EVALUATION OF RESPONSE PLANS IN TWO COUNTIES: IMPLICATIONS FOR

RESPONSE PLANNING IN NORTH DAKOTA

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ABSTRACT

This comprehensive paper sought to evaluate two county emergency response plans to determine the implications of their plan quality for Central Plains Ag Services, a North Dakota agricultural business, that handles hazardous chemicals. The planning research literature was reviewed to identify what steps are taken in the planning process, the characteristics that impact plan quality, the importance of participation in planning, and the recommended plan content for all plans regardless of type and response plans specifically. The basic evaluation characteristics for plan quality were identified and these items, along with recommended content were put into an evaluation form. This evaluation form was used to evaluate the two county response plans and the findings of each evaluation were discussed. The implications of the findings for Central Plains Ag Services were discussed and recommendations were made to improve county plans.

DEDICATION

This paper is dedicated to my father, Isan Ajdari, for always impressing upon me the importance of

education and always providing the support, encouragement, and love to help me reach my goals.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

CPAS.............................Central Plains Ag Services

DOT..............................Department of Transportation

EOC..............................Emergency Operations Center

EOP..............................Emergency Operations Plan

EPA ....Environmental Protection Agency

LEPC ....Local Emergency Planning Committee

MOU ....Memorandum of Understanding

NAICS ....North American Industry Classification System

NIMS ....National Incident Management System

NDDAG ....North Dakota Department of Agriculture

NDDES..........................North Dakota Department of Emergency Services

OSHA ....Occupational Safety and Health Administration

PIO ....Public Information Officer

PSM..............................Process Safety Management

RMP ....Risk Management Program

VOAD ....Voluntary Organizations Active in Disaster

CHAPTER 1. INTRODUCTION

The Environmental Protection Agency (EPA) does not require some businesses storing hazardous materials (e.g., anhydrous ammonia) to complete their own emergency response plans if the businesses exemplify certain characteristics. When such a situation exists, the EPA expects the surrounding county and organizations within it to be the primary responders and allows the county emergency response plans to substitute for a business emergency response plan. A North Dakota business where the researcher worked at the outset of this paper, Central Plains Ag Services (CPAS), stores anhydrous ammonia, but does not need to have its own emergency response plans according to the EPA. Since she wanted to review county readiness to respond to an incident involving a CPAS facility, she needed to examine the readiness of the counties within which CPAS facilities are located.

This comprehensive paper evaluates the emergency response plans for two North Dakota counties in which Central Plains Ag Services (CPAS) has facilities storing anhydrous ammonia as one way of gauging the counties readiness to respond and makes recommendations based on what was found. A literature review of what characterizes high quality response plans informed the development of the evaluation sheet used to examine the emergency response plans.

This chapter provides background information on the agricultural company that the researcher was employed with, outlines the federal regulatory requirements for hazardous chemicals and discusses the significance of this paper. The personal, organizational, and jurisdictional significance for response planning will also be discussed.

Background

At the time this comprehensive paper effort began, the researcher was employed as a Safety Specialist for Central Plains Ag Services (CPAS), an agricultural company headquartered in Hannaford, North Dakota. The primary responsibilities of a safety specialist are to build a culture of safety by educating employees about work-related hazards, promoting a culture of safety, and ensuring compliance with regulatory agencies such as the Occupational Safety and Health Administration (OSHA), the Environmental Protection Agency (EPA), and the Department of Transportation (DOT).

CPAS provides agricultural products and services to growers across North Dakota. The company employs 45 full time employees across five locations including McVille, Aneta, Cooperstown, Hannaford

1

and Courtenay. The company has two primary business divisions which include grain and agronomy services. The grain division buys, sells and stores wheat, soybean and corn commodities. The agronomy division provides fertilizer, seed, agronomy chemicals, and personalized crop services to farmers across the state. The agronomy division also houses three anhydrous ammonia plants located in Courtenay, McVille and Aneta. The counties surrounding these three locations are the focus of this paper.

The Courtenay location is home to a 700,000 bushel capacity wood crib elevator, an agronomy chemical storage facility, an anhydrous ammonia storage facility, and a seed plant. There are six employees who work out of this location, including a location manager, administrative assistant, two elevator workers and two agronomists. This location has the largest capacity of anhydrous ammonia storage with two 30,000 gallon bulk tanks and approximately 20 nurse tanks that range from 1,000 to 2,000 gallons. The hazards of concern at this site are combustible grain dust from the elevator and anhydrous ammonia.

The McVille location has three employees, which include two agronomists and one operations employee. It has a sales office, a chemical storage facility and an anhydrous ammonia facility. This location has one 30,000 gallon anhydrous ammonia storage tank and approximately 20 nurse tanks. McVille sells the most anhydrous due to the high demand from local farmers. Anhydrous ammonia is the primary hazard of concern for this location.

The Aneta location has two employees who work on-site, including a location manager and an operations employee. This location has a dry fertilizer facility, a chemical storage facility, a sales office, and an anhydrous ammonia facility. This location has one 30,000 gallon anhydrous ammonia storage tank and approximately 15 nurse tanks. The hazard of concern for this site is also anhydrous ammonia.

CPAS stores and handles agricultural chemicals at each of these locations. These chemicals include pesticides, herbicides, fungicides and fertilizer, but from an EPA perspective, anhydrous ammonia is the most hazardous chemical that CPAS handles due to its highly toxic nature. Anhydrous ammonia is a clear, colorless, and toxic compressed gas that is used as fertilizer (Occupational Safety and Health Administration, n.d.). It is composed of 85% nitrogen which is applied directly to the soil. The word "anhydrous" means "without water", which causes it to seek out water. It can cause severe burns, especially to parts of the body with high water content, such as the eyes, mouth, lungs, and mucous

membranes. A significant exposure of liquid or vapor can result in serious injury or death. Due to the high quantity and hazardous nature of anhydrous ammonia it is highly regulated by the EPA.

Federal Regulation

CPAS is subject to federal regulation for anhydrous ammonia from the Environmental Protection Agency (EPA). The EPA requires facilities to put together a written Risk Management Program (RMP) and submit a summary of the RMP, called the Risk Management Plan, for all regulated substances that meet specified requirements outlined by the Clean Air Act. These requirements will vary based on the quantity of the chemical and its hazard characteristics. The goal of the RMP is to address the potential of a hazardous chemical release through the development of a written program that includes the following information:

- A hazard assessment that details the potential effects of an accidental release;

- An accident history of the last five years;

- An evaluation of worst-case and alternative accidental releases;

- A prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and

- Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g. the fire department) should an accident occur. (Protection of Environment, 40 C.F.R. pt. 68.95, 1996)

Depending on the hazard characteristics of the chemical, RMPs are designated as Program 1, Program 2 or Program 3. Program 1 is the least stringent and reserved for low risk chemicals, while Program 3 is the most stringent. The requirements for these program levels are:

- Program 1: Processes which would not affect the public in the case of a worst-case release (in the language of Part 68, processes "with no public receptors within the distance to an endpoint from a worst-case release") and with no accidents with specific offsite consequences within the past five years are eligible for Program 1, which imposes limited hazard assessment requirements and minimal prevention and emergency response requirements.

- Program 2: Processes not eligible for Program 1 or subject to Program 3 are placed in Program 2, which imposes streamlined prevention program requirements, as well as additional hazard assessment, management, and emergency response requirements.

- Program 3: Processes not eligible for Program 1 and either subject to OSHA's Process Safety Management (PSM) standard under federal or state OSHA programs or classified in one of ten specified North American Industrial Classification System (NAICS) codes are placed in Program 3, which imposes OSHA's PSM standard as the prevention program as well as additional hazard assessment, management, and emergency response requirements. (Protection of Environment, 40, C.F.R. pt. 68.10, 1999)

The CPAS facilities storing anhydrous ammonia in McVille, Aneta and Courtenay fall under the Program 2 category because each facility exceeds the minimum threshold reporting requirements of 10,000 pounds, but does not fall into Program 1 or Program 3 (Protection of Environment, 2000).

The EPA has specific requirements for RMP emergency response plans depending on the organization's response capabilities. If an organization has enough resources and personnel, it can build an internal response team. An internal response team is a trained group of the organization's employees who would be responsible for responding to a chemical release. The program requires the following components if the organization intends to utilize an internal response team:

- An emergency response plan

- Procedures for using, inspecting, testing, and maintaining emergency response equipment;

- Training for all employees in relevant procedures; and

- Procedures to review and update, as appropriate, the emergency response plan to reflect changes at the facility and ensure that employees are informed of changes. (Protection of Environment, 40 C.F.R. pt. 68.95, 1996).

Small organizations may not have the resources or personnel to have an internal response team as they require a considerable amount of training and equipment. CPAS does not have an internal response team because of the cost of maintaining rescue equipment, the number of employees available on-site, and the amount of training required.

Since CPAS does not have an internal response team, the EPA requires the company to communicate with local emergency response agencies about the hazards they have on-site. This means that once these agencies receive this information from the company, the responsibility for planning and response falls on the state and federally mandated Local Emergency Planning Commissions (LEPC) in each county (Lindell, 1994; Lindell & Perry, 2001). The LEPC is generally coordinated and chaired by the county emergency manager. This situation places a significant amount of responsibility on LEPCs to ensure that these hazards are addressed during the planning process and that the plan and resulting response to hazardous materials incidents are high quality. The CPAS anhydrous ammonia facilities are located in two different counties, thus, CPAS relies on two LEPC's to plan and two counties to coordinate response efforts for a release. These plans are very important indicators of readiness to protect the communities surrounding CPAS facilities and CPAS' reputation.

<center>**Significance**</center>

While CPAS follows all applicable laws and regulations regarding the hazardous chemicals that it handles, there is always the possibility of a significant release that would impact the surrounding community resulting in deaths and/or serious injuries. A review of the EPA requirements for RMP response plans and the lack of resources available within CPAS suggests that there is a serious reliance by the company on the county emergency management agencies to respond to a hazardous chemical release. Because of this reliance, it is very important to determine whether local response agencies are prepared to respond to a catastrophic release. The researcher used a literature-based evaluation sheet to evaluate the quality of emergency operations plans (EOP) for the two counties that CPAS operates in as one means of assessing the likelihood that response efforts would be well executed in the event of a release.

This is a significant and important project because it involved a review of the planning literature and its application in a real world setting that has the potential to impact not just the counties that serve CPAS, but all counties in North Dakota. Anhydrous ammonia is North Dakota's most common hazardous chemical (E. Delzer, personal communication, April 21, 2016). According to the North Dakota Department of Agriculture (NDDAG), there are 323 anhydrous ammonia facilities throughout the state of North Dakota (E. Delzer, personal communication, April 21, 2016). Many of the facilities within North Dakota are found

<center>5</center>

in or around small towns. And many of the businesses that own the facilities, like CPAS, rely on the emergency response plans of the surrounding counties. The literature will be used to determine what components should be included in base plans and response plans, and what characteristics should be used for evaluation. The resulting information will then be used to evaluate the response plans of the county emergency management agencies to determine the implications for response efforts. The recommendations that result from this analysis can be used to help improve the actual response plans in the counties where CPAS facilities are located. Additionally, the evaluation sheets could be used by other businesses storing anhydrous ammonia or other hazardous materials to examine county readiness and/or by county emergency managers for the same reason.

This project also had personal significance because the researcher learned more about planning—a fundamental part of her job. This project helped her be a better professional, which in turn will benefit her organization and the communities it serves. She will also be able to apply what she learned and the findings can be used to inform the direction of planning at her organization and at the North Dakota county level.

Conclusion

Counties lead response in the areas where CPAS has facilities storing anhydrous ammonia. As a former employee of CPAS, the researcher wanted to assess county readiness to respond through one means—examination of response plans. Chapter 2 relates the literature review that validates the evaluation sheet used to examine the plans and describes the ideal process that would have led to those plans. Chapter 3 discusses the findings of the plan evaluations and interprets the significance of those findings. Chapter 4 concludes this paper with a discussion of how the findings can help improve response plans and gives recommendations for future research.

CHAPTER 2. LITERATURE REVIEW

This chapter describes the picture of what a perfect response plan would include and the perfect planning process that would have led to its development in its first three sections. The chapter also makes explicit ties in these sections between what content is suggested by the literature and the evaluation sheet used to study the response plans of the two North Dakota counties in which Central Plains Ag Services (CPAS) has facilities storing anhydrous ammonia. The fourth section concludes the literature review with a discussion of the aspects of the context in which emergency management planning occurs that might facilitate or inhibit the development of the perfect response plan.

Recommended Plan Content

The planning research literature identifies recommended content for both base plans and response plans. This section will highlight the types of content for both types of plans and the importance of such content.

Ideal Content Reflected in All Plans

Research shows that plans should be built upon and reflect a fact basis (Berke, 1994; Berke & Godschalk, 2009; Bunnell & Jepson, 2011; Oliveira & Pinho, 2010). Berke (1994) explains that the fact basis "specifies the existing local conditions and identifies needs related to community physical development" (p. 156). This concept identifies the established need for the plan. This ensures that the problem that the plan aims to solve is legitimate and credible. In emergency management, the fact basis upon which plans are built is the hazard, risk and vulnerability assessments (Alexander, 2005; Perry & Lindell, 2007; Pine, 2015). The hazard, risk and vulnerability assessments are three items out of 13 that have been identified as important base plan content. The following 13 items were noted as vital to base plan content:

Hazard Analysis

Hazard analysis is the process used to identify hazards that a community may be exposed to (Alexander, 2005; Berke, 1994; Berke & Godschalk, 2009; Bunnell & Jepson, 2011; Oliveira & Pinho, 2010). This process should be readily explained in the plan and include any assumptions or limitations associated with the process used. This section of the plan should list the potential types of hazards that a

community may be exposed to, the descriptions and characteristics of each hazard, mapping and/or modeling of hazards, and the sources of the data. This information should be clearly outlined in the plan so it is easily understood by those reading, reviewing, and utilizing the plan.

Vulnerability Analysis

Vulnerability analysis is a process that is used to assess the susceptibility of a community to damage to life, property, or the environment (Alexander, 2005; Baer, 1997; Bunnell & Jepson, 2011). This component should assess the geographic, social, and economic vulnerabilities of a community. This process is important to identify weaknesses that can be addressed before an incident occurs. Some examples of what this component should address include special needs such as communication, medical, supervision, transportation and pets. This information should be based on reliable data that is provided within this section of the plan and also identify the assumptions and limitations associated with the process.

Risk Assessment

The risk assessment is the process that planners use to determine the likelihood and impacts of a potential hazard (Alexander, 2005; Baer, 1997; Berke, 1994; Bunnell & Jepson, 2011; Oliveira & Pinho, 2009; Oliveira & Pinho, 2010). This section should explain this process and identify any assumptions and limitations of the process. The risk assessment looks at direct impacts and indirect impacts of a hazard on the community and must be informed by reliable data. The process addresses the likelihood of each hazard and assigns priority and rank to each one. The plan should describe the relationship of the hazard, vulnerability, and risk processes.

