clinic had a generator and was able to run lights, refrigerators, and other appliances alternately.
- Dr. Schilling threw away most of his medications and vaccinations but did keep some tetanus and penicillin on an emergency basis. The vials were not as cold as they should have been, but Dr. Schilling did not know when he would be able to get another shipment of medicines.
- A vet from Tennessee reached Dr. Schilling some days after the storm. The man had loaded up a truck and trailer of supplies and headed to the area to see what assistance he could give. He offered to work at the clinic while Dr. Schilling took care of his family and the damages to his personal property after the storm.
- The vet from Tennessee was the only assistance that Dr. Schilling received after the storm. There was no way for governmental individuals or others to get to Dr. Schilling in a timely manner; for about a month, the clinic operated on a day-to-day basis doing the best job possible with the resources available.

LOCAL POPULATION:

- Franklinton is a large dairy and meat producing area. All of the farmers stayed with their animals as it was impossible to move cows that are milked two times a day.
- The farmers had generators as power outages occur during storms fairly regularly and cows must be milked. Such previous outages occurred for two to three days not the four weeks or greater that was encountered after Katrina. The generators, for the most part,

were 10 to 15 years old and not in condition to run for days and days on end. Not only were the generators not able to run that long, the tractors that power the generators were also not in condition to run endlessly.

- Generators and tractors were in constant need of repair and parts and replacements were extremely difficult to secure after the storm.
- Some of the neighboring farms had to combine herds to share milking duties and other tasks that were impossible to manage alone. As a result, problems developed.
- Herds were consolidated intentionally through milk farms sharing tasks as well as unintentionally through the widespread destruction of fencing. Such consolidation led to the exposure of cows to bulls prematurely creating “Katrina babies.” Mother cows died in the months after the storm as the animals delivered babies too early in their lives. Disease was also a concern as the herds were consolidated.
- Even eleven months after the storm, Dr. Schilling experiences problems with mail service. The mail from the clinic is routed through Memphis, Tennessee and often tumors or blood samples that require analysis do not arrive in Baton Rouge for weeks. He says that sending items for evaluations his clinic does not conduct, is a hit-or-miss situation and becomes a problem when animals are in urgent need of care.

INSURANCE:

- Dr. Schilling has “business interruption insurance” for his practice. The insurance covers occurrences, like flooding, that close the physical clinic for extended periods of time. The clinic did not sustain any water or wind damage, but was without power for 21 days. The insurance company agreed on a settlement for those days.

- The insurance did not cover the weeks following the storm; visits from patients were not regular. Even though the clinic regained power three weeks after the storm, many Franklinton-area clients did not return to the clinic for three to four additional weeks. Dr. Schilling says that veterinary care is still a “luxury item.” Individuals postponed their animals checkups for weeks after the storm and such routine vaccinations and examinations are the real “moneymakers” for the Dr. Schilling’s practice.

EVACUATION:

- Evacuation of large dairy or cattle farms in nearly impossible. No operations from the area left during the storm and in fact, many animal shelters and operations evacuated to Franklinton where they thought it would be safe.

RECORDS:

- The clinic did not sustain any floodwater damage and therefore all of the records were intact. Dr. Schilling’s clinic does see animals from the New Orleans area that no longer have medical records. He does the best investigation possible, takes the owner’s word, and makes a careful physical evaluation before deciding a course of action.

In Conclusion:

- Dr. Schilling wants to see a “chain of contact from the top down” for the next hurricane. No one was able to contact Dr. Schilling or other rural areas during the storm. Communication functioned on the most rudimentary level and it resulted in the deaths of animals.
- He hopes to see some sort of plan implemented where individual clinics are on checklists and are assisted on a regular basis during and after hurricanes. He suggested that a group in areas such as Baton Rouge assign clinics for individuals to cover on a regular route.

The individual would arrive at a clinic like Dr. Schilling's at a certain time on specific days with medicine, food, information, and other needed supplies. The vets, in exchange could send critical patients or blood work or lists of specific needs back with the individual who would return at the designated time with the assistance required.

- Dr. Schilling said that such plans were discussed in the LVMA winter meeting, but he has not seen much progress in a positive direction.

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9	<i>Client Advice</i> a) informational posters b) handouts with checklist

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5	<i>Insurance Coverage</i> a) assessing coverage after hurricane b) making proper changes to insurance coverage

**APPENDIX J: VETERINARY EMERGENCY PREPAREDNESS AND RESPONSE
(VEPR) MANUAL**

Veterinary Clinic & Hospital Emergency Preparedness & Response Manual

**... a resource guide for practicing
veterinarians and technicians**

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2007

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The guidance document was prepared by faculty and research staff of the Department of Environmental Studies at Louisiana State University with funding provided by the Louisiana State University Board of Regents. The manual was a cooperative effort between the university and practicing veterinarians, compiling and synthesizing real-world experiences in the aftermath of hurricanes Katrina and Rita.

“Plan for the worst, hope for the best.”

A: Overview of Veterinary Emergency Preparedness and Response Manual

Section Contents

1 A.1: Purpose of Veterinary Hospital Hurricane Emergency Manual

The Veterinary Emergency Preparedness and Response (VEPR) manual was created for use in emergency situations that face veterinary clinics and hospitals in the event of major natural catastrophes. Hurricanes Katrina and Rita in 2005 brought to light the need for a guidance document designed specifically for veterinarians in the occurrence of such disasters. Many veterinarians in Louisiana, Mississippi, and Alabama were without help of any kind after the major hurricanes, living day-to-day until conditions in the Gulf Coast region stabilized. The current guidance document provides pertinent information for pre-hurricane planning, weathering the physical storm, and post-hurricane recovery. The manual is intended to reduce the damaging effects that hurricanes have on veterinary clinics and hospitals.

2 A.2: Objectives for Veterinary Hospital Hurricane Emergency Manual

Information concerning animal preparedness and response during hurricanes exists in various places including the Internet, handouts, and other manuals. As the current information is spread over several mediums, it must be synthesized into one comprehensive, highly readable, and useful source. The object of the manual is to be used as a tool for veterinarians as they deal with hurricane season and its many challenges.

3 A.3: Approach

The VEPR manual was created, in part, by conducting interviews with veterinarians affected by Hurricane Katrina and Rita. Using the interviews, information was gathered on the critical issues the veterinarians faced after the hurricanes. With first-hand experience of the emergency situation generated by impending and subsequent occurrence of hurricanes, veterinarians became the best source of information for a manual concerning preparedness and response. The most important issues in veterinary emergency response were determined based on the number of veterinarians who spoke about the topic, their emotion concerning the matter, and other such indicators of significance. Each topic was then given a specific section in the emergency preparedness and response manual. The manual covers the subject thoroughly, providing all information pertinent for success.

B1: *Proactive Planning and Preparation [pre-hurricane season, i.e. 9-12 months before hurricane season, repeated annually.]*

Section	Contents
1	B1.1.1) General Preparedness

DEVELOP A SMALL BUSINESS DISASTER RECOVERY PLAN

While there is no way to lower the risk of a natural disaster like a hurricane, there are critical measures that should be taken to protect a company's bottom line from nature's fury.

A disaster plan and adequate insurance are keys to preparedness and recovery, particularly with an active hurricane season, according to the Insurance Information Institute (III) and the Institute for Business and Home Safety (IBHS).

DEVELOP A DISASTER RECOVERY PLAN

No matter how small or large a business, a business impact analysis should be developed to identify the key components an operation must implement to protect itself in the face of natural disaster. Large corporations often hire risk managers to handle the task and some companies hire consultants with expertise in disaster planning and recovery to assist them with their plans. Small businesses can do the analysis and planning on their own.

A business disaster preparedness plan should consider the following:

- **Set up an emergency response plan and train employees on how to carry it out.** Make sure employees know whom to notify about the disaster and what measures to take to preserve life and limit property losses.
- **Write out each step of the plan and assign responsibilities to employees in clear and simple language.** Practice the procedures set out in the emergency response plan with regular, scheduled drills.
- **Compile a list of important phone numbers and addresses.** Make sure key individuals can be contacted after the disaster. The list should include local and state emergency management agencies, major clients, contractors, suppliers, realtors, financial institutions, insurance agents and insurance company claim representatives.
- **Decide on a communications strategy to prevent loss of clients.** Post notices outside the premises; contact clients by phone, email or regular mail; place a notice in local newspapers.

- **Consider the things the clinic/hospital may need initially during the emergency.** Is a back-up source of power needed? Is there a back-up communications system?
- **Human Resources.** Protect employees and clients from injury on the premises. Consider the possible impact a disaster will have on employees' ability to return to work and how clients can return to the clinic/hospital or receive goods or services.
- **Physical Resources.** Inspect business' plant(s) and assess the impact a disaster would have on facilities. Make sure the plans conform to local building code requirements.
- **Business Community.** Even if the business escapes a disaster, there is still a risk that it could suffer significant losses due to the inability of suppliers to deliver goods or services or a reduction in clients. Businesses should communicate with suppliers and markets (especially if they are selling to a business as a supplier) about their disaster preparedness and recovery plans, so that everyone is prepared.
- **Protect the Building.** If the veterinarians own the structure that houses the business, a disaster protection plan should be integrated for the building and its contents. The financial impact of losing business as a result of a disaster must be considered. What would the impacts be for a day, a week or an entire revenue period?
- **Keep Duplicate Records.** Back-up computerized data files regularly and store them off-premises. Keep copies of important records and documents in a safe deposit box and make sure they are up-to-date.
- **Identify critical business activities and the resources needed to support them.** If the clinic/hospital cannot afford to shut down operation, even temporarily, determine what will be required to run the business at another location.
- **Find alternative facilities, equipment and supplies, and locate qualified contractors.** Consider a reciprocity agreement with another business. Try to get an advance commitment from at least one contractor to respond to the clinic/hospital's needs.
- **Protect computer systems and data.** Data storage firms offer offsite backups of computer data that can be updated regularly via high-speed modem or through the Internet.

REVIEW INSURANCE PLAN

Make sure there is sufficient coverage to pay for the indirect costs of the disaster—the disruption to business—as well as the cost of repair or rebuilding. Most insurance policies do not cover flood damage and separate hurricane protection insurance needs to be purchased. Be sure that policy deductibles and limits are understood.

New additions or improvements should also be reflected in the policy. This includes construction improvement to a property and the addition of new equipment.

For a business, the costs of a disaster can extend beyond the physical damage to the premises, equipment, furniture and other property. There is the potential loss of income while the premises are unusable. The disaster recovery plan should include a detailed review of insurance policies to ensure there are no gaps in coverage.

The policy should include **BUSINESS INTERRUPTION INSURANCE** and extra expense insurance. Even if the basic policy covers expenses and loss of net business income, it may not cover income interruptions due to damage that occurs away from the premises, such as to clients or suppliers or to utility companies. The additional coverage can generally be purchased and added to an existing policy. Business interruption insurance is covered more completely in section **B1.1.2**.

BASIC COMMERCIAL INSURANCE TO CONSIDER:

- **Building Coverage** provides coverage up to the insured value of the building if it is destroyed or damaged by wind/hail, or another covered cause of loss. This policy does not cover damage caused by a flood or storm surge nor does it cover losses due to earth movement, such as a landslide or earthquake, unless added by endorsement.
- **Business Personal Property** provides coverage for contents and business inventory damaged or destroyed by wind/hail, or another covered cause of loss.
- **Tenants Improvements and Betterments** provides coverage for fixtures, alterations, installations, or additions made as part of the building that the insured occupies but does not own, which are acquired and made at the insured's expense.
- **Additional Property Coverage** provides for items such as fences, pools or awnings at the insured location. Coverage limits vary by type of additional property.

- **Business Income** provides coverage for lost revenue and normal operating expenses if the place of business becomes uninhabitable after a loss during the time repairs are being made.
- **Extra Expense** provides coverage for the extra expenses incurred, such as temporary relocation or leasing of business equipment, to avoid or minimize the suspension of operations during the time that repairs are being completed to the normal place of business.
- **Ordinance or Law** provides coverage to rebuild or repair the building in compliance with the most recent local building codes.

For more information on general hurricane preparedness and further resources, reference the following:

http://www.disasterinformation.org/prepare/be_prepared/recoveryplan/

<http://www.lsu.edu/faculty/mccarthy/katrina.htm>

2 B1.1.2) Insurance

Appropriate insurance coverage is an important aspect preparing for hurricanes and their subsequent effects. Veterinary clinics and hospitals can be covered by a variety of plans. Property and liability insurance encompass the most basic and critical coverage a small business needs. The two are often packaged together in a Business Owner's Policy (BOP): property insurance and liability insurance.

Property Insurance:

Property insurance protects the physical assets of the business including computers, equipment, furnishings, valuable papers and records, inventory, and the building itself. Property insurance primarily covers a building and its contents from losses due to most common perils such as fire, theft and wind damage. Flood and water seepage damage are not typically covered by property insurance.

Find out from a local governmental office or a commercial bank if the veterinary clinic/hospital is located in a flood zone. If flood insurance is required, additional coverage must be purchased through an insurance agent or the National Flood Insurance Program.

More information on the Federal Emergency Management Agency (FEMA) is available at: <http://www.fema.gov/business/nfip/index.shtm>

After purchasing an insurance policy, it is critically important to understand the coverage's limits and deductibles. Veterinary clinics/hospitals should consider buying additional coverage policies.

New additions or improvements should also be reflected in the policy. This includes construction improvement to a property and the addition of new equipment (i.e. x-ray machines, autoclaves/sterilizers, ultrasounds, etc.) It is important that the insurance agent is notified EVERY TIME a new item is added to the clinic/hospital. Increasing the existing policy ensures that the additional item is covered in the occurrence of hurricane damage.

It is important to have all insurance information—company names, contact numbers, policy numbers, etc—in one convenient, easy-to-locate place. This will expedite the claims process after a hurricane. The "Know Your Insurance Information" form (from the Hurricane Insurance Information Center) is available for download at:

http://server.iii.org/yy_obj_data/binary/759299_1_0/HIIC_insurance_f.pdf.

See APPENDICIES A – E (pages 115-119)

Save the form to a computer and/or print it out. All the relevant information concerning the clinic/hospital's insurance policies should be filled out electronically or by hand. Whatever method ultimately chosen to record the information, the form must be kept in a safe place (i.e. fire-proof, water-proof lockbox, thumb drive, etc.) where it is easily accessible.

For more information:

http://www.disasterinformation.org/prepare/be_prepared/recoveryplan/

Policy Types:

Replacement Cost and Actual Cash Value:

Replacement cost policies provide the clinic/hospital with the dollar amount needed to replace a damaged item with one of similar kind and quality without deducting for depreciation (the decrease in value due to age, obsolescence, wear and tear and other factors).

Actual cash value policies pay the amount needed to replace the item minus depreciation.

Suppose, for example, a tree fell through the roof onto an eight-year-old commercial sink. With a replacement cost policy for the contents of the clinic/hospital, the insurance company would pay to replace the old sink with a new one. If the clinic/hospital has an *actual cash value* policy, the company would pay only a percentage of the cost of a new sink because a sink that has been used for eight years is worth less than its original cost.

Extended and Guaranteed Replacement Cost:

If the clinic/hospital is damaged beyond repair, a typical business owner's policy will pay to replace it up to the limits of the policy. If the value of the insurance policy has kept up with increases in local building costs, a similar building can generally be built for an amount within the policy limits.

With an *extended replacement cost* policy the insurer will pay a certain percentage over the limit to rebuild the clinic/hospital—20 percent or more, depending on the insurer—so that if building costs go up unexpectedly, there will be extra funds to cover the bill.

A few insurance companies still offer a *guaranteed replacement cost* policy that pays whatever it costs to rebuild the building as it was before the disaster.

Neither type of policy will pay for the use of more expensive materials than those that were used in the one that was destroyed.

Policy Limits

Most insurance policies provide adequate coverage because they include an *inflation-guard* clause to keep up with increases in local building costs.

If the business has *replacement cost* coverage, the insurance company will pay the full cost of repairing or replacing the damaged structure with a building of "like kind and quality."

Most insurance companies recommend that a business be insured for 100 percent of replacement cost so that there is enough money to rebuild if the clinic/hospital is totally destroyed. If significant improvements were made to the building without informing the insurance company, the clinic/hospital may not be fully covered.

Rebuilding and Making Repairs

If the building was destroyed, there are several options.

- A new building can be rebuilt on the same site.
- Depending on state law, it may be possible to sell the land and build or buy a building in a different place, even another state.
- The clinic/hospital can decide that renting is preferable.

If the business decides not to rebuild, the settlement amount depends on state law, what the courts have said about this matter, and the kind of policy the clinic/hospital has. Find out from the insurance agent or company representative what the settlement amount will be based on.

Concerning repairs, if the rebuild is a downgrade, for example replacing an expensive wood floor with one using a cheaper product, the business is not entitled to the difference in cash.

Other Factors

Compliance with Current Building Codes:

Building codes require structures to be built to certain minimum standards. In areas likely to be hit by hurricanes, for example, buildings must be able to withstand high winds. If the building was damaged and it was not in compliance with current local building codes, it may have to be rebuilt in compliance with current building codes.

In some cases, complying with the code may require a change in design or building materials and may cost more. Generally, insurance policies will not pay for these extra costs. Some insurance companies offer an endorsement that pays a specified amount toward such changes. (An endorsement is a form attached to an insurance policy that changes what the policy covers.)

The Use of Public Adjusters:

The insurance company provides an adjuster at no charge. The clinic/hospital may also be contacted by adjusters who have no relationship with the insurance company and charge a fee for their services. They are known as public adjusters. If it is decided to use a public adjuster to help settle the claim, this service could cost as much as 15 percent of the total value of the settlement.

Sometimes after a disaster, the percentage that a public adjusters charges is set by the insurance department. First check references and qualifications by calling the Better Business Bureau and the state insurance department before deciding to use a public claim adjuster. Also contact the National Association of Independent Insurance Adjusters (www.naiia.com).

Compensation for Damage

Vehicles:

If a vehicle was damaged and the clinic/hospital has comprehensive coverage in the automobile insurance policy, the automobile insurance company should be contacted. If the vehicle has been so badly damaged that it is not worth repairing, the business will receive a check for the car's actual cash value—what it would have been worth if it had been sold just before the disaster. Kelley Blue Book (www.kbb.com), or other such publications, can give an idea of what the vehicle was worth.

Trees and shrubbery:

Most insurance companies will pay for the removal of trees that have fallen on the building, but they will not pay to remove trees that have fallen but have not caused damage to the building. They will not pay to replace trees or shrubberies that have been damaged in a storm.

Water:

Most policies do not cover flood damage but they do cover other kinds of water damage. For example, they will generally pay for damage from rain coming through a hole in the roof or a broken window as long as the hole was caused by a hurricane or other disaster covered by the policy. If there is water damage, check with the agent or insurance company representative as to whether it is covered.

Business Interruption Insurance:

Keeping a business operating in a fashion that is as close to normal as possible is crucial to post-hurricane recovery. While business interruption insurance will pay for covered losses, the only chance of surviving and prospering is to keep serving clients. Insurance claims representatives know from many years of experience in helping businesses recover from disasters that there are some operational strategies and emergency recovery procedures to follow as the clinic/hospital picks up the pieces.

If possible, continue conducting business operations as normally as possible, making business decisions as if there were no insurance policy. Clients will appreciate efforts to provide them continuing service.

- Start a physical inventory as soon as possible. It may be required by the insurer. The inventory may be taken by employees or a professional inventory service. Discuss with a claims representative the options and get his or her opinion on the best method for the conduction of the post-disaster inventory.
- Organize books and records. The insurance company claims representative will need to examine these in order to evaluate the damages.
- If portions of the inventory are lost or damaged beyond recognition a "book inventory" will be needed to evaluate the loss. It is important that any inventory shipments received or sales made after the disaster be documented separately from pre-disaster business.

Business Interruption Basics:

- *Extra expense coverage* is designed to help the business continue operations.
- *Loss of income* covers the loss of net income the business would have earned and the normal operating expenses that continue during the period of business interruption.
- *Business interruption* is activated when the business is directly damaged by a covered peril such as fire, storms, lightning, riots, or explosion at the insured premises.
- Most policies do not cover losses resulting from interrupted water, electrical, and natural gas supplies, or telecommunications service, unless the interruption occurs on the premises.

For more information:

<http://www.central-insurance.com/docs/claimfil.htm>

3 B1.1.3) *Banking*

Basic banking preparedness:

- Sign up for direct deposit instead of depending on the postal service for delivery of funds.
- Enroll in online banking to have the ability to transfer funds, review accounts or send bill payments from any computer.
- Carry a list of account numbers and contact information for the clinic/hospital's bank, mortgage lender and insurance agents.
- Have a banking card and extra checks on hand.
- **Have some emergency cash put away:** Hurricanes disrupt banking schedules. Automated teller machines and credit cards, in a world without electricity, will not work or will run out of cash. Do not charge credit cards to the limit; they may be necessary for obtaining cash after the storm.

The Bank of New Orleans suggests the following banking hurricane preparedness measures:

1. To insure uninterrupted access to a checking account, apply for an ATM card which allows the withdrawal of cash from participating ATM machines. For even greater access to a checking account, including in locations where out-of-town checks may not be accepted, apply for a check card, which gives customers the ability to make purchases at millions of locations worldwide in addition to withdrawing cash from any ATM location.
2. Make sure the PIN number for the ATM card and/or the check card is known.
3. Use internet banking to access accounts via the bank's official website. If the clinic/hospital does not have internet banking, sign up **BEFORE** a storm. With internet banking it is possible to check account balances, transfer funds between accounts, make loan payments, research check status, and more – from anywhere using Internet access. Existing internet banking customers should access accounts and become reacquainted with using internet banking before storm season.
4. Sign up for online billpay from the clinic/hospital's online banking service to stay on top of bills from anywhere. Online bill payment helps to avoid delays in payments due to hampered mail service after a hurricane.

5. Keep a 24-hour access line number handy in order to gain information on accounts, to monitor recent account activity, transfer funds between accounts, check balances, and hear current rate information.
6. Make sure direct deposit is set up prior to a hurricane so that checks may be deposited when mail service is disrupted and/or there is displacement from employers and employees. Payrolls can be deposited, as well as Federal government benefits, pension, annuity, and more.
7. Electronic funds transfers may be available from the clinic/hospital's bank. Recurring expenses such as utility bills, insurance premiums, loan payments, can automatically and securely be withdrawn from a selected bank account. Bills do not have to travel through the mail, decreasing the risk for payment problems due to hurricane-caused disruptions.

OTHER TIPS FOR MAINTAINING BANK RECORDS:

It is important to develop a plan for managing bank statements, credit card bills, canceled checks, ATM receipts, and other financial paperwork. The most compelling reason may be the federal tax rules requiring receipts and other records that support items on a tax return for as long as the IRS can assess additional tax.

FDIC Consumer News offers the following record retention system as a reasonable approach for many people:

- **Canceled checks:** Those with no long-term significance for tax or other purposes can be destroyed after about one year. But canceled checks that support tax returns, such as charitable contributions or tax payments, should be held for at least seven years—long enough to cover the six-year tax assessment period that starts when tax returns are filled for the year the check was written. Keep indefinitely (for other tax reasons) any canceled checks and related receipts or documents for a business purchase or sale, renovations or other improvements to a property owned, and non-deductible contributions to an Individual Retirement Account.
- **Deposit, ATM, credit card and debit card receipts:** Save them until the transaction appears on the statement and the information is verified as accurate.
- **Credit card and bank account statements:** Save those with no tax or other long-term significance for about a year, but save the rest for up to seven years. If a detailed annual statement is received, keep that and discard the corresponding monthly statements.

- **Credit card contracts and other loan agreements:** Keep for as long as the account is active, in case there is a dispute over the terms of the contract.
- **Documentation of your purchase or sale of stocks, bonds and other investments:** Retain these while the investment is owned, and then seven subsequent years.

Finally, before tossing away any document that contains a Social Security number, bank account number or other personal information (particularly financial information), shred it to avoid becoming a victim of identity theft.

For more information:

<http://www.crwflags.com/z/naaccc/archive/200508-2.html>

4 **B1.1.4) *Record backups***

Medical records, tax information, and other financial data can be stored as an electronic record. Electronic records include any information created, retained, or maintained in any digitized configuration on a mainframe, PC, hard disk, tape, cassette, floppy disk, zip drive, CDs, DVDs, or any other magnetic storage format electronic image (optical disk, CD-ROM) or other optical technology, or any other type of electronic technology. It is important that electronic records are safeguarded against alterations, accidental erases, or any other forms of tampering.

Electronic records and databases should be backed-up on a regular basis. If frequent changes or additions are made to the records or database groups, backups should be made more frequently.

THE MORE ACTIVITY, THE MORE FREQUENT THE BACKUP.

Electronic records or databases that are seldom changed or updated need to be backed up only as major changes to the information occur.

- Use the same filing structure and naming convention for the electronic files stored on a computer's hard drive and external storage drives as used for the paper file.
- Transfer records that must be retained but are seldom used to external storage drives or CDs to free up space on the hard drive for active records.
- When storing records on diskettes or tapes, store logically related records with like retention periods together.
- Perform backups on a regular basis, storing the backups at an off-site location. Keep two or three generations of backup.
- Regularly run a virus-scanning program on the hard drive and ALWAYS scan files for viruses before uploading information to the hard drive.

For more information:

<http://muarchives.missouri.edu/elecres.html>

5 **B1.1.5) *Back up computers daily***

The key to a successful backup is getting data off of a computer's hard drive. There are many options available to protect personal and business data including:

- Zip disks
- Recordable CDs
- Recordable DVDs
- Tape cartridges
- Uploading data to an Internet-based file storage service

To find a storage solution that is best for the veterinary practice, compare convenience, price, ease of use, and capabilities offered by each approach.

For example, a 100 MB Zip drive costs much less than a tape drive, but a single tape cartridge can hold as much as 300 Zip disks. Tape backups can take place automatically.

Label disks clearly, noting the date and time of the backup. Do not erase the previous backup until the subsequent one is completed.

If the computers in the clinic/hospital are used every day, a daily backup is a good idea.

Make sure that the backup option works. Duplicate a single folder or group of files, and then try to recover those backup files to a different drive or folder. Do not wait until it is too late to find out that the restore process does not work.

NOTE:

Using standard floppy disks for long-term backups of important information should be avoided. Floppies are less reliable than hard disks and are best for short-term storage of small files.

For more information:

<http://www.microsoft.com/athome/moredone/backupfiles.mspx>

6 **B1.1.6) *Prepare evacuation file box (water/fire proof) containing personal and business documentation***

Evacuation box should include:

- Cash or traveler's checks for all anticipated expenses
- Rolls of quarters
- Emergency contact numbers:
 - Doctors, pharmacies
 - Financial advisors
 - Clergy
 - Repair contractors
 - Family members
- Copies of health, dental, and/or prescriptions insurance cards and numbers
- Copies of automobile, flood, renter's or owner's insurance policies and numbers
- Insurance company telephone numbers, including local agent and company headquarters
- Copies of
 - Deeds
 - Titles
 - Wills/trust documents
 - Durable power of attorney
 - Healthcare directives
 - Stock/bond certificates
 - Recent investment statements
 - Clinic/hospital inventory
 - Birth, death, adoption, and marriage certificates
 - Passport and other identifications
 - Employee-benefit documents
 - First two pages of previous year's federal and state income tax returns
- Backup copies of computerized financial records
- Keys to safe deposit box
- Combination to safe
- Computer usernames and passwords
- List of numbers:
 - bank account
 - credit card
 - driver's license
 - investment account
 - social security
 - loan
- List of debt obligations, due dates, and contact information

Creating a “Grab and Go” Box: LSU Disaster Information Resources

STEP ONE:

- PUT PAPERS IN SEALED, WATERPROOF, PLASTIC BOX.
- STORE IN A DURABLE, SEALED BOX. A PORTABLE, FIREPROOF, WATERPROOF BOX OR A WATERPROOF BACKPACK IS RECOMMENDED.

STEP TWO:

- BEFORE HURRICANE SEASON, STORE BOX/BACKPACK AT THE CLINIC/HOSPITAL IN A SECURE, EASILY ACCESSIBLE LOCATION.

STEP THREE:

IN THE INSTANCE OF AN EVACUATION:

- GRAB THE BOX AND TAKE IT TO THE EVACUATION DESTINATION
- KEEP THE BOX IN DIRECT CONTACT AT ALL TIMES
- DO NOT LEAVE THE BOX UNATTENDED

For more information:

<http://web.extension.uiuc.edu/cook/factsheets/moneymanagement593.html>

http://www.vetmed.lsu.edu/Web_pdfs/Preparing_Your_Practice_for_a_.pdf

See APPENDIX F (pages 120-121)

<http://msucares.com/pubs/infosheets/is1801.pdf>

7 **B1.1.7) *Staff drills and feedback***

General Staff Preparedness

- Inform key employees or essential staff of their specific responsibilities under the established hurricane procedures.
- Establish an employee training program concerning hurricane procedures.
- Specify conditions under which hurricane protective procedures are to be implemented.
- Determine and acquire emergency protective equipment and supplies
- Appoint an individual and designate an alternate to implement hurricane protective procedures.
- If appropriate, develop a system for the identification of employees (e.g., I.D. cards, vehicle permits, badges, etc.).
- Inform all employees on when and how they will be notified to report back to work.

