

**ANNUAL REVIEW FOR 2017  
OF THE CAPE MAY POINT, NJ MUNICIPAL BEACHES**



The photo above taken on September 1998 is presented to remind everyone what the Cape May Borough shoreline once looked like where storms routinely broke through at Lighthouse Avenue, rocks were the final line of defence between Lighthouse and Lehigh Avenues, and much of the remaining shoreline was wet to the dunes where a steep scarp meant that erosion was still at work reducing Cape May Point since the days of the Wanamakers as the earliest home builders in Sea Grove Village.

PREPARED FOR: THE BOROUGH OF CAPE MAY POINT  
215 LIGHTHOUSE AVENUE  
CAPE MAY POINT, NJ 08212

PREPARED BY: STOCKTON UNIVERSITY COASTAL RESEARCH CENTER  
30 WILSON AVENUE  
PORT REPUBLIC, NJ 08241

June 1, 2017



## Introduction:

The annual survey of the nine cross section stations on the municipal beach was completed by the Stockton University Coastal Research Center (CRC) on April 24, and 26, 2017. These were compared to previous surveys conducted March 2015 and April 2016. The findings included in this report complete the annual review of the municipal beaches prior to the 2017 tourist season.

The US Army Corps of Engineers (USACE) has finished the Cape May Point Borough and Lower Cape May Meadow beaches in its initial construction completed by June 2007. A second periodic nourishment cycle was completed January 2013 following Hurricane Sandy. The USACE was able to use FY12 funds to complete the second nourishment cycle of the Lower Cape May Meadow - Cape May Point shore protection project. The second cycle of nourishment is planned and reported in (31) gn (352.0

CMP-1: Lehigh Ave	Survey 45	April 24, 2017
CMP-2: Whilldin Ave	Survey 45	April 26, 2017
CMP-3: Coral Ave	Survey 45	April 26, 2017
CMP-4: Lake Drive	Survey 45	April 24, 2017
CMP-5: Cape Avenue	Survey 45	April 26, 2017
CMP-6: Pearl Avenue	Survey 45	April 26, 2017
CMP-7: Sites Avenue	Survey 45	April 24, 2017
CMP-8: Alexander Avenue	Survey 45	April 24, 2017

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sand. The Alexander Avenue site, a big gainer last year, shed sand into Delaware Bay or Sunset Beach his past year yielding a Borough wide net gain of 59,329 cubic yards of sand. Neglecting the loss from Alexander Avenue, he nets 74,067 cubic yards which approaches the volume reported as placed on the beaches by the USACE project manager (110,484 cu yd).

