



# New Jersey Beach Profile Network

## Ocean County

Manasquan Inlet  
to Little Egg Inlet

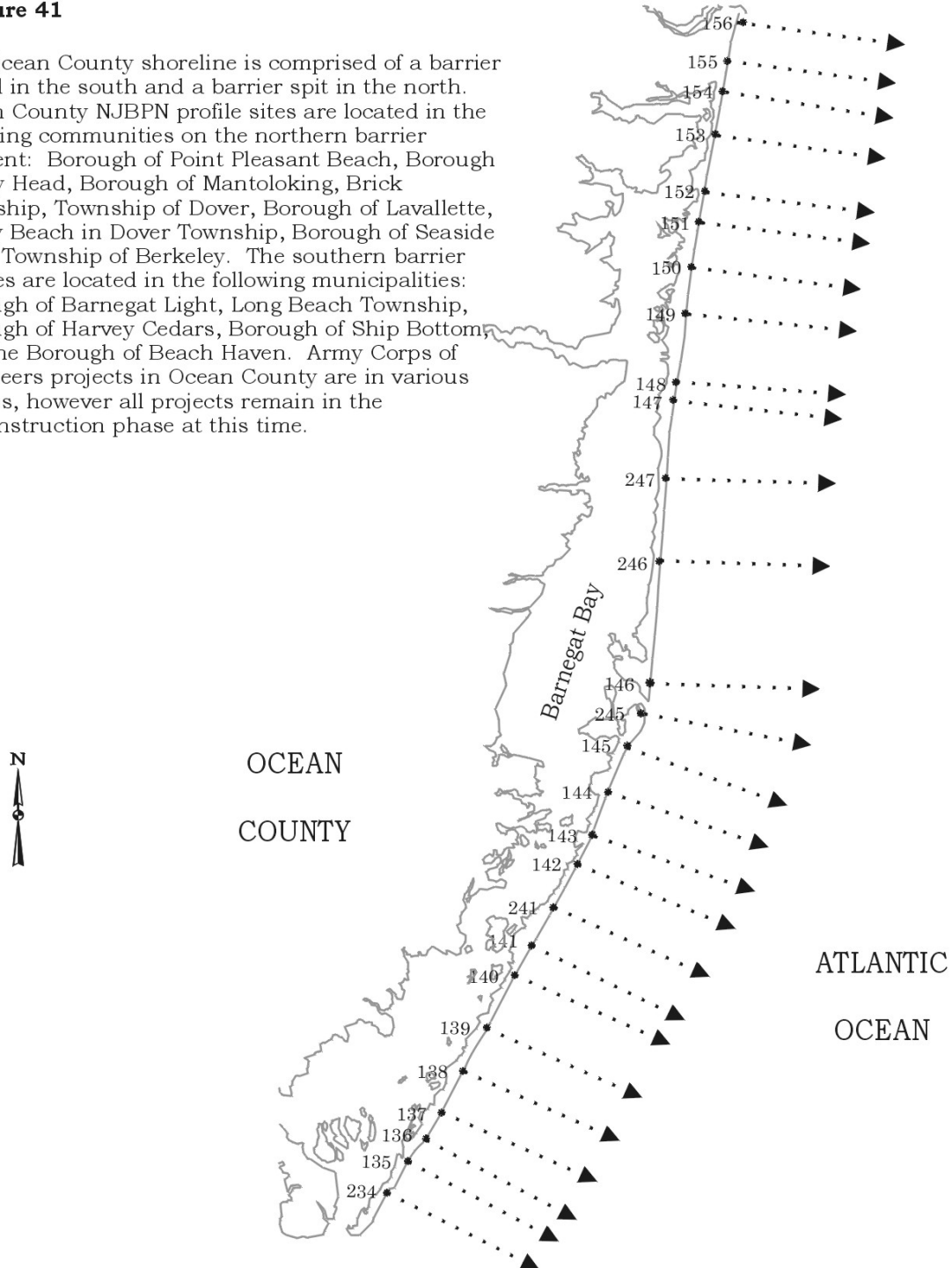
NJBPN Profile #'s  
156 - 234



# New Jersey Beach Profile Network Ocean County Profile Site Locations

**Figure 41**

The Ocean County shoreline is comprised of a barrier island in the south and a barrier spit in the north. Ocean County NJBPN profile sites are located in the following communities on the northern barrier segment: Borough of Point Pleasant Beach, Borough of Bay Head, Borough of Mantoloking, Brick Township, Township of Dover, Borough of Lavallette, Ortley Beach in Dover Township, Borough of Seaside Park, Township of Berkeley. The southern barrier profiles are located in the following municipalities: Borough of Barnegat Light, Long Beach Township, Borough of Harvey Cedars, Borough of Ship Bottom, and the Borough of Beach Haven. Army Corps of Engineers projects in Ocean County are in various phases, however all projects remain in the preconstruction phase at this time.





Photoplate 3a. Photo taken September 13, 2005 in Mantoloking, NJ. The sparsely vegetated seaward slope of the dune is due to a bulldozing effort in 2003 following several small northeast storms that cut to the edge of the dense grass leaving a 6 to 8-foot scarp in the dunes. Note the dune cross over to the south.



Photoplate 3b. By October 17, 2005 a pair of mild northeast storms had re-excavated the seaward dune slope sweeping away the snow fence at the dune toe and partially destroying the stairs. Note that the erosion went exactly as far as it had two years earlier. Sand was moved into place once again in the spring of 2006.





Photoplate 4a. Photo taken June 1, 2000 looking north along the crest of the dunes in the center segment of Island Beach State Park (site #246). This fabulous natural area represents the coastal status enjoyed by New Jersey along all 127 miles of shoreline. Note the offshore bar, the wide beach and multiple lines of dunes.



Photoplate 4b. Five years and a summer later (November 14, 2005) the beach was almost as wide, the offshore bar was still present and the dunes remained as huge reservoirs of sand held in storage should a serious storm impact this coast.

**TABLE 5**  
**OCEAN COUNTY**  
**ANNUAL BEACH VOLUME CHANGES**  
**SPRING 2004 - SPRING 2005 & FALL 2004 - FALL 2005**

<b>PROFILE SITE</b>	Survey	
	28 - 30 <b>S2004 - S2005</b>	29 - 31 <b>F2004 - F2005</b>
<b>LOCATION</b>	(volume expressed as cubic yards per foot)	
156: Point Pleasant, Water St.	-30.56	-59.83
155: Point Pleasant, Maryland Ave.	13.41	16.84
154: Bay Head, Johnson Ave.	9.34	8.20
153: Mantoloking, 1117 Ocean Ave.	-0.34	2.58
152: Brick Townhsip, Public Beach	15.08	-22.61
151: Normandy Beach, 1st Ave	11.20	25.38
150: Lavallette, White Ave.	1.16	28.64
149: Ortlely Beach, 8th Ave.	20.03	5.36
148: Seaside Park, 4th Ave.	13.94	-16.93
147: Berkeley Township, 6th Ave.	9.78	-17.02
247: Island Beach State Park, North	12.15	4.31
246: Island Beach State Park, Middle	5.15	-9.57
146: Island Beach State Park, South	8.62	7.34
245: Barnegat Light, 10th St.	-87.09	-55.25
145: Barnegat Light, 26th St.	-2.57	-7.47
144: Loveladies, La Baia St.	26.69	0.33
143: Harvey Cedars, 73rd St.	-4.68	2.24
142: Harvey Cedars, Tranquility Drive	-8.12	-3.25
241: Surf City, 20th St.	-20.30	3.60
141: Ship Bottom, 8th St.	-3.89	11.15
140: Long BeachTownship, 32nd St.	-2.68	3.95
139: Long Beach Township, 81st St.	-19.44	-6.01
138: Long Beach Township, Old Whaling Rd.	-12.06	-9.07
137: Beach Haven, Taylor Ave.	10.02	15.65
136: Beach Haven, Dolphin Ave.	20.73	22.72
135: Long Beach Township, Webster Ave.	-4.05	-10.00
234: Long Beach Township, Border w/ Refuge	22.45	-15.37

**TABLE 6**  
**OCEAN COUNTY**  
**ANNUAL SHORELINE CHANGES**  
**SPRING 2004 - SPRING 2005 & FALL 2004 - FALL 2005**

<b>PROFILE SITE LOCATION</b>	Survey	
	28 - 30 <b>S2004 - S2005</b>	29 - 31 <b>F2004 - F2005</b>
	(shoreline change expressed in feet)	
156: Point Pleasant, Water St.	-39.5	-89.6
155: Point Pleasant, Maryland Ave.	46.5	54.7
154: Bay Head, Johnson Ave.	9.3	4.7
153: Mantoloking, 1117 Ocean Ave.	-4.5	12.7
152: Brick Township, Public Beach	-20.2	-39.9
151: Normandy Beach, 1st Ave	12.8	0.8
150: Lavallette, White Ave.	16.5	13.1
149: Ortley Beach, 8th Ave.	23.8	-21.1
148: Seaside Park, 4th Ave.	26.4	-27.9
147: Berkeley Township, 6th Ave.	9.1	-8.5
247: Island Beach State Park, North	14.2	-24.4
246: Island Beach State Park, Middle	20.1	-22.4
146: Island Beach State Park, South	-16.7	10.4
245: Barnegat Light, 10th St.	-125.1	-69.0
145: Barnegat Light, 26th St.	85.2	-12.1
144: Loveladies, La Baia St.	30.3	-3.1
143: Harvey Cedars, 73rd St.	-6.0	-6.3
142: Harvey Cedars, Tranquility Drive	-18.9	-1.4
241: Surf City, 20th St.	-34.6	3.8
141: Ship Bottom, 8th St.	-8.4	-19.5
140: Long Beach Township, 32nd St.	15.4	39.3
139: Long Beach Township, 81st St.	-23.8	5.3
138: Long Beach Township, Old Whaling Rd.	-9.7	-8.0
137: Beach Haven, Taylor Ave.	17.8	20.9
136: Beach Haven, Dolphin Ave.	24.1	80.3
135: Long Beach Township, Webster Ave.	-0.9	0.6
234: Long Beach Township, Border w/ Refuge	-49.9	-74.0

**TABLE 7  
OCEAN COUNTY  
SEASONAL BEACH VOLUME CHANGES**

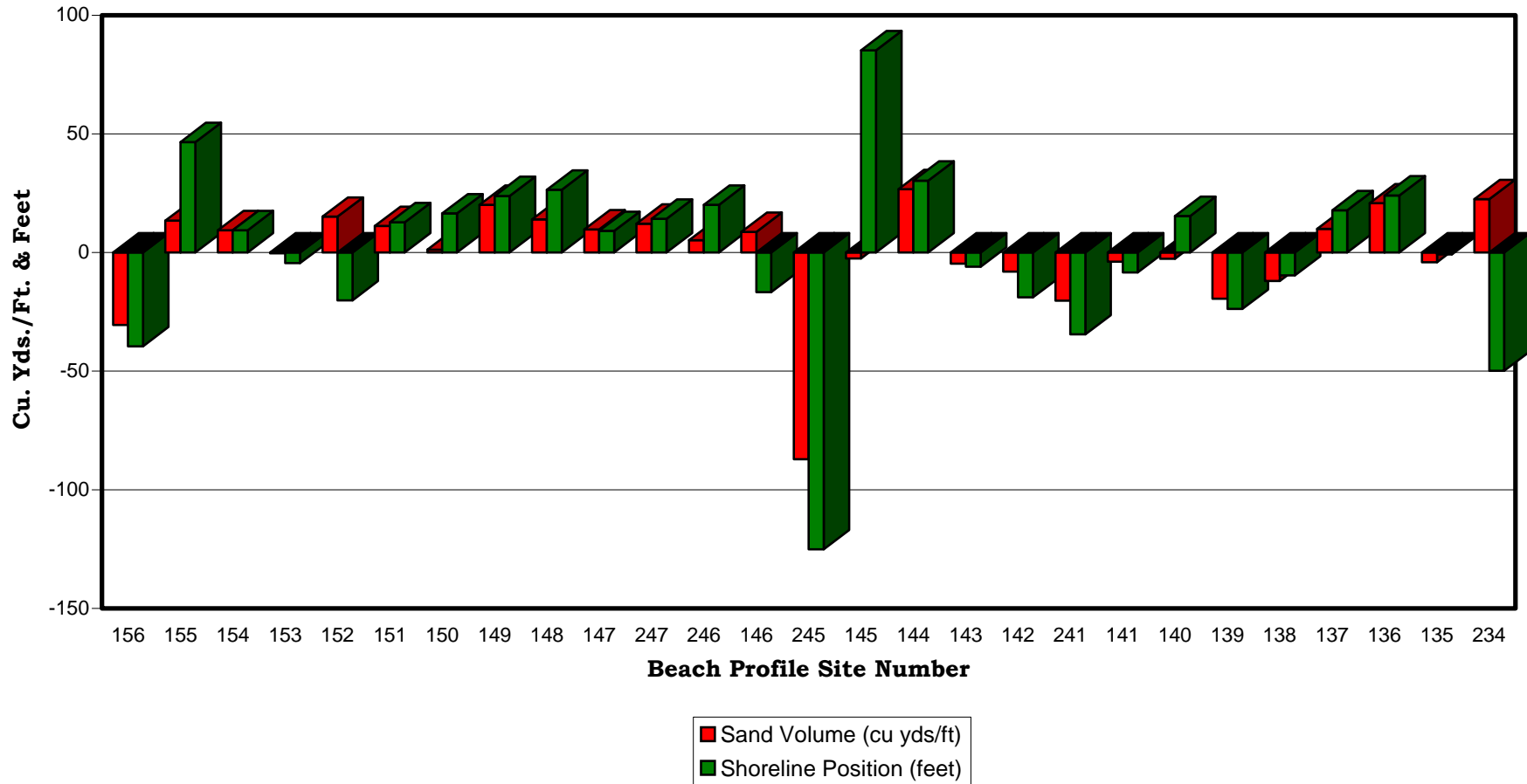
<b>PROFILE SITE LOCATION</b>	Survey	28-29	29-30	30-31	28-31
		<b>S04-F04</b>	<b>F04-S05</b>	<b>S05-F05</b>	<b>S04-F05</b>
		(volume expressed as cubic yards per foot of beachfront)			
156: Point Pleasant, Water St.		26.33	-57.52	-3.88	-33.46
155: Point Pleasant, Maryland Ave.		-11.58	24.86	-7.66	4.91
154: Bay Head, Johnson Ave.		0.92	-2.73	10.96	9.06
153: Mantoloking, 1117 Ocean Ave.		-4.64	3.44	-1.20	-2.48
152: Brick Township, Public Beach		5.80	9.47	-28.22	-12.66
151: Normandy Beach, 1st Ave		-7.44	20.22	8.39	19.14
150: Lavallette, White Ave.		-19.27	19.38	7.66	9.60
149: Ortley Beach, 8th Ave.		4.54	11.08	-5.81	14.58
148: Seaside Park, 4th Ave.		20.15	-6.47	-10.52	3.38
147: Berkeley Township, 6th Ave.		19.72	-10.19	-6.92	2.05
247: Island Beach State Park, North		11.49	-1.07	1.15	15.13
246: Island Beach State Park, Middle		27.84	-24.15	13.41	18.04
146: Island Beach State Park, South		-18.63	27.46	-17.93	-13.23
245: Barnegat Light, 10th St.		-33.63	-55.00	-0.53	-87.54
145: Barnegat Light, 26th St.		-2.05	-0.39	-6.93	-9.44
144: Loveladies, La Baia St.		18.97	9.71	-7.95	19.29
143: Harvey Cedars, 73rd St.		-18.18	14.47	-13.51	-17.63
142: Harvey Cedars, Tranquility Drive		-25.78	19.30	-22.67	-29.30
241: Surf City, 20th St.		-14.38	-5.77	8.62	-11.09
141: Ship Bottom, 8th St.		-11.21	6.39	2.96	-1.24
140: Long Beach Township, 32nd St.		0.34	-2.30	6.46	4.46
139: Long Beach Township, 81st St.		11.67	-31.73	25.78	5.90
138: Long Beach Township, Old Whaling Rd.		16.26	-28.37	19.56	7.47
137: Beach Haven, Taylor Ave.		-0.65	12.01	2.41	12.69
136: Beach Haven, Dolphin Ave.		0.10	20.50	0.97	21.68
135: Long Beach Township, Webster Ave.		9.28	-13.58	3.12	-0.65
234: Long Beach Township, Border w/ Refuge		-13.78	35.80	-51.46	-28.73
<b>VOLUME CHANGES for OCEAN CO.</b>	Survey	<b>28-29</b>	<b>29-30</b>	<b>30-31</b>	<b>28-31</b>
		(cu yds/ft)	(cu yds/ft)	(cu yds/ft)	(cu yds/ft)
<b>SUM of SAND VOLUMES for 27 SITES</b>		-7.81	-5.18	-73.74	-80.07
<b>AVERAGE SAND VOLUME per SITE</b>		-0.29	-0.19	-2.73	-2.97
<b>Northern Ocean Co. Sand Volume Change</b>		73.86	-13.68	-22.64	47.29
<b>Average Northern Ocean Co. Volume Change</b>		5.68	-1.05	-1.74	3.64
<b>Long Beach Island Sand Volume Change</b>		-63.04	-18.96	-33.17	-114.13
<b>Average Long Beach Island Volume Change</b>		-4.50	-1.35	-2.37	-8.15

**TABLE 8  
OCEAN COUNTY  
SEASONAL SHORELINE CHANGES**

<b>PROFILE SITE LOCATION</b>	Survey	28-29 <b>S04-F04</b>	29-30 <b>F04-S05</b>	30-31 <b>S05-F05</b>	28-31 <b>S04-F05</b>
		(shoreline change expressed in feet)			
156: Point Pleasant, Water St.		38.8	-78.3	-11.3	-50.8
155: Point Pleasant, Maryland Ave.		-2.1	48.6	6.1	52.6
154: Bay Head, Johnson Ave.		7.5	1.9	2.8	12.2
153: Mantoloking, 1117 Ocean Ave.		-7.8	3.3	9.5	4.9
152: Brick Township, Public Beach		0.1	-20.3	-19.7	-39.9
151: Normandy Beach, 1st Ave		8.4	4.4	-3.5	9.2
150: Lavallette, White Ave.		0.1	16.4	-3.4	13.1
149: Ortley Beach, 8th Ave.		8.2	15.6	-36.7	-12.9
148: Seaside Park, 4th Ave.		36.2	-9.8	-18.1	8.4
147: Berkeley Township, 6th Ave.		7.7	43.2	7.7	51.0
247: Island Beach State Park, North		31.9	-17.7	-6.8	7.5
246: Island Beach State Park, Middle		53.5	-33.4	11.0	31.1
146: Island Beach State Park, South		-35.4	18.6	-8.2	-24.9
245: Barnegat Light, 10th St.		-62.2	-62.9	-6.2	-131.2
145: Barnegat Light, 26th St.		104.8	-19.6	7.5	92.7
144: Loveladies, La Baia St.		44.2	-13.9	10.8	41.1
143: Harvey Cedars, 73rd St.		5.3	-11.3	5.0	-1.0
142: Harvey Cedars, Tranquility Drive		8.7	-27.6	26.2	7.2
241: Surf City, 20th St.		-20.7	-13.8	17.6	-17.0
141: Ship Bottom, 8th St.		-19.6	11.2	-30.7	-39.1
140: Long Beach Township, 32nd St.		-19.3	34.7	4.6	20.0
139: Long Beach Township, 81st St.		12.5	-36.2	41.5	17.7
138: Long Beach Township, Old Whaling Rd.		34.3	-44.0	36.0	26.3
137: Beach Haven, Taylor Ave.		-6.8	24.6	-3.7	14.1
136: Beach Haven, Dolphin Ave.		20.5	3.6	76.7	100.8
135: Long Beach Township, Webster Ave.		28.6	-29.5	30.2	29.3
234: Long Beach Township, Border w/Refuge		11.8	-61.7	-12.4	-62.2
<b>SHORELINE CHANGES for OCEAN CO.</b>	Survey	<b>28-29</b>	<b>29-30</b>	<b>30-31</b>	<b>28-31</b>
		(feet)	(feet)	(feet)	(feet)
<b>SUM of SHORELINE CHANGES for 27 SITES</b>		289.24	-254.07	132.71	160.30
<b>AVERAGE SHORELINE CHANGE per SITE</b>		10.71	-9.41	4.92	5.94
<b>Northern Ocean Co. Shoreline Change</b>		182.50	-26.23	-62.21	86.46
<b>Average Northern Ocean Co. Shoreline Change</b>		14.04	-2.02	-4.79	6.65
<b>Long Beach Island Shoreline Change</b>		142.14	-246.45	203.08	98.74
<b>Average Long Beach Island Shoreline Change</b>		10.15	-17.60	14.51	7.05

