HURRICANE EVACUATION DECISION MAKING GUIDE

CITRUS COUNTY

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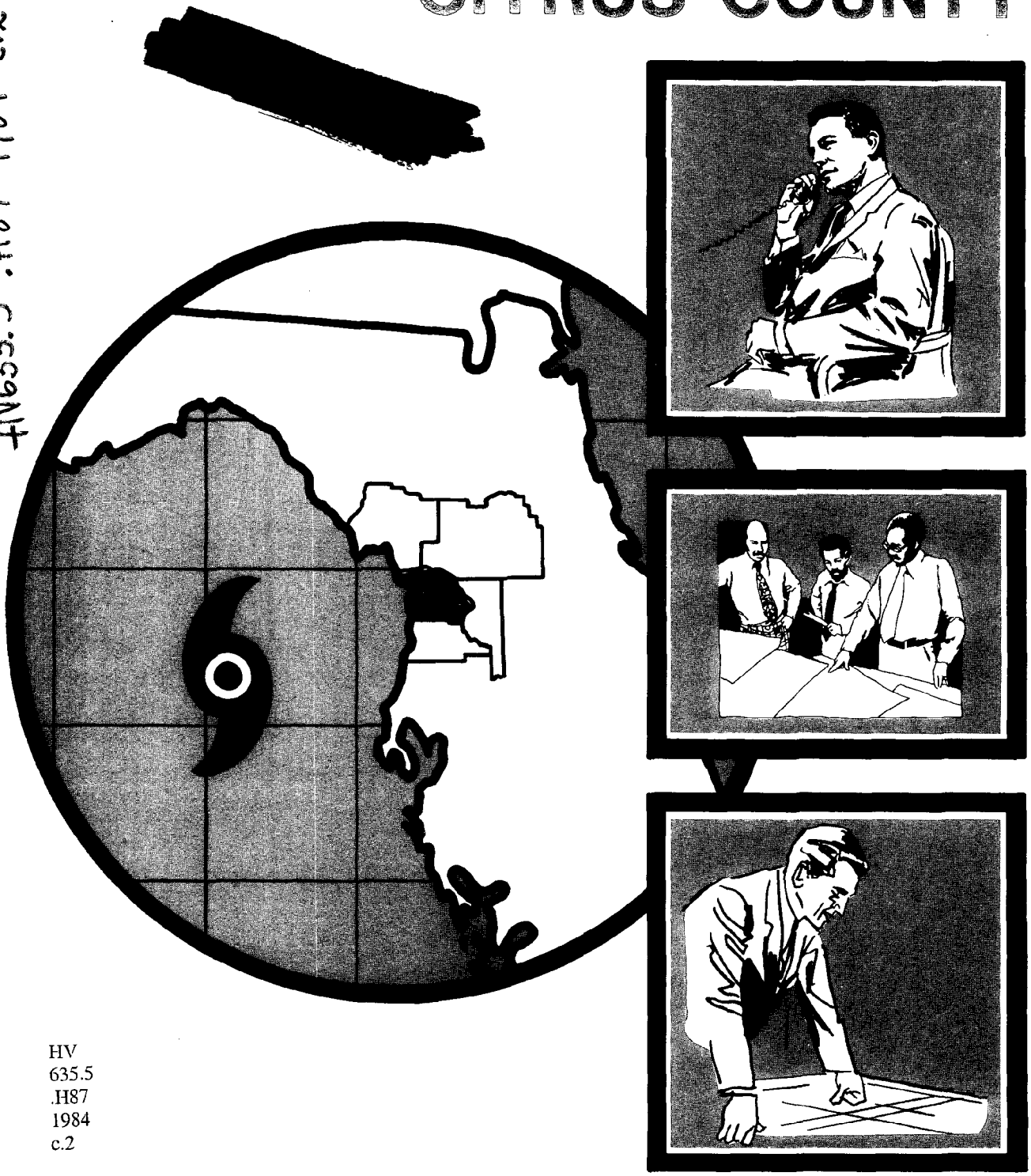

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epared by the WITHLACOOCHEE REGIONAL PLANNING COUNCIL
July, 1984

HURRICANE EVACUATION

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Withlacoochee Regional Planning Council

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INTRODUCTION

As part of the Withlacoochee Hurricane Evacuation Plan, decision-making guides are to be furnished to each county in the region and the Florida Bureau of Emergency Management for use as a ready reference tool by decision-makers during the approach of the storm. The purpose of the guide is to provide information to assist local and state civil defense officials and other emergency management organizations to implement the critical actions necessary to prepare for, and respond to, a hurricane threat.

Basically, the guides consist of two parts. The first part is largely an excerpt from the technical data report prepared for the coastal counties of the region. This excerpt provides information on the expected number of evacuees, needed sheltering and evacuation times according to the forecasted intensity of the hurricane.

The second part is concerned with the coordination of the evacuation. This includes information on the roles and responsibilities of agencies involved in the issuance of the evacuation order and the management of the evacuation. The chapter on local coordination is largely excerpted from the Hurricane Annex of the Local Peacetime Emergency Plans in each county. The chapter on regional coordination is excerpted from the technical data report.

In addition, the coordination section includes a discussion of the implications of the findings of the technical data report on local evacuation decision-making.

Also, a quick reference guide is included which presents information on the expected number of evacuees and recommended evacuation order times according to several evacuation scenarios.

CHAPTER I

QUICK REFERENCE GUIDE

The purpose of this chapter is to provide local decision-makers with a quick reference guide as to the number of persons vulnerable to hurricane hazards in Citrus County and the recommended evacuation order times according to the forecasted intensity of the hurricane.

The population-at-risk and recommended evacuation order times are presented according to designated level of vulnerability. These levels of vulnerability are based on the forecasted hurricane intensity.

It should be noted that the remaining chapters in this document should be read prior to consulting this quick reference guide in order to gain familiarity with how these numbers were calculated.

Vulnerability Level 'A'[1/]

Population-At-Risk

Surge-vulnerable residents: 11,928
Mobile-home residents: 14,368
Total: 26,296

Number requiring public shelter: 8,046

1/ See Map 1 and table 2 for definition of vulnerability levels.

Recommended Evacuation Order Times[2/]

Storm Type	Storm Intensity[3/]	Evacuation Time
Exiting	1	14 Hours
Exiting	2	15
Paralleling	1	14
Paralleling	2	15
Paralleling	3	16.5
Paralleling	4	17.5
Normal	1	15
Normal	2	15.5

Vulnerability Level 'B'

Population-at-Risk

Surge-vulnerable residents: 18,628
Mobile-home residents: 10,633
Total: 29,261

Number requiring public shelter: 8,954

Recommended Evacuation Order Times

Storm Type	Storm Intensity	Evacuation Time
Normal	3	19 Hours
Normal	4	20
Normal	5	18

Vulnerability Level 'A' w/Tampa Bay

Population-At-Risk

If there is a concurrent Withlacoochee and Tampa Bay evacuation, population-at-risk figures increase as follows:

[2/] Chapter IV, Evacuation Times should be consulted for possible timing adjustments.

[3/] See table 1 and figure 1 for definition of storm types and intensities.

Total: 34,416

Number requiring public shelter: 16,166

Recommended Evacuation Order Times

Evacuation times do not change significantly if there is a concurrent Tampa Bay and Withlacoochee evacuation.

Vulnerability Level "B" w/Tampa Bay

Population-At-Risk

Total: 36,473

Number Requiring Public Shelter: 16,166

Recommended Evacuation Order Times

Evacuation times do not change significantly if there is a concurrent Tampa Bay and Withlacoochee evacuation.

Implications for Evacuation Decision-Making

Due to the long evacuation times required for certain intensities of hurricanes, readiness conditions may have to be accelerated (see Chapter VII, Local Coordinative Mechanism). In addition, the amount of resources required to accommodate the expected number of evacuees may have to be increased.

CHAPTER II

EXTENT OF EVACUATION

The extent of the hurricane evacuation refers to the identification of those persons vulnerable to hurricane hazards in Citrus County and the calculation of this vulnerable population.

Identification of Vulnerable Population

There are primarily three hurricane hazards which necessitate or affect the evacuation of Citrus County: hurricane force winds, storm surge and rainfall.

Hurricane Force Winds

Hurricane force winds are defined as 74 mph or greater. A computer program called SPLASH, developed by the National Hurricane Center, was used to predict peak wind speeds resulting from hurricanes. The results indicated that peak wind speeds may vary from 84-174 mph, depending on storm type and intensity. Figure 1 and table 1 display the types and intensities of hurricanes used in the SPLASH program and their resultant wind speeds.

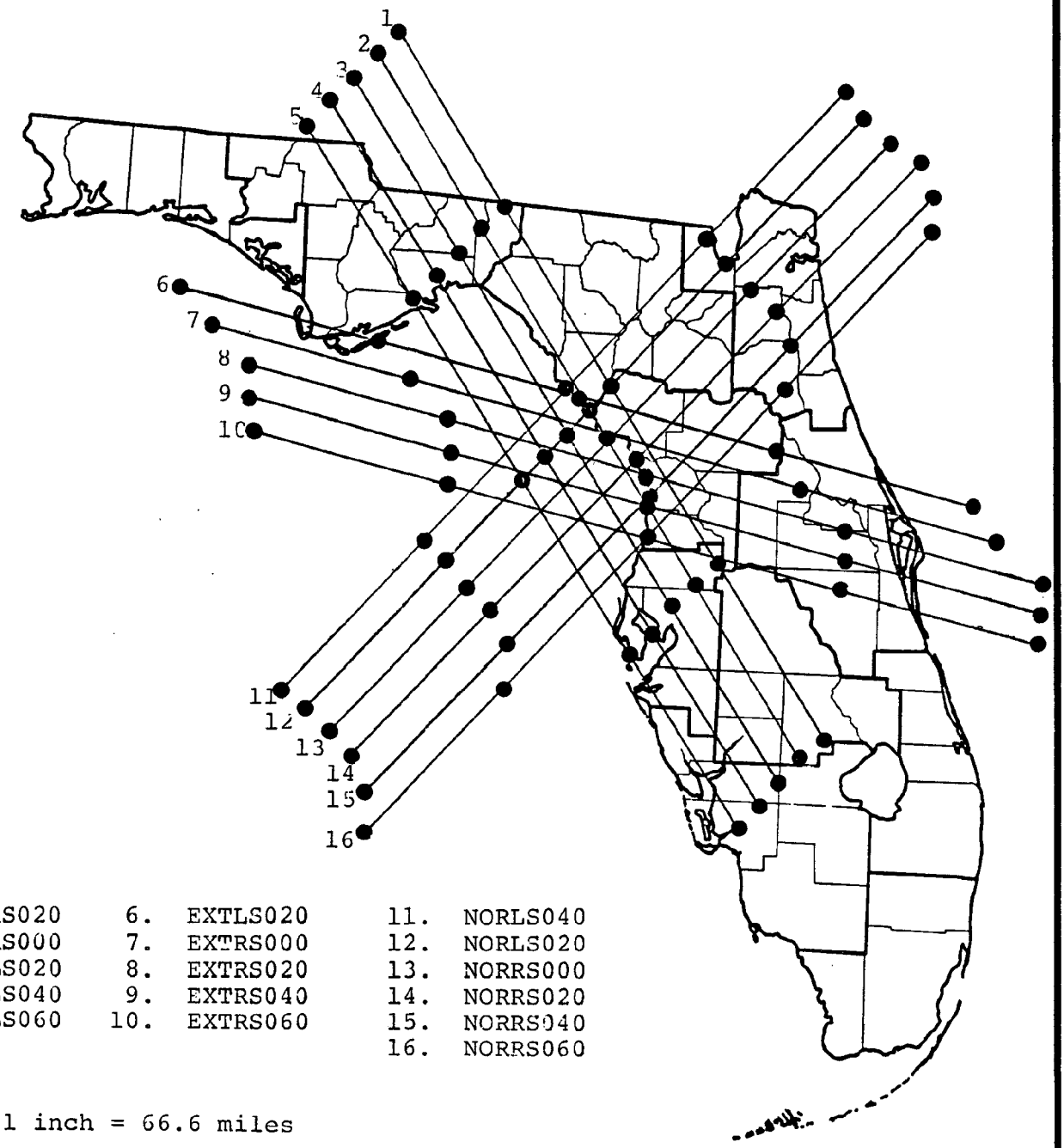
Mobile homes are particularly vulnerable to hurricane force winds because of their lightweight construction and flat sides and ends. Although local regulations require that mobile homes be anchored so as to withstand wind speeds in excess of 70 to 100 mph. In addition, mobile homes are more vulnerable to flying debris. As a result of this vulnerability to hurricane force winds, the National Weather Service recommends that all mobile home residents should evacuate in the event of a hurricane.