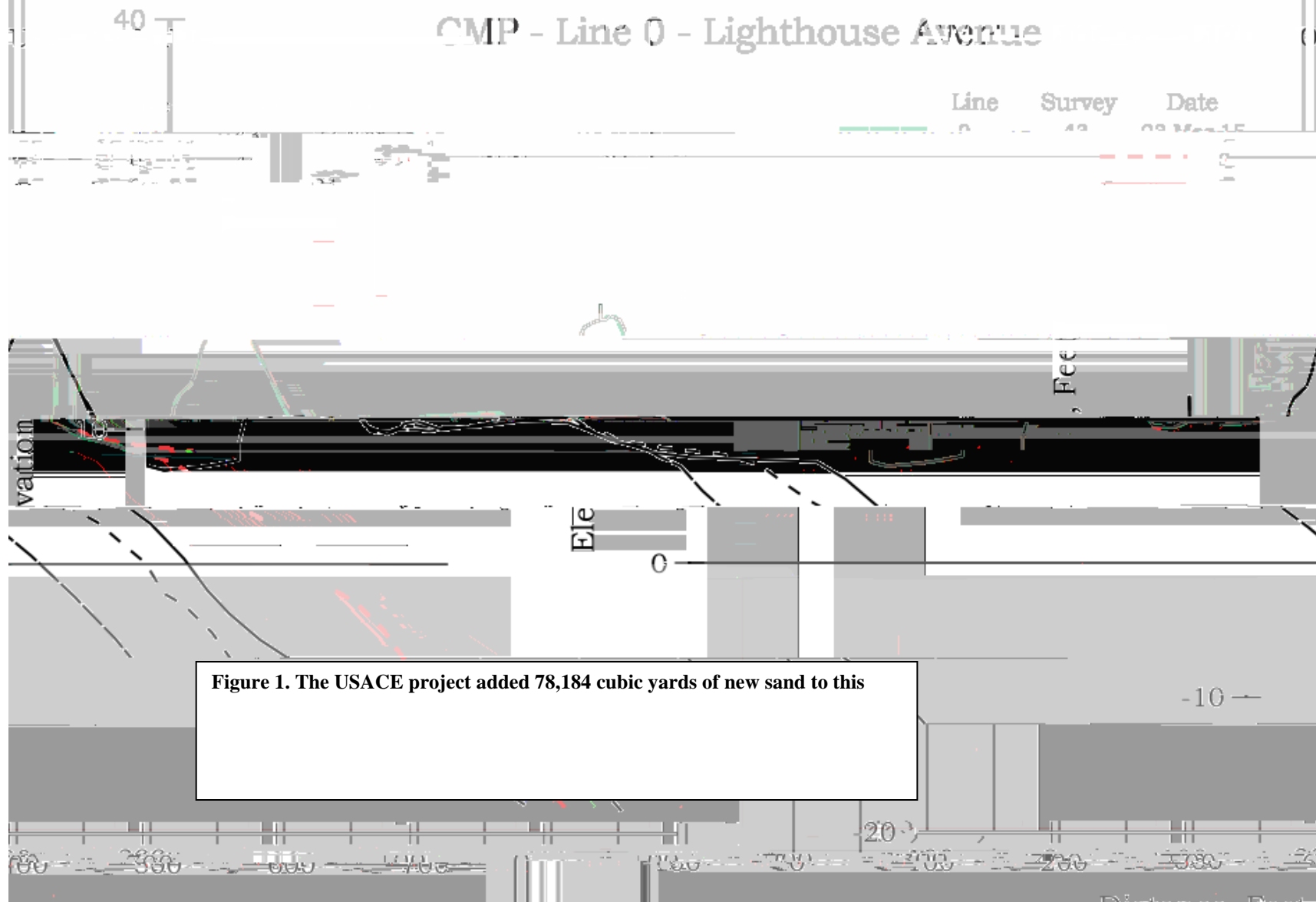
The summary table below compiles the shoreline and beach volume data for the period 1980-1990. (b) (5) - (D) (2) (i) - (2) (ne) (4) ( ) - 10 (a) (4) (nd) (4) (s) -

## **Review of Each of the Beach Cells in Cape May Point:**

This section describes the changes documented at each profile location. Beach volume and shoreline changes were calculated from April 2016 to April 2017 and from March 2015 to April 2017 as shown in the tables above. The individual site review includes photos taken during the survey and annual comparison plots.

