

**FINAL REPORT FOR 2021  
ON CHANGES TO THE MUNICIPAL BEACHES  
THE BOROUGH OF MANTOLOKING, OCEAN COUNTY, NEW JERSEY**







net cell volume change. Total volume change for the Borough is determined by summing the net cell volume changes. Table 1 reproduces last year s survey data so direct comparison can be made with the current survey.

**Table 1**  
**Shoreline & Sand Volumes Changes**  
**November 4, 2019 to November**

The survey results for 2021 show that 67,012 cubic yards of sand were lost from Mantoloking concentrated at Princeton Avenue site where 36.63 yds<sup>3</sup>/ft. were removed, but most of the Princeton Avenue loss appeared as deposition at the southernmost site in the Borough (+23.01 yds<sup>3</sup>/ft.). Both annual comparisons seem to show sand arriving into Mantoloking from Bay Head as storm-generated littoral currents transport it into the Borough.

The final summary table of data is specific for the beaches and dunes to show that sand was still moving from the dry beach into the offshore region seaward of the low tide line. This material can return to the beach during low wave activity periods as migrating sand bars (see Mant-2 profile plot, Figure 2d).

**Table 3**  
**Shoreline & Sand Volumes Changes for the Dunes & Municipal Beach Only**  
**November 23, 2020 to December 1, 2021**

Profile Number	Shoreline Change (feet)	Volume Change (yds <sup>3</sup> /ft)	Avg. Volume Change (yds <sup>3</sup> /ft)	Distance Between (feet)	Net Volume Change (yds <sup>3</sup> )
<i>Northern Municipal Boundary</i>					
		-5.22			
		-12.28			
		-0.93			
		-21.31			
		3.98			
<i>Southern Municipal Boundary</i>					
Total Volume Change					-92,920

The beach and dunes saw 92,920 cubic yards of sand removed which is 25,909 cubic yards of sand more than the entire surveyed transects showed in Table 2 above. This material was deposited offshore below the low tide line and continues a process (termed Cross-shore transport) outlined in last year's report. Ocean wave action will flatten the beachface slope during any storm event and move material offshore. Later during calm intervals, the waves slowly transfer that sand back toward the beach as a small bar that eventually attaches to the beachface adding to

## **Mant-1 Carrigan Place;**

Mant-1 is located at the seaward end of Carrigan Place, along the municipal beach access path between the private residential properties at #911 and #915 East Avenue. Carrigan Place is located about 500 feet south of the Bay Head Mantoloking boundary. The profile reference location is a fire hydrant located along the west curb of East Avenue. The cross-section includes the road and beach access path on the landward dune toe between the oceanfront homes.

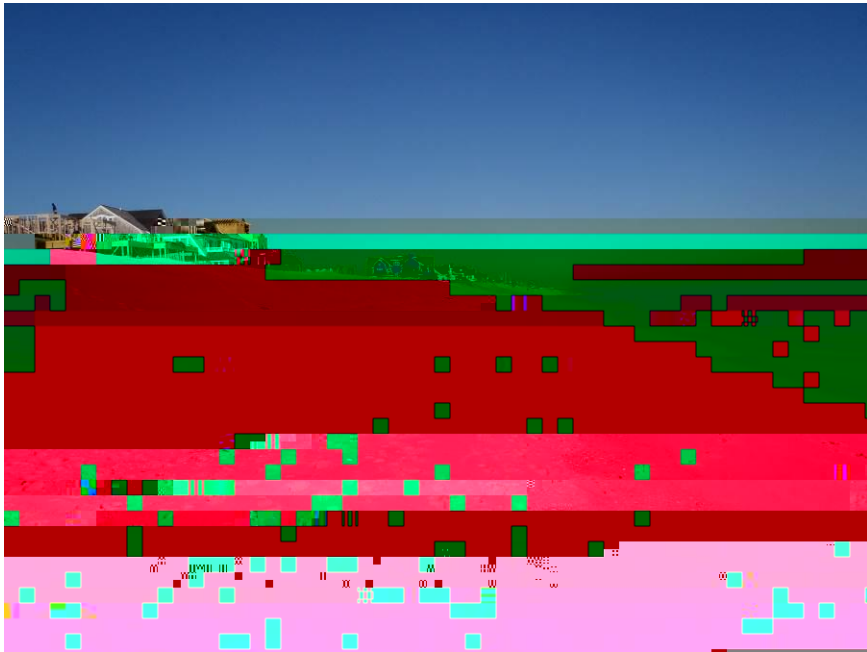
Following Sandy, work commenced to extend the rock revetment south from Bayhead to include this location. South of Lyman Street installation of a steel sheet pile wall was installed by the NJDOT. Today, the 22-foot elevation dune buries the rock revetment which remains as a last line of defense. Since July 2019, sand has been transferred to the dune toe by the wind generating a low foredune at the fence line. Sand was generously added offshore since July 2019 and remained in place since. Differing berm configurations also reflect general stability in spite of elevation changes. The little foredune contains about 4.52 yds<sup>3</sup>/ft. added as the first buffer to major storms.



