



New Jersey Beach Profile Network

Ocean County

Manasquan Inlet
to Little Egg Inlet

NJBPN Profile #'s
156 - 234

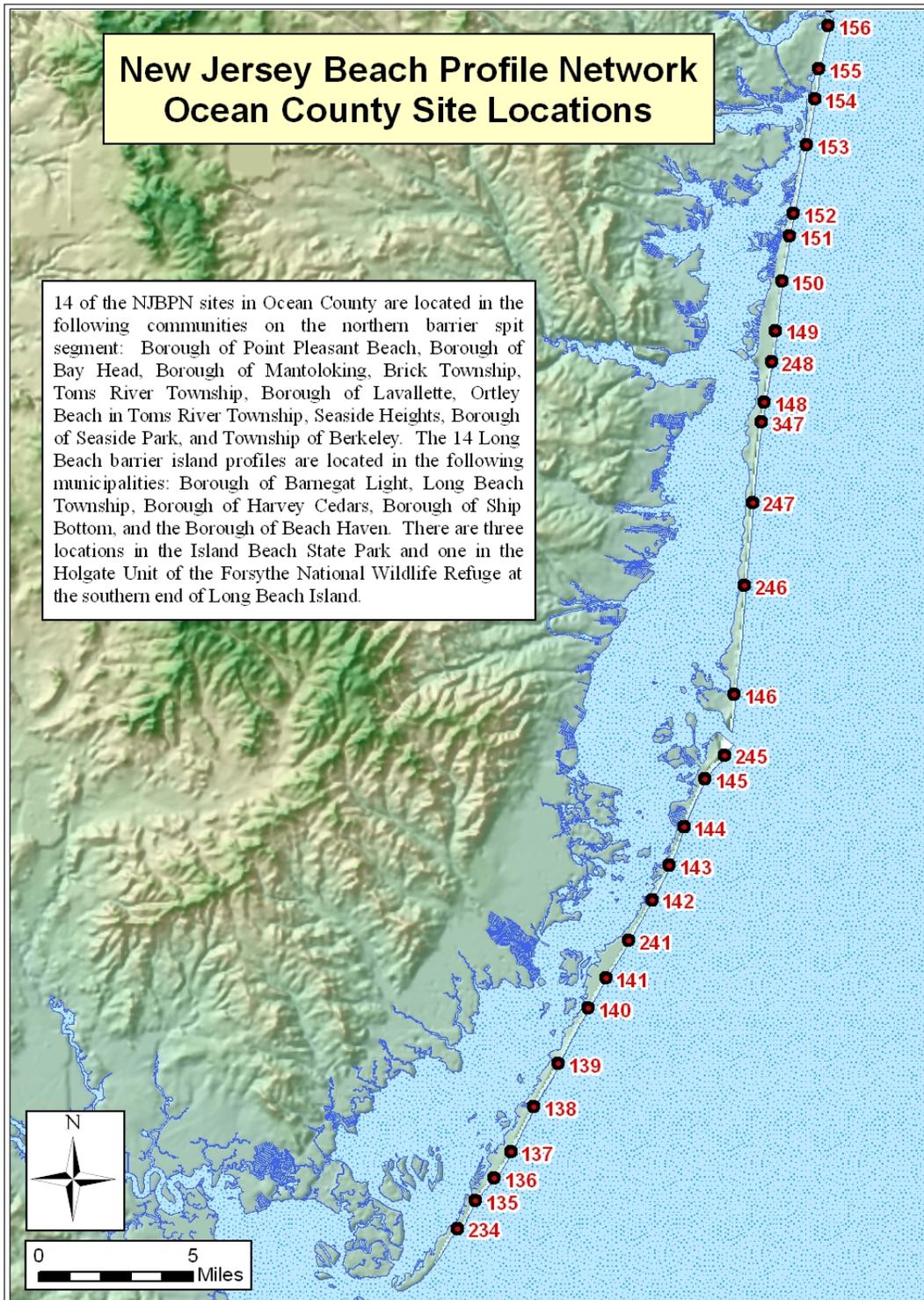


Figure149. Locations of the 28 NJBPN profile stations in Ocean County, NJ.

OCEAN COUNTY SUMMARY

Northern Ocean County has been studied by the US Army Corps of Engineers (ACOE) under the Water Resources Development Act of 2007 leading to the need for a Limited Reevaluation Report and the execution of the Project Partnership Agreement with the State of New Jersey and all impacted municipal entities. Currently set at a cost of \$78,000,000 for both Federal and non-Federal shares, the project calls for the construction of a berm and dune requiring 10 million cubic yards of material derived from offshore borrow sites. The Congressional authorization of the funds, the need for many real estate easements along the oceanfront, and finalized construction plans remain substantial obstacles blocking the start of construction.

Ocean County has the longest oceanfront shoreline of the four coastal counties (45.2 miles) where the northern section comprises 23.6 and Long Beach Island makes up 21.6 miles. There are a total of 13.4 miles of undeveloped shoreline in two large parcels (Island Beach State Park – 10.0 mi. and Holgate – 3.4 miles). There is just one inlet in Ocean County (Barnegat Inlet dividing the northern section from Long Beach Island) between Manasquan Inlet to the north and Little Egg Inlet on the south. The northern section is unique along the NJ coastline in that it lies within a zone where sand transport parallel to the shoreline is essentially zero over long periods of time. Monmouth County's beaches have a limited distance over water for northeast storm winds (fetch) to generate big waves, so sand moves dominantly north (creating Sandy Hook National Seashore over time), while the much greater distance for wave generation between Long Island, NY and Long Beach Island, Atlantic and Cape May Counties gives rise to dominant sand transport to the south. The absence of inlets along a 23.6-mile segment of shoreline also means fewer zones where tidal currents interact with the wave sets to alter the orientation and stability of the barrier islands as in Cape/Atlantic Counties. Northeast storms do move sand south along the Northern Ocean County shoreline, but these impacts are nearly balanced by southeast wave sets acting to move the sand back to the north in near equal quantities. Therefore, over long periods of time the net transport in either direction is zero. Detailed observations do show that sand transport at Manasquan Inlet favors a northern direction, evidenced by a far larger beach width present (without beach nourishment) in Point Pleasant Beach than in the Borough of Manasquan (with a major NY District beach project in 2000). The reverse pattern is evident at Barnegat Inlet where sand preferentially accumulates at the north side of the north jetty in Island Beach State Park.

There has been no Federal, State or locally funded beach nourishment project in northern Ocean County in the past 25 years. Sand was pumped onto the county shoreline following the March 1962 northeast storm derived from dredging deep borrow zones within Barnegat Bay. These 30-foot deep areas are still present and represent biological dead zones due to the absence of oxygen in the deep water column because of the lack of circulation in them. Dunes were built and the shoreline slowly recovered. In 1992, storm damage revealed the presence of vintage cars used to block wave action until the dune was re-built. The Borough of Mantoloking recovered vehicles and discovered they had significant value to those interested in the parts for restorations.

The dramatic influence of inlets on sand distribution has been well documented, as observed in the effect on the adjacent beaches from changing the orientation and location of the south jetty at Barnegat Inlet. In 1988 the Philadelphia District Corps of Engineers undertook the re-alignment of the south jetty from the 1932 "arrow-head design" to starting the south jetty at the lighthouse tower and continuing parallel to the north jetty to the same end point. The land base of the old south jetty came ashore near 9th Street in Barnegat Light Borough about a quarter-mile south of the present land point for the new jetty. Before the new jetty was half complete, sand was back-filling the open water area between the old and new jetties. The cover of this report shows this contrast between the aerial photographs. The "shoreline" at the base of the new jetty extended seaward along the south side of the new structure for about 2,400 feet, making this by far the most accretional beach in New Jersey over the past 25 years. The total area, once water and now vegetated or dry sand, is hundreds of acres. A maritime forest will eventually occupy this zone if left natural by succeeding generations

of developers, making the trek to the high tide line one of arduous effort if one is trying go bathing with children, their “supplies” and the umbrella etc. The high tide line for the CRC profile site at 10th Street lies 1,400 feet from the street end. In fact, a fishing vessel that sank offshore in the 1980’s with its mast showing above the water, now rests well landward of the crest of the primary dune near this cross section.

Long Beach Island shore protection was authorized under the Water Resources Development Act of 2000 and went to construction in Sept. 2006 in Surf City. The US Army Corps of Engineers (ACOE) returned to Ocean County in 2010 following the 2007 Surf City work to place beach nourishment sand in Harvey Cedars. The addition of catch baskets to both the dredge and discharge pipeline have prevented the recurrence of the \$15.7 million expense to search the new deposit for military hardware disposed at sea in the past. Work commenced in Spring 2010 at Harvey Cedars and moved north from the point where the 2007 project ended. This work completed another section of the Long Beach Island project.

Following the Federal disaster declarations in 2009 and 2010, Federal Control and Coastal Emergency funds were used to evaluate the beach damage, and as a result of the study, the FCCE authorized spending \$6,048,000 to restore the federal project area eligible. Between March and June 2011 sand was pumped on the beach at Surf City between 11th and 24th Streets, not Harvey Cedars because it was not complete in November 2009. The Corps is ready to commence construction of the Brant Beach segment in 2012 with FY12 funds.

Real estate issues still plague more rapid progress elsewhere on Long Beach Island. Easement issues where individual private owners hold title to the mean high water line have resisted signing off to allow the projects to proceed across their holdings. Many issues have been raised at countless meetings and in spite of assurances that there will be no permanent “taking” of rights or ownership, some owners have no intention of allowing this work to proceed. Claims of loss of view, which reduces the property’s value, increased public use of “their” beach, a perpetuity clause in the easement documents to cover future maintenance, and no serious financial inducement to sign the easement has kept some on the sidelines while a few militantly refuse any type of cooperation. One does wonder that should a massive storm wreck these properties in the absence of this project, will it be the duty of the US taxpayer to fund the restoration of the supporting infrastructure that makes oceanfront living possible?

Below are links to the US Army Corps of Engineers Philadelphia website for the direct information on Ocean County.

http://www.nap.usace.army.mil/cenap-dp/projects/factsheets/NJ/4CG_NJShoreProtection_ManasquantaBarnegat.pdf

[http://www.nap.usace.army.mil/cenap-dp/projects/factsheets/NJ/Barnegat%20Inlet%20to%20LittleEgg%20\(Long%20Beach%20Island\).pdf](http://www.nap.usace.army.mil/cenap-dp/projects/factsheets/NJ/Barnegat%20Inlet%20to%20LittleEgg%20(Long%20Beach%20Island).pdf)

Ocean County, Beach Volume & Shoreline Position Changes Over 25 Years

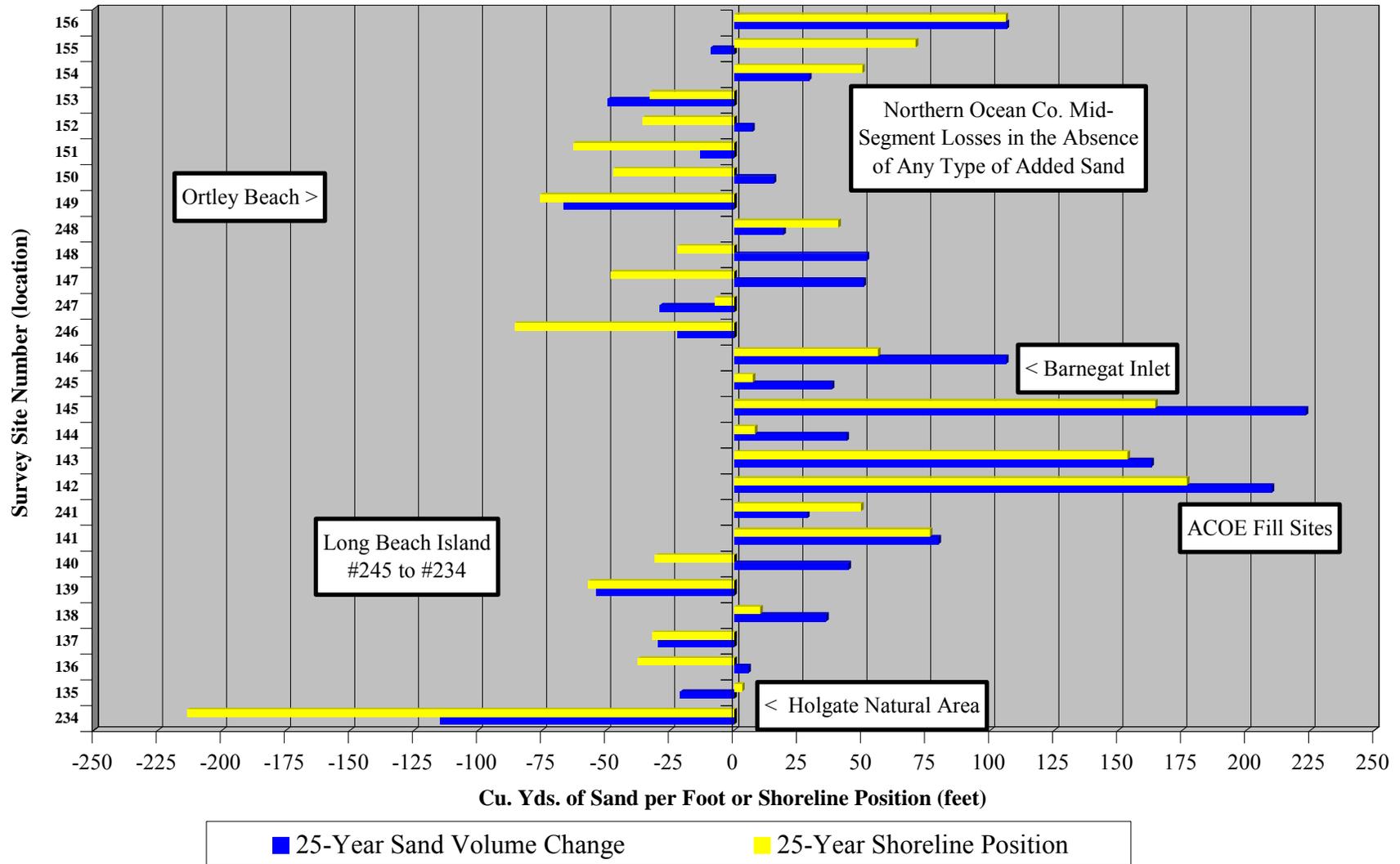


Figure 150. A summary graph showing the 25-year computations of the amount of sand added or lost (blue) and the change in shoreline position (yellow) landward or seaward in 25 years. No beach nourishment activity of any type took place in Northern Ocean County and the middle sites (Surf City, Harvey Cedars & Ship Bottom) were recipients of ACOE projects since 2006. The huge loss in the Holgate Natural area is due to a lack of sand by-passing the terminal rock groin in Beach Haven.

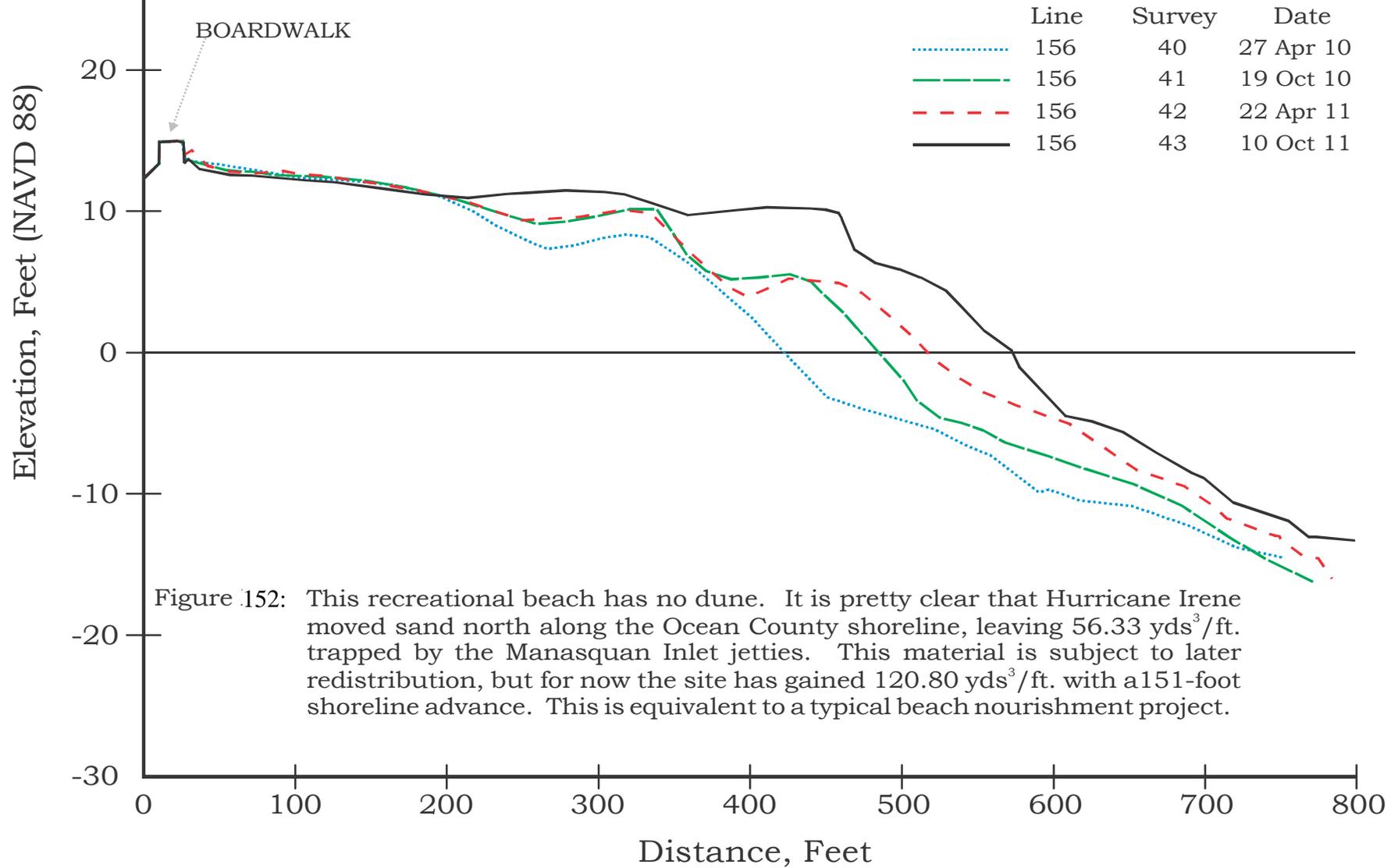
Site 156, Water Street, Point Pleasant, NJ – October 18, 2011



Figure 151. Shown above is the view looking north from the beach at Water Street in Point Pleasant, NJ.

New Jersey Beach Profile Network

#156 - Water Street, Point Pleasant, Ocean County



WATER STREET, POINT PLEASANT BEACH – SITE 156

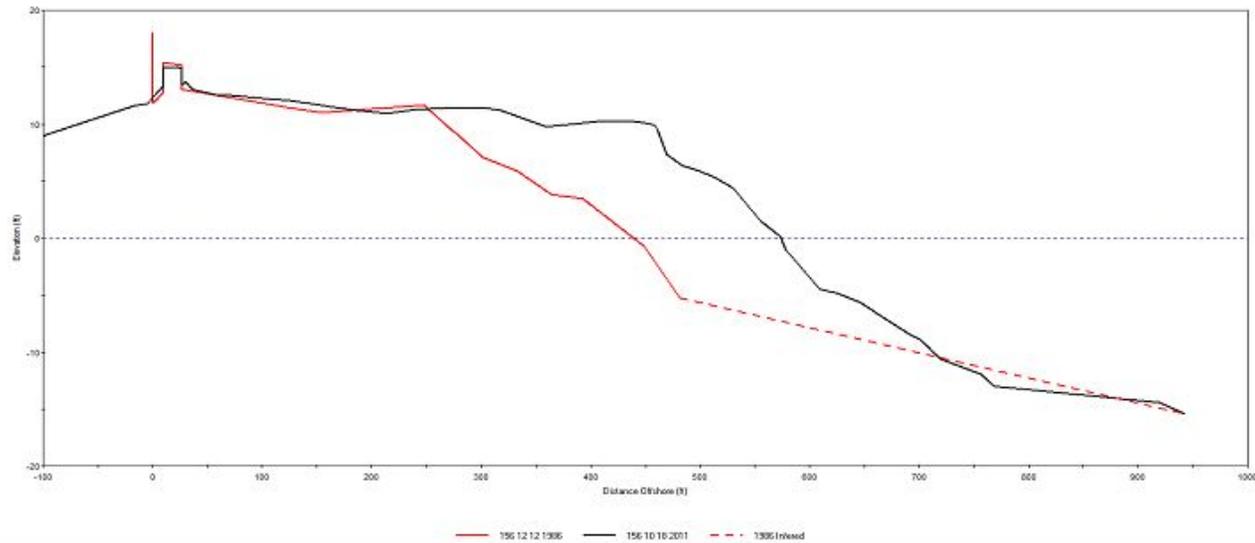


Figure 153: above shows that the beach at Water Street in Point Pleasant Beach has gained a significant amount of sand since its initial survey in 1986. The shoreline advanced by 135 feet and 55,994 cu.yd/ft. of sand was added to the beach. Photo on the left was taken in 1988 and shows the view looking east from the boardwalk. Photo on the right was taken in October of 2011 and shows the view from the beach looking east.



25-Year Coastal Changes at Site 156, Water St., Point Pleasant Beach, Ocean Co.

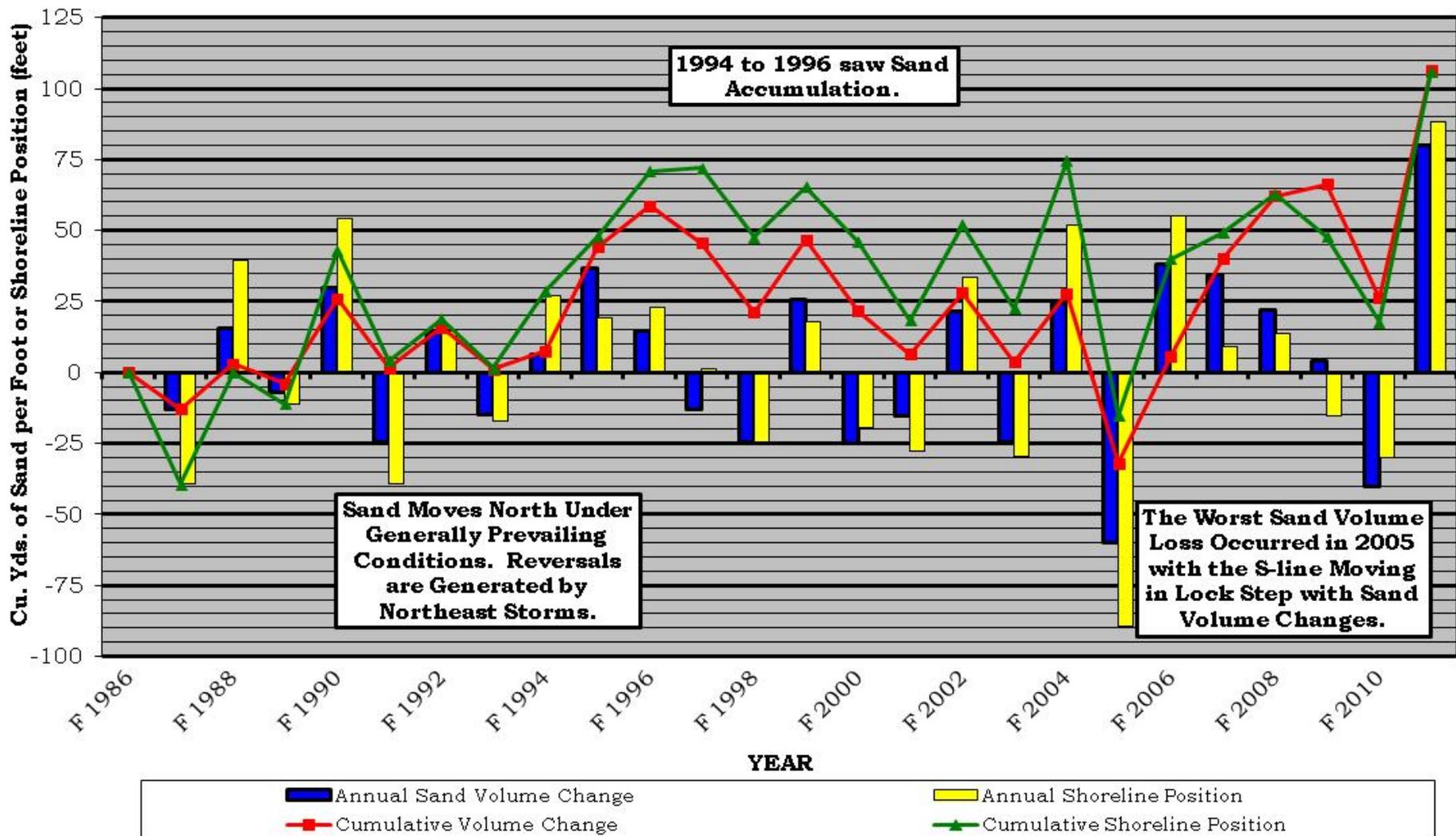


Figure 154. Profile 156 is the northernmost site in Ocean County and is positioned just south of the Manasquan Inlet. Protected by the jetties, the beach remained wide and changed little with storms following the Monmouth County shore protection project. In 2005 the worst sand volume and shoreline position loss occurred followed by a partial retrieval in 2006. In the fall of 2011 Hurricane Irene moved a tremendous amount of sand north along the ocean county shoreline resulting in the largest sand volume and shoreline position gain in the 25 year history.

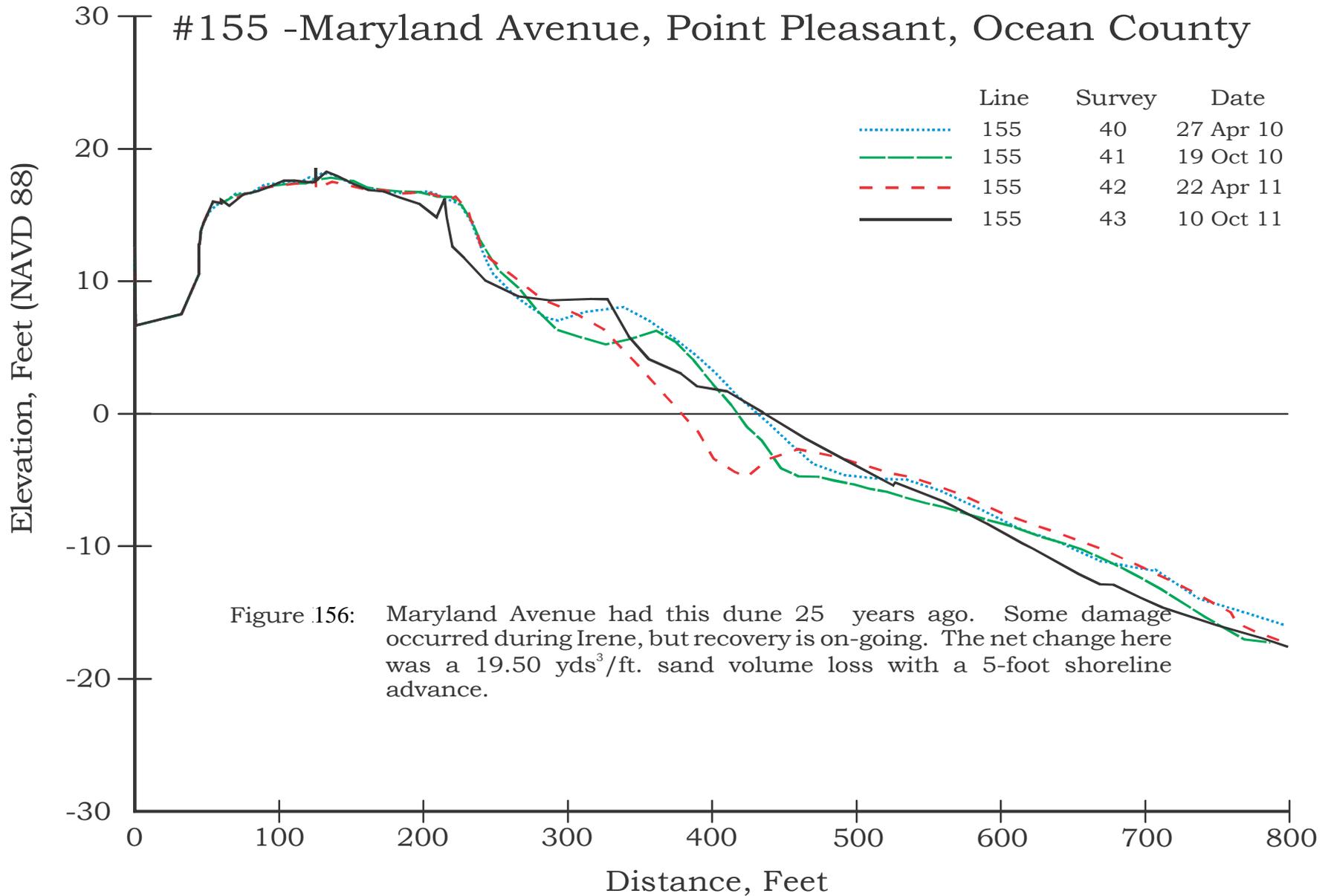
Site 155, Maryland Avenue, Point Pleasant, NJ – October 18, 2011



Figure 155. Shown above is the view looking southwest from the dune at Maryland Avenue in Point Pleasant, NJ.

New Jersey Beach Profile Network

#155 - Maryland Avenue, Point Pleasant, Ocean County



MARYLAND AVENUE, POINT PLEASANT BEACH – SITE 155

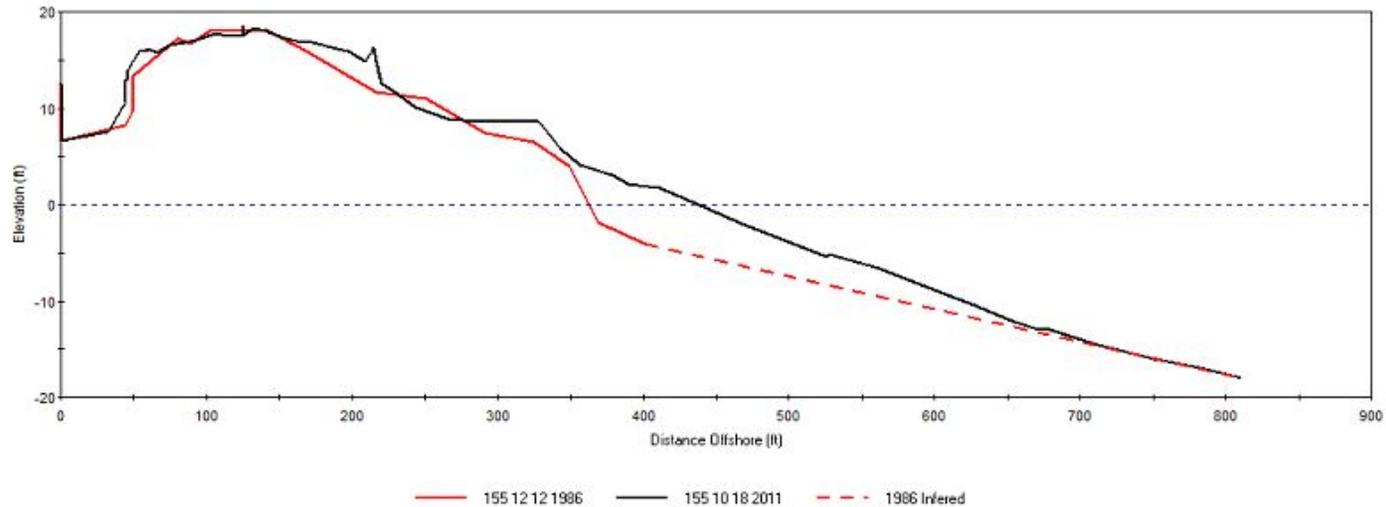


Figure 157 above shows the changes to the beach at Maryland Avenue in Point Pleasant Beach since its initial survey in 1986. Gains to the dune, berm, and beachface resulted in a net gain in sand volume of 18,277 cu.yd/ft. and a shoreline advance of 75 feet. Photo on the Left was taken in November of 1990 and shows the view from the access path looking east. Photo on the Right was taken in October of 2011 and shows the view to the north from the dune toe.



25-Year Coastal Changes at Site 155, Maryland Ave., Point Pleasant Beach, Ocean Co.

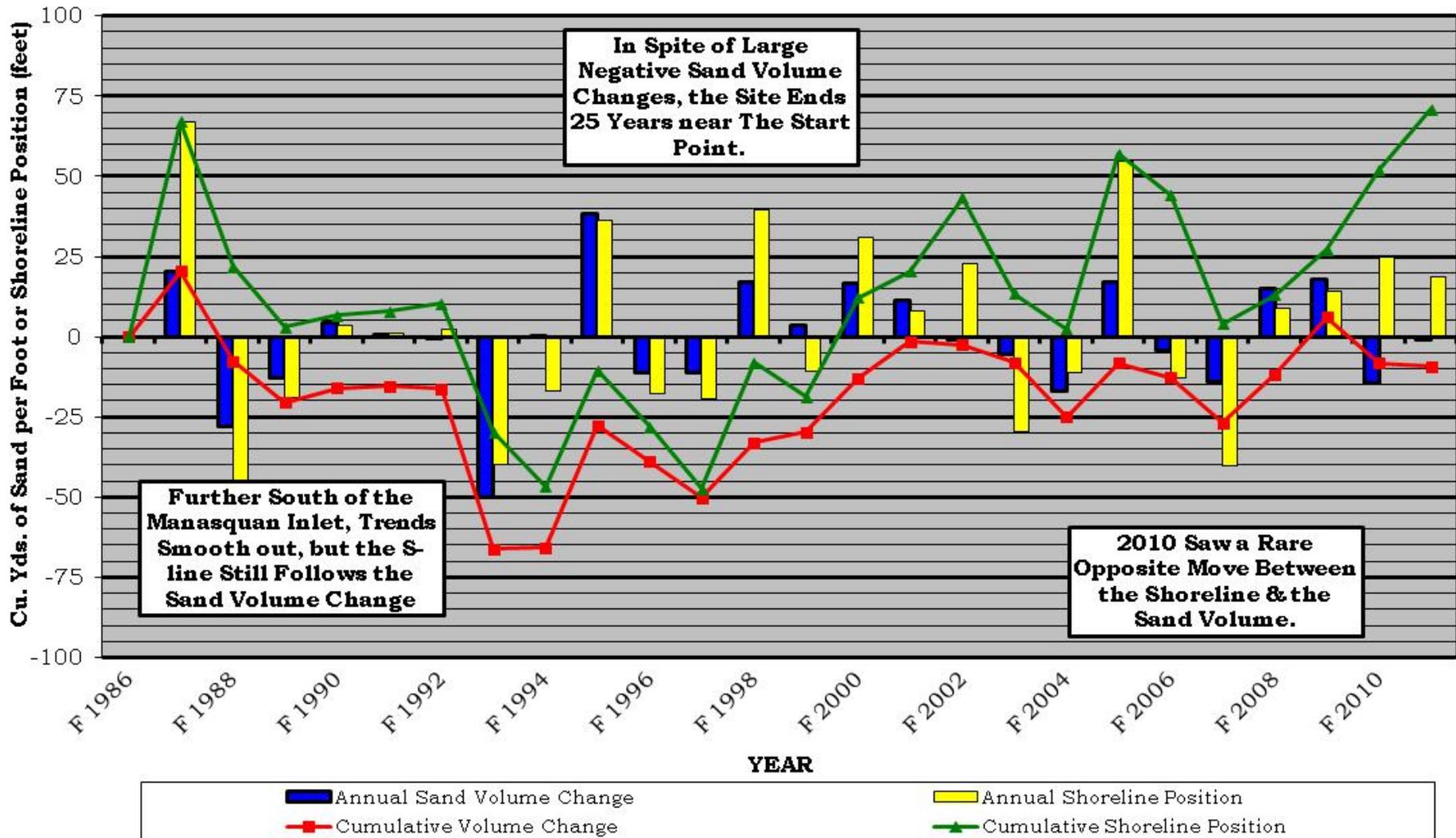


Figure 158. Profile 155 is located well south of the Manasquan Inlet. Storms in 1991 and 1993 resulted in losses in sand volume and shoreline position. In the following years a slow recovery added sand, culminating in 2011 where the shoreline position ended in the nearly the same position as where it began in 1986. There has been no influence by beach nourishment activities from here south along the northern Ocean County shoreline.

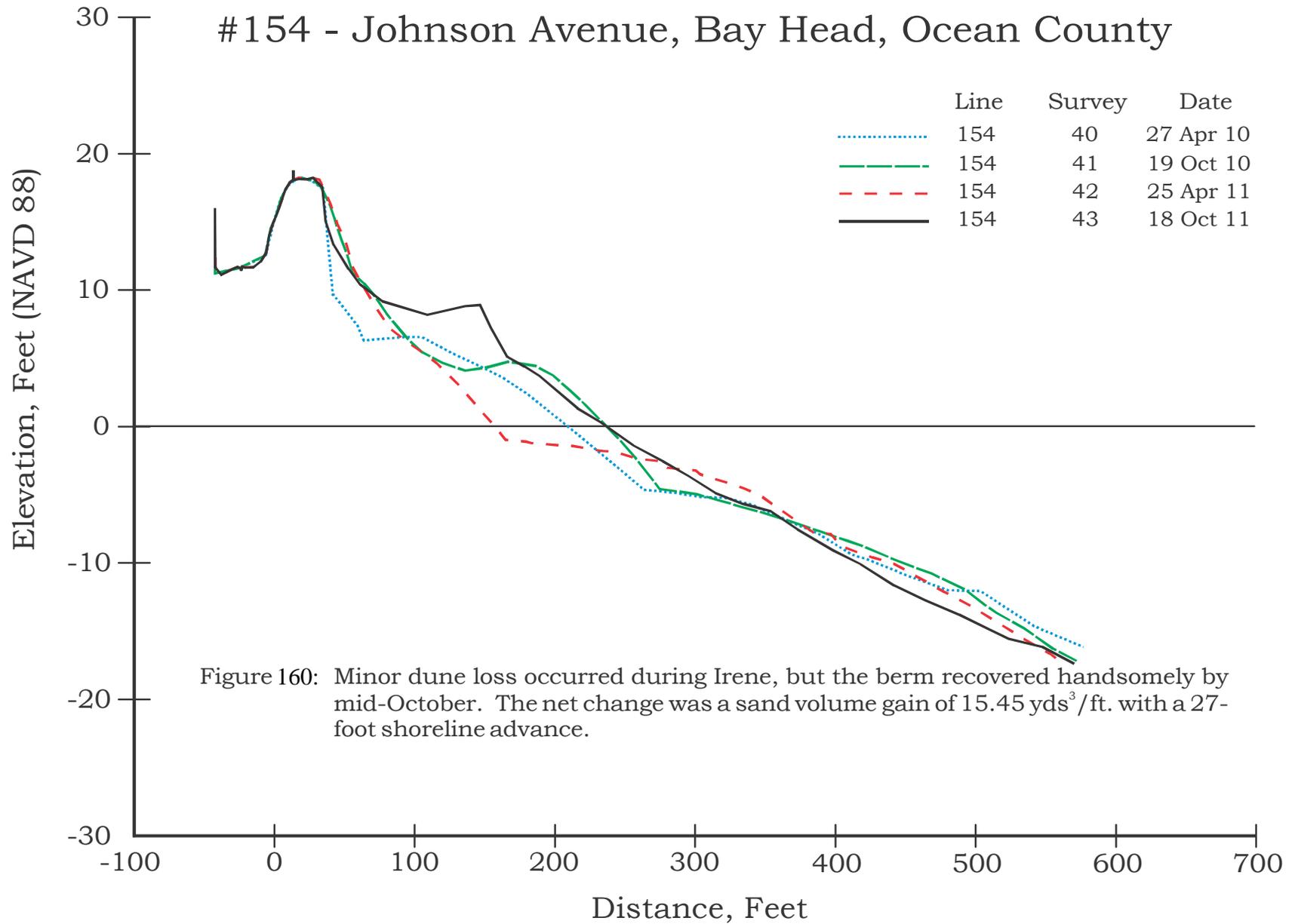
Site 154, Johnson Avenue, Bay Head, NJ – October 18, 2011



Figure 159. Shown above is the view looking north from the seaward crest at Johnson Street in Bay Head, NJ.