Involving Employees in Emergency Preparedness

www.ready.gov, a website from the Department of Homeland Security, offers several suggestions for getting employees involved in every step of disaster preparedness—from initial planning to business recovery.

Ready.gov suggests that all business owners:

Involve employees:

Encourage employees to provide input and assist in all levels of planning for emergencies. The more employees hear about emergency plans and know what to do, the more efficient and prepared they will feel and react.

If the clinic/hospital has employees with special needs, talk to them, involve them in planning and get their suggestions on the best way to help with their specific circumstances.

Publish and practice the plans in place:

Use staff meetings, employee newsletters, intranets and break room bulletin boards to post emergency plans. Rotate the information so that it does not become stale. Remind employees to review specific plans and move that information to the top of the list. Then once a quarter, practice.

If the clinic/hospital rents, leases, or shares space with other businesses, communicate, share and coordinate evacuation procedures and other emergency plans with those around the facilities. Perhaps the building owner/management company will handle the coordination of drills for the clinic/hospital. And again, practice with regularly scheduled drills.

Facilitate communication:

What if a fire occurs on a Saturday evening when no one is in the building, how would employees be informed? Consider setting up a telephone call tree. Do not require one employee to get in touch with all others. A call tree involves all employees equally.

In case of such drastic natural disasters as hurricanes, when residents evacuate the city in all directions, consider setting up an out-of-town number where employees can check in. For instance, if a veterinarian lives in and runs a business in Mississippi, and has a brother that lives in Missouri, have employees contact the brother in Missouri to let everyone know they are okay and out of harm's way.

Once or twice a year, make sure the emergency contact information for all employees is updated. Keep a copy in a safe, off-site location such as a home or bank.

The veterinarians do not have to weather the storm of preparing for emergencies alone. Involve employees and get their input and assistance every step of the way. The more prepared everyone is, the better off the business—and the employees—will be.

For additional reference concerning emergency responses, including hurricane preparations, please reference Dr. John Pine's Emergency Response Guide.

See APPENDIX G (pages 122-132)

For more information:

http://www.nfib.com/object/IO_30784.html

B2: *Planning and Preparation [pre-hurricane season, i.e. 9-12 months before hurricane season, repeated annually.]*

Section	Contents
1	<i>Physical Clinic</i> B2.1.1) securing outdoor structures:

Non-secure outdoor items create damage as airborne projectiles in high winds. Securing outdoor structures ensures that destruction is not caused by hurricane-strength winds dislodging such objects.

- If the clinic/hospital has outdoor signage, especially swinging or portable signs, they should be removed.
- Remove antennas or loose objects from the roof.
- Clean gutters, drains, and downspouts of the building to allow rainwater to flow freely.
- If necessary, install straps or additional clips to securely fasten the roof to the frame structure. This will reduce roof damage.
- Be sure trees and shrubs around the facility are well trimmed. Trees with heavy tops tend to trap air causing them to become uprooted. Additionally, they can be carried by the wind and potentially damage buildings and vehicles.

a) *Kennels/Runs*

Like other outdoor objects, kennels and runs must be securely anchored to ensure they do not become airborne in high winds.

b) *Fencing*

The University of Florida, Institute of Food and Agricultural Sciences suggests that wire-woven fencing best withstands hurricane winds as:

- High winds pass through fence as through a net
- Wire-woven fencing collects debris
- Wire-woven fencing does not pull apart in high winds
- Animals are less likely to be caught in wire-woven fencing

If the clinic/hospital has board fencing, it is likely to blow down and become projectile debris. Backing a wood fence with wire-woven fencing reduces this chance. Avoid using barbed wire fencing since it can pose serious dangers to animals as debris. Structure the clinic/hospital's fencing to keep animals away from power lines as the lines may come down during high winds.

The month of May is a good time to make fencing repairs such as replacing rotten boards or other structural corrections in time for the start of hurricane season, June 1st.

24" x 25' rolls of "MAT Welded Wire, Galvanized" fencing can be purchased from Home Depot.

http://www.homedepot.com/prel80/HDUS/EN_US/jsearch/product.jsp?pn=100004289

A roll of orange, plastic, fencing is useful as a temporary barrier if the permanent fencing sustains damage. 4' x 50' roles of "Tenax Orange Economy Snow Fence" may be purchased at Home Depot.

http://www.homedepot.com/prel80/HDUS/EN_US/jsearch/product.jsp?pn=100384033

More information concerning fencing is available at:

<http://sarasota.extension.ufl.edu/Ag/AgHurricane.htm>

c) *Storage Buildings/Sheds*

Outdoor buildings and sheds should be constructed according to code. If not and time permits, remove the structure. Storage sheds can be tied down with straps and ground anchors if they are not already fixed on a permanent foundation.

The “Arrow Ground Anchor Kit for Storage Building” with four 30 inch steel augers can be purchased from Home Depot. The review suggests that 1,500 pounds of force would be required to remove the anchors from the ground. Installation information is also available.

http://www.homedepot.com/prel80/HDUS/EN_US/jsearch/product.jsp?pn=100054756

More information is available at:

<http://www.hurricanesuttersflorida.com/flashutter/hurricane/outdoor.html>

d) *Windows*

Windows and doors protect structures from high winds. If windows or doors are broken, wind can cause pressure to buildup in the facility, resulting in structural damage to the roof and the walls.

The clinic/hospital should consider installing permanent storm shutters over glass windows, as they are the best way to protect the building from damage. Storm shutters can be purchased from a variety of sources including local building suppliers, on-line manufacturers, and others. Follow manufacturer's installation directions carefully. Check with local building officials before installing storm shutters, as a building permit may be necessary.

If the clinic/hospital decides to install temporary window and door protection, do not wait until a hurricane warning is issued to make the covers; there probably will not be enough time.

More information is available at:

<http://www.ohsep.louisiana.gov/factsheets/WindShutter&WindowCovers.htm>

http://www.redcross.org/static/file_cont47_lang0_25.pdf

Proper Plywood Window Covering Installation:

If the clinic/hospital decides to implement plywood window protection, the panels should be measured, drilled and labeled in advance.

The Florida Building Code recommends a minimum thickness of seven-sixteenths of an inch for exterior-grade plywood.

The Federal Alliance for Safe Homes, which prefers even heavier five-eighths-inch plywood, recommends double-headed nails, wood screws, bolts, wood or masonry anchors, nuts and large washers. The type of fastener required will depend on the type of construction (wood, masonry or concrete) and the type of exterior veneer (siding, brick or stucco).

A 4 x 8 foot sheet of five-eighths-inch plywood costs approximately \$15.

If the clinic/hospital is masonry, 2-inch masonry screws are recommended. Some masonry screws come with sleeves and some do not. Use the sleeves if present and also use washers with the screws.

If the clinic/hospital is wood, the alliance recommends using 10-penny common nails, 12-penny box nails or half-inch wood screws. The wood screws can be left in place in a wood building. If nails were used to secure the plywood, or if it was undesirable to leave screws in place, a two-part epoxylike putty filler is available in the paint sections of home improvement and hardware stores. Knead the two parts together and plug the holes. The plug will harden, and next time the hole can be re-drilled.

When the plywood is taken down, remove the fasteners and patch the holes with stucco, grout patching or wood putty, depending on the exterior of the building.

Some plywood on masonry homes is installed with a permanent anchor, epoxying a sleeve in place and then attaching the plywood with a permanent bolt or screw. Leave fasteners in place. (The fasteners should be rated for 490 pounds pullout strength. The label will provide the information.)

If masonry screws are used (one popular brand is Tapcons), they can be backed out. The plywood should be removed and screws reinstalled.

Keep plywood shutters in a dry area. Painting or staining the plywood will protect it from moisture.

Applying plywood

- If the shortest dimension of the window or door is 4 feet or less, space fasteners at 6 inches on center.
- If the shortest dimension of the window or door is more than 4 feet and less than or equal to 6 feet, space fasteners at 4 inches on center.
- Plywood should not be used where the shortest dimension of the window or door exceeds 8 feet.

The following website provides an animated how-to for securing windows and doors for hurricane protection.

<http://www.flash.org/activity.cfm?currentPeril=3&activityID=179>

B2.1.2) securing interior structures

Office Equipment:

- Move goods, equipment or furniture away from windows and skylights to avoid water damage.
- Clear all desk and table tops of small loose objects.
- Take down all loosely secured pictures, plaques, etc.
- Box or place any loose papers, books, hanging plants, etc. in desk drawers or storage cabinets.
- Relocate files, boxes, computers, office machines and other equipment to the innermost portion of the building or an external location.
- Do not leave boxes or equipment on the ground floor; elevate them by placing items on desk or table tops.
- Remove contents of lower file cabinet drawers on the ground floor of the building and secure contents elsewhere.
- If time permits, take inventory of all moved items to ease unpacking after the storm.
- Disconnect all electrical appliances and equipment, except for refrigeration.
- Cover merchandise, office machines, specialized equipment, file cabinets, copy machines, computer terminals, etc. with tarpaulins or plastic sheeting and secure with sturdy tape.
- Close all windows and draw blinds or drapes.
- Turn off the electricity except for refrigeration at the power box and lock all doors when leaving.
- Before leaving the property, recheck the securing of the outdoor objects.
- If the clinic/hospital owns equipment that could be useful after the storm, notify local emergency management officials.

Animal Care Equipment:

- Ensure animal quarters and corridors are clean and clear of unnecessary equipment and materials.
- Empty all trash containers in the interior corridors and rooms. Dispose of all garbage to the dumpster in the loading dock. Make sure no dirty bedding remains in the cleaning/disposal room.
- Relocate equipment away from doors and windows to interior areas of the facility.
- Unplug all laminar flow hoods in case of power surges.
- After necessary husbandry has been completed, turn off autoclave and cage washing machine via the circuit breaker.
- In case of flooding in the facility, remove anything blocking floor drains.
- **Make sure all exterior doors are closed and secure.**

B2.1.3) power outage

Many power outages occur after hurricanes because transmission power grids become non-operational. It is important to check with the facility's power company to determine how it supplies electricity to the clinic/hospital.

Before the outage occurs:

- Turn off all lights, except one to signal when the power comes back on.
- Turn off all sensitive equipment.
- Do not turn off refrigerators and freezers, as it is easy to forget to turn them back on.
- If it looks as if water may enter the clinic/hospital, open the main breaker in the electrical box in order to cut off power.

Have the clinic/hospital's account number available; it is usually on the bill. The number helps the power company pinpoint exactly where the facility is and allows for quicker restoration of power.

Consider installing a manual or hand water pump. During a power outage, water can be obtained for necessary functions such as cleaning, flushing toilets, and others.

Rain barrels can also be used for water collection in the instance of power outage.

For purchasing information, please reference:

<http://www.do-it-yourself-pumps.com/handpumps.htm>

<http://rainbarrelguide.com/>

Section	Contents
2	<i>Clinic Employees</i> B2.2.1) preparations for those who stay

If the veterinary staff decides that personnel will stay at the clinic/hospital through the hurricane, there are some preparations that should be made.

Designate a “safe room” with no exterior windows and doors in case the clinic/hospital’s structure is compromised. Pre-stock with supplies.

Lighting:

If the power is out for an extended period of time, it is essential to have various means of lighting. Every individual who remains at the clinic/hospital should have at least one light.

Battery operated flashlights are sufficient if the power is out for a short time. Light-Emitting Diode (LED) flashlights run on batteries five to ten times longer than incandescent flashlights. D-battery powered “Heavy Duty Aluminum LED Flashlights” are available from Target.

http://www.target.com/gp/detail.html/ref=br_1_20/601-8005474-0620905?ie=UTF8&frombrowse=1&asin=B000EFBCT4

Smaller “Kagen LED Flashlights” powered by AAA-batteries are also available from Target.

http://www.target.com/gp/detail.html/ref=br_1_16/601-8005474-0620905?ie=UTF8&frombrowse=1&asin=B000I7OJH0

Food:

The disaster preparedness division from the Naval Station at Mayport, Florida suggests the following food items:

- One-quart whole, dry milk envelopes*
- Boxes of cookies, graham crackers, etc.*
- Boxes of saltines or soda-type crackers*
- Six packs V-8 or tomato juice*
- Six packs of 100% fruit juice (not fruit pouches or punch)*
- Packages of pre-sweetened lemonade or ice tea mix*
- Packages of instant chocolate milk or breakfast drinks*
- Plastic utensils (to save cleaning water)*
- Dry cereal*
- Dried fruits (apricots, dates, raisins, etc.) and trail mixes*
- Canned tuna*
- Boxes of granola bars*
- Jar of peanut butter*
- Jar of jelly or jam*
- Loaf of bread*
- Gallons of water in plastic jugs*
- Canned fruits and vegetables*

Other foods to include:

- Apples, bananas, lemons, and oranges (will keep at room temperature for several days)
- Individual servings of apple sauce or pudding
- Cheese spreads and slices that do not need refrigeration
- Summer sausage or pepperoni
- Muffins or bagels
- Instant coffee, tea, or cocoa*
- Unsalted nuts and pretzels*
- Hard candies and gum*

(*) Items can be collected and stored before hurricane season. Replace the stored goods every six months. The other items should be added when a storm is approaching.

More hurricane preparedness information from the Naval Station at Mayport, Florida can be found at:

<http://www.nsmayport.navy.mil/hurricane/Disaster%20Prep%20default.html>

Water:

Having an ample supply of water is a top priority in an emergency.

- The amount of water needed will differ depending upon age, physical condition, activity, diet and climate.
- Most people need to drink at least two quarts (64 ounces), which is equal to eight cups, of water each day.
- Hot environments can double the amount needed as the body uses water for cooling.
- The amount of water needed also depends on the total amount of juices, soups, other drinks, and high moisture foods that are available. Additional water will be needed for food preparation and hygiene.

In general, store at least one gallon of water per person, per day of expected need. Two gallons of water is preferable if space is available.

Storing at least a three-day supply is recommended, but consider storing a two-week supply if clinic/hospital has enough space.

What containers should be used?

Water can be stored in food grade plastic or glass containers with tight fitting screw-on caps. Food-grade containers include those that previously held beverages, such as 2-liter soda bottles, or other water, juice, and punch containers. Plastic milk bottles should be avoided, because it is difficult to remove protein and fat residues that may allow bacteria to grow during storage.

New plastic containers for water storage can be purchased in most house-wares and sporting goods departments, and clean food-grade containers may be available for purchase at water vending machines. Only purchase containers labeled for storage of food or beverages.

Containers not labeled for food or beverage storage could release harmful chemicals into the water. Never use a container that has held toxic substances as tiny amounts may remain in the container's pores. Some plastic containers affect the taste of stored water.

Chlorine bleach bottles may be a food approved plastic, but they contain an anti-static agent which prevents the accumulation of dust during storage and are thus not recommended. Avoid using containers that will decompose or break such as milk cartons or glass bottles. Also, some old glass jars were made with glass containing lead, and unacceptable amounts of lead can leach into water stored in the jars even for short periods.

How should the containers be prepared?

Wash the containers and lids thoroughly with hot tap water and dish detergent then rinse again with hot water.

Can tap water be stored?

Municipal Water Supply

If the clinic/hospital is on a municipal water supply, the water currently used for drinking and washing should also be suitable for storing for emergencies. Municipal water supplies include public water supplies such as "city water", or "county/parish water." While it can be expected that water from a public water supply will be safe, remember that the container used to collect and store the water must also be clean.

Private Water Supply

Private water supplies include individual wells and springs. If the clinic/hospital is on a private water supply, it is recommended that bottled water be purchased for storage. Make sure the bottled water label has an IBWA (International Bottled Water Association) or NSF (National Sanitation Foundation) seal, or a NYSDH certification number. These organizations require periodic water testing and inspections of the bottling facility. Only sealed, unopened bottles should be stored.

The quality of the well construction and the water in private water supplies varies greatly. Even if the water has been tested for coliform bacteria, there are other microorganisms that could cause problems during storage. Organic matter, which may not be visible in the water, can make chlorine ineffective. For these reasons, it is risky to store water from private wells and springs.

If the clinic/hospital has a private water supply, a generator will allow for the continual pumping of water when there is a power outage. See section **C.1.5** for information about safe usage of a generator.

Community Water Systems

If the clinic/hospital is on a community water system, the water should be tested regularly by the operator. The EPA requires regular testing of any system that has at least 15 service connections or regularly serves at least 25 individuals. This testing is more extensive than just bacterial testing, and should be conducted at least quarterly.

Water quality can vary with weather and other conditions, so test results should show a pattern of meeting EPA standards year-round. The owner or operator should be able to show documentation of these test results. Water from a system which meets these requirements should be safe to store. Store using the same treatment for municipal water.

If the community water system's owner or operator cannot provide documentation that EPA requirements have been met year-round, this water should be considered the same as water from a private well.

Storing bottled water (see private water supplies, above) is probably much less risky than storing water from such a supply.

Vended Water Supply

Water vending machines are systems where customers fill their own containers with water that has been treated in some way. Vended water is regulated by the Food and Drug Administration (FDA). Since the FDA requires that water for vending machines comes from an approved public water supply, the assumption is that the water meets EPA drinking water standards. The vending machine normally provides additional treatment to that done by the municipality. However, the machine must be kept clean, and the treatment equipment must be properly maintained, in order for the vended water to be good quality. Additionally, the container used to collect and store the water must be clean, as anything remaining in the container after cleaning could result in bacterial contamination.

Where should water be stored and for how long?

Store containers in a cool, dry place away from direct sunlight. Most plastic beverage containers degrade over time, so store them away from heat and light to prevent leakage. Because hydrocarbon vapors can penetrate polyethylene plastics, store water in plastic containers away from gasoline, kerosene, pesticides, or similar substances.

Water weighs over 8 pounds per gallon. Make sure the shelves or area in which the water is stored is strong enough to support the weight.

For best quality, replace water stored from a public or vended water supply every six months. For commercially bottled distilled or drinking water, check the label for an expiration date. If none is given, bottled water with the IBWA or NSF seal should have a shelf-life of at least one year.

To improve the taste of water stored for a long time, pour it from one clean container to another clean container several times, to put air back into it.

Water can also be stored for an extended period of time in the freezer. If electricity is lost, the frozen water will help keep foods frozen until power is restored. Leave 2 to 3 inches of air space in the top of the containers before freezing, to keep the container from breaking as water expands during freezing. Some glass containers may break regardless of the air space provided.

How can water in opened containers be kept safe?

Do not use water that is cloudy, or water that has any odor other than the chlorine (if added). Once opened, sanitary measures are important when using the water to keep it safe and to control exposure to bacteria.

To reduce the chance of water contamination, do not open more containers than are needed at the time. If electrical power is available, store opened containers in a refrigerator at or below 40 degrees Fahrenheit. If refrigeration is not available and containers are stored at room temperature, be extra careful to avoid introducing bacterial contamination into the bottled water. Use water in opened containers within one or two days.

What if the stored water supply runs out?

If supplies run low, never ration drinking water. Drink the amount needed for the day, and try to find more for tomorrow. The amount of water needed can be reduced by decreasing activity level.

Hidden Water Sources:

If a disaster occurs in the clinic/hospital without a large enough stored supply of clean water, water in the hot-water tank, pipes, and ice cubes can be used. As a last resort, water in the reservoir tank of toilets (not the bowl) can also be used.

Make sure the location of the clinic/hospital's incoming water valve is known. It will need to be shut off to stop contaminated water from entering the facility if there are reports of broken water or sewage lines, or a failure at the water treatment plant.

To use the water in the pipes, shut off the incoming water valve. Let air into the plumbing by turning on the faucet in the building at the highest level. Small amounts of water will trickle out. Obtain water from the lowest faucet in the facility

To use the water in a hot-water tank, be sure that plumbing fixtures and the water heater are not submerged by the flood. Turn the electricity or gas off, and turn off the water intake valve. Start the water flowing by opening the drain at the bottom of the tank and turning on a hot-water faucet. Do not turn on the gas or electricity when the tank is empty.

Other Sources of Water:

If water must be obtained from outside of the facility, the only sources may contain harmful bacteria. Be sure to purify the water according to the instructions listed in section **B2.6.2** before drinking it.

Some possible sources are: collected rainwater; streams, rivers and other moving bodies of water; ponds and lakes; and natural springs. Avoid water with floating material, an odor or dark color. Use saltwater only if it distilled first.

Do not drink floodwater.

For more information:

<http://www.bae.ncsu.edu/programs/extension/publicat/wqwm/emergwatersuppl.html>

B2.2.2) plan for communication

Widespread disaster, like those associated with large hurricanes, can strand employees without access to working landlines or cellular telephone services. The clinic/hospital should develop alternative ways of locating and communicating with employees and clients.

Less-traditional methods of communication may include two-way radios, cellular phones with out-of-state area codes and/or text-messaging capabilities, satellite phones, or personal data assistants (PDA). Employees should use these communication devices to give locations and receive current information updates.

It is important to have an updated contact list of employees, clients, vendors, and key governmental agencies. Copies of the list should exist at both the clinic/hospital and at one or more offsite locations.

A central point of contact, particularly an individual outside of the potential disaster area, should be designated to which employees and family members can “check-in.” Provide the selected contact individual with employee contact information including names, home, work and cell phone numbers and e-mail addresses. The out-of-state contact should attempt to contact as many of the employees as possible and keep everyone updated on overall status of the situation.

Information to provide to out-of-town contact.	
Email:	
Name:	
Phone #:	
Email:	
Name:	
Phone #:	
Email:	
Name:	
Phone #:	

For more information on communicating during and after the storm:

[Communication.pdf](#)

Shortwave Radios:

Shortwave radios are a good source of information during times of local or national emergency. Three benefits of emergency shortwave radios include:

1. Shortwave radio stations can be heard around the world unlike standard AM/FM stations that are limited to local areas.
2. When local radio stations are off the air because of a natural or man-made disaster, emergency shortwave radios can always be turned on for stations outside of the area and even on the other side of the world.
3. Shortwave radio is generally commercial free.

SELECTING A SHORTWAVE RADIO:

There are many different makes and models of shortwave radios, and they vary greatly in cost, features, size, complexity, and other factors. **The best shortwave radio for depends primarily on listening interests.** However, there are some features and specifications to look for in any shortwave radio under consider:

- **Frequency coverage:** Shortwave frequencies are usually considered those from the upper end of the AM broadcasting band, 1700 kHz, up to 30 MHz. The minimum frequency coverage to look for is 540 kHz to 30 MHz. Most shortwave radios sold today also tune down to 150 kHz, covering the longwave band.
- **Frequency readout:** Most shortwave radios sold today have a digital display showing the frequency the radio is tuned to. A few radios, usually less expensive models, have an analog "slide rule" frequency readout that does not indicate the precise frequency the radio is receiving. It can be very difficult and frustrating to find a station on a specific frequency without a digital display, so a **digital frequency display should be a "must"** for any shortwave radio. An analog readout shortwave radio can make a good, inexpensive "spare" radio for traveling, etc.
- **Modes:** Some shortwave radios tune only AM mode stations, and these can be satisfactory for listening to most shortwave broadcasting stations. However, SSB is used by a few broadcasting stations in addition to ham, aeronautical, military, and maritime communications. A shortwave radio that can receive **SSB in addition to AM will greatly expand listening options** on shortwave.
- **Selectivity Options:** Selectivity is discussed in more detail below, but how many selectivity bandwidths that can select must be considered. Some portable receivers allow a choice between "wide" and "narrow" selectivity bandwidths, while some desktop shortwave radios have as many as five selectivity bandwidths. **Narrow selectivity bandwidths reduce interference** from stations on adjacent frequencies, although the audio quality of the desired station will be reduced as the selectivity is narrowed.

- **Antenna Connections:** Some portable radios come with a built-in telescoping antenna but have no provision for an external antenna. Other portable shortwave radios have a jack that connects to an external antenna. Most tabletop shortwave radios have connectors for external antennas. These usually include connectors for antennas using 50 ohm coaxial cables and others for antennas using ordinary insulated "hook-up" wire. **External antennas normally give better reception than built-in antennas**, although built-in antennas are usually satisfactory for listening to major international broadcasting stations. However, built-in antennas give poor results inside buildings with steel frames, like a high-rise condominium or apartment buildings. In such cases, the ability to connect an external antenna (even it is only a few feet of wire outside a window) can make a significant improvement in reception.

Terms to understand when buying a shortwave radio. These terms are used to describe the features and controls found on shortwave radios:

Audio filter: This circuit rejects certain audio frequencies in the audio output of a receiver. A *bandpass* filter will pass a certain band of audio frequencies but reject others. A *low pass* filter will reject all audio frequencies above a certain frequency. A *high pass* filter rejects all audio frequencies below a certain frequency.

Automatic gain control (AGC): This circuit adjusts the gain of the receiver to maintain a relatively constant level of audio output from the receiver regardless of changes in the strength of the received signal. Some AGC circuits let the listener select how fast it reacts to a change in signal strength, such as a "slow" or "fast" AVC. This circuit is sometimes called an *automatic volume control* (AVC).

Beat frequency oscillator (BFO): A circuit that produces an internally-generated carrier to allow reception of SSB, CW, and FSK signals.

Crystal lattice filter: This device improves selectivity by increasing rejection of signals on adjacent frequencies.

Digital signal processing (DSP): Circuitry in which analog signals, such as audio or radio signals, are converted into digital form, manipulated and processed while in digital form, and then converted back to analog form.

Dynamic range: A measure of the strongest received signal that a receiver can handle with overloading or distortion. It is measured in decibels. A minimum satisfactory measurement is 70 dB; over 100 dB is preferred.

Memories: These allow storing of frequencies of favorite stations. Some receivers allow storing of mode, receiver bandwidth, etc., in addition to frequency.

Noise blanker/limiter: This circuit reduces noise due to electrical equipment, lightning, neon lights, etc. Noise limiters are simpler circuits that limit the maximum strength of noise pulses, while more complex noise blankers actually silence the receiver during noise pulses. While this circuits can help reduce noise, they cannot eliminate noise and often introduce some audio distortion.

Notch filter: A notch filter removes a very narrow slice from a received signal, either from the radio frequency itself ("RF notch") or from the audio output ("audio notch") of the receiver.

Passband tuning: A circuit that allows the listener to move the selectivity bandwidth above or below the frequency to which the radio is tuned. This is often helpful in reducing interference.

Product detector: This is a beat frequency oscillator with enhancements for improved SSB and CW reception.

RF attenuator: This circuit reduces the sensitivity of the receiver in discrete steps, such as 10 or 20 decibels.

RF gain: Control permitting the sensitivity of a receiver to be continuously varied.

Scanning: This feature lets the receiver automatically tune through a desired frequency range, stopping on all frequencies where a signal is present. This feature is sometimes not too useful on shortwave, since atmospheric noise can also can mimic a radio signal.

Selectivity: The ability of a shortwave radio to reject signals on frequencies adjacent to the desired station. It is usually expressed as a bandwidth measured at 6 dB rejection points ("6 dB down" or "-6 dB"). For example, a selectivity specification of "6 kHz at -6 dB" means any signal outside the 6 kHz bandwidth will be reduced in strength by at least 6 dB (in other words, the interfering signal is only one-fourth as strong as it would be otherwise). Typical good selectivity measurements at 6 dB points are 6 kHz for AM, 2.5 kHz for SSB, and 0.5 kHz for CW.

Sensitivity: The ability of a shortwave radio to respond to weak signals. It is measured in microvolts (mV). The lower the measurement in microvolts, the fainter the signal the radio can receive.

Squelch: This quiets the receiver audio until the strength of a received signal exceeds a desired level.

Synchronous detection: A circuit that replaces the carrier in a received AM signal with an internally generated replacement to reduce the effects of fading. This useful feature is found in some portable radios like the Sony ICF-SW7600GR and also in some table-top models like the Drake R8B.

Variable bandwidth tuning: This circuit allows the selectivity of a receiver to be continuously varied.

For more information:

<http://www.dxing.com/swrx.htm>

Section	Contents
3	<i>Animals Boarding in Clinic</i> B2.3.1) preparations for cages/runs • Check cages for overcrowding, necessary weanings, and pregnancies. Notify appropriate personnel to complete the necessary separations before storm strike timeframe. • Normal husbandry schedules should be change to accommodate the projected storm strike timeframe. All scheduled bedding changes should be done <i>24 hours before a storm hits</i>. BEDDING CHANGES SHOULD NOT BE DONE DURING THE STORM. • Check cages in all quarters for unexpected heavily soiled bedding and perform necessary last minute cage changes. • If ventilated systems exist, make sure all cages are correctly positioned and locked into position. • Check all conventionally housed animals to make sure all lids and filter tops are correctly placed and secure.