Vision Statement

A vision statement should be written that describes the community or organization's vision of itself as a result of implementing the plan (Alexander, 2002; Alexander, 2005; Baer, 1997; Berke & Godschalk, 2009; Bunnell & Jepson, 2011). The vision is important because it sets the big picture of what the plan hopes to accomplish. The overall picture set forth in the vision then leads the planning process into the creation of goals.

Goals

Plans should include goals that are directed toward the plan's vision (Alexander, 2002; Alexander, 2005; Baer, 1997; Berke, 1994; Berke & Godschalk, 2009; Bunnell & Jepson, 2011). Goals identify what aspirations the community hopes to achieve, the problems that need to be alleviated, and the needs to be addressed throughout the planning process (Berke, 1994). Goals are important because they break the vision down into smaller portions and create a path to the vision. Once goals have been identified, the planners can break the goals down into objectives.

Objectives

Objectives are statements that are directed toward fulfilling the plan goals (Alexander, 2002; Alexander, 2005; Baer, 1997; Berke, 1994; Berke & Godschalk, 2009; Bunnell & Jepson, 2011; Oliveira & Pinho, 2009; Oliveira & Pinho, 2010). Objectives should be specific, measureable, attainable, realistic and time-bound. Objectives are important because they turn goals into something that can be measured and accomplished, creating a more detailed pathway to the vision.

Scope

All plans should also include a scope to help the reader and planners identify the limitations, assumptions, and structure of the plan (Alexander, 2005; Baer, 1997; Berke & Godschalk, 2009; Bunnell & Jepson, 2011; Oliveira & Pinho, 2009; Oliveira & Pinho, 2010). The scope identifies the plan assumptions and describes the plan horizon or cycle, development structure roles, responsibilities and relationships. It also identifies the geographic and administrative limitations of the plan.

Planning Process: Who is Involved and How

There is considerable support within the research literature that plans need to be participatory (Alexander, 2002; Alexander, 2005; Baer, 1997; Berke, 1994; Berke & Godschalk, 2009; Brody, Godschalk & Burby, 2003; Bunnell & Jepson, 2011; Burby, 2003; Evans-Cowley & Gough, 2008; Oliveira & Pinho, 2009; Oliveira & Pinho, 2010). Participation should be reflected in the plan. The written plan is the proof of the planning process, thus it should describe that process in detail. This includes noting who was involved and their contributions. Participation should include stakeholders who implement the plan, as well as community members who the plan is designed to protect and serve.

Legal Foundation

Another content area that is important for planning is identifying the legal foundation of the plan (Alexander, 2002; Alexander, 2005; Baer, 1997; Berke & Godschalk, 2009; Oliveira & Pinho, 2009; Oliveira & Pinho, 2010). The legal foundation identifies which federal, state, and local regulations the plan is subject to and helps the reader understand which regulations the plan is designed to meet. The legal foundation is important to note, especially when a plan is mandated.

Plan Testing

A method of testing should be included in all plans in order to determine whether the plan is effective (Alexander, 2005). Testing can be done by periodic trainings and exercises that target individuals, groups or organizations. These periodic trainings and exercises should be listed in the plan and testing should be conducted at regular intervals to test the effectiveness of the plan and provide a refresher for those involved in the response efforts. The purpose of each training should be readily identified in the plan as well as a method to garner feedback from the attendees.

Plan Maintenance

Plans are active and living documents that need regular maintenance. A plan maintenance schedule should be included to indicate when the plan will be reviewed and revised to ensure it remains up-to-date (Alexander, 2005; Berke & Godschalk, 2002). The process for maintenance and how it will be conducted should be outlined in the plan. Additionally, the individuals responsible for plan maintenance should be identified. Regularly scheduled maintenance that is documented is important to ensure that the plans are being reviewed and updated.

Plan Implementation

Plan implementation is another content area that should be included in plans (Alexander, 2005; Baer, 1997; Berke & Godschalk, 2009; Bunnell & Jepson, 2011; Oliveira & Pinho, 2009; Oliveira & Pinho, 2010). This section identifies who is responsible and what types of resources are needed if the plan is implemented. This includes human, financial, and technical resources and it should also discuss how these resources might be acquired. This is important because it assigns roles and responsibilities to execute plan objectives and also identifies resource needs prior to the plan being implemented.

Definitions

Definitions are important to help the reader understand the content within the plan (Alexander, 2005; Berke & Godschalk, 2009). The definitions page provides a list of key terms and phrases to foster clarity and understanding to those using the plan.

The base plan components discussed in this section were put into the plan evaluation form. Table 1 provides the breakdown of components as well as a description of the specific planning elements that should be addressed for each component. The next section discusses content that should be included in response plans.

Table 1. Base Plan Components

Component	Specific Planning Elements Assessed
Vision	Description of the community's/organization's vision of itself as a result of implementing the plan
Goals	Goals are directed toward the vision
	Goals address sustainability and/or resilience as appropriate to plan type
	Goals are future-oriented, positive statements that can be used to frame policies
Objectives	Objectives are directed toward fulfilling goals
	Objectives are specific
	Objectives are measureable
	Objectives are attainable
	Objectives are realistic
	Objectives are time-bound
Scope	Plan assumptions identified
	Description of plan horizon
	Description of plan development structure role
	Description of plan development structure responsibilities
	Description of plan development structure relationships
	Description of geographic limitations of plan
	Description of administrative limitations of plan
	Statement of how this plan fits with other jurisdictional/organizational AND emergency management plans
Planning Process: Who and How Involved	Description of groups/individual organizations (should show broad involvement)
	Description of numbers involved
	Description of who involved what stages
	Description of frequency of contact with who involved
	Description of a variety of techniques used to provide information to stakeholders
	Description of number of techniques used to provide information to stakeholders
	Description of variety of techniques used to get information from stakeholders
	Description of number of techniques used to get information from stakeholders
	Description of how stakeholders influenced the process
Legal Foundation	Description of authority to plan provided by federal, state, and/or local regulations
	Description of duty to plan provided by federal, state, and/or local regulations
	Description of standards referred to in process of plan development

Table 1. Base Plan Components (continued)

Component	Specific Planning Elements Assessed
Hazard Analysis	Process used to identify hazards explained
	Any assumptions/limitations associated with process to identify hazards explained
	Potential types of hazards listed
	Description of characteristics of each hazard
	Mapping and/or modeling of hazards demonstrated
	Sources of data described (multiple sources referred to)
Vulnerability Analysis	Process used to assess vulnerabilities explained
	Any assumptions/limitations associated with process to identify vulnerabilities explained
	Geographic vulnerabilities assessed
	Assessment of geographic vulnerabilities data informed
	Assessment of geographic vulnerabilities based on reliable data
	Social vulnerabilities assessed (i.e., health care system, employment, poverty index, languages spoken in area, educational background, gender, age, rent vs. own)
	Assessment of social vulnerabilities data informed
	Assessment of social vulnerabilities based on reliable data
	Special needs understood and addressed as appropriate to plan type (i.e., communication, medical, maintaining functional independence, supervision, transportation, pets)
	Economic vulnerabilities assessed (i.e., infrastructure, businesses, critical facilities, industry)
	Assessment of economic vulnerabilities data informed
	Assessment of economic vulnerabilities based on reliable data
Risk Assessment	Process used to assess risk explained
	Any assumptions/limitations associated with process to identify risk explained
	Direct impact assessed
	Indirect impact assessed
	Assessments are data informed
	Data used is reliable
	Likelihood established
	Hazards prioritized/ranked
	Relationship of hazard, vulnerability, and risk processes to planning described
Plan Testing	Schedule of periodic ongoing trainings
	Identification of who will be targeted in trainings
	Identification of the purpose of trainings
	Identification of how feedback will be provided and incorporated from trainings
	Schedule of periodic ongoing exercises (if applicable)
	Identification of who will be targeted in exercises
	Identification of what will be tested in exercises
	Identification of how feedback will be provided and incorporated from exercises
Plan Maintenance	Specifies timeframe on an ongoing basis in which the plan will be reviewed
	Specifies timeframe on an ongoing basis in which the plan will be revised
	Describes process by which maintenance will be conducted
Plan Implement.	Responsibility for implementation identified
	Identification of human resources required
	Identification of financial resources required
	Identification of technical resources required
	Discussion of how resources will be acquired
	Description of how evaluation will be handled including indicators
	Inclusion of flexibility statement

Ideal Content Reflected in Response Plans Specifically

Perry and Lindell (2007) have identified content that is recommended for inclusion in response plans in *Emergency Planning*. This is based on a comprehensive literature review and regulatory guidance documents that identify the content that should be included in emergency response plans. For the purpose of this section, Perry and Lindell (2007) is used as the primary source for the 20 response plan content items discussed. The response plan items identified by Perry and Lindell (2007) include: threat detection and emergency classification, hazard and environmental monitoring, population monitoring and assessment, damage assessment, hazard source control, hazard impact abatement, population action selection and implementation, population warning, evacuation, sheltering, impact zone access control and security, reception and care of victims, search and rescue, emergency medical care and morgues, agency notification and mobilization, communication, resource management, on-scene direction and control, off-scene direction and control, external coordination, public information and documentation of agreements. These 20 items have been identified in the emergency management research literature as vital to response plan content.

Threat Detection and Emergency Classification

Perry and Lindell (2007) identify threat detection and emergency classification as a content area that should be included in response plans. This is important because it allows planning agencies to identify in advance how they will learn about and monitor a threat as it progresses and link it to an emergency classification system that can be communicated to the affected community. The classification system should relate to the level of response that will be initiated upon learning of the threat. Once a hazard has impacted an area, the counties will move on to hazard and environmental monitoring.

Hazard and Environmental Monitoring

Hazard and environmental monitoring looks at the potential impacts to the surrounding areas after an event has occurred (Perry & Lindell, 2007). This is important because it identifies how the emergency management agencies for the county will continually survey the area as the event occurs and immediately identify any additional hazards that are detected. Additional hazards can include ruptured gas lines after a tornado or a tsunami after a major earthquake.

Population Monitoring and Assessment

Population monitoring and assessment addresses the behaviors and actions of people in the community as a result of a looming threat and immediately thereafter (Perry & Lindell, 2007). Population monitoring is important because it helps to determine where people go and what they need in a hazard scenario. This type of information informs the decisions that are made at the jurisdictional level when it comes to making policies such as curfews, opening shelters, and delivering warning messages.

Damage Assessment

Perry and Lindell (2007) identify damage assessment as an item that needs to be included in plans prior to a disaster occurring. There are varying levels of damage assessments as an incident unfolds. Damage assessment begins with assessing the hazard and gaining an understanding of the boundaries of what has happened. Agencies can then identify the range of needs and impacts that occur and begin assigning numbers to them to better understand geographically where the impact is greater. Initial assessments can be done through windshield surveys, aerial surveys, and initial assessments by first responders. This information is then compiled and information shared with the Emergency Operations Center (EOC) and relevant agencies and departments. This should be identified in the plan rather an operating ad hoc.

Hazard Source Control and Hazard Impact Abatement

 Perry and Lindell (2007) also identify hazard source control and hazard impact abatement as two content areas that should be included in response plans. Hazard source control is the notion that communities need to think about how they are going to monitor emerging hazards or cascading events. This identifies the things that can get worse or happen in addition to the original impact. This moves beyond monitoring to identifying how to intervene at the source of further damage such as a ruptured gas line. Hazard impact abatement focuses on mitigation during response, or doing things that may lessen the damage, such as turning on a sprinkler to prevent a fire. In the planning arena, these two areas focus on identifying what can be done to minimize the impact or take actions to reduce hazards.

Population Action Selection and Implementation

Population action selection and implementation moves past monitoring and moves into the action level. Population action selection and implementation looks at what the county emergency management

agencies will do in regard to how people are reacting to the hazard (Perry & Lindell, 2007). For example, this content area would identify items such as securing hazardous locations, ordering buses for evacuation and transport, ordering food and supplies, and opening shelters.

Population Warning

Population warning is another content area discussed by Perry and Lindell (2007) that identifies the means to warn the population of an impending emergency or disaster. Warning methods need to be outlined in the plan and warning systems established and tested to ensure they are sufficient to notify as many people as possible. Additional and backup forms of warning notification should also be listed such as warning sirens, television and radio.

Evacuation

Evacuation is another content area identified by Perry and Lindell (2007). This portion of the plan looks at identifying egress routes from affected areas, determining the number of people who will be evacuating, the means of transportation, evacuation meeting areas and reception centers, and any vulnerable populations that may require additional assistance. It also aims to identify any bottlenecks and transportation and infrastructure concerns that may arise in a large scale evacuation, and how to address these issues prior to their occurrence.

Sheltering

Along with evacuation, Perry and Lindell (2007) identify sheltering as a content area that should be discussed in the planning process and included in the written plan. Possible sheltering locations need to be identified in advance to ensure they will meet the needs of the community. Backup shelters, staffing, and resource needs should all be addressed prior to implementation.

Impact Zone Access Control

Perry and Lindell (2007) identify impact zone access control and security as another content area that should be included in all plans. This should identify agencies tasked with securing the impact zone to prevent unauthorized access and additional casualties. It should also identify the resources needed to secure areas, ways to communicate off-limits areas to the public, address any potential problems, and provide corrective actions.

Reception and Care of Victims

A plan needs to include information on how the emergency management agencies for the county will handle the reception and care of victims (Perry & Lindell, 2007). This content area identifies where people can go to seek assistance such as a reception center that includes utility companies, cell phone companies, voluntary organizations active in disaster (VOADs), churches, and other agencies or businesses providing services.

Search and Rescue

Search and rescue is an important content area that identifies the agencies that will be conducting rescue efforts, the required resources needed for those efforts, and where those resources are located. Planning in advance for these activities should expedite the process, ensure that responders have been properly trained, and that there is a protocol in place for search and rescue efforts.

Emergency Medical Care and Morgues

Emergency medical care and morgues is another content area identified by Perry and Lindell (2007) that should be included in the planning process. This discussion focuses on the types of emergency medical care available for scenarios that involve large-scale injuries and fatalities. Part of this process is understanding the capacity and resources available at local hospitals, clinics and mortuaries. This helps identify potential needs for large-scale situations with many casualties.

For all of the items discussed above, there are specific planning elements that should be assessed. The plan should identify the following elements for each content area:

1. the organization that initiates and coordinates the function;
2. the strategies necessary to fulfill each function;
3. the agencies that execute the function and their responsibilities;
4. the anticipated resources needed to address function
5. the milestones for execution of the tasks that can be used to define progress, diagnose problems and recommend corrective actions.

The organization and planning should be based on accurate assumptions about what people will do, how they will behave and their everyday routines to provide the most realistic scenario for response.

Agency Notification and Mobilization

In order for a plan to be put into action, there must be a means in place to notify and mobilize agencies (Perry & Lindell, 2007). This section identifies the list of agencies, their services, and the conditions under which they can be mobilized. The process and mechanisms used to notify agencies should be outlined and the reporting locations readily identified.

Communication

Perry and Lindell (2007) discuss communication as an area that needs to be addressed in response plans. This must identify the coordinating organization and the primary communication system and equipment that will be used. Multiple communication methods must be evaluated prior to an incident occurring to ensure interoperability, and a backup system should be identified in case the primary system fails. This section should describe the process in place for reviewing and disseminating information and work toward identifying potential pitfalls in the communication system.