# Cape May Point - Annual Comparisons

## CMP - Line 0 - Lighthouse Avenue

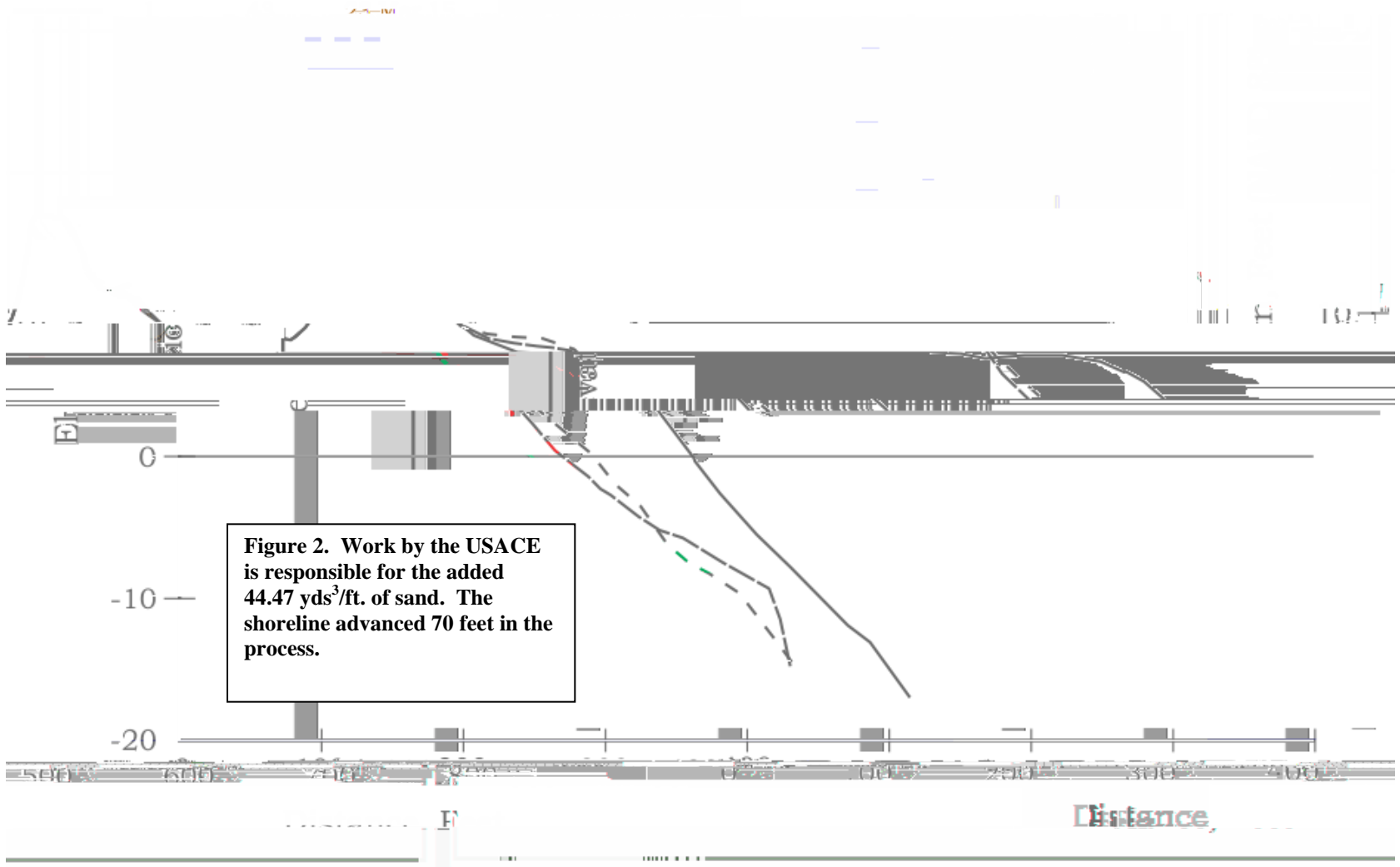


## Lehigh Avenue

CMP-1 (Cell 1) stretches from the Lighthouse Avenue groin to Lehigh Avenue.



# Cape May Point - Annual Comparisons



## Lehigh to Whilldin Avenues



The CMP-2 (Cell 2) beach is the northeastern-most of the groin cell sites and an early installation of the Beaches from 1993, which still are functioning and shown the profile cross-section at the 520-foot distance from the reference point and remain relatively stable. Sand added to the system during the initial USACE project has resulted in the near burial of a rock seawall that served as property protection prior to the project. No additional sand was placed here during the 2013 2<sup>nd</sup> maintenance cycle.