B2.3.2) dietary/medication and other provisions

- Every cage should have the food trough filled to the capacity limit and water bottles should be filled with fresh drinking water.
- Store and secure enough water for animal water bottles for at least 7 days. **A minimum of 150 gallons of water should be stored.** Ideally, the water should be sterilized but distilled, reverse osmosis water is acceptable.
- Check for the availability of extra conventional caging equipment (microfilter tops, water bottles, wire lids, cage tags) for the transfer of ventilated cage system animals in case of there is a power failure and there is no backup power to run the system. Position all equipment for immediate availability and use.
- All scheduled animal euthanasia must be completed and the carcasses must be either disposed of via the biohazardous waste disposal system or placed in the freezer.
- Set freezer to the coldest setting. If there are carcasses still in the freezer, double bag all bags of carcasses and replace back in the freezer.

For more information on animal disaster preparedness, reference the following:

http://www.avma.org/disaster/state_resources/la.asp

http://www.avma.org/disaster/state_pubhealth_vets.asp#la

Section	Contents
4	<i>Animal Records/Identification</i>
	B2.4.1) organization, management, and storage of patient medical files

It is of great importance for the clinic/hospital to have a plan to protect patient files from hurricane-induced damage. Both hardcopy and digital files must be safeguarded against wind and water damage.

Additional paper copies of patient files should be stored off-location and updated periodically as determined by the veterinary staff. External hard drives for digital records must also be maintained and stored in a safe location away from the clinic/hospital. These additional precautions will aid veterinarians in providing uninterrupted health care for animals in the wake of a hurricane.

Keep daily written records

- Create a master sheet to quickly remind the staff of the animal's treatment history, known medical conditions or allergies, etc.
- Address presenting symptoms and treatment in a more deliberate, formalized process than normal.
- Create a contemporaneous written record of the presenting symptoms, as communicated *in the words of the owner*.
- Create a contemporaneous written record, authored by the veterinarian, as to the presenting symptoms, conditions and treatment.
- Educate owners as to reasonable expectations concerning diagnosis, treatment, follow-up and remaining uncertainties beyond the veterinarian's control.
- Establish that animal care was in accordance with industry standards within that area or discipline.

The following forms may be used to complete the necessary medical documentation for admitted animals:

http://www.research.usf.edu/cm/CMDC/C008_2_Arrival_Status_9_06.pdf

http://www.research.usf.edu/cm/CMDC/C013_1_Progress_Notes_1_03.pdf

http://www.research.usf.edu/cm/CMDC/C010_1_Surgical_Record_1_03.pdf

See APPENDICIES H-J (pages 133-135)

Recordkeeping Tips

Daily recordkeeping can be streamlined by creating standardized forms (i.e., a patient summary form and a standardized treatment form), using computer software, using carbonless memo pads, and/or by dictating records rather than writing them down.

❖ Patient Summary Form

Each patient treated should have a master record, which generally summarizes the animal's medical history.

Review the patient's medical-history sheet and, if necessary, take the document to the treatment area. This allows the veterinarian to reference and update the record at the time of treatment. The sheet should include:

- Information concerning the owner (i.e., name, address, telephone number, fax number, Social Security or Federal Employment Identification Number, etc.).
- If horses are involved, whether there are multiple owners of the horse. As horses are sometimes owned by multiple parties, be sure to identify *all* owners in the event a life-and-death situation affects the animal. If this occurs, be sure to secure a written statement that the owner being dealt with has authority to make these decisions on behalf of all other owners.
- Information about the animal (i.e., name, breed, sex, age and owner's estimated value, as determined by purchase price, insured value or other factors).
- Any unique characteristics of the animal from a treatment-history perspective (i.e., prior history of colic, founder or laminitis; prior surgeries; known food, drug or other allergies; history of abuse or neglect; history of breeding problems, etc.)

❖ Standardized Treatment Form (Call Sheet)

The form, at a minimum, should identify: the date; time of initial call; time of arrival at destination (if applicable); owner or contact name; animal name and information; presenting complaints as identified by the owner, preferably in the owner's own handwriting; diagnosis; treatment provided; follow-up care to be provided by the owner; date of next examination, if required, or referral to a third party.

❖ Computer Software

Practice-management software is available to help veterinarians keep track of patient history, treatment, etc. Input and update customized forms can also be implemented. Print out a hard copy of each form at the end of each business day, and make backup files on disk, in case the hard drive crashes.

❖ **Carbonless Memo Pad**

The pad should include the same information listed in the standardized treatment form. Since this pad is essentially a blank page, hand-entering all of the headings and information is necessary. For convenience, ask a local printer to create a carbonless form that includes the pre-printed headings identified above. After completion, pull off the top copy, give it to the owner, then file the bottom copy in the client/patient file after returning to the office.

❖ **Dictation**

If there is reluctance to complete the necessary paperwork by hand, simply use dictated notes concerning the treatment. Small, handheld Dictaphones can be purchased from any office-supply store or department store for less than \$25. The dictations can then be transcribed by a staff member or outside transcription service. (Look in the Yellow Pages under the "Transcription Service" or "Temporary Secretarial Service" heading.) The disadvantage of this system is that there is no immediate record to give owners.

❖ **The calendar-entry follow-up.**

When completing and filing the forms outlined earlier, veterinarians should also get into the habit of immediately docketing a calendar entry reminding everyone of required follow-up. If no formal follow-up is required, the staff might perhaps docket a simple courtesy call to check on the patient's status.

For more information:

<http://www.farrislawfirm.com/Default.aspx?PageID=29>

<http://www.cedara.com/clinicalspecialties/veterinary.htm>

http://www.cvm.umn.edu/img/assets/11323/Medical_Record_Retention.pdf

See APPENDIX K (page 136)

B2.4.2) microchipping

The veterinary staff should encourage all animals to be microchipped, particularly dogs, cats, parrots, and horses. Microchipping serves many purposes, especially in emergency situations:

- Microchips provide an opportunity to reunite pets and owners quickly. Animal Control Officers will be provided with "wands" with which to scan for microchips. If a microchip is located, the wand will provide owner and address information. Officers could then return the animal to the owner rather than transporting the animal to the facility.
- In addition to quickly reuniting animals and owners, the ability to identify animals by microchip will also assist the section by saving space, food, time, and effort that are often expended on animals being held in the facility.
- Recent weather related incidents demonstrated that animals can be quickly separated from their homes and owners and, often times, at a separation of great distances. Microchipping aided in those scenarios, including in the aftermath of Hurricane Katrina, by identifying animals and their owners quickly and reuniting them safely with minimal cost, time and effort.

The following document can be used as a resource to encourage animal owners to microchip their pets.

MICROCHIPPING

It is always sad to see a flyer stapled to a signpost or on a bulletin board at the grocery store with a picture of a lost Snuggles or Scruffy. You imagine a child waiting for the phone to ring, hoping that some kind person happens to find his kitty and see his flyer. Sadly, once a pet is lost, the odds are against her finding her way home again. According to the American Humane Association, only about seventeen percent of lost dogs and two percent of cats ever find their way back from shelters to their original owners. Almost 20 million pets are euthanized every year because their owners can't be found. There are ways to beat these odds though, and they're a little higher-tech than the nametag and collar you're used to. To give your pet the best chance to be identified, no matter how far he roams, have him implanted with a microchip.

Tags and collars are a good start—they are certainly better than no ID at all—but they are not 100 percent dependable. Tags can fade, rust, or get scratched and be impossible to read. Collars can tear or slip off, or even worse, get caught on something while your pet is wandering in the wilderness and hurt or kill him. With microchipping, on the other hand, a veterinarian injects a tiny computer chip—about the size of a grain of rice—just under your pet's skin, between the shoulder blades. Then the number on the computer chip is entered in an international database, like the Central Animal Registry or PETtrac. If your dog or cat is found, any animal hospital, shelter, or humane society can use a microchip reader to read the unique ID number contained on the chip. The veterinarian or worker then calls the database, or accesses it on the computer, and

enters the number given off by the microchip. The database matches the number to your name and phone number. The chip can't be lost or damaged, and it lasts for the pet's lifetime.

The microchip is convenient, safe, and reliable, but it still isn't as popular in the US as it is in Canada and Great Britain. Though many veterinarians and animal shelters are actively working to inform their clients about microchipping, there are still a number of myths keeping pet owners from microchipping their pets.

The myth: The implantation procedure is too expensive.

The truth: While the price can vary from one veterinarian to another, it often falls between \$25 and \$40. A lot of veterinarians will charge even less if they perform the implantation at the same time as another procedure, like spaying, neutering, or dental work. It is a one-time fee; the chip never needs maintenance or replacement. There may be a fee, generally under \$20, to enter your pet's ID number in a database, and there may be a small fee for changing your address, phone number, or other contact information in the database. Still, microchip identification is cheaper than making flyers, calling around town, and taking time off work to find a lost pet.

The myth: It's going to hurt my pet to get the chip implanted.

The truth: The procedure is simple, routine, and painless, and it doesn't require any anesthesia. Your pet simply gets an injection just under the loose skin between the shoulder blades; it is a lot like getting vaccinated. Most animals don't react at all.

The myth: They could not possibly give every pet with a microchip a unique number. My pet's number will be duplicated.

The truth: The way technology works today, these tiny microchips can hold huge amounts of information. In fact, the microchips are designed to produce 275 billion different identification numbers. On top of that, manufacturers add unique product codes and manufacturer's codes to identify their chips. With all the possible combinations of product codes and ID numbers, there are more than enough numbers to make sure every pet has a completely unique number.

The myth: Most shelters and veterinarians don't have microchip readers, so they will not be able to identify my pet.

The truth: It is true that a microchip will not work to identify your pet unless your pet comes in contact with a microchip reader, and there are some shelters and veterinarians in the US that do not have readers yet. (In Canada, almost all the animal control services and veterinarians have readers.) But the three main microchip manufacturers offer microchip readers to humane societies, shelters, and veterinarian for free or for a small fee. Until recently, each brand of microchip could only be read by its own brand of microchip reader. Recently, though, universal readers that will read

several brands of microchips have been made available to the shelter community. Ask your veterinarian, your nearby humane society or shelter, or the animal control department in your area whether they have microchip readers readily available. If not, encourage them to get the readers. Of course, to be sure your pets will be returned to you, you should identify them as many ways as you can, with a tag, a microchip, and even a tattoo.

The myth: Eventually, the microchip will wear out and I will have to have it replaced.

The truth: The chip does not have an internal battery or power source. Most of the time it is inactive. When the microchip reader is passed over it, it gets enough power from the reader to transmit the pet's ID number. Since there is no battery and no moving parts, there is nothing to wear out or replace. The microchip will last throughout your pet's lifetime.

The myth: My cat never goes outside. She does not need to have a microchip ID.

The truth: It is wonderful that you are keeping your pet safe inside, but a guest or a repair person could easily leave the door hanging open, or a screen could come loose from an open window. Unaltered pets in particular will take any chance to roam. There is a possibility that your house could be damaged in heavy storm, flood, or other natural disaster, causing your cat to run away in fear. Pets can even be stolen-particularly birds and exotic or purebred animals. No matter how closely you watch your favorite animal friend, there is always a chance she could get out, and if she does not have any ID, it will be extremely hard to find her.

The myth: If someone else ever tries to claim my pet, the microchip ID number will not hold up in court.

The truth: This issue has not actually come up in a court of law yet. However, a microchip ID number is unique, it cannot be changed, and it links a pet to its owner through an international database. It works a lot like the serial numbers that link vehicles, stereos, TV sets, and other valuable possessions to their owners. The American and Canadian Kennel Clubs have recognized microchipping as definitive proof of a dog's identity and ownership, and accept microchip identification to register purebred dogs. If you own a very valuable pet, or if you are afraid there might be a question about who has custody of your pet, microchip identification could be a big help.

The myth: It is not safe for my dog to have a foreign object inside his body.

The truth: Veterinarians have been implanting microchips in animals for years, and the process has been proven to be very safe. The chip is made out of an inert, biocompatible substance, which means it will not cause an allergic reaction in your furry friend, and it will not degenerate over time. The first versions of the microchip would sometimes migrate from where they were injected, but manufacturers now design the chips with anti-migrating properties. When they are implanted properly, today's chips will

not migrate. Once they are in place, they will not move around or get near any delicate tissues or organs. You can help make sure the microchip heals securely by keeping your pet calm and quiet for the 24 hours following injection. Because the microchip is placed just under the skin and not internally, microchip reading is completely safe as well.

Microchipping is safe, effective, durable, and dependable, but it cannot absolutely guarantee that a lost pet will be found. The best way to keep your pet safe is to use more than one form of identification. Microchips are long lasting and a wonderful means of identification, but there is a chance a shelter will not have a reader, so a tattoo would be an effective backup form of identification. If kind strangers find your dog in the street, on the other hand, they will not have a reader handy to check for a microchip and will not know where to call to match a animal's tattoo to an owner. A tag with your name and address would let them bring your pet right back to your door. Another possibility would be a tag that informs readers that your pet has been microchipped and/or tattooed and gives them the number to call to reach the ID number database. There is always the possibility that one kind of identification could fail, but if your pet has two or three kinds of ID, there is a good chance that at least one will help bring her home to you. Talk to your veterinarian about the best types of identification for your pet.

In a perfect world, leashes, fences, and doors would be enough to keep your pet safe at home. In the real world, accidents happen, and your pet depends on you to protect her against the things that could go wrong. With a little effort now, you can take a big step toward ensuring that your furry friend will be with you in the future.



Inserting a microchip
into an animal



Scanning an animal
for a microchip

For more information:

http://www.healthypet.com/library_view.aspx?ID=78

<http://www.identidog.com/about/default.aspx>

Section	Contents
5	<i>Financial Records</i>
	B2.5.1) small business record keeping

RECORDKEEPING IN SMALL BUSINESS

Good financial record-keeping is essential for the operation of any small business for various reasons including, inventory monitoring, expense control, fulfillment of payroll requirements, and other functions. In times of natural disaster, well-kept records will allow the clinic/hospital to operate more effectively and conventionally in the aftermath.

REQUIREMENTS OF A GOOD SYSTEM

The following criteria are essential to a good record-keeping system:

- * simplicity
- * accuracy
- * timeliness
- * consistency
- * understandability
- * reliability and completeness

There are several types of accounting systems that can be designed for individual business needs including:

Commercial Record-Keeping Systems

Record-keeping systems are currently available from various sources in the marketplace: stationery stores, publishers and business advisory services. These systems either are specifically designed for a certain type of business or are general enough to be used by many different types of businesses. Systems are available for cash basis recording, accrual basis recording and for both single and double entry.

Computerized Record Keeping

Compare different software systems and make sure that the system chosen provides accurate and timely information and offers more than adequate presentation of accounting information for small business.

Low-cost computer programs are available that can handle many of the book entries that are necessary in a system that is maintained by hand. Appropriate hardware and a good general ledger software program can offer substantial assistance in recording business transactions and summarizing the information into appropriate accounting presentations

INSURANCE RECORDS:

Most businesses have several types of insurance. For each policy, following information is necessary:

- * clear statement of the type of coverage
- * names of individuals covered
- * effective dates and expiration date
- * annual premium

Review insurance policies on a regular basis. In addition, annually consult an insurance specialist, who will review the total insurance package to determine what coverage is appropriate and ensure that premiums remain in line with prior quotations.

Business Equipment

Keep an accurate list of permanent business equipment used on both a regular and stand-by basis. The list should describe the equipment and provide serial numbers, date of purchase and original cost. Keep the list available for insurance or other purposes. The information is also needed to prepare accurate depreciation schedules.

ACCOUNTING SERVICES

There are several choices for maintaining an accounting system:

- * the staff maintains the books
- * a bookkeeper is hired on a full-time or part-time basis
- * an accountant is hired to set up the books
- * a hybrid system is set up in which the staff maintains the day-to-day reports, while an accountant does the period-end record preparation, summaries, reconciliations, and the returns for sales tax, excise tax and payroll taxes

In making the choice, the clinic/hospital must decide whether it has the ability and time to set up and maintain good records or if outside accounting service should be engaged. It is usually suggested that an accountant be hired to do the final year-end preparations and to advise the clinic/hospital.

No matter which method chosen, employees should remain familiar with the books and participate in the record-keeping process. This will maximize the services provided by the accountant and allow for the tracking of the business.

FINANCIAL RECORDS THE CLINIC/HOSPITAL SHOULD BE AWARE OF

DAILY	WEEKLY	MONTHLY
- Balance of cash on hand	- Accounts receivable, particularly slow paying accounts	- Records of receipts, disbursements, bank accounts, and journals
- Bank balance		
- Daily summaries of sales and cash receipts	- Accounts payable	- Income statements
- Any errors or problems that have occurred in collection	- Payroll particularly the accumulation of hours and the development of payroll liability	- Balance sheets
- A record of monies paid out, both by cash and by check	- Taxes; be aware of any tax items that are due and reports required by government agencies	- Reconcile bank account
		- Balance petty cash
		- Review federal tax requirements and make deposits
		- Review and age accounts receivable to recognize and handle slow or bad accounts

For more information on small-business record keeping:

<http://www.sba.gov/library/pubs/fm-10.txt>

<http://www.cpa.net/resources/retengde.pdf>

B2.5.1) establish a safe deposit box

It is important to have a safe deposit box to protect important papers. The deposit box eliminates additional stress in the instance of hurricane evacuation. The boxes are located at various financial institutions and should include the following items:

PERSONAL DOCUMENTATION:

∅ Marriage certificate	∅ Copy of professional license
∅ Copy of will	∅ Copy of separation/divorce papers
∅ Birth certificate	∅ Social Security Card
∅ Copy of passport	∅ Copy of health information (vaccinations, hospitalizations)
∅ Copy of college degree	∅ Military records

REAL AND PERSONAL PROPERTY:

∅ Deeds, titles, title insurance for clinic/hospital	∅ Copy of receipts for big-ticket items
∅ Deeds, titles, title insurance for any other property owned	∅ Copy of business-owner's insurance
∅ Deeds, title, title insurance for auto(s)	∅ Copy of receipts for clinic/hospital improvements
∅ Videotape/DVD inventory of clinic/hospital	

FINANCIAL/BUSINESS:

∅ Copy of employment contract	∅ Bonds and Treasury securities (if not held in street name)
∅ Original stock certificates (if not held in street name, which is the recommended form of ownership)	∅ U.S. savings bonds
∅ Original prospectuses and sales materials for any limited partnerships	

For more information:

<http://allfinancialmatters.com/2006/06/25/what-belongs-in-your-safe-deposit-box/>

B2.5.2) purchase records of drugs, materials, and utilities

As with financial records, implementing an effective system for cataloging and storing purchase records can help alleviate issues subsequent to hurricane disruption. Prior to hurricane season the clinic/hospital staff should decide on the retention times for purchase records, the physical storage of the records, and maintaining easy access to the records. The planning will aid in instances of hurricane evacuation and recovery.

For more information on purchase record maintenance:

http://www.kondinin.com.au/Downloads/Pam3_AgVetChemPurchRecords.pdf

http://www.doncaster.gov.uk/Images/Veterinary%20Medicine%20Record_tcm2-43944.pdf

<http://www.crosscompliance.org.uk/publications/Vet%20Medicine%20Guidance%20Note%20on%20Record%20Keeping.pdf>

http://www.derbyshire.gov.uk/Images/ah07_tcm2-73214.pdf

<http://www.pabulletin.com/secure/data/vol36/36-39/1907.html>

<http://ocw.tufts.edu/data/43/481658.pdf>

<http://www.dos.state.pa.us/bpoa/LIB/bpoa/20/10/vetnews02.pdf>

See APPENDICIES L-M (pages 137-138)

B2.5.3) tax information

Protecting tax information is important at all times, but should be a particular priority in hurricane preparedness. The IRS encourages taxpayers to safeguard financial and tax records in several ways:

1. TAKE ADVANTAGE OF PAPERLESS RECORDED KEEPING

Sign up to receive bank statements and documents by e-mail. W-2s, tax returns, and other paper documents can be scanned onto an electronic format, helping to ensure the security of the clinic/hospital's financial records.

All of the financial records are consolidated in an electronic form. These records can then be periodically copied onto a "jump drive" or other portable storage device. The drives can be sent to a contact in another city for safe-keeping in case normal computer backup systems are destroyed.

Portable storage devices can be purchased at various places and in various sizes and capabilities.

<http://www.officedepot.com/textSearch.do?uniqueSearchFlag=true&Ntt=portable+storage+device>

Other options include copying files onto a CD or DVD. Many retail stores sell computer software packages that can be used for recordkeeping.

Safeguard and backstop the most important records. Store them in a safe place. Back-up the electronic files. Make duplicates where possible and keep them in a separate location.

2. DOCUMENT VALUABLES

Photograph or videotape the contents of the facility, especially items of greatest value. The IRS has a disaster loss workbook (<http://www.irs.gov/pub/irs-pdf/p584.pdf>) to aid in the compilation of a room-by-room list of possessions. The documentation will help the clinic/hospital recall and prove the market value of items for insurance and casualty loss claims. Again, make sure that the photographs and videotapes are stored in a geographically out-of-risk area.

3. CHECK ON FIDUCIARY BONDS

Employers who use payroll service providers should ask the provider if they have a fiduciary bond in place. The bond could protect the employer in the event of default by the payroll service provider.

4. UPDATE EMERGENCY PLANS

Emergency plans should be reviewed annually. Personal and business situations change over time as do preparedness needs. Individual taxpayers should make sure they are saving necessary documents including W-2s, building closing statements, and insurance records.

When employers hire new employees or if the clinic/hospital has a change in function, plans should be updated accordingly and employees should be informed of the changes.

5. CONTACT THE IRS

The IRS has valuable information the clinic/hospital can request if records are destroyed.

Immediately after a casualty, the practice can request a copy of a return and all attachments (including Form W-2) by using <http://www.irs.gov/pub/irs-pdf/f4506.pdf>, Request for Copy of Tax Return. There is no fee for a transcript and the transcripts are available for the current year and returns processed in the three prior years.

See APPENDIX N (page 139)

More information is available at:

<http://www.irs.gov/newsroom/article/0,,id=157643,00.html>

Tax Assistance for Businesses

Small businesses and employers in the Gulf region receive a variety of tax breaks and incentives under recently-enacted legislation.

- [Recent Tax Law Changes Affecting Businesses in the Gulf Region](#). This fact sheet includes information regarding the Gulf Zone Opportunity Act.
- [Frequently Asked Questions \(FAQs\) for businesses](#)

For more information:

<http://www.irs.gov/pub/irs-pdf/p583.pdf>

Section	Contents
6	<i>Materials for Use After Hurricane: proper storage and quantity</i> B2.6.1) fuel

The following website provides daily information concerning fuel prices and availability throughout the United States:

<http://tonto.eia.doe.gov/oog/info/gdu/gasdiesel.asp>

Maintaining Fuel Purchase Records

A fuel purchase record is useful for tracking fuel economy, fuel expenditures, and vehicle mileage over time. **MPG** provides a downloadable form for tracking fuel purchases. The figure below describes the kind of data that should be entered in a fuel purchase record. Some fields are required to calculate MPG, others are used to record optional information that also may be useful.

Date (optional): The date on which the vehicle was refueled.

Vehicle: 2004 Toyota Prius ← **Vehicle (optional):** The name or a description of the vehicle. This makes record-keeping easier when more than one vehicle is being tracked.

Date	Odometer Reading or Miles Traveled (required)	Gallons (required)	Fill-up Cost (\$)	Driving Conditions (%)		MPG
				Stop & Go	Highway	
1/3/04	15,001.5	8.5	\$14.03	80%	20%	
1/7/04	15,290.0 (288.5)	6.1	\$10.31	80%	20%	47.3

Odometer Reading or Miles Traveled (required): The odometer reading at the time of fill-up or the miles traveled since the last fill-up.

Gallons (required): The number of gallons of fuel purchased. MPG estimates are more accurate if the tank is filled completely each time.

Fill-up Cost (optional): The cost of the entire fuel purchase for the fill-up.

Driving Conditions (optional): The percentage of time driving in stop-and-go type conditions and the percentage of highway driving between the last fill-up and the current one. This will be a guess for most people.

MPG: Fuel economy calculated from odometer and fuel use entries. Information on how to calculate MPG is located [HERE](#).

Calculating MPG from Fuel Purchase Records

Calculating fuel economy from fuel purchase data is quite simple: MPG is simply calculated as the number of miles traveled per gallons of fuel used. The figures below show how fuel purchase data can be used to calculate MPG. These methods are only valid if the tank was filled completely for the current purchase and the previous purchase.

Using Odometer Reading

Vehicle: 2003 Toyota Prius

Date	Odometer Reading or Miles Traveled (required)	Gallons (required)	Fill-up Cost (\$)	Driving Conditions (%)		MPG
				Stop & Go	Highway	
1/3/04	15,001.5	8.5	\$14.03	80%	20%	
1/7/04	15,290.0	6.1	\$10.31	80%	20%	47.3

Step 1. Distance traveled is calculated by subtracting the new odometer reading from the previous one.

$$15,290.0 - 15,001.5 = 288.5 \text{ miles.}$$

Step 2. MPG is calculated by dividing the distance traveled by the gallons of fuel consumed.

$$288.5 \text{ miles} / 6.1 \text{ gallons} = 47.3 \text{ miles/gallon.}$$

Using Miles Traveled

Vehicle: 2003 Toyota Prius

Date	Odometer Reading or Miles Traveled (required)	Gallons (required)	Fill-up Cost (\$)	Driving Conditions (%)		MPG
				Stop & Go	Highway	
1/3/04	397.0	8.5	\$14.03	80%	20%	46.7
1/7/04	288.5	6.1	\$10.31	80%	20%	47.3

Step 1. If Miles Traveled is already calculated by a trip odometer or some other method, MPG is calculated by simply dividing the distance traveled by the gallons of fuel consumed.

$$288.5 \text{ miles} / 6.1 \text{ gallons} = 47.3 \text{ miles/gallon.}$$

For more information:

<https://www.fueleconomy.gov/mpg/MPG.do?action=purchaseRecord>

B2.6.2) water**a) Drinking water disinfection: boiling and chemical treatment**

Safe drinking and cleaning water is vitally important in the aftermath of a hurricane. After a major storm, listen to a local radio or television station for announcements from appropriate authorities about the safety of drinking water. Water from the community water system is safe for drinking unless contamination warnings have been issued or there are other reasons to suspect contamination. Consider all water from wells, cisterns and other delivery systems in the disaster area to be unsafe until tested.

Do not use water that has a dark color, an odor or that contains floating material.

When possible, use bottled water that has not been in contact with floodwaters. Other sources of potable water may be available in the clinic/hospital. Limited amounts of drinkable water can be obtained through draining the hot water tank or melting ice cubes. In most cases, well water is the preferred source of drinking water. If it is not available and river or lake water must be used, avoid sources containing floating material and water with a dark color or an odor. Generally, flowing water is better quality than stagnant water.

If bottled or other potable water is unavailable, boiling or chemically treating the water will kill most of the disease-causing organisms. When emergency disinfections are necessary, disinfectants are less effective in cloudy, murky or colored water. Filter murky or colored water through a clean cloth or allow it to settle. It is better to both settle **and** filter. After filtering the water until it is clear and allowing all dirt and other particles to settle, draw off the clean and clear water for disinfection. Water prepared for disinfection should be stored only in clean, tightly covered, containers, not subject to corrosion.

Boiling:

Boiling is the surest method to make water safe to drink and kill disease-causing microorganisms like *Giardia lamblia* and *Cryptosporidium*, which are frequently found in rivers and lakes. *Giardia* may cause diarrhea, fatigue, and cramps after ingestion. *Cryptosporidium* is highly resistant to disinfection. It may cause diarrhea, nausea and/or stomach cramps. People with severely weakened immune systems are likely to have more severe and more persistent symptoms than healthy individuals.

Procedure:

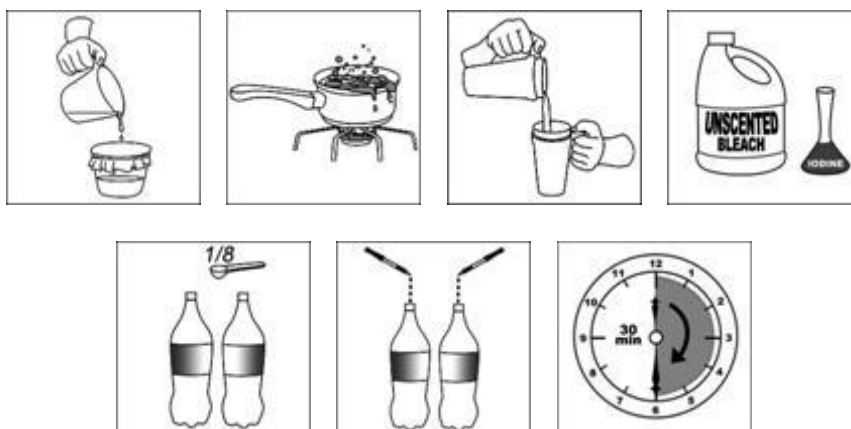
1. Boil filtered and settled water vigorously for one minute.
2. Let it cool.
3. Store in clean containers with covers.