Resource Management

Resources are an important part of response and need to be addressed during the planning process. The resource management section identifies the process by which facilities and equipment will be activated, mobilized, monitored, and deactivated throughout the event. The planning process for resource management should also include the process by which resource documentation and financing of facilities and equipment will be managed.

On Scene and Off Scene Direction and Control

The plan should include on-scene and off-scene direction and control information that identifies the authority structure for each scenario and the staffing required (Perry & Lindell, 2007). This portion of the plan also identifies the key agencies and organizations expected to participate in the response and the overarching organizational system, structures, and processes that will be used. The planning process should be based on accurate assumptions of what people will do, how they will behave and their everyday routines. The on-scene planning considerations should specify how on-scene and off-scene efforts will interact with regard to communication, resources, and decision making.

External Coordination

External coordination describes how communication and coordination will work with other levels of government and other organizations. It also describes the necessary administrative and logistic support needed. External coordination is an important part of the planning process because it opens the discussion between agencies and organizations to help identify gaps and address needs prior to an incident occurring.

Public Information

Perry and Lindell (2007) identify public information as an area that needs to be addressed in plans prior to a disaster occurring. Specifically, the plan should address how information is communicated to the public during an emergency or disaster. It should also identify a plan to reach those with communication related functional needs. The Public Information Officer (PIO) should be identified in the plan along with their role and authority. A process for sharing information with the media should also be included.

Documentation of Agreements

Perry and Lindell (2007) discuss the importance of documenting the agreements between organizations, agencies, and jurisdictions assisting with response. The documentation of agreements section can include memoranda of understanding (MOU), mutual aid agreements, and automatic aid agreements with neighboring communities and private or state agencies to provide support during the operational period of an emergency or disaster. These signed agreements identify the conditions of activation, the type of assistance and resources available, how personnel will be deployed, cost, and liability information.

The response plan components discussed in this section have been identified in Table 2 along with the specific planning elements that should be addressed. This table is the second part of the evaluation sheet developed from the literature that was to evaluate plan quality of the two emergency response plans in the two counties where Central Plains Ag Services has facilities storing anhydrous ammonia.

Table 2. Response Plan Components

Component	Specific Planning Elements Assessed
Threat Detection and Emergency Classification	Identifies the organization that initiates and coordinates the function
	Identifies strategies necessary to fulfill the function
	Identifies agencies that execute the function and their responsibilities
	Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function
	Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions
	Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines.
Hazard and Environmental Monitoring	Identifies the organization that initiates and coordinates the function
	Identifies strategies necessary to fulfill the function
	Identifies agencies that execute the function and their responsibilities
	Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function
	Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions
	Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines
Population Monitoring and Assessment	Identifies the organization that initiates and coordinates the function
	Identifies strategies necessary to fulfill the function
	Identifies agencies that execute the function and their responsibilities
	Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function
	Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions
	Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines
Damage Assessment	Identifies the organization that initiates and coordinates the function
	Identifies strategies necessary to fulfill the function
	Identifies agencies that execute the function and their responsibilities
	Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function
	Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions
	Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines
Hazard Source Control	Identifies the organization that initiates and coordinates the function
	Identifies strategies necessary to fulfill the function
	Identifies agencies that execute the function and their responsibilities
	Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function
	Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions
	Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines

Table 2. Response Plan Components (continued)

Component	Specific Planning Elements Assessed
Hazard Impact Abatement	Identifies the organization that initiates and coordinates the function
	Identifies strategies necessary to fulfill the function
	Identifies agencies that execute the function and their responsibilities
	Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function
	Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions
	Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines
Population Action Selection and Implementation	Identifies the organization that initiates and coordinates the function
	Identifies strategies necessary to fulfill the function
	Identifies agencies that execute the function and their responsibilities
	Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function
	Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions
	Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines
Population Warning	Identifies the organization that initiates and coordinates the function
	Identifies strategies necessary to fulfill the function
	Identifies agencies that execute the function and their responsibilities
	Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function
	Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions
	Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines
Evacuation	Identifies the organization that initiates and coordinates the function
	Identifies strategies necessary to fulfill the function
	Identifies agencies that execute the function and their responsibilities
	Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function
	Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions
	Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines
Sheltering	Identifies the organization that initiates and coordinates the function
	Identifies strategies necessary to fulfill the function
	Identifies agencies that execute the function and their responsibilities
	Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function
	Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions
	Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines

Table 2. Response Plan Components (continued)

Component	Specific Planning Elements Assessed
Impact Zone Access Control and Security	Identifies the organization that initiates and coordinates the function
	Identifies strategies necessary to fulfill the function
	Identifies agencies that execute the function and their responsibilities
	Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function
	Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions
	Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines
Reception and Care of Victims	Identifies the organization that initiates and coordinates the function
	Identifies strategies necessary to fulfill the function
	Identifies agencies that execute the function and their responsibilities
	Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function
	Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions
	Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines
Search and Rescue	Identifies the organization that initiates and coordinates the function
	Identifies strategies necessary to fulfill the function
	Identifies agencies that execute the function and their responsibilities
	Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function
	Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions
	Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines
Emergency Medical Care and Morgues	Identifies the organization that initiates and coordinates the function
	Identifies strategies necessary to fulfill the function
	Identifies agencies that execute the function and their responsibilities
	Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function
	Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions
	Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines
Agency Notification and Mobilization	Identifies those with authority to notify and mobilize agencies
	Identifies agencies to be mobilized and conditions under which mobilized
	Specifies process and mechanisms that will be used to notify agencies
	Identifies the location to which agencies should report once mobilized
Communication	Identifies the organization that initiates and coordinates the function
	Describe the primary communications system and equipment to be used
	Describe provisions for back-up communications should the primary communication system fail
	Addresses interoperability
	Describes structures and processes for the processing of incoming information
	Describes structures and processes for the dissemination of information
	Describes necessary administrative and logistic support related to function

Table 2. Response Plan Components (continued)

Component	Specific Planning Elements Assessed
Resource Management	Identifies the process by which facilities and equipment will be activated, mobilized, monitored, deactivated
	Identifies the process by which resource documentation and financing of facilities and equipment will be managed
	Describes necessary administrative and logistic support related to function
On Scene Direction and Control	Specifies authority structure for on scene efforts
	Specifies overarching organizational system, structures, and/or processes that will be used
	Specifies anticipated off scene agency staffing and staffing levels during mobilizations
	Identifies agencies/organizations anticipated to play a key role and their basic responsibilities
	Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines
	Specifies how on-scene efforts will interact with off scene efforts including communication, resource ordering, and decision-making
	Describes necessary administrative and logistic support related to function
Off Scene Direction and Control	Specifies authority structure for off scene
	Specifies overarching organizational system, structures, and/or processes that will be used
	Specifies anticipated off scene agency staffing and staffing levels during mobilizations
	Identifies agencies/organizations anticipated to play a key role and their basic responsibilities
	Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines
	Describes necessary administrative and logistic support related to function
External Coordination	Describes how communication and coordination with other levels of government and other organizations will work
	Describes necessary administrative and logistic support related to function
Public Information	Describes process by which information will be communicated to the public
	Describes plans to reach those with communication related functional needs during response
	Specifies one or more individuals who will act as a public information officer in an event
	Describes the role of the public information officer including their authority
	Describes process by which information will be shared with the media
	Describes necessary administrative and logistic support related to function
Documentation of Agreements	Lists all reciprocal agreements
	For each agreement, describes conditions under which the agreement is activated
	For each agreement, describes the specific nature of the assistance to be rendered
	For each agreement, resources for loan identified by location
	For each agreement, provides instructions of how personnel from an assisting organization will be deployed and to whom they will report
	For each agreement, describes any payments necessary for the use of the responding personnel and equipment
	For each agreement, describes how is the bearer of liability for injury or damage incurred in the response

Quality Characteristics of Ideal Plan Content

Consensus among scholars regarding content seems to exist. Yet, a specific, short list of quality characteristics the content must demonstrate was not immediately apparent. The literature does show consensus, however, around the idea that merely including key content is not sufficient. Inclusion is critical, but thematic analysis of the work on plan quality reveals important too are other characteristics, such as comprehensiveness, clarity, internal compatibility, and external compatibility of that content.

Inclusiveness

The literature identifies inclusiveness as an important characteristic in determining plan quality (Baer, 1997; Berke, 1994; Berke & Godschalk, 2009). A plan that is inclusive will have all of the relevant content that should be included in a plan such as vision, goals, objectives, scope, fact basis, plan implementation, and the other previously discussed items. Determining whether the plan includes each of these items is the first step in the evaluation process. If the content area is included, the evaluator can then move on to rate the depth to which these items were covered in the plan using comprehensiveness, clarity, and internal compatibility.

Comprehensiveness

Comprehensiveness looks at whether a plan covers what is important about the issue (Alexander, 2002; Baer, 1997; Berke & Godschalk, 2009; Oliveira & Pinho, 2009; Oliveira & Pinho, 2010). A plan is considered comprehensive if it demonstrates a level of thinking and consideration to address issues and provide solutions. It is important to note that this quality is not related to length, as a lengthy plan may not address the important issues or connect in a coherent manner. For each content area, comprehensiveness can be evaluated by determining whether the specific planning elements discussed in Chapter 3 were addressed.

Clarity

Clarity is another characteristic of plan quality that looks at how easily understood the plan is (Alexander, 2002; Baer, 1997; Berke, 1994; Berke & Godschalk, 2009; Bunnell & Jepson, 2011). A clear and concise plan should be easy to understand and free of technical jargon that a lay person cannot understand. The plan should be simply and concisely written and clear in terms of language. The plan should also provide evidence in the form of citations and references to identify where data came from. All

terms should be clearly defined to avoid confusion, and supporting graphics should be included to foster understanding. Clarity is an important quality in planning to create a usable, credible, and easily understood plan.

Internal Compatibility

Internal compatibility or internal consistency is another important evaluation characteristic identified by the research literature (Alexander, 2002; Baer, 1997; Berke, 1994; Berke & Godschalk, 2009; Oliveira & Pinho, 2009; Oliveira & Pinho, 2010). Internal consistency means that plan sections should fit and hang together. An internally consistent plan will have components that align with plan goals and actions. This characteristic can be evaluated throughout the plan by making sure there are no contradictions and that plan components support the vision, goals and objectives.

External Compatibility

The last characteristic of plan quality is external compatibility. This is the idea that a plan must be built upon the needs of the community it is serving and the community must support it (Alexander, 2002; Baer, 1997; Berke & Godschalk, 2009; Bunnell & Jepson, 2011; Burby, 2003; Evans-Cowley & Gough, 2008; Oliveira & Pinho, 2009; Oliveira & Pinho, 2010). A plan can have all of the characteristics listed above and be unusable if it does not have external compatibility. This is a very important characteristic but it cannot be assessed by evaluating a physical plan alone. It is important to note that the paper plan is not the most valuable part of planning, the process undertaken to create plan is the most important part. This is where external compatibility is fostered.

The plan evaluation process will first look at whether each component suggested for all plans and response plans specifically were included. Based on the literature, each component that is found to be included in the plan will also be evaluated based on comprehensiveness, clarity and internal compatibility. These characteristics have been included in the full evaluation sheet in Appendix A. External compatibility, the most important part of a plan, cannot be expressed throughout the plan and is an important essential limitation which will be discussed later.

Steps in an Ideal Planning Process

The areas of content that should be included in all plans and in response plans specifically is clear. Yet, the content itself, i.e., just what is described related to the topics, ought to be developed

through a robust, purposeful planning process if the plan is to be externally compatible—one of the most important aspects of plan quality. The planning literature suggests that a process comprised of a number of steps should be undertaken in order to produce an externally compatible plan. These steps need to be considered separately and also together as a collective before planning commences, but the steps do not have a specific timeline. Kelly (2010) discusses six stages that should be involved in the planning process. These stages include data gathering, data analysis, policy making, policy adoption, implementation, and maintenance and revision.

Data Gathering

Data gathering is the first step in the process and focuses on gathering data that is relevant to the plan being put together (Kelly, 2010). All plans need to have a fact basis so the plan develops in a way that is relevant to the plan context. The data that is gathered is relevant to the set of circumstances that surround the plan. In emergency management, the fact basis of plans is the hazard, risk and vulnerability assessment (Pine, 2015). This assessment allows planners to readily identify the hazards, risks and vulnerabilities using credible sources so they can be adequately addressed throughout the planning process. Once the data has been gathered, it then goes through the data analysis process.

Data Analysis

Data analysis takes an in-depth look at the different types of data that was collected and the relationship between the data and the type of plan that is being produced (Kelly, 2010). This helps planners identify how the data will inform the resulting plan.

Policy Making

The policy making process looks at creating content for the plan based on the data that has been gathered and analyzed (Kelly, 2010). This would include the strategy and tactics related to the plan type. For example, in emergency management response plans, the base plan content includes public communication, incident management, and annexes. This process involves a number of stakeholders, such as community officials, response agencies, and emergency managers. The next step following policy making is policy adoption.

Policy Adoption

According to Kelly (2010), policy adoption takes place when the completed plan is formally adopted by those represented in the plan. This phase involves multiple parties that agree to finalize and adopt the plan. Once the plan is adopted, the next step is implementation.

Plan Implementation

Plan implementation is the process of executing or carrying out the plan (Kelly, 2010). Implementation can vary due to the context and type of plan that was produced. Plans are traditionally implemented immediately following policy adoption, but in emergency management the implementation phase can vary. For example, a response plan would be implemented when a real world scenario occurs or during an exercise to test the plan (Perry & Lindell, 2007). After a plan has been implemented and/or tested, deficiencies are often found, thus the next step in the process is maintenance and revision.

Maintenance and Revision

Maintenance and revision is the last step in the planning process. Maintenance and revision includes making changes to plans to correct deficiencies (Kelly, 2010). Plans should be developed with a schedule of maintenance and revision in mind. This should be identified in the policy making stage and adhered to on a cyclical or periodic basis, whether or not the plan has been implemented in whole or part (Kelly, 2010). The maintenance and revision schedule ensures that the plan isn't put on a shelf and forgotten once it is completed.

Characteristics of Ideal Planning Processes

The planning process outlined by Kelly (2010) is important to understand and to achieve. Yet, as important as these steps are, simply going through the motions does not guarantee that the resulting plan will be high quality and implemented. It is when the planning process—in each and all of the steps of it—is internally driven, inclusive, consensus-based, transparent, evolving, informed, that a high quality plan is more likely to result (J. Jensen, personal communication, June 2, 2015). This reality is similar to plan quality not being contingent on just including key components in a plan but how those components are developed.

Internally Driven

One theme that emerges is the concept that plans should be internally driven (Bunnell & Jepson, 2011). This is the idea that the best plans are created when the entity writing the plan drives the planning process and when the plan is not being created in response to a mandate. Instead, those engaged in the process are driven to do it for the benefit of the community or organization. When driven internally, plans are more likely to be high quality and implemented (J. Jensen, personal communication, June 2, 2015).