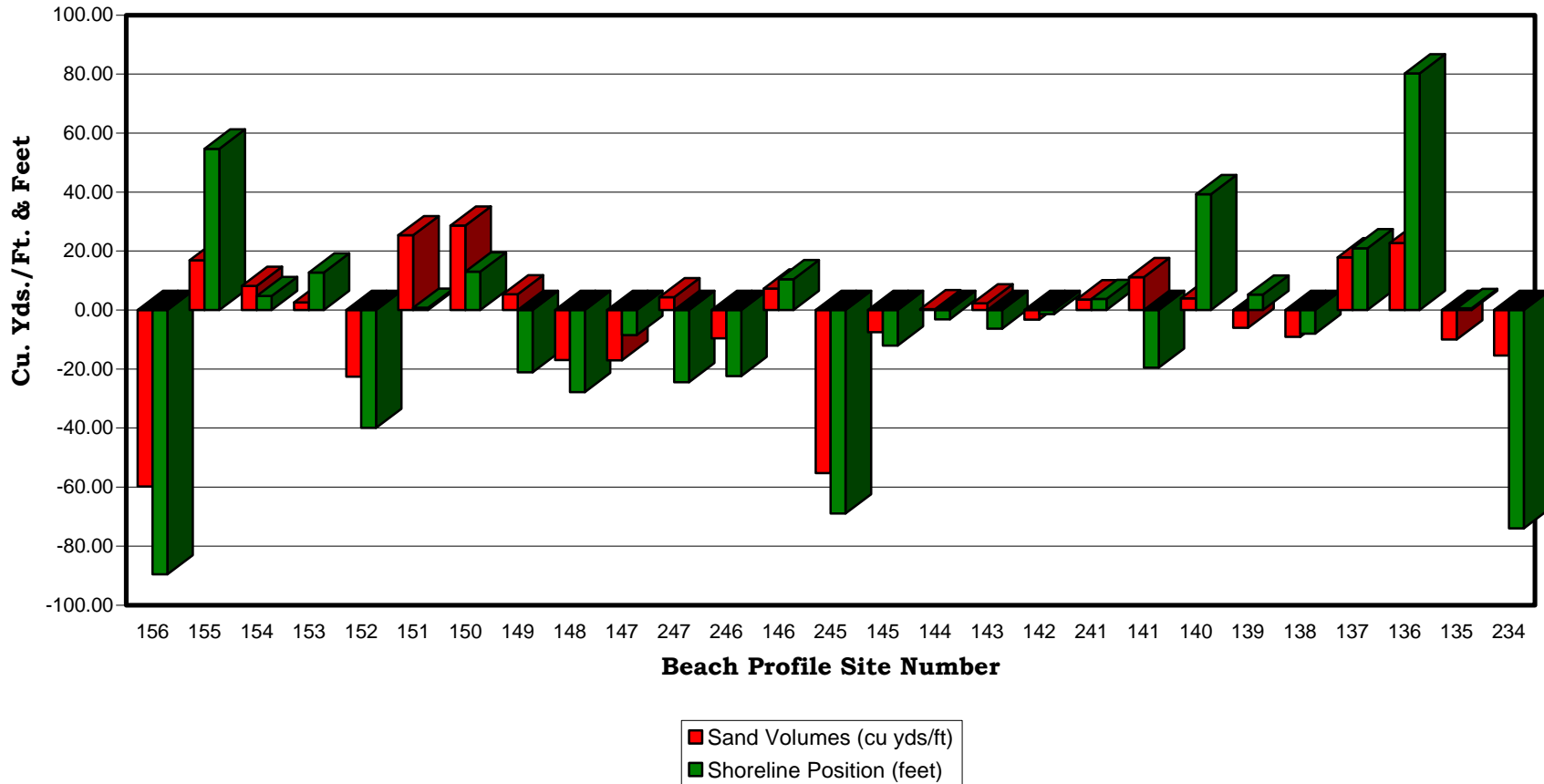


### Ocean County Beach Volume & Shoreline Changes - Spring 2004 to Spring 2005



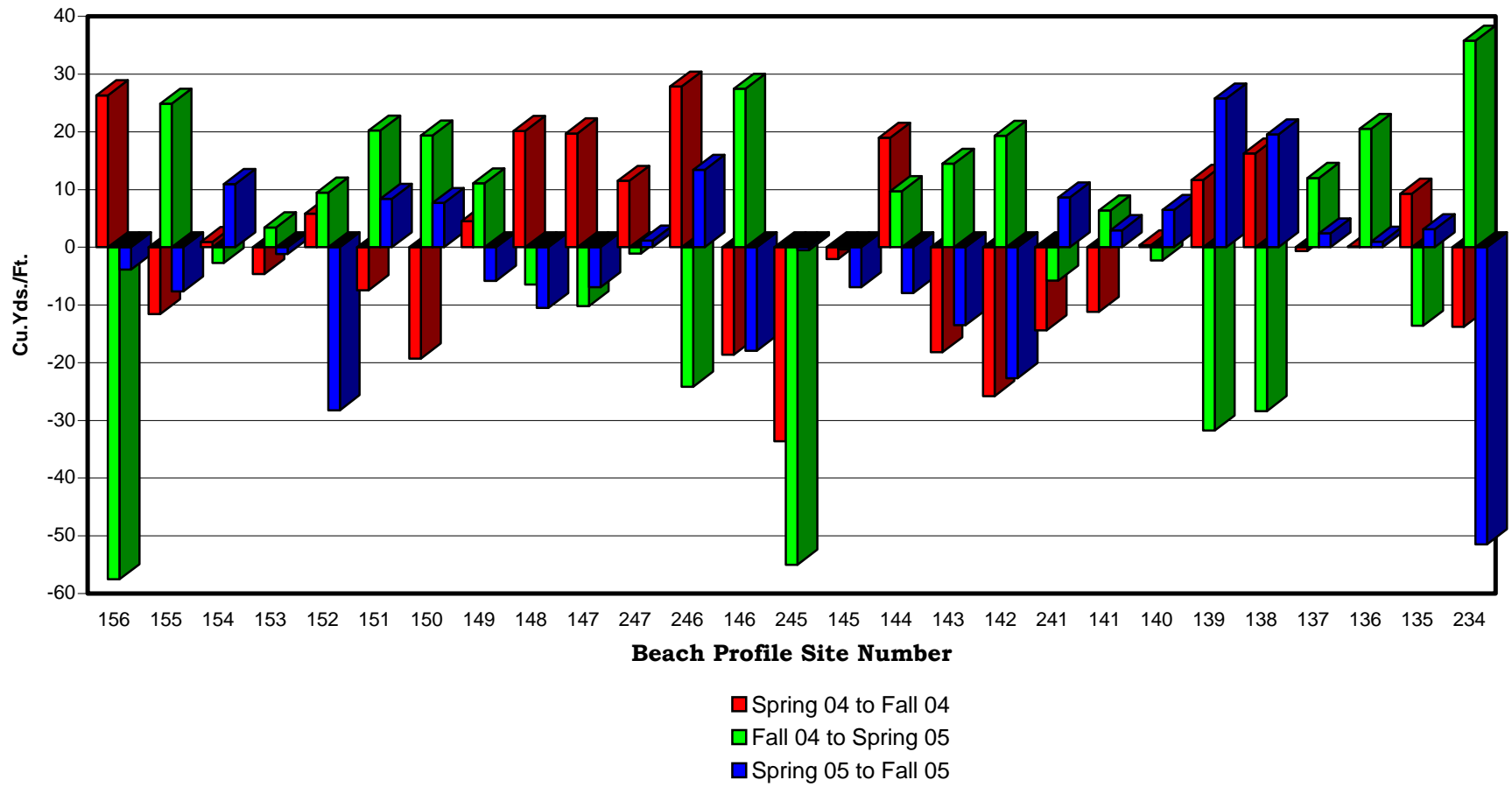
**Figure 42a.** The comparison of each beach’s cross section sand volume from spring 2004 to spring 2005 shows modest accretion along the Northern Ocean County shoreline. This is contrasted with spotty accretion on Long Beach Island with half the sites showing minor losses. The northernmost profile site in each half of the county experienced losses between the spring seasons.

Ocean County Beach Volume & Shoreline Position Changes - Fall 2004 to Fall 2005



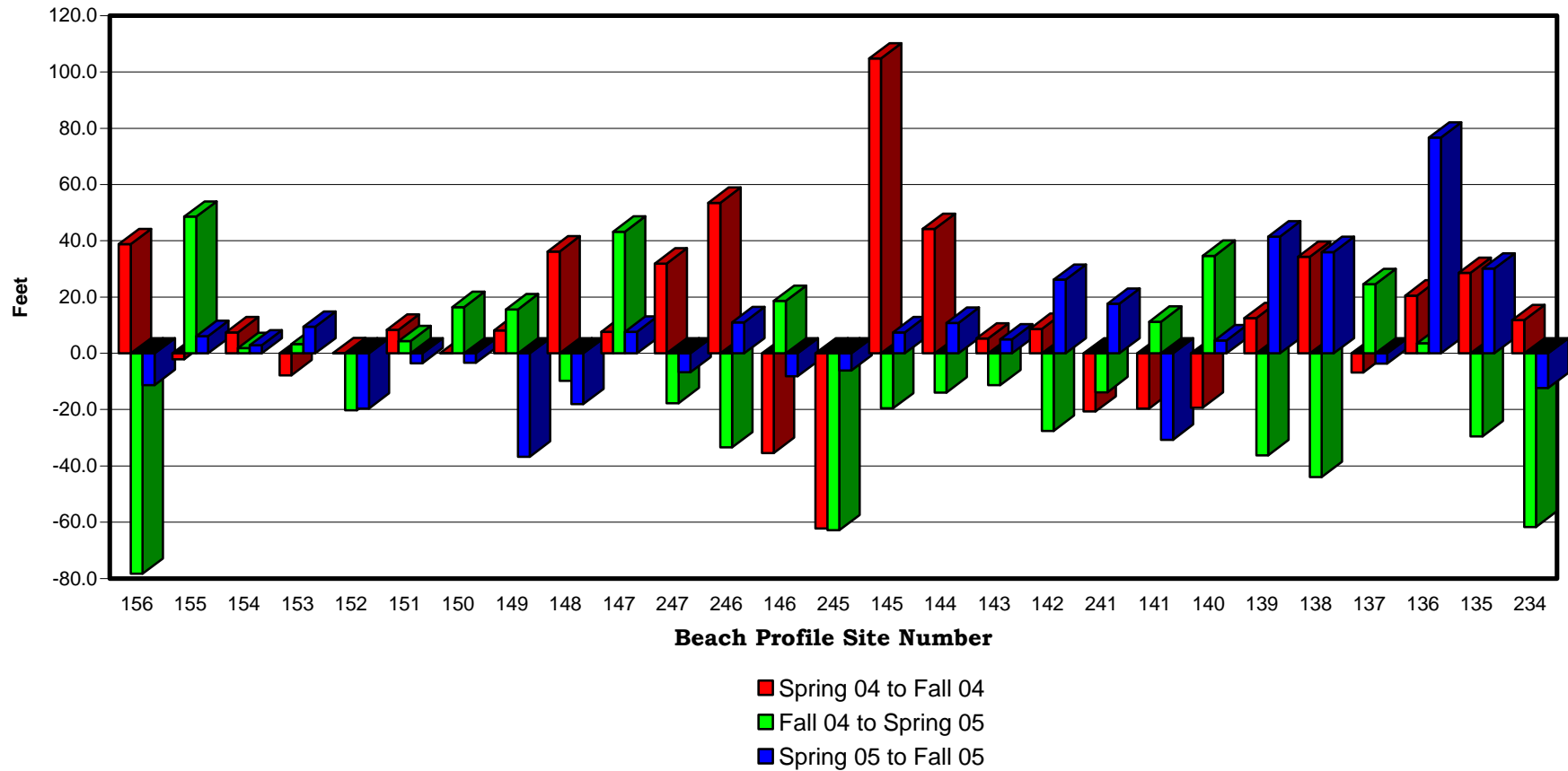
**Figure 42b. A similar annual comparison for the fall of 2004 to the fall of 2005 shows that the summer of 2005 did not produce complete recovery from the winter losses at many of the sites in Ocean County. The two northernmost sites maintained the loss pattern seen for the spring seasonal comparison. Only three sites on Long Beach Island achieved double digit sand volume accretion or over 20 feet of shoreline advance throughout the year.**

Seasonal Ocean County Beach Sand Volume Changes - Fall 2004, Spring 2005 & Fall 2005



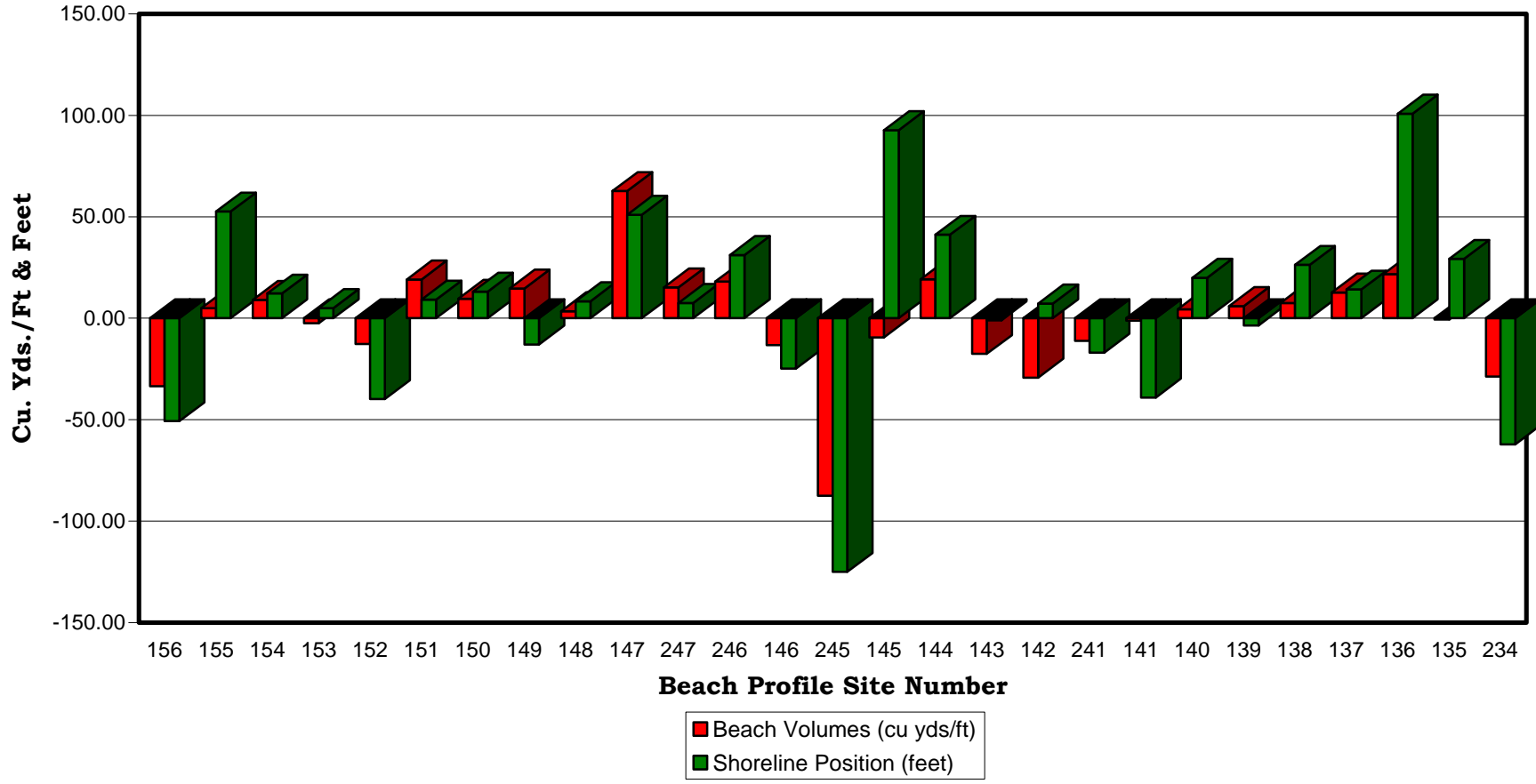
**Figure 42c.** The seasonal display of sand volume gains presents the odd behavior at sites 143 and 142 where sand was lost each summer but returned to the cross section during the winter season. Sites 246, 139, and 138 show classic seasonal behavior where sand is lost during the winter and returns each summer. Largest seasonal losses occurred at the sites located near the tidal inlets.

Seasonal Ocean County Beach Shoreline Changes - Fall 2004, Spring 2005 & Fall 2005



**Figure 42d. The shoreline data ranged between an advance or retreat of 60 feet except sites near inlets (156, 245 and 234). The winter season did produce the majority of the shoreline retreat patterns, an expected result. The following summer did not always generate a corresponding advance recovery, which correlates with the sand volume data in the previous graph.**

Ocean County Beach Volume & Shoreline Position Changes - Spring 2004 to Fall 2005



**Figure 42e. Over 18 months of study, the Ocean County shoreline averaged a loss of 8.15 yds<sup>3</sup>/ft. driven by large losses at Manasquan and Barnegat Inlet south margins. The shoreline position averaged an advance of 6 feet county-wide.**

## **SUMMARY OF INDIVIDUAL SURVEY STATIONS LOCATED IN OCEAN COUNTY**

- **Profile #156 - Water Street, Point Pleasant, Ocean County** (fig. 43)

This profile begins along Water Street and includes the Point Pleasant Beach boardwalk, which is located along this section of beach. The Water Street beach is extensively used for recreation but is privately owned. Aeolian processes blow sand across the wide, dry beach that accumulates along the seaward side of the boardwalk. Usually these accumulations are subsequently removed during maintenance activities, but for some reason a ridge of sand was present at the seaward side of the boardwalk, which extended almost two feet above the boardwalk surface on November 11, 2005.

In August 2004, a berm crest was present approximately 400 feet east of the boardwalk. This deposit retreated 160 feet during the winter of 2004 to 2005 resulting in a loss of 57.52 yds<sup>3</sup>/ft. and a shoreline retreat of 78 feet. Further retreat occurred between the spring 2005 and fall 2005 surveys. Since the fall survey took place in November, the impact of a pair of mid-October northeast storms were most likely responsible for a further retreat of 11 feet and a 15.28 yds<sup>3</sup>/ft. sand volume loss from the beach. The November 2005 berm crest lies 225 feet landward of the August 2004 position leaving 175 feet of dry beach between the crest and the boardwalk. This site is sensitive to shoreline retreat and beach erosion during periods of northeast storm activity. This is because sand cannot rapidly cross the Manasquan Inlet to replace material moved from beaches located just south of the inlet jetties. During periods of southeast winds, this segment of the shoreline accumulates sand far more rapidly than do beaches in Bay Head or Mantoloking.

- **Profile #155 – Maryland Avenue, Point Pleasant, Ocean County** (fig. 44)

The Maryland Avenue profile starts along the road and includes a street end bulkhead located at the landward dune toe. The profile is set along a public beach access path through the dune located between the homes on either side of the street end. The landward dune slope and crest have been stable for years with slow advance of the seaward slope to the situation that existed by June 2005. The same northeast storm activity eroded into this dune toe slope removing 10.09 yds<sup>3</sup>/ft. from the area. Following the October storm activity, the beach berm recovered the 3.0-foot relief wedge of sand shown on the November 2005 profile line positioned between 300 and 400 feet from the reference on the plot. Offshore there were few changes in bottom elevation.

- **Profile #154 – Johnson Avenue, Bay Head, Ocean County** (fig. 45)

The Johnson Avenue profile reference position is located on a utility pole along Johnson Avenue. The profile includes the pole, street end and dune feature as well as the beach and offshore. This dune is relatively unique for Ocean County because of the rock seawall that forms the dune's core, and is presently buried beneath a veneer of sand. This seawall was exposed during a few storm events in the early 1990's, including the December 11-12, 1992 northeast storm. Sand was replaced over the rocks then dune grass and other plant species flourished to help stabilize the sand.

The August 2004 survey shows the berm at its largest size. The winter season reduced this feature and transported the sand offshore. The beach lost 13.54 yds<sup>3</sup>/ft. and the offshore region gained 11.24 yds<sup>3</sup>/ft. This activity produces a typical situation known as "cross-shore transport" where sand eroded from the beach moves offshore to create a bar that moves back toward the shoreline when the wave climate moderates. The



October 2005 northeast storms reversed any summer accumulation and produced an additional 11.66 yds<sup>3</sup>/ft. beach loss accompanied by a 22.73 yds<sup>3</sup>/ft. gain offshore. The excess material appears to have come from the deposition of sediment carried parallel to the shoreline from further north.

- **Profile #153 – 1117 Ocean Avenue, Mantoloking, Ocean County** (fig. 46)

This profile is located on private property and begins near the northeast corner of the home. A well-established dune, 80 feet in width and a crest elevation of 19 feet NGVD protects the home. Although each oceanfront home owns the dune and dry beach in front of it, the Borough of Mantoloking orchestrates scarp repair using sand harvested from the berm after it begins to recover following the storm season. The Borough moves between 2.5 and 4 yds<sup>3</sup>/ft. from the berm and grades it up to the top of the scarp. This program restores the dune volume and width to pre-storm conditions maintaining the level of storm protection for oceanfront homes and public access ramp sites.

Storm activity during the winter of 2003 left a near-vertical scarp at this location. The Borough repaired the damage in the spring of 2004 shown by the position of the June 2004 survey of the dune. The dune survived the 2004 – 2005 winter season without damage but was cut into a vertical scarp by the mid-October northeast storms. The berm crest shown on Survey 31 demonstrates beach recovery between October 15<sup>th</sup> and the survey date of December 7<sup>th</sup>.

- **Profile #152 – Public Beach #3, Brick Township, Ocean County** (fig. 47)

At public beach #3 in Brick Township the profile includes the pavilion deck and continues over a dune system that has grown significantly since the monitoring program began in 1986. The dune width has grown to 140 feet at the toe with a current dune crest elevation of 22 feet NGVD. The landward slope and crest are covered by an abundance of dune grass, sporadic goldenrod, and a flourishing ground cover consisting of mostly beach pea. These plants contribute to the stabilization of the dune system.

The October northeast storm sequence shows as erosion of the beach to the base of the dune toe takes 41.24 yds<sup>3</sup>/ft. from the beach and nearshore region. The offshore region acquired a bar that contained 12.62 yds<sup>3</sup>/ft. between -5.4 and -13.9 feet of water. The accumulation thickness was 2.0 feet at the seaward end of the survey and continued further seaward accounting for more sand loss from the beach.

- **Profile #151 – 1<sup>st</sup> Street, Normandy Beach, Ocean County** (fig. 48)

This profile is set along the public beach access path located at the seaward end of 1<sup>st</sup> Street in Normandy Beach. The profile begins at the landward dune toe, which is intact on this open public lot set between homes built on the landward dune slope north and south of the profile line. Consequently, the profile shows a natural dune configuration for this region and does not represent the more typical truncated configuration caused by excavation into the back of the dune for the footprint of the homes built along this stretch of shorefront. The dune width is approximately 120 feet with a crest elevation at 20 feet NGVD. The dune width seaward of the homes is less than 50 feet because the home occupies the landward slope up to the landward crest reducing the dune's shore protection benefits dramatically. On the profile line the landward toe and slope are well established and stable demonstrated by the pine trees and bayberry plants that inhabit the area. Along the dune crest a thick stand of dune grass mixed with sporadic

goldenrod flourish. Dune grass along the seaward slope is sparse but some rhizomes and recently planted plugs are colonizing this area.

The migration of bar material onto the beach is demonstrated by the close proximity of the bar's depositional landward slope to the base of the beachface in survey 30. This most likely attached to the berm and further added to the beach volume during the ensuing summer. However, by November 15, 2005 the impact of the northeast storms in October had transferred sand offshore in approximately the same volume seen at the site to the north (-12.59 yds<sup>3</sup>/ft. taken from the beach with 23.74 yds<sup>3</sup>/ft. deposited offshore).

- **Profile #150 – White Avenue, Lavellette, Ocean County** (fig. 49)

The White Avenue profile starts at the street end and includes the boardwalk constructed at the same elevation as the dry beach, but landward of the dune and above the street. The dune has grown steadily over the history of the monitoring program to its current configuration 75 feet wide at the base with a crest elevation of 24 feet NGVD. Vegetation is very sparse on both slopes with a limited number of goldenrod and dune grass plants colonizing the crest. The seaward slope gained 2.49 yds<sup>3</sup>/ft. during the 18-month interval. It also appears as though the municipal workers have removed about 0.65 yds<sup>3</sup>/ft. from the landward slope because it tends to slump down onto the boardwalk.

The beach varied somewhat seasonally, but the offshore region produced a sizable bar by the November 2005 survey. This bar was probably significantly enhanced by the October 2005 northeast storms.