The recent cycle of USACE

# Cape May Point - Annual Comparisons

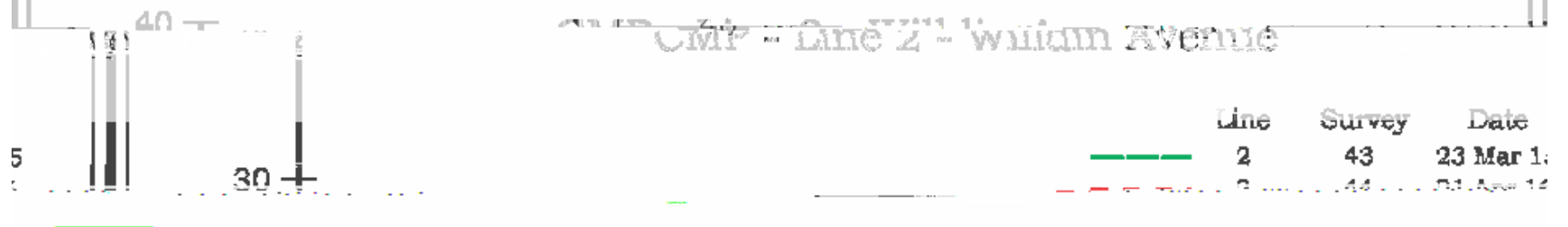
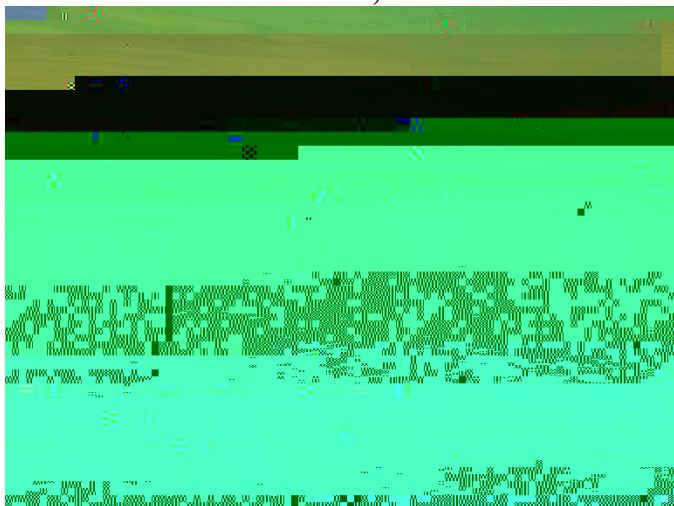
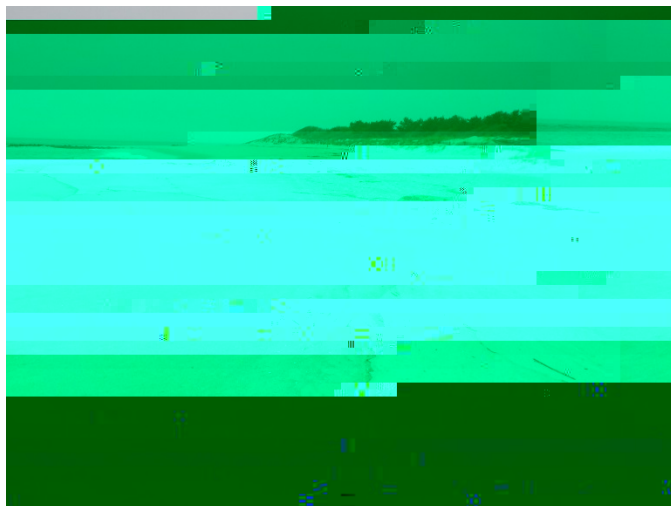


Figure 3. No sand was placed directly on this beach during the 2016 USACE renourishment project. A modest volume of sand accumulated on the foredune slope and beachface slope. During 2016 the net volume change was a gain of 22.16 yds<sup>3</sup>/ft. of sand. The reef unit

## Whilldin to Coral Avenues;



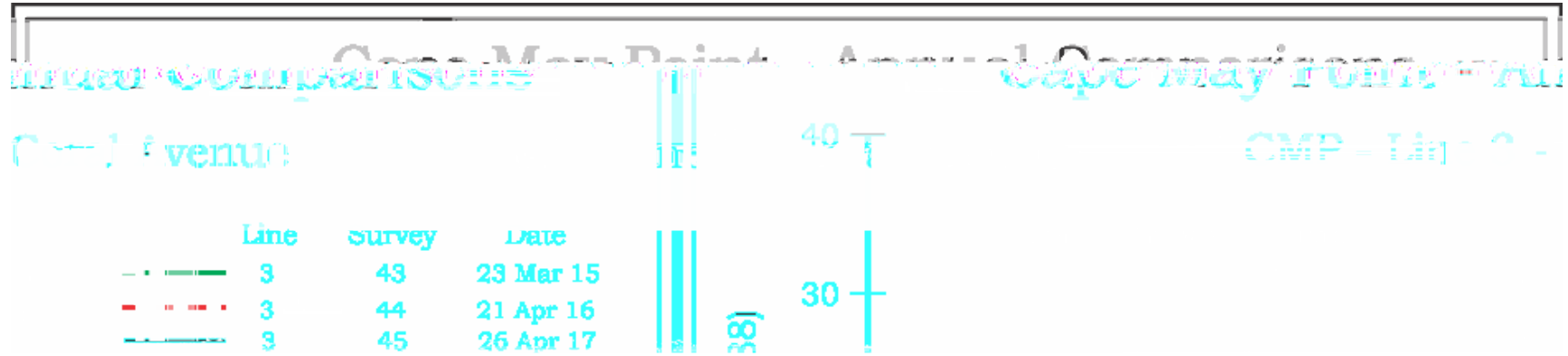
The April 21, 2016 photo shows the beach offset along the Coral Avenue groin continues to widen. By far this offset is the most pronounced in Cape May Point.



