

EMERGENCY MANAGEMENT

INTRODUCTION AND BACKGROUND

The complex field of emergency management can be generally divided into four phases: preparedness, response, recovery, and mitigation. It is difficult to clearly differentiate the activities that occur within each of these phases. For example, the planning for response activities, such as warning, evacuating and sheltering, can be considered preparedness. Similarly, preparedness activities such as flood proofing can be viewed as hazard mitigation. Also, mitigation activities are increasingly incorporated into the recovery operations to reduce future impacts from similar events. Although the activities inherent in each of the four phases of emergency management share a number of commonalities, the skills required in these phases vary. For example, while the response and recovery phases of emergency management require good tactical skills, fast decision making ability, and the capacity to function under pressure, emergency preparedness and mitigation require skills in planning and public policy design, development, and implementation.

The emergency management activities discussed above are frequently guided by the development of a variety of emergency management plans. The purpose, scope, content, and format of each plan differs. Operational plans are detailed documents intended to provide a framework for emergency activities (usually response and recovery). They bridge the normal, non-emergency organizations and activities in a community to the emergency activities. Operational plans include specific responsibilities for individuals, agencies, and organizations expected to be involved in emergency management operations. They are the basis for the development of detailed standard operating procedures and for the training of emergency personnel. The County Comprehensive Emergency Management Plans (CEMP) required by the State Emergency Management Act¹ can be considered operational plans.

Florida Statutes² require another type of emergency plan, the Strategic Regional Policy Plans (SRPPs). Strategic or policy plans are documents intended to identify priorities and provide direction for emergency activities based on the identified priorities and the resources available to the planning area. The Emergency Management Element of the SRPP is intended to provide a policy direction for the ARPC and other agencies and organizations in the Apalachee Region who are either directly or indirectly involved in emergency preparedness activities. The SRPP is required to "...focus on regional rather than local resources and facilities."³ The goals, policies, and implementation activities in the SRPP must relate to the present emergency management conditions of the Apalachee Region and to the anticipated future growth and development trends and patterns.

In order to clearly identify and analyze the strategic emergency management priorities in the Apalachee Region, this element is organized according to the four generally recognized phases of emergency management: emergency preparedness, response, recovery, and mitigation. The first section discusses emergency preparedness and focuses on identifying the natural and technological hazards that occur in the Apalachee Region, identifying issues concerning hazard education, as well as problems associated with monitoring hazards.

EMERGENCY PREPAREDNESS

Emergency preparedness is the phase of emergency management that deals with planning and arranging for readiness to deal with emergencies or disasters. According to Frederick Cunny, ". . . the objectives of preparedness are to protect lives and property from an immediate threat, to promote rapid reaction in the immediate aftermath of a disaster, and to structure the response to both the emergency and longer-term recovery operations."⁴ Effective emergency preparedness activities involve people whose regular jobs are related to emergency management (e.g., the local emergency manager, law enforcement, and fire fighting personnel) as well as elected officials, building officials, media, school districts and planners. Preparedness activities are undertaken at the local, regional, state, and federal levels of government. Each level focuses on activities that are most compatible with its regular functions. For example, while local emergency personnel prepare for specific response and recovery efforts, regional efforts may be better directed at coordination among local activities and mitigation activities. However, to ensure proper coordination and effective response, each level of government must be aware of the activities of others. One of the most important aspects of emergency preparedness is being aware of the natural and technological hazards that may occur in an area. This analysis of hazards is discussed in the following section.

Issue 1: Regional Hazards — Trends And Conditions

The hazards that may occur in the Apalachee Region are discussed on the following pages. Also examined are the frequency or probability that the hazard will affect the area based on a historical evaluation of similar events; the potential damage or impact each hazard may pose to people and property; and the impact that projected trends in population growth and development patterns could have on the Region's vulnerability to hazards. Particular attention is paid to tropical cyclones (tropical storms and hurricanes). This is a product of their past frequency of occurrence in the Region, the predictions that the Western Hemisphere is entering a period of increased hurricane activity, and their ability to cause widespread, catastrophic damage across an enormous area. The first issue to be considered in this section is flooding — a hazard that has affected this part of the State a number of times in the last 25 years.

Flooding: Riverine flooding in the Apalachee Region is usually the result of locally heavy rains or tropical cyclones. Riverine flooding also can be caused when the soil and vegetation cannot absorb rainfall fast enough or when the flow of water cannot be carried in the normal streams or retained in lakes or ponds. The floodplains of rivers and other wetlands are the areas where flooding is expected to occur. The Region also is susceptible to coastal flooding, which is usually the result of the impacts of a tropical or a winter storm. Impacts from flooding include the threat to people's lives, direct damage to property, and disruption of services and economic activities.

Vulnerability to floods increases with a rise in the number of people living within the river floodplains and coastal high hazard areas (CHHA), as well as with a change in the normal flow of water. From 1980 to 1990, the population of the Region increased by 19.3 percent, from 282,946 to 337,522.⁵ The majority of this growth, about 80 percent, occurred within Leon County. From 1990 to 1995, the population was estimated to have increased by 10.6 percent, to 373,270.⁶ There is also a trend toward increasing populations in the Region's vulnerable coastal areas. Populations in the Region's four coastal counties, Franklin, Gulf, Jefferson, and Wakulla, grew by 17.6 percent between 1990 and 1995. The trend toward increasing populations in the Region, especially in storm surge vulnerable coastal areas and heightens the potential for injury, loss of life, and property damage. Increased populations also strain the limited emergency response resources of the Region.

For SRPP purposes, major flood events are those that result in a Presidential disaster declaration. The last major flood within the Region resulted from the remnants of Tropical Storm Alberto (July, 1994), Tropical Storm Beryl, and Tropical Depression #10. Tropical Storm Alberto dropped heavy rains on southeast Alabama, western Georgia and Florida for nearly one week. As a result of the heavy rains, the Apalachicola River crested at its highest level in 65 years.⁷ Six counties (Calhoun, Franklin, Gadsden, Gulf, Jackson, and Liberty) were declared Presidential Disaster Areas after the July storms. These storms also contributed to flooding in Leon and Wakulla Counties.

These were not the first floods in the area. In fact, the Apalachee Region has a history of major flood events. In 1990, the same counties referenced above received Presidential disaster declarations. Major floods also affected the Region in 1979 and 1975. The repetitive flood history of the Region contributes to substandard housing since the income levels of a majority of flood victims are often inadequate to conduct proper repairs or hazard mitigation. The repetitive floods coupled with the low income levels of the majority of the victims has created a cycle of flood — repair — flood, and so on.⁸

In the past, structural actions such as diking or damming rivers or lakes were used to reduce flooding. These alternatives have high economic and environmental cost. These structures also provided a sense of safety which encouraged further development.

Current methods for floodplain and property protection are non-structural and include activities such as development regulations, land use regulations, voluntary property acquisition, and hazard education. Floodplain management regulations can reduce flood damages and are estimated to save \$569 million annually.⁹ In addition, the establishment and implementation of coastal construction control lines may reduce vulnerability to coastal flooding.

Most local governments in the Region have adopted floodplain management ordinances intended to reduce the risk to persons and property from flooding. The extent of these regulations vary, but the majority require structures to be elevated above the base flood elevation and do not consider the potential effects of development on water quality of the surface water body involved. Reconsideration should be given to the intent of existing floodplain management ordinances to include mitigation activities, such as anchoring, use of flood resistant materials, incorporation of new data concerning elevation and flood proofing, opening walls on enclosed areas, floodway no-rise certification, and pile or column foundations, and free of obstruction requirements in coastal high hazard areas.¹⁰

Hazardous Materials Releases: Another hazard common to the Apalachee Region is hazardous materials releases. Hazardous chemicals are a common part of life in modern society. They are used both in the workplace and at home. They are commonly stored and used by the government, large industry, small businesses, and by private citizens. While there are many ways to divide the broad category of hazardous materials, this element considers: chemicals stored and handled at fixed facilities; chemicals transported on roads and rail; natural gas pipelines; and oil transported via barges.

Responding to the potential dangers associated with the use of these hazardous chemicals at fixed facilities, the U.S. government initiated the Emergency Planning and Community Right-to-Know Act Program (EPCRA). The two primary goals of this program are to develop plans to respond in the event of hazardous materials release and to increase the public's knowledge of hazardous chemicals in their communities. The EPCRA program is implemented in Florida through the State Emergency Response Commission for Hazardous Materials (SERC) and the eleven Local Emergency Planning Committees (LEPCs). Together, the SERC and the LEPCs provide guidance on hazardous materials training, exercises, and compliance with the requirements of the federal EPCRA program. The jurisdictions of the eleven LEPCs correspond with those of the State's Regional Planning Councils (RPCs) and the RPCs provide staff to the LEPCs.

Fixed Facilities are defined, pursuant to EPCRA and the State Hazardous Materials Emergency Response and Community Right-to-Know Act of 1988,¹¹ as facilities where Extremely Hazardous Substances (EHS), a group of about 360 substances identified by the Environmental Protection Agency, are present at quantities above a specified threshold at any time during the year. The owner or operator of these facilities must

provide certain facility and chemical information to the Local Emergency Planning Committee (LEPC), the State, and local fire departments.

As of 1995, there were approximately 239 fixed facilities with EHSs above the threshold planning quantity in the Apalachee Region. Most of the facilities use or store chlorine gas for the treatment of water and wastewater.¹² This represents an increase of 27 percent over 1992 when there were 188 such facilities in the Region. As the population of the Region grows, the number of these facilities will likely increase. This will result in an increase in the number of people living in the vulnerable zones of these facilities.

In addition, there are approximately 444 facilities in the Region that are regulated according to Sections 311 and 312 of EPCRA. These Sections of the EPCRA legislation apply to any hazardous chemical that meets or exceeds the threshold of 10,000 pounds, thereby necessitating the maintenance of a Material Safety Data Sheet (MSDS) as required by the Occupational Safety and Health Administration (OSHA). The majority of these facilities use or store petroleum products such as gasoline or diesel fuel oil (e.g. gasoline stations). As the population of the Region grows, the number of these facilities will increase as well.

Whereas EPCRA provides guidelines for monitoring hazardous materials located at fixed facilities, the transportation of hazardous materials is regulated by the Department of Transportation under 49 CFR Parts 100 through 177. Growth in regional traffic volumes is accompanied by an increased frequency and quantity of hazardous materials transported through the Region and an attendant increased probability for hazardous materials transportation releases. At this time, local emergency management personnel are frequently not advised of the types and quantities of hazardous materials that are transported through the Region. This lack of information may result in impediments to adequately responding to hazardous materials incidents caused by transport vehicles. District II LEPC staff are in the process of performing a District-wide hazardous chemical commodity flow study to identify the range of hazardous materials being transported through the Region by rail and road.

Another source of potential hazardous materials releases is pipelines. The Florida Natural Gas Transmission Line crosses Gadsden, Jackson, Jefferson, and Leon Counties. The operation of the line, including gas volumes, compressor stations and meter stations, is controlled by the companies. The gas in the pipeline is pressurized and potential hazards include explosion, fire, and toxicity to people and animals. In the case of propane, the gas is lighter than air; therefore, it will rise and dissipate, unless trapped by an overhead obstruction.

Oil is transported by barges along the Intracoastal waterways and to the ports of St. Marks and Port St. Joe. An average of approximately 15 barges of gasoline or diesel oil

(20,000 barrels¹³ per barge) and 4 barges of asphalt or #6 Oil (17,500 barrel per barge) are delivered to the St. Marks area each month. Hazards from these materials include potential fire or explosion and spills that can threaten health and water quality. The potential consequences to the environment are high.

Given the prevalence of hazardous materials in everyday life, it is not surprising that there were over 3,340 reported hazardous materials incidents in Florida in 1994 and 1995. Table EM-1 displays information describing the number of hazardous materials accidents reported in the nine counties of the Apalachee Region since 1992. Complete data were not available for 1993. For years with complete data, the total number of accidents reported has ranged from a low of 76 to a high of 88. In 1994, the year with the greatest number of reported incidents, a total of 215 people were evacuated, five people were injured, and three people were killed in accidents occurring throughout the Region.

Petroleum products are involved in a large proportion of the accidents (ranging from 36 percent to 65 percent of the total number of accidents in years with complete data). The most common EHS involved in accidents were chlorine and sulfuric acid. Although no discernible trend is evident from the spills data, it appears likely that given the increasing number of fixed facilities (both Section 302 and 311/312 facilities) and the frequency with which hazardous materials are shipped, the number of reported accidents will increase over time.

Table EM-1: Hazardous Materials Accidents Reported in the Apalachee Region, 1992-1996.

Year	Total Accidents	Petroleum Related Accidents	People Evacuated	People Injured	People Killed
1992	76	37 (36%)	63	4	0
1994	88	57 (65%)	215	5	3
1995	78	44 (56%)	4	7	1
1996	11	8 (73%)	77	23	0

Source: Florida Department of Community Affairs, Compliance Planning Section, 1996.

Thunderstorms: The Apalachee Region is affected by "convective" and "frontal" thunderstorms. Convective thunderstorms are more common in the summer and are localized in nature, with an average size of approximately 10 Km. Convective thunderstorms may also be part of a tropical weather system (see tropical cyclones below). Frontal thunderstorms are more common in spring and are commonly part of a larger weather system, like a squall line.

