

An Ideal Municipal Emergency Management Program:
An Assessment of the City of San Marcos

By

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ABSTRACT

Purpose. The purpose of this research is to assess the City of San Marcos's current emergency management program using a developed ideal model. *Methods.* The data used in this case study are a combination of document analysis of City of San Marcos ordinances, plans, and policies and a structured interview with the City of San Marcos Emergency Management Coordinator. This research reviewed documentation and presented an interview to determine whether elements of the ideal emergency management program exist within the City of San Marcos. *Results.* The results show that the City of San Marcos contains all the components of an ideal emergency management program. *Conclusion.* The City of San Marcos, in the development of its emergency management program, has adequately developed pre-emptive activities, relationships, and general capability to respond adequately to an emergency event within its city limits.

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Chapter One: Introduction

City of San Marcos, Texas

The City of San Marcos, Texas is centrally located along the IH 35 corridor between the cities of Austin and San Antonio. The City of San Marcos is located along 18.3 square miles and encompasses not only residences and businesses, but continued development of retail and Texas State University. In addition to its 44,894 residents and 18,179 single family homes, the City of San Marcos is also home to approximately 34,000 students between the months of September and May of each year. As the years progress and development continues, the numbers of enrolled students, residents, and single family homes are expected to increase.

Due to current and future population trends, the city's location on the IH 35 corridor, the presence of state highways and railroads, and the current number of persons estimated to be present during a daily visit to the city (66,116), the City of San Marcos bears a significant responsibility in protecting the life, health, and welfare of not only its population and structures but those visiting the city as well. Along with municipal facilities, many of the Hays County facilities are also located in the City of San Marcos. Facilities such as county courts, jail, police and Sheriff Headquarters and precinct offices are in continuous operation within the San Marcos city limits. The protection of these facilities during normal and emergency operations is of top importance. Basic functions such as the availability of water, electricity and communications are necessary to ensure continuity of operations for the benefit of all residents.

Emergency Disasters in Texas and the United States

Emergency events in the United States have occurred through natural catastrophes such as hurricanes and through man-made disasters such as the terrorist attacks in New York on September 11, 2001. The scope of destruction that results from both of these types of disasters

has led to an entirely new thinking into how the government, at all levels, handles emergency situations. Since 2001, the United States has experienced 774 Major Disaster Declarations, a majority of which were natural or unpreventable. Among those declarations was Hurricane Katrina, which first made landfall in the United States on August of 2005. Damages as a result of this hurricane reached in excess of \$108 billion, with almost 2,000 fatalities. The terrorist attacks in New York resulted in nearly 3,000 fatalities and significant financial burden due to structural losses throughout the ground zero area.

In the state of Texas, significant natural events in the form of wildfires have brought attention to emergency management once again. The Bastrop Complex Fire occurring on September 4th and 5th of 2011 devastated thousands of acres of property, structures, and crippled the area's economic stability. The Bastrop Complex Fire resulted in 32,400 burned acres and the destruction of 1,723 homes. This fire event has been recorded as the most destructive wildland urban interface wildfire in Texas and the third worst to affect the United States. The damages resulting from this fire event has been valued at \$209,318,741 (Ridenour et al. 2012). Beyond these fires, the state of Texas also faces numerous natural events such as severe thunderstorms, tropical storms, and hurricanes.

Emergency Disasters in San Marcos, Texas

Considering the region's history of natural events, officials must continue due diligence via the execution of an emergency management program to ensure adequate response and recovery of any major event affecting the city. The City of San Marcos has historically had a strong history of severe thunderstorms, severe flooding, tornadoes, and frequent periods of drought. In recent years wildfire threats have plagued the city as well as across the state, leaving thousands of acres burned and many homes lost to fire events. Since 1965, the City of San

Marcos has experienced several Presidential Disaster Declarations, with many instances of severe thunderstorms and flood events due to the location of the city along a 100 year floodplain. As of 2011, the City of San Marcos has a total of 1,500 parcels remaining all or partially, in the 100 year flood plain (Hazard Mitigation Plan Update 2011). As recently as 2011, the City of San Marcos was on alert for wildfire activity that dominated other sections of the state. The City of San Marcos has indicated the need for a study to determine the number of structures in danger of wildfire damage to provide a better understanding of the number of homes and persons vulnerable to wildfire events. This study was initiated in late 2011 by the City of San Marcos (Hazard Mitigation Plan Update 2011). Nearby San Marcos, and in Hays County, two threatening wildfire events occurred, destroying 6,445 acres of property and many homes.

Emergency Management

Emergency management has been present in federal policy and planning since the early 1930s. The evolution of emergency management has grown considerably since then. The Flood Control Act of 1934 was the first emergency management legislation to be passed by Congress. This act provided the U.S. Army Corp of Engineers with the authority to “design and build flood control projects” throughout the United States (Haddow et al. 2007, 2). It is not until the 1960s and a resurgence of flooding events throughout the United States that additional legislation was passed. In 1968, the National Flood Insurance Act was passed to assist uninsured homeowners affected by severe flooding events. The Disaster Relief Act of 1974 provided a more comprehensive attempt to assist the public. This act authorized the Department of Housing and Urban Development to assist in natural disaster response and recovery with greater reach than years prior. In 1978, President Jimmy Carter expanded the federal authority even further by uniting several federal agencies for the sole purpose of addressing emergency events. The

Federal Emergency Management Agency (FEMA) was created in 1978, unifying the following agencies: National Fire Prevention Control Administration, Federal Insurance Administration, Federal Broadcast System, Defense Civil Preparedness Agency, Federal Disaster Assistance Administration, and the Federal Preparedness Agency. In March 2002, President Bush signed the Homeland Security Presidential Directive – 3, creating the Department of Homeland Security to lead efforts at preventing domestic terrorist attacks (Haddow et al. 2007).

The creation of all these pieces of legislation has cultivated a process at addressing emergency events in the most organized and comprehensive manner possible, benefitting all those affected by a natural catastrophe or man-made disaster so as to resume normal daily operations as quickly as possible. An ideal emergency management program is comprised of four phases, each of which plays a vital role in addressing how to handle disasters before, during and after the event occurs. A comprehensive emergency management program includes functions at the mitigation, preparedness, response, and recovery phases (Waugh Jr. et al. 2006).

Jeffrey Stephen Phillips, in his 1998 Applied Research Project (ARP), discusses these phases of emergency management. His ARP provides an important back drop into how emergency management was viewed prior to 9/11 and natural disasters such as Hurricane Katrina and the Bastrop Complex Fire. Since the completion of the 1998 ARP, much of an ideal emergency management program has evolved or changed altogether (Phillips 1998). Emergency management has in fact evolved into several facets since the late 1990s since then. As the years have progressed since major disasters such as 9/11, the functions of local governments, such as the City of San Marcos, have increased, with the most common first responder functions of fire and police being met with more complex emergency management components to address emergency events.

Research Purpose

The purpose of this research is twofold. First, it will assess the City of San Marcos's current emergency management program using a developed ideal model in order to determine strengths and weaknesses of the city's emergency management program. The developed ideal model was first introduced in the 2006 ARP –A Developed Ideal Emergency Management Program Setting and Plan: A Case Study of Navarro County". Utilizing new research, this ideal model has been updated to include new components of an ideal emergency management program model. Second, the research will provide recommendations based upon an examination of the results of the City of San Marcos's emergency management program assessment.

Chapter Preview

This research project is organized into five chapters. Chapter Two of this project presents a thorough review of the literature discussing emergency management and the components which encompass the program. It discusses in further detail all recommended components and sub-components of an ideal emergency management program at the municipal level. Chapter Three presents an overview of the methodology used to assess the City of San Marcos's emergency management program against the ideal model program. This chapter provides specific information concerning the methods used to collect evidence about the current emergency management program in the City of San Marcos. Chapter Four provides a comprehensive review of the results of the assessment. Chapter Five presents the conclusions of the research with final recommendations.

Chapter Two: Literature Review

Chapter Purpose

The purpose of this chapter is to review the literature on emergency management to refine an ideal model that was adopted by Shawn Cox (2006). Mr. Cox's ARP identified four categories that create the model for an ideal emergency management program for local governments. This chapter further reviews the literature relevant to the policies, programs, methods and models of effective emergency management programs for municipal level government, providing an update to the 2006 ideal model. The literature is organized into a practical type ideal model wherein a current emergency management program at a local government can be measured against the ideal model of emergency management. This can assist in determining whether the local government meets all, some, or none of the components of an ideal program. As it can be "viewed as standards or points of reference" (Shields 1998, 215) the practical ideal type model will be used to assess whether a municipality's current program engages in all, some, or none of the activities identified by the literature. Providing "benchmarks and/or best practice that enable the manager/research to understand and improving reality" (Shields et al. 2006, 325) to a municipality can assist in a measurement of the program's limitations and successes.

Emergency management programs are found at the local, state and federal level, with varying degrees of roles and responsibilities. However, the literature emphasizes that emergency management is primarily rooted on a local level, with responsibilities and authority defined within municipalities first and, as needed, state, and federal second and third (Col 2007; Alexander 2005). For this reason, emergency management programs must begin at the municipal level and move upwards during all phases of emergency management. Divided into four phases,

emergency management programs are similar along various levels of government, specifying particular actions that should be taken during any natural or man-made disaster, with local government being the first responsible to respond to such events (McLoughlin 1985). Emergency management is divided into four phases in order to comprehensively approach disaster situations (McLoughlin 1985) with the general goal for an emergency management program to restore normal daily operations (McEntire 2007).

Although state and federal governments maintain emergency management programs themselves, municipal governments are also urged to develop programs on their own rather than depending upon external assistance to address the four phases of emergency management. Municipal government has the ability to address emergency management from a bottom up approach, having unique knowledge of their community's needs, weaknesses, and strengths (Kasumasavi et al. 2010) which is likely to be unknown by state or federal agencies. Moreover, local governments are first to respond during an emergency event (Drabek 1985) and there is a growing understanding that local governments play the most active role in emergency operations" (Kusumasari 2010, 442).

The ideal emergency management program will be comprised of four phases, each phase containing specific actions and policies for municipal response to disasters or other emergency events. A municipality will develop an emergency management program that addresses the following phases:

- Mitigation
- Preparedness
- Response
- Recovery

These categorized phases can be further divided in measurable characteristics that will enable a municipality to gauge its own emergency management program. The remainder of this literature review discusses the four phases of emergency management and their characteristics.