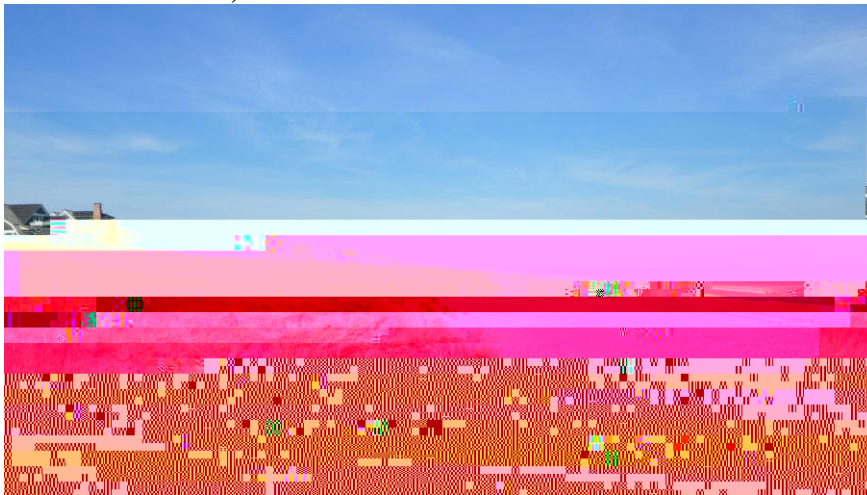








**2a. December 21, 2017**



**2c. December 