By April 26, 2017, the offset in beach width has decreased as more sand was added to the western half. The dune increased, while the beach remained constant at the cross section location.

CMP-3 is bonded by rock groins at Whilldin Avenue and Coral Avenue. This beach cell was the other original 1993 Beachsaver<sup>®</sup> installation in Cape May Point. Sand added to the system during the initial USACE project had resulted in the near burial of the entire beach structure. No additional sand was placed here during the 2<sup>nd</sup> maintenance cycle (2012-2013). No new sand was added here during the recent USACE project either. Sand accumulated on the dunes, and minimally on the beach.

The minimal change to the beach width keeps the Beachsaver<sup>®</sup> in its relation to the shoreline, approximately 85 feet. The concrete crest provides to elevation - 5.0 feet (NAVD88 zero datum) while the base is at -11 to -12 feet NAVD88. This location has been restricted for several years as the beach width brings the zero elevation position within 100 feet of the reef structure. There is a deep trough at the landward side of the reef structure and the swimming space has decreased marginally. Again this year the recommendation is to allow swimmers to wade near shore in shallower less than 3-4 feet deep regardless of the tide level. Water access could be allowed here in mid-beach but water access near the groins where the structures are closer to shore should be prohibited. Another hazard is the wave surge turbulence as larger waves pass over the submerged reef structures. Someone of limited swimming ability might panic if buffeted about by this repetitive wave turbulence within 40 feet of the reef structures. This is only a concern when larger waves are reaching the shoreline.

