TOWN OF ATLANTIC BEACH
COMPREHENSIVE BEACHFRONT MANAGEMENT PLAN

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I. INTRODUCTION

PURPOSE

The Town of Atlantic Beach submits this document to comply with the South Carolina Code of Laws, Section 48-39-350, of the South Carolina Coastal Zone Management Act, as amended 1 July 1990.

BACKGROUND

The South Carolina Coastal Council (SCCC) is a coastal zone management and permitting agency which was established in 1977 by passage of the state Coastal Zone Management Act. The council is mandated to protect the quality of South Carolina's coastal environment and to promote the economic and social improvement of the coastal zone and of the people of the state. Effective 1 July 1988, the South Carolina Code of Laws was amended to increase beach management authority in the state's coastal zone. The 1988 legislation was amended during the 1990 legislative session and made into law on 1 July 1990 (Exhibit A). This legislation will be referred to in this plan as the Beach Management Act. Among other requirements, the provisions require each coastal beachfront county and city to prepare a Local Comprehensive Beachfront Management Plan based on the SCCC's guidelines and to submit the plan for the SCCC's approval by 1 July 1991.

SCOPE

Section 48-39-350 requires the following be contained in the local comprehensive beachfront management plans:

1) Inventory of beach profile data and historic erosion rate data for each standard and inlet erosion zone.
2) Inventory of public beach access and attendant parking and a plan to enhance public access and parking.
3) Inventory of all structures seaward of setback line.
4) Inventory of turtle nesting and important habitats of the beach dune system with protection plan.

5) Conventional zoning and land-use plan.
6) Analysis of beach-erosion control alternatives, including renourishment.
7) Drainage plan for area seaward of the setback zone.
8) Postdisaster plan.
9) Forty-year retreat strategy for achieving goals of the Beach Management Act.

AUTHORITY

This beach management plan for the Town of Atlantic Beach was adopted on _____ 1991 by the town council.

SCCC APPROVAL

II. AREA PHYSICAL DESCRIPTION

The Town of Atlantic Beach occupies approximately 92 acres along the Atlantic Coast in the northeastern portion of the State of South Carolina. With approximately 1,330 feet (ft) of ocean frontage as its eastern boundary, the town is bounded on its remaining borders by the City of North Myrtle Beach (Exhibit B). The Windy Hill area is its neighbor to the south and Crescent Beach is its neighbor to the north. When these two communities, along with Cherry Grove and Ocean Drive, incorporated to form North Myrtle Beach in 1968, Atlantic Beach was already incorporated (in 1966) and chose to maintain its independence.

The town is rectangular in shape (Exhibit C) with a width of approximately 1,330 ft along the beach and at its northwest boundary landward of U.S. Highway 17. Its northeast and east boundaries are approximately 3,100 ft long. The town is laid out in a gridiron with typical lot sizes of 50 ft by 150 ft. Four streets are perpendicular to the ocean, 29th Avenue South to 32nd Avenue South, known as Tyson, Atlantic, Carolina, and Virginia Avenues, respectively. First, Second, Third, and Fourth Avenues (as well as U.S. Highway 17) run parallel to the ocean.

Presently, the town has a population of 460 permanent residents according to the last census. Only about 60 percent of the land is developed of which 65 percent is residential and 35 percent is commercial. Few buildings exist along the beachfront which is privately owned and undeveloped. An old motel in disrepair is the largest structure close to the setback line.

Changes along the shoreline of Atlantic Beach are gradual in comparison to other coastal areas in South Carolina. After Hurricane *Hugo* struck the state, a federally funded project provided for renourishment and sand scraping. The dune system is not hindered by any hard erosion-control structures, and there is little development near the dune line. Overall, the natural dynamics of the beach/dune system are allowed to perform freely. Given the small area of the town's property along the beach, actions in neighboring North Myrtle Beach will affect Atlantic Beach's shoreline.

III. HISTORICAL EROSION RATES

Atlantic Beach is a 1,330 ft stretch of beach included in approximately 45,000 ft of shoreline between Hog Inlet to the north and White Point Swash to the south (Fig. III-1). The remaining footage is within the city limits of the City of North Myrtle Beach. Any meaningful discussion of historical erosion rates must be made within this context. However, Atlantic Beach is included in studies of North Myrtle Beach as part of the southern reach between stations 5720 and 5725. Therefore, this beach management plan assumes that, in general, what is true in North Myrtle Beach studies is also true for Atlantic Beach. The major difference is that Atlantic Beach has not developed up to the dune line and has no erosion-control structures. However, the shoreline ignores municipal boundaries, and nearby development of habitable and erosion-control structures affects the small shoreline area of Atlantic Beach.

Long-term shoreline changes in the Atlantic Beach area have been gradual in comparison to many coastal areas in South Carolina. With only a small inlet to the northeast (Hog Inlet) and a swash south of Windy Hill, the shoreline forms a broad arc (part of the Grand Strand) which is in equilibrium with the principal wave approaches. A 1977 Sea Grant erosion inventory classified North Myrtle Beach as generally stable. A later study, North Myrtle Beach Shorefront Management Plan (SMP), in 1986 provided a detailed accounting of linear shore movement and volumetric sand losses since the 1950's. The SMP estimated long-term erosion rates at a low 0.4 feet per year (ft/yr) (recent 40-year trend) and volumetric losses along the recreational profile at around 0.2 cubic yards per foot per year (cy/ft/yr) (1955-1985). Exhibit D contains a general discussion by the SCCC of the natural and man-made processes which shape the beaches.

The U.S. Army Corps of Engineers (USACE) prepared two studies in 1962 and 1983 which further support the observed trends. The USACE classified 79 percent of the shoreline as "stable" and 21 percent as eroding. The worst areas were identified as Cherry Grove between 37th and 20th Avenues North and Crescent Beach between 14th and 21st Avenues South. Shoreline change rates ranged from 0.6 ft/yr to 1.5 ft/yr based on maps for 1873 to 1942, a period prior

to extensive development. The USACE estimated volumetric losses at 0.6 cy/ft/yr to 2.6 cy/ft/yr by extrapolating from linear rates.

The 1986 SMP documented short-term erosion rates from profiles, greatly exceeding the long-term erosion rates. Between September 1983 and July 1985 (1.8 years), the recreational beach zone from the foredune/seawall to -5 ft NGVD (low-tide wading depth) lost over 320,000 cy along 43,800 ft of shoreline (-4.1 cy/ft/yr). In contrast, only 262,000 cy were estimated lost for the period September 1955 to July 1985 (29.8 years). This later estimate, based on profiles, equated to -0.2 cy/ft/yr. Figure III-2 from the SMP shows the distribution of losses along the nine shoreline compartments delineated in that study. In simple terms, accretion was more common in the north and south, including Atlantic Beach, while erosion dominated over the central area. It can be seen, however, the long-term and short-term trends were variable.

One year after completion of the SMP, two northeasters occurred (2 December 1986 and 1 January 1987). The latter storm produced about 40 ft of dune retreat throughout the Grand Strand and caused over $2.5 million in property damage at North Myrtle Beach (Horry County Civil Defense Agency). Much of the damage involved seawalls and pools which collapsed from undermining and scour as storm waves penetrated further inland. Remedial action along the beach after the storms was largely confined to beach scraping and rebuilding seawalls. An analysis for the SCCC's first beach monitoring surveys (CSE, 1988) estimated erosion losses from the winter 1987 storms at -11.2 cy/ft in North Myrtle Beach. By April 1987, 7.0 cy/ft had been recovered, for a short-term loss averaging -4.2 cy/ft.

Following the first state surveys of erosion in 1986 and 1987, a new system of monuments was established in the North Myrtle Beach area (5700-5800 series) (Table III-1). At present, these total approximately 40 and are positioned in the NAD'83 coordinate system. Because the monuments are in new locations, direct comparison with earlier surveys is not possible. Based on pre-*Hugo* erosion data, the SCCC reports an official interim erosion rate of -0.4 ft/yr at each station (Exhibit E-1).

BASELINES AND SETBACK LINES

The Beach Management Act (BMA) prescribes methodology for establishing baselines and setback lines for the purposes of enforcing state law. Interim lines were set in July 1988 based on the 1986 SMP. As of this writing (May 1991), the SCCC has proposed updated baselines and setback lines using a beach survey from September 1988. The analysis for the proposed SCCC lines is given in Exhibit E-1. As part of the present plan, CSE analyzed October 1990 beach data and, applying the methodology prescribed by the BMA, computed revised baseline positions (offsets) for each SCCC monument. A comparison of all lines is given in Table III-2. In general, differences between the lines are small, indicating relatively little change in beach condition between 1986 and October 1990. Surveys from October 1990 support seaward movement of the SCCC lines. However, because little time has passed since *Hugo* and nourishment, it is considered premature to use these data.

HURRICANE *Hugo*

The most recent event of concern is Hurricane *Hugo* (21 September 1989) and the emergency response. *Hugo* caused unprecedented damage and extensive beach erosion north of Charleston with upwards of 75 ft of erosion in the area of Atlantic Beach (Fig. III-3). Volumetric losses exceeded 1.1 million cy (26 cy/ft) along the recreational beach (to -5 ft NGVD) (Fig. III-4).

Soon after the storm, the Federal Emergency Management Administration (FEMA) designated 7,200 ft of shoreline, which did not include Atlantic Beach, for emergency protection. FEMA approved construction of dunes at an elevation of +9 ft NGVD, a height corresponding to the five-year return period water level. The state approved a similar emergency measure for remaining sections of the Town of Atlantic Beach. The purpose of the emergency dune was to protect remaining structures from further damage given the highly eroded condition of the beach. Construction was by means of bulldozers and pan earthmovers using sand from the intertidal beach. The emergency dunes were completed by mid October 1989 (Kana et al., 1991). By December 1989, about 225,000 cy had returned to the beach through profile recovery, a natural process whereby sand deposited

offshore during storms gradually migrates back to the beach. However, the extent of the sand loss and deficit condition of certain areas of the beach before *Hugo* suggested large-scale remedial measures would be needed to build a viable beach before the next tourist season.

