

Running Head: Community Infrastructure Risk Assessment

Conducting a Community Infrastructure Risk Assessment for Haines City

Ellen S. Kehoe

Haines City Fire & Rescue, Haines City, Florida

CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

Signed: _____

Abstract

Despite being impacted by three major hurricanes in 2004, Haines City Fire & Rescue has never conducted a critical infrastructure assessment for Haines City and is therefore placing the citizens at risk for the continuity of essential services during major emergencies. The purpose of this research is to identify the recommended components of a community infrastructure risk assessment for Haines City, determine the benefits of a critical infrastructure risk assessment, identify Haines City's critical infrastructure sites and determine if HCF&R can successfully mitigate the risks at the sites posing the greatest risks to the community.

The action research method was used to answer the following questions: What are the components of a community risk assessment? What are the benefits of a community risk assessment? How can HCF&R complete a community risk assessment? Which critical infrastructure sites pose the greatest risk for Haines City? Can HCF&R successfully mitigate the risks at the critical infrastructure sites posing the greatest risks to the community? These questions were answered using a combination of literature review, surveys, and interviews.

The results found that the risk assessment process helps to prepare the community for handling responses to any community hazard. Recommendations include linking the community risk assessment process to the department goal of pre-incident planning for community target hazards, insuring that Best Practice Guideline (BPG) for updating target hazards is conducted annually, development of a new BPG for conducting pre-incident plans, participation in table top exercises or other training opportunities with

businesses and other city departments, and the development of a process to review and continually improve the risk assessment document.

TABLE OF CONTENTS

ABSTRACT	3
TABLE OF CONTENTS.....	5
INTRODUCTION	6
BACKGROUND AND SIGNIFICANCE.....	7
LITERATURE REVIEW	9
PROCEDURES.....	13
RESULTS	16
DISCUSSION.....	29
RECOMMENDATIONS	32
REFERENCES	35
APPENDIX	
APPENDIX A	38
APPENDIX B	39
APPENDIX C	40
APPENDIX D.....	41
APPENDIX E	46

Conducting a Community Infrastructure Assessment for Haines City

Introduction

Haines City Fire & Rescue (HCF&R) has never conducted a risk assessment of Haines City. Haines City was impacted by hurricanes Charley, Frances and Jeanne during a six-week period in 2004 proving that even inland communities were not immune to hurricane force winds in excess of 100 mph and significant rain fall.

The purpose of this action research is to identify the recommended components of a community infrastructure risk assessment for Haines City, determine the benefits of a critical infrastructure risk assessment, identify Haines City's critical infrastructure sites and determine if HCF&R can successfully mitigate the risks at the sites posing the greatest risks to the community.

The research questions are: What are the components of a community risk assessment? What are the benefits of a community risk assessment? How can HCF&R complete a community risk assessment? Which critical infrastructure sites pose the greatest risk for Haines City? Can HCF&R successfully mitigate the risks at the critical infrastructure sites posing the greatest risks to the community?

Background and Significance

Haines City is geographically located in Polk County, one of nine counties comprising Central Florida. The city is the third most populated city in Polk County with a 2010 census population of 20,535 residing within the 20 square mile city limits (H. Fordyce Planner II, personal communication, February 17, 2011). The 2010 census shows a 40.1 percent population increase over the 2000 census. Haines City was incorporated in 1914 as an agriculturally based community focusing on citrus groves and other citrus related industries. Citrus groves are still widespread throughout the city although many of these former grove properties have been sold and are now residential, commercial or industrial developments.

Prior to the economic downturn, Haines City experienced rapid residential, light industrial and commercial development. Some of the reasons for this rapid growth can be attributed to Haines City's easy access to major roadways, proximity to Orlando and Tampa, availability of rail transportation, and an aggressive city annexation plan designed to annex properties serviced by city utilities but not located within the current city limits. Haines City's annexation plan, also known as the city view, designates the land usage for all newly annexed acreage. Most of the annexed acreage is designated for residential use while the rest of this acreage will be used for industrial, commercial or commerce park type developments. A commerce park development combines commercial and industrial occupancies into a single development.

Future economic development is expected to increase the need for additional fire and rescue services so additional fire stations are planned. The current staffing of Haines City Fire & Rescue (HCF&R) consists of 27 full-time operations personnel and five full-

time administrative personnel. A 2005 SAFER grant allowed the department to grow from 15 firefighters to 27 firefighters in preparation for the construction of two additional fire stations. Currently, all personnel work from a single station located in Haines City's downtown historic district. The City of Haines City purchased and annexed ten acres near the city's northernmost boundary for construction of a second station. The city anticipates entering into the bid process for construction of a second station to be located on these ten acres prior to December 2011. Once this station is complete, the current station may undergo a renovation or be relocated to another section of the downtown historic district. A planned third station will be constructed near the city's southern boundary on land donated by the developer of a large over 55 mixed use community.

Of the 32 full-time paid employees, 30 are certified Florida firefighters and licensed Emergency Medical Technicians. HCF&R personnel provide the community with regularly scheduled fire safety inspections of commercial, industrial and multi-family residential buildings, first responder basic life support, public information, public education, fire prevention, and fire suppression. Fire safety inspections are not conducted for single family residential properties.

During August and September 2004, Haines City was impacted by three of the four devastating hurricanes to strike Florida during the annual hurricane season. Florida's hurricane season is June 1 until November 30 and is most active during the months of August, September, and October. Hurricanes are classified into five categories using maximum sustained wind speeds as the determining criteria for each category. A Category 1 hurricane has the weakest sustained winds while a Category 5 hurricane has the strongest sustained winds.

The first of the three 2004 hurricanes, Hurricane Charley, struck Haines City on August 13, 2004 around 7 p.m. as a Category 2 storm. Hurricane Charley's winds exceeded 100 mph as it traveled through Haines City after making landfall on Florida's west coast as a Category 4 storm. This hurricane proved to be a significant wind event in Haines City. On September 5, 2004, slow moving Hurricane Frances made landfall on Florida's east coast as a Category 2 storm. As Frances traveled towards and through Haines City, she produced rainfall totals over 10 inches in many areas of central Florida. Frances proved to be a significant rain event for Haines City and Polk County. The final hurricane of 2004 to impact Haines City was Hurricane Jeanne. Jeanne made landfall on September 26, 2004 as a Category 3 storm. Jeanne moved slowly through Haines City as a combined wind and rain event.

Despite being impacted by Hurricane Charley, Hurricane Frances and Hurricane Jeanne, Haines City Fire & Rescue has never conducted a critical infrastructure risk assessment for Haines City. Without a critical infrastructure risk assessment, maintaining the continuity of essential services during a major emergency could compromise the safety of Haines City residents.

Literature Review

Today's fire department has evolved from a traditional role of simply providing communities with fire suppression services to a more complex organization tailored to address community emergencies and hazards through wide-ranging services (Paulsgrove, 2003). Enhanced fire department services may include emergency medical services (EMS), public relations, safety education, fire safety inspections and code enforcement for commercial occupancies, technical rescue services, plan review for new construction

projects, emergency management, fire investigations, hazardous materials and other associated prevention and safety activities (Paulsgrove, 2003).

Complex community hazards can be categorized into either natural disasters or events caused by humans (Meacham and Galioto, 2008). The most frequent natural disasters are hurricanes, earthquakes, tornadoes, floods, winter storms, tsunamis, cyclones, landslides, and lightning caused wildfires (Meacham and Galioto, 2008). Deliberate events may include chemical, biological, radiological, nuclear (CBRN) events, bombs or other types of explosive related events, fires, technological events, and other forms of terrorism (Meacham and Galioto, 2008).

In 1979, the Federal Emergency Management Agency (FEMA) was established by President Carter as a centralized agency where citizens could receive federal disaster assistance from a single agency (Van Helden and Stewart, 2008). FEMA is now a part of the Department of Homeland Security and focuses on educating citizens about preparing for all types of disasters, disaster recovery, rebuilding after a disaster, disaster assistance, mitigation strategies, and detailed disaster information (Van Helden and Stewart, 2008).