1, 20**

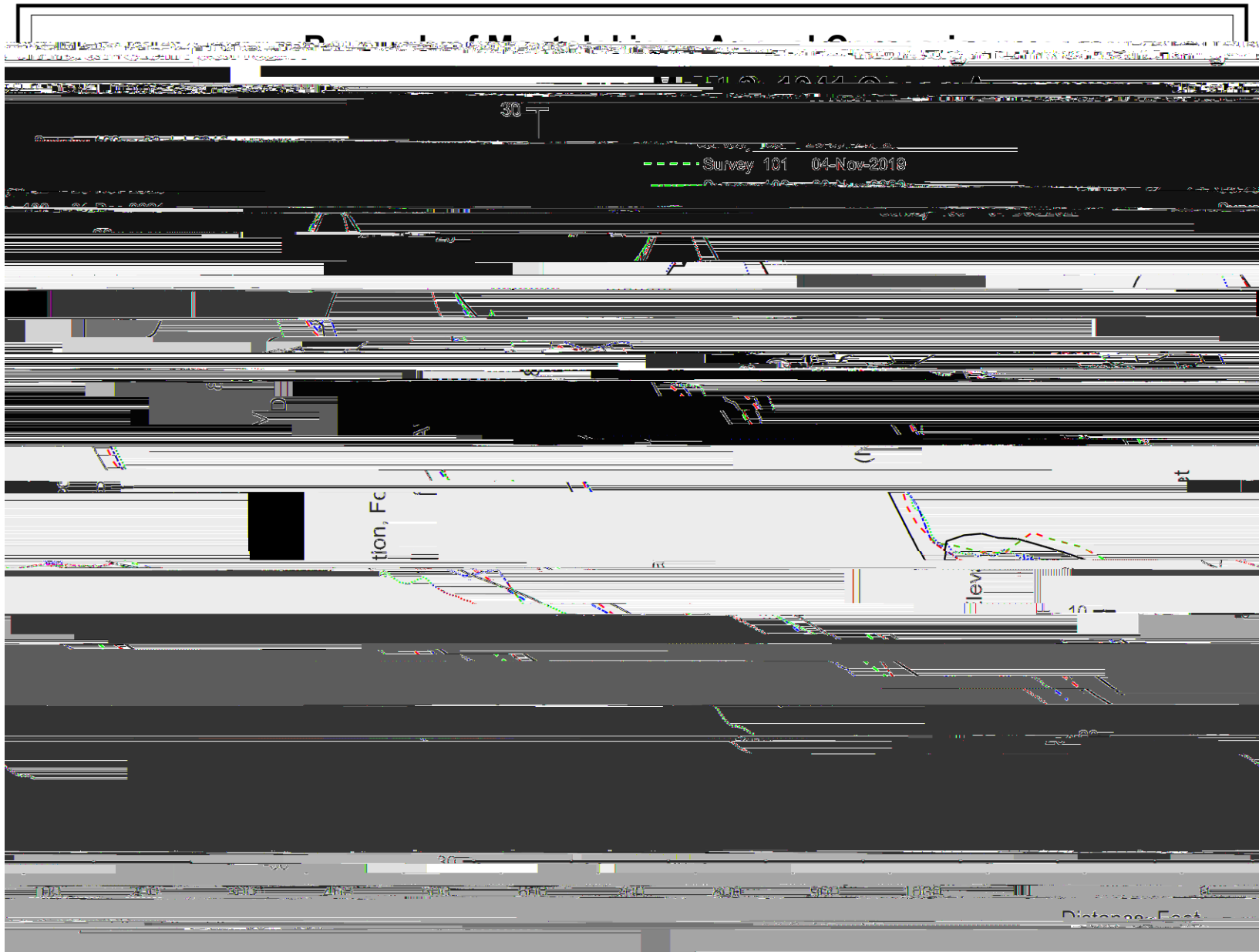
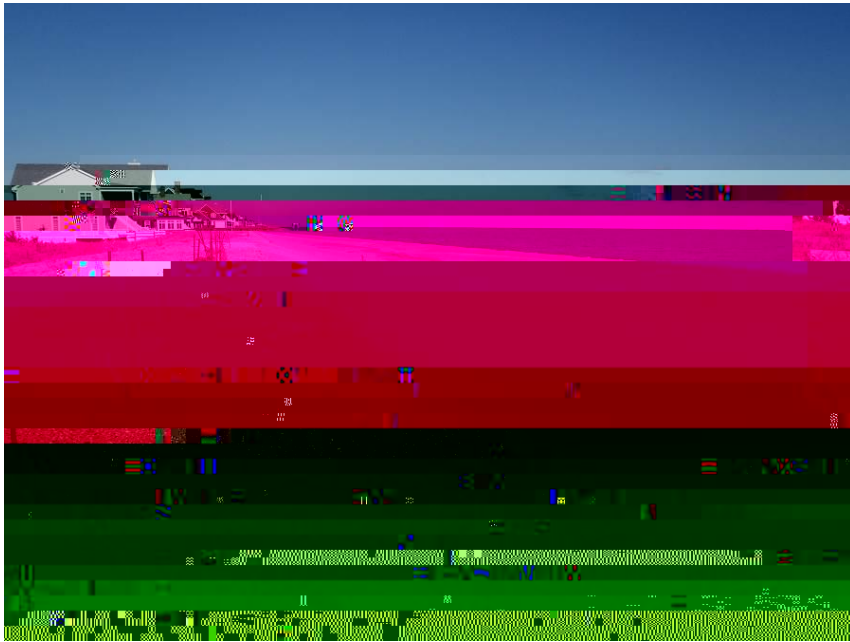


