



TOWN OF KILL DEVIL HILLS
Land Where Flight Began

MEMORANDUM

TO: Mayor and Board of Commissioners

FROM: Rachel Tackett, Office Assistant *RT*

RE: Packet Memorandum and Attachment- APTIM Coastal Planning and Engineering of NC- 2018 Beach Nourishment Annual Monitoring Report (Introductions and Presentations Attachment)

DATE: February 20, 2019

Due to the length and complexity of the report on the first annual profiling and surveying of the Town's beach nourishment project, the packet memorandum and attachments were delivered to the Mayor and Board of Commissioners on February 8, 2019, for review.

Please bring the Packet Memorandum and Attachment- APTIM Coastal Planning and Engineering of NC- 2018 Beach Nourishment Annual Monitoring Report (Introductions and Presentations Attachment) to the upcoming Board meeting.



TOWN OF KILL DEVIL HILLS

Land Where Flight Began

MEMORANDUM

February 8, 2019

TO: Mayor and Board of Commissioners

FROM: Debora P. Diaz, Town Manager 

REF: Packet Memorandum – IP-1 – Beach Nourishment Update

Due to the length and complexity of the report on the first annual profiling and surveying of the Town's beach nourishment project, this memorandum is being delivered to you in advance of the remainder of the packet, which will be completed next Wednesday.



TOWN OF KILL DEVIL HILLS

Land Where Flight Began

MEMORANDUM

February 20, 2019

TO: Mayor and Board of Commissioners

FROM: Debora P. Diaz, Town Manager 

REF: Introductions and Presentations

1. Ken Willson – APTIM Coastal Planning & Engineering of NC - 2018 Beach Nourishment Annual Monitoring Report (Attached IP-1)

The 2018 annual beach profile survey to monitor the beach nourishment project and report on sand loss/gain has been completed by APTIM Coastal Planning & Engineering, and Ken Willson, the project's lead, will be reporting on the findings at this meeting.

There are three components to this report, two are included with this memorandum, and the third, *Appendix A*, is included with the packet materials placed on the Town's website, www.kdhnc.com. Attached are the *Kill Devil Hills Shore Protection Project Beach Maintenance Plan*, and the *2018 Shoreline & Volume Change Monitoring Report*, will be the basis of Mr. Willson's comments.

Planning Director Meredith Guns has prepared a summary of this information, which is attached for your information.

No action from the Board is necessary on this item.

Director of
Planning and Inspections
MEREDITH GUNS

Building Inspector
MARTY SHAW
CHARLES THUMAN

Code Enforcement Officer
JORDAN BLYTHE



**THE TOWN OF KILL DEVIL HILLS
NORTH CAROLINA**

Assistant Director of
Planning and Inspections
CAMERON RAY

Senior Planner
RYAN LANG

Zoning Administrator
DONNA ELLIOTT

PLANNING DEPARTMENT

February 7, 2019

Memorandum

To: Debbie Diaz, Town Manager

From: Meredith Guns, Planning Director *MBG*

Subject: 2018 Beach Nourishment Annual Monitoring Report

As part of the *Town of Kill Devil Hills Shore Protection Project Beach Maintenance Plan*, the Town is required to conduct a beach profile survey annually to monitor the project and report on sand loss/gain. Attached is the 2018 Shoreline & Volume Change Monitoring Report completed by APTIM; the Town's engineering firm for the project. The Kill Devil Hills report includes data from the Southern Shores and Kitty Hawk projects since they are all connected and part of one large project.

To summarize the report, the initial beach profile was completed at the conclusion of the shore protection project in December 2017. This profile serves as the basis for future profiles to determine sand volume changes over time. In very simplistic terms, a beach profile survey is a survey conducted perpendicular to the shore along stations spaced at approximately 1,000-foot increments for the entire length (Southern Shores to Kill Devil Hills) of the project. Each profile extends from landward of the dune out into the ocean to a depth of about 30 feet of water (approximately 3,000 feet off shore). At the time this initial survey was conducted, the engineer recommended additional bathymetric surveying (surveys of the ocean bottom) in "hot spots" areas that extended from East Wilkins Street in Kitty Hawk to East Sothel Street in Kill Devil Hills. The bathymetric survey was conducted in the near shore area from about 10 feet of water out to 30 feet of water. In contrast to the beach profile surveys, these surveys were conducted parallel to the shoreline and at a higher density spacing of 200 feet increments. The purpose of the bathymetric survey was to gather data in these areas to provide a baseline survey of nearshore troughs or depressions, that could be used in the future if needed.

In June 2018, the Year-1 annual beach profile survey was conducted by APTIM, Inc. After initial review of the data and visible observations, the engineer recommended conducting another bathymetric survey but this time of the entire project area. The bathymetric survey was conducted in October 2018. For the Town of Kill Devil Hills the report shows a volume loss of 27.4% when comparing the June 2018 beach profile with the December 2017 beach profile. Given the fact that the Mean High Water shoreline only moved landward an average of -6.9 ft. during this time and the visual observations of the beach, the engineer concluded that the volume change calculated based on beach profile surveys alone, is likely not accurately capturing volume changes.

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ATTACHMENT IP-1

In order to test this conclusion, the engineer computed volume changes using the available bathymetric surveys. This comparison could only be done in the area that was previously surveyed in 2017 (Wilkins Street in Kitty Hawk to Sothel Street in Kill Devil Hills). This comparison indicated a volume loss approximately 32% less than what was computed using the beach profile surveys only. The engineer's theory is that the parallel survey (bathymetric) provide a higher resolution, which is required to accurately assess volume changes occurring in the nearshore depressions.

The engineer has recommended conducting both types of surveys for the entire project area during the 2019 annual survey. This will help provide a more accurate report of the volumetric change within the project area and explain how the nearshore depressions are effecting the beach. This extensive surveying will also assist the Town if a major storm affected the project and the Town became eligible for Federal assistance to rebuild the project.

Also attached is the revised *Shore Protection Beach Maintenance Plan*. The plan has been updated to include that the annual monitoring will be supplemented with shore parallel bathymetric surveys due to the presence of the nearshore depressions. Additionally, FEMA issued a new policy guide last year, therefore the plan has been updated to reflect new guidance.

Ken Willson from APTIM, Inc. will be at the meeting to answer any questions you may have.