The expanded role of a fire department has also shifted the focus of pre-incident planning, formally known as pre-fire planning, to one of an all-hazards approach (Norman, 2008). A pre-incident plan is a formalized written document designed to assist fire departments with facility familiarization prior to an emergency response. This plan will contain critical information relative to both disaster planning and emergency responses (Serapiglia, 2008). Conducting pre-incident plans affords fire department personnel with the ability to document their familiarity with the buildings in their

response area prior to emergency incidents (Granito, 2008). Insuring that fire departments conduct pre-fire or pre-incident plans is also a component of the public fire suppression section for an Insurance Services Office (ISO) evaluation (Granito, 2008).

Components of pre-incident plans need to include data about site conditions, building construction, occupancy factors, fire protection systems, and any special hazards (Searpiglia, 2008). Information regarding site conditions should include access, security features, exposures, and any potential communication issues (Serapiglia, 2008).

Building construction information needs to include height and area of the building, wall construction, floor construction, roof construction, location of confined spaces, ceiling construction, location and construction of windows, and location and construction of doors (Serapiglia, 2008). Other building feature locations requiring documentation are emergency power, electric, gas, elevators, domestic water, and boiler locations (Serapiglia, 2008).

Occupancy factors, focusing on life safety, for a pre-incident plan need to focus on life hazards such as the number and location of occupants, occupant physical and mental abilities, location and security features of exits, and existing emergency action or response plans (Serapiglia, 2008). If the facility has a plan, fire department responders can use this information to help develop their strategies and tactics. A facility plan can provide critical information such as designated areas for employee or occupant refuge, equipment available for evacuation assistance, organizational structure, emergency contact information, and information about hazardous materials or hazardous operations (Serapiglia, 2008).

Pre-incident data for fire protection systems needs to be system specific and also include water supply information. Fire protection systems are not limited to sprinkler, standpipe or alarm systems. Site specific fire protection systems may also include foam systems, carbon dioxide systems, dry or wet chemical systems, and halogenated systems (Norman, 2008). Valuable fire protection system information to be documented in the pre-incident plan should include the location of system control valves, panel locations, and the location of fire department connections (Norman, 2008). Water supply information needs to include testing results, hydrant locations, fire flow information, and alternate water supply information (Norman, 2008).

Special site hazards should include the location of hazardous material storage or disposal (Schmidt, 2008). The location of any specific hazardous process should be noted together with amounts, types, and properties of all of the chemicals used to (Norman, 2008). Hazardous materials pose risks to both the public and firefighters.

A risk assessment is a tool used by a community's public and private response agencies to identify specific potential hazards that could impact the community (Meacham and Galioto, 2008). Once the specific potential hazard, such as a CBRN event, is identified, community response agencies then collaborate to develop an emergency plan (Schmidt, 2008). This emergency plan serves as the basis for analyzing the community's response capabilities and developing exercises and drills for training purposes (Schmidt, 2008).

As a method of equipping communities to deal with any type of natural, technological or terrorist events, FEMA was instrumental in the development of a Community Hazards Emergency Response- Capability Assurance Process (CHER-CAP).

The CHER-CAP process is designed to involve all of the community's local, state, or federal first responding agencies. There may also be commitments from private commercial and industrial industries (Van Helden and Stewart, 2008).

Health care facilities such as hospitals, nursing homes, and assisted living facilities are now required to conduct a hazard vulnerability analysis as part of their larger emergency operations plan (EOP) (Mark Sartoris, personal communication, February 18, 2011). Recent hurricanes, such as Hurricane Katrina and Hurricane Charley, in addition to other types of disasters, emphasize the importance of these plans. Both of these hurricanes displaced numerous patients from hospitals and other health care facilities. Functioning health care facilities are an integral component of a community's ability to successfully recover from a disaster (Mark Sartoris, personal communication, February 18, 2011). The hospital accreditation program contains an emergency management chapter with elements of performance designed to insure hospital services are available to the community in the event of a disaster (Mark Sartoris, personal communication, February 18, 2011). Chapter 12 of NFPA 99 ® *Health Care Facilities* ® also outlines the components for a hospital emergency management program. The first component of the emergency management program is a hazard vulnerability analysis (Mark Sartoris, personal communication, February 18, 2011).

Procedures

The purpose of this research is to identify the recommended components of a community risk assessment for Haines City, determine the benefits of a critical

infrastructure risk assessment, identify Haines City's critical infrastructure sites, and to determine if Haines City Fire & Rescue can successfully mitigate the risks at the sites posing the greatest risks to the community.

The literature review reveals that the first step in the community risk assessment process is to identify the potential hazards or events that can impact the community (Schmidt, 2008). . After all of the potential hazards have been identified, the probability of each potential hazard occurring in the community needs to be determined (Schmidt, 2008). Once these steps are completed, an all hazards approach to planning for each of the identified hazards is developed (Van Helden and Stewart, 2008).

The Executive Analysis of Fire Service Operations in Emergency Management (EAFSOEM) Student Manual (NFA, 2011) uses FEMA's CHER-CAP process to describe the necessary components of a community risk assessment. CHER-CAP stands for "Community Hazards Emergency Response Capability Assurance Process" and is designed to assist a community with the all-hazard planning process.

To assist with the identification of Haines City's potential hazards together with the vulnerability for each of these hazards to occur, a review of the *Polk County Emergency Management Plan, Heart of Florida Regional Medical Center Risk Assessment, Burriss Logistics Emergency Plan, Cellynne Corporation Emergency Plan, and City of Haines City Emergency Management Plan* was conducted. Input was also gathered from the Haines City Public Works Department, Haines City Police Department and Polk County School Board. The information obtained from the review of these documents and interviews with representatives from the police department, public works, and school board led to the development of a Microsoft Word document listing Haines

City's potential hazards and the probabilities for each of these hazards. Appendix A contains Haines City's vulnerability summary table. This table lists the event, probability, impact, and preparedness level for each of these events.

A survey was developed to assist in determining the benefits of a community risk assessment. This survey was administered by telephone to the administrators or their designated representatives of eight Haines City businesses whose fire department fire safety inspection files revealed copies of a risk assessment document. The eight businesses surveyed by telephone included a hospital, adult day care, nursing home, three assisted living facilities, and two industrial occupancies. The business survey can be found in Appendix B. The department survey is found in Appendix C. The results of both these surveys are analyzed in the results section of this document.

An extensive review of existing Haines City Fire & Rescue documents was conducted to determine if any of the information contained in these documents could assist with conducting a CHER-CAP assessment. This document review included fire safety inspection reports, pre-fire plan binders in first response units, *Haines City Emergency Management Plan*, and the *Polk County Emergency Management Plan*.

In order to determine the infrastructure sites with the greatest risks, a review of current Haines City Fire & Rescue fire safety inspection records and existing pre-plan books was conducted. Additional information was also gathered from the *Haines City Emergency Management Plan*, *Polk County Emergency Management Plan*, and interviews with key personnel from Haines City Public Works, Haines City Police Department, Haines City Fire & Rescue, and Polk County School Board. Information from all of these sources was compiled to develop the list of the critical infrastructure

sites posing the greatest risk for Haines City. The *Haines City Emergency Management Plan* contained a listing of critical facilities using latitude and longitude coordinates.

This listing is found in Appendix D.

With only a single station responding to emergency incidents in Haines City, Haines City Fire & Rescue has never divided the city into response quadrants. To assist with compiling and organizing the list of Haines City's critical infrastructure sites, the city was divided into quadrants. The quadrants were established using the existing fire station address as the starting point to establish the north, south, east, west, northeast, northwest, southeast, and southwest quadrants. Appendix E contains the master list of critical infrastructure sites in Haines City. These sites are referenced by quadrant.

After Haines City's most critical infrastructure sites were identified, the information gathered from the interviews with key personnel from Haines City Public Works, Haines City Police Department, Haines City Fire & Rescue, and Polk County School Board was used to help determine if Haines City Fire & Rescue could successfully mitigate the risks at the identified critical infrastructure sites.