- **Profile #149 – 8<sup>th</sup> Avenue, Ortley Beach, Ocean County** (fig. 50)

This profile begins at the seaward end of 8<sup>th</sup> Avenue and includes the street end parking area and boardwalk. A small dune is located seaward of the boardwalk and is the major shore protection feature for the property and public infrastructure located landward of the boardwalk. The dune width is 40 feet at the base and the crest elevation is 19.5 feet NGVD.

The beach was at its widest in November 2004 and if recovery proceeded beyond that seen by May 2005, it was completely erased by the October northeast storms. The beach in November 2005 was very narrow with a tiny berm and a large offshore bar positioned between 400 and 700 feet from the reference position. Between surveys 30 and 31 the beach lost 23.39 yds<sup>3</sup>/ft. and the offshore region gained 16.45 yds<sup>3</sup>/ft.

- **Profile #148 – 4<sup>th</sup> Avenue, Seaside Park, Ocean County** (fig. 51)

At 4<sup>th</sup> Avenue the profile includes the road, an access ramp between the street and boardwalk, which is constructed on the landward dune slope. The boardwalk is at least 5 feet higher than the road and occupies a niche on the upper landward dune slope. This large dune provides significant storm protection for the property and infrastructure located west of the dune including the boardwalk. The dune sand has been encroaching on the boardwalk as it grew, especially on some of the gazebo structures located seaward of the boardwalk alignment. From the landward toe near the street to the seaward toe, the dune is 175 feet wide and gained sand on the seaward slope (3.96 yds<sup>3</sup>/ft.). A narrow berm defines the beach, but the apparently steeper beach slope seen on the plot is really due to the greater horizontal distance used to accommodate the 1000-foot length of the cross section.

The final survey continues a pattern of post-storm recovery far from complete a month following a pair of northeast storms. The offshore bar is very pronounced creating a deep trough near the beach and the highest elevation of the interval on the bar. At this location, the four surveys come together at nearly the same elevation offshore indicating that nearly all the sand volume being redistributed across the shoreline has been accounted for. The 18-month sand volume change verifies this (-0.49 yds<sup>3</sup>/ft.).

- **Profile #147 – 6<sup>th</sup> Lane, Midway Beach, Ocean County** (fig. 52)

The Midway Beach profile begins at the seaward end of 6<sup>th</sup> Lane and includes an open sandy lot where the beach access path is located between oceanfront homes. The dune here has grown significantly during the monitoring history with sand accumulating around a series of dune fence installations. Initially there was no dune, just a bare sand hill about 6 feet lower than the present crest elevation. The dune width as of November 2004 had reached 130 feet between the landward fence and seaward toe with a maximum crest elevation of 22.3 feet NGVD. In November 2005 the decision was made to move the profile location about 100 feet south of the old site because the access pathway dune was bulldozed out nearly level to the beach. The new location was named Site #347 to avoid conflict with either the older data at this site and the northern Island Beach State Park site inserted years ago as #247. The special comparison plot of the old site compared to the new site shows the larger dune along this segment of shoreline. This access way was restored by the spring of 2006 and the profile line was moved back to its original location.

The beach and bar system performed in a similar fashion in response to the October 2005 northeast storms with a transfer of sand from the beach to the offshore region.

- **Profile #247 – North End, Island Beach State Park, Ocean County** (fig. 53)

Profile #247 is located at the north end of Island Beach State Park set several hundred feet north of the northern limit to public vehicle beach access. This site was established on a completely natural dune system that has been subject to a variety of influences that have produced considerable changes over the history of monitoring here. Island Beach State Park is a wildlife area with a wide variety of native plant species. The back dune area is a stable environment where pine and bayberry are abundant. The forward dune ridges are more susceptible to changes and are covered with dune grass, seaside goldenrod and other early colonizing plant species. The profile starts on a secondary dune ridge and continues through a swale. This feature has continued to change, influenced by wind scour and transport, which is frequently responsible for some seaward movement of the primary dune's landward slope. This natural site illustrates that westerly winds also impact dune development as the cross sections show a relatively steady erosion of sand from the upper slope. This western slope impact is seldom seen on developed shorelines since oceanfront homes tend to block west winds and the owner efforts to vegetate the landward slope of the dune limits the west wind scour.

The primary dune is 170 feet wide and rises to an elevation of 23 feet. Three secondary dune ridges have developed, each seaward and slightly lower than the previous ridge. The beach is wide and undergoes regular expansion and erosion as the seasons change wave energy. After the October 2005 northeast storms the offshore bar was positioned over 992 feet seaward from the reference point on the plot. Almost 4 feet of new sand covered the bottom in 12 feet of water from the prior profile done in June.

- **Profile #246 – Island Beach State Park, Ocean County** (fig. 54)

Profile #246 is located midway along the recreationally accessible beach area just north of the second beach vehicle access path. This site is set on a natural dune system with bayberry and pine trees growing on the back dune area. The profile starts on the secondary dune ridge and crosses a wide flat dune swale not shown on the plot. Dune grass mixed with seaside goldenrod and other species flourish from the secondary ridge across the swale and over the primary dune to the seaward crest. The seaward slope has been subjected to past erosional events and dune grass is sporadic but a dune fence was installed to help collect sand and stabilize the slope. The dune system accumulated 3.41 yds<sup>3</sup>/ft. between May 2004 and November 2005.

The beach varies seasonally with well-defined bar migration exchanging sand with the berm. The October northeast storms eroded the beach and shifted 35.32 yds<sup>3</sup>/ft. seaward to create a new bar 500 to 700 feet offshore on the plot. The deposit was over 4 feet in thickness at the 700-foot distance declining to 3.3 feet at 778 feet (the end point in the survey).

- **Profile #146 – South End, Island Beach State Park, Ocean County** (fig. 55)

Profile #146 is located approximately 1000 feet south of the southern beach vehicle access path, positioned on the large natural dune system. At the southern end of Island Beach State Park there is no road or other development, the dune naturally tapers landward into the bayside environment. Bayberry and other native shrubs and plants flourish on the back dune area creating a dense stand of flora. The profile begins at the landward toe of the primary dune. During the last eight surveys the primary dune was relatively stable. Seaward of the primary dune a foredune ridge developed during the last ten years, which continued to accumulate sand on its seaward crest and slope during this report interval (8.74 yds<sup>3</sup>/ft. gained). The overall width of both features is about 300 feet with crest elevations of 25.0 feet for the primary dune and 20.0 feet for the foredune. Abundant stands of dune grass mixed with seaside goldenrod cover both features.

The same pattern of beach erosion and deep trough development, followed by a large offshore bar, is a direct link to the October northeast storms. The prior three surveys all vary about much smaller ranges of elevation and distance. This highlights the fact that in spite of the two storms not being more than annual events, their close proximity in time allowed the second storm to amplify the damage done by the first.

- **Profile #245 – 10<sup>th</sup> Street, Barnegat Light, Ocean County** (fig. 56)

This is the longest beach profile of the 100 sites established in the State and results from the new southern Barnegat Inlet jetty that was reconstructed in 1990. The new orientation of the jetty allowed millions of cubic yards of sand to be contained between the Barnegat Light Borough shoreline and the jetty. As a result the beach grew seaward by hundreds of feet. The region on the original back dune's landward slope is becoming a maritime forest and is fully vegetated. The dune positioned between 300 and 600 feet from the reference was the former primary dune at the beach prior to 1990. Dune grass, seaside goldenrod and other native species are flourishing on this dune system from the new primary dune crest to the seaward dune toe. The old primary dune width extends approximately 450 feet from the street end to the swale, while the developing "foredune" system continues seaward another 600 feet forming a dune field that now covers a distance of over 1200 feet seaward of the street end. The primary crest elevation is 24 feet NGVD while the foredune crest elevation grew to 17 feet NGVD by November 2005. Surveying this complex region is difficult and the sand volume

changes in the dunes are perhaps attributed as much to the variability in the choice of data points as it is to the change in sand distribution. By May 2005 erosion had brought the waves to the toe of the new primary dune creating a very narrow beach. These two losses are documented in the tables and bar graphs at the beginning of this section on Ocean County. It appears as if a period of shoreline retreat has commenced over the past year.

The winter of 2004 – 2005 was not severe with few storms, yet the beach was lost in about the same volume as it vanished over the summer of 2004 (-34.87 yds<sup>3</sup>/ft. and – 57.51 yds<sup>3</sup>/ft.). Little change occurred over the 2005 summer (-5.22 yds<sup>3</sup>/ft.) with the October events claiming an additional few cubic yards per foot at the toe of the dune and upper beach. No bar developed offshore.

- **Profile #145 – 26<sup>th</sup> Street, Barnegat Light, Ocean County** (fig. 57)

Profile #145 is located at the seaward end of 26<sup>th</sup> Street in Barnegat Light. The profile includes the road end and continues over a wide dune that continued to grow during each of the recent surveys. The seaward crest and associated dune volume has been increasing since 1990 due to sand accretion along several thousand feet of Barnegat Light Borough shoreline beginning a short distance south of 26<sup>th</sup> Street north to the new jetty. By the end of November 2005, the dune width measured 180 feet between the landward and seaward dune toe. The growth occurred on the seaward slope where sand accumulated from below the crest to the toe expanding the dune width. The foredune crest is higher than that of the former primary dune elevation (23 vs. 22 feet).

Seasonal changes on the beach reflect the deposition or erosion of a large, wide berm. The recent storms have pushed the berm landward by 80 feet, but resulted in no real shoreline retreat due to a broad terrace near low tide (zero elevation). No bar developed offshore, but sand was moved in a thin sheet seaward.

- **Profile #144 – La Baia Street, Loveladies, Ocean County** (fig. 58)

Footprints of the homes essentially occupy the natural landward slope of the dune in Loveladies. The profile at La Baia Street is set along the beach access path over the dune but starts at the base of a utility pole located along a driveway to the adjacent oceanfront property. This reference position is located about midway on what should be the natural landward slope of this dune. The crest of the dune is at an elevation of 20.5 feet NGVD and is about 20 feet wide on the crest while between the driveway edge and seaward slope the dune width is about 60 feet. Pine and bayberry flourish on the undeveloped landward slope just south of the site. On the crest and seaward slope, dune grass growth is modest to sparse mixed with sporadic seaside goldenrod plants. The dune lost some seaward toe material during the fall of 2005.

Offshore the beach and bar system exchanged sand with the October storm events providing the energy to create the most obvious bar, furthest from the shoreline.

- **Profile #143 – 73<sup>rd</sup> Street, Harvey Cedars, Ocean County** (fig. 59)

The oceanfront homes and seaward street end in Harvey Cedars also intrude upon the natural position of the landward dune slope as previously mentioned in Loveladies. Profile #143 starts at the seaward end of 73<sup>rd</sup> Street and continues over the street end dune. The dune width is 80 feet from the seaward edge of 73<sup>rd</sup> street to the seaward dune toe. Dune grass is abundant on the landward slope and mixed with seaside goldenrod. However, plant coverage tapers toward significantly sparser conditions from the crest seaward to the toe.

The beach was surveyed prior to the mid-October storms and shows the largest berm of the 4-profile sequence. The impact of the storm events was to eliminate this feature at all places that were surveyed after the storms. The offshore bar present in May 2005 had migrated to the beach adding the sand volume to the berm. Based on those surveys done after the storm events, the conclusion would be that this site also suffered berm loss and bar construction.

- **Profile #142 – Tranquility Drive, Harvey Cedars, Ocean County** (fig. 60)

Profile #142 is set on a private access called Tranquility Drive. The profile includes the driveway and a small retaining wall at the landward dune toe. The retaining wall confines the landward dune toe and prevents sand from spilling onto the oceanfront property. Since this site was also surveyed prior to the October storms, their impact is not seen. There was a minor volume of sand added to the dune toe and the offshore elevation was lowered as sand moved onto the beach. These beaches were definitely impacted by the October events as vertical scarps were being restored by bulldozing during the spring of 2006.

- **Profile #241 – 20<sup>th</sup> Street, Surf City, Ocean County** (fig. 61)

This profile starts along the seaward end of 20<sup>th</sup> Street and includes the road end at the landward toe of the dune. A large dune protects the seaward end of the road, nearly 150 feet in width at the base and 80 feet across the crest with a top elevation of 25 feet NGVD. Dune grass mixed with seaside goldenrod is present in modest amounts helping to promote a stable dune environment.

The seasonal movement of sand is visible during the May 2005 profile which shows the narrowest berm. By October 5<sup>th</sup> there was a large volume of sand deposited on the berm (26.02 yds<sup>3</sup>/ft.) and bar positioned just beyond the toe of the beachface slope. These conditions would also have changed considerably ten days later.

- **Profile #141 – 8<sup>th</sup> Street, Ship Bottom, Ocean County** (fig. 62)

At 8<sup>th</sup> Street the profile begins at the landward toe of the dune at the seaward end of the street. The width of this dune is nearly 150 feet at the base and 40 feet across the crest with a top elevation of 21.5 feet NGVD. The crest and landward slope is covered by dune grass mixed with some other plant species including bay berry and seaside goldenrod. Modest additions to the dune toe slope occurred up to the September 2005 survey date.

The beach had its largest berm in September 2005 with a small bar positioned at the base of the beach slope. There was abundant sand deposited near the shoreline as the summer of 2005 drew to a close. The October northeast storms would have had a similar impact on this shoreline as described from Ocean County sites further north.

- **Profile #140 – 32<sup>nd</sup> Street, Long Beach Township, Ocean County** (fig. 63)

This profile begins at the landward toe of the dune located at the seaward end of 32<sup>nd</sup> Street. The lineup is set along the south edge of the beach access path between oceanfront properties. The dune is approximately 120 feet wide at the base with a crest elevation of 24.0 feet NGVD. The landward slope and crest are relatively stable and are covered with dune grass, mixed with seaside goldenrod and some beach rose. On the seaward crest the vegetation density and diversity decreases. The dune grass and



goldenrod become more sporadic on the seaward slope. By September 12, 2005 the beach and dune merged as the beach gradually sloped upward to the dune. Little new material was added to the dune.

The beach and offshore was in a “summer accretional mode” with a bar offshore containing more sand. Following the October storm events, the dune toe slope was cut into a scarp with owners begging for material to restore the loss. The communities of Long Beach Island did transport sand from mainland quarries to the beach to rebuild the dune slopes. Later in the spring of 2006 bulldozing was used to harvest beach sand and push it to the dune.

- **Profile #139 – 81<sup>st</sup> Street, Long Beach Township, Ocean County** (fig. 64)

This site is located at the seaward end of 81<sup>st</sup> Street set along the north edge of the beach access path. The profile begins at the landward toe of the dune. The dune width is marginal due the encroachment of oceanfront homes developed on the landward slope north and south of the profile line. The dune north of the site is extremely narrow and low while south of the site the dune width and elevation are slightly greater. Dune grass and seaside goldenrod are present but very sparse on this stretch of dune. The dune width was approximately 50 feet with a crest elevation of 17.6 NGVD.

This beach varied seasonally with wide berms following the summers and offshore deposition following each winter. The two summer seasons were very similar except for the depth of the trough landward of the offshore bar in 2005. The October storm events altered this site because news articles from Long Beach Island were near universal in reporting on erosional scarps cut into the dunes.

- **Profile #138 – Old Whaling Road, Long Beach Township, Ocean County** (fig. 65)

The profile at Whaling Road starts at the landward dune toe and was set along the north side of the beach access path through the dune between oceanfront properties. As seen at several other sites on Long Beach Island the oceanfront homes were built on the landward dune slope north and south of the profile line and the foundation footprints reduce the overall dune width shown on the plot for this open lot. On the profile line, the dune width is about 140 feet at the base with a crest elevation of 24 feet NGVD and a width of 10 feet. Little sand was added to the dune during these four surveys.

The seasonal pattern of summer berm growth and offshore bar deposition were dutifully followed at this site with near perfection to the textbook model for this process. The October storms removed the sand fronting several homes in this part of Long Beach Island leaving them sitting on their pilings and waves washing under them. Sand was hauled onto the island from the mainland to restore the elevation under these homes.

- **Profile #137 – Taylor Avenue, Beach Haven, Ocean County** (fig. 66)

Profile line #137 is set on the open lot at the seaward end of Taylor Avenue. The dune width is approximately 115 feet wide at the base with a crest elevation of 19 feet NGVD. The small beach varied seasonally with the fall of 2005 showing the widest extent of dry beach. This situation dramatically changed by October 2005 because storm waves eroded into the dune. Changes offshore involved bar creation and eventual migration back to the beach.

- **Profile #136 – Dolphin Avenue, Beach Haven, Ocean County** (fig. 67)

Profile #136 is located at the seaward end of Dolphin Avenue and begins at the landward dune toe where a wooden retaining wall was constructed to prevent sand from spilling onto the road. On the line and to the south of the profile the dune is undeveloped. In this region the dune width at the base is approximately 75 feet with a crest elevation of 18.2 feet NGVD. North of the line this dune is encroached upon by oceanfront home development and is significantly reduced both in width and elevation. Dune grasses mixed with sporadic seaside goldenrod produced modest ground cover to the landward slope and crest providing added dune stability. The plant coverage diminishes along the seaward slope becoming sparse on the foredune ridge.

The May 2004 beach was back against the dune toe slope with most of the sand offshore. The summer recovery in 2004 produced a classic berm shape in this cross section. The mild winter of 2004 – 2005 provided additional width to the berm by April 2005. This was climaxed in late August 2005 with a berm 100 feet wider than was present in May 2004 with an elevation of 10.3 feet above the NGVD 29 zero datum. This change amounted to 44.03 yds<sup>3</sup>/ft. and a 101-foot shoreline advance. Unfortunately this condition of the beach did not survive the October storm events a month and a half later.

- **Profile #135 – Webster Avenue, Long Beach Township, Ocean County** (fig. 68)

This profile is located along one of the narrowest sections of developed shorefront on Long Beach Island. The site is set south of the intersection of Long Beach Boulevard and Webster Avenue. Along this stretch of Long Beach Blvd. the road is flanked by a single row of homes with no cross streets on the seaward side. Immediately southwest of the site, marshland borders the road along the bay side. Homes were built on the landward dune slope, affecting the dune configuration north and south of the profile line. The profile line was established along a beach access path between the oceanfront properties, on an undeveloped area that represents a more natural dune configuration. The profile starts on the landward side of Long Beach Blvd. and includes the road. The dune width is about 140 feet at the base with a crest elevation of 21 feet NGVD. Dune grass is mixed with some planted pine and bayberry that inhabit the landward slope between and in front of the properties, the dune grass mixed with a few goldenrod plants continued over the crest. On the seaward slope the plant density is sparser.

Seasonal deposition created a narrow berm at this site during both summer periods. The offshore became very flat and sloped continually seaward in late August 2005. Here the dune was scarped to the crest in October and the beach was all but erased. Some recovery will occur, but this is a narrow, vulnerable location for severe storms.

- **Profile #234 – Holgate Wildlife Reserve, Long Beach Township, Ocean County** (fig. 69)

This site is located at the south end of Long Beach Island between the Holgate Wildlife Area and the development on the island. This is a narrow strip of undeveloped dune. The back dune area is covered by bayberry, pine, dune grass and other native species that flourish in this natural region. From the secondary ridge seaward dune grass is the dominant species that flourishes over the swale and is mixed with goldenrod on the landward slope. From the crest, seaward the plant coverage quickly diminishes to just a few sparse dune grass rhizomes and sea rocket near the dune toe. The profile starts on the secondary ridge and continues across a swale to the primary dune ridge. This

feature is only 60 feet wide at the base. A small volume of sand reached the dune system over the 18 months of study.

Positioned as it is just south of the terminal groin protecting developed property on Long Beach Island, this site suffers sand starvation when sediment moves south along the beach. The low impact winter of 2004 – 2005 allowed sand to increase the beach width by 120 feet in spite of a small change in the zero elevation shoreline position. By late August 2005 the beach had retreated and the offshore slope was considerably lower. The site lost 51.46 yds<sup>3</sup>/ft. but the shoreline only retreated by 12 feet.

### **SUMMARY OF OCEAN COUNTY:**

The northern Ocean County shoreline extends from Manasquan Inlet at Pt. Pleasant Beach where the uplands sedimentary bluff disappears from exposure at the modern beach in Bay Head and continues south as the geologically modern sand spit to Barnegat Inlet, located at the southern end of the magnificently natural 9.75-mile Island Beach State Park. The thirteen NJBPN monitoring sites in the northern segment indicate this shoreline has been remarkably stable. Much of the shoreline is open to free littoral sand transport and is positioned on the New Jersey coast where the average northerly and southerly littoral transport rates essentially balance over time. Northeast storms tend to move sand south toward the Barnegat Inlet jetty, while southeast events tend to move the sand north toward the Manasquan Inlet. Large depositional fillets at both the southern jetty at Manasquan Inlet and at the northern jetty of Barnegat Inlet tend to document this sand transport balance. Sand might move north for extended time intervals, but any northeast storm will rapidly adjust the transport rate to the south to balance the equation. This is a zone of near-equilibrium in littoral transport processes and relatively long-term beach stability appears to be the result.

The southern 21-mile section of Ocean County is known as Long Beach Island with fourteen NJBPN monitoring sites, which record beach changes within the 18-mile developed region of the northern most barrier island in New Jersey. It is the longest barrier island in New Jersey and historically has been divided by storm events in up to three separate islands. Today it is a highly developed region made up of six municipalities with the southern 3 miles preserved by the Holgate Unit of the Edwin B. Forsythe National Wildlife Refuge. The dune system varies in width from very narrow to truly vast. The most extreme case of the latter is the northernmost site on the island at 10<sup>th</sup> Street in Barnegat Light where as of November 2005 the dune width had reached 1285 feet (at the #245 profile site) as a direct result of the southern jetty re-orientation at Barnegat Inlet (completed in 1991, Philadelphia District Corps of Engineers). Conversely, the profile at Dolphin Avenue in Beach Haven, located along the southern portion of the island, has a dune width of only 90 feet. Any storm event eats into the dune volume and it is clear that a severe storm will overwhelm the dune and wash across the island to Barnegat Bay.

The undeveloped area in Holgate is under management by the Edwin B. Forsythe Wildlife Refuge with the main office in Atlantic County. Long-term shoreline changes have impacted this area more than other regions because the shoreline has no shore protection structures and lies in a down-drift direction from the 97-groin field along the rest of Long Beach Island. There is a 700 to 900-foot westward offset in the shoreline position between 1899 and 1994, by far the largest in Ocean County. This was due to the opening of “Beach Haven” Inlet in 1920 followed by the southern migration of this new inlet over the next 30 years effectively erasing the detached segment of Long Beach Island. This truncated segment of Long Beach Island became known as Tucker’s Island, which vanished by 1950, but the northern side of the new inlet migrated south as well, into a position considerably landward of the shoreline prior to the inlet opening.

The comparison of the 1899 pre-inlet opening shoreline with the post-migration position in 1994 yields a progressively greater landward displacement from Dolphin Avenue south to the tip of the spit.