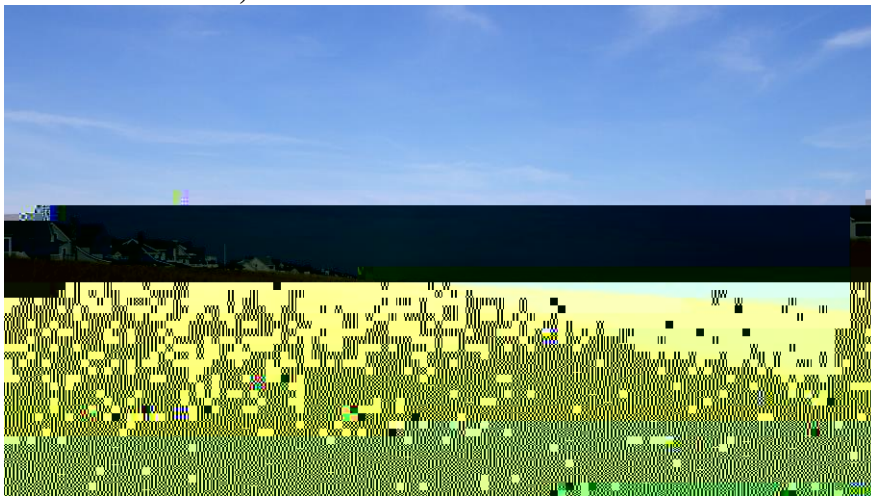
Figure 2d: The profile series begins with July 2019. Sand was added to the (signature) 0000011802 0 0.000011is m( toa

**Mant-3 #1117 Ocean Avenue;**

The #1117 Ocean Avenue monitoring site is located on private property. This site, originally established in 1986, is included in the National Beach Profile Network (NJBPB). The site was later included in the beach-monitoring program in Mantoloking because of the pre-existing data collected for the State at this location. The profile line was set along the former dune line, which caused damage to the dune vegetation. Positioned nearly in the center of the municipal shoreline, this site ha



