



August 7, 2024

Andover Planning Board  
Town Office  
36 Bartlett Street  
Andover, MA 01810

Attn: Ms. Jacki Byerley, Town Planner,

RE: Response to Initial Peer Review of the Stormwater Design  
Eden Estates – Definitive Subdivision @ 9 Bancroft Road, Andover, MA

The Horsley Witten Group, Inc. performed a peer review of the stormwater design for Eden Estates and provided comments to the Board as outlined in their letter dated June 17, 2024. The following responses address each of the comments:

1. *Standard 1 states that no new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*

Response: It is our understanding that this standard has been met.

2. *Standard 2 requires that stormwater management system shall be designed so that post- development peak discharge rates do not exceed pre-development peak discharge rates.*

- a. *July 24, 2024: The Applicant has adjusted the catchment areas as noted above and compared the pre- and post-development design points as suggested. HW has the following comments regarding the proposed grading as provided on Sheet 4 of 8.*

- i. *HW recommends that the Applicant provide the proposed 298-contour at the intersection with Bancroft Road and Eden Lane.*

Response: The proposed 298 contour has been added at the intersection.

- ii. *HW notes that the 286-contour provided west of the infiltration basin adjacent to the property line does not appear correct. It appears that the 286-contour is primarily located west of the property boundary.*

Response: The proposed 286 contour on the east side of the property boundary has been eliminated.

- c. *July 24, 2024: The Applicant has noted that a storm drain was installed along the property line between Lots 59-29A and 59-30. HW was not able to locate this drain and recommends that the Applicant clarify if it is proposed or existing.*

Response: The storm drain east of the property boundary is existing. The Town Engineer provided the information, and a copy accompanies the letter.

- d. *July 24, 2024: The Applicant has adjusted the curve numbers as suggested. HW recommends that the Applicant clarify whether the area between the proposed 288-contour and the existing 290-contour on the west side of Lot #2 will be altered and has been modeled accurately. This area is outside of the Construction Limits.*

Response: The area to the west of Lot #2 between the 288 and 290 contours will not be altered. The grading and construction limits have been revised.

- j. July 24, 2024: The Applicant is proposing to discharge stormwater from the basin via a 12-inch pipe set at a slope of 9.5%. HW recommends that the Applicant reduce the slope if feasible to avoid a 10-foot trench excavation. HW further recommends that prior to approval confirmation from the Department of Public Works is obtained, confirming that the municipal pipe can manage the flow.

**Response:** If the slope is reduced, the excavated trench will get deeper. Once the drainage issues have been adequately resolved, a confirmation letter from the Town Engineer will be requested.

- j. July 24, 2024: The Applicant has removed the riprap swale and replaced it with a 100-foot-long grass swale located near the western property boundary. The grass swale has spot grades of 290.4. It is not clear where the proposed 290-contour appears in this area. HW recommends that the Applicant confirm the spot grades provided are accurate.

**Response:** The grading has been modified.

- l. July 24, 2024: The Applicant has provided individual drywells to manage the roof runoff. The drywells consist of crushed stone and are 22 feet long, 15 feet wide, and 3.5 feet deep. A 12-inch perforated pipe is proposed down the center of the crushed stone. HW recommends that the Applicant include two 12-inch pipes set 5 feet on center, instead of one set 7.5 feet on center to more evenly distribute the roof runoff.

**Response:** The individual drywell design has been modified.

- n. July 24, 2024: The Applicant has routed subcatchment area SC-5 through a grass channel located on the east side of the proposed road. It appears that subcatchment SC-6 should also be routed through a channel shown along the western property boundary

**Response:** The Grassed Channel (formerly Biofilter Swale) in SC-5 is detailed on sheet 6. The Drainage Channel in SC-6 is for conveyance only.

**3. Standard 3 requires that the annual recharge from post-development shall approximate annual recharge from pre-development conditions.**

- a. July 24, 2024: In our initial review letter, HW had noted that the estimated seasonal high ground water (ESHGW) elevation for the infiltration basin was 282.43 based on Test Pit #1. However, it appears that Test Pit #2 which is less than 25 feet from the revised basin has documented the ESHGW elevation at 286.5. The size of the basin has increased significantly, and the bottom of the basin is at elevation 285.5. HW recommends that the Applicant raise the bottom of the basin to be at elevation 286.5 and eliminate the exfiltration rate in the HydroCAD model. The Applicant will need to update the recharge calculations incorporating the other stormwater practices proposed. HW suggests that the Applicant consider revising the grass channel on the east side of the roadway to a bioretention swale or an infiltration swale if feasible, including a pea stone diaphragm along the edge of the roadway to provide pretreatment.

**Response:** Three test pits located in the basin have been performed and the results added to sheet 4. The results of the testing indicated the basin with modifications is adequate for an infiltration basin. The drainage calculations have been revised and accompany this letter.