A thunderstorm is classified as severe when it produces winds of 58 mph or higher. Severe storms may be accompanied by heavy rains, high winds, hail, lightning and may even spawn tornadoes. These associated hazards are a threat to people and property and may disrupt public services and economic activities.

The National Weather Service in Tallahassee has gathered data since 1959 concerning the occurrence of severe thunderstorms in Florida. The following table describes the frequency of occurrence and number of injuries and deaths resulting from severe thunderstorms.

Table EM-2: Severe Thunderstorms in the Apalachee Region, 1959-1995.

County	Severe Thunderstorms	Deaths	Injuries
Calhoun	13	0	1
Franklin	23	1	0
Gadsden	25	0	0
Gulf	14	0	1
Jackson	31	2	1
Jefferson	15	0	0
Leon	69	0	5
Liberty	3	0	0
Wakulla	19	0	1

Source: National Weather Service, Tallahassee, 1996.

Tornadoes: These rotating phenomena are the most violent storms on the planet. They can lift buildings from their foundations, turn over vehicles, and destroy crops and vegetation. They are generated by severe thunderstorms and start out as either a single or multiple rotating columns of air within a cloud (funnel cloud). The rotating funnel extends from the base of the cloud to the ground and the average time on the ground is 15 minutes.¹⁴ There is disagreement regarding maximum wind speeds, but in strong tornadoes winds over 250 mph are not uncommon. The average width of the path of a tornado is about 420 feet, but some tornadoes have been measured at over a mile in diameter. Although they can develop at any time of the year, tornadoes are most common in this area during April, May, and June.

Tornadoes are common in Florida, although their average characteristics differ from those in other areas. Statistically, tornadoes in Florida are weaker than in other areas of the nation.¹⁵ This could be in part due to the fact that some of the reported tornadoes are actually waterspouts. Table EM-3 displays information describing tornado frequency in the Apalachee Region between the years 1959 and 1995. During this time period, there were 109 tornadoes in the Region which resulted in five deaths and 59 injuries. Given the increasing population in the Region, it appears that a greater number of people may be at risk from tornado activity.

Table EM-3: Tornadoes in the Apalachee Region, 1959-1995.

County	Tornadoes	Deaths	Injuries
Calhoun	9	0	12
Franklin	20	3	8
Gadsden	19	2	5
Gulf	14	0	3
Jackson	19	0	27
Jefferson	5	0	1
Leon	7	0	0
Liberty	7	0	0
Wakulla	9	0	3

Source: National Weather Service, Tallahassee, 1996.

Tropical Cyclones: Tropical cyclones include tropical depressions (maximum sustained winds of 39 mph or less), tropical storms (maximum winds between 39 and 74 mph) and hurricanes (winds over 74 mph). The names may apply to the same system at different stages of development. Hurricanes are classified into Saffir-Simpson Categories 1 through 5 based on their maximum sustained speeds (see Table EM-4).

Table EM-4: Saffir-Simpson Hurricane Scale.

Storm Category	Wind Velocity (mph)	Damage
1	74-95	Minimal
2	96-110	Moderate
3	111-130	Extensive
4	131-155	Extreme
5	155+	Catastrophic

Source: U.S. Army Corp of Engineers 1995, 2-2.

A tropical cyclone forms over warm waters and derives its energy mainly from the condensation of water vapor within the system's core. Hurricanes have a peculiar structure which consists of the "eye," the "eye wall," and rainbands. The eye is characterized by little or no cloudiness or precipitation and may vary in width from 6 to 60 miles.¹⁶ Surface pressure reaches its minimum in the eye of the hurricane. The eye wall is the main engine of a hurricane. It is here where the strongest winds and heaviest rains are found. Winds decrease rapidly with increasing distance from the eye wall. The rainbands are lines of thunderstorms that spiral around the eye and eye wall causing damage far away from the center of the storm. The strongest winds in a hurricane are found in its front right quadrant.

Effects from a hurricane include heavy rains, intense winds, tornadoes, and the storm surge. The actual amount of rainfall depends on the intensity of the storm, its forward speed, the distribution of the rain within the storm, and the location of the area with respect to the storm's forward motion. Approximately 25 percent of hurricanes making landfall in the United States spawn tornadoes.¹⁷

Historical Hurricane Activity in the Apalachee Region

The National Climate Center and the National Weather Service (NWS) have compiled records of tropical cyclone occurrences in the Apalachee Basin of Florida's panhandle. This Region includes the coastal areas of Franklin, Gulf, Jefferson, and Wakulla Counties. Thirty-three hurricanes passed within 125 miles of Apalachicola between 1886 and 1991, an average of one every 3.2 years. In recent years, the Region has been impacted by Hurricanes Opal and Erin in 1995, Elena in 1985 (Tropical Storm Kate also affected the Region in 1985), Eloise in 1975, and Agnes in 1972. Hurricane researchers have described the period from 1970 through 1994 as one of relatively "average" activity in terms of the number of hurricanes striking the United States.

The 1995 hurricane season was one of historic activity with 19 named storms, 121 named storm days, and 11 hurricanes. Forecasters predict that the 1996 season will not be as active as 1995 but will still be considerably more active than the period from 1970-1994. Hurricane experts also note that there will likely be an increase in the number of major hurricanes (category 3-5) striking the East Coast of the United States, Florida, and the Caribbean within the next ten years¹⁸. As development activities and resident and vacation populations increase in coastal counties and flood prone inland counties (such as those in the Apalachee Region), the ramifications of increased major hurricane activity could prove catastrophic for these vulnerable areas.

Geographic Area Susceptible to Storm Surge

The storm surge is potentially the most dangerous effect from a hurricane. It is an increase in the sea level created by the reduction in pressure and push from the winds of the storm. It acts like "a giant bulldozer sweeping everything in its path."¹⁹ The maximum surge is expected at the front right quadrant of the hurricane where the maximum winds occur. Surge heights are also related to the shape and bottom topography (bathymetry) of the coast. Potential surge heights in the coastal counties in the Apalachee Region have been modeled using the Sea, Lake and Overland Surge Heights (SLOSH) model.

The U.S. Army Corps of Engineers (Corps), using the SLOSH model, has developed a series of inundation maps predicting the maximum storm surge flooding that will be produced by a tropical storm or category 1-5 hurricane, regardless of the storm track. The four coastal counties in the Apalachee Region, Jefferson, Wakulla, Franklin, and Gulf, are at greatest risk. In fact, some of the highest predicted storm surges in the nation have been computed for coastal counties in the Region.

Table EM-5 contains information describing worst-case storm surge scenarios computed by the Army Corps of Engineers. Shown in each column are the ranges in storm surge by storm category in locations in each of the coastal counties. For example, worst-case

surge heights for a tropical storm could range from 3.8 to 8.7 feet depending on your location along the coastal area of Wakulla County. Worst-case surge heights for a category 5 hurricane for coastal areas in Wakulla County could range from 17.2 to 27.5 feet. This information can be seen in its entirety in the storm surge atlases developed for these counties by the Army Corp of Engineers.

The implication of surge heights of this magnitude is clear: increased development in the at-risk coastal areas of the Region elevates the potential for injury, loss of life, and damage to public and private property in the event of a tropical storm or hurricane. For these reasons it is important to properly guide development in flood prone areas. Examples of areas that are especially susceptible to flooding and surge include barrier islands, beach and dune systems, coastal areas, and inland 100 year flood plains. Left undeveloped, these systems serve as natural barriers to the storm surge from tropical cyclones. The inland flood plains serve as basins in which water collects and gradually percolates into the aquifer below. Altered for development, these areas offer little protection for either persons or property. Barrier islands, beach and dune systems, and coastal areas are resources of regional significance in the Apalachee Region. Low-lying inland areas and riparian lands are also extremely vulnerable to the effects of hurricane-induced flooding and are areas in which wise development guidelines should be followed.

Table EM-5: Range of Surge Heights for Varying Intensities of Storms.

County	T.S.	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
Franklin	4.2 - 7.1	4.2 - 9.2	6.2 - 14.3	9.2 - 19.3	14.5 - 23.8	17.2 - 27.5
Gulf	4.1 - 5.2	4.2 - 6.3	6.2 - 9.5	7.2 - 12.7	8.4 - 16.1	10.2 - 19.7
Jefferson	8.6 - 8.7	10.5 - 11.0	16.6 - 17.6	22.4 - 23.4	26.6 - 29.4	31.4 - 35.4
Wakulla	3.8 - 8.7	4.0 - 10.8	8.0 - 17.3	15.0 - 23.3	20.6 - 29.3	23.7 - 34.4

Source: U.S. Army Corp of Engineers, 1993, 1994.

Vulnerable Populations

The Corps identifies the vulnerable population or population at risk as those persons living within evacuation zones subject to the storm surge combined with the residents of mobile homes located in zones not expected to flood.²⁰ Residents of mobile homes are included in the population at risk because of the vulnerability of these structures to the strong winds associated with hurricanes. Also included in estimations of vulnerable zone populations are potential tourist populations located in evacuation zones. Table EM-6 identifies the estimated populations vulnerable to the storm surge from tropical storms and category 1 through 5 hurricanes in the Apalachee Region.

Table EM-6: Estimated Vulnerable Populations in the Apalachee Region.

County/ Storm Scenario	Maximum Population Evacuating	Maximum Number of Vehicles Evacuating
Calhoun County		
All Hurricanes	3,300	1,435
Franklin County		
Tropical Storm - Cat 2 Hurricane	10,400	4,550
Category 3-5 Hurricane	11,300	4,900
Gadsden County		
All Hurricanes	11,400	4,950
Gulf County		
Tropical Storm - Cat 1 Hurricane	7,900	3,350
Category 2-3 Hurricane	11,100	4,800
Category 4-5 Hurricane	12,400	5,400
Jackson County		
All Hurricanes	10,300	4,480
Jefferson County		
Tropical Storm - Cat 2 Hurricane	4,600	2,000
Category 3-5 Hurricane	5,400	2,300
Leon County		
Category 1-2 Hurricane	30,000	13,000
Category 3-5 Hurricane	40,000	17,400
Liberty County		
All Hurricanes	2,700	1,170
Wakulla County		
Tropical Storm - Cat 1 Hurricane	12,450	6,100
Category 2-5 Hurricane	15,550	7,600
Max Regional Evacuation for a Category 5 Hurricane	112,300	49,635

1. Franklin County's total of 11,300 evacuees includes an estimated 2,500 seasonal residents. Depending upon the time of year, this number may be higher or lower.
2. The figures from Gulf County include 1,190 seasonal dwelling units assumed to be 75 percent occupied for each storm scenario.
3. The Leon County figures include approximately 25,000 mobile home residents plus a portion of the remaining permanent population. Other inland county populations reflect only current mobile home populations.
4. For each coastal county the figures include all permanent and seasonal residents in potential flood surge areas as identified by the U.S. Army Corp of Engineers. Aggressive pre-storm public education and strong evacuation notices would have to be issued to the public for actual response to approach these figures.

Source: U.S. Army Corp of Engineers, 1995, 6-17.

From the data above, it appears there is a significant population, over 112,000 people, vulnerable to tropical cyclones in the Apalachee Region. Populations in the coastal counties have a high degree of vulnerability, even from relatively weak tropical cyclones (tropical storms and category 1 and 2 hurricanes). The inland vulnerable population is comprised primarily of persons residing in mobile or manufactured homes which are common in this part of Florida. In fact, as stated in the *Affordable Housing Element* of

the SRPP, mobile or manufactured homes now account for over 19 percent of the housing stock in the Region. In Wakulla County, mobile or manufactured housing comprises over 43 percent of the housing stock. In unincorporated Leon County, mobile or manufactured housing comprises over 27 percent of all housing.

The ramification of the increasing number of persons in coastal areas and the widespread popularity of mobile or manufactured homes in the Region's housing stock is that a significant number of persons are at risk from storm surge and high wind conditions. The size of the population at risk from tropical cyclones places great stress on the limited emergency management resources available in the largely rural Apalachee Region. These limited resources include professional emergency services personnel, hurricane shelter space, and evacuation road network capacity.

Critical Facilities

An important part of a hurricane vulnerability analysis is identifying facilities that are necessary for a community to respond to an emergency situation. Examples of these facilities include: emergency operation centers, hospitals, clinics, fire departments, law enforcement offices, emergency medical services, National Guard units, water treatment facilities, and evacuation shelters. Other facilities important to identify are those which may house large numbers of persons such as adult congregate living facilities, schools, prisons, and office complexes. Tables EM-15 through EM-23 in the appendix to this section contain information describing critical facilities for the nine counties in the Region. More complete and detailed information will be obtained regarding the full range of sensitive facilities in these counties as data become available. As funding allows, the ARPC will incorporate the locations of many of these critical facilities into the Council's Geographic Information System (GIS). This will prove useful for county-specific as well as Region-wide emergency management planning efforts.

Clearance Times for Coastal Counties

Another critical factor to be considered in a hurricane hazards analysis is clearance times for residents in coastal counties. Clearance time, according to the Corps, is the time required to clear a roadway when an evacuation order is given in response to a hurricane.²¹ Clearance time starts when the first vehicle enters the roadway to begin evacuating and ends when the last vehicle reaches its assumed safe destination. The components of clearance time include mobilization time, travel time, and queuing delay time. Mobilization time includes time spent securing homes and gathering the necessary items to leave. Travel time includes the time spent traveling along the road network. Queuing delay time refers to the time spent on the road in congested traffic. It is important to note that clearance time is not a measure of the length of time any one vehicle spends traveling on the road.