**3a. December 21, 2017**

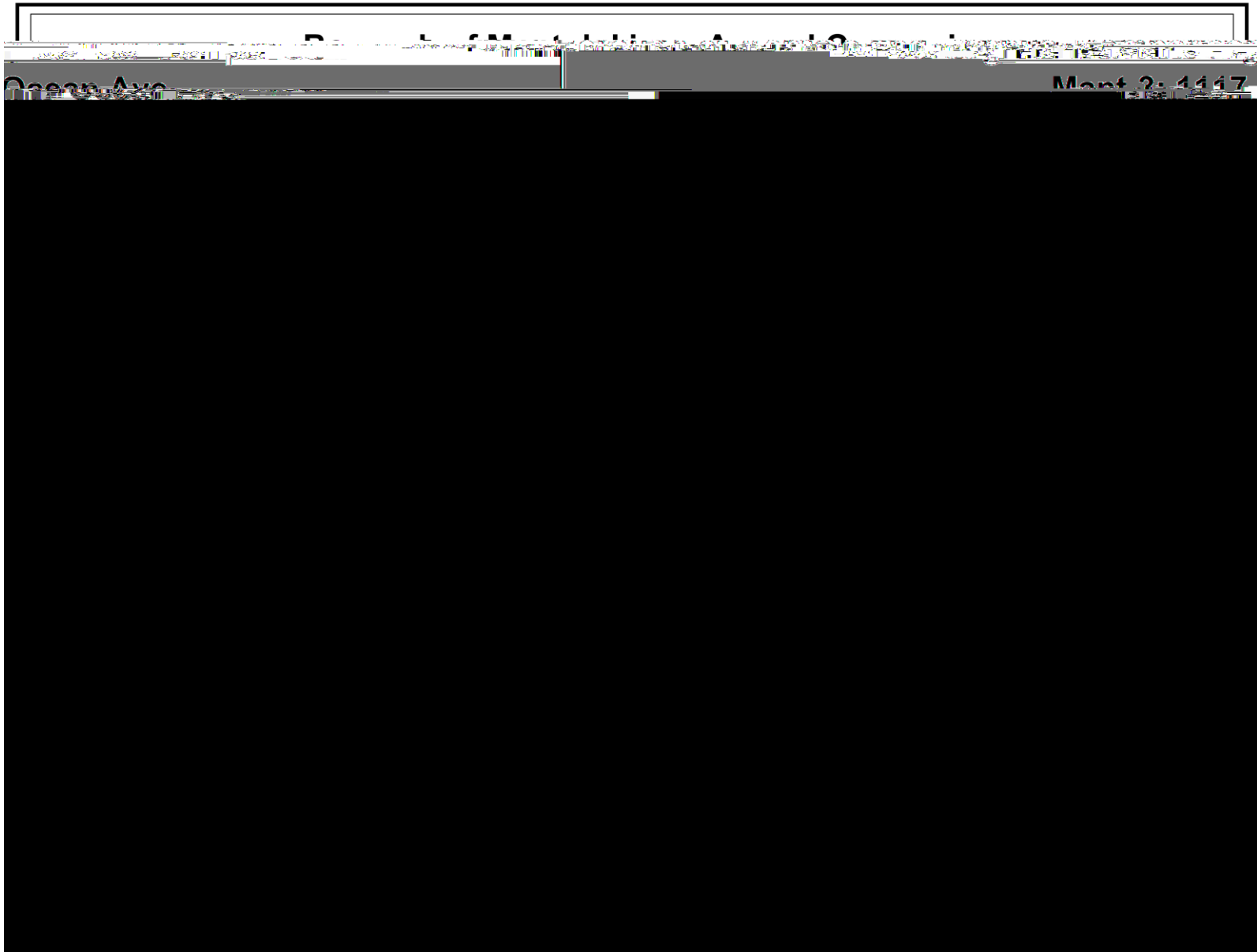


**3c. December 1, 2021**

**3b. November 23, 2020**

*Mant-3 Photographs 3a, 3b & 3c show the view to the north from the seaward dune crest.*

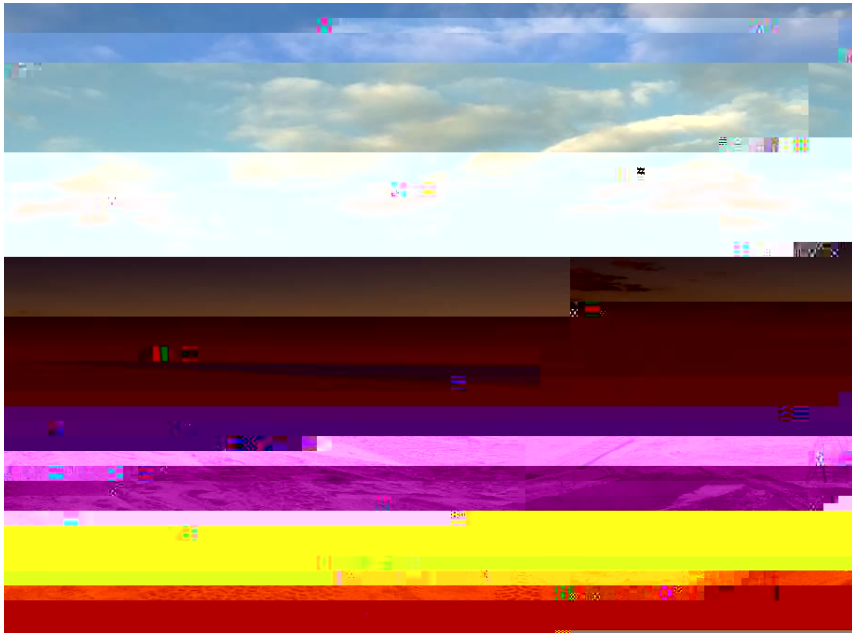
*Photograph 3a. By December 2017, a combination of natural sand recovery re35o3bi*