Inclusive

The planning process should be inclusive. Planners should be able to look back at the planning process and say that it included a broad array of appropriate stakeholders and those stakeholders were able to participate in a meaningful way. Stakeholder input is an important part of the planning process. Research suggests that the level of quality and the rate of implementation of plans is directly affected by the stakeholders involved in the process (Brody, Godschalk & Burby 2003; Burby 2003; Evans-Cowley & Gough, 2008).

Consensus-based

Stakeholder involvement is important, but only if those involved in the planning process can live with the final product. In other words, plans should be based on the consensus of all parties involved. Those involved in the planning process and implementation of the plan should agree with the end result. Consensus does not mean that all stakeholders involved are an equal advocate of the content of the plan or that they are all passionate about the plan. Plan implementation is a problem if the entities do not agree with it because it may lack community and political support (Brody, Godschalk & Burby, 2003; Burby, 2003)

Transparent

The planning process should be transparent so that those involved can easily understand the methodology for the process. It should be very clear how the planning process evolved. Additionally, stakeholders should be given the chance to review and provide feedback on the content of the plan during the process (Baer, 1997; Berke & Godschalk, 2009; Brody, Godschalk & Burby, 2003; Burby, 2003).

Evolving

Plans should be evolving, meaning that the planning process should go from one step to another, but should also be iterative. As the planning committee goes through the steps, if something was not done right, the time should be devoted to doing it again. This is very important because if these things are not fixed, the resulting plan will not adequately address these areas (Kelly, 2010). Plans should be a living document that evolves over time and is updated and maintained when deficiencies are identified and when new hazards emerge.

Informed

All plans should be informed (Alexander, 2002; Alexander, 2005; Baer, 1997; Berke, 1993; Berke & Godschalk, 2009; Brody, Godschalk & Burby, 2003; Burby, 2003; Oliveira & Pinho, 2009; Oliveira & Pinho, 2010). Informed plans are based on facts, data, and stakeholder feedback or knowledge. Facts and data provide a solid basis for areas that need to be addressed. This helps identify issues relevant to emergency planning such as which hazards pose the highest risk to the community and the damage history associated with those hazards (i.e. hazard, risk and vulnerability assessments). The involvement of knowledgeable stakeholders will ensure that resources and needs are identified during the planning process and have the ability to increase buy-in for plan implementation (Perry & Lindell, 2007; Pine, 2015).

It is important that the planning process exemplify all of these characteristics. Yet, perhaps the most important of these suggested by the literature is that of inclusivity. Inclusivity seems to be critical and elusive and, perhaps, the most important of all of the characteristics because of its determining influence on the external compatibility of the plans. For this reason, it warrants some additional consideration.

Importance of Participation in the Planning Process

Emergency planning ought to involve a diverse group of stakeholders that each provide input throughout the planning process. These stakeholders are a key component in the planning process and their feedback and participation significantly impact the resulting plan. Research has shown that participation is important to the planning process and the resulting quality of the plans produced (Alexander, 2002; Alexander, 2005; Baer, 1997; Berke, 1994; Berke & Godschalk, 2009; Brody,

Godschalk & Burby, 2003; Bunnell & Jepson, 2011; Burby, 2003; Evans-Cowley & Gough, 2008; Oliveira & Pinho, 2009; Oliveira & Pinho, 2010).

Participants in the planning process should include a range of public stakeholders. Public stakeholders are considered any person, group or organization that is not directly tied to emergency management. These can include businesses, local government officials, development groups, government departments, neighborhood groups, media, environmental groups, special district representatives, affordable housing groups, property owners, trade groups, professional groups, and special interest groups (Brody, Godschalk & Burby, 2003; Burby, 2003).

Research has shown that public participation is beneficial to the planning process and helps to create plans that are locally and politically accepted, knowledgeable to community issues, and centered around the culture of values of the community (Burby, 2003; Perry & Lindell, 2007). This can have a significant impact on the political effectiveness of the plan because participants create more of a push on local government and political leaders to accomplish the goals set forth in the plan (Burby, 2003). Participation has a number of other benefits as well. It has shown to educate stakeholders which creates more understanding and buy-in, and increases collaboration and political support for policies. It also creates stakeholder ownership because they have played a part in shaping the plan (Burby, 2003). Research has also shown that plans and policy proposals are much stronger and more likely to be implemented when a larger array of stakeholders are involved in the planning process (Alexander, 2002; Alexander, 2005; Baer, 1997; Berke, 1994; Berke & Godschalk, 2009; Brody, Godschalk & Burby, 2003; Bunnell & Jepson, 2011; Burby, 2003; Evans-Cowley & Gough, 2008; Oliveira & Pinho, 2009; Oliveira & Pinho, 2010).

While involving stakeholders has shown to improve plan quality, there are many factors that make encouraging participation difficult. Planners have to reach out to the local communities to request involvement in the process and public outreach can be complicated due to the location, situation, and the resources available (Evans-Cowley & Gough, 2008). For example, Evans-Cowley and Gough (2008) noted that time, money, and the number of personnel to assist with outreach make the process difficult. Another issue that may arise is how planners view citizen involvement. Planners may see citizen involvement as a hindrance to the planning process because citizen attitudes and perceptions can be

29

difficult to overcome (Burby, 2003). This can create conflicts between what is best for planning and what a community wants to accomplish, making it difficult to reach a consensus (Evans-Cowley & Gough, 2008).

Thus, the research has shown that increasing participation in the planning process, increases plan quality. There is also significant evidence that plans are more likely to be implemented with increased participation. Since it is clear that public participation is vital, the next section will discuss the different techniques that can be used to request feedback and participation from the public.

Techniques to Increase Public Participation

There are many different techniques that can be used to disseminate or request information from public stakeholders. Creighton (2005) uses many different techniques to give information to the public, such as briefings, exhibits and displays, feature stories, information repositories, the internet, mass mailings, media interviews, newsletters and paid advertisements. Creighton (2005) also discusses ways to receive information from the public. These can include the use of summits, advisory groups, task forces, charrettes, coffee klatches, consensus building, facilitation, field trips and focus groups. Each of these techniques has benefits and drawbacks, depending on the audience you are trying to engage. For example, using the internet as a primary source of sending and receiving information may exclude community members that do not use technology. Also, newsletters may only be effective if a current mailing list is available. This is why it is important to use a variety of techniques to garner the most feedback and participation.

The research has shown that the more types of techniques that are used to reach out the public during the planning process, the better the resulting plan will be relative to public input (Brody, Godschalk & Burby, 2003; Evans-Cowley & Gough 2008). For example, Evans-Cowley and Gough (2008) used a variety of outreach techniques to engage citizens in the planning process following Hurricane Katrina. The researchers designated steering committees to talk to neighbors and promote town hall meetings. They used print publications such as newsletters, postcards and flyers. They also used online discussion boards. Using a variety of techniques to provide resources and reach out to different audiences resulted in more citizens becoming actively involved in the planning process and increased the community capacity for plan implementation.

Brody, Godschalk and Burby (2003) noted that an increase in the types of meetings and techniques used to reach out to citizens resulted in an increase in more citizen involvement in the planning process. Additionally, it was shown that using techniques that allow for feedback from the public generated a higher level of citizen involvement in the process. The techniques that resulted in the highest number of participants included charrettes, workshops, community forums, citizen advisory committees and subcommittees (Brody, Godschalk & Burby, 2003). Public participation can increase community support for plans and can aid in the likelihood the plan is approved and implemented.

Based on the literature review to this point, it seems clear that key content needs to be evidenced in quality plans. Yet, it also seems clear that the development of that content needs to have been through a multi-stage process exemplifying a number of characteristics, key among them inclusivity and participation. Within the plan content requirements for any plan reported earlier was the requirement that plans include a description of the planning process, e.g., who was involved, over what period, what techniques were used to engage them. It is only one section of the 13 suggested for all plans, but, because of what it suggests about the quality of the process that led to the production of the plan itself it seems to the researcher to be perhaps the most significant.

The plan content, planning process, and planning process characteristics provide a picture of what an ideal response plan might look like. The picture is both easily understood and overwhelming. It seems logical that, if included, the content would be helpful and that, if carried out as described, the planning process would lead to meaningful content. It seems logical that Central Plains Ag Services (CPAS)—the organization for which the researcher used to work—could be reasonably assured that the county had done well in readying itself for response (at least looking at this one measure of readiness). Yet, the picture painted by the literature of the ideal plan is also overwhelming. It appears as though it would be very difficult, if not impossible, to achieve given the contexts in which emergency management planning occurs.

Planning Contexts

Every plan is developed and implemented within three interdependent but different contexts—jurisdictional, public policy, and emergency management—and the features of each context shape planning processes and resulting plans (Perry & Lindell, 2007). This section explains each context and

how each might facilitate or inhibit planning processes and plans and in so doing make more or less likely the picture of a high quality plan painted on the previous pages.

The first context is jurisdictional. The jurisdictional context is critical because emergency planning is the responsibility of jurisdictions at the local level and the planning process must take place within each of them (Perry & Lindell, 2007). Yet, just because jurisdictions have the responsibility to plan does not mean that there is necessarily support for planning (Perry & Lindell, 2007). Planning is best conducted when the effort enjoys the support of local officials, citizens, response agencies, and other relevant jurisdiction players (Perry & Lindell, 2007). Planning is also facilitated when jurisdictions have significant disaster experience, when there is high risk salience within the jurisdiction, when emergency management is a priority within the jurisdiction, and when the jurisdiction is well-resourced (Perry & Lindell, 2007). If these aspects of the jurisdictional context are not present as described, then it constrains the ability to produce high quality planning processes and plans (Perry & Lindell, 2007). If the community does not have a significant disaster experience, it is more difficult to gain support for planning for disasters—events that may or may not happen in the future. The planning process will also be affected if community members do not feel that the risks being addressed are important. If the community does not understand the risks and support the changes that are being made, it can be difficult to get the necessary resources and funding, particularly if the jurisdiction does not have sufficient resources to meet its every day responsibilities. These features of the jurisdictional context influence the extent to which planning processes are undertaken, how long they take, who engages in the process, the discourse that takes place around plan content, and more (Perry & Lindell, 2007). These features of jurisdictional context influence the content developed in the plans, the extent to which plans are externally compatible, the extent to which the process was inclusive—essentially each of these features drives the extent to which the plan will be high quality. Where the jurisdictional context inhibits planning, those charged with facilitating the development of response plans have little control or direct influence to change the context.

Each feature of the second important planning context—the public policy context—may also facilitate or inhibit planning. The public policy context is comprised of the rules and regulations at all levels of government and elected official support (Perry & Lindell, 2007). The support of elected officials within jurisdictions is integral to quality planning—without it or with minimal support planning processes are

greatly constricted (Perry & Lindell, 2007). Rules and regulations from federal, state, and county levels may also set the frame in which planning occurs work (Perry & Lindell, 2007, p. 11). The rules and regulations from each level may dictate what emergency management plans are undertaken, what the plans must include/address, the time period during which plans must be completed, who must be involved in the planning process, etcetera (Perry & Lindell, 2007). Existing rules and regulations at one or more levels may also facilitate or inhibit what options exist for addressing emergency management issues. For instance, federal regulations require that local jurisdictions base incident management in their response plans on the National Incident Management System (Department of Homeland Security, 2008). This requirement means that jurisdictions are not free to determine an incident management structure unique to organizational preference within the jurisdiction. The extent of and form of support, rules, and regulations associated with the policy context shape quality and content of the plans. Here again, those charged with facilitating response plans have no control or direct influence on rules and regulations making it impossible to see the ideal plan and process emerge unless the rules and regulations are consistent with what the literature suggests.

The third and final important planning context is the emergency management context. Emergency management is the emerging profession charged with "coordinating and integrating all activities necessary to build, sustain, and improve the capability to mitigate against, prepare for, respond to, and recover from threatened or actual natural disasters, acts of terrorism, or other man-made disasters" (Federal Emergency Management Agency, 2007). One of the most fundamental and important activities that those in the emerging profession coordinate and integrate is planning. Yet, the ability of emergency management to fulfill its charge is either facilitated or inhibited by a number of factors associated with the emergency management context itself including, for example: the number of personnel in the emergency management office, the time available to the emergency management staff for planning, and the education and training of the emergency manager (Perry & Lindell, 2007). At the county level, emergency management departments may be staffed by one person or many people, the staff may be full or part-time dedicated to emergency management, the office may function as an independent department or function as a unit within another such as a fire department or law enforcement office, the office may work with a reasonable budget or none at all other than personnel and basic administrative costs (McEntire,

33

2007). As with features of the jurisdictional and public policy contexts, the features of the emergency management context also significantly influence the planning process and plan content. Staff in emergency management offices—those typically charged with facilitating response plans and processes—have limited influence on much of the emergency management context within which they work.

In summary, the emergency management context, public policy context, and jurisdictional context set the framework within which response plans are developed. The contexts are each complex. It seems as though it would be difficult for all of the aspects of each context to be in alignment so that an ideal plan, informed by the ideal process, emerges. It seems particularly difficult to imagine those conditions existing in the two counties in which CPAS has facilities given the realities associated with each of their jurisdictional, public policy, and emergency management contexts. Nevertheless, it is helpful to be able to describe what perfect would entail and use a picture of the ideal against which to assess the real. Such an evaluation can lead to identification of weak or problem areas in the county plans and recommendations of where to focus energies on improvement in plan maintenance. The results of such an evaluation also can suggest the extent to which the counties are ready to respond were an event to occur (using this one means of assessing readiness).

The findings from the evaluations of the two county plans that were carried out using the evaluative criteria described in this chapter are reported in the next chapter. The significance of the findings for the counties and for CPAS are also discussed.

CHAPTER 3. PLAN EVALUATION AND DISCUSSION

This chapter discusses the plan evaluation form, evaluation process, and results for each county. It is organized into four sections. The first section describes how scoring was undertaken for each plan. The second section relates the evaluation results for County A and the third section relates the evaluation results of County B. The fourth section identifies specific examples from each plan and the resulting scores, as well as a discussion of the significance of the plan scores and recommendations to improve the planning process.

Central Plains Ag Services (CPAS) has anhydrous facilities in two counties in North Dakota. Each county was contacted requesting a copy of their emergency operations plan and provided information on how the plan was going to be used for this paper. Since the evaluations represent a form of critique, some minimal shielding of the identity of the counties that have provided plans was provided by identifying the plans as that of County A and County B.

Evaluation Form

Each plan was reviewed using an evaluation worksheet (Appendix A) that was created by Dr. Jessica Jensen (North Dakota State University) based on a review of the planning literature and validated through the literature review in Chapter 2. The form is broken down into two sections: base plan components that should be included in all plans regardless of type and components that should be included specifically in response plans. As discussed in Chapter 2, plan components were identified through the research literature and specific planning elements were identified for each component. Each component was scored up to two steps. The first part of the evaluation assessed whether the component was included in the plan. Each component received zero points if it was not included in the plan or one point if it was included in the plan. The second step of the evaluation then scored each of the included components on comprehensiveness, internal compatibility and clarity, based on how well these areas were covered within the plan. The total number of points available for each of these characteristics varies from one point up to seven points, depending on the number of specific planning elements that were addressed for each component. Upon completion of the evaluation, the points were totaled, percentages were given for each of the criteria and an overall plan quality score was derived.

