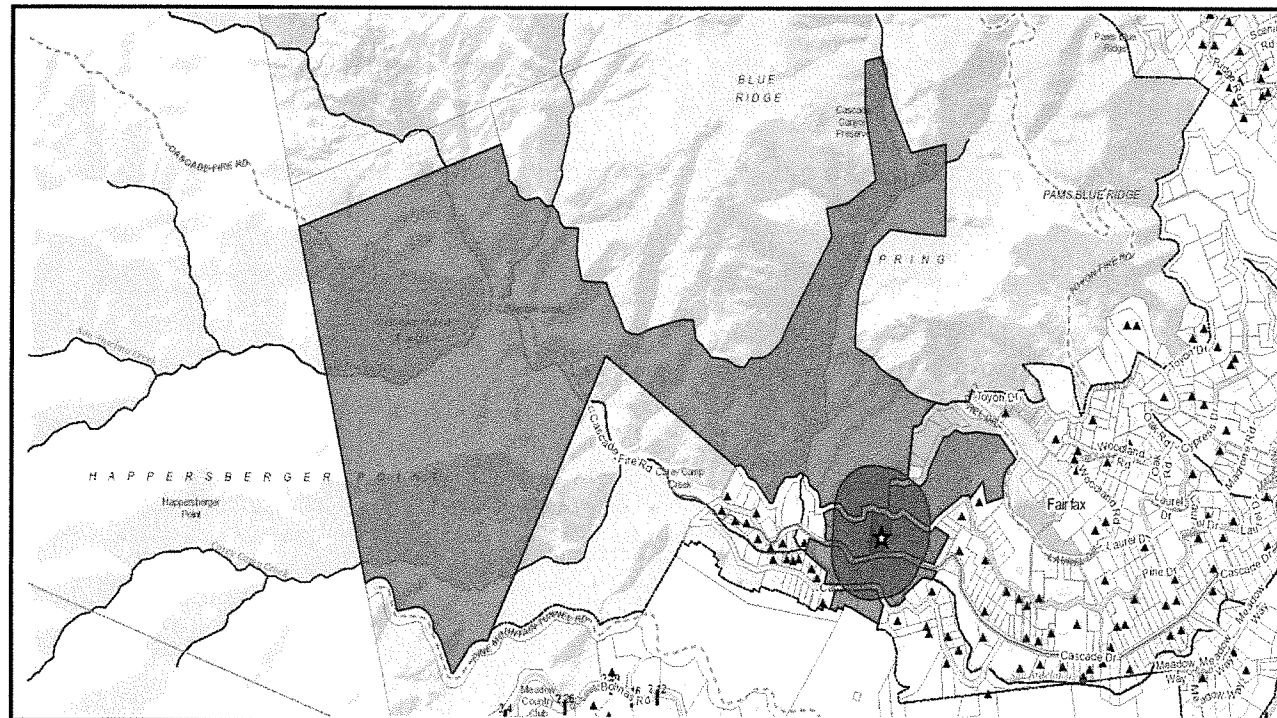


**TOWN OF FAIRFAX
STAFF REPORT**

Department of Planning and Building Services

TO: Fairfax Planning Commission
DATE: May 21, 2020
FROM: Linda Neal, Principal Planner
LOCATION: 572 Cascade Drive; Assessor's Parcel No. 003-022-20
PROJECT: New single-family residence and driveway improvements
ACTION: Hill Area Residential Development, Excavation, Tree Removal and Design Review permits; Application # 20-4
APPLICANT: Richard Rushton, Architect
OWNER: George Pederson
CEQA STATUS: Categorically exempt, §15303(a)



572 CASCADE DRIVE

AGENDA ITEM # 3

DESCRIPTION

Applications were submitted for Hill Area Residential Development, Excavation and Design Review permits on July 19, 2018. The project was declared complete on May 8, 2020.

The proposed project consists of the following: a) construction of a 3-story, 28.5 foot-tall, 2,659 square-foot residential structure with 1,448 square feet on the 3rd floor, 1,211 square feet on the second floor and a 603 square foot garage on the first, ground level; b) a 318 square-foot deck off the 3rd floor living room on the southwest corner of the house, and a 35 square-foot deck off the 2nd floor southeastern corner of the house; c) a 209 square-foot patio off the 3rd floor, and a a 37 square-foot patio off the second floor; installation of a septic system and leachfield; d) removal of an old catch basin inlet located approximately 2/3rd of the way up the property along the western side property line and the existing 8-inch storm drain pipe and daylighting the water run-off from the hillside above the proposed house into a more natural swale that more closely follows the original natural drainage path of the water; e) installation of a drainage pipe to take the water underneath Cascade Drive to the San Anselmo Creek; and f) improvement and paving of the shared driveway that will lead to the proposed garage and also provide vehicle access for the property west of the site at 578 Cascade Drive.

Project grading consists of roughly 690 cubic yards of cut material to create the house/garage, patios, stormwater detention basic, drainage swale about the house, septic tanks and the septic system sand filter as well as other site grading for the drainage system, sewer and water lines, etc., and roughly 26 cubic yards of fill, with roughly 664 cubic yards of off haul.

The proposed residential structure would contain 3 bedrooms (2 on the second floor and 1 on the 3rd floor, 3½ bathrooms (2 on the second floor and 1½ on the third floor, and a living/dining/kitchen great room on the third floor. The house entry way is located on the east side of the second floor but the house can also be entered via a stairway that would lead from the back of the garage to the second floor entry area.

The residence complies with the regulations set forth in the Residential Single-family RS-6 Zone District as follows:

	Front Setback	Rear Setback	Combined Front/rear Setback	Side Setbacks	Combined Side Setbacks	FAR	Lot Coverage	Height
Required/ Permitted	6 ft.	12 ft.	35 ft.	5 ft. & 5 ft.	20 ft.	.40	.35	28.5 ft., 3 stories
Proposed	37 ft.	180 ft.	217 ft.	15 ft. & 26 ft.	41 ft.	.08	.07	28.5, 3 stories

BACKGROUND

The roughly 34,029 square-foot site is located along the north side of Cascade Drive, beyond the area that is served by a sewer main. The site is devoid of trees in the area where the footprint of the proposed house is located. Minor improvements have been made to the site including undergrounding a previously above-ground natural drainage channel, and grading a driveway that accesses both the house at 578 Cascade Drive to the west of the site and provides off street parking for the site owner. San Anselmo Creek is located across Cascade Drive, roughly 77 feet to the south. Due to the proximity of the site to the creek and the fact that the lack of a sewer line would require a new house to be served by a septic system, staff contacted Howard Bunce of the Marin County Stormwater Pollution Prevention Program for direction on how to process the proposal. Our concern was that the septic system components might have to be relocated or redesigned or would result in a required redesign of the project due to the proximity of the site to San Anselmo Creek. Upon his recommendation, we directed the applicant to appear before the Marin Project Coordination Committee, a group that processes Joint Aquatic Resources Permit Application (JARPA) permits for Marin County. The group is made of a representative from the Army Corps of Engineers, State Wildlife and Fisheries, the Bay Area Regional Water Quality Control Board and the County Stormwater Pollution Prevention agency. The group met with the applicants and staff at their monthly meeting in mid-2019, and followed up a meeting on the site. The site meeting with all the involved parties occurred on September 30, 2019. At the on-site meeting the following items were identified as needing to be addressed by the project design:

1. The site improvements would require some habitat restoration on the site as a compensatory measure and it was agreed that the removal of the existing storm drain conveyance system that starts about 1/3 of the way up the hillside on the west side of the site and runs east across roughly the middle of the site and re-landscaping a natural drainage swale would meet this requirement and be acceptable to all groups.
2. No jurisdictional action was needed by the Army Corps of Engineers but they would like to receive a copy of the plans showing how the previously described condition would be achieved along with a copy of final JARPA application.
3. The representative from the Water Board indicated that the project would qualify for a General 401 Water Quality Certification for a Small Habitat Restoration project.
4. The final design of the site improvements would be submitted along with the common application (JARPA) to the attention of the Bay Area Regional Water Quality Control Board, the CA. Department of Fish and Wildlife which will include a revised topographic map of the site, the hydraulic calculations, the post-

construction stormwater management plan, along with a revised site plan for the development and landscape provisions that will be used to stabilize the open-channel that will replace the existing storm drain conveyance system.

No one expressed any concern about the proximity of the septic system to the San Anselmo Creek.

REQUIRED DISCRETIONARY PERMITS

The project requires the approval of a Hill Area Residential permit, Excavation permit, Tree Removal permit and a Design Review permit. The required discretionary permits and analysis of project compliance with the related sections of the Town Code and Zoning Ordinance are found below.