Results

Action research was used to conduct a critical infrastructure risk assessment to identify both the critical infrastructure sites for Haines City.

What are the components of a Haines City community risk assessment?

The literature review identifies the need for communities to identify the potential hazards that can impact their community (Schmidt, 2008). The next step in the risk assessment process is to identify the probability for each of the potential hazards (Schmidt, 2008). Once these two critical components of the risk assessment process are

complete, the community begins the planning process for each of the hazards (Van Helden and Stewart, 2008).

A review of the *Polk County Emergency Management Plan*, *Heart of Florida Regional Medical Center Risk Assessment*, *Burriss Refrigerated Logistics Emergency Plan*, *Cellynne Corporation Emergency Plan*, and *City of Haines City Emergency Management Plan* identified similar potential hazards, especially those associated with natural disasters. The potential natural disasters identified include hurricanes, drought, tornadoes, severe thunderstorms, floods, freezes,

The review of the *Burriss Refrigerated Logistics Emergency Plan* revealed that there were a limited number of potential hazards identified. The primary focus of the Burriss plan was on pre-emergency preparation for power failures, ammonia vapor releases, major and minor fires, and explosions (*Burriss Refrigerated Logistics Emergency Response Plan*, October 2008 p. 19). There was a reference to natural disasters such as severe weather incidents, hurricanes, together with security threats but the focus of this reference was how to deal with the release of hazardous materials (*Burriss Refrigerated Logistics Emergency Response*, October 2008 p. 29).

The potential hazards identified in the *Cellynne Corporation Emergency Plan* included power outages, fires, major and minor earthquake, fires, hazardous material incidents, and industrial accidents (*Cellynne Corporation Emergency Plan* p. 21-25). This plan did not contain a probability assessment but did include preparedness, response and recovery components (*Cellynne Corporation Emergency Plan* p. 31).

The *Heart of Florida Regional Medical Center Risk Assessment* contained four charts outlining a wide variety of potential hazards. The first chart contained safety and

security risks (*Heart of Florida Regional Medical Center Risk Assessment* p.1). The second chart outlined utility systems and hazardous materials hazards (*Heart of Florida Regional Medical Center Risk Assessment* p. 2). The third chart listed medical equipment hazards such as telemetry systems, operating rooms, and lab systems and are specific to this the facility (*Heart of Florida Regional Medical Center Risk Assessment* p. 3). The final chart contained the natural events hazards (*Heart of Florida Regional Medical Center Risk Assessment* p. 4). The majority of the natural events hazards listed were weather related. Information from this chart was used to help develop the potential hazard information for Haines City.

An examination of the *City of Haines City Emergency Management Plan* identified both natural hazards and human caused events with the potential to impact Haines City. The listings of these events were found in the general information section of the plan (*City of Haines City Emergency Management Plan* p. 7). The rest of the plan, except for Appendix G, details the responsibilities of each city department during emergency operations. Appendix G identifies a list of Haines City facilities by latitude and longitude.

The most comprehensive information to assist with the development of the Haines City Vulnerability Summary Table was found in the 2010 risk assessment updates in the *Polk County Emergency Management Plan*. Although not specific to Haines City, the natural disaster component of the plan contained the same information as the *City of Haines City Emergency Management Plan* (*Polk County Emergency Management Plan* p.25).

Hurricanes, tornadoes, severe thunderstorms, heat waves, droughts, and freezes are medium probability events for Haines City. Flooding would occur from localized rainfalls and not from a storm surge (*Polk County Emergency Management Plan* p.14).

Those residents who live along the banks of Haines City's lakes are more susceptible to flooding.

What are the benefits of a community risk assessment to Haines City businesses and Haines City government agencies?

To determine the benefits of conducting a community risk assessment, a telephone survey was developed and delivered to eight Haines City businesses whose fire department inspection files contained a copy of a risk assessment document or emergency management plan. The businesses answering this survey were Heart of Florida Regional Medical Center, Palm Krest Manor Assisted Living Facility, Haines City Adult Daycare Center, Heart of Florida Assisted Living Facility, Haines City Health Care Nursing Home, Savannah Court Assisted Living Facility, Cellynne Corporation, Burriss Logistics. A separate survey was delivered to representatives from Haines City Public Works, Haines City Utilities, Haines City Police Department, and Polk County School Board.

Of the eight businesses surveyed, 75% are required to conduct a risk assessment to satisfy the requirements of another regulatory agency. All of the health care related agencies must conduct a risk assessment to satisfy another agency. Burriss Logistics and Cellynne Corporation conduct their risk assessments as a component of their company health and safety responsibilities (M. Diamond, Cellynne Corporation Safety Officer, personal communication, March 18, 2011).

The survey revealed that all of the businesses update their risk assessment annually and use the document for training current staff members and new employees (B. Schaffer, Palm Krest Manor Administrator, personal communications, March 21, 2011). When Heart of Florida Regional Medical Center updates their hazard vulnerability analysis, these updates are shared with Polk County Emergency Management, Haines City Police Department, and Haines City Fire Department (M. Sartoris, HFRMC Director of Engineering, personal communication, March 21, 2011). This facility develops and trains using both table top exercises and community based response exercises at least twice a year (M. Sartoris, HFRMC Director of Engineering, March 21, 2011).

Polk County School Board conducts and annually reviews and updates their risk assessment document. Haines City schools serve as emergency evacuation shelters for residents in the event of a large scale incident such as a hurricane (F. Murphy, Polk County Schools Assistant Superintendent, personal communication, March 18, 2011). Administrators, with the assistance of Polk County Emergency Management, use the plan to develop and conduct training exercises (F. Murphy, Polk County Schools Assistant Superintendent, personal communication, March 18, 2011). This was the only department surveyed using their risk assessment document for training.

Haines City Police Department, Haines City Public Works, and Haines City Utilities all utilize the *City of Haines City Emergency Management Plan*. A representative from each of these city departments will review and update their component of the plan as requested by the emergency management director (R. La Porte, Haines City Assistant Public Works Director, personal communication, February 25, 2011).

The benefits of a risk assessment generated a list of twelve benefits from the eight businesses surveyed. A list of eight benefits was produced for the Polk County School Board and the three City of Haines City departments. Some of the business responses were duplicated. All of the businesses and department representatives agreed that their risk assessment is a useful component for identifying potential community risks.

The risk assessment process is useful in helping to prevent property damage. This benefit was listed by 62.5 % of the organizations surveyed. The Polk County School Board and all of the City of Haines City departments stated that preventing property damage is a benefit. Minimizing damage was a benefit listed by 50% of the businesses and 100% of the departments surveyed.

Only 25% of the businesses stated that the risk assessment process assists them with environmental protection compliance. Haines City Utilities was the only department listing environmental protection compliance as a risk assessment benefit department dealing with environmental compliance issues was Haines City Utilities (L. Fisher, Utilities Superintendent, personal communication, March 25, 2011).

All of the surveyed businesses identified protecting the safety of occupants, employees, and the community as a benefit. The health care organizations all have disaster preparedness mutual aid agreements to address resident or patient relocation issues together with food, water, medications, and transportation (S. Jackson, Administrator Heart of Florida Assisted Living Facility, personal communication, March 18, 2011). Polk County School Board was the only department to consider protecting employees, occupants, and the community to be a benefit.

Identification of current resources available to address identified risks was a priority for all of the businesses surveyed. This was especially critical for the hospital as they are charged with providing health care to the community during disasters (M. Sartoris, HFRMC Director of Engineering, personal communication, March 21, 2011). Additional resource identification allows each of the surveyed businesses to prepare for specific risks by entering into contracts for services such as transportation, security, and supplies or mutual aid agreements for sheltering (B. Schaffer, Palm Krest Manor Administrator, personal communications, March 21, 2011). All contracts and agreements are in writing and included as appendices in the business plan (Van Helden and Stewart, 2008).