New Jersey Beach Profile Network

#154 - Johnson Avenue, Bay Head, Ocean County



JOHNSON AVENUE, BAY HEAD– SITE 154

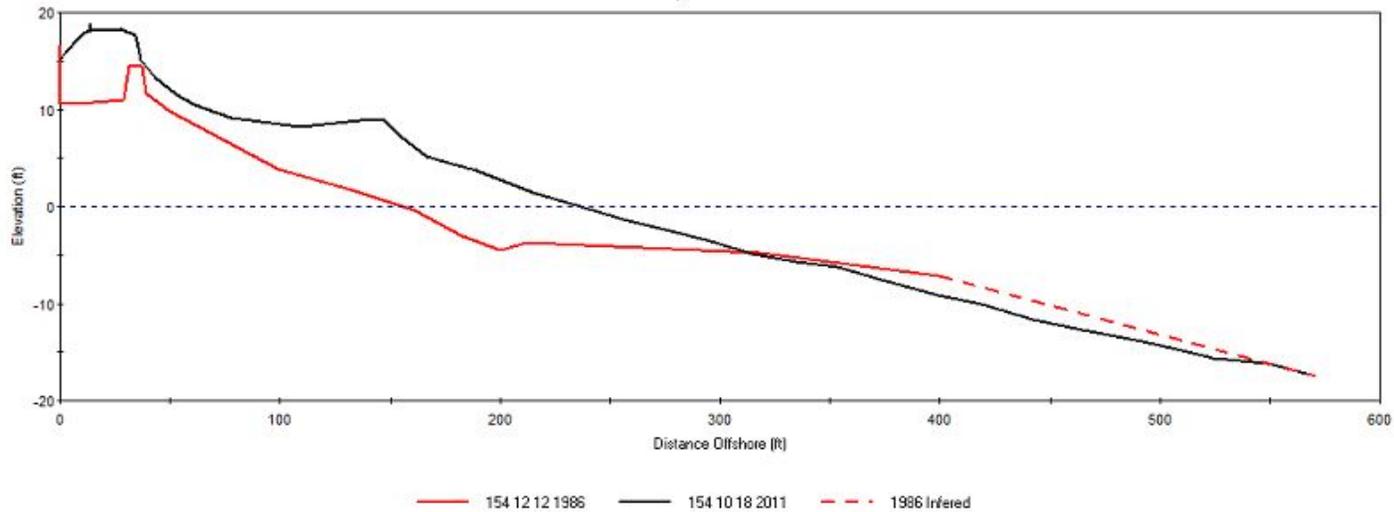


Figure 161 above shows that a significant amount of sand has been added to the beach since its initial survey in 1986. The shoreline advanced by 81 feet and there was a net gain in sand volume of 49,632 cu.yd/ft. Photo on the left was taken in November of 1991 and shows the view to the north. Photo on the right was taken in October of 2011 and shows the view to the north from the dune toe. The wider beach is clearly visible.



25-Year Coastal Changes at Site 154, Johnson Ave., Bay Head, Ocean Co.

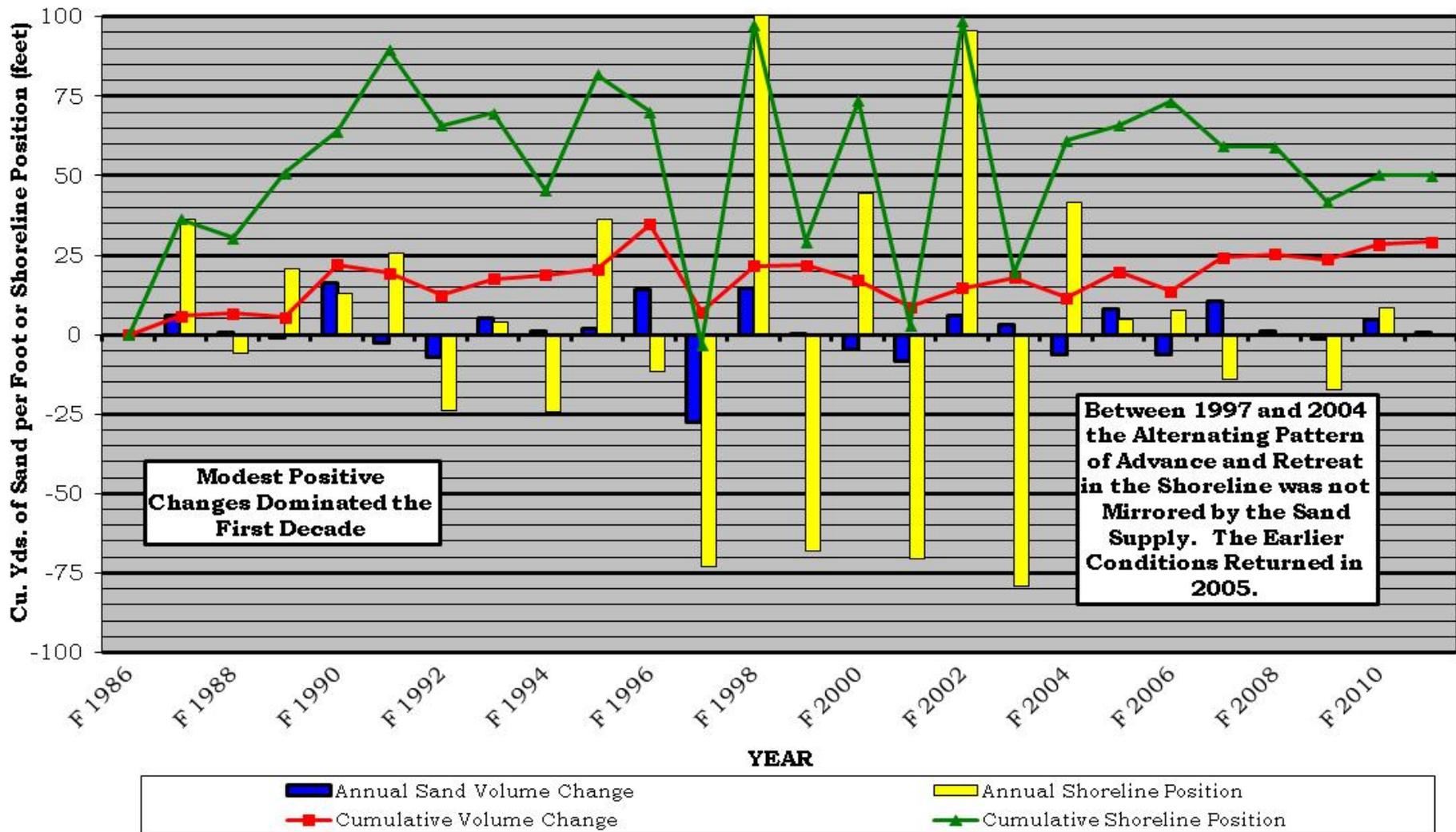


Figure 162. Profile 154 in Bay Head saw dramatic changes in shoreline position(s) between 1997 and 2004. The 25 year trend was towards sand accretion as the sand volume steadily increased despite the huge changes in shoreline position. These unusual oscillations in shoreline position were the result of changes in the direction of longshore transport by waves whether toward the groin field (north) or away from it (south). The result of this as indicated above is the large shifts in the shoreline depending on the direction of the dominant drift of sand.

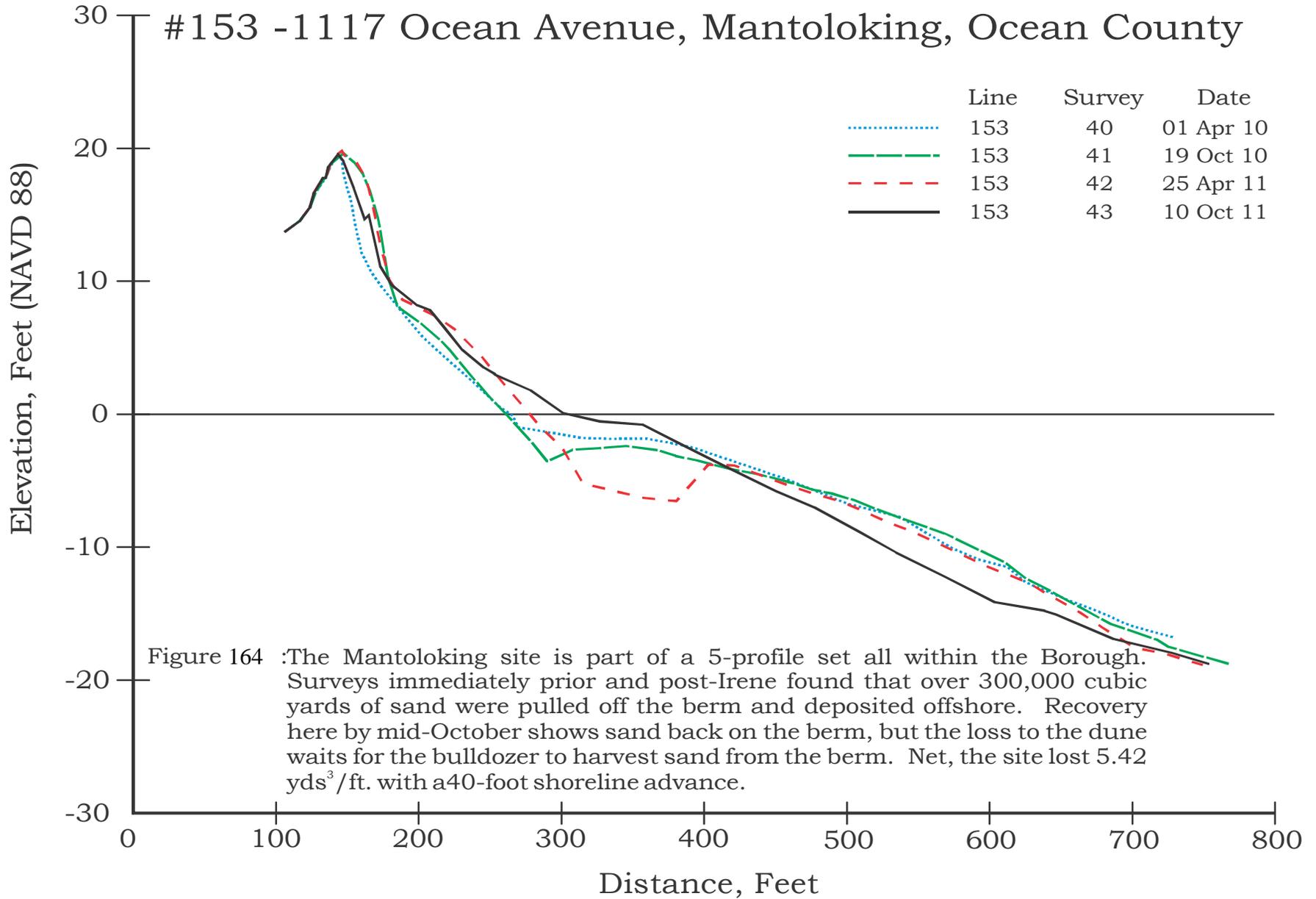
Site 153, 1117 Ocean Avenue, Mantoloking, NJ – October 18, 2011



Figure 163. Shown above is the view looking south from the dune crest at 1117 Ocean Avenue in Mantoloking, NJ. Bulldozing sand from the berm to the dune slope has become a common practice in the Borough of Mantoloking.

New Jersey Beach Profile Network

#153 -1117 Ocean Avenue, Mantoloking, Ocean County



1117 OCEAN AVENUE – SITE 153

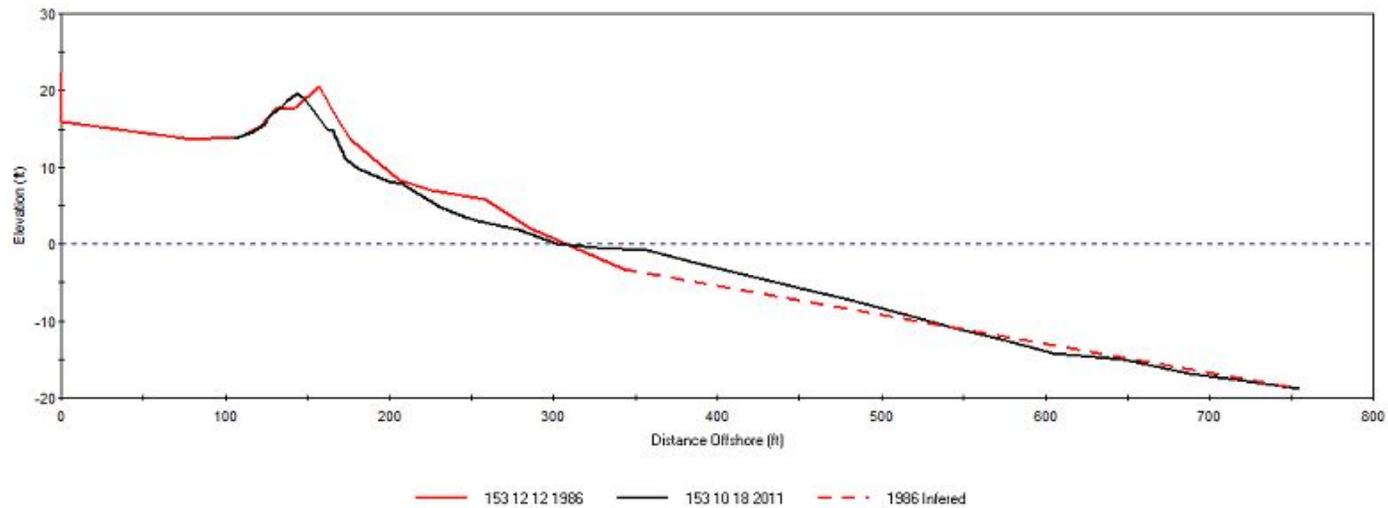


Figure 165 above shows at 1117 Ocean Avenue in Mantoloking there were only minor changes to the dune, berm, and offshore slope. The shoreline retreated minimally by 3 feet, while there was a net loss in sand volume of 8.969 cu.yd/ft. Photo on the left was taken in November of 1990 and shows the view from the dune looking east. Photo on the right was taken in October of 2011 and shows the view looking northeast.



25-Year Coastal Changes at Site 153, 1117 Ocean Ave., Mantoloking, Ocean Co.

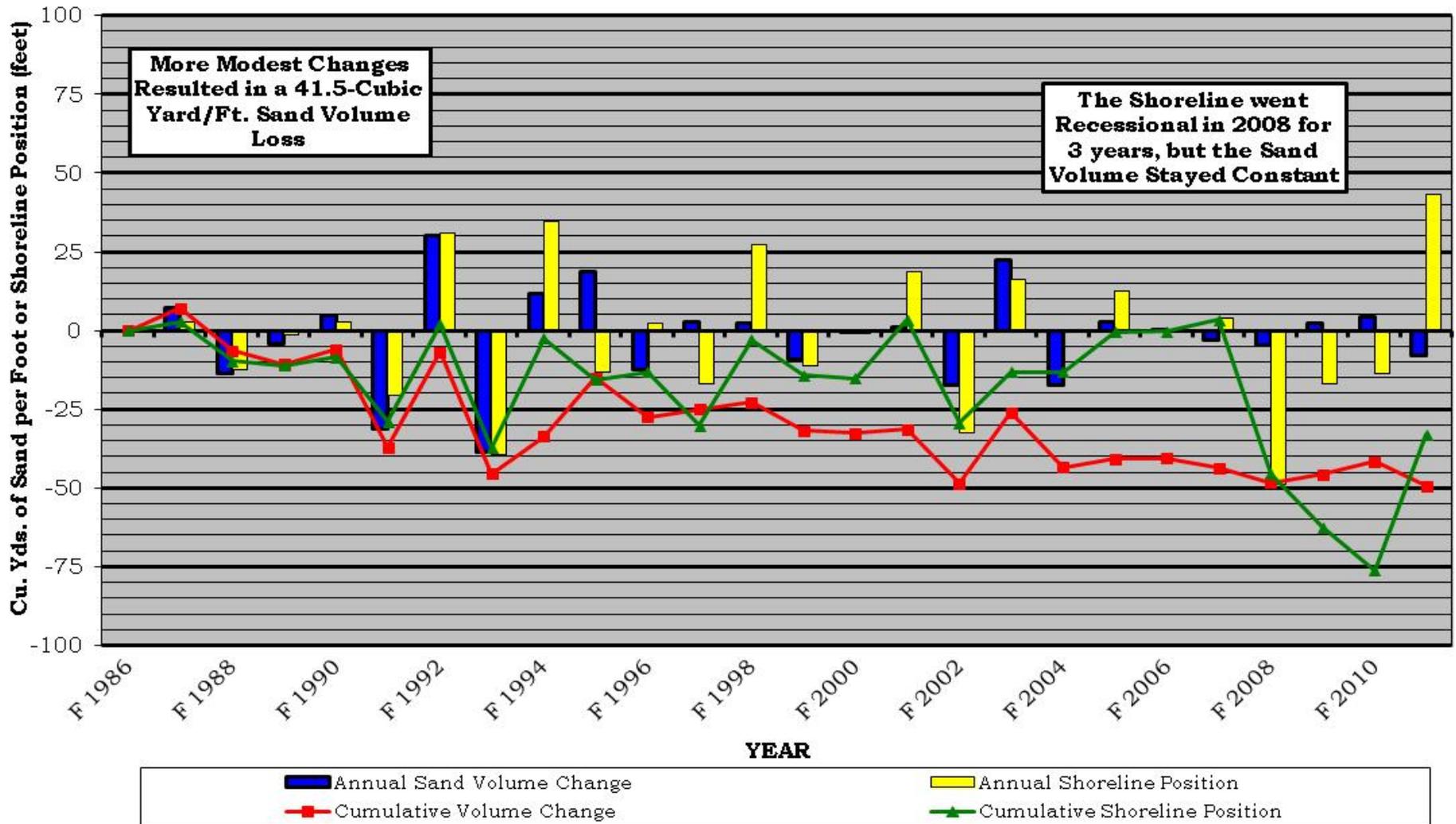


Figure 166. Profile 153 in Mantoloking has no hard structures in its beach; therefore the shifts are related to individual storm impacts and seasons with higher than average storm activity. The beach width is insufficient to support further dune growth and marginally sufficient for supporting the current dune system, resulting in frequent erosion and vertical scarping of the seaward slope even during modest to moderate storm events. The trend has been toward shoreline and sand volume loss.

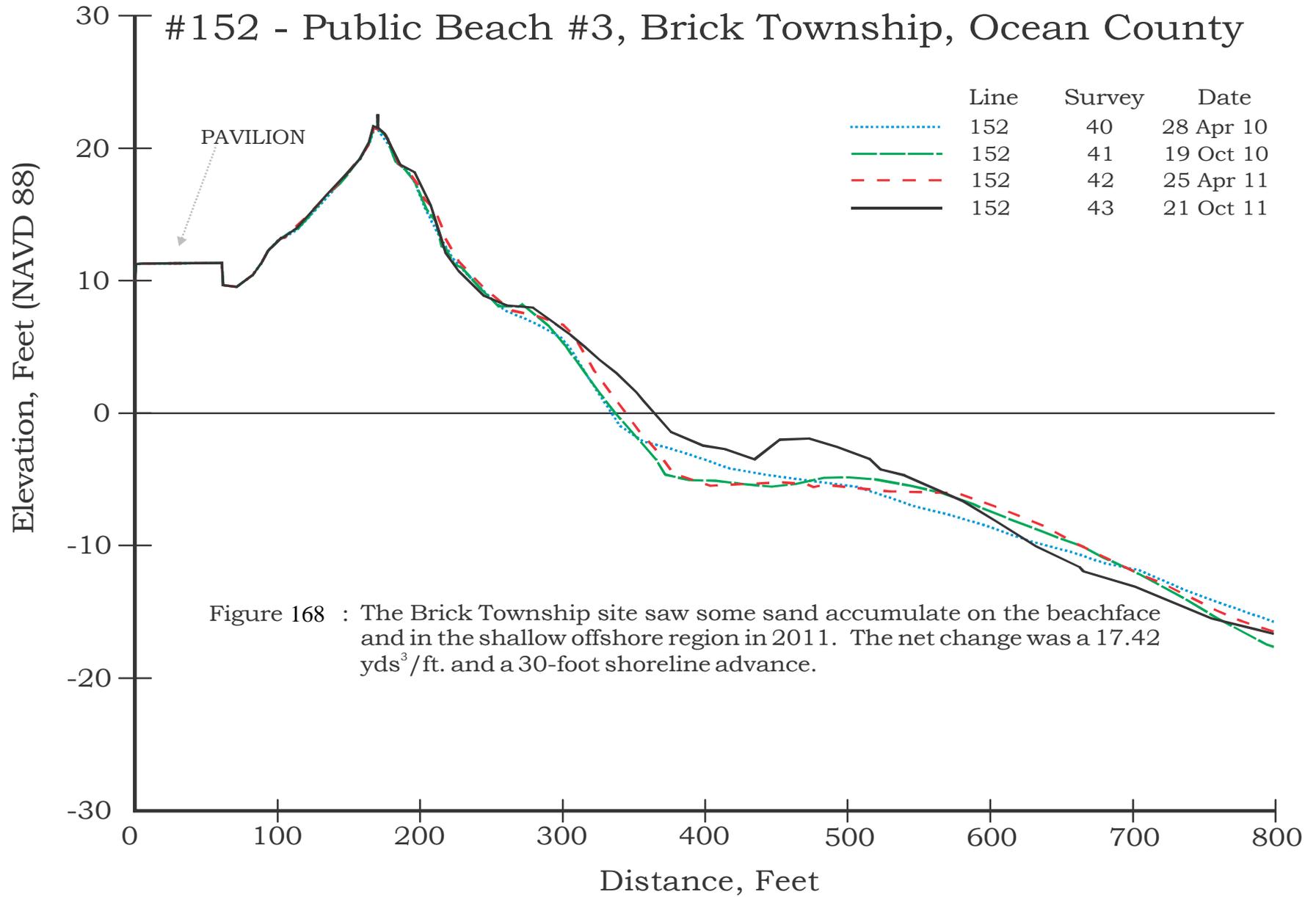
Site 152, Public Beach # 3, Brick Township, NJ – October 21, 2011



Figure 167. Shown above is the view looking northeast from the dune crest at public beach # 3 in Brick Township, NJ.

New Jersey Beach Profile Network

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



PUBLIC BEACH #3, BRICK TOWNSHIP– SITE 152

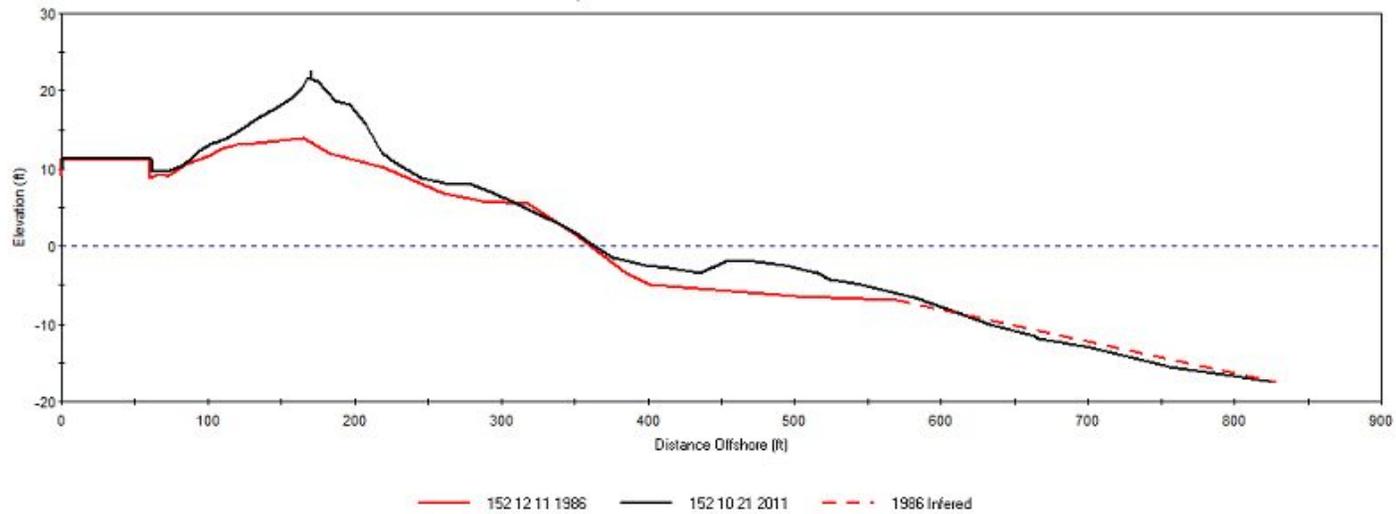


Figure 169 above shows that there were gains to dune, berm, and nearshore slope. These changes are reflected in the numbers as the shoreline advanced 4 feet and the site gained 44.866 cu. yd/ft.

Photo on the left was taken in November of 1990, and shows the view east from the dune.

Photo on the right was taken in October of 2011 and shows the view looking northeast from a noticeably higher dune.



25-Year Coastal Changes at Site 152, Public Beach #3, Brick Township, Ocean Co.

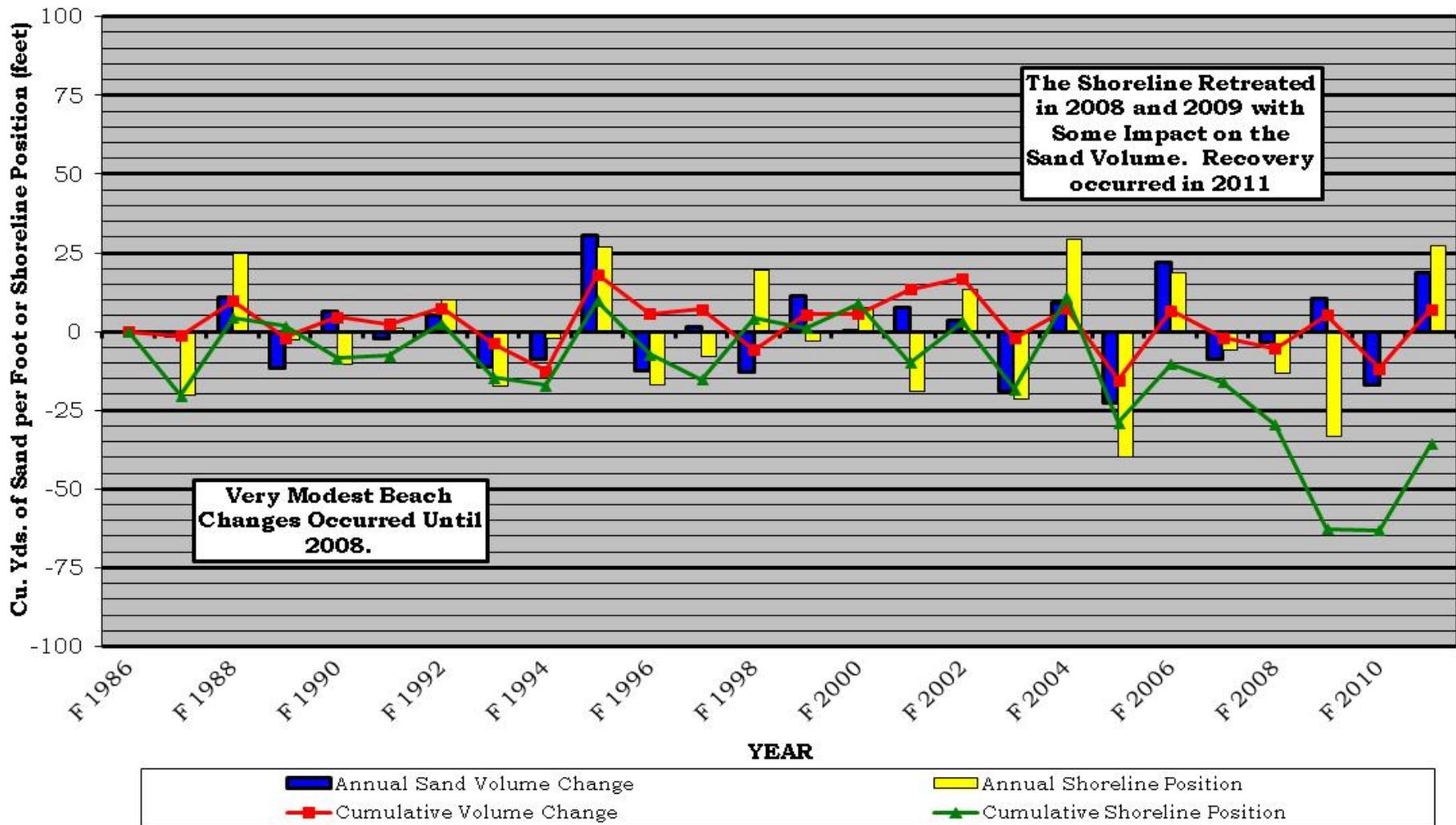


Figure 170. Profile 152 in Brick Township has no hard structures and as a result there were very modest changes in sand volume in the 25 year history of this site. From 1986 through 2005 the shoreline also remained stable; however, beginning in 2005 there has been a trend towards shoreline retreat despite the relatively constant change in sand volume. Some recovery occurred in 2011, but not enough to match where it started in 1986.

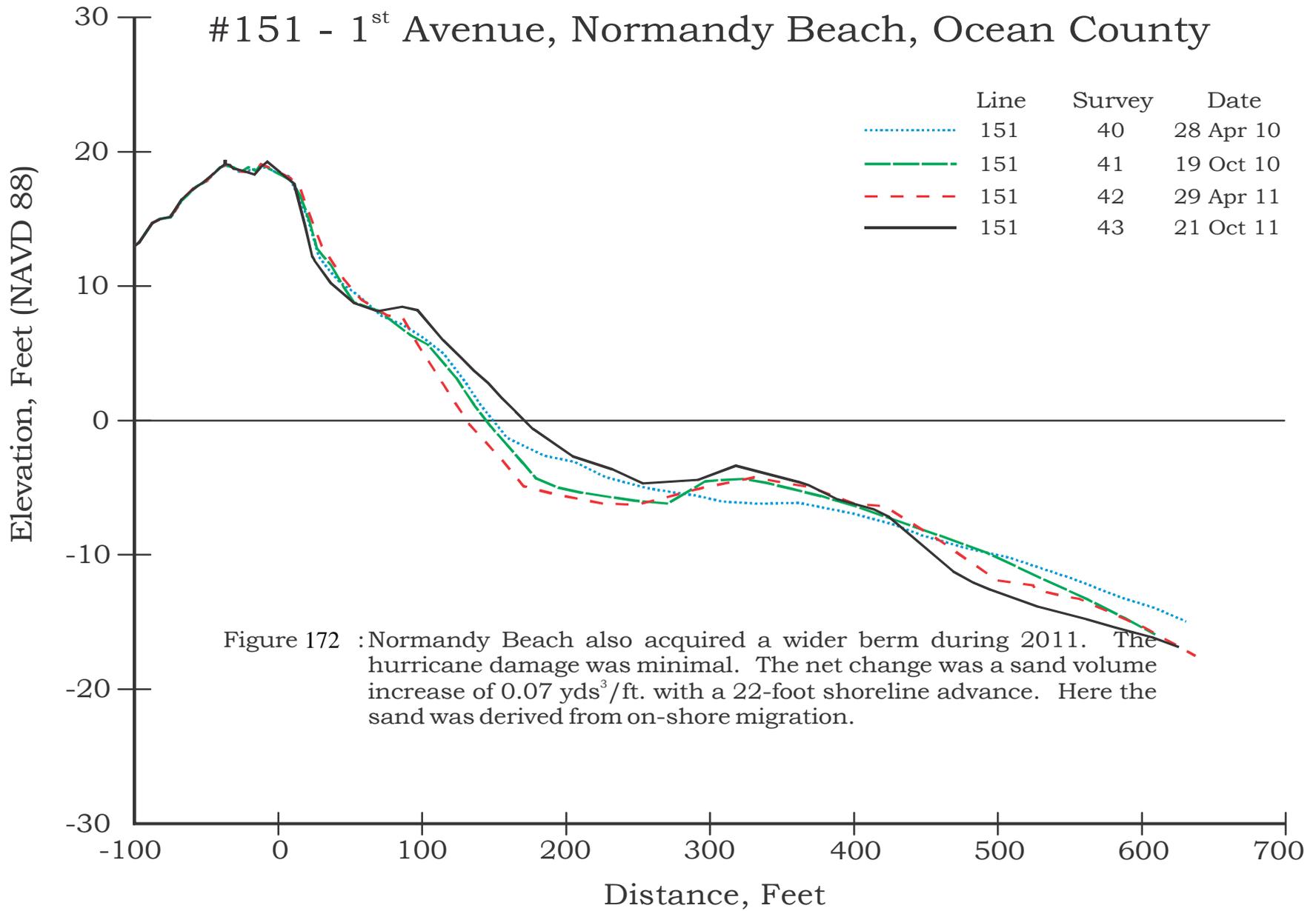
Site 151, 1st Avenue, Normandy Beach, NJ – November 21, 2011



Figure 171. Shown above is the view looking southeast from the dune at 1st Street in Normandy Beach, NJ.

New Jersey Beach Profile Network

#151 - 1st Avenue, Normandy Beach, Ocean County



1st AVENUE, NORMANDY BEACH – SITE 151

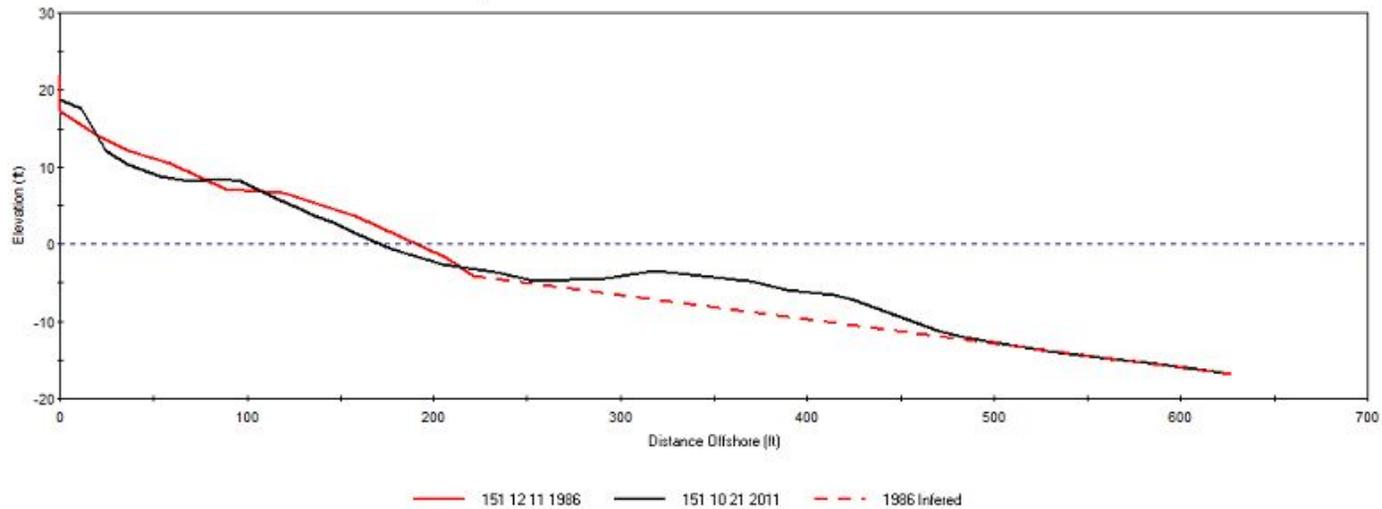


Figure 173 above shows that since the initial survey in 1986 there has been relatively little change. This is apparent in both the shoreline and volume changes, as the shoreline retreated 19 feet and the net loss in volume was a negligible 2.286 cu.yd/ft.. Photo on the left was taken in November of 1991 and shows the view to the north from the dune. Photo on the right was taken in October of 2011 and shows the view to the north from the dune toe.



25-Year Coastal Changes at Site 151, 1st Ave., Normandy Beach, Ocean Co.

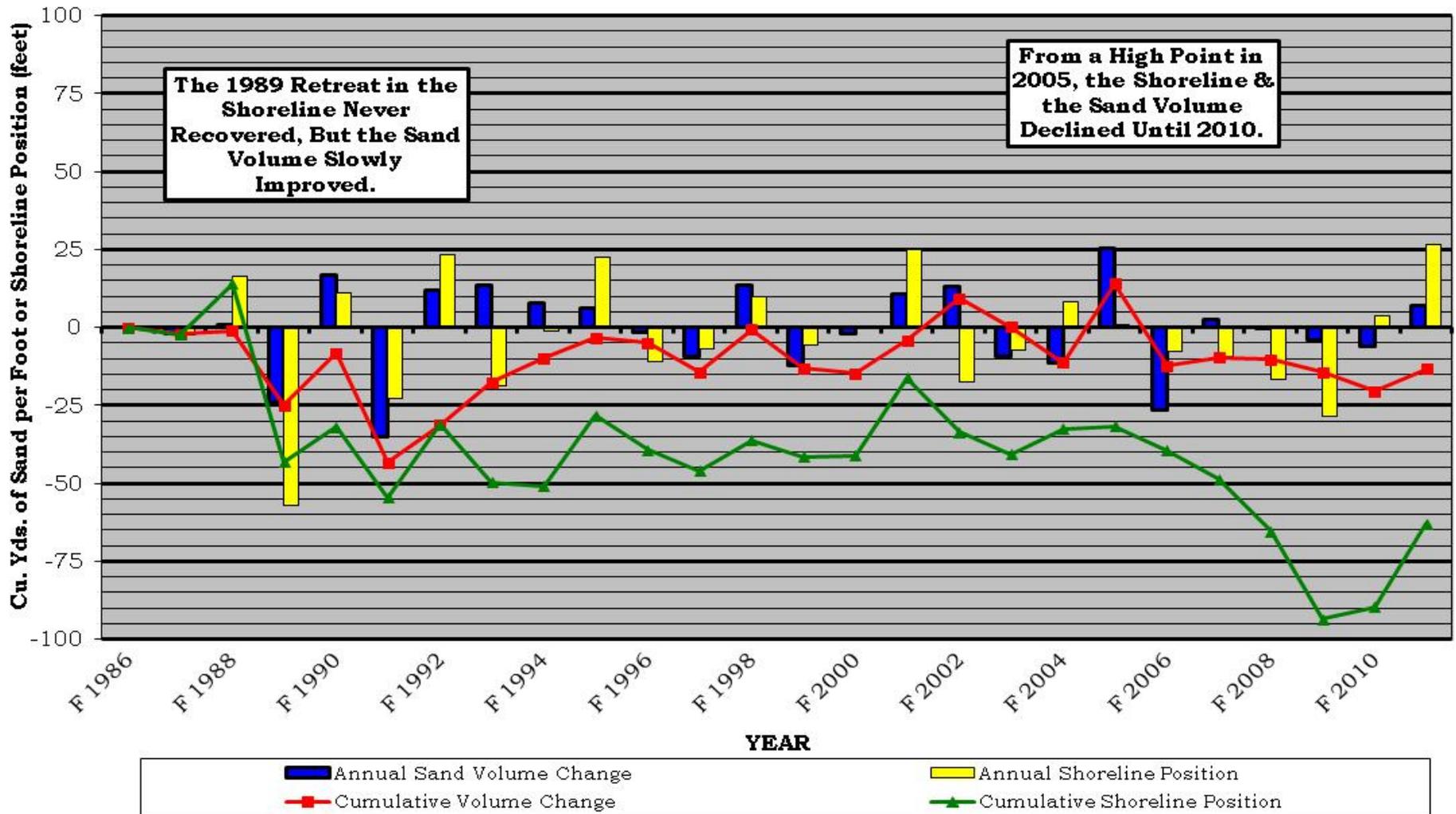


Figure 174. Profile 151 in Normandy Beach there were significant losses to the shoreline position and sand volume in 1989 and 1991. While the sand volume slowly recovered the shoreline did not. Starting in 2005 there was downward trend in shoreline and sand volume until 2010. The low point in the shoreline position occurred in 2009, despite the sand volume only losing moderate amounts of sand. Some recovery occurred in 2011, however, not nearly enough to offset the significant losses in the years prior.