- b. July 24, 2024: The Applicant has clarified the use of 1.02 iph as the K value and revised the recharge volume calculation. However, as noted above, HW recommends that the Applicant provide recharge calculations using an infiltration practice on the east side of the proposed road and the drywells for each of the proposed houses. Additional soil testing may be necessary if the Applicant uses these practices to meet its recharge requirement.

**Response:** No infiltration credit is given for Grassed Channels. Additional soil testing has been done in the drywell areas, however, there is adequate capacity in the basin for the required recharge volume.

- c. July 24, 2024: The Applicant has provided a mounding analysis as requested. HW recommends that the Applicant provide documentation clarifying how each of the input values was determined.

**Response:** The backup information for the mounding analysis has been added to the revised stormwater report.

5. *Standard 4 requires that the stormwater system be designed to remove 80% Total Suspended Solids (TSS) and to treat 1.0-inch of volume from the impervious area for water quality.*

- a. *July 24, 2024: The Applicant has adjusted the TSS worksheet and provided a detail for the drainage swale. HW notes that the detail appears to be for a stormwater conveyance and not for a water quality swale. Additional information is needed, potential check dams and plantings to contain the stormwater with the intention to slow down the runoff and provide treatment.*

**Response:** The Grassed Channel (formerly Biofilter Swale) in SC-5 is detailed on sheet 6. The Drainage Channel in SC-6 is for conveyance. The TSS worksheet is correct.

- b. *July 24, 2024: The Applicant has adjusted the TSS worksheet as suggested. HW now questions the ability of the proposed basin to provide infiltration if the groundwater is higher than the bottom of the basin. HW recommends that the Applicant reconsider the design.*

**Response:** Please see the response to item 3.a above.

- c. *July 24, 2024: The Applicant has included the calculation as requesting using a total impervious area of 0.3 acres. HW was not able to confirm this value and recommends that the Applicant clarify how it was determined.*

**Response:** The impervious area includes the three (3) roofs and driveways and the proposed paved roadway. These areas total 24,890 s.f. or 0.57 areas. The calculations have been revised accordingly.

- d. *July 24, 2024: The Applicant has noted that it met this requirement by retaining 1.0 inch of stormwater by the total post-construction impervious surface area. As noted above HW was not able to confirm the value of 0.3 acres and recommends that the Applicant clarify how it was determined.*

**Response:** See response above for 4.d.

6. *Standard 5 is related to projects with a Land Use of Higher Potential Pollutant Loads (LUHPPL).*

**Response:** Standard 5 is not applicable.

7. *Standard 6 is related to projects with stormwater discharging into a critical area, a Zone II or an Interim Wellhead Protection Area of a public water supply*

**Response:** Standard 6 is not applicable.

8. *Standard 7 is related to projects considered Redevelopment.*

**Response:** Standard 7 is not applicable.

9. *Standard 8 requires a plan to control construction related impacts including erosion, sedimentation or other pollutant sources.*

- b. *July 24, 2024: The Applicant has included a Tree Removal Exhibit in the Stormwater Report. It is not clear how many trees will be removed though there is a 10-inch Apple tree within the right of way and a second Apple tree along the path of the drainpipe. HW defers to the Planning Board if additional clarification for the total number of trees being removed is required.*

**Response:** It is our understanding that the Board has addressed this issue.

- d. *July 24, 2024: The Applicant has included a Limit of Construction designation within the property boundaries. As noted previously, HW recommends that the Applicant clarify whether the area between the proposed 288-contour and the existing 290-contour on the west side of Lot #2 will be altered.*

**Response:** See response above for 2.d.

- e. *July 24, 2024: As stated previously, the Planning Board may choose to require receipt of the SWPPP as a condition of approval.*

**Response:** The applicant will comply with the final Conditions of Approval.

**11. Standard 9 requires a Long-Term Operation and Maintenance (O & M) Plan to be provided.**

- a. July 24, 2024: The Planning Board may choose to require receipt of the signed O&M Plan or the Home Owners Association documents as a condition of approval.

**Response:** The O&M Plan has been prepared as a separate document and will be part of the HOA Documents.

**12. Standard 10 requires an Illicit Discharge Compliance Statement to be provided**

- a. July 24, 2024: The Planning Board may choose to require receipt of the signed Illicit Discharge Compliance Statement as a condition of approval.

**Response:** The Illicit Discharge Compliance Statement has been prepared as a separate document and signed by the Applicant. The document accompanies this letter.

**13. Earth Movement Permit**

- a. July 24, 2024: The Applicant has updated the Earthwork Quantities Cut/Fill Map. However, HW notes that the area between the proposed 288-contour and the existing 290-contour on the west side of Lot #2 has not been included. HW recommends that the Applicant revise the proposed grades within this area or add the fill quantities that will be needed.

**Response:** The earthwork quantities have been updated based on the latest revision of the plans.

Should you require any additional information or questions concerning the responses, please do not hesitate to contact me at your convenience.

Sincerely,



Daniel Koravos, P.E.

*DK Engineering LLC*