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MEMORANDUM

DATE: March 7, 2022

TO: Connie Alexander
Tisbury Planning Board
P. O. Box 602
Vineyard Haven, MA 02568

FROM: Kurt A. Fraser P.E. - President - Fraser Polyengineering Services (FPES) *KRF*
Keith A. Coleman, P.E. Senior Civil Engineer (FPES)

SUBJECT: 4 State Road, Tisbury – Stormwater Management System Review

In response to the March 3, 2022, additional information received we would like to offer the following comments for the revised stormwater system.

- 1) Submitted plans are not detailed engineered plans. Dimensions are not included to determine the location of the system on the site. A comprehensive site plan should include all dimensions and elevations required to construct the designed system.
- 2) Test pit data submitted revealed fill material with no determination of groundwater elevation. No in situ infiltration/percolation test was performed. Design value for the soil permeability was estimated based on a sample of the undisturbed soil at the bottom of the test pits. We feel the estimated design value is not the best method to determine the ability of the existing soils to infiltrate the collected stormwater.
- 3) Our recommendation would be to perform an in-situ infiltration test in a few locations within the proposed stormwater system location to determine an average infiltration rate of the underlying soil. In lieu of additional testing a more conservative infiltration rate could be proposed that would align with common accepted rates for the existing soil type.
- 4) Currently the stormwater system has been designed to infiltrate at the estimated infiltration rate which appears to be a very liberal rate of infiltration that would be unlikely to be sustainable throughout the life of the system.

- 5) Typically, a stormwater management system is designed to collect the total runoff from a specific storm event (25 year/24 hours for this design). The typical system is designed to collect and store the total volume of the specified storm event, which is slowly infiltrated over time into the natural soils surrounding the system. This system does not use this typical design approach.
- 6) The design approach utilized does not store the volume of runoff from the design storm event. The design requires that the relatively small area beneath the proposed chambers, approximately 80 square feet continuously infiltrate the incoming stormwater, with no provision for long term storage of stormwater volume generated by the design storm event.
- 7) We recommend a more conventional design approach with stored volume in additional chambers and a more conservative infiltration rate that will allow for sustained long term functionality.

Best Regards,

Kurt A. Fraser P.E.

President - FPES

Keith Coleman P.E.

Senior Civil Engineer - FPES