The U.S. Army Corp of Engineers notes that clearance time is one of two critical factors to consider when issuing an evacuation order.²² The second important factor is "pre-landfall hazards time," which is the arrival time of hazardous conditions such as tropical storm winds and surge-induced roadway inundation. The estimated clearance times for counties in the Apalachee Region are based on the important assumption that local emergency officials will be successful in evacuating residents from areas shown as flooded by the SLOSH model. Tables EM-7 and EM-8 display clearance times for the four coastal counties in the Apalachee Region. Table EM-9 shows regional clearance times focusing on Leon County/Southwest Georgia and Jackson County/Southeast Alabama. It is important to note that these data are taken from a hurricane evacuation study that is still in a draft format. This information could change as the report is finalized. Further, there are a number of factors that must be considered which could result in longer clearance times than indicated in the following tables. These factors include nighttime evacuations and slow moving storms.

Table EM-7: Clearance Times for Gulf and Franklin Counties.

Storm Scenario	Gulf County Clearance Times in Hours*	Franklin County Clearance Times in Hours**	
		Normal	Peak Season
Tropical Storm Through Category 1 Hurricane			
Rapid Response	4 1/2	4 3/4	6
Medium Response	6 1/4	6 3/4	6 3/4
Long Response	9 1/4	9 3/4	9 3/4
Category 2 Through Category 3 Hurricane			
Rapid Response	6	4 3/4	6 1/4
Medium Response	7	6 3/4	7
Long Response	9 1/4	9 3/4	9 3/4
Category 4 Through Category 5 Hurricane			
Rapid Response	7	4 3/44	6 1/4
Medium Response	8	6 3/4	7
Long Response	9 1/4	9 3/4	9 3/4

* The U.S. Army Corp of Engineers (1995, 6-22) notes, "Evacuation decision making in Gulf County must consider times to clear Bay and Gulf County evacuees through the intersection of SR 73 and US 231 in Jackson County. Local officials believe that, for some hurricanes involving a nighttime evacuation or a slow moving storm, behavioral response will be longer than 9 hours pushing clearance time duration to as much as 20 hours. Gulf County times include a portion of Apalachicola traffic that will evacuate through Gulf County."

** The U.S. Army Corp of Engineers (1995, 6-22) further notes "Evacuation decision making in Franklin County must consider times to clear bottlenecks in Wakulla and Leon Counties."

Source: U.S. Army Corp of Engineers (1995, 6-22).

Table EM-8: Clearance Times for Jefferson and Wakulla Counties.

Storm Scenario	Jefferson County Clearance Times in Hours	Wakulla County Clearance Times in Hours*	
		Normal	Peak Season
Tropical Storm Through Category 1 Hurricane			
Rapid Response	4 1/4	6 3/4	8 3/4
Medium Response	6 1/4	7 1/2	9 1/2
Long Response	9 1/4	9 1/4	11
Category 2 Through Category 5 Hurricane			
Rapid Response	4 1/4	7 1/4	9 1/4
Medium Response	6 1/4	8	10
Long Response	9 1/4	9 1/4	11 1/4

*Evacuation decision making in Wakulla County must consider time to clear bottlenecks in Leon County.

Source: U.S. Army Corp of Engineers (1995, 6-23).

Table EM-9: Regional Clearance Times.

Storm Scenario	Leon County/Southwest Georgia Bottlenecks (Hours)		Jackson County/Southeast Alabama Bottlenecks (Hours)	
	Normal	Peak Season	Normal	Peak Season
Tropical Storm Through Category 2 Hurricane				
Rapid Response	8 3/4	10 3/4	8 1/2	10 3/4
Medium Response	10 1/4	12 1/4	9 1/4	11 1/4
Long Response	12 1/2	14 1/2	10 1/4	12 1/4
Category 3 Through Category 5 Hurricane				
Rapid Response	10 3/4	12 3/4	10	12 3/4
Medium Response	12 1/4	14 1/4	10 1/2	13
Long Response	14 1/2	16 1/2	11 1/2	14

Source: U.S. Army Corp of Engineers (1995, 6-23).

The data show that evacuation clearance times for coastal counties can be rather significant. The Corps predicts that if citizens in affected areas are slow to respond, clearance times could take over nine hours for Gulf County. Local officials in Gulf County note a nighttime hurricane or slow moving storm could push clearance time to as long as 20 hours. Clearance times of over 9 hours are also estimated for Franklin, Jefferson, and Wakulla Counties in the event of a long response to evacuation orders. Clearance times in peak season for Wakulla County could add as much as two hours to the time required to clear all evacuating vehicles from the road network. Regional clearance times in Tallahassee are as long as 14 1/2 hours for long responses to category 3 and higher storms.

Although clearance times are extremely difficult to predict given all of the factors involved, these figures provide at least some guidance to emergency managers in the Apalachee Region who must make this difficult decision. It is important to note that as the population in the Region grows, so will the stress on the evacuation road network -- a factor which must be considered in the decision to permit new development in vulnerable areas in the Region. Roadway clearance times also provide useful information to be considered when evaluating proposed transportation improvements. Demand for hurricane evacuation shelter space will also increase as greater numbers of residents flee approaching storms. This is considered in the following section.

Shelter Capacity and Demand

In the event of an approaching hurricane, many residents of both coastal and inland counties will seek refuge in public shelters. The number of spaces available in public shelters in each county is constantly changing as a result of a number of factors which may be different for each hurricane. These factors include: season, storm intensity (tropical storm through category 5 hurricane), storm direction, and landfall projection, availability of shelters, and availability of qualified shelter operators (U.S. Army Corp of Engineers 1995, 5-1). Because of these many factors, it is important to note that not all shelters will be open for use for every hurricane.

Following are two tables describing shelter capacity and demand in the Apalachee Region. The first table displays information about shelter space supply and demand in coastal counties. The second table displays information about inland shelter demand, which includes estimated *in-county* demand as well as demand from persons evacuating *from* coastal counties. The data are based on destination data from a study entitled, "*Behavioral Assumptions for Hurricane Evacuation Planning in the Apalachee Region of Florida.*" The authors of the study note that these are very general estimates and will likely vary for each individual tropical storm and hurricane. These data assume that emergency officials can provide an adequate warning period and the public is aware of the location of shelters.

Table EM-10: Shelter Space Supply and Demand in Coastal Counties.

County/ Storm Scenario	Potential In-County People Going to In-County Public Shelter	In-County Public Shelter Capacity
Franklin County		
T.S. - Category 1 Hurricane	740	1,865
Category 2-5 Hurricane	150 (All Refugees)	Will not shelter for Cat. 2-5
Gulf County		
T.S. - Category 1 Hurricane	680	200
Category 2-3 Hurricane	1,010	200
Category 4-5 Hurricane	730 (All Refugees)	Will not shelter for Cat. 4-5
Jefferson County		
T.S. - Category 2 Hurricane	680	1,500
Category 3-5 Hurricane	770	1,500
Wakulla County		
T.S. - Category 1 Hurricane	930 (All Refugees)	Will not shelter for T.S. - Cat. 1
Category 2-5 Hurricane	470 (All Refugees)	Will not shelter for Cat. 2 - 5

Source: The U.S. Army Corp of Engineers 1995, 5-3.

Table EM-11: Inland Shelter Supply and Demand.*

Evacuee Destination	Max. Out of County Evacuees from:			Public Shelter Demand from Coastal Evacuees	Public Shelter Demand from In-County Residents**	Total Public Shelter Demand	Total Public Shelter Supply***
	Gulf County	Franklin County	Wakulla County				
Tallahassee							15,432
T.S.-Cat 2	1,910	6,000	6,300	2,800	4,500	7,300	
Cat 3-5	3,770	7,300	9,600	4,100	6,000	10,100	
Liberty Co.							NA
T.S.-Cat 2	--	430	--	90	810	900	
Cat 3-5	--	520	--	105	810	915	
Gadsden							9,236
T.S.-Cat 2	100	30	--	110	3420	3530	
Cat 3-5	190	520	--	140	3420	3560	
Calhoun							8,350
TS - Cat 2	480	--	--	100	990	1090	
Cat 3-5	950	--	--	190	990	1180	
Jackson							4,487
T.S.-Cat 2	720	430	180	270	3090	3360	
Cat 3-5	1420	520	270	440	3090	3530	
SE Alabama							NA
T.S. -Cat 2	525	260	--	160	NA	NA	
Cat 3-5	1040	315	--	270	NA	NA	
SW Georgia							NA
T.S.-Cat 2	670	430	1170	455	NA	NA	
Cat 3-5	1320	520	1790	730	NA	NA	

* The U.S. Army Corp of Engineers notes (1995, 5-4), "Estimates should be taken as very general guidance as coastal participation rates and behavior will vary widely by storm. Figures do not include shelter demand from Bay County and Points west. This is important as one considers potential shelter demand for Jackson County, Southeast Alabama, and to some degree, Tallahassee."

** Figures in this column are 15 percent of Leon County evacuees and 30 percent of other inland county evacuees.

***Does not consider category of hurricane. The number of shelter spaces available will vary depending upon the factors noted previously.

Source: The U.S. Army Corp of Engineers 1995, 5-4.

Shelter space in coastal counties is generally only available for lesser intensity hurricanes. This is the case for Franklin County which will not open shelters for category 2-5 hurricanes and Gulf County which will not open shelters for category 4-5 storms. Wakulla County will not offer shelter space for any level of tropical storm or hurricane. This places the impetus on inland counties to house those persons who cannot find shelter through other means (relatives or friends living in safe areas, hotels, motels, etc.). The shelter deficit in coastal counties will likely increase as the population rises in these areas. The availability of safe shelter space, both in coastal and inland counties, is a strategic concern that must be dealt with on a regional level to ensure the safety of residents and visitors to the Apalachee Region. One means of achieving this is to require that adequate shelter capacity (located in areas not vulnerable to flooding) is provided concurrent with the impact of new development. A second possible solution to the problem is to limit development in flood prone areas that will require evacuation.

Evacuation Routes

Another extremely important issue to consider is the road network upon which people will rely to get them out of the path of the storm. Being able to determine the best route to get out of harm's way is of great concern to persons evacuating from an approaching hurricane. This is also an area of concern for emergency management personnel given the significant population and concomitant traffic congestion in the State's coastal counties. The Corps has studied the issue of hurricane evacuation in the Apalachee Region and identified roads, roadway segments, and intersections that are critical for evacuating coastal populations during a tropical storm or hurricane.²³ Roadway segments with the highest volume-to-service ratios were identified as the critical transportation links in counties which are expected to see large numbers of evacuees. These links are listed in the following table in order of severity. A key finding of the study is that the most congested roadways will likely be inland — primarily in Leon County — rather than in the Region's coastal areas.

An earlier study by the Apalachee Regional Planning Council, the *1984 Hurricane Evacuation Plan*, revealed that many critical evacuation routes are low in elevation, in substandard condition, and subject to poor drainage. Due to surrounding marshes and wetlands, roadway shoulders in many locations are soft and not conducive to vehicular movement. Lateral clearances (distance between the edge of the roadway and the nearest obstruction) on several bridges are limited. In addition, segments of US 98 between Eastpoint and Carrabelle are in close proximity to the shoreline and subject to critical erosion during a storm. These conditions persist today. The importance of the roadway evacuation network cannot be overstated. In order to ensure the safety of residents and visitors to the Region, it is imperative that local governments require new development to mitigate the deleterious impacts to the capacity of the roadway evacuation network. This can be accomplished by expanding existing roadway capacity or siting development along routes that are not components of the evacuation network.

Table EM-12: Critical Roads, Road Segments, and Intersections in the Apalachee Region.

Route/Segment/Intersection
Calhoun County
SR 71/SR 20 intersection at Blountstown
Franklin County
US 98 through Eastpoint
St. George Island Causeway intersection with US 98
US 319 and Capital Circle intersection south of Tallahassee (in Leon County)
US 319 through Crawfordville (in Wakulla County)
US 319 and US 98 intersections at Medart (in Wakulla County)
US 319 and SR 61 intersection south of Tallahassee (in Leon County)
SR 20 and Capital Circle intersection west of Tallahassee (in Leon County)
Gulf County
SR 71 through Wewahitchka (intersection of 22 and SR 71)
CR 386 at SR 71 intersection south of Wewahitchka
SR 71/SR 20 intersection at Blountstown (in Calhoun County)
SR 73 at US 231 intersection north of Cottondale (in Jackson County)
Jackson County
SR 73 at US 231 intersection north of Cottondale
Jefferson County
CR 259 and US 19 intersection at Capps
US 27 and US 19 intersection at Capps
Leon County
US 319 (Crawfordville Road) and Capital Circle intersection
US 319 (Crawfordville Road) and SR 61 intersection
Woodville Highway and Capital Circle intersection
Capital Circle between Crawfordville Highway and Apalachee Parkway
Thomasville Road and Capital Circle N.E. Intersection
Capital Circle between Apalachee Parkway and Centerville Road
Thomasville Road between I-10 and the Georgia State line
Monroe Street between Magnolia and the Fairgrounds
Adams Street between Orange Avenue and FAMU
US 90 West and Capital Circle Intersection
Connector streets (Gaile, Paul Russell, Orange, and Magnolia) between Adams and Monroe Streets
Wakulla County
US 319 through Crawfordville
US 319 and US 98 intersections at Medart
US 319 and Capital Circle intersection south of Tallahassee (in Leon County)
US 319 and SR 61 intersection south of Tallahassee (in Leon County)
Woodville Highway and Capital Circle intersection south of Tallahassee (in Leon County)

Source: The U.S. Army Corp of Engineers (1995, 6-18: 6-19).