Mitigation

The mitigation phase of emergency management is often a municipality's opportunity to identify and prevent future losses from occurring prior to an emergency event. Mitigation is often seen as cost effective and can contribute to a municipality's ability to prepare for, respond to, and recover from a major event.

Hazard and Vulnerability Assessment

Mitigation in emergency management can be defined as a series of steps or activities to reduce the likelihood of structural damages or loss of life (McLoughlin 1985; Drabek, 1991) as a result of a hazard caused by natural or man-made emergency disasters. Municipalities must identify two critical categories in the mitigation phase of emergency management: (1) identification of and likelihood of each type of hazard on the community and (2) the vulnerability of the community during a disaster based upon the amount of injury, fatality, and destruction that could result from a hazardous situation. This process is referred to as a hazard identification and assessment (Henstra 2010). Once both categories have been addressed, a municipality may then conduct a risk analysis, identifying the full scope of risk to life and property as a result of each hazard (Henstra 2010; Drabek 1991). A risk analysis can then be used by a municipality to more accurately estimate losses, both human and economic, that result from specific emergency incidents (Henstra 2010).

Due to the multitude of types of disasters and potential losses, mitigation is subdivided into several types of hazards in order to better identify strategies for loss prevention. Titled hazard analyses, municipalities classify them as natural, technological, civil, or biological

(McEntire, et al. 2004). Natural hazards are typically those that cannot be prevented or controlled, such as hurricanes, tornados, and floods. Technological hazards are often those dealing with chemical plants or nuclear accidents. Civil hazards are rooted in acts of violence or terrorism. Biological hazards are those wherein prevention and containment may be difficult, such as bacterial, viral or toxic hazards. The literature presents evidence in illustrating that all these hazards are unique and must be dealt with in individual manners (Drabek 1991). Likely hazards should be identified using the following criteria: “magnitude, frequency, duration, destructiveness, speed of onset, distribution, and predictability of processes” (Weichselgartner 2001, 90). Characteristics such as geography, predictability, and level of destruction could make one hazard less likely or severe than another. For this reason identification and analysis of the type of hazard a municipality may encounter is vital to emergency management planning and processes. The identification of likely hazards provides a two-fold benefit: it assists in identifying areas of potential danger and it assists in identifying areas of financial need, thereby increasing the likelihood of future financial assistance (Henstra 2010).

Assessing the vulnerability of a municipality, both in lives and structures, assists the municipality in identifying priority areas for future corrective action. Caruson argues that vulnerabilities vary as much as types of hazards; at least five vulnerabilities have been identified in the literature. A municipality may be vulnerable in any, some, or all of the following: critical infrastructure, geography, population, availability of resources, and fiscal situation (Caruson et al. 2008). The destruction of critical infrastructure may prevent a municipality from sufficient response or worse, prevent the municipality from short or long term recovery. Hardenbrook defines critical infrastructure as “systems or assets so vital...that the incapability or destruction...would be a debilitating impact on security, public health or safety” (Hardenbrook

2005, 2). A municipality's unique location and number of residents may make emergency response and recovery more difficult because of potential factors such as inaccessibility, low ratio of first responders to residents, and minimal resources.

Through this process, municipalities should identify vulnerable populations especially at risk for damage and prioritize where assistance may be administered first, second, and so on. (Somers et al. 2009). Municipalities must account for barriers related to culture, age, disability, and language when designing mitigation assessments. "Many post disaster analyses have also found flaws in evacuation planning and assistance for institutionalized individuals in hospitals, nursing homes, and assisted living facilities; poor persons without transportation; and non-English speaking individuals" (Caruson et al. 2008, 289). The availability of money and resources for a city may provide issues in later phases of emergency management. For example, lack of water resources or contamination of those resources through an emergency incident may trigger shortages detrimental to recovery (Caruson et al. 2008). Financial vulnerabilities exist within a municipality wherein no emergency contingency funds have been set aside to cope in purchasing emergency resources. Lack of financial security within a municipality can slow the emergency management process as the municipality may have to rely upon State or Federal assistance (Settle 1985).

Loss Reduction Activities

A risk analysis provides municipalities with information pertaining to hazards, vulnerabilities and recommendations for the prevention of future losses. The conclusion of this type of analysis typically identifies both structural and non-structural recommendations for improvement is identified as a loss reduction activity (Schneider 2002; Drabek 1991). A structural loss reduction activity removes structures that in future emergency incidents may

prevent further losses, such as homes located in flood prone areas to prevent future damage to the home. Of the two, structural improvements can prove costly to cities, with the movement of structures more likely to incur more costs. The literature points to recommendations for internal and external sources of funding for these types of activities. Internally, municipalities should develop emergency fund accounts in preparation of unforeseen incidents. Mitigation activities could utilize these funds to prevent future catastrophic losses in structural or technological damage (Settle 1985). External sources of funding may also provide a municipality partial assistance for loss reduction activities. Many levels of government utilize grant funding to not only assist in mitigation but all phases of emergency management. Mitigation can be funded in part through the Federal Emergency Management Agency (FEMA); FEMA provides Pre-disaster Mitigation Grants to assist municipalities in loss reduction (McEntire et al. 2004).

Municipalities should also seek cost-saving activities during the planning stages to further decrease the likelihood of major losses during an emergency event. These activities are typically non-structural changes to current and future planning and assist in creating more sustainable communities. Non-structural mitigation activities include, but are not limited to, changes in municipal building codes, land use mapping to prevent future construction on vulnerable sites, removal of vulnerable structures, and other pre-incident measures (McLoughlin 1985; Drabek 1991; Waugh Jr. et al. 2006). Of these mitigation activities mentioned, land use planning contributes greatly to loss reduction. Incorporating known hazards into current planning efforts allows planners and emergency managers to take into account hazard prone areas, completely avoiding future developments from occurring at all, preventing potential future economic and human losses (Henstra 2010). As a result, planning requires a community-wide effort to prevent future losses. The literature maintains that sustainable planning must require

private support through carefully designed community development (Schneider 2002). Mitigation efforts should work alongside community and economic development, with neither hindering the other's ability to succeed in their priorities.

Preparedness

The preparedness phase of emergency management is an ongoing phase with many components and benefits. A prepared municipality will be better able and capable to respond during an emergency event, no matter the scale or scope when preparedness activities have been utilized. Municipalities should employ the proper personnel to lead the execution of all preparedness activities. Preparedness activities identified by the literature include designation of an emergency management officer, identification of financial resources, planning, warning, training, collaboration, illustration of commitment, education, public assistance, and proper capacity to response. Through this, preparedness assists the community comprehensively because ~~it~~ has been proven that the ability to improvise during a disaster is greatly increased with the minimum amount of preparedness. Preparedness therefore helps to protect community values, reduces the 'unknown' during a disaster, and may even allow for enhanced flexibility in response" (McEntire et al. 2004, 141).

Designation of an Emergency Management Coordinator

An Emergency Management Officer, or emergency manager, is employed at the municipal level dedicated to all phases of emergency management and ensuring the proper development of a city's emergency management program. The emergency manager is responsible for collection of all pre-disaster mitigation activities, preparedness activities and coordinating the response and recovery activities as the behest of elected local officials (McEntire 2007). Emergency managers also play a vital role in developing policies and processes for emergency management (Henstra 2010). For this reason, municipalities should

ensure their emergency managers maintain professionalism and qualities of a leader, as they are often the highest ranking personnel to make decisions concerning emergency management activities (Drabek 1991). David McEntire describes these qualities as being inclusive of the following: ability to motivate others, ability to compromise, ability to communicate effectively, and ability to maintain control during difficult and high stress situations (McEntire et al. 2004).

Identification of Financial Resources

Financial resources are a critical component during any emergency; planning ahead to identify these resources will assist a municipality in responding quickly to an emergency event. Funding options, according to the literature, can originate from a variety of sources, including the municipality itself. A lack of adequate financial resources may have serious consequences for a municipality attempting to manage an emergency. In the event of an emergency, for example, municipalities should have funding sources in place to support critical equipment and resources for emergency response, such as personal protection equipment, communications capabilities, and adequate training (Gerber et al. 2005).

Prior to reaching out for funding to external agencies, municipalities should evaluate their entire revenue streams for funding potential future events. This evaluation will assist the city in identifying potential sources of funds prior to occurrence of any emergency event. Cities should evaluate the strength of their tax base and the effect an emergency may have on future taxes. Should a municipality rely on these funds too heavily, a major event may derail future recovery efforts (Settle 1985). Much like funding mitigation activities, a municipality should also identify internal emergency fund sources during the preparedness phase to assist in any response or recovery costs. Settle also maintains that mutual aid agreements with external agencies may assist the city in man power or resources which, for the city, may prevent financial obligations

that exceed their capabilities. Tax notes and municipal bonds may be another alternative a municipality should consider when trying to obtain funds for emergency management. These funds are typically loans or a process of debt financing but have proven to assist other municipalities in their emergency management activities (Settle 1985).

Grant funding from federal agencies also exists to assist in the preparedness phase of emergency management. As a large part of preparedness activities include the purchase of vital resources, municipalities must establish funding sources, internal or external, to acquire those resources. Grant funding can assist emergency management programs in the purchase of much needed equipment, personal protective equipment, and any education or training that will enhance response activities (McEntire et al. 2004). The literature has pointed to many instances where grant funding is needed in some municipalities to fund the entire emergency management program. FEMA in particular may assist in obtaining up to 75% funding for training, equipment, or other vital resources (Settle 1985). Available grants by FEMA include First Responder Counter Terrorism Training Assistance, Fire Suppression Assistance, and Chemical Stockpile Emergency Preparedness Program (McEntire et al. 2004). The identification of internal and external sources of funding should be well maintained and up to date as those resources may be utilized in the third phase of emergency management (response).