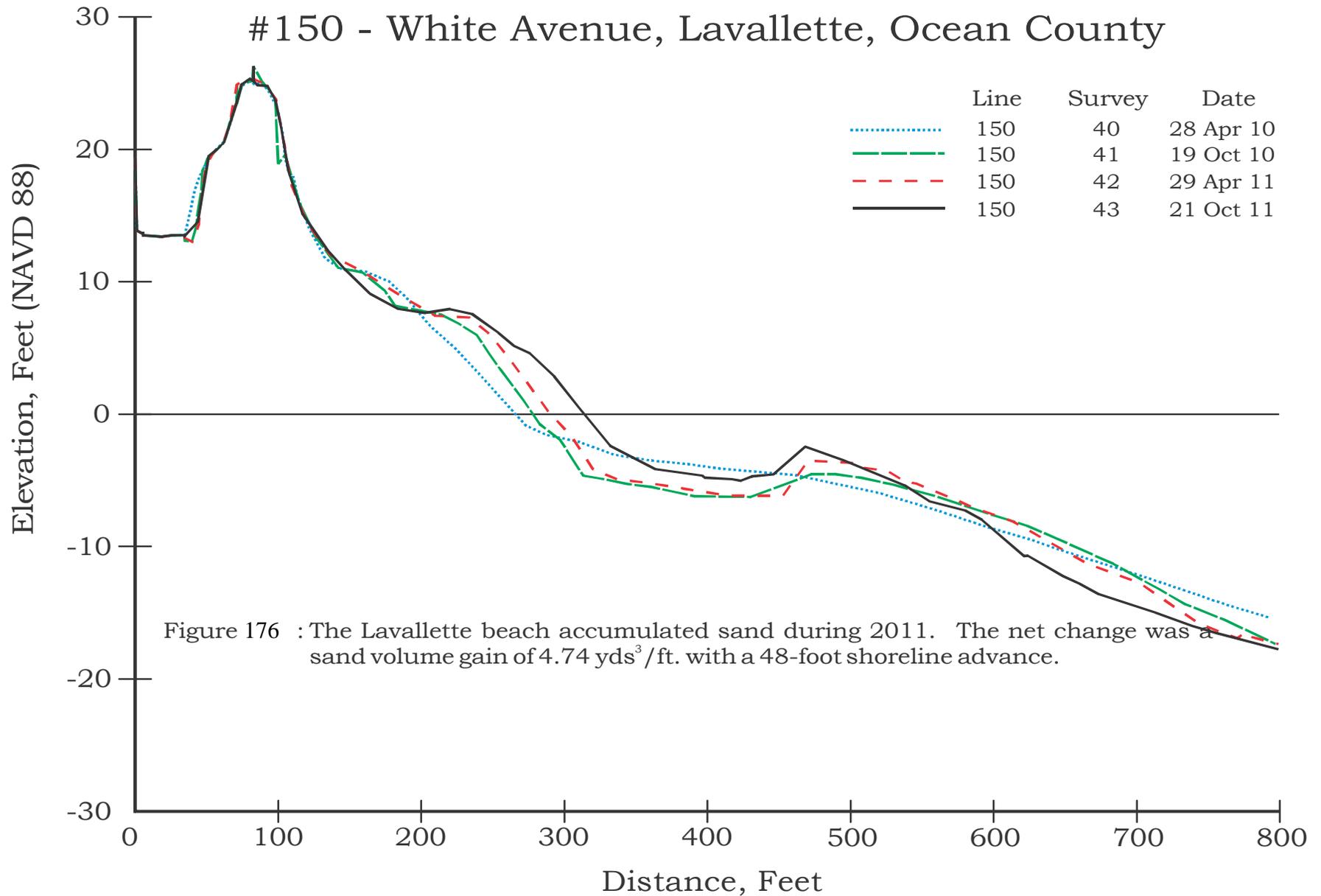
Site 150, White Avenue, Lavalette, NJ – October 21, 2011



Figure 175. Shown above is the view looking south from the dune crest at White Avenue in Lavalette, NJ.

New Jersey Beach Profile Network

#150 - White Avenue, Lavallette, Ocean County



WHITE AVENUE, LAVALLETTE – SITE 150

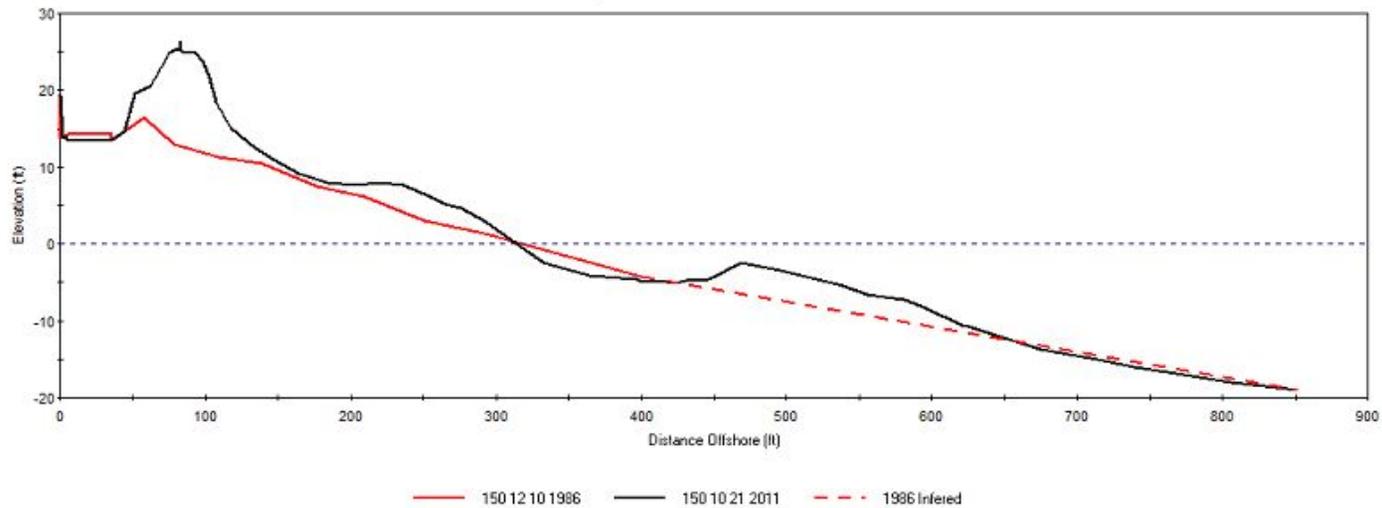


Figure 177 above shows that the dune, berm, and offshore slope have gained sand since the initial survey in 1986. The shoreline retreated by 4 feet while there was a net gain in sand volume of 30.846 cu.yd/ft. Photo on the left was taken in February of 1989 and shows the view from the dune looking east. Photo on the right was taken in October of 2011 and shows the view from the seaward crest looking northeast.



25-Year Coastal Changes at Site 150, White Ave., Lavellette, Ocean Co.

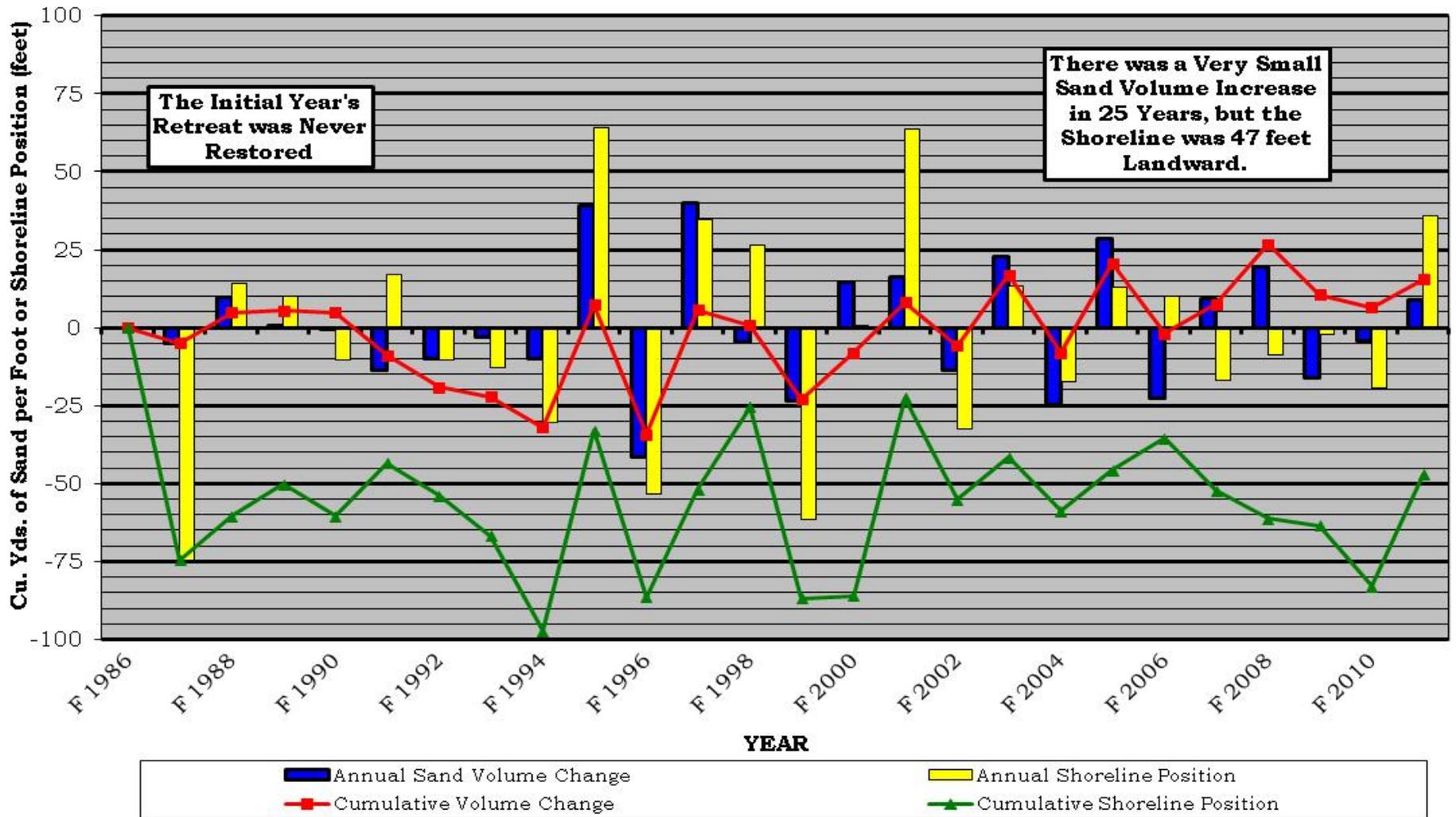


Figure 178. Profile 150 in Lavellette saw a steady pattern of shoreline and sand volume retreat from 1986 through 1994. This was followed by a pattern of oscillation from 1994 through 2003 when finally the beach began to stabilize. Starting in 2006 the sand volume began to slowly increase, conversely the shoreline retreated. In 2011 some recovery occurred, however, the shoreline ultimately ended up 47 feet landward of where it began in 1986. The sand volume increase since 1986 was minimal.

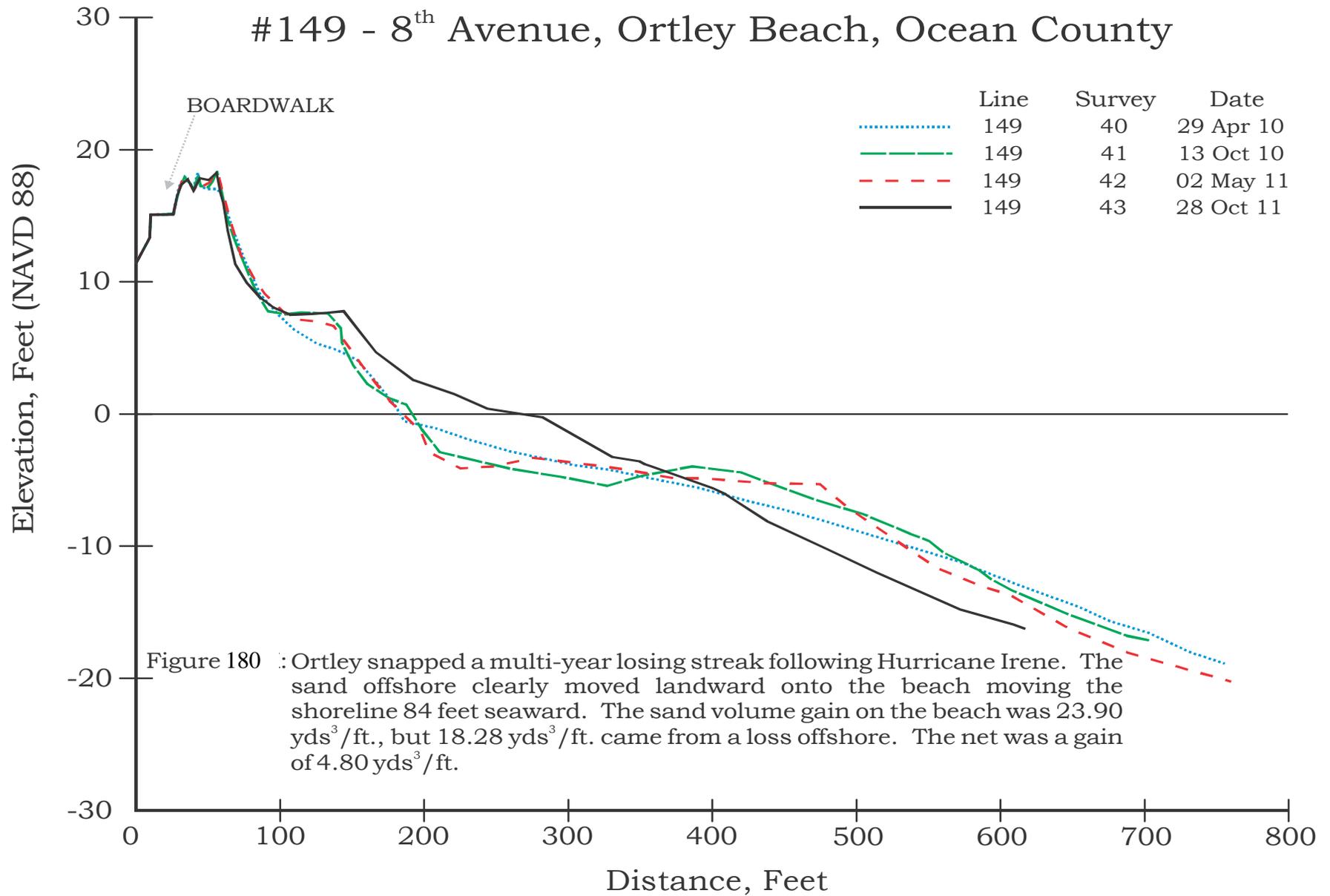
Site 149, 8th Avenue, Ortley Beach, NJ – October 28th, 2011



Figure 179. Shown above is the view looking north from the seaward crest at 8th Avenue in Ortley Beach, NJ.

New Jersey Beach Profile Network

#149 - 8th Avenue, Ortley Beach, Ocean County



8th AVENUE, ORTLEY BEACH – SITE 149

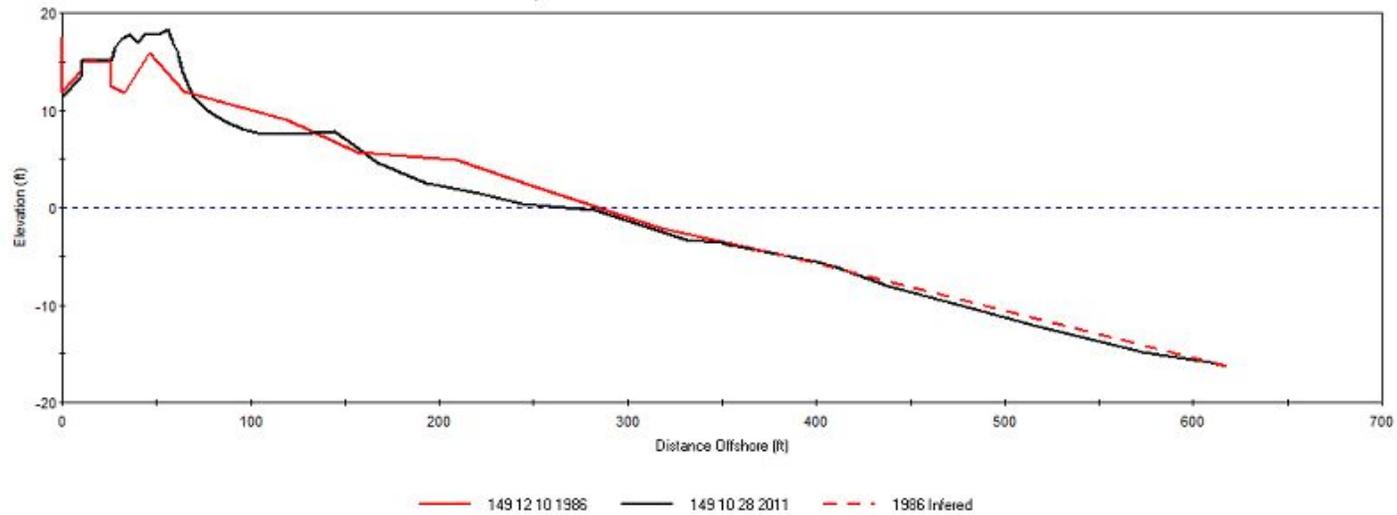


Figure 181 above shows the changes to the beach at 8th Street in Ortley Beach since its initial survey in 1986. The dune has grown vertically, however losses to the dune toe and beach face resulted in a shoreline retreat of 16 feet and a net loss of 7.402 cu.yd/ft. of sand. Photo on the left was taken in February of 1989 and shows the view looking northeast from the boardwalk. Photo on the right was taken in October of 2011 and shows the view north from the crest of the dune.



25-Year Coastal Changes at Site 149, 8th Ave., Ortley Beach, Ocean Co.

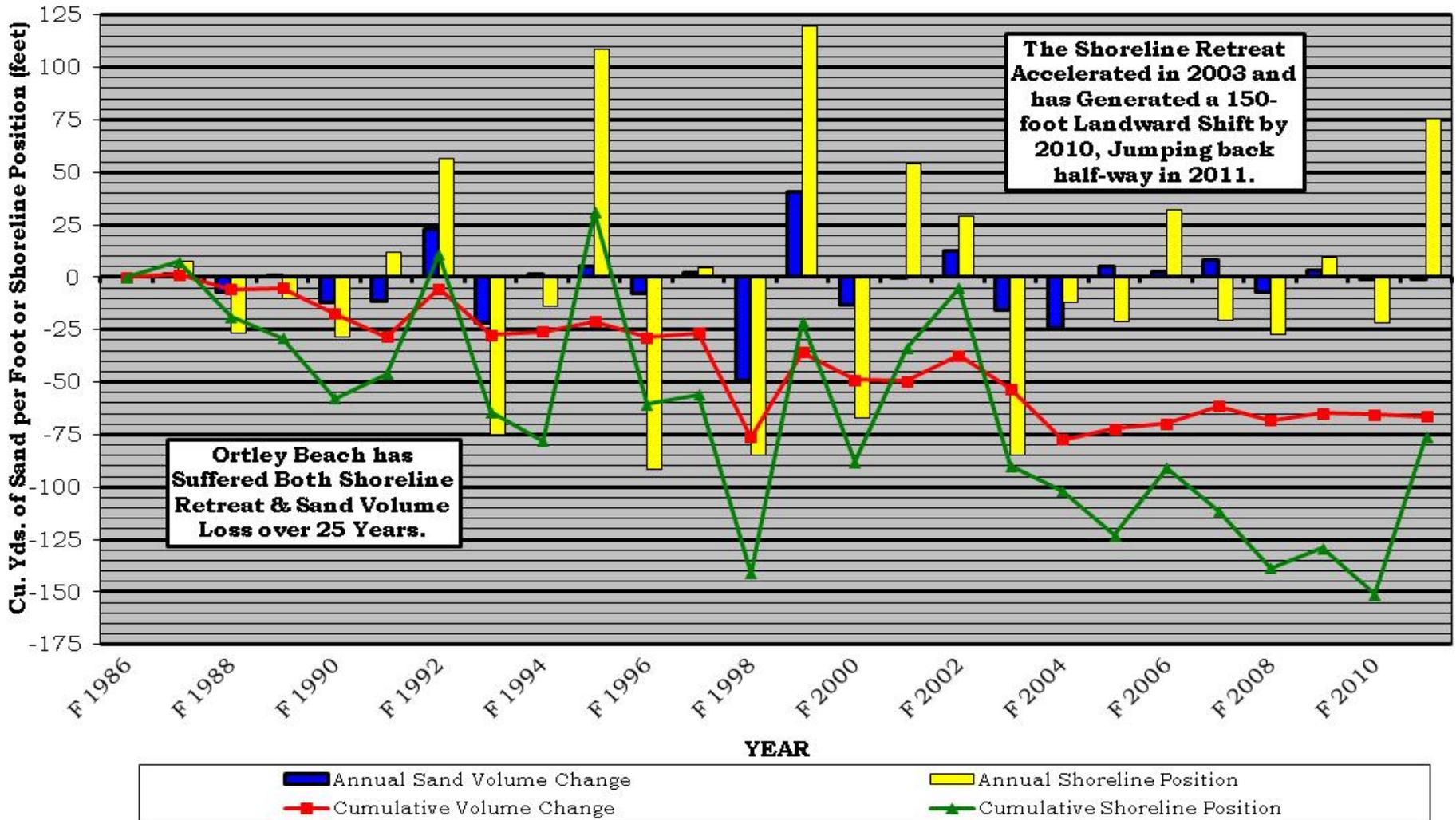


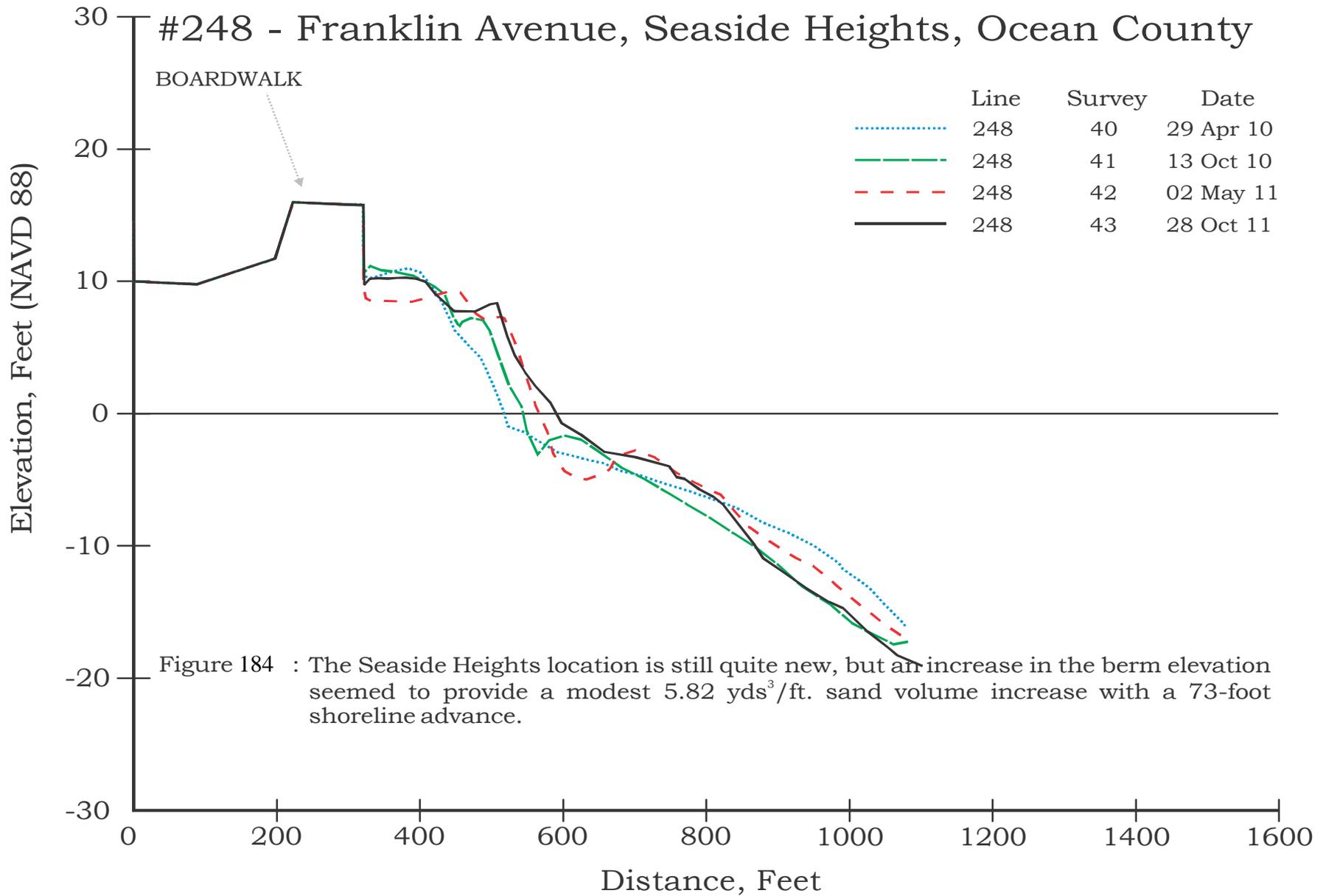
Figure 182. Profile 149 at Ortley Beach endured extensive oscillations in its shoreline position, particularly between 1992 and 2003; while the overall trend in sand volume has been that of a slow decline. The shoreline retreat accelerated in 2003 with the low point in 25 year history occurring in 2010, while some recovery occurred in 2011 the overall shoreline trend was that of retreat. From 2003 through 2011 the sand volume stabilized despite the shoreline retreat, and began a slight upward trend.



Figure 183. Shown above is the view looking south from the boardwalk at Franklin Avenue in Seaside Heights, NJ.

New Jersey Beach Profile Network

#248 - Franklin Avenue, Seaside Heights, Ocean County



FRANKLIN AVENUE, SEASIDE HEIGHTS – SITE 248

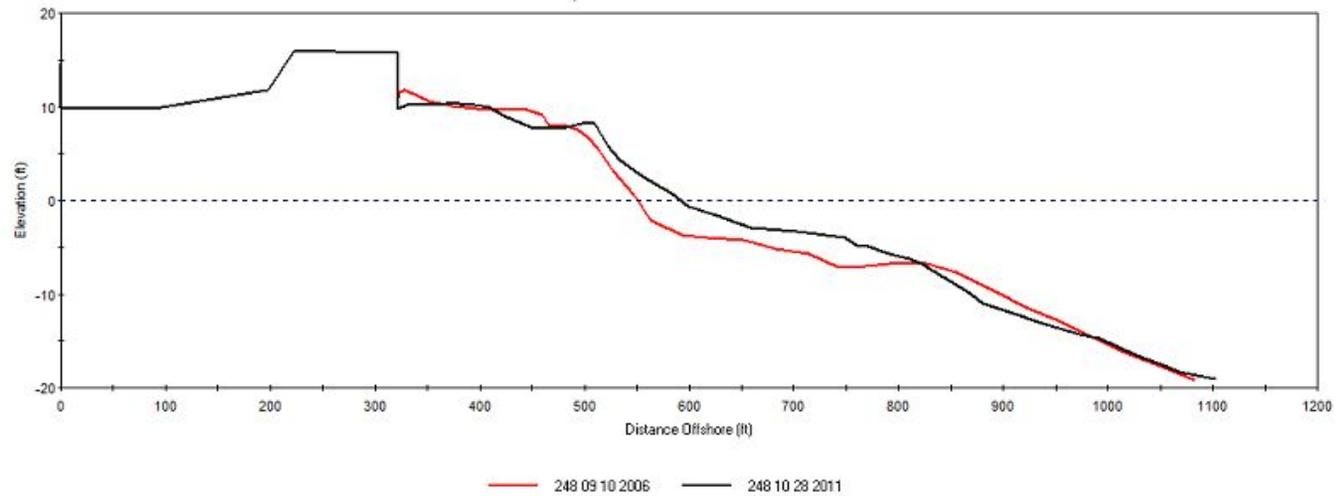


Figure 185 above the Franklin Avenue site in Seaside Heights. This site was added to the NJBPN network in 2009 to record changes to this municipal beach. Since the initial survey in 2009 the beach has gained 41 feet of shoreline and 19,333 cu.yd/ft. of sand .
Photo on left taken October 6, 2009. View to the south.
Photo on right taken October 28, 2011. View to the south.



Note: The 25-year change graphic was not completed due to this site's 2009 date of establishment.

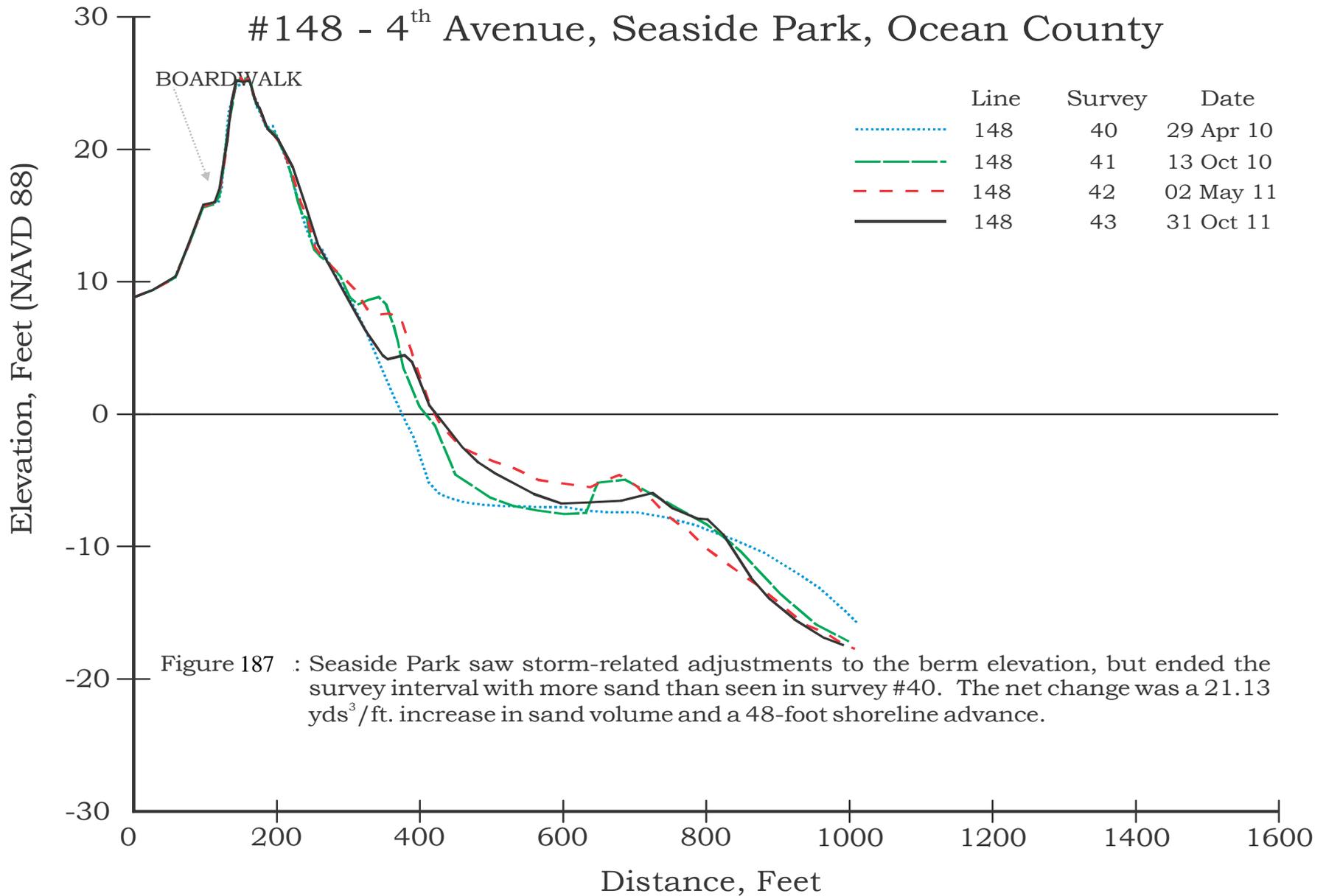
Site 148, 4th Avenue, Seaside Park, NJ – October 31, 2011



Figure 186. Shown above is the view looking south from the dune at 4th Avenue in Seaside Park, NJ.

New Jersey Beach Profile Network

#148 - 4th Avenue, Seaside Park, Ocean County



4th AVENUE. SEASIDE PARK– SITE 148

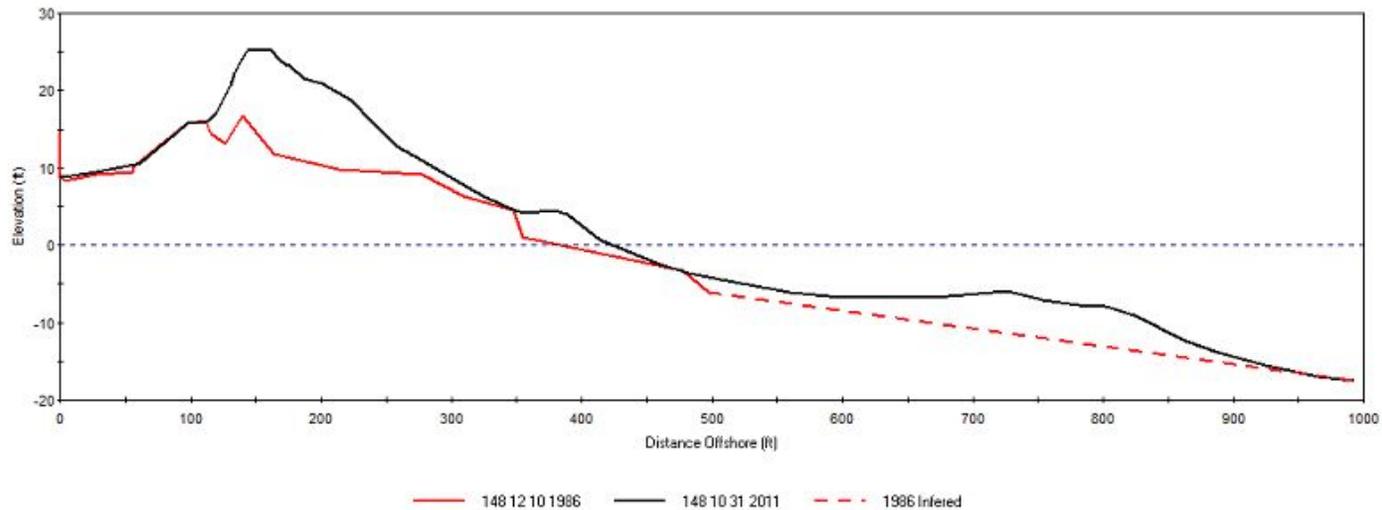


Figure 188 above shows that since the initial survey in 1986 the dune grew both horizontally and vertically, while sand was added to the beachface, and offshore slope. As a result of the changes the shoreline advanced 39 feet and an additional 62,212 cu.yd/ft. of sand was added. Photo on the left was taken in February of 1989 and shows the view to the east from the boardwalk. Photo on the right was taken in October of 2011 and shows the view to the south from the dune crest.



25-Year Coastal Changes at Site 148, 4th Ave., Seaside Park, Ocean Co.

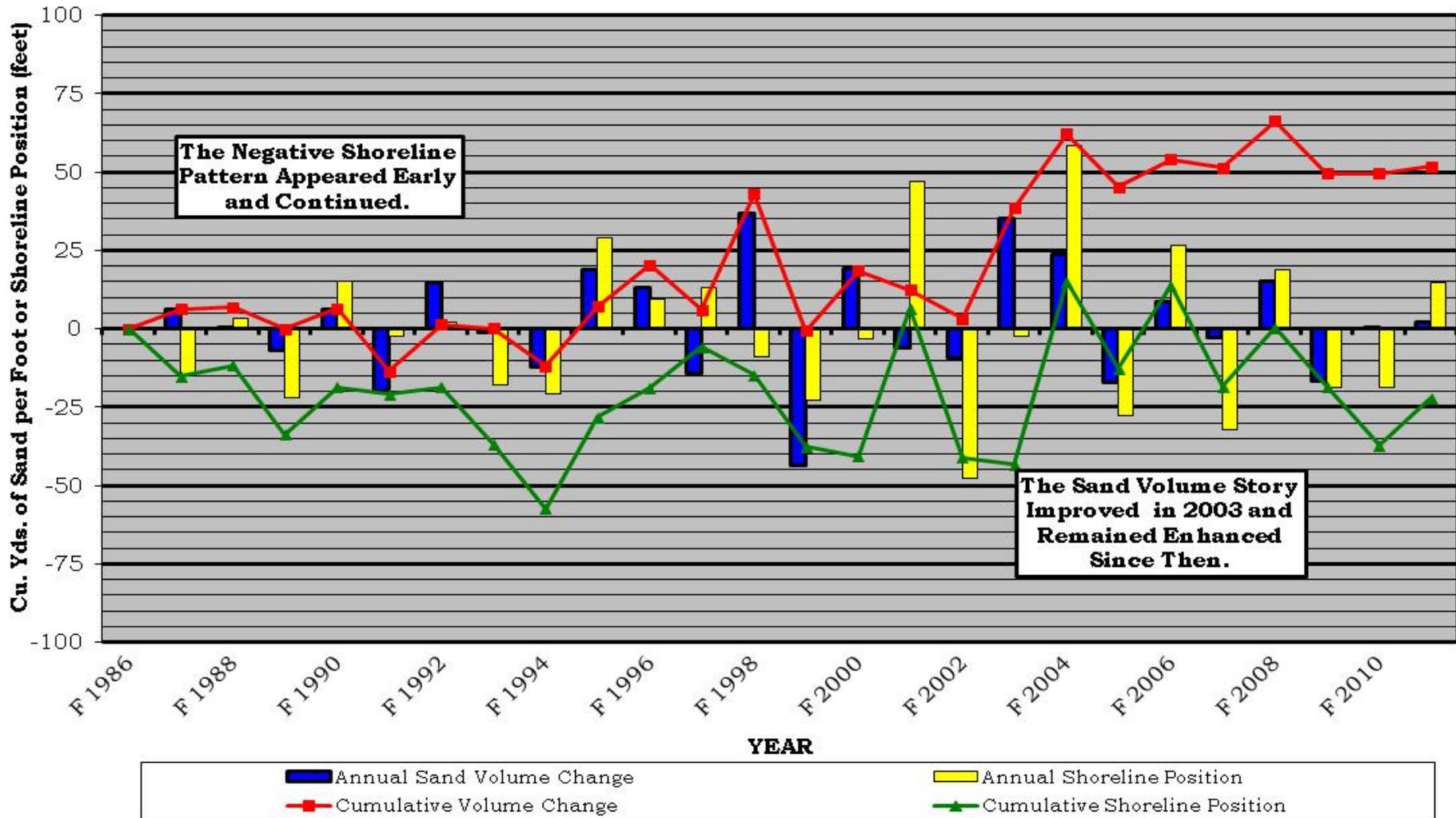


Figure 189. Profile 148 in Seaside Park shows that from 1986 until 2003 the sand volume alternated between gains and losses. From 2003 until 2011 the sand volume has increased and has remained enhanced since then. The dune system has flourished at this location which resulted in the increased sand volume, however, the shoreline position has been dynamic from year to year and at the end of 2011 the shoreline was 25 feet landward from where it started in 1986.

