



MEMORANDUM

DATE: May 2, 2023

TO: Jean Bubon, AICP, Town Planner
Rebecca Gendreau, Conservation Agent

CC: file

FROM: John P. Shevlin, P.E.

**Re: Engineering Review Services
Blueberry Hill Estates-Site Plan & Special Permit
30 Main Street/20 Fiske Hill Road
4th Review
Sturbridge, Massachusetts
(Pare Project No.: 22088.00)**

Pare Corporation had completed our review of the latest documents provided by McClure Engineering which include the following:

- *Special Permit and Site Plans- Blueberry Hill Estates-55+ Manufactured Housing Community-Lot 3 Berry Farms Road*, dated April 28, 2023, prepared by McClure Engineering, Inc.
- *Stormwater Management Report – “55+ Manufactured Housing Community” – Lot 3 Berry Farms Road*, dated April 28, 2023, prepared by McClure Engineering, Inc.
- *Revision 2 Submittal Memo-55+ Manufactured Housing Community – Justin Stelmok – Blueberry Hill Estates – Lot 3 Berry Farms Road*, dated May 1, 2023, prepared by Peter C. Engle, P.E.

The revisions included within this submittal were based on comments received from the Conservation Commission meeting held on March 30, 2023. The significant revisions stated to be included in the submission are the following:

- Revisions of Units 20 and 21 to reduce impacts within the 200' buffer
- Revisions to Units 53 and 55 to remove structures from the 100' wetland buffer
- Removal of Unit 56 and revisions to the grading, drainage, limit of disturbance and the removal of proposed retaining walls that was performed to reduce the impact within the 200 foot vernal pool buffer
- Revision to Unit 57 to reduce the impact to the 200 foot vernal pool buffer
- Revisions to Units 64 and 65 to remove the structures from the 100' wetland buffer
- Revision to Unit 70 to remove the structure from the 200' vernal pool buffer
- Additional test pits were performed
- Revisions to watershed areas based on the site revisions, and
- The addition of a minimum of one tree planting per proposed unit/lot has been added.

Based on our review, Pare offers the following comments:

PLANS

1. The applicant has added an Open Space Plan (Sheet C-32).
2. Existing Conditions Plans C-2 thru C-5- McClure Engineering performed an additional 38 test pits throughout the site. For the most part, the depth to groundwater was relatively consistent with the test pits performed in 2020. In most cases where they varied there was some additional depth to the groundwater elevation. A couple test pits did indicate less depth to 24". All of these test pits were performed by a registered professional engineer and stamped to be accurate.
3. Applicant states that Unit 53 and have been revised to remove structures from the 100' wetland buffer. Unit 53 was already out of the buffer. Please verify.

STORMWATER MANAGEMENT REPORT

1. The applicant has revised the stormwater report to account for the revised site layout design. Watershed areas and the models for the stormwater design have been revised accordingly. The applicant has maintained a conservative permeability (k) variable for soils for the the design. Based on the results of the analysis, revisions to some of the raingardens have been modified by being widened to account for the reduced infiltration capacity. Pare is in agreement with the revised grading and drainage plans, the corresponding details and the related stormwater analyses.

CONSERVATION DETAILED COMMENTS AGENDA

The following responses are to the comments raised at the March 39, 2023 Conservation Hearing:

1. *Was the Stormwater Report revised? Revision date does not reflect revision.*

The previous submission was revised but the revision date was not added. The latest submission has been revised and correctly noted (4/28/23).

2. *LEC narrative notes that mounding analysis have been added. Was this previously included?*

It is Pare's understanding that the mounding analyses were previously performed but the data was not included with previous submissions.

3. *It was noted that monitoring wells are required. Are these shown on the plans or required to be shown on the plans?*

The details do now indicate monitoring wells.

4. *Document notes NOAA data was used for storm events. This is noted in report for selection of storm events. Stormwater report notes SCS TR-20 and TR-55 for methodology and the subcatchments were modeled using these. TR-55 was used for analysis of peak flow and infiltration basin sizing. Would this sizing be based on the NOAA data? Residents have expressed concern with he potential for downstream flooding.*

The method used for the analyses is in accordance with the latest methodology for stormwater design.

5. *DEP previously commented that “Soil testing confirming the depth to seasonal high groundwater and bedrock should be provided in all areas where infiltration is proposed.” Staff reviewed the plans for test pit locations and it does not appear that each specific location of a rain garden that provides infiltration would have its own test pit. Was each test pit log recorded on a DEP Form 11 or equivalent which can be provided or has been reviewed by the peer reviewer and verified? Is there at least one test pit or boring for every 5,00 square feet of basin area with a minimum of three subsurface investigations per basin within the footprint.*

Additional test pits were recently performed at the rain garden areas and within the basin area. The information provided is in general conformance with previous data provided. The test pits were not observed by Pare. They were however confirmed and stamped by a Registered Professional Engineer and Soil Evaluator.

6. *8 house and multiple drainage structures and outlets are proposed within the 200-foot vernal pool buffer. The board can restrict development in this area. As noted in SWB Regs 365-1.4, Sturbridge has a Vernal pool buffer which states that “the first 100 feet is to be considered the minimum “no disturb buffer”. This buffer may be extended to 200 feet based on site conditions and impacts to critical wildlife habitat needed to keep the pool viable.*

Oxbow recommended that the board do so and staff support this also. Some of the drainage structures are proposed in areas of steep slopes and overflow will pick up velocity and eventually could create channels towards the wetlands. Some of these structures and outlets are located within tin 100 feet of the wetlands in which the vernal polls are located within. Impacts to water quality and hydrology of the vernal pools from stormwater runoff is a concern. Creating more distance is recommended.

The design does include means to help reduce velocity of stormwater and for dispersion of the flow. The shorter paths do also contribute to less channelization of flow which will help limit the amount of erosion.

In summary, Pare is satisfied with the revised design changes and the stormwater revisions. We are available to discuss our comments andy any other outstanding items at the next Board/Conservation Commission meeting. In the meantime, if you have any questions, please feel free to contact me.