Protecting or helping to minimize financial loss was identified as a benefit by 100% of those surveyed. Financial loss was associated with a failure to provide either goods or services (M. Diamond, Cellynne Corporation Safety Officer, personal communication, March 18, 2011). Other types of financial losses are those associated with either property damages or personal injuries. Property damage and personal injury financial losses were also listed as a benefit by the 100% of the departments surveyed.

Helping to prevent interruption of services was listed as a benefit by 75% of the businesses surveyed. Interruption of services was a very critical concern for the hospital where successful emergency mitigation is strongly linked to the accreditation process (M. Sartoris, HFRMC Director of Engineering, personal communication, March 21, 2011). The Polk County School Board must also try to avoid service interruptions to minimize disruptions to the existing school calendar (F. Murphy, Polk County Schools Assistant Superintendent, personal communication, March 18, 2011). All of the Haines City

departments surveyed prioritized service interruption prevention as a distinct benefit for risk assessments (B. Raul, Haines City Police Department Captain, personal communication, March 25, 2011).

The ability to prioritize emergencies was listed as a risk assessment benefit by only 37.5 % of the businesses surveyed. The health care businesses utilize this benefit. This was not a benefit listed by anyone completing the department survey.

Only 50% of the businesses felt that their business has a responsibility to the community to conduct a risk assessment. The risk assessment process assists the community by having each business develop their own emergency operations plan (T. Glass, Haines City Health Care Administrator, personal communication, April 21, 2011). These plans will contain components designed to address preparedness, mitigation activities, response and recovery relative to the specific business (M. Sartoris, HFRMC Director of Engineering, personal communication, March 21, 2011). During an emergency, the business may not be able to count on support from the community so a flexible emergency operations plan allows for uninterrupted or minimally interrupted operations (M. Sartoris, HFRMC Director of Engineering, personal communication, March 21, 2011). All of the departments surveyed considered this to be a benefit to conducting a risk assessment. Government has a responsibility to provide service to the citizens despite being impacted by emergencies (B. Raul, Haines City Police Department Captain, personal communication, March 25, 2011).

The final risk assessment benefit listed by the businesses surveyed involved communication abilities and deficiencies. Only 37.5% of the businesses surveyed believe that this is an associated benefit of conducting a risk assessment. The ability to continue

communicating vital information is critical should primary communication systems fail (M. Sartoris, HFRMC Director of Engineering, personal communication, March 21, 2011). Communication deficiencies need to be addressed and alternate means of communicating to employees and other outside agencies must be identified (S. Jackson, Administrator, Heart of Florida Assisted Living, personal communication, April 21, 2011). Training needs to be conducted using the backup communication plan and as new technologies become available, these should be researched to see if they can help support the backup communication process (M. Sartoris, HFRMC Director of Engineering, personal communication, March 21, 2011). None of the departments surveyed listed communications as a benefit of a risk assessment.

How can Haines City Fire & Rescue complete a community risk assessment?

The research reveals that many of the components for completing a Haines City community risk assessment can be found within existing department documents. Data documenting both natural disasters and human caused events can be found in the *Polk County Emergency Management Plan*, *Haines City Emergency Management Plan* and the *Heart of Florida Regional Medical Center Risk Assessment*. Data from these documents was used to formulate the Haines City vulnerability summary table in Appendix A.

The identification of critical infrastructure sites can also be accomplished by using information from both the *Polk County Emergency Management Plan* and the *Haines City Emergency Management Plan*. Haines City's plan contains an appendix of critical facilities identified by latitude and longitude. Some of these facilities are also cross referenced by address. The listing of these critical facilities is found in Appendix E.

In 2010, Chief Lon Cheney assigned the fire prevention division the task of coordinating the department's pre-incident planning in preparation for the installation of computers in response apparatus (L. Cheney, Fire Chief, personal communication, February 23, 2011). HCF&R personnel will have the ability to access pre-incident plans through Polk County's Tiburon public safety dispatching program (L. Cheney, Fire Chief, personal communication, February 23, 2011). HCF&R has not updated their existing pre-incident plans since 2005. All of the existing documents are currently in three ring binders located in the fire station. Each binder contains 50 pre-incident plans for various businesses throughout Haines City. Only 3% of the businesses in the binders are listed on the newly developed Haines City's critical infrastructure master list. A review of the binders shows that updated information is required for 34% of the businesses. Assigning firefighters to conduct pre-incident planning enables HCF&R to identify critical information for a risk assessment through pre-incident planning (L. Cheney, Fire Chief, personal communication, February 23, 2011).

Which critical infrastructure sites pose the greatest risks for Haines City?

The listing of Haines City's critical infrastructure sites was provided to each of the Haines City department representatives to determine the ranking of the sites posing the greatest risks. The Haines City Police Department representative felt that all of the health care occupancies, schools, CSX rail, US 17/92, US 27, SR 17, SR 544, police station, fire station, city hall, post office, and all of the supermarkets, posed the greatest risk to Haines City and their department (B. Raul, Haines City Police Department Captain, personal communication, March 25, 2011). From a law enforcement perspective, the risks associated with these sites include developing and implementing

alternate transportation routes, evacuation traffic, and coordination with outside agencies (B. Raul, Haines City Police Department Captain, personal communication, March 25, 2011).

The Polk County School Board selected all of the public and private Haines City schools, pre-schools, CSX rail, US 17/92, SR544, US 27, SR 17, Head Start, Verizon Switching Station, and all of the park facilities and sports complexes posed the greatest risks (F. Murphy, Polk County Schools Assistant Superintendent, personal communication, March 18, 2011). Issues include the evacuation of students, sheltering of students, transportation, and notification issues (F. Murphy, Polk County Schools Assistant Superintendent, personal communication, March 18, 2011).

The Haines City Public Works representative selected all of the city buildings, natural gas pipeline, CSX rail, Buddy's LP Gas, all of the manufacturing sites, and all of the retail centers as Haines City's greatest risks (R. La Porte, Haines City Assistant Public Works Director, personal communication, February 25, 2011). Concerns ranged from local roads being utilized for evacuations, hazardous material incidents, and the inability to provide city services such as garbage pick-up (R. La Porte, Haines City Assistant Public Works Director, personal communication, February 25, 2011). An additional concern involved the management of debris removal which could be addressed with a private contract.

Haines City Utilities felt that the greatest risks involved water plants 1 and 2, sewage treatment plant, hospital, schools, all retail establishments, health care facilities, restaurants, and all of the supermarkets and medical office buildings (L. Fisher, Utilities Superintendent, personal communication, March 25, 2011). The risks involved with

these sites are environmental because of the threat of contaminated water issues or sewer issues (L. Fisher, Utilities Superintendent, personal communication, March 25, 2011).

Can HCF&R successfully mitigate the risks at the critical infrastructure sites posing the greatest risks to the community?

The ability for HCF&R to mitigate risks at critical infrastructure sites is linked to the event that creates the risk and the ability to establish relationships with city departments and outside agencies. Currently, HCF&R is a small single station department with only 27 full-time operations personnel and five full-time administrative personnel working from a single station. HCF&R operates with one rescue unit, two engines, one ladder, brush unit, boat, three staff vehicles and a utility vehicle. For example, during the 2004 hurricanes, the department operated with only 15 operations personnel with four administrative personnel. All personnel were required to work during the hurricanes (L. Cheney, Fire Chief, personal communication, February 23, 2011). Successful planning and mitigation for the potential incidents listed in Appendix A involves agreements, cooperation, and establishing relationships between both public and private entities (L. Cheney, Fire Chief, personal communication, February 23, 2011).

An example of an established relationship occurred during the 2004 hurricanes. All of the Polk County schools were closed for 14 days (F. Murphy, Polk County Schools Assistant Superintendent, personal communication, March 18, 2011). Some of the Haines City schools served as shelters for residents and one school served as a special-needs shelter for residents. Haines City High School suffered considerable roof damage to several of the buildings (F. Murphy, Polk County Schools Assistant Superintendent, personal communication, March 18, 2011). Using the schools as shelters reduced the

occupant loading for these buildings. A reduced occupant load communicated to HCF&R allowed HCF&R to delay requests for additional resources (L. Cheney, Fire Chief, personal communication, February 23, 2011).