Note:

To improve the flat taste of boiled water, aerate it by pouring it back and forth from one container to another and allow it to stand for a few hours, or add a pinch of salt for each quart or liter of water boiled.

Chemical Treatment:

Water can also be disinfected with household bleach. Add 1/8 teaspoon or 8 drops of regular, liquid, unscented, household bleach for one gallon of water. Stir and allow the water to sit for 30 minutes before use or storage.

Summary and Illustration of Key Points:

b) Well water: chlorine shock treatment

After a flood, it is critical to take every precaution to ensure the safety of the clinic/hospital's well water. It is necessary to inspect, clean, and pump the well before reuse. It is advisable to have the water well driller or contractor check out the well before using it, particularly the wiring for the pump. There is a risk of electrical shock. After the proper inspections have taken place, run the pump and discard the water until the well water runs clear.

If it is known for sure that the clinic/hospital's well flooded, the water should be tested for total chloroform bacteria (fecal coliforms and *E. coli*) and additional analyses may be advisable depending on factors that could provide evidence of contamination. The Louisiana Hurricane Resources website, hosted by the Louisiana Sea Grant College Program suggests asking the following questions to determine appropriate analysis after a flood:

1. What parish is the sample from?
2. How old is the clinic/hospital and when was the well constructed?
3. From what source did the flooding occur (pond, river, salt or brackish water), and the name (if applicable)?
4. How near a municipality is the well?
 - a. What municipality?
 - b. Was the municipality flooded?
 - c. Were fuel stations with underground tanks flooded near the clinic/hospital?
 - d. Were chemical storage facilities or points of sale flooded near the clinic/hospital, and what chemicals may have been stored there?
5. What is the land use in the immediate location of the well?
 - a. Farming, and what crops?
 - b. Confined animal operations and what animals?
 - c. Industrial activities and what kind of industry (petrochemical, plastics, pesticides, herbicides, other)?
6. Have there been unexpected chemical emissions from nearby industries prior to flooding or during the flooding?
7. Is there a noticeable color or odor change from the water after 2-3 minutes of purging?
8. Have contaminants been detected in nearby wells?

If it is suspected that the well may be contaminated, contact a local or state health department or agriculture extension agent for specific advice.

It is possible for the clinic/hospital to sample its own well water for analysis. To do so, first contact the W. A. Callegari Environmental Center, LSU AgCenter prior to sample collection to determine appropriate analyses and necessary sample size:

Phone: (225)765-5155

Fax: (225)765-5158

David Schellinger, Lab Manager (dschellinger@agcenter.lsu.edu) or

Javed Iqbal, Quality Assurance Officer (jiqbal@agcenter.lsu.edu)

[http://www.lsuagcenter.com/en/our_offices/departments/W.A. Callegari Environmental Center](http://www.lsuagcenter.com/en/our_offices/departments/W.A._Callegari_Environmental_Center)

Sampling procedure:

- Obtain clean plastic or glass containers washed with a phosphate-free soap, rinsed with good quality filtered water and air-dried.
- Do not remove the cap until taking sample and do not touch the inside of the lid or container.
- Samples must be obtained from a faucet closest to the well.
- Sterilize the faucet inside and out by:
 - Using a three-inch flame from a butane torch circling the inside and outside of the opening several times
 - Using chlorine bleach and a brush or rag
- Fully open the faucet for 2-3 minutes (hand pumps 5-10 minutes).
- Remove lids from sample containers and fill $\frac{3}{4}$ full and replace lids immediately.
- Store and ship samples in ice.

Samples should be shipped overnight to:

W. A. Callegari Environmental Center
1300 Dean Lee Drive
Baton Rouge, LA 70820

([Bill Carney](#), LSU AgCenter) 9-22-05

It is most important to disinfect the well after determining contamination. This can be accomplished by following the procedure from the LSU AgCenter as outlined below; however, it is advisable to hire a well contractor to disinfect the well.

- Pump the well for several hours to reduce the cloudiness and contaminant levels in the water.
- Pour four gallons of a chlorine bleach solution into the well.
Chlorine bleach solution consists of one gallon of bleach with three gallons of clean water.
- Open every faucet and pump the water until the water coming out of the faucet smells like chlorine, and then turn off each faucet. If chlorine is not smelled at the faucet, add a little more chlorine solution until the smell is detected.
- Let the system sit for 24 hours.
- Open the faucets and run the water until the chlorine smell disappears.
- Have the water sampled and tested. The water IS NOT safe for drinking until lab results show no indication of total coliform bacteria. The final lab results can be discussed with the lab or local parish health unit. It is important to remember that disinfections will not remove chemicals that may have contaminated the well during a flood.

Things to Remember:

- Chlorine compounds are volatile so they will degrade with time. Purchase only what is needed and use it all.
- Always read and follow manufacturers' recommendations. When using chlorine bleaches, do not purchase bleaches that have scents or other additives.
- **Do not add other cleaning materials to the chlorine solution.** Some combinations of chlorine and acids or ammonia could produce dangerous gases.
- Make sure all work areas are well ventilated.

More information about disinfecting well water using shock chlorination is available at:

www.fcs.uga.edu/pubs/PDF/HACE-858-4.pdf See APPENDIX O (page 140-141)

<http://www.water-research.net/shockwelldisinfection.htm#REMEMBER>

<http://wyagric.state.wy.us/aslab/disinfct.htm>

B2.6.3) vaccinations and medications**CRITICAL MEDICATIONS, VACCINATIONS, AND APPARATUS**

If animals and veterinarians remain at the clinic/hospital, the following medical equipment should be stockpiled in the days prior to hurricane landfall.

- Tetanus vaccine
- West Nile vaccine
- Electrolytes
- Antibiotics
- Steroids
- Pain reliever
- Tourniquet
- Needles
- Bandages
- Sutures
- Garbage/trash bags

Additional equine vaccinations should include:

- Eastern Equine Encephalitis (EEE)
- Western Equine Encephalitis (WEE)
- Measles Vaccine Virus (MVV)
- Flu
- Tetanus Toxoid

For more information:

<http://animalrescuefoundation.org/disaster.htm>

B2.6.4) animal food and water

If the clinic/hospital boards animals in the facility during a hurricane event, the staff should have the equivalent of **1 OUNCE/1 POUND /DAY** of animal food. A 14 day minimum of animal food should be kept in the clinic/hospital as food delivery services are often uncertain after natural disasters.

A **150 gallon** minimum of water reserved for animals boarding in the clinic should exist in the facility before the storm. The water should be kept in plastic drums; drums are sold in 15, 55, and 100 gallon increments. A minimum of **one quart** of water per cat or dog per day should be on hand for the duration of the hurricane event.

Water drums can be purchased from the following websites in various volumes:

http://www.bayteccontainers.com/waterbarrels.html?gclid=CM2Z_NTozlwCFRQrSgodUkCqYA

<http://www.alwaysbeprepared.com/site/558697/product/WA133/?referrer=Google&gclid=CPSPioHpzlwCFRdxSgodtV5uYg>

For a list of pet food suppliers, please reference:

http://www.avma.org/disaster/responseguide/K_livestock.pdf

See APPENDIX P (pages 142-143)

B2.6.5) disinfectant materials**CLEANING UP THE CLINIC/HOSPITAL**

If the facility was flooded during the hurricane, assume that everything touched by flood water is contaminated and will have to be disinfected or thrown out. *Take extra precautions for health and safety.*

Most clean up can be done using household cleaning products.

Wash hands frequently during clean up and always wear rubber gloves, a disposable dust/mist face mask (NIOSH approved N-95 type) and, if possible, waterproof boots. If the ceiling was damaged, wear a hard hat and safety glasses.

- Before turning the power back on, have the electrical system checked out by an electrician.
- If the pilot light on the natural gas furnace, hot-water heater or stove has gone out, have it re-lit by a professional.
- Throw away flood-contaminated mattresses, upholstered furniture, carpets and padding, wallboard and wallpaper because they cannot be cleaned thoroughly.
- Clean plaster or tile walls, hard-surface floors and other household surfaces by scrubbing with soap and water. Disinfect them with a solution of one cup of bleach to four gallons of water. Pay particular attention to areas that come in contact with food.
- After cleaning a room or item, go over it again with disinfectant to kill germs and odors left by flood waters. Dry everything completely after cleaning.
- Use a two-bucket method when cleaning. Put cleaning solution in one bucket and rinse water in the other. Replace rinse water frequently.
- Wash all linens and clothing in hot water with a disinfectant, or dry clean them. Throw them away if they are moldy or mildewed.
- Materials should be completely dry before cleaning, or mold and mildew will grow. If items cannot be completely dried out, throw them away.
- If materials become moldy or smell musty, they are probably contaminated and should be thrown away.
- Remove mildew on hard surfaces with household mildew cleaner; a mixture of five tablespoons washing soda or trisodium phosphate to a gallon of water; or 1/4 cup of laundry bleach to a gallon of water.
- If sewage backed up into the clinic/hospital, wear rubber boots and waterproof gloves during cleanup. Remove and discard contaminated goods such as wall coverings, rugs, upholstered furniture, cloth and drywall that cannot be disinfected.
- Empty standing water out of any containers.

More information on the proper selection and use of disinfectant materials can be found in British Columbia Center for Disease Control's guide:

http://www.bccdc.org/downloads/pdf/epid/reports/CDManual_DisinfectntSelectnGuidelines_sep2003_nov05-03.pdf

Section	Contents
7	<i>Evacuation Plan</i>
	B2.7.1) predetermined external evacuation location

In the case of mass evacuation, potentially determined by the veterinary staff hours before hurricane landfall, a predetermined external evacuation location must be established. The staff should be informed of this location and have a plan to move animals and themselves in that direction if deemed necessary.

Consider the following hurricane classifications when deciding on a mass evacuation of the clinic/hospital:

SAFFIR/SIMPSON HURRICANE SCALE

All hurricanes are dangerous, but some are more so than others. The way storm surge, wind, and other factors combine determine the hurricane's destructive power. To make comparisons easier - and to make the predicted hazards of approaching hurricanes clearer to emergency forces - National Oceanic and Atmospheric Administration's hurricane forecasters use a disaster-potential scale which assigns storms to five categories. Category 1 is a minimum hurricane; category 5 is the worst case. The criteria for each category are shown below. This can be used to give an estimate of the potential property damage and flooding expected along the coast with a hurricane.

Category Definition-Effects

ONE Winds 74-95 mph: No real damage to building structures. Damage primarily to unanchored mobile homes, shrubbery, and trees. Also, some coastal road flooding and minor damage.

TWO Winds 96-110 mph: Some roofing material, door, and widow damage to buildings. Considerable damage to vegetation, mobile homes, and piers. Coastal and low-lying escape routes flood 2-4 hours before arrival of center. Small craft in unprotected anchorages break moorings.

THREE Winds 111-130 mph: Some structural damage to small residences and utility buildings with a minor amount of curtainwall failures. Mobile homes are destroyed. Flooding near the coast destroys smaller structures with larger structures damaged by floating debris. Terrain continuously lower than 5 feet above sea level may be flooded inland 8 miles or more.

FOUR Winds 131-155 mph: More extensive curtainwall failures with some complete roof structure failure in small residences. Major erosion of beach areas. Major damage to lower floors of structures near the shore. Terrain continuously lower than 10 feet above sea level may be flooded requiring massive evacuation of residential areas in land as far as 6 miles.

FIVE Winds greater than 155 mph: Complete roof failure on many residences and industrial buildings. Some complete building failures with small utility buildings blown over or away. Major damage to lower floors of all structures located less than 15 feet above sea level and within 500 yards of the shoreline. Massive evacuation of residential areas on low ground within 5 to 10 miles of the shoreline may be required.

http://www.stcharlesgov.net/departments/doem_pre_04.htm

B2.7.2) additional animals in clinic

If the practice retains animals in the facility for the duration of the storm, a plan must be in place to receive additional animals to the clinic/hospital. Individuals may drop off animals in the hours preceding or following hurricane landfall. As a result, there should be enough supplies including: food, water, bedding, vaccinations, medications, and more to compensate for additional animals arriving late or unexpectedly to the clinic/hospital.

When animals are accepted to the clinic/hospital for boarding prior to an evacuation event or after hurricane landfall, it is important to have thorough documentation. In order to have complete medical records, the followings survey should be filled out for every animal maintained in the clinic.

http://www.avma.org/disaster/responseguide/G_survey.pdf

See APPENDIX Q (page 144)

Section	Contents
8	<i>Emergency Supply Route</i> B2.8.1) getting on a list

If available, the clinic/hospital should be placed on an emergency supply route in the months prior to hurricane season.

For more information:

<http://www.sheltersource.org/WHO.htm>

B2.8.2) establishing consistent pickup location and time

If the clinic/hospital is placed on a supply list, a consistent time for delivery to the clinic must be established.

B2.8.3) arriving at designated location

If the clinic/hospital is placed on a supply list, veterinarians and staff must establish a consistent time at which they will arrive to pickup supplies and drop off laboratory work (i.e. blood samples, tumor biopsies). The staff should clearly communicate with drivers as to the place and hour for arrival and then **be on time**.

Section	Contents
9	<i>Client Advice</i>
	B2.9.1) informational materials

The following forms allow veterinary clinic/hospitals to inform their clients on the services they provide in the instance of a hurricane.

The forms should be completed and distributed to clients before hurricane season begins.

http://www.avma.org/disaster/responseguide/G_survey.pdf

http://www.avma.org/disaster/responseguide/G_log.pdf

See APPENDIX R (page 145)

<http://www.co.clear-creek.co.us/Depts/OEM/Form%20A.htm>

If the clinic/hospital has clients who are horse owners particularly, the following website contains pertinent and thorough information on equine disaster preparedness:

<http://www.floridahorse.com/hurricane/hurricane.html>

B2.9.2) handouts

Veterinarians should prepare clients with as much information as possible in the months prior to hurricane season. The information could be presented as a checklist or other document type and include answers to important questions including:

- If the clinic/hospital will accept pets for board during hurricanes
- The flood zone in which the clinic/hospital is located
- An emergency pet evacuation list; a sample list is provided in section **B2.9.3**

For more information:

<http://www.mychurricanecenter.com/hurricaneposter.pdf>

See APPENDIX S (page 146)

http://www.redcross.org/static/file_cont4470_lang0_1577.pdf

See APPENDIX T (pages 147-148)

<http://www.ready.gov/america/downloads/pets.pdf>

See APPENDIX U (pages 149-150)

http://www.asPCA.org/site/DocServer/ASPCA_pet_preparedness_full_page.pdf?docID=7021

<http://www.bestfriends.org/archives/forums/082204disaster.html>

<http://www.clemson.edu/lph/Preparing%20for%20Hurricane%20Seaso1.pdf>

See APPENDIX V (pages 151-152)

B2.9.3) emergency packs

PET EVACUATION KIT PROVISIONS:

-  **pet food** (2 week supply; don't forget the manual can opener if you bring canned food!)
-  **water** (2 week supply)
-  **pet bowls leashes and/or harnesses medications** (including heart worm preventative, flea preventative)
-  **pet carriers**, labeled with your contact information pet identification folders vaccination history (including rabies license and tags)
-  **medical history**
-  **pet first aid kit** (see below for contents)
-  **emergency contact numbers** (your veterinarian's phone number, for example)
-  **list of pet-friendly hotels, shelters, boarding facilities**
-  **maps with evacuation routes** (Contraflow maps are available at Lowe's, Home Depot, and Walmart locations in the greater New Orleans area.)
-  **pet toys, pet beds, and/or blankets**
-  **treats, litter box, litter, and scoop dog-poop bags paper towels trash bags**
-  **flashlight, batteries and radio**

PET FIRST AID KIT, BASIC PROVISIONS

 Alcohol wipes	 Tweezers
 Bandage	 Cold Pack
 scissors	 Antibiotic ointment
 Bandage tape	 Iodine
 Gauze pads (assorted sizes) Conforming bandage	 Latex gloves
 Wash cloth	

<http://humanela.org/hurricanepreparedness.htm#kit>

B2.9.4) hardcopy medical records

Provide animal owners with hardcopy medical records in the months leading up to hurricane season. Owners can take the records with them when evacuating. Additionally, if clients must change veterinarians in the wake of a hurricane, they will have a complete medical history file for their pet.

Such a system, along with medical record copies stored off-site by the clinic/hospital, eliminates substantial future problems if records existing in facility are lost due to flood, wind, or other hurricane-induced damage.

B2.9.5) determination/suggestion of alternative veterinarian

If animal owners evacuate to another state for an impending hurricane, veterinarians should provide the name, number, and address of a veterinary practice in the evacuation area when possible. The clinic/hospital staff may also recommend alternative veterinarians in the local area in case damage to the home office is sustained after a hurricane event.

If there is no particular alternative veterinary, information on more than 800 Louisiana veterinarians is available on the Louisiana Veterinary Medical Association website. Clients can then determine a location for temporary veterinary care if the current clinic/hospital is incapacitated.

Local veterinary listings:

<http://www.lvma.org/>

C: *Post-Emergency Operations*

Section	Contents
1	<i>Returning to Clinic</i>
	C1.1) General Safety

- Do not enter a building if gas is smelled. Call 911. Do not light matches or turn on lights.
- Wear waterproof boots and gloves to avoid floodwater touching skin.
- If necessary, use respiratory protection or a HAZMAT suit.
- Wash hands often with soap and clean water, or use a hand-cleaning gel with alcohol in it.
- Avoid tetanus and other infections by getting medical attention for a dirty cut or deep puncture wound.

Avoid Contact with Animals and Insects

- Reduce mosquito bites. Consider avoiding outdoor activities during the evening and early morning, which are peak biting times for many mosquitoes. Use an insect repellent with DEET or Picaridin.
- Get rid of dead animals according to local guidelines.

Drive Safely

- Stop and look both ways at all intersections. Drive slowly and keep space between other vehicles. Watch out for trash on the road.
- Wear a seatbelt.
- Do not drive after drinking.

Permitting and Curfew

Before attempting to return to the clinic/hospital, check with local police and/or officials for information concerning proper identification tags and permits for re-entering affected areas. The permits may be necessary to return to the facility to assess damages and begin cleanup work.

Be aware of any curfew restrictions in the area. Abide by those restrictions and complete work on the facility or operation of clinic/hospital within the appropriate hours.

C.1.2) power-outage restoration

In order to have power restored in a timely manner, Entergy-Louisiana suggests the following:

- When wide spread outages occur, Entergy phone-lines experience high call volumes. The fastest way to report an outage is to call **1-800-9OUTAGE (1-800-968-8243)**. Use the automatic reporting system, which can be accessed by choosing option 1.
- After selecting option 1, the caller will be asked for an account number or phone number. If the clinic/hospital does not have an account number and the phone number is not in the company's computer information system, the caller will be automatically transferred to an agent.
- Once the outage has been reported, there is no reason to report it again, unless a neighboring facilities' power comes on and the clinic/hospital's does not.
- Please be patient. Entergy crews will be working as quickly as possible to restore power to all customers.

For more information:

http://www.entergy-louisiana.com/global/storms/pdfs/2006_LA_hurricane_reference_guide.pdf

C.1.3) assessment of food stuffs

The Center for Food Safety and Applied Nutrition, a division of the Food and Drug Administrations suggests the following precautions for safe food consumption after a hurricane:

Assessing safe food consumption after potential water damage:

Do not eat any food that may have come in contact with flood waters.

If in doubt, throw it out!

- Do not eat food packaged in cardboard, cloth, paper, plastics, or other such containers that have been water damaged.
- Discard food and beverage containers with screw-caps, snap lids, crimped caps (soda bottles), twist caps, flip tops, and home canned foods, if they have come in contact with flood water. These containers cannot be disinfected.
- Undamaged, commercially-prepared foods in all-metal cans or retort pouches can be saved if the labels are removed, the cans thoroughly washed and rinsed and then disinfected with a sanitizing solution consisting of 1 tablespoon of bleach per gallon of potable water. Finally, re-label the containers with a marker and include the contents name and expiration date.
- Discard refrigerators that have been submerged in flood water, or if enough moisture was present from liquefied food items to reach the insulation inside the equipment.
- Replace all ice machine filters and beverage dispenser filters and flush all water lines for 10 to 15 minutes.
- Discard all ice in ice machines; clean and sanitize (1 tablespoon of bleach per gallon of potable water) the interior surfaces; run the ice through 3 cycles; and discard ice with each cycle. (The ice may be used for applications other than in drinking water.)

Assessing safe food consumption after power outages:

- If an appliance thermometer was kept in the freezer, check the temperature when the power comes back on. If the freezer thermometer reads 40° F or below, the food is safe and may be refrozen. If a thermometer has not been kept in the freezer, check each package of food to determine its safety. Appearance or odor

cannot be relied upon. If the food still contains ice crystals or is 40° F or below, it is safe to refreeze or cook.

- Refrigerated food should be safe as long as the power was out for no more than 4 hours. Keep the door closed as much as possible. Discard any perishable food (such as meat, poultry, fish, eggs or leftovers) that has been above 40° F for two hours or more.
- Perishable food such as meat, poultry, seafood, milk, and eggs that are not kept adequately refrigerated or frozen may cause illness if consumed, even when they are thoroughly cooked.

Food maintenance:

- If the power in a refrigerator goes out, keep the refrigerator and freezer doors closed as much as possible to maintain the cold temperature. The refrigerator will keep food cold for about 4 hours if it is unopened.
- A full freezer will keep the temperature for approximately 48 hours (24 hours if it is half full) if the door remains closed. Buy dry or block ice to keep the refrigerator as cold as possible if the power is going to be out for a prolonged period of time. Fifty pounds of dry ice should hold an 18-cubic foot fully-stocked freezer cold for two days.

Safety of Specific Refrigerated Foods After a Power Outage

All chopped meats, poultry and seafood sandwich fillings should not be left without refrigeration for more than two hours. Food supply can be extended by cooking all unspoiled meat immediately. Cooked meat needs to be kept above 140 °F if it cannot be cooled below 40 °F within two hours.

Do not trust sense of smell. Food may be unsafe, even if it does not smell bad.

Tips on perishable foods:

- **Large, solid, unbound pieces of fresh beef or lamb**, such as rump roast or leg of lamb, are least susceptible to quick spoilage.
- **Uncured sausage** is vulnerable to contamination because it is free of preservatives. Keep it frozen as long as possible, then cook before it completely thaws.
- **Raw chopped meats, like hamburger**, spoil quickly. Pork, fish and poultry spoil quickly, too. Dispose of these foods if they have been in a well-insulated, good working refrigerator without power for 12 hours or more.

- **Hard cheese** usually keeps well at room temperatures. Other cheeses, such as cream cheese, opened containers of cheese spreads and cottage cheese, spoil quickly. Throw them out when an off-flavor or unusual mold develops.
- **Milk** spoils quickly without refrigeration. Throw out spoiled milk. Soured milk may be used in baking.
- **Custard, gravies, creamed foods, chopped meats, poultry and seafood sandwich fillings** spoil quickly when unrefrigerated. They are ideal growing places for organisms that can cause sickness. Dispose of these foods if they have warmed to over 40 °F or room temperatures. Spoilage is hard to detect since they may not smell or taste bad.
- **Commercially made baked goods with cream fillings** are not safe if unrefrigerated. Keep them cold, and eat as quickly as possible.
- **Accidentally frozen canned goods** can present health problems. If they are merely swollen—and the swelling was caused by freezing for certain—the cans may still be usable. Let the can thaw in the refrigerator before opening it. If the product does not look or smell normal, throw it out. **Do not taste it!** However, if the food does look and smell normal, thoroughly cook it by boiling for 10 to 20 minutes right away. If the seams have rusted or burst, throw the cans out immediately.

If flood water or water resulting from any other natural disaster gets into the refrigerator or freezer, discard all contents. These waters may carry silt, sewage, oil, toxic chemical wastes, filth, and disease-causing bacteria.

For more information on maintaining and assessing food stuffs after a power outage:

http://www.fsis.usda.gov/Fact_Sheets/keeping_food_Safe_during_an_emergency/index.asp

<http://www.umext.maine.edu/emergency/9003.htm>

http://www.redcross.org/static/file_cont3461_lang0_1352.pdf

See APPENDIX W (page153-154)

http://www.redcross.org/services/disaster/0,1082,0_564_,00.html

<http://www.uri.edu/ce/ceec/food/factsheets/powerout.html>

<http://www.cfsan.fda.gov/~dms/fsdisas5.htm>

C.1.4) addressing mold growth

- Take out items that have soaked up water and cannot be cleaned and dried.
- Fix water leaks. Use fans and dehumidifiers and open doors and windows to remove moisture.
- To remove mold, mix 1 cup of bleach in 1 gallon of water, wash the item with the bleach mixture, scrub rough surfaces with a stiff brush, rinse the item with clean water, then dry it or leave it to dry.
- Check and clean heating, ventilating, and air-conditioning systems before use.
- To clean hard surfaces that do not soak up water and that may have been in contact with floodwater, first wash with soap and clean water. Next disinfect with a mixture of 1 cup of bleach in 5 gallons of water; allow to air dry.
- Wear rubber boots, rubber gloves, and goggles when cleaning with bleach. Open windows and doors to get fresh air. Never mix bleach and ammonia. The fumes from the mixture could be lethal.

For more information:

<http://www.mold-help.org/content/view/680/>

<http://www.moldmart.net/hurricane-typhoon-tornado.htm>

http://www.centerforhealthyhousing.org/AFHH_NCHH_Hurricane_Aftermath_Fact_Sheet_Flooding.pdf

See APPENDIX X (pages 155-156)

<http://deg.louisiana.gov/portal/portals/0/news/pdf/DHHIndoorMOLDandMILDEW-v2-091605.pdf>

For information on infectious diseases following Hurricane Katrina, visit the following website:

<http://depts.washington.edu/einet/newsbrief59.html>

C.1.5) generator operation

If the clinic/hospital decides to install a generator for use in a power outage, the staff must determine the proper location for the placement of the generator. Fuel needs should also be taken into consideration, including the amount of fuel needed, the storage of the fuel at the facility, and the ability to secure fuel after the hurricane.

Safety considerations:

Numerous deaths have been attributed to improper use of portable, electric generators. Entergy has suggested the following items in order to ensure safety when operating a generator:

- Purchase the electric generator only from a reputable dealer who can service and maintain the unit.
- Read and follow the manufacturer's instructions. If the manual is misplaced or lost, contact the manufacturer for another copy. Often the manuals are available for download on the Internet from the manufacturer's website. Keep the manual in a zip-lock bag or other waterproof container.
- **Never use a generator indoors or in an attached garage. Never use a generator in enclosed or partially enclosed spaces.**
- Generators can produce high levels of carbon monoxide very quickly. When using a portable generator, remember that CO cannot be seen or smelled. An individual may still be exposed to CO even if exhaust fumes are not smelled.
- If one begins to feel sick, dizzy, or weak while using a generator, they should get to fresh air immediately. The CO from generators can rapidly lead to full incapacitation and death.
- Locate the unit outdoors and away from doors, windows, and vents that could allow CO to come indoors.
- Turn off the generator when people are sleeping or away from the clinic/hospital.
- Many generator parts are hot enough to cause burns during operation. Stay away from the muffler and other hot areas.
- The easiest way to use a portable generator is to plug lights or appliances directly into the proper electrical outlet on the generator itself.

- Use heavy-duty, grounded extension cords when plugging appliances into the generator. The cords should be run out of the way to prevent tripping hazards.
- Portable generators should never be connected directly to the facility's wiring, even through an outlet. They may send electricity to the power lines that power crews are working to restore. These energized lines are a threat to customers and restoration workers. Extensive damage could be caused to utility equipment or the generator.
- The generator should be sized for the expected load. For example, a 3-kilowatt generator produces 3,000 watts. This would be enough to power a 1,200-watt hair dryer and a 1,600-watt toaster, with some power left over for a few lights. Additional needs should be considered when sizing the generator.
- **Do not exceed the generator's recommended wattage.**

http://blogs.chron.com/rita/archives/2005/09/entergy_offers.html

The chart can be used to calculate the size of a standby unit large enough to keep the clinic/hospital running during a power outage. Identify essential pieces of equipment and their wattages. Then add the wattages in the chart below.

Equipment	Running Watts
Water Pump	_____ watts
Ventilation	_____ watts
Lights (house and livestock buildings)	_____ watts
Milker	_____ watts
Milk Cooler	_____ watts
Feed System	_____ watts
Food Freezer	_____ watts
Refrigerator	_____ watts
Other	_____ watts
Total Running Wattage	_____ watts
Minimum Generator Size	_____ watts

Note: 1000 watts = 1 kilowatt

The more the clinic/hospital grows, the more power will be required. The type of engine and the fuel it runs on, gasoline, natural gas, diesel, or propane should be considered before purchasing an electrical unit.