Emergency Operation Plan

An emergency operations plan (EOP) is an established plan created to serve as a guide during emergency incidents. EOPs typically serve as a living document assisting emergency managers and their program in quickly and efficiently serving the public during the response phase of emergency management. As emergency plans can vary by locality, creating a standard for emergency preparedness assists all levels of government in addressing a minimum level of

uniformity and consistency to ensure basic needs and actions are addressed by the localities (Alexander 2005). Throughout a review of the literature, scholars have maintained that emergency management planning should be rooted at the most local level of government, notably municipalities. Municipalities are more likely to be aware of needs, available resources, and the general make-up of the community, seeing that “...the success of an emergency management operation will probably depend on the quality of local resources, including the effectiveness of the plan that governs their deployment and usage” (Alexander 2005, 161). Functions such as shelter and mass care, critical resources, evacuation, transportation, and communications should be addressed as annexes to the overall basic plan in an emergency operations plan as they have been identified as critical resources to assist the public (McEntire et al. 2004). Municipalities may also seek to address additional functions, such as warning, terrorism, and hazardous materials in order to increase their level of emergency preparedness. Addressing the functions listed above assists the municipality in preparing for the need for specific resources which may be difficult to obtain without advanced planning.

Set as a standard for emergency response, the EOP creates standards for minimum responsibilities, lines of authority, limitations, and capabilities on a variety of functions that should be addressed during an emergency event (Alexander 2003). Delegating specific funds to departments or individuals prior to an event speeds up processes for training and orientation to those functions (Drabek 1991). Addressing these leadership roles will provide the municipality with a greater level of preparedness, response time and anticipation of duties that may be required during an emergency event (Drabek 1991; Nicolson 2007). The literature identifies several local government capabilities that are critical to successful emergency response. Of those capabilities, maintaining institutional and leadership capabilities assist in a municipality's

success. Institutional capabilities are defined as having “a clear structure, role, responsibilities”, while leadership capabilities are defined as “building local level leadership to make quick and appropriate decisions” (Kusumasari 2010, 441). Lack of defined leadership roles and lines of authority may hinder the municipality during an emergency event, resulting in a failed response (Kusumasari 2010).

Another key function within the EOC is the listing of critical resources held by the municipality. Critical resources can vary from department to department and can depend upon the type of emergency situation at hand. Essentially, critical resources lists assist the municipality in quickly assessing its available assets and current needs, and enabling purchases within a twenty-four hour period if necessary (McEntire et al. 2004). The literature discusses that critical resources need not be limited to equipment or materials, but should include manpower resources as well. For that reason, critical resources should include contact lists for all municipal personnel and personnel providing direct services to that municipality (McEntire et al. 2004).

Evacuation in an emergency incident is also a key function that must be addressed by each municipality in its emergency operations plan. As each city is unique, both in population and geography, emergency managers must develop sufficient evacuation plans to determine what circumstances are appropriate for evacuation. Evacuation of residents in a municipality should be undertaken with great care, as not all emergencies recommend such action; some events may trigger sheltering in place. In other instances where evacuation is recommended, plans should be in place for an organized procedure for residents to move away from the municipality in order to avoid massive or chaotic evacuations (Henstra 2010). Municipalities should utilize evacuation maps, pre-planned routes and use of response personnel when developing guidelines for evacuation (McEntire 2007).

As evacuation requires some mode of transportation, more notably cars and buses, municipalities must prepare in their EOP plans for transport of all residents within their city. The transport of the immobile or those who do not have their own means of transportation should be accounted for in more specific terms. Literature points to Hurricane Katrina as an example of transportation planning failure. Failure to adequately address the transportation gaps amongst those without vehicles left many stranded within the city of New Orleans (Col 2007). Persons considered to be special needs should also be addressed in a city's transportation plan as they may require more attention than the general population. The literature states that "People with disabilities are also particularly vulnerable...special transportation needs complicate evacuation" (Henstra 2010, 239). Municipalities should be prepared by developing mutual aid agreements with those agencies or companies who may supply buses during an emergency event, as last minute acquisition may be difficult for large numbers of a city's population (McEntire 2007; Col 2007).

In the event that evacuation is not a possibility for some or all of the population, provisions should be made for local shelters within the municipality. Sheltering requires specific agreements by several parties; municipalities must be sure to arrange these agreements prior to any emergency event. Most notable among those assisting municipalities in arranging shelter sites are the American Red Cross and the Salvation Army (Henstra 2010). Working with external organizations to identify future sites for shelter and developing agreements for those entities to run the shelters saves a municipality time and manpower -- two critical resources in an emergency event (Henstra 2010; McEntire 2007). Arranging for shelters is not limited to a place for safe coverage; shelter care often includes provisions for feeding, showering, clothing, and

other basic necessities. Municipalities should consider these factors when identifying shelter locations and creating agreements with external organizations (Henstra 2010).

A municipality's Emergency Operations Plan should also detail its city-wide communications plans, both internal and external. Communications during an emergency event has been identified by the literature to be the top priority during the emergency response phase of emergency management; lack of proper communications planning may affect a municipality's ability to serve out all its other identified function within their EOP. Adequate preparation for communications encompasses a variety of types of communications. Municipalities must be sure to develop interoperable inter-agency communications amongst departments and staff. In addition, municipalities must also be sure to account for first responder communications abilities. As first responders serve to protect the general safety and welfare of the community's residents, it is vital that they maintain communications capabilities with their dispatchers as well as with other first responders (Horan et al. 2005). Municipalities must address these issues as "Understanding end-to-end performance is essential to improving the timeliness and quality of service delivery, including under normal and crisis conditions" (Horan 2005, 1). Communications also serve as an information sharing method, a vital component to fluid emergency operations. Louise Comfort extends this by stating that inter-governmental problem solving during an emergency requires multiple jurisdictions or departments gathering necessary information and disseminating it throughout the municipality (Comfort 1985). Labeled as *concurrent information search*, this method affords expediency and efficiency in gathering information during the emergency response phase as well as acting proactively, "operating to raise the level of information available to decision makers at the time of an actual emergency" (Comfort 1985, 158). More recently, Comfort has also emphasized the importance of

communications based upon examples of communications failure during an emergency event. Comfort found that although a critical aspect of emergency management, often emergency managers and municipalities do not place enough emphasis on equipping, managing and training on the communications function of preparedness (Comfort 2006).

Early Warning Systems

Communications between local government and its public is also a vital component of emergency management. Communications between the two allow for the public to be aware of nearby impending danger. Warning systems serve a way to inform the public of the emergency incident affecting their community and what their next steps to maintain their safety should be. This includes the communication of potential evacuation routes, precautionary measures, the current incident's status, and expected times for emergency events or responses. As the local contact, a municipality is responsible for warning the general public. If an event affects only the municipality itself, county or state level warning systems will not reach out to warn residents of that municipality; municipalities must be capable of contacting its citizens for warning purposes and not dependent upon other governing agencies (Collins et al. 2008). Warning systems often vary in their size, scope, and method to reach out to the public. Municipalities should ensure the proper type of warning system based on the public's ability to be warned, language barriers, disability barriers, and communication barriers (McEntire et al. 2004). The different types of warning systems a municipality may employ are sirens, use of TV and radio media, emergency alert systems, reverse 911, telephone, text messages, and door to door warnings (Henstra 2010). As some warning systems may be hindered during an emergency event - for example, downed power lines may make TV warnings impossible - municipalities should employ several methods in warning the public. Due to changes in how society communicates today, municipalities may

also employ the use of the Internet and social media to warn the public. Social media sites can provide timely and accurate information that municipalities would like to share with the public (Jaeger et al. 2007). Municipalities should also be prepared to warn those with language or disability barriers. Those who do not speak English or cannot hear must be warned like everyone else; contingency plans should be put in place to identify and address these pockets of the populations prior to an emergency event.

Emergency Preparedness Training

Emergency preparedness training of municipal staff and elected officials is an important component to an emergency management program as a whole (Perry et al. 2003). Continued training enables staff to understand their own roles, responsibilities, the emergency operations plan itself, and the city's chain of command during emergency events. David McEntire emphasizes the role of training to prevent instances of ill-equipped personnel and resources, citing that municipalities frequently forget to conduct emergency planning training, leaving those cities ill-prepared for handling an emergency situation (McEntire et al. 2004). Furthermore, the literature also indicates a need for elected municipal officials to undergo emergency response training in addition to municipal staff. Elected officials are the ultimate authority and decision makers within a municipality; their training is essential for any necessary decision-making in the emergency response phase (Henstra 2010).

Mutual Aid

Agreements between a municipality and other public and private organizations have also been identified as a critical aspect of emergency management planning by the literature. The development of a mutual aid agreement between a municipality and another government entity assists the municipality in the event of resource or personnel shortages during an emergency

situation, essentially identifying any gaps in the current municipality's response capabilities (Hardenbrook 2005). Agreements also define clear lines of liability in the event of injury of borrowed personnel or equipment while being used by the borrowing municipality (McEntire et al. 2004). Mutual aid agreements are considered contract documents and create a commitment of resources and/or personnel in the event of an emergency situation (McEntire et al. 2004). Because of these pre-planned agreements, municipalities can worry less about the acquisition of resources in the event of shortages or damages to existing resources (Henstra 2010). The presence of mutual aid agreements also assists municipalities in acquiring resources they may need only during an emergency and will never likely use in daily work duties, such as specialized equipment or personnel dedicated to specific emergency situations (McEntire et al. 2004). In these instances, it may be more cost effective for a municipality to borrow from a neighboring city that may use the equipment or resource more frequently due to its own needs.

Municipal Ordinance

Municipal level emergency management programs should have the support of elected officials through local ordinances. This addition to the existing ideal model is based upon the importance of leadership support in the emergency management of a municipality. Municipal ordinances provide the emergency management program with substantial support and backing by the city's leadership. Ordinances provide a legal foundation from which to assign responsibilities and duties within an emergency management program (McEntire et al. 2004). Ordinances establishing an emergency management program can include direction and control over responsibilities, mutual aid agreements, validation of the emergency operations plan, and other aspects of the program. Furthermore, municipal legislation adds legitimacy to extraordinary powers that public officials might exercise in an emergency, and usually provides protection

from liability for responders who act on behalf of the local government” (Henstra 2010, 239). Already having established ordinances allowing for emergency powers during an emergency event allows the city and city staff to expedite all actions, whether be they the execution of mutual aid agreements or emergency procurement of resources (Drabek 1991).