To mitigate roadway incidents requires assistance from the police department and Public Works employees. Other Florida agencies such as Florida Highway Patrol and Polk County Sherriff may also be required depending upon the scope of the incident (R. La Porte, Haines City Assistant Public Works Director, personal communication, February 25, 2011).

To assist them with the mitigation of incidents at Haines City water treatment plants, sewage treatment plant, and lift stations. Haines City Utilities has entered into private sector agreements for maintenance of generators, additional chemicals used to treat both water and sewage, and hazardous materials clean up (L. Fisher, Utilities Superintendent, personal communication, March 25, 2011).

Incidents involving natural or LP gas will require mitigation assistance for the gas companies. Rail incidents will involve CSX officials and if hazardous materials, the shipper of the product and the Polk County Hazardous materials team.

Parks and recreation sites together with the sports complexes will require assistance form Haines City Parks and Recreation personnel. Public and private golf courses will have knowledgeable personnel able to assist HCF&R (K Callihan, Director, Haines City Parks and Recreation, personal communication, April 19, 2011).

Public buildings, special occupant facilities, warehouses, and retail establishments can also enter into private contracts for food, water, medical supplies, generators, generator maintenance and facility repairs (Van Helden and Stewart, 2008).

The key to successful mitigation is to establishing relations, education and training. Educating the business community to conduct their own risk assessment process enables them to determine their own deficiencies and enter into the necessary agreements or contracts to help mitigate these issues (Van Helden and Stewart, 2008). Establishing partnerships and building relationships with stakeholders assists HCF&R with the mitigation of critical infrastructure sites.

Discussion

The all hazards approach to emergency incidents involves many different responders from both public and private organizations. For example, in the event of a tornado, public works employees would coordinate debris management for a fire service response by removing debris from roadways for ease of emergency responses (Van Helden & Stewart, 2008). Other agencies would then responsible for restoring power, distributing food and water, and sheltering displaced persons during the response and recovery phases of the incident (Van Helden & Stewart, 2008). The ultimate goal of a community disaster plan is to get the community into the recovery phase so that it can be restored to a pre-disaster state (Van Helden & Stewart, 2008).

Conducting a community risk assessment enables HCF&R to identify and plan for both natural disasters and events caused by humans (Meacham and Galioto, 2008). The 2004 hurricanes challenged both the department's disaster planning and emergency response skills (L. Cheney, Fire Chief, personal communication, February 23, 2011). However, hurricanes are not the only potential hazard that can impact Haines City and challenge HCF&R's resources.

Just as the hurricanes of 2004 challenged HCF&R, so would the majority of the events listed in the Haines City vulnerability table. Preparedness levels for the vulnerability table range from low to high. HCF&R has a low preparedness level for 24% of the events. The department does not currently have the training or resources for many of these events so it will need to will rely on services of other departments using the Polk County mutual aid agreement (L. Cheney, Fire Chief, personal communication February 23, 2011). Earthquakes, landslides, tsunami's aircraft incidents and a nuclear incident also received low preparedness ratings. Earthquakes, landslides and a tsunami would all be unusual events for Florida. Nuclear and aircraft incidents also require specialized training and equipment and a low rating for organizational preparedness (L. Cheney, Fire Chief, personal communication, February 23, 2011).

HCF&R has a medium preparedness level for 64% of the events. Those events receiving a medium preparedness level include hurricanes, tornadoes, severe thunder storms, floods, sinkholes, heat wave, epidemic, rail incident, bomb threat, water supply contamination, natural gas incident, mass casualty incident, terrorist attack, explosion, and major fire. Other than natural gas incidents and rail incidents involving hazardous materials, no specialized training is required for department personnel to mitigate these types of incidents. Additional scene resources can be obtained using the mutual aid agreement (L. Cheney, Fire Chief, personal communication, February 23, 2011).

A high level of preparedness is reserved for only 12% of the events. These events are wildfires, freezes, and drought. If necessary, assistance from other city departments and outside agencies can be requested so that HCF&R personnel can help mitigate these events (L. Cheney, Fire Chief, personal communication, February 23, 2011). The fire

department does not have an automatic aid agreement with any Polk County fire department.

Simply stated, a critical infrastructure assessment is an information gathering process focusing on a community's target hazards or critical facilities (Van Helden & Stewart, 2008). Once a community assesses all of their vulnerabilities, the next step is to identify their critical facilities or target hazards. After the identification process is complete, the next step in the process is to gather information about these facilities. The information gathered is similar to the information required by the fire department for pre-incident planning (Norman, 2008). Site visits by fire department personnel for both site familiarization and data gathering (Norman, 2008). Agencies need to develop either a written or electronic form to assist them standardizing their data (Norman, 2008). Information about each target hazard should include but not be limited to the name of the facility, street address, cross street information, latitude and longitude, name and address of the property owner or businesses operator, contact information, type of occupancy, life hazard, construction features, special matters, and hazardous materials or operations (Van Helden & Stewart, 2008).

A pre-incident plan will also include a sketch of the facility. Information on the sketch would include hydrants, fences, gates, stairs, fire alarm control panel, sprinkler risers, sprinkler control valves, hazardous materials, entrances/exits, elevators, standpipes, fixed fire extinguishing systems, and other unique building or occupancy features (Norman, 2008). Although a sketch of the facility may not be an essential component of the critical infrastructure assessment, units or agencies assigned to the

emergency response, reconnaissance and damage assessment modes may find this information useful (Van Helden & Stewart, 2008).

Recommendations

HCF&R needs to link the critical infrastructure assessment process to the department goal of pre-incident planning Haines City's target hazards by establishing a Best Practice Guideline (BPG) for pre-incident plans. Currently there is none. This guideline should contain the details for all of the details for the data gathering process.

The recommendation is to assign a designated number of Haines City's critical infrastructure sites, found in Appendix E, to operations personnel every month. Assignments will be coordinated by fire prevention personnel. Both prevention and operations personnel should review and update the existing pre-incident plan data information sheets to establish the standardized data it needs to collect. It is strongly recommended that latitude and longitude be included for each of the critical infrastructure sites because some incidents will destroy or damage both street and business signage.

Fire prevention personnel can assist operations by providing business contact information for scheduling a site visit. The fire safety inspection files may also contain information that maybe helpful for sketching the facility and data gathering so this information would then be forwarded to personnel assigned to conduct the plan.

As new businesses and residents discover Haines City, prevention personnel can update the Appendix E listing and assign the new facilities to operations thereby insuring that the critical risk assessment document will continually update their all hazards approach to community incidents (Norman, 2008). Pre-incident planning data is also

useful information and an important component for the analysis of current and future response capabilities (Schmidt, 2008).

Once sketches and information sheets are complete, fire prevention personnel will review them and convert them to a PDF file. These files will be forwarded to the Polk County Dispatch Center for inclusion into the Tiburon dispatch system. Once the data is in Tiburon, responding commanders and firefighters will be able to view it on the apparatus computers. Until this process is complete, the department should continue to utilize the existing three ring binders so that information is provided to responding commanders and personnel. Updated information can also be provided to operations personnel using the annual fire safety inspection process and annual site visits to facilities will help to continually improve the HCF&R risk assessment document.

A section of the existing HCF&R BPG for response of emergency vehicles during hurricanes and tropical storms requires updating the target occupancies list in June. Hurricane season is June 1, through November 30.

The only list of critical facilities in Haines City is currently found in the *Haines City Emergency Management Plan*. Appendix D contains this listing. The information for this listing needs to be updated because many of the business names are incorrect. Once the critical infrastructure sites in Appendix E have been pre-incident planned, these information can be incorporated into the BPG and included in the *Haines City Emergency Management Plan*.

The practical application of the critical infrastructure site information involves education and implementation (Norman, 2008). Operations personnel can demonstrate their proficiency with the sites by scheduling site visit drills or table top exercises

(Norman, 2008). It is recommended that the HCF&R training officer develop training scenarios or tabletop exercises for the various sites.