Storm Surge

The storm surge is the rising wall of ocean water, mainly produced by hurricane-force winds, which impacts upon coastal fringe areas. The storm surge is by far the most severe hurricane hazard. It causes 9 out of 10 hurricane-related deaths and possesses the greatest damage potential. A comparison of figure 1 with table 1 indicates that, of the hurricanes in the SPLASH model which produce the greatest affect on Citrus County, peak surge heights are predicted to range from 5 to 25 feet, depending on storm type and intensity.

FIGURE 1

HYPOTHETICAL HURRICANE TRACKS*



1.	PARRS020	6.	EXTLS020	11.	NORLS040
2.	PARRS000	7.	EXTRS000	12.	NORLS020
3.	PARLS020	8.	EXTRS020	13.	NORRS000
4.	PARLS040	9.	EXTRS040	14.	NORRS020
5.	PARLS060	10.	EXTRS060	15.	NORRS040
				16.	NORRS060

Scale: 1 inch = 66.6 miles

*See table 1 for key to track identification.

TABLE 1

HURRICANES GENERATED BY SPLASH

	Input Parameters				Results	
Identification	Pressure Drop (millibars)	Storm Speed (m.p.h.)	Radius Of Maximum Winds (miles)	Direction (degrees clockwise from North)	Peak Surge Height (ft.)	Peak Wind Speed (m.p.h.)
NOR-01-LS040	30	15	20	45	9.6	86
NOR-01-LS020	30	15	20	45	11.6	86
NOR-01-RS000	30	15	20	45	11.6	86
NOR-01-RS020	30	15	20	45	9.8	86
NOR-01-RS040	30	15	20	45	8.7	86
NOR-01-RS060	30	15	20	45	7.4	86
NOR-02-LS040	40	15	20	45	13.0	99
NOR-02-LS020	40	15	20	45	15.6	99
NOR-02-RS000	40	15	20	45	16.0	99
NOR-02-RS020	40	15	20	45	12.9	99
NOR-02-RS040	40	15	20	45	11.8	99
NOR-02-RS060	40	15	20	45	10.0	99
NOR-03-LS040	60	15	20	45	19.6	121
NOR-03-LS020	60	15	20	45	23.6	121
NOR-03-RS000	60	15	20	45	24.2	121
NOR-03-RS020	60	15	20	45	20.2	121
NOR-03-RS040	60	15	20	45	17.9	121
NOR-03-RS060	60	15	20	45	15.2	121
NOR-04-LS040	80	15	20	45	26.4	140
NOR-04-LS020	80	15	20	45	31.8	140
NOR-04-RS000	80	15	20	45	32.6	140
NOR-04-RS020	80	15	20	45	27.2	141
NOR-04-RS040	80	15	20	45	24.2	140
NOR-04-RS060	80	15	20	45	20.5	140

TABLE 1 (cont.)

HURRICANES GENERATED BY SPLASH

	Input Parameters				Results	
Identification	Pressure Drop (millibars)	Storm Speed (m.p.h.)	Radius Of Maximum Winds (miles)	Direction (degrees clockwise from North)	Peak Surge Height (ft.)	Peak Wind Speed (m.p.h.)
NOR-05-LS040	100	15	12	45	24.8	174
NOR-05-LS020	100	15	12	45	26.0	172
NOR-05-RS000	100	15	12	45	33.1	172
NOR-05-RS020	100	15	12	45	29.2	174
NOR-05-RS040	100	15	12	45	23.6	174
NOR-05-RS060	100	15	12	45	21.4	174
PAR-01-LS060	30	15	20	120	8.2	86
PAR-01-LS040	30	15	20	120	8.3	86
PAR-01-LS020	30	15	20	120	8.0	86
PAR-01-RS000	30	15	20	120	7.3	82
PAR-01-RS020	30	15	20	120	5.2	73
PAR-02-LS060	40	15	20	120	11.1	99
PAR-02-LS040	40	15	20	120	11.2	100
PAR-02-LS020	40	15	20	120	11.0	99
PAR-02-RS000	40	15	20	120	10.1	95
PAR-02-RS020	40	15	20	120	7.3	86
PAR-03-LS060	60	15	20	120	16.8	122
PAR-03-LS040	60	15	20	120	17.1	122
PAR-03-LS020	60	15	20	120	15.7	122
PAR-03-RS000	60	15	20	120	15.8	118
PAR-03-RS020	60	15	20	120	11.5	108
PAR-04-LS060	80	15	20	120	22.6	141
EXT-01-LS015	30	15	20	165	5.2	84
EXT-01-RS000	30	15	20	165	5.7	84
EXT-01-RS015	30	15	20	165	4.0	86

TABLE 1 (cont.)

HURRICANES GENERATED BY SPLASH

	Input Parameters				Results	
Identification	Pressure Drop (millibars)	Storm Speed (m.p.h.)	Radius Of Maximum Winds (miles)	Direction (degrees clockwise from North)	Peak Surge Height (ft.)	Peak Wind Speed (m.p.h.)
EXT-01-RS030	30	15	20	165	3.9	86
EXT-01-RS045	30	15	20	165	3.6	86
EXT-02-LS015	40	15	20	165	7.4	99
EXT-02-RS000	40	15	20	165	8.0	98
EXT-02-RS015	40	15	20	165	5.7	99
EXT-02-RS030	40	15	20	165	5.5	99
EXT-02-RS045	40	15	20	165	5.1	99

Key for identification:

NOR - Path of hurricane normal or perpendicular to Gulf Coast
PAR - Path of hurricane parallel to Gulf Coast
EXT - Path of hurricane from point inland to Gulf Coast

01 to 05 - Hurricane intensity level based on Saffir/Simpson scale

LS, RS - Path of hurricane located to the left side or right side of Cedar Key, facing the Gulf Coast

000 to 060 - Distance of path of hurricane to the left or right from Cedar Key in miles

Source: SPLASH II computer output

Due to the severity of this hazard, all residents of areas subject to storm-surge flooding should evacuate. The approximate limits of the areas in Citrus County subject to this hazard are shown in map 1.

Vulnerability Levels. Each storm type and intensity listed in table 1 which affects Citrus County produces a different peak surge height. However, due to topographic changes in coastal areas, the extent to which the surge travels inland for several of these storm types and intensities does not change significantly. Therefore, these storm types and intensities are condensed into two vulnerability levels, as shown in table 2. The approximate geographic limits of these levels are shown in map 1.

Rainfall

Approximately 6 to 12 inches of rainfall can be expected to accompany a hurricane. However, the geographic distribution of this rainfall is difficult to predict prior to the arrival of the hurricane. Therefore, if heavy rains are predicted to accompany a hurricane, residents in areas subject to severe freshwater flooding should be prepared to evacuate in the event a hurricane warning is issued for their area.

Also, heavy rainfall can produce impedances in the evacuation process by causing difficult driving conditions. The effects of early rainfall on evacuation time are discussed in Chapter IV, Evacuation Times.

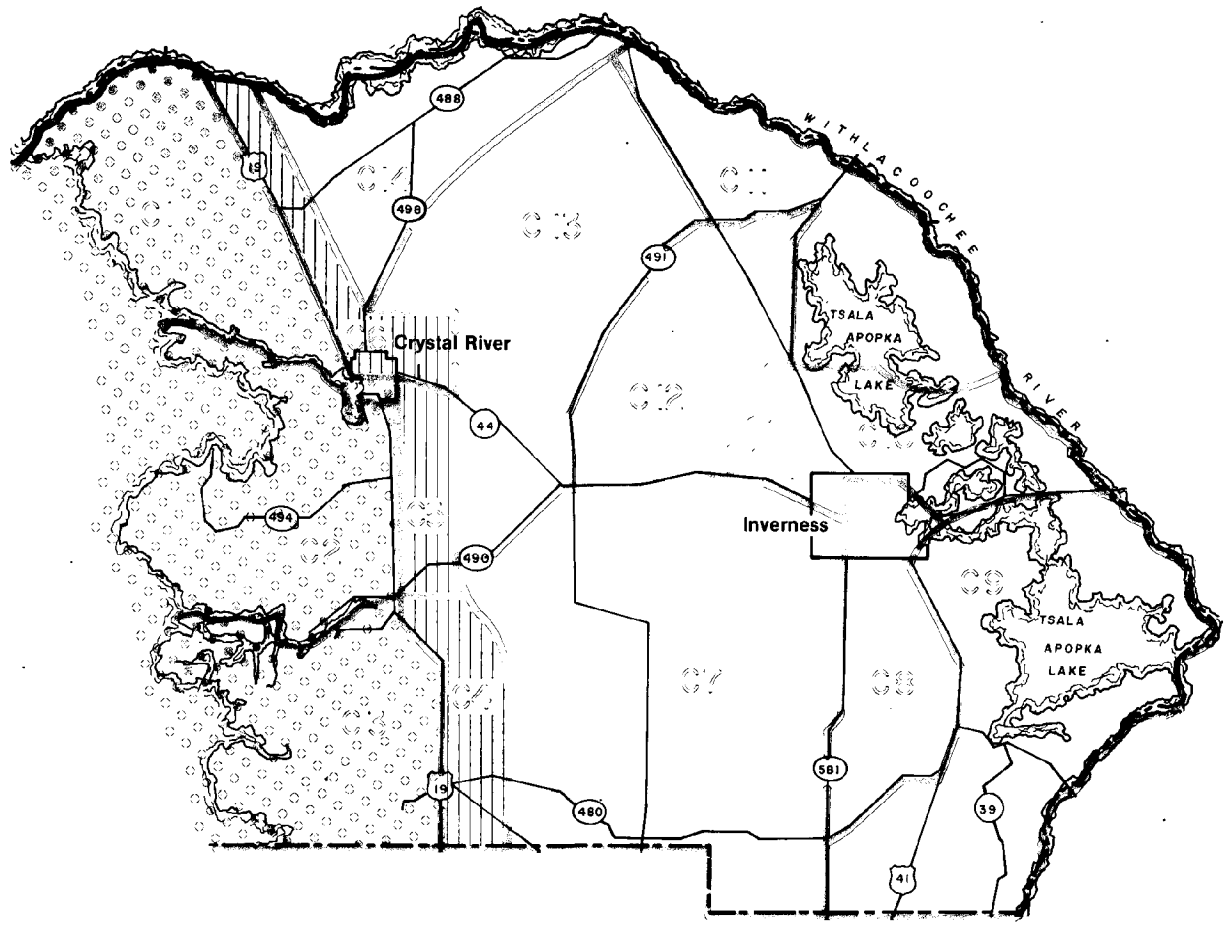
Population-At-Risk

The number of persons residing within the surge-vulnerable areas, as shown in map 1, and the number of mobile home residents outside these areas constitute the population-at-risk to hurricane hazards in Citrus County.[1/] This is shown below by vulnerability level:

[1/] The number of persons evacuating due to freshwater flooding should be relatively minor.

