

March 21, 2023

Mr. Paul Foley
Director of Planning and Economic Development
Planning & Economic Development
Town of Fairhaven
40 Center Street
Fairhaven, MA 02719

Re: Definitive Subdivision Plan - Starboard Drive Estates, off Sconticut Neck Road
(Map #42, Lots #9D, #9E and Portion of Lot #9A), Fairhaven, MA.

Dear Mr. Foley:

GCG Associates, Inc. has reviewed the following information for the Starboard Drive Estates, Definitive Subdivision Plan, off Sconticut Neck Road in Fairhaven, MA with respect to stormwater related requirements under Chapter 322 - Subdivision of Land, Chapter 194 - Stormwater Management, and Chapter 198-31.1 - Stormwater Management.

Plan References:

Definitive Subdivision Plan – “Starboard Drive Estates” off Sconticut Neck Road in Fairhaven, MA., prepared by Schneider, Davignon & Leone, Inc. (SDL) dated September 08, 2022, last revised 2-24-2023, consists of:

- Sheet 1 - Cover Sheet
- Sheet 2 – Lotting Plan
- Sheet 3 – Existing Conditions Plan
- Sheet 4 – proposed Grading & Utility Plan
- Sheet 5 – Roadway Plan and Profile
- Sheet 6 – Roadway Plan and Profile & Details

Updated plan sheet three with soil test pits locations through email.

Documents:

Planning Board Cover Letter dated February 24, 2023, prepared by SDL.

Response letter dated February 06, 2023, prepared by SDL.

Long Term Pollution Prevention Plan and Illicit Discharge Compliance Statement, dated 2-7-2023 and 03-07-2023, prepared by SDL.

Water Depth Observations sheet prepared by John Rockwell, dated February 17, 2023.

Stormwater Report, Starboard Drive Estates, Fairhaven, MA Prepared by Keri William, P.E., KW Engineering, dated September 7, 2022. Last revised February 24, 2023.

Based upon our review of the above information, we offer the following comments with respect to compliance with Stormwater related requirements of the Town Bylaws: Chapter 322 - Subdivision of Land, Section 26 Stormwater Management; 194 - Stormwater Management (Land Disturbance Permit); Chapter 198-31.1 – Zoning - Stormwater Management. The numerical section of the regulations is referenced at the beginning of each comment unless it is a general comment. GCG latest comments shown in “Blue.”

GENERAL PLAN AND DEVELOPMENT COMMENTS

The following are general stormwater related comments with respect to the plans and development of the project.

1. 198-31.1. B. (1) – This subdivision consists of 8 Lots and is required to meet the Town of Fairhaven Zoning Chapter 198-31.1, Stormwater Management standards.
2. 194-4(A)(1)(a) - This development requires a Land Disturbance Permit with the Fairhaven Board of Public Works. Permit could be exempted per 194-4. A.3. [Under 194-4. A.3. - the applicant could submit written determinations from Planning Board or Conservation Commission to the Board of Public Works to qualify for exempted project.](#)
3. This project requires an US-EPA National Pollutant Discharge Elimination System (NPDES) permit and associated Stormwater Pollutant Prevention Plan (SWPPP) filing.
4. There are wetland resource areas delineated on the property. The property is in the Zone VE Costal Flood Zone with Velocity Hazard (wave action). A Notice of Intent will be filed with the Town of Fairhaven, Conservation Commission. [Project is under review by the Conservation Commission.](#)

Plan Sheet 1 – Cover

1. No stormwater related comments.

Plan Sheet 2 – Lotting Sheet Existing Conditions Plan

1. No stormwater related comments.

Plan Sheet 3 – Existing Conditions Plan

1. Show and clarify soil test pit locations. There were seven test pit symbols shown on this plan and three marked T.P. D-2. There were three Test Pit Data (Soil logs) shown on plan sheet 6. The applicant should identify and number all soil test pit locations and provide associated soil logs for proposed drainage system and demonstrate the system meets the minimum separation from the estimated seasonal high groundwater (ESHW). [Soil test pit locations were updated on](#)

this plan sheet sent through an email. The soil pit locations should be added to the final plan set.