According to the *Haines City Emergency Management Plan*, the fire chief functions as the city's designated emergency management director. One of his responsibilities is to update the plan information (L. Cheney, Fire Chief, personal communication, February 23, 2011). This is accomplished by assigning a section to each of the city departments with plan responsibilities (L. Cheney, Fire Chief, personal communication, February 23, 2011). In addition to this assignment, it is recommended that each of the departments develop some time of training or table top exercise with an associated evaluation.

Many of the critical infrastructure sites, such as Heart of Florida Regional Medical Center are also stakeholders for Polk County Emergency Management. As such, they are called upon to participate and assist with the development of training exercises and other associated documents (M. Sartoris, HFRMC Director of Engineering, personal communication, March 21, 2011). It is also a recommendation that both HCF& R administrative and operational personnel participate in these activities so that they can become proficient in both Polk County and Haines City operations. This will also help to establish working relationships between all levels of government and the business community prior to a disaster (Van Helden & Stewart, 2008).

Finally, HCF&R should consider entering into an automatic aid agreement with local fire departments. An automatic aid agreement in conjunction with the existing mutual aid agreement will help to insure that the citizens of Haines City will be provided with the essential services they need during major emergencies.

References

- Burris Logistics. (2009). *Burris logistics emergency plan*. Haines City, Florida: Burris Logistics.
- Cellynne Corporation. (2009). *Emergency planning guide*. Haines City, Florida: Cellynne Paper Manufacturer.
- DHS/FEMA/USFA/NFA. (2011). *Executive analysis of fire service operations in emergency management* (3rd Edition, 3rd printing ed.). Emmittsburg, MD: FEMA/USFA/NFA.
- Flax, L., Jackson, R., & Stein, D. (2002, November 1). Community Vulnerability Assessment Tool methodology. (S, Bender, L. Flax, R. Jackson, & D. Stein, Eds.) *Natural Hazards Review* (Special: Application of Vulnerability Assessment Techniques in the Americas), pp. 163-176
- Florida Hazard Watch. (2003). Florida *hazard watch-tornadoes*, Retrieved April 5, 2011 from Florida Division of Emergency Management; Florida Disaster.
- Haines City. (2010). *Haines City Emergency management plan*. Haines City, Florida: City of Haines City.
- Haines City Health Care. (2010). *Haines City health care emergency management plan*. Haines City, Florida: Haines City Health Care.
- Heart of Florida Assisted Living Facility. (2009). *Emergency management plan*. Haines City, Florida: Heart of Florida Assisted Living Facility
- Heart of Florida Regional Medical Center. (2011). *Heart of Florida regional medical center risk assessment*. Haines City, Florida: Heart of Florida Regional Medical Center.

- Godefrin, S. (2009, August 12). Five years ago Polk County devastated by the hurricanes. *News Chief*. p. A1
- Granito, J. (2008). Planning for public fire-rescue protection. In A. E. Cote (Ed). *Fire protection handbook* (pp. 3-21). Quincy, MA: National Fire Protection Association.
- Meacham, B. J., & Galioto, C. (2008). Protecting against extreme events. In A.E. Cote (Ed). *Fire protection handbook* (pp. 109-116). Quincy, MA: National Fire Protection Association.
- Norman, J. (2008). Pre-incident planning for emergency response. In A.E. Cote (Ed.). *Fire protection handbook* (pp. 299-308). Quincy, MA: National Fire Protection Association.
- Palm Krest Manor Assisted Living Facility. (2010). *Emergency management plan*. Haines City, Florida: Palm Krest Manor Assisted Living Facility.
- Palsgrove, R. (2003). Fire department administration and operations. In A.E. Cote (Ed.) *Fire protection handbook* (pp. 5-25). Quincy, MA: National Fire Protection Association.
- Phelps, K. (2009, August 18), Charley, Frances, Jeanne. *News Chief*. p. A1
- Phelps, K. (2009, August 14). Shelter at school. *News Chief*. p. A1.
- Polk County. (2009). *Polk County emergency management plan*. Bartow, Florida. Polk County Emergency Management.
- Schmidt, D. (2008). Emergency management and business continuity. In A.E. Cote (Ed). *Fire protection handbook* (pp. 137-153). Quincy, MA: National Fire Protection Association.

Serapiglia, R. (2008). Safety in the built environment. In A.E. Cote (Ed). *Fire protection handbook* (pp. 237-253). Quincy, MA: National Fire Protection Association .

Van Helden, W. & Stewart, T. (2008). Disaster planning and response services. In A.E. Cote (Ed). *Fire protection handbook* (pp. 199-213). Quincy, MA: National Fire Protection Association.

APPENDIX A

Haines City Vulnerability Summary Table

EVENT	PROBABILITY	IMPACT	PREPAREDNESS
Hurricanes	Medium	High	Medium
Tornadoes	Medium	High	Medium
Severe Thunder Storms	Medium/High	Medium/High	Medium
Wildfires	Medium	Medium/High	High
Floods	Low	Medium	Medium
Freezes	Medium	Medium	High
Sinkholes	Medium	Medium	Medium
Drought	Medium	Medium	High
Heat Wave	Medium	Medium	Medium
Chemical Release/Spill	Medium	High	Low
Earthquake	Low	Medium	Low
Epidemic	Medium	High	Medium
Rail Incident	Medium	Medium/High	Medium
Bomb Threat	Low	Medium	Medium
Water Supply Contamination	Low	Medium/High	Medium
Natural Gas Incident	Low	Medium	Medium
LP Gas Incident	Low	Low	Medium
Tsunami	Low	Low	Low
Landslides	Low	Low	Low
Aircraft Incident	Low/Medium	Low	Low
Mass Casualty Incident	Medium	Medium	Medium
Terrorist Attack	Low/Medium	Medium	Medium
Explosion	Medium	High	Medium
Major Fire	Medium	High	Medium
Nuclear Incident	Low	Low	Low

APPENDIX B

BUSINESS SURVEY

Is your business required to conduct a risk assessment by another regulatory agency?		
1. YES	6	75%
2. NO	2	25%
How often is your risk assessment document reviewed or updated?		
1. Annually	8	100%
2. Never	0	0%
3. Other Time Frame	0	0%
Do you use your assessment document for training?		
1. YES	8	100%
2. NO	0	0%

What are the benefits of a risk assessment to your agency?		
1. we used this process to help our agency identify potential risks.	8	100%
2. help our agency prepare for the potential risks by identifying resources currently	8	100%
3. allows agency to prioritize emergencies	3	37.5%
4. assists in the development of training programs to address the identified risks	4	50%
5. help to establish and mitigate communication deficiencies	3	37.5%
6. help to protect safety of employees, occupants, and the community	8	100%
7. helps to lessen or prevent interruption of services	6	75%
8. helps to prevent property damage	5	62.5%
9. helps to minimize or protect against financial loss	8	100%
10. agency responsibility to the community	4	50%

APPENDIX C

DEPARTMENT SURVEY

Is your department required to conduct a risk assessment by another regulatory agency?		
1. YES	1	25%
2. NO	3	75%
How often is your risk assessment document reviewed or updated?		
1. Annually	1	25%
2. Never	0	0%
3. Other Time Frame	3	75%
Do you use your assessment document for training?		
1. Monthly	0	0%
2. Semi-annually	0	0%
3. Annually	1	25%
4. Other	3	75%

What are the benefits of a risk assessment to your department?		
1. help to identify potential risks.	4	100%
2. help to prevent property damage	4	100%
3. help to minimize property damage	4	100%
4. assist us with environmental protection	1	25%
5. help protect employees, occupants, and the community	1	25%
6. responsibility to the community	4	100%
7. minimize financial loss, property damage, personal injury	4	100%
8. helps prevent interruption of services	4	100%

APPENDIX D

CRITICAL FACILITIES
(By Latitude and Longitude)