MAP 1

EVACUATION ZONES - CITRUS COUNTY



LEGEND

LEVEL "A" FLOODING

LEVEL "B" FLOODING

C 6 EVACUATION ZONE NUMBER

0 5 10

Graphic Scale
Scale In Miles

Source: Post, Buckley, Schuh & Jernigan, Inc.

TABLE 2

VULNERABILITY LEVELS

Storm Type	Storm Intensity[1/] Category	Vulnerability[2/] Level
Exiting	1	A
Exiting	2	A
Paralleling	1	A
Paralleling	2	A
Paralleling	3	A
Paralleling	4	A
Normal	1	A
Normal	2	A
Normal	3	B
Normal	4	B
Normal	5	B

[1/] Storm intensity category refers to the intensity level on the Saffir/Simpson scale.

[2/] Vulnerability levels are inclusive meaning that vulnerability Level B includes all persons residing within the areas bounded by Vulnerability Levels A and B (see Map 1).

Vulnerability Level	Population-At Risk
A	26,296
B	29,261

The difference between vulnerability levels 'A' and 'B' is the number of non-mobile home residents in surge area 'B', as shown in Map 1.

Evacuation Destination Distribution

As part of the technical data report for this plan, a statistically significant survey of hurricane response behavior was conducted in the Withlacoochee region.[2/] One of the questions asked in the survey was the evacuation destination. The destinations were public shelter, friend or relative and hotel/motel.

Based on the results of this survey and discussions with the Regional Disaster Preparedness Advisory Committee, the following evacuation destination distribution was developed for the coastal counties:

Evacuation Destination	Percentage of Population-At-Risk Seeking Destination
Public Shelter	30.6%
Friend or Relative	40.6
Hotel/Motel	28.8

It should be noted that, for the hotel/motel destination, there is not sufficient hotel/motel capacity to accommodate the expected number of evacuees seeking this destination. Therefore, those evacuees unable to obtain a hotel or motel in Citrus County are assumed to seek such destinations outside the region.

Tampa Bay Evacuees

Based on a report prepared by the Florida Bureau of Emergency Management, approximately 30,000 evacuees from the Tampa Bay region are expected to enter the Withlacoochee Region via U.S. 41. Some evacuees will also enter the coastal counties via U.S. 301 and I-75. Of these evacuees, approximately 17,000 are expected to need public shelter.[3/]

[2/] Behavioral Surveys for the Withlacoochee Regional Disaster Preparedness Plan, H. W. Lochner, Inc., 1982.

[3/] Report on the Expected Coastal Demand for Inland County Shelter Facilities from the Tampa Bay and Southwest Florida Regions, Florida Bureau of Emergency Management, 1982.

The number of Tampa Bay evacuees entering Citrus County will depend on available public shelter capacity in Citrus County. According to the technical data report, if an evacuation order is issued for both the Tampa Bay and Withlacoochee regions, there is approximately 7,200 shelter spaces available for incoming Tampa Bay evacuees in Citrus County under a worst case storm. Assuming that through traffic from the Tampa Bay region heads toward I-75 (which may require the use of traffic control personnel), this means that approximately 11,700 evacuees or approximately 4,300 vehicles may enter Citrus County via U.S. 41. The additional 4,500 evacuees are accounted by the remaining available shelter capacity in Levy County who would pass through the county on U.S. 41.

Evacuation Routes and Zones

As part of a transportation model of a hurricane evacuation in the Withlacoochee region, the evacuation roadway network for each county was designated.[4/] This network is displayed in map 2 for Citrus County.

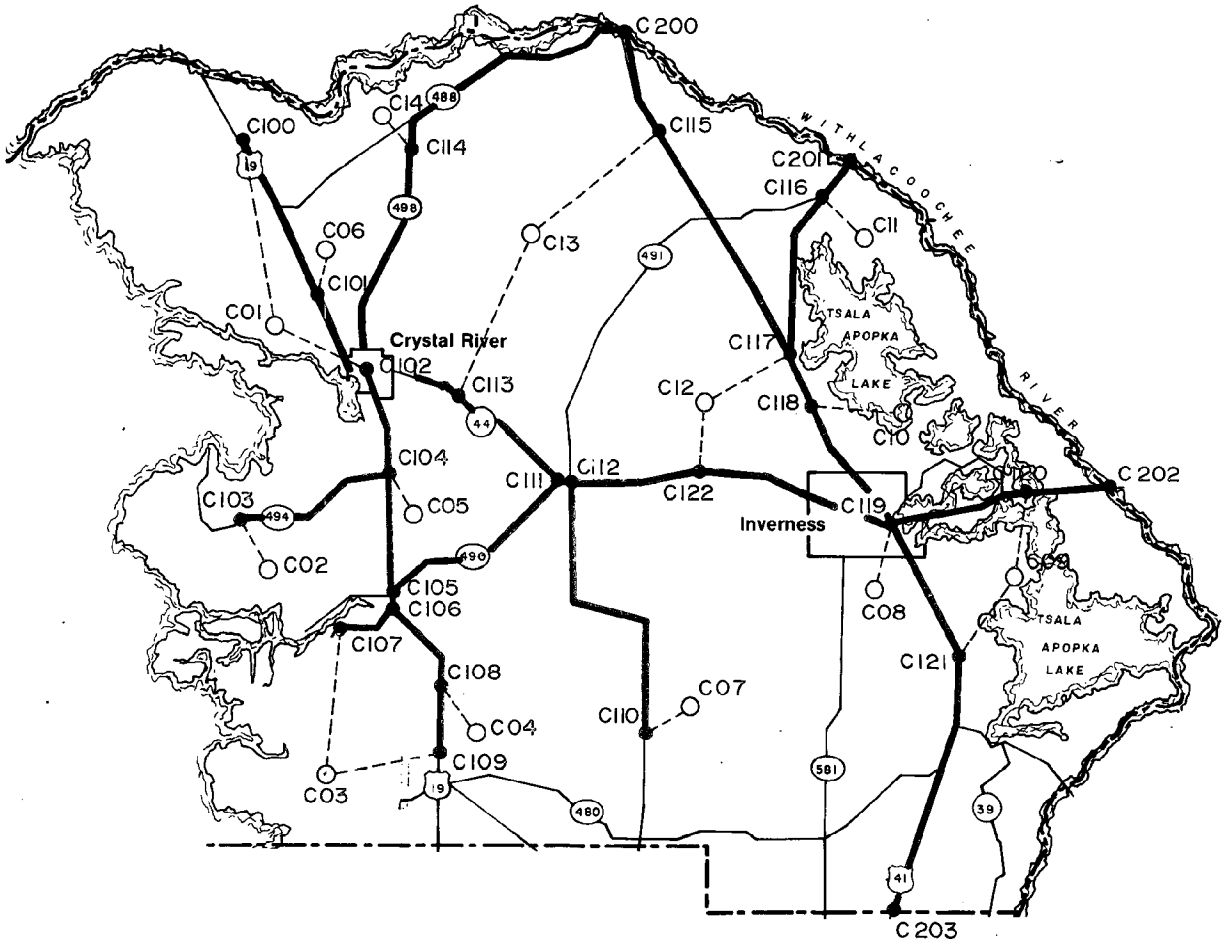
Another task of the transportation modeling effort was to divide the counties into evacuation zones. Zones were based on the roadway network and other easily identifiable boundaries.

These zones show the distribution of the population-at-risk within the county and thereby assists in the allocation of manpower and other resources within the county. Map 1 displays the evacuation zones developed for Citrus County. Appendix A provides a written description of these zones. Tables 3 and 4 show the distribution of the evacuation population and number of vehicles, broken out by evacuation destination, for vulnerability levels 'A' and 'B', respectively.

[4/] Transportation Analysis: Withlacoochee Regional Hurricane Evacuation Plan, Post, Buckley, Schuh & Jernigan, August, 1983.

MAP 2

EVACUATION NETWORK - CITRUS COUNTY



LEGEND

●	STREET OR INTERSECTION LOCATION (NODE)
O	EVACUATION ZONE CENTER (CENTROID)
C 102	NODE OR CENTROID NUMBER

0 5 10

Graphic Scale
Scale In Miles

Source: Post, Buckley, Schuh & Jernigan, Inc.

TABLE 3

CITRUS COUNTY EVACUATING POPULATION AT RISK AND EVACUATING VEHICLES

	Evacuating Population	1	2	3	4	Evacuating Vehicles	1	2	3	4
Zone #C01	4324					1970				
		1323	1756	1245	0		603	800	567	0
Zone #C02	4485					2044				
		1372	1821	1292	0		625	830	589	0
Zone #C03	3119					1421				
		954	1266	898	0		435	577	409	0
Zone #C04	1281					584				
		392	520	369	0		179	237	168	0
Zone #C05	1479					674				
		453	600	426	0		206	274	194	0
Zone #C06	975					444				
		298	396	281	0		136	180	128	0
Zone #C07	1014					462				
		310	412	292	0		141	188	133	0
Zone #C08	971					442				
		297	394	280	0		135	180	127	0
Zone #C09	2675					1219				
		819	1086	770	0		373	495	351	0
Zone #C10	2026					923				
		620	823	584	0		283	375	266	0
Zone #C11	1633					744				
		500	663	470	0		228	302	214	0
Zone #C12	1162					529				
		355	472	335	0		162	215	152	0
Zone #C13	225					103				
		69	92	65	0		31	42	30	0
Zone #C14	927					422				
		284	376	267	0		129	171	122	0
	26296	8046	10677	7574	0	11981	3666	4866	3450	0

1 = Red Cross Shelter
2 = Friends Home
3 = Hotel/Motel
4 = Do Not Know

% Participation	100
# Per Mobile Home Unit	2.3
# per Other Unit	2.3
Avg. Veh. per D.U.	1.6
Veh. Usage %	65.5

Dist. %: S= 30.6 FR= 40.6 HM= 28.8 DK= 0

Surge Zones C01, C02, C03

Source: Post, Buckley, Schuh & Jernigan, Inc., 1983.