County A and County B plan content was evaluated using the plan evaluation form. The form provides a consistent method for evaluating plan content that is supported by the research literature. There is a strong basis for approaching plan evaluations in this way, but when confronted by a plan created with a template, the evaluation is simplified to the point of almost being meaningless.

The Emergency Operations Plans for County A and County B were created using an Emergency Operations Plan template. When initially reviewing the plans, it was immediately apparent that each plan had the same headings, content, and layout. The plans appeared to be nearly identical. The researcher contacted the emergency manager from County A to verify that a template was used. The template was provided to the county by the North Dakota Department of Emergency Services. The county emergency manager believed that the planning template had not been updated in many years except to include the National Incident Management System (NIMS). The template layout directed the planners to structure the plans with the content identified in the table of contents and provide specific language for each section that planners could choose to use either verbatim or as a foundation. Due to the layout of the template, many items identified as important plan content areas on the evaluation form were not included in the plans, affecting the plan quality. The table of contents for the template is provided in Appendix D.

Although the plans are very similar because a template was used, it is still important to evaluate each plan individually to provide feedback to each county to help improve their plans. Since the template originates with the North Dakota Department of Emergency Services (NDDES), the findings of this project could also potentially be shared with them in the hope they might consider revisions to the template. Typically, specific examples from each plan would be provided in each evaluation section below to demonstrate how the resulting scores were reached, but due to the nearly identical nature of the two plans, these examples will be provided in the discussion section of this chapter and discussed with respect to both plans simultaneously to reduce redundancy.

County A Evaluation Results

The main plan contents and appendices for County A stayed within the generic template and additional county-specific information was included throughout the plan. The evaluation of the base plan identified 5 of 12 components that were included in the plan. These components were scope, legal foundation, plan testing, maintenance and implementation. While each of these components received

points for inclusiveness, they scored low to moderate on comprehensiveness and clarity. Internal

compatibility scored the highest for each included component totaling 10 out of 24 points overall. The

evaluation identified a number of areas that were not addressed in the plan including vision, goals,

objectives, a description of the planning process, hazard and vulnerability analysis, and risk assessment.

The resulting total for the base components was 28 out of a possible 135 total points.

The evaluation of the response specific plan content identified 17 of 22 components that were

included in the plan. Each of these components was mentioned to some degree throughout the plan or

the functional annexes, but was not addressed comprehensively. For example, the plan identified what

Memorandums of Understanding (MOU) are, but did not provide a current MOU listing or a reference to

MOU document locations. The evaluation also identified a number of areas that were not addressed

including hazard and environmental monitoring, population monitoring and assessment, hazard impact

abatement, off-scene direction and control, and external coordination. The plan also lacked information

on who was included in the planning process, resource availability, and contact information for

responders, relevant players and local organizations. The response specific portion of the plan scored

much better on inclusiveness than the base score portion, but scored very low on comprehensiveness, 23

out of 126, and clarity, 10 out of 44. Internal compatibility scored higher with 33 out of 44. The total score

for the response plan portion was 88 out of 236.

The evaluation process identified an overall score for County A was 111 out of 369 points or 30%.

While the plan included a significant amount of information, it did not address all of the components

identified in the literature that should be included in plans. Those items that it did address did not provide

enough information to be considered comprehensive and clear. See Table 3 for the scores for each area.

See Appendix B to review the completed evaluation worksheet for County A.

Table 3. County A Evaluation Summary

Criteria	Base Component Score/Total Available	Plan Type Score/Total Available	Total Points/Total Available	Percentage
Inclusion	5/12	17/22	22/34	65%
Comprehensiveness	8/75	23/126	31/199	16%
Internal Compatibility	10/24	33/44	43/68	63%
Clarity	5/24	10/44	15/68	22%
OVERALL PLAN QUALITY	28/135	88/236	111/369	30%

County B Evaluation Results

The Emergency Operations Plan for County B utilized the exact same template as County A. As with County A, the main plan contents and appendices stayed within the generic template and additional county-specific information was included throughout the plan. The evaluation of the base plan identified that 6 out of 12 components were included in the plan, unlike County A which only had five. The components included were scope, legal foundation, plan testing, who was included in the planning process, maintenance and implementation. County B included a listing of the LEPC members and their contact information, giving them an additional point for who was included in the planning process. While each of these components received points for inclusiveness, they like with County A's plan, scored low to moderate on comprehensiveness and clarity. Internal compatibility, again scored the highest for each included component totaling 12 out of 24 points. County B scored two points higher than County A due to the inclusion of who was involved in the planning process. The evaluation identified a number of areas that were not addressed in the plan including vision, goals, objectives, hazard and vulnerability analysis and risk assessment. The plan received a base component score of 33 out of 135 total points. County B scored higher than County A in the basic plan components section due to the inclusion of a comprehensive resource list with contact information, contact lists for relevant agencies, and a full LEPC contact list.

The evaluation of the response specific plan identified 17 of 22 components that were included in the plan. Each of these components was mentioned to some extent throughout the plan or the functional

annexes, but was not addressed comprehensively. The same as County A, the evaluation identified a number of areas that were not addressed including hazard and environmental monitoring, population monitoring and assessment, hazard impact abatement, off-scene direction and control, and external coordination. The plan did include a basic list of MOU's and additional information on glossary terms and acronyms, resulting in a higher score than County A for the response evaluation. The contact lists were last updated in 2012 identifying a need for plan review and maintenance. The response specific portion of the plan scored much better on inclusiveness than the base score portion, but scored very low on comprehensiveness, 32 out of 126, and clarity, 11 out of 44. Internal compatibility scored higher with 33 out of 44. The total score for the response plan portion was 93 out of 236.

County B scored a total of 126 out of 369 points or 34%, slightly higher than County A. While the plan included a significant amount of information, it did not address all of the components identified in the literature that are recommended to be included in plans. The items that the plan did address did not provide enough information to be considered comprehensive and clear. See Table B to see the full list of scores for each area. See Appendix C to review the full evaluation worksheet for County B.

Table 4. County B Evaluation Summary

Criteria	Base Component Score/Total Available	Plan Type Score/Total Available	Total Points/Total Available	Percentage
Inclusion	6/12	17/22	23/34	68%
Comprehensiveness	10/75	32/126	42/199	21%
Internal Compatibility	12/24	33/44	45/68	66%
Clarity	5/24	11/44	16/68	24%
OVERALL PLAN QUALITY	33/135	93/236	126/369	34%

Discussion

The plans for County A and County B were both created from the same template provided by the North Dakota Department of Emergency Services. The primary plan content and all of the functional annexes contained the exact same information with the exception of some site-specific information added into the plan. Both plans were evaluated using the plan evaluation worksheet located in Appendix A. Each

plan was reviewed for inclusiveness, comprehensiveness, clarity and internal compatibility. Comprehensiveness, clarity, and internal compatibility will be discussed next with specific examples provided from each plan. The first area that will be addressed is comprehensiveness.

Evaluating Comprehensiveness

A plan is considered comprehensive if it has considered key issues and provided solutions related to topics identified in the literature. The county plans were evaluated for comprehensiveness using the criteria outlined in the evaluation worksheet in Appendix A. To better understand how each plan component was evaluated for this characteristic, examples of how comprehensiveness was scored for plan testing and plan maintenance will be looked at for both counties.

When reviewing the county plans for plan testing, both plans received points for inclusiveness because the following information was included verbatim in both plans:

> The plan will be tested at least once a year in the form of a simulated emergency exercise in order to provide practical, controlled experience to functional coordinators and task coordinators responsible for plan maintenance and response (County A, p. 6; County B, p. 6).

This section discusses plan testing, but it did not meet the full criteria for comprehensiveness in each plan. The plan evaluation worksheet identified several specific planning elements that should be addressed that were specific to plan testing. These elements include a schedule of periodic ongoing trainings and exercises, identification of who will be involved, their purpose, how feedback will be provided, and who will be targeted and tested. The evaluation form (Table 5) shows that both counties scored 1 out of 8 on comprehensiveness for plan testing because the plans only noted one or two of the required items.

Similar to Plan testing, Plan Maintenance was an area that received points for inclusiveness for both plans, but did not meet all of the criteria for comprehensiveness. Plan Maintenance was discussed verbatim in both plans for County B in the following paragraph:

> An annual review of this plan will be conducted by all officials involved in its execution. The emergency manager will coordinate this review and any revision and distribution found necessary (County A, p. 6; County B, p. 6).

While the plan section above mentions that the plan needs to be reviewed and revised on an annual basis, it does not fulfill the criteria from the evaluation worksheet. The description above does identify two of the three specific planning elements assessed, such as the timeframe that the plan should be reviewed and the timeframe that the plan should be revised, but it does not describe the process by which maintenance will be conducted. This portion of the plan scored a 2 out of 3 in comprehensiveness because review and revision was discussed, but it did not describe the maintenance process, document any reviews or revisions or include who was involved in the process. The evaluation form criteria and scores for each county are identified in Table 5.

Table 5. Comprehensiveness Evaluation Score Examples

Components & Sub-Components	Inclusion	Specific Planning Elements Assessed	Comprehensive
County A			
Plan Testing	1/1	Schedule of periodic ongoing trainings	1/8
		Identification of who will be targeted in trainings	
		Identification of the purpose of trainings	
		Identification of how feedback will be provided and incorporated from trainings	
		Schedule of periodic ongoing exercises (if applicable)	
		Identification of who will be targeted in exercises	
		Identification of what will be tested in exercises	
		Identification of how feedback will be provided and incorporated from exercises	
Plan Maintenance	1/1	Specifies timeframe on an ongoing basis in which the plan will be reviewed	2/3
		Specifies timeframe on an ongoing basis in which the plan will be revised	
		Describes process by which maintenance will be conducted	
County B			
Plan Testing	1/1	Schedule of periodic ongoing trainings	1/8
		Identification of who will be targeted in trainings	
		Identification of the purpose of trainings	
		Identification of how feedback will be provided and incorporated from trainings	
		Schedule of periodic ongoing exercises (if applicable)	
		Identification of who will be targeted in exercises	
		Identification of what will be tested in exercises	
		Identification of how feedback will be provided and incorporated from exercises	
Plan Maintenance	1/1	Specifies timeframe on an ongoing basis in which the plan will be reviewed	2/3
		Specifies timeframe on an ongoing basis in which the plan will be revised	
		Describes process by which maintenance will be conducted	

Evaluating Clarity

Each plan element was also evaluated for clarity. Clarity looks at whether the plan is easily understood, clearly and concisely written, and supported by evidence. For example, when reviewing the

element under the response plan evaluation for search and rescue, there is very little information

available about this topic. Search and rescue is referenced in the following sections of each county plan

in Figure 1 and Figure 2.

Coordinate search efforts involving lost or missing persons, fugitives and bomb threats	Sheriff/Police Department	

Figure 1. County A Search and Rescue Example (p. 39)

Response Phase (Continued)		
Task/Responsibility	**Task Coordinator**	**Reference Materials**
Coordinate and define urban search and rescue efforts	Sheriff/Police Chief/Fire Chiefs	

Figure 2. County B Search and Rescue Example (p. 76)

This section was evaluated for clarity and received a 0 out of 2 points for both county plans. While the

wording was clear and concise, the lack of supporting information leaves gaps in understanding for the

reader. These figures represent all of the information for search and rescue for each plan. While plans

cannot be overly detailed and rigid, more information is needed on this topic. This area could have been

clearer by adding an annex on search and rescue and referencing it to provide more information. This

area also scored very low on comprehensiveness, which also reflects on clarity. If this area is not

comprehensive, it is also very difficult for it to be clear as it is missing important information.

Clarity also ranked very similarly in the area of documentation of agreements for the same

reasons. This was a recurring theme throughout the plan since the bulk of the information was contained

in functional annexes that provided very generic information on many of the plan components that were

evaluated. Figure 2 provides a sample of some of the information contained under documentation of

agreements.

Request mutual aid and other resources as necessary	FC (Above)/Emergency Manager	

Figure 3. Documentation of Agreements Example (County A, pg. 39; County B, pg. 76)

There was also an additional section included on Memorandums of Understanding (MOU) that included a generic list of items that should be included in an MOU. County B scored slightly better than County A on clarity for this section because the plan also included a list of agencies and organizations that the county had agreements with. County B scored a 1 out of 2 on clarity, while County A scored a 0 out of 2. County B also scored a 3 out of 7 on comprehensiveness, while County A scored a 1 out of 7, which also reflects the effect of comprehensiveness on clarity.

Evaluating Internal Compatibility

Internal Compatibility was also evaluated throughout each plan to ensure consistency within the plans. For the items that were included, internal compatibility was very good. For example, both plans were very consistent in their management system and the relevant players and their roles. These were outlined in the functional annexes, coordination and control charts, and functional coordinators. Overall, both plans scored very high on internal compatibility for the items that received points for inclusiveness, but the overall internal compatibility scores suffered because the items that did not receive any points for inclusiveness were automatically given a zero for comprehensiveness, clarity, and internal compatibility. This resulted in an overall lower score of 43 out of 68 in internal compatibility for County A and 45 out of 68 for County B.

Plan Comparisons

The primary difference noted between the two plans was the inclusion of site specific information that supplemented the templated material for County B. The plan put together by County B scored slightly higher overall due to more site-specific information available throughout the plan such as contact lists and resource lists for each functional annex, an LEPC contact list, an MOU list, and a section for acronyms and glossary terms. The County A plan did not include a significant amount of additional information beyond the base plan template, resulting in lower scores than County B.

Due to the layout and information provided in the template, both plans scored very closely in inclusion for base plan components and response specific components. Both plans were missing several areas from the evaluation sheet, such as a vision, goals, objectives, hazard and vulnerability analysis and risk assessment, just to name a few. Both plans failed to move beyond the very general information provided in the functional annexes on topics such as off-scene control and search and rescue. Many of

the topics that were identified in the plan did not provide any additional information that indicates that there was any valuable discussion on how to progress with each portion of the response, if an event were to occur. Even more concerning is that neither plan had any information pertaining to hazard and vulnerability analysis, which led the researcher to surmise that this was not done. This is an important discussion because businesses and community members rely on the county response agencies to understand the hazards their communities are exposed to, build a plan and provide a response.

The Environmental Protection Agency (EPA) allows businesses subject to the Risk Management Program (RMP) not to plan for response because it is covered by the county's plan. Businesses that handle certain amounts of highly hazardous chemicals, like anhydrous ammonia are required by the EPA to send information to the county Local Emergency Planning Committees (LEPCs) every year in the form of Tier II reports identifying the chemical name, the hazards, and the quantity of chemical on site. The information contained in Tier II reports is intended to be used for planning purposes, but based on the results of the evaluations, it does not appear that this information was factored into the plan. It is very concerning that there is no information in the county plans on evaluating hazards, not only to the counties that they presume to represent, but also for the businesses located in these counties. The next section will discuss the implications.

Implications

After reviewing the plans for each county, the results are concerning as are the implications for the response effort if a facility experiences a significant release. The plan evaluations and implications will be discussed in this section as they relate to the context, planning process, the basic characteristics of plan quality, and the implications for Central Plains Ag Services.