Animal Related:	Davis Dairy	28'06" 706 N 81'28"886 W
	Why Not Farm	28'05" 579 N 81'38" 085 W
Church:	Antioch Church of God by Faith 1517 Bartley St.	28' 07" 305 N 81'37" 382 W
	Buelah Baptist Church 1706 12th Sr. N	28' 04" 366 N 81' 37" 259 W
	Church of Christ 1232 Robinson Dr.	28'05" 784 N 81'37" 411W
	Church of Jesus Christ Of Latter-Day Saints	28' 05"017 N 81' 37" 415 W
	Church of the Nazarene 1500 Robinson Dr.	28'05" 744 N 81'37" 163W
	Covenant Comm. Church of H.C. 1010 Ave C	28'07" 169 N 81'37" 375 W
	Eastside Baptist	28'06" 559 N 81'36" 786 W
	Faith Temple Assembly of God 704 McLeod Ave	28'06"617 N 81' 38" 395 W
	Faith Lutheran Church 100 8th St. S	28'06" 316 N 81' 37" 514 W
	First Christian Church 705 14th St. S	28' 05" 850 N 81'37" 206 W
	First Freewill Baptist Church 502 30th St. N	28'06" 873 N 81' 36" 443 W
First Presbyterian Church 104 Scenic Hwy	28'05"850N 81'38"123 W	

Critical Facilities *(By Latitude and Longitude) (Cont.)*

First United Methodist Church 201 2nd St. S	28'06" 299 N 81'37" 751 W
Haines City Church of God 1718 Melbourne Ave	28'06"643N 81'37" 020 W
Iglesia De Dios 113 1st St. S	28' 06" 271 N 81'37" 843 W
Iglesia Rosa De Saron 104 Ledwith Ave	28' 06" 235 N 81'37"822 W
Jehovah's Witness 902 Scenic Hwy	28' 05" 026 N 81'37" 396 W
Lakeview 7th Day Adventist Church 210 Kentucky Ave	28'07" 305 N 81'38" 885 W
Lamb of God Lutheran Church	28'05" 072 N 81' 37" 382 W
Landmark Baptist	28' 06" 401 N 81'37"487 W
Liberty Baptist Church 2624 10th St. N	28'07" 737 N 81'37" 314 W
New Mt. Zion Missionary Baptist Ch 713 8th St. N	28'06" 977 N 81'37" 501 W
North Ridge Baptist Church 2250 10th St. N	28'04" 922 N 81' 37" 292 W
Oakland Church of Christ 1106 Ave F	28'07" 283 N 81'37" 305 W
Redeemed Church of God in Christ 724 8th St.	28'06" 994 N 81' 37" 499 W
St. Ann Catholic Church	28' 05" 706 N 81'37" 292 W
St. Maries Episcopal Church	28'06" 491 N 81'37" 454 W

Critical Facilities *(By Latitude and Longitude) (Cont.)*

	St. Paul Primitive Baptist Church Ave C	28' 07" 169 N 81'37" 531 W
	The New Emanuel Baptist	28'06" 218 N 81' 37" 806 W
	Westside Baptist Church 1416 Polk City Rd	28'07" 303 N 81' 38" 829 W
Clinic:	Polk County Health Department	28'06" 576 N 81'37" 382 W
	Heartland Medical Center 40100 US Hwy 27	28'06" 128 N 81'37" 385 W
Communications:	GTE Communications Bldg.	28'06" 344 N 81'37" 571 W
	Haines City Police Dispatch	28'06" 854 N 81'38" 460 W
Emergency Ops. Center:	Haines City Police Station	28'06" 854 N 81'38" 460 W
Secondary EOC:	Haines City, City Hall	28'06" 358 N 81'37" 623 W
Electrical:	Florida Power Terminal	28'06" 371 N 81'37" 303 W
Emergency Medical Services	PCEMS, ALS 13	28'06" 219 N 81'37" 430 W
Fire Station:	Haines City Fire & Rescue 138 N 11 th Street	28'06" 112 N 81'37" 379 W
Hazardous Materials Sites:	Haines City Citrus Growers Assoc.	28'06" 402 N 81'37" 766 W
	H.C. Fertilizer Production Barn Bannon Island & Detour Rd	28'04" 631 N 81'36" 712 W
	South Atlantic Cold Storage	28'06" 365 N 81'37" 855 W

Critical Facilities *(By Latitude and Longitude) (Cont.)*

Landing Zone (possibilities):	Alta Vista Elementary School	28'05" 088 N 81' 37" 490 W
	Cook Field	28' 07" 168 N 81' 37" 398 W
	Eastside Elementary School	28'06" 846 N 81'35" 864 W
	Haines City Ridge High School	28'09" 097 N 81'37" 864 W
	Haines City High School	28'05" 942N 81' 36" 477 W
	Haines City Ridge High School	28' 09" 097 N 81' 37" 864 W
	Hinson Plaza Parking Lot Hinson Ave & 17-92	28'06" 371 N 81'38"438 W
	J. Daniel Jenkins Middle School	28' 06" 229 N 81'37" 490W
	Landmark Christian School	28' 06" 428 N 81'36" 787 W
	Shelly S. Boone Middle School	28'06" 163 N 81'35" 864 W
	Tractor Supply Parking Lot	28'07" 343 N 81'38" 443 W
	Yale Field	28'06" 085 N 81' 37" 622 W
	Military Base:	National Guard Armory
Nursing/Convalescent Care:	Savannah Court	28'06" 152 N 81'37" 985 W
	Palm Krest Manor	28'06" 326 N 81'37" 985 W

Critical Facilities *(By Latitude and Longitude) (Cont.)*

	Haines City Health Care	28' 06" 007 N 81' 37" 369 W
Police Department:	Haines City Police Department	28' 06" 365 N 81' 37" 621 W

APPENDIX E

Haines City Critical Infrastructure Sites		
<i>NORTH QUADRANT</i>		
<i>Business Name</i>		<i>Business Address</i>
Retail		
1	La Placita Mexico Supermarket	201 N 10th St
Public Buildings		
1	Fire Station	138 N 11th Street
Special Occupant		
1	Head Start	1008 Ave. D
<i>NORTH EAST QUADRANT</i>		
<i>Business Name</i>		<i>Business Address</i>
Infrastructure		
1	Sewage Treatment Plant	851 East Park Road
Manufacturing		
1	Buddy's Enterprise LP Gas	2800 17/92
2	Pallet Associates	112 Hwy 17-92 N.
Public Assembly		
1	Antioch Church of God	1517 Bartley St.
2	Beulah Baptist Church	1706 N 12 th Street
3	Covenant Community Church	2795 N 10 th St
4	Crispers	39895 Hwy 27
5	East Park	1000 East Park Drive
6	Eastside Baptist Church	116 N 22 nd St.
7	Faith Temple Assembly of God	704 McLeod Ave.
8	First Baptist Church	1250 26 th St N
9	Larry Parrish Complex	24 th & Johnson Ave
10	New Mount Zion Missionary Baptist Church	713 N 8 th Street
11	Our Place	35523 Hwy 27
12	Southern Dunes Golf and Country Club	2888 Southern Dunes Blvd.
13	Southern Dunes Restaurant	2888 Southern Dunes Blvd.
Retail		
1	Publix Supermarket	39883 US Hwy 27 N
2	St Charles Retail Strip Center	39851 US Hwy 27 N
3	Walgreen	40101 US Hwy 27 N
4	Winn Dixie	36019 US Hwy 27 N