TABLE 4

CITRUS COUNTY EVACUATING POPULATION AT RISK AND EVACUATING VEHICLES

	Evacuating Population	1	2	3	4	Evacuating Vehicles	1	2	3	4
Zone #C01	4324					1970				
		1323	1756	1245	0		603	800	567	0
Zone #C02	4485					2044				
		1372	1821	1292	0		625	830	589	0
Zone #C03	3119					1421				
		954	1266	898	0		435	577	409	0
Zone #C04	2006					914				
		614	814	578	0		280	371	263	0
Zone #C05	2822					1286				
		864	1146	813	0		393	522	370	0
Zone #C06	1872					853				
		573	760	539	0		261	346	246	0
Zone #C07	1014					462				
		310	412	292	0		141	188	133	0
Zone #C08	971					442				
		297	394	280	0		135	180	127	0
Zone #C09	2675					1219				
		819	1086	770	0		373	495	351	0
Zone #C10	2026					923				
		620	823	584	0		283	375	266	0
Zone #C11	1633					744				
		500	663	470	0		228	302	214	0
Zone #C12	1162					529				
		355	472	335	0		162	215	152	0
Zone #C13	225					103				
		69	92	65	0		31	42	30	0
Zone #C14	927					422				
		284	376	267	0		129	171	122	0
	29261	8954	11881	8428	0	13332	4079	5414	3839	0

1 = Red Cross Shelter
2 = Friends Home
3 = Hotel/Motel
4 = Do Not Know

% Participation	100
# per Mobile Home Unit	2.3
# per Other Unit	2.3
Avg. Veh. Per D.U.	1.6
Veh. Usage %	65.5

Dist. %: S= 30.6 FR= 40.6 HM= 28.8 DK= 0

Surge Zones C01, C02, C03, C04, C05, C06

Source: Post, Buckley, Schuh & Jernigan, Inc., 1983.

CHAPTER III

PUBLIC SHELTER CAPACITY

Primary and Secondary Shelters

Primary shelters consist of the public schools in Citrus County located outside of the surge-vulnerable areas. These shelters will be opened and used first in the evacuation process. Table 5 presents the capacity of the primary public shelters in Citrus County.

Secondary shelters consist of churches and other civic buildings located outside of the surge-vulnerable areas. These shelters will only be opened if there is insufficient primary shelter capacity to accommodate the evacuees. Table 6 presents the capacity of the secondary public shelters in Citrus County which were inventoried for the technical data report.[1/]

Table 7 displays the public shelter demand and capacities for each of the coastal counties. It can be seen that there is more than adequate primary shelter capacity to accommodate the expected number of Citrus County evacuees. However, if an evacuation order is issued for both the Tampa Bay and Withlacoochee regions, all the primary and secondary shelter capacity in Citrus County may have to be utilized. The implications of a Withlacoochee and Tampa Bay evacuation on evacuation times are discussed in the next chapter.

Shelter Duration Periods

The shelter duration period is defined as the minimum period of time in which evacuees must remain in their evacuation destination until the hurricane passes. This is defined as the period of time before and after the occurrence of gale force winds (32 - 63 mph). Gale force winds are assumed to create hazardous conditions due to flying debris. These times were calculated from the results of the SPLASH model and are displayed in table 8 for each hurricane type and intensity.

[1/]It should be noted that the list of secondary shelters in the Citrus County Peacetime Emergency Plan is more comprehensive than this list. However, the total amount of shelter capacity is sufficient to accommodate the expected number of County and Tampa Bay evacuees.

TABLE 5

CITRUS COUNTY PRIMARY SHELTER CAPACITY

	Shelter Name	Address	Capacity[1/]
(C1)	Adult General and Community Education	504 W. Grace St. Inverness, FL 32650	423
(C2)	Citrus High School	601 W. Main St. Inverness, FL 32650	2,347
(C3)	Floral City Elementary School	Marvin St. & Old Floral City Rd., Floral City, FL 32636	543
(C4)	Hernando Elementary School	N. US 41 & University Blvd., Hernando, FL 32642	600
(C5)	Inverness Middle School	1950 US 41 North Inverness, FL 32650	3,224
(C6)	Inverness Primary School	206 S. Line St. Inverness, FL 32650	1,397
(C7)	Lecanto Elementary	Lecanto, FL 32661	1,869
(C8)	Lecanto Middle School	Lecanto, FL 32661	2,519
(C9)	Oak Hill School	Van Nortwick Rd. & W. SR 44, Lecanto, FL 32661	188
	TOTAL		13,110

[1/]Based on 20 square feet of usable shelter space/person.

Source: Citrus County School Board.

TABLE 6

CITRUS COUNTY SECONDARY SHELTER CAPACITY

	Shelter Name	Address	Capacity
(C10)	Assembly of God	200 W. Highland Ave. Inverness	400
(C11)	Church of God	438 S. Main Street Inverness	500
(C12)	First Church of God	Jasmine Dr. & U.S. 41 Inverness	150
(C13)	First Baptist Church	123 S. Seminole Ave. Inverness	610
(C14)	First Presbyterian Church	402 W. Grace St. Inverness	100
(C15)	First United Methodist Church	401 W. Main Street Inverness	400
(C16)	Main St. Baptist Church	S. U.S. 41 & Inverness Blvd. Inverness	250
(C17)	Our Lady of Futima Catholic Church	S. U.S. 41 & Louis St. Inverness	300
(C18)	St. Margaret's Episcopal Church	N. Osceola Ave. & Tompkins St. Inverness	171
(C19)	Catholic Church	6 Roosevelt Blvd. Beverly Hills	100
(C20)	Lutheran Church	N. S.R. 491 & Pine Ridge Blvd. Beverly Hills	75
	TOTAL		3,056

TABLE 7

NET SHELTER CAPACITY

Primary Shelter Capacity		Secondary Shelter Capacity		Shelter[1/] Demand		Net Shelter Capacity
		Levy County				
5,801	+	2,999	-	4,259	=	4,541
		Citrus County				
13,110	+	3,056	-	8,954	=	7,212
		Hernando County				
9,126	+	3,664	-	7,833	=	4,957
		Coastal County Total				
28,037	+	9,719	-	21,046	=	16,710
		Coastal County Total Plus Tampa Bay Evacuees				
28,037	+	9,719	-	37,839	=	-83

Sources: WRPC Staff analysis.

Report on Expected Coastal Demand for Inland County Shelter Facilities from the Tampa Bay and Southwest Florida Regions, Florida Bureau of Disaster Preparedness.

NOTES: [1/] Based on worst case surge vulnerability.

It should be noted that these are minimum shelter duration periods and that actual shelter duration periods may have to be increased depending on the results of the storm.

CHAPTER IV

EVACUATION TIMES

Evacuation times consist of three components: pre-landfall hazard time, behavioral response time and clearance time.

Pre-landfall hazard time is the number of hours before the eye of the storm strikes or makes its closest point of approach in which gale force winds occur. It is assumed that evacuation must be completed before the occurrence of gale force winds due to the potential of hazardous driving conditions. Pre-landfall hazard times are presented in table 8 for each storm type and intensity.

Behavioral response time is the amount of time it takes for the vulnerable population to respond to the evacuation order. These times were based on the survey of hurricane response behavior conducted in the Withlacoochee region and previous evacuation studies and were calculated as part of the transportation model.

Clearance time is the amount of travel time it takes for the vulnerable population to reach their evacuation destinations. This time was calculated as a part of the transportation model developed for the Withlacoochee region.[1/]

Evacuation time is the sum of these components. Tables 9 and 10 display the evacuation times by each level of vulnerability for each county in the Withlacoochee region. It can be seen that evacuation times are greatly increased in some counties, if both the Withlacoochee and Tampa Bay regions are issued an evacuation order.

[1/]Clearance time is calculated by determining which link in the evacuation roadway network, displayed in Map 2, is the most congested during the evacuation process. This is called the "critical link". The amount of time it takes for the last vehicle to "clear" this link is the clearance time. Appendix B presents the distribution of traffic on the roadway network in Citrus County according to the evacuation scenarios developed for this report. The critical links are denoted with an asterisk.

TABLE 8

GALE FORCE WIND ANALYSIS AND SHELTER DURATION PERIOD
BY STORM TYPE AND INTENSITY

Storm Type	Storm Intensity	Pre-landfall Hazard Time	Shelter Duration Period
Normal	5	7.0[1/]	12.0[1/]
Normal	4	9.0	15.0
Normal	3	8.0	14.0
Normal	2	6.0	11.0
Normal	1	5.5	9.5
Paralleling	4	8.0	17.0
Paralleling	3	7.0	15.0
Paralleling	2	5.5	11.0
Paralleling	1	4.5	9.0
Exiting	2	5.5	13.0
Exiting	1	4.5	12.0

[1/]Pre-landfall hazard time and shelter duration period for storm intensity category five are shorter due to a narrower radius of maximum winds

Source: SPLASH II computer output.

TABLE 9

EVACUATION TIMES (in hours)

VULNERABILITY LEVEL 'A'

	Response Curve	REGIONAL VULNERABILITY LEVEL A	A w/Tampa Bay Evacuation
Levy County	A-Quick Response	8 3/4 - 12 1/4	8 3/4 - 12 1/4
	B-Medium Response	11 3/4 - 15 1/4	11 3/4 - 15 1/4
	C-Slow Response	14 3/4 - 18 1/4	14 3/4 - 18 1/4
Citrus County	A-Quick Response	12 1/4 - 15 3/4	12 1/4 - 15 3/4
	B-Medium Response	14 - 17 1/2	14 - 17 1/2
	C-Slow Response	16 - 19 1/2	16 - 19 1/2
Hernando County	A-Quick Response	8 3/4 - 12 1/4	29 1/2 - 33
	B-Medium Response	12 - 15 1/2	24 - 27 1/2
	C-Slow Response	15 - 18 1/2	30 3/4 - 34 1/4
Marion County	A-Quick Response	9 1/2 - 13 1/2	22 1/2 - 26
	B-Medium Response	12 1/2 - 16	24 - 27 1/2
	C-Slow Response	15 1/2 - 19	25 1/2 - 29
Sumter County	A-Quick Response	9 - 12 1/2	22 1/2 - 26
	B-Medium Response	11 3/4 - 15 1/4	24 - 27 1/2
	C-Slow Response	14 1/2 - 18 1/4	25 1/2 - 29

SOURCE: Post, Buckley, Schuh & Jernigan, Inc. and WRPC Staff.

