







Figures 264 to 279, Brigantine profile sites	283
Figures 280 to 290, Atlantic City profile sites	299
Figures 291 to 294, Ventnor City profile site	310
Figures 295 to 298, Margate City profile site	314
Figures 299 to 302, Longport profile site	318
<b>Cape May County</b>	<b>322</b>
Figure 303. Cape May County Station Locations	323
Cape May County Summary	324
Figure 304, Beach volume & Shoreline changes over 25 years for Cape May Co.	327
Figures 305 to 330, Ocean City & Corson's Inlet State Park profile sites	328
Figures 331 to 350, Upper Township (Strathmere) & Sea Isle City profile sites	354
Figures 351 to 374, Avalon & Stone Harbor profile sites	374
Figures 375 to 390, No. Wildwood, Wildwood, Wildwood Crest & Lower Twp profile sites	398
Figures 391 to 402, Cape May City profile sites	414
Figures 403 to 410, Nature Conservancy & Cape May Point profile sites	426
Figures 411 to 426, Delaware Bay profile sites	434
<b>Monmouth County Sand Volume &amp; Shoreline Change Values</b>	<b>450</b>
<b>Ocean County Sand Volume &amp; Shoreline Change Values</b>	<b>454</b>
<b>Atlantic County Sand Volume &amp; Shoreline Change Values</b>	<b>458</b>
<b>Cape May County Sand Volume &amp; Shoreline Change Values</b>	<b>460</b>
<b>Typical New Jersey Beach Profile Terminology</b>	<b>464</b>
<b>Glossary of Coastal Terms</b>	<b>465</b>
<b>USDA Dune Fencing Plan</b>	<b>467</b>
<b>USDA Dune Grass Planting Design</b>	<b>468</b>
<b>Bibliography</b>	<b>469</b>



The survey data were analyzed and evaluated to show changes in the county shorelines and sand volume changes for the 18-month study interval. The three-month seasonal average sand volume changes for each county plus the 18-month summary are shown below.

	S 10 Cu. yds/ft.	F 10 Cu. yds/ft.	F 10 S 11 Cu. yds/ft.	S 11 F 11 Cu. yds/ft.	S 10 F 11 Cu. yds/ft.
<b>Monmouth County</b>		-2.91	2.05	-0.66	-1.24
<b>Ocean County</b>		4.71	0.57	2.54	9.41
<b>Atlantic County</b>		7.69	1.82	33.81	43.17
<b>Cape May County</b>		2.59	5.78	15.46	24.24

Beach nourishment occurred in the southern three counties between the spring 2010 and fall 2011. The 2009 Long Branch project had been redistributed by 2010 and had minimal impact on the averages. Strong shoreline advances were seen at the northern Ocean County sites as sand migrated onto the beach profile in substantial quantities. This proved beneficial during hurricane Irene because many beaches were wider than in many previous summer seasons. Sand was added along Beach Island, Absecon Island, Ocean City, Ludlam Island, 7-Mile Island and Cape May City during this time interval. A restoration project was conducted in the City of North Wildwood to repair cumulative damages from November 2009 through December 2010. Hurricane Irene and the October 29, 2011 storm were restored using recycled sand trucked in from the berm in the Borough of Wildwood Crest in the late winter of 2012.

The shoreline change values reflect storm frequency combined with long, quiet periods where sand could migrate landward from water depths near 20 feet to the offshore bars where it could progress up the foreshore slope to the berm. The beach nourishment activity within the southern three counties produced three-times the advance seen in Monmouth County, which has a steeper beach surface slope because the sand is coarser in size.

	S 10 Feet	F 10 Feet	F 10 S 11 Feet	S 11 F 11 Feet	S 10 F 11 Feet
<b>Monmouth County</b>		1.44	3.51	8.39	13.33
<b>Ocean County</b>		19.88	2.24	17.16	39.28
<b>Atlantic County</b>		7.68	13.28	17.29	38.26
<b>Cape May County</b>		5.86	0.35	30.90	41.28

State wide, the sand volume change at all 105 sites was a gain of 10.02 yds<sup>3</sup>/ft. The State-wide shoreline change was an advance of 29.36 feet.

Since 1986 approximately \$601,577,500 has been spent to place 80,735,735 cubic yards of sand on 53.75 of the 97.09 miles of developed New Jersey shoreline (Sandy Hook to Cape May Point is 126.45 miles). Of the 97-mile developed shoreline 55.36% has been nourished since 1985 by either the ACOE (84.67%) or the NJ State/local partnership (15.33). The impact over 25 years has been an average coast-wide sand volume gain of 3.022 yds<sup>3</sup>/ft and a shoreline advance seaward of 4.029 feet. Dividing the 25-year beach nourishment volume by 25, then by the number of feet along the NJ coastline equals 4.816 yds<sup>3</sup>/ft in sand volume placed on each foot of beachfront. The average price per cubic yard placed appears to be a significantly impressive investment in maintaining a \$36,600,000,000 ANNUAL revenue generated by NJ coastal tourism.



This research was funded by the State of New Jersey Department of Environmental Protection, Division of Construction and Engineering under the Shore Protection Act, legislation authorizing the stable funding of coastal

south to the north jetty of Manasquan Inlet. The Philadelphia District has res



team of Coastal Resources personnel, Dr. Farrell and outside consultant (Dr. Steven Leatherman) undertook a week-long tour of the entire

trucks brought all these commodities directly to any coastline crisis. As a result many segments of the coast have continuous bulkheads, closely spaced groins, but 3 of the 11 inlets are confined by jetties.

The earliest attempt at sand supplies came in the 1950s trucking sand from Belmar beaches across the Shark River Inlet and dumping it on the Avoncks to effectively "by-pass" the inlet. In 1952 the ACOE conducted a 2.54 million cubic yard beachfill in Ocean City in Cape May County. Beach restoration followed the devastating March 1962 northeast storm as many sources of sand were eroded to replace the beaches torn away by the event. Beach nourishment got a boost in the 1970's as the State passed two multi-million dollar bond issues to finance projects at a variety of places. Congressman William Hughes sided an initial Federal project in Ocean City at the same time the restoration was advancing to construction in Cape May City. These successes generated interest in undertaking the restoration of the entire Monmouth County oceanfront shoreline. Five years, 25 million cubic yards of sand and \$250 million dollars later, the largest beach