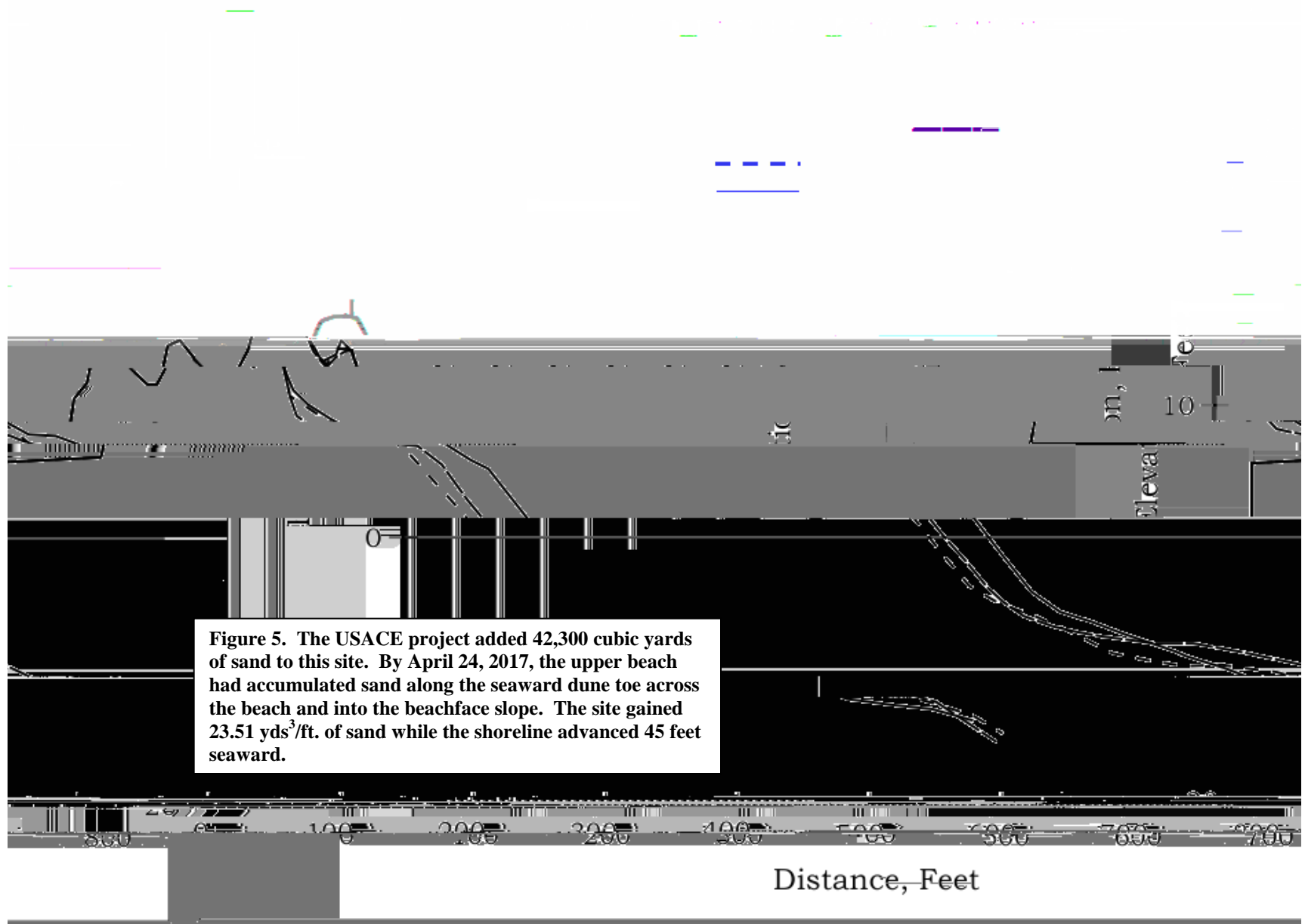


## Coral Avenue to Lake Drive

The Lake Drive (CMP-4, Cell 4) beach cell is bonded by the rock groins at Coral Avenue and south of Lake Drive (closer to Surf Avenue). This cell does not contain any nearshore beach structures but it has received sand both during the initial project and in the recent 2<sup>nd</sup> maintenance cycle nourishment project. Over the 2012/2013 winter, the USACE reported sand placement of 37,000 cubic yards in the Lake Drive beach cell (DightPakan, USACE). This site also received modest sand placement in 2016 (42,300 cubic yards, DightPakan, personal communication).

The dune has remained relatively stable to slightly accrete through the recent monitoring time interval. The new sand shows a wider berm across

# Case Study Point Annual Comparisons



## Surf to Cape Avenues

CMP-5 (Cell 5) contains the nearshore breakwater installation installed in 2002 during the USACE CMP-227 experimental project. The breakwaters are still present located just under 200-feet seaward of the zero elevation shoreline position. These breakwaters are furthest from the shoreline and



## Cape May Point - Annual Comparisons

**Figure 6. The breakwater reef is still exposed at this site and continues to function as a sand retention feature. No sand was placed directly on this beach during the 2016 USACE project. Longshore and cross-shore transport moved sand onto this beach elevating the berm and nudging the shoreline seaward 8 feet. From April 2016 to April 2017 the beach and dune accumulated sand, 7.87 yds<sup>3</sup>/ft. both onshore and offshore. The breakwater unit at this site is located over 200 feet seaward of the shoreline position and in water depths greater than -10 feet NAVD88.**

## Cape to Pearl Avenues

CMP-6 (Cell 6) is bounded by the rock groins at Cape Avenue and Pearl Avenue. The nearshore bay floor contains the Double Tee structures that were installed as part of the USACE CMP-227 experimental project. These structures were quickly buried and have remained buried by sand in the past eight annual surveys. Consequently, they have limited ability to influence additional sand retention.

Sand shed from the initial project beaches moves into this site seasonally by predominant longshore drift. As a result, it is likely erosion will expose these structures in the near future provided the USACE continues to remain committed to regular project maintenance by adding sand to the system. These structures are located on the seafloor 11 feet below the 0.0 ft NAVD88 datum and buried by 4 feet of sand nearly 100 feet offshore. The structures however might be