Public Education

Educating the general public about a municipality’s emergency management program as well as recommended actions for residents to employ assists a municipality in creating a comprehensive preparedness phase. Public education enables a municipality to inform residents of potential disasters, likelihood of occurrence, and recommendations for residents to protect themselves (McEntire et al. 2004). This component of preparedness places a level of responsibility in the public’s hands by providing answers to common questions, recommendations for potential resources, and potential sources for continued information before, during, and after an emergency event (Henstra 2010). Public education in the preparedness phase also assists in facilitating response activities by the public during an emergency event. Municipalities should employ public education in their preparedness phase to increase public engagement during disaster response and recovery activities (McEntire et al. 2004).

Volunteer Assistance

This research examines scholarly literature that indicates the importance of volunteer assistance in emergency management, although this aspect of emergency management is not included in Cox’s ideal model, Henstra and Robinson state multiple benefits to its inclusion in an ideal program. Generating volunteers prior to an emergency event enables a municipality to have on hand manpower to assist in different aspects of the third phase of emergency management: emergency response. Moreover, the preparedness phase enables a municipality to concentrate

trained volunteers in particular areas of emergency response in a coordinated manner. Inadequate management of volunteers during an emergency event with no pre-emergency planning may not make adequate use of the volunteers, their time, or skills (Henstra 2010). Titled community emergency response teams (CERTs), these municipally funded volunteer organizations work to provide support in various areas of emergency response in a coordinated manner and in line with the objectives of the municipality. Volunteers who join their local CERTs become highly trained individuals skilled at first aid, search and rescue, and other immediate response actions identified as critical (Henstra 2010). Such a team must be willing to respond to any type of major event with limited knowledge, maintain flexibility in its functions, adapt to new information and situations quickly, and self-organize. Scholars have indicated that these types of characteristics are essential for successful community collaborations and, when present, can yield positive results in responding quickly and effectively to an emergency disaster (Robinson et al. 2006).

Emergency Operations Center

An emergency operations center serves as a municipality's central working hub, wherein all appropriate authorities and elected officials can make response decisions collectively and communicate to first responders through one communication channel to provide for single directives and guidance. The inclusion of this facility is also an addition to the ideal model as recent literature in 2010 has pointed to the importance of such an existing facility for emergency management. Facilities appropriate for a central emergency response should be identified in the preparedness phase of emergency management to ensure an adequate location that can provide communications and timely information sharing between emergency managers and first responders (Henstra 2010). Emergency operations centers serve as the single resource for those responding via mobile units or through other first response methods. As a result, a single source

of information to prevent confusion or multiple orders should be planned for maximum response; scholarly literature points to the significance of these centers in distributing communications (Drabek 1985).

Response

The response phase of emergency management is a series of actions, directed by preparedness strategies identified in the second phase, that facilitate an adequate response to the public's safety and welfare following an emergency event. This includes activities to save lives, prevent further property damage, and to otherwise meet the needs of victims of emergencies (McLoughlin 1985). Municipalities should ensure proper direction through an incident management system, ensure interoperable communications are functioning, provide emergency services, financial resources have been secured, and the municipality's infrastructure itself is secure.

Incident Management System

A municipal level incident management system serves to execute the emergency operations plan created during the second phase of emergency management. This type of system assists in defining leadership roles and ensuring lines of authority determined through previous plans are maintained throughout the emergency incident (Henstra 2010). Indeed, incident management systems can be large and complex, with its own levels of command and leadership. For example, Brian O'Neill's 2008 ARP is dedicated solely to the assessment of the incident command system, a type of incident management system, of the San Antonio Fire Department. This examination of incident management and command provides a more thorough assessment of this component alone (O'Neill 2008). Incident management although only briefly referenced in this ARP, can be examined much more closely in O'Neill's ARP.

Lack of existing leadership roles within an incident management system has been identified as a cause for failure in previous emergency events (Waugh Jr. 2006). More specifically, a key characteristic among leaders should be adaptive management of emergency situations. This characteristic enables a leader to share information more frequently and be more willing to work with others to achieve a common goal (Waugh Jr. 2006).

The presence of an incident management system also ensures both internal and external information sharing. The incident management system operates by receiving a continuous influx of information and then disseminating that information to the proper channels with specific direction and order. Especially due to current technological abilities (Jaeger et al. 2007), information sharing through a proper management system can expedite the response process, assisting the public more quickly (Comfort 1994).

Interoperable Communications

Interoperable communications has been identified as a critical function to maintain during the response phase of emergency management. Maintaining continuous communications amongst elected officials, emergency managers, city staff, and first responders also continues the appropriate direction and control of an emergency situation and the city's response to that situation. Communications capabilities planning should be addressed by a municipality in the second phase of emergency management. This third phase of emergency management should ensure utilization and workability of this function amongst first responders during an emergency event. The coordination of communications for first responders, such as police, fire, and medical services is especially important as they are able to "gather, analyze, and disseminate information rapidly, promptly recognizing patterns and coordinating response activities" (Jaeger 2007, 593). This maintenance of internal communications must be a first priority for municipalities in their

response activities. Scholars have identified a lack of interoperable communications within the organization itself as a factor in the failure to respond to Hurricane Katrina (Comfort et al. 2006). Interdepartmental communications plays a strong role in coordinating actions, delivering timely updates, coordinating personnel needs, and other response-oriented actions; lack of such a system produces life-threatening delays.

In addition, communication between a municipality and external agencies also plays a critical role in responding to disasters. The literature indicates that having continuous communications between a municipality and outside agencies can provide support during disaster response: “Communications need to be operational not only among the component actors of the affected region but also among potential donors and supportive participants in the emerging response system” (Comfort 2006, 330).

Maintaining the ability to communicate on a municipal level both internally and externally also allows the municipality to provide information to public in a timely and accurate manner. During emergency events, the public seeks information from its municipality concerning basic safety, sheltering, evacuation routes, and status updates of the current emergency situation. For this reason, addressing the communications needs during the emergency response phase is important for a municipality. During this phase of emergency management one city staff member or member of the response team should be identified as the Public Information Officer, designated to serve as the city’s lone voice in disseminating information to the public through various avenues (Henstra 2010). These avenues can include, but are not limited to, radio, TV, municipal website, Twitter, Facebook, and other types of social media (Jaeger et al. 2007).

Assistance to Victims

During the response phase of emergency management, a municipality must provide essential services to victims of an emergency incident, including informing and assisting the public in the evacuation process, sheltering processes, search and rescue activities, and medical care reception. Many members of the public may be unaware of pre-determined evacuation routes designed by a municipality; officials should ensure the public's knowledge and ability to maneuver outside of the city to a safer location through the execution of evacuation plans (McEntire 2007).

For those unable to evacuate from an emergency incident, plans should be executed to shelter residents of the municipality. Shelters should have present food, water, bathroom facilities, and places for evacuees to sleep (Drabek 1991). Municipalities should execute any existing mutual aid agreements, for example, those with the American Red Cross, created to assist in the sheltering process (Drabek 1991).

The search and rescue process by a municipality should also be addressed, as emergency events can often trigger the need for such an activity. Municipalities should utilize their volunteer resources gathered during the preparedness phase to develop search and rescue teams. The literature has indicated that more often those involved in search and rescue activities are volunteers (Drabek 1991; Henstra 2010); for this purpose, search and rescue activities should be well planned and organized prior to the actual response (Col 2007).

Medical care reception should also be addressed by a municipality in its emergency management plan. This type of reception can encompass a multitude of methods to assist victims of disasters. Community emergency response teams, as previously mentioned, can assist a municipality in basic first aid assistance, while major medical issues can be addressed by first

responders (Henstra 2010). Municipalities should utilize their local emergency medical services implement plans that specify available facilities for reception of victims. This is an activity that should be identified in the emergency operations plan but executed in full during the response phase of emergency management (Drabek 1991).

Infrastructure Control

Due to the potential for injury and or theft, municipalities should employ methods to control access to a disaster area and manage debris. This limit in access to the disaster area minimizes the potential for injuries or illegal behavior. Among the several recommendations by the literature, for access control to become a successful response activity, leadership roles should be identified, boundaries should be drawn, and a type of surveillance method should be utilized (patrol, camera, recording devices). By identifying leadership roles and controlling access, the public will have a sense of security that the disaster area and private properties will be protected by local authorities (Drabek 1991).

Debris management should also be approached with careful consideration, as municipalities must determine clear lines of authority, location for debris drop-off, and measures related to the daily operations of debris management. Defined as the “collection, sorting, storage, transportation, and disposal or recycling of rubble, destroyed materials or other wastes” (McEntire 2007, 226), debris management is a large task that accompanies all major emergency events. In most cases, responsibility for this activity remains at the municipal level. Managers should be prepared with sufficient resources and personnel to take on this task. This should be done well in advance of the disaster itself, when developing operational plans for the response phase of an emergency incident. The literature states, “The sheer volume of debris can quickly overwhelm local departments, potentially delaying the deployment of resources or restoration of

essential services” (Henstra 2010, 242). This is especially important during major natural disasters or terrorist incidents, as the amount of debris resulting from such events can exceed double digits in terms of millions of yards of debris collected (McEntire 2007).

Access to Emergency Funds

To successfully complete all activities mentioned during the response phase, a municipality should maintain ready access to emergency funds from pre-determined sources developed in the preparedness phase of emergency management. More particularly, these funds should be pre-planned and made available even during times of zero revenue for the city. This is particularly important for a municipality that relies solely upon a tax base of property tax for additional funds (Settle 1985). Emergency funds allow for the ability to respond, a quicker response, and a reduced need for state or federal assistance. The ability of a municipality to quickly purchase resources and/or commit funds to particular response activities provides for increased flexibility and options during the actual emergency itself. Harrald identifies mobilization of resources as critical throughout the entire phase of emergency response whereby the mobilization of resources itself creates a catalyst for the implementation of other response activities (Harrald 2006). Gaps in funding can lead to municipalities’ depleting existing resources or having to wait on external assistance.

Recovery

The process of recovery is the fourth and final phase of emergency management. The recovery phase identifies short term and long term actions municipalities should take to reinstate normal operations and processes for governing and assisting the public. Within the recovery phase of emergency management, municipalities should develop both short and long term plans, identify and acquire means of financial support for recovery activities, and identify actions or activities which require mitigation in order to prevent damage in potential future disasters.

Recovery is not limited to specific facets of a community; a municipality's plans should encompass all areas affecting public health, welfare and quality of life (Drabek 1991). Furthermore, the literature maintains that recovery does not have specific boundaries, with beginnings and endings; municipalities should be prepared for an indefinite set of actions timeframe to fully recover from an emergency incident (McLoughlin 1985).