Special Occupant		
1	AT Radiology	2235 North Blvd
2	Central Florida Cancer Center	40107 Hwy 27 N
3	Eastside Elementary School	1820 E Johnson Ave.
4	Parkview Village Child Dev. Ctr.	3601 Baker Dairy Road
5	RAI Care Center	110 Patterson Road
6	Ridge Community High School	500 Orchid Drive
7	State Motel	35509 Us Hwy 27
Transportation Network		
1	US Hwy 27	US Hwy 27
2	US 17/92	US 17/92
Warehouse		
1	Badcock Furniture Store	35495 US Hwy 27 N
2	Lowe's	37051 US Hwy 27 N
<i>NORTH WEST QUADRANT</i>		
<i>Business Name</i>		<i>Business Address</i>
Infrastructure		
1	Water Plant 2	2003 Angle Ave
2	Natural Gas Pipeline	
Manufacturing		
1	Old Castle	2427 RWS Ranch Road
Public Assembly		
1	8 Acre Park	1900 N 10 th Street
2	All Star Grill	94 Maxcy Plaza Circle
3	Beef O'Brady's	902 Polk City Rd.
4	Bethune Auditorium	915 Ave. E – Bldg C
5	Bethune Neighborhood Senior Center	915 Ave E Bldg D
6	Burger King	36100 Hwy 27
7	Cook Field	915 Ave E
8	Dolphus Howard Complex	704 Ave. C
9	Free Hope Baptist Church	704 N 7 th St
10	Kentucky Fried Chicken	35854 Hwy 27
11	Manny's Chop House	35496 Hwy 27
12	McDonald's	36204 Hwy 27
13	Oakland Church of Christ	1106 Ave. F
14	Oakland Gymnasium	915 Ave. E Bldg B
15	Redeemed Church of God in Christ	724 N 8 th St

16	Sonny's	35620 Hwy 27
17	St Paul Primitive Baptist Church	720 Ave C
18	T-Bones Restaurant	35510 Hwy 27
Public Buildings		
1	Florida Drivers License	930 E Lily Ave
2	Haines City Tax Collector Customer Service Center	74 Maxcy Plaza Circle
3	National Guard Armory	1107 Commerce Ave.
4	Police Station	35400 Hwy 27
Retail		
1	ALDI Supermarket	35770 Hwy 27 N
2	CVS Pharmacy	35799 US Hwy 27 N
3	CVS Pharmacy	39902 US Hwy 27 N
4	Dollar General Supermarket	5922 US Hwy 27 N
5	Heart of Florida Retail	35910 Us Hwy 27 N
6	Walgreen	35800 US Hwy 27 N
Special Occupant		
1	Bethune Academy	900 Avenue F
2	Heart of Florida Medical Office Bldg.	40124 Hwy 27 N
3	Heart of Florida Regional Medical Center	40100 Hwy 27
Transportation Network		
1	US Hwy 27	US Hwy 27
Warehouse		
1	Tractor Supply	35874 US Hwy 27 N
<i>SOUTH QUADRANT</i>		
<i>Business Name</i>		<i>Business Address</i>
Public Assembly		
1	Lamb of God Lutheran Church	901 Scenic Hwy
2	Northridge Church	2250 SR 17 S.
Special Occupant		
1	Budget Inn	1010 Hinson
2	Haines City Healthcare	409 S 10th Street
3	Hampton Court	301 S. 10th Street
4	North Ridge Academy – Preschool, Middle, High School	2250 Hwy 17 S
5	Palm Krest Manor	20 S. 10th Street
6	Pediatric Healthcare Facility	306 S 10th Street
Transportation Network		

1	SR 17	SR 17
Warehouse		
1	ALDI Foods	2651 Scenic Hwy
<i>SOUTH EAST QUADRANT</i>		
<i>Business Name</i>		<i>Business Address</i>
Infrastructure		
1	Verizon Switching Station	6th Street
Manufacturing		
1	Aercon Florida	3701 SR 544E
2	Cellynne Corp	1006 Marley Drive
3	Hanson Pavers	1980 Marley Drive
4	ITW Building Components	1950 Marley Drive
Public Assembly		
1	Church of Christ	1232 Robinson Drive
2	Church of Nazarene	801 S 14 th St.
3	Community Center	555 Ledwith Ave.
4	Diamondback Golf Club	6501 SR 544
5	Faith Lutheran Church	100 S 8 th St.
6	First Christian Church	705 S. 14 th Street
7	Lake Eva Banquet Center	799 Johns
8	Landmark Baptist Church	2020 E Hinson Ave
9	St Ann Catholic Church	1265 Robinson Drive
Public Buildings		
1	Parks and Recreation Maintenance Bldg	305 S 6th Street
2	Polk County EMS/Fire Station	901 Ledwith
3	Post Office	1051 Hwy 544 East
Retail		
1	Bravo Supermarket	1703 Hinson Ave E
2	Central Pharmacy	1671 Hinson
3	CVS Pharmacy	1701 Hinson
4	El Zocalo Supermarket	452 Hwy 17-92 N
5	Hinson Ave. Retail Center	1701 Hinson Ave
6	Save-A-Lot Grocery	1687 Hinson
Special Occupant		
1	Boone Middle School	225 22nd Street
2	Children's Palace Day Care	1001 Wood Ave.
3	Haines City High School	2800 Hornet Drive

4	Landmark Baptist Elementary, Middle and High Schools	2020 E Hinson
5	Neighborhood Pre-School	1019 E Grace Ave.
Transportation Network		
1	SR 544	SR 544
<i>SOUTH WEST QUADRANT</i>		
<i>Business Name</i>		<i>Business Address</i>
High Occupancy		
1	Landmark Baptist College	810 E Hinson Ave
2	Pinnacle Pines	501 Live Oak Ave.
Infrastructure		
1	Water Plant 1	402 N 5th Street
2	Natural Gas Pipeline	
Manufacturing		
1	Burriss Logistics	100 Railroad Ave.
2	Haines City Citrus Growers Association	8 Railroad Ave.
3	Monison Pallets	3100 Hwy 17-92 W.
Public Assembly		
1	Burger King	505 US 17/92
2	Church of Jesus Christ of Latter Day Saints	3009 S. 9 th Street
3	Clay Cut Center	801 Ledwith Ave.
4	Club Blitz	651 E Main Street
5	First Presbyterian Church	104 Scenic Hwy
6	Haines City Library	303 Ledwith Ave.
7	Iglesias De Dios	113 S 1 st Street
8	Iglesias Rosa De Saron	104 Ledwith Ave
9	Jehovah's Witness	902 Scenic Hwy
10	La Fiesta Mexicana	645 Ingraham Ave.
11	Lake Eva Park	305 Ledwith Ave
12	Lake Eva Park Aquatic Center	321 S 6 th St.
13	McDonald's	317 E Hinson Ave
14	New Horizon Methodist Church	21 S 2 nd Street
15	Pizza Hut	127 Hinson Ave
16	Railroad Park	6 th St N and Main Street
17	St Mark's Episcopal Church	102 N 9 th St
18	Still Water Christian	117 McKay

19	Westside Baptist Church	1416 Polk City Rd.
Public Buildings		
1	Armory Bldg	515 Ledwith Ave
2	City Hall	502 East Hinson
3	Fleet Maintenance	300 N 5th St
4	Public Works Bldg.	300 N 5th St
Retail		
1	Haines City Mall	603 US 17-92
2	Joey's Plaza	432-480 US 17-92
3	Publix Supermarket	617 US 17-92
Special Occupant		
1	Alta Vista Elementary School	801 Scenic Hwy.
2	Daniel Jenkins Middle School	701 Ledwith Ave.
3	Haines City Adult Day Care Center	751 Scenic Hwy
4	Jesus Cares	129 S 5th St.
5	New Horizons Pre-School	21 S 2nd St.
6	Savannah Court	301 Peninsular Dr.
Transportation Network		
1	US 17/92	US 17/92
2	SR 544	SR 544
Warehouse		
1	Aaron's Sales and Lease	639 Hwy 17-92
2	Rent King	500 Hinson Ave
<i>EAST QUADRANT</i>		
<i>Business Name</i>		<i>Business Address</i>
Public Buildings		
1	Polk County Health Department	111 N 11th Street
Transportation Network		
1	CSX Rail	CSX Rail
<i>WEST QUADRANT</i>		
<i>Business Name</i>		<i>Business Address</i>
Public Assembly		
1	Haines City Church of God	1718 Melbourne Ave
2	Seventh Day Adventist Church	210 Kentucky Ave.
3	Lighthouse Educational	706 Melbourne
Transportation Network		

1	CSX Rail	CSX Rail
Warehouse		
1	House of David's Auctions	220 N 7th Street