Plan Sheet 4 – Grading and Utility Plan

1. MassDEP “Standard Design Guideline for Shallow UIC Class V Injection Wells” – Minimum Setback Distance table, footnote [5] – Proposed roof drain infiltration chambers system is classified as Shallow UIC Class V Injection Wells. “A 50-foot setback distance from Title 5 soil absorption systems applies to all stormwater UIC wells” is required. Lots #1 & #2 roof drain chambers system do not meet the 50-foot setback to the Title V soil absorption systems. [Resolved](#).
2. MassDEP “Standard Design Guideline for Shallow UIC Class V Injection Wells” – depth requirements (1)(a) – two feet for all stormwater wells. The bottom of proposed roof drain chambers systems are approximately three feet below finish grade. Based on the soil logs shown on plan sheet 6, the ESHW is between 19” to 25” below surface. Roof drain infiltration system do not meet the 2-foot separation to ESHW. (Additional comments in Stormwater Report). [Based on the soil test logs, the ESHW for Lots 1, 2, 3, 4, 7, and 8’s roof drain infiltration chambers systems are acceptable. However, Lot number five roof drain infiltration system \(Class V Well\) is within the fifty feet wetland setback requirements. The proposed system is approximately 33’ from wetland flag #4-R, and this series of salt marsh wetland flags are located above the 4’ contour. This area is designated as HSG ‘D’ soil and not suitable for infiltration. GCG recommends relocating or removing the infiltration system on Lot 5.](#)
3. 198-31.1. C.(2)(g)[6][d] - Design standards require all basins/ponds designed for stormwater runoff control shall have side slopes at a no steeper than a 4H:1V grade. Ponds A & B have 3H:1V side slopes. [Waiver requested. The proposed 3H:1V side slope meets the Massachusetts Stormwater Handbook requirements. Granting the waiver should not have any adverse impacts to the basin system.](#)

Plan Sheet 5 – Roadway Plan & Profile

1. (Massachusetts Stormwater Handbook) MSH Vol.2, Ch.2, Pg. 78 – Dry Water Quality Swale (WQS) should be provided with pretreatment device. WQS should have a 30” permeable soil (specific soil media mix) and underdrain with a minimum of 2-foot separation to ESHW. The proposed Water Quality Swales (#1 & #2) do not have a pretreatment device and do not have the soil media thickness required and are close to the ESHW. [Resolved](#).
2. 198-31.1. C.(2)(k)[1][d] - Design standards, Pond A forebay is only 0.5 feet deep, (enclosed by a 6” high trap rock berm). (2)(k)[1][d] requires 4’ deep forebay, waiver requested. [The forebay has the volume to contain 0.25-inch times the impervious \(roadway pavement\). This exceeds the MSH’s minimum forebay sizing \(0.1”\) requirements but does not meet regulation \(2\)\(k\)\[1\]\[d\] which requires a 4’ deep forebay, local requirements. Waiver requested.](#)
3. Design Standards (2)(k)[1][b], forebay should be sized to contain 0.25 inches per impervious acre of contributed drainage. Portion of the proposed roadway pavement drains directly to the Pond-A forebay, forebay should be sized to receive the 25% TSS removal for pretreatment credit. [Revised forebay meets the 0.25 inches requirements but not the 4’ deep local requirements. Waiver requested.](#)