# Cape May Point - Annual Comparisons

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2010 - 2011

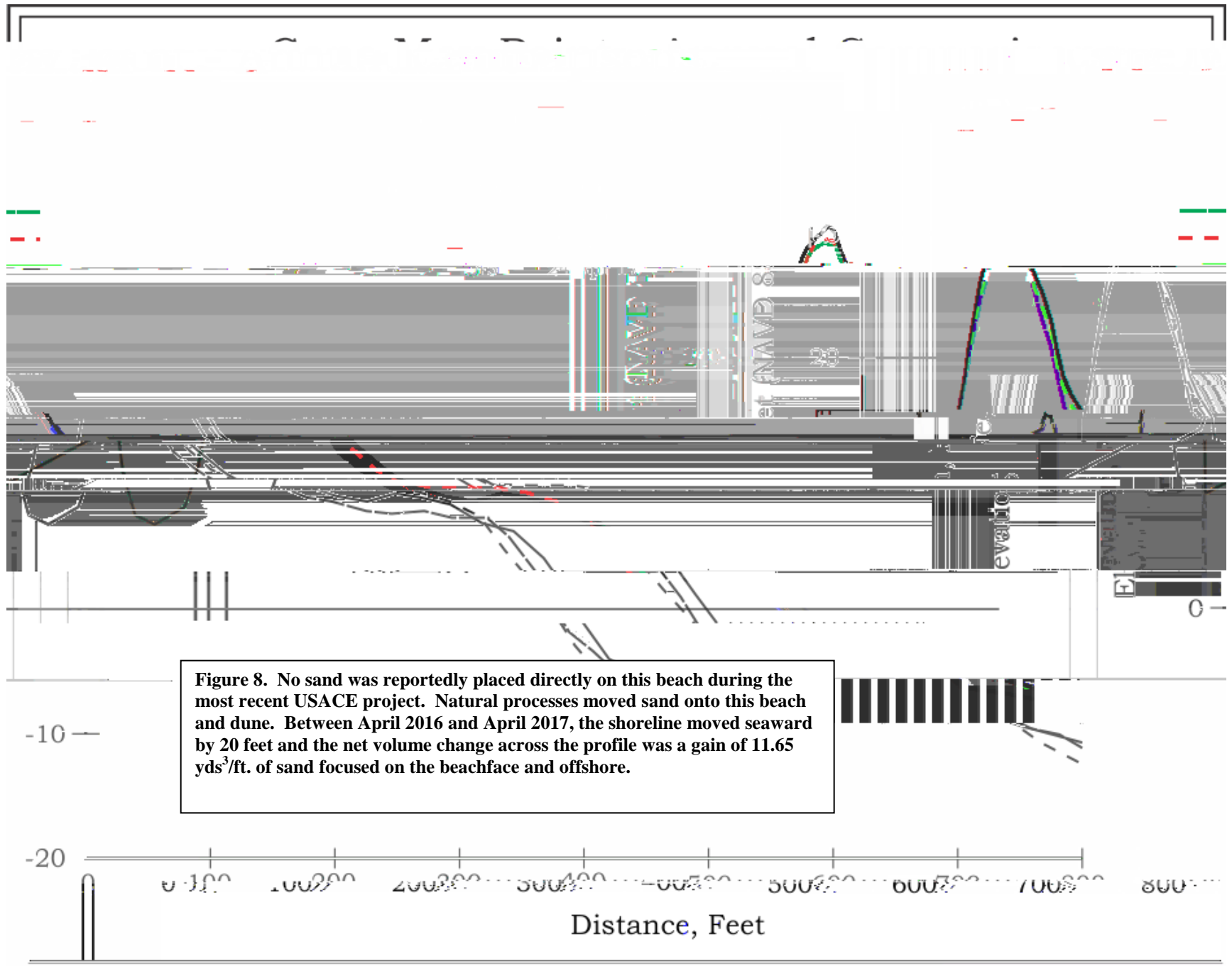


Figure 7. No s

## Pearl to Stites Avenues

Profile CMP-7, located southeast of Brainard Avenue, (Cell 7) is bounded by the rock groins near Pearl Avenue and Stites Avenue. The cell has not received any sand directly from the past USACE beach restoration or maintenance projects. Natural processes dominated by longshore drift continue to transfer sand from east to west along the Borough's shoreline. This process has benefited the western beaches as sand has accumulated across the entire profile length from the dune crest to the offshore seafloor limits. This process continued through April 2017. With no structures present at this location the wide dry beach should provide beach patrons with abundant recreational area and good nearshore swimming conditions for the summer season.