TABLE 10

EVACUATION TIMES (in hours)

VULNERABILITY LEVEL 'B'

	Response Curve	REGIONAL VULNERABILITY LEVEL B	B w/Tampa Bay Evacuation
Levy County	A-Quick Response	10 3/4 - 14 3/4	10 3/4 - 14 3/4
	B-Medium Response	13 1/4 - 16 1/4	13 1/4 - 16 1/4
	C-Slow Response	16 1/4 - 19 1/4	16 1/4 - 19 1/4
Citrus County	A-Quick Response	16 1/4 - 18 1/4	16 1/4 - 18 1/4
	B-Medium Response	18 - 20	18 - 20
	C-Slow Response	20 - 22	20 - 22
Hernando County	A-Quick Response	15 1/4 - 18 1/4	32 - 34 1/2
	B-Medium Response	15 1/4 - 17 1/4	32 1/2 - 34 1/2
	C-Slow Response	17 1/2 - 19 1/2	33 1/4 - 35 1/4
Marion County	A-Quick Response	12 - 14	25 1/4 - 27 1/4
	B-Medium Response	15 - 17	25 3/4 - 28 3/4
	C-Slow Response	18 - 20	28 1/4 - 30 1/4
Sumter County	A-Quick Response	11 1/2 - 13 1/2	25 - 27
	B-Medium Response	14 1/4 - 16 1/4	26 1/2 - 28 1/2
	C-Slow Response	17 1/4 - 19 1/4	28 - 30

SOURCE: Post, Buckley, Schuh & Jernigan, Inc. and WRPC Staff

Timing Adjustments

Evacuation Order Adjustment. The behavioral response time includes response time before and after the evacuation order is issued. The amount of response time before the evacuation order is issued should be subtracted from the evacuation times listed in tables 9 and 10 in order to arrive at the minimum evacuation order time. These adjustments are as follows:

Behavioral Response	Change in Evacuation Time
A (quick)	subtract 1 hour
B (medium)	subtract 2 hours
C (slow)	subtract 3 hours

Early Arrival of Rainfall. The evacuation times set forth in this report include the number of hours before eye landfall (pre-landfall hazard time) when ambient high winds might prevent evacuation from being carried out. However, depending on the structure, size, or forward speed of the storm, hurricane-induced rainfall may precede this point in time. Historically, rainfall has occurred as late as two hours before eye landfall and as early as twenty hours before eye landfall. Such rainfall would reduce roadway carrying capacity because of limited driver visibility and wet pavement. This reduction has been estimated at approximately fifteen percent in past transportation studies. This adjustment requires a monitoring of the forecasted arrival of rainfall by the local weather service office radar. If the arrival of rainfall is forecasted substantially before the pre-landfall hazards time an amount of time equal to about fifteen percent of the clearance time should be immediately added to the evacuation time. The clearance time is the overall evacuation time minus the pre-landfall hazards time.

Based on the above, the following are the changes in evacuation time according to behavioral response:

Behavioral Response	Change in Evacuation Time
A	add 1.5 hours
B	add 1.5 hours
C	add 2 hours

Changes in Hurricane Parameters. Certain variables were used to predict wind speeds in the SPLASH model. If, according to the monitoring of the storm before landfall, these variables are different, the arrival of gale force winds could change and thereby affect pre-landfall hazard times.

The parameters in the SPLASH model which can affect the arrival of gale force winds and thereby pre-landfall hazard times are the forward speed of the storm and the radius to maximum winds. As the storm speed increases, there is less time required for the arrival of gale force winds, thereby reducing pre-landfall hazard time. As the radius-to-maximum winds increases, gale force winds arrive sooner, thereby increasing pre-landfall hazard times.

In order to ascertain the sensitivity of pre-landfall hazard times to the aforementioned, additional SPLASH program runs were made. Forward speed and radius-to-maximum winds were independently varied in each additional run. The results are presented and explained in table 11.

Unpredictable Road Blockages. The intensity of traffic during a hurricane evacuation will always be accompanied by a certain number of traffic accidents and breakdowns. Although roadway shoulders are available for vehicles in distress, the movement of such vehicles to these areas is often difficult and disruptive. It is recommended that at least two traffic control personnel be positioned at each key roadway link so that one can assist disabled vehicles as needed. A tow vehicle should also be positioned at each critical link to facilitate the removal of immobilized vehicles. Those roadways that historically experience flooding due to rainfall alone should be monitored for vehicle distress and help.

To guard against an unpredictable, and thus unquantifiable blockage of evacuation routes that could add to the overall evacuation time, a safety margin of up to two hours will be added to the evacuation times. Such unpredictable blockages could include: disabled vehicles, traffic accidents and fallen trees or other debris.

Recommended Evacuation Times. It is recommended that a medium behavioral response be used in determining the evacuation order time. It is also recommended that two hours be added to the evacuation time to account for unpredictable road blockages. Other adjustments in evacuation times should be made as necessary according to the previously mentioned adjustment factors.

TABLE 11

SENSITIVITY ANALYSIS OF PRE-LANDFALL HAZARD TIMES

Storm Speed

Intensity Level	Change in Storm Speed	Change in Hazard Time[1/]
1	+15 mph	-1.5 hrs.
2	+15	-2.0
3	+15	-4.0
4	+15	-4.0
5	+15	-3.0

Radius to Maximum Winds (RMW)

Change in RMW	Change in Hazard Time[2/]
-10	-2
+10	+2
+20	+4
+30	+6

[1/]Changes in pre-landfall hazard times for other changes in storm speed can be determined from this table. For example, if the storm speed is forecasted 10 mph greater than the storm speed used in the SPLASH model, which is 15 mph, the resultant change in storm speed is proportional. The hazard times will increase only if the forecasted storm speed is less than 15 mph.

[2/]Generally there is a 2 hour change in hazard time for every 10 mile change in RMW. The RMW used in the SPLASH model are shown in table 1.

SOURCE: SPLASH II computer printouts prepared by the National Hurricane Center.

Based on the above recommendations, the following are recommended evacuation order times according to level of vulnerability:

Vulnerability Level	Recommended Evacuation Time
A	14 to 17.5 hours[2/]
B	18 to 20 hours

These times represent minimum evacuation order times, excluding other adjustment factors. These times should be adjusted, using these factors, according to forecasted hurricane conditions.

Implications for Evacuation Decision-Making

As can be seen in tables 9 and 10, the evacuation times in Citrus County do not change if there is a concurrent Tampa Bay evacuation, whereas, in some other counties in the Withlacoochee region, evacuation times are greatly increased.

There are two reasons why evacuation times do not change. First, Hernando County absorbs some of the traffic from Tampa Bay on U.S. 41 before reaching Citrus County. Second, and more importantly, it was assumed in the transportation model that through traffic (that is, traffic not seeking public shelter in Citrus County) will gravitate toward I-75 and therefore not produce as much congestion on the roadways.

Even though the evacuation times are much longer in some other counties if there is a concurrent Tampa Bay evacuation, the evacuation times are still long enough in Citrus County such that readiness conditions may have to be accelerated.

The effects of evacuation times on local preparedness activities are further discussed in Chapter VII, Local Coordinative Mechanism.

[2/] The difference in evacuation times for each vulnerability level are accounted by changes in storm intensity for each level. Recommended evacuation order times are presented by storm intensity in Chapter I, Quick Reference Guide.

CHAPTER V

WARNING INFORMATION

Warning information refers to the flow of information on the need for hurricane evacuation from the National Hurricane Center to the general public. The purpose of this chapter is not to propose a new method for the dissemination of warning information, but rather to explain the existing system.

Agency Participants and Warning Process

The following are the principal Federal, State and local governmental agencies involved in the warning system:

- National Hurricane Center, Miami
- Tampa Area Office, National Weather Service, Ruskin
- Florida Bureau of Emergency Management, Tallahassee
- Central Florida Area Office, Florida (Bureau of Emergency Management, Wildwood)
- Citrus County Hurricane Preparedness Committee[1/]
- Citrus County Civil Defense Department
- Public Media (TV/Radio)

The warning process is initiated by the National Hurricane Center and reaches the public through the following five-step procedure:[2/]

1. A potential hurricane picked up in satellite images is usually the subject to the first in a series of advisory messages issued by the National Hurricane Center at six hour intervals (5 and 11 A.M. and P.M., Eastern Standard Time). These early advisories are aimed mainly at shipping and aviation interests. When the storm intensifies further into a tropical storm, it is given a name.

2. If the hurricane or tropical storm approaches land, the advisory information begins to focus on coastal and inland effects.

[1/]The composition and responsibilities of this committee are discussed in Chapter VII, Local Coordinative Mechanism.

[2/]The following information was taken from the Pinellas County Hurricane Implementation Guide, prepared by the Tampa Bay Regional Planning Council, June, 1981.

- A Hurricane Watch announcement becomes part of the NHC advisories when the storm threatens coastal and inland areas. This Watch covers a specified area and period of time and means that hurricane conditions are a real possibility.

- A Hurricane Warning is added to the advisory when hurricane conditions, winds of at least 74 miles per hour, high water and storm tides, are expected within a period of up to 24 hours. The Warning identifies coastal areas where these conditions are expected to occur.

3. As the threat to coastal areas becomes more apparent, the advisories are then interspersed with intermediate advisories every three hours or as needed.

4. Once a hurricane becomes a threat to the Withlacoochee Region, then the Tampa Area office of the National Weather Service will add local statements to each NHC advisory and intermediate advisories. The local statements will consist of recommendations for precautionary actions and completion times, existing conditions of wind and tides, information regarding projected storm tides confronting counties of the region.

5. All normal warning information will be provided to the general public through the media (radio/TV) by the NHC and when necessary, local government.

The warning information provided by the hurricane advisories, intermediate advisories and local statements will be used as a basis to alert local officials and disaster organizations of any potential hurricane threat. These warnings are augmented by restricted information to local governments also furnished by the NHC to assist those governments in preparation and evacuation decision-making. This restricted information is normally received over the National Warning System (NAWAS) by the Department of Civil Defense, or, when activated, the Citrus County Emergency Operations Center (EOC).

On the basis of the aforementioned warning procedure, the Governor of Florida is advised by the State Bureau of Disaster Preparedness to issue an evacuation order for the affected local area;[3/] or, the chief elected official of each affected local political jurisdiction may issue the evacuation order, as advised by its disaster preparedness agency or committee.

[3/]See appendix C for the chain of legal authority to issue an evacuation order.

The Central Florida Area Office will serve as the lead agency for coordinating an interregional evacuation, which is described in Chapter VI, Regional Coordinative Mechanism.

Local disaster preparedness agencies and other agencies, such as fire districts, Red Cross and Sheriffs Departments will be the key agencies in carrying out the evacuation. Agency involvement and specific evacuation procedures are discussed in Chapter VII, Local Coordinative Mechanism.

The following is a chronological summary of key warning conditions based on the above information, in relation to the number of hours before projected hurricane eye landfall or closest point of approach:

- 72 hours advisory: storm assigned Category number on Saffir/Simpson Scale by NHC
- 48 hours before projected eye landfall: local areas placed under hurricane watch condition by NHC
- 24 hours before projected eye landfall: local areas placed under hurricane warning condition by NHC
- 12-24 hours before projected eye landfall: local area advised to evacuate by NHC advisory or local NWS office Local Action Statement
- Governor advised by Bureau of Emergency Management to issue an evacuation order for the local area or Executive Group, Hurricane Evacuation Committee advised by its control group to issue an evacuation order for the jurisdiction.[4/] The local evacuation order should be issued according to the recommended evacuation order times in this guide.