The project provides the required 3 parking spaces per Town Code § 17.052.030(A)(1) and (2), and the garage provides more than the one covered parking space required by Town Code § 17.052.010(D).

Hill Area Residential Development

The purpose of the Hill Area Residential Development Permit is to encourage the maximum retention of natural topographic features, minimize grading of hillside areas, provide a safe means of ingress and egress to and within hillside areas, minimize water run-off and soils erosion during and after construction, prevent loss of life, reduce injuries and property damage and minimize economic dislocations from geologic hazards, and to ensure that infill development on hillside lots is of a size and scale appropriate to the property and is consistent with other properties in the vicinity under the same zone classification [Town Code sections 17.072.010(A) and (B)].

Town Code §17.072.090(C)(1) requires graded slopes to be sculptured and contoured to blend with the natural terrain and Town Code §17.072.090(C)(3) requires that the height of retaining walls be minimized within the Hill Area Residential Development Overlay Zones.

Town Code § 17.072.090(D) indicates that projects within the Hill Area Residential Development Overlay Zone shall be designed to minimize disruptions of existing ecosystems.

The house has been located on the portion of the site that has no trees and is immediately adjacent to the already graded driveway that serves the site and the adjacent residence to the west at 578 Cascade Drive. All the improvements for the house have been located at the front of the site with the majority of the site being retained in its natural state. The removal of the existing storm drain inlet and pipe and replacement with an open landscaped earthen swale will restore a previously

developed area of the site to a more natural state and has been recommended by both the CA. Department of Fish and Wildlife and the Bay Area Regional Water Quality Control Board and will restore a natural topographic feature to a portion of the site.

The only walls proposed on the site are the foundation walls within the footprint of the proposed house, the walls to create the patio on the west side of the house which will not exceed roughly 4 feet in height, and the 3 foot-tall concrete wall that will replace the existing wooden wall along the north side of the existing unpaved driveway. The improvement of the existing driveway accessing the house at 578 Cascade Drive and the proposed new residence will be a benefit stabilizing the existing driveway and adjacent cut bank slopes.

The proposal will result in modest widening and extension of the existing driveway to provide adequate access to the proposed garage which will provide parking for 3 vehicles in separate 2-car and 1-car garages. The only other site disturbance will occur in the area of the proposed house itself in an area that already experienced some minor grading and serves as unimproved yard/storage area for the adjacent residence where the owner currently lives.

The Cascade Drive roadway will be widened by roughly 4 feet along the property frontage to accommodate the required 8-foot wide by 40-foot long fire truck staging area required by the Ross Valley Fire Department

The property is within ¼ mile of a known Northern Spotted Owl nesting site. Therefore, construction may not occur or must be minimized and/or monitored to be kept below certain noise levels to limit negative impacts to the birds during the nesting season which runs from February 1st through July 1st. Acts that result in the disturbance or death of Northern Spotted owls are a federal offense.

Drainage and Slope Stability

The Town Engineers have reviewed the entire body of information provided by the applicants on the project including the project engineering and architectural plans as well as the geotechnical reports by Dennis Furby, Consulting Geotechnical Engineer dated 4/13/18, 10/22/19, 12/10/19 and 3/31/20 (Attachment B) as well as the septic system design reports by Noahdiah Eckman, Physical Geologist, dated 7/15/19 and 4/7/20 (Attachment C). After completing their review and visiting the site on 8/5/19 and again for the joint meeting with affected agencies on 9/30/19, they have determined that the project can be constructed as proposed without creating any significant geologic or hydrologic hazards for adjacent public or private properties as long as certain conditions are met (Attachment D).

They concur with page 4 of the 4/13/18 report by Dennis Furby where it indicates, "The slopes uphill of the planned development show no indications of erosion, slope creep, sloughing or expansive soil. Further, the exposed natural slope surfaces show weathered and closely fractures Sandstone with only little cover of weak, near surface

soils” so “the risk of slope instability, including the planned wastewater drip irrigation system, is not a significant hazard for the site”. The project engineer also believes, and the Town Engineers agree, that while there is always a slight risk of sloughing or isolated small debris flows on steep natural slopes during extended intense winter rains, the proposed drainage and debris barrier across the slope north of the proposed structure will serve the dual purpose of directing storm water around the house while also providing a catchment area to contain and/or slow the potential movement of any soils (Attachment B – Project Engineer’s reports)

The site drainage system has been designed to intercept and divert surface and subsurface water away from the building footprint. Water flowing down the restored natural swale behind the house will be intercepted by a headwall at the northeast corner of the house where it will be directed into a 12-inch pipe and carried to the bottom of the site where it will be released into a cobblestone drainage channel to slow it down before directing the water into the 12-inch pipe that runs underneath Cascade Drive. Water from the driveway and roof of the structure will be captured in downspouts and directed into smaller 4 inch pipes that will run around the back of the house, along the east and west sides before depositing it into a bio-detention basin at the front of the property between the driveway and the front property line. From the detention basin the water will flow to the outlet dissipator that serves to disperse and slow water from the hillside above the house before being directed to the 12-inch pipe that runs underneath Cascade Drive and ultimately into the San Anselmo Creek.

The septic system tanks will be located underneath the driveway in front of the garage while the recirculating sand filter and the 1,050 square-foot drip (evaporation) leachfield area will be located on the hillside behind and above the house. Staff was concerned about how the system would function if the power was out for an extended period of time. The designer of the system has indicated that will not be an issue because the design complies with Marin County Environmental Health Code Section 604 item # 2 code which includes the requirement that the design mitigate potential pump failures and power outages. To comply with the code, the system includes roughly 500 gallons of additional tank space after the normal operating level of the pump tank is reached which, based on average water usage for a 4 bedroom home, is enough storage space for roughly 5 days of storage before the tank is full and has to be pumped (Attachment C).

Environmental Health, the Town Engineer, the Department of Fish and Wildlife, the Army Corps of Engineers and the Marin Water Quality Control Representative have all seen the preliminary plan for the septic system and have approved the proposed locations of the tanks and the drip (leach) field and expressed support for the design. Construction drawings will be reviewed and approved by the Marin County Environmental Health department prior to issuance of the building permit should the proposed project be approved by the Commission (see Attachment E)

House Siting and Design

As indicated above, the siting of the proposed house is in an area already modified with surface grading of the driveway and removal of trees. All the grading being proposed for the site is to construct the foundation, garage, drainage system, driveway and supply line improvements for the proposed house. Most of the trees being removed are being removed because they pose a fire hazard to the development or they have serious health issues that cannot be mitigated.

Staff discusses the two proposed design features of concern in the following Design Review section.

Design Review

Town Code §17.020.030(A) requires that the design of new residences be reviewed and approved by the Fairfax Planning Commission for compliance with the design review criteria contained in Town Code §17.020.040.

These criteria include but are not limited to the following:

“The proposed development shall create a well composed design harmoniously related to other facilities in the immediate area and to the total setting as seen from hills and other key vantage points in the community”.

“The size and design of the structure shall be considered for the purpose of determining that the structure is in proportion to its building site and that it has balance and unity among its external features so as to present a harmonious appearance”.

“The extent to which natural features, including trees, shrubs, creeks and rocks and the natural grade of the site are to be retained”.

The proposed structure complies with the Design Review Criteria with the exception of two features which will be discussed further below. The structure conforms to the general character of other structures in the vicinity, will require minimal disturbance to the 34,029 square-foot site for grading of the house pad, driveway, septic and drainage system and water line improvements. The construction will require the removal of 23 trees - 7 Bays and 2 Bay clusters, 4 Oaks, 8 Douglas Firs, 1 Monterey Pine, and 1 Deodar Cedar, to comply with the fire safety, fire access, and defensible space requirements of the Ross Valley Fire Department and the recommendations of the project arborist (Attachment F). The vegetative management plan was approved by the Fire Department on 2/25/20 and the number of trees being removed matches those identified in the Tree Protection Plan by Dan McKenna, ISA Certified Arborist, dated 2/19/20 which was submitted to the Tree Committee with the tree removal permit application.

At the 1/27/20 Tree Committee meeting the Committee took action recommending the Commission approve the Tree Permit Application subject to the conditions that the applicants work with the Ross Valley Fire Department to try and keep as many healthy trees as possible and that any trees that are removed be replaced at a minimum ratio of 1 to 1 (Attachment F).