Wildfires: A large portion (approximately 67 percent) of the Apalachee Region is forested. The increase of development in and around forested areas has augmented the potential for damage from uncontrolled fires to people and property. In fact, regionwide, there were 203 reported wildfires burning over 2,400 acres of forest. The State Division of Forestry and the private land owners are responsible for fire monitoring, mitigation and response activities. The following table contains data about the number and size in acres of wildfires reported to the Florida Department of Agriculture and Consumer Services in 1995. It is important to note that while the information below pertains to uncontrolled fires, the State Division of Forestry is involved in setting managed or controlled fires. These controlled burns allow fire-dependent habitat to continue to thrive, rather than being replaced by poorer quality non-native ecosystems. Controlled burns also allow the large amount of combustible fuels produced by fire adapted ecosystems to burn on a regular basis. When these fuels accumulate to critical levels, the result can be uncontrolled wildfires which are catastrophic to the ecosystem.

Table EM-13: Wild Fires by Type in the Apalachee Region, 1995

County	# Fires/Total Acres Burned	# of Fires by Cause/Acres Burned					
		Lightning	Campfire	Smoking	Debris Burning	Incendiary	Other
Calhoun	18/368	7/247	0/0	1/3	6/20	2/80	2/18
Franklin	34/492	1/8	1/.3	0/0	13/342	14/132	5/9
Gulf	48/709	14/380	0/0	1/.1	3/2	16/99	14/228
Gadsden	26/185	1/.1	0/0	0/0	11/80	1/6	13/99
Leon	13/42	1/.1	1/0	0/0	2/1.5	5/11	4/30
Liberty	2/2.1	0/0	0/0	1/2	1/.1	0/0	0/0
Jefferson	20/40	1/.2	0/0	1/.2	12/20	3/.4	3/19.5
Jackson	26/225	3/111	0/0	3/22	7/47	5/11	8/34
Wakulla	16/402	3/9	0/0	1/7	4/103	4/262	4/21
Region	203/2,465						

REGIONAL GOAL EP 1.1: Be prepared for hazards associated with tropical cyclones.

REGIONAL POLICY EP 1.1.1.: Assist counties in the Region in the preparation, implementation, and coordination of Comprehensive Emergency Management Plans.

Implementation Strategies:

1. The ARPC will provide technical assistance in the preparation and review of County CEMPs. This assistance will include identification of hazards,

- vulnerability analyses, and coordination of plans through Mutual Aid Agreements and Memoranda of Understanding.
2. Provide mapping assistance, if funding is available, to counties preparing and implementing CEMPs.

REGIONAL POLICY EP 1.1.2.: Use land development regulations to guide development of any scale on barrier islands, beach and dune systems, and coastal areas that are subject to storm surge and flooding, in order to reduce state subsidization of such development.

Implementation Strategies:

1. Coastal local governments should include restrictions on development within the Coastal High Hazard Area in their local comprehensive plans and land development regulations.
2. The ARPC, if requested, will assist local governments in establishing redevelopment standards for property damaged by 50 percent or greater during by a storm event.

REGIONAL POLICY EP 1.1.3.: Reduce the amount of public expenditures for private development on barrier islands, beach and dune systems, or in surge and flood prone coastal areas.

Implementation Strategies:

1. The ARPC, with the help of local governments, should compile an inventory of all barrier islands, beach and dune systems, surge and flood prone areas.
2. Local government should not appropriate money to provide public facilities in those areas of the above inventory considered high hazard areas.

REGIONAL POLICY EP 1.1.4.: Roadway improvements will be made in a coordinated, timely, and orderly manner to avoid the potential for exceeding the evacuation capacity of the Region's road network by (a) consulting with local governments and the Regional Planning Council prior to road construction, (b) avoiding, where possible, construction activities on critical evacuation routes during hurricane season, and (c) by completing the job according to the work schedule.

Implementation Strategies:

1. The ARPC, with the cooperation of local governments, will compile an inventory of the components of the regional evacuation network. Prior to road construction or improvement, the jurisdiction doing the maintenance work should check if the road is part of the evacuation network so that alternate

routes could be determined or other measures to minimize the impact on evacuation times be observed.

2. All jurisdictions should avoid blocking any part of the evacuation network during hurricane season, unless alternate routes are defined.
3. State and Local Governments should prioritize road improvements that reduce the evacuation times.

REGIONAL POLICY EP 1.1.5.: Require all new development in category 1, 2 and 3 storm zones and/or with evacuating population to mitigate impact on inland shelter space.

Implementation Strategy:

1. Through the Development of Regional Impact (DRI) and Intergovernmental Coordination and Review (ICR) processes, all reviewing agencies should ensure that all new development that exceeds shelter capacity will provide funds for additional public shelter space, or provide its own shelter space.

REGIONAL POLICY EP 1.1.6.: Require all new development in category 1, 2 and 3 storm zones and/or with evacuating population to mitigate adverse impacts on the evacuation road network.

Implementation Strategy:

1. Through the DRI and ICR development review processes, all reviewing agencies should ensure that all new development mitigate impacts to evacuation clearance times.
2. ARPC staff will evaluate new development and its potential impact on Level of Service Standards on evacuation network roads.

REGIONAL POLICY EP 1.1.7.: Prepare and distribute an audio visual program to inform the regional population about evacuation plans and the safety of evacuation in general.

Implementation Strategies:

1. ARPC should summarize the regional Evacuation Plan into an audio visual program with points regarding the importance of efficient evacuation.
2. Copies of the above mentioned program will be distributed to county libraries for loan to public schools, local government, and other interested parties.

REGIONAL POLICY EP 1.1.8: Operators of critical facilities which are necessary to assist a county in responding to a hurricane should be contacted by local governments and be made aware of hurricane preparedness planning activities.

Implementation Strategy:

1. The ARPC will assist local governments' in identifying and mapping local critical facilities.

Indicators:

1. County CEMPs reviewed and found in compliance with State criteria.
2. Change in the level of service standard on evacuation network roads from 1995.
3. Change in the number of American Red Cross comfort shelter spaces from 1995 level.
4. Change in the number of American Red Cross protected shelter spaces from 1995 level.
5. Change in the number of Special Needs Shelter spaces from 1995 levels.
6. Change in the number of critical facilities mapped on the ARPC's GIS system.

REGIONAL GOAL EP 1.2: Be prepared for hazards associated with floods.

REGIONAL POLICY EP 1.2.1.: Use land development regulations to guide development of any scale on barrier islands, beach and dune systems, and coastal areas that are subject to storm surge and flooding, in order to reduce state subsidization of such development.

Implementation Strategies:

1. Coastal local governments should include restrictions of development within the Coastal High Hazard Area in their local comprehensive plans and land development regulations.
2. Establish redevelopment standards for property damaged by 50 percent or greater by a storm event.

REGIONAL POLICY EP 1.2.2.: Reduce the amount of public expenditures for private development in flood prone coastal and inland areas.

Implementation Strategies:

1. The ARPC, with the help of local governments, should compile an inventory of all barrier islands, beach and dune systems, surge and flood prone areas.
2. Local government should not appropriate money to provide public facilities in those areas of the above inventory considered high hazard areas.

REGIONAL POLICY EP 1.2.3.: Promote flood hazard awareness among local officials, business owners, and private citizens in flood prone communities throughout the Region.

Implementation Strategy:

1. The ARPC and the American Red Cross will operate a Mobile Community Disaster Education Classroom in communities throughout the Region providing hazard education and emergency preparedness information.

REGIONAL GOAL EP 1.3. Be prepared for hazards associated with hazardous materials incidents.

REGIONAL POLICY 1.3.1.: Provide hazardous material training throughout the Region for those persons who may be required to respond to hazardous materials incidents.

Implementation Strategy:

1. The ARPC will offer hazardous materials training at locations throughout the Region, as funding allows.

REGIONAL POLICY 1.3.2.: Mitigate impacts to critical facilities (hospitals, schools, law enforcement, fire departments) locating within the vulnerable zones of hazardous materials facilities or near transportation routes frequented by carriers of hazardous materials.

Implementation Strategies:

1. ARPC staff will provide information describing the nature and extent of hazardous materials which have the potential to affect a critical facility.
2. ARPC staff will provide information to critical facilities describing procedures to follow in the event of a hazardous materials incident.

REGIONAL POLICY 1.3.3.: Encourage public and private members of the community to support and participate in the District II LEPC.

Implementation Strategy:

1. ARPC staff will make presentations to the public and private sectors describing the EPCRA program and informing individuals and agencies of the benefits associated with increased involvement in the process of planning for a hazardous materials emergency.

REGIONAL POLICY 1.3.4.: Support public education efforts throughout the Region to promote awareness of hazardous materials.

Implementation Strategy:

1. ARPC staff will organize public education activities throughout the Region to increase public awareness of hazardous materials.

Indicators:

1. Change in the number of hazardous materials incidences in the Region since 1995.
2. Change in the number of first responders in the Region trained to Hazardous Materials Awareness Level 1 and Operations Level II.
3. Change in attendance at LEPC meetings since meetings in 1995.
4. Number of presentations to the public concerning hazardous materials awareness.

Issue 2: Hazards Education — Trends And Conditions

The importance of hazard education as a preparedness activity cannot be sufficiently emphasized. It is one of the most effective ways to reduce vulnerability. Much can be learned from examining the behavior of people in response to a major event such as a hurricane. Following Hurricane Opal, a telephone survey was conducted with 800 residents of the affected areas. The sample was divided into four groups of 200 interviews each in the following manner: Mobile and Baldwin Counties in Alabama, Escambia and Santa Rosa Counties, Okaloosa and Walton Counties, and Bay County in Florida. The interviews were stratified to include residents from beach locations, mainland surge locations, and non-surge areas. In the beach areas, approximately 85 percent of respondents evacuated, except in Bay County (78 percent). In the mainland surge areas in Florida, evacuation rates ranged from 57 percent to 66 percent. In the non-surge areas, roughly one-third of the residents evacuated.

Three-fourths of the people in beach locations evacuated even if they did not hear evacuation notices from emergency management personnel. However, if they did hear evacuation notices, 87 percent left. The effect of evacuation notices from officials was even more pronounced in mainland surge areas where 75 percent of those who heard evacuation notices left while only 29 percent left who did not hear evacuation notices. Survey results indicate that if residents believed evacuation notices were mandatory they were more likely to evacuate than if they believed the notices were recommendations. This was especially true in the mainland surge region where 87 percent of those surveyed left if they thought the evacuation notice was mandatory while 62 percent left if they thought the notice was only a recommendation.

A major factor contributing to the evacuation decision was people's perception of their vulnerability. People who thought their homes would have experienced dangerous flooding if Opal had hit with winds of 125 MPH were much more likely to evacuate than

those who believed their homes would not flood (79 percent vs. 50 percent). Finally, many of the residents in Santa Rosa and Escambia Counties were contacted by a computerized telephone notification system advising or ordering them to leave. Of those persons contacted in the beach and mainland surge areas, 90 percent evacuated, a much greater rate than persons who did not receive calls.

One of the most important points to be gleaned from the behavioral analysis is that people's individual perceptions of vulnerability have a direct affect on their actions. If people *perceive* they are at risk then they will leave the area to avoid a hazard. Public perceptions and misconceptions regarding risks posed by hazards can be influenced by education. Educational activities should provide the public a good understanding of the hazards that may affect them (such as storm surge and high winds), the potential effects from these hazards (damage to property, injury, death), factors or activities that increase risk (residing in coastal or low-lying areas or in mobile homes), and protective actions to reduce the impacts (heeding mandatory or recommended evacuation notices).

Elected and appointed government officials also should be targeted by educational activities. Government officials make decisions that may reduce or increase the risk to the population of an area. These leaders should be provided information regarding the potential impact of their decisions on the risk to the community and potential liability from decisions that knowingly increase the vulnerability of an area.

Local media is another sector that must be targeted for public education efforts. The local media is one of the most important players in emergency management. They are the main source for distribution of warning information in the Apalachee Region. They can serve as an excellent vehicle for educating the public. On the other hand, they can also spread unconfirmed rumors and inadequate information and, when operating from misconceptions, become an obstruction to emergency activities.

Within the Apalachee Region, the present efforts to educate the public about potential hazards are somewhat limited. One notable public education program concerning hazards is sponsored by the EPCRA program. EPCRA requires that the public be provided information concerning the type, quantity, and location of hazardous materials. The District II LEPC maintains this information. In addition, the District II LEPC annually conducts a public education campaign during EPCRA week. Past activities have included presentations to local civic groups and schools, interviews with the local media, and the distribution of literature concerning EPCRA and how to obtain additional information about hazardous materials in the community. The American Red Cross also distributes information describing disaster preparedness. A major difficulty faced by the American Red Cross has been finding convenient locations to meet the public, offer disaster preparedness classes, and distribute information, especially in the rural portions of the Region. This need has recently been filled by the ARPC's purchase of a mobile

classroom to be used by the Capital Area Chapter of the American Red Cross for community disaster education.

REGIONAL GOAL EP 1.4.: Disaster preparedness materials and classes available to every school, business, and governmental agency in the Region.