**Figure 3d: Four surveys show change since July 2019 where the berm retreated 35 feet since Nov. 2019 then stabilized. Minimal sand was deposited offshore, but the Nov. 2020 beachface toe trough filled in (+9.73 yds<sup>3</sup>/ft. added). The beach and dune lost 0.93 yds<sup>3</sup>/ft. while the offshore region gained 6.41 yds<sup>3</sup>/ft. since November 2020. The shoreline position changed very little (-0.21 feet in a year).**

**Mant-4 Princeton Avenue;**

The Mant-4 beach profile is located at the seaward end of Princeton Avenue along the municipal dune walkover. This site is located approximately midway between the #1117 and #1543 Ocean Avenue sit

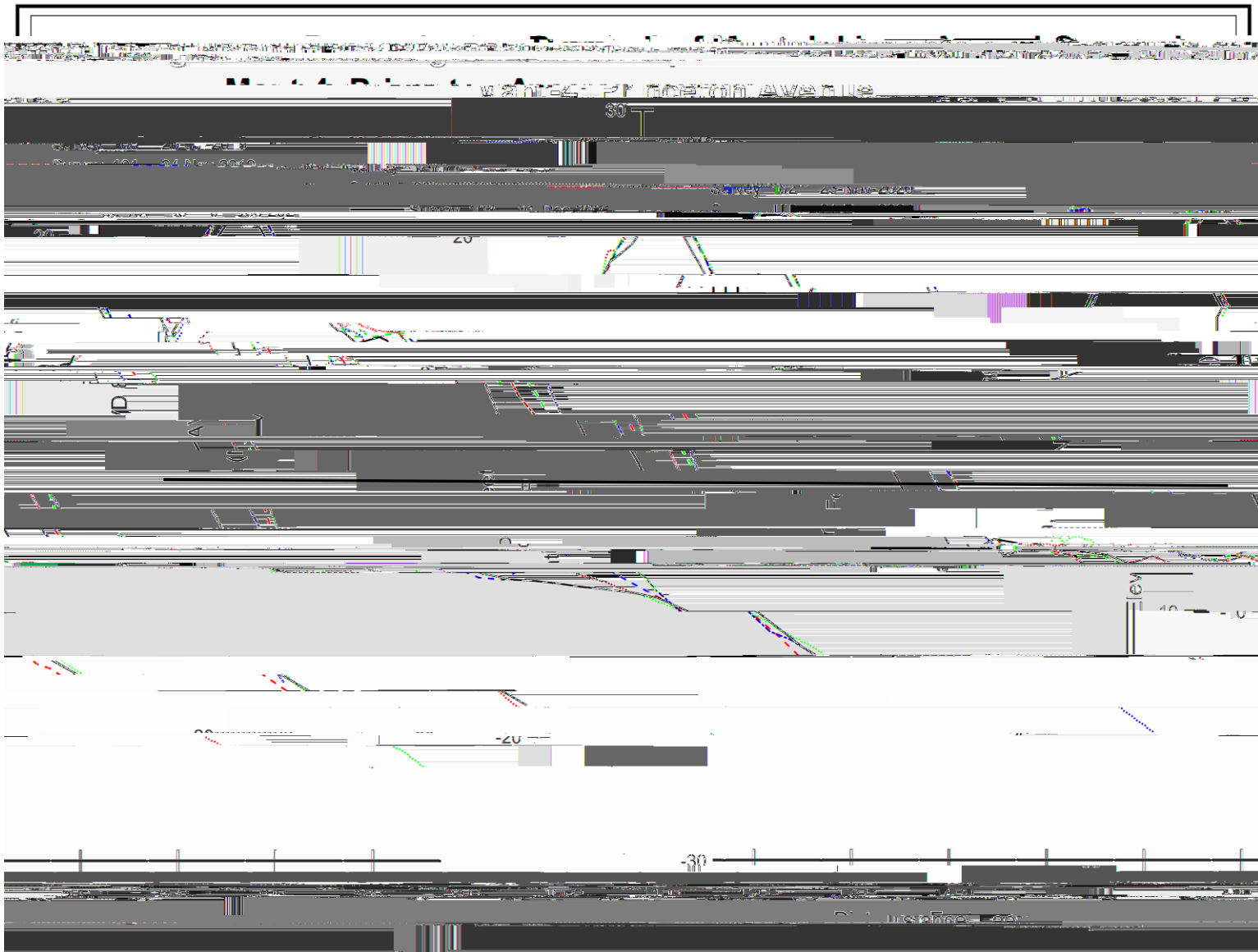