The exterior of the structure will be articulated through the use of alternating horizontal and vertical siding, varied roof heights and pitches, the use of varied window sizes throughout the exterior of the building, the stepping back of the front façade between the two garage door building faces, the inclusion of the expanded entry walkway up the east side of the building to the second floor entry and with the inclusion of two decks off the front of the building proposed at an angle to the front face of the building. The siding will be Boral V-Rustic ship lap siding painted a light grey color for the horizontal siding (Benjamin Moore "Sterling" # 1591) and a dark grey (Benjamin Moore "Rocky Coast" # 1595) for the vertical siding. The Boral V-Rustic siding has deep V-shaped grooves that cast a shadow and provide good siding articulation. The roof will be asphalt Timberline "Weathered Wood" shingles, the window frames and fascia board will be white (Benjamin Moore "White") and the concrete access stairway will be surfaced with a reddish stone façade.

The site is very large by Fairfax standards – 34,029 square feet - and the house will not have a significant visual impact from any of the neighboring residences due to the large setbacks it will maintain from the property lines. Additionally, the house has a relatively small footprint, 2,044 square feet, in relation to the site size, with a maximum height of 28 feet, 6 inches and the remainder of the site will be retained in its natural state.

572 CASCADE DRIVE – SIMILAR PROPERTIES DEVELOPMENT							
APN #	ADDRESS	LOT SIZE	HOUSE SIZE	# BEDROOMS	# BATHS	GARAGE	FAR
003-012-07	650 Cascade	55,000	2,282	3	2	400	.04
003-022-13	588 Cascade	22,000	2,477	5	3	308	.11
003-023-07	597 Cascade	21,000	2,680	3	3	999	.15
003-023-04	581 Cascade	15,000	1,030	3	2	0	.07
003-031-25	551 Cascade	51,200	1,400	3	2	440	.03
003-032-23	151 Cascade	29,700	1,869	3	2	720	.07
DEVELOPMENT OF PROPERTIES IN THE IMMEDIATE NEIGHBORHOOD ON CASCADE DRIVE							
003-011-03	654 Cascade	13,600	1,053	2	1	0	.08
003-011-20	676 Cascade	12,880	924	2	1	0	.07
003-011-22	680 Cascade	5,843	2,224	3	2	0	.38
003-011-16	690 Cascade	19,200	2,246	3	2	400	.12
003-011-24	696 Cascade	20,170	1,534	3	2	877	.09
003-022-19	578 Cascade	14,962	1,000	2	1	0	.07
003-022-17	570 Cascade	17,784	1,210	2	1	0	.07
003-023-03	571 Cascade	20,000	1,224	1	1	0	.06
003-023-12	591 Cascade	11,200	1,782	3	2	446	.16
572 Cascade Drive		34,029	2,569	3	3 ½	603	.08

Note: 103 square feet of 603 square foot garage counts towards the project Floor Area Ratio (FAR) per Town Code § 17.136.030(A) as do the garages that exceed 500 square feet on the other property included in the table above.

Overall, the house has been designed to be in scale with the project site and similar in size to other structures in the neighborhood and on similar sized and sloped sites throughout the hillsides of Fairfax.

What is somewhat incongruous about the project design is the extra-tall 2-car garage door (to accommodate a historic vehicle), which in staff's opinion lends an industrial appearance to the structure. Furthermore, the other single-car garage door completes a street-facing ground level dominated by vehicle parking.

We recommend a redesign that reduces the visual prominence the garage doors – perhaps by combining the two separate doors into one wider, articulated one, with the remainder of the southeast side of the façade designed with pedestrian entryway features. Another option is having a two-toned garage door with the lower portion, in the dimensions of a standard garage door, painted white and the upper portion painted with a different color, or surfacing the upper portion of the door differently, or other design measures to address the size. Staff believes that design changes directed by your Commission could be included as conditions of approval to be approved by the Planning Director prior to issuance of the building permit.

The other unusual aspect of the design is the large 17 foot deep, upper deck off the third floor that projects out from the building at an angle and presents a point towards the street (See page A4.2 of the architectural plan set). The appearance of the deck is also unusual because of the way it is supported due to the distance it extends out from the building face. Instead of an open structural bracing system, the support structure for the deck has been enclosed with an unspecified sheathing material/siding that slopes back towards the building and gives the structure an odd appearance somewhat like a ship's prow.

The house's ground level is several feet above Cascade Drive. That, combined with the two dominant street-facing design elements – garage door(s) and ship's prow deck –give the proposed house a street-view that is unusual, to say the least, and in staff's opinion inharmonious with the neighborhood.

If the Commission shares staff's concerns they can condition the project upon the deck either being reduced in depth. For example, the distance from the southwest edge of the deck to the corner of the house could be reduced to a maximum of 6 feet, which allows for adequate useable deck area and aligns the 'prow' with the wall line of the west side of the house. Another option is to reorient it so that it does not require a support system and enclosed with sheathing. The Commission could also continue the project to the June meeting and ask the applicant to provide alternative designs for the deck and/or the deck and the design treatments that can be applied to minimize the appearance of the large garage door.

A further note: It isn't clear what the applicant intends with a ground-level retaining wall shown on Sheet A4.1, that appears to enclose an approximately 15-foot deep area behind (north of) the garage. If that retaining wall extends down to the ground level finished floor elevation, it is inconsistent with the cross-section shown on Sheet A6.1. It also implies considerably more excavation and enclosed area (for what purpose?) than is currently proposed. Assuming this is simply an oversight, staff recommends this be deleted from the construction drawings.

Note: the staff advised the applicants that we had concerns about the project design in our original incomplete letter to them on August 23, 2019.

Landscaping and Lighting

The landscaping plan indicates that three 10-gallon oaks and five 15-gallon Crepe Myrtles will be planted on the site. This is 15 trees short of the 1 to1 replacement recommended by the Tree Committee as a condition of tree removal permit approval. Staff was only able to locate one proposed oak tree replanting location on the plans. If the applicant does not believe that the site could support an additional 7 or 23 trees (particularly considering their canopy size at maturity), he should so state.

If the Commission decides to require the 1 to 1 tree replacement ratio, they must include the following condition in the resolution of approval:

- A revised landscaping plan showing a 1 to 1 tree replacement ratio shall be submitted with the building permit application for Planning Director review. The size of the replacement trees shall be no smaller than 15-gallon.

The project proposes using exterior LED wall mounted light fixtures. The fixtures have a silver finish and the only fixtures are proposed for the exterior of the building with one adjacent to the garage and the other adjacent to the front entry stairs. The fixtures are dark sky compliant, directing the light downwards and limiting light spillage beyond the area being lit.

The exterior lighting proposed seems inadequate to staff. We would support same fixture being located adjacent to both of the patio doors, one next to each of the doors to the front decks and one next the front door at the top of the entry stairway.

Excavation

Town Code §12.20.080 requires that an Excavation Permit be obtained from the Planning Commission for excavation and fill amounts of over 100 cubic yards. In order to approve an Excavation Permit the Commission must be able to find that the health, safety and welfare of the public will not be adversely affected, that adjacent properties are adequately protected by project investigation and design from geologic and hydrologic problems, that the amount of excavation or fill proposed is not more than is required to allow the owner substantial use of his or her property, that the visual and scenic enjoyment of the area by others will not be adversely affected by the project more than is necessary, that natural landscaping will not be removed by the project more than is necessary and that the time of year during which the construction will take place is such that the work will not result in excessive siltation from storm run-off nor prolonged exposure of unstable slopes.

The proposed project will require the excavation of 690 cubic yards of material and the fill of 26 cubic yards of material. Most of the excavation is due to the construction of the 603 square foot, 3 car garage, the creation of the daylighted drainage swale system at the rear of the house (recommended by the Marin Project Coordination Committee), the creation of the driveway and the bio-detention pond and the installation of the septic tanks and sand filtration basin.

The Zoning Ordinance only requires the provision of 1 covered parking space so the proposed 3 car garage far exceeds the requirements. The creation of a 3-car garage when one is not required by the code might not be seen as minimizing excavation on the site. However, the applicant has indicated that he needs the additional garage space to store his numerous vehicles including an army wrecker which is a historic vehicle. A search of the Marin County Tax Assessor's Records revealed that there are other properties in the Cascades Subdivision neighborhood that have even larger garages so the proposal is not necessarily excessive relative to other residentially developed properties in the area, although they are not all bunkered into the hillside as

this one is. Also, Fairfax prides itself for its varied housing styles and unique character. The applicant is planning to live in the house and has designed it to meet his needs and the needs of his family. Therefore, for a family that collects vehicles, the proposed amount of excavation could be considered the minimum necessary to meet their needs.

Since it is being proposed underneath the existing living space, it will not result in any additional disruption to the site and the house has a relatively small footprint. Excavating the parking into the hillside also reduces the visual bulk of the house, notwithstanding other concerns with certain proposed design features.