Subsequent to the emergency dune building, the state and federal government approved a plan for emergency nourishment in the most critically eroded sections. The plan was implemented between December 1989 and March 1990. The borrow source was accreted shoals in Hog Inlet north of the development. The combination of nourishment and natural recovery replaced almost 90 percent of the sand lost during *Hugo*. Postproject surveys indicated the North Myrtle Beach area regained all but 124,000 cy of sand lost during *Hugo* by October 1990 (Figs. III-5 to III-7; Table III-3). Emergency nourishment contributed about 40 percent and natural recovery produced the remainder. The short-term volumetric losses for the period March 1989 to October 1990 averaged less than 2.0 cy/ft/yr. If the emergency nourishment project had not been completed, the losses would have averaged around 7.8 cy/ft/yr. Rapid recovery has been beneficial for the community and tourism. Still, a large sand deficit remains.

While overall, North Myrtle Beach has recovered well following *Hugo*, the rate of recovery has been slower along Atlantic Beach. SCCC stations 5720 (33rd Avenue South) and 5730 (27th Avenue South) had a deficit of 5.9 cy/ft to 18.2 cy/ft in October 1990, compared to the March 1989 (pre-*Hugo*) beach survey. Most of this loss is believed to be caused by the loss of the foredune. In comparison with other areas of North Myrtle Beach, Atlantic Beach has a major sand deficit. Fortunately, no property is imminently threatened given the wider setbacks for development.

As in the past, certain sections of the North Myrtle Beach area tend to experience more erosion than others as shoreline dynamics change over the short term. The net long-term effect of *Hugo* and the winter 1987 storms on North Myrtle Beach's sand budget will not be known for a number of years until additional surveys become available. However, the condition of the beach at present can be documented by means of sand volumes and comparisons between monitoring stations and the estimated ideal profile volume for the city. Table III-3

presents the beach profile conditions from the most recent survey (October 1990), indicating unit volumes from the foredune/ seawall to low-tide wading depth in comparison with an ideal volume of 96 cy/ft (SCCC). Exhibit E-2 contains a set of comparative profiles for the period March 1988 to October 1990. Irrespective of erosion rates, these data show a remaining deficit of sand along North Myrtle Beach and Atlantic Beach. For the beach to remain viable for recreation, this deficit must be replaced and adequate sand added to account for long-term erosion losses.

SUMMARY

The condition of the 1991 beach in North Myrtle Beach is generally similar to pre-*Hugo* conditions. Because of natural recovery combined with emergency nourishment, about 90 percent of the volumetric losses sustained during the hurricane have been restored. This supports the estimate of low erosion rates over the long term.* However, along Atlantic Beach, because of high losses in the foredune, the beach profile has a large deficit [estimated at greater than 10 cy/ft (±15,000 cy)] compared to pre-*Hugo* conditions.

While the beach overall has recovered well since *Hugo*, dunes remain in the incipient stage with little or no relief along the backshore. This is particularly noticeable along Atlantic Beach where healthy dunes existed before *Hugo*. Limited recovery of dunes to date leaves the shoreline more exposed and increases the vulnerability of Atlantic Beach's oceanfront development. Remedial and long-range measures to deal with beach erosion are outlined in Section IV under Beach Erosion Control Plan Alternatives.

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*FOOTNOTE 1. The official erosion rate for Atlantic Beach is 0.4 ft/yr (SCCC). This is based on long-term trends from the 1950's to 1980's (CSE, 1986). Storms such as *Hugo* and the winter 1987 northeasters produce higher rates over the short term, but the net effect after beach recovery is much less. The Beach Management Act of 1990 prescribes setbacks based on long-term erosion rates. The SCCC will periodically review and update long-term rates at which time the net effect from *Hugo*, recent storms, and beach nourishment will be factored into the rate.

TABLE III-1. List of surveys available at North Myrtle Beach for the years 1988 to 1990 and used in the historical erosion analysis. December 1989 and April 1990 surveys completed by CSE; all other surveys completed by USC Coastal Carolina. ["B" denotes replaced monuments. *Monument destroyed or survey error preventing comparison.]

Reach	Mar'88	Mar'89	Oct'89	Dec'89	Apr'90	Oct'90
Southern						5700
	5705	5705	5705	5705	5705	5705
	5715	5715	5715	5715	5715	5715
	5720	5720	5720	5720	5720	5720
		5725	5725	5725	5725	*
Phase II-B	5730	5730	5730	5730	5730	5730
		5735	5735	5735	5735	5735
	5740	5740	5740	5740	5740	5740
		5745	5745	5745	5745	5745
	5750	5750	5750	5750	5750	5750
		5755	5755	5755	5755	5755
	5760	5760	5760	5760	5760	5760
	5770	5770	5770	5770	5770	5770
		5775	5775	5775	5775	5775
	5780	5780		5780	5780	5780
		5785	5785	5785	5785	5785
Central	5790	5790	5790	5790	5790	5790
	5795	5795	5795	5795	5795	5795
		5798	5798	5798	5798	5798
	5800	5800		5800	5800	5800
		5803	5803	5803	5803	5803
	5805	5805	5805	5805	5805	5805
	5815	5815	5815	5815	5815	*
		5818	5818	5818	5818	5818
Phase I	5820	5820	5820	5820	5820	5820
		5825	5825	5825	5825	5825
	5830	5830		5830	5830	*
		5835	5835	5835	5835	*
	5840	5840	5840	5840	5840	5840
					5845	5845B
	5850	5850	5850	5850	5850	5850
					5855	5855B
Phase II-A	5860	5860		5860	5860	5860B
		5865	5865	5865	5865	5865
	5870	5870	5870	5870	5870	5870
			5875	5875	5875	5875
Northern	5880	5880	5880	5880	5880	5880
		5885	5885	5885	5885	5885
	5890	5890	5890	5890	5890	5890
		5895	5895	5895	5895	5895
Totals	**22**	**36**	**33**	**37**	**39**	**36**

TABLE III-2. North Myrtle Beach nourishment baseline calculations. The ideal dune crest is computed at 18 ft landward of the point at which the ideal volume is computed. Ideal volume is constant at 96 cy/ft. City ordinance results and all asterisked (*) values were determined graphically. (+) Seaward. (-) Landward. [Source: Coastal Science & Engineering, Inc., May 1991]

KEY: LH = large hotel/resort/condominiums SM = small hotel SW = seawall
MF = multifamily/small condominiums SF = single family ND = no data

Station	Locality	SCCC Baseline Fall'88 Survey	City Ordinance 1986 Survey	Recomputed Baseline Oct'90 Survey	Difference 1990 vs		SCCC Versus City	Notes	
					SCCC	City		Building Type	1990 Dune Crest
5700	47S	155*	144	159	+4*	+15	+11	LH	@ 193 ft
5705	45S	181	179	173	-8	-6	+2	LH	No
5715	39S	148	164	153	+5	-11	-16	MF/SM	@ 182 ft
5720	33S	166	189	176	+10	-13	-23	MF/SM	No
5730	27S	262	238	238	-24	0	+24	Holiday Inn	No
5735	23S	212*	205	204	-8	-1	+7	LH	No
5740	20S	187	189	191	+4	+2	-2	LH	No
5745	18S	195*	185	196	+1*	+11	+10	LH	No
5750	17S	162	162	166	+4	+4	0	LH	No
5755	15S	178*	178	178	0	0	0	SM	No
5760	14S	146	175	158	+12	-17	-29	LH	No
5770	11S	189	211	203	+14*	-8	-22	SF	@ 220 ft
5775	10S	201*	213	207	+6*	-6	-12	MF	@ 221 ft
5780	8S	163	178	176	+13	-2	-15	SF	@ 183 ft
5785	7S	230*	244	248	+18	+4	-14	SM	No
5790	5S	257	257	257	0	0	0	SM	No

TABLE III-2 (continued). North Myrtle Beach nourishment baseline calculations. The ideal dune crest is computed at 18 ft landward of the point at which the ideal volume is computed. Ideal volume is constant at 96 cy/ft. City ordinance results and all asterisked (*) values were determined graphically. (+) Seaward. (-) Landward. [Source: Coastal Science & Engineering, Inc., May 1991]

KEY: LH = large hotel/resort/condominiums SM = small hotel SW = seawall
MF = multifamily/small condominiums SF = single family ND = no data

Station	Locality	SCCC Baseline Fall'88 Survey	City Ordinance 1986 Survey	Recomputed Baseline Oct'90 Survey	Difference 1990 vs		SCCC Versus City	Notes	
					SCCC	City		Building Type	1990 Dune Crest
5795	2S	222	232	228	+6	-4	-10	LH	@ 201 ft
5798	1N	256*	265	268	+12	+3	-9	LH	@ 263 ft
5800	3N	321	321	307	-14	-14	0	LH	@ 330 ft
5803	5N	298*	322	296	-2*	-26	-24	LH/SF	@ 280 ft
5805	7N	273	320	286	+13	-34	-47	SF	@ 290 ft
5810	9N	261*	306	275	+14	-31	-47	SF	@ 252 ft
5815	11N	311	343	ND	ND	ND	-32	SF	ND
5818	14N	271*	281	290	+19	+9	-10	SF	@ 247 ft
5820	17N	311	315	324	+13	+9	-4	SF	@ 325 ft
5825	19N	264*	273	285	+21	+12	-9	LH	No
5830	20N	159	179	ND	ND	ND	-20	SM	ND
5835	SEA	55*	101	ND	ND	ND	-46	SM	ND
5840	26N	20	85	85	+65	0	-65	MF	SW
5845	30N	+11	67	43	+32	-24	-56	MF	SW
5850	32N	64	104	82	+18	-22	-40	SF	SW
5855	37N	58*	112	103	+45	-9	-54	SF	@ 108 ft
5860	42N	107	107	123	+16	+16	0	SF	@ 107 ft

TABLE III-2 (continued). North Myrtle Beach nourishment baseline calculations. The ideal dune crest is computed at 18 ft landward of the point at which the ideal volume is computed. Ideal volume is constant at 96 cy/ft. City ordinance results and all asterisked (*) values were determined graphically. (+) Seaward. (-) Landward. [Source: Coastal Science & Engineering, Inc., May 1991]

KEY: LH = large hotel/resort/condominiums SM = small hotel SW = seawall
MF = multifamily/small condominiums SF = single family ND = no data

Station	Locality	SCCC Baseline Fall'88 Survey	City Ordinance 1986 Survey	Recomputed Baseline Oct'90 Survey	Difference 1990 vs		SCCC Versus City	Notes	
					SCCC	City		Building Type	1990 Dune Crest
5865	45N	129*	124	141	+12	+17	+5	MF	No
5870	48N	107	118	112	+5	-6	-11	MF	@ 117 ft
5875	51N	106*	102	94	-12	-8	+4	SF/MF	No
5880	54N	158	148	164	+6	+16	+10	MF	SW
5885	57N	205*	205	173	-32	-32	0	MF	@ 203 ft
5890	59N	182	224	151	-31	-73	-42	MF	No
5895	62N	167*	ND	141	-26	ND	ND	MF	No
				Averages	+8.3	-7.3	-15.7		

NOTE: n = 40 (average of adjacent stations assumed where ND)

TABLE III-3. March 1989 to October 1990 beach volume changes along the recreational beach from the dune/seawall to low-tide wading depth (+9 to -5 ft NGVD). Beach volume calculations begin at the indicated distance seaward of SCCC monuments. Phases refer to principal nourishment areas after Hurricane *Hugo*. [Minus sign (-) denotes erosion. E denotes estimate.]