Context

As discussed in Chapter 2, context plays a significant role in determining the quality of the planning process and the quality of the plan. The context surrounding planning may help identify the reasons why County A and County B did not allow them to create a better plan than they did. Some context issues that may affect planning include the number of personnel available to facilitate and guide planning (Perry & Lindell, 2007). Smaller counties may only have an Emergency Manager that is part time or has multiple job positions and responsibilities (McEntire, 2007; Perry & Lindell, 2007). Another area

that may affect planning is if there is little support for emergency management activities due to other jurisdictional priorities (McEntire, 2007; Perry & Lindell, 2007). Also, emergency managers may have very little training and experience on how to conduct effective planning (Perry & Lindell, 2007). With these reasons in mind, one can understand why a template would be an attractive option to use. Nevertheless, the template appears to have negatively impacted the quality of the resulting plans.

As the plan evaluations show, the template used for these plans has a significant impact on plan quality. This helps identify the limitations of using a generic template for planning purposes as it may guide the planners too stringently within the framework of the template. The implications of using a template that does not meet the evaluation criteria discussed in this paper are a poor quality plan and the possibility of a similar quality response if a disaster were to occur in these counties.

Planning Process

Chapter 2 of this paper discussed the importance of the planning process, the need for participation, and the characteristics and content that need to be included. When a template is used for planning, it is completely unclear without the addition of a planning process section, who was involved or whether there was an actual process. Chapter 2 also discussed the importance of transparency in the planning process so that the methodology can be easily understood and it is clear how the process evolved. Not only did the county plans not include a meaningful planning process section, they used a template, which without any other evidence, would indicate that there was not a planning process. Chapter 2 also discussed the importance of participation in the planning process by representatives who are served by the plan or participate in executing the plan. The plans were not clear as to who was involved in the planning process and to what extent. Without transparency, participation, and relevant content, the process to produce the plan is no longer useful and educational, but what results is a book on a shelf put together to check a regulatory box for compliance.

Chapter 2 also discusses the base plan content and the response plan content that should be included in plans. Because a template was used, both of these areas were missing important content. The response specific content was missing information on the hazard, risk, and vulnerability assessment, which is a fundamental part of planning that identifies the facts for which the plan is being built on (Berke, 1994; Berke & Godschalk, 2009; Bunnell & Jepson, 2011; Oliveira & Pinho, 2010). The lack of a hazard,

45

risk and vulnerability assessment suggests that the planning process was not built on related facts and that the various hazards the counties face were not identified or adequately addressed. This indicates that there is the possibility that the hazard that chemical facilities pose to the surrounding community was not specifically discussed in the planning process.

Basic Characteristics of Plan Quality

In Chapter 2, the importance of determining what characteristics make a plan high quality were presented including inclusiveness, comprehensiveness, clarity, internal compatibility, and external compatibility. The plan evaluations section discussed the scoring for each of these areas and found that while the plans may have included some of the relevant content areas, they did not score well in comprehensiveness and clarity. The implications of this are important to note because it shows that the planning process did not comprehensively and clearly consider all of the content areas that it should have. Once again, this could be the result of using the planning template, but the lack of information contained within the plan suggests that those involved in the planning process did not adequately discuss each of these content areas.

Population monitoring and assessment is an example of a content area that should have been addressed in the planning process. This is an important consideration for the communities Central Plains Ag Services operates in because in the event of an anhydrous ammonia release, the responding agencies need to be prepared to monitor people's behavior during and after during the release. Anhydrous ammonia is highly toxic and if people choose to leave their homes, there is an immediate threat to their life and health if they are exposed to the vapor cloud. If they choose to shelter-in-place, they need information on how to do it properly to prevent the vapor from entering their homes. This also identifies the need for planners to address population action selection and implementation.

Population action selection and implementation follows population monitoring and moves it into action. This area identifies what the jurisdiction will do in response to how people are reacting to the hazard. This could include ordering buses for evacuation to move people out of the release area safely, setting up shelters for displaced residents, and setting up emergency medical care centers to treat chemical exposure. This content area was not addressed within the county plans and the lack of planning and foresight can have a significant impact on the response.

Hazard and environmental monitoring is another content area that needs to be addressed during the planning process specific to an anhydrous ammonia release. Hazard and environmental monitoring looks at the potential impacts to the surrounding areas and identifies how the jurisdiction will continue to survey during and after the release (Perry & Lindell, 2007). Anhydrous ammonia vapor is lighter than air and will generally go up unless it is humid, then the vapor cloud will fall down and remain closer to the ground. This characteristic of anhydrous ammonia vapor, along with wind speed and direction are important things to consider during the monitoring process to determine where the vapor cloud will go. Also, the vapor cloud has the potential to contaminate any water sources that it reaches by drastically raising the pH.

These examples outline how important base plan and response plan content is for planning and the resulting response. These areas need to be readily addressed during the planning process to prevent additional impacts to the surrounding community.

Overall

Companies like CPAS are not required to have a response plan according to the EPA, thus they rely heavily on the county response agencies to respond to significant chemical releases within the communities they serve. Based on the plan evaluation results, the researcher is concerned about the implications for CPAS and the communities in which it operates. The plan evaluation scores, the use of a template, the lack of a documented hazard, risk and vulnerability assessment, and the lack of information on who was involved in the planning process bring to light serious concerns for CPAS.

The low evaluation scores for the response plans suggests that the county may not be adequately prepared to respond to a significant chemical release of anhydrous ammonia. The lack of many content areas within the plan and the small amount of information provided for those that were included identifies serious gaps in the plan. Looking at the plans as a reflection of the planning process, the use of a template and the small amount of deviation from the original template suggests that planning did not much of a process. The use of a template, the information provided in the plans, and the results of the plan evaluations, suggest that the planning process, the plan, and the resulting response effort will be of similar quality.

The plans did not readily identify who was involved in the planning process, which based on the idea that plans should be a reflection of the planning process, suggests that planning was done without all of the relevant players in attendance. As the safety specialist for CPAS, the researcher should have been a public stakeholder participating in meetings about the hazardous chemicals that the company handles. The lack of outreach to public stakeholders and the lack of documentation on who participated in the process indicate that there could also be a lack of buy-in and support, which could result in poor collaboration and cooperation during the response effort.

The lack of a hazard, risk, and vulnerability assessment is deeply concerning because it suggests that the possibility of an anhydrous ammonia release may have never been discussed during the planning process. CPAS provides this information annually in the form of Tier II reports that are sent to the county emergency manager and the local fire departments. It is important for responders to understand the properties of anhydrous ammonia to determine how it will behave in certain conditions, how it will affect the surrounding community, and what type of equipment and response effort is needed. The leaves the question as to whether responders are adequately prepared to handle a release. Anhydrous ammonia has the potential to seriously injure or kill people and an ad hoc response can result in greater casualties.

CPAS relies on the county to respond to a release of anhydrous ammonia because it is not feasible to have an intercompany response team and the EPA does not require them to have one. If the county response does not go well, this reflects not only on the county, but on CPAS. The ability to operate a business successfully is dependent on the reputation the company builds. A significant release with an ad hoc response can negatively affect the reputation of Central Plains Ag Services. Because CPAS has chosen to rely on the county to respond, it is important to note that CPAS is still responsible for any release that occurs. It is in CPAS best interests to make sure that all precautions have been taken to prevent a release from occurring, through regular plant maintenance, inspections and employee training.

Each of these items is addressed in the risk management program that the company has put together for each anhydrous ammonia location. This process of putting together the RMP helps the company evaluate hazards that can result in a release and also identify weaknesses in the system. CPAS should also participate in the planning process in a meaningful way. This can include reaching out to the LEPC to request that a CPAS employee participate in the planning process, providing annual facility tours

to emergency response personnel, providing hazard information to the LEPC and local responders, volunteering to host an exercise at their facility, and providing assistance and funding for any specialty training and equipment needed. Ultimately, if CPAS continues to handle anhydrous ammonia, the company should look into putting together a hazardous materials response team to address any potential releases. If that is not feasible, CPAS could provide hazardous materials training and supplies to the local response agencies.

Limitations

The evaluation process has several limitations that need to be identified. Evaluator subjectivity in scoring can be a limitation, but because a template was used for both plans, making them nearly identical, the bias was greatly reduced. However, there are true limitations that need to be discussed for this study.

External compatibility was discussed in the basic characteristics of plan quality section as an essential limitation. External compatibility is the idea that a plan must be built upon the needs of the community it is serving and the community must support it (Alexander, 2002; Baer, 1997; Berke & Godschalk, 2009; Bunnell & Jepson, 2011; Burby, 2003; Evans-Cowley & Gough, 2008; Oliveira & Pinho, 2009; Oliveira & Pinho, 2010). This characteristic cannot be evaluated by looking at the plan, so it is impossible to determine whether external compatibility exists. While this is an important limitation to discuss, there is still considerable value in evaluating plans to provide feedback for planning agencies to help improve their plans.

It was difficult to fully determine the quality of the planning process since the plans did not include related content. The evaluation sheet focuses solely on plan content and it would be ideal if information about the planning process were included, but, even if it were, to better understand plan value there are additional items that can be assessed beyond the paper plan. These items can include looking at the exercises have been conducted within the county to test the plan and reviewing the after action reports. It could also include interviews with the county emergency manager or members of the planning team to better determine what information was discussed during the planning process that may not have been adequately reflected in the paper plan. While these areas could be very helpful, the paper plan evaluation

process is still very beneficial as it can help identify gaps in planning and provide recommendations to planners on how to improve their planning process and the resulting plan.

One consideration that needs to be discussed is that some contact information that was considered sensitive was removed from County B's plan prior to being sent for evaluation, but the emergency manager also noted that the majority was sent for evaluation. This missing contact information could potentially affect the accuracy of scoring, but based on the information from the county on what was removed, this should be negligible.

Recommendations

Based on the plan evaluations and the researcher's experience within an emergency management and safety context, a number of recommendations are noted that can assist planners.

Recommendation 1. Analysis and Participation

The first recommendation is to identify the hazards within communities by doing a hazard, risk and vulnerability analysis. Based on that analysis, determine who the relevant players are within the communities who would be a benefit to and also who would benefit from the planning process. These players could include knowledgeable individuals from local businesses that pose a hazard within the communities. For example, if a local business has hazardous chemicals on-site that are a threat to the community, they may provide additional insight that would benefit the process and build a relationship between local responders, the LEPC, and the company.

These companies may also be able to provide additional training and resources that may not be available through normal channels. Organize facility walk-throughs at these companies to become better acquainted with their facilities, resources, and available water supply. This will increase communication and understanding of how they would like a response to be handled to minimize exposure to the local community.

Recommendation 2. Utilize the Evaluation Form

The evaluation form used in this paper contains all of the content areas that should be included in a high quality plan and their descriptions. Planners should use this as a guidance document to build the content areas within their current plans and enhance the planning process by using these areas as discussion points. Planners may also want to use the results of their hazard, risk, and vulnerability

analysis to identify their highest hazards and discuss each content section as it relates to that hazard. This can help them build a better understanding of the response effort and address the unique considerations for each hazard.

Recommendation 3. Templates

Planners should be cautious when using templates for creating plans. If a template must be used, design a very basic template and guidance document that includes the items identified in the evaluation form for this paper and tailor it to the county. A guidance document should include questions to ask during planning meetings to guide discussion for each area. The template may help put the relevant information into a more useable format and provide more information about how the planning process was conducted, but should not be so detailed that it takes away from the planning process. Utilizing a pre-built template with general information included prior to the start of planning may take away from the planning process. Templates can make it easier to skip over content areas and hinder in-depth discussion on a topic. The North Dakota Department of Emergency Services (NDDES) and the counties that it serves could benefit greatly if the planning template was revised and guidance document was created using the information in this paper.

Recommendation 4. Expand Training Offerings

Along with revising the planning template and creating a guidance document, training should be made available to emergency managers to support their facilitation of effective planning processes and as a result, higher quality plans. Specifically, training should include not only plan content from the evaluation form and why each type of content is important to consider and reflect in response plans, but also an orientation to the characteristics of the ideal planning process. These characteristics are important to help planners understand that plans should be internally driven, inclusive, consensus-based, transparent, evolving and informed. For example, training on inclusiveness should include information on the importance of participation in planning, who should be involved in planning, and the different techniques to increase participation as was described in Chapter 2. A planning orientation training agenda could be built based on the information provided in this paper. Training could be held as a formal classroom session, an interactive session, a question and answer session, a mock planning committee, or a collaborative session, just to name a few. There are a variety of ways that planning can be

conducted, but it is important to provide planners with a foundation of the elements that have shown to improve the planning process and to create a plan that is a reflection of that process.

The recommendations discussed above have the potential to significantly impact the county planning process and the resulting plans in a positive way. By creating the pathway for a more comprehensive planning process, involving more stakeholders in that process, limiting the reliance on templates, and providing training on planning, the counties can improve their planning efforts. This can have a significant impact on the businesses and communities that response plans are designed to serve and protect.

CHAPTER 4. CONCLUSION

This project began because the researcher was employed with an agricultural company that handles hazardous chemicals and was reliant upon county responders if a significant chemical release occurred. This paper discussed the three contexts that affect planning and looked at the research literature to determine the process, content, and characteristics that should be included to produce a high quality plan. Based on the findings of the literature, a plan evaluation worksheet was validated and two county emergency response plans were evaluated for quality. The plans were found to utilize a template provided by the state that had a significant negative impact on the resulting plan quality. The implications for the resulting response effort were discussed and recommendations provided.

In all communities, first responders are relied upon to respond to significant incidents that affect public safety. Emergency planning is an integral process for an effective response. The planning process and the resulting plan should exemplify the findings of the research literature to ensure that planning is conducted in the most effective manner possible to gain the highest understanding and the most informed response possible. The evaluations conducted for each plan identify significant gaps in the planning process that may affect the county's ability to respond to a significant chemical release. The implications for the relying on the county to respond to chemical releases are the response efforts may not be adequate, based on the plan quality. Also, no one from Central Plains Ag Services (CPAS) was included in the planning process, which could have been a great benefit to planning for anhydrous ammonia releases by increasing the level of preparedness, collaboration, and cooperation between the company and the response agency.

Recommendations

The findings of this paper identify a potential problem in the planning process and the resulting quality of plans produced by counties in North Dakota, especially those that utilize the North Dakota Department of Emergency Services (NDDES) planning template. This paper opens the door for future researchers to evaluate county plans on a broader scale across the state to determine how each county scores in regard to plan quality. This process can identify weaknesses in the planning process and in plan content that can then be addressed state-wide. The state can then focus efforts on providing targeted training for counties to aid in the planning process and development of plan content.