[4/]The composition of the executive and control groups is described in Chapter VII, Local Coordinative Mechanism.

CHAPTER VI

REGIONAL COORDINATIVE MECHANISM

Regional Evacuation Scenarios

For purpose of this report, "regional" is defined as affecting more than one county. Accepting this definition, the hurricane is definitely a regional event. This is not only because its hazards can affect a relatively large area, but also due to the error in prediction as to where the hurricane will strike, or make its closest point of approach (CPA) during the hurricane warning period, typically 12 to 24 hours before CPA. It is possible that up to a 250-mile "warning area" along the coast may occur during the warning period due to this error in prediction. Therefore, it is possible that, for example, both the Withlacoochee and the Tampa Bay regions may fall under this "warning area" and, hence, have to be evacuated.

It should be further noted that the rate of reduction of hurricane-force winds after the hurricane makes its closest point of approach is largely unpredictable. Therefore, it is assumed that the mobile-home residents in the inland counties will have to evacuate regardless of the type or intensity of the hypothetical hurricane tracks modeled in the SPLASH computer model, should an evacuation order be issued for the inland counties.

Based upon the above information, three regional evacuation scenarios have been designated for purposes of this report. They are as follows:

- Regional Scenario A: includes all of the residents within the evacuation zones associated with Vulnerability Level 'A' in the coastal counties, the mobile-home residents in the remainder of the coastal counties and the mobile-home residents in the inland counties.

- Regional Scenario B: includes all of the residents within the evacuation zones associated with Vulnerability Levels A and B, the remainder of the coastal mobile-home residents and inland mobile-home residents.

- Regional Scenario C: includes all of the residents in Regional Scenario B and the number of persons entering the Withlacoochee region from the Tampa Bay region, based on the worst-case regional evacuation scenario for the Tampa Bay region.

The aforementioned scenarios do not cover all the possibilities in that it is possible that, for example, only the northern counties of Levy and Marion need be evacuated should the "warning area" be further to the north. The same applies to the southern counties of Citrus, Sumter and Hernando; should it be further to the south. It is also possible that, for example, the Tampa Bay region may be evacuated without any of the counties in the Withlacoochee region evacuated. Thus, the regional scenarios should be viewed as worst-case planning possibilities, based on currently available information.

The population-at-risk for each regional scenario is shown below:

Regional Scenario	Population-At-Risk
A	98,742
B	112,232
C	255,742

Implications for Evacuation Decision-Making

The implications of the regional evacuation scenarios for evacuation decision-making in Citrus County are primarily in regard to the possible need for additional manpower and other resources necessary to accommodate Tampa Bay evacuees.[1/] Since the public shelter capacity in most of the other counties appears to be sufficient, there should be no evacuees from other counties in the Withlacoochee region entering Citrus County.

In terms of evacuation times, there appears to be a negligible increase in time if there is a concurrent Withlacoochee and Tampa Bay evacuation. However, additional traffic manpower may be necessary to divert through traffic from U.S. 41 to I-75.

[1/]The procedures for obtaining any needed additional resources for the evacuation is addressed in the next section and in Chapter VII, Local Coordinative Mechanism.

Regional Coordination

Lead Agency

To effectively coordinate a regional response to a hurricane emergency, a lead agency must be designated to provide a linkage among the organizational participants. The lead agency must have jurisdiction over a multi-county area, and process sufficient expertise, staff and funding to effectively manage the evacuation. A reliable communication system is also crucial for the overall coordination of the evacuation.

It is proposed that the Central Florida Area Office for the Bureau of Disaster Preparedness (CEFA) located in Wildwood, be designated as the lead agency for interregional evacuation management. While other entities were considered for designation as lead agency, CEFA appears to be best qualified for terms of the criteria mentioned above. (See Figure 2.)

As the lead agency with overall responsibilities for coordination in the Withlacoochee Region, CEFA will serve as the focal point for the flow of information on hurricane warnings, evacuations and shelter openings.

Regional Entities

Organizations that will be involved at the regional level include the Florida Highway Patrol, the Red Cross and the Health and Rehabilitative Services Department. The FHP maintains traffic control and maintains the progress of the evacuation. Continuous communication with the regional EOC will provide up-to-the-minute information on the evacuation and thereby improved decision-making during the emergency. The Red Cross will be involved at the regional level in the opening and staffing of shelters. The regional office of the Red Cross would assist in areas without a local Red Cross Chapter. The State Department of HRS provides manpower assistance to the Red Cross should insufficient personnel be available for staffing of hurricane shelters.

Procedures for Implementation of Interregional Evacuation Plan

To be effective, the plan for interregional evacuation must contain a coordinative mechanism to establish procedures for the opening of shelters and reception sites in coordination with evacuation movements. The proposed procedures for implementation of the interregional plan are described below for each phase of the hurricane emergency.

Normal Conditions

Representatives of the participating agencies involved in the plan will meet on a regular basis to enhance ongoing coordination among the agencies and identify problems with the implementation of the plan.

This group should meet as a permanent committee, and focus on the regional aspects of hurricane planning and operations. Activities of the committee may include:

- testing of the plan
- review of the institutional arrangements for coordination
- improvement of public awareness of hurricane hazards
- exchange information on ways to improve disaster response and recovery.

Emergency Conditions

As a hurricane develops and threatens land areas, the National Hurricane Center will issue a hurricane watch twenty four to forty-eight hours before landfall. This alerts threatened areas to potential storm conditions. A hurricane warning should be issued according to the recommended evacuation order times in this report. These warnings are issued to the State Bureau of Emergency Management as well as county civil defense offices.

Post Emergency Conditions

As the hurricane hazard recedes from the region, the Area Coordinator should continue to act as the liaison between coastal and inland counties. Information on when it is safe to return to effected areas can be transmitted to the inland county civil defense offices. The Area Office should also assist where ever possible in an expedient and effective disaster recovery process.

After recovery has been completed, the interregional committee should meet to evaluate the plan as implemented and identify any problems that may have occurred.

Public Notification

During non-emergency periods, public information and education is disseminated by various agencies through news releases, news features, and radio and television programs. Such activity serves to increase awareness of emergency preparedness programs and provides the citizens with a knowledge of the basic precautions necessary during an emergency.

During emergency periods, it is necessary to provide the public with clear, concise, and timely information and instructions to the general public. It is important that one single agency in each jurisdiction be designated as the sources of public information in an emergency. This will avoid the issuance of conflicting reports and provide a continuous flow of information regarding governmental decisions, recommendations and instructions. Public notification and instructions will be issued by the civil preparedness agency within each respective jurisdiction. This information should be disseminated after consultation and coordination with the Central Florida Area Office, Bureau of Emergency Management.

While primary responsibility for public notification is conferred to the respective civil preparedness agencies, it is suggested that the procedures below be incorporated into the public notification process to improve interregional coordination. These suggestions are divided into three phases: normal, emergency, and post emergency conditions.

Normal

Public information materials developed as part of the Regional Hurricane Evacuation Plan (and prepared by the Regional Planning Council) should be disseminated to coastal and inland residents. This material will educate the public on hurricane hazards, and provide instructions based on the findings of the inland shelter study. The material will identify the sources of further information and assistance during the emergency phase.

Emergency

It is suggested that as the emergency approaches, an emergency public information officer be activated to act as the only official sources of public information for that jurisdiction. This officer should be pre-designated and in constant communication with the National Hurricane Center, surrounding EOC's and CEFA.

Evacuation and sheltering instructions on cassette tapes or radio scripts which have been prepared beforehand can be dissminated at this time. In the print media, area newspapers could print hurricane supplements which have been prepared in cooperation with the civil preparedness agency.

Post Emergency

In this phase the public information officer should continue to be the official source of public information and should receive information from various service agencies for dissemination to the public. The officer should assist State and Federal officers in local dissemination of information concerning their programs.

Personnel for Reception Centers and Shelters

Assignment and notification of personnel to emergency facilities is the responsibility of the county civil defense director. The mobilization of emergency personnel will follow the issuance of an evacuation order. Through consultation with CEFA, the civil defense director should have a good idea of the timing and scope of the evacuation in coastal areas. He may then mobilize county resources to the required level.

To ensure that shelters and reception centers are properly staffed in an emergency, it is suggested that procedures be established for assignment and notification of personnel. These procedures should be developed as part of a plan of action that is consistent with the regional plan and relevant to the needs and resources of the county.

Suggested Plan of Action

Key members of county government, the Red Cross and other agencies should meet with the civil defense director as a group to establish the roles and responsibilities of the participants. A plan of action can be devised to acquaint each member with the duties that his organization is expected to perform.

The group or committee is put on call with the issuance of the hurricane watch. Key members of the committee (those in charge of a county division for example) would meet with the civil defense officer to review plans, and determine readiness of equipment, supplies and personnel.

Several hours prior to the recommended evacuation order times, the key personnel would activate their departmental or agency emergency plans, and alert and maintain communications with personnel. As evacuations are announced, the committee would monitor the situation and respond to instructions from the civil defense officer.

Prior to the recommended evacuation order times, the EOC should be fully operational with each participant performing assigned duties and tasks. Emergency operations would be in full swing and involve several different areas:

- communication with the Red Cross for shelter openings
- broadcast of hurricane precautions
- communications with public utilities
- law enforcement: patrols, road blocks, rescues
- coordination of emergency services and needs

With the onslaught of the hurricane, activities in the affected areas are halted. The progress of the storm and emergency operations are monitored at the EOC.

After the danger has passed, post disaster operations will be initiated. A written report and evaluation should be provided to the civil defense officer.

CHAPTER VII

LOCAL COORDINATIVE MECHANISM

The following information is extracted from the Citrus County Peacetime Emergency Plan. Some revisions have been made on the plan of action, using the recommended evacuation order times.[1/] The section on shelter assignments is extracted from the technical data report.

Hurricane Preparedness Committee

Organization

A permanent Hurricane Preparedness Committee is hereby established to provide Citrus County with adequate protection to minimize death, injuries and property losses usually associated with hurricanes. This committee is to consist of an Executive Group, a Control Group and a Support Group, consisting of the following personnel:

Executive Group

Chairman, Board of County Commissioners, County Administrator, Director, County Department of Disaster Preparedness, Chairman, County Red Cross Chapter.

Control Group

Chairman, Board of County Commissioners. All County Commissioners to be members. All Mayors of Municipalities to be members. County Administrator, County Disaster Preparedness Director and County Attorney to be advisors.

[1/] It should be noted that these changes should be interpreted as recommendations and should not be construed as locally adopted evacuation times.