REGIONAL POLICY EP 1.4.1.: Develop and implement public education programs for all hazards.

Implementation Strategies

1. Coordinate efforts of local governments, DEM, the ARPC and the American Red Cross to develop and distribute educational information on emergency management procedures. The information may include publications and audio-visual aids and be incorporated into a campaign of presentations to and workshops for local officials and the public.
2. Provide funding, support, and guidance to the Mobile Community Disaster Education classroom project. Disaster preparedness classes and materials will be directed to the general public through schools, community groups and organizations, Chambers of Commerce, and local governments. The mobile classroom will be available year-round in the nine counties of the Apalachee Region.

REGIONAL POLICY EP 1.4.2.: Identify and pursue funding for the development and implementation of public education campaigns.

Implementation Strategy:

1. ARPC staff will research potential funding opportunities for public education programs. In addition, ARPC staff will provide technical assistance in the preparation and submittal of funding requests by outside agencies.

REGIONAL POLICY 1.4.3.: Establish relationships with local media for the dissemination of information concerning emergencies.

Implementation Strategy:

1. The ARPC will inventory the media within the area, analyze existing mechanism for information sharing between emergency personnel and the media, and assist in the development and implementation of MOUs between the media and local government.

Indicators:

1. Change in the number of emergency preparedness classes offered throughout the Region by the American Red Cross (including fixed location classes and CDE mobile classroom classes).
2. Change in the number of persons attending disaster education classes in the Region
3. Change in the number of persons attending EPCRA awareness activities.

Issue 3: Monitoring Hazards — Trends And Conditions

The ability to monitor hazards during an event and through the recovery period is critical in the determination of response actions. Information and forecasts of importance include weather (e.g., rain, wind, temperature), tides, water height in flooding rivers, and expected crests in flooding rivers. This information allows emergency workers to plan in advance the activities to be taken to deal with the problems caused by the hazard. Effective emergency activities depend on the quality of information available to the emergency management officials and responders. Better information translates into better decisions and warnings, which in turn are the basis for protective measures, such as evacuation. The information sources vary with the type of hazard.

The National Weather Service (NWS) provides severe weather advisories, such as tornado or severe thunderstorm watches or warnings, marine advisories, radar information, forecasts and other weather information. The information may be transmitted through the National Warning System (NAWAS) line, through the local National Oceanic and Atmospheric Administration (NOAA) Weather Radio Station, or by contract with a private information provider. Tropical cyclone information is received from the National Hurricane Center in Coral Gables through the NAWAS line or by regular phone contacts. Tornado sightings or touchdowns are typically reported by local observers, but confirmation is necessary. Weather radar also may be used to identify potential tornadoes because of their peculiar signature echoes. The local Weather Service station and each weather radar within the Region is considered a facility of regional significance.

There are several issues of concern regarding these facilities. The NAWAS has ceased operations due to funding cutbacks. It has been replaced by the Emergency Satellite Communication System which is available to all counties in the State. In addition, the NOAA Weather Radio Station has a limited range of 40 miles. NOAA facilities are located in Tallahassee, Panama City, and Pensacola. There are areas of the Region that are outside of the NOAA facilities. Sources for weather information in the Apalachee Region are limited by access or cost. The cost of installation, equipment, and service can be prohibitive for some of the Region's local governments. Therefore, efforts to address facility and service deficiencies must be coordinated.

Riverine flooding information is received from the network of gauges of the United States Geological Survey (USGS) and the Water Management District. Readings from these gauges are critical in flood preparations. Law enforcement and public works personnel sometimes report localized flooding that may threaten residents. Although USGS has an upstream river gauge system, the location and limited number of gauges may not be sufficient to forecast flood conditions. As a result of the relative lack of accurate river monitoring gauges, local governments in the Region must use rudimentary techniques to monitor rising flood waters. These techniques do not accurately calculate the rate of increased flooding and do not provide sufficient forewarning of flooding conditions. Other hazard monitoring systems include notification by the facility or the transportation operator of hazardous materials incidents (confirmation may be required) and warning of wildfires from the State Forestry Division or from local observers.

REGIONAL GOAL EP 1.5.: No deficiencies in the regional hazards monitoring system.

REGIONAL POLICY EP 1.5.1.: Develop and pursue funding alternatives for the provision, operation, and maintenance of river gauges in the Apalachicola and Chipola Rivers.

Implementation Strategies:

1. ARPC staff, in conjunction with local emergency management personnel DEM, and USGS will develop a regional hazards monitoring system needs analysis.
2. ARPC staff will assist local governments to develop funding proposals to implement the findings of the regional needs analysis.

REGIONAL POLICY EP 1.5.2.: Implement a regional notification system, accessible to all governments in the Region, for severe weather events and other emergencies.

Implementation Strategies:

1. ARPC staff, in conjunction with local emergency management personnel and DEM, will develop a regional hazards monitoring system needs analysis.
2. ARPC staff will assist local governments to develop funding proposals to implement the findings of regional needs analysis.

Indicators:

1. Change in the number of river gauges monitoring conditions on the Apalachicola and Chipola Rivers.

2. Change in level of funding to develop a regional severe weather notification system.

RESPONSE

Issue 1: Providing Training and Exercise Opportunities for Emergency Management Personnel—Trends And Conditions

The process of responding to an emergency situation, small or large, requires the education and training of emergency responders. Professional and volunteer first responders such as fire fighters, emergency medical services personnel, and law enforcement officers, should be aware of the types of hazards that affect the area, their potential impacts and protective actions. There are different sources of training that are available to emergency personnel in the Apalachee Region. They include:

- (a) The Florida Department of Community Affairs, Division of Emergency Management (DEM) provides training for different emergency management activities, including exercise design, disaster recovery operations, hurricane planning, evacuation, and developing volunteers.
- (b) The Capital Area Chapter of the American Red Cross offers a full selection of courses focusing on emergency training. Courses include: Emergency Operations Center, Survey/Damage Assessment, Mass Care, Logistics, Liaison, Disaster Health Services, Emergency Assistance to Families, and many others.
- (c) The State of Florida American Red Cross Disaster Services Unit sponsors the Greater Southeast Disaster Training Institute, which features a week of intensive emergency training. The ARC Chapters and District offices are considered facilities of regional significance.
- (d) The District II Local Emergency Planning Committee (LEPC) provides materials and equipment for Hazardous Materials Awareness and Operations level training.
- (e) The Environmental Protection Agency (EPA) periodically provides training for hazardous materials responders.
- (f) Florida Fire College provides training for firefighters and hazardous materials awareness and response.
- (g) Lively Vocational School provides training for fire fighters.

The rural nature and low population density of the Apalachee Region create problems of accessibility to training sites. Travel time and cost make it difficult for local governments to afford to adequately train their first responders. Also, widespread use of volunteers with their concomitant personal and work responsibilities make the scheduling of training sessions difficult.

In 1995, the District II LEPC, in conjunction with the ARC, trained 203 persons to Hazardous Materials Awareness Level I. The function of persons with this level of training is to recognize when a hazardous materials incident has taken place, notify the proper authorities that a release has occurred, and initiate a proper response. They may also establish isolation areas to restrict access to the site. Persons trained to Level I are required to take an annual refresher course. It was estimated in 1994, that over 70 percent of firefighters in the Region needed to be trained to, at a minimum, operations level, which is Level II. The need for training was estimated to be over 1,000 persons.²⁴ It is unclear how many persons in the Region have received the minimum emergency response training identified by the LEPC. LEPC staff are developing a data base of information on all persons receiving LEPC-sponsored training. This data base will facilitate the process of determining the level of training of responders in the Region and will allow a more accurate determination of regional training needs.

Emergency exercises are a vital part of any training program. They help emergency personnel put in practice what has been learned through training or past experience. They also help identify weaknesses in the emergency plans or in the ability of the area to implement the plans due to personnel or other resource limitations. The weakness identified by the exercise could be the focus for further training or improvements. Local emergency management programs are required to plan and execute periodic exercises to test their plans and capabilities. Because of the considerable financial and personnel constraints facing rural counties, not all counties in this Region can fully realize the benefits associated with regular emergency exercises. The nature of the Region and use of volunteers create logistical problems in the implementation of exercises, as they do in the scheduling of training sessions. The limited funds available to emergency management agencies and organizations also limit the type and scope of exercises that can be successfully implemented.

In addition to the exercise requirements of local emergency management programs, the District II LEPC is also required to conduct biennial exercises to test response capabilities for hazardous materials incidents. A full-scale exercise was held in January, 1996. Finally, the FDEM also holds an annual exercise to test statewide hurricane readiness. The latest exercise involved a statewide response to the fictional Hurricane Zelda which hit the State in April, 1996.

REGIONAL GOAL EP 2.1.: Adequate training for all emergency management personnel.

REGIONAL POLICY EP 2.1.1.: Identify the training needs of emergency management personnel in the Region.

Implementation Strategy:

1. The ARPC will interview local emergency service agencies to determine the number of persons requiring training, present training levels of existing personnel, and type and frequency of training needed.
2. ARPC staff will research potential funding opportunities for public education programs. In addition, ARPC staff will provide technical assistance in the preparation and submittal of funding requests by outside agencies.

REGIONAL POLICY 2.1.2.: Maintain a centralized emergency management training database.

Implementation Strategy:

1. The ARPC will develop and maintain a database inventorying the training type and level of local and regional emergency management personnel, available training course, and recommended or required training guidelines for emergency management personnel.

REGIONAL POLICY 2.1.3.: Increase opportunities for emergency management personnel and emergency responders to be involved in tabletop, functional, or full scale exercises.

Implementation Strategy:

1. ARPC staff will provide emergency service personnel with information describing public and private sector exercise opportunities in the Region.
2. ARPC staff will research potential funding sources for emergency exercises.
3. ARPC staff will continue to plan and coordinate hazardous materials training exercises for Counties in the Region.

Indicators:

1. Change in the number of emergency management personnel receiving training in the Region.
2. Change in the number of emergency management agencies and personnel participating in exercises.

Issue 2: Availability of Equipment and Resources — Trends And Conditions

A key factor in the adequacy of emergency response is the availability and quality of equipment and resources. In areas with limited economic means, such as the Apalachee Region, emergency management needs compete for funding with other government services and activities. It is not surprising to find inadequate equipment and facilities. New equipment and facilities for the Region were provided as a result of the passage of

legislation in 1995, creating the Emergency Management, Preparedness and Assistance Trust Fund (EMPATF), Section 252.371, F.S. The EMPATF provided an infusion of money which was rapidly converted into communications equipment, electric generators, and better information sources, among other things. Nevertheless, local facilities, such as the County Emergency Operations Centers (EOC), need improvements.

Cooperation among local emergency management agencies and organizations in the Apalachee Region have helped to make these organizations more effective. The District II LEPC provides a forum for discussion and improvements in planning, education and training efforts to deal with hazardous materials incidents. Mutual aid agreements improve the effectiveness of response efforts. Joint educational activities among local governments, the ARC, and private sponsors allows for the preparation and dissemination of much needed public information.

Because of the rural nature of the Region, volunteers are essential for the implementation of emergency management activities. They assist with firefighting, shelter management, mass care, damage assessment, and personal and family aid, among other things. Another type of volunteer are those who typically arrive on the scene following a disaster, especially if there has been heavy media coverage. They can be of great assistance to areas with limited resources. On the other hand, they can also overwhelm and burden the emergency management efforts. The FDEM has prepared and requires local governments to prepare procedures to deal with volunteers and donations. Identified locations for Volunteer and Donation Staging Areas (VDSAs) can be considered resources or facilities of regional importance for the purpose of emergency preparedness purposes.

REGIONAL GOAL EP 2.2.: No equipment or facilities deficits in the Region.

REGIONAL POLICY EP 2.2.1.: Identify and develop funding alternatives for improvements to Emergency Operations Centers.

Implementation Strategies:

1. The ARPC will provide technical assistance to local governments to locate funding alternatives for improvements to EOCs.
2. Incorporate the provision of EOCs into the local comprehensive plan Capital Improvements Element.

REGIONAL POLICY EP 2.2.2.: Implement the multi-jurisdictional use of unused or underutilized public owned buildings or land for EOCs and alternate EOCs.

Implementation Strategy:

1. Local governments should enter local agreements to jointly fund and operate public facilities that have inter-jurisdictional service areas.

REGIONAL POLICY EP 2.2.3.: Improve local planning efforts for Volunteer Donation and Staging Areas.

Implementation Strategy: Include the maintenance and operation of Volunteer Donation and Staging Areas in the Capital Improvements planning process.

Indicator:

1. Regional equipment and facilities deficits.

RECOVERY

The recovery phase of emergency management involves the restoration of the community to a normal pre-disaster condition or better. Short term recovery deals with restoration of vital services and facilities and begins as soon possible following the disaster. Long term recovery includes the redevelopment of the affected areas. Adequate planning for recovery activities (i.e., replacement of public facilities and procedures for streamlining construction permits) allows the community the opportunity to mitigate impacts from future events while reducing delays due to disputes or policy development. Following a disaster there is the public and political willingness to do something about reducing risk. Recovery could continue at an adequate pace while mitigating future impacts if potential mitigation activities have already been evaluated and plans made to implement needed reforms.