Recovery Plan

Municipalities ought to develop plans that discuss both short term and long term recovery objectives. Recovery plans allow a municipality to divide responsibilities and priorities in public services, financial obligations, infrastructure, and other areas of importance. Short term recovery includes restoring essential services, for example, water and wastewater (Nicholson 2007). Planning for this phase of emergency management enables a municipality to recover faster, more efficiently, and potentially with fewer costs. Plans enable municipal leaders to identify clear lines of authority in the recovery process as well as identify external agencies working to move the recovery process along (Henstra 2010). The literature also states that plans for the recovery process allow for flexibility and adaptability to potential new situations, as the planning process requires coordination among many differing departments within and outside of the city to ensure continuity of operations (Comfort et al. 2010).

The recovery process is also heavily reliant upon governmental departments' assuming daily operations and public service. Some departmental operations critical to short term recovery such as public works, building permits, and public safety must continue throughout the recovery process (Drabek 1991). Municipalities should identify these critical departments early and assign proper roles and responsibilities (Henstra 2010). These responsibilities are multiplied during

recovery operations, and municipalities should be prepared to provide the services of these and other departments (Comfort et al. 2010).

Assessment of damages, both in the public and private sector, should also be a part of a municipality's recovery plan. Damage assessments are useful tools in determining whether structures can be recovered or rehabilitated, their priority ranking, potential costs, and an estimated timeframe for recovery of that structure or location (Henstra 2010). Damage assessments have the ability to estimate the economic impacts of an emergency disaster and should be utilized in recovery planning (McEntire 2007). Damage assessments also assist a municipality in receiving assistance from state and federal authorities and provide a clear picture of the severity of the emergency disaster to the authorities (McEntire 2007). Municipalities should indicate in their recovery plans lines of authority or responsibility to lead damage assessments for the city, as the process can require multiple staff members and many hours of additional work.

Recovery plans should also indicate levels of assistance to victims of emergency disasters. As assistance can vary significantly based upon the type and severity of an event, municipalities should indicate types of assistance available on a local, state and federal level, providing multiple options for public assistance. Municipalities should indicate any public-private partnerships that could assist in this aspect of recovery (Drabek 1991). Victim's services groups can assist municipalities in obtaining resources, counseling, and financial assistance on behalf of disaster victims (Drabek 1991; Henstra 2010). Municipalities should ensure any mutual aid agreements or memorandums of understanding with these groups extend into the recovery phase of emergency management.

Financial Support

Recovery operations are dependent upon municipal resources; the literature has repeatedly cited the importance of identifying and requesting financial assistance during recovery operations for maximum benefit (Comfort 2010; Settle 1985; Schneider 2002; Harrald 2006). The literature also cites the importance of identifying early on what types of financial sources are available within the municipality's budget (Settle 1985). Internal sources of funding include temporary internal municipal loans in the form of transferred budgets, tax notes, bonds, property tax increases, and tax increment financing (Settle 1985). These funding mechanisms enable a municipality to pull from multiple sources of money, allowing for a change to increase the amount of recovery efforts rather than scale back due to financial limitations.

Municipalities should also seek these sources of funding in anticipation of state or federal assistance that requires financial commitment by localities. External assistance in the form of grants can help a municipality in obtaining the needed funds to quickly recover from an emergency event. This assistance is limited, however; municipalities should also utilize their funding mechanisms to meet cost share requirements of state and federal grants, such as FEMA grant assistance (Settle 1985). Financial assistance to municipalities during the recovery phase is also available through other federal agencies. Agencies such as the Department of Housing and Urban Development, the National Flood Insurance Program, and the Hazard Mitigation Grant are available for public assistance. Municipalities should maintain knowledge of these grant programs and the eligibility for each grant program (Comfort et al. 2010).

Post Disaster Mitigation Activities

The recovery phase of emergency management is also a time for municipalities to identify vulnerable structures, populations, and or situations which were destroyed or harmed in

the prior emergency event. The purpose of these activities is to identify vulnerabilities not previously identified in the preparedness pre-disaster mitigation phase of emergency management. These measures further reduce impacts made by potential emergency disasters in the future (Drabek 1991).

Table 2.1: Conceptual Framework and Sources

Practical Ideal Type Category	Source
Mitigation <ul style="list-style-type: none"> ▪ A municipality should assess hazards and vulnerabilities. ▪ A municipality should conduct loss reduction activities. 	Caruson, (2008), Comfort (2010), Drabek (1991), Henstra (2010), Hardenbrook (2005), McEntire (2007), McLoughlin (1985), Somers (2009), Settle (1985), Schneider (2002) Weichselgartner (2001)
Preparedness <ul style="list-style-type: none"> ▪ A municipality should designate an Emergency Management Coordinator. ▪ A municipality should identify financial resources. ▪ A municipality should establish an emergency operations plan. ▪ A municipality should establish warning systems. ▪ A municipality should engage in preparedness training. ▪ A municipality should engage in mutual aid agreements. ▪ A municipality should adopt ordinances. ▪ A municipality should conduct educational activities. ▪ A municipality should employ volunteer assistance. ▪ A municipality should establish an emergency operations center. 	Alexander (2003), Alexander (2005), Col (2007), Collins (2008), Comfort (1985), Comfort (2006), Drabek (1991), Gerber (2005), Hardenbrook (2005), Henstra (2010), Horan (2005), Jaeger (2007), Kusumasari (2010), McEntire (2004), McEntire (2007), Nicholson (2007) Perry (2003), Robinson (2006), Settle (1985)
Response <ul style="list-style-type: none"> ▪ A municipality should engage in an incident management system. ▪ A municipality should maintain interoperable communications. ▪ A municipality should provide assistance to victims. ▪ A municipality should conduct infrastructure control activities. ▪ A municipality should maintain financial resources. 	Col (2007), Comfort (1994), Comfort (2006), Drabek (1991), Harrald (2006), Henstra (2010), Jaeger (2007), McEntire (2007), McLoughlin (1985), Perry (2003), Rubin (1985), Settle (1985), Waugh Jr. (2006)
Recovery <ul style="list-style-type: none"> ▪ A municipality should develop a recovery plan. ▪ A municipality should identify financial resources for recovery. ▪ A municipality should conduct post disaster mitigation activities. 	Comfort (2010), Drabek (1991), Henstra (2010), Nicholson (2007), McEntire (2007), Settle (1985)

Summary of Conceptual Framework

The model consists of four broad categories. In the literature, these four categories have been labeled as “phases” (McLoughlin 1985; Henstra 2010; McEntire 1994; Col 2007). Table 2.1 outlines the ideal categories and their subcomponents of emergency management.

Summary of Literature Review

The literature has supported the ideal type model of emergency management as originally constructed in Cox's ARP (Cox 2006), with additional elements identified as critical throughout the four established categories of mitigation, preparedness, response, and recovery not previously identified (Cox 2006). More specifically, this research has identified four sub categories not previously mentioned: mutual aid, volunteer assistance, emergency operations center, and infrastructure control. This research has also extended upon the developed ideal, updating new policies and procedures and providing additional clarification of existing model sub-categories.

Throughout the literature, presence of an emergency management program at the municipal level has been stressed as vital to successfully overcoming emergency incidents. As municipalities have long been identified as first to respond and manage a disaster event, the existence of an effective emergency management program is important to ensuring the public health, safety and welfare of its citizens, knowing best how and when to act (Rubin et al. 1985).

The review of scholarly literature indicates that a successful emergency management program should encompass all objectives listed in the conceptual framework, including each element within it, as each category bears influence on another with shortcomings of one objective having potentially adverse effects on another (Henstra 2010). This ideal type model is suited to assist all levels of government in their emergency management planning, however the literature has clearly indicated a substantial need for municipalities to employ this model, as they are "the first line of official public responsibility" (McLoughlin 1985, 165).

Chapter Three: Methodology

Chapter Purpose

The purpose of this chapter is to describe the methodology used to assess the City of San Marcos's Emergency Management Program. The four categories and several sub-categories will be used to guide the data collection in this assessment. The data collection methods will be discussed in this chapter, identifying the weaknesses and strengths of each type of collection method to be employed in the research as well as their role in the research design.

Methodology

The research design used in this project is a case study. The use of the case study method will provide a rounded assessment of the City of San Marcos's Emergency Management Program, using both document analysis and a structured interview to collect the needed data as the case study method can originate from varying sources (Yin 2009, 99). Due to the nature of the program as an entity established to maintain safety and order, a case study is most appropriate, as "a case study method allows investigators to retain holistic and meaningful characteristics of real-life events—such as individual life cycles, small group behavior, organizational and managerial processes, neighborhood change, school performance, international relations, and the maturation of industries" (Yin 2009, 4). This method also presents the researcher with the ability to corroborate facts obtained from one or more various research sources, thereby making the research project a stronger, more reliable piece of information to be utilized (Yin 2009, 103).

Operationalization

As previously stated, this case study will use two techniques to collect data for assessing the San Marcos Emergency Management Program. Document analysis and a structured interview will be used to determine whether there is a presence of or lack of presence of categories

encompassing an emergency management program. The operationalization table is presented in Table 3.1. The purpose of this table is to connect the conceptual framework, the research methodology and sources of information. The table outlines the research categories of the ideal model and corresponding methods to gauge San Marcos's program.