The excavation proposed to install the drainage improvements and supply lines for the residence, parking and driveway improvements are the minimum necessary to allow construction, per the Town Engineers' recommendations to ensure slope stability throughout the project site and to comply with building and fire codes.

The Town Engineers have indicated that the site can be developed without causing adverse geologic or hydrologic problems for adjacent properties as long as the following conditions are complied with, and the plans are reviewed and approved by them, prior to issuance of the project building permit (Attachment D):

1. A Title Report shall be submitted with the building permit application.
2. Design level grading, drainage and erosion control plans shall be submitted.
3. Structural, wastewater and construction management plans shall be provided.
4. A design level Geotechnical report shall be provided.

OTHER DEPARTMENT/AGENCY COMMENTS/CONDITIONS

Ross Valley Fire Department (RVFD)

RVFD submitted written requirements which have been incorporated into conditions of approval in the attached resolution and are summarized as follows:

A sewage disposal permit will be required prior to issuance of the building permit.

Marin Municipal Water District (MMWD)

MMWD submitted written requirements which have been incorporated into conditions of approval in the attached resolution and are summarized as follows:

Submit a High Pressure Water Service Agreement along with a copy of the building permit with the required fees, the foundation must be completed within 120 days of the date of application, all indoor and outdoor requirements or District Code Title 13, Water Conservation must be complied with, any landscaping plans must be reviewed and approved by the MMWD, backflow prevention requirements must be met and

Ordinance 420, requiring installation of grey water recycling system when practicable, must be incorporated into the project building permit plans or an exemption letter from MMWD must be provided to the Town, all of MMWD's rules and regulations if effect at the time service is requested must be complied with.

Ross Valley Sanitary District (RVSD)

RVSD did not comment as they have no sewer improvements in this area of Cascade Drive, and is not recommending requiring that a sewer main be extended to serve this project.

Marin County Environmental Health Services

Marin County Environment Health Services has performed a preliminary plan check for a 4-bedroom septic system design for the project that consists of a recirculating sand filter (for pretreatment) with a drip disposal leachfield above/behind the proposed house and has found that the proposed system is in conformance with the requirements of the Marin County Health Department. A sewage disposal permit will be required prior to issuance of the building permit.

Building Department

The Building Department submitted verbal requirements which have been incorporated into conditions of approval in the attached resolution and are summarized as follows:

All large trucks with more than 2 axels accessing the site for construction will be limited to the hours of 9 AM to 3 PM, trucks removing off-haul will be limited to 10-yard dump trucks, the driveway improvements shall be completed and be signed off by the Town Engineer, the Building Official/Public Works Managers and the Ross Valley Fire Department before construction on the house begins, and road closures shall be noticed in the field a minimum of 48 hours prior to the event.

Fairfax Police and Public Works

Staff received no comments from the Police and Public Works Departments.

Miscellaneous

The owner has already executed an easement agreement guaranteeing vehicle access/egress over the subject property for the developed property at 578 Cascade Drive to continue to use the driveway (Attachment G).

RECOMMENDATION

1. Conduct the public hearing.
2. Move to approve application 20-4 by adopting Resolution No. 2020-03,

attachment A, setting forth the findings and conditions for project approval.

ALTERNATIVE RECOMMENDATION

Move to continue the project and direct the applicant to redesign the project to minimize the appearance of ground floor garage doors and the 3rd floor deck so it presents a balanced façade appearance from the street, minimizes the garage doors' visual dominance, and provide a landscaping plan that shows a 1 to 1 tree replacement as recommended by the Fairfax Tree Committee.

ATTACHMENTS

Attachment A – Resolution No. 2020-03

Attachment B- Dennis Furby geotechnical/drainage reports dated 3/31/20, 12/10/19, 10/22/18 and 4/13/18

Attachment C- Septic System reports by Noahdiah Eckman, Geologist, dated 4/7/20 and 7/15/19

Attachment D – Town Engineer's final report on project

Attachment E – Marin County Environment Health Department memorandum

Attachment F - Tree Committee letter of recommendation, arborist report and plan

Attachment G – Driveway easement document

Attachment H – letters of support from the neighbors

RESOLUTION NO. 2020-03

**A Resolution of the Fairfax Planning Commission Approving Application No. 20-4
for a Hill Area Residential Development, Excavation, Tree Removal and Design
Review Permits for a Residence at 572 Cascade Drive**

WHEREAS, the Town of Fairfax has received an application from to build a 3-story, 2,659 square-foot, 3 bedroom, 3½ bathroom single-family residence with an attached 603 square-foot internally connected garage July 19, 2019 which was declared complete on May 8, 2020; and

WHEREAS, the Planning Commission held a duly noticed Public Hearing on May 21, 2020 at which time the Planning Commission determined that the project complies with the Hill Area Residential Development Overlay Ordinance, Excavation Ordinance, Tree Removal Ordinance and Design Review Regulations; and

WHEREAS, based on the plans and other documentary evidence in the record the Planning Commission has determined that the applicant has met the burden of proof required to support the findings necessary to approve the Hill Area Residential Development, Excavation, Tree Removal and Design Review Permits; and

WHEREAS, the Commission has made the following findings:

The project is consistent with the 2010-2030 Fairfax General Plan as follows:

Policy LU-7.1.5: New and renewed residential development shall preserve and enhance the existing character of the Town's neighborhoods in diversity, architectural character, size and mass.

Policy LU-7.2.2: To the extent feasible natural features including the existing grade, mature trees and vegetation shall be preserved for new and renewed development.

Policy LU-4.1.4: New and renewed development shall be designed to minimize run-off in a manner that does not cause undue hardship on neighboring properties.

Policy S-3.1.3: Maximize access and egress for emergency response vehicles.

Hill Area Residential Development

As amended, the proposed development is consistent with the General Plan and the Residential Single-family RS 6 Zone regulations.

1. The site planning preserves identified natural features as much as possible while also complying with other agencies' regulations and being designed to meet the owner's personal needs.

2. Vehicular access and parking are adequate.
3. **Once the design has been amended per Commission direction to minimize the visual impact of the garage doors and to minimize the visual appearance of the 3rd floor deck**, the proposed development will harmonize with surrounding residential development and meets the design review criteria contained in Town Code § 17.020.040.
4. The approval of the Hill Area Residential Development permit for one single-family residence and one accessory dwelling unit on this 34,029 square foot parcel shall not constitute a grant of special privilege and shall not contravene the doctrines of equity and equal treatment.
5. The development and use of property as approved under the Hill Area Residential Development Permit will not cause excessive or unreasonable detriment to adjoining properties or premises, or cause adverse physical or economic effects thereto, or create undue or excessive burdens in the use and enjoyment thereof, or any or all of which effects are substantially beyond that which might occur without approval or issuance of the use permit.
6. Approval of the proposed Hill Area Residential Development permit is not contrary to those objectives, goals or standards pertinent to the particular case and contained or set forth in any Master Plan, or other plan or policy, officially adopted by the City.
7. Approval of the Hill Area Residential Development permit will result in equal or better development of the premises than would otherwise be the case.

Excavation Permit

8. The Town Engineers have reviewed the following plans and reports and have determined the project can be constructed, with certain conditions of approval, without creating any hazards:
 - a. Architectural plans by Rich Rushton, revision date 2/20/20, pages A1.1, A2.2, A2.5, A4.1, A4.2, A6.1, A7.1, A7.2, A7.1, Engineering plans by Vlad Iojica, P.E. dated 2/20/20, pages C1.0 through C5.0 and C2.1, L1.0, L1.1, CM.1, and septic system preliminary design plans by Noahdiah Eckman, Geologist dated 7/16/19, pages 1 through 3, the tree protection and removal plan and reports by Dan McKenna, ISA certified project arborist, report dated 3/12/18, plan revision date 12/19/19.
9. Based on the Town Engineer's review and recommendation that the project can be safely constructed, the Planning Commission finds that:

10. The health safety and welfare of the public will not be adversely affected;
11. Adjacent properties are adequately protected by project investigation and design from geologic hazards as a result of the work;
12. Adjacent properties are adequately protected by project design, **with the redesign approved by the Planning Director to minimize the 3rd floor deck and the visual appearance of the industrial sized garage door,** from drainage and erosion problems as a result of the work;
13. The amount of the excavation or fill proposed is not more than that required to allow the property owner substantial use of his or her property;
14. The visual and scenic enjoyment of the area by others will not be adversely affected by the project more than is necessary;
15. Natural landscaping will not be removed by the project more than is necessary; and
16. Town code § 17.072.090(c)(4) prohibits grading of hillside properties from October 1st through April 1st of each year. Therefore, the time of year during which construction will take place is such that work will not result in excessive siltation from storm runoff nor prolonged exposure of unstable excavated slopes.
17. Construction may not occur or must be minimized and/or monitored to be kept below certain noise levels between February 1st and July 1st each year during the Northern Spotted Owl nesting season. Therefore, negative impacts to the owl species will be limited..