Recovery plans typically focus on the process of providing assistance to people and restoring services. In order to incorporate mitigation, the recovery plan should also include procedures for permitting or potential changes to the local comprehensive plan, land development regulations, or building code. Potential changes should be debated in public prior to the emergency. Procedures indicating when and how the changes will take place should be clear. Some of the issues associated with recovery are damage assessment, recovery assistance programs, disaster recovery centers (DRCs), limited funds, and convergence of resources and volunteers.

The first step in the recovery process is the evaluation of damage. Damage assessment activities should be clearly defined by local emergency officials in the local plans or operating procedures and damage assessment personnel should be adequately trained. For major and catastrophic disasters, State emergency officials and the State's National Guard have created the Rapid Impact Assessment Team (RIAT) concept. The RIAT will

be involved in major or catastrophic disaster where the local resources are not enough to cope with the situation.

Recovery assistance programs can be divided into individual and community programs. Individual assistance includes: Small Business Administration (SBA) funds, temporary housing, mortgage and rental assistance; American Red Cross (ARC) assistance to victims; and other federal, state and private funds, services or waivers. Community programs include: FEMA Hazard Mitigation funds; Housing and Urban Development (HUD) grants; Rural Community Development (formerly Farmer's Home Administration) funds; and EMPATF funds, among others. Assistance programs may be grants or loans depending on the source and local situation.

DRCs are intended to reduce the number of places victims will have to visit in order to request assistance or services. Locations of DRCs are identified by the local government and staffed by local, state, federal or volunteer personnel. In addition to assistance programs, different areas around the nation and Canada are experimenting with the addition of services such as insurance, utilities, food and housing to the DRC.

Issue 1: Disaster Recovery Efforts — Trends And Conditions

As a result of flooding associated with Tropical Storms Alberto and Beryl, and Tropical Depression #10 during July of 1994, the local governments within the Apalachee Region received funding for recovery efforts from several sources. The City of Blountstown in Calhoun County received \$7 million from the U.S. Department of Housing and Urban Development, and used \$4,494,833 for acquisition of property and relocation of residents, as well as improvements to a sewage treatment plant and to the wastewater collection system. The City transferred the remainder of the funds to Calhoun County to be used for property acquisition and resident relocation. Franklin County received an Emergency Community Development Block Grant for \$1.7 million and loaned a total of \$500,000 to 35 businesses. Twenty additional businesses in Franklin County received SBA loans. Gadsden County received a grant of \$375,000 to partially pay for the replacement of bridges and culverts washed out by the storms. Jackson County received \$330,000, primarily for road repairs and a \$210,000 grant from EDA to replace washed out culverts. The City of Graceville received \$300,000 from the EDA to purchase land and a building for a new City Hall. Funding provided by the SBA to Counties affected by the storms is shown in the table below.

Table EM-14: Small Business Administration Loans in Affected Counties

County	Number of Loans	Funding
Calhoun	54	\$1,048,400
Franklin	118	\$1,184,600
Gadsden	6	\$56,900
Gulf	40	\$959,500
Jackson	13	\$215,000

Liberty	5	\$91,900
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Source: Small Business Administration, 1996

The recovery effort from the July, 1994, storms is continuing throughout the Apalachee Region. Businesses are getting back on their feet and residents in the most flood-prone areas are having their homes elevated or are relocating out of the flood plain. Vital public utilities in flood prone areas are being flood-proofed. The damage suffered by residents in flood prone areas of the Region brings to light the importance of pre-disaster recovery planning as well as flood hazard mitigation activities.

REGIONAL GOAL EP 3.1.: Expedient recovery from natural and technological disasters affecting the region.

REGIONAL POLICY EP 3.1.1.: Assist pre-disaster recovery planning efforts in all local governments in the Region.

Implementation Strategy:

1. The ARPC will provide technical assistance to local governments developing pre-disaster recovery plans.

REGIONAL POLICY EP 3.1.2.: Assist local governments in short-term recovery operations following a natural or technological disaster.

Implementation Strategy:

1. Qualified ARPC staff will assist local governments or the American Red Cross in performing damage assessments for homeowners and businesses, if requested.
2. Qualified ARPC staff will assist the American Red Cross as a volunteer member of the Disaster Services Human Resources Team.

REGIONAL POLICY EP 3.1.2.: Assist local governments in long-term disaster recovery following natural or technological disasters.

Implementation Strategies:

1. Provide technical assistance to local governments seeking state and federal disaster aid.
2. Continue developing a long-term economic redevelopment strategy for Counties affected by Tropical Storm Alberto, Tropical Storm Beryl, and Tropical Depression #10.

HAZARD MITIGATION

Hazard mitigation involves activities that are intended to reduce the impact from future emergencies. Properly used, mitigation is an effective means to break the cycle of natural disasters, property damage, rebuilding, repeated damage, and so on. Mitigation activities can be incorporated into the economic and community development goals to hasten the development of a more effective government. A good mitigation plan must provide alternatives that are consistent with the community values, goals and objectives. Potential long term economic impact from mitigation activities versus their potential long term benefits should be evaluated and presented to decisions makers. The benefits must be based on all the objectives of the community, including economic, environmental, and public safety issues. An area of concern in this type of evaluation is the fact that it may be difficult to quantify the value of some of the activities. For example, it is difficult to place a value on such things as increased safety and environmental protection. However, these are direct benefits that should not be discounted when evaluating potential mitigation activities.

Risk perception is a critical factor in the success or failure of mitigation activities. The importance that the public and local officials give to the risk will define their willingness to deal with the problems. Residents may not be able to relate to the risk from a hurricane event based on data and models. Prior to starting debate on mitigation, the public and local officials should be adequately informed about the hazards that affect the community and their potential impacts.

Often, mitigation measures involve the adoption or amendment of rules and regulations. This may take a long time, especially if citizens are to be given adequate participation in the deliberation and adoption process. It will also take time to develop the data and analyses necessary for objective deliberations. Therefore, it is critical that the process of adopting and implementing mitigation measures be started before an emergency strikes the community.

Issue 1: Hazard Mitigation in the Apalachee Region — Trends and Conditions

There are many benefits associated with mitigating hazards. There are also a large number of means of achieving these benefits. Following is a brief overview of some of these activities. This list is not exhaustive and should serve as a familiarization tool for public and private agencies and individuals who are interested in becoming more familiar, better educated, and participating in the range of options in hazard mitigation.

- (A) Limiting development within highly vulnerable areas.
- (1) Land Development Regulations: The following are alternative practices that may be considered as part of the local land development regulations:
 - (a) Reducing the allowable density in areas within the CHHA or within the vulnerability zone of other hazards. The reduction of densities is a politically difficult action since it may have repercussions on land value. A cost/benefit analysis of the impact that a density reduction could have on land values versus the impact that development at the allowed density would have on damage potential to private structures and public infrastructure would help the deliberations and ensure a better decision.
 - (b) Changing the setback restrictions for lots contiguous to the coast. This could be done for undeveloped lots and for structures destroyed following a disaster event.
 - (c) Declaring specific land uses non-conforming and disallowing reconstruction of the same land use after it has been destroyed over a certain percentage. The benefits and costs of this action should be evaluated prior to adopting any changes in order to ensure a fair discussion.
 - (d) Adding "special use permits" which allow a specific use if it meets certain conditions specifically stated in the ordinance. The conditions must apply equally to all property owners within the affected area and must not require concessions or commitments from the community.
 - (e) Prohibiting residential mobile homes within the CHHA. It is not possible to regulate the construction standards for manufactured units locally and securing the units would probably not be enough to reduce their damage from surge and wave impact. It should be noted that the taxable assessed value of manufactured units may not offset the cost of additional services and the replacement of public facilities if they are severely damaged by a storm.
 - (f) Plan Unit Developments (PUDs) can be used to approve development in a large parcel of land as a unit. This approach allows the developer more flexibility in the layout of the parcel. The PUD process could be encouraged for development or redevelopment of areas within the CHHA or areas within a hazard vulnerability zone. The PUD process may allow the developer the opportunity for changing lot shapes, creating vegetation buffers or other actions that may reduce the impact from identified hazards. For example, within the CHHA, development could be clustered, while roads and public facilities could be located in areas of the

- parcel that are less susceptible to damage from storm surge or wave action.
- (g) Local governments could require or recommend subdivisions in vulnerable areas to set aside the most susceptible parts of their parcels for non-intensive uses, such as recreation facilities. They could also require subdivisions that will increase the need for evacuation to provide off-site shelter space.
- (2) Land and Property Acquisition: The local government may acquire the land that is most susceptible to damage. For example, the local government may acquire undeveloped parcels or areas heavily damaged by a hurricane in order to avoid redevelopment. The long term impact of acquisition on the financial condition of the area must be evaluated. Options other than fee simple purchase include:
- (a) Purchase of development rights: a restrictive covenant will be attached to the parcel which will restrict use the land for certain uses only.
 - (b) The government could promote the donation of conservation easements or scenic areas as a federal tax deduction.
- (B) Creating disincentives for development in highly vulnerable areas.
- (1) The local government may consider the levy of impact fees for development that will increase the cost of emergency services and/or the cost of infrastructure repair or replacement. The funds must be earmarked for these activities and must benefit the residents paying the fee. The ordinance dealing with an impact fee of this nature should include the methodology for estimating the potential impacts.
 - (2) The local government may decide not to extend public facilities or replace damaged public facilities within vulnerable areas.
 - (3) Differential taxation based on the impact of development to damage potential may be considered. The risk assessment used for insurance purposes in proportion to similar units in other areas of the community could be used as a factor for determining the differential.
- (C) Providing incentives for development outside vulnerable areas.
- (1) Use the local Comprehensive Plan land use designation to direct growth or specific types of development to areas best suited for them. The plan designations can be used to direct local and regional economic development efforts.
 - (2) Reducing potential damage from hazards affecting the community should be one of the factors used to evaluate capital improvements. The provision of infrastructure could be used as an attraction for areas that are better

- suited for development. This would provide a disincentive to develop in areas considered to be more vulnerable to hazards.
- (3) Differential taxation, as mentioned in B (3) above, could be considered an incentive for development outside vulnerable areas.
- (D) Improving building/construction codes and compliance.
- (1) For hurricanes and severe weather, local governments should consider incorporating recommended building code improvements that are produced as a result of new research and experience in other areas. Information describing how to improve the safety of buildings should be provided to all builders requesting permits.
 - (2) Construction, repair or replacement of public facilities should be performed in a manner that will reduce their vulnerability from hazards. For example, in flood prone areas, the local government or agency in charge should consider moving, elevating, or flood-proofing facilities, if repair or replacement is not cost effective.
 - (3) Personnel from building, public works, and planning and zoning departments should be trained in techniques and materials that reduce the structural vulnerability to hurricanes or floods. Planning and zoning personnel should be informed about non-structural mitigation activities. The resources available at the regional, state, and federal levels could be called upon to assist in training and providing information to local personnel.
- (E) Protecting the natural coastal and wetland environments. Vegetation along barrier islands, the coast, and the dune area provide a natural defense against storm surge. Wetlands and floodplains, if operating properly, serve as reservoirs for flood waters reducing flooding effects to other areas.
- (F) Preparing for more efficient recovery and reconstruction. In order to avoid disruption in the recovery process following a disaster and to ensure mitigation of impacts from future events, local governments should have formal post-disaster recovery plan to deal with the hazards that may affect the community.
- (G) Adopting or participating in public education programs. Public education efforts dealing with response to the hazards affecting the community, protective actions and ways to reduce potential damage can be targeted to businesses, governmental agencies, and schools throughout the Region.

Prior to Tropical Storms Alberto and Beryl, and Tropical Depression #10, local governments in the Region had gradually begun adopting low-cost mitigation measures such as participating in the National Flood Insurance Program (NFIP) and the

Community Rating System. As a result of the flooding from the storms of July, 1994, local governments in the Region have become more involved in hazard mitigation activities. The City of Blountstown is in the process of acquiring a number of residential properties in flood-prone areas. Following acquisition, structures on the properties will be condemned and development will not be permitted. Other mitigation measures include improvements to a sewage treatment plant and to the wastewater collection system. Calhoun County is also acquiring flood prone properties and relocating residents to areas outside of the flood plain. The ARPC is managing the hazard mitigation grant for the City of Blountstown and will provide technical assistance to other local governments considering prospective hazard mitigation strategies.

REGIONAL GOAL EP 4.1: Mitigation for future emergency events.

REGIONAL POLICY EP 4.1.1.: Identify and prioritize, using a cost-benefit analysis, areas suitable for mitigation.

Implementation Strategies:

1. The ARPC will provide technical assistance in the preparation of county CEMPs. This assistance will include identification of hazards, vulnerability analyses, and coordination of plans through Mutual Aid Agreements and Memoranda of Understanding.
2. The ARPC will compile information concerning innovative mitigation techniques.
3. The ARPC will research funding alternatives to implement mitigation activities.

REGIONAL POLICY EP 4.1 2

1. Construction or replacement of public facilities should be performed in a manner that will reduce their vulnerability to natural and technological hazards.

Implementation Strategy:

1. The ARPC will review and comment on plans for the construction and replacement of infrastructure. Staff will provide technical assistance to local governments interested in hazard mitigation as it relates to the siting of infrastructure.

REGIONAL POLICY EP 4.1.3: Develop and implement mitigation strategies as part of disaster recovery activities.

Implementation Strategy:

1. Local governments should provide financial incentives for relocation of structures outside of high hazard areas.

REGIONAL POLICY EP 4.1.4.: Avoid development in the 100 year flood zones; buildings in less frequently flooded areas should be required to be elevated and designed so damage from flooding will be minimal.