4. Detention ponds (A & B) were equipped with a sump and sized with an exfiltration rate, which is an infiltration basin design. (Additional comments in Stormwater Report). Approximately 75 % of Pond-A and 100% of Pond-B are in the Hydrologic Soil Group 'D' area and not suitable for exfiltration. Based on the soil test logs, Basin A has the 2 feet separation between the bottom of the basin to ESHW and is suitable for an infiltration basin. Basin B will not meet the minimum 2' separation requirements and has been redesigned as a dry detention basin. The bottom of Basin 'B' is most likely within a foot of the ESHW and could become a wetland basin which will not affect the function of the detention basin, but the maintenance may have to be modified if it becomes a wet basin.
5. Detention Ponds A & B as shown are infiltration basins, both ponds do not have the 1-foot of freeboard required (MSH Vol.2, Ch.2, Pg. 90). The emergency spillway should be sized based on Brimful conditions. Basin 'A' was designed as an infiltration basin. This basin has 0.5' freeboard and 1 foot is required by the MSH. A waiver has been requested. The emergency spillway was sized to accommodate the brimful conditions without overtopping the earth berm.
6. Ponds A & B's earthen berm will be constructed with fill material approximately 1.5' to 2' above existing grade in the coastal velocity zone. The top of the berm is only 4-foot wide. GCG recommends the width of earth berm be increased to minimum 10-foot width with an impervious core to secure the earthen berms. The entire site is in the coastal velocity zone 'VE' (EL. 17 to 20) with wave elevation 13 feet higher than the proposed top of earth berm. The eastern side of basin 'A' and the southern side of basin 'B' along the cul-de-sac have a berm width of 4 feet. GCG recommends providing earth berm design to protect against the coastal wave action.
7. The proposed Basin 'A' outlet should be equipped with three (3) – 6-inch diameter pipes as used in the HydroCAD calculations. (Also shown on sheet 6)

Plan Sheet 6 – Roadway Plan & Profile

1. The Cul-de-sac forebay does not have a sump. A sump sized to contain 0.25 inches per impervious acre of contributed drainage should be provided. An outlet control structure detail should be provided. Drainage HydroCAD calculations were based on a 6" round culvert outlet with invert at the bottom of forebay (elevation 5.5), which provides no storage for sediment and defeats the function of a forebay. Cul-de-sac forebay removed, resolved.
2. MSH Vol. 2, Ch. 2, Pg. 15 – Unless part of a wet basin, post construction sediment forebay must be designed to dewater between storms. The bottom of the forebay should be at a minimum of 2 feet above seasonal high groundwater. The cul-de-sac forebay bottom grade is approximately 0.5 feet below existing grade. Based on the three soil logs, the forebay bottom is less than 2 feet above ESHW separation requirements. Furthermore, the forebay is in HSG 'D' soil, applicant should demonstrate that forebay exfiltrating/dRAINING between storm events. The soil test logs indicated there is 2 feet separation between the bottom of basin to ESHG. Resolved.
3. Outlet Control Structure detail should be provided. Resolved.
4. Roof drain leader overflow control detail should be provided. Calculations included a 4" vertical orifice/grate to discharge the excessive roof runoff, which is a typical roof drain leader overflow design, provide connection details. Resolved.

5. 198-31.1 (Article 37) – Amendments. 198-31.1. (1)B(1) - Proposed roadway pavement is classified as new-development and requires a 90% TSS removal and 60% of Total Phosphorus, based on average annual load. The applicant is considering this development as redevelopment and requesting the Planning Board treat it as such. GCG’s interpretation of the new-development condition was based on the MSH which considers all new pavement as new development. However, if a development proposes gravel roadway in a new project, the Town would be most likely to treat it as an impervious surface. Therefore, CCG does not object to the argument that this is a redevelopment project. Nevertheless, the status should be decided by the Board.
6. The roof runoff is considered clean water and requires not treatments. However, a minimum of two feet separation between the bottom of infiltration system to ESHW should be provided. Lots #4, #5, #6, and portion of the #7 roof drain infiltration system are in HSG ‘D’ area, which is not suitable for infiltration. Lot #5’s infiltration system is within the 50 feet wetland setback and should be relocated.
7. 198-31.1. C. (2). (n).[6] – Requires storm drains shall be at least 12 inches diameter, with at least 24” cover, all drainpipes except subdrain shall be reinforced concrete or ADS and reinforced concrete Class IV pipe if having less than 48 inches of cover within a street right of way. The project proposes triple 8 inches diameter ADS pipes for a driveway culvert, 6 inches ductile iron pipe culvert under the cul-de-sac pavement, and twin 6” ADS pipes connecting the two detention ponds. All pipes with less than 24” cover. Waiver has been requested. The proposed 6” drains are used to control the basin ‘A’ outflow rate and outside the roadway. Alternately, the small diameter drainpipes could be replaced by an outlet control structure with orifices. This waiver should not have any adverse impacts to the drainage design.
8. Typ. X-Section of Roof Recharge Trench – Finish grade should be 12” minimum to meet the manufacturers minimum cover requirements for unpaved conditions.