Station	Reach (ft)	Volume Begins At (ft)	+9 to -5 Unit Volume (cy/ft)					+9 to -5 Change	
			Sep '88	Mar '89	Dec '89	Apr '90	Oct '90	Unit Volume (cy/ft)	3'89→10'90 Volume (cy)
SOUTHERN									
5700	1,500	205	85.5	79.3	67.3	95.4	79.8	+0.5	750
5705	1,518	165	113.4	111.5	69.9	76.4	78.8	-32.7	-49,639
5715	1,687	182	88.6	85.5	79.5	81.4	90.1	4.6	7,760
5720	2,129	205	93.1	95.1	87.4	86.6	89.2	-5.9	-12,561
PHASE II-B									
5730	1,828	260	119.0	112.1	90.8	97.7	93.9	-18.2	-33,270
5735	1,162	237	ND	83.7	62.9	77.2	86.0	2.3	2,673
5740	965	220	88.8	84.0	68.2	86.1	89.7	5.7	5,500
5745	945	239	ND	74.0	62.7	67.7	80.0	6.0	5,670
5750	1,129	212	77.4	76.8	62.0	72.3	79.0	2.2	2,484
5755	1,094	200	ND	93.1	77.6	86.9	93.8	0.7	766
5760	1,056	165	103.1	103.3	79.0	93.9	101.0	-2.3	-2,429
5770	360	217	100.4	101.4	78.9	95.3	98.0	-3.4	-2,924
5775	859	212	ND	106.6	86.4	102.2	102.2	-4.4	-3,780
5780	1,128	203	95.1	92.6	71.8	80.8	91.2	-1.4	-1,579
5785	1,085	267	ND	89.3	65.4	93.9	95.5	6.2	6,727
CENTRAL									
5790	1,179	270	97.0	99.9	71.1	81.0	98.2	-1.7	-2,004
5795	1,153	231	103.4	107.7	85.5	95.3	103.3	-4.4	-5,073
5798	963	286	ND	101.1	82.4	89.0	95.8	-5.3	-5,104
5800	816	350	110.6	111.8	70.6	80.6	80.4	-31.4	-25,622
5803	787	310	ND	105.0	83.2	93.9	97.7	-7.3	-5,745
5805	1,779	303	109.1	109.1	79.3	88.5	96.2	-12.9	-22,049
5818	1,814	295	ND	107.8	83.2	95.6	102.1	-5.7	-10,340
PHASE I									
5820	1,104	342	103.3	98.2	75.1	92.3	95.8	-2.4	-2,650
5825	1,900	302	ND	86.6	63.6	85.3	96.5	9.9	18,810
5840	1,847	141	55.1	53.8	42.9	68.5	73.7	19.9	36,755
5845	749	125	ND	51.6	ND	ND	60.6	9.0	6,741
5850	886	167	52.8	52.5	52.2	63.8	59.2	6.7	5,936
5855	1,228	127	ND	82.5	ND	79.9	92.5	10.0	12,280
PHASE II-A									
5860	1,373	128	96.1	92.9	79.8	94.3	102.4	9.5	13,043
5865	1,237	155	ND	93.5	75.1	88.4	97.8	4.3	5,319
5870	902	126	94.3	100.7	86.6	91.4	97.8	-2.9	2,616
5875	891	121	92.1	ND	79.9	88.8	91.1	-2.9	2,584
NORTHERN									
5880	1,049	189	89.7	84.5	74.3	89.8	91.5	+7.0	+7,343
5885	1,271	203	ND	105.8	81.5	87.9	90.1	-15.7	-19,955
5890	969	168	111.4	114.1	100.8	97.7	96.2	-17.9	-17,345
5895	1,016	134	ND	148.9	119.4	117.7	103.8	-45.1	-45,821
TOTAL	43,858								-124,133 cy
								(Average)	-2.8 cy/ft

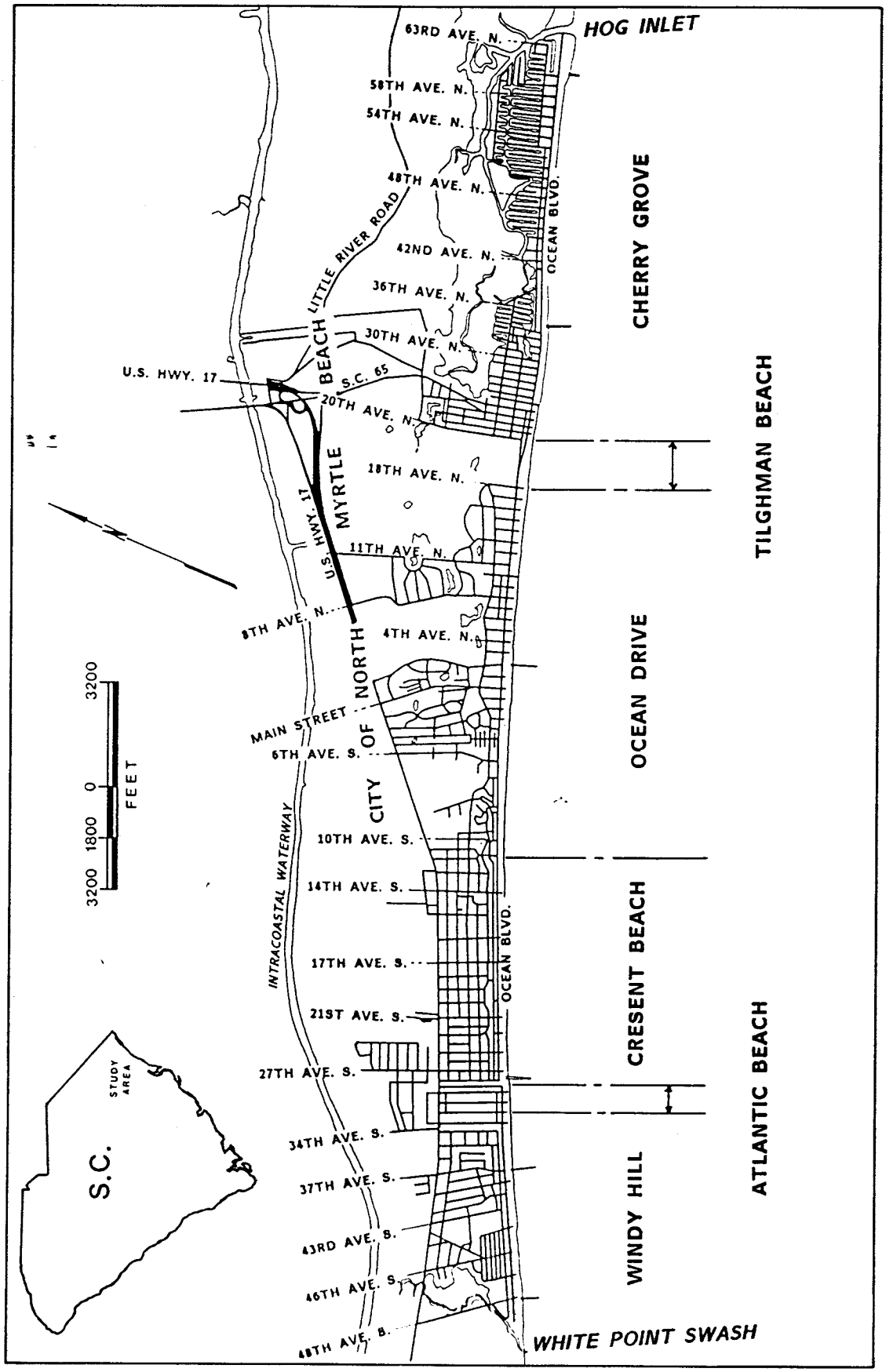


FIGURE III-1. Location map of the Atlantic Beach, South Carolina.