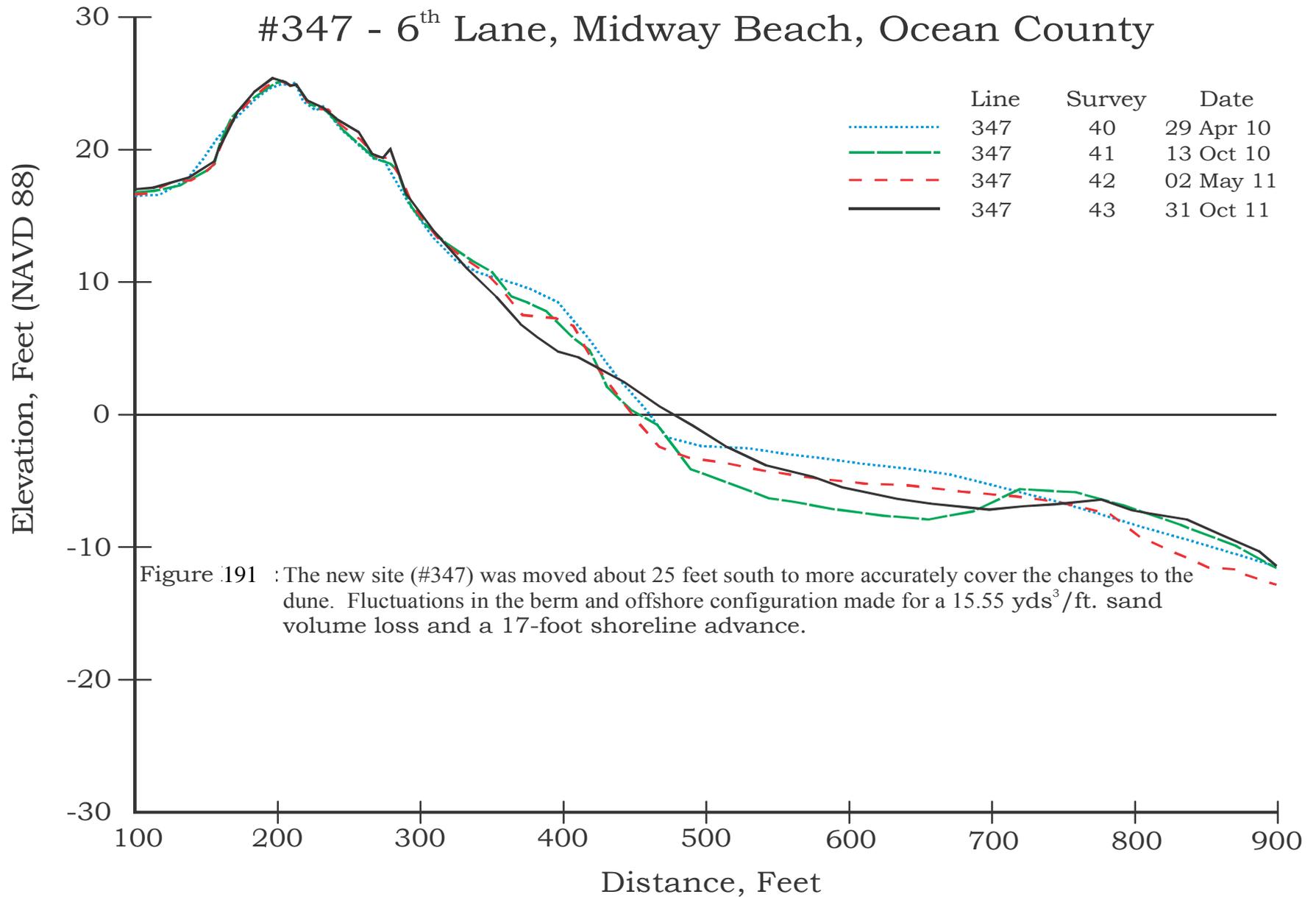
Site 147, 6th Lane, Midway Beach, NJ – October 31, 2011



Figure 190. Shown above is the view looking north from the dune at 6th Lane in Midway Beach, NJ.

New Jersey Beach Profile Network

#347 - 6th Lane, Midway Beach, Ocean County



6th LANE, MIDWAY BEACH – SITE 347 (formerly 147)

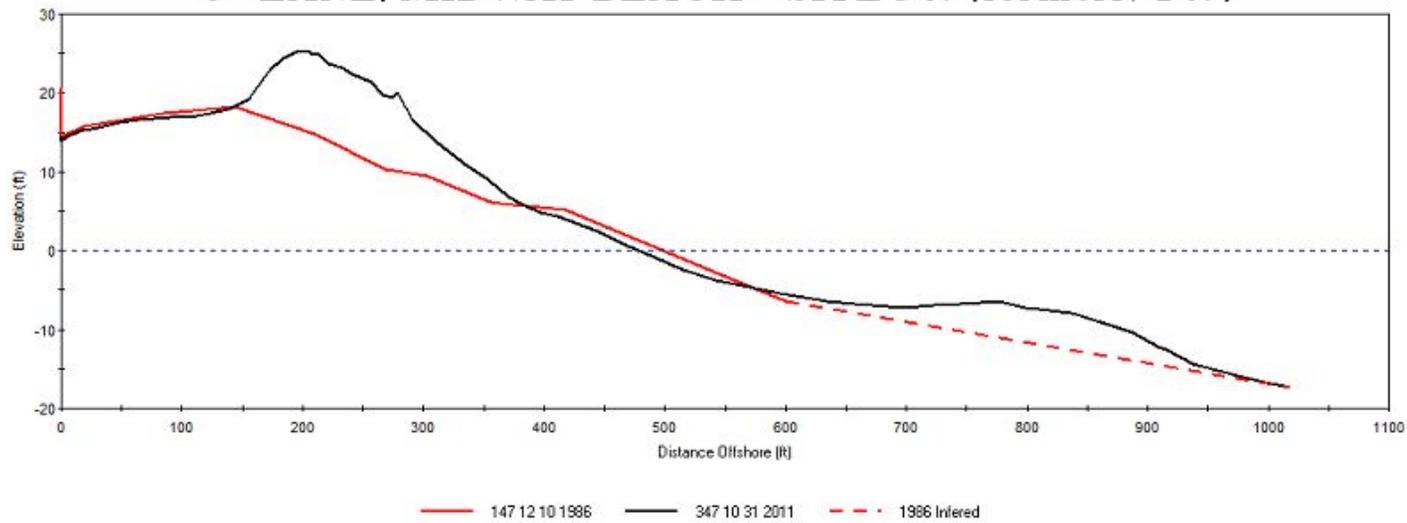


Figure 192 above shows the original survey line which ran along the access path (red line). The profile was later moved south to capture changes in the dune that was growing adjacent to the path (black line). The shoreline retreated 21 feet. Photo on the left was taken in February of 1989 looking east up the access path. Photo on the right was taken in October of 2011 and shows the view from the foredune crest looking north.



25-Year Coastal Changes at Site 347, 6th Lane, Midway Beach, Ocean Co.

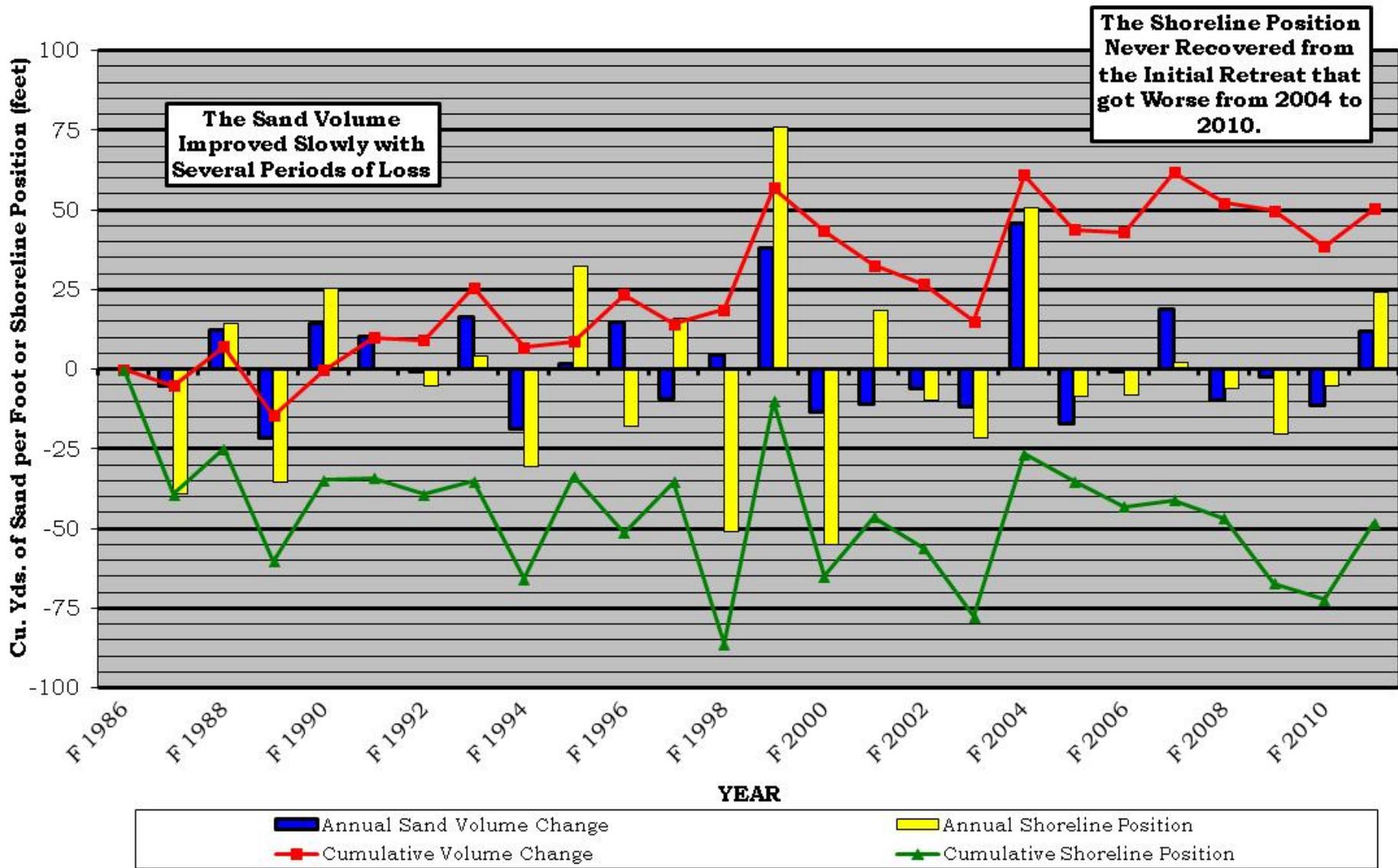


Figure 193. Profile 347 in Midway Beach steadily gained sand volume starting in 1990; this pattern continued through 2011. The shoreline position however began with a retreat and never recovered. The worse losses were from 2004 to 2010.

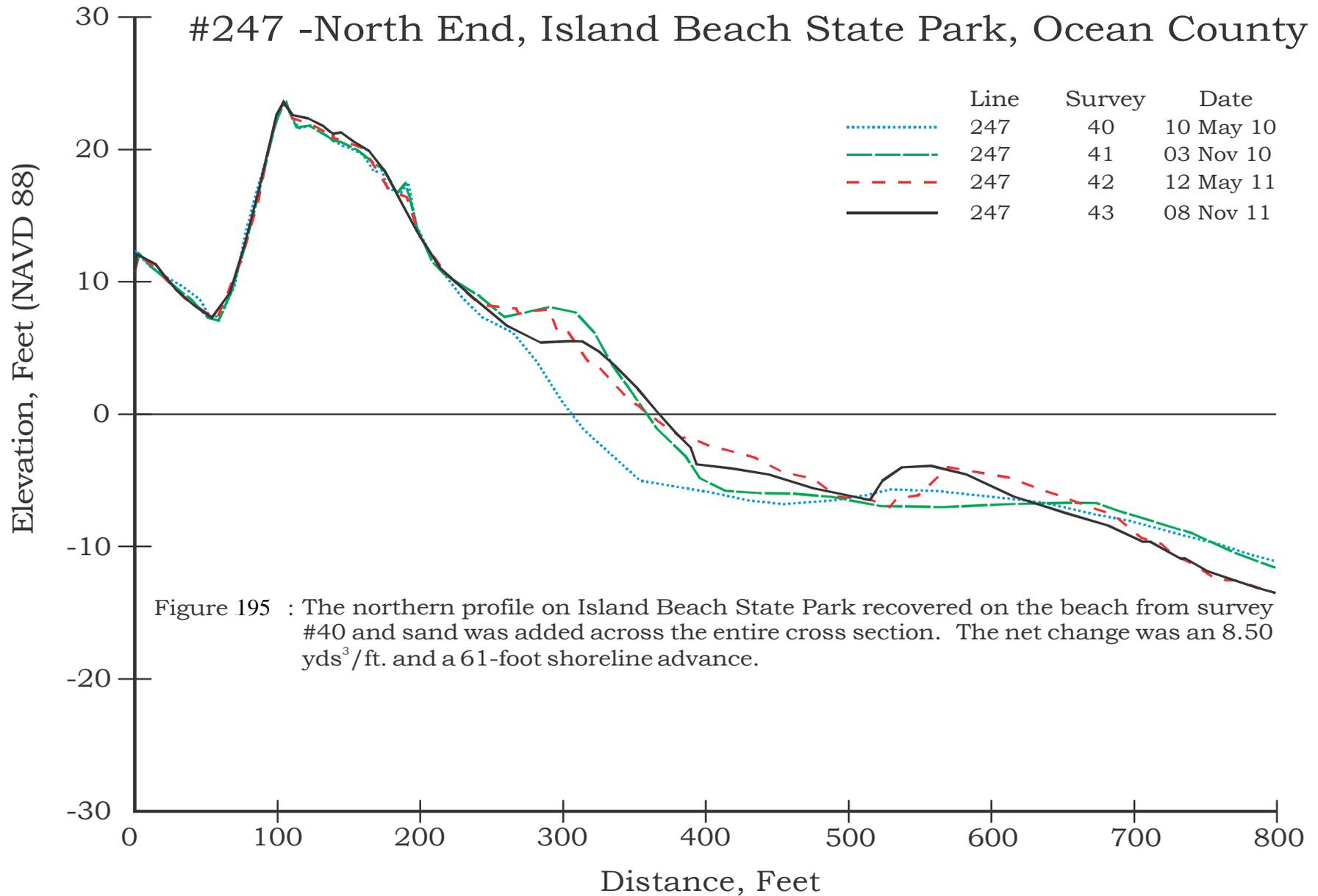
Site 247, North End, Island Beach State Park, NJ – November 8, 2011



Figure 194. Shown above is the view looking northeast from the dune at the North End of Island Beach State Park, NJ.

New Jersey Beach Profile Network

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



NORTH END, ISLAND BEACH STATE PARK – SITE 247

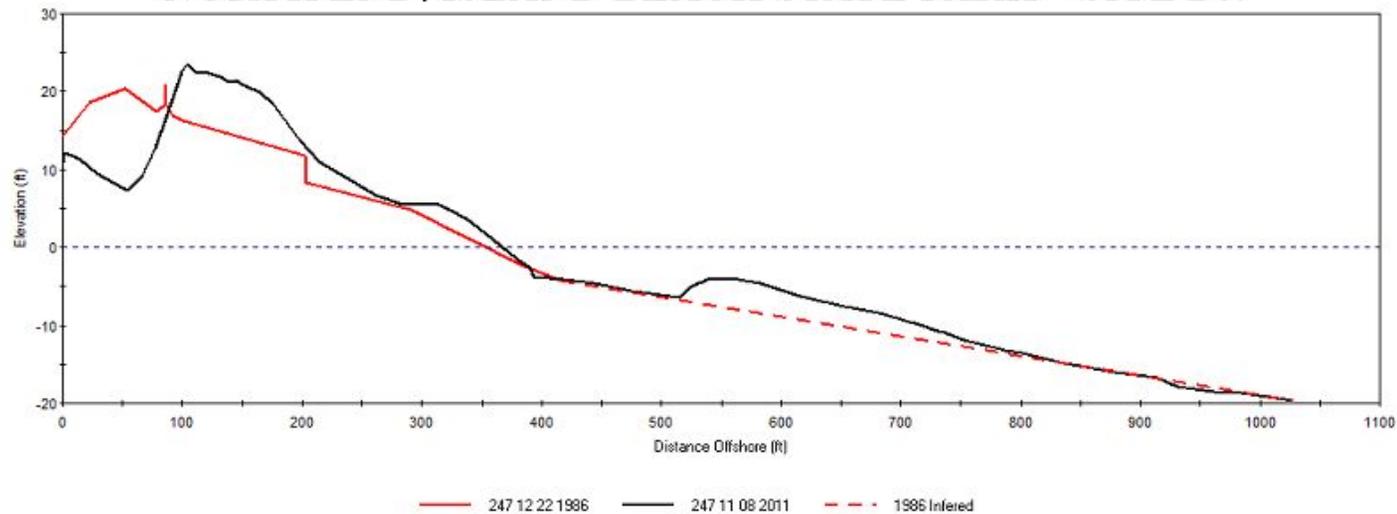


Figure 196 above shows the initial survey in 1986 compared to the November 2011 survey. By 2011 the dune developed a deep swale and grew vertically. The shoreline advanced by 14 feet and there was a net gain in sand volume of 8.304 cu.yd/ft. Photo on the left was taken in February of 1989 and shows the view from the dune crest looking east. Photo on the right was taken in November of 2011 and shows the view from the dune crest looking north.



25-Year Coastal Changes at Site 247, North End, Island Beach State Park, Ocean Co.

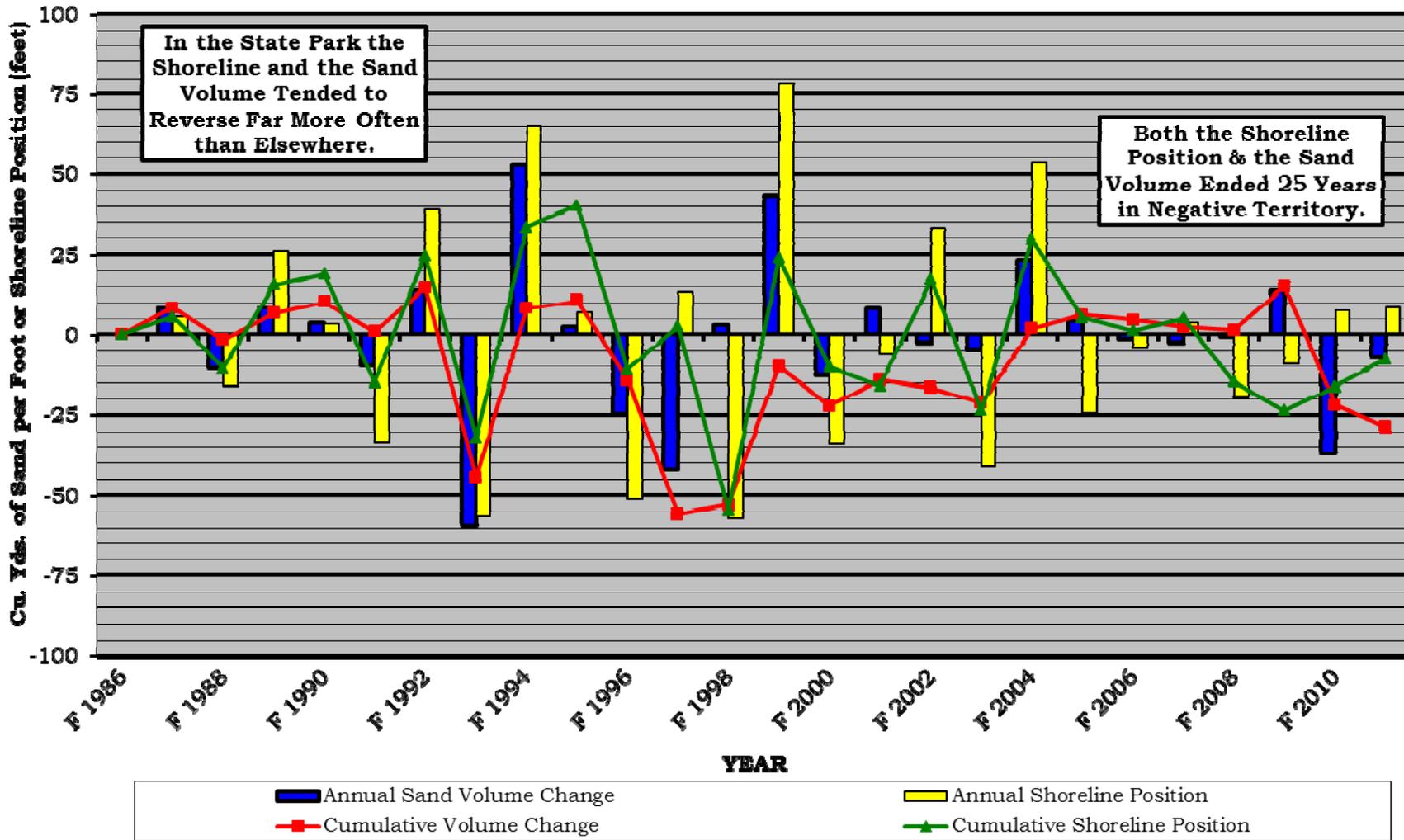


Figure 197. Profile 247 at the north end of Island Beach State Park saw dramatic reversals of the sand volume and shoreline position in its 25 year history. Along with sites #246 and #146 this site is located in the State Park and covers a totally natural dune and beach system. Although both the shoreline and sand volume ended in negative territory, the deviation from the initial survey in 1986 was minor.

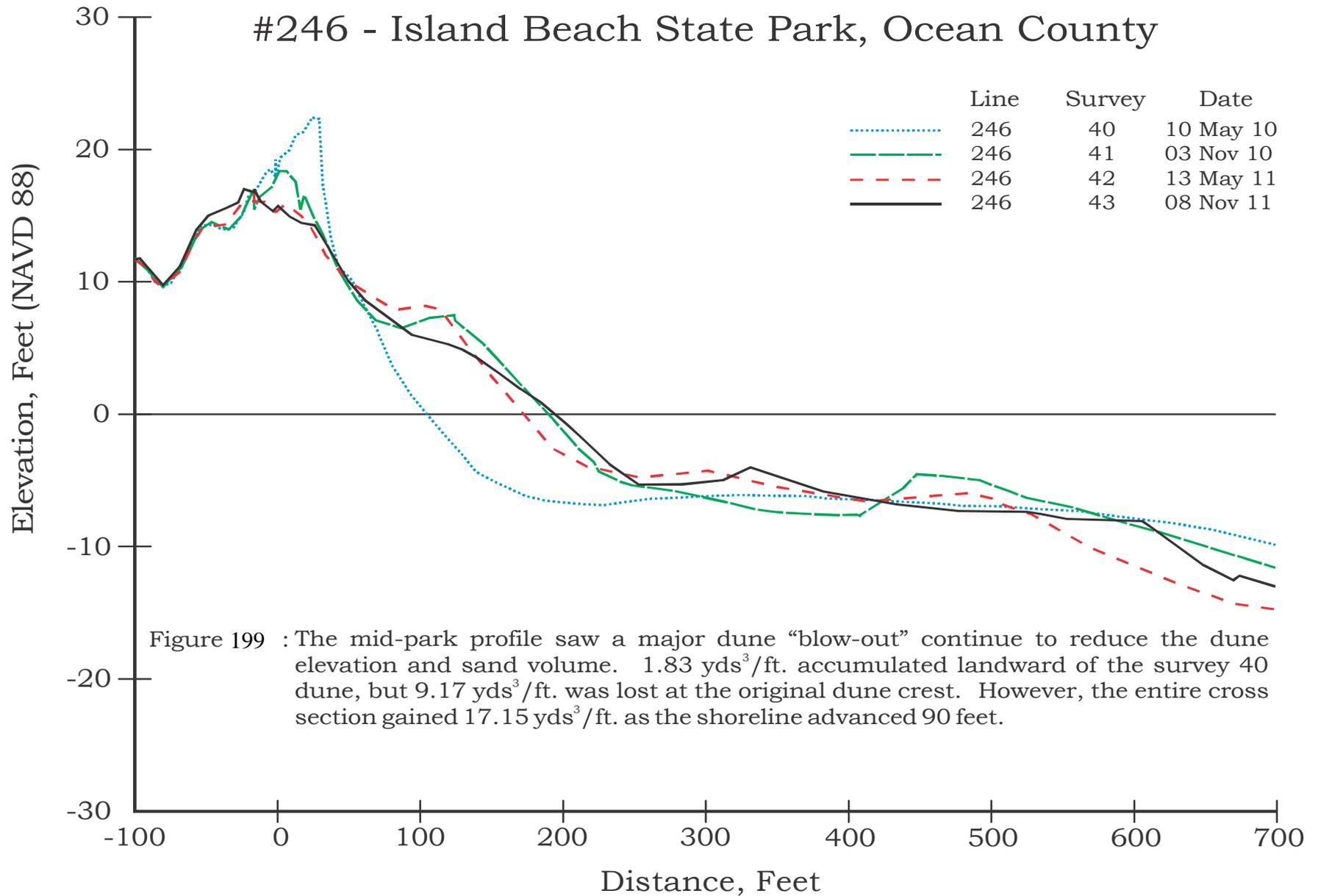
Site 246, Parking Lot A7, Island Beach State Park, NJ – November 8, 2011



Figure 198. Shown above is the view looking south from the seaward crest of the dune near parking lot A7 in Island Beach State Park, NJ.

New Jersey Beach Profile Network

#246 - Island Beach State Park, Ocean County



ISLAND BEACH STATE PARK – SITE 246

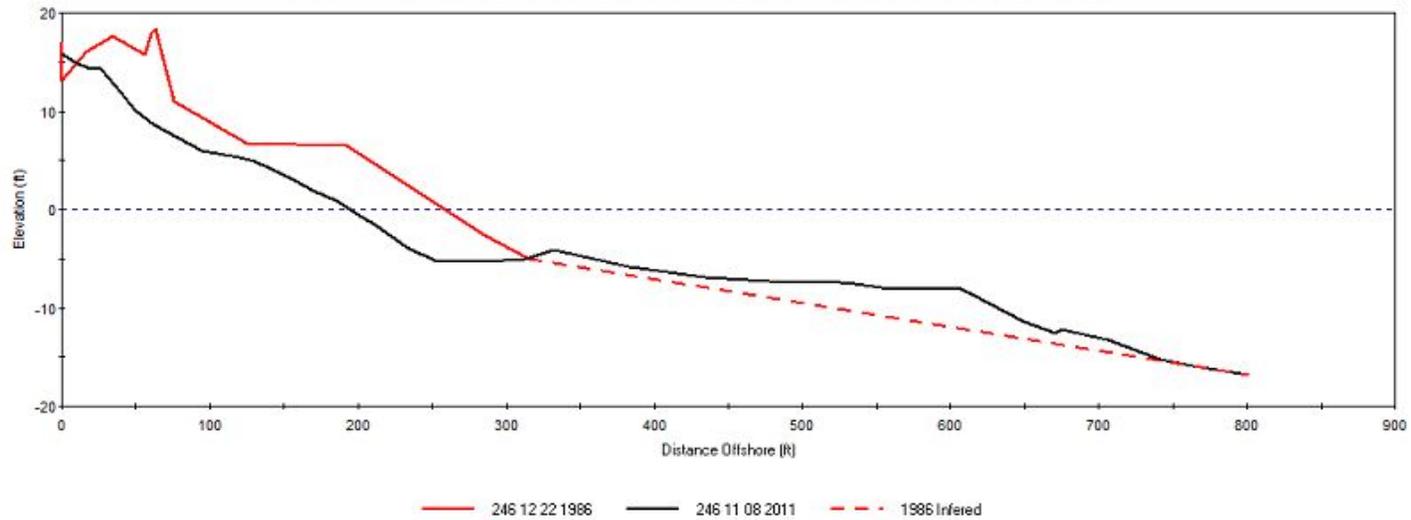


Figure 200 above shows the losses to the dune and beach that this site has sustained since the initial survey in 1986. The shoreline retreated 64 feet and the net loss in sand was 37,823 cu.yd/ft.

Photo on the left was taken in 1995 and shows the view from the fore dune crest looking north.

Photo on the right was taken in November of 2011 and shows a similar view north from the fore dune crest.



25-Year Coastal Changes at Site 246, Island Beach State Park, Ocean Co.

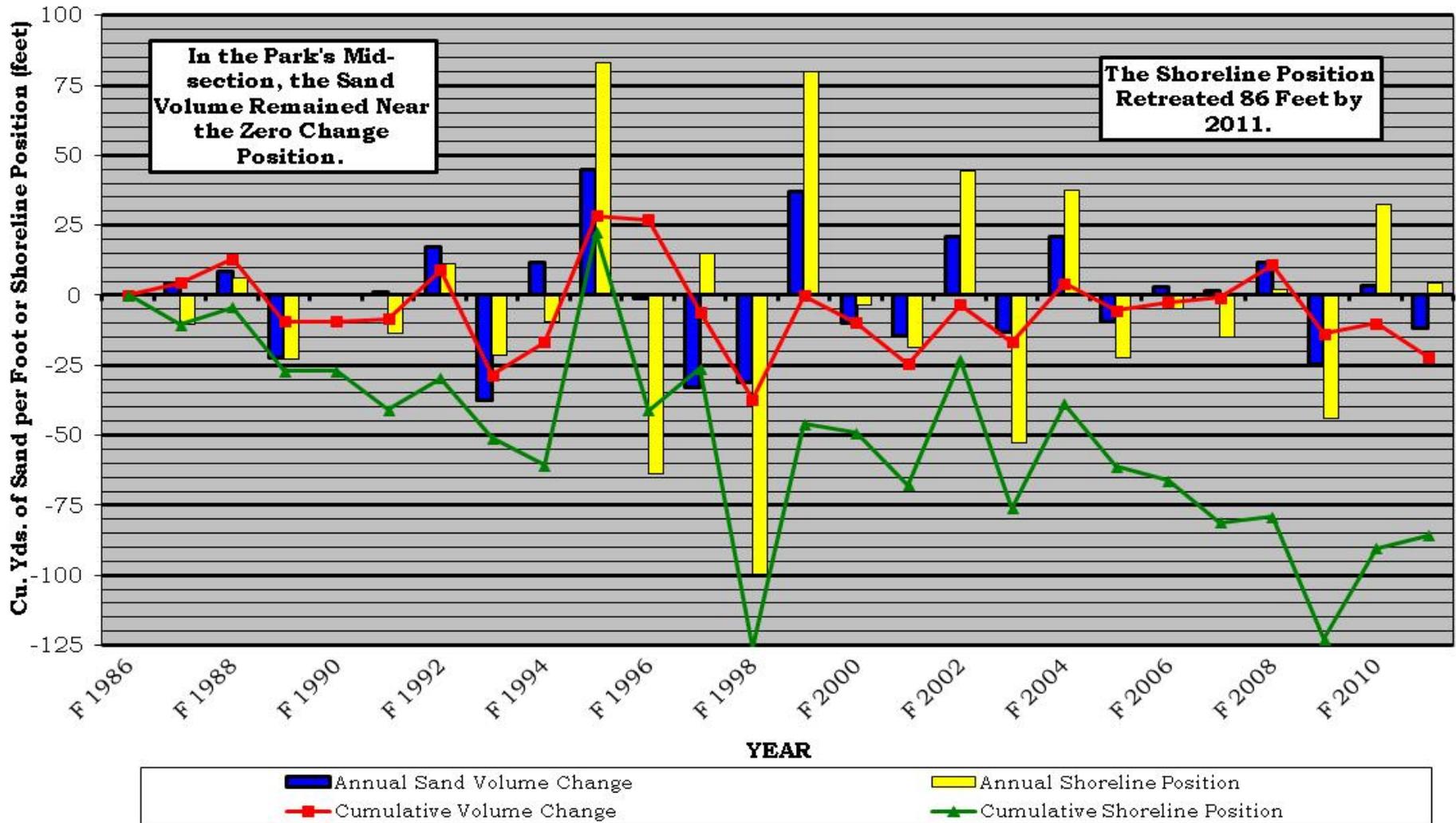


Figure 201. Profile 246 at the mid-section of Island Beach State Park had fluctuations in sand volume throughout its history; however, in the end the volume remained near the zero change line. The shoreline position however was another matter. Immediately following the initial survey in 1986 the shoreline retreated. Only once in 2005 did the shoreline advance by the zero change position in this profile's 25 year history. By 2011 the shoreline position has retreated 86 feet from where it started.

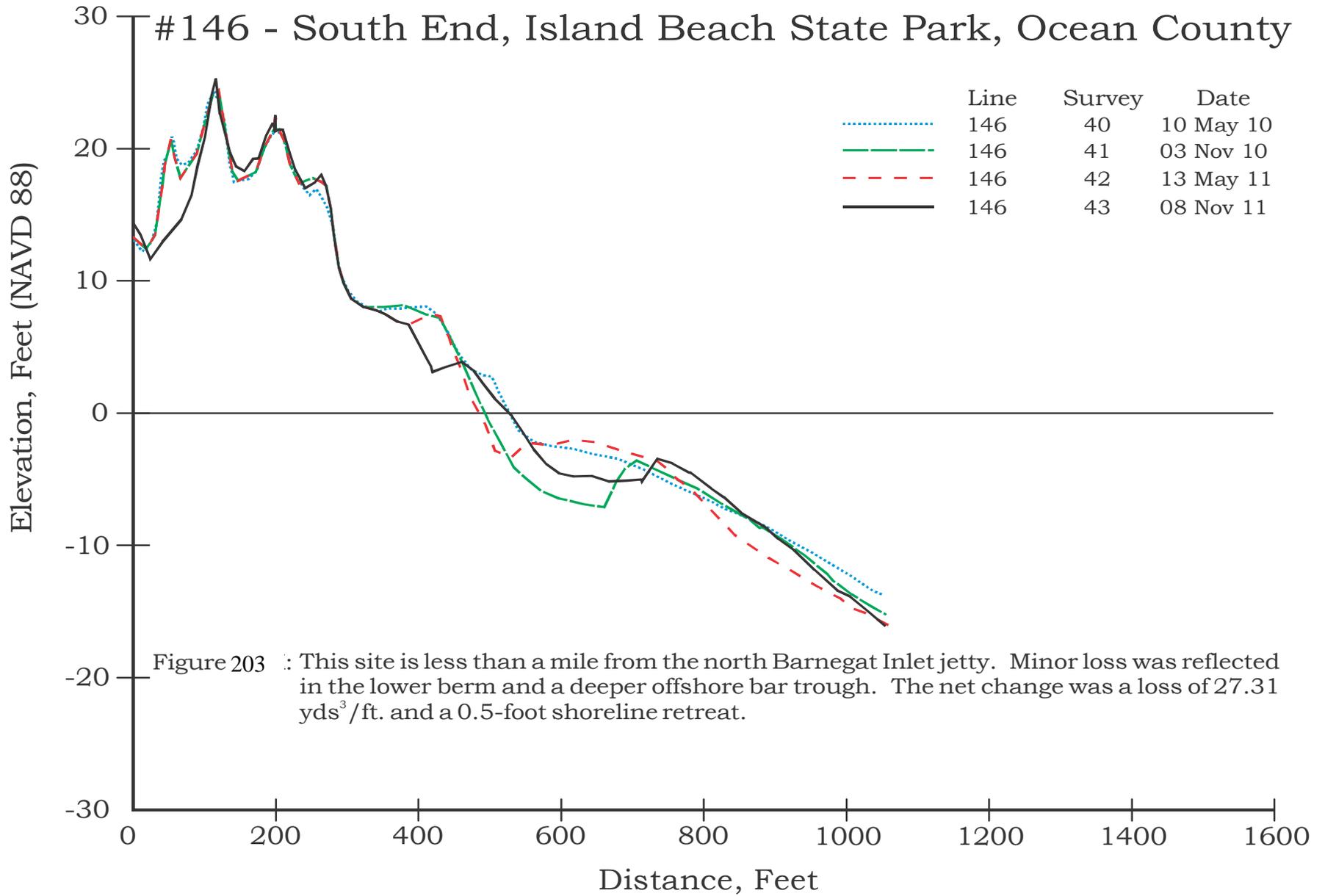
Site 146, South End, Island Beach State Park, NJ – November 8, 2011



Figure 202. Shown above is the view looking northeast from the seaward crest of the dune at the south end of Island Beach State Park, NJ.

New Jersey Beach Profile Network

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



SOUTH END, ISLAND BEACH STATE PARK – SITE 146

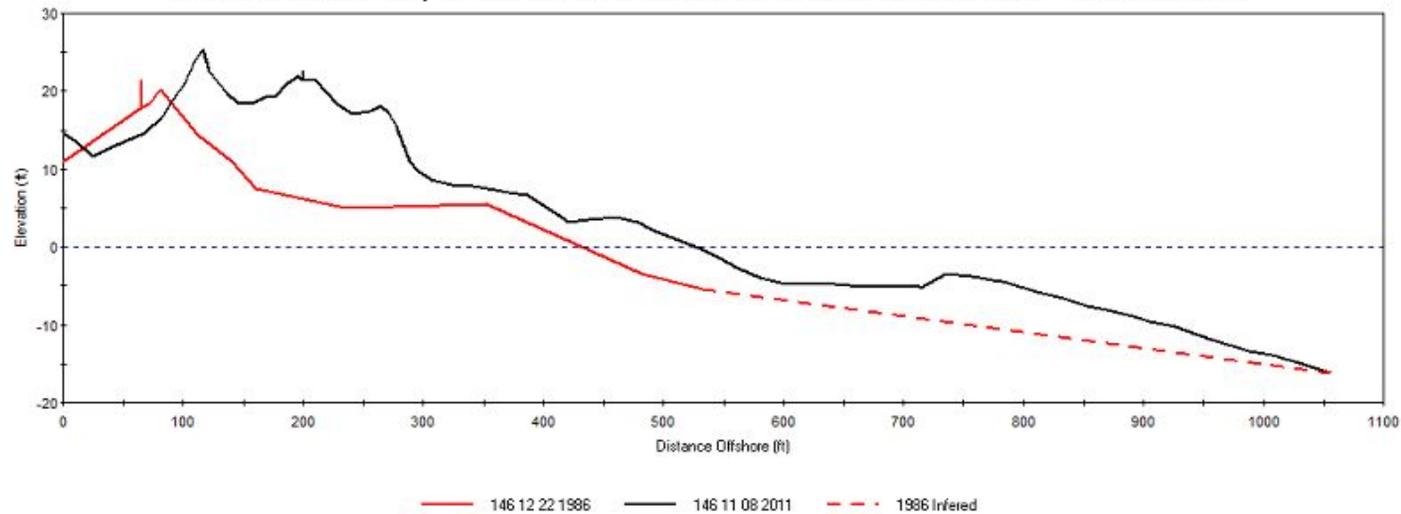


Figure 204 above shows the extensive growth to the dune and beach that has occurred since the initial survey in 1986. In which time the shoreline advanced 95 feet and the net gain in sand was 111.8 cu.yd/ft. Photo on the left was taken in February of 1989 and shows the view east from the dune crest. Photo on the right was taken in November of 2011 and shows the view northeast from the seaward crest.