Table 3.1: Operationalization Table

Practical Ideal Type Category	Research Method	Evidence	Source
Mitigation			
Hazard and Vulnerability Assessment	Document Analysis	A county-level plan encompassing city activities should be present	2011 Hazard Mitigation Plan Update for Hays County
Loss Reduction Activities	Structured Interview	Interview Question #1	Emergency Management Coordinator
Preparedness			
Designation of Emergency Management Officer	Document Analysis	Employment of an Emergency Management Coordinator	Municipal Ordinance
Identification of financial resources	Structured Interview	Interview Question #2	Emergency Management Coordinator
Establishment of an emergency operations plan	Document Analysis	Presence of an adopted Emergency Operations Plan	Local Emergency Management Plan and Annexes
Establishment of warning systems	Document Analysis	Presence of adopted warning system policy/plan	Local Emergency Management Plan and Annexes
Staff engagement in preparedness training	Structured Interview	Interview Question #3	Emergency Management Coordinator
Engagement in mutual aid agreements	Structured Interview	Interview Question #4	Emergency Management Coordinator
Adoption of emergency management ordinances	Document Analysis	Existence of Emergency Management Ordinance	Municipal Ordinance
Municipality-led education activities	Structured Interview	Interview Question #5	Emergency Management Coordinator
Use of volunteer assistance	Structured Interview	Interview Question #6	Emergency Management Coordinator
Establishment of an emergency operations center	Structured Interview	Interview Question #7	Emergency Management Coordinator

Table 3.1: Continued

Practical Ideal Type Category	Research Method	Evidence	Source
Response			
Engagement in a municipal incident management system	Structured Interview	Interview Question #8	Emergency Management Coordinator
Availability of interoperable communications	Document Analysis & Structured Interview	Interview Question #9, Emergency Operations Plan, MOUs	Local Emergency Management Plan and Annexes, Hays County Interoperability Plan & Emergency Management Coordinator
Emergency Services for the Public	Structured Interview & Document Analysis	Interview Question #10 & Documentation of potential assistance	Emergency Management Coordinator & Local Emergency Management Plan and Annexes
Municipality-led infrastructure control activities	Document Analysis	Presence of debris management policy/plan	Local Emergency Management Plan Annexes
Maintenance of financial resources	Structured Interview	Interview Question #11	Emergency Management Coordinator
Recovery			
A municipality should develop a recovery plan	Structured Interview	Interview Question #12	Emergency Management Coordinator
A municipality should identify financial resources for recovery	Structured Interview	Interview Question #13	Emergency Management Coordinator
A municipality should conduct post disaster mitigation activities	Structured Interview	Interview Question #14	Emergency Management Coordinator

Document Analysis

Document analysis will comprise one of the two research methods used in this research. This type of research method has been noted to “play an explicit role in any data collection in doing case studies” (Yin 2009, 103). Document analysis can assist the researcher in corroborating information obtained via other methods, such as interviews with subjects (Yin 2009). Due to the convenience in flexibility when obtaining information, Yin notes that document analysis should play a role in the overall research (Yin 2009). Document analysis

carries much strength, namely its stability for continuous review, the exactness of information, and its ability to maintain information across many years, events, and or settings (Yin 2009). Weaknesses in document analysis should not be ignored, but rather identified early so as to understand that this type of research may not yield all desired answers to the researcher's questions. Depending upon the age and or location of the document(s) in question, retrievability may be a problem for the researcher. In conducting evidence collection, researchers do run the risk of not finding their desired documentation. Furthermore, some documentation can be weakened if the documents in question are inaccessible due to confidentiality or security issues. This can hinder the progress of the researcher if documentation is the only methodology used in their work (Yin 2009). For the purpose of this research, document analysis will be used to identify the presence of specific aspects of an ideal emergency management program at the City of San Marcos, including the existence of ordinances, policies, and budgetary allotments.

Document analysis will be used to assess several sub-components of the four ideal type categories identified in the operationalization table. For this study, document analysis will be used to determine the presence of various activities in the mitigation, preparedness, and response categories of an ideal emergency management program. This will be accomplished by reviewing existing assessments, ordinances, guidebooks, and departmental budgets that assist in creating and managing the first three phases of emergency management. The Hays County Hazard Mitigation Plan provides a current assessment of hazardous (natural or man-made) circumstances municipalities are likely to encounter in the future. It also addresses potential solutions to reduce the likelihood of reoccurrence or potential harmful impact upon the citizens of each municipality. The San Marcos Code of Ordinances will be reviewed to determine the presence of an emergency management program, emergency management coordinator, and operation plan. As

the City of San Marcos has adopted the State of Texas' Local Emergency Management Plan and Annexes, these documents will be reviewed to assess the presence of an emergency operations plan. The Memorandum of Understanding for the Hays County Interoperability Channel Plan will be reviewed to assess the city's communications interoperability.

Assessment Criteria: Document Analysis

Documented information collected will be used to determine whether or not such exist in the City of San Marcos Emergency Management Program.

Structured Interview

A structured interview will also be used to assess the City of San Marcos's Emergency Management Program. Yin considers interviewing to be "One of the most important sources of case study information" (Yin 2009, 106). An interviewee is capable of providing insight that will corroborate other case study methods used, strengthening the integrity of research as a whole. Yin also points out the relevance of an interviewee with respect to research topics dealing with current events. He states, "Overall, interviews are an essential source of case study evidence because most case studies are about human affairs or behavioral events. Well-informed interviewees can provide important insight into such affairs or events" (Yin 2009, 108). A structured interview assists the researcher in establishing a time frame and limited number of questions with latitude for the interviewee to elaborate on particular questions. This type of interview can be especially beneficial to the assessment of San Marcos's Emergency Management Plan because all initial questions require a yes or no answer with the potential for elaboration. This open-ended type of interview can assist the researcher in maintaining a limitation in the length of interview time, maintaining a casual, approachable method to interviewing (Yin 2009, 107).

Table 3.2: Structured Interview Questions for City of San Marcos Emergency Management Coordinator

Mitigation Phase	Response
1. Does the City of San Marcos engage in loss reduction activities?	Yes/No
Preparedness Phase	
2. Has the City of San Marcos identified sources of funding for preparedness activities?	Yes/No
3. Has the city engaged its staff in emergency preparedness training?	Yes/No
4. Does the city have mutual aid agreements addressing emergency management?	Yes/No
5. Does the city conduct emergency management education activities?	Yes/No
6. Does the city use volunteers to assist in emergencies?	Yes/No
7. Does the city have a designated emergency operations center?	Yes/No
Response Phase	
8. Does the city use an incident management system?	Yes/No
9. Does the city maintain interoperable communications?	Yes/No
10. Does the city have plans in place for volunteer assistance for emergency services during an emergency response?	Yes/No
11. Does the city have sources of funding to assist with costs associated with emergency response?	Yes/No
Recovery Phase	
12. Does the city have a recovery plan for emergency incidents?	Yes/No
13. Does the city have sources of funding to assist with costs associated with emergency recovery?	Yes/No
14. Does the city have developed plans to conduct post-disaster mitigation activities during the recovery phase?	Yes/No

Structured interviews carry much strength and assist greatly in the case study method. This type of interview is targeted and will focus only on the case study at hand, with all questions related to the purpose of the research (Yin 2009). Structured interviews can also provide additional information which may not have been as evident in document analysis. The interviewee could be privy to information not necessarily documented or be considered confidential from public view. An interviewee may provide this missing information or guidance as to why such information is unavailable. Furthermore, a structured interview can provide for additional information on the subject at hand. Yin supports this idea when discussing interviews in general, stating –The interviews will be guided conversations rather than structured queries. In other words, although you will be pursuing a consistent line of inquiry, your actual stream of questions in a case study interview is likely to be fluid rather than rigid” (Yin 2009, 106).

Table 3.3: Structured Interview Follow Up Questions

Mitigation Phase	Follow Up Question
1. Does the City of San Marcos engage in loss reduction activities?	<i>What types of loss reduction activities has the city engaged in?</i>
Preparedness Phase	
2. Has the City of San Marcos identified sources of funding for preparedness activities?	<i>What sources of funding have been identified?</i>
3. Has the city engaged its staff in emergency preparedness training?	<i>How often do you train? Who receives training and how much?</i>
4. Does the city have mutual aid agreements addressing emergency management?	<i>With whom? What types of agreements are they?</i>
5. Does the city conduct emergency management education activities?	<i>What type of education do you provide and to whom?</i>
6. Does the city use volunteers to assist in emergencies?	<i>In what situations? Are they trained?</i>
7. Does the city have a designated emergency operations center?	<i>Is there more than one?</i>
Response Phase	
8. Does the city maintain interoperable communications?	<i>What type of communications?</i>
9. Does the city use an incident management system?	<i>How often? For any event?</i>
10. Does the city have plans in place for volunteer assistance during an emergency response?	<i>What kinds of volunteers are used? How are they used?</i>
11. Does the city have sources of funding to assist with costs associated with emergency response?	<i>Is it located in a budgeted contingency fund?</i>
Recovery Phase	
12. Does the city have a recovery plan for emergency incidents?	<i>Is it a written plan?</i>
13. Does the city have sources of funding to assist with costs associated with emergency recovery?	<i>What types of sources?</i>
14. Does the city have developed plans to conduct post-disaster mitigation activities during the recovery phase?	<i>Please elaborate.</i>

In conducting a structured interview, however, researchers must also identify the weakness of using such a research method. Structured interviews can be biased for several reasons: the line of questioning by the interviewer, poor recall, the response of the interviewer, and the likelihood of receiving all relevant information from the interviewee (Yin 2009). The interviewer must ensure his or her questions are not biased or likely to give biased answers. To properly address this weakness, the researcher should corroborate information received through second or third case study forms of evidence.

For this research, fourteen interview questions were developed to gauge the City of San Marcos's Emergency Management Program. A single interview will be held with the San

Marcos Emergency Management Coordinator to collect evidence on the city's current program. Development of structured interview questions were guided by the conceptual framework of the research. Interview questions will be used in conjunction with document analysis to determine the presence of sub-categories in the varying phases of emergency management within the City of San Marcos (Table 3.2). Following each question, a follow-up question will be made for further elaboration. Table 3.3 provides the follow-up questions.

Assessment Criteria: Structured Interview

The City of San Marcos's Emergency Management Coordinator, Ken Bell, will be interviewed to answer the questions listed in table 3.2 and 3.3. Questions are in yes or no format, allowing for the interviewee to provide follow up information. The purpose of this is to provide a clearer understanding of the cities' use, or lack of use of these particular sub-categories.

Human Subjects Protection

This research is exempt from full review by the Texas State Institutional Review Board (IRB). The survey research is limited to public officials and public documents which can be accessed through a public request. The structured interview will be conducted under the express consent of the San Marcos Emergency Management Coordinator. Furthermore, this structured interview inquiries about existing ordinances, policies and activities of a public entity for the health, safety, and welfare of its citizens. Disclosure of the information is limited to that which is considered public information by the City of San Marcos and the city's Emergency Management Coordinator. A copy of the IRB (Application Number 2012L1361) exemption is included in the appendix section. The IRB was submitted on June 14, 2012 and approved on June 29, 2012. Permission to cite Mr. Ken Bell was given via email and verbally in the structured interview.