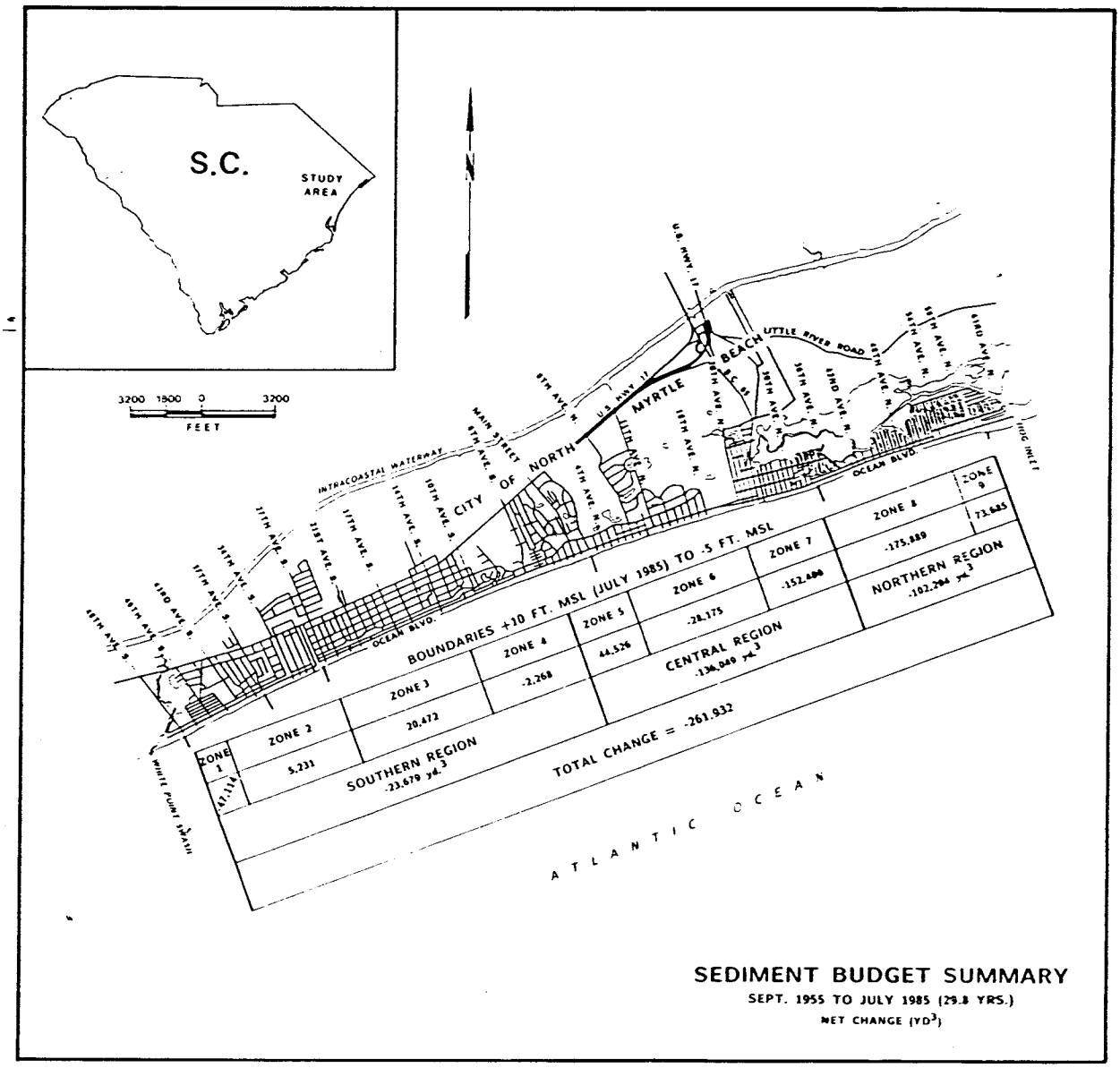


FIGURE III-2. Estimated, long-term sediment budget for North Myrtle Beach, applying an adjustment in seasonal trends as discussed in the 1987 shorefront management plan. This result is consistent with results for nearby Myrtle Beach during a comparable time period.

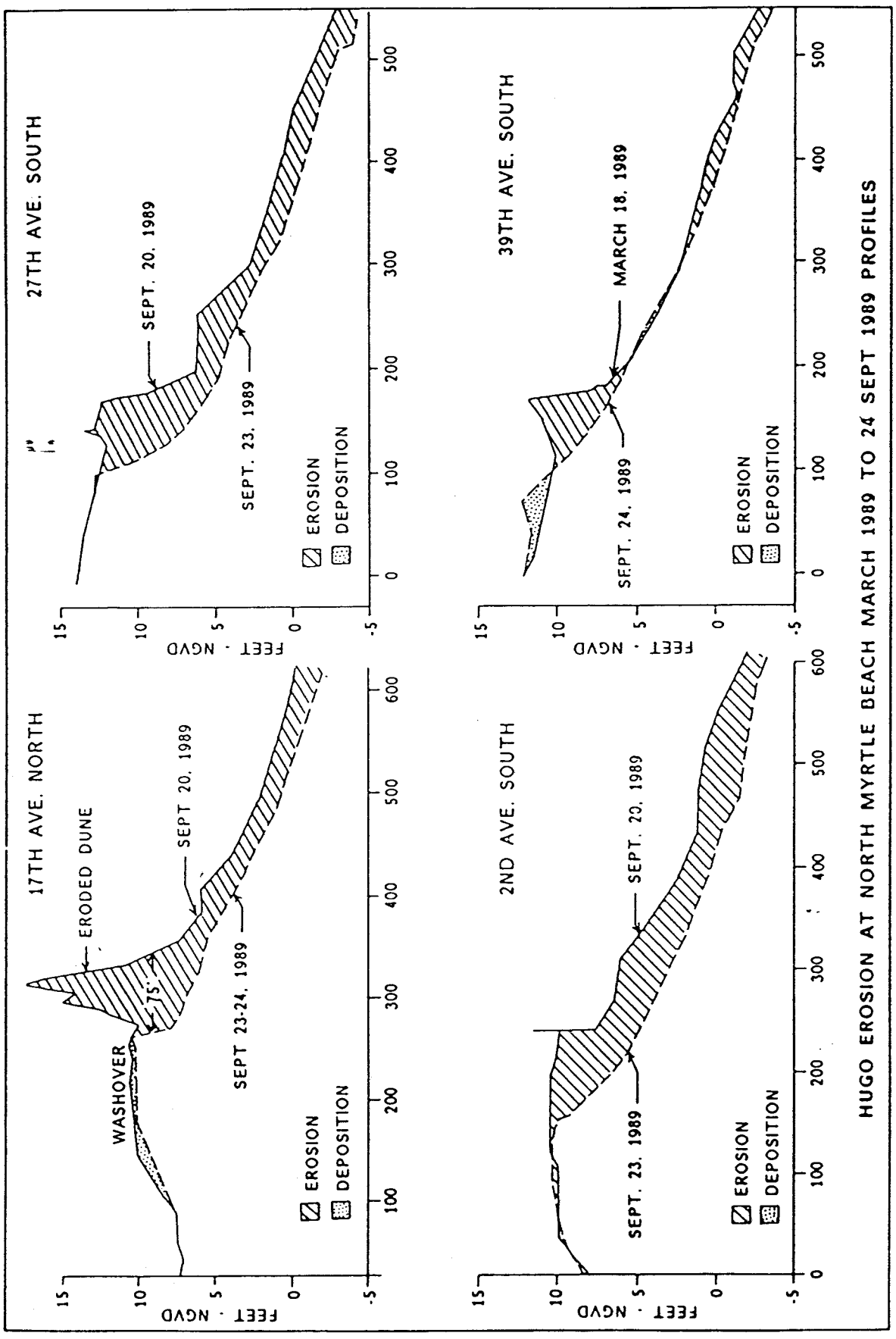


FIGURE III-3. Erosion caused by Hurricane *Hugo*, North Myrtle Beach, South Carolina. [Source: Nelson, 1989]