The 27 Ocean County cross sections showed that seasonal changes vary considerably with storm climates and summer accretion. This series ends with the fall 2005 profiles run over a time period from August 30, 2005 to December 7, 2005 and effectively bracket a pair of northeast storms that were quite efficient in eroding the beach and transporting large volumes of sand seaward. Dunes were scaped and in a few places, homes were undermined so that the waves washed freely beneath the buildings. Sand was hauled onto the island from mainland sand quarries and dumped along the most severely eroded areas. Municipalities acted later to bulldoze sand from the beach to the dune to repair the eroded toe slope.

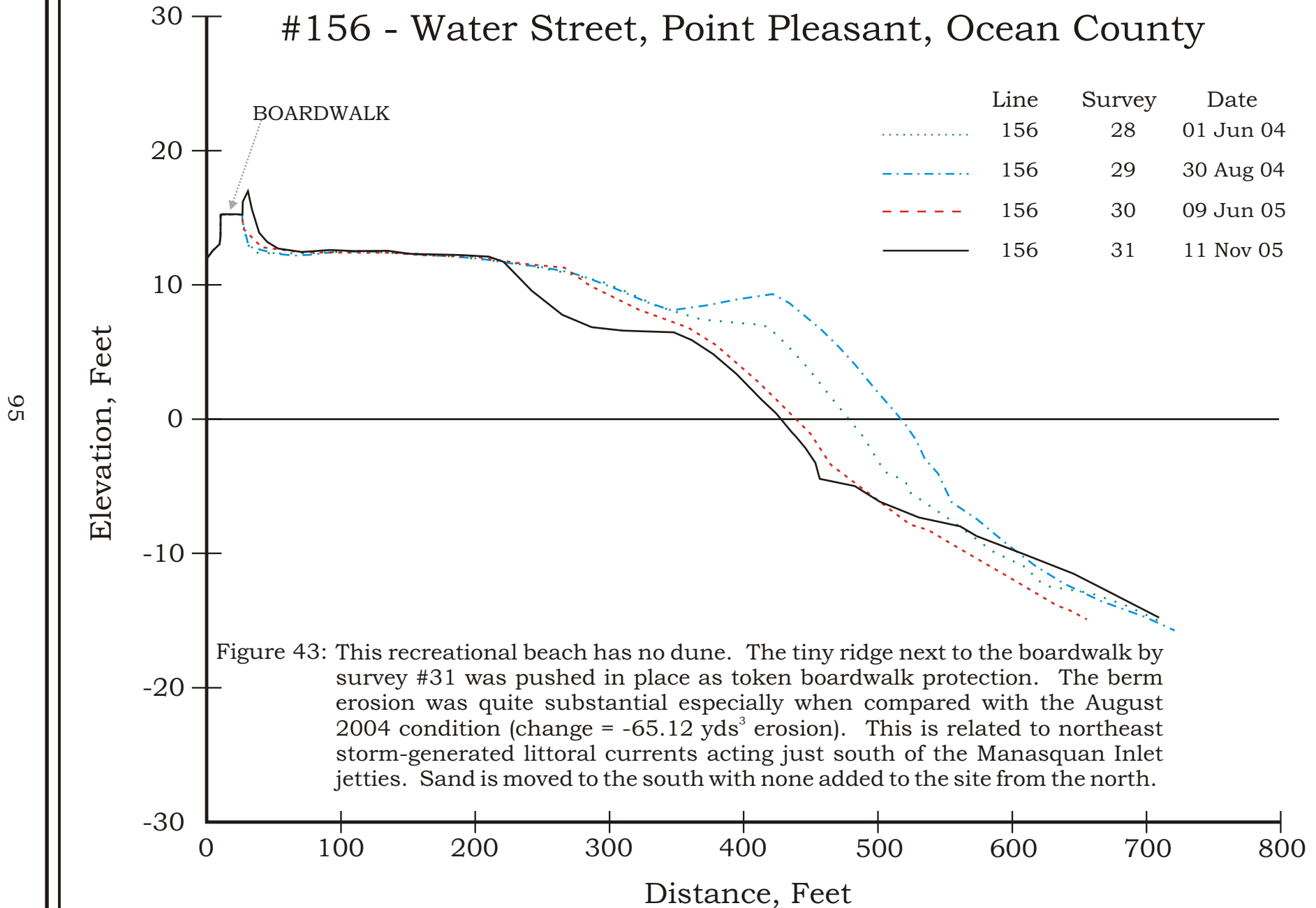
Those profiles run prior to the storms show a well-developed summer berm and wide beach with a near flat offshore slope because all the offshore sand is piled on the beach. Those surveyed following the storms show a tiny recovery berm on the beach, but a cut into the dune toe slope and a much larger than normal offshore bar in deeper water from those the past several winters. Surveys generally go to (-)14 to (-)16 feet of water and sand was moved further seaward by these two events as witnessed by deposition of up to 4 feet of sand at the seaward most end of the profile line surveyed. This year the averages for all of Ocean County are presented in the Seasonal Sand Volume and Shoreline Change tables at the front of this section of the report.

As this report is being written, the US Congress has inserted funding for going to construction on the Long Beach Island Shore Protection project developed by the US Army Corps of Engineers (ACOE) Philadelphia District. Funding is currently limited to sufficient money to start by hauling sand by truck to Surf City and Harvey Cedars. The lion's share of funding is part of the Water Resources Development Act of 2006 (WRDA) currently stalled in Congress. If passed and signed into law, the ACOE will be in position to begin to undertake the restoration of the developed portion of the Long Beach Island shoreline. The project will not include the wide segment from the Barnegat Inlet jetty to about 26<sup>th</sup> Street in Barnegat Light Borough and will stop at the end of development in Beach Haven at the border with the Forsythe Refuge.

The WRDA bill of 2006 also continues funding to move the Northern Ocean County Shore Protection project closer to a Planning and Engineering Design (PED) document to be submitted to the US Army Corps of Engineers Commander in Washington, DC. This document is required prior to seeking construction funding. This step will need to wait for a subsequent WRDA bill in Congress. As of publication of this report, the 107<sup>th</sup> Congress failed to enact the WRDA of 2006 and the continued funding for this project will depend on the NJ State Congressional delegation's ability to insert funds into the FY2008 budget for these new shore protection efforts and to be able to maintain the existing projects already completed.

# New Jersey Beach Profile Network

#156 - Water Street, Point Pleasant, Ocean County



# New Jersey Beach Profile Network

#155 - Maryland Avenue, Point Pleasant, Ocean County

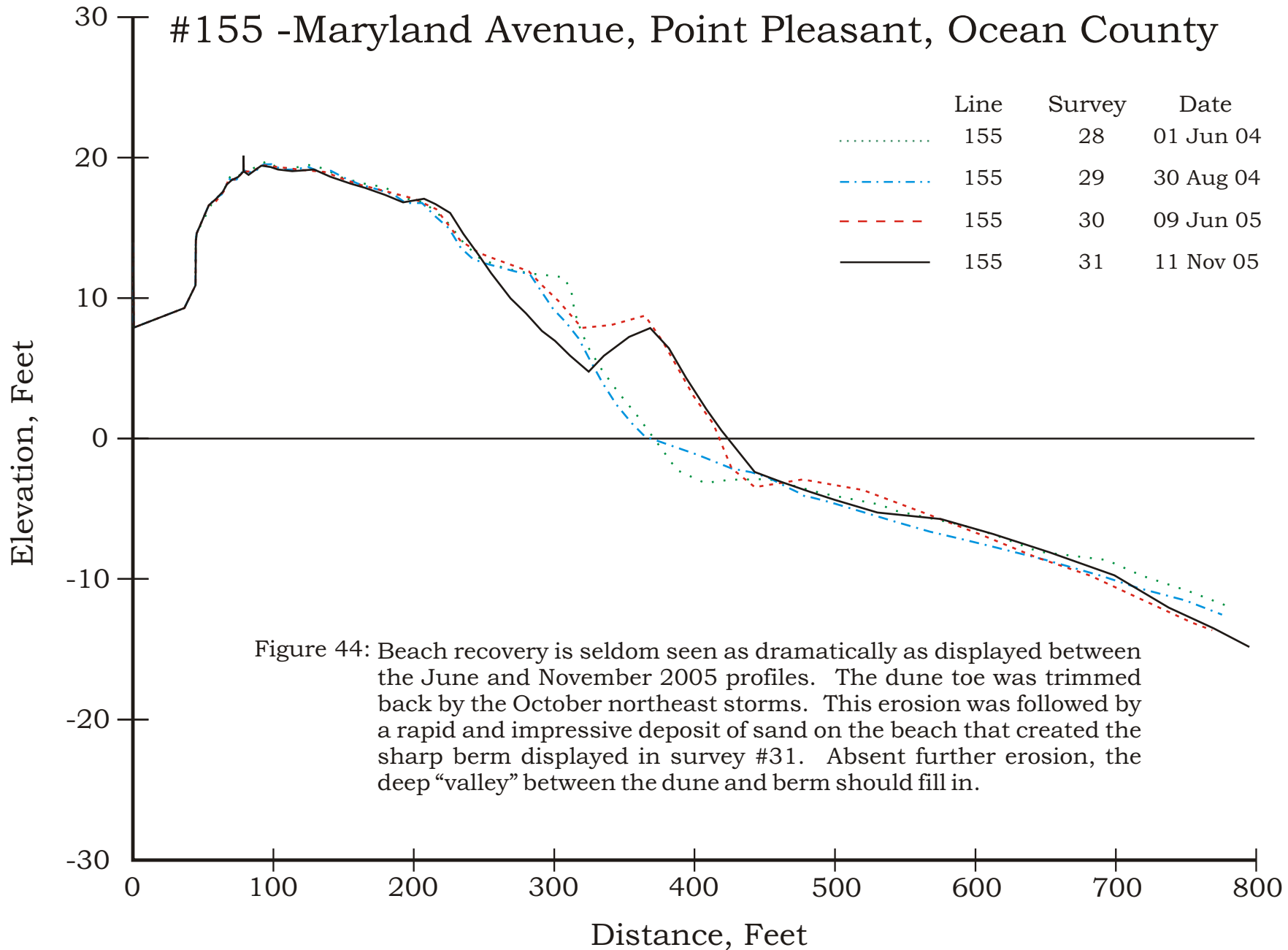
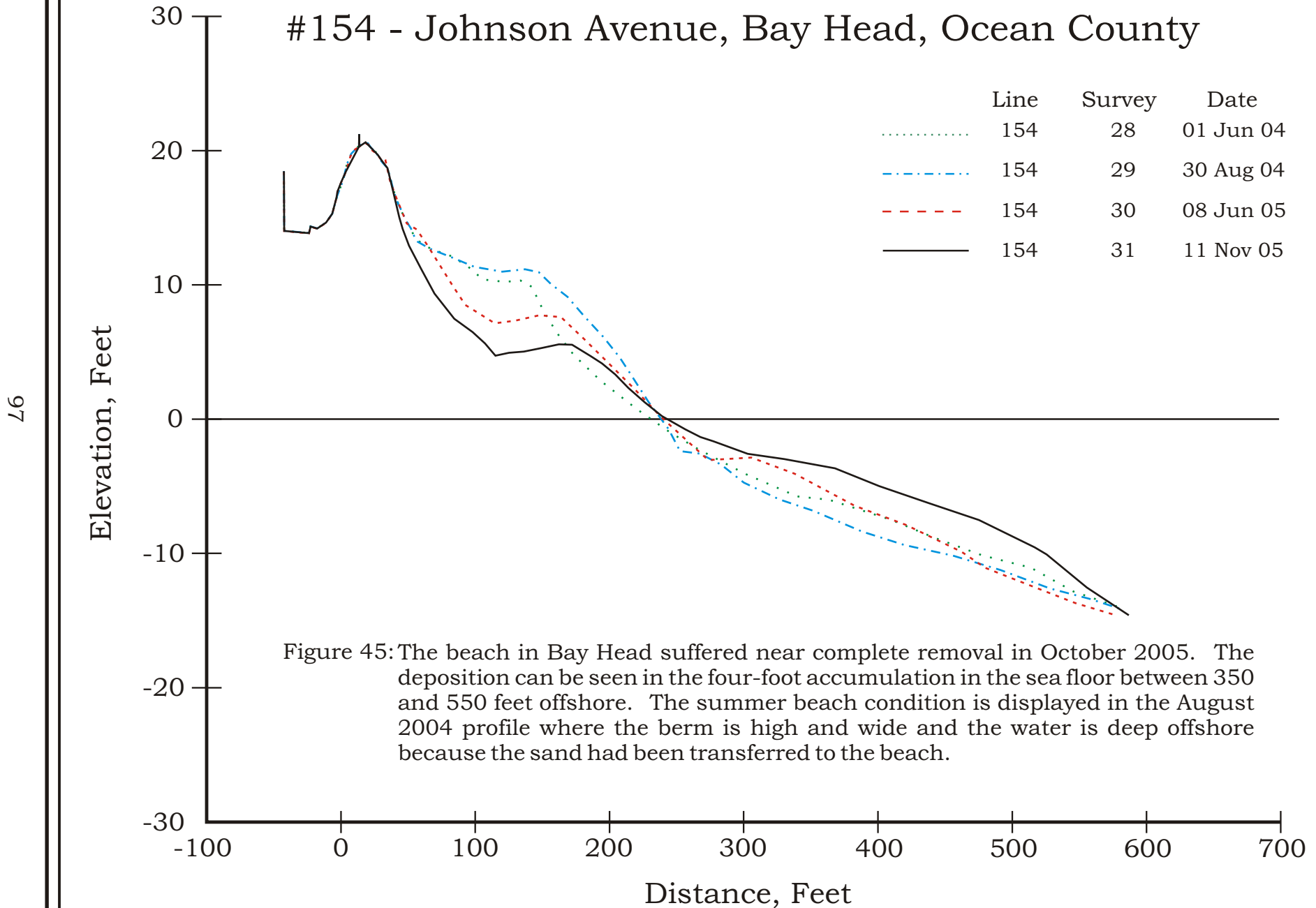


Figure 44: Beach recovery is seldom seen as dramatically as displayed between the June and November 2005 profiles. The dune toe was trimmed back by the October northeast storms. This erosion was followed by a rapid and impressive deposit of sand on the beach that created the sharp berm displayed in survey #31. Absent further erosion, the deep “valley” between the dune and berm should fill in.



# New Jersey Beach Profile Network

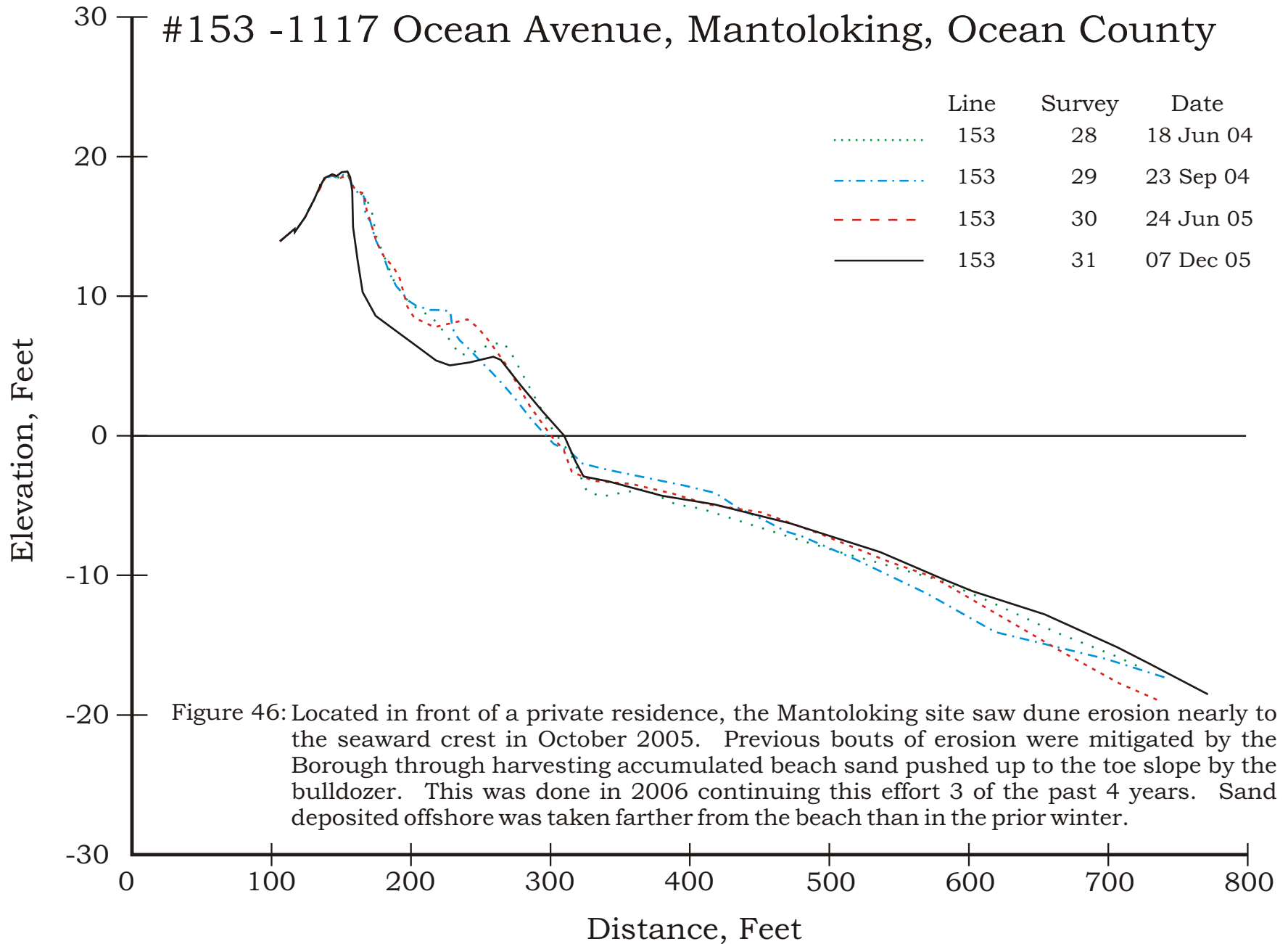
## #154 - Johnson Avenue, Bay Head, Ocean County



# New Jersey Beach Profile Network

#153 -1117 Ocean Avenue, Mantoloking, Ocean County

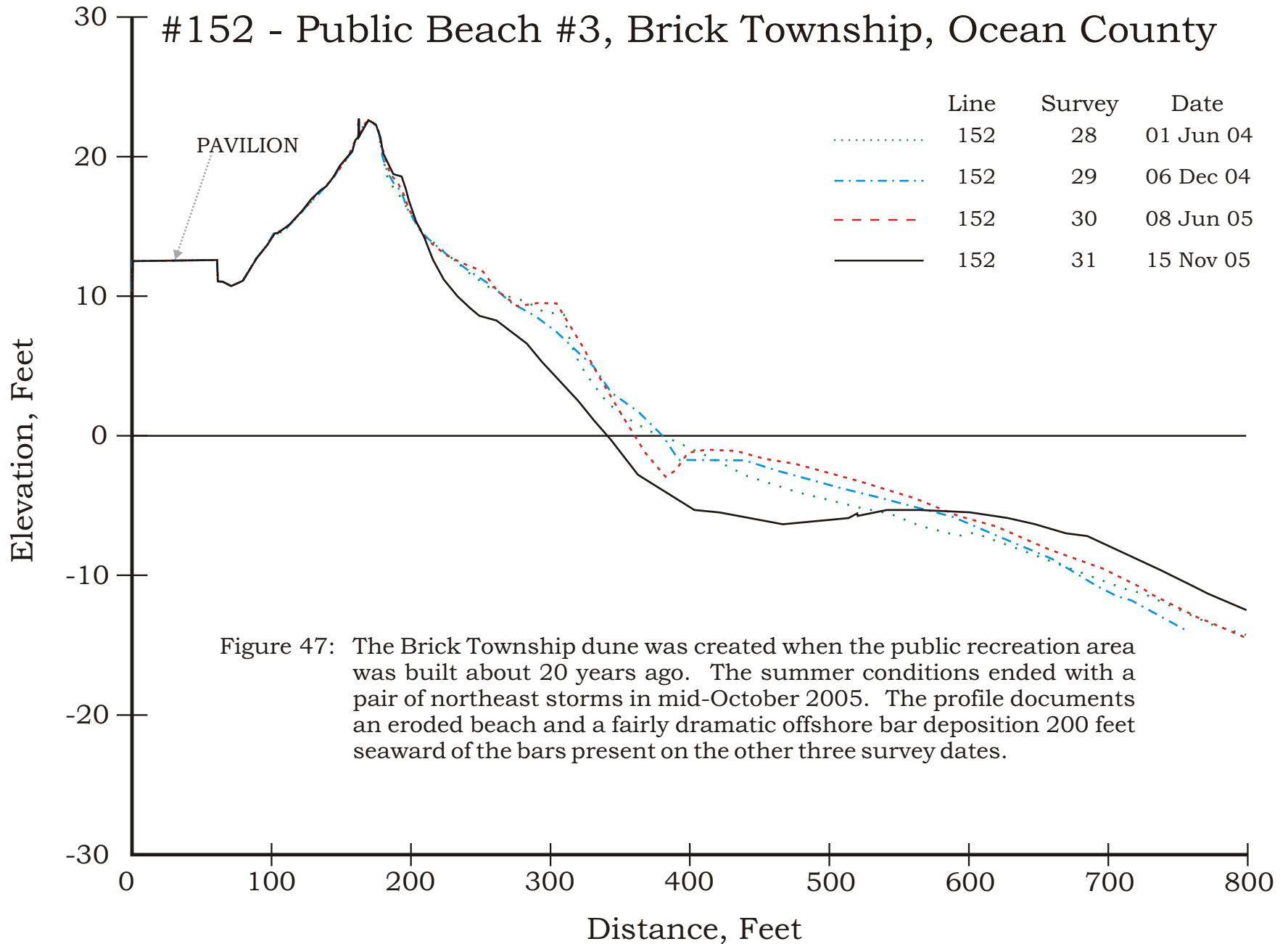
Line	Survey	Date	
.....	153	28	18 Jun 04
-.-.-.-	153	29	23 Sep 04
-.-.-.-	153	30	24 Jun 05
————	153	31	07 Dec 05