Stormwater Report.

MHS and Zoning 198-31.1 - Stormwater Treatment – This project is a re-development and new-development project. The site is previously developed. However, re-development impervious areas are limited to the existing five building roofs only. The proposed new roadway pavement, new building roofs, and enlarged building roof areas are all classified as new development. The design should be revised to meet the following.

1. 198-31.1 amendments adopted 2021 June ATM, Section 3(a), which requires new development to provide the average annual post-development load of 90% TSS removal and 60% TP removal. Section 3(b), which requires redevelopment to provide the average annual post-development load of 80% TSS removal and 50% TP removal standards. (See 2021 June ATM Article 37 for detail requirements.) The redevelopment status should be approved by the Board. Majority of the proposed roadway except for a small section of the cul-de-sac pavement has been treated by the Infiltration basin with forebay pretreatment and a downstream detention basin treatment. GCG considers the drainage design follows the redevelopment conditions.
2. 198-31.1. A.(1)(b). Water quality – the first flush of stormwater runoff should be treated prior to discharge off site. See 198-33 – Definitions – “First Flush” definition for first flush treatment volume calculation formula. Due to the high seasonal water table and HSG ‘D’

soil on site. The applicant is unable to provide the First Flush – 1.25” times the total site impervious surface treatment volume and is requesting a waiver.

3. 198-31.1. A. (1)[2] - Tables 2, 3, and 4 should provide comparison of the 10-year, 24-hour design storm pre-development and post-development volumes to demonstrate the net increases. There appeared to be increased in runoff volume during the 10-yr storm event and the applicant is requesting a waiver. The calculations indicated there will be approximately 0.019 a.f. or (828 c.f.) of runoff volume increase during the 10-year storm event. The applicant has requested a waiver.

Stormwater HydroCAD report – Existing

4. Show flow path for each existing sub-catchment, verify sub-catchments ‘North Wetland’ and ‘Southeast Wetland’ time of concentration (Tc) input. In comparison with these two sub-catchments with ‘Southwest Wetland’, which consisted of 50 feet sheet flow of 14.6 minutes, which should be similarly applied to sub-catchment ‘North wetland’ and ‘Southeast Wetland’ (both shown 6 minutes Tc through direct entry). [Resolved](#).
5. Sub-catchments North Wetland, Southeast Wetland, and Southwest Wetland utilized Woods area with ‘Fair’ hydrologic conditions. There is no evidence to support the Woods areas were grazed but not burn as defined in ‘Fair’ conditions, (see SCS TR-55 Table 2-2c Woods footnote #6 for ‘Fair’ definition). GCG recommends using ‘Good’ conditions for the Woods coverage in both pre-development and post-development conditions. [Resolved](#).