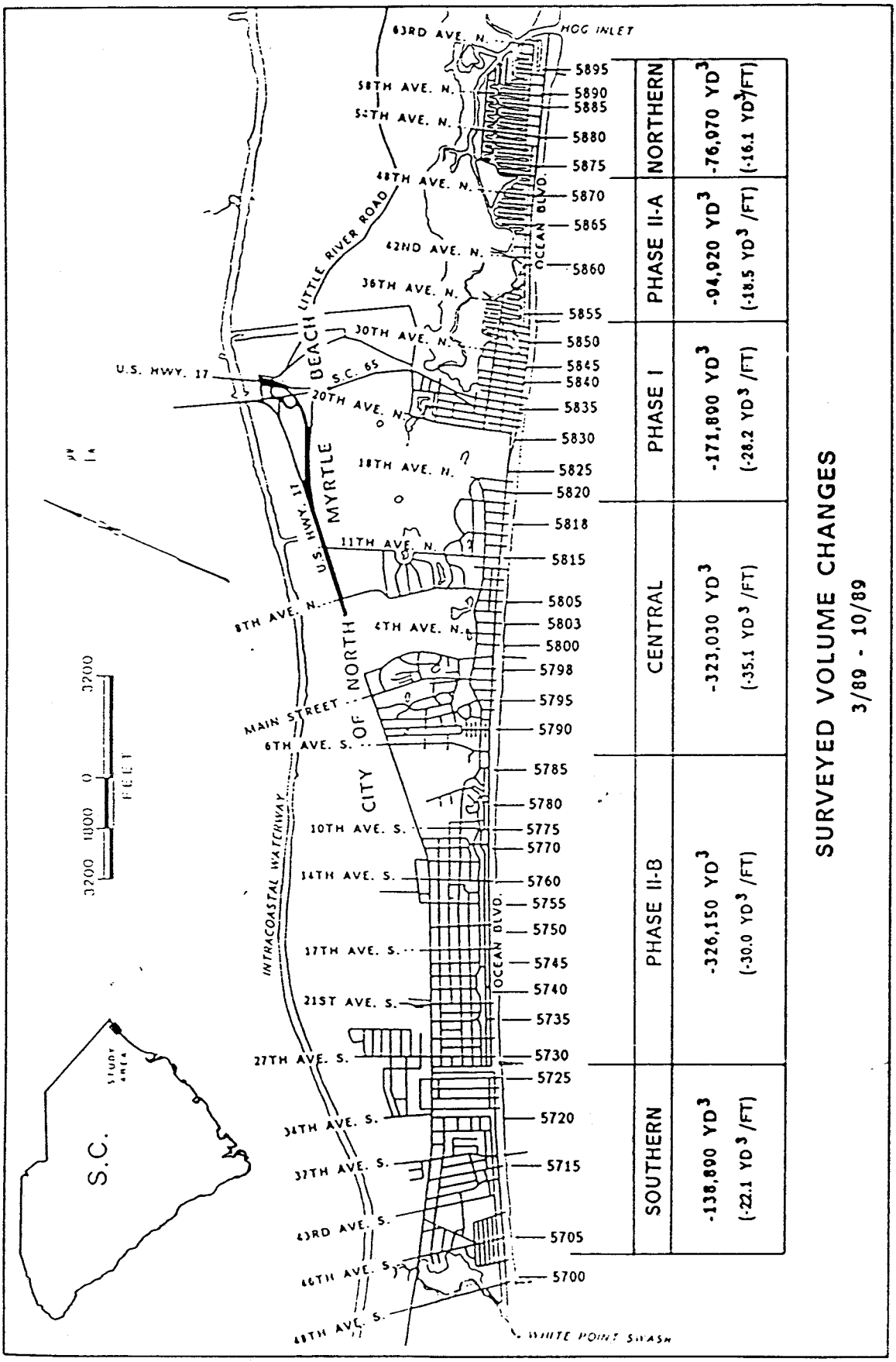
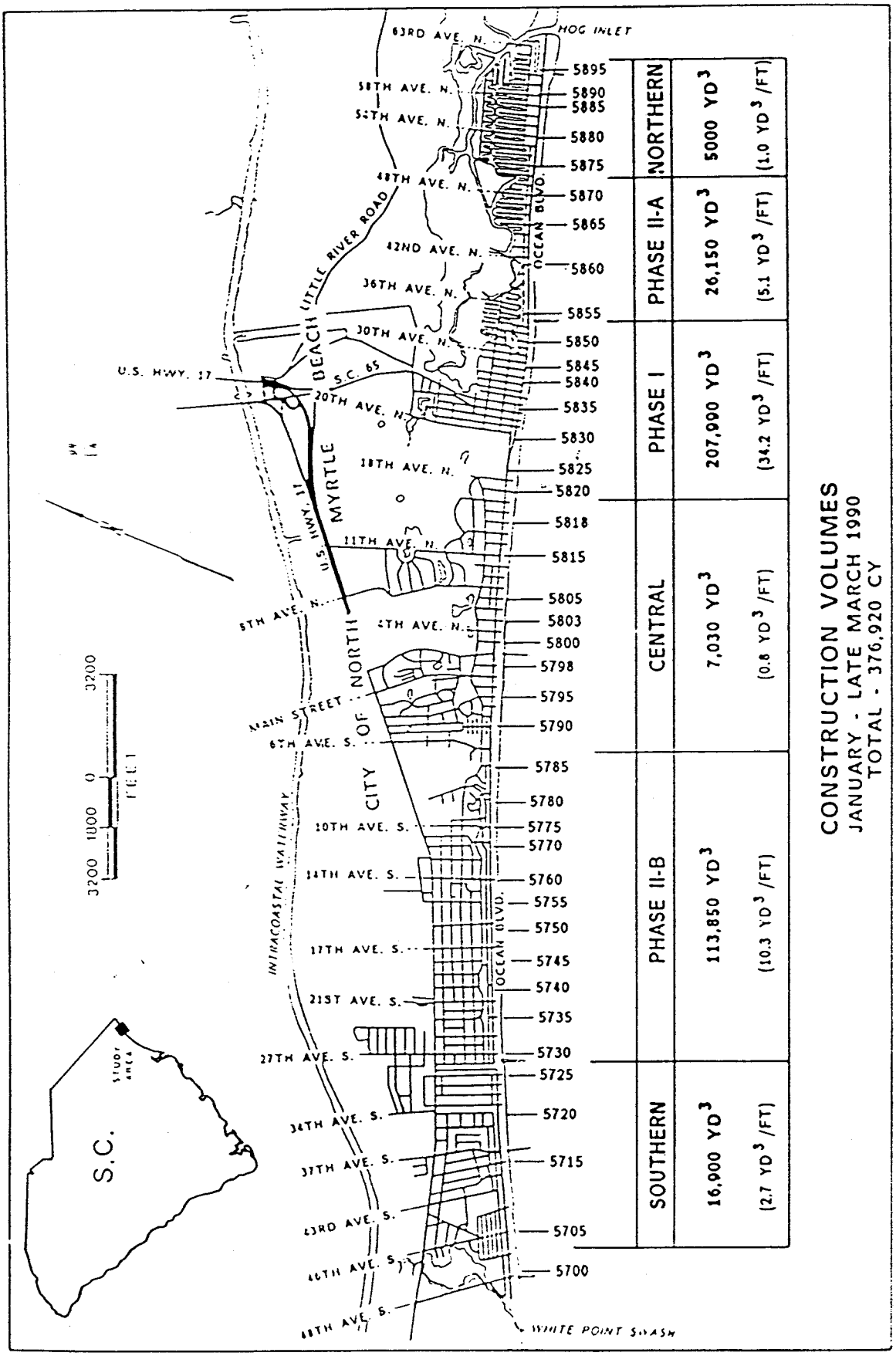


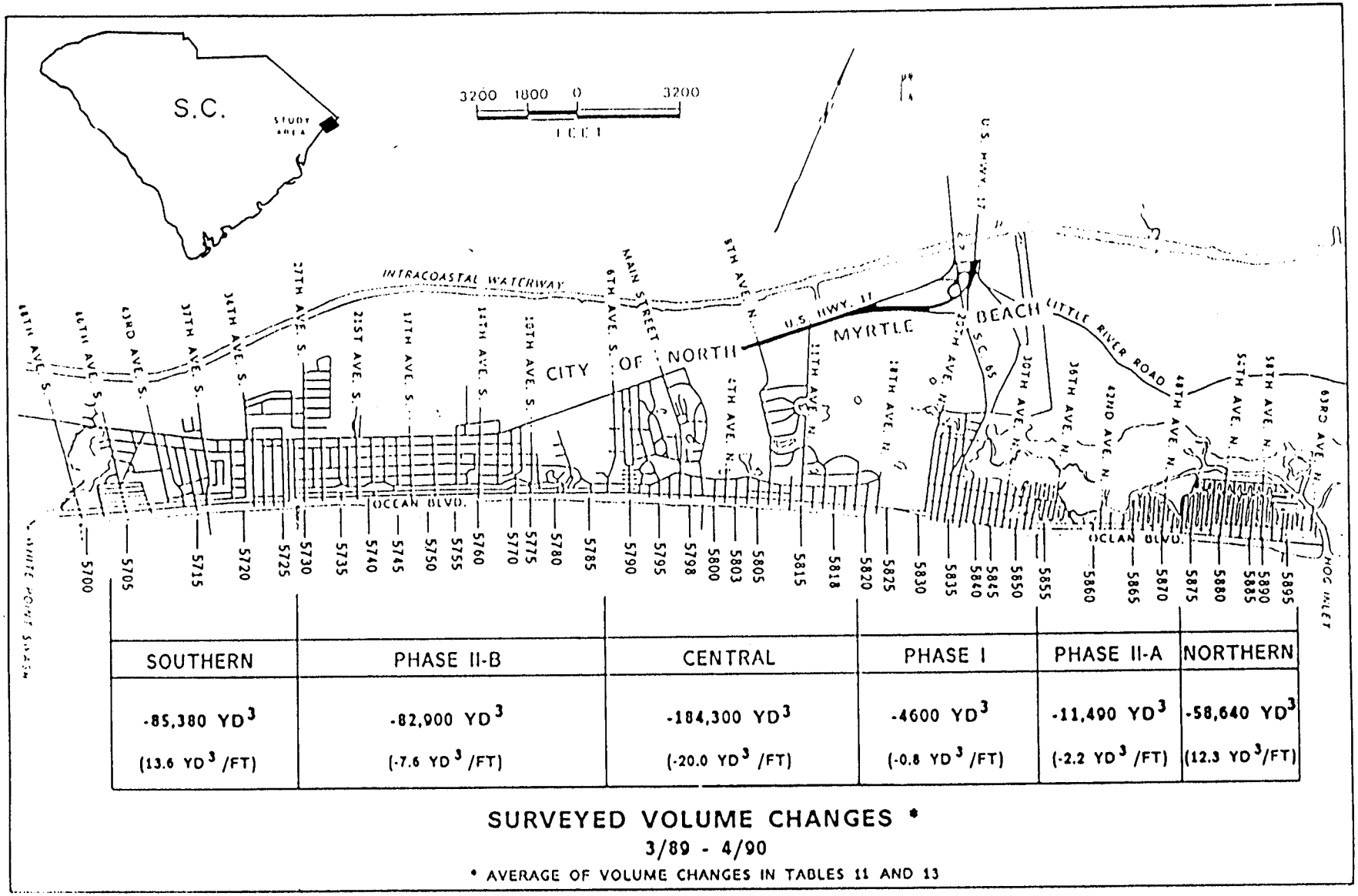
FIGURE III-4. Changes in sand volume by reach along North Myrtle Beach for the period March to October 1989, encompassing Hurricane *Hugo*. Survey limits are +10.0 ft to -5.0 ft NGVD, coinciding with the primary recreational zone of the beach. Losses totaled 1,131,850 cy or about 26 cy/ft. Phases refer to reaches nourished with emergency fill between December 1989 and February 1990. [Source: CSE, 1990]



NORTHERN	PHASE II-A	CENTRAL	PHASE I	PHASE II-B	SOUTHERN
5000 YD^3	26,150 YD^3	7,030 YD^3	207,900 YD^3	113,850 YD^3	16,900 YD^3
(1.0 YD^3/FT)	(5.1 YD^3/FT)	(0.8 YD^3/FT)	(34.2 YD^3/FT)	(10.3 YD^3/FT)	(2.7 YD^3/FT)

CONSTRUCTION VOLUMES
JANUARY - LATE MARCH 1990
TOTAL - 376,920 CY

FIGURE III-5. North Myrtle Beach emergency nourishment volumes. [Source: CSE, 1990]



SOUTHERN	PHASE II-B	CENTRAL	PHASE I	PHASE II-A	NORTHERN
-85,380 YD^3	-82,900 YD^3	-184,300 YD^3	-4600 YD^3	-11,490 YD^3	-58,640 YD^3
(13.6 YD^3/FT)	(-7.6 YD^3/FT)	(-20.0 YD^3/FT)	(-0.8 YD^3/FT)	(-2.2 YD^3/FT)	(12.3 YD^3/FT)

SURVEYED VOLUME CHANGES *

3/89 - 4/90

* AVERAGE OF VOLUME CHANGES IN TABLES 11 AND 13

FIGURE III-6. Changes in sand volume by reach along North Myrtle Beach for the period March 1989 (pre-*Hugo*) to April 1990 (post-nourishment). Survey limits are +10.0 ft to -5.0 ft NGVD, coinciding with the primary recreational zone of the beach. The results show a net gain of over 700,000 cy compared with conditions immediately after *Hugo*. However, a deficit of over 425,000 cy remained in April 1990 compared with March 1989 conditions. Continued natural recovery during the summer of 1990 reduced the deficit to approximately 124,000 cy (approx. 2.9 cy/ft, see Fig. III-7). [Source: CSE, 1990]