TYPICAL WATTAGE REQUIREMENT CHART*

Equipment	Running Watts
Aquarium	50-1210
Clock Radio	10
Coffee Maker	90-1200
Clothes Dryer	350-500
Personal Computer	1800-5000
Hair Dryer	270
Heater (portable)	650-1750
Light Bulb (100 watts)	1200-1875
Microwave Oven	750-1500
Radio	70-400
Refrigerator (16 cubic feet)	725
Television (19")	60-110

*These tips are not intended as a substitute for the owner's manual and/or operating instructions of the generator manufacturer. Source: U.S. Department of Energy

For more information:

<http://www.energy.gov/>

Fuel Safety Considerations:

- **Do not store gasoline for the generators indoors.**
- Do not store gasoline in a garage if there is a water-heater or other fuel-burning appliance located there as well. Gasoline is lighter than air and can be ignited by a pilot light or other source of a flame such as an electric spark.
- Extinguish all flames when handling fuel or the generator.
- Shut off the generator before refueling and turn off all equipment powered by the generator before shutting it down.
- Always have a fully charged, approved fire extinguisher located near the generator.

Things to consider:

Storm surge or even driving rain can flood the generator. Water can get into the fuel if the tanks are not water proofed. Ask the following questions to ensure that the generator is not flooded during a hurricane: Are the vents higher than the highest possible water level? Will the fan suck in water?

If possible, generators should be installed at an elevated location (i.e. on the top of pilings) to eliminate a potential flood-out of the machine.

The low atmospheric pressure created by hurricane conditions can cause generators to fail. The low air pressure affects the fuel/air mixture; be prepared to reset the generator as soon as someone is able to safely get to a site. The generator will be in “over crank” as the starter may have run too long without turning over the engine. When the air pressure returns to normal, restart the generator and it should resume working.

Additional Warning: Protection from Carbon Monoxide Poisoning

Do not use generators, pressure washers, charcoal grills, camp stoves, or other fuel-burning devices indoors or in enclosed or partially enclosed areas such as garages, even with doors or windows open. Do not put these devices outside near an open door, window, or air vent. Poisoning or death could result from carbon monoxide exposure. Carbon monoxide is an odorless, colorless gas produced by burning fuel such as gasoline, charcoal, or propane.

C.1.6) addressing water damage

Water in Clinic:

If animals are boarded in clinic/hospital during a flood:

- Animals should be moved to an empty room away from the affected areas if possible. If no empty rooms are available, animals should be moved to an occupied room based on compatible health background, projects, and species.
- Animal should be dried as necessary.
- Animals exposed to extreme environmental conditions should be examined by the attending veterinarian as soon as possible.
- All materials in the affected area, i.e. feed and bedding, should be inspected for damage.
- Wet or damaged feed or bedding should be discarded.
- Affected areas should be vacuumed, squeegeed, and/or mopped dry and subsequently washed with disinfectant.

If the water is *less than one foot high*:

1. Move animals from the bottom shelf or level of rack to higher shelves or levels. The use of additional racks or shelf units may be required.
2. Move animals into portable run units.

If the water is *greater than one foot high*:

1. Move animals from the bottom shelf or level of rack to higher shelves or levels. The use of additional racks or shelf units may be required
2. Move animals into portable run units.
3. Move all animals to a second and/or third floor if more than one level exists. Cages may have to be moved individually and reassembled on a higher floor if elevators are inoperable.

C.1.7) maintaining refrigerated medications and vaccines

Months Before Hurricane Season:

Promote good storage and handling of vaccinations at every opportunity.

- Regularly monitor refrigerator temperatures.
- Follow vaccination handling and storage requirements.
- Check equipment function (door seals, etc.).

Develop vaccine management protocols.

Display disaster recovery plans.

Days/Hours Before Hurricane Landfall:

Contact distributors to stop all bulk vaccine order deliveries.

Ensure power source backup for vaccine refrigerators.

Document vaccines determined not viable for later return.

Be Proactive

Ensure backup energy source if possible.

Develop emergency protocols for disaster scenarios.

EXAMPLE: LOSS OF POWER

- Close the vaccine refrigerator door tightly.
- Do not discard the affected vaccines. Mark the vaccines so potentially compromised vaccines can be easily identified.
- Call the manufacturers and notify a local or state health official.
- Record the action taken.

Remind staff of vaccine protocol and procedures.

During the Hurricane:

Protect vaccines and maintain the cold chain by following recommended vaccine temperatures, vaccine storage requirements, and temperature monitoring.

If transporting vaccines to another location, maintain the cold chain during transport.

If the power outage is on-going:

- Keep all refrigerators and freezers closed to help conserve the cold mass of the vaccines.
- Continue to monitor temperatures if possible. **DO NOT OPEN UNITS TO CHECK TEMPERATURES DURING THE POWER OUTAGE.** Instead, record the temperature as soon as possible after the power is restored, and the duration of the outage. This will provide data on the maximum temperature and maximum exposures to elevated temperatures.
- If alternate storage with reliable power sources are available (i.e., hospital with generator power), transfer to that facility can be considered.
- Follow proper cold chain procedures for storage and handling when transporting the vaccines.

When power is restored:

- Record the temperature in the unit as soon as possible after power has been restored. Continue to monitor the temperatures until they reach the normal 2–8 degrees Celsius range in the refrigerator, or -15 degrees C or less in the freezer.

Temperatures logs can be downloaded for implementation:

<http://www.immunize.org/catg.d/p3039.pdf>

<http://www.immunize.org/news.d/celsius.pdf>

See APPENDIX Y (page 157-158)

- Be sure to record the duration of increased temperature exposure and the maximum temperature observed.
- If there is concern about the exposure or efficacy of any of the vaccine stocks, do not administer the vaccines until the state or local health department has been consulted.
- Keep exposed vaccine separated from any new product received and continue to store at the proper temperature if possible.

For more vaccination information, consult the following:

<http://www.immunize.org/catg.d/p3035chk.pdf>

See APPENDIX Z (page 159)

<http://www.immunize.org/catg.d/p3049.pdf>

See APPENDIX AA (page 160)

<http://www.immunize.org/catg.d/p3051.pdf>

See APPENDIX BB (page 161)

<http://www.immunize.org/catg.d/p3036.pdf>

See APPENDIX CC (page 162)

<http://www2.cdc.gov/nip/isd/shtoolkit/splash.html>

http://www.cdc.gov/nip/publications/vac_mgt_book.htm

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5242a6.htm>

www.cispimmunize.org/pro/ppt/PracticePres_Preparedness.ppt

C.1.8) sustaining critical patients/emergency surgeries

C.1.9) mail service

After an emergency it may be weeks or a matter of months until the local government infrastructure is reestablished. During this time there will be incoming mail, but it may not actually arrive at the clinic/hospital. Several options are available:

- *Mail Forwarding:*
Have the mail temporarily forwarded to another address.
<https://moversguide.usps.com/?referral=USPS>
- *Hold Mail:*
Have the mail held.
<https://holdmail.usps.com/duns/HoldMail.jsp>
- *PO Box Rental:*
Receive mail by setting up a Post Office box:
<http://www.usps.com/receive/businesssolutions/poboxservice.htm>
- *Receive Mail at Other Locations:*
When away from a mail delivery location with carrier service and a PO Box is not an option, the USPS can still deliver the clinic/hospital's mail via GENERAL DELIVERY. The mail will be held at the post office for up to 30 days and can be picked up at any retail window. This is also a good option if the clinic/hospital does not have a permanent address. To find the Main Post Office, contact the local Postmaster.

When the clinic/hospital is reestablished, word-of-mouth cannot be depended on to bring clients back or new clients in. Consider doing the following:

1. Place an advertisement to run for at least a week in the local newspaper
2. Place an advertisement in the free newspapers and magazines that are given away in local supermarkets, restaurants, and shops.
3. Cull through the addresses in client's digital files. Select the clients which are most likely to still be in the general area, and send them a pre-printed postcard announcing that the clinic/hospital is up and running. Include the new address if the practice moved and consider showing a small map to the location.
4. Inform the state veterinary medical association of the clinic/hospital's status and make sure the contact information is updated on the website.

For more information:

<http://www.usps.com/>

C.1.10) assessment of needs

Following hurricane landfall, the clinic/hospital must make an assessment of critical needs. These needs include: medications, vaccinations, foodstuffs, fuel, and additional communication/information.

Need should be prioritized based on the current situation. The proper assessment of necessary items will facilitate an efficient use of time, resources, and energy.

NEED	TYPE	AMOUNT	SOURCES

2*Communication***C.2.1)** contact means for clients, family, employees

The chart below should be filled out with the proper information before hurricane season. Keep the table on hand and distribute it to the appropriate personnel.

NAME	E-MAIL ADDRESS	TELEPHONE NUMBER	COMMENT

C.2.2) times of clinic operation

C.2.3) contact with state/regional officials

The following chart should be filled with the appropriate information before hurricane season. Keep a copy on hand to reference as needed.

AGENCY	NAME	JOB TITLE	PHONE NUMBER	E-MAIL ADDRESS

For more information:

www.ladaf.state.la.us/divisions/Animal%20Health/Parishemergencypreparednesscontacts.doc

http://www.avma.org/disaster/responseguide/I_government.pdf

See APPENDICIES DD-EE (page 163-165)

3 *Returning to Normal Clinic Operation* **C.3.1) sustaining clinic financially**

After a hurricane event, the clinic/hospital may encounter financial strain until the client base returns for animal care on a regular basis.

Ways to Reduce Loss of Income:

- Carefully consider ways to continue business operations, even if on a partial basis. Consider ways to expedite repairs and replacement of destroyed inventory.
- Rent another temporary facility if the current location is not serviceable.
- Enlist the support of non-competitor business associates, to see if they can help maintain service or supplies to clients.
- Downsize the operation if a portion of the building remains serviceable.
- Consider sending printed materials to clients describing a plan to continue operations during the restoration period.
- Act quickly to restore and protect inventory, but keep damaged property for the claims representative's inspection.

C.3.2) proper evaluation for animals without medical history records

If the clinic/hospital decides that animals without medical history records will be admitted for treatment the animals should be evaluation with a physical examination and from the verbal medical history given by the owner.

Do the best investigation possible. Take the word of the owner and make a careful physical evaluation before deciding on a course of action.

C.3.3) reimbursement for “pro bono” cases

There are various institutions that monetarily aid veterinary clinics/hospitals in the wake of national disasters. Aid is usually provided in the form of grants available for veterinarians in the months following the event.

For more information and possible assistance, see the below references.

<http://www.avmf.org/html/index.asp>

www.avmf.org/downloads/StateGrantApplication.doc

http://67.19.212.114/~lvma/pdf/Veterinary_Loan_brochure.pdf

See APPENDIX FF (page 166)

C.3.4) retrieving important financial and other business information

The clinic/hospital should back up key business information to avoid loss in case of natural disasters such as fire, theft, tornado, hurricane or other such catastrophe. Hard copies of items such as insurance documents and bank statements should be stored in fireproof safes or bank lock boxes. It is best to back up computer information in multiple locations offsite. Even so, important information may not be kept safe in the wake of a natural disaster.

When natural disasters strike, it may be difficult to retrieve personal and business information. Files may be burned or irretrievably scattered, and computers and storage devices may be damaged or destroyed.

It is important to safeguard the following items, and put them on the top of a list to find immediately after a disaster:

- Personnel files, salary records, benefits records, medical records and other key records
- Vendor lists
- Customer lists and information
- Insurance documents
- Checks and banking documents, bank statements
- Loan documents, payment records
- Credit card information and statements
- Investment information
- Medical information and records of a personal nature, including names and phone numbers of physicians
- Photos of personal possessions, business equipment, furnishings, for use if/when insurance claims are necessary
- Information for contacting emergency authorities: hospital, ambulance, sheriff, county, city, FEMA, and other important numbers

When information is lost or destroyed, take action quickly to regain the information and to prevent it from falling into the wrong hands. Immediately after a disaster:

- Notify insurance agents of loss and of missing insurance papers if applicable.
- Notify banks of missing blank checks and prior check statements. Close accounts or put them on hold until all records are sorted out. Banks can reconstruct previous statements.
- Notify credit card companies of missing cards, statements and other information. Cancel account numbers and get the bank to issue new account numbers as quickly as possible to avoid identity theft.
- When computers are damaged, information can still be retrieved from them. Contact companies specializing in the retrieval of data from damaged hard drives and backup devices.
- Notify investment companies when documents have been lost and passwords may be compromised. Have account numbers and passwords changed on the spot.
- Title companies can issue duplicate property deeds.
- Pharmacies can print out prescription records for individuals.
- Notify passport office about lost or stolen passports.
- Contact vendors regarding missing payment records.
- Utility companies can replace previous statements and bills.
- Records of miscellaneous purchases are the most difficult to reconstruct. Examining credit card statements and bank records are the best solution.

Also, a person may be emotionally distraught after a disaster, making it difficult to operate efficiently. To safeguard against stress-related inefficiency, keep a list of insurance agents, banks, credit card companies, investment firms and others in a safe place for quick reference.

Recompiling lost information may take time, especially when dealing with serious damage. Other businesses and individuals may be attempting to retrieve their lost information as well, so financial institutions and other organizations are likely to be burdened with the extra load. For the quickest response, compile a list of lost information, and get the clinic/hospital's name in the queue as early as possible

For more information:

http://www.nfib.com/object/IO_21889.html

4 *Insurance Coverage*

C.4.1) settling insurance claims

Steps to Recovery After the Disaster

Contact insurance agent or company immediately.

- Call the insurance agent, broker, or insurance company claim telephone number immediately to report how, when, and where the loss or damage occurred. Be prepared to provide a reasonably accurate description of damages.

To control damage to stock:

- Separate the damaged stock from the undamaged stock.
- Remove all debris as soon as possible after receiving authorization from authorities and a claims representative.
- Dehumidify the stock area after the building has been made weather tight.
- Have the stock storage area cleaned. Note: It may be necessary to move the undamaged stock to another location during the clean up.
- Consider making either a public or a limited announcement to clients advising of any temporary changes being made to continue operations.

If the veterinarians own the building and it is damaged:

- Inspect the building to determine its safety and the extent of damage. Architects, contractors, and building officials may be of help.
- Board up the building and cover holes in the roof to make it weather tight and reduce additional damage.
- Secure the building from casual entry or post guards.
- Restore the utilities as soon as possible.
- If necessary, install a temporary electrical generator.
- Order a dumpster for debris.
- Use temporary signs to redirect parking or traffic access.
- Partition the building if some areas are not usable.
- Locate alternative location if the building is not usable.

Things to do Immediately:

- Close out the books as of the date of the loss and maintain a separate, accurate record of any sales or operating expenses that continue after the loss. Remember, the claims representative will need to verify these expenses as part of the claim process.
- Maintain accurate records for extra expenses incurred to expedite the resumption of operations.
- Create a written record of any communications received regarding orders to evacuate, including who ordered the evacuation, date, and time.
- If any property is totally consumed by fire, or blown away in the storm, prepare an inventory of the remaining stock.

Contact insurance agent or company immediately.

Find out:

- Whether the damage is covered under the terms of policy
- How long is the period to file a claim
- Whether the claim exceeds the deductible (the amount of loss agreed to pay before insurance kicks in)
- How long it will take to process the claim
- Are estimates needed for repairs

Make temporary repairs:

- Take reasonable steps to protect the property from further damage.
- Save receipts for what is spent and submit them to the insurance company for reimbursement. Remember that payments for temporary repairs are part of the total settlement. If the clinic/hospital pays a contractor a large sum for a temporary repair job, there may not be enough money for permanent repairs.
- Beware of contractors who ask for a large amount of money up front and contractors whose bids are very low—they might cut corners and do shabby work.
- Do not make extensive permanent repairs until the claims adjuster has assessed the damage.

Prepare for the adjuster's visits:

The insurance company may send a *proof of loss* form to complete or an adjuster may visit the facility first. (An adjuster is a person professionally trained to assess the damage.) The more information available about damaged possessions—a description of the item, approximate date of purchase and what it would cost to replace or repair—the faster the claim generally can be settled.

- To substantiate loss, prepare an inventory of damaged or destroyed items and give a copy to the adjuster along with copies of any receipts. Do not throw out damaged items until the adjuster has visited. It is also appropriate to consider photographing or videotaping the damage. If the property was destroyed or there are no longer any records, work from memory.
- Identify structural damage to the building and other structures, such as a garage, tool shed or outdoor kennels and runs. Make a list of everything to show to the adjuster. For example, cracks in the walls and missing roof tiles. The electrical system should be checked. Most insurance companies pay for these inspections.
- Get written bids from licensed contractors. The bids should include details of the materials to be used and prices on a line-by-line basis. This makes adjusting the claim faster and simpler.
- Keep copies of the lists and other documents that are submitted to the insurance company. Also keep copies of whatever paperwork the insurance company gives and record the names and phone numbers of everyone involved in the process.
- A separate flood insurance policy is needed. If the clinic/hospital has flood insurance through the federal government's National Flood Insurance Program, the business owner claim adjuster may coordinate claims for flood damage with other damage claims.

Expediting Business Interruption Claim

- Prepare a list of steps required to promptly resume operations on a full, or even a partial, basis.
- To help calculate the amount of business income loss the claims representative will need:
 - Historical sales records
 - Income and expense information as shown in recent profit and loss statements and/or income tax forms
 - Other business records that might assist in projecting what the profits would have been had business not been interrupted.

- Consider ways to reduce continuing expenses. A claims representative will review this with the policy-holder.

For additional information, visit the following website:

http://www.iii.org/prepare/resources/settling_claims/

C.4.2) making proper changes to insurance coverage

After the claim has been settled and the repair work is underway, take the time to evaluate the clinic/hospital's insurance coverage:

- Was the clinic/hospital adequately insured?
- Was there replacement cost coverage for personal property?
- Talk to the insurance agent or company representative about possible C=changes.

5 *Overall Postmortem Assessment*
C.5.1) what went right; what went wrong

Intra-clinic:

- 1: If possible, keep a daily journal of events from Evacuation Day-5 to at least EDay+21. Write in journal at whatever time is suitable but make it a regular and prescheduled. Journaling last thing at night or on waking in the morning are usually the best times because of the demands of an emergency.
- 2: Set a future date for a half-day retreat or roundtable discussion by all the clinic/hospital staff, approximately 7 to 14 days ahead.
- 3: In the meanwhile have everyone write themselves notes in relation to **what went right; what went wrong**.
- 4: Hold a retreat/discussion with frank and open talk, without blame; take full notes of the discussion; circulate copies to everyone; collect comments and any corrections.
- 5: Go to **C.5.2**

Inter-Clinic/Citywide:

- 1: Set up an advisory committee of real experts in hurricane and flood disasters, with at least one local representative who is respected throughout the veterinary community. The committee should have three, five or seven members but no more. Look for funding.
- 2: Ensure transparency.
- 3: Hold at least one focus group discussion of representative individuals from the veterinary community discreetly witnessed by the advisory committee. This will provide significant preliminary insights.
- 4: Some 90% of the committee's findings are probably already known and discussed by the veterinary community. The problem is to get them properly documented, verified and validated, and supported by hard data.
 - Frequently, the right decisions were made but because of faulty communication they were ignored or not realized or over-ridden by external management outside the disaster area;
 - Interview the largest possible representative sample of clinical operators and animal owners;
 - Interview relevant government officials.

- 5: Start investigations within six months of the emergency, not later. Too soon and those with information are not yet available because of the exigencies of the emergency. Too late and fading memories and evacuations radically diminish available information.
- 6: Circulate the draft report of the committee, first within the clinic community, and then statewide and incorporate corrections, addenda, and other changes. Release final report both in hard copy and on a suitable website. Drafting of the final version should facilitate the proper and suitable corrective necessary actions and improvements.
- 7: Go to **C.5.2**

The assessment is not a placement of blame, just problem identification!

C.5.2) change plans and actions accordingly

D: Appendices

APPENDIX A: Homeowners Insurance Form



HOMEOWNERS INSURANCE	
Company	
Agent/Company representative	
Contact number/email	
Policy number	
Name of insured	
Deductibles <i>(including hurricane, windstorm, wind/hail)</i>	
Floaters/endorsements	
Excess flood insurance	
Mortgage company information	
Additional notes	

If you have not yet created a home inventory, you can download free home inventory software from:
www.knowyourstuff.org.

APPENDIX B: Flood Insurance Form



FLOOD INSURANCE	
National Flood Insurance Program	
Agent/Company representative	
Contact number/email	
Policy number	
Name of insured	
Deductibles	
Additional notes	

APPENDIX C: Auto Insurance Form



KNOW YOUR INSURANCE INFORMATION

AUTO INSURANCE	
Company	
Agent/Company representative	
Contact number/email	
Policy number	
Name of insured	
Deductibles	
Additional notes	

APPENDIX D: Excess Liability Form



KNOW YOUR INSURANCE INFORMATION

EXCESS LIABILITY INSURANCE

Company	
Agent/Company representative	
Contact number/email	
Policy number	
Name of insured	
Deductibles	
Additional notes	

APPENDIX E: Business Insurance Form



KNOW YOUR INSURANCE INFORMATION

BUSINESS INSURANCE	
Company	
Agent/Company representative	
Contact number/email	
Policy number	
Name of insured	
Deductibles	
Additional notes	

APPENDIX F: Veterinary Clinic/Hospital Emergency Checklist

Preparing Your Practice for a Disaster

Disaster preparedness is critical for your practice, and not just during hurricane season. Did you know that fire is the most common emergency experienced in veterinary hospitals? Being prepared for an emergency makes financial sense and saves lives. Can you check off the business disaster plan items below?

Evacuation & Disaster Planning:

- ☐ **Review Insurance Coverage:**
 - ☐ AVMA Liability- Does it cover travel and multiple locations?
 - ☐ Business Umbrella- Update your contents coverage every three to five years to cover new equipment purchases, and check to see if special riders are needed for more valuable equipment
 - ☐ Business Interruption- What length of time are you and your clinic covered? Are salaried employees covered? Ask how the amount paid will be calculated.
 - ☐ Flood Insurance- Buy extra flood coverage if your business is in a flood plain.
 - ☐ Signage- Can you quickly replace your sign? Is replacement covered?
 - ☐ Professional Disability- Maintain adequate coverage in case you are injured or disabled.
- ☐ **Prepare an Evacuation File Box:** Place copies of insurance papers, employee contracts, leases, payroll information, financial data, checks and bank information, as well as your state licenses, DEA numbers, etc. in a watertight, fireproof container for safe removal during an evacuation.
- ☐ **Maintain current employee emergency contact numbers:** These should be updated and copies distributed to all employees as needed. Include laminated copies of all clinic employee address, phone and emergency contact information in your evacuation box.
- ☐ **Maintain good boarding records:** Make sure all boarding patients have correct emergency contact numbers identified on the boarding check-in sheets. Data should include owner, emergency contact number, secondary in-town contact person, dietary instructions, medication(s) being administered and length of time boarding. During hurricane season, add an out of town contact.
- ☐ **Back up your computer:** You should back up your main computer prior to evacuation (and daily). Zip Drives and external hard drives offer the quickest and safest form of copying large amounts of data for easy, portable back-up computer files. Have at least two copies for two different people to leave with.
- ☐ **Secure transportation for animals:** Safe, air-conditioned transport must be identified before the crisis. Rental truck companies should be the first source. Car dealers or truck dealers may also be called for availability.
- ☐ **Evacuate to a safe location:** *Partner* with a classmate or colleague in advance who can provide shelter for you and your patients outside your danger zone during an evacuation. The State Animal Response Team is an excellent source of contact information for partnering.
- ☐ **Ready your patients for evacuation:**
 - ☐ Make copies of the records of all the animals in the clinic at the time of the disaster/evacuation. Place the copies in a watertight container or bag to be carried with the animal during evacuation.
 - ☐ Have a clean transport cage ready for every animal in the hospital.
 - ☐ Have a two-week supply of food capable of feeding all the animals you plan to evacuate in a watertight box to make transport and storage easier.
 - ☐ Carry emergency drugs and supplies with you in case of problems.

- ☐ **Secure hospital equipment:** All computers, laboratory equipment, X-ray machines and valuable electrical equipment should be covered or encased in heavy plastic bags, moved to a safe room in your facility, or taken with you.
- ☐ **Move all valuable paperwork, charts and retail items to a secure location within the facility:** Use watertight, plastic containers to store client files and paperwork. Retail items should be moved off the ground. Fire safes are *not* water tight. Plan to take controlled substances, narcotics, and DEA paperwork with you.
- ☐ **Secure all windows and glass doors:** Precut plywood is the best form of protection-Preventing potential weather damage will always reap benefits!
- ☐ **Remove artwork to a secure location:** Even though your artwork may be insured, it may not be adequately covered. Plus, if you do not have to replace these valuables, you will have more contents coverage available to replace your damaged inventory and equipment.
- ☐ **Have cash on hand:** You may not be able to get to a bank or cash a check during an evacuation or after a disaster. Plan ahead and have cash or cashier's checks available.
- ☐ **Join SART:** Being involved in the State Animal Response Team prepares you to handle an animal emergency calmly and efficiently.

- ☐ **Prepare an Emergency Phone List:**

LSU Small Animal Clinic: 225-578-9600

LSU Large Animal Clinic: 225-578-9500

LSU School of Veterinary Medicine: 225-578-9900

State Veterinarian: _____

Local Veterinary Assn: _____

State Veterinary Assn: _____

Small Business Assn: _____

Insurance Agent/Local number: _____

Insurance Company/Toll free phone number:

Personal Physician: _____

Payroll Specialist: _____

Local Office of Emergency Preparedness:

Financial Institutions (local & toll-free numbers):

FEMA: _____

APPENDIX G: Disaster Operations Planning (amended)

Prepared by: John C. Pine, Director, Disaster Science & Management, Louisiana State University.

An essential component of effective emergency response is planning and preparation. Response organizations representing public, private and not for profit entities adapt their normal operational processes to deal with unique demands in times of disaster. A college class that addresses the elements of the planning process would provide undergraduate students with the concepts and skills necessary to establish an organization that can adapt quickly during times of crisis and provide the necessary leadership to work with other entities and address the complex demands and problems in a disaster. The basic structure for this course comes was modeled from a planning guide developed for public and private schools by the Louisiana Office of Homeland Security and Emergency Preparedness. The guide addresses the essential elements that are required for an effective site emergency response plan. A copy of the initial emergency planning guide will be provided along with this draft of the Planning for Emergency Response Operations Course. Additional subject areas were added to the outline to ensure that students will be prepared to deal with the demands of emergency response operations.

This course complements the LSU Fundamentals of Emergency Management course and focuses on topics that are critical to effective emergency response. The following briefly describes the sessions for a proposed course on Planning for Emergency Response Operations and provides some key questions that must be addressed as part of the preparations for emergency response. I have also included some references to show that there is a body of extensive research for this course. If EMI chooses to develop such a course, the development team might consider these sessions as a potential framework for the class.

I will be providing a copy of this draft report to EMI to one of our LSU faculty who was extensively involved in emergency response activities for Hurricane Katrina in New Orleans. I will ask that he give me some feedback on the scope of this proposed course and provide you with his comments and suggestions. This LSU faculty member participated in the 2006 Higher Education Conference in Emmitsburg. I have discussed the need of this course with him and asked if he would consider teaching the class. I will be proposing that LSU offer this class as a special topics course next fall.

The major topic areas include the following:

- I. Organization and Scope of Operations
- II. Community Description and Site Layout
- III. Organizational Structure and Staff Responsibilities (Incident Command)
- IV. Hazards Analysis and Risk Assessment
- V. Warning and Notification

- VI. Sheltering and Evacuation
- VII. Media and Crisis Communication
- VIII. Leadership and Group Dynamics
- IX. Supporting Services and Response Operations (Logistics)
- X. Security and Response Operations
- XI. Training and Exercises
- XII. Legal Issues and Mandates
- XIII. Crisis Decision Making

I. Organization and Scope of Operations (Institutional Mission)

Public private and non-profit organizations must plan for disasters. As part of the planning process, it is critical to examine the nature and scope of the business operations including off site enterprises that are included in the enterprise. In addition, the description should also describe critical groups that either serve as suppliers, users of services and goods, and how an interruption of these services might impact the organization. We have seen from recent disasters from hurricanes to winter snow storms, that public utilities (communications, electricity, natural gas or sewerage) could be impacted. As part of the disaster impacts, the operation may be dependent on major transportation routes, Internet communication, or phone serves.

An interesting example of how dependent we are on networks comes from Hurricane Katrina. It appears that all Bell South long distance phone services, no matter where one was in Louisiana, were routed through New Orleans. Few people were aware of the regional dependency on New Orleans for long distance phone service. Business operations throughout the region were halted because of the connectivity issues from flooding in New Orleans.

