OVERVIEW

This letter presents the report for approval of the variances from code for the subject property's proposed on-site wastewater treatment system. The site currently consists of multi residential units. There are currently five units. This project consists of adding one additional affordable housing unit. This is a residential project and does not consist of commercial strength waste. The water use records for the past year and a half document the average daily water use for the existing units is currently 340 gallons per day.

Based on the review of monitoring data from the Marin County Environmental Health Department (MCEHS) the average use per residential home is 100 gpd. This project consists of 6 units of housing. Based on the existing water use numbers at this property from Stinson Beach Water District data and the average residential housing use from MCEHS monitoring records the addition of this unit will not cause the project to exceed 600 gpd.

The property consists of five units of residential housing which are approximately 2,200 square feet. The discharge permit allows for daily flows of 600 gpd which can accommodate habitable square footage between 2,801 and 3,300 square feet. The property’s total habitable square footage will be no more than 3,300 square feet which meets Section 4.15.621 Design Flow criteria and does not constitute an increase in permitted design flow.
The existing system consists of a 1,500-gallon concrete septic tank and a 1,500-gallon concrete pump chamber followed by dual capacity raised bed leachfields combined with two-feet of coarse sand for treatment. Each leach field is 1,512 square feet. The tanks are 25-feet and the leach fields are 50-feet, respectively, from the two watercourses that intersect the property.

The soils generally consist of gravelly loams underlain by gravelly sand alluvium to depths of 36-inches. A groundwater monitoring well was installed to a depth of 27-inches and there was no groundwater in the monitoring well on December 30th, 2021 after significant rainfall. The existing leach field meets the 36-inches of separation from groundwater.

We propose significantly improving the existing system and installing a new secondary pretreatment system consisting of a new 1,500-gallon concrete recirculation tank with an Advantex recirculating textile filter unit capable of treating 600 gpd.

The proposed system will require a total of three variances from the following two sections: Site Criteria and Use of Alternative Wastewater Systems Designs of the Stinson Beach County Water District Title IV Wastewater Code. The following is a list of proposed variances:

**Section 4.19.010: Use of Alternative Wastewater Systems Designs.** The current permitted system is a raised bed system with two-feet of coarse sand to provide pretreatment before discharge to native soils. The proposed improvement to the system will add a secondary pretreatment unit prior to the existing pretreatment and leach field. The addition of another secondary pretreatment unit will reduce BOD from the average residential strength of 150 mg/L to 20 mg/L before discharge to the existing system. The existing coarse sand bed then becomes an effluent polishing system before discharge to native soils.

We have specified an Advantex recirculating textile filter pretreatment system. Code defines an intermittent sand filter as the standard system to be used, therefore, the proposed use of the recirculating textile system in place of an intermittent sand filter is considered alternative.

**Section 4.15.100: Site Criteria- Setbacks.** A setback reduction for the leach field to the watercourse is required. Code requires a 100-feet setback. The existing
permitted leachfield is currently setback 50-feet from the two watercourses that intersect the property. No changes to the leach field location are proposed.

**Section 4.15.100: Site Criteria- Setbacks.** A setback reduction of tanks to the watercourse is required. Code requires a 50-feet setback. The existing septic tank and pump chamber tank is 25-feet feet from the watercourse. The new recirculation tank/treatment unit is proposed to be 25-feet from the watercourse.

**Findings of Fact**

The following are the responses to Section 4.13.130 “Finding of Fact.”

**Finding 1. Special circumstances and conditions exist on the property that makes strict compliance with the regulations inappropriate.**

Whereas, the lot of record consists of sandy soils, limited area and watercourses, available options for wastewater disposal are limited, requiring the above requested variances. Specifically:

• The project itself is not the cause of the limited available options for wastewater disposal.

• The soils and drainage courses are existing natural conditions.

**Finding 2. The variance is necessary for the preservation and enjoyment of a substantial property right.**

Whereas, approval of the above requested variances would allow for the construction of additional habitable square footage on the property, preservation and enjoyment of a substantial property right will be preserved for the property owners.