Stormwater HydroCAD report – Proposed

6. Sub-catchments Pond A and Pond B should use the pond surface area at 100-year event peak instead of the pond bottom as water surface (CN value 98), to match the exfiltration rate specified ‘over the surface area’ in the Detention Pond-A and Detention Pond-B modeling. Minimum Tc should be 6 Minute instead of 10. [Resolved](#).
7. Sub-catchment houses 1 through 8 should be modeled with minimum Tc of 6 minutes. [Resolved](#).
8. Show flow path for each proposed large sub-catchment, verify Tc value for sub-catchments North Wetland and Southeast Wetland (SE), see pre-development Tc comments. [Resolved](#).
9. Sub-catchment East Entrance should include the existing pavement area in the Sconticut Neck Road right of way, (matching the existing conditions watershed boundary). [Resolved](#).
10. Sub-catchment North Wetland’s Woods coverage become ‘Good’ hydrologic conditions. The same watershed in pre-development conditions was assigned ‘Fair’ conditions. GCG recommends using ‘Good’ conditions for all woods coverage in both pre-development and post-development conditions, including proposed sub-catchments SE and SW. [Resolved](#).
11. Ponds Lot 1, Lot 2, Lot3 and Lot 8 - Roof Recharge Trench(es) are in HSG ‘C’ and ‘C/D’ soils, Pond Lot 7 is partially in HSG ‘D’ soil. Ponds Lot 4, Lot 5, and Lot 6 are in HSG ‘D’ soil. The HydroCAD exfiltration rate was based on HSG ‘B’ soil. Even though, the three soil logs show sandy loam soil on site, but the proximity of the ESHW will not support the exfiltration rate. The roof trench would not meet the two feet separation to ESHW

requirements. Lot 5 infiltration system should be relocated to outside the 50' wetland setback.

12. The proposed detention Pond A and Pond B were labeled as a detention basin, which receives no TSS removal credits. (MSH Vol.2, Ch. 2, Pg. 108). However, the HydroCAD modeling utilized a sump below outlet invert and assigned with a HSG 'B' exfiltration rate, with draw down calculations and water mounding calculations. All the necessary calculations for infiltration basin design. The two proposed ponds/basins are in HSG 'D' soil area, where infiltration system is not recommended. Due to the proximity to ESHW, the forebays do not meet the minimum two feet separation to ESHW requirements. Resolved.
13. Applicant should provide calculations to demonstrate the new development and redevelopment meeting the First Flush water quality treatment, TSS, and TP removal requirements. First Flush water quality treatment waiver requested.
14. The site is restricted by the HSG 'D' soil and the shallow ESHW, controlling runoff peak and volume by infiltration and utilizing soil media filtering (water quality swale, sediment forebay) are not practical. Applicant could consider wet BMPs (wet swale, constructed wetland/wet pond with wet forebay treatment) in series to meet the TSS & TP removal requirements. MSH does not specify any separation between bottom of dry detention basin to ESHW. The handbook mentioned that if the water table is within two feet of the bottom of the basin, the basin may experience problems with standing water. GCG recommends the O&M operator to monitor the detention basin and modify the maintenance procedure as necessary.
15. Operation and Maintenance plan should be updated with the BMPs comments above and revisions. Plan should include sample inspection form and operation budget. O&M should reference plan sheet 6's operation and maintenance notes. Street sweeping (minimum twice per year, early Spring, and late Fall) should be mandatory as part of the O&M plan. An annual operation should be provided.
16. An Illicit Discharge statement should be provided. Resolved.

Review Summary

The general drainage mitigation concept is based soil media pre-treatments (water quality swale) and in infiltration/detention ponds (roof trench and infiltration basin) with sediment forebay pre-treatments which requires a deep ESHW and well drained soils. The ESHW is within two feet of the ground surface which also affects the exfiltration rate. GCG recommends utilizing wet BMPs as recommended by the MSH to provide treatment for high ESHW. The proposed drainage system is relatively sound with the limitation of high seasonal water table and HSG 'D' soil (high water table related) on site. However, the entire development is within the Coastal Velocity zone. The drainage BMPs performance are subject to coastal tide and wave action.

If you have any questions, please call.

Respectfully submitted,
GCG ASSOCIATES, INC.

Michael J. Carter

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Project Manager