# New Jersey Beach Profile Network

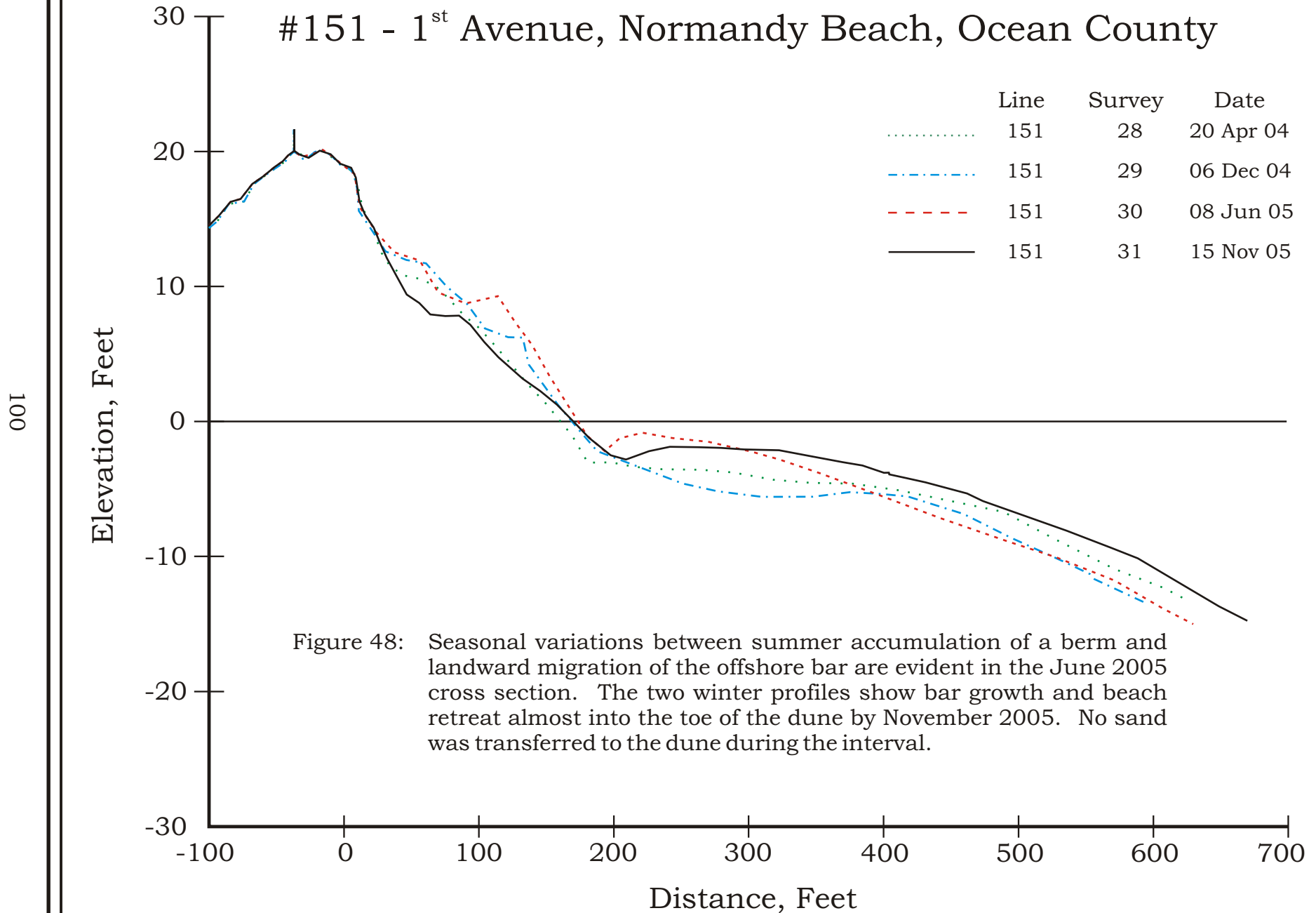
#152 - Public Beach #3, Brick Township, Ocean County

66



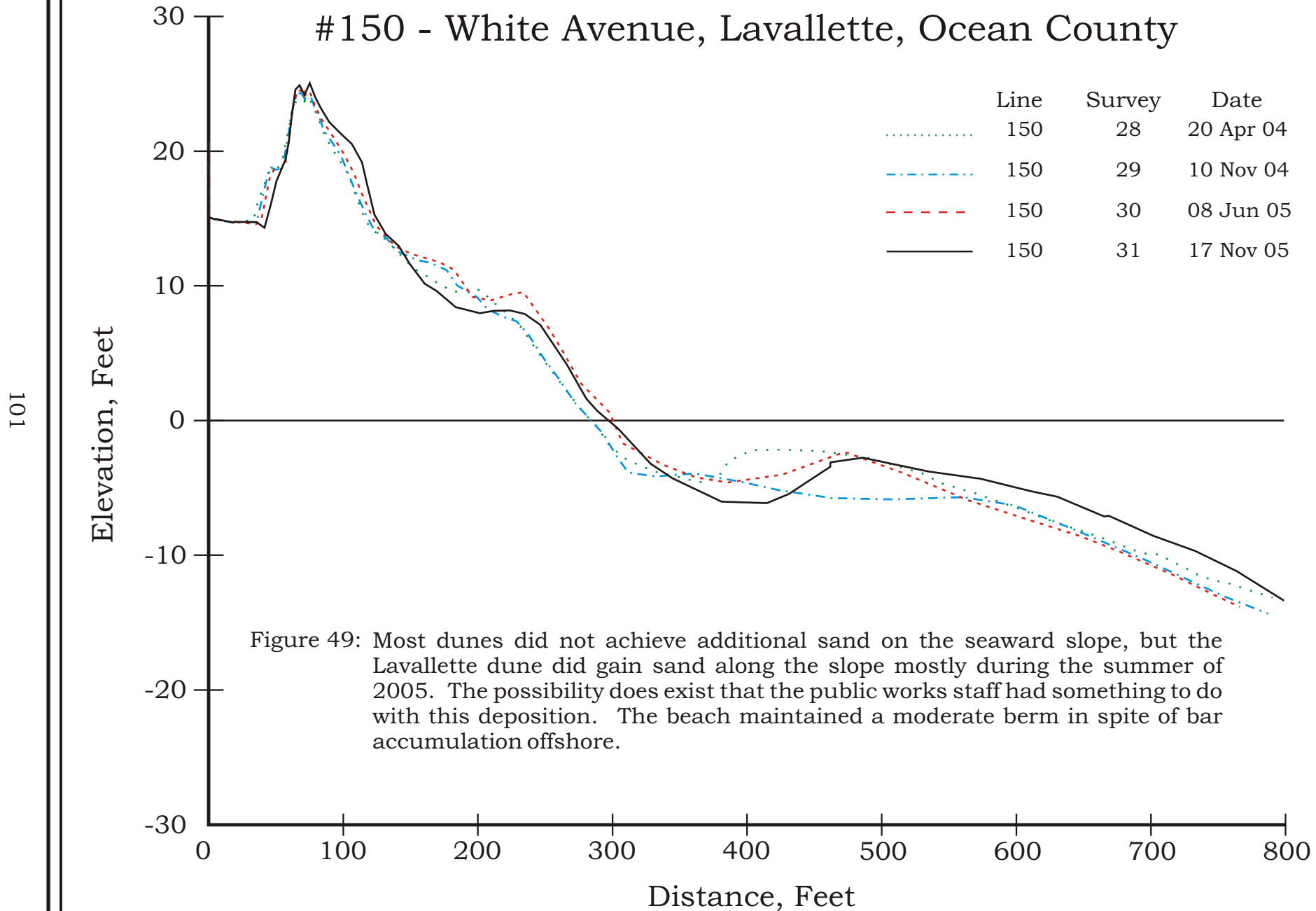
# New Jersey Beach Profile Network

#151 - 1<sup>st</sup> Avenue, Normandy Beach, Ocean County



# New Jersey Beach Profile Network

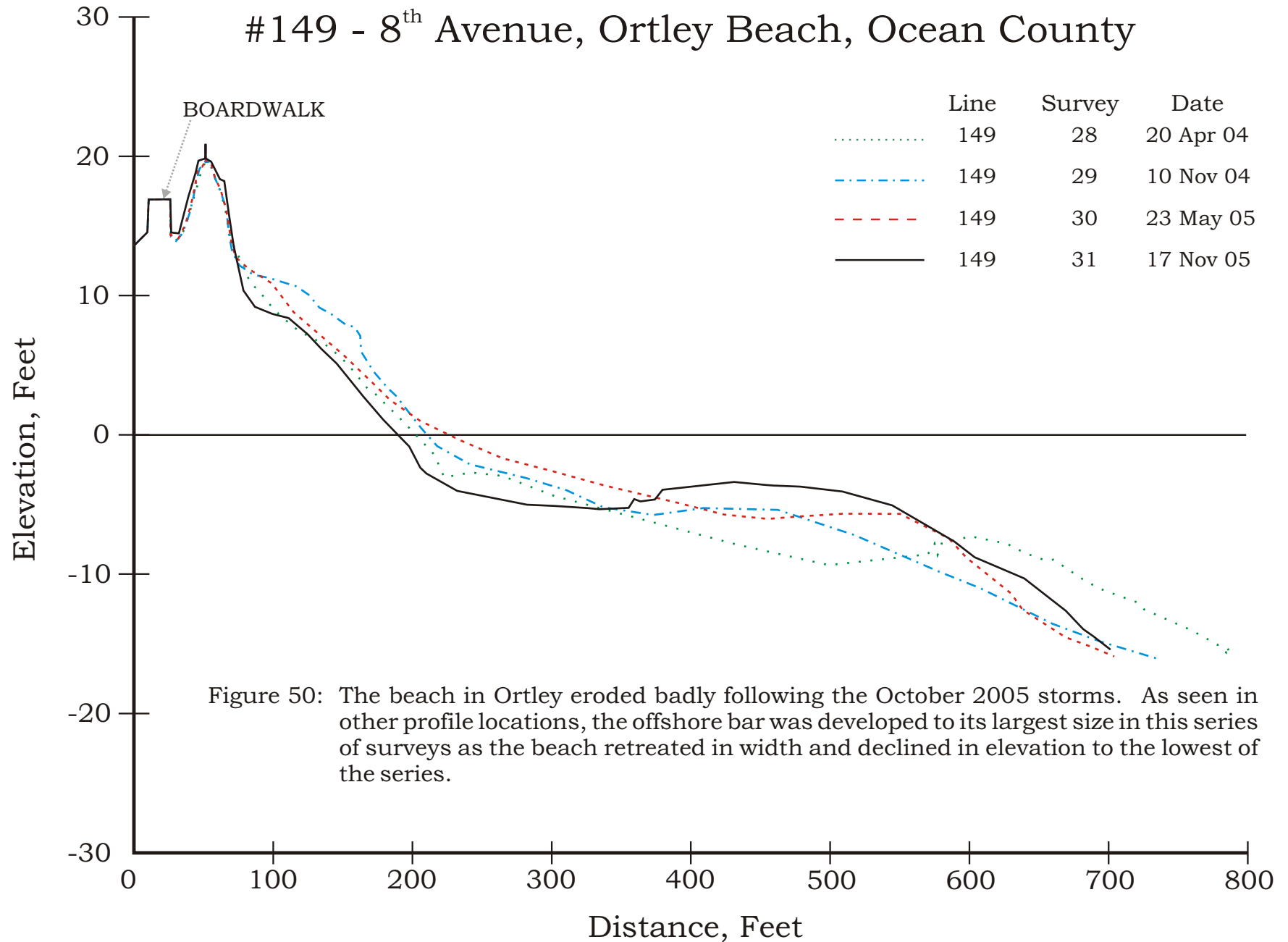
## #150 - White Avenue, Lavallette, Ocean County



# New Jersey Beach Profile Network

#149 - 8<sup>th</sup> Avenue, Ortley Beach, Ocean County

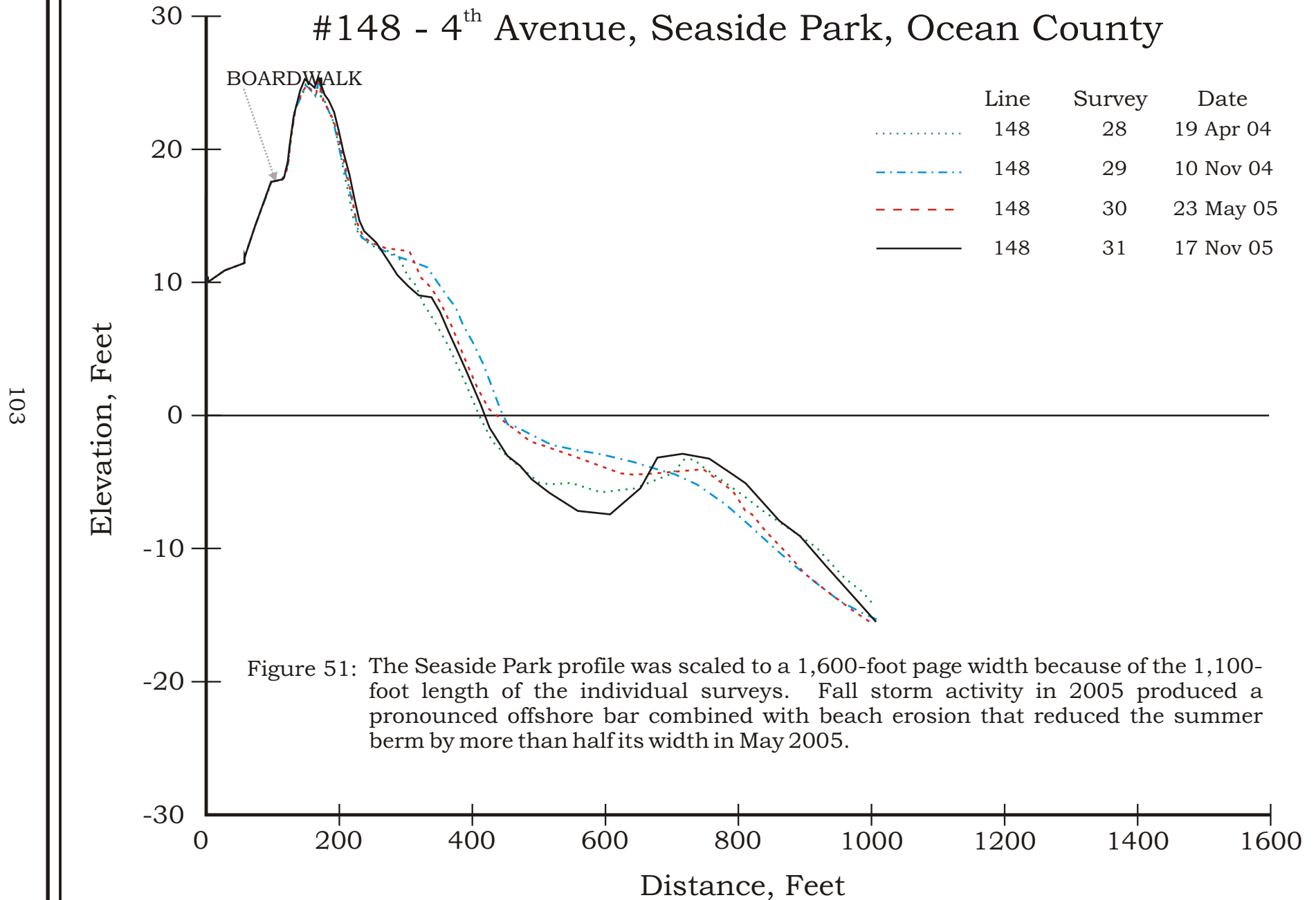
102





# New Jersey Beach Profile Network

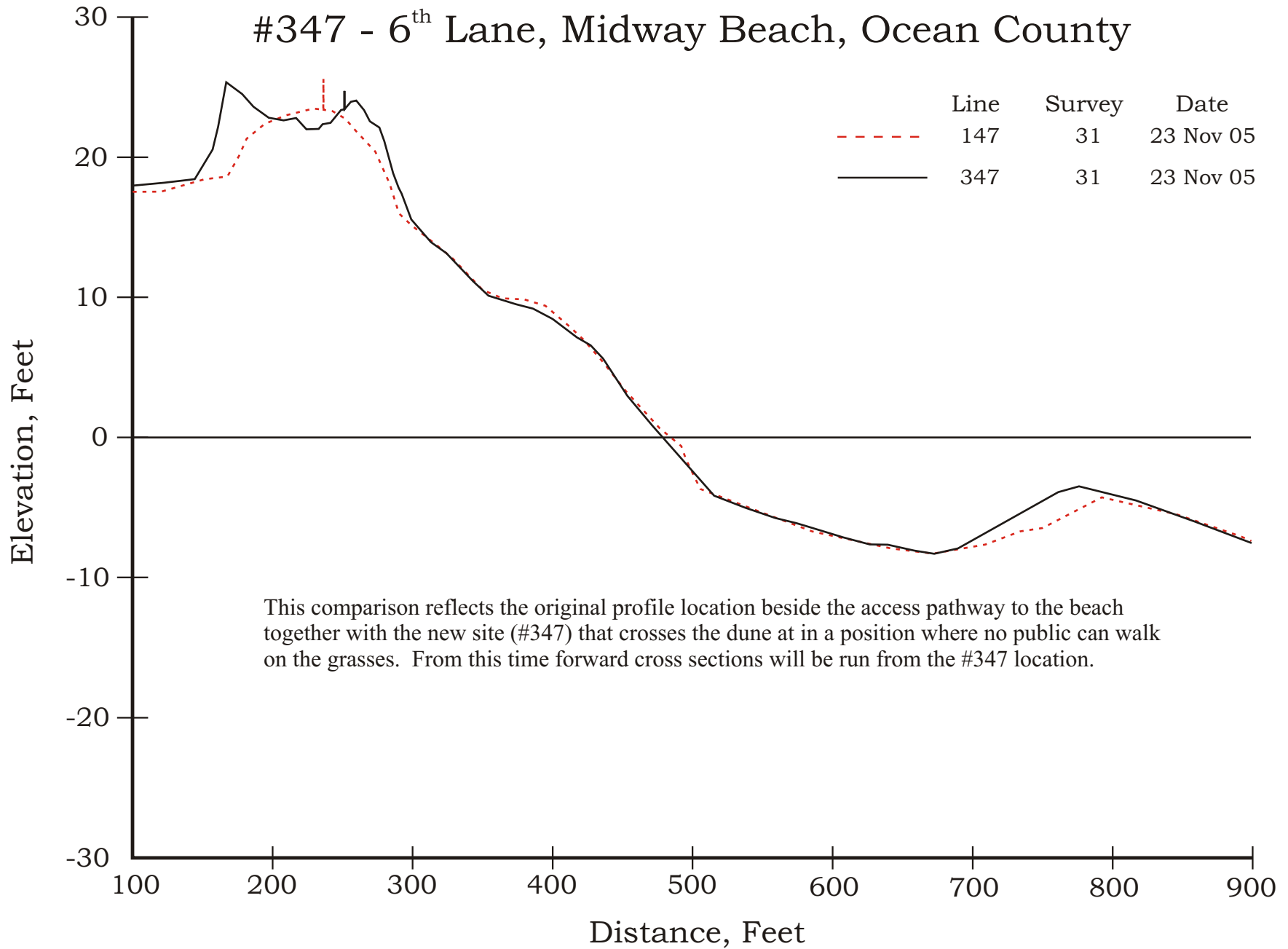
#148 - 4<sup>th</sup> Avenue, Seaside Park, Ocean County



# New Jersey Beach Profile Network

## #347 - 6<sup>th</sup> Lane, Midway Beach, Ocean County

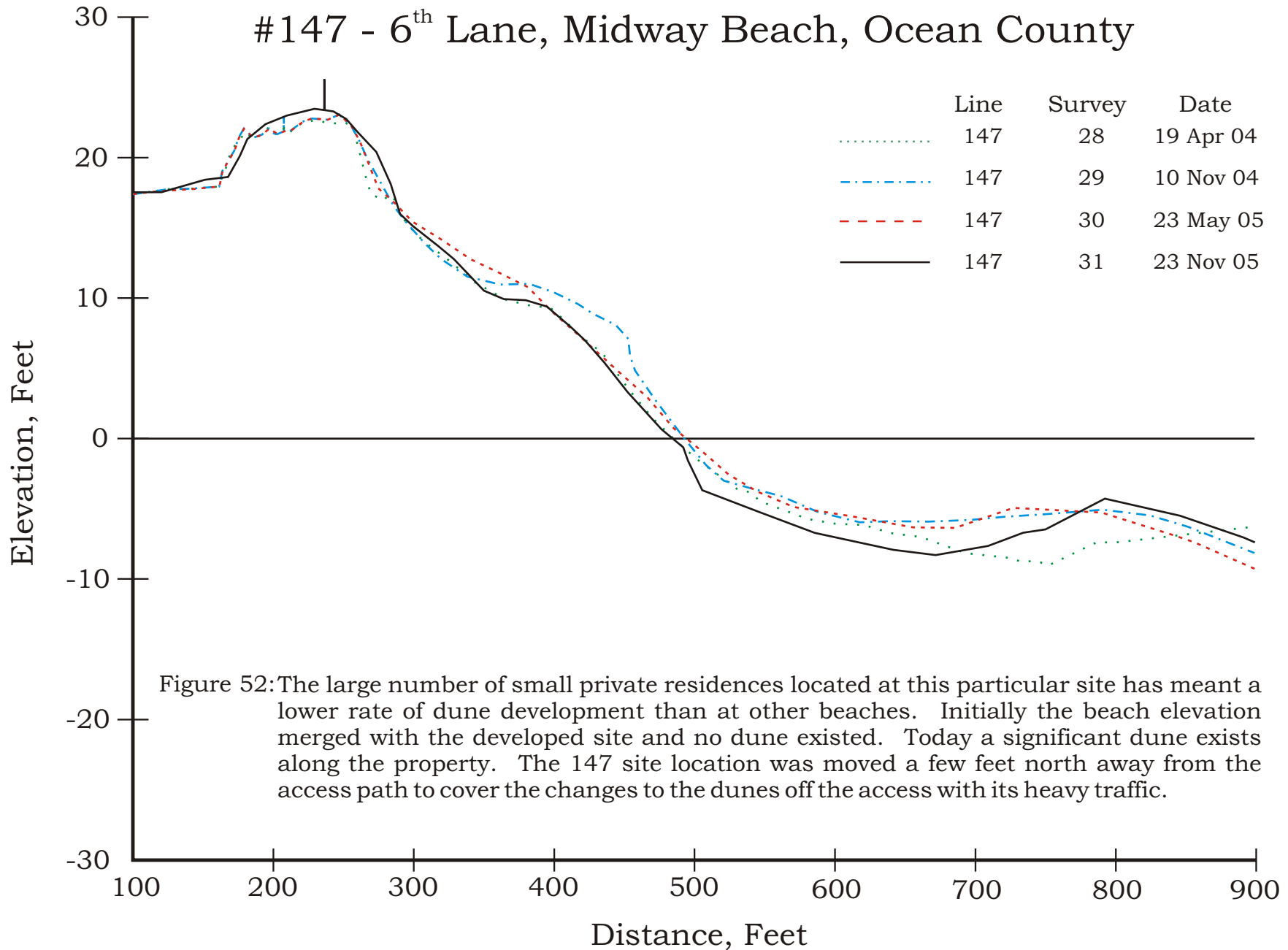
Line	Survey	Date	
---	147	31	23 Nov 05
—	347	31	23 Nov 05