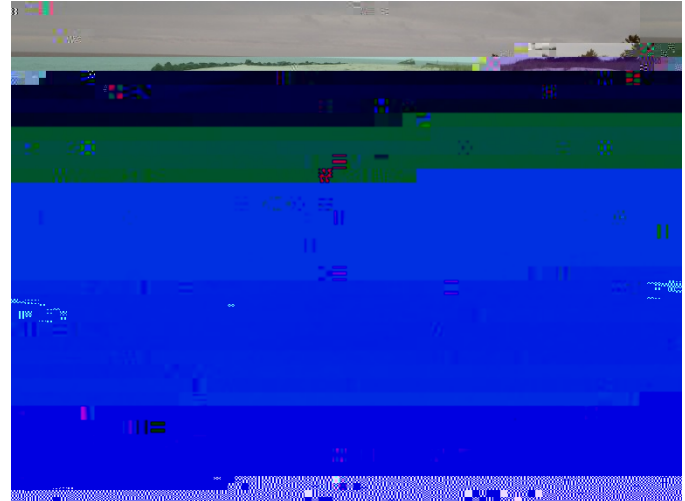
In 2017, the annual net volume gain was 11.65 cu yd/ft of sand in 20 feet of seaward shoreline position advance. The elevation of the recreational beach berm remained constant compared to last year and sand accumulated offshore. Aeolian transport moved sand to the seaward dune slope and to the crest. Stites Avenue is the first Cape May Point due to grow higher than 30 feet in elevation. The wind transport effect has been evident on the Stites Avenue beach access path where sand deposits



## Stites to Alexander Avenues



This photo taken on April 19, 2016 shows continued dune growth and seaward expansion of the beach berm and shoreline position.



Sand left the Alexander Avenue beach as littoral processes moved it further west into the bay from the final groin or onto the Sunset Beach to the west.

The Alexander Avenue location, CMP -8 is the western most beach cell in the Borough. Sand placement was never included for this location during the USACE project. Natural processes have moved sand from the project beaches to this location. The beach extends seaward nearly to the tip of the western groin. Sediment loss from this cell is to the western Delaware Bay shoreline and shoals locally known as the "Cape May Rips." The offset in the beach east of the Alexander Avenue groin means that most of the sand is transported to the nearby bay floor and does not appear on the Sunset Beach shoreline.

Following completion of the initial USACE project sand began to accumulate in increasing amounts, 2015 was the first year in which this accretion trend stopped. In 2016, the accretion trend continued in a large wedge of sand accumulating from the seaward dune crest seaward to the profile limits. The dune advanced seaward 20 feet as a result of sand accumulation on the seaward slope. However, by April 2017, the shoreline retreated 39 feet as 22.33 cu yds<sup>3</sup>/ft in sand volume left the cell.

The dry beach provides ample area to support summer recreational activity onshore while the nearshore slope is steeper in this cell in water depths of -10 feet NAVD88 within 100 feet of the shoreline. The steeper slope and drop off near the end of the groins along with strong tidal currents in this region should probably limit swimming activity to the shallow nearshore region. Swimming has not been permitted at Alexander Avenue for many years in the final groin a long time favorite for fishing activities.

Gen. Map Point Annual Comparison



**Figure 9. No sand was placed directly on this beach during the 2016 USACE renourishment project. Natural processes removed sand from this beach. Between April 2016 and April 2017, there was a volume loss of 22.33 yds<sup>3</sup>/ft. of sand and the shoreline retreated 39 ft. from its 2016 position.**





region to draw the shoreline landward and increase the distance between the shoreline and the concrete piers.

4. Cell 4 has no structures offshore and a relatively flat nearshore slope. This site remains overall a good option for a swimming beach in Cape May Point this season and the recreational berm is wider this year. The relatively shallow slope platform in the area between groins makes wading and swimming relatively safer for beach patrons.
5. Cells 5 and 6 contain the new piers but pose minimal risk for swimming in 2017. Both reef structures lie in greater than 8 feet of water approximately 200 hundred feet from the shoreline at low tide. The Double Tee structure in Cell 6 is once again buried in additional sand. Swimming near the groins should always be avoided since the piers are slightly closer to the beach adjacent to the rocks.
6. Cells 7 at Sites A and B benefited from a wider berm area enhancing the recreational value of the beach, his paired in the shallow offshore platform will offer a relatively safe option for swimming.
7. Cell 8 at Alexander Avenue, sand loss this year has reduced the blanket space, but the available recreational area has been substantially improved at this beach since 2005. The sand lost from Alexander Avenue does not accumulate on the Sunset Beach segment but adds to the sediment layers on the nearshore Delaware Bay floor instead.

The Coastal Research Center (CRC) will continue to monitor the conditions on the Cape May Point beaches at the Borough's request and assist officials in additional actions.