Implementation Strategies:

1. Local governments should provide financial incentives for relocation of structures outside of high hazard areas.
2. The ARPC will research funding alternatives to implement mitigation activities.

Indicators:

1. Reduction in rate of property loss and personal injury. Calculations should be based on 1995 dollars.
2. Number of structures in the Region relocated out of the flood plain since the July, 1994 storms.

RESOURCES OF REGIONAL SIGNIFICANCE

American Red Cross Chapters
Barrier Islands, Beach and Dune Systems, and Coastal Areas
Emergency Broadcast System Repeaters
Emergency Medical Services (including hospital, clinics, ambulances)
Evacuation Shelters
Evacuation Transportation Network
Florida Department of Community Affairs, Division of Emergency Management
Local Emergency Management Departments and Directors
Local Emergency Operations Center
Local Emergency Planning Committee
Media
Municipal and Volunteer Fire Departments
Volunteer and Donation Staging Area Locations
Weather Radar
Weather Service Stations

APPENDIX I: CRITICAL FACILITIES BY COUNTY*Table EM-15: Critical Facilities in Calhoun County.*

Facility	City	Emergency Function
Altha VFD.	Altha	Fire Protection
Blountstown VFD	Blountstown	Fire Protection
Nettle Ridge VFD	--	Fire Protection
West End VFD	--	Fire Protection
Scotts Ferry VFD	--	Fire Protection
Canard VFD	--	Fire Protection
Red Oak VFD	--	Fire Protection
Mossy Pond VFD	--	Fire Protection
Clarksville VFD	Clarksville	Fire Protection
Calhoun County Sheriff	Blountstown	Law Enforcement
Blountstown Police Department	Blountstown	Law Enforcement
Calhoun County Courthouse	Blountstown	Emergency Operations Center
Calhoun County Public Health Department	Blountstown	Health Care
Calhoun General Hospital	Blountstown	Health Care

Source: ARPC Staff, 1996.

Table EM-16: Critical Facilities in Franklin County.

Facility	City	Emergency Function
National Weather Service	Apalachicola	Weather Service
Eastpoint Water Plant	Eastpoint	Water System/Elevated Tank
Radio Station WOYS	Eastpoint	Emergency Broadcast Station
Franklin County Courthouse	Apalachicola	Government Building
Franklin County Sheriff's Dept.	Eastpoint	Law Enforcement Communications
Apalachicola City Hall	Apalachicola	Government Bldg City EOC
Carrabelle City Hall	Carrabelle	Government Bldg
Alligator Point Water	Alligator Point	Ofc/Elevated Tank
Alligator Point Water	Alligator Point	Well Site Water System
St. George Island Utility	St. George Island	Water System/Elevated Tank
Carrabelle Water Plant	Carrabelle	Water System
Carrabelle Sewer Plant	Carrabelle	Sewer Plant
Apalachicola Municipal Airport	Apalachicola	Landing Zone/Airport
Carrabelle Flight Strip	Carrabelle	Landing Zone/Airport
St. George Island Helipad	St. George Island	Landing Helipad
Alligator Point Fire Dept.	Alligator Point	Fire Dept./Operating Center
Apalachicola Fire Dept.	Apalachicola	Fire Dept.
Dog Island Fire Dept.	Carrabelle	Fire Dept./Operating Center
Eastpoint Fire Dept.	Eastpoint	Fire Dept./Operating Center
Lanark Village Fire Dept.	Lanark Village	Fire Dept./Operating Center
St. Teresa Fire Dept.	St. Teresa	Fire Dept.
Emerald Coast Hospital	Apalachicola	Medical Hospital
Apalachicola Health Care Ctr.	Apalachicola	Nursing Home
Bay St. George Nursing Center	Eastpoint	Nursing Home
Franklin Co. Sr. Citizens Center	Carrabelle	Disaster App Center
Inner Harbor Hospital	Carrabelle	Medical Clinic/Facility
Apalachicola High School	Apalachicola	Shelter/Alternate Landing Zone
Brown Elementary School	Eastpoint	Shelter
Carrabelle High School	Carrabelle	Shelter/Recovery Staging Area
Franklin Co. Emergency Op. Ctr.	Apalachicola	Emergency Operations Center
Franklin Co. Road Camp	Eastpoint	Recovery Staging Area/Storage
St. George Island Fire Dept.	St. George Island	Fire Dept.
Fl National Guard Armory	Apalachicola	Law Enforcement
Apalachicola Sewerage Plant	Apalachicola	Sewer Plant
Chapman Elementary School	Apalachicola	Shelter/Disaster Application Ctr.
Eastpoint Sewerage Plant	Eastpoint	Sewerage Treatment Plant
Lanark Village Sewerage Plant	Lanark Village	Sewerage Treatment Plant
Lanark Village Water Plant/Tank	Lanark Village	Water System

Source: U.S. Army Corp of Engineers 1995, 3-4.

Table EM-17: Critical Facilities in Gadsden County.

Facility	City	Emergency Function
Gadsden County Sheriff's Office	Quincy	Emergency Operations Center
Gadsden County Courthouse	Quincy	Information And Coordination
Chattahoochee City Hall	Chattahoochee	Information And Coordination
County Extension Office - Inman Ag Cntr	Quincy	Disaster Field Office
Chattahoochee Post Office	Chattahoochee	Communications
Greensboro Post Office	Greensboro	Communications
Gretna Post Office	Gretna	Communications
Havana Post Office	Havana	Communications
Midway Post Office	Midway	Communications
Gadsden County Administration -Resource	Quincy	Information And Coordination
Gadsden County Growth Management	Quincy	Information And Coordination
Gadsden County Tax Collector	Quincy	Information And Coordination
Gadsden County Tax Appraiser	Quincy	Information And Coordination
Quincy Post Office	Quincy	Communications
Gretna Public Works	Gretna	Potable Water Distribution
Gadsden County Public Works	Quincy	Transportation
Chattahoochee Utilities & Public Works	Chattahoochee	Electrical
Chattahoochee Sewage Treatment Plant	Chattahoochee	Sewage Treatment
Gadsden County Emergency Medical Service	Quincy	Emergency Medical Services
Gretna Correctional Institute	Gretna	Correctional Facility
Florida State Correctional Mental Health	Chattahoochee	Correctional Facility
River Junction Correctional Facility	Chattahoochee	Correctional Facility
Quincy Police Department	Quincy	Police Department
St. Joseph Telephone Company	Chattahoochee	Communications
Gretna City Hall/Police Department	Gretna	Police Department
Chattahoochee Police, Fire, And Ems	Chattahoochee	Police Department
Gretna Fire Department	Gretna	Fire Department
Quincy Fire Department	Quincy	Fire Department
Havana Police Department	Havana	Police Department
Havana Sewage Treatment	Havana	Sewage Treatment
Havana Public Well # 3	Havana	Potable Water Distribution
Havana Water Treatment (Well 1 & 2)	Havana	Potable Water Distribution
Havana Gas Department	Havana	Natural Gas Control Point
Florida State Hospital	Chattahoochee	Hospital/Major Medical
Gadsden County Health Unit-Gretna	Gretna	Clinic
Gadsden County Health Unit-Chattahoochee	Chattahoochee	Emergency Medical Services
Gadsden County Health Unit - Havana	Havana	Clinic
Gadsden County Health Unit - Greensboro	Greensboro	Clinic
School - Havana Middle School	Havana	Shelter - Primary
School - Shanks High School	Quincy	Shelter - Backup/Secondary
School - Stewart Street Elementary	Quincy	Shelter - Primary
School - Havana Northside High School	Havana	Shelter - Primary
School - Havana Elementary School	Havana	Shelter - Primary
School - Chattahoochee High School	Chattahoochee	Shelter - Primary
Facility	City	Emergency Function

School - Greensboro Elementary	Greensboro	Shelter - Primary
School - Chattahoochee Elementary School	Chattahoochee	Shelter - Primary
School - Quincy Education Center	Quincy	Shelter - Primary
School - St Johns Elementary	St Johns	Shelter - Primary
School - Greensboro High School	Greensboro	Shelter - Primary
School - George W. Munroe Elementary	Quincy	Shelter - Backup/Secondary
Midway Police/Fire Department	Midway	
Midway City Hall	Midway	
Gadsden Memorial Hospital	Quincy	Hospital/Major Medical

Source: Gadsden County Emergency Management

Table EM-18: Critical Facilities in Gulf County.

Facility	City	Emergency Function
Gulf Coast Electric Co-Op, Inc.	Wewahitchka	Substation On W. River Rd.
Gulf Pines Hospital	Port St. Joe	Hospital
Gulf County Public Health Unit	Port St. Joe	Health Facility
Gulf County Health Dept.	Wewahitchka	Health Dept.
Wewahitchka Medical Ctr.	Wewahitchka	Medical Center
Port St. Joe Police Dept.	Port St. Joe	Police Dept.
Port St. Joe City Hall	Port St. Joe	Gov't Building
Port St. Joe Fire Dept.	Port St. Joe	Fire Dept.
Beaches Volunteer Fire Dept.	Port St. Joe	Fire Dept.
South Gulf Volunteer Fire Dept.	Port St. Joe	Fire Dept.
Highland View Volunteer Fire Dept.	Port St. Joe	Fire Dept.
White City Volunteer Fire Dept.	White City	Fire Dept.
Howard Creek Volunteer Fire Dept.	Wewahitchka	Fire Dept.
Overstreet Volunteer Fire Dept.	Port St. Joe	Fire Dept.
Dalkeith Volunteer Fire Dept.	Wewahitchka	Fire Dept.
Wewahitchka Volunteer Fire Dept.	Wewahitchka	Fire Dept.
Wewahitchka Emer. Med. Services	Wewahitchka	Medical Services
Wewahitchka City Hall	Wewahitchka	Gov't Building
Gulf Forestry Camp	White City	Forestry
Gulf Correctional Institution	Wewahitchka	Correctional Facility
Highland View Elementary	Port St. Joe	School
Port St. Joe Elementary	Port St. Joe	School
Port St. Joe High School	Port St. Joe	School
Wewahitchka Elementary School	Wewahitchka	School
Wewahitchka High School	Wewahitchka	School
United States Post Office	Port St. Joe	Post Office
United States Post Office	Wewahitchka	Post Office
Port St. Joe Centennial Building	Port St. Joe	Building
Wewahitchka Community Center	Wewahitchka	Community Center
WPBH Radio Station C/O WPAP	Panama City	Radio Station
St. Joseph Telecommunications	Port St. Joe	Telecommunications
St. Joseph Telecom. Beach Office	Port St. Joe	Telecommunications
St. Joseph Telecom. Wewa Office	Port St. Joe	Telecommunications
Port St. Joe Wastewater Plant	Port St. Joe	Wastewater Treatment Plant
Wewahitchka Wastewater Plant	Wewahitchka	Wastewater Treatment Plant
Gulfaire Wastewater Plant	Port St. Joe	Wastewater Treatment Plant
City Of Port St. Joe Water Plant	Port St. Joe	Water Treatment Plant
City Of Wewahitchka Water Plant	Wewahitchka	Water Treatment Plant
Mexico Beach Water Plant	Mexico Beach	Water Treatment Plant
Lighthouse Utilities Water Plant	Port St. Joe	Water Treatment Plant
Bayside Lumber And Supply	Port St. Joe	Lumber/Building Supply
St. Joe Hardware Company	Port St. Joe	Hardware

Continued

Table EM-18 Continued: Critical Facilities in Gulf County.

Facility	City	Emergency Function
Beach Lumber And Supply	Port St. Joe	Lumber/Building Supply
Fisher's Lumber Supply	Wewahitchka	Lumber/Building Supply
Saveway Food Store	Port St. Joe	Food
Big Star Foods	Port St. Joe	Food
David Rich's IGA	Port St. Joe	Food
David Rich's IGA	Wewahitchka	Food
Walker's Dixie Dandy Store	Port St. Joe	Food
Dixie Dandy	Wewahitchka	Food
Miller Agency, Inc.	Port St. Joe	
Barfield's Lawn & Garden Center	Port St. Joe	Lawn & Garden Center
Wewahitchka Congreg. Meal Site	Wewahitchka	
Gulf Aviation, Inc.	Port St. Joe	Aviation
Five Point Landfill	Port St. Joe	Debris Disposal
Wetappo Landfill	Wewahitchka	Debris Disposal
Apalachicola Northern Railroad	Port St. Joe	Railroad Office Building
Long Avenue Baptist Church & Gym	Port St. Joe	Church
Bay St. Joseph Care Center, Inc.	Port St. Joe	Care Center
Test Site D-3 (Vitro Tech. Service)	Port St. Joe	
St. Joe Paper Company	Port St. Joe	Paper Company
Arizona Chemical Company	Port St. Joe	Chemical Company
St. Joe Rent-All, Inc.	Port St. Joe	Equipment Rental
Gulf County Courthouse	Port St. Joe	EOC Tower
Gulf County Courthouse	Port St. Joe	Helicopter Landing Site
Gulf County Courthouse	Port St. Joe	Courthouse Radio Tower
Kirk's Ice	Port St. Joe	Ice
Highland View Water Tank	Port St. Joe	Water
Overstreet Boat Ramp	Port St. Joe	Boat Ramp
Old Gulf County Courthouse	Wewahitchka	Gov't Building
Gulf County Road Dept.	Wewahitchka	Transportation
Florida Power Corporation	Monticello	Beacon Hill Substation
Florida Power Corporation	Monticello	Port St. Joe Industrial Substation
Florida Power Corporation	Monticello	Port St. Joe Substation
Gulf County Sr. Citizens	Port St. Joe	

Source: U.S. Army Corp of Engineers 1995, 3-5.