# New Jersey Beach Profile Network

#147 - 6<sup>th</sup> Lane, Midway Beach, Ocean County

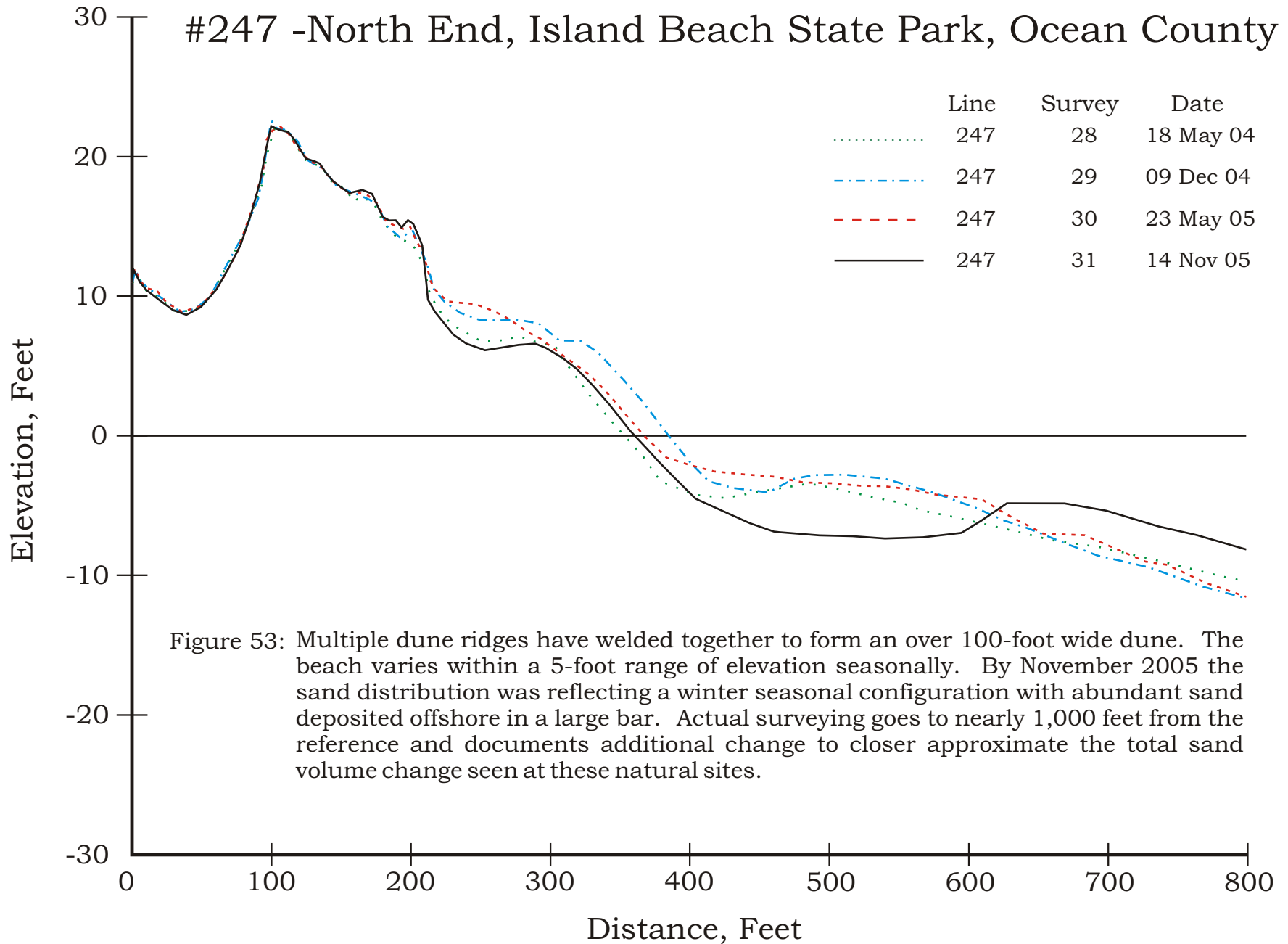
104b



# New Jersey Beach Profile Network

#247 -North End, Island Beach State Park, Ocean County

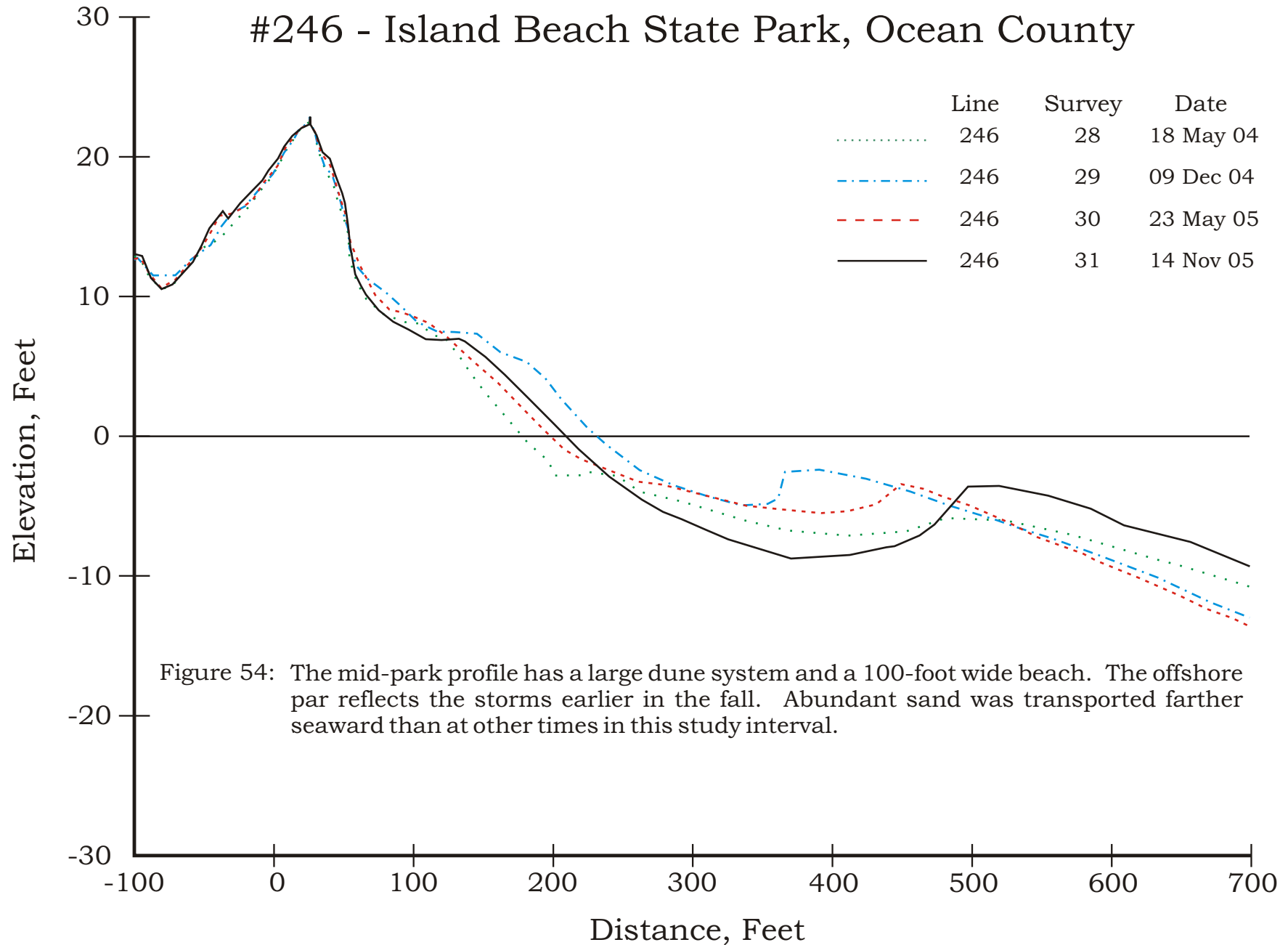
501



# New Jersey Beach Profile Network

## #246 - Island Beach State Park, Ocean County

901



# New Jersey Beach Profile Network

#146 - South End, Island Beach State Park, Ocean County

Line	Survey	Date	
.....	146	28	18 May 04
-.-.-.-	146	29	09 Dec 04
- - - -	146	30	23 May 05
————	146	31	14 Nov 05

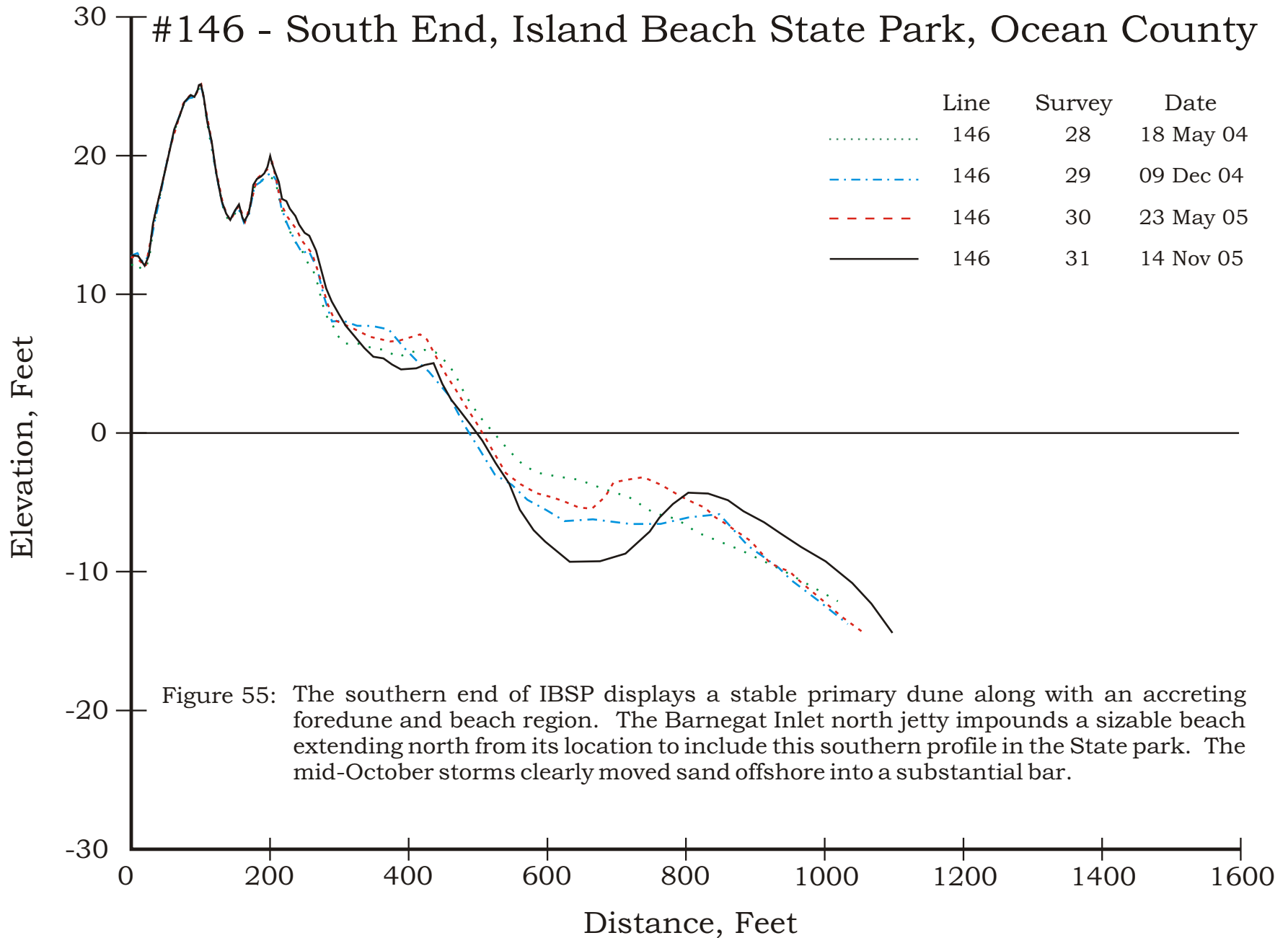
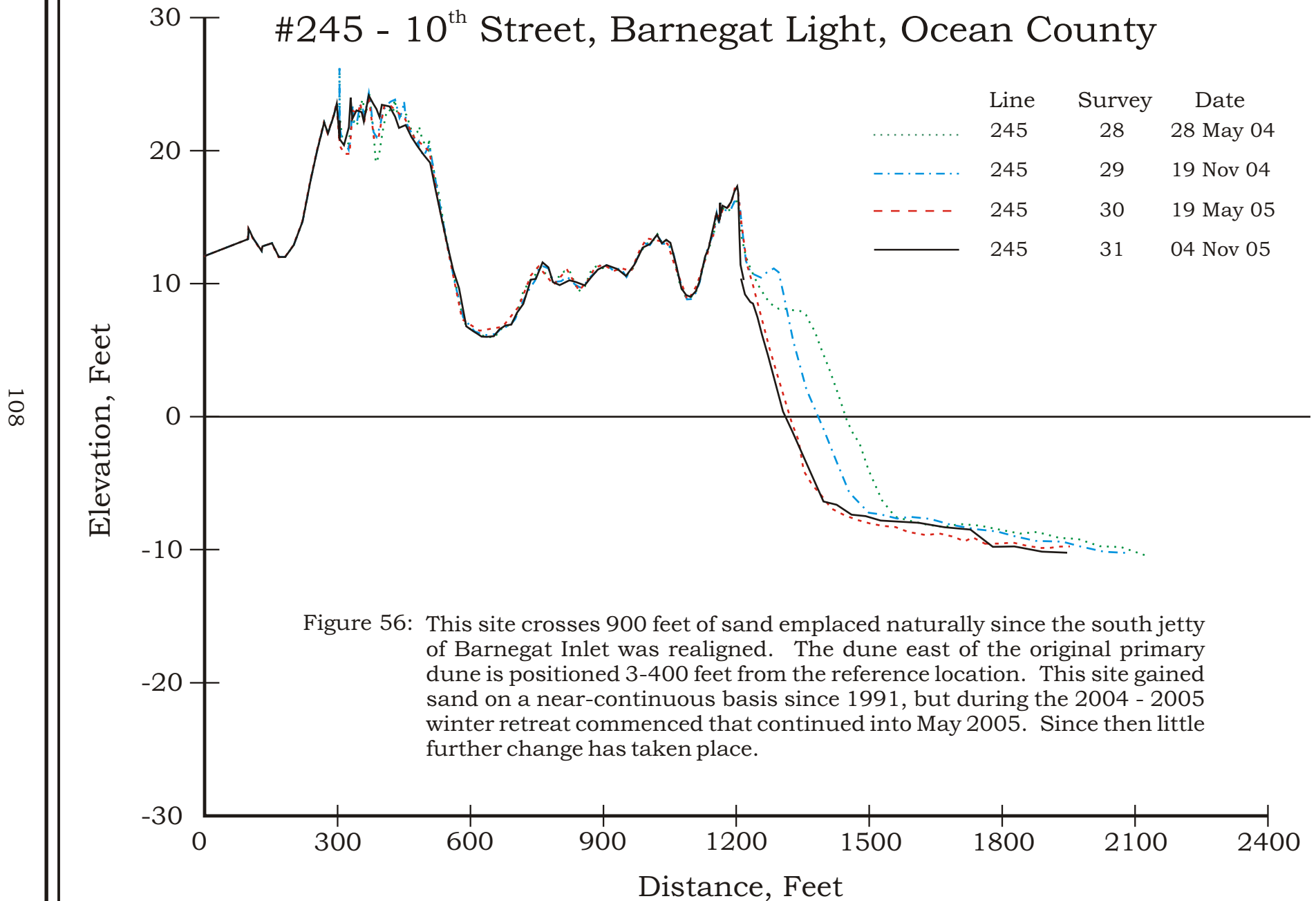


Figure 55: The southern end of IBSP displays a stable primary dune along with an accreting foredune and beach region. The Barnegat Inlet north jetty impounds a sizable beach extending north from its location to include this southern profile in the State park. The mid-October storms clearly moved sand offshore into a substantial bar.

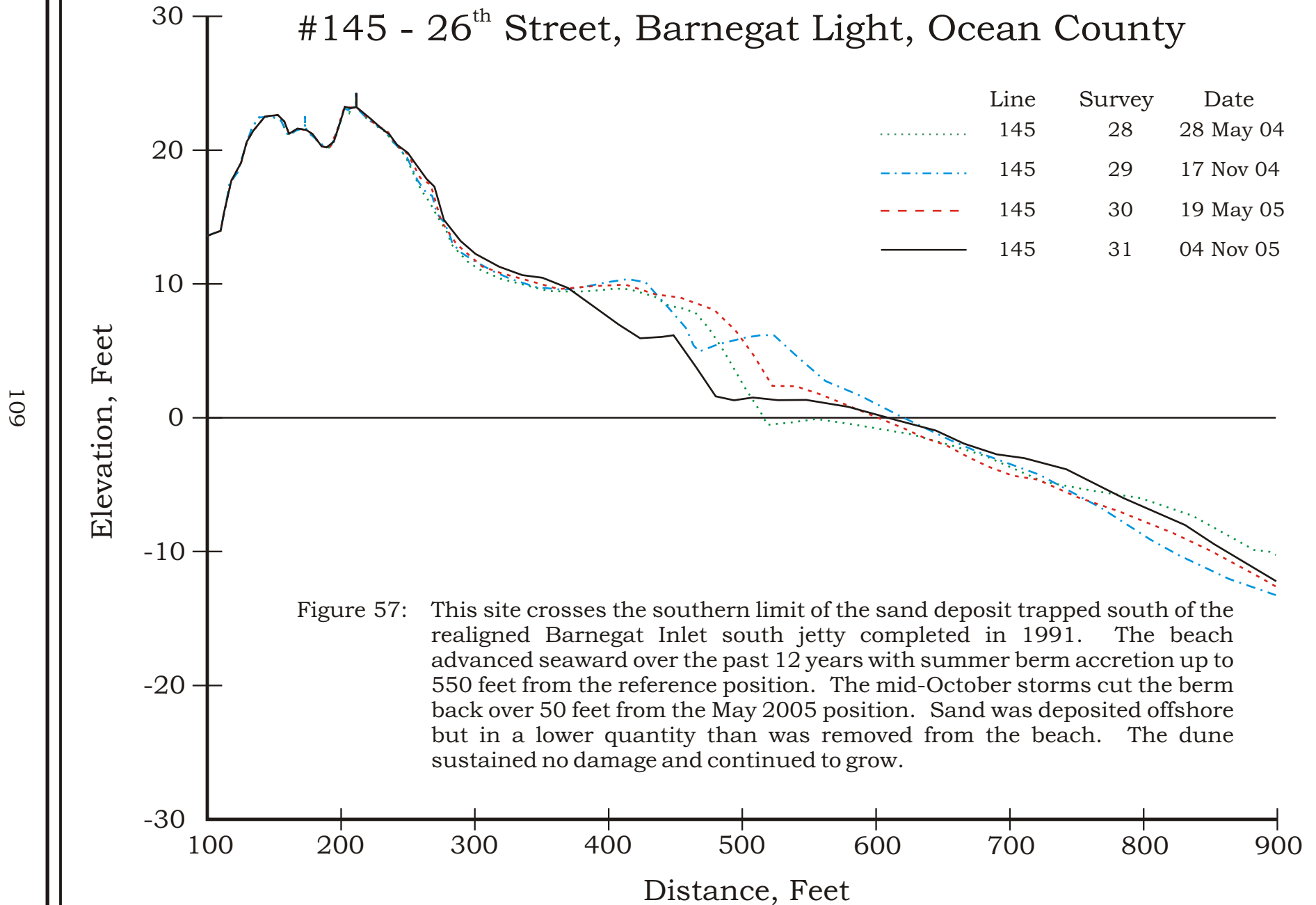
# New Jersey Beach Profile Network

#245 - 10<sup>th</sup> Street, Barnegat Light, Ocean County



# New Jersey Beach Profile Network

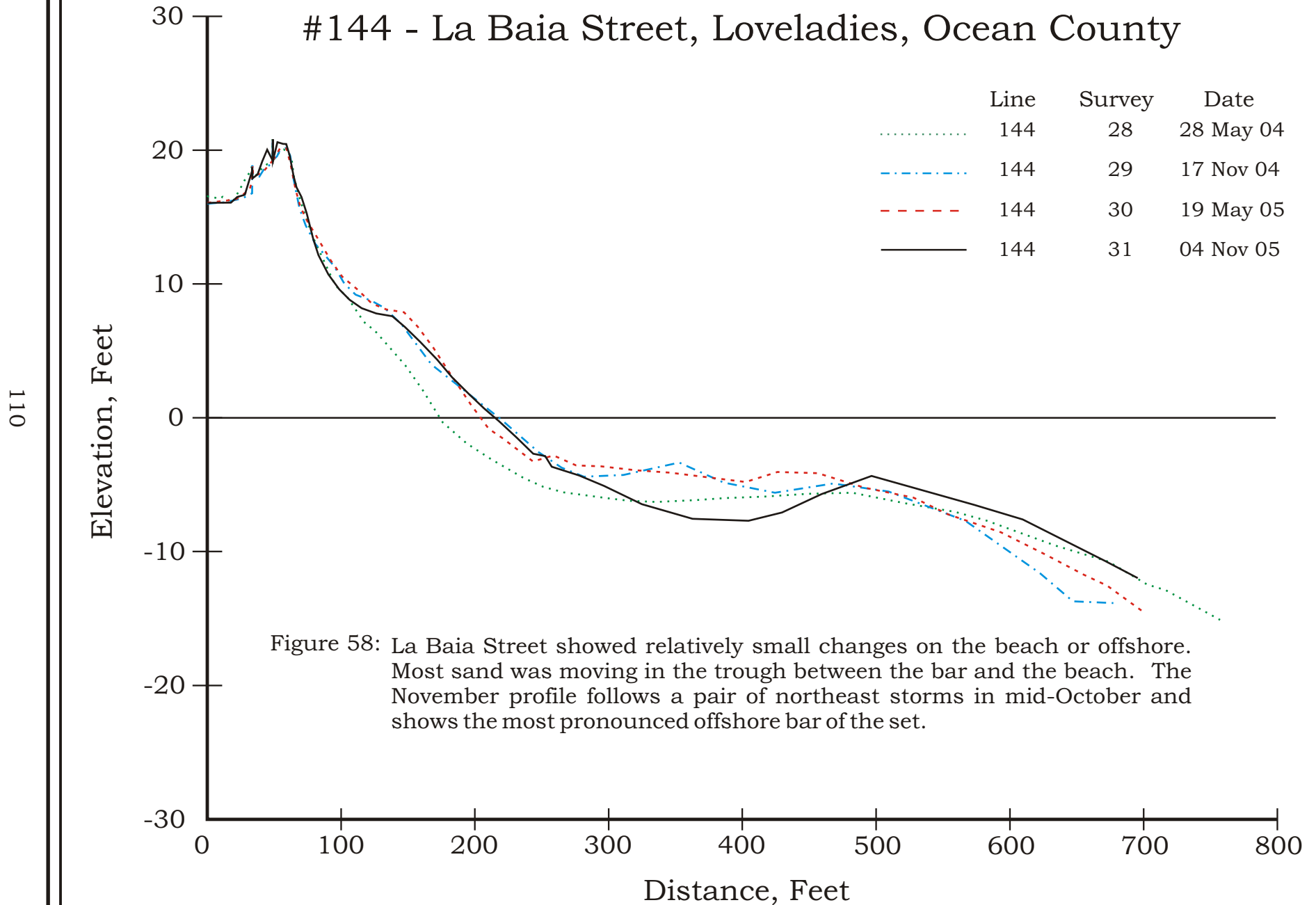
#145 - 26<sup>th</sup> Street, Barnegat Light, Ocean County