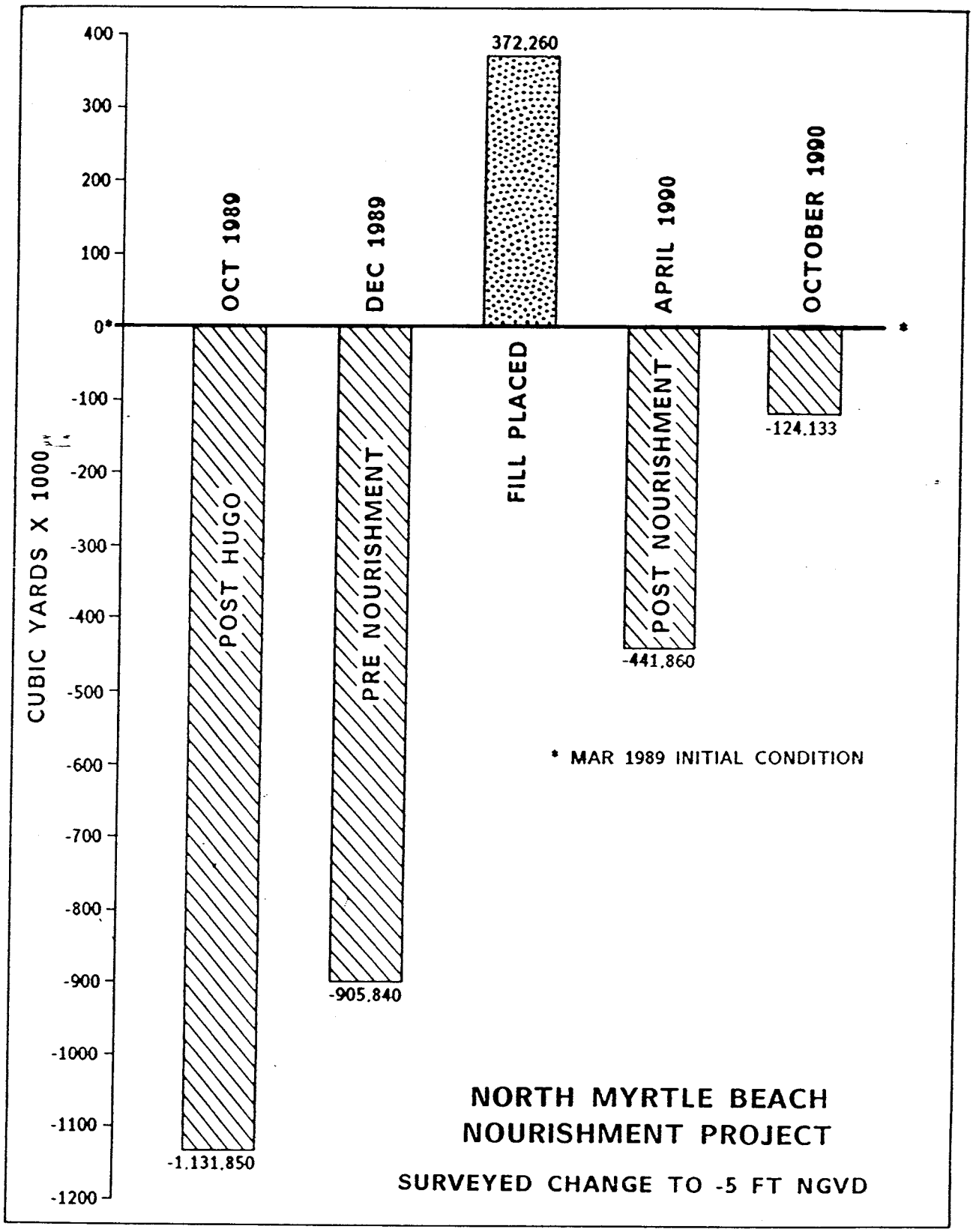


FIGURE III-7. Sand volume changes following Hurricane *Hugo* and emergency nourishment compared to the March 1989 beach condition along North Myrtle Beach [from Kana et al., 1991].

IV. BEACH INVENTORY

GENERAL INFORMATION

The following inventories of structures, parking facilities, drainage systems, etc., are an integral part of the Local Comprehensive Beachfront Management Plans. An inventory provides the town and state with necessary information about existing conditions along the coast. For example, such inventories provide proof of beach accessibility to the public for purposes of distributing state beach funds equitably, as well as providing a snapshot record of structures to be used in future permitting decisions.

Orthogonals and Overlays

The SCCC provided orthophoto maps, based on 2 July 1988 photography with a scale of 1 inch equals 100 feet, depicting the State Plane Coordinate System and the setback line and baseline. Overlays of various inventories were produced on mylar for ease in viewing inventory information in relation to the information on the orthophoto maps. The overlays were created using AutoCad™ (Release 10). Orthogonal map 415, which depicts Atlantic Beach, has one AutoCad™ file containing all overlays. The file has been downloaded to a high-density (1.2 MB), five and one-quarter inch diskette and is included at the back of this plan. The file contains the following layers:

Layer	Color	Information
0	White	•Setback lines
Drainage	Cyan	•Drainage system (pipes, basins, outfalls)
Parking	Green	•Public parking lots, public/private access points
Structural	Yellow	•All structures
Zoning	Magenta	•Zone boundaries and usage (SCCC coordinates used)
Access	Blue	•Lengths of fully accessible beaches

The overlays were created by a combination of digitization and drawing from fieldwork posted on copies of the orthogonal map and are not to scale (i.e., the thickness of a line depicting a pipe is not the diameter of the pipe; the width of a

block depicting a public access point is not the actual surveyed width of the easement, etc.). The coordinate system used is the NAD'83 State Plane Coordinate System. The actual State Plane Coordinates used are shown on the zoning layer. The drawings were then rotated for plotting purposes. The degree of rotation is shown on the zoning/drainage overlays. Copies of the overlays are included at the back of this plan.

There are three sets of mylars, reproduced from plots of the overlays, which contain the following:

Set	Layers
415S	Structural
415D	Drainage, zoning, endangered species
415P	Parking, access

Note that layer 0 is not included on the mylars to allow for changing baselines and setback lines. The access layer was created as a tool for analyzing public accessibility to the beach.

Attached as Exhibit F are SCCC guidelines for complying with the beach inventory portion of the Local Comprehensive Beachfront Management Plan. The information required in these instructions, including legends, is repeated on the tabular inventories at the end of each inventory, as well as on each overlay.

STRUCTURAL INVENTORY

Introduction

In the early 1950's, the development on the coast in Atlantic Beach consisted of the Gorden Hotel and several smaller cottages. Hurricane *Hazel* (1954) destroyed many of the cottages, the hotel, and other commercial establishments. These buildings were not insured and the owners of beachfront property have never rebuilt on a large scale. When Hurricane *Hugo* hit the coast in 1989, it swept away tons of sand, making visible the cement block foundation of the old Gorden Hotel.

Inventory

The tax map parcel numbers are indicated on the overlays, as well as street addresses and hotel names. Sizes of habitable structures were determined visually as was the general condition of erosion control structures. The structural inventory is presented in tabular form in Table III-4. Structural inventory categories are as follows:

A = Habitable structures less than 5,000 square feet in area

B = Habitable structures greater than 5,000 square feet in area

C = Recreational amenities (pools, piers, etc.)

D = Parking lots

E = Ancillary buildings (gazebos, pool houses, garages, etc.)

Existing now along the beach are a motel in disrepair, the Holiday, a pavilion used for dancing and recreation, and a residential cottage, all shown on overlay 415S. A second pavilion is under construction at the end of Atlantic Avenue, well behind the setback line, and there are plans to build public restrooms across Atlantic Avenue from the new pavilion in conjunction with the SCCC. There are no existing erosion control devices in Atlantic Beach. The Holiday motel is the only building which encroaches the setback line to ±5 ft. Plans are to remove the building which is considered unsafe.

TABLE III-4. Structural inventory for Atlantic Beach, South Carolina.

STRUCTURAL INVENTORY CLASSES:
A = Habitable structures less than 5,000 square feet in area
B = Habitable structures greater than 5,000 square feet in area
C = Recreational amenities (pools, piers, etc.)
D = Parking lots
E = Ancillary buildings (gazebos, pool houses, garages, etc.)

[Occurrence of more than one of any given structure is indicated by a number in parentheses following the letter.]

STRUCTURAL LOCATION CLASSES:
1 = seaward of baseline
2 = seaward of dead zone
3 = seaward of setback line
4 = within 50 ft of setback line

EROSION CONTROL INVENTORY:
1 = functional seawalls
2 = nonfunctional seawalls
3 = functional revetments
4 = nonfunctional revetments
5 = groins/jetties

[*Community Center under construction less than 50 ft landward of the setback line.]

Parcel Number	Structural Inventory	Structure Location	Erosion Control Inventory
156-3-15-33	Vacant		
156-3-15-34	Vacant		
156-3-18-1	Vacant		
156-3-18-2	Vacant		
156-3-18-3	A	4	
156-3-18-4	Vacant		
156-3-18-5	Vacant		
156-3-18-6	Vacant		
156-3-21-1	Vacant		
156-3-21-2	Vacant		
156-3-21-3	Vacant		
156-3-21-4	Vacant		
156-3-21-5	A	*	
156-3-25-1	Vacant		
156-3-25-2	Vacant		
156-3-25-3	A	4	
156-3-25-4	Vacant		
156-3-25-5	B	4	
156-3-25-7	Vacant		
156-3-25-8	Vacant		
156-3-25-9	Vacant		

In 1988, Governor Carroll Campbell, Jr., provided a $250,000 grant to the town to commission a development and marketing package for the town. The contract was subsequently awarded to the Keenan Company, which completed the plan in 1989. The plan calls for the acquisition by the town of the property along the oceanfront as well as some property further back to allow for planned development. The proposed development takes the Beach Management Act fully into account and, in fact, provides for a public park to run the entire length of the town along the beach.

Summary

Whether the town is able to move forward with the Keenan plan or whether the situation remains as is, the existing structures adhere to the intent of the Beach Management Act and its purpose of retreat from the ideal dune crest.