- Who are the major groups that use your operations? What suppliers are critical to your operations and where do they come from? Are there contingencies in place to ensure that you have necessary food, fuel, power, or supplies? Some public and private educational organizations serve multiple functions including education and research. Extensive financial resources were at stake following Hurricane Katrina to protect critical research operations in New Orleans. Do research projects have emergency disaster plans in place and operational procedures that can ensure that institutional resources are not vulnerable in case of flooding, fire, or just loss of electrical power?
- In an assessment of emergency operations at Louisiana State University following Hurricane Katrina and Rita, it was revealed that both facility services (maintenance, utilities, and construction services) and food services had implements hurricane disaster operations procedures in advance of the landfall of these hurricanes. The university had learned from dealing with Hurricane Andrew in 1992, that specific processes could be implements that would protect

critical university operations from power, storm water runoff, or backup fuel for vehicles. University units had reviewed these response procedures well before the beginning of the 2005 hurricane season. Staff knew what had to be done to protect critical operations on their campus. Although no one expected many of the additional functions that they would assume in the response to Hurricane Katrina, their procedures provided a critical base from which to improvise. Flexibility grew from their current disaster procedures and plans.

II. Community Description and Site Layout

A layout of the facility, community, or operational area is a critical part of the community/site description. In addition, a diagram showing system connections to utility hubs should be shown as part of this process. As an example, a major east coast military installation has a single high voltage line that services the entire base. No other major connectivity to the electrical power grid is part of their operations. An assessment of their layout including utilities, revealed this dependency and vulnerability.

- What security issues could be present in a disaster on your site? If your site served a critical response function, would security of personnel and facilities be an issue?
- How can we secure buildings, parking areas and access to the site?
- Are some of the functions high-risk areas and need to be secured?
- How do you verify the identity of temporary users of your site and operations?
- Do we have procedures in place to lock down facilities and parts of our operations?
- How do you stay in contact with the public, your employees, your visitors or anyone temporarily present at your operational facilities?

III. Organizational Structure and Staff Responsibilities (Incident Command)

Describe the reporting responsibilities of employees in all parts of the operations. What are the major operational divisions and how might these units support emergency operational services. Normal operational units of a large public university provide the essential services to accomplish their educational mission. During the response operations for Hurricane Katrina, these same operational units provided essential services to medical, veterinary, transportation and many other response units. Most organizations have an established organizational mission and priorities. In a disaster, the units may need to support continuity of services to continue operational functions. Students need to be fed, utilities must be safeguarded and functional operational effectiveness sustained. What one may need to consider is how the organization may be called on to help in a disaster. Louisiana State University became a critical needs shelter for vulnerable populations, but also served as a medical triage center, staging area for evacuee pets, and a staging area for numerous response agencies that were called in to Louisiana for rescue operations in New Orleans and other coastal

communities. No one ever thought of the university serving as a staging area for major support of rescue operations. This was not considered as part of the university mission; however, it turned out to be a critical element of effective evacuation as well as search and rescue.

- What are the main functions of the units operation? How can these functions be sustained in a disaster?
- Given the functions, assets, and resources of the organization, how can it serve additional disaster rescue or response operations?
- Could your site serve as a major staging area, your vehicles or equipment help in rescue operations, or your employees supplement local, regional and national rescue operations.
- How is incident command structured within your organization? How does your organization interface with external units of government at either the local, state or federal level?
- The crisis team should include many of the following functions in an organization: Senior Staff; Director; senior support staff; facility support services include maintenance and food services; Media or public affairs; Legal; Transportation; business affairs; and security. In addition, the crisis team should include functional staff such as teachers, nurses, sales representatives, or service providers depending on the nature of the organization.

IV. Hazards Analysis and Risk Assessment

The Environmental Protection Agency along with fourteen other Federal Agencies (NRT-1) adopted a community level hazards analysis and this approach is useful in understanding risks posted by hazards to organizations. NRT-1 defines hazard analysis as a three-step process: (1) hazard identification, (2) vulnerability analysis, and (3) risk analysis.

Hazards are a potential harm; they threaten the population, environment, private and public property and infrastructure, and businesses. Hazards may be defined by natural events (flood, hurricane, earthquake, fire, etc.), technological (hazardous materials spills, nuclear accident, power outage, etc.), or are human induced (bio-chemical, bombing, weapons or mass destruction, terrorism, etc.). FEMA describes hazards as “events or physical conditions that have the potential to cause fatalities, injuries, property damage, infrastructure damage, agricultural loss, damage to the environment, interruption of business, or other types of harm or loss.” A hazard has the potential to cause fatalities, injuries, property damage, infrastructure damage, agricultural loss, damage to the environment, interruption of business, or other types of harm or loss of an event that makes it a hazard.

One of the most useful definitions of risk, preferred by many risk managers, is displayed in the equation stating that risk is the likelihood of an event occurring multiplied by the consequence of that event, were it

$$\text{Risk} = \text{Likelihood of Occurrence} \times \text{Consequence}$$

The likelihood can be expressed as a probability or a frequency, depending on the analysis being considered.

Managers must consider the nature, likelihood and consequence of hazards faced by their entity. A sound understanding of the hazards analysis process is included in this class to ensure that students develop appropriate and realistic response processes following the disaster.

A. Weather

1. Lightning

- Develop policies and process guidelines for staff and visitors in the event of adverse weather.

2. Tornados

- When a watch has been issued in an area near the facility make sure that institutional policies and emergency procedures are implemented. These processes might include monitoring Emergency Alert or NOAA Weather Stations (National Weather Service, Weather Channel). Other emergency procedures should be implemented.

3. Fire

- In the event of a fire, smoke from a fire or a gas odor has been detected, prepare fire evacuation route plan identify safe areas for a fire incident; evacuate staff to a safe distance outside of building.

B. Hazardous Materials Incident

- Ensure that all sheltering and notification procedures are implemented for the operation.
- Evacuation Notification has occurred including: the organization crisis team, all senior personnel, and the transportation coordinator.

C. Assaults / Fights

1. Staff Violence (unrest)

- Ensure that staff are trained to assess the situation, know who to contact in the event of an incident.
- Clarify who is certified in first aid and any other facility medical staff in case of an emergency.

- Clarify the procedures for dealing with an incident (isolating affected staff; notification of senior agency personnel; identification of incident witnesses; and notification of media).
- Activate crisis team. Designate staff person to accompany injured / ill person / for medical treatment.
- For post-crisis processes, meet with facility counseling staff to determine level of intervention for staff.
- Anticipate scheduling and staffing requirements, absences and consider alternative scheduling.
- Conduct a post incident debriefing with staff.
- Explain the incident to staff to avoid rumors.

2. Violence (external threats and internal conflicts / unrest including the use of weapons and physical violence)

- Identify processes for notification of police and other proper authorities.
- Ensure the safety of personnel and visitors
- Contain the unrest. Seal off area of disturbance.
- Notify senior personnel.
- Crisis team alerted. Staff may issue lock-down.
- Move staff involved in disturbance to isolated area.
- Document incident with recorder and take detailed notes.

D. Phone Bomb Threat

Ensure that procedures are in place to deal with a bomb threat. Upon receiving a message that a bomb has been planted in the facility: Get all the facts. Ask the following questions:

- Who made the threat?,
 - What is it made of?
 - When will it go off?
 - Why did you place it in the facility?
 - Where is it – be specific?
- a. Notify principal or agency designee. Do not share information about call with others. Senior personnel INITIATES crisis code and orders evacuation of all persons inside the facilities.
 - b. Senior personnel notifies police (call 911) and other senior personnel. Report the incident to Fire Marshal.
 - c. Ensure that staff understand the threat of a bomb and to avoid the use of radios, cell phones to avoid detonation.

E. Intruder / Hostage

1. Intruder (An unauthorized person who enters the facility property) Notify senior personnel. Procedures that are appropriate for the agency should be:

- How should a staff member deal with an intruder?
- How do staff protect other employees and property?

- What are the notification processes that should be used?

2. Hostage

- Develop processes for notification of authorities within the organization and external: police, 911, or other security personnel.
- What procedures should be implemented to protect other staff and property? Seal off area near hostage scene.
- How do staff work with public safety personnel? Give control to police and negotiation team.
- Be prepared to provide details: number of hostage takers, description of hostage taker, type of weapon hostage taker has, demands

F. Accidental injury, serious Injury or death

- What procedures should be initiated in the event of a serious injury or death of a staff member? Who should be contacted internally in the entity and external authorities?

V. Warning and Notification

Emergency communications is critical for any organization.

- How would an organization communicate quickly with staff that there was an emergency at the site?
- How could communication occur and not cause undue concern for guests, or clients present on the site?
- Given the extensive use of cell phones today, how is communication controlled from a site and ensure that any communication from the organization is constructive?
- Who should be notified of an emergency? Is there some type of emergency communication system to alert staff of a crisis?

VI. Sheltering and Evacuation

Sheltering provides refuge for staff or the public within an entity's facility building during an emergency. Shelters are located in areas that maximize the safety of inhabitants. Safe areas may change depending on emergency. Where are these locations and does the organization have a comprehensive assessment of the limitations and assets of the site?

An evacuation or relocation of staff from the site is a significant organizational challenge. Under what conditions would an evacuation or relocation be required? Who in the organization is authorized to make this decision? How will the organization notify staff of a site closure, evacuation or relocation? Has the organization tested the process to ensure that communication will be successful?

A. Sheltering

- Have safe areas in the site been identified?
- Who initiates the alert.
- What actions should be taken to protect your site (buildings)?
- How will communications with staff be implemented?
- How should staff and visitors be assembled in safe areas.
- How do you plan on accounting for all staff?
- All persons must remain in the safe areas until notified by senior staff.

B. Evacuation / Relocation

- Who makes the decision on an evacuation or site closure?
- What arrangements need to be made for transportation, directions, routes, holding areas, or assembly points?
- Maps should be posted in all classrooms indicating primary and secondary egress routes and holding areas / assembly points.
- List primary and secondary relocation centers.
- The primary site is located close to the facility. The secondary site is located farther away.
- Establish a management post at the off-site evacuation location.
- Notify transportation staff for alternate schedule.
- What role should public safety personnel play in the evacuation or relocation?

VII. Media and Crisis Communication

This area involves actually two elements of communication. First, an examination of the media and their contribution to disasters and then communication in general during crisis situations. The first examines the role of numerous large organizations from network operations, the Internet and of course how the entertainment industry addresses disasters. The second should include some discussion of the inter-operability of our response operations. A recent study evaluated current local governmental inter-operability and found many troubling trends. Responders must be able to communicate easily across organizational boundaries and technology should not disrupt their effectiveness.

A. Mass Media

- To whom should staff refer media?
- Who assumes responsibility for issuing public statements during an emergency?
- What senior personnel serves as spokesperson unless he or she designates a spokesperson? If unavailable, an alternate assumes responsibilities.
- During an emergency what procedures should be adhered?
- Where should a media information center be established?
- Prepare factual written statements for the press in cooperation with public safety and emergency service personnel.

- Be certain every media member receives the same information.
- Update media regularly. Do not say “No comment.”
- Set limits for time and location for interviews.
- Don’t argue with media.
- Maintain log of all telephone inquiries.
- Use a prepared response to questions / inquiries.
- Crisis Team management completes Crisis Response Documentation Form.
- Emergency phone numbers should be available to all staff including:

Help-line

Crisis Intervention

- Rape Crisis Hotline
- Suicide Prevention
- In Care Crisis Counseling Services

Victim Assistance

- Child Abuse / Neglect Reporting Line
- National Center for Missing Children (for parents)
- Crime Victims Bureau
- Domestic Violence Hotline

Hazardous Materials / Poison

- Hazardous Materials Leak or Spill (877) 925-6595
- Poison Control Center (800) 256-9822

Disaster Assistance

- American Red Cross

Emergency Management Agencies

- Office of Emergency Preparedness (800) 256-7036

Local Emergency Services

- Fire
- Police
- EMS
- Hospital
- Local Utilities
 - Electric
 - Gas
 - Water
 - Public Works

Radio Stations

B. Local Government Communications Inter-operability

- What communication systems are in place by city and county response agencies?
- What communications systems are in place on a regional basis by local response agencies?

- What organizational structures are necessary to ensure that the necessary planning takes place to ensure that regional response agencies can communicate effectively?
- What communications systems are in place on a state wide level to support response operations? How can state police, transportation, state parks, and wildlife and fisheries agencies coordinate with local responders?

VIII. Leadership and Group Dynamics

Few of our emergency management classes address the human components of management from leadership, individual motivation and group behavior. Given the large role of large numbers of workers and volunteers in response activities, sessions on leadership and group dynamics in disaster response activities should be a part of the class. There is considerable research on leadership as noted from the references below that apply to disaster situations but this is further supplemented by research from the 2001 terrorist incidents, the 2004 tsunami, and of course Hurricane Katrina. The concepts of transformational leadership are very appropriate in this type of class to provide students with a broader view of working with groups and individuals. The Masters program in Homeland Security from the Naval Postgraduate School stresses “transformational leadership” as a means of looking at the entire system rather than a focus on individuals or small groups.

IX. Supporting Services and Response Operations (Logistics)

Emergency response involves numerous logistic operations such as food, shelter, transportation for responders, and human resource management. Anyone involved in managing response activities must address the large logistics obligations. Public, private and non-profit organizations involved in response activities all address this huge obligation. A course in emergency response should include sessions dealing with these very important details.

X. Security and Response Operations

Site security is becoming a critical priority for those involved directly and indirectly in disaster response operations. The protection of agency personnel, the public using our facilities and agency property must be anticipated and an appropriate process implemented. A layout of the entity’s property can form the basis for examining access routes, security, and other protective measures. This topic provides an excellent opportunity for the class to get involved in a case study of a facility. Examining the layout of a site, including the surrounding community will reveal what steps might need to be taken in advance to ensure the safety of personnel and property.

XI. Training and Exercises

Few emergency management classes provide the opportunity to ensure that students have some background in managing the training and exercise functions in an organization. We use disaster drills, simulations or exercises to test our preparedness; including a module in a disaster response course provides a means of ensuring that we can assess the capacity of our organizations to respond effectively. The need for conducting drills or disaster exercises are often included in an introduction to emergency management class. A module for this class would give students the skills in developing a training session or designing a disaster exercise.

XII. Legal Issues and Mandates

Responder concerns about individual and organizational liability in implementing response activities continues to be an issue. This session examines state and federal mandates for public, private and non-profit organizations and the implications for individual and organizational liability. Many states require local governments to develop comprehensive emergency plans. State and federal funding is often linked to local agencies having approved emergency plans for addressing hazards. Ensuring that students appreciate the legal mandates can provide additional incentives for effective planning for disaster response agencies and operations.

XIII. Crisis Decision Making

Crisis decision making is a critical skill required of emergency managers. This session will examine a process for decision making under very difficult conditions and barriers to making effective decisions in a crisis situation. The session should also include a discussion of “post audit crisis assessment.”

APPENDIX H: Animal Arrival Status Form

**Division of Comparative Medicine
University of South Florida**

**Arrival Status
Page 1**

Principal Investigator:	IACUC#:	USDA ID (tag #/tattoo):	USF ID #:
Recording Technician:	Arrival Date:	Source:	
Species:	Sex: M F	Age:	Body Weight:
Description:			
Permanent Markings:			
Prior Conditioning:			
Heart Rate:	Respiratory Rate:	Body Temperature:	Capillary Refill Time:

Please Circle Below to Indicate Subjective Impression as Either N=Normal, A=Abnormal, or blank indicates not done.
If Abnormal, please describe observations.

Eyes	N	A	Description:
Ears	N	A	Description:
Nose	N	A	Description:
Mouth	N	A	Description:
Skin. Coat	N	A	Description:
Nails	N	A	Description:

General Attitude and Condition:
Assessment:
Treatment:
Plan:

Progress Notes
Room # _____
Page # _____ of _____

[illegible]

APPENDIX J: Surgical Record

**Division of Comparative Medicine
University of South Florida**

**Surgical Record
Page ____ of ____**

Principal Investigator:	IACUC#:	USDA ID (tag#/Tattoo):	USF ID #:

Date of Preoperative Assessment:	Body Weight:	Technician:

General Preoperative Condition:

Planned Procedure:	Fasting:

Anesthetic Plan	dosage (mg/kg) X body weight (kg) = dose (mg) / dilution (mg/ml) = volume administered (ml).
1. Anticholinergic	
2. Tranquilizer Sedative Preanesthetic	
3. Inductant	
4. General Anesthetic	
5. Analgesic	
6. Antibiotic	

Date of Surgery:	Surgeon:	Assisting Technician:

Time Preanesthetics Administered:	Time of Induction:	Time of Incision:

IV Fluids Administered:	Other Medications:

	Time	HR	RR	CRT	Pulse Characteristics	Body Temperature	Other
Preoperative							
Intraoperative							
Postoperative							

Surgical Procedure:

Time of Closure:	Time When Sternal Recumbant:

Observations, Treatments, Plan:

APPENDIX K: Medical Record Retention

College of Veterinary Medicine
Veterinary Medical Center

Policy and Procedure Manual

Subject:	Medical Record Retention	Policy Section:	10-VMC-J
Applicable to:	All VMC clinicians, staff, and students	Pages:	1 of 1
Author:	Medical Records Manager	Submitted Date:	5/2/02
Review:	Medical Records Committee	Review Date:	5/7/02
Approval:	Clinical Management Committee	Approval Date:	7/9/02
Related policies and procedures:		Replaces version Dated:	New

POLICY: Medical records for all small and large animals will be maintained in hard copy in their entirety for a minimum of seven years from the last date of service at the Veterinary Medical Center.

PROCEDURE:

1. Medical Record personnel will determine the last date of service for all records.
2. The entire record will be microfilmed.
3. The record will be maintained on roll microfilm and readily accessible through an adequate indexing process. The ability to reproduce this information to plain paper will be readily available.
4. After review of the microfilm from the processing lab the medical record will be destroyed via incineration.
 - a. Medical Records will notify internal users before destruction.
5. An original and duplicate roll of film will be maintained in separate storage areas.

OVERSIGHT/FOLLOW THROUGH:

The Medical Record Manager is responsible for assuring compliance with this policy.

Policy Name: Medical Record Retention
Approval Date: 07/09/02

Policy Section: 10-VMC-J
Pages: 1 of 1

APPENDIX L: Chemical Purchase Records

Agricultural and veterinary chemical purchase records.

Date of Purchase	Place of purchase	Quantity purchased	Chemical/drug purchased	Batch number	Expiry date (vet chemicals)	Date of manufacture (ag. chemicals)	WHP and/or ESI	Off-label authorisation or permit number	Storage location	How container will be disposed of

APPENDIX M: Veterinary Medicine Record

Veterinary Medicine Record

The Animals and Animal Products (Examination for Residues and Maximum Residue Limits) Regulations 1997
Welfare of Farmed Animals (England) Regulations 2000
Veterinary Medicines Regulations 2005
Food Hygiene (England) Regulations 2006

Name:

Address:

Post Code:

Telephone:

Holding Number:

If you are in the business of rearing, production, or treating of farm animals which will end up as food intended for human consumption, you must keep a record of any veterinary medicinal product you give them or treat them with.

A format for the keeping of these records is set out on the attached sheets.

Any person required to keep a record, must retain that record for a period of five years, from the end of the calendar year to which such records relates. Where prescriptions are used as the record, they must be kept for five years, the actual dates of administration of the treatment must be recorded.

Send animals for slaughter **ONLY AFTER** the end of the withdrawal period, for the veterinary medicinal product, which has been administered.

A record shall be maintained of any medicinal treatment given to animals, which are bred or kept for the production of food, wool, skin, or fur or for other farming purposes.

If a veterinary surgeon administers a veterinary medicinal product to a food producing animal he must either enter the information in the keeper's records or give it to the keeper in writing in which case the keeper must enter the details required in his records

NB: Columns in italics relate to information which is not a statutory requirement but will assist in meeting some Farm Assurance Scheme requirements.

This record book consists of both purchase records and administration records, please ensure both are completed as required

These are general guidance notes only, and cannot be taken as an authoritative view of the law – further information can be obtained from Doncaster Metropolitan Borough Council, Animal Environmental Health, Council House, Floor 3, College Rd, Doncaster, DN1 1RN – (Tel 01302 737554 / 37560)

APPENDIX N: Duplicate Tax Return Request

Form 4506 (Rev. April 2006) Department of the Treasury Internal Revenue Service	Request for Copy of Tax Return ▶ Do not sign this form unless all applicable lines have been completed. Read the instructions on page 2. ▶ Request may be rejected if the form is incomplete, illegible, or any required line was blank at the time of signature.	OMB No. 1545-0429

Tip: You may be able to get your tax return or return information from other sources. If you had your tax return completed by a paid preparer, they should be able to provide you a copy of the return. The IRS can provide a **Tax Return Transcript** for many returns free of charge. The transcript provides most of the line entries from the tax return and usually contains the information that a third party (such as a mortgage company) requires. See **Form 4506-T**, Request for Transcript of Tax Return, or you can call 1-800-829-1040 to order a transcript.

1a Name shown on tax return. If a joint return, enter the name shown first.	1b First social security number on tax return or employer identification number (see instructions)
2a If a joint return, enter spouse's name shown on tax return	2b Second social security number if joint tax return

3 Current name, address (including apt., room, or suite no.), city, state, and ZIP code

4 Previous address shown on the last return filed if different from line 3

5 If the tax return is to be mailed to a third party (such as a mortgage company), enter the third party's name, address, and telephone number. The IRS has no control over what the third party does with the tax return.

Caution: If a third party requires you to complete Form 4506, **do not** sign Form 4506 if lines 6 and 7 are blank.

6 Tax return requested (Form 1040, 1120, 941, etc.) and all attachments as originally submitted to the IRS, including Form(s) W-2, schedules, or amended returns. Copies of Forms 1040, 1040A, and 1040EZ are generally available for 7 years from filing before they are destroyed by law. Other returns may be available for a longer period of time. Enter only one return number. If you need more than one type of return, you must complete another Form 4506. ▶

Note. If the copies must be certified for court or administrative proceedings, check here. ☐

7 Year or period requested. Enter the ending date of the year or period, using the mm/dd/yyyy format. If you are requesting more than eight years or periods, you must attach another Form 4506.

/ /	/ /	/ /	/ /

8 Fee. There is a \$39 fee for each return requested. Full payment must be included with your request or it will be rejected. Make your check or money order payable to "United States Treasury." Enter your SSN or EIN and "Form 4506 request" on your check or money order.	\$ 39.00
a Cost for each return	
b Number of returns requested on line 7	
c Total cost. Multiply line 8a by line 8b	\$

9 If we cannot find the tax return, we will refund the fee. If the refund should go to the third party listed on line 5, check here ☐

Signature of taxpayer(s). I declare that I am either the taxpayer whose name is shown on line 1a or 2a, or a person authorized to obtain the tax return requested. If the request applies to a joint return, **either** husband or wife must sign. If signed by a corporate officer, partner, guardian, tax matters partner, executor, receiver, administrator, trustee, or party other than the taxpayer, I certify that I have the authority to execute Form 4506 on behalf of the taxpayer.

Signature (see instructions)	Date	Telephone number of taxpayer on line 1a or 2a ()
Title (if line 1a above is a corporation, partnership, estate, or trust)		
Spouse's signature	Date	

APPENDIX O: Shock Chlorination Well Water Disinfection



**HOUSING
& ENVIRONMENT**

THE UNIVERSITY OF GEORGIA
COOPERATIVE EXTENSION SERVICE
JORGE H. ATILES
PAUL F. VENDRELL

DISINFECTING YOUR WELL WATER: SHOCK CHLORINATION

A standard treatment for sanitizing your well water is **shock chlorination**. Listed below are guidelines for using this treatment safely and effectively.

WHAT IS SHOCK CHLORINATION?

Shock chlorination is the process by which wells are sanitized with chlorine. Shock chlorination is the most widely recommended means of treating bacterial contamination in home water systems such as wells, springs, and cisterns.

WHEN SHOULD SHOCK CHLORINATION BE USED?

Shock chlorination is recommended following any construction, installation, maintenance, or repair of wells and other water systems. Shock chlorination is essential if there has been flooding or other obvious means of contamination in your area. It is NOT a recommended method for treating recurring bacteria problems.

WHAT PRECAUTIONS SHOULD BE TAKEN PRIOR TO SHOCK CHLORINATION?

Make sure that everyone in your home is warned not to use the water during the treatment process. Arranging for an alternative source of drinking water is a necessity, especially if the solution is in the system overnight. Special care should be taken to ensure that children and older adults do not consume tap water during the treatment process.

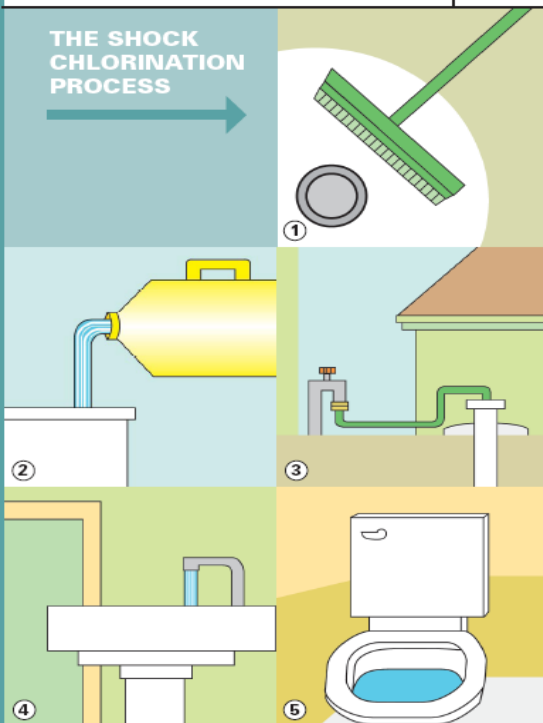
WHAT KIND OF CHLORINE SHOULD BE USED?

Regular household chlorine bleach found in supermarkets and supply stores is suitable for this process. Use only the plain (and generally least expensive) kind of bleach; do NOT buy fresh scent, lemon, or other scented chlorine products.

THE SHOCK CHLORINATION PROCESS

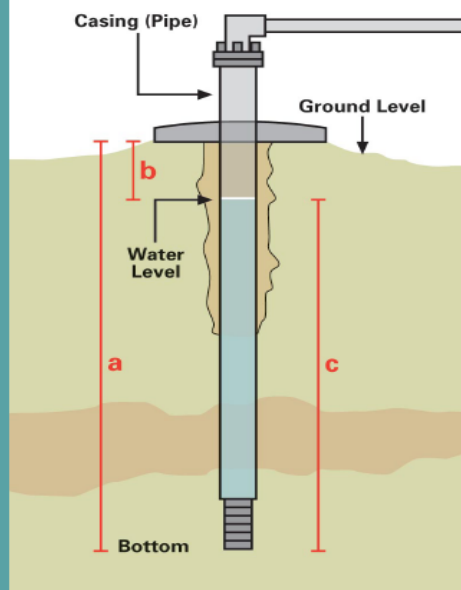
- 1. CLEAN:** Remove all loose or foreign debris from the wellhouse, spring house, or storage tank. Then scrub accessible interior surface with strong chlorine solution (1/2 gallon chlorine bleach per 5 gallons clean water).
- 2. CALCULATE & POUR:** Pour 3 pints of chlorine bleach per 100 gallons of water into your well. To determine the amount of standing water in the well, use the guidelines on the reverse side of this publication.
- 3. MIX:** Hook a clean garden hose to the outdoor faucet nearest the well and place the end of the hose inside the well. Turning the water on, let it run until you smell chlorine coming out of the hose.
- 4. CIRCULATE:** Allow solution to circulate until a strong chlorine odor is detected from all taps in the house.
- 5. FLUSH:** Flush toilets, then allow water to stand in the system for at least 8 hours (preferably 12-24 hours).
- 6. FINISH:** Rid the system of remaining chlorine by turning on outside faucets letting them run until chlorine smell dissipates. Finally, run the indoor faucets until water is clear and smell is gone. Do not run all this chlorinated water into your septic system or allow it to drain into a stream, pond, or lake.

THE SHOCK
CHLORINATION
PROCESS



HOUSEHOLD
WATER
QUALITY
SERIES

4



DETERMINING THE AMOUNT OF CHLORINE TO MIX WITH YOUR WELL WATER

When using basic laundry bleach, 3 pints should be added for every 100 gallons of water in the well. To determine the amount of standing water in your well, you will first need to know the depth of your well measured from the bottom to ground level (look at "a" in the diagram on the left). If you do not have this information, call your driller and ask for your well log information. A driller can also measure your well if your well log is unavailable. Once you know the well diameter, depth of your well, and depth to the bottom, follow the steps below.

1. First, determine the distance from the bottom of the well to the water level. To find this information, measure the distance from the ground level to the water level (distance "b" in the diagram). Subtract "b" from the well depth "a" to find the total depth of the water: $a - b = c$.
2. Next, determine your well's storage per foot of water. This number is based upon the diameter of your well. Generally, there are two types of wells, drilled and bored. The inside diameter of the casing (well pipe) of a drilled well is typically from 4 to 8 inches. Bored wells are larger, ranging from 24 to 36 inches. Refer to the following table to determine your well's storage per foot of water.