# New Jersey Beach Profile Network

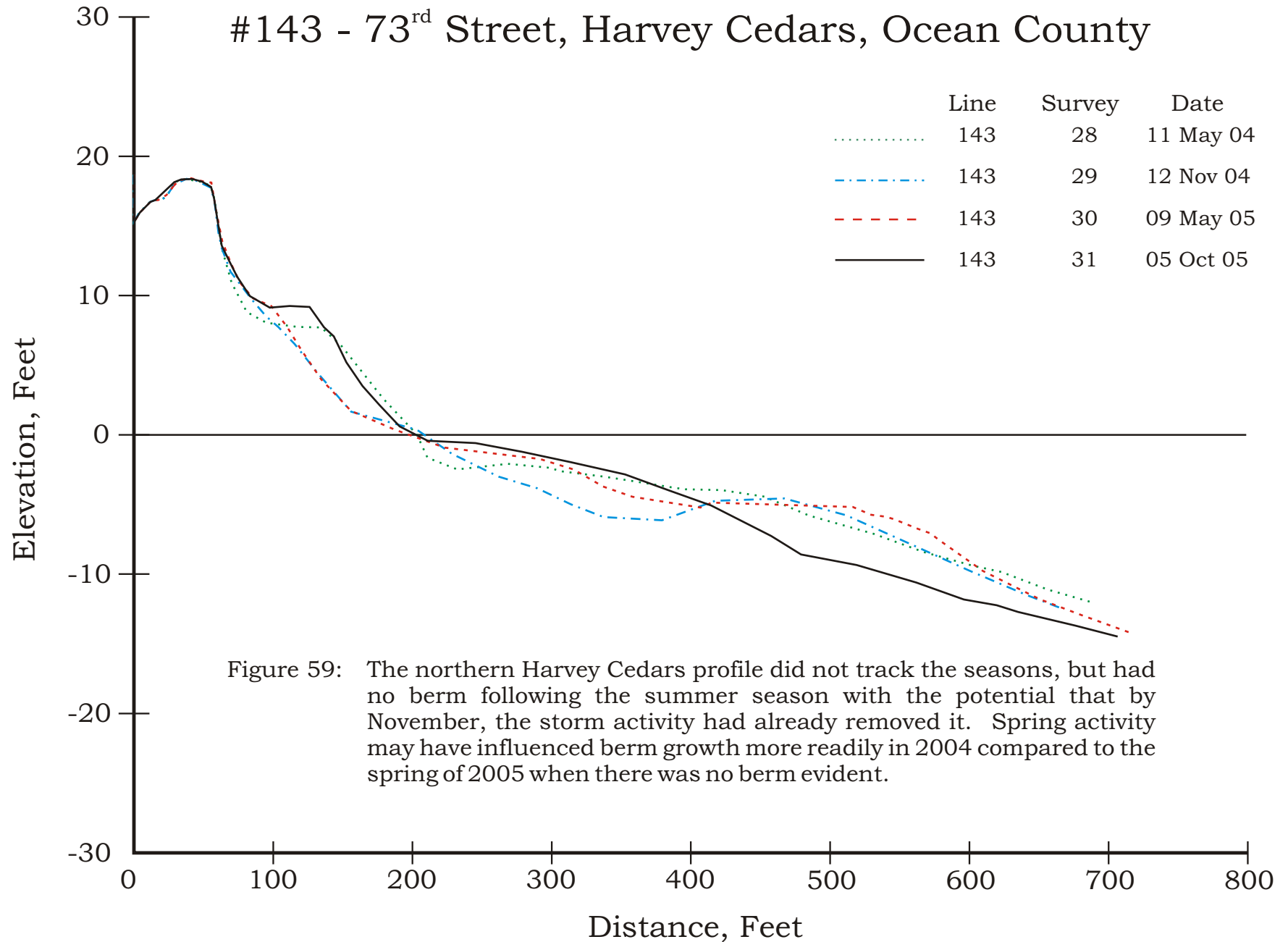
#144 - La Baia Street, Loveladies, Ocean County



# New Jersey Beach Profile Network

#143 - 73<sup>rd</sup> Street, Harvey Cedars, Ocean County

III



# New Jersey Beach Profile Network

#142 - Tranquility Drive, Harvey Cedars, Ocean County

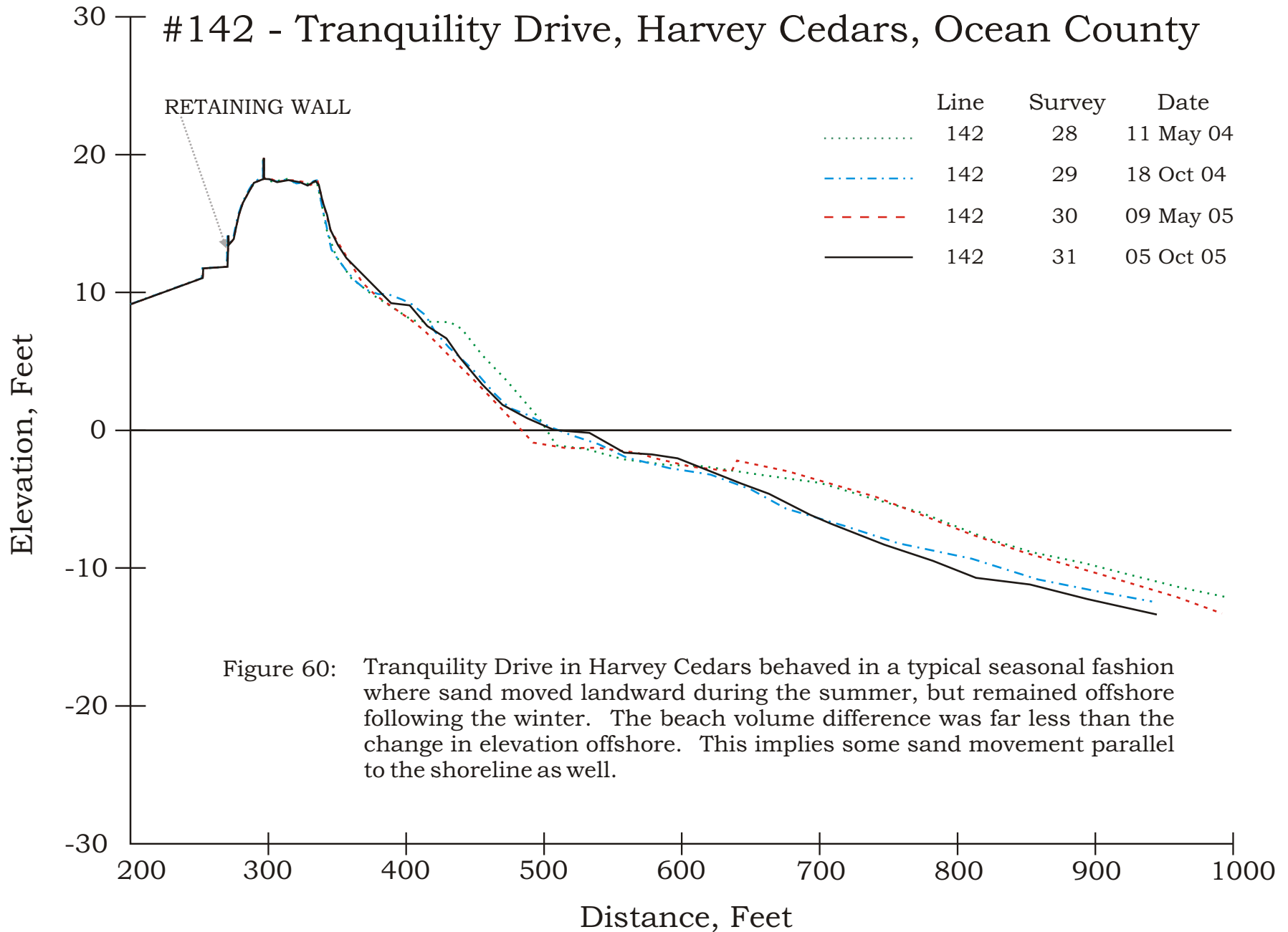
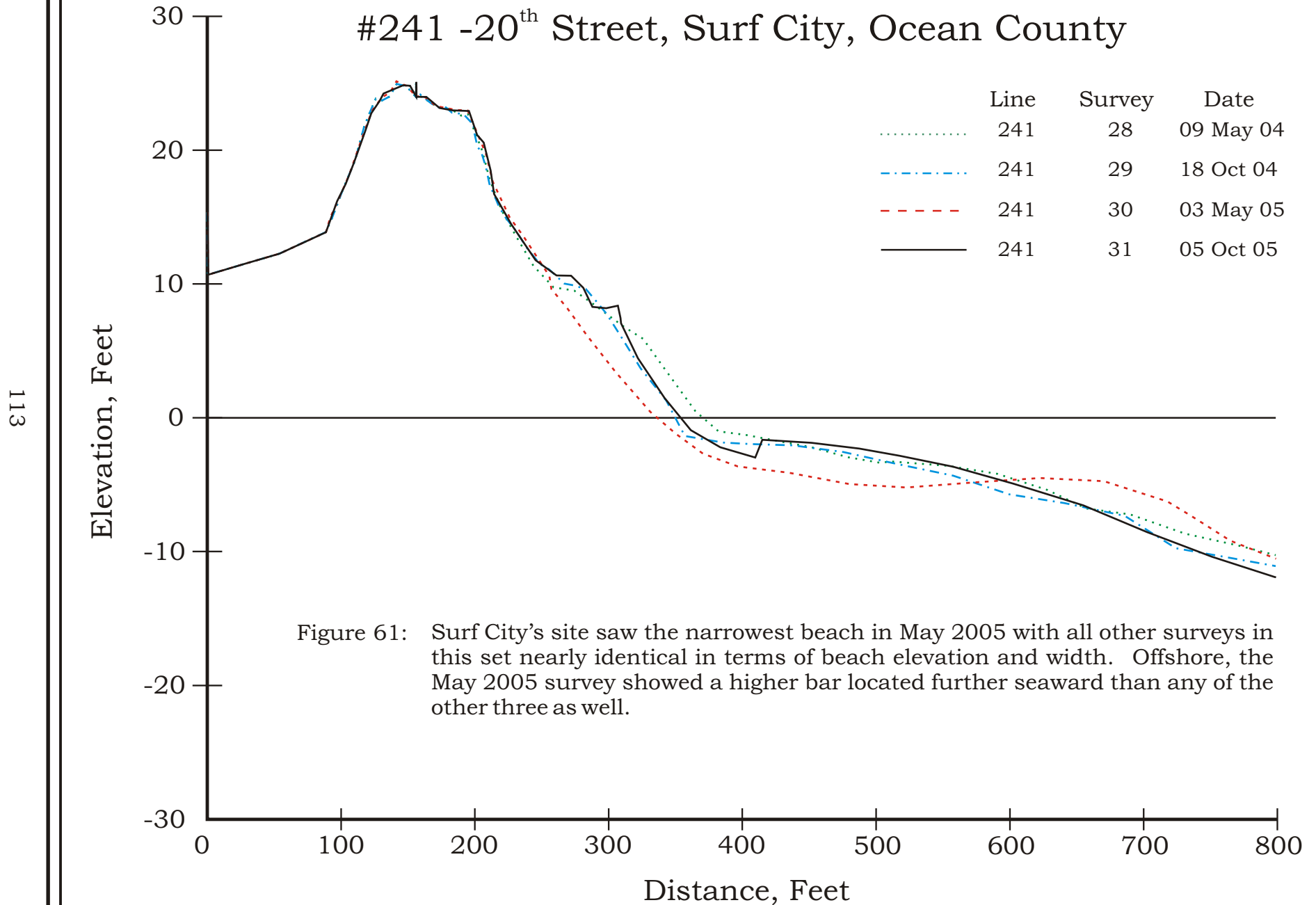


Figure 60: Tranquility Drive in Harvey Cedars behaved in a typical seasonal fashion where sand moved landward during the summer, but remained offshore following the winter. The beach volume difference was far less than the change in elevation offshore. This implies some sand movement parallel to the shoreline as well.

# New Jersey Beach Profile Network

#241 -20<sup>th</sup> Street, Surf City, Ocean County



# New Jersey Beach Profile Network

#141 - 8<sup>th</sup> Street, Ship Bottom, Ocean County

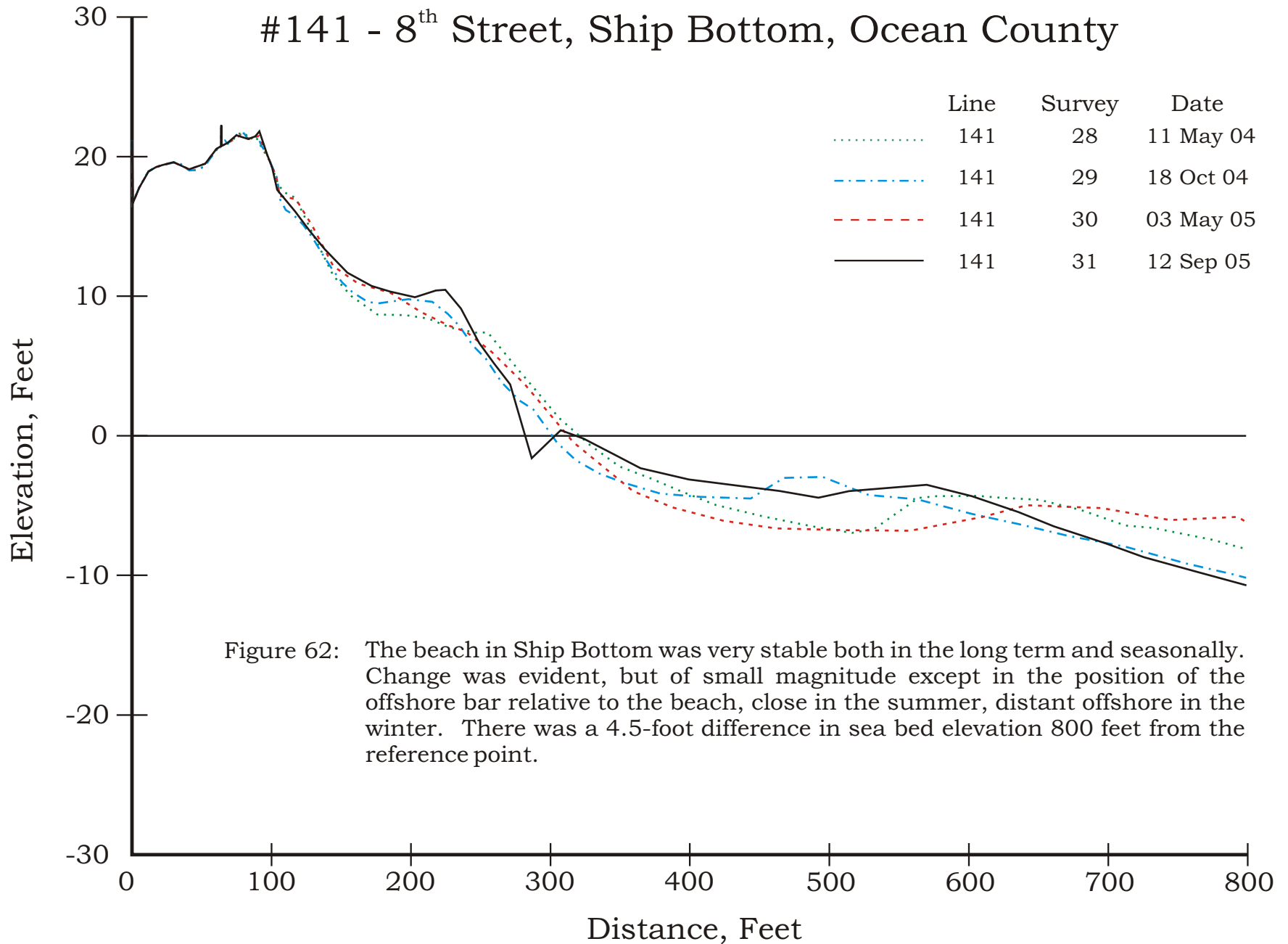
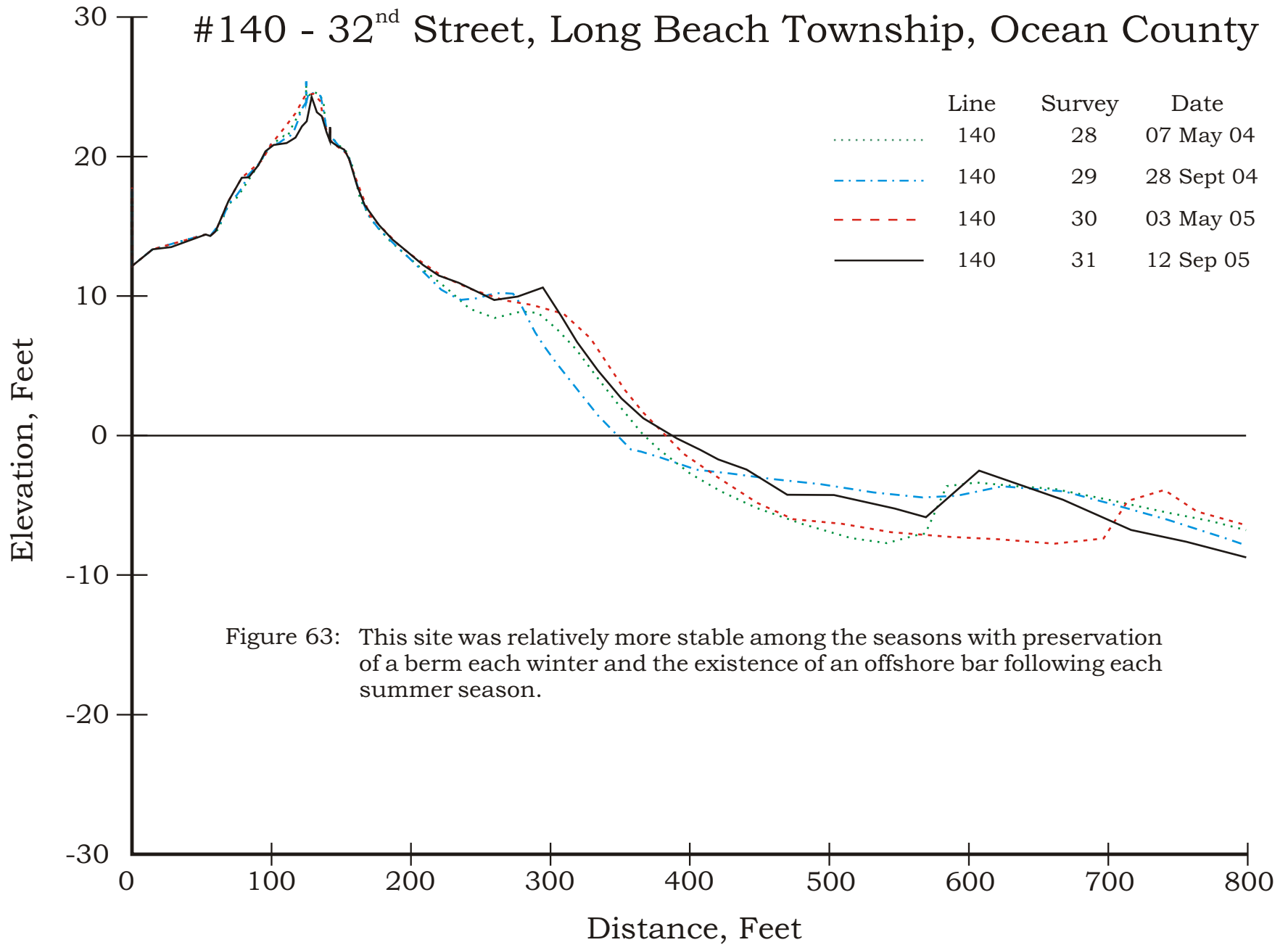


Figure 62: The beach in Ship Bottom was very stable both in the long term and seasonally. Change was evident, but of small magnitude except in the position of the offshore bar relative to the beach, close in the summer, distant offshore in the winter. There was a 4.5-foot difference in sea bed elevation 800 feet from the reference point.