• Approval of this project will allow the property to sustain an improved onsite wastewater system. An intermittent sand filter requires 500-square feet of area whereas the use of a recirculating textile filter is only 21-square feet. The use of a textile filter eliminates the need for drain rock and sand and dramatically reduces the impact caused by grading, removal of material and importing of material. The proposed system has minimal impact on the land and native landscapes of the property. This protects the undeveloped natural areas of the property.

The use of a textile filter is a well-established onsite wastewater system and has significant environmental advantages including eliminating large areas of grading and the mining and transport of sand and rock from outside sources. The proposed system reduces the impact from grading, construction of retaining walls and creates efficiency, thereby, allowing the owner to keep intact, whilst improving the integrity and improving the site with modern and well suited technology to protect and maintain environmental
health of groundwater and water courses and persons associated and in proximity to the site.

• One of the owner's substantial property rights is to improve their property. This project allows the owner to further improve their property by upgrading their existing septic system with a modern, efficient, and environmentally sensitive system. The owners will be able to better enjoy the use of their property by having a system which accommodates the flows of the existing and proposed habitable space and improves their property by protecting the groundwater and the watercourses with additional pretreatment prior to discharge tentative soils. Improvement of this system in conjunction with using the habitable square footage associated with the existing discharge permit and system capacity represents preservation of the owner's substantial right to improve and utilize their property.

Finding 3. The variance, if granted, would not result in a cumulative adverse detrimental effect on surface or ground waters.

Whereas, the proposed system increases habitable square footage at the property and is compliant with Title IV setback requirement (4.15.111), there is presumption that the project creates no cumulative adverse detrimental effect on surface or ground waters.

• The project meets the Title IV (4.15.111) setback requirement of 3-feet from groundwater. As such, it is presumed that this is sufficient distance from groundwater as to avoid detrimental effect.

• Each single capacity existing leach field is 1,512-square feet. Per current code the required leach field area for the 600-gpd design flow is 429-square feet. Each existing leach field is three and one half times larger than code requires and is therefore, significantly oversized. This oversizing increases treatment and also increases the life of the system.

• The project proposes to utilize an NSF40 approved textile treatment system that will provide secondary or better treatment. The treated effluent will then be delivered to a raised bed leachfield that has 24-inches of coarse sand to provide a polishing. The system will now have two pretreatment systems in addition to a leachfield which is significantly oversized by over three times the design flow. Therefore, the project creates no adverse detrimental effect on surface waters or groundwaters.

Finding 4. The variance will not materially adversely affect the condition of the adjacent watercourses or wetlands, the conditions of the subsurface water under adjacent properties, the health or safety of persons residing or working in the neighborhood, the property and /or general health and safety of the public.

Whereas, the parcel and existing system is located near a watercourse, granting the requested variance will not adversely affect the condition of the adjacent watercourses
or wetlands, the conditions of the subsurface water under adjacent properties, the health or safety of persons residing or working in the neighborhood, the property, and/or the general health of the public.

- The proposed wastewater system improvement utilizes a secondary pretreatment device to reduce suspended solids, biological oxygen demand and other constituents within the wastewater effluent prior to discharge into the leach field which already has 24-inches of coarse sand to provide treatment.

- The use of a 200% capacity leachfield field assumes that the soils will remain unsaturated. The actual loading rate will be 0.4 gpd/ft², which is significantly less than the 1.4 gpd/ft² loading rate code requires for a raised bed system.

- The proposed system incorporates the use of a telemetry control panel, secondary pretreatment, and the necessary audio alarms for possible pump malfunction and to ensure proper and safe operation of the alternative system. Remote monitoring is an added safety factor to protect the general health of the public and lands.

This project will not cause the site to exceed the 600 gpd discharge permit. The proposal significantly improves the existing septic system and provides further mitigation and protection of the watercourses. We appreciate your review. If you have any additional questions, please email me at info@eckmanenvironmental.com. You can also contact me with questions or comments at (510) 390-3992.

Sincerely,

Noadiah S. Eckman, P.G.
Managing Geologist