Support Group

A. Chairman
Director County Disaster Preparedness

B. Vice Chairman
Chief Law Enforcement Officer

C. Director
Department of Administration

D. Director
Department of Development

E. Director
Department of Public Works

F. Director
Department of Community Services

G. Chairman
Citrus County Fire Protection and Taxing District

H. Director
Citrus County Ambulance Service

I. Director
Citrus County Division of Animal Control

J. Chairman
Citrus County American Red Cross Chapter

K. Member
Citrus County Health Officer

L. Member
Citrus County Superintendent of Public Instruction

M. City Manager or Designee
City of Crystal River

N. City Manager or Designee
City of Inverness

O. Member
Representatives of Utilities and Industry

P. Managing Editor or Designee
Citrus County Chronicle (Newspaper)

Department Heads, Constitutional Officers, or the Sheriff may designate a representative. For example, the Chief Deputy, the Deputy in charge of Uniformed Deputies, or another person may be designated to participate as a Member, but must have the authority to act for the Activity he represents.

Governmental responsibility in time of disaster is, in general, the same as in normal times - the protection of life, public health and property and the maintenance and repair of public property. Disaster does not change the legal responsibilities of government, but rather increases the need for meeting them promptly and adequately under emergency conditions. The governing authority and responsibility will therefore remain in the hands of the duly elected officials of Citrus County and the Municipal officials situated therein.

This local plan is promulgated to minimize loss of life and property within the political jurisdiction of the County government and authority has been delegated to the County Disaster Preparedness Director to implement this plan. Uncommitted county resources will be made available to the various municipal jurisdictions subject to their request and direction.

Consultation will be requested by the Chairman as needed with the Governor's Office, the State Bureau of Emergency Management Director, the Meteorologist in charge of the Weather Bureau and close coordination will be maintained with Departments and activities of the State, to include the Florida National Guard through the Coordinator, Central Florida Area Emergency Management.

Situation

Citrus County is subject to severe storms and hurricanes from June through November. This plan prescribes only those actions to be taken prior to and during storms in which winds reach, or are forecast to reach, velocities in excess of 74 miles per hour.

The Disaster Preparedness headquarters is located in the basement at the County Courthouse Building located at 110 North Apopka Ave., Inverness, FL. Emergency Operating Center (EOC) capabilities have been established including emergency power.

Agency Responsibilities

Local Government

1. Develop the plans and organization from natural disaster operations to include:

   A. Issue official warnings and designated hazardous zones.
   B. Urge citizens to evacuate threatened areas.
   C. Provide means of rescue and evacuation and direct the means provided.
   D. Organize and coordinate all government departments and agencies.
   E. Develop systematic procedures to insure the rapid and accurate accumulation of disaster information and the automatic transmission of this information to the State Bureau of Emergency Management Director by the most expeditious means.
   F. Evaluate natural disaster damage to local public facilities as well as private interests.

2. Provide Emergency Community Services

   A. Police Services
   B. When disaster declared "major" by Presidential Order, temporary housing through the Federal Government.
   C. Safeguards to public health and sanitation
   D. Special police and fire protect for disaster areas
   E. Identification and care of dead, including temporary morgues
   F. Designation of hazardous buildings and areas.

3. Provide Assistance in Community Restoration

   A. Repair of sewerage, water system, streets and highways
   B. Removal of debris from public property
   C. Restoration of public transportation and communication facilities
   D. Repair of public buildings
   E. Inspection of private property for health and safety
   F. Salvage of unclaimed property

4. Provide Aid for Recovery

   A. Disaster loan program, such as those provided by SBA, Farmers Home Administration, et cetera
   B. Specialized counseling and advise, such as that provided by public health and other agencies or departments.

5. Provide Public Education to Include:

   Continually advising the public through all available news media, particularly during the hurricane season, of their responsibility to their community, family, and to themselves in natural disaster.

Red Cross Responsibility
To disaster-affected persons (Financed by Red Cross)

1. Provide emergency necessities of Life

   A. Medical, nursing, and hospital care
   B. Food
   C. Shelter
   D. Clothing

2. Render emergency services

   A. Relief communicable facilities
   B. Welfare inquiries
   C. Survey of family needs

3. Rehabilitate families

   A. Temporary maintenance
   B. Medical, nursing and hospital care
   C. Repairing and rebuilding of homes
   D. Household furnishings
   E. Occupational assistance

Advise and refer individuals and families.

Disaster Preparedness Responsibility
To all persons within jurisdiction (financed by government agencies)

1. Protect persons and property

    A. Warning of impending danger
    B. Evacuation
    C. Rescue and First Aid
    D. Maintenance of Law
    E. Fore precautions and protection
    F. Designation of hazardous buildings and areas
    G. Public health and sanitation

        1. Water safety
        2. Biologicals
        3. Control of Communicable diseases

    H. Care of the dead (Coroner's duties)
    I. Traffic Control

2. Render usual services expanded as necessary

    A. Welfare and Health
    B. Public institutions
    C. Transportation (public)
    D. Communication (public)
    E. Removal of debris from public property
    F. Salvage of unclaimed property
    G. Inspection of buildings for safety

3. Restore public property

    A. Public Buildings
    B. Sewerage systems
    C. Water systems
    D. Streets and Highways
    E. Other public projects

4. Render emergency services

    A. Transportation of disaster victims
    B. Transportation of supplies and equipment

Role Of The American Red Cross

Under the provisions of Public Law 4, approved January 5, 1905 33 Stat. 599), as amended, the Red Cross is authorized by the Congress to carry on a system of national and international relief in time of peace and to apply it in mitigating the suffering caused by fire, floods, and other great national calamities. The Red Cross charter is not only a grant of power but also an imposition of duties, and the Red Cross cannot abdicate the responsibilities placed upon it by the Federal Government.

The ability of the Red Cross to organize effective disaster relief results from the voluntary support of the American people and their active participation in personal services as in contributing funds. The Red Cross chapter serves as the community agent for disaster relief, and in cooperation with other community interest must develop a plan of preparedness for combating the effects of disaster. The plan is built on the organized effort of many volunteers and community groups and on the recognized fields of responsibility of the individual, the family, the community, and the components of the community.

Immediately following a disaster the Red Cross provides assistance to alleviate human suffering. Emergency assistance may include: 1. food, 2. clothing, 3. temporary shelter, 4. emergency first aid and medical care to supplement local medical resources, and 5. information and inquiry service.

Rehabilitation assistance may include 1. food, 2. clothing, 3. basic maintenance, 4. repair or rebuilding or owner-occupied homes, 5. household furnishings, 6. medical, 7. nursing and hospital care, and 8. supplies or equipment for occupational rehabilitation. Rehabilitation advise indicates that insurance or other assets of the company or owner are inadequate or cannot be applied for the relief of the person affected.

Each citizen has two areas of responsibility. 1. To provide for his basic needs so as not to be a burden to others. 2. To help in meeting the needs of the groups of which he is a part, his family, neighborhood, community, state and nation.

Volunteers of the local chapter are available for duty following a natural disaster. This disaster committee is not only a committee to be called upon following a Hurricane, but is ready to assist following any major natural disaster such as fire, flood, train accident, industrial accident that might affect the community.

Because the community and its services are legally defined and constituted, the normal channels for authoritive action must be recognized and support in an emergency. Deviations from the abandonment of action by constituted authorities can be expected to result in confusion and unsupported financial commitments, and even in damage and personal injuries.

Plan of Action

The Hurricane Preparedness Committee or Groups shall meet as often as need indicates. The Committee or Group shall meet at least once a year just before the beginning of the hurricane season to review the plan and to make sure each member is well acquainted with the duties his organization is expected to perform in case of an emergency.

The Executive Group shall convene every time a Hurricane Watch indicates a threat to its area of responsibility, and will remain in session or on call until the emergency or threat is ended.

Official weather forecasts will be obtained by County Disaster Preparedness from the U.S. Weather Bureau.

Steps in the evacuation process include:[1/]

STEP 4: 72 hours prior to forecast arrival
STEP 3: 36 hours prior to recommended evacuation order time
STEP 2: 24 hours prior to recommended evacuation order time
STEP 1: Recommended evacuation order time
STEP 0: The period of actual onslaught of the hurricane
STEP -1: All Clear. Submit after action reports to County Disaster Preparedness

Step 4

General increased readiness.

[1/]These timeframes are a revision of the Citrus County Peacetime Emergency Plan, using the recommended evacuation order times developed in the technical data report.

Step 3

Executive Group meets at the EOC to direct activities and review plans. All personnel of committee placed on call.

One member of the Executive Group will remain on duty at the EOC at all times with other members immediately available on call. Department heads determine readiness of equipment, facilities, supplies, and personnel. Assigns priorities to improve readiness posture.

Step 2

Activate EOC. Operations at required level. Control Group evaluates data and issues warning. Department heads will activate their plans, prepare department, municipal or county equipment, facilities and personnel to accomplish tasks as required.

Alert and maintain communications with all emergency response activities and volunteer groups.

Step 1

Fully Staff the EOC. Begin evacuation of those personnel not voluntarily complying after a determination of absolute necessity.

Survey all emergency services of mutual aid or equipment requirements to meet emergency needs.

Coordinate with Red Cross for opening shelters.

Release broadcast information to EBS system giving general hurricane precautions.

Request departments with radio on their frequency.

Public Utilities

- Florida Power Corporation
- Sumter Electric Co-operative Inc.
- Withlacoochee River Electric Coop, Inc.
- Public Gas Co.
- Empiregas Inc., of Crystal River
- Northern Propane Gas Co.
- Texgas Corporation
- Florida Telephone Corp.

Every attempt will be made to maintain service in shelters and EOC. Utilities will keep the EOC informed as to the status of service, outages and time of expected restoration.

Sheriff

Maintain law and order. Patrol settlements, trailer parks and evacuated areas to prevent looting. Deputy or Sheriff Possee member be assigned to each shelter.

Transportation

If County assets are inadequate for evacuation, carrying the injured rescue, movement of personnel, relief supplies and equipment, the National Defense Transportation Association (NDTA) will be contacted for assistance.

Highway Patrol

The Highway Patrol will set up roadblocks on all routes necessary and divert tourists and truck traffic to outside the threatened area. Information on all roads that are impassable to be relayed to the public through the EOC.

National Guard

To be activated only on the request of the Sheriff or Disaster Preparedness Director and when approved by the Governor through approved channels. If activated, their duties will be requested to support local plans.

Step 0

Accelerate operations for the protection of life. Conduct only necessary operations to protect life and property. Routine work will not be permitted.

Step -1

After the danger has ceased to exist, a report of the Departments preparations, function performed, and recommendations concerning future occurrences will be submitted in writing to the Director, Disaster Preparedness.

Traffic Control Points

Traffic control points are points along the county evacuation network used to direct traffic, resolve congestion problems and to divert traffic to other shelter destinations when the capacity of public shelters is reached.

It is recommended that the "nodes" indicated on Map 2 be used as a basis for designating traffic control points in the county. In addition, Appendix B shows the projected amount of traffic on each of the links in the evacuation network during the evacuation. This information can also be used to determine traffic control points.

Shelter Assignments

Shelter assignments refer to the assignment of vulnerable persons within each evacuation zone to a particular shelter destination in the same or another evacuation zone. The assignment of individuals to public shelter destinations is based on the results of the transportation model.