4a. January 19, 2018



4c. December.47 Tm0 g0 G[Jan)-3(u)-3(ar)4(y 19, 2018)]TJETQ080 Do 80.000011802 0 792 612 re.47 Tm0 g0 G[Jan)-3(u)-3(ar)4(y 19, 2018)]TJE

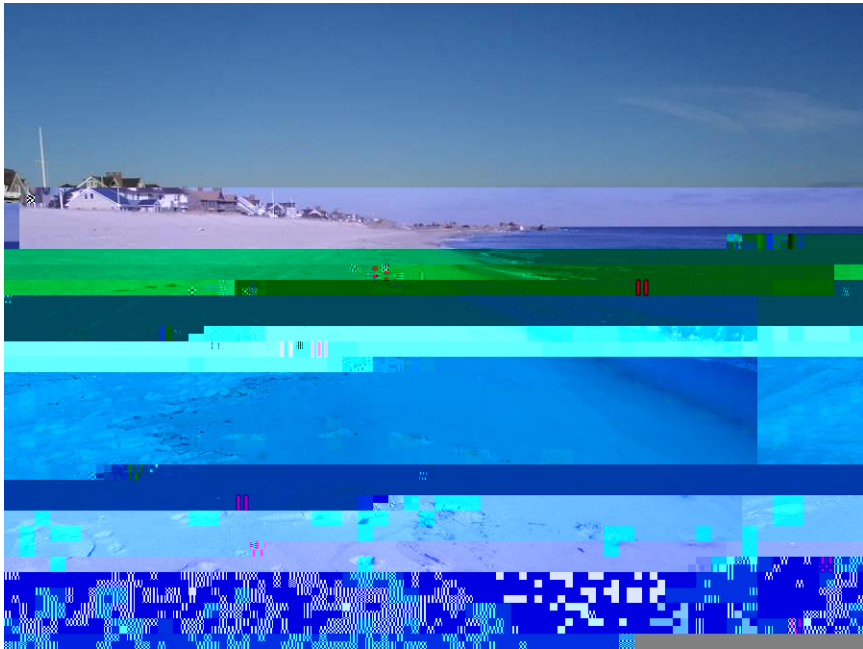




**Figure 4d:** This series of four surveys presents the most erosional picture along the Borough oceanfront. A total of 36.63 yds<sup>3</sup>/ft. in sand volume was lost between Nov. 2020 and Dec. 2021. The shoreline retreated 38 feet as well. Sand present offshore in Nov. 2020 diminished as well, but the final toe well offshore remained constant among the four surveys.

**Mant-51 #1543 Ocean Avenue;**

This monitoring site was initially located on private property between the homes at #1547 and #1549 Ocean Aven