Table EM-19: Critical Facilities in Jackson County

Facility	City	Emergency Function
Alford VFD	Alford	Fire Protection
Campbelton VFD	Campbelton	Fire Protection
Cottdale VFD	Cottdale	Fire Protection
Graceville VFD	Graceville	Fire Protection
Grand Ridge VFD	Grand Ridge	Fire Protection
Malone VFD	Malone	Fire Protection
Marianna Fire Department	Marianna	Fire Protection
Sneads VFD	Sneads	Fire Protection
Jackson County Fire Department	Jackson County	Fire Protection
Emergency Operations Center	Marianna	EOC
Public Health Department	Marianna	Public Health
Cottdale Police Department	Cottdale	Law Enforcement
Graceville Police Department	Graceville	Law Enforcement
Marianna Police Department	Marianna	Law Enforcement
Sneads Police Department	Sneads	Law Enforcement
Florida Highway Patrol	Marianna	Law Enforcement
Apalachee Correctional Institution	Sneads	Correctional Institute
Jackson County Sheriff's Dept.	Marianna	Law Enforcement

Table EM-20: Critical Facilities in Jefferson County.

Facility	City	Emergency Function
Jefferson Nursing Center	Monticello	Nursing Home
Gerry Medical Clinic	Monticello	Medical Clinic
Jefferson County EOC	Monticello	Emergency Operations Ctr.
Jefferson County AEOC	Monticello	Alternate Emer. Operations Ctr.
Jefferson County Health Unit	Monticello	Public Health
Jefferson County Fire Rescue	Monticello	Fire And Ambulance Service
Family Physician Office	Monticello	Doctor's Office
Jefferson County Courthouse	Monticello	County Seat
Winn Dixie Stores, Inc.	Monticello	Groceries
Jefferson Elementary School	Monticello	Shelter
Howard Middle School	Monticello	Shelter
Jefferson Hs Auditorium	Monticello	Primary Public Shelter
Jefferson Hs Media Center	Monticello	Special Needs Shelter
Jefferson Hs Cafeteria	Monticello	Shelter
Monticello Water Plant	Monticello	Water For City Of Monticello
Monticello Sewer Plant	Monticello	Wastewater Treatment Plant
Jefferson County Sheriff's Office	Monticello	Law Enforcement
Monticello Sewer Lift Station #1	Monticello	Wastewater Pump
Monticello Sewer Lift Station	Monticello	Wastewater Pump
Foodway Of Monticello	Monticello	Groceries
Monticello Water Plant	Monticello	Drinking Water
Sewer Lift Sta (Busbarn)	Monticello	Pumps Wastewater To Sewer Plant
Sewer Lift Sta (Heritage Manor)	Monticello	Pumps Wastewater To Sewer Plant
Sewer Lift Sta (Jefferson St.)	Monticello	Pumps Wastewater To Sewer Plant
Sewer Lift Sta (Mays St.)	Monticello	Pumps Wastewater To Sewer Plant
Sewer Lift Sta (Hickory St.)	Monticello	Pumps Wastewater To Sewer Plant
Sewer Lift Sta. (Holly Hills)	Monticello	Pumps Wastewater To Sewer Plant
Jefferson Sheriff's Office	Monticello	Law Enforcement
Sewer Sta (Independence St.)	Monticello	Pumps Wastewater To Sewer Plant
Sewer Sta (Shepards St.)	Monticello	Pumps Wastewater To Sewer Plant
Monticello Pearl St. Water Wells	Monticello	Potable Water Wells
Sewer Lift Sta. (Us 19 Trailer Park)	Monticello	Pumps Wastewater To Sewer Plant
Sewer Lift Sta. (Shady Lane)	Monticello	Pumps Wastewater To Sewer Plant
Sewer Lift Sta. (Us 19 Jckc)	Monticello	Pumps Wastewater To Sewer Plant

Source: U.S. Army Corp of Engineers 1995, 3-6.

Table EM-21: Critical Facilities in Leon County.

Facility	City	Emergency Function
Apalachee Elementary	Tallahassee	Shelter
Astoria Park Elementary	Tallahassee	Shelter
Belle Vue Elementary	Tallahassee	Shelter
Bethel AME	Tallahassee	Shelter
Bond Elementary	Tallahassee	Shelter
Buck Lake Elementary	Tallahassee	Shelter
Chaires Elementary	Tallahassee	Shelter
Desoto Trail Elementary	Tallahassee	Shelter
East Baptist	Tallahassee	Shelter
Faith Presbyterian	Tallahassee	Shelter
First Baptist Church of Woodville	Woodville	Shelter
Forest Heights	Tallahassee	Shelter
Ft. Braden Elementary	Tallahassee	Shelter
Gilchrist Elementary	Tallahassee	Shelter
Godby High School	Tallahassee	Shelter
Killearn Lakes Elementary	Tallahassee	Shelter
Lakeview Baptist Church	Tallahassee	Shelter
Leon High School	Tallahassee	Shelter
Lincoln High School	Tallahassee	Shelter
Moore Elementary	Tallahassee	Shelter
Mormon Church	Tallahassee	Shelter
Nims Middle School	Tallahassee	Shelter
Oak Ridge Elementary	Tallahassee	Shelter
Raa Middle School	Tallahassee	Shelter
Rickards High School	Tallahassee	Shelter
Riley Elementary	Tallahassee	Shelter
Ruediger Elementary	Tallahassee	Shelter
Sabal Palm Elementary	Tallahassee	Shelter
Sealey Elementary	Tallahassee	Shelter
Senior Citizen's Center	Tallahassee	Shelter
Springwood Elementary	Tallahassee	Shelter
Sullivan Elementary	Tallahassee	Special Needs Shelter
Wesson Elementary	Tallahassee	Shelter
Woodville Elementary	Woodville	Shelter

Continued

Table EM-21 Continued: Critical Facilities in Leon County.

Facility	City	Emergency Function
Arbors at Tallahassee	Tallahassee	Nursing home
Best Western Seminole	Tallahassee	Hotel
Cabot Lodge	Tallahassee	Hotel
Capital City Lumber	Tallahassee	Construction Materials
Capital Health Care Center		Nursing home
Centerville Care Center	Tallahassee	Nursing Home
City of Tallahassee Traffic Control Point	Tallahassee	Traffic Control (Lights)
Days Inn	Tallahassee	Hotel
FAMU Police Department	Tallahassee	Law Enforcement
Florida Highway Patrol	Tallahassee	Law Enforcement
Leon County Jail	Tallahassee	Jail
Leon County Public Works	Tallahassee	Public Works
Leon County Sheriff	Tallahassee	Law Enforcement
Little Chaires	Tallahassee	Shelter
Medical Clinic	Tallahassee	Medical Care Facility
Midsouth South Ice	Tallahassee	Ice
Motel 6	Tallahassee	Hotel
Mulvaney's Inc.	Tallahassee	Generators, Lights
Radisson Hotel	Tallahassee	Hotel
Tallahassee Community Hospital	Tallahassee	Hospital
Tallahassee Convalescent Home	Tallahassee	Hospital
Tallahassee Fire Department, Pensacola St.	Tallahassee	Fire Department
Tallahassee Fire Department, Hartsfield Road	Tallahassee	Fire Department
Tallahassee Fire Department, Chaires Crossroad	Tallahassee	Fire Department
Tallahassee Fire Department, #1	Tallahassee	Fire Department
Tallahassee Fire Department, #10	Tallahassee	Fire Department
Tallahassee Fire Department, #11	Tallahassee	Fire Department
Tallahassee Fire Department, #13	Tallahassee	Fire Department
Tallahassee Fire Department, #14	Tallahassee	Fire Department
Tallahassee Fire Department, #10	Tallahassee	Fire Department
Tallahassee Fire Department, #2	Tallahassee	Fire Department
Tallahassee Fire Department, #3	Tallahassee	Fire Department
Tallahassee Fire Department, #5	Tallahassee	Fire Department
Tallahassee Fire Department, #6	Tallahassee	Fire Department
Tallahassee Fire Department, #7	Tallahassee	Fire Department
Tallahassee Fire Department, #9	Tallahassee	Fire Department
Tallahassee Memorial Regional Medical Center	Tallahassee	Hospital

Continued

Table EM-21 Continued: Critical Facilities in Leon County.

Facility	City	Emergency Function
Tallahassee Regional Airport	Tallahassee	Commercial Airport
Tallahassee Weather Service	Tallahassee	Weather and Warning
Talquin Electric/Bradfordville Substation	Tallahassee	Electric Substation
Talquin Electric/Buck Lake Substation	Tallahassee	Electric Substation
Talquin Electric/Killearn Substation	Tallahassee	Electric Substation
Talquin Electric/Lake Jackson Substation	Tallahassee	Electric Substation
Talquin Electric/Miccosukee Substation	Tallahassee	Electric Substation
Talquin Electric/Harbinwood Substation	Tallahassee	Electric Substation
Talquin Electric/Killearn Lakes WWTP Substation	Tallahassee	Wastewater Treatment Plant
Talquin Electric/Lake Bradford Substation	Tallahassee	Electric Substation
Talquin Electric/Lake Talquin Substation	Tallahassee	Electric Substation
Talquin Electric/Lakewood WWTP Substation	Tallahassee	Wastewater Treatment Plant
Talquin Electric/Meadows WWTP Substation	Tallahassee	Wastewater Treatment Plant
Talquin Electric/Oak City Substation	Tallahassee	Electric Substation
Talquin Electric/sandstone WWTP Substation	Tallahassee	Wastewater Treatment Plant
Talquin Electric/Wetview WWTP Substation	Tallahassee	Wastewater Treatment Plant
The Meadows	Tallahassee	ACLF
United States Postal Service	Tallahassee	Mail
Westminister Oaks Center	Tallahassee	Nursing Home
WGLF 104.1 EBS	Tallahassee	EBS
Woodmont Retirement Community	Tallahassee	Retirement Home

Source: Leon County Division of Emergency Management, 1996.

Table EM-22: Critical Facilities in Liberty County.

Facility	City	Emergency Function
Liberty County High School	Bristol	Shelter
Bristol Elementary School	Bristol	Shelter
Lake Mystic Baptist Church	--	Shelter
Bristol Pentecostal Holiness	Bristol	Shelter
Liberty County Senior Citizens Center	Bristol	Shelter
Woodmen of the World Lodge	Hosford	Shelter
Liberty County Senior Citizens Center	Hosford	Shelter
Liberty County Sheriff's Department	Bristol	Law Enforcement
Liberty County Ambulance Service	Bristol	EMS
Liberty County School Board	Bristol	Transportation
Liberty County Public Works	Bristol	Road Repair
City of Bristol VFD	Bristol	Fire Protection
Hosford VFD	Hosford	Fire Protection
Rock Bluff VFD	Rock Bluff	Fire Protection
Liberty County Health Department	Bristol	Health
Liberty County EOC, Liberty County Courthouse	Bristol	Emergency Op Center

Source: Liberty County Comprehensive Emergency Management Plan, 1996.

Table EM-23: Critical Facilities in Wakulla County.

Facility	City	Emergency Function
Apalachee Bay VFD	--	Fire Protection
Crawfordville VFD	Crawfordville	Fire Protection
Medart VFD	Medart	Fire Protection
Ochlocknee VFD	--	Fire Protection
Panacea VFD	Panacea	Fire Protection
St. Marks VFD	St. Marks	Fire Protection
Smith Creek VFD	--	Fire Protection
Sopchoppy VFD	Sopchoppy	Fire Protection
Wakulla Station VFD	--	Fire Protection
Emergency Operations Center	Crawfordville	EOC
Wakulla County Public Health Department	Crawfordville	Health Care
Wakulla County Sheriff's Department	Crawfordville	Law Enforcement

Source: ARPC Staff, 1996.

¹ Chapter 252, F.S.

² Section 186.507

³ Section 186.507 (2), F.S.

⁴ Cunny, 1983, p. 220.

⁵ U.S. Department of Commerce, Bureau of Census

⁶ University of Florida, Bureau of Economic and Business Research

⁷ Community Redevelopment Task Force, *Interagency Report*, 1995, p.2.

⁸ *ibid.* p. 3.

⁹ *ibid.* p. 1.

¹⁰ *ibid.* p. 13.

¹¹ Section 252.81, F.S

¹² ARPC. *District II Hazardous Materials Emergency Response Study*. Figure 1-5. pp I-25 to I-67. 1994.

¹³ 1 barrel forty two gallons

¹⁴ Ludlum, 1991

¹⁵ Purvis, et.al., 1992.

¹⁶ Groggier, 1995.

¹⁷ Anthes, 1982,

¹⁸ Gray, 1996

¹⁹ Weather Almanac, 1987, p.54.

²⁰ U.S. Army Corps of Engineers, 1995, (5-3).

²¹ *ibid.* p. 6-21.

²² *ibid.* p. 6-20.

²³ *ibid.* p. 6-18: 6-19.

²⁴ ARPC, District II LEPC Annual Report on Training, 1994, p.2.