The state can also focus on providing a basic template, a guidance document, and training for planners to help them better understand the planning process so they can improve the process and their resulting plans. This has the potential to significantly impact the response efforts that those plans are created for. Planners can also look at expanding stakeholder participation to those in the community that have the expertise when handling hazardous chemicals. The counties that provided plans for evaluation for this paper should utilize the evaluation form and their resulting scores to expand discussion during the planning process and improve the content of their plans for inclusiveness, comprehensiveness, clarity, and internal compatibility. These counties should also test their plans regularly to identify gaps in the response efforts, increase knowledge of the plan, and turn the plan into a living document, rather than a book on the shelf. These recommendations are the starting point for improving county response plans across the state of North Dakota. Overall, more research should be done to help counties create a planning process and a response plan that will better serve the communities in North Dakota.

CHAPTER 5. REFERENCES

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APPENDIX A. BLANK RESPONSE PLAN EVALUATION FORM

Component & Sub-Components	Inclusion	Specific Planning Elements Assessed	Compre.	Intern. Compat.	Clarity
Base Components					
Vision	/1	Description of the community's/organization's vision of itself as a result of implementing the plan	/1	/2	/2
Goals	/1	Goals are directed toward the vision Goals address sustainability and/or resilience as appropriate to plan type Goals are future-oriented, positive statements that can be used to frame policies	/3	/2	/2
Objectives	/1	Objectives are directed toward fulfilling goals Objectives are specific Objectives are measureable Objectives are attainable Objectives are realistic Objectives are time-bound	/6	/2	/2
Scope	/1	Plan assumptions identified Description of plan horizon Description of plan development structure role Description of plan development structure responsibilities Description of plan development structure relationships Description of geographic limitations of plan Description of administrative limitations of plan Statement of how this plan fits with other jurisdictional/organizational AND emergency management plans	/8	/2	/2
Planning Process: Who and How involved	/1	Description of groups/individual organizations (should show broad involvement) Description of numbers involved Description of who involved what stages Description of frequency of contact with who involved Description of a variety of techniques used to provide information to stakeholders Description of number of techniques used to provide information to stakeholders Description of variety of techniques used to get information from stakeholders Description of number of techniques used to get information from stakeholders Description of how stakeholders influenced the process	/9	/2	/2
Legal Foundation	/1	Description of authority to plan provided by federal, state, and/or local regulations Description of duty to plan provided by federal, state, and/or local regulations Description of standards referred to in process of plan development	/3	/2	/2
Hazard Analysis	/1	Process used to identify hazards explained Any assumptions/limitations associated with process to identify hazards explained Potential types of hazards listed Description of characteristics of each hazard Mapping and/or modeling of hazards demonstrated Sources of data described (multiple sources referred to)	/6	/2	/2

Component & Sub-Components	Inclusion	Specific Planning Elements Assessed	Compre.	Intern. Compat.	Clarity
Vulnerability Analysis	/1	Process used to assess vulnerabilities explained	/12	/2	/2
		Any assumptions/limitations associated with process to identify vulnerabilities explained			
		Geographic vulnerabilities assessed			
		Assessment of geographic vulnerabilities data informed			
		Assessment of geographic vulnerabilities based on reliable data			
		Social vulnerabilities assessed (i.e., health care system, employment, poverty index, languages spoken in area, educational background, gender, age, rent vs. own)			
		Assessment of social vulnerabilities data informed			
		Assessment of social vulnerabilities based on reliable data			
		Special needs understood and addressed as appropriate to plan type (i.e., communication, medical, maintaining functional independence, supervision, transportation, pets)			
		Economic vulnerabilities assessed (i.e., infrastructure, businesses, critical facilities, industry)			
		Assessment of economic vulnerabilities data informed			
		Assessment of economic vulnerabilities based on reliable data			
Risk Assessment	/1	Process used to assess risk explained	/9	/2	/2
		Any assumptions/limitations associated with process to identify risk explained			
		Direct impact assessed			
		Indirect impact assessed			
		Assessments are data informed			
		Data used is reliable			
		Likelihood established			
		Hazards prioritized/ranked			
		Relationship of hazard, vulnerability, and risk processes to planning described			
Plan Testing	/1	Schedule of periodic ongoing trainings	/8	/2	/2
		Identification of who will be targeted in trainings			
		Identification of the purpose of trainings			
		Identification of how feedback will be provided and incorporated from trainings			
		Schedule of periodic ongoing exercises (if applicable)			
		Identification of who will be targeted in exercises			
		Identification of what will be tested in exercises			
		Identification of how feedback will be provided and incorporated from exercises			
Plan Maintenance	/1	Specifies timeframe on an ongoing basis in which the plan will be reviewed	/3	/2	/2
		Specifies timeframe on an ongoing basis in which the plan will be revised			
		Describes process by which maintenance will be conducted			
Plan Implement.	/1	Responsibility for implementation identified	/7	/2	/2
		Identification of human resources required			
		Identification of financial resources required			
		Identification of technical resources required			
		Discussion of how resources will be acquired			
		Description of how evaluation will be handled including indicators			
		Inclusion of flexibility statement			
TOTALS	/12		/75	/24	/24

Component & Sub-Components	Inclusion	Specific Planning Elements Assessed	Compre.	Intern. Compat.	Clarity
Response Specific Components					
Threat Detection and Emergency Classification	/1	Identifies the organization that initiates and coordinates the function	/6	/2	/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Hazard and Environmental Monitoring	/1	Identifies the organization that initiates and coordinates the function	/6	/2	/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Population Monitoring and Assessment	/1	Identifies the organization that initiates and coordinates the function	/6	/2	/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Damage Assessment	/1	Identifies the organization that initiates and coordinates the function	/6	/2	/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			

Component & Sub-Components	Inclusion	Specific Planning Elements Assessed	Compre.	Intern. Compat.	Clarity
Hazard Source Control	/1	Identifies the organization that initiates and coordinates the function	/6	/2	/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Hazard Impact Abatement	/1	Identifies the organization that initiates and coordinates the function	/6	/2	/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Population Action Selection and Implementation	/1	Identifies the organization that initiates and coordinates the function	/6	/2	/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Population Warning	/1	Identifies the organization that initiates and coordinates the function	/6	/2	/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			

Component & Sub-Components	Inclusion	Specific Planning Elements Assessed	Compre.	Intern. Compat.	Clarity
Evacuation	/1	Identifies the organization that initiates and coordinates the function	/6	/2	/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Sheltering	/1	Identifies the organization that initiates and coordinates the function	/6	/2	/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Impact Zone Access Control and Security	/1	Identifies the organization that initiates and coordinates the function	/6	/2	/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Reception and Care of Victims	/1	Identifies the organization that initiates and coordinates the function	/6	/2	/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			

Component & Sub-Components	Inclusion	Specific Planning Elements Assessed	Compre.	Intern. Compat.	Clarity
Search and Rescue	/1	Identifies the organization that initiates and coordinates the function	/6	/2	/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Emergency Medical Care and Morgues	/1	Identifies the organization that initiates and coordinates the function	/6	/2	/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Agency Notification and Mobilization	/1	Identifies those with authority to notify and mobilize agencies	/4	/2	/2
		Identifies agencies to be mobilized and conditions under which mobilized			
		Specifies process and mechanisms that will be used to notify agencies			
		Identifies the location to which agencies should report once mobilized			
Communication	/1	Identifies the organization that initiates and coordinates the function	/7	/2	/2
		Describe the primary communications system and equipment to be used			
		Describe provisions for back-up communications should the primary communication system fail			
		Addresses interoperability			
		Describes structures and processes for the processing of incoming information			
		Describes structures and processes for the dissemination of information			
		Describes necessary administrative and logistic support related to function			
Resource Management	/1	Identifies the process by which facilities and equipment will be activated, mobilized, monitored, deactivated	/3	/2	/2
		Identifies the process by which resource documentation and financing of facilities and equipment will be managed			
		Describes necessary administrative and logistic support related to function			

Component & Sub-Components	Inclusion	Specific Planning Elements Assessed	Compre.	Intern. Compat.	Clarity
On Scene Direction and Control	/1	Specifies authority structure for on scene efforts	/7	/2	/2
		Specifies overarching organizational system, structures, and/or processes that will be used			
		Specifies anticipated off scene agency staffing and staffing levels during mobilizations			
		Identifies agencies/organizations anticipated to play a key role and their basic responsibilities			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
		Specifies how on-scene efforts will interact with off scene efforts including communication, resource ordering, and decision-making			
		Describes necessary administrative and logistic support related to function			
Off Scene Direction and Control	/1	Specifies authority structure for off scene	/6	/2	/2
		Specifies overarching organizational system, structures, and/or processes that will be used			
		Specifies anticipated off scene agency staffing and staffing levels during mobilizations			
		Identifies agencies/organizations anticipated to play a key role and their basic responsibilities			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
		Describes necessary administrative and logistic support related to function			
External Coordination	/1	Describes how communication and coordination with other levels of government and other organizations will work	/2	/2	/2
		Describes necessary administrative and logistic support related to function			
Public Information	/1	Describes process by which information will be communicated to the public	/6	/2	/2
		Describes plans to reach those with communication related functional needs during response			
		Specifies one or more individuals who will act as a public information officer in an event			
		Describes the role of the public information officer including their authority			
		Describes process by which information will be shared with the media			
		Describes necessary administrative and logistic support related to function			
Documentation of Agreements	/1	Lists all reciprocal agreements	/7	/2	/2
		For each agreement, describes conditions under which the agreement is activated			
		For each agreement, describes the specific nature of the assistance to be rendered			
		For each agreement, resources for loan identified by location			
		For each agreement, provides instructions of how personnel from an assisting organization will be deployed and to whom they will report			
		For each agreement, describes any payments necessary for the use of the responding personnel and equipment			
		For each agreement, describes how is the bearer of liability for injury or damage incurred in the response			
TOTALS	/22		/126	/44	/44

OVERALL PLAN QUALITY

Criteria	Base Component Score/Total Available	Plan Type Score/Total Available	Total Points/Total Available	Percentage
Inclusion	/12	/22	/34	
Comprehensiveness	/75	/126	/199	
Internal Compatibility	/24	/44	/68	
Clarity	/24	/44	/68	
OVERALL PLAN QUALITY	/135	/236	/369	

APPENDIX B. COUNTY A RESPONSE PLAN EVALUATION

Component & Sub-Components	Inclusion	Specific Planning Elements Assessed	Compre.	Intern. Compat.	Clarity
Base Components					
Vision	0/1	Description of the community's/organization's vision of itself as a result of implementing the plan	/1	/2	/2
Goals	0/1	Goals are directed toward the vision Goals address sustainability and/or resilience as appropriate to plan type Goals are future-oriented, positive statements that can be used to frame policies	/3	/2	/2
Objectives	0/1	Objectives are directed toward fulfilling goals Objectives are specific Objectives are measureable Objectives are attainable Objectives are realistic Objectives are time-bound	/6	/2	/2
Scope	1/1	Plan assumptions identified Description of plan horizon Description of plan development structure role Description of plan development structure responsibilities Description of plan development structure relationships Description of geographic limitations of plan Description of administrative limitations of plan Statement of how this plan fits with other jurisdictional/organizational AND emergency management plans	3/8	2/2	1/2
Planning Process: Who and How involved	0/1	Description of groups/individual organizations (should show broad involvement) Description of numbers involved Description of who involved what stages Description of frequency of contact with who involved Description of a variety of techniques used to provide information to stakeholders Description of number of techniques used to provide information to stakeholders Description of variety of techniques used to get information from stakeholders Description of number of techniques used to get information from stakeholders Description of how stakeholders influenced the process	/9	/2	/2
Legal Foundation	1/1	Description of authority to plan provided by federal, state, and/or local regulations Description of duty to plan provided by federal, state, and/or local regulations Description of standards referred to in process of plan development	1/3	2/2	1/2
Hazard Analysis	0/1	Process used to identify hazards explained Any assumptions/limitations associated with process to identify hazards explained Potential types of hazards listed Description of characteristics of each hazard Mapping and/or modeling of hazards demonstrated Sources of data described (multiple sources referred to)	/6	/2	/2

Component & Sub-Components	Inclusion	Specific Planning Elements Assessed	Compre.	Intern. Compat.	Clarity
Vulnerability Analysis	0/1	Process used to assess vulnerabilities explained Any assumptions/limitations associated with process to identify vulnerabilities explained Geographic vulnerabilities assessed Assessment of geographic vulnerabilities data informed Assessment of geographic vulnerabilities based on reliable data Social vulnerabilities assessed (i.e., health care system, employment, poverty index, languages spoken in area, educational background, gender, age, rent vs. own) Assessment of social vulnerabilities data informed Assessment of social vulnerabilities based on reliable data Special needs understood and addressed as appropriate to plan type (i.e., communication, medical, maintaining functional independence, supervision, transportation, pets) Economic vulnerabilities assessed (i.e., infrastructure, businesses, critical facilities, industry) Assessment of economic vulnerabilities data informed Assessment of economic vulnerabilities based on reliable data	/12	/2	/2
Risk Assessment	0/1	Process used to assess risk explained Any assumptions/limitations associated with process to identify risk explained Direct impact assessed Indirect impact assessed Assessments are data informed Data used is reliable Likelihood established Hazards prioritized/ranked Relationship of hazard, vulnerability, and risk processes to planning described	/9	/2	/2
Plan Testing	1/1	Schedule of periodic ongoing trainings Identification of who will be targeted in trainings Identification of the purpose of trainings Identification of how feedback will be provided and incorporated from trainings Schedule of periodic ongoing exercises (if applicable) Identification of who will be targeted in exercises Identification of what will be tested in exercises Identification of how feedback will be provided and incorporated from exercises	1/8	2/2	1/2
Plan Maintenance	1/1	Specifies timeframe on an ongoing basis in which the plan will be reviewed Specifies timeframe on an ongoing basis in which the plan will be revised Describes process by which maintenance will be conducted	2/3	2/2	1/2
Plan Implement.	1/1	Responsibility for implementation identified Identification of human resources required Identification of financial resources required Identification of technical resources required Discussion of how resources will be acquired Description of how evaluation will be handled including indicators Inclusion of flexibility statement	2/7	2/2	1/2
TOTALS	5/12		9/75	10/24	5/24

Component & Sub-Components	Inclusion	Specific Planning Elements Assessed	Compre.	Intern. Compat.	Clarity
Response Specific Components					
Threat Detection and Emergency Classification	1/1	Identifies the organization that initiates and coordinates the function Identifies strategies necessary to fulfill the function Identifies agencies that execute the function and their responsibilities Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines	1/6	2/2	0/2
Hazard and Environmental Monitoring	0/1	Identifies the organization that initiates and coordinates the function Identifies strategies necessary to fulfill the function Identifies agencies that execute the function and their responsibilities Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines	/6	/2	/2
Population Monitoring and Assessment	0/1	Identifies the organization that initiates and coordinates the function Identifies strategies necessary to fulfill the function Identifies agencies that execute the function and their responsibilities Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines	/6	/2	/2
Damage Assessment	1/1	Identifies the organization that initiates and coordinates the function Identifies strategies necessary to fulfill the function Identifies agencies that execute the function and their responsibilities Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines	2/6	2/2	1/2