WHEREAS, the Commission has approved the project subject to the applicant's compliance with the following conditions:

1. The project is approved per the following plans and documents: Architectural plans by Rich Rushton, revision date 2/20/20, pages A1.1, A2.2, A2.5, A4.1, A4.2, A6.1, A7.1, A7.2, A7.1, Engineering plans by Vlad Iojica, P.E. dated 2/20/20, pages C1.0 through C5.0 and C2.1, L1.0, L1.1, CM.1, and septic system preliminary design plans by Noahdiah Eckman, Geologist dated 7/16/19, pages 1 through 3, the tree protection and removal plan and reports by Dan McKenna, ISA certified project arborist, report dated 3/12/18, plan revision date 12/19/19, subject to the following amendments:
 - a. The garage doors shall be combined to a 3-car garage, with adequate visual features differentiating the taller 2-car door from the 1-car door.
 - b. The area in the southeast ground floor façade shall be redesigned (fenestration, etc.) to provide a more of a residential entry appearance.
 - c. The third-floor deck will be reduced by 6 feet on its southwestern edge, so that the edge is approximately 6 feet from the southwest house corner.
 - d. The final design shall be subject to the approval of the Planning Director.
2. Prior to issuance of any of the building permits for the project the applicant or his assigns shall submit a construction plan to the Public Works Department which may include but is not limited to the following:
 - a. Construction delivery routes approved by the Department of Public Works.
 - b. Construction schedule (deliveries, worker hours, etc.)
 - c. Notification to area residents
 - d. Emergency access routes

3. The applicant shall prepare, and file with the Public Works Director, a video tape of the roadway conditions on the public construction delivery routes (routes must be approved by Public Works Director).
4. Submit a cash deposit, bond or letter of credit to the Town in an amount that will cover the cost of grading, weatherization and repair of possible damage to public roadways. The applicant shall submit contractor's estimates for any grading, site weatherization and improvement plans for approval by the Town Engineer. Upon approval of the contract costs, the applicant shall submit a cash deposit, bond or letter of credit equaling 100% of the estimated construction costs.
5. The foundation and retaining elements shall be designed by a structural engineer certified as such in the state of California. Plans and calculations of the foundation and retaining elements shall be stamped and signed by the structural engineer and submitted to the satisfaction of the Town Structural Engineer.
6. The grading, foundation, retaining, and drainage elements shall also be stamped and signed by the site geotechnical engineer as conforming to the recommendations made by the project Geotechnical Engineer.
7. Prior to submittal of the building permit plans, the applicant shall secure written approval from the Ross Valley Fire Authority, Marin Municipal Water District and the Ross Valley Sanitary District noting the development conformance with their recommendations.
8. Submit 3 copies of the record of survey with the building permit plans.
9. All retaining walls that are visible from the street and are constructed of concrete shall be heavily textured or colored in a manner approved by planning staff prior to issuance of the building permit. This condition is intended to mitigate the visual impact of the proposed walls.
10. Three copies of the Tree Protection/Preservation Plan by prepared by Dan McKenna, project arborist, shall be submitted with the building permit application and all recommendations included in this report shall be conditions of the project approval including but not limited to recommendations for the treatment of multi-stemmed trees and tree protection fencing, trunk and limb protection and soil armoring. All the inspections contained in the inspection schedule on page 14 of the report shall be made by the project arborist who shall provide the Town with written verification after each inspection that the work is progressing in compliance with the recommendations and conditions of the arborist.
11. Prior to the removal of any trees not approved by the Planning Commission through this action, the applicant shall secure a tree cutting permit, if required, from the Fairfax Tree Committee prior to removal of any on-site trees subject to a

permit under Town Code Chapter 8.36. To further minimize impacts on trees and significant vegetation, the applicant shall submit plans for any utility installation (including sewer, water and drainage) which incorporates the services of the project arborist to prune and treat trees having roots 2 inches or more in diameter that are disturbed during the construction, excavation or trenching operations. In particular, cross country utility extensions shall minimize impacts on existing trees. Tree root protection measures may include meandering the line, check dams, rip rap, hand trenching, soil evaluation and diversion dams. Any pruning shall take place during the winter when trees are dormant for deciduous species and during July to August for evergreen species.

12. If deemed necessary by the Town Engineers, the applicants shall prepare a drainage system maintenance agreement including a recordable exhibit of the proposed drainage system in its entirety including a maintenance schedule to be approved by the Town Engineer. The maintenance agreement will have to be signed by the owner, notarized and recorded at the Marin County Recorder's office prior to issuance of the building permit.
13. During the construction process the following shall be required:
 - a. The geotechnical engineer and the project arborist shall be on-site during the grading process and both shall submit written certification to Town Staff that the grading and tree protection measures have been completed as recommended prior to installation of foundation and/or retaining forms and drainage improvements, piers and supply lines.
 - b. Prior to the concrete form inspection by the building official, the geotechnical and structural engineers shall field check the forms of the foundations and retaining elements and provide written certification to Town staff that the work to this point has been completed in conformance with their recommendations and the approved building plans.
 - c. The Building Official shall field check the concrete forms prior to the pour.
 - d. All construction-related vehicles including equipment delivery, cement trucks and construction materials shall be situated off the travel lane of the adjacent public right(s)-of-way at all times. This condition may be waived by the Building Official on a case-by-case basis with prior notification from the project sponsor.
 - e. Any proposed temporary closures of a public right-of-way shall require prior approval by the Fairfax Police Department and any necessary traffic control, signage or public notification shall be the responsibility of the applicant or his/her assigns. Any violation of this provision will result in a stop work order being placed on the property and issuance of a citation.

14. Prior to issuance of an occupancy permit the following shall be completed:
 - a. The geotechnical engineer shall field check the completed project and submit written certification to Town Staff that the foundation, retaining, grading and drainage elements have been installed in conformance with the approved building plans and the recommendations of the soils report.
 - b. The Planning Department and Town Engineer shall field check the completed project to verify that all planning commission conditions and required engineering improvements have been complied with including installation of landscaping and irrigation prior to issuance of the certificate of occupancy.
15. Excavation shall not occur between October 1st and April 1st of any year. The Town Engineer has the authority to waive this condition depending upon the weather.
16. The roadways shall be kept free of dust, gravel and other construction materials by sweeping them, daily, if necessary.
17. Any changes, modifications, additions or alterations made to the approved set of plans will require a modification of Application #20-4. Modifications that do not significantly change the project, the project design or the approved discretionary permits *may* be approved by the Planning Director. Any construction based on job plans that have been altered without the benefit of an approved modification of Application 20-4 will result in the job being immediately stopped and red tagged.
18. Any damages to the public portions of Toyon, Oak, Laurel, Cascade, or other public roadway used to access the site resulting from construction-related activities shall be the responsibility of the property owner.
19. The applicant and its heirs, successors, and assigns shall, at its sole cost and expense, defend with counsel selected by the Town, indemnify, protect, release, and hold harmless the Town of Fairfax and any agency or instrumentality thereof, including its agents, officers, commissions, and employees (the "Indemnitees") from any and all claims, actions, or proceedings arising out of or in any way relating to the processing and/or approval of the project as described herein, the purpose of which is to attack, set aside, void, or annul the approval of the project, and/or any environmental determination that accompanies it, by the Planning Commission, Town Council, Planning Director, Design Review Board or any other department or agency of the Town. This indemnification shall include, but not be limited to, suits, damages, judgments, costs, expenses, liens, levies, attorney fees or expert witness fees that may be asserted or incurred by any person or entity, including the applicant, third parties and the Indemnitees, arising out of or in connection with the approval of this project, whether or not there is

concurrent, passive, or active negligence on the part of the Indemnitees. Nothing herein shall prohibit the Town from participating in the defense of any claim, action, or proceeding. The parties shall use best efforts, acting in good faith, to select mutually agreeable defense counsel. If the parties cannot reach agreement, the Town may select its own legal counsel and the applicant agrees to pay directly, or timely reimburse on a monthly basis, the Town for all such court costs, attorney fees, and time referenced herein, provided, however, that the applicant's duty in this regard shall be subject to the Town's promptly notifying the applicant of any said claim, action, or proceeding.