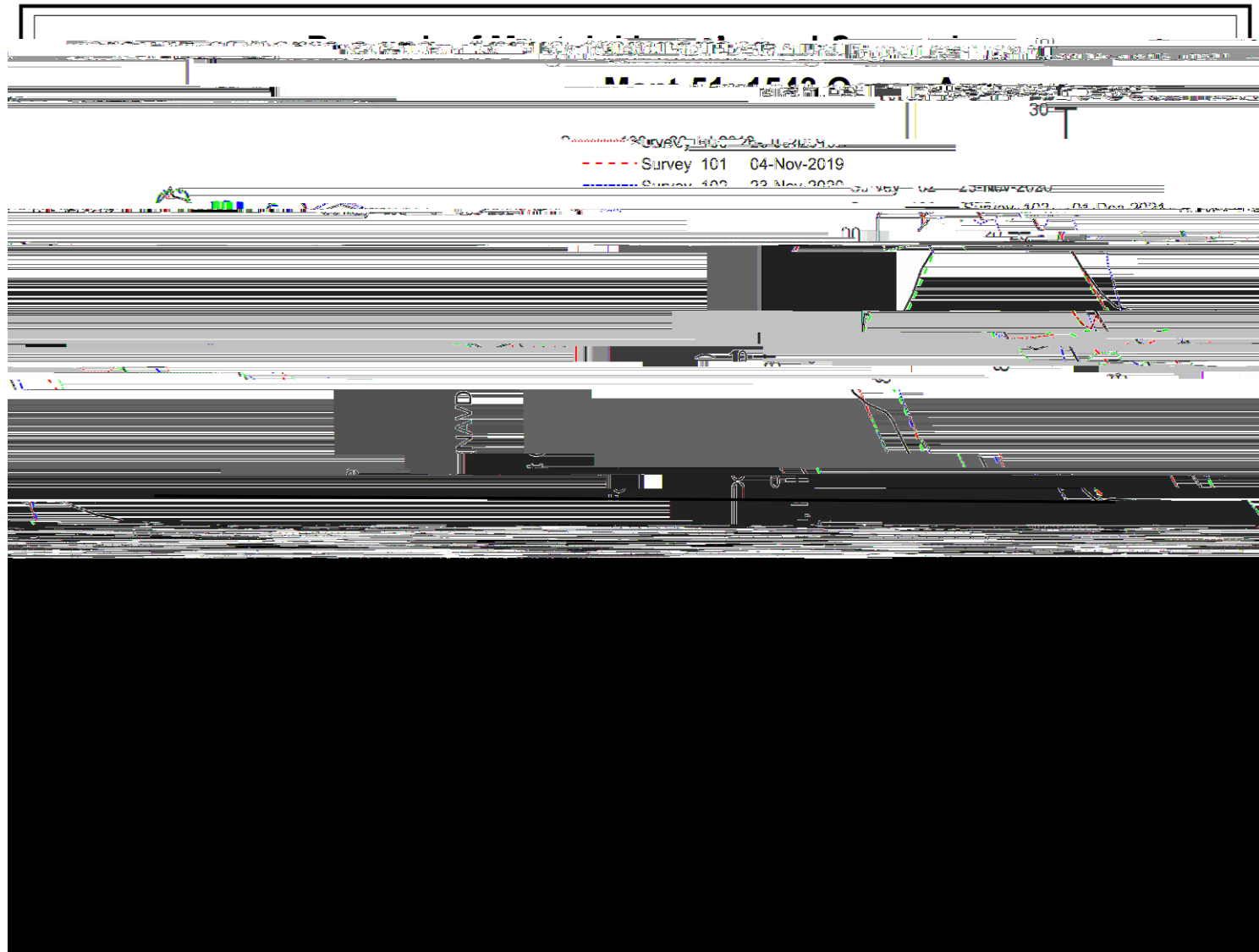
5a. December 21, 2017



5c. December 1, 2021

5b. November 23, 2020

*Mant-51 Photographs 5a to 5c. All views are to the north from the beach access or the berm*



**Figure 5d: The southern site did not see dune breaching during Sandy because of the greater width of the feature. The July 2019 survey shows the new primary dune with a deep trough between it and the old primary dune. This was filled in by Nov. 2019 and graded into the dune profile surveyed since. The beachface slope and adjacent nearshore region gained large volumes of sand compared to other sites between Nov. 2020 and Dec. 2021. Further seaward the 4 surveys become parallel to each other indicating little change.**

**Conclusions:**

As of completing the December 2021 survey series, the CRC found that **12.48% of the 1,377,081 cubic** points either further seaward than the surveying or moved south into Brick Township. The entire northern Ocean County project has been sustained by sand supplies never previously available to the modern or historical oceanfront to provide added shore protection.

When the sand volume placed prior to the December 2017 CRC surveys is included in the total sand placement count, the