



March 26, 2021

Iris Hill
Town Administrator
Town of Edisto Beach
2414 Murray St
Edisto Beach SC 29438

RE: Hurricane Dorian Dune Repair Project [CSE 2530]

Dear Iris,

This letter is written in response to comments received by a few homeowners regarding the recently completed post-Dorian repair project. The principle issue voiced by owners appears to be related to the character of the material used for nourishment. This letter is provided to discuss the project rationale, permit requirements, and anticipated evolution of the nourishment sand over the next several weeks and months.

The intent of the project was to restore the volume of sand lost from Hurricane Dorian, which was measured to be ~30,000 cubic yards (cy) of sand. The storm mostly impacted the north end of the Town beach and the area around Point St. The losses in Dorian were in addition to losses resulting from Hurricanes Irma, Michael, and Florence as well as normal background erosion. The multiple storm events left the north end of the Town and Point St in a poor condition, with little to no dry sand berm and a narrow dune. The project design called for addition of 25,000 cy of sand to the north end, and 5,000 cy of sand to Point St. This would add 2-3 years worth of typical erosion losses to each area. The principle incentive in moving forward with the restoration project was the ability to utilize a 75% FEMA cost share for construction costs.

The only permissible method for adding this quantity of sand, that would also be able to be completed within FEMA's required timeframe, is via trucking from an inland source. This type of project is completed under a "minor dune restoration" permit from SCDHEC OCRM. The permit requires that sand be placed along the dry sand beach, meaning that the fill could not be evenly distributed along the entire beach slope. Trucks would deposit sand in piles along the existing dune line, and a bulldozer would spread the sand into a typical trapezoidal dune shape. Notice of the project was sent to all oceanfront owners by certified letter.

CSE anticipated that a significant amount of the sand placed along the dune would be shifted by waves from the dune to the beach slope within a few months of construction. This is a natural process of a beach returning to an equilibrium profile following a change in slope (whether due to a storm event, nourishment, or other physical cause of change). CSE expects that over the next 2-3 months, the majority of sand placed along the dune will have shifted into the wet sand beach. It is likely that areas that have been stable over the past month (on the north side of each groin) will



erode as the typical summer waves push sand to the north (resulting in accretion on the south side of each groin).

Sand for the project was obtained from an inland borrow site located near Ravenel, SC. Several samples of the fill material were submitted to SCHEC OCRM for approval for beach use. The material was tested and confirmed to have less than 2% silt or finer material, and had a mean grain size of 0.17 mm. This is finer than the typical sand found on Edisto Beach, but is characteristic of sand sizes along many South Carolina beaches, especially along the dunes where wind deposits finer sand particles. Due to the smaller grain size, the sand is more likely to move during high winds and is also more likely to stick to feet when wet. For any type of nourishment project, several months of weathering are required to make the added sand appear more like native beach sand. With an offshore project (as was the case with Edisto in 2017), sand often initially appears grey due to the anoxic conditions of the submerged borrow sands and lightens over time when exposed to the air and sun. For an inland project, the sand may be shades of orange, brown, or grey due to minerals in the sand; however, this will also lighten over time due to bleaching from the sun, washing from rain/storm events, and mixing with native sand.

Since completion of the project, the placed sand has shown evidence of adjustment, resulting in formation of escarpments in some areas. The Town's recent effort to push sand from the dune to minimize the escarpment height should be continued periodically, with the most beneficial time to do any work being after a spring tide window or storm event. Observations from late March show that the escarpment in some areas includes native beach sand (below the placed dune sand), indicating that escarpments would be forming regardless of the new dune sand, though they would likely be lower in height. It is highly likely that this upcoming spring tide window will result in further erosion of the dune on the south side of each groin; however, this will depend on the weather conditions. Areas on the north side of the groins are likely to be impacted later in the spring or summer as more dominant southerly waves impact Edisto. CSE will continue to work with the Town to monitor the evolution of the fill and provide recommendations for any remedial work deemed necessary. Please let us know if you have any questions,

Sincerely,

Coastal Science & Engineering (CSE)

A handwritten signature in black ink, appearing to read 'S. Traynum', written over a white background.

Steven B Traynum
Coastal Scientist / Project Manager