25-Year Coastal Changes at Site 146, South End, Island Beach State Park, Ocean Co.

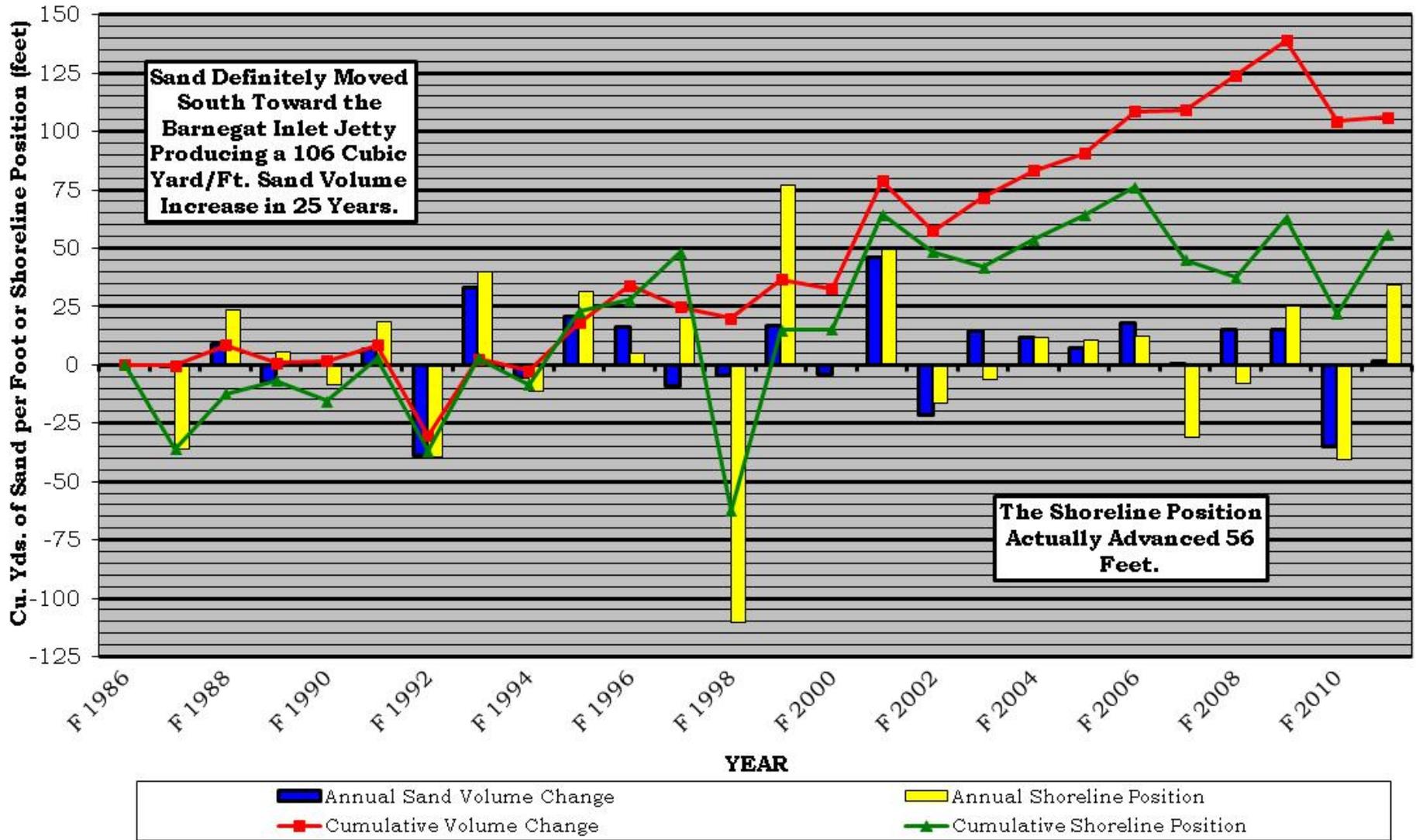


Figure 205. Profile 146 at the south end of Island Beach State Park saw the shoreline advance and the sand volume increase as sand moved south toward the Barnegat Inlet Jetty.

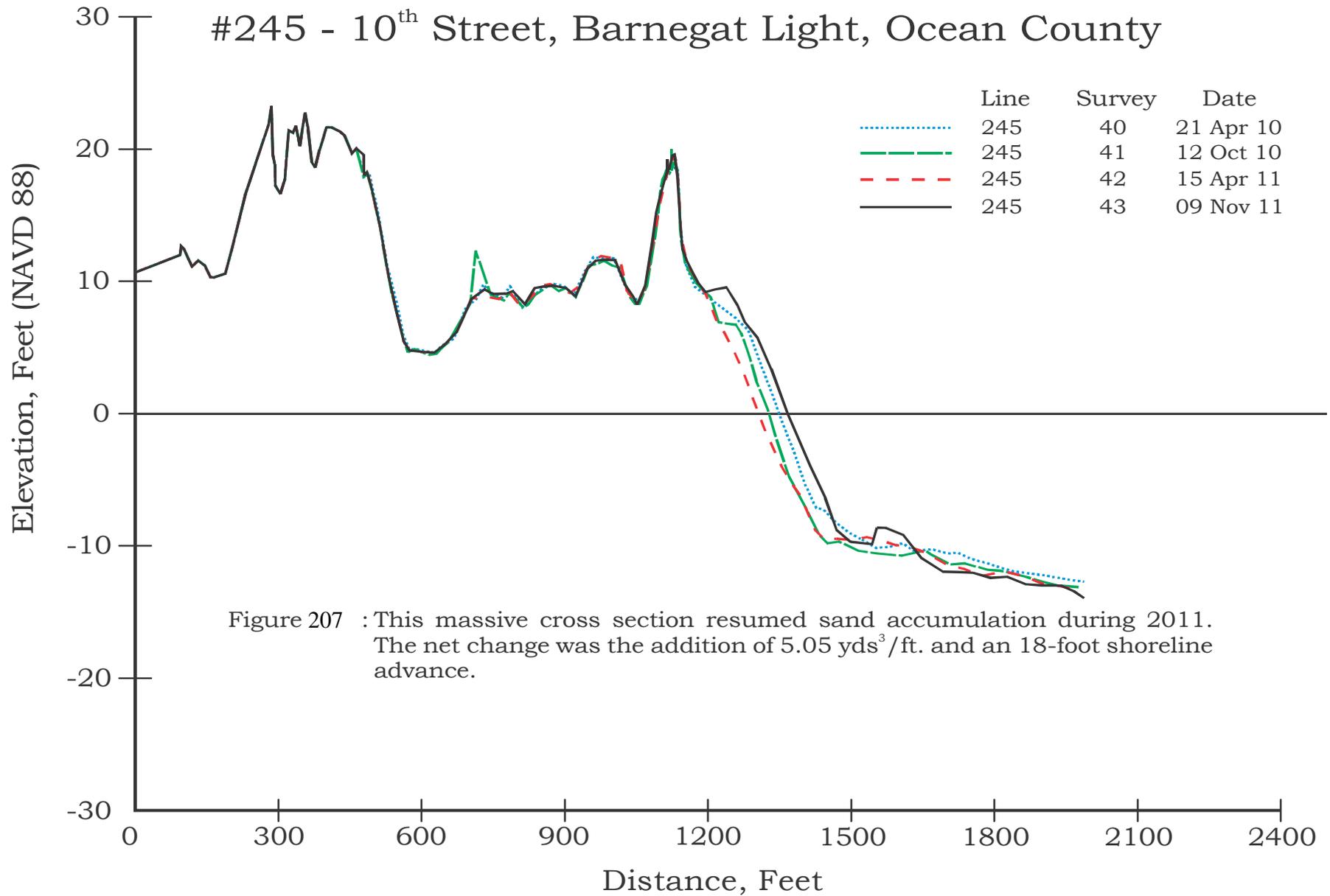
Site 245, 10th Street, Barnegat Light, NJ – November 9, 2011



Figure 206. Shown above is the view looking south from the dune at 10th Street in Barnegat Light, NJ. The mast of a fishing vessel once submerged offshore, which is now buried in the dune as a result of the massive accretion at the new south jetty for Barnegat Inlet, is shown on the right side of the image.

New Jersey Beach Profile Network

#245 - 10th Street, Barnegat Light, Ocean County



10th STREET, BARNEGAT LIGHT – SITE 245

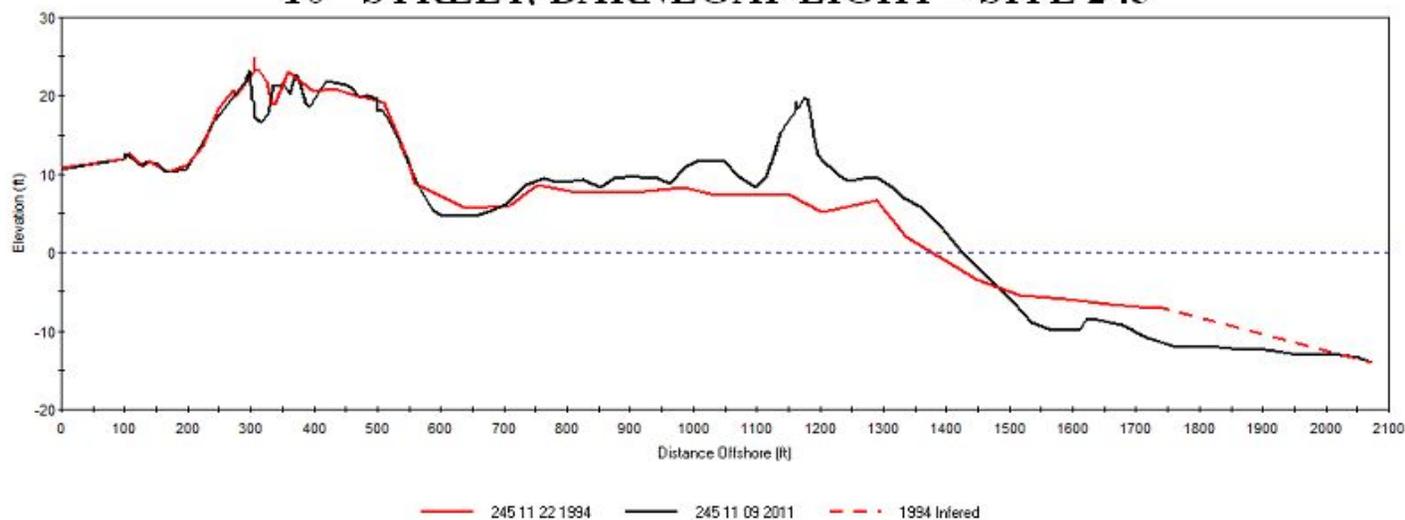


Figure 208 above shows the site at 10th street in Barnegat Light. This site was established in 1994 to monitor changes associated with Barnegat Inlet. The shoreline advanced 47 feet and there was a net gain in sand of 51,078 cu.yd/ft. Photo on the left was taken in October of 1995 and shows the view looking east. Note the absence of the foredune crest. Photo on the right was taken in November of 2011 and shows the view from the foredune crest looking north.



17-Year Coastal Changes at Site 245, 10th Street, Barnegat Light, Ocean Co.

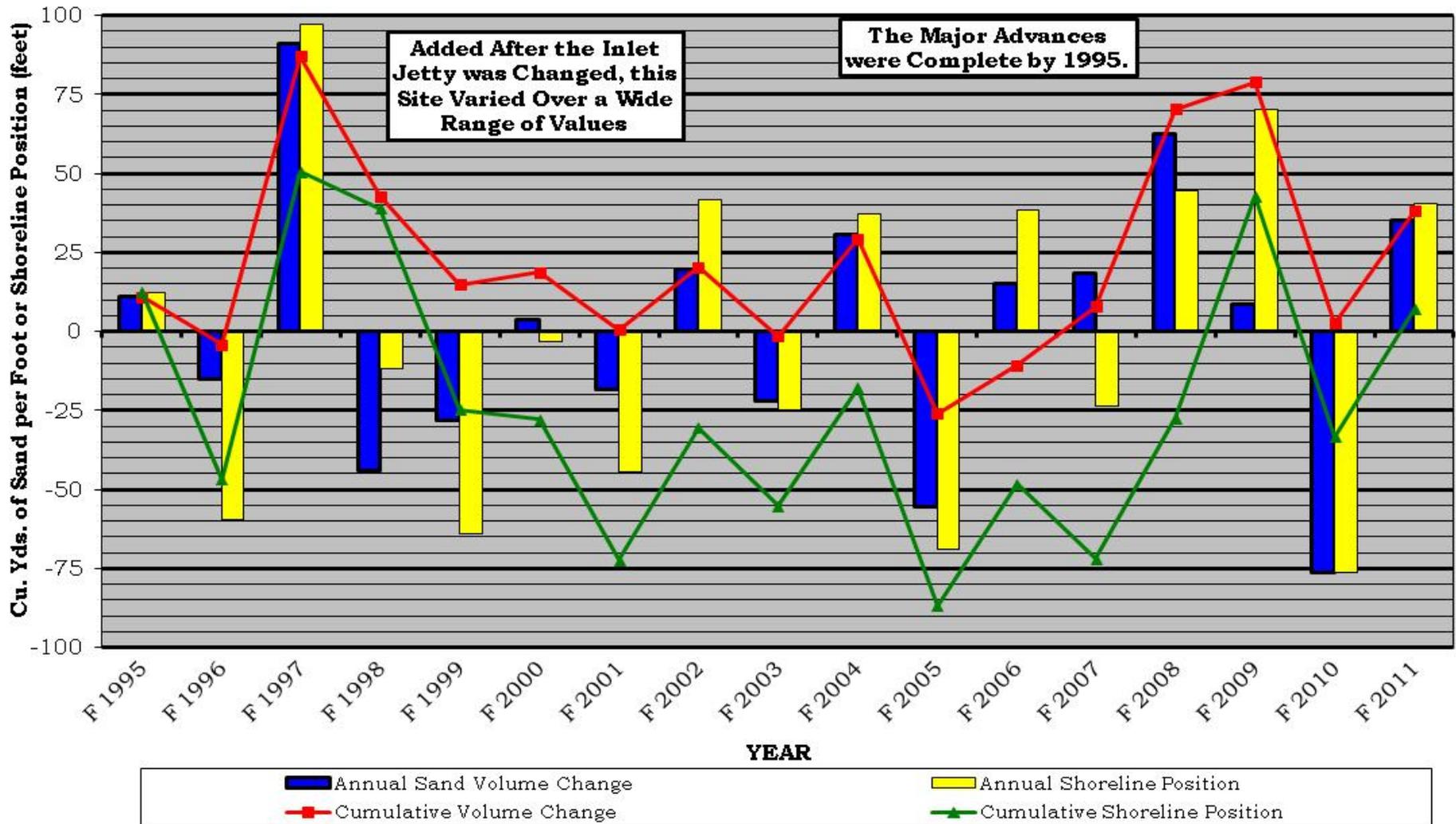


Figure 209. Profile 245 in Barnegat Light was established in 1994 to follow changes associated with Barnegat Inlet, the figure does not show the huge gains achieved prior to 1994. Since then this site has been highly variable. The general trend seems to be towards a slight shoreline retreat and a slight sand volume gain. Due to the proximity to jetty this site is sheltered from northeast storm waves and any major erosion events.

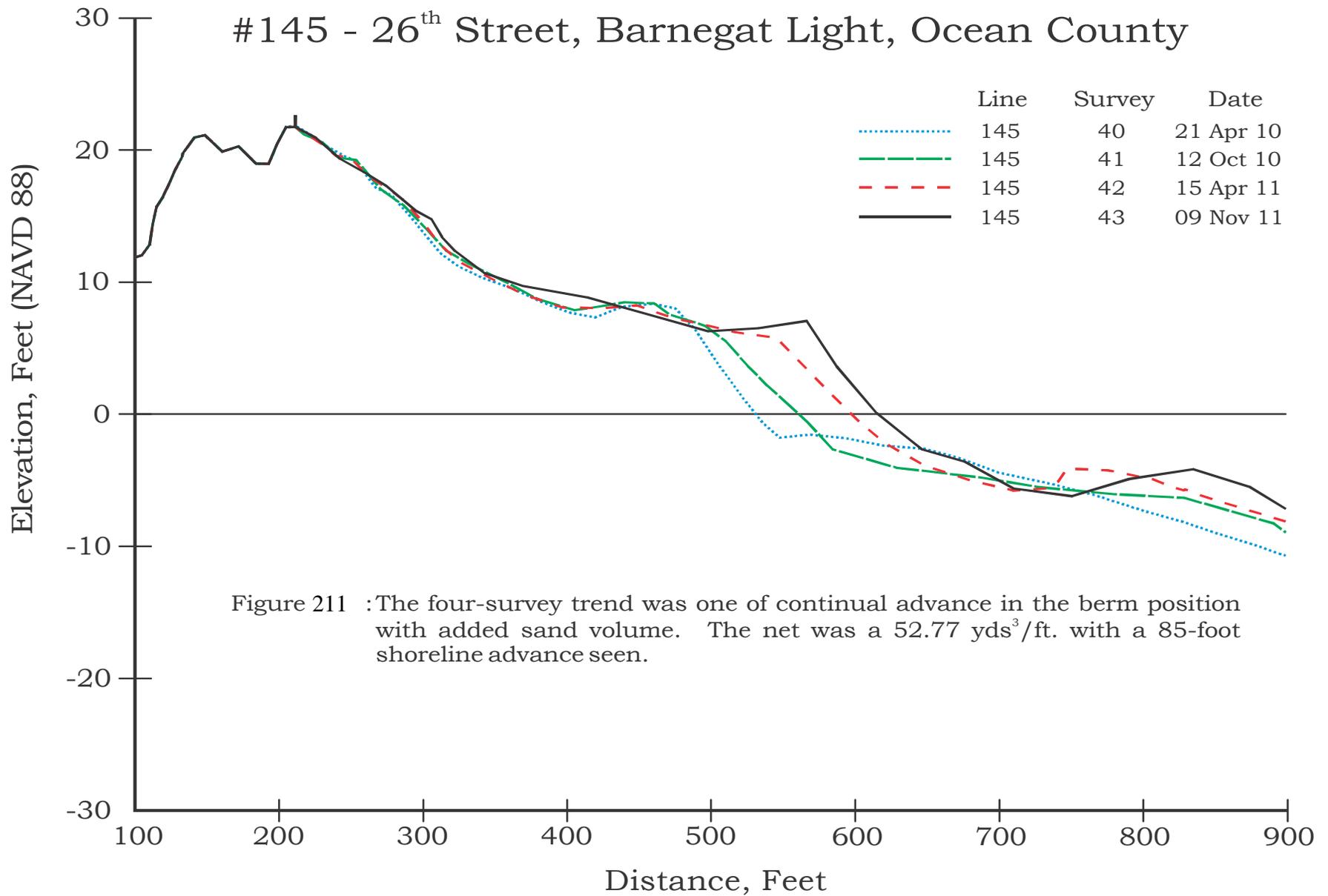
Site 145, 26th Street, Barnegat Light, NJ – November 9, 2011



Figure 210. Shown above is the view looking northeast from the dune at 26th Street in Barnegat Light, NJ.

New Jersey Beach Profile Network

#145 - 26th Street, Barnegat Light, Ocean County



26th STREET, BARNEGAT LIGHT – SITE 145

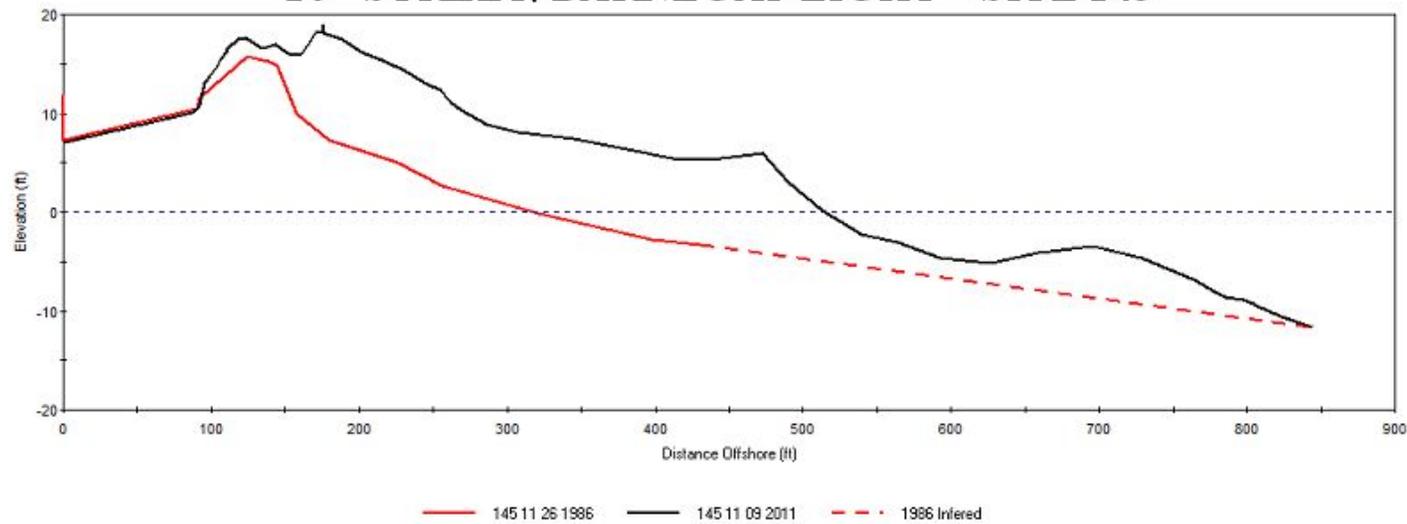


Figure 212 above shows the dramatic gains between the initial survey in 1986 and the November 2011 survey. Sand was added to nearly every part of this survey resulting in a shoreline advance of 197 feet and a net gain of 92,816 cu.yd/ft. of sand. Photo on the left was taken in February of 1989 and shows the view from the dune looking east. Photo on the right was taken in November of 2011 and shows the view looking northeast.



25-Year Coastal Changes at Site 145, 26th Street, Barnegat Light, Ocean Co.

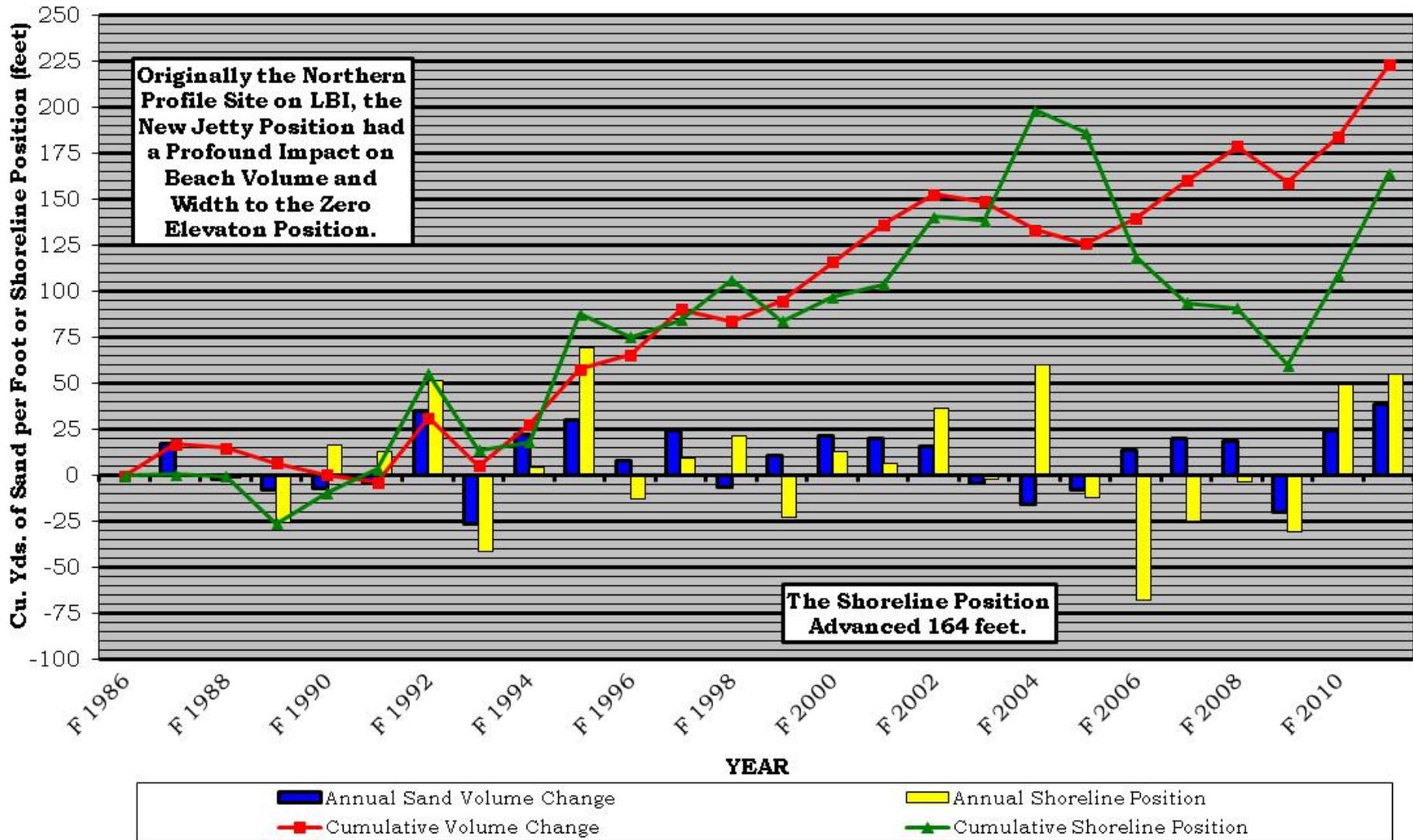


Figure 213. Profile 145 located in Barnegat Light was originally the northern most profile on Long Beach Island until site 245 was established in 1994 . The profound impact of new Barnegat Inlet South Jetty is apparent in the figure above as the shoreline and the sand volume increased dramatically since its initial survey in 1986.

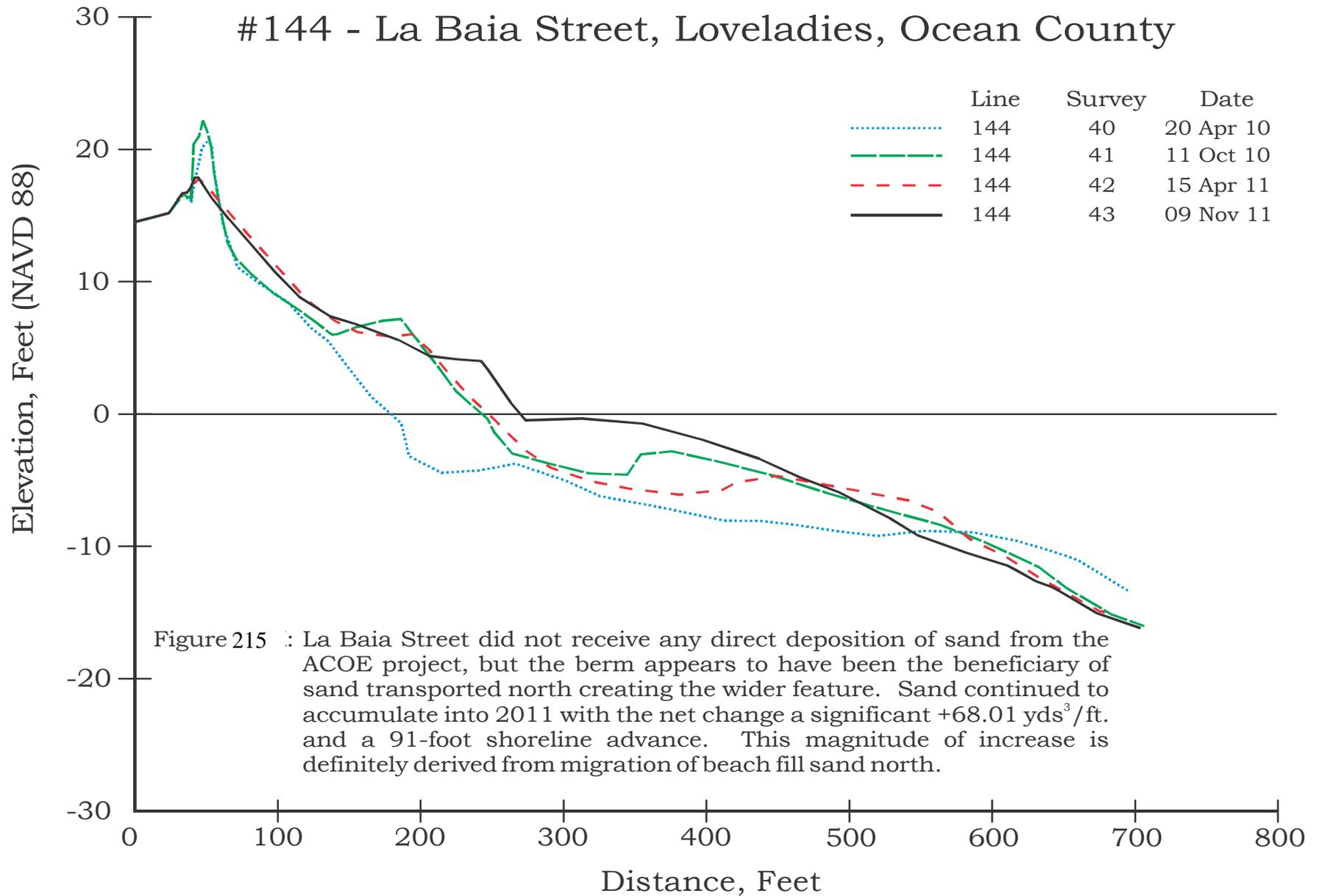
Site 144, La Baia Street, Loveladies, NJ – November 9, 2011



Figure 214. Shown above is the view looking south from the dune toe at La Baia Street in Loveladies, NJ.

New Jersey Beach Profile Network

#144 - La Baia Street, Loveladies, Ocean County



LA BAI A STREET, LOVELADIES – SITE 144

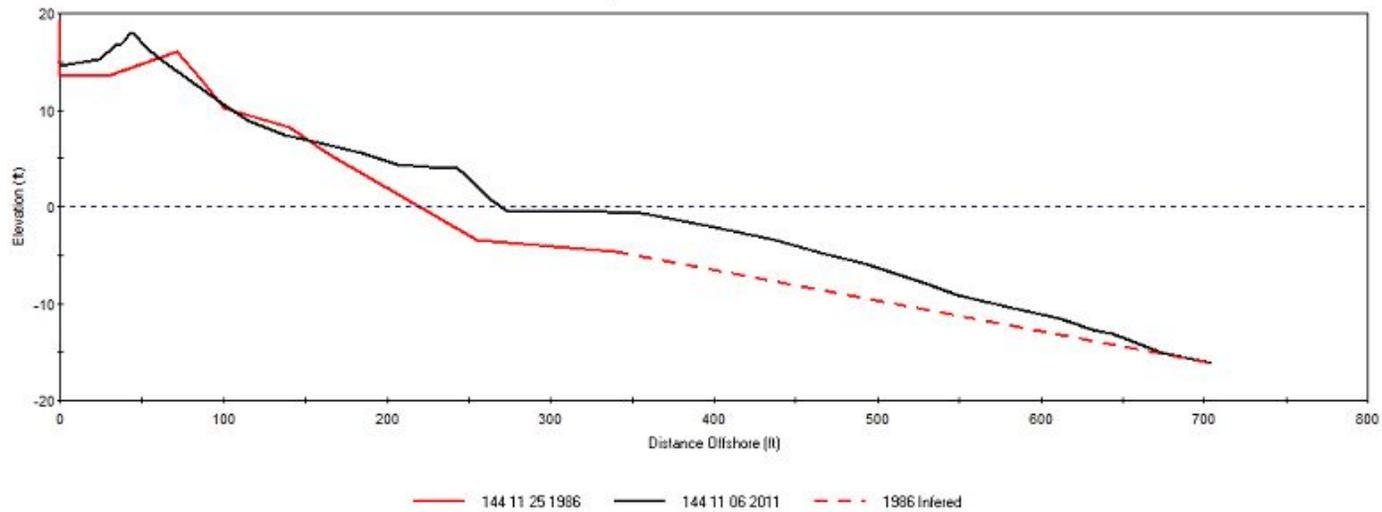


Figure 216 above shows that since the initial survey in 1986 the shoreline advanced seaward as the dune crest grew vertically. As a result of these changes the shoreline advanced 51 feet while the net gain of sand was 27.051 cu.yd/ft. Photo on the left was taken in November of 1991 and shows the view to the south from the dune toe. Photo on the right was taken in November of 2011 and shows the view to the south from the access.



25-Year Coastal Changes at Site 144, La Baia Street, Loveladies, Ocean Co.

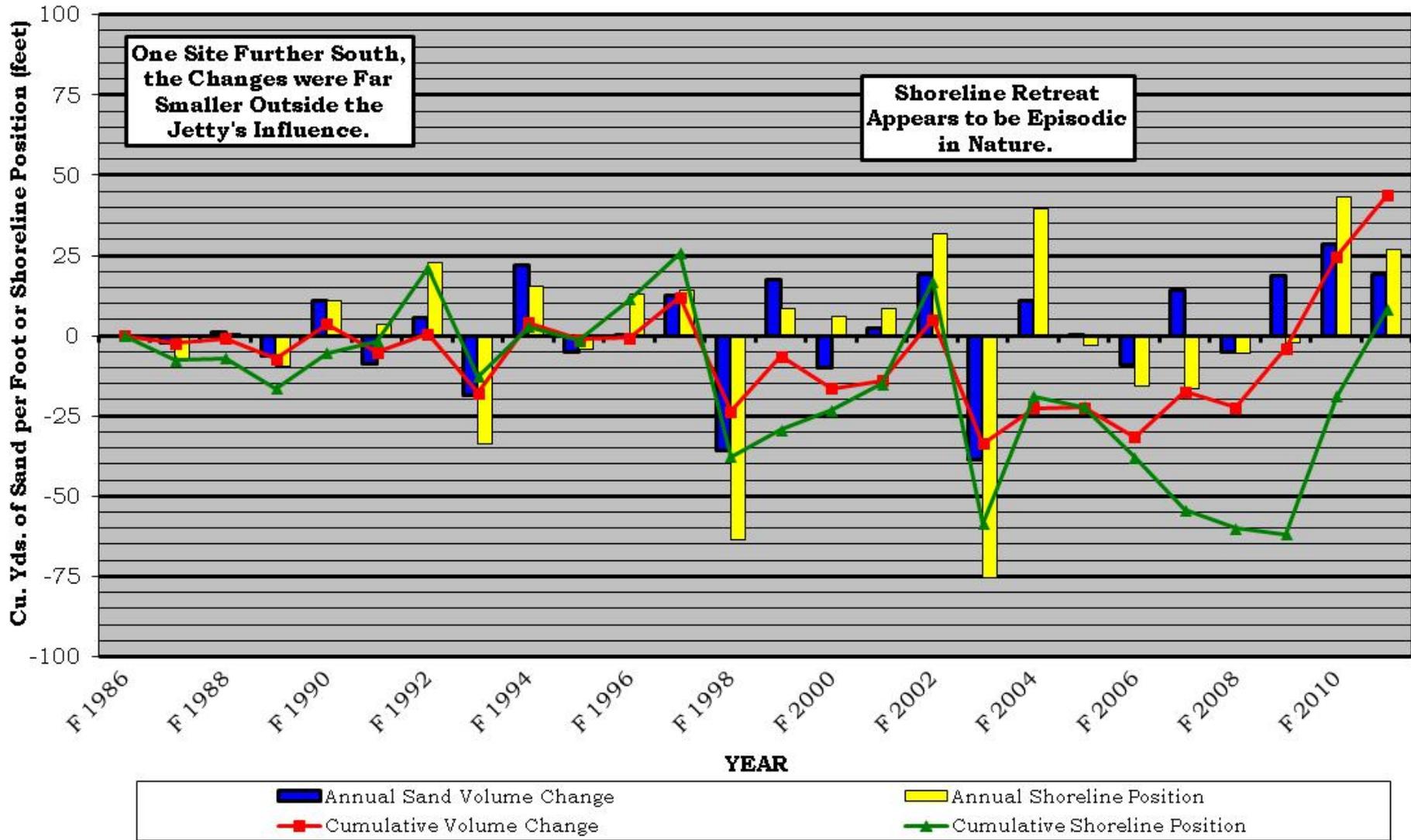


Figure 217. Profile 144 in Loveladies is far enough south to have been influenced little from the Barnegat Inlet Jetty's installation in 1991. The general trend up until 2008 appeared to be that of shoreline retreat and sand volume loss, however, that trend seemed to reverse with recovery taking place from 2009 through 2011.