DRILLED WELL/PIPE		BORED WELL	
diameter (inches)	Storage per foot of water (gal/ft)	diameter (inches)	Storage per foot of water (gal/ft)
4"	0.653	24"	23.5
6"	1.47	36"	52.9
8"	2.61		

Example: A drilled well with a 6" diameter has a storage per foot of water capacity of 1.47 gal/ft. If your well has an unlisted diameter, or if you use a cistern or reservoir, you will need to contact your local extension service for more information or refer to the source publications.

3. Next, multiply your total depth of water "c" times your storage per foot of water "s." For this example we will assume that "c" is 204 ft. The product will be the volume of water in your well: $204 \times 1.47 = 300 \text{ gal}$.
4. Now pour 3 pints of bleach into your well for every 100 gallons of water and add 3 extra pints to treat the household plumbing such as the pressure tank, hot water heater, and pipes. If the volume of water in your well is 300 gallons, you will add 9 pints of bleach to treat the well and 3 extra pints for the plumbing for a total of 12 pints or 1.5 gallons:

$$\frac{300 + 100 \times 3}{100} = 12 \text{ pts.} = 1.5 \text{ gal.}$$

Sources:

"Shock Chlorination of Home Wells, Springs and Cisterns," Cooperative Extension Service, The University of Georgia.

"Shock Chlorination of Domestic Water Supplies," Cooperative Extension Service, University of Nebraska-Lincoln.

Reviewers: Julia Gaskin, David Kissel, Mark Risse, Penny Thompson, and Carl Varnadoe, The University of Georgia; Jane Perry, Georgia Department of Human Resources; Calvin Sawyer, Clemson University

Research Assistant: Philip M. Herrington

The University of Georgia and Ft. Valley State University, the U.S. Department of Agriculture and counties of the state cooperating. The Cooperative Extension Service, The University of Georgia College of Agricultural and Environmental Sciences offers educational programs, assistance, and materials to all people without regard to race, color, national origin, age, sex, or disability.

An Equal Opportunity Employer/Affirmative Action Organization Committed to a Diverse Work Force

COLLEGE OF FAMILY AND
CONSUMER SCIENCES
and the
COLLEGE OF AGRICULTURAL AND
ENVIRONMENTAL SCIENCES
cooperating.



January 2003 - Circular 858-4

Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, The University of Georgia College of Agricultural and Environmental Sciences and the U.S. Department of Agriculture cooperating.
Gale A. Buchanan, Dean and Director

APPENDIX P: Animal Food Suppliers

American Feed Industry Association http://www.afia.org	Arlington, VA	Phone: 703-524-0810 Fax: 703-524-1931 Email: afia@afia.org
Del Monte Foods http://delmonte.com/company Consumer questions:	San Francisco, CA Pittsburgh, PA	Phone: 415-247-3000 Phone: 412-222-2200 Phone: 800-252-7022
Evanger's Dog and Cat Food Company http://www.evangersdogfood.com	Wheeling, IL	Phone: 847-537-0102 Phone: 800-288-6796 Email: hsher@evangersdogfood.com
Farmer's Warehouse Company http://www.farmerswarehouse.com	Keyes, CA	Phone: 209-632-2333 Phone: 800-400-6377 Fax: 209-634-6341 Email: info@farmerswarehouse.com
Farmland Industries:	Kansas City, MO	Phone: 816-713-7000
Hay hotline links and information sources:		http://wyorange.net/Droug ht/hay_hotline.html http://hayexchange.com/hay.htm
USDA Farm Service Agency http://www.fsa.usda.gov	Washington, D.C.	Phone: 202-720-7807 Email:
Hay hotlines:	Illinois Iowa Nebraska Oklahoma South Dakota Texas Texas	Phone: 708-256-8888 Phone: 800-255-0449 Phone: 800-249-0366 Phone: 800-580-6543 Phone: 800-228-5254 Phone: 800-687-7564 Phone: 877-429-1998

Hill's Pet Nutrition	Topeka, KS	Phone: 800-445-5777
Iams Company	Dayton, OH	Phone: 800-675-3849 Phone: 800-525-4267 Fax: 937-264-7264
National Hay Association http://nationalhay.org	St. Petersburg, FL	Phone: 800-707-0017 Fax: 727-367-9702 Email: haynha@aol.com
Natural Life Pet Products	Girard, KS	Phone: 800-367-2391 Phone: 620-724-8012 Fax: 620-724-8424
Nestle Purina http://www.purina.com	St. Louis, MO	Phone: 314-982-1000 Phone: 800-778-7462
Pedigree http://www.pedigree.com/home.asp	McLean, VA	Phone: 800-525-5273

APPENDIX Q: Animal Care and Holding Survey

ANIMAL CARE AND HOLDING SURVEY

Facility _____

Owner's name _____

Facility address _____

Facility phone No. _____ Back line _____

Owner's home phone No. _____ Cellular phone No. _____

Owner's pager No. _____ Ham radio _____

What species of animal will you accept?

_____ Canine _____ Feline _____ Equine _____ Avian _____ Other (specify) _____

How many cages or stalls do you have available?

_____ Cages _____ Runs _____ Large animal stalls _____ Corrals _____

Are you willing to provide services during a disaster? (check one)

_____ Pro bono _____ Reduced fee _____ Standard fee

What are your minimal entry requirements for animals to your facility?

_____ Not applicable _____ Rabies vaccination _____ Other vaccinations _____ Parasite control _____

Do you have isolation facilities that could be used if needed?

_____ Yes _____ No

Would your facility and/or support staff be available for disasters outside normal hours of operation?

_____ Yes _____ No

Release: (to be signed by person to commit facility)

Print Name _____

Signature _____ Date _____

APPENDIX R: Animal Care Log

Each animal care and holding facility should complete this log and send a copy to your Veterinary Response Historian (VRH).				
Date Admitted	Description of Animal	Condition & Treatment	Disposition	Date Released
NOTE: Please copy as many extra blank pages as needed.				

APPENDIX S: Sample Hurricane Poster



Hurricane Season

June 1 - November 30

Are You Ready?

www.mylhurricanecenter.com



APPENDIX T: Hurricane Evacuation Check List



**American
Red Cross**

HURRICANE EVACUATION CHECKLIST TAKE ACTION NOW

- ☐ **Monitor media reports.** Watch TV, listen to AM/FM or NOAA weather radio and check the Internet often for official news. **Evacuate when advised** to do so.

Family Communications Plan Steps:

- ☐ **Make a plan and prepare to evacuate.** Plan your evacuation route by using maps and identifying alternative routes. Pets should not be left behind, but understand that only service animals are permitted in shelters. Plan how you will care for your pets and bring extra food, water and supplies for them.
- ☐ **Develop a family communication plan** by designating an out-of-town contact that you can call. Ask them to contact other people who care about you, to let them know your status. Write contact information including name, home, work and cell phone numbers and e-mail address.

Contact information to provide to your out-of-town contact.

Name:	Name:
Phone #:	Phone #:
Email:	Email:
Name:	Name:
Phone #:	Phone #:
Email:	Email:
Name:	Name:
Phone #:	Phone #:
Email:	Email:

Assemble a Disaster Supplies Kit Including the Following Items:

- ☐ Non-perishable or canned Food
- ☐ Can opener (non-electric)
- ☐ Bottled water
- ☐ Clothing
- ☐ Rainwear
- ☐ Bedding
- ☐ Sleeping bags
- ☐ Pillows
- ☐ Battery-operated radio
- ☐ Flashlight
- ☐ Extra batteries
- ☐ Prescriptions and medications
- ☐ First aid kit
- ☐ Car keys
- ☐ Maps

Special items for:

- ☐ Infants
- ☐ Elderly
- ☐ People with disabilities

Important Documents

(store in a waterproof container):

- ☐ Driver's license
- ☐ Social Security card
- ☐ Proof of residence
- ☐ Insurance policies
- ☐ Tax records
- ☐ Birth and marriage certificates
- ☐ Deeds
- ☐ Wills

Remember to make a supplies kit for pets with water, food (with manual can opener), collars with identification tag, carrier or harness, sturdy leash, medication, name and number of veterinarian, cat litter pan and scooper, pet beds and toys.



Prepare Your Home:

- ☐ Bring inside: lawn furniture, trash cans, hanging plants, outdoor decorations or ornaments, or anything else that can be carried by the wind.
- ☐ Close windows and doors, then close hurricane shutters or install pre-cut plywood. *Note: Tape does not prevent windows from breaking, so taping windows is not recommended.*

Evacuate If Necessary:

- ☐ If advised to evacuate, do so immediately. Follow the advice of authorities on which routes to take, which evacuation shelters to seek, and other important directions.
- ☐ Identify ahead of time where to go if told to evacuate. Learn the best evacuation routes to take. Get the telephone numbers of places you may go, as well as a road map in case you need to take alternative or unfamiliar routes if major roads are impassable.
- ☐ If time allows, call or e-mail your out-of-town contact to let them know where you are going and when you expect to get there. Leave a note telling others when you left and where you are going. Check with neighbors who may need a ride or other assistance.
- ☐ If you live in the affected area, call the toll-free Red Cross hotline: 1-866-GET-INFO (866-438-4636) for the nearest Red Cross emergency shelter. Or make arrangements to stay inland at a hotel or with friends or relatives until the storm has passed.

Take Precautions:

- ☐ Listen to local TV, radio, or NOAA Weather Radio to be aware of watches and warnings.
- ☐ Be aware that the calm "eye" is deceptive; the storm is not over. The worst part of the storm will happen once the eye passes over and the winds blow from the opposite direction. Trees, shrubs, buildings, and other objects broken by the first winds can be destroyed by the second winds.

Tornadoes can happen during a hurricane and after it passes over.

- ☐ Be alert to weather conditions as they can change rapidly. Look for large hail and listen for the sound of an approaching tornado – many say approaching tornadoes sound like a freight train.
- ☐ Pick a safe place in your home where family members and pets can gather if a tornado occurs.
- ☐ Remain indoors, in the center of your home, in an interior closet, bathroom or hallway on the lowest floor, and away from all windows.
- ☐ Know the community's warning system. Many use sirens.

Flooding can begin well before a hurricane nears land.

- ☐ Stay away from floodwaters. If you come upon a flooded road, turn around and go another way. If you are caught on a flooded road and waters are rising rapidly around you, get out of the car quickly and move to higher ground. The floodwaters may still be rising, and the car could be swept away at any moment.
- ☐ Never attempt to drive through water on a road. Water can be deeper than it appears, and water levels can rise very quickly.
- ☐ Most cars can be swept away by less than two feet of moving water. Many hurricane deaths are caused by people attempting to drive through floodwaters.
- ☐ Floodwaters can erode roadways, and a missing section of road – even a missing bridge – will not be visible with water running over the area.
- ☐ Avoid walking through floodwaters; two inches of moving water can sweep most people off their feet.

APPENDIX U: Sample Client Preparedness Brochure



Preparing for Your Pets Makes Sense. Get Ready Now.

If you are like millions of animal owners nation wide, your pet is an important member of your household. The likelihood that you and your animals will survive an emergency such as a fire or flood, tornado or terrorist attack depends largely on emergency planning done today. Some of the things you can do to prepare for the unexpected, such as assembling an animal emergency supply kit and developing a pet care buddy system, are the same for any emergency. Whether you decide to stay put in an emergency or evacuate to a safer location, you will need to make plans in advance for your pets. Keep in mind that what's best for you is typically what's best for your animals.

If you must evacuate, take your pets with you if possible. However, if you are going to a public shelter, it is important to understand that animals may not be allowed inside. Plan in advance for shelter alternatives that will work for both you and your pets.

Make a back-up emergency plan in case you can't care for your animals yourself. Develop a buddy system with neighbors, friends and relatives to make sure that someone is available to care for or evacuate your pets if you are unable to do so. Be prepared to improvise and use what you have on hand to make it on your own for at least three days, maybe longer.

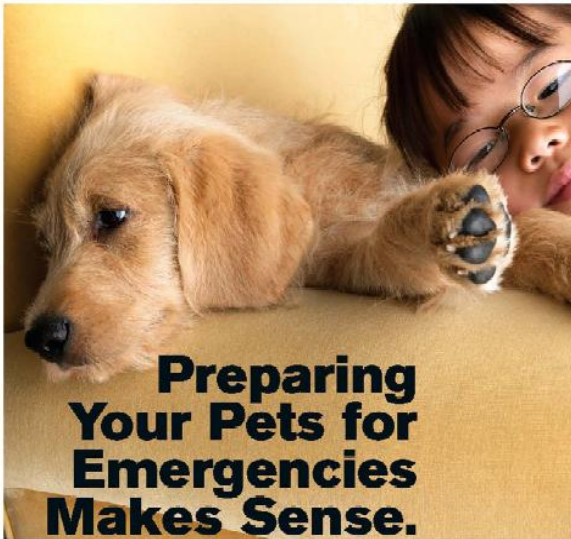
Preparing for the unexpected makes sense.
Get Ready Now.



This information was developed by the U.S. Department of Homeland Security in consultation with:
American Kennel Club, The American Society for the Prevention of Cruelty to Animals, American Veterinary Medical Association, and The Humane Society of the U.S.



READY-APP-0105-01.



Ready

Prepare. Plan. Stay Informed.

Preparing Your Pets for Emergencies Makes Sense. Get Ready Now.



Homeland Security

www.ready.gov

1 Prepare

Get a Pet Emergency Supply Kit.

Just as you do with your family's emergency supply kit, think first about the basics for survival, particularly food and water. Consider two kits. In one, put everything you and your pets will need to stay where you are. The other should be a lightweight, smaller version you can take with you if you and your pets have to get away. Plus, be sure to review your kits regularly to ensure that their contents, especially foods and medicines, are fresh.

Food. Keep at least three days of food in an airtight, waterproof container.

Water. Store at least three days of water specifically for your pets in addition to water you need for yourself and your family.

Medicines and medical records. Keep an extra supply of medicines your pet takes on a regular basis in a waterproof container.

First aid kit. Talk to your veterinarian about what is most appropriate for your pet's emergency medical needs. Most kits should include cotton bandage rolls, bandage tape and scissors; antibiotic ointment; flea and tick prevention; latex gloves, isopropyl alcohol and saline solution. Include a pet first aid reference book.

Collar with ID tag, harness or leash. Your pet should wear a collar with its rabies tag and identification at all times. Include a backup leash, collar and ID tag in your pet's emergency supply kit. In addition, place copies of your pet's registration information, adoption papers, vaccination documents and medical records in a clean plastic bag or waterproof container and also add them to your kit. You should also consider talking with your veterinarian about permanent identification such as microchipping, and enrolling your pet in a recovery database.

Crate or other pet carrier. If you need to evacuate in an emergency situation take your pets and animals with you provided that it is practical to do so. In many cases, your ability to do so will be aided by having a sturdy, safe, comfortable crate or carrier ready for transporting your pet. The carrier should be large enough for your pet to stand, turn around and lie down.

Sanitation. Include pet litter and litter box if appropriate, newspapers, paper towels, plastic trash bags and household chlorine bleach to provide for your pet's sanitation needs. You can use bleach as a disinfectant (dilute nine parts water to one part bleach), or in an emergency you can also use it to purify water. Use 16 drops of regular household liquid bleach per gallon of water. Do not use scented or color safe bleaches, or those with added cleaners.



A picture of you and your pet together. If you become separated from your pet during an emergency, a picture of you and your pet together will help you document ownership and allow others to assist you in identifying your pet. Include detailed information about species, breed, age, sex, color and distinguishing characteristics.

Familiar items. Put favorite toys, treats or bedding in your kit. Familiar items can help reduce stress for your pet.

2 Plan

What You Will Do in an Emergency.

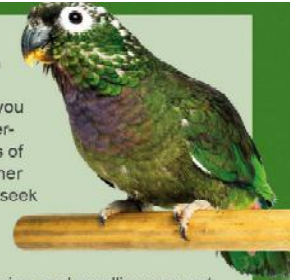
Be prepared to assess the situation. Use whatever you have on hand to take care of yourself and ensure your pet's safety during an emergency. Depending on your circumstances and the nature of the emergency the first important decision is whether you stay put or get away. You should understand and plan for both possibilities. Use common sense and the information you are learning here to determine if there is immediate danger. In any emergency, local authorities may or may not immediately be able to provide information on what is happening and what you should do. However, watch TV, listen to the radio or check the Internet for instructions. If you're specifically told to evacuate, shelter-in-place or seek medical treatment, do so immediately.

Create a plan to get away. Plan how you will assemble your pets and anticipate where you will go. If you must evacuate, take your pets with you if practical. If you go to a public shelter, keep in mind your animals may not be allowed inside. Secure appropriate lodging in advance depending on the number and type of animals in your care. Consider family or friends willing to take in you and your pets in an emergency. Other options may include: a hotel or motel that takes pets or a boarding facility, such as a kennel or veterinary hospital that is near an evacuation facility or your family's meeting place. Find out before an emergency happens if any of these facilities in your area might be viable options for you and your pets.

Develop a buddy system. Plan with neighbors, friends or relatives to make sure that someone is available to care for or evacuate your pets if you are unable to do so. Talk with your pet care buddy about your evacuation plans and show them where you keep your pet's emergency supply kit. Also designate specific locations, one in your immediate neighborhood and another farther away, where you will meet in an emergency.

Talk to your pet's veterinarian about emergency planning.

Discuss the types of things that you should include in your pet's emergency first aid kit. Get the names of vets or veterinary hospitals in other cities where you might need to seek temporary shelter. You should also consider talking with your veterinarian about permanent identification such as microchipping, and enrolling your pet in a recovery database. If your pet is microchipped, keeping your emergency contact information up to date and listed with a reliable recovery database is essential to your being reunited with your pet.



Gather contact information for emergency animal treatment. Make a list of contact information and addresses of area animal control agencies including the Humane Society or SPCA, and emergency veterinary hospitals. Keep one copy of these phone numbers with you and one in your pet's emergency supply kit. Obtain "Pets Inside" stickers and place them on your doors or windows, including information on the number and types of pets in your home to alert firefighters and rescue workers. Consider putting a phone number on the sticker where you could be reached in an emergency. And, if time permits, remember to write the words "Evacuated with Pets" across the stickers, should you flee with your pets.

3 Stay Informed

Know About Types of Emergencies.

Some of the things you can do to prepare for the unexpected, such as assembling an emergency supply kit for yourself, your family and your pets, is the same regardless of the type of emergency. However, it's important to stay informed about what might happen and know what types of emergencies are likely to affect your region as well as emergency plans that have been established by your state and local government. For more information about how to prepare, visit www.ready.gov or call 1-800-BE-READY.

Be prepared to adapt this information to your personal circumstances and make every effort to follow instructions received from authorities on the scene. With these simple preparations, you can be ready for the unexpected. Those who take the time to prepare themselves and their pets will likely encounter less difficulty, stress and worry. Take the time now to get yourself and your pet ready.

Preparing for Your Pets Makes Sense. Get Ready Now.

APPENDIX V: Sample Client Preparedness Handout

Hurricane season is upon us again. The following tips may be helpful:

Horses:

- Make arrangements in advance to prepare your horse trailer in case of an emergency.
- Know where you can take your horses in an emergency evacuation.
- Contact your local animal care and control agency, agricultural extension agent, or local emergency management authorities for information about shelters in your area.
- Place your horses/ Coggins tests, veterinary papers, identification photographs, and vital information such as medical history, allergies, and emergency telephone numbers in a watertight envelop or zip-lock type freezer bag.
- Keep halters ready. Each halter should include the following information: the horse's name, your name, your telephone number, and another emergency telephone number where someone can be reached.
- Prepare a basic first-aid kit that is portable and easily accessible.
- Be sure to have on hand a supply of water, hay, feed and medications for several days for each horse you are evacuating.
- It is important that your horses are comfortable while being loaded onto a trailer. If your horses are unaccustomed to being loaded onto a trailer, practice the procedure now so they become used to it.

There may be times when the evacuation of your horses is impossible during an emergency. The following suggestions can aid you in your hurricane preparation efforts:

- Make sure every animal has durable and visible identification.
- Create a list of emergency telephone numbers.
- Reinforce your house, barn, and outbuildings with hurricane straps and other measures.
- Modify your fencing and open gates so that animals may move to high ground in a flood and to low-lying areas during high winds.
- Install a hand pump and obtain enough large containers to water your animals for at least a week after a hurricane.
- If you have boats, feed troughs, or other large containers, fill them with water before any high wind event. This prevents them from blowing around and also gives you an additional supply of water.
- A generator with a safely stored supply of fuel may be essential, as electrical equipment is necessary for the well being of your animals.
- Secure or remove anything that could become blowing debris.

Pets

- Pets should always be evacuated. Because evacuation shelters do not accept pets, you must plan ahead to ensure that your pets will have a safe place to stay.
- Contact hotels and motels outside your immediate area to check policies on accepting pets during an emergency. Call ahead for a reservation as soon as you think you might have to leave your home. You can always cancel.

- Check with friends, relatives, or others outside your immediate area. Ask if they would be able to shelter you and your animals or just your animals, if necessary.
- Make a list of boarding facilities and veterinary offices that might be able to shelter animals in emergencies; include 24-hour telephone numbers.
- Ask your local animal shelter if it provides foster care or shelter for pets in an emergency. This should be your last resort, as shelters have limited resources and are likely to be stretched to their limits during an emergency.
- All pets should wear a sturdy collar or harness with the following information attached: the pet's name, your name, your telephone number, and another emergency telephone number where someone can be reached.
- Prepare a disaster kit to take with you. It should include:
 - Medications and medical records stored in a waterproof container and a first aid kit.
 - Information on medical conditions, behavior problems, and the name and number of your veterinarian in case you have to board your pets or place them in foster care.
 - Sturdy leashes, harnesses, and carriers to transport pets safely and to ensure that your pets can not escape. Carriers should be large enough for the animal to stand comfortably, turn around, and lie down. Include blankets or towels for bedding and warmth.
 - Current photos, and descriptions of your pets to help others identify them in case you and your pets become separated.
 - Food and water for at least three (3) days for each pet, bowls, cat litter and litter box, and a manual can opener.

APPENDIX W: Power Outage Handout

Help! The Power Is Out...

Sudden power outages can be **frustrating** and **troublesome**, especially when they are prolonged. Perishable foods should not be held above 40 degrees for more than 2 hours. **If a power outage is 2 hours or less, you need not be concerned**, but how do you save your food when the refrigerator is out for longer times? Being prepared can help. By planning ahead, you can save your perishables.

What do I need?

- One or more **coolers**. Inexpensive styrofoam coolers can do an excellent job as well.
- **Ice**. Surrounding your food with ice in a cooler will ensure that it will stay cold.
- **Shelf-stable foods**, such as canned goods and powdered or boxed milk. These can be eaten cold or heated on the grill.
- A digital quick-response **thermometer**. A digital thermometer should be a necessity in your kitchen anyway. With these thermometers you can quickly check the internal temperatures of food for doneness and safety.

What to do...

Do not open the refrigerator or freezer.

Tell your little ones not to open the door. An unopened refrigerator will keep foods cold enough for at least a couple of hours. A freezer that is half full will hold for up to 24 hours and a full freezer for 48 hours. (See chart on back for more details.)

If it looks like the power outage will be for more than 2-4 hours, pack refrigerated milk, dairy products, meats, fish, poultry, eggs, gravy, stuffing and left-overs into your **cooler** surrounded by **ice**. (See chart on back for more details.)

If it looks like the power outage will be **prolonged**, prepare a cooler with ice for your freezer items,

Q's and A's

What if I go to bed and the power is still not on? Before you go to bed, pack your perishables into your coolers if you haven't already done so and put in as much ice as you can. Also, when you go to bed, leave a bedroom light switched on. When the power goes back on, it will wake you, so you can check the condition of your foods in the freezer. If freezer foods still have ice crystals, they can be refrozen.

What if the power goes out while I'm at work or out of the house and it has been more than a few hours before I get home? Try to determine how long the power has been out. Check the internal temperature of the food in your refrigerator with your quick-response thermometer. A liquid such as milk or juice is easy to check. Spot check other items like steaks or left-overs also. If the internal temperature is above 40 degrees, it is best to throw it out. (Check the chart on the back.) If the food in the freezer is not above 40 degrees and there are still ice crystals, you can refreeze.

What if the power goes out and comes back on while I am out? If your freezer is fairly full and you know it was not longer than 24 hours, the food should be OK. There will be loss of quality with refreezing, but the food will be safe. If the refrigerator was out for more than 2-4 hours, you are best to discard the perishables.



Prepared by Giant Food, Inc., Landover, Maryland, June 1999. Used with permission. Original content adapted from "Help, Power Outage!" Food News for Consumers, Summer 1989, U.S. Department of Agriculture, Food Safety and Inspection Service.

ARC 1098
September 1999

What Should Be Discarded After A Power Outage?



As soon as the power returns, **check temperatures**. If the food in the freezer has ice crystals and is not above 40 degrees you can refreeze. Perishable foods in the refrigerator should not be above **40 degrees F.** for more than two hours. **Use this chart** to see what has to be discarded and what can be kept.

Frozen Foods	Still Contains Ice Crystals. Not Above 40° F	Thawed, Held Above 40° F For Over 2 Hours
Meat and Mixed Dishes:		
Beef, veal, lamb, pork, poultry, ground meat and poultry	REFREEZE	DISCARD
Casseroles with meat, pasta, rice, egg or cheese base, stews, soups, convenience foods, pizza	REFREEZE	DISCARD
Fish, shellfish, breaded seafood products	REFREEZE. MAY BE SOME TEXTURE & FLAVOR LOSS	DISCARD
Dairy:		
Milk	REFREEZE. MAY LOSE SOME QUALITY	DISCARD
Eggs (out of shell), egg products	REFREEZE	DISCARD
Ice cream, frozen yogurt	DISCARD	DISCARD
Cheese (soft and semi soft), cream cheese, ricotta	REFREEZE. MAY LOSE SOME TEXTURE	DISCARD
Hard cheese (Cheddar, Swiss, Parmesan)	REFREEZE	REFREEZE
Fruits/Vegetables:		
Fruit juices	REFREEZE	REFREEZE. DISCARD IF MOLD, YEASTY SMELL OR SLIMINESS DEVELOPS.
Home or commercially packaged fruit	REFREEZE. WILL CHANGE TEXTURE & FLAVOR	REFREEZE. DISCARD IF MOLD, YEASTY SMELL OR SLIMINESS DEVELOPS.
Vegetable juices	REFREEZE	DISCARD IF ABOVE 50° F FOR OVER 8 HOURS
Home or commercially packaged or blanched vegetables	REFREEZE. WILL CHANGE TEXTURE & FLAVOR	DISCARD IF ABOVE 50° F FOR OVER 8 HOURS
Baked Goods/Baking Ingredients:		
Flour, commmeal, nuts	REFREEZE	REFREEZE
Pie crusts, breads, rolls, muffins, cakes (no custard fillings)	REFREEZE	REFREEZE
Cakes, pies, pastries with custard or cheese filling, cheesecake	REFREEZE	DISCARD
Commercial and homemade bread dough	REFREEZE. MAY LOSE SOME QUALITY	REFREEZE. CONSIDERABLE QUALITY LOSS
Refrigerator Foods	Food Still Cold, Held At 40° F Or Above Under 2 Hours	Held Above 40° F For Over 2 Hours
Dairy/Eggs/Cheese:		
Milk, cream, sour cream, buttermilk, evaporated milk, yogurt	KEEP	DISCARD
Butter, margarine	KEEP	KEEP
Baby formula, opened	KEEP	DISCARD
Eggs, egg dishes, custards, puddings	KEEP	DISCARD
Hard & processed cheeses	KEEP	KEEP
Soft cheeses, cottage cheese	KEEP	DISCARD
Fruits/Vegetables:		
Fruit juices, opened; canned fruits, opened; fresh fruits	KEEP	KEEP
Vegetables, cooked; vegetable juice, opened	KEEP	DISCARD AFTER 6 HOURS
Baked potatoes	KEEP	DISCARD
Fresh mushrooms, herbs, spices	KEEP	KEEP
Garlic, chopped in oil or butter	KEEP	DISCARD
Meat/Poultry/Seafood:		
Fresh or leftover meat, poultry, fish or seafood	KEEP	DISCARD
Lunchmeats, hot dogs, bacon, sausage, dried beef	KEEP	DISCARD
Canned meats (NOT labeled "Keep Refrigerated" but refrigerated after opening)	KEEP	DISCARD
Canned hams labeled "Keep Refrigerated"	KEEP	DISCARD
Mixed Dishes/Side Dishes:		
Casseroles, soups, stews, pizza with meat	KEEP	DISCARD
Meat, tuna, shrimp, chicken, egg salad	KEEP	DISCARD
Cooked pasta, pasta salads with mayonnaise or vinegar base	KEEP	DISCARD
Gravy stuffing	KEEP	DISCARD
Pies/Breads:		
Cream- or cheese-filled pastries and pies	KEEP	DISCARD
Fruit pies	KEEP	KEEP
Breads, rolls, cakes, muffins, quick breads	KEEP	KEEP
Refrigerator biscuits, rolls, cookie dough	KEEP	DISCARD
Sauces/Spreads/Jams:		
Mayonnaise, tartar sauce, horseradish	KEEP	DISCARD IF ABOVE 50° F FOR OVER 8 HOURS
Opened salad dressing, jelly, relish, taco and barbecue sauce, mustard, catsup, olives	KEEP	KEEP

APPENDIX X: Health and Housing Flooding Handout



National Center for Healthy Housing

Hurricane Aftermath—Health and Housing Flooding

Flooding and the serious water intrusion that accompanies it is perhaps the most serious healthy homes impact of a hurricane strike. Large and widespread mold infestations, bacterial growth, pest infestations, release of toxic substances from wet building materials, and deteriorated structural integrity can all follow water intrusion of residential buildings. The water itself can carry an unknown mix of toxic chemicals, waste, and bacteria that can contaminate houses and apartments, personal belongings, and yards, even after the flood recedes.