20. The applicant shall comply with all applicable local, county, state and federal laws and regulations. Local ordinances which must be complied with include, but are not limited to: the Noise Ordinance, Chapter 8.20, Polystyrene Foam, Degradable and Recyclable Food Packaging, Chapter 8.16, Garbage and Rubbish Disposal, Chapter 8.08, Urban Runoff Pollution Prevention, Chapter 8.32 and the Americans with Disabilities Act.
21. Conditions placed upon the project by outside agencies or by the Town Engineer may be eliminated or amended with that agency's or the Town Engineer's written notification to the Planning Department prior to issuance of the building permit.
22. Conditions placed upon the project by the project arborist may be amended or eliminated by the approval of the Planning Director after receiving a request for the elimination/amendment in writing from the project arborist.
23. The building permit plans shall be reviewed and approved by the Town Engineer, at the expense of the applicant, prior to issuance of the building permit. The project shall be inspected by the Town Engineer prior to issuance of the occupancy permit for the residential structures for compliance with the engineering plans.

Ross Valley Fire Department

24. An 8-foot by 40-foot length of Cascade Drive, along the property frontage shall be a minimum of 20 feet wide and must be asphalt or concrete capable of taking 50,000 pounds of vehicle weight.
25. A fire sprinkler system shall be installed throughout the entire building.
26. Smoke detectors shall be installed throughout the entire building and be provided with AC power and be interconnected for simultaneous alarm. Detectors shall be located in each sleeping room, outside of each sleeping room in a central location in the corridor and over the center of all stairways with a minimum of 1 detector on each story of the occupied portion of the residence.
27. Carbon monoxide alarms shall be provided in existing dwellings when a permit is required for alterations, repairs, or addition and the cost of the permit exceeds

\$1,000.00. Carbon monoxide alarms shall be located outside of each sleeping area in the immediate vicinity of the bedrooms and on every level of the dwelling, including basements.

28. Address numbers at least 4 inches tall must be in place adjacent to the front door. If not clearly visible from the street, additional numbers must be placed in location that is visible from the street. The numbers must be internally illuminated or illuminated by and adjacent light controlled by a photocell that can be switched off only by a breaker so it will remain illuminated all night.
29. Alternative materials or methods may be proposed for any of the above conditions in accordance with Section 104.9 of the Fire Code.
30. All approved alternatives requests, and their supporting documentation, shall be included in the plan sets submitted for final approval by the Fire Department.
31. Hydrant flow and location are to be identified prior to submittal of the building permit and shall be shown on the plans.

Marin County Environmental Health Services (MCEHS)

32. A sewage disposal permit will be required prior to issuance of the building permit.

Marin Municipal Water District (MMWD)

33. Submit a High Pressure Water Service Agreement along with a copy of the building permit with the required fees.
34. The foundation must be completed within 120 days of the date of application.
35. All indoor and outdoor requirements or District Code Title 13, Water Conservation must be complied with.
36. Any landscaping plans must be reviewed and approved by the MMWD.
37. Backflow prevention requirements must be met.
38. Ordinance 420, requiring installation of grey water recycling system when practicable, must be incorporated into the project building permit plans or an exemption letter from MMWD must be provided to the Town.
39. All of MMWD's rules and regulations if effect at the time service is requested must be complied with.
40. A copy of the building permit must be provided to the district along with other the required applications and fees.

Fairfax Building and Public Works Departments

- 41. All large trucks with more than 2 axels accessing the site for construction will be limited to the hours of 9 AM to 3 PM.
- 42. Trucks removing off-haul will be limited to 10-yard dump trucks.
- 43. The driveway improvements shall be completed and be signed off by the Town Engineer, the Building Official/Public Works Managers and the Ross Valley Fire Department before construction on the house begins.
- 44. Road closures shall be noticed in the field a minimum of 48 hours prior to the event and individual written notifications shall be delivered to each potentially impacted resident on Cascade Drive.

Miscellaneous

- 45. Construction shall be prohibited during the Northern Spotted Owl nesting season from February 1st through July 1st.
- 46. The approved lighting fixture (shown on page 5 of the architect's 7/13/19 letter that was attached to the plan set approved by the Commission at the 5/21/20 meeting) may also be installed adjacent to the both of the patio doors, next to each of the doors to the front decks and one next the front door at the top of the entry stairway.
- 47. A revised landscaping plan must be submitted for Planning Director and Ross Valley Fire Department approval showing a 1 to 1 replacement for the 23 trees being removed.

NOW, THEREFORE BE IT RESOLVED, the Planning Commission of the Town of Fairfax hereby finds and determines as follows:

The approval of the Hill Area Residential Development Permit, Excavation Permit, and Design Review Permit are in conformance with the 2010 – 2030 Fairfax General Plan, the Fairfax Town Code and the Fairfax Zoning Ordinance, Town Code Title 17; and

Construction of the project can occur without causing significant impacts on neighboring residences and the environment.

The foregoing resolution was adopted at a regular meeting of the Planning Commission held in said Town, on the 21 day of May, 2020 by the following vote:

AYES:
NOES:

ABSTAIN:

Chair Green

Attest:

Ben Berto, Director of Planning and Building Services

DENNIS H. FURBY, PE
CONSULTING GEOTECHNICAL ENGINEER

March 31, 2020
Job No. 1328-1

Fairfax Planning Department
142 Bolinas Road
Fairfax, CA 94978
Attn: Linda Neal, Principal Planner

Subject: Geotechnical Engineering Responses
Pedersen Residential Project
572 Cascade Drive, Fairfax, CA
(A.P. No. 003-022-20)

Dear Ms. Neal,

I am responding to Comment #8 in your latest letter dated March 27, 2020 regarding the subject project. I judge that the Comment reflects a misunderstanding and/or misstatement regarding my assessment of the hillside stability and recommended remedial measure of the "debris barrier".

In my Feasibility Evaluations letter dated April 13, 2018 (Amended September 4, 2019), my assessment of the Slope Stability presented on Page 4 states

"Therefore, I judge that the risk of slope instability, including the planned wastewater drip irrigation system, is not a significant hazard for this site. While there is always a slight risk of sloughing or isolated small debris flows on steep natural slopes during extended intense winter rains, the planned drainage & debris barrier across the slope just uphill of the development will provide a catchment area to contain and/or slow the movement to protect against damage." (underlining added for emphasis)

I do not "feel strongly about the potential for slides to hit the house" or its occupants.

Further, my recommended Debris Barrier (perhaps Diversion Berm is more accurate terminology) is not a "steep pile of relatively loose dirt". My Amendment letter dated December 10, 2019 (amended February 15, 2020) very clearly states

"The berm alignment should first be cleared and stripped as previously described, followed by re-compaction of the exposed natural soil. The berm material can then be placed in six- to eight-inch lifts, moisture conditioned to near optimum moisture content for the soil portion, and compacted by track-walking with heavy operating equipment."

This is an engineered fill, not loose dirt!

As previously stated, these conclusions and recommendations will be incorporated into my final Geotechnical Engineering Report following Planning approvals, are being incorporated into the project plans, and will be implemented during construction. In addition, also as previously stated in my Feasibility letter, future maintenance of these natural slopes will be required, with specific Slope Maintenance Guidelines being provided to the client (copy attached).

30 Via Holon, #18
Greenbrae, CA 94904

ATTACHMENT **B**

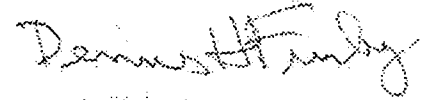
Fairfax Planning
Attn: Linda Neal
Page 2

March 31, 2020
Job No. 1328-1

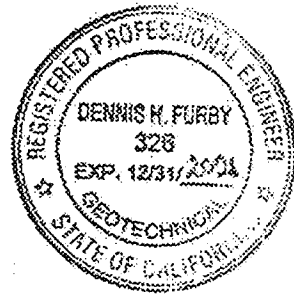
I trust that this adequately responds to your concerns. But I must also request that you trust me, as a professional Geotechnical Engineer, to adequately evaluate the risks of natural slope stability and to recommend appropriate remedial measures.

Yours very truly,

D. H. FURBY, PE
ENGINEERING CONSULTANT



Dennis H. Furby
Geotechnical Engineer – 326
(expires 12/31/2021)



DHF/dbf

Attachment: Slope Maintenance Procedures

1 copy submitted (lneal@townoffairfax.org)

cc: George Pedersen (gnppedersen@gmail.com)

cc: Richard Rushton (rich@rushtonarchitect.com)

cc: Vlad Iojica (viojica@via-eng.com)

DENNIS H. FURBY, PE
CONSULTING GEOTECHNICAL ENGINEER

SLOPE MAINTENANCE PROCEDURES

Purpose

Provide guidelines for maintaining natural slope surfaces in order to reduce the risk of future erosion, sloughing and debris flows.