Chapter Four: Results

Chapter Purpose

The purpose of this chapter is to assess how closely the City of San Marcos's Emergency Management Program meets the ideal model of a municipal level emergency management program: having all four phases of emergency management present. The four phases of emergency management are mitigation, preparedness, response, and recovery. The assessment utilizes several types of documentation as well as an interview with the City of San Marcos Emergency Management Coordinator to review the city's emergency management program.

This chapter summarizes the results of an analysis of the following documents: Hays County Hazard Mitigation Plan, City of San Marcos Code of Ordinances, State of Texas Local Emergency Management Plan and Annexes, and a Memorandum of Understanding: Hays County Interoperability Channel Plan (HCICP). This review of documentation will assist in determining whether specific sub-components of the four phases of emergency management are present in the City of San Marcos emergency management infrastructure. A structured interview was also conducted with the Emergency Management Coordinator in San Marcos to assess current activities, financial sources, training, and other sub-components of emergency management.

Mitigation

Mitigation is the first phase of an ideal emergency management program. Within mitigation two sub-components should be present in an ideal program, an assessment of hazards and vulnerabilities and loss reduction activities.

Hazard and Vulnerability Assessment

A review of the 2011 Hazard Mitigation Plan Update reveals a documentation of all identified hazards and vulnerabilities within Hays County, including a detailed analysis of the hazards and vulnerabilities for the City of San Marcos. The 2011 Update compiles information from all municipalities within Hays to provide the public and appropriate officials with the following information: an overview of hazards, characterization of people and structures at risk, and identification of vulnerable areas by hazard type. This plan address vulnerabilities for the following hazards: flood risk, tornado risk, wind risk, hail storm risk, winter storm risk, severe drought and wildfire risk. The assessment identifies the vulnerabilities San Marcos possesses with each type of these hazards, including the history, description, location, impact, and frequency of occurrence. This assessment assists city leaders in detailing next steps to provide a safer community to the residents of San Marcos.

Loss Reduction Activities

A structured interview with the Emergency Management Coordinator revealed several loss reduction activities conducted by the City of San Marcos. Through the utilization of Community Development Block Grant funds and mitigation grant funding, the City of San Marcos has successfully acquired structures located in areas prone to flooding and fires, reducing the likelihood or impact of future emergency events in those areas. This type of land use planning prior to an event has benefited the city in its efforts to reduce structural losses. It must be noted, however, that land use planning can be a difficult task within larger, already developed municipalities. For the purpose of this study, which is confined to a single city of a low-to-medium population, land use planning is included within the ideal model.

The City of San Marcos has also conducted Wildfire Interfacing activities whereby the city is actively reducing the amount of brush and debris in the surrounding areas, reducing the likelihood of wildfire spread in those areas. Due to these actions, the City of San Marcos receives a rating of Class 2 through the Insurance Services Office in their insurance standards, providing a significant financial benefit to the city. A rating of 2 indicates that a municipality has met nearly all standards created by the Insurance Services Office pertaining to the protection against all types of hazards within its city limits. With this high rating, the City of San Marcos will pay less each year in its fire insurance policies throughout the city.

Preparedness

The preparedness phase is the second phase of emergency management and is further divided into 10 sub-components. Each sub-component was assessed using either the structured interview with the city's emergency management coordinator or through a review of existing documentation on the subject matter.

Designation of an Emergency Management Coordinator

A review of the City of San Marcos Code of Ordinances has identified the designation of an emergency management coordinator to act on matters concerning emergency management. Ordinance No. 2006-29 expressly designates the creation of an emergency management coordinator position and describes the roles and responsibilities of this position. Specifically, the ordinance outlines key relationships to be established, the development of plans and policies created by the coordinator, and any required supervisory roles the emergency management coordinator is tasked to oversee or complete.

Identification of financial resources

A structured interview with the City of San Marcos's Emergency Management Coordinator revealed that several sources have been identified to fund the preparedness phase of

emergency management. The interviewee indicated that funds from the City of San Marcos General Fund; state appropriations to support radio interoperability communications; and grant funds including Community Development Block Grant Funds, Mitigation grants funds, and various other grant funds have assisted in financing preparedness activities. These funds are expected to continue financing preparedness activities in future years.

Establishment of an emergency operations plan

Per an initial inquiry with the Emergency Management Coordinator, the research has identified that San Marcos has, via Ordinance 2006-29, adopted the Local Emergency Management Plan and Annexes to be used within its own city limits. This plan, with its annexes is a state-drafted plan which can be adopted by any municipality and incorporated into that municipality's preparedness activities, with each city to define specific roles, responsibilities, resources, and facilities at their own discretion.

The Local Emergency Management Plan and Annexes has been adopted at the state's advanced level, the highest and most inclusive of emergency management roles and responsibilities within an emergency response framework in the City of San Marcos. The City of San Marcos has chosen to adopt the advanced-level emergency management plan and annexes due to various factors, such as population, geographic location, and likely hazards. This includes a basic plan outlining authority, purpose, situations and assumptions, concepts, organization and assignment, direction and control, readiness levels, administration and support, plan development and maintenance of the basic plan. The annexes adopted by the City of San Marcos outlines the purpose, concepts, organization, direction, and administrators responsibilities for more specific aspects of preparedness and response during an emergency event. The City of San Marcos has adopted the following 22 annexes: Warning, Communications, Shelter & Mass Care,

Radiological Protection, Evacuation, Firefighting, Law Enforcement, Health and Medical Services, Emergency Public Information, Recovery, Public Works & Engineering, Utilities, Resource Management, Direction & Control, Human Services, Hazard Mitigation, Hazmat & Oil Spill Response, Search & Rescue, Transportation, Donations Management, Legal, and Terrorist Incident Response. The plan and annexes are reviewed annually by the emergency management coordinator in order to ensure accuracy in assignment of roles, contact information, and listed resources.

Establishment of warning systems

The City of San Marcos's adoption of the Local Emergency Management Plan and Annexes included the establishment of warning systems in the City of San Marcos. A review of the adopted plan and annex titled "Warning" indicates that the City of San Marcos has developed clear policies for warning key officials and the public of an emergency situation. The adopted plan and annexes identify that adequate messages will be delivered to the public providing information and instruction on the current emergency, including potential evacuation instructions. Furthermore, specific information relating to the types of warning systems, such as outside warning systems, television warning announcements, and door-to-door is also discussed in detail in the warning annex. The plan also discusses the need for routine inspection to ensure full operability during an actual event.

Staff engagement in preparedness training

An interview with the Emergency Management Coordinator found that all employees of the City of San Marcos are training in emergency preparedness and response. The interviewee indicated that during an emergency event all staff, regardless of their current positions, are subject to being recalled to assist in emergency response activities. As a result, staff training of

all positions is required for maximum benefit to the city. City staff are trained through coursework derived from the Federal Emergency Management Agency (FEMA). FEMA courses taken by staff include courses under the Incident Command System coursework (ICS and IS courses): ICS-100 Introduction to Incident Command System, ICS-300 Intermediate ICS for Expanding Incidents, ICS-400 Advanced ICS, IS-700 NIMS, An Introduction, IS-701 NIMS MACS, and IS-800 National Response Framework.

Engagement in mutual aid agreements

The interview with the San Marcos Emergency Management Coordinator revealed that the City of San Marcos has engaged in various mutual aid agreements to provide additional support to the city in the event of an emergency. The City of San Marcos currently has 30 active mutual aid agreements, many that are considered to be regional in nature, with agencies that include but are not limited to the Capital Area Council of Governments, the American Red Cross, the Capital Area Shelter Hub, and the San Marcos Independent School District. The existing mutual aid agreements assist in providing services that include shelter, mass feeding, busing, and facilities for San Marcos residents in the event of an emergency. Per the Stafford Disaster Relief and Emergency Assistance Act, the state of Texas is legally required to provide additional assistance to municipalities experiencing a disaster or emergency event.

Adoption of emergency management ordinances

A review of the Code of Ordinances, documents that the City of San Marcos has adopted laws relating to activities, authorities, and the appropriate designations of individuals and departments during a period of emergency or disaster. Ordinance No. 2006-29 provides for 18 sections in the municipal code of ordinances to discuss emergency management. These 18 sections provide a comprehensive legal responsibility for various aspects of emergency

management in order to have adequate capacity and capability in the emergency preparedness and response phases of emergency management. Sections 26.001-26.031 are described in detail in table 4.1.

Table 4.1: Ordinance No. 2006-29 Sections 26.001-26.031

Section	Description
Section 26.001	Definitions
Section 26.002	Designation and duties of the emergency management director, deputy emergency management director, and emergency management coordinator
Section 26.003	Powers and duties of the office of emergency management
Section 26.004	Emergency management council
Section 26.005	Supersession of existing ordinances
Section 26.006	Oath
Section 26.007	Declaration of disaster
Section 26.008	Authority to issue orders in the interest of public safety and welfare
Section 26.009	Rules governing expenditure of funds
Section 26.010	Price gouging prohibited
Section 26.011	Offenses and penalties
Section 26.012	Conflict with state and federal laws and regulations
Section 26.013	Inclusion within city's emergency management plan
Section 26.027	Standard of care for emergency action
Section 26.028	Liability
Section 26.029	No liability for operation of shelters
Section 26.030	No liability for operation of vehicles used to evacuate residents
Section 26.031	Designation of certain authorized emergency vehicles

Municipality-led education activities

An inquiry into the City of San Marcos's emergency preparedness activities via the structured interview found that the city provides many types of educational activities and resources for public benefit. Annual contractors' classes are led by the city in an effort to assist in the mitigation and prevention of unsafe construction/building of facilities. Fire prevention classes are also held for the public to assist in educating them on best practices to reduce the likelihood of fires and wildfires in the area. These efforts are attempts by the city to reduce future damages in the event of a natural or man-made emergency event. The City of San Marcos also engages the public via the creation of the Local Emergency Planning Committee. This committee

provides oversight of several municipal-level emergency management functions likely to impact the public.

Use of volunteer assistance

The structured interview also revealed the frequent use of volunteer assistance for emergency management purposes. Volunteers are used in radio communications, general operations, police, and fire activities. Volunteers that have been accepted by the City of San Marcos are generally already trained, having been in the professions for which they now volunteer their time. For this reason, the City of San Marcos's Emergency Management Coordinator relies heavily upon their assistance and is confident in their abilities to work in an emergency environment.