To minimize the impacts of flooding and water intrusion for homes and apartment buildings in which structural integrity has *not* been weakened beyond repair, property owners should take the following steps:

- Before entering any house or apartment building, protect yourself by wearing rubber boots, rubber gloves, goggles, and a respirator.
- Children, the elderly, and persons with compromised immune systems should not return to flood-damaged buildings until all repair and rehabilitation work is completed. People with severe asthma should also avoid flood-damaged structures.
- Remove all standing water as quickly as possible, even if the amount of standing water is small. Standing water can be a breeding ground for bacteria and some pests, it can harbor dangerous contaminants, and it can provide a source of moisture for mold growth.
- Remove all wet materials and personal belongings from the house or apartment building. This includes all wet wallpaper, wallboard, carpeting, throw rugs, bedding, mattresses, box springs, stuffed toys, clothing, and any other wet materials that cannot be adequately dried and wiped clean. All of these materials can become food sources for mold, they can “off-gas” significant amounts of toxic chemicals. Inadequate drying of these materials can attract large cockroach infestations. Where possible, professional contractors trained in materials removal and mold clean-up should perform this work.
- Remove all porous materials that demonstrate significant mold growth. Again, where possible, professional contractors trained in these tasks should perform this work.
- Take appropriate measures to dry out the entire structure of the house or apartment building. As soon as safe, reliable power is restored, fans; dehumidifiers; window air conditioners; and undamaged, uncontaminated, properly filtered HVAC systems can be used to dry out a building. All houses and apartments buildings should also have ventilation systems repaired if damaged.

- The scope of the flood damage and resultant mold growth following Hurricanes Katrina and Rita are unprecedented in many areas along the Gulf Coast. However, for those homeowners who suffered only minimal water intrusion from minor flooding or other damage to their homes, cleaning all nonporous, wipeable materials and surfaces with a hot water and detergent solution can help. If a hot water and detergent solution does not clean these surfaces, a very dilute bleach solution (1 cup bleach to 9 cups water) can be used. *Remember that this pertains **only** to homes where mold growth is impacting small, easily contained areas. If using a dilute bleach solution, **NEVER MIX BLEACH WITH ANY OTHER CLEANING PRODUCT OR DETERGENT!***
- Chemical fungicides should be used only as a *last resort* against mold, and only the lowest-toxicity fungicides should be used in these circumstances. Mold removal efforts should focus on a) removing all water-damaged materials from the home, b) removing all materials demonstrating significant mold growth, and c) removing all sources of standing water and excessive moisture from the home.

Resources

- For information on making homes healthy following a hurricane strike, visit the EPA's Hurricane Katrina response page, linked from www.epa.gov.
- For specific information on returning home following a major flood event, visit www.cmhc-schl.gc.ca/en/burema/coem/flood/flwhbeaf/index.cfm.
- The Alliance for Healthy Homes and the National Center for Healthy Housing provide more detailed information on health and housing on their websites, www.afhh.org and www.centerforhealthyhousing.org.

APPENDIX Y: Temperature Log and Troubleshooting Chart for Vaccines

Temperature Log for Vaccines (Fahrenheit)

Month/Year: _____ Days 16–31

Completing this temperature log: Check the temperatures in both the freezer and the refrigerator compartments of your vaccine storage units at least twice each working day. Place an “X” in the box that corresponds with the temperature and record the ambient (room) temperature, the time of the temperature readings, and your initials. Once the month has ended, save each month’s completed form for 3 years, unless state or local jurisdictions require a longer time period.

If the recorded temperature is in the shaded zone: This represents an unacceptable temperature range. Follow these steps: 1. Store the vaccine under proper conditions as quickly as possible. 2. Call the vaccine manufacturer(s) to determine whether the potency of the vaccine(s) has been affected. 3. Call the immunization program at your local health department for further assistance: (____) _____. 4. Document the action taken on the reverse side of this log.

Day of Month	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Staff Initials																
Room Temp.																
Exact Time																
°F Temp	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm	am	pm
..... 49°																
48°																
47°																
46°																
45°																
44°																
43°																
42°																
41°																
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• 32°																
• 8°																
7°																
6°																
5°																
4°																
• 3°																

Adapted by the Immunization Action Coalition courtesy of the Michigan Department of Community Health and the California Department of Health Services.

Technical content reviewed by the Centers for Disease Control and Prevention, Jan. 2007.

Vaccine Storage Troubleshooting Record

Date	Time	Storage Unit Temp	Room Temp	Problem	Action Taken	Results	Initials

APPENDIX Z: Checklist for Safe Vaccine Handling and Storage

Checklist for Safe Vaccine Handling and Storage

Here are the 20 most important things you can do to safeguard your vaccine supply. Are you doing them all? Reviewing this list can help you improve your clinic's vaccine management practices.

Yes	No	
_____	_____	1. We have a designated person in charge of the handling and storage of our vaccines.
_____	_____	2. We have a back-up person in charge of the handling and storage of our vaccines.
_____	_____	3. A vaccine inventory log is maintained that documents:
		_____ Vaccine name and number of doses received
		_____ Date the vaccine was received
		_____ Arrival condition of vaccine
		_____ Vaccine manufacturer and lot number
		_____ Vaccine expiration date
_____	_____	4. Our refrigerator for vaccines is either household-style or commercial-style, NOT dormitory-style. The freezer compartment has a separate exterior door.
_____	_____	5. We do NOT store any food or drink in the refrigerator or freezer.
_____	_____	6. We store vaccines in the middle of the refrigerator or freezer, and NOT in the door.
_____	_____	7. We stock and rotate our vaccine supply so that the newest vaccine of each type (with the longest expiration date) is placed behind the vaccine with the shortest expiration date.
_____	_____	8. We check vaccine expiration dates and we first use those that will expire soonest.
_____	_____	9. We post a sign on the refrigerator door showing which vaccines should be stored in the refrigerator and which should be stored in the freezer.
_____	_____	10. We always keep a thermometer in the refrigerator.
_____	_____	11. The temperature in the refrigerator is maintained at 35–46°F (2–8°C).
_____	_____	12. We keep extra containers of water in the refrigerator to help maintain cold temperatures.
_____	_____	13. We always keep a thermometer in the freezer.
_____	_____	14. The temperature in the freezer is maintained at +5°F (-15°C) or colder.
_____	_____	15. We keep ice packs and other ice-filled containers in the freezer to help maintain cold temperatures.
_____	_____	16. We post a temperature log on the refrigerator door on which we record the refrigerator and freezer temperatures twice a day—first thing in the morning and at clinic closing time—and we know whom to call if the temperature goes out of range.
_____	_____	17. We have a “Do Not Unplug” sign next to the refrigerator’s electrical outlet.
_____	_____	18. In the event of a refrigerator failure, we take the following steps:
		_____ We assure that the vaccines are placed in a location with adequate refrigeration.
		_____ We mark exposed vaccines and separate them from undamaged vaccines.
		_____ We note the refrigerator or freezer temperature and contact the vaccine manufacturer or state health department to determine how to handle the affected vaccines.
		_____ We follow the vaccine manufacturer’s or health department’s instructions as to whether the affected vaccines can be used, and, if so, we mark the vials with the revised expiration date provided by the manufacturer or health department.
_____	_____	19. We have obtained a detailed written policy for general and emergency vaccine management from our local or state health department.
_____	_____	20. If all above answers are “yes,” we are patting ourselves on the back. If not, we have assigned someone to implement needed changes!

Technical content reviewed by the Centers for Disease Control and Prevention, Dec. 2006.

www.immunize.org/catg.d/p3035chk.pdf • Item #P3035 (12/06)

Immunization Action Coalition • 1573 Selby Ave. • St. Paul, MN 55104 • (651) 647-9009 • www.immunize.org • www.vaccineinformation.org

APPENDIX AA: Maintaining Cold Chain During Transport

Maintaining the Cold Chain During Transport

When transporting vaccines, think about how each vaccine was packed when you first received it from the manufacturer or distributor. Use this as a model for how to repack the individual vaccines in order to transport them at their appropriate temperature. Keep a temperature log. Record the temperature during transport and periodically (e.g., at least once each hour) during the entire time the vaccine is kept in the transport container to ensure it remains within the recommended range.

	Vaccines	Special Instructions
Inactivated vaccines	• Diphtheria-tetanus-pertussis (DTaP, DT, Tdap, Td) • <i>Haemophilus influenzae</i> type b • Human papillomavirus • Hepatitis A • Hepatitis B • Influenza, inactivated • Meningococcal • Pneumococcal • Poliovirus, inactivated • Combination products of these vaccines	• Keep cold at 35–46°F (2–8°C) and do not freeze. • Use refrigerated or frozen packs depending on the time of the year and the situation (e.g., frozen packs for hot weather while transporting outdoors, refrigerated packs for cold weather). • Make sure vaccines are kept in their original boxes. Place some insulation (e.g., crumpled paper, bubble wrap) between the vaccine boxes and the refrigerated or frozen packs to prevent the inactivated vaccine from directly touching the refrigerated or frozen packs. Put crushed paper in the cooler to keep the vaccines from shifting during transport. • During hot weather, keep the insulated container in a cool place (air-conditioned interior of car). Do not leave the vaccine container unattended or in the trunk of a parked car. During cold weather, do not leave the container in an unheated area because vaccine must not freeze. In cold weather, include a freeze indicator in the vaccine container.
Live virus vaccines	• Measles, mumps, rubella (MMR) • Rotavirus	• Keep cold at 35–46°F (2–8°C). MMR may be frozen. • If MMR is transported with inactivated vaccines, follow the packing instructions for inactivated vaccines indicated above. • If you are transporting diluent in the same cooler with the MMR, refrigerate the diluent in advance to help maintain the cold temperature in the cooler.
	• Varicella (VAR) • MMR+VAR (MMRV) • Zoster (shingles)	Transport only the quantity needed in a special freezer unit or in an insulated container with dry ice; clearly mark the vaccine with the date and time it was removed from the original freezer unit. It is extremely important to include a thermometer in the container with the vaccine. If using dry ice, pack the container with enough to ensure the temperature is maintained at 5°F (-15°C) or colder. If dry ice is not available, you may transport VAR (not MMRV or zoster) with frozen packs. If the temperature within the container exceeds 5°F (-15°C) but doesn't go above 46°F (8°C), the expiration date of the VAR vaccine is reduced to 72 hours. VAR vaccine that has reached temperatures above 46°F (8°C) or has exceeded the 72 hour limit cannot be used. Note: MMRV and zoster vaccines must always be transported with dry ice or in a special freezer unit that can reliably maintain temperatures of 5°F (-15°C) or colder. For this reason, transport of MMRV or zoster to off-site clinics is not advised.
	• Influenza, live	For information on transporting live, attenuated intranasal influenza vaccine (FluMist®), refer to the package insert.

Adapted by the Immunization Action Coalition, courtesy of the Minnesota Department of Health

Technical content reviewed by the Centers for Disease Control and Prevention, Nov. 2006.

www.immunize.org/catg.d/p3049.pdf • Item #P3049 (11/06)

Immunization Action Coalition • 1573 Selby Ave. • St. Paul, MN 55104 • (651) 647-9009 • www.immunize.org • www.vaccineinformation.org

APPENDIX BB: Vaccine Emergency Response Worksheet

Emergency Response Worksheet

What to do in case of a power failure or another event that results in vaccine storage outside of the recommended temperature range

Follow these procedures:

1. Close the door tightly and/or plug in the refrigerator/freezer.
2. Store the vaccines at appropriate temperatures. Make sure the refrigerator/freezer is working properly or move the vaccines to a unit that is. Do not discard the affected vaccines. Mark the vaccines so that the potentially compromised vaccines can be easily identified.
3. Call the manufacturer(s) and notify the local or state health department (see phone numbers below).
4. Record action taken.

Record this information*:

1. Temperature of refrigerator: current _____ max. _____ min. _____
2. Temperature of freezer: current _____ max. _____ min. _____
3. Air temperature of room where refrigerator is located: _____
4. Estimated amount of time the unit's temperature was outside normal range:
refrigerator _____ freezer _____
5. Vaccines in the refrigerator/freezer during the event (use the table below)

* Using a recording thermometer is the most effective method of tracking the refrigerator and freezer temperatures over time. Visually checking thermometers twice a day is another effective method to identify inconsistent or fluctuating temperatures in a refrigerator and freezer.

Vaccines Stored in Refrigerator

Vaccine, manufacturer, and lot #	Expiration date	# of doses	# of affected vials	Action taken

Vaccines Stored in Freezer

Vaccine, manufacturer, and lot #	Expiration date	# of doses	# of affected vials	Action taken

Other Conditions

1. Prior to this event, was the vaccine exposed to temperatures outside the recommended range? Y N
2. Were water bottles in the refrigerator and ice packs in the freezer at the time of this event? Y N
3. Other: _____

Manufacturers

GlaxoSmithKline (866) 475-8222
 MedImmune, Inc. (877) 633-4411
 Merck & Co., Inc. (800) 637-2579
 Novartis Vaccines (800) 244-7668
 sanofi pasteur (800) 822-2463
 Wyeth Vaccines (800) 572-8221

Other Resources

Local health department phone number _____ State health department phone number _____

Adapted by the Immunization Action Coalition, courtesy of the Michigan Department of Community Health

www.immunize.org/catg.d/p3051.pdf • Item #P3051 (10/06)

APPENDIX CC: Storage and Handling of Vaccines

Don't Be Guilty of These Errors in Vaccine Storage and Handling

The following are frequently reported errors in vaccine storage and handling. Some of these errors are much more serious than others, but none of them should occur. Be sure your clinic or practice is not making errors such as these.

Error #1: Designating only one person in the office to be responsible for storage and handling of vaccines, instead of a minimum of two.

It's important to train at least one back-up person to learn proper storage and handling of vaccines. The back-up person should be familiar with all aspects of vaccine storage and handling, including knowing how to handle vaccines when they arrive, how to properly record refrigerator and freezer temperatures, and what to do in case of an equipment problem or power outage.

Error #2: Recording temperatures only once per day.

Temperatures fluctuate throughout the day. Temperatures in the refrigerator and freezer should be checked at the beginning and end of the day to determine if the unit is getting too cold or too warm. Ideally, you should have continuous thermometers that measure and record temperatures all day and all night. A less expensive alternative is to purchase maximum/minimum thermometers. Only certified thermometers should be used for vaccine storage. It's also a good idea to record the room temperature on your temperature log in case there is a problem with the refrigerator or freezer temperature. This information may be helpful to the vaccine company's telephone consultant in determining whether your vaccine can still be used.

Error #3: Recording temperatures for only the refrigerator or freezer.

If your facility administers varicella, MMRV, or zoster (shingles) vaccine, you should have certified thermometers in both the refrigerator and freezer. Rather than buying cheap thermometers that may not accurately measure the temperature, buy quality thermometers that will last for years.

Error #4: Documenting out-of-range temperatures on vaccine temperature logs but not taking action.

Documenting temperatures is not enough. Acting on the information is even more important! So, what should you do? Notify your supervisor whenever you have an out-of-range temperature. Safe-guard your vaccines by moving them to another location and then determine if they are still useable. Check the condition of the unit for problems. Are the seals tight? Is there excessive lint or dust on the coils? After you have made the adjustment, document the date, time, temperature, the nature of the problem, the action you took, and the results of your action. Recheck the temperature every two hours. Call maintenance or a repair person if the temperature is still out of range.

Error #5: Discarding temperature logs at the end of every month.

It's important that you keep your temperature logs for at least three years. As the refrigerator ages, you can track recurring problems. If out-of-range temperatures have been documented, you can determine how long this has been happening and take appropriate action. It's also a great way to lobby for a new refrigerator.

Error #6: Refrigerating vaccine in a manner that could jeopardize its quality.

The temperature in the vegetable bins, on the floor, next to the walls, in the door, and near the cold air outlet from the freezer may differ significantly from the temperature in the body of the refrigerator. Always store vaccines in their original packaging in the body of the refrigerator away from these locations. Place vaccine packages in such a way that air can circulate around the compartment. Never overpack a refrigerator compartment.

Error #7: Storing frozen vaccines in a dorm-style refrigerator.

Varicella, MMRV, and zoster (shingles) vaccines must be stored in a freezer that has its own external door separate from the refrigerator. No matter how hard you try to adjust the temperature in a dorm-style refrigerator's freezer to +5°F, you won't be able to reach this low freezer temperature, and you'll probably freeze the vaccines in the refrigerator compartment!

Error #8: Inadvertently leaving the refrigerator or freezer door open or having inadequate seals.

Remind staff to close the unit doors tightly each time they open them. Also, check the seals on the doors on a regular schedule, and if there is any indication the door seal may be cracked or not sealing properly, have it replaced. The cost of replacing a seal is much less than replacing a box of pneumococcal conjugate or varicella vaccine.

Error #9: Discarding multi-dose vials 30 days after they are opened.

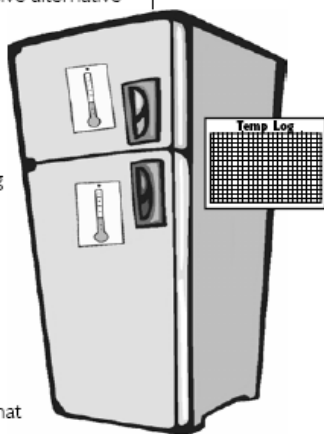
Don't discard your vaccines prematurely. Almost all multi-dose vials of vaccine contain a preservative and can be used until the expiration date on the vial unless there is visible contamination. However, you must discard multi-dose vials of reconstituted vaccine (e.g., meningococcal, yellow fever) if they are not used within a defined period after reconstitution. Refer to the vaccine package inserts for additional information.

Error #10: Not having emergency plans for a power outage or natural disaster.

Every clinic should have a written Disaster Recovery Plan that identifies a refrigerator with a back-up generator in which to store vaccine in the event of a power outage or natural disaster. Consider contacting a local hospital or similar facility to be your back-up location if you should need it.

Error #11: Storing food and drinks in the vaccine refrigerator.

Frequent opening of the refrigerator door to retrieve food items can adversely affect the internal temperature of the unit and damage vaccines.



APPENDIX DD: Parish Homeland Emergency and Preparedness Contacts

PARISH	CONTACT	OFFICE	FAX
Acadia	Lee Hebert	(337) 783-4357	(337) 788-8852
Allen	John Richer	(337) 584-5156	(337) 584-5156
Ascension	Eddie Howard	(225) 621-8360	(225) 621-8362
Assumption	John Boudreaux	(985) 369-7351	(985) 369-7341
Avoyelles	Weber "Chip" Johnson	(318) 253-7291	(318) 253-9218
Beauregard	Glen Mears, Sr.	(337) 463-3281	(337) 463-6347
Bienville	Rodney Warren	(318) 263-2019	(318) 263-7404
Caddo/Bossier	Sandy Davis	(318) 425-5351	(318) 425-5940
Calcasieu	Richard "Dick" Gremillion	(337) 721-3800	(337) 437-3583
Caldwell	Dale Powell	(318) 649-3764	(318) 649-3765
Cameron	Clifton Hebert	(337) 912-7418	(337) 775-2959
Catahoula	Debra Renda	(318) 744-5697	(318) 744-5697
Claiborne	Dennis Butcher	(318) 927-9118	(318) 927-2115
Concordia	Morris White	(318) 757-8248	(318) 757-7200
DeSoto	Alan Bounds	(318) 872-3956	(318) 872-2304
East Baton Rouge	JoAnne Moreau	(225) 389-2100	(225) 389-2114
East Carroll	Joseph Jackson	(318) 559-2256	(318) 559-1502
East Feliciana	Travis Prewitt	(225) 634-5113	(225) 634-7267
Evangeline	Liz Hill	(337) 363-3267	(337) 363-3308
Franklin	Bill Mulkey	(318) 435-9735	(318) 435-9420
Grant	Robert Meeker	(318) 627-3041	(318) 627-5927
Iberia	James Anderson	(337) 369-4427	(337) 369-9956
Iberville	Laurie Doiron	(225) 687-5140	(225) 687-5146
Jackson	Kenneth Pardue	(318) 259-2361	(318) 259-5660
Jefferson	Deano Bonano	(504) 349-5360	(504) 349-5366
Jefferson Davis	Ricky Edwards	(337) 821-2100	(337) 821-2105
Lafayette	William Vincent	(337) 291-5075	(337) 291-5080
Lafourche	Chris Boudreaux	(985) 537-7603	(985) 537-7297
LaSalle	Joe P. Stevens	(318) 992-0673	(318) 992-7390
Lincoln	Dennis Woodward	(318) 513-6200	(318) 513-6209
Livingston	Brian Fairburn	(225) 686-3066	(225) 686-3074
Madison	Earl Pinkney	(318) 574-3230	(318) 574-2773
Morehouse	Jerre Hurst	(318) 282-3517	(318) 283-3322
Natchitoches	Leigh Perkins, Jr	(318) 352-8101	(318) 352-7377
Orleans	Joseph Matthews	(504) 658-8700	(504) 658-8701
Ouachita	Dean Dozier	(318) 322-2641	(318) 322-7356
Plaquemines	Jesse St. Amant	(504) 682-0081	(504) 297-5394
Pointe Coupee	Donald Ewing	(225) 694-9014	(225) 694-5408
Rapides	Sonya Wiley	(318) 445-5141	(318) 445-5605
Red River	Russell Adams	(318) 932-5981	(318) 932-6651
Richland	Tommy Burgess	(318) 728-0453	(318) 728-7004
Sabine	Kenny Carter	(318) 256-5637	(318) 256-9652
St. Bernard	Larry Ingargiola	(504) 278-4267	(504) 271-7343
St. Charles	Tab Troxler	(985) 783-5050	(985) 783-6375
St. Helena	Mark Harrell	(225) 938-5976	(225) 777-4143
St. James	Gerald Falgoust	(225) 562-2364	(225) 562-2269
St. John the Baptist	Paul Oncale	(985) 652-2222	(985) 652-2183
St. Landry	Lisa Vidrine	(337) 948-7177	(337) 948-9139
St. Martin	Sheriff Ronnie Theriot	(337) 394-3071	(337) 394-5705
St. Mary	Duval H. Arthur, Jr.	(985) 385-2600	(337) 828-4092
St. Tammany	Dexter Accardo	(985) 898-2359	(985) 898-3030
Tangipahoa	Dawson Primes	(985) 748-9602	(985) 748-7050
Tensas	William "Rick" Foster	(318) 766-3992	(318) 766-4391
Terrebonne	Michael Deroche	(985) 873-6357	(985) 850-4643
Union	Brian Halley	(318) 368-3124	(318) 368-2728
Vermilion	Robert LeBlanc	(337) 898-4308	(337) 898-4309
Vernon	Kenneth Noble	(337) 238-7225	(337) 238-4987
Washington	Tommy Thiebaud	(985) 732-5200	(985) 732-5830
Webster	John Stanley	(318) 846-2454	(318) 846-2446
West Baton Rouge	Sharlot Edwards	(225) 346-1577	(225) 346-0284
West Carroll	Peggy Robinson	(318) 428-2704	(318) 428-0122
West Feliciana	Jesse Means	(225) 635-6428	(225) 635-6996
Winn	Harry Foster	(318) 332-1960	(318) 628-7182

APPENDIX EE: Governmental Emergency Contacts

Department of Health and Human Services

200 Independence Avenue, S.W.

Washington, D.C. 20201

202-619-0275

Tollfree: 877-696-6775

E-mail: hhs@mail.os.dhhs.gov

Website: <http://www.os.dhhs.gov>

Department of Homeland Security

National Disaster Medical System Section

500 C Street, S.W., Suite 713

Washington, D.C. 20472

800-USA-NDMS (800-872-6367)

Fax: 202-646-4618

Website: <http://ndms.dhhs.gov>

Center for Disease Control and Prevention

1600 Clifton Road, N.E.

Atlanta, GA 30333

404-639-3311 or 800-311-3434

Website: <http://www.cdc.gov>

CDC Emergency Response

(24-hr assistance during emergencies)

404-639-2888

U.S. DEPARTMENT OF AGRICULTURE

Jamie L. Whitten Building

14th & Independence Avenue, S.W.

Washington, D.C. 20250

202-720-7052

Fax: 202-690-4437

Website: <http://www.usda.gov>

Animal and Plant Health Inspection Service - Website: <http://www.aphis.usda.gov>

Administrator 202-720-3668

Associate Administrator 202-720-3861

Veterinary Services – Website: http://www.aphis.usda.gov/animal_health

Deputy Administrator 202-720-5193

Emergency Programs 301-734-8073

National Veterinary Services Laboratory 515-663-7202

Eastern Region 919-856-4504

Central Region 817-885-6910

Western Region 916-857-6205

Food Safety and Inspection Service – Website: <http://www.fsis.usda.gov>

Administrator	202-720-7025
Office of Public Health and Science	202-720-2644
Food Safety Education	301-504-9605
Food Security and Emergency Preparedness	202-720-5643
Hotline (USDA Meat & Poultry)	800-535-4555
Office of Field Operations	202-720-8803

Agriculture Research Service – Website: <http://ars.usda.gov>

Administrator	202-720-3656
Associate Administrator	202-720-3658
Plum Island Animal Disease Center	631-323-3207
National Animal Disease Center	515-663-7201

U.S. DEPARTMENT OF DEFENSE**Department of the Army**

United States Army Veterinary Corps
 Chief, U.S. Army Veterinary Corps
 Director, DOD Veterinary Service Activity NQDA (DODVSA)
 5109 Leesburg Pike
 Falls Church, VA 22041-3258
 Phone: 703-681-3056
 Fax: 703-681-3059

Assistant Chief, U.S. Army Veterinary Corp/Corps Specific Branch Proponent Officer
 AMEDDC&S
 Attn: MCCS-CV Ste 287
 2250 Stanley Road
 Fort Sam Houston, TX 78234-6100
 Office: 210-221-6564
 Fax: 210-221-8360

U.S. Army Veterinary Command
 Fort Sam Houston, TX 78234-6000

Department of the Air Force

HQ U.S. Air Force/SGW
 110 Luke Avenue Suite 360
 Bolling AFB, D.C. 20032-7050
 Director, Medical Force Management and Chief, Biomedical Sciences Corps
 Office: 202-767-4563
 Fax: 202-404-7366

HQ Air Force Medical Operations Agency/SGOP
 110 Luke Avenue Suite 405
 Bolling AFB, D.C. 20032-7050
 Consultant to the Air Force Surgeon General for Public Health
 Office: 202-767-4331
 Fax: 202-404-8089

APPENDIX FF: Veterinary Loan Brochure

Dr. Walter J. Ernst, Jr.
Veterinary Memorial Foundation

CD-Secured Loans



Guidelines for Application Process:

Client applicant must provide the following information to IBERIABANK for consideration:

- Dr. Walter J. Ernst, Jr. Veterinary Memorial Foundation grant approval letter
- Articles of Incorporation/Organization & operating agreements
- Complete Business loan application (reflecting 100% ownership interest)
- Loans will be guaranteed by Dr. Walter J. Ernst, Jr. Veterinary Foundation
- Loans for a minimum of \$10,000 and a maximum of \$50,000
- 3 year term payout for loans less than \$25,000
- Up to 5 year term payout available for loans greater than \$25,000
- Foundation-pledged CD mirroring exact term of loan will be pledged as collateral
- Loans will be priced at 3.00% fixed rate for the life of the loan
- No pre-payment penalty.
- 24-hour application approval
- Contact Julie Hensgens Reed at IBERIABANK:
jhensgen@iberiabank.com or 337-521-4618

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IBERIABANK
Member FDIC EQUAL HOUSING LENDER

VITA

Laura Marie Basirico, the daughter of Connie and Peter Basirico, was born in New Orleans, Louisiana, on January 6, 1985. She attended Southeastern Louisiana University and received a Bachelor of Science degree in biology in 2006. Laura hopes to complete the Louisiana State University requirements for the Master of Science degree in environmental sciences in December 2007. She intends to further her education with admittance into a doctoral program in public health studies.