Intent of Maintenance

The intent of periodic slope maintenance is three-fold:

1. Provide unobstructed uniform surface water runoff and control drainage in order to avoid concentrated flows which can cause erosion and/or excessive saturation of weak near-surface soils;
2. Prevent build-up of debris which could become saturated and start debris flows during sustained intense rains;
3. Identify potential problem areas and repair them before they deteriorate into hazards that could adversely impact slope stability.

Maintenance Procedures

1. Visually monitor slope conditions in September or early October prior to the start of winter rains.
2. Remove dead trees, downed limbs and accumulations of dead vegetation and/or loose soil that could become saturated and start to "creep" down hill. It is not necessary to remove leaves or small twigs as long as they do not impede surface water runoff. Also trim or remove large trees that are leaning and present a hazard of falling during high winds. **Do not dump loose soil, grass cuttings or debris onto the slope surface.**
3. Clean all debris from concrete-lined ditches, pipe inlets, catch-basins and other established drainage facilities or channels in order to provide unobstructed flows for water runoff. Additional observations of drainage systems should be made during the rainy season to determine the need for further cleaning.
4. Observe the condition of lined channels, pipes and outlets to verify that they will carry and discharge water properly without leaking onto the slope surface; seal joints, cracks and otherwise repair as necessary.
5. Provide and maintain adequate cobble rip-rap or other suitable energy dissipater at pipe outlets on the slope in order to reduce the risk of erosion. All surface water discharges should be directed into established drainage courses.
6. Repair any observed new or active erosion or sloughing as soon as possible by removing loose soil and adding cobble rip-rap, short retaining walls or other suitable repair. Contact Dennis H. Furby, Consulting Geotechnical Engineer, for specific recommendations.
7. Re-seed bare slope surfaces to resist surface erosion and to reduce the risk of saturation of weak surface soils. It may be necessary to install jute netting or other type of erosion-control mat to assist in establishing natural vegetation.

DENNIS H. FURBY, PE
CONSULTING GEOTECHNICAL ENGINEER

December 10, 2019
Job No. 1298-1

George Pedersen
588 Cascade Drive
Fairfax, CA 9494

FEB 27 2020

Subject: Amendment to Preliminary Geotechnical Feasibility
Evaluations and Recommendations
New Single-Family Residence
572 Cascade Drive, Fairfax, CA
(A.P. No. 003-022-20)

Dear Mr. Pedersen,

This letter serves as an additional Amendment to my earlier Preliminary Geotechnical Feasibility Evaluations and Recommendations dated April 13, 2018, and previously Amended September 4, 2019, regarding the suitability of your property at 572 Cascade Drive for the proposed single-family residential development. Specifically, this Amendment addresses Item No. 8, page 4 of the Miller Pacific Engineering Group's letter of November 27, 2019 to the Town of Fairfax regarding the need to provide recommendations for the debris barrier. My earlier response letter recommended this debris barrier to mitigate the risk of hillside sloughing and/or debris flows impacting the new residential development but failed to provide specific recommendations for its design and construction. These supplemental conclusions and recommendations are as follows:

Debris Barrier

It is not possible to accurately predict exact quantities or consistency of the debris flow material, but it is reasonable to assume that it will be mostly liquified soil with organic and large gravel/cobble content. Therefore, the barrier (earth berm) should serve to both collect and divert debris flow material to prevent it from impacting the new residence. I recommend that the alignment remain as currently shown on the Civil drawing C.2 dated 10/14/19 but be increased in height to between two to three feet, measured from the uphill side. The berm can consist of a mixture of soil and rock material excavated from the building pad, with no specific gradation requirements.

The berm alignment should first be cleared and stripped as previously described, followed by re-compaction of the exposed natural soil. The berm material can then be placed in six- to eight-inch lifts, moisture conditioned to near optimum moisture content for the soil portion, and compacted by track-walking with heavy operating equipment. The side slopes of the finished berm should be no steeper than 1½ to 1, and then can be blanketed with a thin layer of topsoil to support erosion-resistant vegetation for aesthetics.

30 Via Holon, #18
Greenbrae, CA 94904

George Pedersen
Page 2

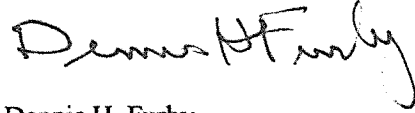
December 10, 2019
Job No. 1298-1

Following the additional reviews and project approval by the Town of Fairfax Planning Department, I will be preparing a design-level geotechnical engineering report for the Permit submittal. The above conclusions and recommendations regarding the debris barrier/earth berm will be included in that report.

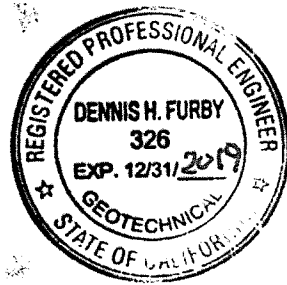
I trust this provides the information required at this time. Should you or others have further questions regarding the soil engineering aspects of this project, please call me.

Yours very truly,

D. H. FURBY, PE
ENGINEERING CONSULTANT



Dennis H. Furby
Geotechnical Engineer – 326
(expires 12/31/2019)



DHF/dhf

1 copy submitted (gnppedersen@gmail.com)

cc: Richard Rushton (rushtonchartock@gmail.com)

cc: Vlad Iojica (viojica@via-eng.com)

(additional copies may be printed as required for the Fairfax Planning submittal)

DENNIS H. FURBY, PE
CONSULTING GEOTECHNICAL ENGINEER

October 22, 2019
Job No. 1298-1

Richard Rushton, Architect
235 Scenic Road
Fairfax, CA 94930

Subject: Geotechnical Engineering Plan Review
New Single-Family Residence for Pedersen
572 Cascade Drive, Fairfax, CA
(A.P. No. 003-022-20)

Dear Mr. Rushton,

This letter documents my geotechnical engineering review of the current plans for the subject project that are being prepared for your re-submittal to Fairfax Planning Department in response to theirs and other Agency comments. I am providing services for this project in accordance with my Professional Services Agreement dated February 12, 2018, and recently submitted my Preliminary Geotechnical Feasibility Evaluations in a letter dated April 13, 2018 and Amended September 4, 2019.

The plans reviewed are as follows:

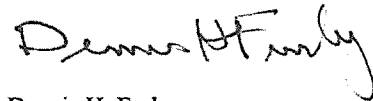
- Architectural plans, sections & elevations: sheets A1.1 thru -7.2 (8 sheets) variously dated 10/21/19 and 8/31/19, prepared by Richard Rushton Architect, and
- Civil plan& details, sheets C.1 thru -.3 (3 sheets) dated 10/14/2019 prepared by VIA Atelier.

My reviews indicate that the above plans adequately reflect the intent of my previous geotechnical engineering recommendations with regards to site grading and drainage. I understand that, following planning approvals, I will be providing supplemental recommendations for the approved project, and will document those recommendations and plan reviews in a separate report prepared for the Permit submittal.

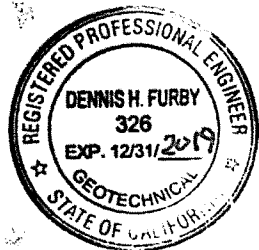
I trust that this provides the information required at this time. Should you or others have further questions or comments, please do not hesitate to contact me directly.

Yours very truly,

D. H. FURBY, PE
ENGINEERING CONSULTANT



Dennis H. Furby
Geotechnical Engineer - 326
(expires 12/31/2019)



DHF/dhf

1 copy submitted (rich@rushtonarchitect.com)
cc: VIA Atelier (vlad@via-eng.com)
cc: George Pedersen (gnppedersen@gmail.com)

DENNIS H. FURBY, PE
CONSULTING GEOTECHNICAL ENGINEER

April 13, 2018
Amended September 4, 2019
Job No. 1298-1

George Pedersen
588 Cascade Drive
Fairfax, CA 9494

Subject: Preliminary Geotechnical Feasibility Evaluations
and Recommendations
New Single-Family Residence
572 Cascade Drive, Fairfax, CA
(A.P. No. 003-022-20)

Dear Mr. Pedersen,

INTRODUCTION

This letter report summarizes my preliminary geotechnical evaluations regarding the suitability of your property at 572 Cascade Drive for the proposed single-family residential development. In addition, this Amendment provides supplemental geologic hazards evaluations and site grading recommendations, as well as other clarifications, in response to the plan review comments by the Town of Fairfax Planning Department and their engineer, Miller Pacific Engineering Group, as presented in their letters dated August 23, 2019 and August 21, 2019, respectively.