Establishment of an emergency operations center

The City of San Marcos currently has three emergency operations centers, according to the San Marcos Emergency Management Coordinator. These multiple locations provide alternatives should the first or second choices be unavailable or not optimal for the emergency situation at hand. Each emergency operations center is fully functional and capable to handle any emergency event, with full technology capability. In addition to the city's three facilities, the City of San Marcos maintains a direct link with the emergency operations center at Texas State University should the need arise for quick communications between the municipality and the university. This link is an extension of the operations center capabilities and the city's efforts to work alongside Texas State University during any emergency events.

Response

The response phase of emergency management is the third phase of emergency management and is further divided into five sub-components. Each sub-component was assessed

using either the structured interview with the city's emergency management coordinator or through a review of existing documentation on the subject matter.

Engagement in a municipal incident management system

The structured interview for the research has found that the City of San Marcos engages in the use of an incident management system during both emergency events and normal daily operations. This further familiarizes city staff with this type of system as well as the general benefits that an incident management system brings to everyday operational activities. One key example provided by the interviewee was the city's use of the incident management system at the September 8, 2012, Texas State football game in San Marcos, Texas. The use of this system provided the city and the university with the capability to organize the event in a clear and efficient manner, saving time and resources and providing for contingencies in the event of emergencies or unforeseen events.

Availability of interoperable communications

The structured interview revealed multiple options for the City of San Marcos in its ability to communicate with other entities or agencies. The City of San Marcos, through the emergency management coordinator has interoperable capability on an inter-municipal, regional, and state level, allowing the city to maintain communications during an emergency with other departments in the city, with the state office of emergency management and regional emergency agencies tasked with emergency response.

A review of adopted documents also supports the emergency management coordinator's statements. Having adopted an advanced level emergency management plan, the city also pledged to adopt Annex B Communications in its entirety, whereby the city tasked itself in ensuring the communications capacity needed to adequately respond to an emergency event. The

City of San Marcos also engages in a regional interoperable communications agreement with Hays County, Texas State University, and the City of Kyle. Titled the Hays County Interoperable Plan, this memorandum of understanding between the four entities established guidelines and protocols for the use of interoperable communications and radio channels during emergency situations for improved coordination and organization. This memorandum of understanding is authorized by Texas Government Code chapters 791, 771, and 41.0105.

Assistance to Victims

The structured interview indicated that volunteers recruited by the City of San Marcos would work to assist the public in various manners. To arrange the use of volunteers in this capacity, the donations manager under the city’s emergency operation plan would be placed in charge to hand out assignments to each volunteer.

Table 4.2: Public Assistance Annexes of Local Emergency Management Plan

Annex	Purpose
Annex C: Shelter and Mass Care	The purpose of this annex is to outline organizational arrangements, operational concepts, responsibilities, and procedures to protect evacuees and others from the effects of an emergency situation by providing shelter and mass care.
Annex E: Evacuation	The purpose of this annex is to provide for the orderly and coordinated evacuation of all or any part of the population of if it is determined that such action is the most effective means available for protecting the population from the effects of an emergency situation.
Annex H: Health and Medical Services	The purpose of this annex is to outline the local organization, operational concepts, responsibilities, and procedures to accomplish coordinated public health and medical services to reduce death and injury during emergency situations and restore essential health and medical services within a disaster area.
Annex O: Human Services	The purpose of this annex is to make provisions for providing human services support to people who require food, clothing, mental health services, and victim’s compensation in the aftermath of an emergency. The services described in this annex may be needed in the aftermath of incidents of limited scale as well as major emergencies and disasters

A review of the city’s emergency management plan has also found several sections dedicated to services aimed to assist the public. The emergency management plan has dedicated four annexes to assisting the public in various areas, ranging from medical assistance to human services. Table 4.2 lists these annexes and their purpose more specifically. The adoption of these

annexes clearly defines roles and responsibilities of those departments or persons placed in charge of public assistance.

Municipality-led infrastructure control activities

Based upon information obtained from the City of San Marcos's Local Emergency Management Plan Annex K (Public Works and Engineering), the City of San Marcos does have plans for infrastructure control during an emergency response period. The adoption of Annex K by the city accepts responsibility for debris removal and management for all property types. Furthermore, adoption of Annex G (Law Enforcement) ensures the protection of structures and property affected by an emergency event. This protection is aimed at deterring potential crimes such as property theft or vandalism of private or public property.

Maintenance of financial resources

The structured interview with the city's Emergency Management Coordinator found that financial resources have been available to adequately respond during an emergency event. The city maintains contingency funds to assist in the costs associated with disaster response and recovery. Furthermore, the City of San Marcos has on-hand access to \$1 million in credit for immediate purchases necessary to the health, safety, and welfare of the public. The emergency management coordinator has also included non-specific funds with the city's general fund to assist in any financial obligations required during emergency situations.

Recovery

The recovery phase is the fourth and final phase of emergency management and is further divided into three sub-components. Each of these sub-components was assessed using the structured interview with the city's Emergency Management Coordinator.

Development of a recovery plan

The City of San Marcos does not have a standard recovery plan, as the interviewee indicated that each type of emergency recovery is unique and requires specific plans of action for that particular emergency event. The City does utilize the state's recovery plan to provide some guidance, but most of the city's recovery plans are entirely contingent upon the circumstances surrounding the actual event. However, the city does use its organizational chart to begin the recovery process, providing initial roles and responsibilities within the city. This is a standard first step in the recovery process, regardless of the type of recovery. Beyond this action, the city does not maintain formalized recovery plans.

Identification of financial resources for recovery

The City of San Marcos has worked to identify financial resources for the recovery phase of emergency management. The structured interview revealed that, much like recovery planning, financing recovery is also a unique task in that the financial resources available are very much dependent upon the type of emergency event experienced by the city. Based upon the type of event, requests for financial assistance could be made to regional, state, or federal agencies such as FEMA for grant funds to pay for a portion of recovery costs. According to the emergency management coordinator for the City of San Marcos, identification of funding streams are based upon the problem or incident and the agency that bears primary responsibility over functions related to that incident. Key examples of funding by type of emergency incident are the recent Bastrop fires and Bastrop County's requests from FEMA to assist in the recovery activities resulting from the many structure fires. In these situations, funding streams were based upon the fact that the incidents were fires rather than flooding, tornado, hurricane or other type of disaster.

Municipal post disaster mitigation activities

The structured interview showed that the city actively engages in mitigation activities, although it strives to conduct them prior to a disaster if at all possible. While certainly agreeing that post disaster events have led to the identification of weaknesses and improvements throughout the city, the interviewee did state that it has not had to experience post disaster mitigation as frequently as it has executed pre-disaster mitigation activities. Post disaster mitigation has not had to occur as frequently because of a lack of major, life-threatening disasters affecting San Marcos; a pre-emptive approach by the City of San Marcos to address potential disasters that have been affecting nearby areas, such as wildfire, has also contributed to a lack of post disaster mitigation activities.

Overall, document analysis and a structured interview with the City of San Marcos's Emergency Management Coordinator indicate that the city's emergency management program meets the ideal municipal level emergency management program, having met a presence of each category and sub-category with its respective ordinances, policies, and plans.

Chapter Summary

This chapter presented the results of the case study conducted on the City of San Marcos's Emergency Management Program. These results were presented utilizing the operationalization of the conceptual framework, with four categories and 20 subcategories. Each subcategory was used to determine if specific ordinances, policies, or plans were used for the development of the city's emergency management program. Data have been presented to provide specific identification of ordinances and plans used to create the city's program.

Overall, the case study revealed the city's emergency management program to meet the ideal model. The next chapter provides a conclusion with recommendations to improve upon the existing model and future research recommendations in the field of emergency management.

Chapter Five: Conclusion

Research Purpose

The purpose of this research is to assess the City of San Marcos's emergency management program and determine whether it meets the ideal model for an emergency management program at the municipal level. Through the utilization of documentation analysis and a structured interview with the city's emergency management program, this study whether the City of San Marcos emergency management program meets all, some, or none of the subcomponents of the four phase of emergency management.

Chapter Summaries

The first chapter of the study introduces the City of San Marcos and discusses the effects emergency events, both natural and man-made, have had on the United States, Texas, and the City of San Marcos. The second chapter of the research provides a literature review discussing the ideal components and sub-components of an emergency management program. With this review of the literature, a developed ideal emergency management model has been refined to assess the City of San Marcos emergency management program. Chapter Three provides the methodology from which this assessment will be completed. This chapter provides the reader with the operationalization of the study, including specific documents to be analyzed and interview questions to be used by the researcher. Chapter Four provides the results of the document analysis and interview, providing information on whether the City of San Marcos's emergency management program contains specific components or sub-components of an ideal program as developed in the literature review in Chapter Two.

Assessment of the Results

Upon a review of the City of San Marcos's emergency management program against the ideal model, research has found all required components and sub-components are present in the San Marcos Emergency Management Program. Information presented by the Emergency Management Coordinator reflects a pro-active approach towards handling emergencies; a significant amount of time and financial resources lays in their preparedness activities much like the research recommends. Furthermore, the City of San Marcos regards highly the ideal model's references to the need for communications and interoperability. Interdepartmental communication and communication amongst other agencies is a high priority for the emergency management coordinator. Mitigation activities, per the interviewee, are also held in this regard, with multiple requests occurring for financial assistance to minimize destruction of property prior to an actual emergency event.

The city possesses multiple planning documents and ordinances, indicating strong support by elected officials for emergency management activities. Extensive planning via the local emergency management plan and local ordinance indicates future emergency management planning. These actions will continue to assist in the minimization of damage or fatality in events that are beyond human control.

Recommendations and Future Research

Based upon the assessment of the City of San Marcos's emergency management program, the current actions by city leaders and city staff meet the health, safety, and welfare needs of the citizens of San Marcos during an emergency event. Although recovery is a difficult phase to specifically plan in advance, as the emergency management coordinator stated in his interview, additional efforts should be made to better prepare the city for future recovery

situations. Although this may be a difficult and unending task, as knowing the severity of future emergency events is impossible, it remains an important component of emergency management.

Future research could study the methods in which municipalities, counties, and states can better recover from disasters. Natural disasters for example, are unpredictable and costly, inevitable, and depending upon one's location, unavoidable. It is important for research to review periodically and identify the best means to recover from such a disaster and resume daily normal operations.

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