LAND USE AND ZONING

Introduction

The Town of Atlantic Beach enacted a zoning ordinance in 1985 by order of the Town Council. The ordinance defines various usage districts as follows:

- R-1 – low-density development
- R-2 – medium-density development
- R-3 – high-density development
- C-1 – highway commercial
- PD – planned development

The boundaries of each district have not actually been defined in the existing ordinance. The map's one which shows existing land use as of 1979. The 1989 Keenan plan also developed an existing land use map which is included as Exhibit C.

Analysis

The 1989 Community Development Plan, prepared by the Keenan Company, provides a proposed zoning plan for the town as well as recommendations for general revisions to the existing ordinance. This current Local Comprehensive Beach Management Plan uses these recommended zoning guidelines, assuming that the town will implement them as it is able to do so. Copies of the zoning and overlay plans are included as Exhibits G and H, and the zone boundaries are shown on the planning overlay 415D.

Recommended Ordinances

The town has in place a zoning ordinance which does not define the boundaries described therein. The Keenan Company recommendations for improving the ordinance are summarized as follows:

1) Article III – provide additional definitions for terms introduced in the development, such as "pedestrian circulation" and "open air market."
2) Article IV – provide additional districts required by the redevelopment plan, such as multi-family, governmental/institutional, etc.

3) Article V. Section 512 – setback requirement from the ocean must be coordinated with the adopted Beach Management Plan.
4) Article VII – requirements for new districts addressing permitted and conditional uses, minimum lot sizes, setbacks, building heights, etc.
5) Article VIII – exceptions and modifications, review 805, 806, and 807.
6) Article IX – prohibited signs, review.

This beachfront management plan recommends these changes as well as the addition of another overlay district to the ordinance called Beachfront Park Overlay (BPO) to be bounded by the SCCC setback line on the landward side and the mean low watermark on the seaward side with the town limits making up the remaining boundaries. The purpose of the BPO district would be to enforce locally the state's guidelines for construction and reconstruction beyond the setback line and can be simply worded to that effect.

Summary

While the Town enacted a zoning ordinance in 1985, the ordinance does not sufficiently define the boundaries of the described districts. The Keenan Plan of 1989 rezones the town with the town's ultimate redevelopment in mind. While this rezoning has not been implemented, this beachfront management plan assumes that it will be and recommends an additional BPO be created to ensure compliance with the SCCC guidelines.

BEACH ACCESS AND PARKING

Introduction

The South Carolina Beach Management Act finds that the state's beach-dune system provides a natural and healthy environment for the citizens of the state and that it is in the state's best interest to protect and promote increased public access to the beaches for both out-of-state tourists and South Carolina residents. To achieve this access, the act requires the SCCC to develop guidelines for preserving and enhancing public access. The SCCC's guidelines are included in Exhibit I. This section details existing access and parking availability and provides for future enhancements to public access for the City of North Myrtle Beach.

Inventory and Analysis of Beach Access and Parking

The town has 60-ft street easements on 30th and 31st Avenues and allows public parking along these areas as shown on the overlays and in tabular form in Table III-5. Access site one with 12 available parking spaces (lots A and B) provides one-quarter mile in either direction, and access site two with 18 spaces provides the same. These access allowances easily cover the SCCC requirements for full and complete access to the beach. The Keenan Company development plan also addresses parking needs. The plan recommends the continuance of on-street parking for residents and their guests as well as the provision of ample parking spaces by major developments, including the proposed Beachfront Park.

Recommended Ordinances

Both inventoried access points provide vehicular access as well as pedestrian access. The town does not presently have an ordinance regulating traffic on the beach. Attached as Exhibit J are the SCCC's Guidelines for the Regulation of Vehicular Traffic upon the Beaches. It is recommended as part of this Local Comprehensive Beachfront Management Plan that an ordinance be drafted and enacted by the town to comply with the state's guidelines.

Summary

Given the small shoreline length of Atlantic Beach, existing parking provides full public access by the SCCC definition. Future development will continue to provide access and parking to the public. The history of the town shows its longstanding commitment to welcoming the public to its beach.

TABLE III-5. Parking and beach access inventory for Atlantic Beach, South Carolina.

SITE: Numbers represent beach access sites. Letters represent parking sites.

TYPE OF ACCESS: PA = public access point. PRP = private access point.

FACILITY: 1 = walkover structure. 2 = restrooms. 3 = showers. 4 = lifeguard station. 5 = handicapped access ramp. 6 = vehicle access ramp. 7 = trash receptacle available. 8 = lighting. 9 = sign. 10 = decks/seating. 11 = city park.

TYPE OF PARKING: 1 = on-street. 2 = private off-street lots. 3 = public off-street lots. 4 = beach transit lots (lots where shuttle service to and from the lot is provided by the local government or a contractor).

Site	Type of Access	Facilities	Width of Public Easement (ft)
1	PA	1,5,6	60
2	PA	1,5,6,2(proposed)	60

Site	Approximate Number of Spaces	Type of Parking	Distance to Access Point (ft)
A	6	1	≤200 variable
B	6	1	≤200 variable
C	6	1	≤200 variable
D	6	1	≤200 variable
E	6	1	≤200 variable

DRAINAGE INVENTORY

Introduction

This portion of the Local Beachfront Management Plan is required to identify areas of stormwater runoff on the beach. In the past, excess stormwater runoff naturally flowed downhill across sand, plants, etc., and percolated into the ground as it went. With development came streets, parking lots, and roof tops which do not absorb water as the ground does. This increased the amount of runoff. In addition, pollutants dripped and spilled onto these impervious surfaces and changed the runoff from rainwater to contaminated water. In cases of development right up to the dune line, storm water has, in some cases, been piped directly to the beach, creating the possibility of pollution and erosion. Because of so much vacant land along the shore, Atlantic Beach has not experienced these problems to any marked degree.

Analysis and Plan

The Town of Atlantic Beach has a 15-inch pipe to the beach as shown on the planning overlay 415D. This pipe is maintained by the state highway department, not by the town. The pipe is not presently functioning but is full of sand. An open canal on the northern town limits with North Myrtle Beach handles some runoff from the town and is eventually piped to the beach in North Myrtle Beach directly south of the Holiday Inn. This is also a state-maintained pipe. With 65 percent of the town undeveloped and so many vacant lots on the beach, the quantity of stormwater runoff to the beach is negligible. Stormwater runoff from any future development will be managed according to the SCCC guidelines through the permitting process.

Recommended Ordinances

The Town of Atlantic Beach does not have a local ordinance in place that addresses stormwater management. This issue is one that will be considered as the direction of development becomes more certain. Presently, any development requesting a permit from the SCCC must include a stormwater management plan

that shows compliance with the SCCC guidelines for stormwater management. It is not recommended that the town enact a local stormwater management ordinance at this time.

Summary

The Town of Atlantic Beach has very little runoff of its own due to large areas of vacant lots. It will, of course, be affected by its neighbor, North Myrtle Beach. Any development along the beach will be regulated by the SCCC guidelines for stormwater management and as development becomes more eminent, a local stormwater ordinance may be enacted.

ENDANGERED SPECIES

Introduction

The highly developed nature of the Grand Strand area means there is little critical habitat as defined by the SCCC. Conversations with staff at the SCCC and South Carolina Wildlife and Marine Resources Department's (SCWMRD) Heritage Trust have confirmed this lack of critical habitat in the Atlantic Beach area. One plant, *Sabatia kennedyana*, is recorded in North Myrtle Beach by the Heritage Trust, but not in Atlantic Beach.

Protection Plan

The Town of Atlantic Beach recognizes the importance of preserving natural estuarine land and water habitat. If the town develops according to the Keenan Plan, the entire dune section will become a protected park, with dune walkovers to preserve dune formation and vegetation. The protection and enhancement of a viable beach/dune system will provide habitat for numerous species of plants and animals.

Recommended Ordinances

Exhibits K and L are respectively the SCCC's "Guideline for Protection of Endangered Species" and "Model Beach Lighting Ordinance." These are included for present reference and perhaps future adoption, should conditions warrant.

Summary

There are no identified critical habitats or endangered species located within the Town of Atlantic Beach. However, the large tract of vacant land has allowed the beach/dune system to remain viable, and any future development will preserve this system.

BEACH EROSION CONTROL PLAN ALTERNATIVES AND ANALYSIS

The Town of Atlantic Beach does not have a history of attempting to control erosion. The lack of development on the beachfront has not provided the impetus for constructing seawalls or revetments as it has in neighboring North Myrtle Beach. Nor have nourishment projects been indicated, due to economics and relatively small reach of Atlantic Beach's shoreline.

The town's strategy of erosion control is as follows:

Yearly Survey and Inspection. SCCC survey monuments 5720, 5725, and 5730 are the closest ones on either side of Atlantic Beach. The SCCC's yearly surveys will be monitored to discover any adverse erosional trends. The beach will be inspected periodically for any problem areas.

Sand Scraping. Following Hurricane *Hazel* (1954), the northeasters of 1986-1987, Hurricane *Hugo* (1989), and other unnamed northeasters, the city, state, federal government, and private interests have scraped sand from the wet-sand beach and placed it along the back beach in an effort to protect properties. In some cases (e.g., *Hazel* and *Hugo*), washover sand has been collected from roads and adjacent property and placed back on the beach. While this is not nourishment by the true definition because it does not provide a new source of sand to the littoral zone, it has been a common practice. Sand scraping can be implemented quickly after storms and generally can be performed at a fraction of the cost of other shore-protection measures. Its success is variable, tending to work well along unarmored reaches that had a healthy sand supply and well-formed dunes before a storm.

Dune Enhancement and Revegetation. During the past decade, ad hoc efforts at dune enhancement have become organized under SCCC criteria and guidelines. The largest coordinated effort was accomplished after *Hugo*. The first phase involved construction of the emergency dune by sand scraping in October 1989. The final phase involved sprigging the new dune with American beach grass, panicum, and sea oats in March-April 1990. Success was mixed with an estimated 50 percent of the new dunes remaining viable through the 1991 winter.

Beach Nourishment. A large-scale nourishment project may be considered in conjunction with North Myrtle Beach. The economics of such projects precludes

the town's undertaking large-scale nourishment on its own. Nor would it be practical to nourish the small 1,330-ft reach by itself. Nourishment projects completed in North Myrtle Beach will provide information regarding the success of such projects in this area.

Development and Redevelopment Setbacks. Future development and redevelopment will be subject to state laws and setback lines. The beachfront lots are sufficiently deep to allow construction landward of the setback line.