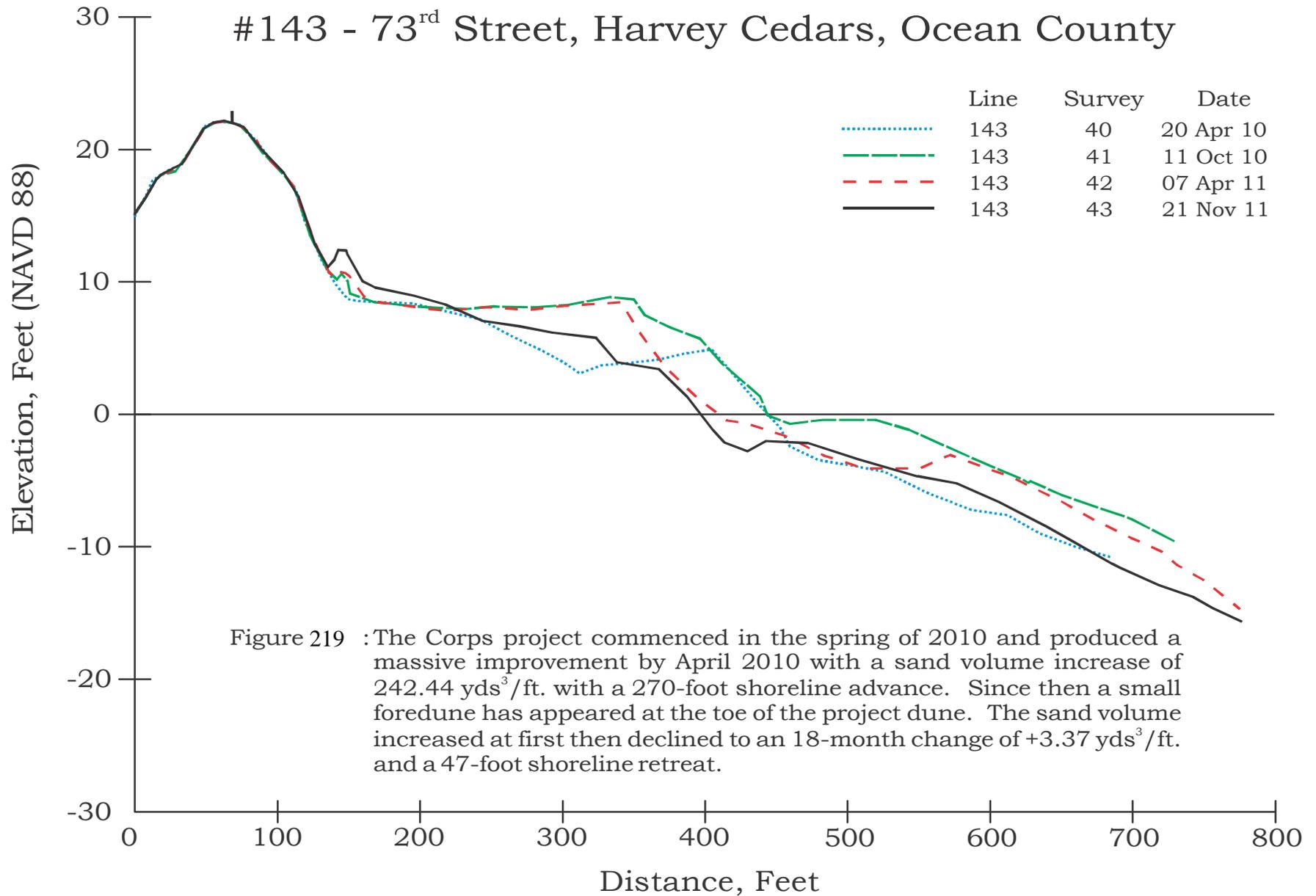
Site 143, 73rd Street, Harvey Cedars, NJ – November 21, 2011



Figure 218. Shown above is the view looking southeast from the dune at 73rd Street in Harvey Cedars, NJ.

New Jersey Beach Profile Network

#143 - 73rd Street, Harvey Cedars, Ocean County



73rd STREET, HARVEY CEDARS – SITE 143

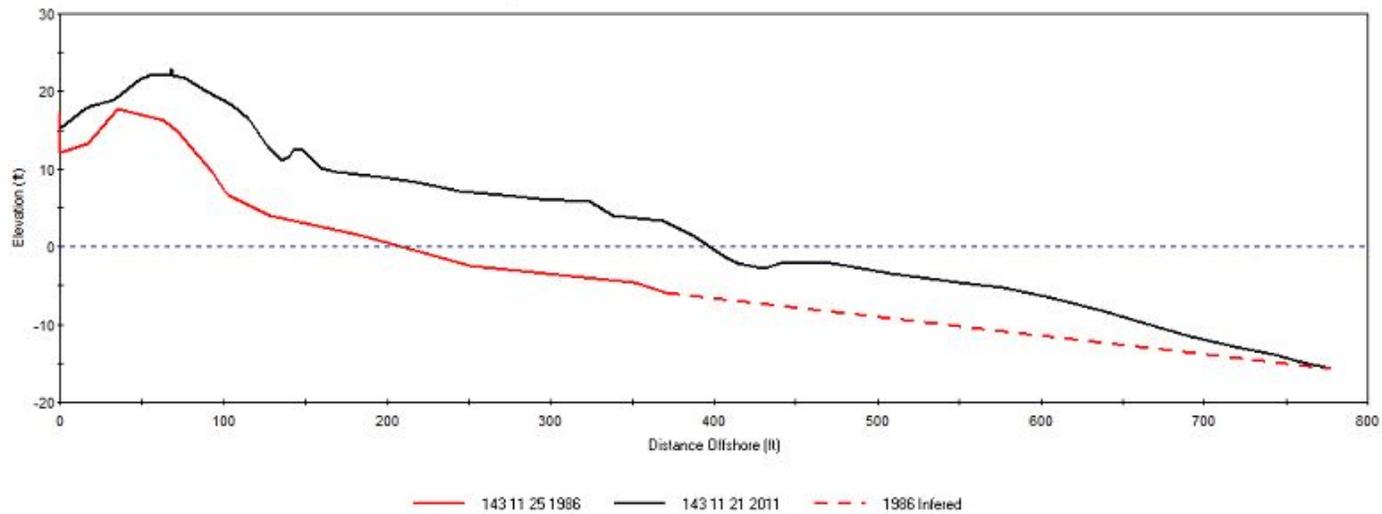


Figure 220 above shows the initial survey in 1986 and the survey from November of 2011 which saw the shoreline advance 189 feet and 111.27 cu.yd/ft. of sand added to the beach. In spring 2010 the ACOE added 242.44 cu.yd/ft. of sand to the beach. Photo on the left was taken in November of 1991 and shows the view from the dune to looking northeast. Photo on the right was taken in November of 2011 and shows the view from the dune toe and the dramatically wider beach.



25-Year Coastal Changes at Site 143, 73rd Street, Harvey Cedars, Ocean Co.

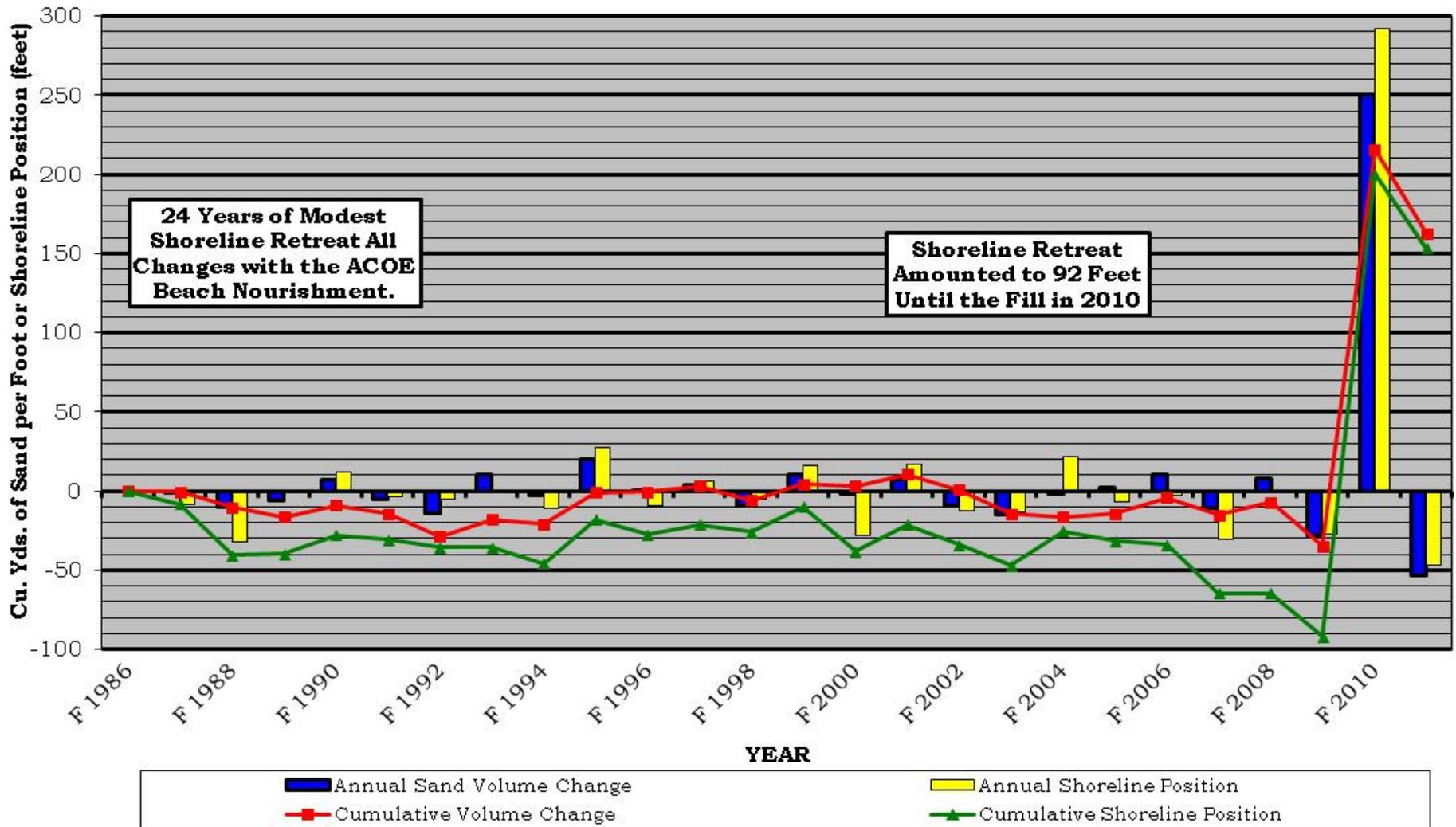


Figure 221. Profile 143 in Harvey Cedars was the beneficiary of 465,000 cubic yards of sand added to system in 1994-95 during a state and local sponsored project. Despite the fact that little effect is shown on the figure above the additional sand in the system surely helped to maintain the beaches up until 2006. From 2006 until 2010 the shoreline steadily retreated landward until it became necessary for ACOE to deposit sand onto the beach to protect the shorefront infrastructure.

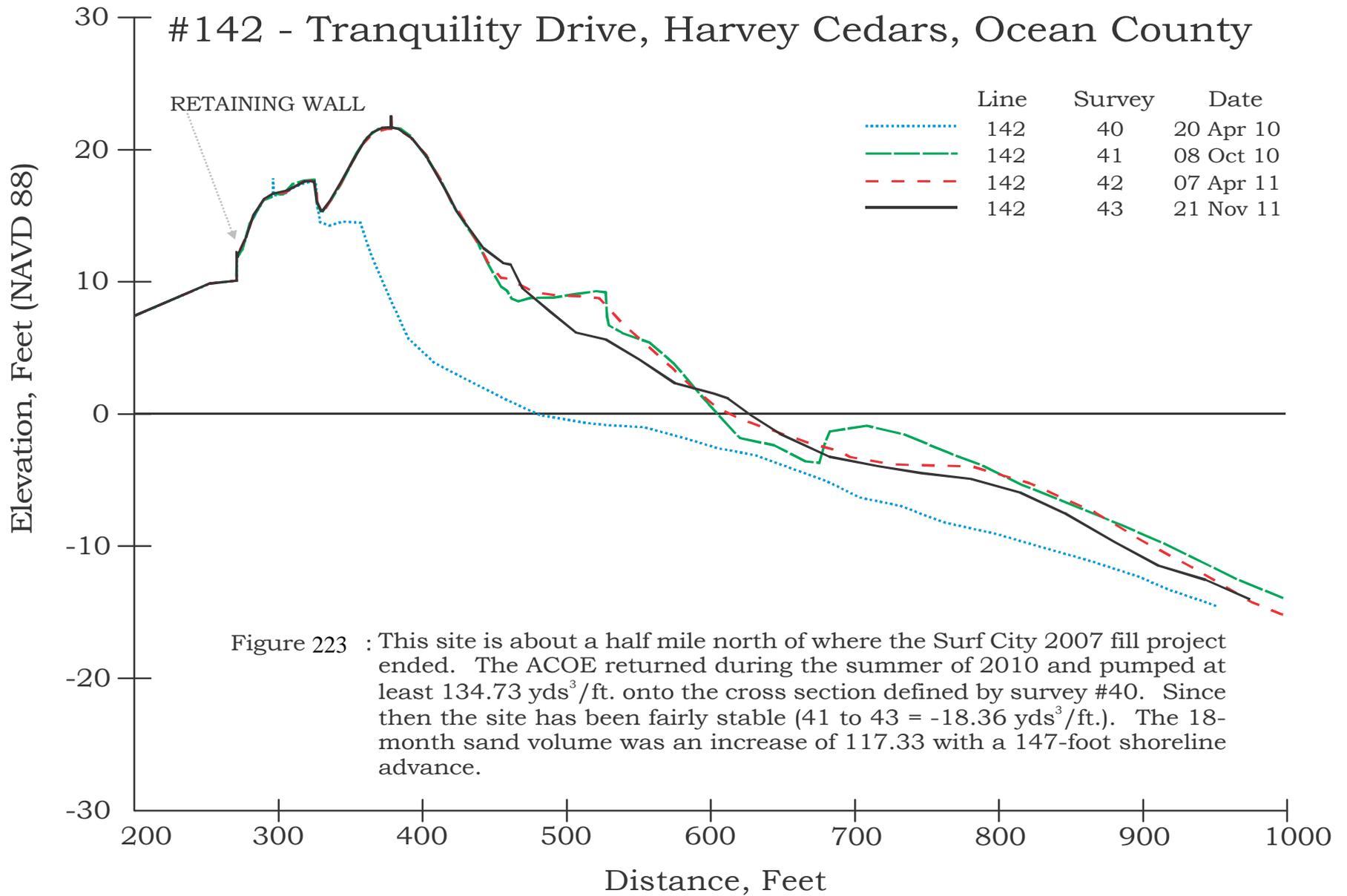
Site 142, Tranquility Drive, Harvey Cedars, NJ – November 21, 2011



Figure 222. Shown above is the view looking north from the fence line at Tranquility Drive in Harvey Cedars, NJ. The sand trapping effect of the dune fencing is apparent in this picture.

New Jersey Beach Profile Network

#142 - Tranquility Drive, Harvey Cedars, Ocean County



TRANQUILITY DRIVE, HARVEY CEDARS – SITE 142

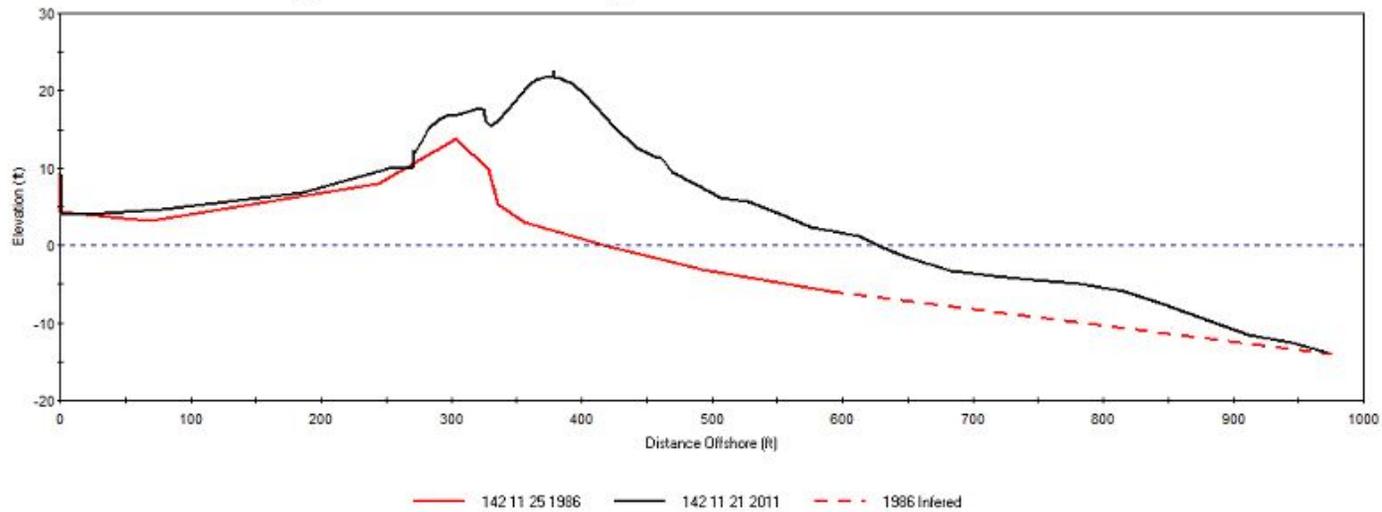


Figure 224 above shows the dramatically different topography between 1986 and 2011 in which time the shoreline advanced 209 feet, and the beach gained 141.459 cu.yd/ft. of sand. A replenishment project in 2010 added 134.73 cu.yd/ft of sand. Photo on the left was taken in November of 1991 shows the view south from the dune toe and the exposed groin. Photo on the right was taken in November of 2011 and shows the view south. The groin exposed in 1991 is no longer visible.



25-Year Coastal Changes at Site 142, Tranquility Drive, Harvey Cedars, Ocean Co.

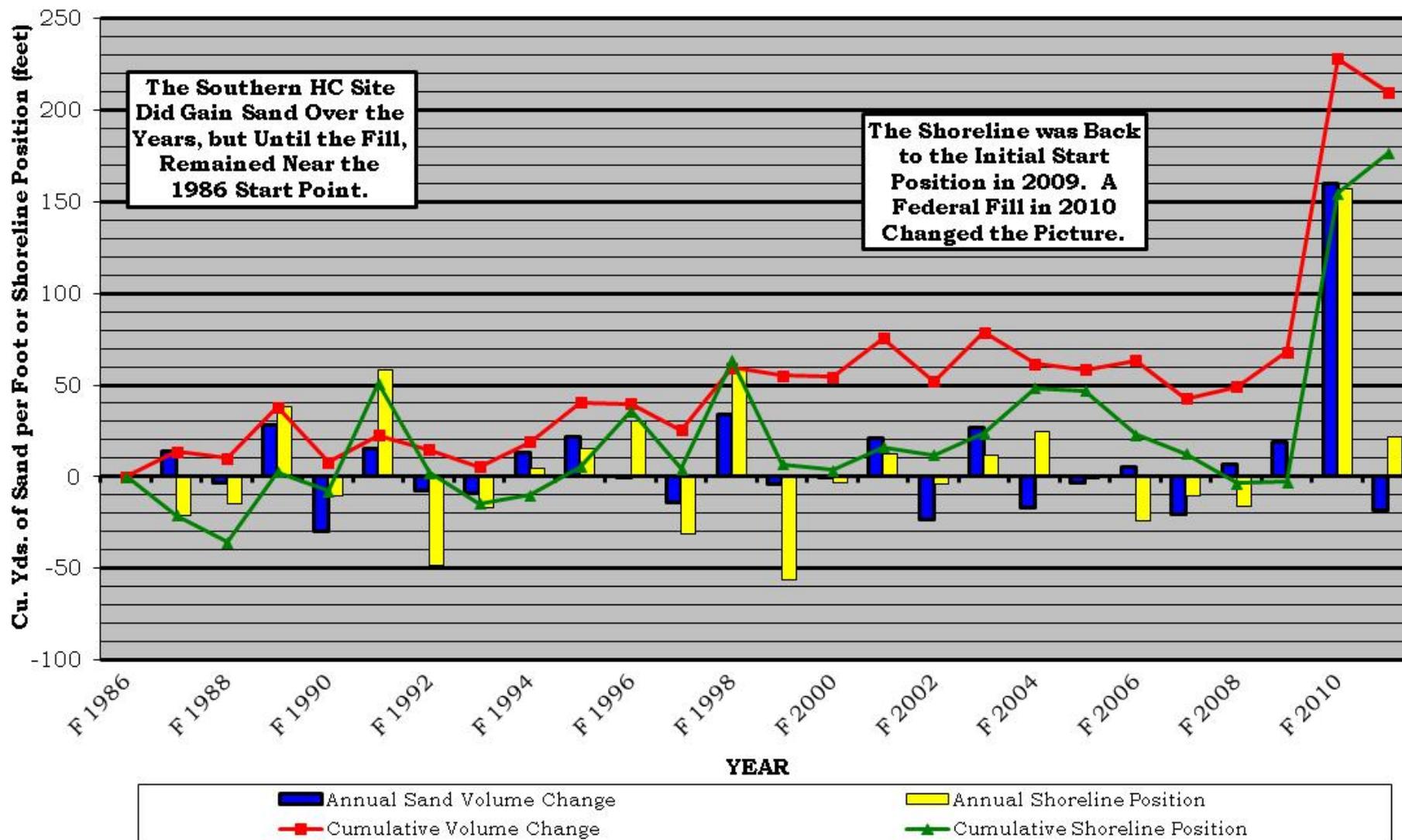


Figure 225. Profile 142 in Harvey Cedars was also the beneficiary of the ACOE fill project in 2010. Prior to the fill project in 2010 this site gained sand volume and was in the same approximate position as the initial survey in 1986.

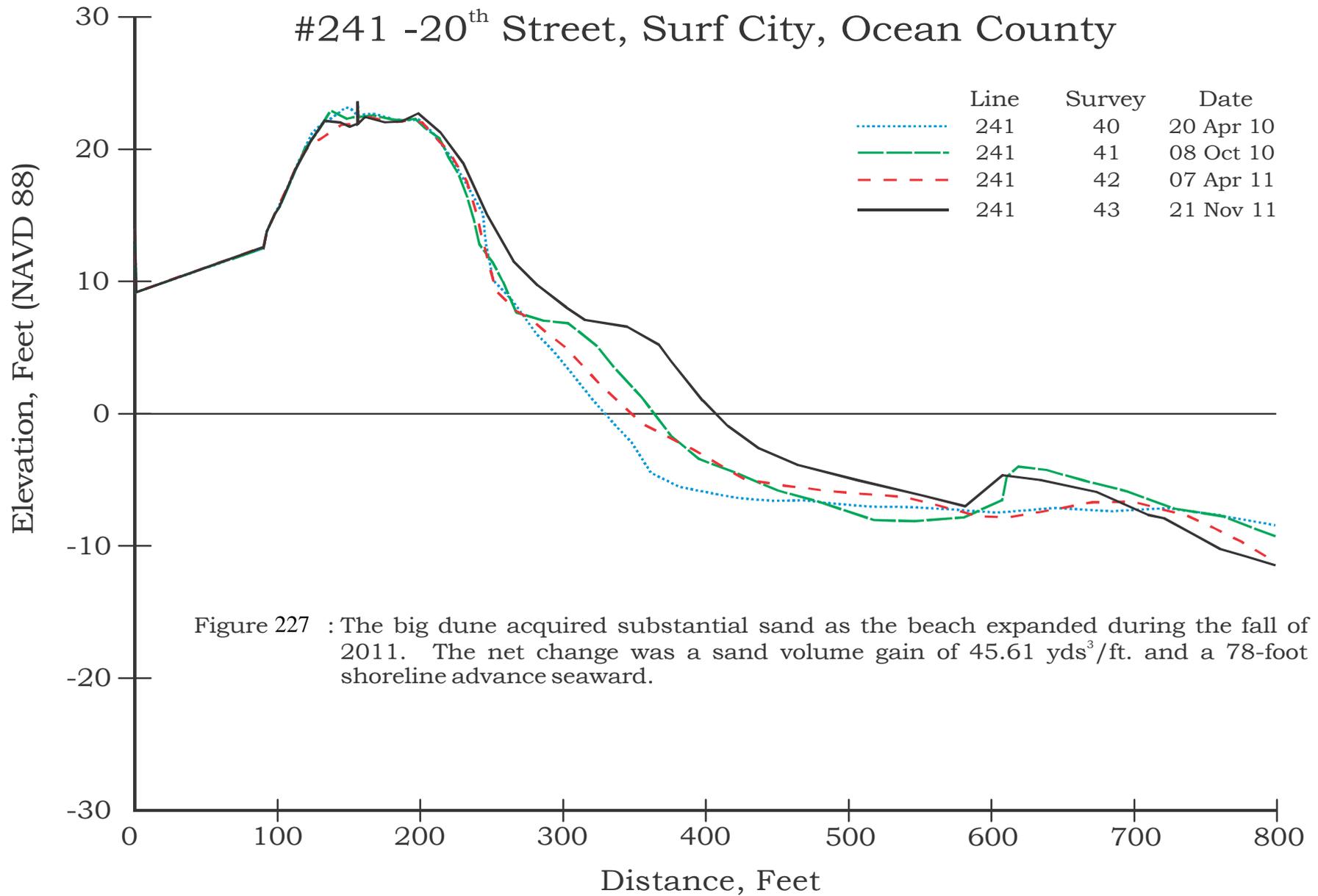
Site 241, 20th Street, Surf City, NJ – November 21, 2011



Figure 226. Shown above is the view looking south from the dune at 20th Street in Surf City, NJ.

New Jersey Beach Profile Network

#241 -20th Street, Surf City, Ocean County



20th STREET, SURF CITY – SITE 241

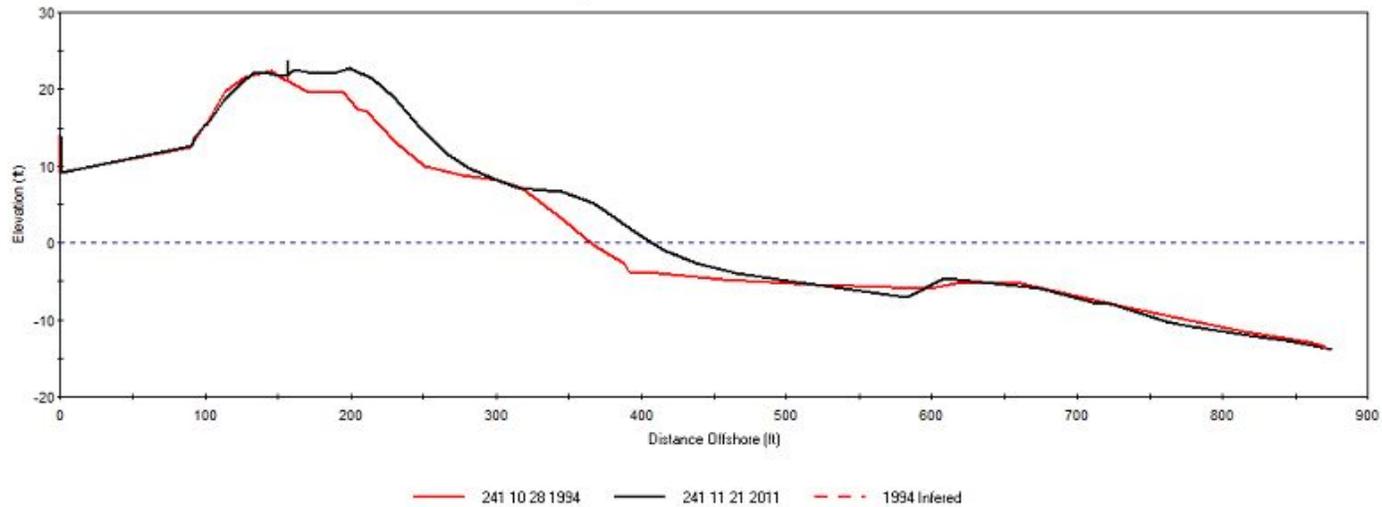


Figure 228 above shows that the dune and beachface gained sand and migrated seaward since the initial survey in 1994. As a result of these changes the shoreline advanced 42 feet and there was a net gain in volume of 30.822 cu.yd/ft. Photo on the left was taken in April of 1995 and shows the view north from the seaward crest. Photo on the right was taken in November of 2011 and shows the view to the north from the dune toe.



17-Year Coastal Changes at Site 241, 20th Street Surf City, Ocean Co.

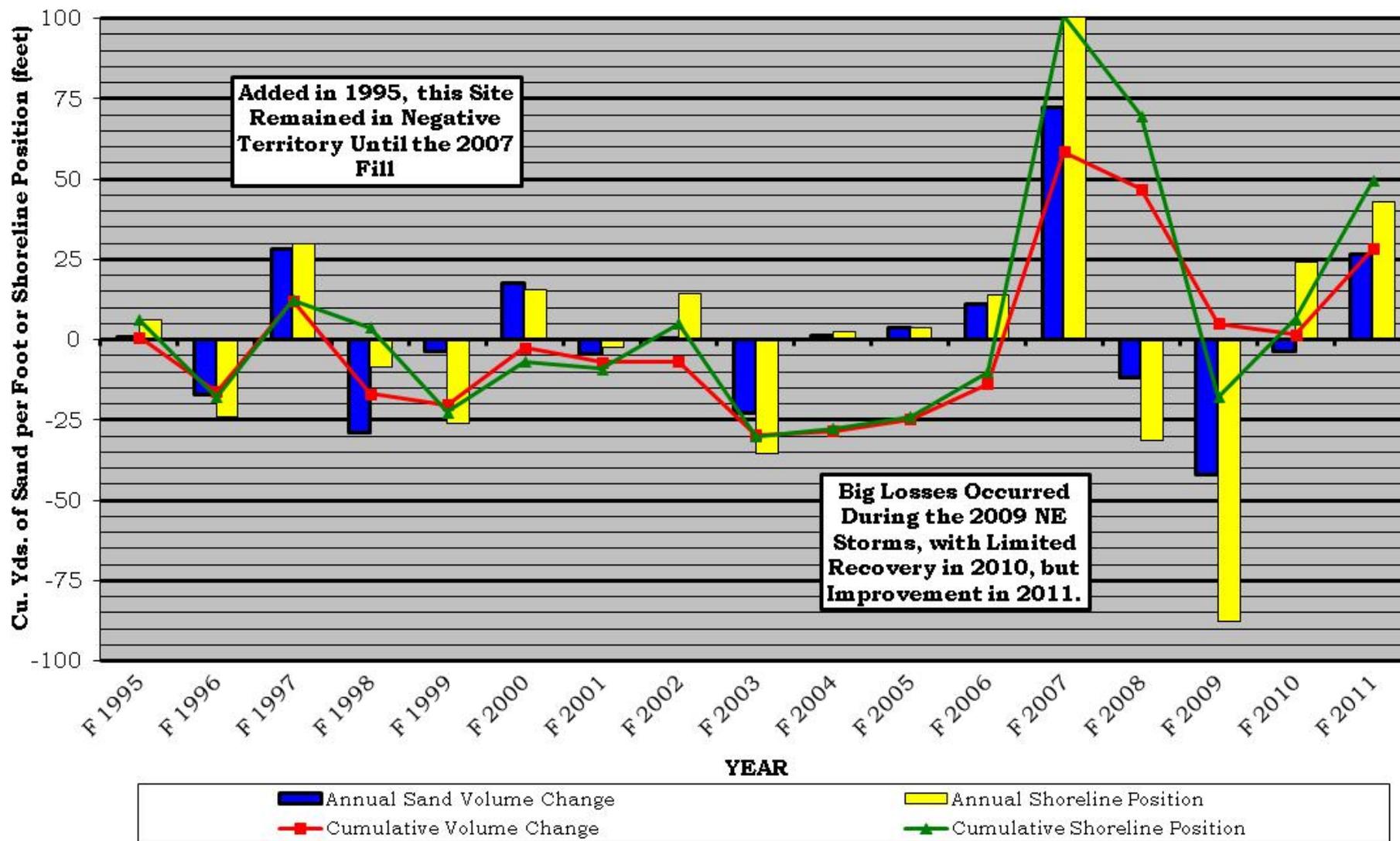


Figure 229. Profile 241 in Surf City was added in 1995 and was trending downward in both shoreline position and in sand volume until the 2007 fill project. Losses in 2008 & 2009 returned the shoreline and sand volume to near pre-fill conditions before a recovery in 2011.

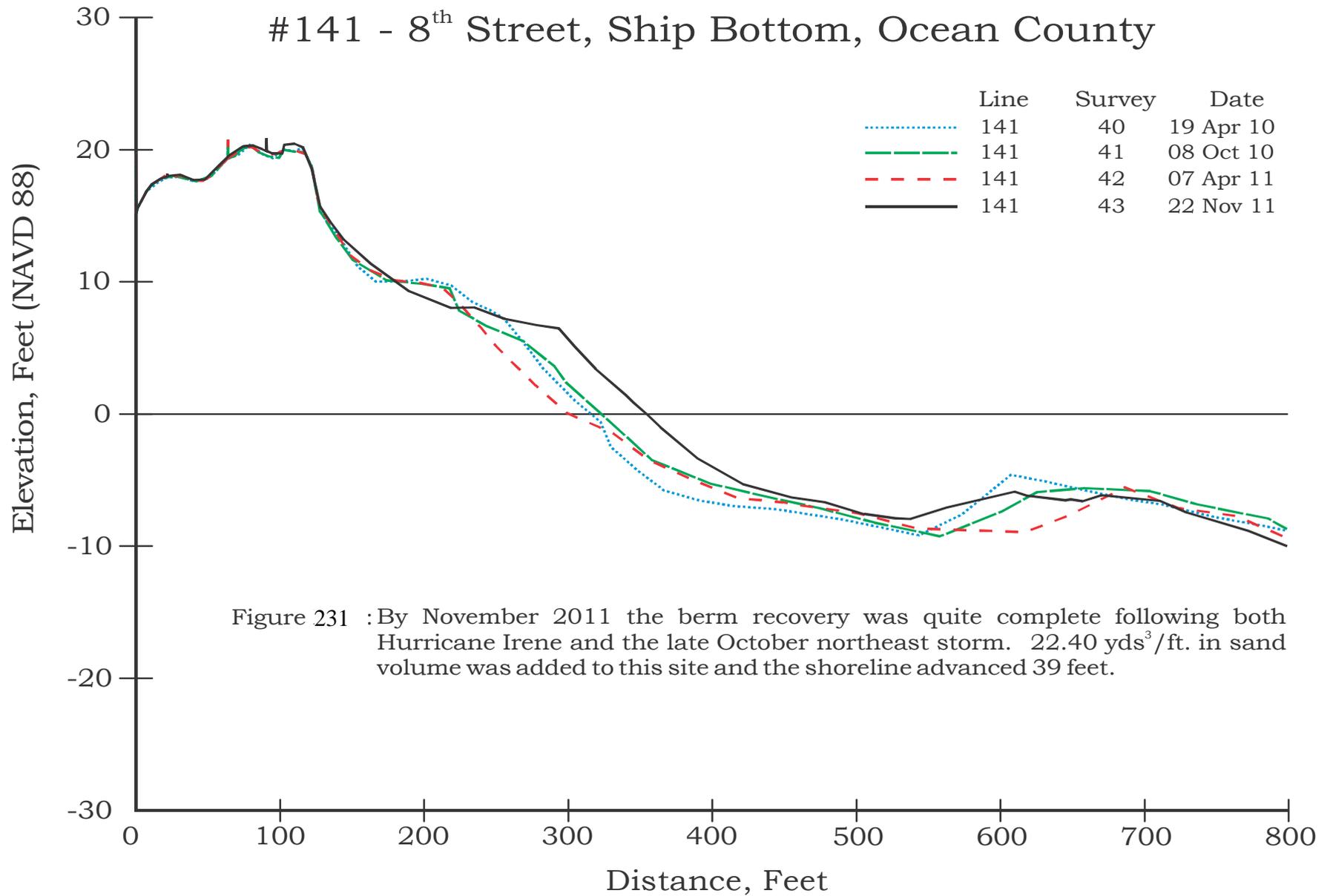
Site 141, 8th Street, Ship Bottom, NJ – November 22, 2011



Figure 230. Shown above is the view looking north from the dune crest at 8th Street in Ship Bottom, NJ.

New Jersey Beach Profile Network

#141 - 8th Street, Ship Bottom, Ocean County



8th STREET, SHIP BOTTOM – SITE 141

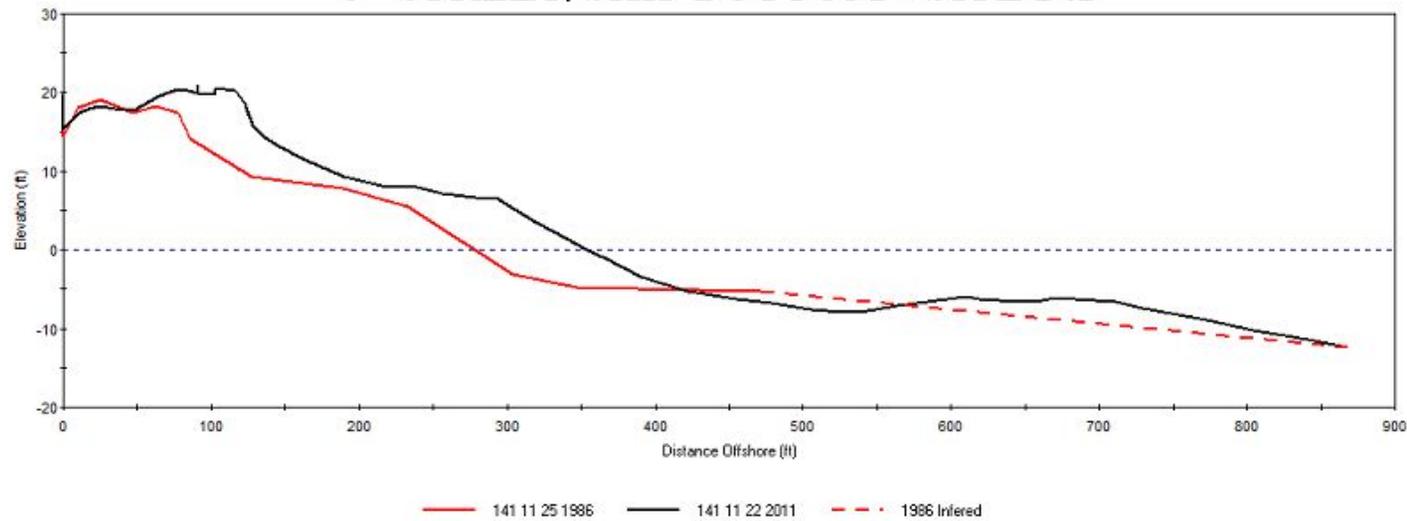


Figure 232 above shows that the dune, berm, and beachface all have grown since the initial survey in 1986. These changes are reflected in numbers as the shoreline advanced 76 feet and the profile gained 56.851 cu.yd/ft. of sand. Photo on the left was taken in November of 1991 and shows the view from the dune crest looking southeast. Photo on the right was taken in November of 2011 and shows the view from the seaward crest looking south.



25-Year Coastal Changes at Site 141, 8th Street, Ship Bottom, Ocean Co.