The assignment of vulnerable residents requiring public shelter to public shelter destinations follow a three-phased procedure: designation of reception centers, assignment of intra-county evacuees and assignment of intercounty evacuees.

Designation of Reception Centers. In order to prevent the unnecessary opening of public shelters and thereby conserve needed evacuation manpower, evacuees will be first assigned to a reception center. A reception center is a key primary public shelter which will serve as a control point for opening additional public shelters. One reception center will be opened in each evacuation zone which contains at least one primary public shelter. During the evacuation process, as it becomes apparent that the capacity of the reception center will be exceeded, other primary public shelters in the evacuation zone or surrounding evacuation zones can be opened through a communications network.

The criteria for the designation of reception centers are those primary public shelters in each evacuation zone which have the greatest shelter capacity and are the most feasible for use as public shelter. Reception centers and associated primary public shelters, for each coastal county are presented in table 12.

Intra-County Assignment. The goal of the intra-county shelter assignment is to minimize clearance time. As part of the transportation model, vulnerable intra-county residents were assigned to primary public shelter locations in each county.[2/]

The logic of this shelter assignment can be seen by comparing table 13 with map 2. Table 13 shows the "paths" by which the vulnerable residents of an evacuation zone proceed to their primary shelter destinations. This is represented conceptually on map 2 with evacuation zone centers, or centroids, and street or intersection locations, or nodes.

By following these paths, it can be seen that the vulnerable residents of each evacuation zone are assigned to the nearest primary shelter location until all the available primary shelters in the destination evacuation zone are utilized. If there is any overflow, the remaining evacuees are assigned to the nearest available primary public shelter.

Inter-County Assignment. In the case of both the Withlacoochee and Tampa Bay regions evacuating (Regional Scenario C), it is assumed that a certain percentage of the Tampa Bay evacuees will enter the coastal counties via U.S. 41.

Under this scenario, the first reception center nearest U.S. 41 in each coastal county shall be designated as an inter-regional control center. These centers will monitor the number of incoming intra- and inter-regional evacuees and disseminate them, first among available primary shelter capacity and then to secondary shelters, if primary shelter capacity is exceeded.

[2/] It was assumed in the assignment of intra-county evacuees that primary public shelters would be opened first. Since there is adequate primary shelter capacity for coastal county evacuees, no secondary shelters were used in the assignment.

TABLE 12

RECEPTION CENTERS AND ASSOCIATED PRIMARY SHELTERS

Citrus County

Evacuation Zone	Reception[1/] Center	Associated Primary Shelters
C8	Citrus High School	Inverness Middle School
		Inverness Primary School
		Adult Education
C9	*Floral City Elementary School	None
C10	Hernando Elementary School	None
C13	Lecanto Middle School	Lecanto Elementary School
		Oak Hill School

[1/]Asterisk indicates inter-regional reception centers.

TABLE 13

CITRUS COUNTY EVACUATION ROUTES
TO PUBLIC SHELTER

C01-C102, C113-C13 or C01-C100, C101, C102, C113-C13

C02-C103, C104, C102, C113-C13

C03-C107, C106, C105, C111, C113-C13 or C03-C109, C108, C106, C105, C104, C102, C113-C13

C04-C108, C106, C105, C111, C112, C122, C119-C08

C05-C104, C105, C111, C112, C122, C119-C08 or C05-C104, C102, C113, C111, C112, C122, C119-C08

C06-C101, C102, C113-C13

C07-C110, C112, C122, C119-C08

C08-C08

C09-C09 or C09-C121, C119-C08 or C09-C120, C119-C08

C10-C10

C11-C116, C-1

C12-C122, C119-C08 or C12-C117, C118, C119-C08

C13-C13

C14-C114, C102, C113-C13 or C14-C114, C200, C115-C13

Source: Post, Buckley, Schuh & Jernigan, Inc.

APPENDIX

APPENDIX A

CITRUS COUNTY
EVACUATION ZONE BOUNDARIES

Evacuation Zone	Zone Boundary Description
C1	South of Citrus County line; west of US 19 and Crystal River city limit; north of SR 44; east of Gulf of Mexico
C2	South of SR 44; west of ½ mile east of US 19; north of Homosassa River; and east of Gulf of Mexico
C3	South of Homosassa River; west of US 19; north of Citrus County line; east of Gulf of Mexico
C4	South of CR 490A; west of two miles east of US 19; north of Citrus County line; east of US 19
C5	South of SR 44; west of two miles east of US 19; north of CR 490A; east of ½ mile east of US 19
C6	South of Citrus County line; west of one mile east of US 19 and one mile east of Crystal River city limit; north of SR 44; east of US 19 and Crystal River city limit
C7	South of CR 490 and SR 44; west of CR 581; north of Citrus County line; east of two miles east of US 19
C8	South of Inverness city limit; west of US 41; north of CR 480; east of CR 581
C9	South of SR 44; west of Citrus County line; north of Citrus County line; east of CR 581, CR 480, and US 41
C10	South of Hernando northern town limit and Tsala Apopka Lake; west of Citrus County line; north of SR 44 and Inverness city limit; east of North Inverness Highlands western limit and Hernando western town limit

Evacuation Zone	Zone Boundary Description
C11	South of Citrus County line; west of Citrus County line; north of Hernando and Tsala Apopka Lake; east of CR 200, CR 491 and US 41
C12	South of CR 491; west of CR 200, Hernando and north Inverness Highlands; north of SR 44; east of CR 491
C13	South of SCL Railroad; west of US 41 and CR 491; north of CR 490; east of two miles east of US 19 and Crystal River
C14	South of Citrus County line; west of SCL Railroad; north of two miles north of Crystal River; east of one mile east of US 19

APPENDIX B

Citrus County
Assigned Link Volumes and V/C Ratios

Link	TOTAL LINK VOLUME				Service	VOLUME/CAPACITY RATIO			
	A	A w/tb	B	B w/tb	Volume	A	A w/tb	B	B w/tb
100-101	811	811	642	642	25900	.031	.031	.025	.025
101-102	1268	1268	1495	1495	25900	.049	.049	.058	.058
102-104	1924	1924	2502	2502	25900	.074	.074	.097	.097
103-104	2071	2071	1980	1980	10100	.205	.205	.196	.196
104-105	1772	1772	1752	1752	25900	.068	.068	.068	.068
105-106	1995	1995	2344	2344	32400	.062	.062	.072	.072
106-107	728	728	781	781	10100	.072	.072	.077	.077
106-108	1308	1308	1613	1613	25900	.051	.051	.062	.062
108-109	707	707	698	698	25900	.027	.027	.027	.027
102-114	429	429	453	453	14600	.029	.029	.031	.031
102-113	4030	4030	5184	5184	14200	.284	.284	.365	.365
105-111	2682	2682	3115	3115	14600	.184	.184	.213	.213
111-113	1766	1766	2772	2772	14600	.121	.121	.190	.190
110-112	509	509	572	572	14600	.035	.035	.039	.039
111-112	4347	4347	5867	5867	14200	.306	.306	.413	.413
112-122	4765	4765	6083	6083	14600	.326	.326	.417	.417
119-122	4551	4551	5729	5729	14200	.320	.320	.403	.403
115-117	177	177	189	189	14600	.012	.012	.013	.013
116-117	2505	2505	2871	2871	14600	.172	.172	.197	.197
117-118	2487	2487	2805	2805	14600	.170	.170	.192	.192
118-119	3000	3000	3482	3482	14200	.211	.211	.245	.245
119-120	1976	1976	2231	2231	14600	.135	.135	.153	.153
119-121	669	3233	782	3346	14200	.047	.228	.055	.236
200-115	0	0	0	0	14600	0	0	0	0
201-116	2034	2034	2271	2271	14600	.139	.139	.156	.156
202-120	2033	2033	2267	2267	14600	.139	.139	.155	.155
203-121	0	2564	0	2564	14600	0	.176	0	.176

APPENDIX C

LEGAL AUTHORITY TO ISSUE AN EVACUATION ORDER

In any hurricane evacuation, one of the most critical components of the decision-making process for local government officials is the timely issuance of the evacuation order to the endangered population. Within the State of Florida, the decision-making authority and power to order evacuation has been conferred or delegated to three different levels of government: state, county and municipal. Such emergency powers at the various levels of government are also innate responsibilities of the particular jurisdictions to safeguard the lives and property of their citizens. The Governor is empowered to issue an evacuation order; however, in the event that the Governor fails to order evacuation as early as required by local conditions, then the Board of County Commissioners may order evacuation within its physical boundaries. The same is true for a mayor of any municipality in the region. However, the evacuation order of a higher level of government is binding upon a lower level of government.

The authority to order evacuation of threatened Florida residents from an approaching hurricane is conferred to the Governor by Chapter 252.36 (5)(c) of the Florida Statutes, stating that the Governor may:

> "...direct and compel the evacuation of all or part of the population from any stricken or threatened area within the State if he deems this action necessary for the preservation of life or other disaster mitigation, response or recovery."

This power to order evacuation from an approaching hurricane conferred upon the Governor by Statutes is delegated to the governing body of each political subdivision of the State by Executive Order 80-29. The term "political subdivision" is defined under the Statute as "any County or municipality created pursuant to law." The delegation of authority empowers the chief elected official of a county or municipality to order an evacuation from any approaching storm.

The diffusion of the authority to issue an evacuation order does not create problems during a localized evacuation. However, in the case of a hurricane which threatens the coastal residents of the Withlacoochee or Tampa Bay Regions, it, by necessity, demands detailed inter-jurisdictional coordination. This is especially true in the event of the evacuation of the highly population Tampa Bay Region with its many municipal and county jurisdictions all with the power to issue an evacuation order. An evacuation order not

coordinated between municipal, and county officials can have a devastating impact upon the evacuation jurisdiction as well as surrounding jurisdictions. Prior to the evacuation order, region-wide traffic control and coordinated opening of the shelters should be established. Since a portion of the Tampa Bay evacuees will seek shelter in the Withlacoochee Region, a mechanism of coordination is needed to alert officials in the probable "host" counties of the impending evacuation. A proposed mechanism to achieve this coordination is described in Chapter VI, Regional Coordinative Mechanism.

WITHLACOOCHEE REGIONAL PLANNING COUNCIL

STAFF

James D. Mims
Executive Director

Lorene Finch
Administrative Assistant

Peggy Alexander
Finance Director

Charlotte Neupauer
Full Charge Bookkeeper

William E. Taylor
Graphics Chief

Joyce E. Cusick
Senior Planner/Community Development

Kevin Smith
Principal Planner

*Mark Sinclair
Principal Planner

Oliver Pinkston
Planning Intern

Taylor Warner
Planning Intern

Ed Isenhour
Planning Intern

William Scarff
Research Assistant/Housing Rehabilitation Specialist

Vivian A. Whittier
Research Assistant/Information Specialist

Lynn Rich
Research Assistant/Information Specialist

Glenda Roberts
Secretarial Supervisor

Kim Greene
Secretary II

Dedra Freeman
Secretary I

Tonja Edmondson
General Clerical Assistant

Doris Pullings
General Clerical Assistant

*Planner responsible for the preparation of this report.

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