Component & Sub-Components	Inclusion	Specific Planning Elements Assessed	Compre.	Intern. Compat.	Clarity
Hazard Source Control	1/1	Identifies the organization that initiates and coordinates the function Identifies strategies necessary to fulfill the function Identifies agencies that execute the function and their responsibilities Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines	1/6	2/2	0/2
Hazard Impact Abatement	0/1	Identifies the organization that initiates and coordinates the function Identifies strategies necessary to fulfill the function Identifies agencies that execute the function and their responsibilities Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines	/6	/2	/2
Population Action Selection and Implementation	1/1	Identifies the organization that initiates and coordinates the function Identifies strategies necessary to fulfill the function Identifies agencies that execute the function and their responsibilities Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines	1/6	2/2	1/2
Population Warning	1/1	Identifies the organization that initiates and coordinates the function Identifies strategies necessary to fulfill the function Identifies agencies that execute the function and their responsibilities Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines	1/6	2/2	1/2

Component & Sub-Components	Inclusion	Specific Planning Elements Assessed	Compre.	Intern. Compat.	Clarity
Evacuation	1/1	Identifies the organization that initiates and coordinates the function	2/6	2/2	1/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Sheltering	1/1	Identifies the organization that initiates and coordinates the function	1/6	2/2	0/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Impact Zone Access Control and Security	1/1	Identifies the organization that initiates and coordinates the function	2/6	2/2	1/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Reception and Care of Victims	1/1	Identifies the organization that initiates and coordinates the function	2/6	2/2	1/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			

Component & Sub-Components	Inclusion	Specific Planning Elements Assessed	Compre.	Intern. Compat.	Clarity
Search and Rescue	1/1	Identifies the organization that initiates and coordinates the function	1/6	2/2	0/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Emergency Medical Care and Morgues	1/1	Identifies the organization that initiates and coordinates the function	2/6	2/2	1/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Agency Notification and Mobilization	1/1	Identifies those with authority to notify and mobilize agencies	1/4	2/2	0/2
		Identifies agencies to be mobilized and conditions under which mobilized			
		Specifies process and mechanisms that will be used to notify agencies			
		Identifies the location to which agencies should report once mobilized			
Communication	1/1	Identifies the organization that initiates and coordinates the function	1/7	1/2	1/2
		Describe the primary communications system and equipment to be used			
		Describe provisions for back-up communications should the primary communication system fail			
		Addresses interoperability			
		Describes structures and processes for the processing of incoming information			
		Describes structures and processes for the dissemination of information			
		Describes necessary administrative and logistic support related to function			
Resource Management	1/1	Identifies the process by which facilities and equipment will be activated, mobilized, monitored, deactivated	1/3	2/2	0/2
		Identifies the process by which resource documentation and financing of facilities and equipment will be managed			
		Describes necessary administrative and logistic support related to function			

Component & Sub-Components	Inclusion	Specific Planning Elements Assessed	Compre.	Intern. Compat.	Clarity
On Scene Direction and Control	1/1	Specifies authority structure for on scene efforts Specifies overarching organizational system, structures, and/or processes that will be used Specifies anticipated off scene agency staffing and staffing levels during mobilizations Identifies agencies/organizations anticipated to play a key role and their basic responsibilities Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines Specifies how on-scene efforts will interact with off scene efforts including communication, resource ordering, and decision-making Describes necessary administrative and logistic support related to function	2/7	2/2	1/2
Off Scene Direction and Control	0/1	Specifies authority structure for off scene Specifies overarching organizational system, structures, and/or processes that will be used Specifies anticipated off scene agency staffing and staffing levels during mobilizations Identifies agencies/organizations anticipated to play a key role and their basic responsibilities Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines Describes necessary administrative and logistic support related to function	/6	/2	/2
External Coordination	0/1	Describes how communication and coordination with other levels of government and other organizations will work Describes necessary administrative and logistic support related to function	/2	/2	/2
Public Information	1/1	Describes process by which information will be communicated to the public Describes plans to reach those with communication related functional needs during response Specifies one or more individuals who will act as a public information officer in an event Describes the role of the public information officer including their authority Describes process by which information will be shared with the media Describes necessary administrative and logistic support related to function	1/6	2/2	1/2
Documentation of Agreements	1/1	Lists all reciprocal agreements For each agreement, describes conditions under which the agreement is activated For each agreement, describes the specific nature of the assistance to be rendered For each agreement, resources for loan identified by location For each agreement, provides instructions of how personnel from an assisting organization will be deployed and to whom they will report For each agreement, describes any payments necessary for the use of the responding personnel and equipment For each agreement, describes how is the bearer of liability for injury or damage incurred in the response	1/7	2/2	0/2
TOTALS	17/22		23/126	33/44	10/44

OVERALL PLAN QUALITY

Criteria	Base Component Score/Total Available	Plan Type Score/Total Available	Total Points/Total Available	Percentage
Inclusion	5/12	17/22	22/34	65%
Comprehensiveness	9/75	23/126	32/199	16%
Internal Compatibility	10/24	33/44	43/68	63%
Clarity	5/24	10/44	15/68	22%
OVERALL PLAN QUALITY	29/135	88/236	112/369	30%

APPENDIX C. COUNTY B RESPONSE PLAN EVALUATION

Component & Sub-Components	Inclusion	Specific Planning Elements Assessed	Compre.	Intern. Compat.	Clarity
Base Components					
Vision	0/1	Description of the community's/organization's vision of itself as a result of implementing the plan	/1	/2	/2
Goals	0/1	Goals are directed toward the vision Goals address sustainability and/or resilience as appropriate to plan type Goals are future-oriented, positive statements that can be used to frame policies	/3	/2	/2
Objectives	0/1	Objectives are directed toward fulfilling goals Objectives are specific Objectives are measureable Objectives are attainable Objectives are realistic Objectives are time-bound	/6	/2	/2
Scope	1/1	Plan assumptions identified Description of plan horizon Description of plan development structure role Description of plan development structure responsibilities Description of plan development structure relationships Description of geographic limitations of plan Description of administrative limitations of plan Statement of how this plan fits with other jurisdictional/organizational AND emergency management plans	3/8	2/2	1/2
Planning Process: Who and How involved	1/1	Description of groups/individual organizations (should show broad involvement) Description of numbers involved Description of who involved what stages Description of frequency of contact with who involved Description of a variety of techniques used to provide information to stakeholders Description of number of techniques used to provide information to stakeholders Description of variety of techniques used to get information from stakeholders Description of number of techniques used to get information from stakeholders Description of how stakeholders influenced the process	1/9	2/2	0/2
Legal Foundation	1/1	Description of authority to plan provided by federal, state, and/or local regulations Description of duty to plan provided by federal, state, and/or local regulations Description of standards referred to in process of plan development	1/3	2/2	1/2
Hazard Analysis	0/1	Process used to identify hazards explained Any assumptions/limitations associated with process to identify hazards explained Potential types of hazards listed Description of characteristics of each hazard Mapping and/or modeling of hazards demonstrated Sources of data described (multiple sources referred to)	/6	/2	/2

Component & Sub-Components	Inclusion	Specific Planning Elements Assessed	Compre.	Intern. Compat.	Clarity
Vulnerability Analysis	0/1	Process used to assess vulnerabilities explained Any assumptions/limitations associated with process to identify vulnerabilities explained Geographic vulnerabilities assessed Assessment of geographic vulnerabilities data informed Assessment of geographic vulnerabilities based on reliable data Social vulnerabilities assessed (i.e., health care system, employment, poverty index, languages spoken in area, educational background, gender, age, rent vs. own) Assessment of social vulnerabilities data informed Assessment of social vulnerabilities based on reliable data Special needs understood and addressed as appropriate to plan type (i.e., communication, medical, maintaining functional independence, supervision, transportation, pets) Economic vulnerabilities assessed (i.e., infrastructure, businesses, critical facilities, industry) Assessment of economic vulnerabilities data informed Assessment of economic vulnerabilities based on reliable data	/12	/2	/2
Risk Assessment	0/1	Process used to assess risk explained Any assumptions/limitations associated with process to identify risk explained Direct impact assessed Indirect impact assessed Assessments are data informed Data used is reliable Likelihood established Hazards prioritized/ranked Relationship of hazard, vulnerability, and risk processes to planning described	/9	/2	/2
Plan Testing	1/1	Schedule of periodic ongoing trainings Identification of who will be targeted in trainings Identification of the purpose of trainings Identification of how feedback will be provided and incorporated from trainings Schedule of periodic ongoing exercises (if applicable) Identification of who will be targeted in exercises Identification of what will be tested in exercises Identification of how feedback will be provided and incorporated from exercises	1/8	2/2	1/2
Plan Maintenance	1/1	Specifies timeframe on an ongoing basis in which the plan will be reviewed Specifies timeframe on an ongoing basis in which the plan will be revised Describes process by which maintenance will be conducted	2/3	2/2	1/2
Plan Implement.	1/1	Responsibility for implementation identified Identification of human resources required Identification of financial resources required Identification of technical resources required Discussion of how resources will be acquired Description of how evaluation will be handled including indicators Inclusion of flexibility statement	2/7	2/2	1/2
TOTALS	6/12		10/75	12/24	5/24

Component & Sub-Components	Inclusion	Specific Planning Elements Assessed	Compre.	Intern. Compat.	Clarity
Response Specific Components					
Threat Detection and Emergency Classification	1/1	Identifies the organization that initiates and coordinates the function	1/6	2/2	0/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Hazard and Environmental Monitoring	0/1	Identifies the organization that initiates and coordinates the function	/6	/2	/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Population Monitoring and Assessment	0/1	Identifies the organization that initiates and coordinates the function	/6	/2	/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Damage Assessment	1/1	Identifies the organization that initiates and coordinates the function	3/6	2/2	1/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			

Component & Sub-Components	Inclusion	Specific Planning Elements Assessed	Compre.	Intern. Compat.	Clarity
Hazard Source Control	1/1	Identifies the organization that initiates and coordinates the function	1/6	2/2	0/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Hazard Impact Abatement	0/1	Identifies the organization that initiates and coordinates the function	/6	/2	/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Population Action Selection and Implementation	1/1	Identifies the organization that initiates and coordinates the function	1/6	2/2	1/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Population Warning	1/1	Identifies the organization that initiates and coordinates the function	3/6	2/2	1/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			

Component & Sub-Components	Inclusion	Specific Planning Elements Assessed	Compre.	Intern. Compat.	Clarity
Evacuation	1/1	Identifies the organization that initiates and coordinates the function	2/6	2/2	1/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Sheltering	1/1	Identifies the organization that initiates and coordinates the function	1/6	2/2	0/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Impact Zone Access Control and Security	1/1	Identifies the organization that initiates and coordinates the function	2/6	2/2	1/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Reception and Care of Victims	1/1	Identifies the organization that initiates and coordinates the function	3/6	2/2	1/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			

Component & Sub-Components	Inclusion	Specific Planning Elements Assessed	Compre.	Intern. Compat.	Clarity
Search and Rescue	1/1	Identifies the organization that initiates and coordinates the function	1/6	2/2	0/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Emergency Medical Care and Morgues	1/1	Identifies the organization that initiates and coordinates the function	3/6	2/2	1/2
		Identifies strategies necessary to fulfill the function			
		Identifies agencies that execute the function and their responsibilities			
		Identifies anticipated resources (i.e., administrative, logistics, personnel, equipment, supplies) needed to address function			
		Defines set of milestones for execution of the tasks that can be used to define progress, diagnose problems, and recommend corrective actions			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
Agency Notification and Mobilization	1/1	Identifies those with authority to notify and mobilize agencies	2/4	2/2	0/2
		Identifies agencies to be mobilized and conditions under which mobilized			
		Specifies process and mechanisms that will be used to notify agencies			
		Identifies the location to which agencies should report once mobilized			
Communication	1/1	Identifies the organization that initiates and coordinates the function	2/7	1/2	1/2
		Describe the primary communications system and equipment to be used			
		Describe provisions for back-up communications should the primary communication system fail			
		Addresses interoperability			
		Describes structures and processes for the processing of incoming information			
		Describes structures and processes for the dissemination of information			
		Describes necessary administrative and logistic support related to function			
Resource Management	1/1	Identifies the process by which facilities and equipment will be activated, mobilized, monitored, deactivated	1/3	2/2	0/2
		Identifies the process by which resource documentation and financing of facilities and equipment will be managed			
		Describes necessary administrative and logistic support related to function			

Component & Sub-Components	Inclusion	Specific Planning Elements Assessed	Compre.	Intern. Compat.	Clarity
On Scene Direction and Control	1/1	Specifies authority structure for on scene efforts	2/7	2/2	1/2
		Specifies overarching organizational system, structures, and/or processes that will be used			
		Specifies anticipated off scene agency staffing and staffing levels during mobilizations			
		Identifies agencies/organizations anticipated to play a key role and their basic responsibilities			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
		Specifies how on-scene efforts will interact with off scene efforts including communication, resource ordering, and decision-making			
		Describes necessary administrative and logistic support related to function			
Off Scene Direction and Control	0/1	Specifies authority structure for off scene	/6	/2	/2
		Specifies overarching organizational system, structures, and/or processes that will be used			
		Specifies anticipated off scene agency staffing and staffing levels during mobilizations			
		Identifies agencies/organizations anticipated to play a key role and their basic responsibilities			
		Organization and planning is based on accurate assumptions about what people will do/how will behave and everyday routines			
		Describes necessary administrative and logistic support related to function			
External Coordination	0/1	Describes how communication and coordination with other levels of government and other organizations will work	/2	/2	/2
		Describes necessary administrative and logistic support related to function			
Public Information	1/1	Describes process by which information will be communicated to the public	1/6	2/2	1/2
		Describes plans to reach those with communication related functional needs during response			
		Specifies one or more individuals who will act as a public information officer in an event			
		Describes the role of the public information officer including their authority			
		Describes process by which information will be shared with the media			
		Describes necessary administrative and logistic support related to function			
Documentation of Agreements	1/1	Lists all reciprocal agreements	3/7	2/2	1/2
		For each agreement, describes conditions under which the agreement is activated			
		For each agreement, describes the specific nature of the assistance to be rendered			
		For each agreement, resources for loan identified by location			
		For each agreement, provides instructions of how personnel from an assisting organization will be deployed and to whom they will report			
		For each agreement, describes any payments necessary for the use of the responding personnel and equipment			
		For each agreement, describes how is the bearer of liability for injury or damage incurred in the response			
TOTALS	17/22		32/126	33/44	11/44

OVERALL PLAN QUALITY

Criteria	Base Component Score/Total Available	Plan Type Score/Total Available	Total Points/Total Available	Percentage
Inclusion	6/12	17/22	23/34	68%
Comprehensiveness	10/75	32/126	42/199	21%
Internal Compatibility	12/24	33/44	45/68	66%
Clarity	5/24	11/44	16/68	24%
OVERALL PLAN QUALITY	33/135	93/236	126/369	34%

APPENDIX D. NDDES PLANNING TEMPLATE TABLE OF CONTENTS

Emergency Operations Plan

Appendix A – Emergency Response Contact List

«Jurisdictional Name» County

Directory of Township Officers

City of **«Jurisdictional Name»**

Appendix B – Emergency Service/Resources Contacts

Appendix C – State Emergency Contacts

Appendix D – Federal Emergency Contacts

Appendix E – Private Emergency Contacts