TOWN OF SCITUATE

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Egypt Beach Berm

The Town of Scituate would like to take this opportunity to better inform the residents of the work to be done on Egypt Beach starting next week and to correct some inaccuracies that have been reported on Social Media.

The Mann Hill/Egypt Beach cobble berm was engineered and installed in 1979 following the Blizzard of '78. It has been repaired by the Town several times since then, most notably in the March 2018 storm. During that event, heavy equipment was needed during the storm to repair "various breaches" that occurred at the Surfside end of the berm.

The current project is designed to restore the berm to the originally designed 1979 height, while adding stability to the berm so that it can withstand the storm impacts of moderate nor'easters. As stated by our consultant coastal engineer (see attached) "This project is critical for flood protection of properties in the Musquashcut Pond, Mann Hill and Egypt Beach areas." The stones being used are between 3"-12", with the majority of the stones specified being in the 3"-9" range. On the Mann Hill portion of the berm, where the work is nearing completion, 4'-5' of stone was necessary to restore the berm to its original height and profile. The section of berm at Egypt Beach will need considerably less stone, raising the height of the berm from 18"-24".

Having said that, over the past several days the Town has heard from many residents concerned over the impact that this work will have on Egypt Beach. Specifically, the concerns mostly centered on the type of material being used as opposed to the necessity of the work being done. To that end, the Town has spoken to the design engineer and the contractor to ascertain if the new stone could be "buried" deeper in the berm and the existing stone placed back on top to maintain the look, feel and integrity of the beach while at the same time achieving the goal of coastal protection. We are happy to inform the Community that this is a feasible alternative and the contractor has been directed to place the new stone deeper in the berm, than cover it with the existing cobble. The end result will be a berm that aesthetically will look like the existing beach, with a slightly higher profile (again 18"-24") but will provide added protection against coastal storms. In addition, the contractor will be providing access points at Jawl Avenue and Surfside Road. The access at Egypt will be unchanged with the existing boardwalk.

The project to secure the berm at Mann Hill/Egypt Beach has been in the planning and permitting stages for many years. A public hearing, with notification to the abutters, was held by the Conservation Commission on April 22, 2019 and the project was approved by a vote of the Commission. Funding from the federal government (FEMA) is covering 75% of the contract cost of $1,093,185. Not completing the project will not reduce our financial obligations and could put FEMA reimbursements in jeopardy. In addition, not meeting FEMA specifications could disqualify Scituate from receiving funds for future needed repairs.

The Town has heard your concerns and made adjustments to the project in response to those concerns. The work currently being planned for Egypt Beach will not impact the look and feel of the beach but preserve it while providing additional security for residents. It is imperative that the work be completed prior to the winter storm season. We hope that this allays resident's concerns surrounding the Egypt Beach portion of this project.

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Date: **August 18, 2020**

To: **Sean McCarthy, Engineering Supervisor, Town of Scituate**

From: **John Ramsey, P.E. and Morgan Simms, P.G.**

Subject: **Egypt/Mann Hill Beach Cobble Berm Reconstruction**

The Mann Hill/Egypt Beach cobble berm was originally a naturally occurring "shingle" dunes created by erosion and littoral transport of regional glacial materials. After 1957, the Town began to monitor beach elevations along this stretch of shoreline and repair the dune system to maintain foreshore protection. The engineered cobble berm/dune was placed in 1979, repaired in 1992, and again in 2008. The most notable storms to impact the dune system since the late 1950s are the Blizzard of '78, the Halloween Storm of 1991, the December Nor'easter of 1992, Winter Storm Nemo in 2013, and Winter Storm Riley in 2018. During Winter Storm Riley, earth-moving equipment was needed throughout the duration of the storm to repair various "breaches" that formed through the berm over a two-week period in early March 2018.

The purpose for the ongoing berm 'fortification' is to provide added coastal resiliency by reestablishing the form of the previously constructed cobble berm to a level that can withstand the storm impacts associated with moderate nor'easters. This project is critical for flood protection of properties in the Musquashcut Pond, Mann Hill, and Egypt Beach areas. As part of this design, rounded cobble material that is as coarse or coarser than the existing material was specified to maximize the stability of the berm during high energy wave conditions. Sources for this naturally rounded cobble material are scarce, and the contractor found two available sources: one in Littleton, MA and the other in Weare, NH. These sources were screened to ensure the material met the project specifications, where all material is less than 12-inches in diameter, and a majority of the material is in the 3-inch to 9-inch range. The upper limit of 12-inches was based on the observed size of the largest *in situ* material along the berm crest during site surveys in 2017 and 2018. This grain size is compatible with the existing material along the crest of the berm, which generally consists of the 'naturally' coarser-grained material that is pushed into ridges by storm waves.

After the cobble berm material is put in place, winter storm waves will move this material in the cross-shore direction (i.e. perpendicular to the shoreline) and spread the material along the berm profile. The coarsest material will 'self-bury', but provide a more structural core to the cobble berm. Storm waves will reposition the coarsest material into shore-parallel ridges and the finer-grained gravel/cobble will settle between the ridges. Over the next storm season (assuming the area is impacted by moderate coastal storms), the 2020 placed cobble material will mix and become integrated with the previously placed cobble As the cobble sediments are not readily transported by milder wave conditions, this

material is not expected to perform any differently than the existing cobble berm sediments and is not expected to migrate onto Egypt Beach.

During major storms, the engineered berm is designed to gradually shift landward in response to storm wave energy, similar to a natural dune system. While the Mann Hill/Egypt Beach berm is a constructed feature, it functionally acts as a coastal dune; therefore, it is regulated as a dune. State wetland regulations require that coastal dunes be allowed to naturally migrate, where storm overwash is not prevented, but encouraged as part of the natural process. Therefore, these regulations prohibit taking material from the overwash fans in Musquashcut Pond and moving it back onto the Mann Hill/Egypt Beach cobble berm.