V. 40-YEAR RETREAT STRATEGY

INTRODUCTION

Long-term beach erosion along Atlantic Beach has occurred at a moderately low rate well under 1 ft/yr. While storm events can produce much more erosion, the net effect is generally small and short-lived. Even after storms as large as *Hugo*, the beach has tended to regain a major portion of the sand lost. The town has no erosion control or habitable structures within the setback line. The Keenan Community Development Plan provides for a public park area beyond the setback line with dune walkovers being the only structures.

Oceanfront development along Atlantic Beach is minimal and property values are relatively high. The combination of low erosion rates and valuable oceanfront property suggests a primary strategy for future beach management should be artificial nourishment. Analyses by the USACE (1983) and SCCC (1990) place the cost of nourishment at $4 to $17 million in the North Myrtle Beach area over a period of 5-10 years. This equates to $125 to $400 per linear foot, a fraction of the present value of oceanfront property.

In keeping with the state's long-range goal of shifting development further from the oceanfront, Atlantic Beach plans a 40-year retreat strategy containing several elements:

Dune Enhancement. The prerequisite for dunes is a viable, dry-sand beach. As a final phase of the town's 40-year retreat strategy, property owners will be encouraged to improve and enhance the height and sand volume in the foredune. The long-range goal is to create dunes with sufficient volume and elevation to withstand a 50-100 year return-period storm. Dunes eroded by large storms will be repaired in coordination with efforts to rebuild the dry beach.

Small-Scale Beach Nourishment and Scraping. From time to time, localized erosion problems will develop due to shifts in the position of inlets or swashes and their effects on adjacent beaches, or from storms. Such problems will be addressed with smaller scale nourishment or emergency sand scraping projects. The degree to which these activities is required depends on the

performance of large-scale nourishment and success in relocating structures more landward.

Artificial Beach Nourishment. Areas experiencing a sand deficit as evidenced by lack of a dry-sand beach, exposed seawalls, absence of dunes, or shallow setbacks may be nourished artificially using sand from an external source. The outcome of such projects will be monitored to determine the cost-effectiveness and longevity of the fill. The primary goal of large-scale nourishment will be replacement of the sand deficit, restoration of a dry-sand beach, and restoration of dunes which would be performed in conjunction with surrounding North Myrtle Beach.

Setbacks. All new construction will be subject to the SCCC permitting process.

SUMMARY

The town considers that landward shifts of the baseline and setback line due to erosion are possible in the future. With little existing development on the beach, some landward shifting of the lines can be tolerated without threat to development, loss of tourism revenue, or loss of aesthetic values. However, should surveys document a continuing decline in beach width and volume or damages increase from storms, the town may endeavor to rebuild the beach artificially. Accelerated sea-level rise may increase erosion rates but even a four-fold increase would leave Atlantic Beach less vulnerable than other South Carolina beaches such as central Hilton Head where erosion is 5-10 times faster.

Each year, the town will review erosion rate data and sand budgets from the SCCC and other sources and determine if any change in the above strategy is warranted. Through existing ordinances and the provisions of the Beach Management Act, the city will establish what types of rebuilding will be allowed within the setback zones over a range of damages.

VI. POSTDISASTER PLAN

INTRODUCTION

While the town is characterized by a pleasing environment and pleasant weather, its geographic location and native topography make it vulnerable to hurricanes and other storms. These storms can be deadly, resulting in loss of life and property. Hurricane *Hugo* was the worst storm in the past 35 years and was comparable in intensity to Hurricane *Hazel* in 1954, the storm of record for portions of the Grand Strand.

As part of the Local Comprehensive Beachfront Management Plan, the SCCC requires each community to develop a postdisaster plan to include plans for public safety, maintenance of essential services, cleanup, emergency building ordinances, and the establishment of priorities, as well as the inspection of structures to determine damage and repairability with respect to the Beach Management Act of 1990.

Included as part of this section is the postdisaster plan for the Town of Atlantic Beach. Much of the information, particularly sources for local vendors and news agencies, is duplicated from the City of North Myrtle Beach's postdisaster plan due to the town's location within the boundaries of North Myrtle Beach.

TOWN OF ATLANTIC BEACH

POST DISASTER PLAN

Table of Contents:

I. INTRODUCTION AND AUTHORITY

I. Introduction and Authority

Being a coastal town, Atlantic Beach is at risk of experiencing the impact of a hurricane. To prepare the Town and its employees for such an event and to minimize harm to citizens, guests and property, the Town has formulated this Post Disaster Plan.

This Plan outlines the responsibilities of the Mayor, Town Council and other departments to ensure that necessary governmental functions are maintained before, during and after a hurricane strike. This Plan serves as a guideline to the officials concerned and may be altered and/or added to as circumstances dictate. This Plan is hereby adopted.

DATE: _____

AUTHORITY: _____
(mayor)

_____

_____

_____

_____

II. GLOSSARY OF TERMS

HURRICANE EMERGENCY PLAN

GLOSSARY OF TERMS:

HURRICANE WATCH: The first alert when a hurricane poses a possible, but as yet uncertain, threat to a certain coastal area. Small craft advisories are issued as part of a hurricane watch advisory.

HURRICANE WARNING: Notice that within 24 hours or less a specified coastal area may be subject to sustained winds of 74 mph or higher and/or dangerously high water or a combination of dangerously high water and exceptionally high waves, even though expected winds may be less than hurricane force.

HURRICANE CATEGORIES:

CATEGORY ONE: Winds of 74 to 95 mph. Damage primarily to shrubbery, trees, foliage, unanchored mobile homes, and possibly, poorly constructed signs--OR--Storm surge 4 or 5 feet above normal. Low-lying coastal roads inundated, minor pier damage, some small craft in exposed anchorages torn from moorings.

CATEGORY TWO: Winds of 96 to 110 mph. Considerable damage to shrubbery and tree foliage, some trees blown down. Major damage to exposed mobile homes and poorly constructed signs. Some damage to roofs, windows, and doors. No major damage to buildings. OR--Storm surge 6 to 8 feet above normal. Coastal roads and low-lying escape routes cut by rising water 2 to 4 hours before arrival of hurricane center. Considerable damage to piers. Marinas flooded and small craft in unprotected anchorages torn from moorings. Evacuation of some shoreline residences and low-lying island areas required.

CATEGORY THREE: Winds of 111 to 130 mph. Foliage torn from trees, large trees blown down. Practically all poorly constructed signs blown down and mobile homes destroyed. Some damage to roofs, windows, and doors and some structural damage to small buildings. OR--Storm surge 9 to 12 feet above normal. Serious flooding at coast and many smaller structures near coast destroyed. Larger structures battered by waves and floating debris. Low-lying escape routes cut by rising water 3 to 5 hours before hurricane center arrives. Flat terrain 5 feet or less above sea level flooded 8 miles inland or more. Evacuation of low-lying residences within several blocks of shoreline possibly required.

CATEGORY FOUR: Winds of 131 to 155 mph. Shrubs and trees blown down, all signs down. Extensive damage to roofs, windows, and doors. Complete destruction of mobile homes. OR--Storm surge 13 to 18 feet above normal. Flat terrain 10 feet or less above sea level flooded as far as 6 miles inland. Major damage to lower floors of structures near shore due to flooding and battering by waves and floating debris. Low-lying escape routes cut by rising water 3 to 5 hours before hurricane arrives. Major erosion of beaches. Massive evacuation of all residences within 500 yards of shore possibly required, and of single-story residences on low ground within 2 miles of shore.

GLOSSARY OF TERMS: cont.

CATEGORY FIVE: Winds greater than 155 mph. Shrubs and trees blown down, all signs down and complete destruction of mobile homes. Extensive shattering of glass in windows and doors and complete failure of roofs on many residences and industrial buildings. Small buildings overturned or blown away. OR--Storm surge greater than 18 feet above sea level within 500 yards of shore. Low-lying escape routes cut off by rising water 3 to 5 hours before hurricane center arrives. Massive evacuation of low-lying residential areas within 5 to 10 miles of shore possibly required.

SLOSH (Sea, Lake, and Overland Surge from Hurricanes)

The SLOSH model provides four major types of information on the effects of simulated hurricanes. They are:

1) Surface envelope of highest surges above mean sea level.
2) Time histories of surges at selected gages or grid points.
3) Computes windspeeds at selected gages or grid points; and
4) Computed wind directions at selected gages or grids.

SPLASH (Special Program to List the Amplitudes of Surges from Hurricanes).

The SPLASH model predicts the height and duration of open coastline storm surge heights created by an approaching hurricane. It assumes a generally smooth coastline and the absence of amplification of the surge by a bay or estuary. With the SPLASH model, inland routing techniques are used to delineate the inundation areas.

III. ORGANIZATIONAL RESPONSIBILITIES

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A. Mayor and Town Council

1. Declares state of emergency and gives evacuation order to Chief of Police, as appropriate.
2. Establishes policy for emergency operation of governmental functions.
3. Coordinates with contractors, state or federal emergency officials and others, for the removal of debris from the beaches and public areas. Specifies temporary storage sites for such debris.
4. Coordinates with contractors, state or federal emergency officials and others in the restoration of utilities, roads, electricity, water, sewer, etc.

B. Chief of Police

1. Carries out evacuation order by notifying residents.
2. Directs evacuation in a smooth and orderly manner.
3. Maintains the security of the Town.
4. Ensures good maintenance of Town vehicles and refuels prior to storm event.

C. City Clerk

1. Maintains and updates the Post Disaster Plan
   a. keeps current list of Town employees and their addresses and phone numbers
   b. obtains and distributes copies of publications by Horry County Civil Defense Agency and other pertinent information
   c. updates addresses and phone numbers of emergency vendors, news agencies, contractors, etc in the resource section of the Plan
2. Facilitates communications between various Town departments

D. BUILDING OFFICIAL

1. Initiates damage assessment immediately following storm.
2. Posts all buildings with applicable signs denoting condition. These signs will be color coded to allow determine condition from a safe distance.
3. Prepares preliminary damage assessment report and forwards to local Emergency Services Office Director.
4. Coordinates with SCCC or other local and federal damage assessment teams.
5. Coordinates post disaster building inspection and permit issuance, based upon criteria established by the Beach Management Act.
6. Coordinates the moving and relocation of unsafe buildings with owners.

IV. [redacted]