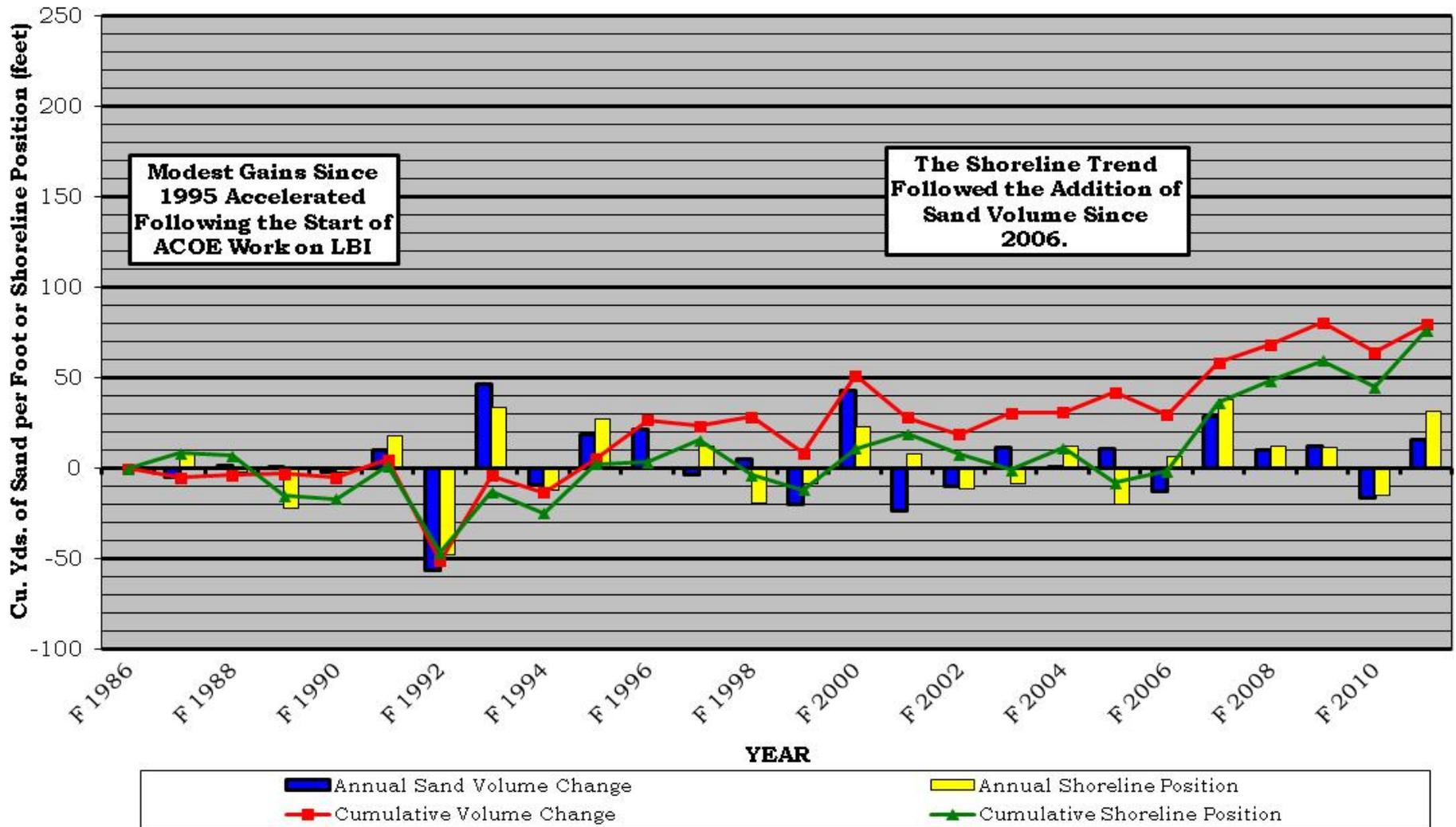


Figure 233. Profile 141 in Ship Bottom was relatively stable throughout its history. The 1992 northeast storm resulted in the largest loss of sand volume and shoreline position. This was followed by recovery in 1993, and a pattern of modest gain(s) beginning in 1995 which added sand volume and advanced the shoreline. In 2006 the sand volume increase accelerated and the shoreline advanced in lockstep along with it.

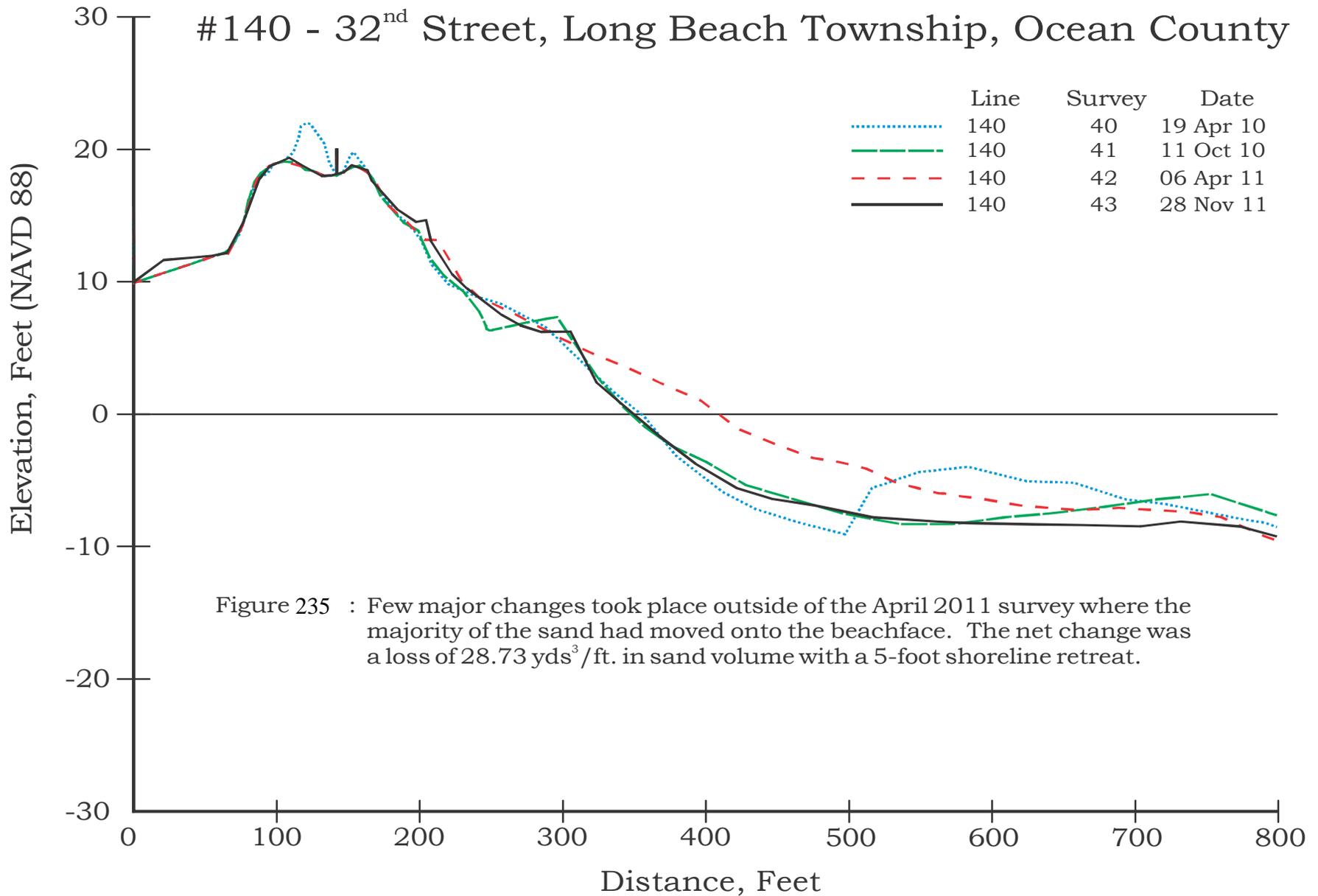
Site 140, 32nd Street, Long Beach Township, NJ – November 28, 2011



Figure 234. Shown above is the view looking south from the dune toe at 32nd Street in Long Beach Township, NJ.

New Jersey Beach Profile Network

#140 - 32nd Street, Long Beach Township, Ocean County



32nd STREET, LONG BEACH TOWNSHIP – SITE 140

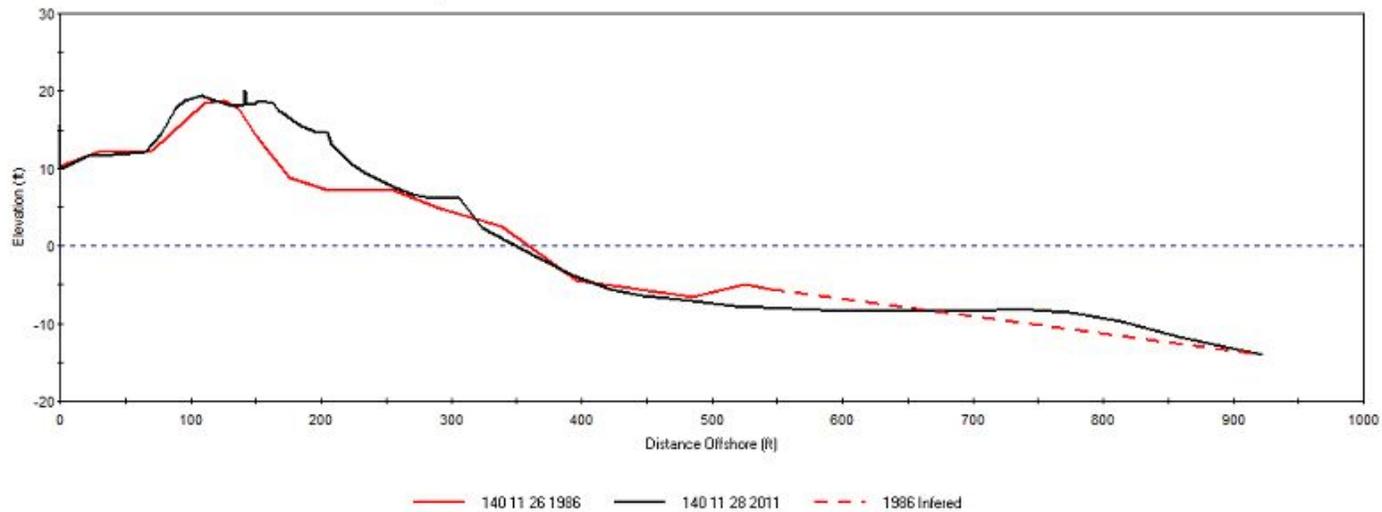


Figure 236 above shows that the dune grew horizontally since the survey in 1986. Minor changes to the beachface resulted in a shoreline retreat of 10 feet, however, the significant gains to the dune resulted in a net gain of 17.565 cu.yd/ft. of sand. Photo on the left was taken in February of 1989 and shows the view east from the dune crest. Photo on the right was taken in November of 2011 and shows the view north from the seaward crest of the dune.



25-Year Coastal Changes at Site 140, 32nd Street, Long Beach Township, Ocean Co.

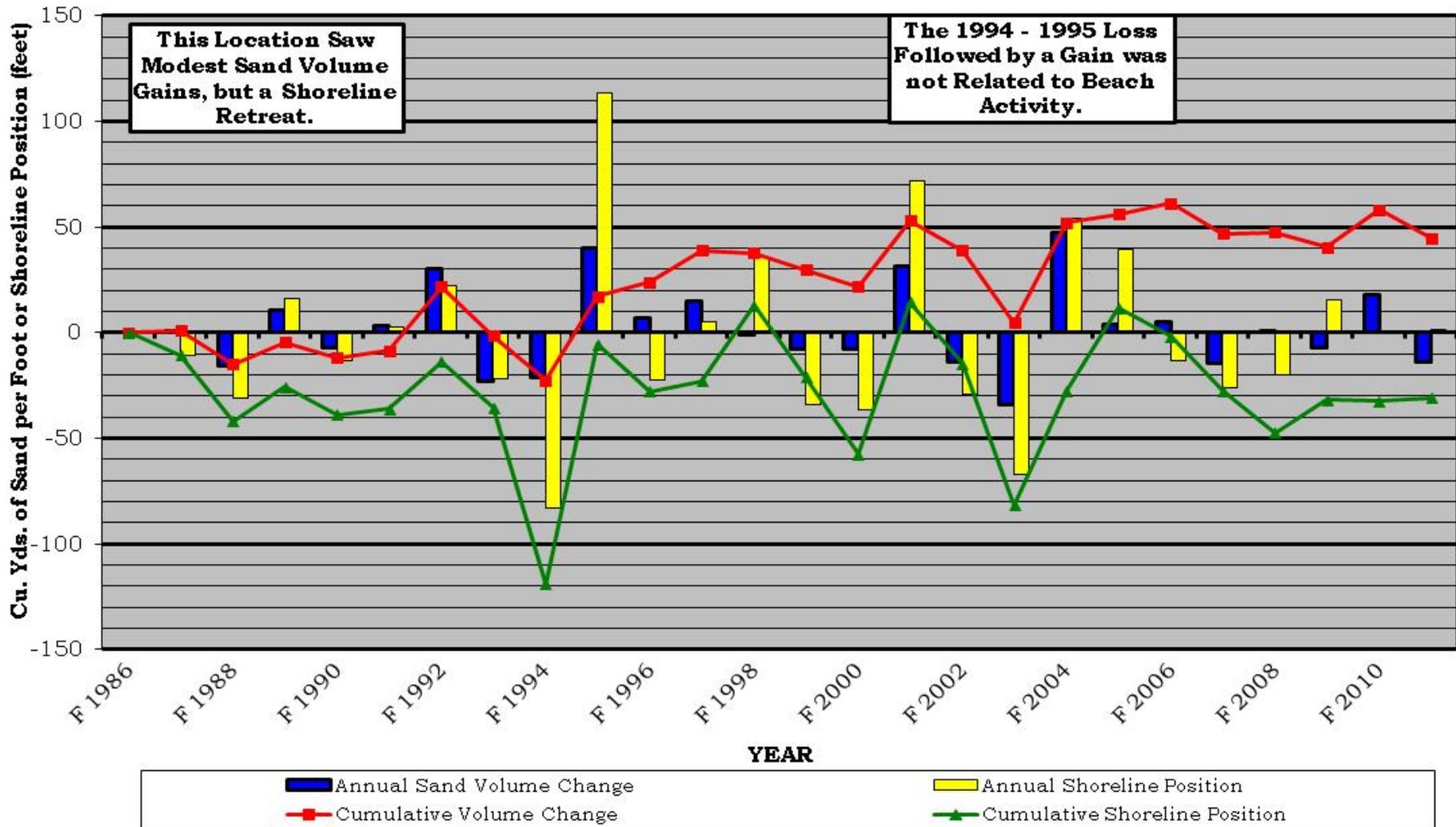


Figure 237. Profile 140 in Long Beach Township showed larger than usual annual shoreline variation, especially in 1994. The loss is unrelated to any significant storm and in 1995 recovery in equally surprising. Loss and gain in subsequent years continued this level of variability. Beginning in 2003 the sand volume gained sand and stabilized, while the shoreline position had a modest recovery to near the 1986 position then retreated in subsequent years and stabilized.

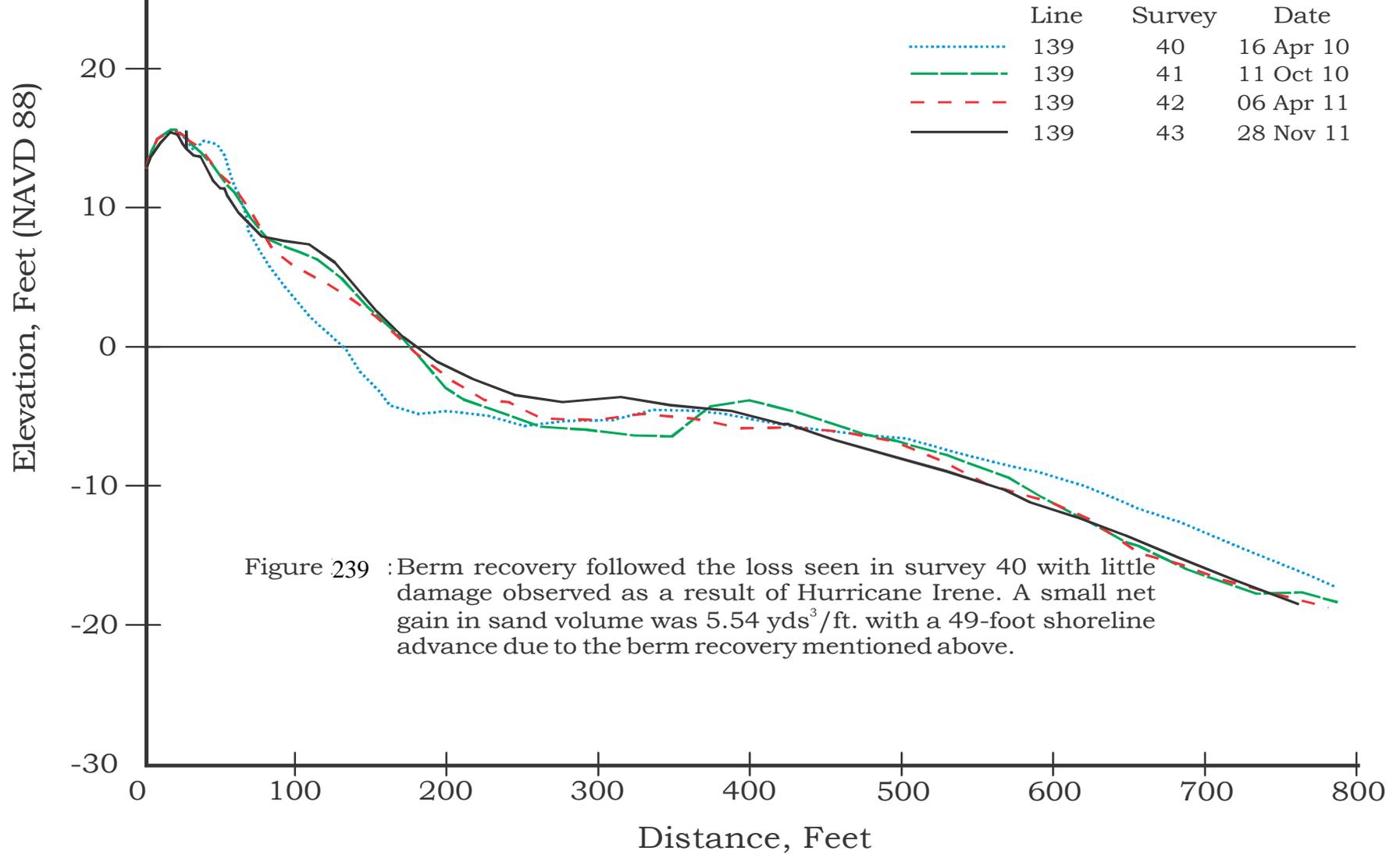
Site 139, 81st Street, Long Beach Township, NJ – November 28, 2011



Figure 238. Shown above is the view looking south from the dune at 81st Street in Long Beach Township, NJ.

New Jersey Beach Profile Network

#139 - 81st Street, Long Beach Township, Ocean County



81st STREET, LONG BEACH TOWNSHIP – SITE 139

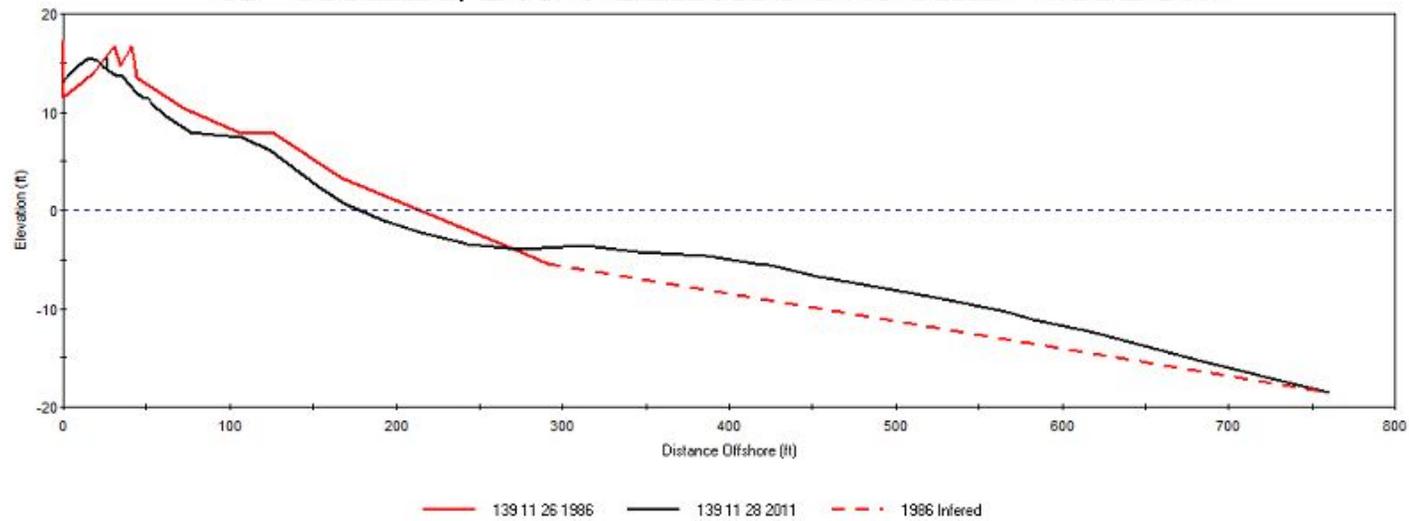


Figure 240 above shows that when compared to the initial survey in 1986 the 2011 survey shows losses to the dune, berm, and beachface; and gains to the offshore slope. The shoreline retreated 35 feet and there was a net loss of 14,593 cu.yd/ft of sand. Photo on the left was taken in November of 1991 and shows the view to the north from the seaward crest. Photo on the right was taken in November of 2011 and shows the view to the north from the dune toe.



25-Year Coastal Changes at Site 139, 81st Street, Long Beach Township, Ocean Co.

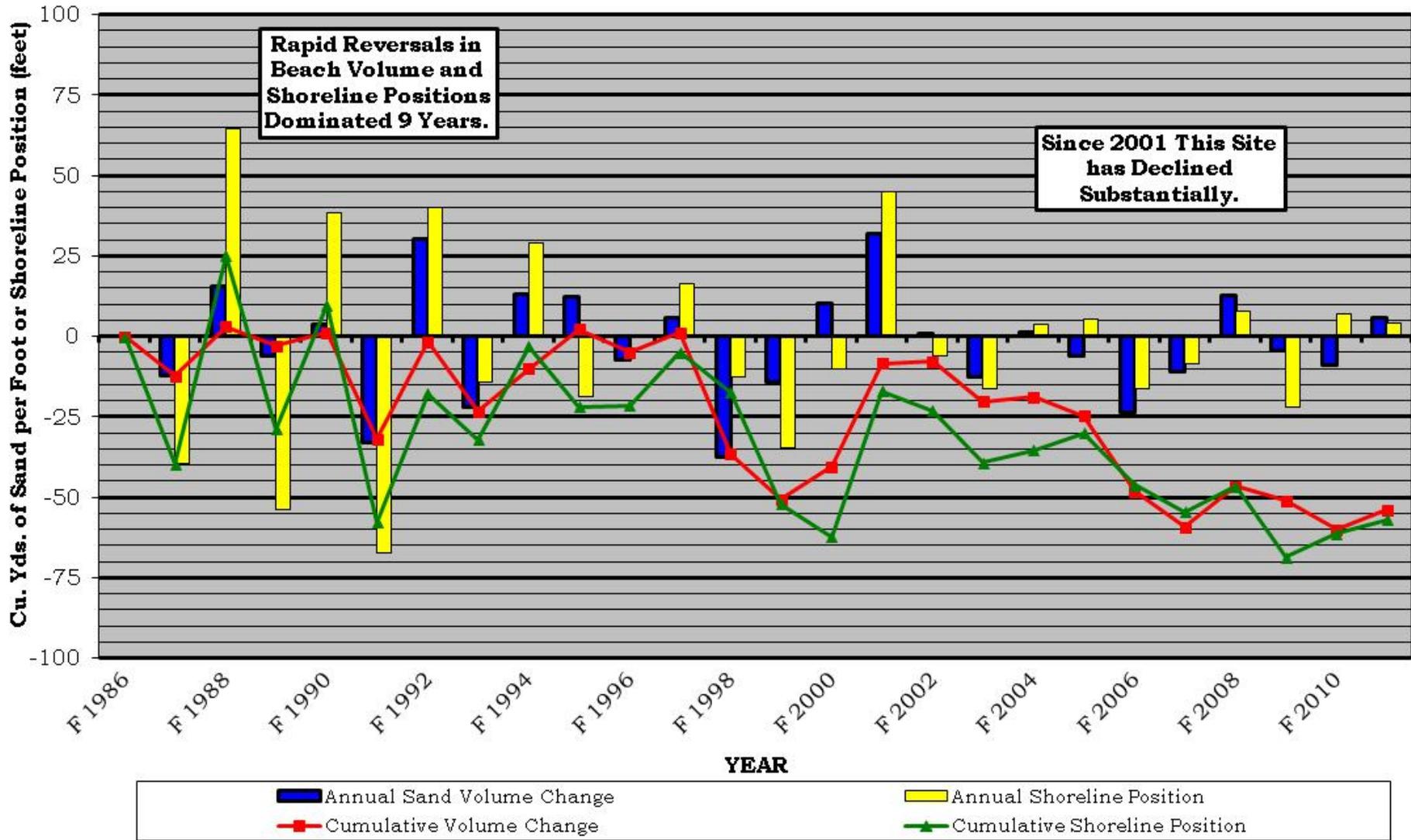


Figure 241. Profile 139 in Long Beach Township saw tremendous oscillations in the first 10 years of monitoring. From 2001 on the trend was a negative one as both the shoreline position and the sand volume decline substantially.

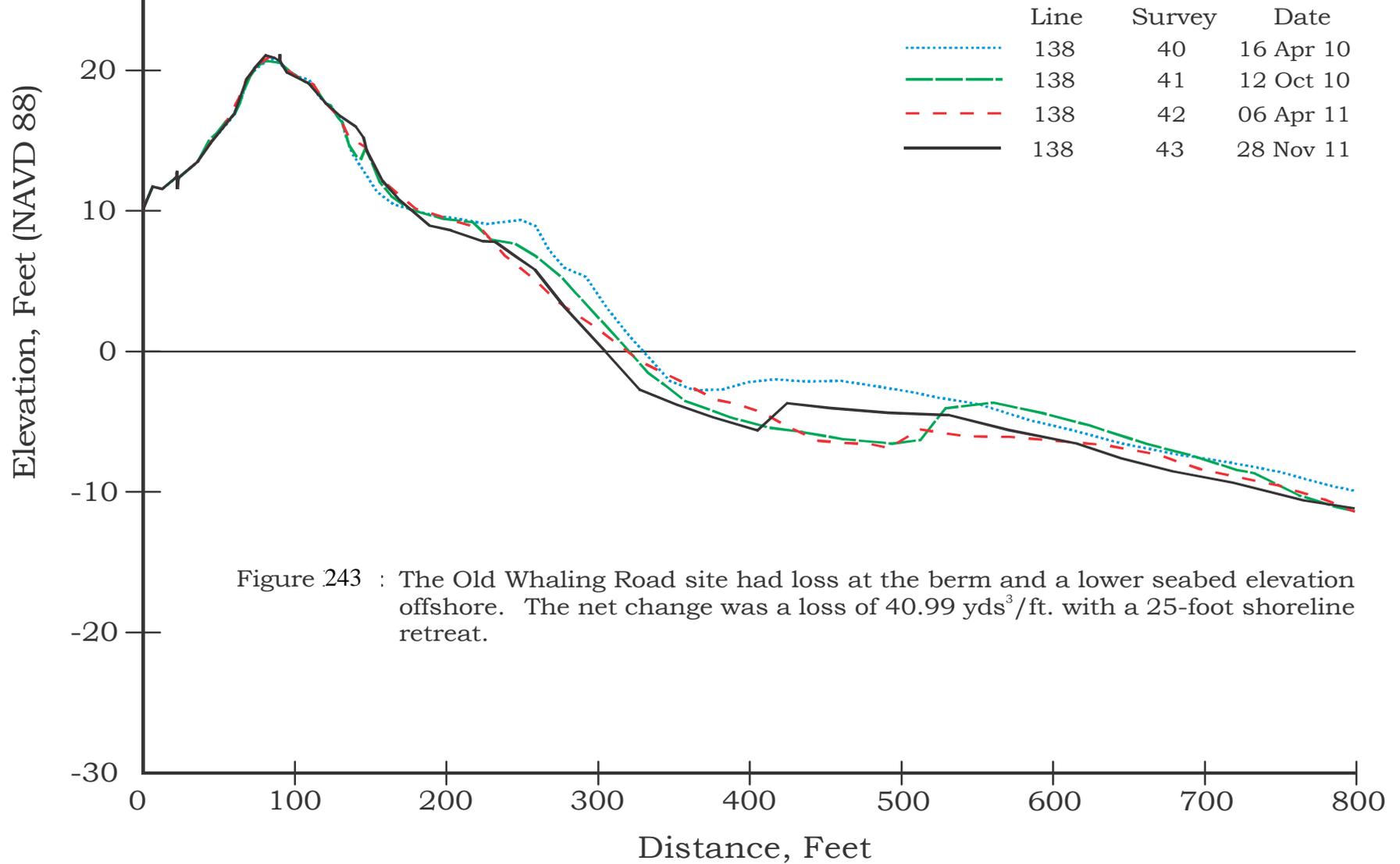
Site 138, Old Whaling Road, Long Beach Township, NJ – November 28, 2011



Figure 242. Shown above is the view looking north from the dune at Old Whaling Road in Long Beach Township, NJ.

New Jersey Beach Profile Network

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



OLD WHALING ROAD, LONG BEACH TOWNSHIP – SITE 138

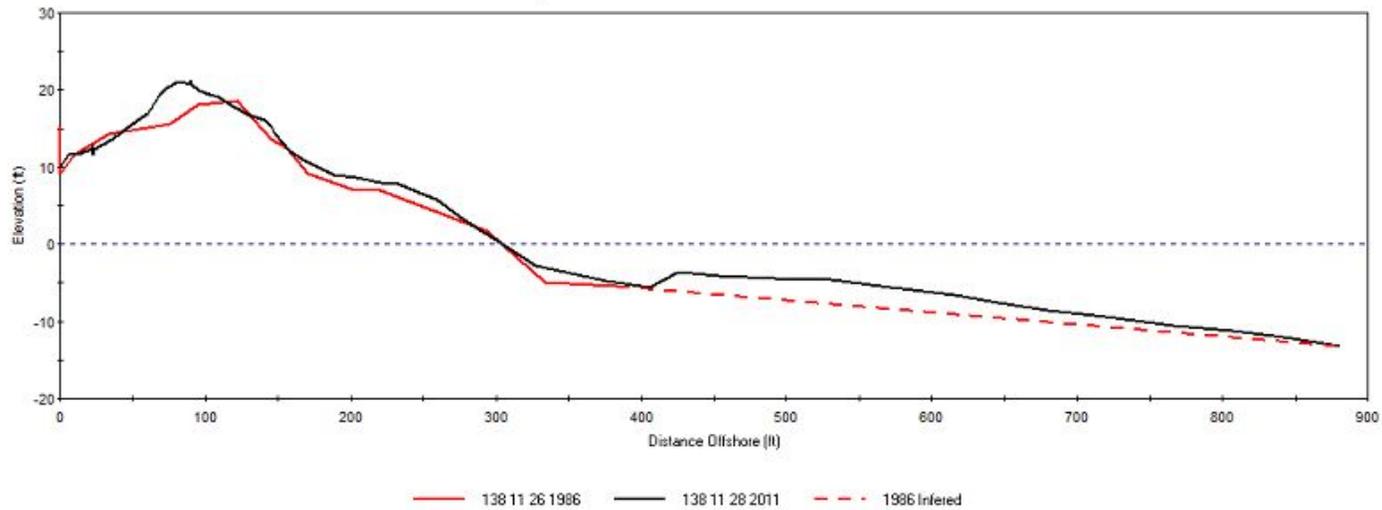


Figure 244 above shows that this site's initial survey in 1986 is very similar as to its condition in 2011. Minor gains to the dune, berm and offshore slope resulted in a net gain of 15.29 cu.yd/ft of sand, a shoreline advance of just 1 foot. Photo on the left was taken in November of 1991 and shows the view north from the dune toe. Photo on the right was taken in November of 2011 and shows the view north from the beach.



25-Year Coastal Changes at Site 138, Old Whaling Rd. Long Beach Township, Ocean Co.

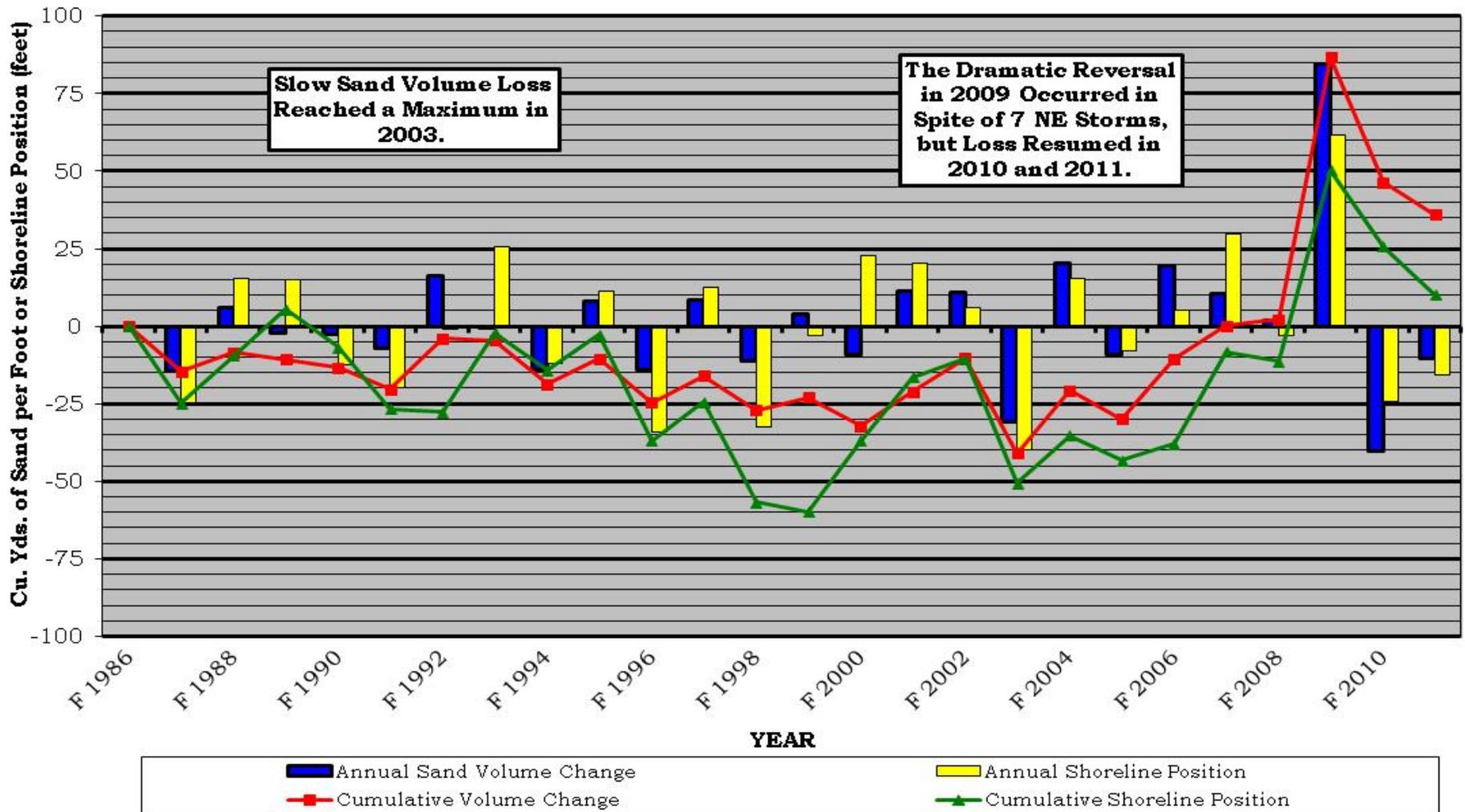


Figure 245. Profile 138 in Long Beach Township saw a slow and steady sand volume and shoreline position loss from 1986 until 2003. Beginning in 2004 a recovery began to add sand and advance the shoreline back to where it approximately was in 1986. In 2009 there was a dramatic advance in both shoreline position and in sand volume in spite of 7 northeast storms that year. However, losses in 2010 and 2011 removed much of the surplus which had been added the in 2009.

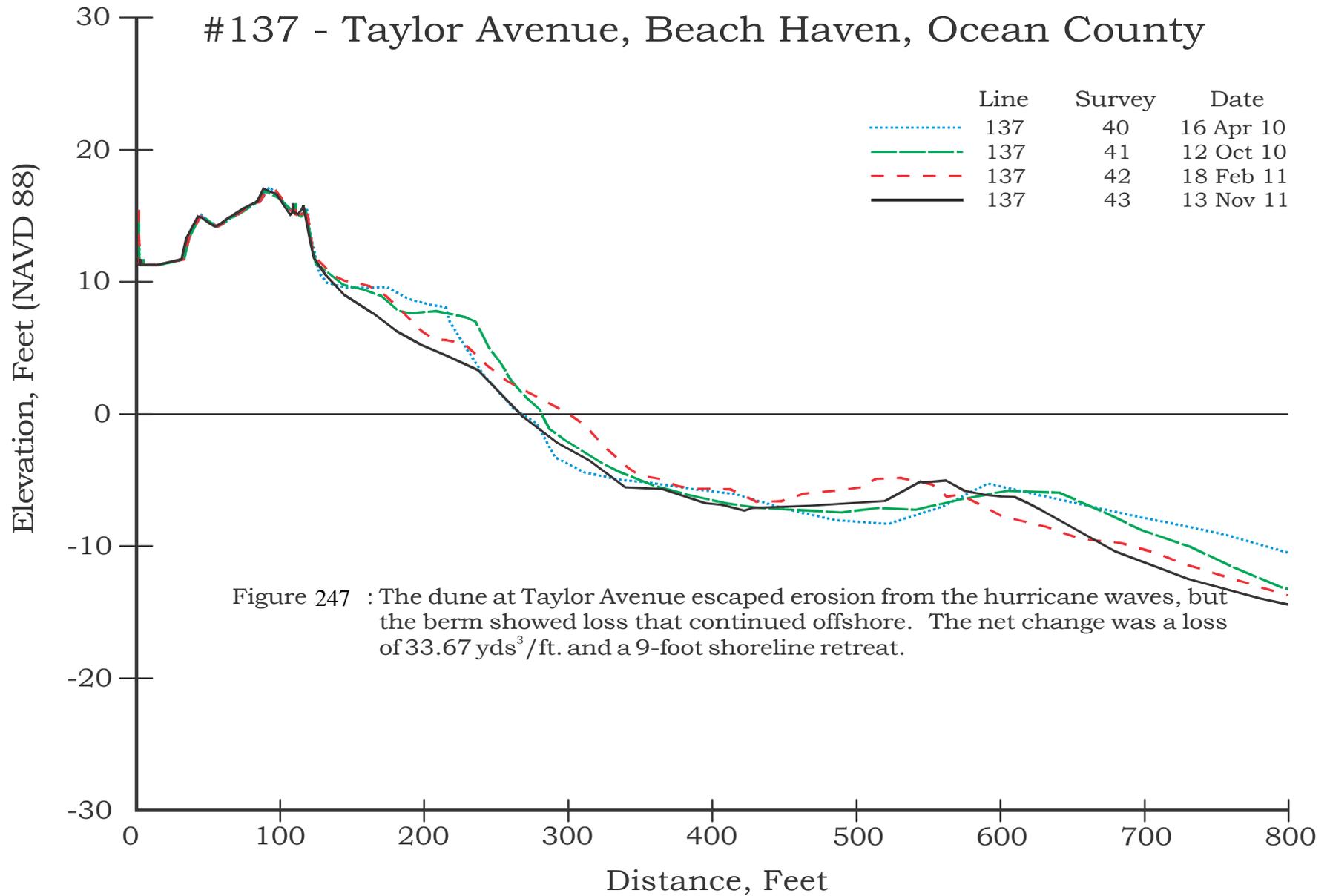
Site 137, Taylor Avenue, Beach Haven, NJ – November 3, 2011



Figure 246. Shown above is the view looking south from the dune crest at Taylor Avenue in Beach Haven, NJ.