# New Jersey Beach Profile Network

#140 - 32<sup>nd</sup> Street, Long Beach Township, Ocean County



# New Jersey Beach Profile Network

#139 - 81<sup>st</sup> Street, Long Beach Township, Ocean County

Line	Survey	Date	
.....	139	28	07 May 04
-.-.-.-	139	29	28 Sep 04
- - - -	139	30	02 May 05
————	139	31	12 Sep 05

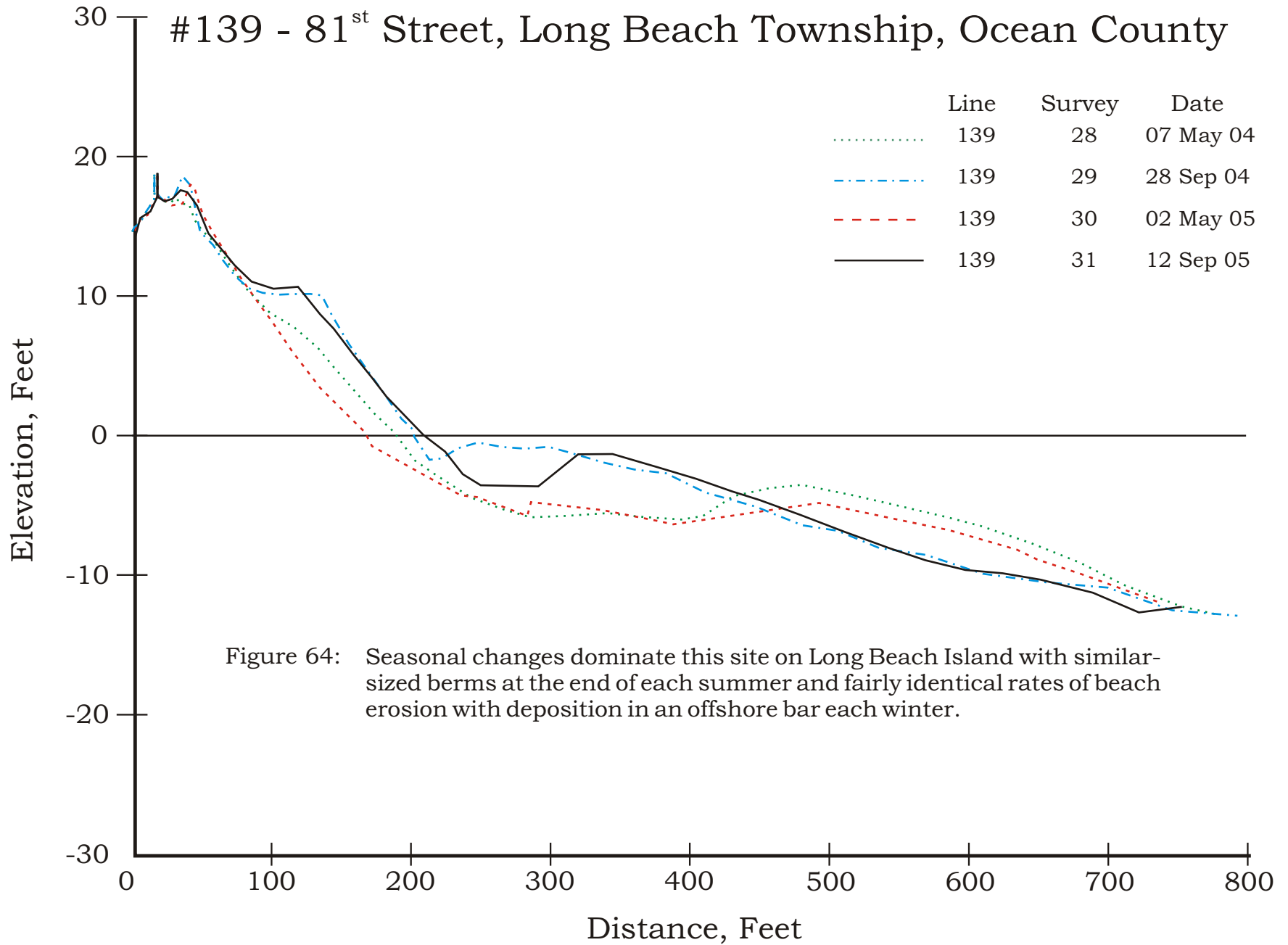
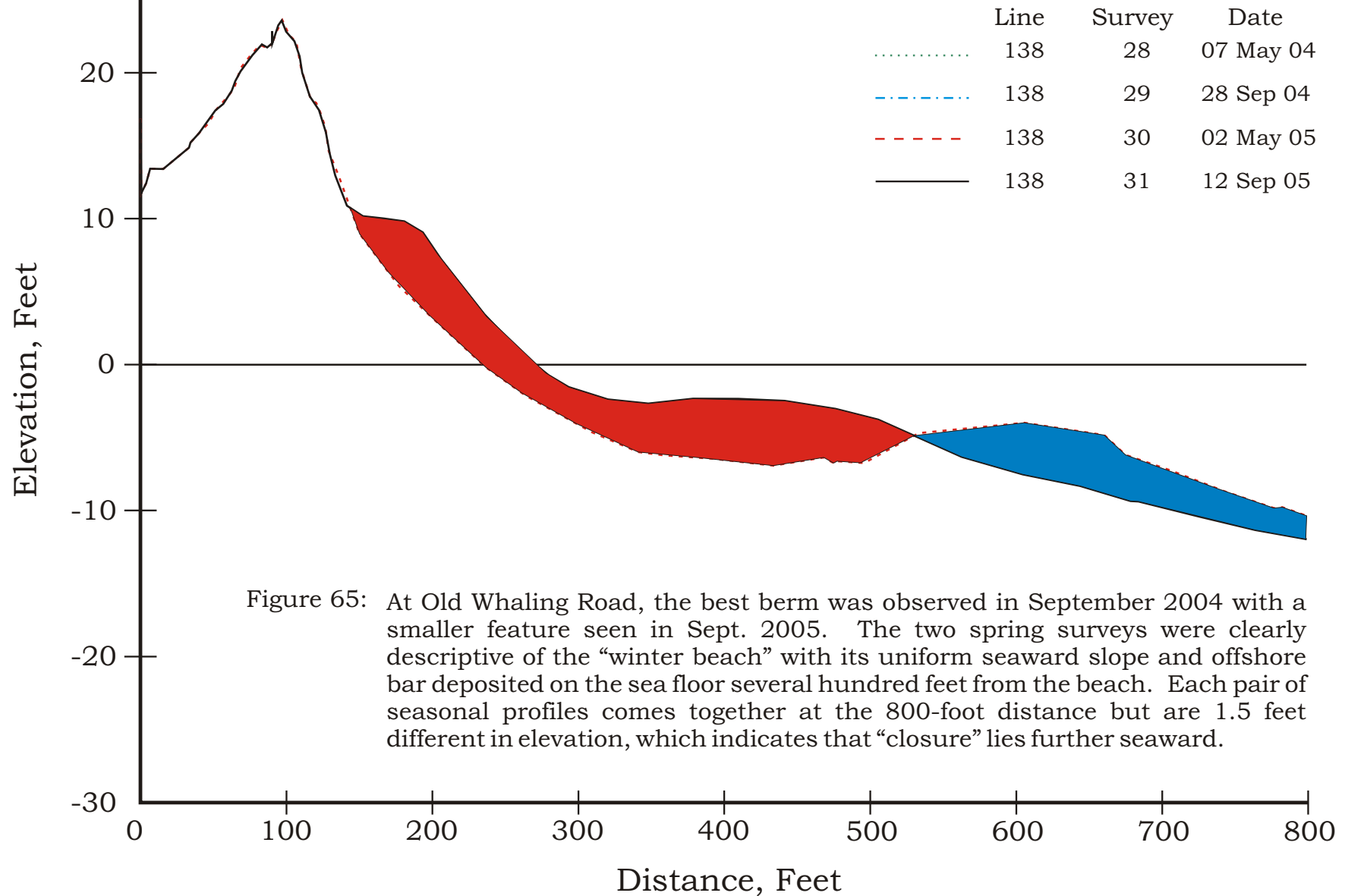


Figure 64: Seasonal changes dominate this site on Long Beach Island with similar-sized berms at the end of each summer and fairly identical rates of beach erosion with deposition in an offshore bar each winter.

# New Jersey Beach Profile Network

#138 - Old Whaling Rd., Long Beach Township, Ocean County

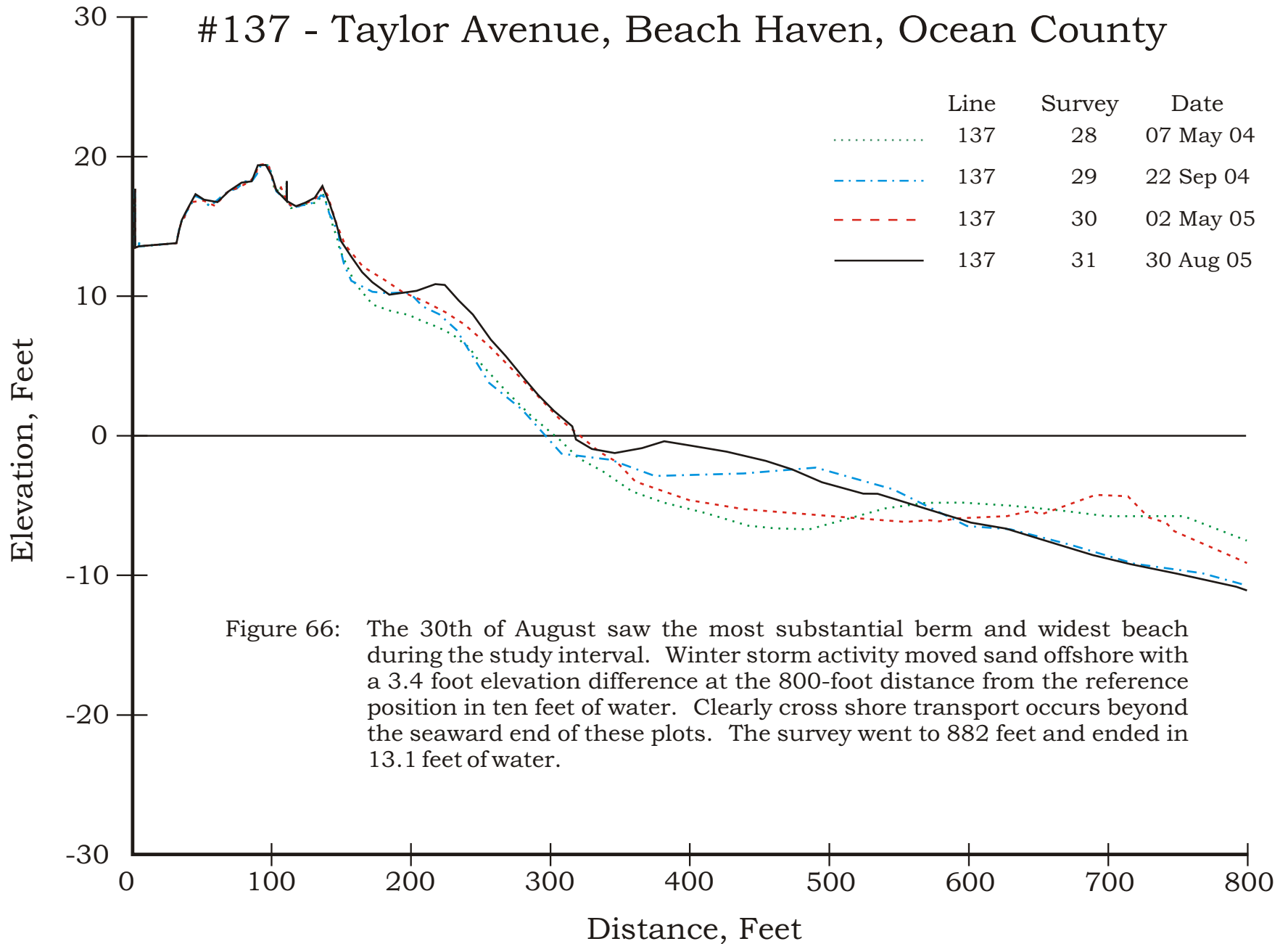




# New Jersey Beach Profile Network

## #137 - Taylor Avenue, Beach Haven, Ocean County

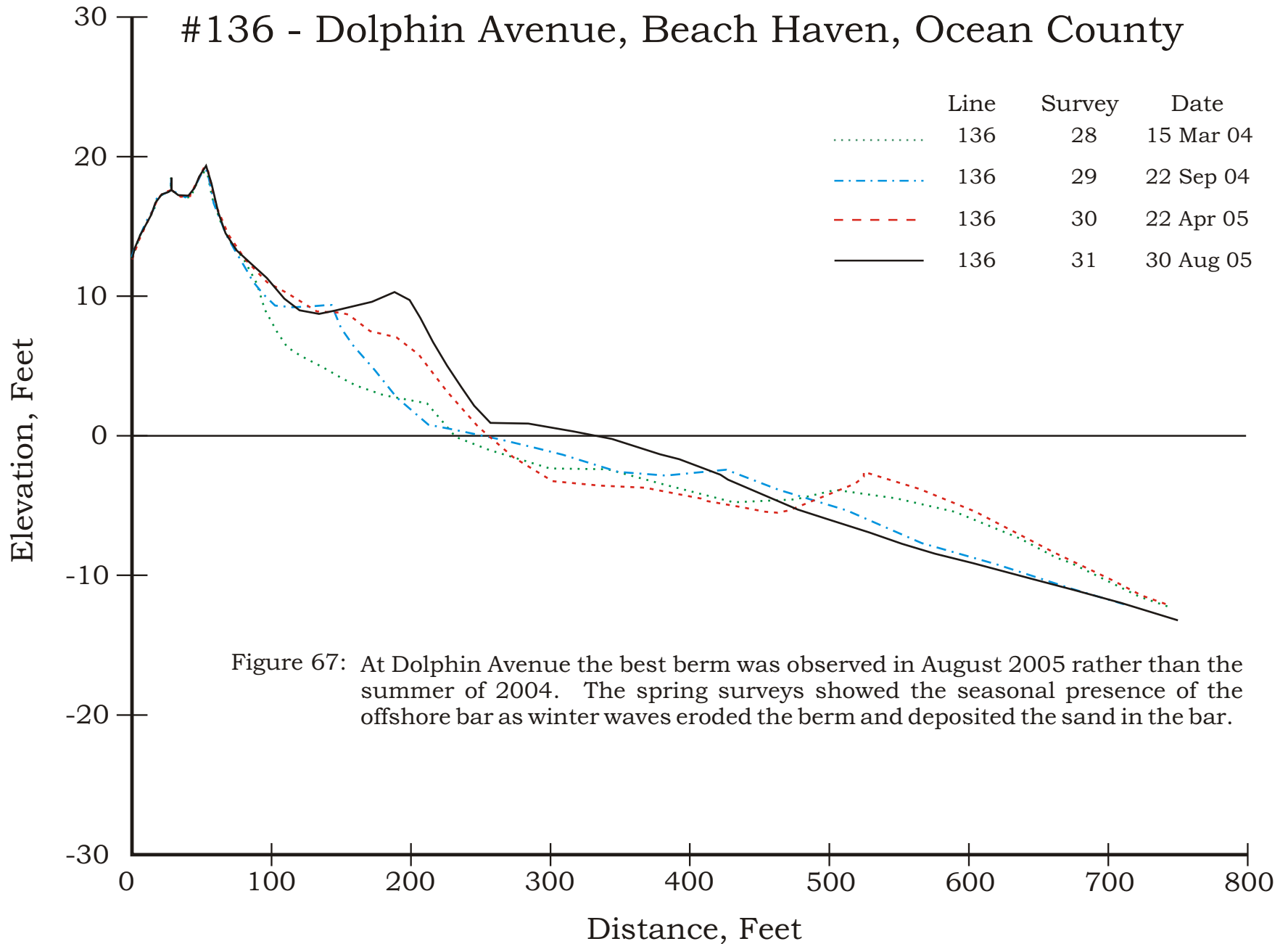
Line	Survey	Date	
.....	137	28	07 May 04
-.-.-.-	137	29	22 Sep 04
- - - -	137	30	02 May 05
————	137	31	30 Aug 05



# New Jersey Beach Profile Network

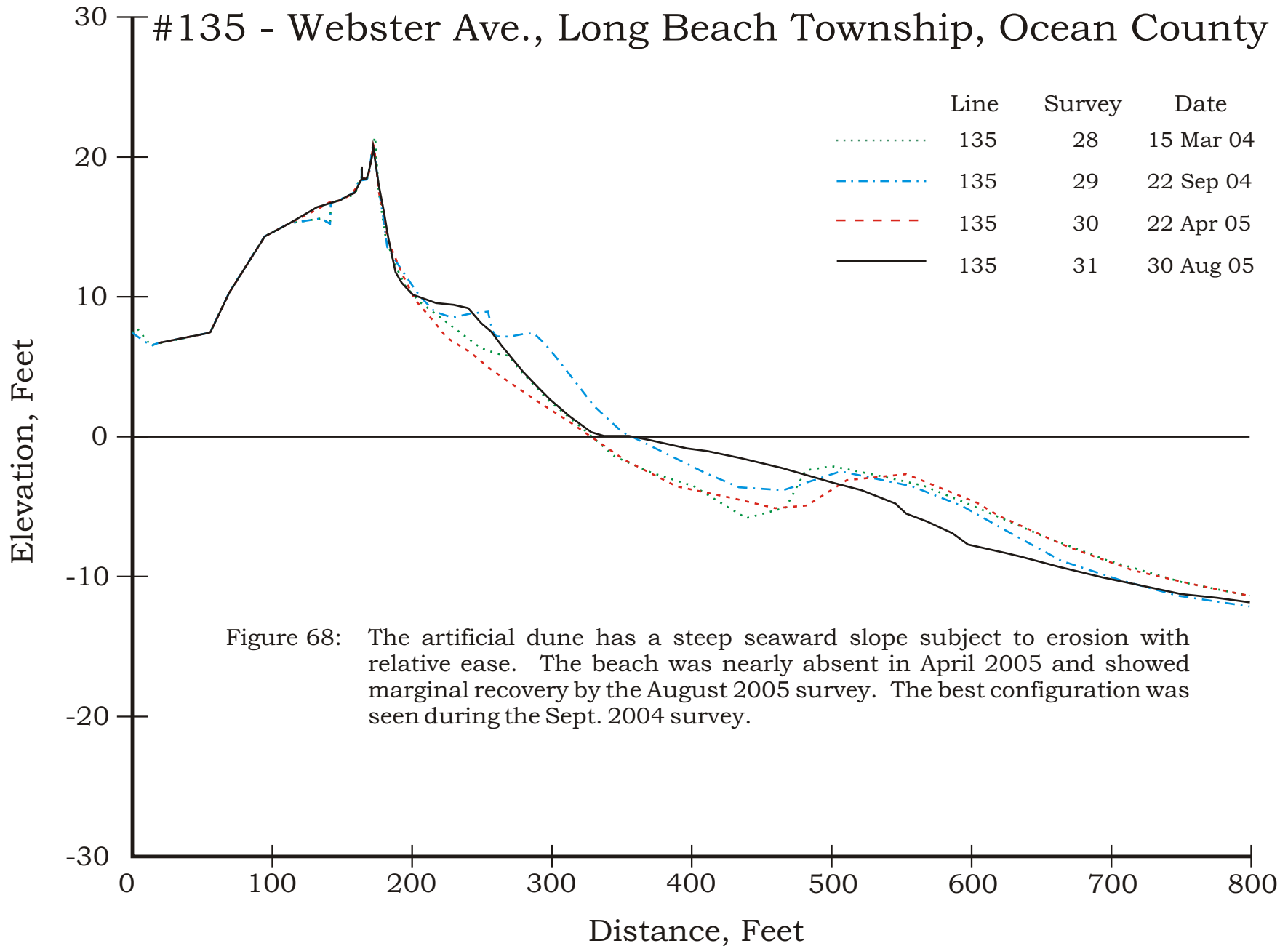
#136 - Dolphin Avenue, Beach Haven, Ocean County

611



# New Jersey Beach Profile Network

#135 - Webster Ave., Long Beach Township, Ocean County



# New Jersey Beach Profile Network

#234 - Natural Area, Long Beach Township, Ocean County

Line	Survey	Date
------	--------	------

.....	234	28	15 Mar 04
-.-.-.-	234	29	22 Sep 04
- - - -	234	30	22 Apr 05
————	234	31	30 Aug 05

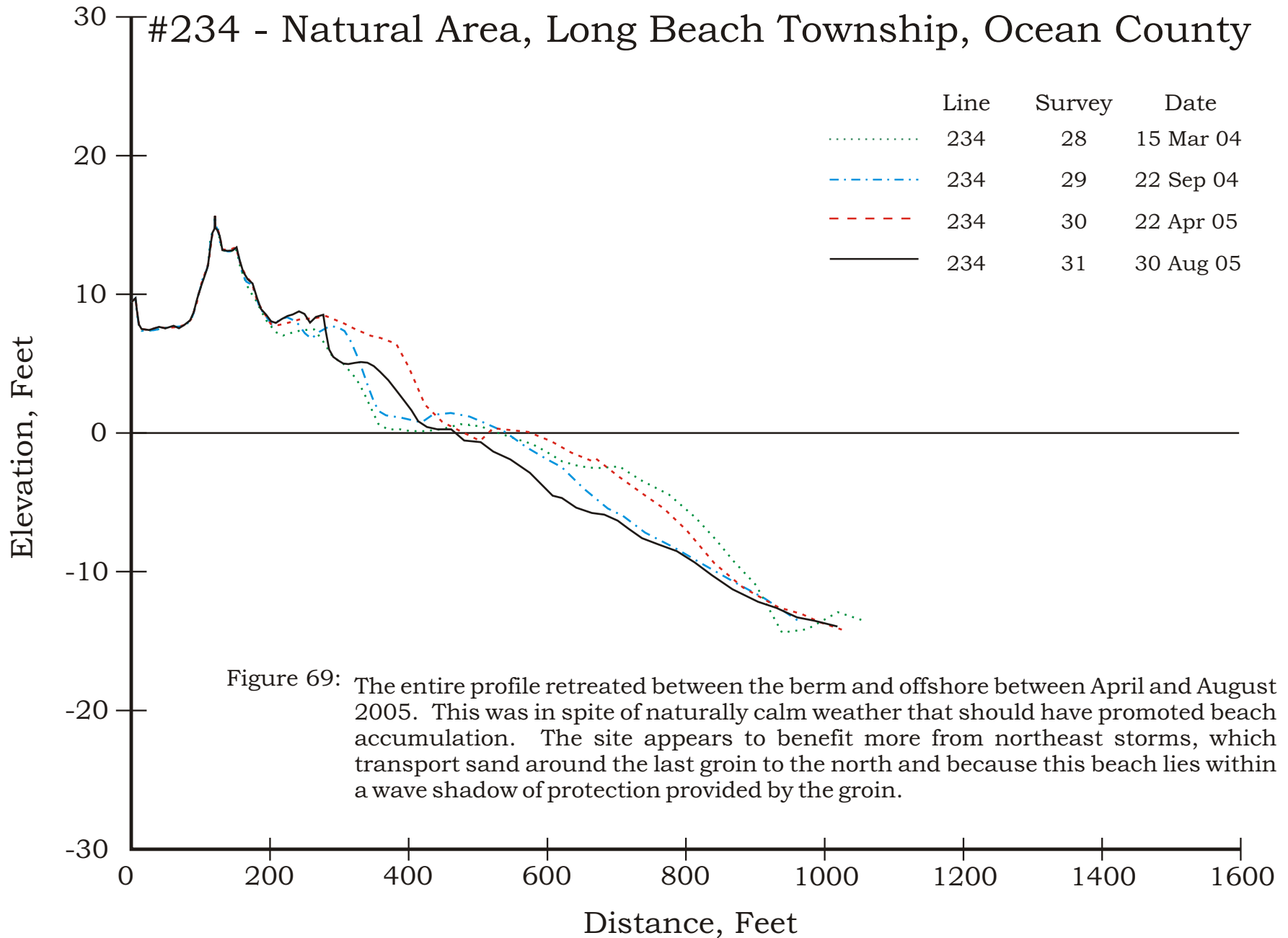


Figure 69: The entire profile retreated between the berm and offshore between April and August 2005. This was in spite of naturally calm weather that should have promoted beach accumulation. The site appears to benefit more from northeast storms, which transport sand around the last groin to the north and because this beach lies within a wave shadow of protection provided by the groin.