New Jersey Beach Profile Network

#137 - Taylor Avenue, Beach Haven, Ocean County



TAYLOR AVENUE, BEACH HAVEN – SITE 137

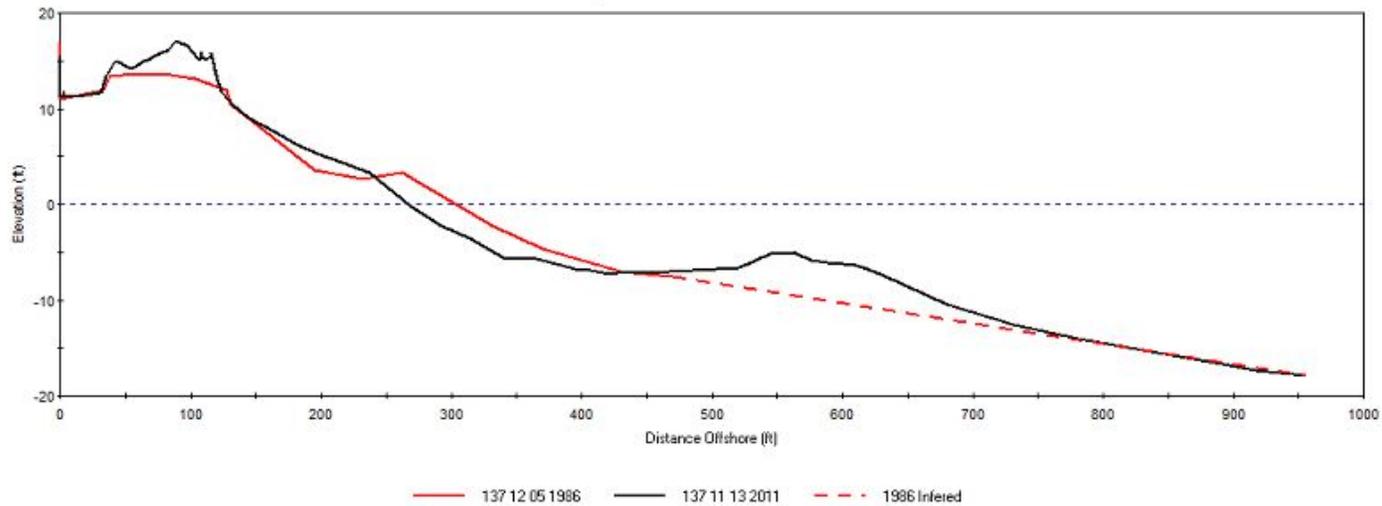


Figure 248 above shows that the dune grew vertically, the beachface lost sand, and an offshore bar developed, since this site's initial survey in 1986. The shoreline retreated 37 feet and there was a net loss of 3.212 cu.yd/ft of sand. Photo on the left was taken in November of 1991 and shows the view north from the dune toe. Photo on the right was taken in November of 2011 and again shows the view north, the dune growth is clearly visible.



25-Year Coastal Changes at Site 137, Taylor Avenue, Beach Haven, Ocean Co.

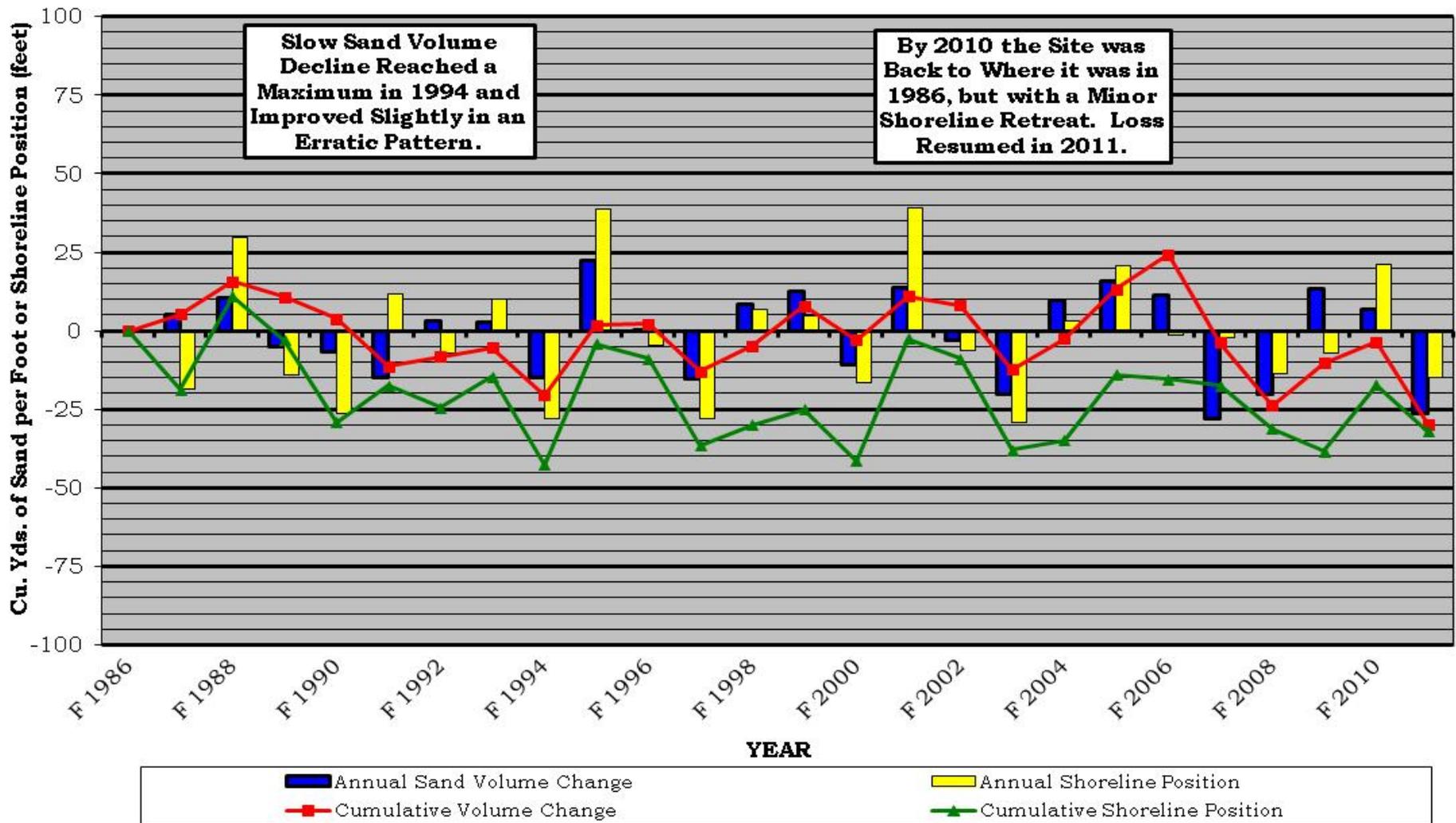


Figure 249. Profile 137 in Beach Haven remained relatively stable with variations occurring within seasonal ranges. The maximum loss of sand volume occurred in 1994 and subsequently a recovery took place in 1995. From there the sand volume slowly increased reaching a maximum in 2006 before beginning to decline again. Despite the variations in sand volume(s) the shoreline position remained within a range of 25 feet from where the shoreline was in 1986.

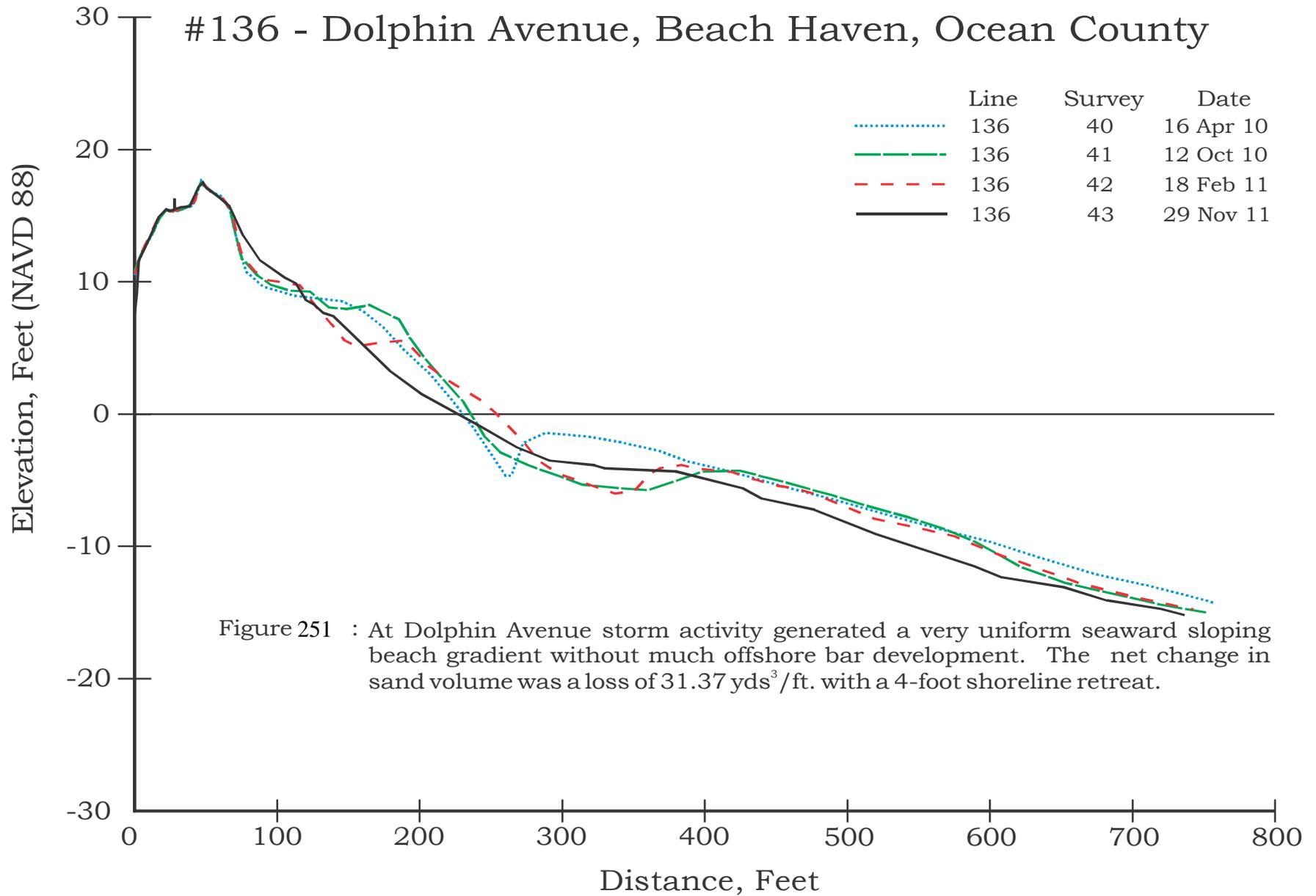
Site 136, Dolphin Avenue, Beach Haven, NJ – November 29, 2011



Figure 250. Shown above is the view looking south from the dune at Dolphin Avenue in Beach Haven, NJ.

New Jersey Beach Profile Network

#136 - Dolphin Avenue, Beach Haven, Ocean County



DOLPHIN AVENUE, BEACH HAVEN – SITE 136

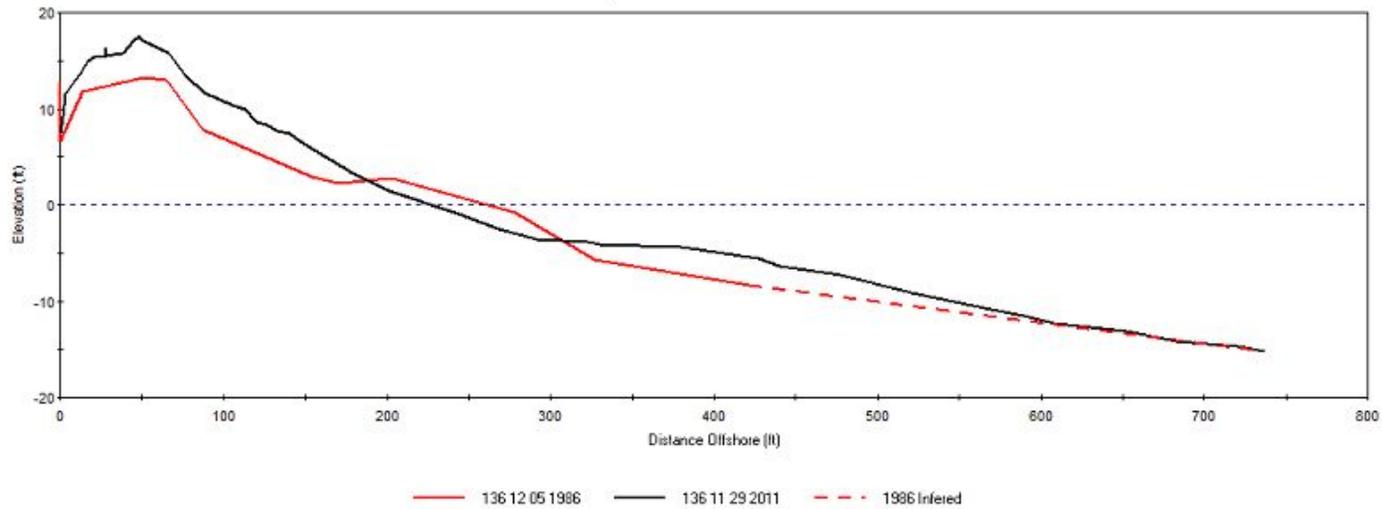


Figure 252 Shown above are the changes the Dolphin Avenue site has sustained since it's initial survey in 1986. The dune grew horizontally and vertically ,while the beachface migrated landward resulting in a loss of 34 feet of shoreline. The gains, however, offset the losses and resulted in an additional 24,294 cu.yd/ft of sand. Photo on the left was taken in February of 1991 and shows the view to the north with a lower dune but a wider beach. Photo on the right was taken in November of 2011 and shows the view to the north from atop a significantly higher dune.



25-Year Coastal Changes at Site 136, Dolphin Avenue, Beach Haven, Ocean Co.

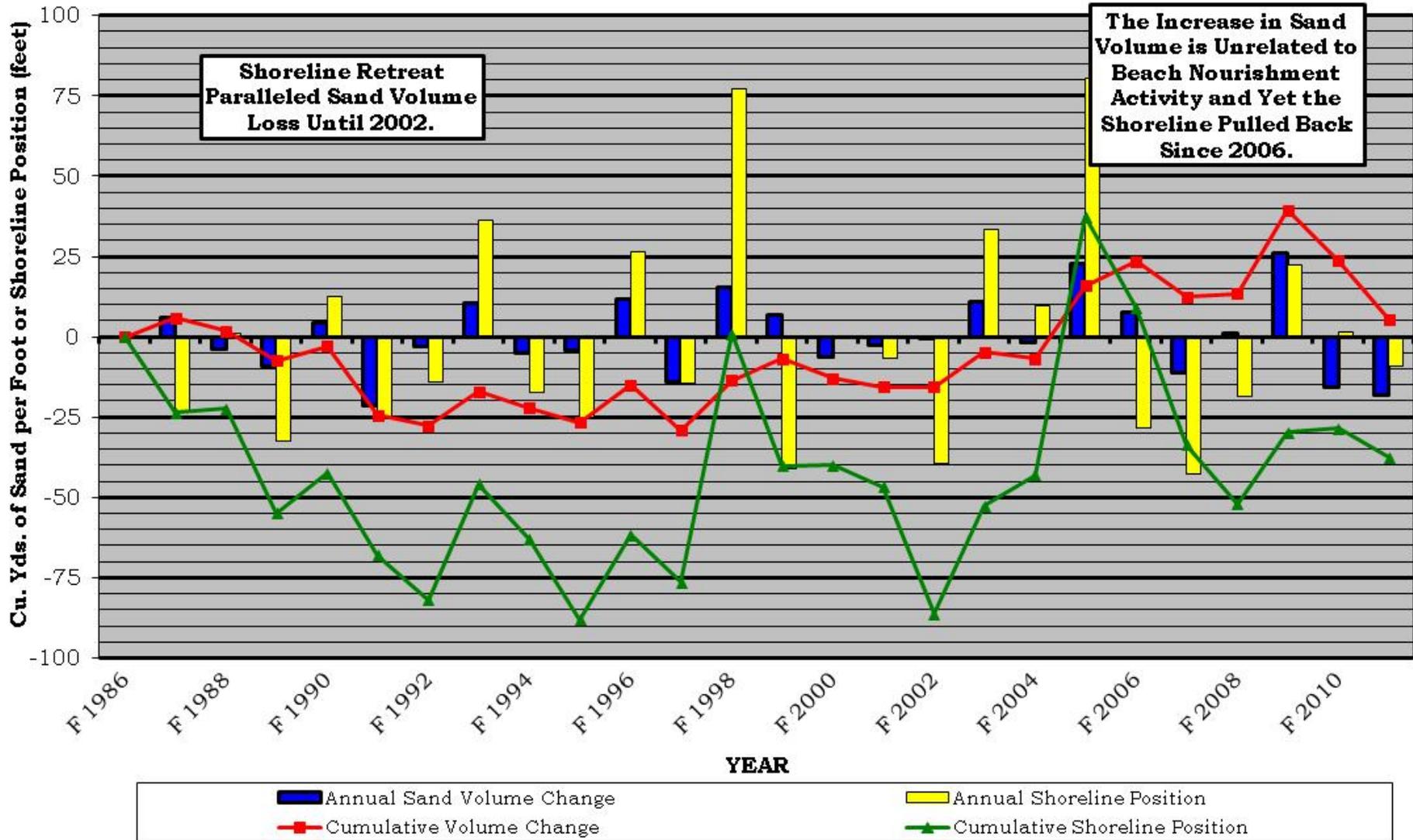


Figure 253. Profile 136 in Beach Haven had dramatic variations in shoreline position and in sand volume in its 25 year history. From 1989 until 2006 the trend was towards sand volume loss and shoreline retreat. If not for dramatic recoveries in 1998 and 2005 the trend might have been entirely negative.

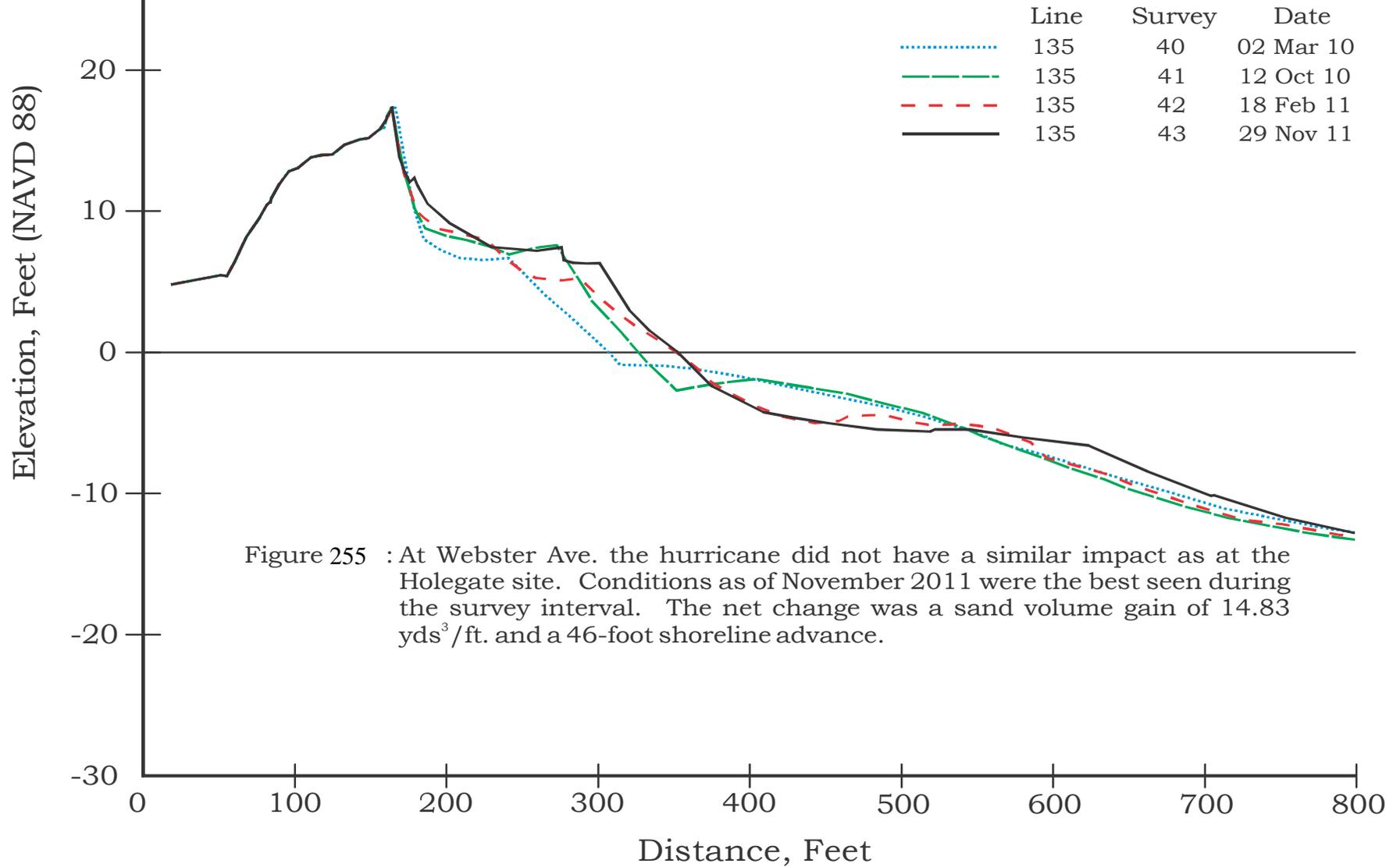
Site 135, Webster Avenue, Long Beach Township, NJ – November 29, 2011



Figure 254. Shown above is the view looking north from the dune at Webster Avenue in Long Beach Township, NJ.

New Jersey Beach Profile Network

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



WEBSTER AVENUE, LONG BEACH TOWNSHIP – SITE 135

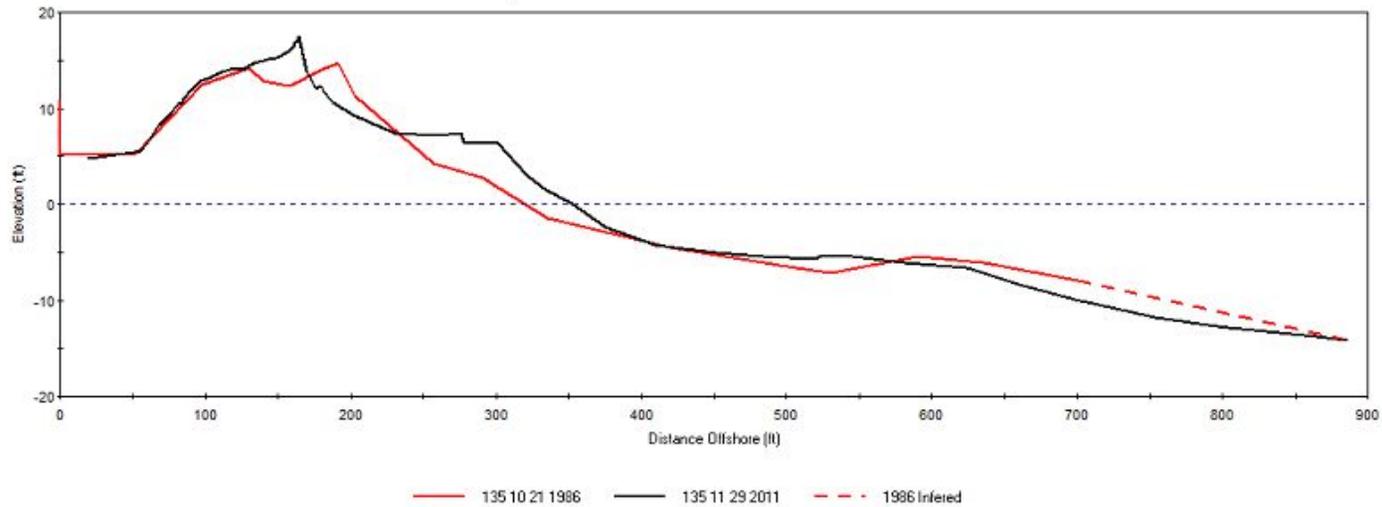


Figure 256 Shown above is site 135 where the beachface advanced seaward, and the dune crest migrated landward and grew vertically since the initial survey in 1986. There was a net gain in sand volume of 13.487cu.yd/ft., and the shoreline advanced 32 feet. Photo on the left was taken in November of 1991, and shows the view north from the seaward crest. Photo on the right was taken in November of 2011 and shows the view north, however, the beach is noticeably wider.



25-Year Coastal Changes at Site 135, Webster Avenue, Long Beach Township, Ocean Co.

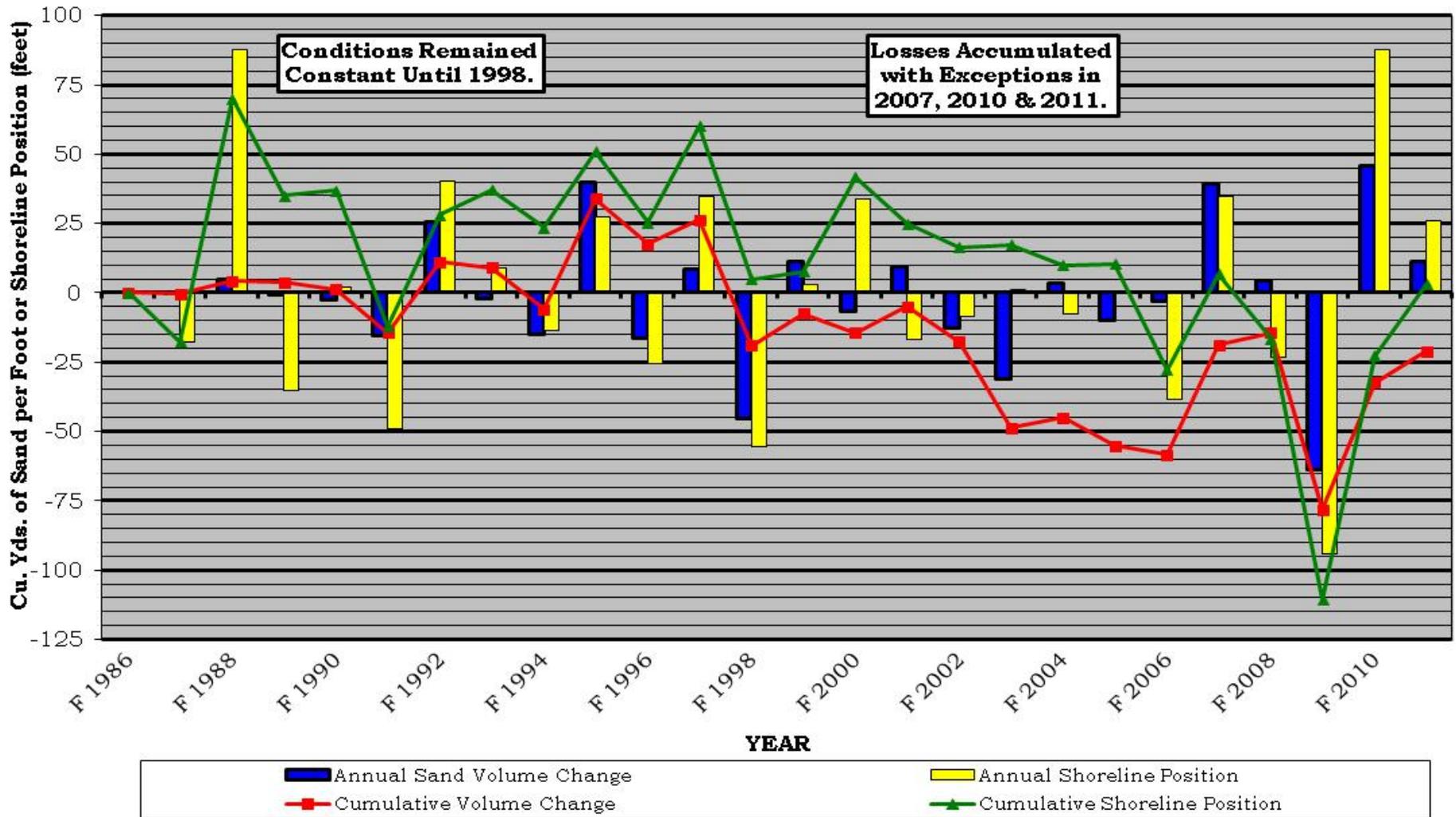


Figure 257. Profile 135 in Long Beach Township had a period from 1986 to 1998 where the sand volume remained relatively constant while the shoreline advanced in that time period reaching its maximum in 1988. Starting in 1999 losses accumulated culminating in the low point in 2009 for both the shoreline position and in sand volume. Recovery occurred in 2010 and 2011 bringing the shoreline position back to where it was when initially surveyed in 1986.

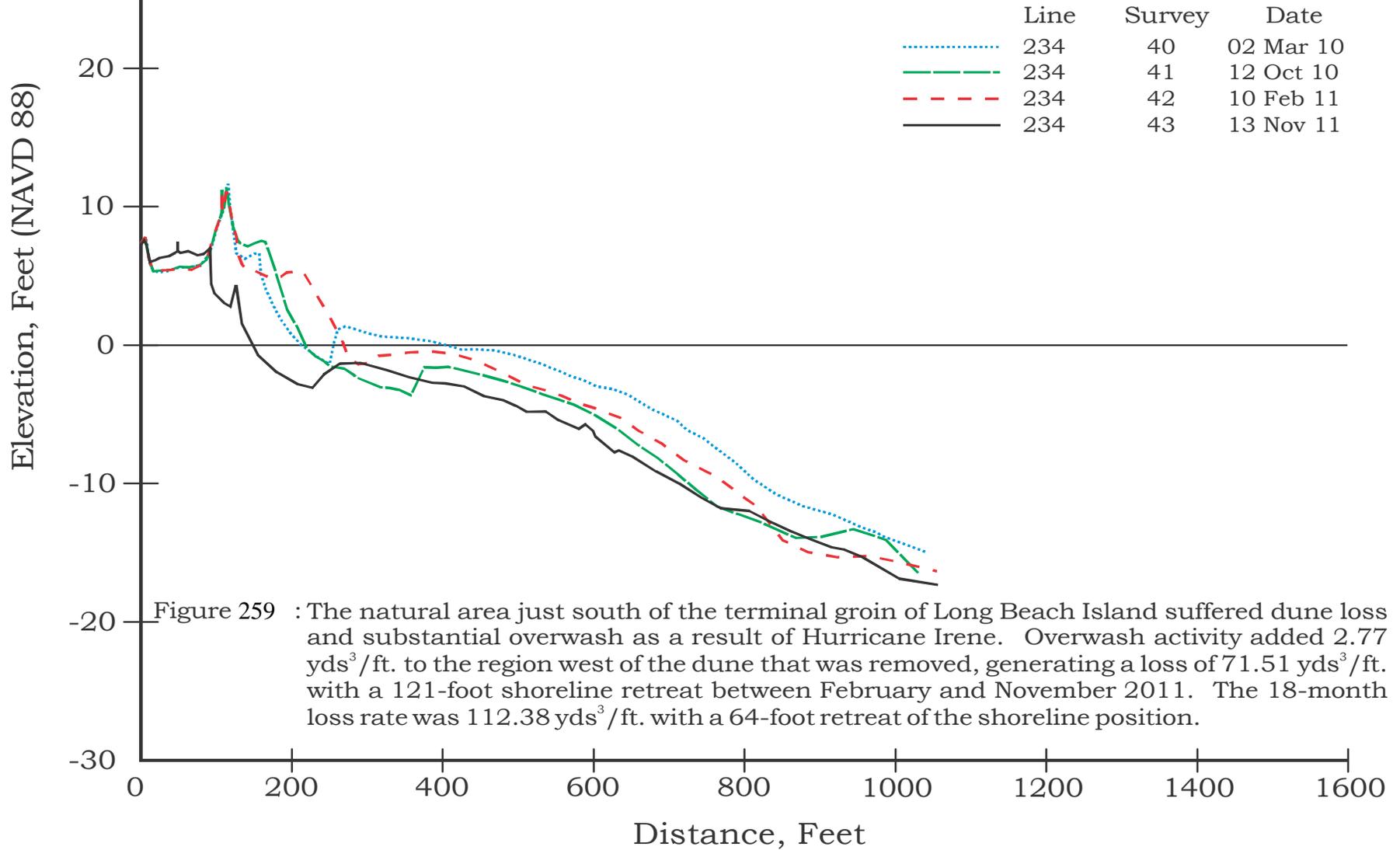
Site 234, Holgate Wildlife Reserve, Long Beach Township, NJ – November 3, 2011



Figure 258. Shown above is the view looking north from the top of the scarp at the Holgate Wildlife Reserve in Long Beach Township, NJ. This site suffered dune loss and overwash from Hurricane Irene.

New Jersey Beach Profile Network

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



NATURAL AREA, LONG BEACH TOWNSHIP – SITE 234

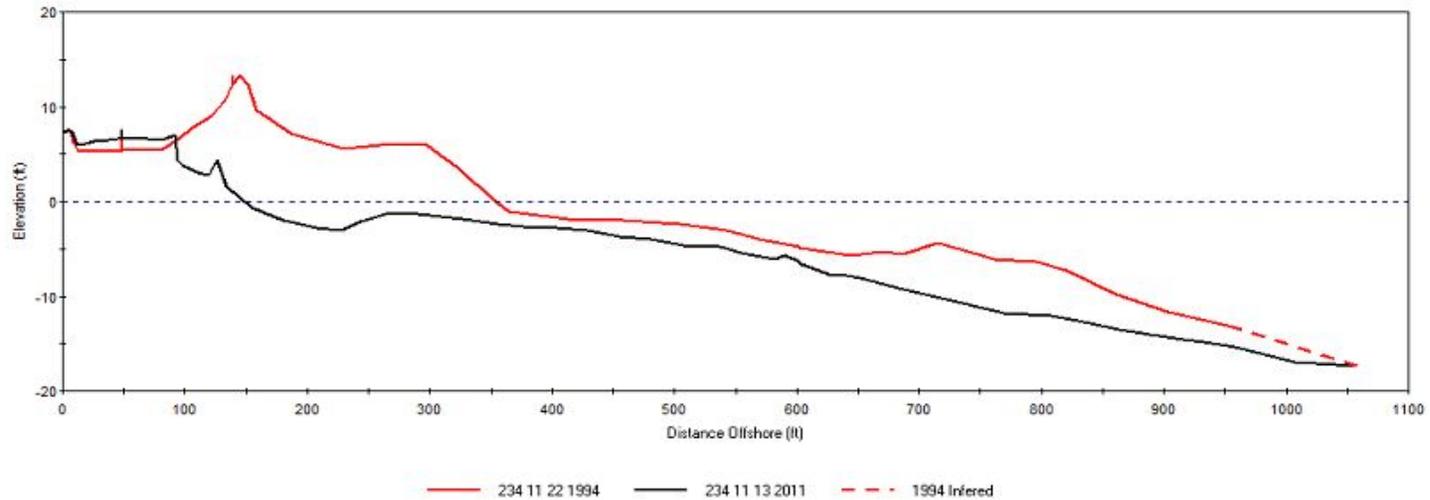


Figure 260 Shown above are the tremendous losses that the southern most site in LBI sustained since the initial survey in November of 1994. The shoreline retreated 205 feet while the net loss in volume was 134.79 cu.yd/ft. of sand. Photo on left was taken in April of 1995, and shows the view from the seaward crest looking south and the width of the beach. Photo on right was taken in November of 2011, and shows the dramatic loss of sand and the exposed rocks.



17-Year Coastal Changes at Site 234, Natural Area, Long Beach Township, Ocean Co.

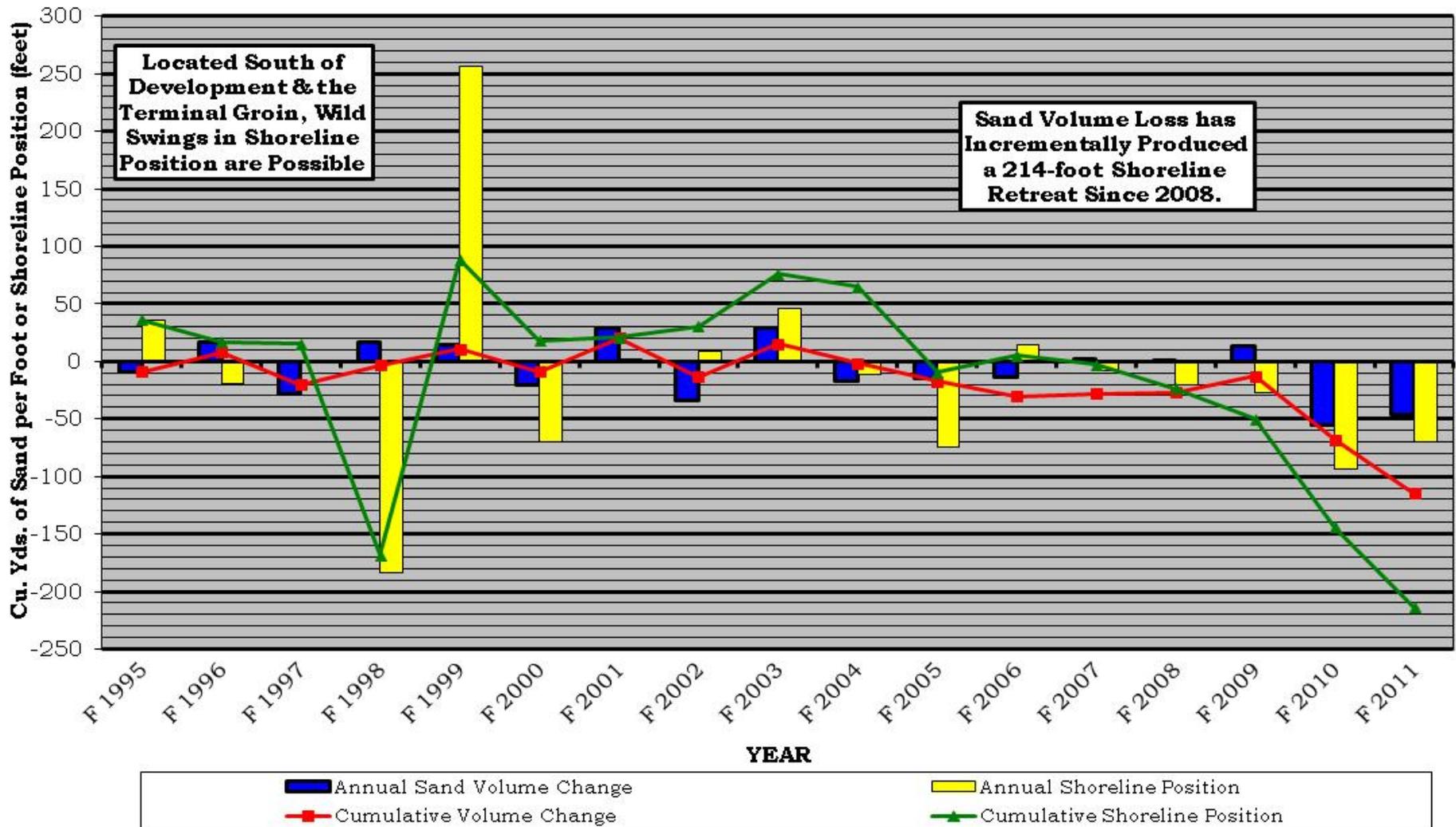


Figure 261. Profile 234 in Long Beach Township was established in 1995 and is located south development and of the terminal groin where wild swings in shoreline positions are possible. This was on display between 1998 and 1999 where the shoreline retreated 180 feet (in '98) only to advance back 250 feet in ('99). The sand volume remained stable for nearly the entire 16 year history until 2010 and 2011 when an incremental sand volume loss produced the lowest shoreline position in this sites history.