The site location in Fairfax, CA is indicated on the attached Figure 1. The site extends uphill to the north above Cascade Drive, with the planned new residence being sited on the lower portion near the road, as shown on the attached Partial Site Plan, Figure 2.

SCOPE OF SERVICES

I am providing services for this project in three separate phases (Planning, Design & Construction) in accordance with my Professional Services Agreement dated February 12, 2018. During the current planning phase, my services have included the following:

1. Evaluating the existing site conditions based on surface reconnaissance, logging two (2) backhoe test pits on March 30, 2018, research of available geologic data, and my previous experience in the site vicinity;
2. Consulting with you, Rich Rushton, Vlad Iojica and Andy Flick regarding our approach to site development, foundation type(s) and site drainage;
3. Reviewing the Preliminary drawings (sheets A1.1, A2.2, A4.1 & A6.1 dated 1/9/18 & 1/10/18) and the Project Description (2 pages of text, digital renderings & photos dated February 6, 2018) being prepared for the Design Review submittal by Rushton – Chartock Architects; and
4. Preparing this Feasibility Evaluation for the Fairfax Planning submittal.

30 Via Holon, #18
Greenbrae, CA 94904

5. Following receipt for the Town's comments referenced above, I performed additional services:
- Additional site reconnaissance on August 30, 2019,
 - Consultation with the project Architect, Richard Rushton, the Civil Engineer, Via Atelier, and the environmental engineer, Eckman Environmental Designs;
 - Review the following drawings that were submitted to for Planning review:
 - Architectural plans, 7 sheets A1.1 thru -7.2 dated 7/11/18 with various revisions thru 8/31/19, prepared by Rushton – Chartock Architects;
 - Civil plans, 3 sheets C.1 thru -.3 dated 7/10/2018 prepared by VIA Atelier; and
 - Wastewater System Plan, 3 sheets dated 07-16-2019/A prepared by eckman environmental designs, inc.
 - Amending this letter to provide more specific responses to the geotechnical-related comments.

Following planning approvals, I will continue my consultations with you and the project team (architect, structural engineer, civil engineer & contractor) regarding soil engineering recommendations for site preparation/grading, foundations (drilled piers and spread footings), retaining walls and site drainage improvements. I also will be reviewing the project plans as they are nearing completion for conformance with the intent of my recommendations, and then formally documenting my evaluations and plan review in a report for the Permit submittal. During construction, I will be providing intermittent site observations of the site preparation & grading, building pad and foundation excavations, retaining wall backfills and final grading & drainage, for conformance with the intent of my recommendations and the approved plans. The results of these construction-related services will be summarized in a summary report for submittal to the Fairfax Building Department upon satisfactory completion of the work.

PROJECT DESCRIPTION

The new single-family residence will be sited near the front of the lot, with a looped driveway leading up and around from Cascade Drive, as shown on the attached Partial Site Plan, Figure 2. The wood-frame and concrete structure will be three (3) levels stepped into the hillside, with the two upper levels of living spaces supported above the lower level garage. The excavations into the slope will be retained by reinforced concrete walls varying from 10 to 12 feet high. The garage will have a concrete slab-on-grade floor. A shorter exterior wall approximately four feet high will extend across the back of the residence to create a level patio area. The site development also will include both surface and subsurface hillside drainage improvements uphill of the residence.

SITE CONDITIONS

Geologic mapping¹ shows the property to be in an area mapped as Franciscan Melange of the Jurassic age, which consists primarily of Sandstone/Shale with intrusions of Serpentine and harder Greenstone. This formation has been folded and faulted by uplift resulting zones more susceptible to erosion. Locally, these weaker zones have eroded to form ravines that channel surface water runoff. The nearest active fault is the San Andreas Fault over eight miles southwest of the site.

The Pedersen property lies at the base of the natural hillside, with the confluence of two narrow drainage channels leading down along the west side of the property to drain beneath Cascade Drive and into Fairfax Creek to the south. The terrain within the planned development area slopes up from Cascade Drive at an average inclination of

¹ USGS Geologic Map of Parts of Marin, etc. (online version 1.0) 2000, by M.C. Blake, R.W. Graymer & D.L. Jones

approximately 4 to 1 (horizontal to vertical ratio), with localized variations created by excavations to create a driveway across the bottom of the slope and vehicle parking area further uphill. The natural hillside then steepens to the north above the planned building site, and the side slopes of the drainage channels are inclined at approximately 3 to 1, with higher slopes locally as steep as 2 to 1. However, Pine Drive further uphill effectively intercepts the surface water runoff from higher up and diverts it into the natural drainage channels. There are no indications of erosion, sloughing or soil creep visible on the side slopes. Further, the bottoms of the natural drainage channels have been cleared of dead wood and debris that could obstruct surface water runoff or become the source of possible debris flows, with the exception of two downed tree trunks which I understand will be cleared in the near future or at the time of the property development.

The two backhoe test pits excavated with the proposed building site (see Figure 2) indicate that the site is underlain by colluvial soils washed down from the natural hillside. As indicated by the Logs of Test Pits shown on Figure 3, these soils consist of sandy silts and clays that are relatively soft/weak near the surface but increase in stiffness and strength along with increased gravel content, with depth. Cal/OSHA classifications have also been added to the Logs. The bottom of Test Pit #2 at the upper end of the planned building site, along with an excavated bench further uphill on the ravine side slope, exposed dense clayey gravel (deeply weathered Sandstone/Shale. These materials only become less weathered with fractured rock structure with depth; thus, I determined that deeper exploration was not necessary to adequately provide the required soil design criteria for foundations and retaining walls. Further, no sampling or laboratory testing was performed nor is necessary to establish the conservative soil design criteria for a relatively lightly-loaded residential structure. These test pits did not encounter free groundwater or seepage, nor were there any soft or caving soils. However, depending on the time of year that the building pad excavations are performed, groundwater seepage could be encountered within rock fractures or soil/rock contact zones.

GEOLOGIC HAZARDS EVALUATIONS

Faulting

The site is not within an Alquist-Priolo Fault Hazard Zone, and the nearest active fault is the San Andreas Fault over 8 miles southwest of the site. Therefore, active faulting is not a hazard for the site.

Ground shaking

The site will be subjected to ground shaking during future earthquakes from any of the active faults within the Bay Area. The extent of earthquake-related damage to structures will vary depending on the location, intensity and duration of the generating earthquake, and the soil/rock conditions underlying the site. The mitigation for this hazard is to design the structure in accordance with the current building code standards utilizing the appropriate seismic criteria, as is presented in a subsequent section of this report.

Liquefaction

The mixture and interbedding of the colluvial clay, silt, sand and gravel soil, and the lack of a free groundwater table preclude the risk of liquefaction for this site. There could be a slight risk of densification of clean sands/gravels during extended strong ground shaking. However, due to the relatively high content of the fine-grained silt and clay binders within the colluvial soil, and the recompaction of any such soils that are encountered in footing excavations during construction, I judge that there is essentially no risk of densification that could result in damage to the completed residence.

Expansive soils

The results of the test pits, my surface reconnaissance and previous experience in the site vicinity lead me to conclude that there are no expansive soils on site that could cause damage to the structure due to seasonal shrinking and swelling. Expansive soils are not a hazard for this site.

Flooding

The property's elevation above the near-by Fairfax Creek, and the fact that there are no reservoirs or tanks located uphill of the site preclude flooding as a hazard for the planned development. Further, most all surface water runoff from extended rains will be channeled into the natural drainage channels by either the slope inclinations or the planned diversion berm/lined V-ditch across the back of the development and which, in turn, will be directed into the Creek.

Slope stability

As indicated above, the slopes uphill of the planned development show no indications of erosion, slope creep, sloughing, or expansive soil. Further, the exposed natural slope surfaces show weathered and closely fractured Sandstone with only little cover of weak near-surface soils. The profile test pits performed by Eckman Environmental Designs confirm this Sandstone structure within their planned wastewater infiltration area. Therefore, I judge that the risk of slope instability, including the planned wastewater drip irrigation system, is not a significant hazard for this site. While there is always a slight risk of sloughing or isolated small debris flows on steep natural slopes during extended intense winter rains, the planned drainage & debris barrier across the slope just uphill of the development will provide a catchment area to contain and/or slow the movement to protect against damage. Future maintenance of these natural slopes will be important to maintaining this stability, with Slope Maintenance Guidelines being provided as part of my final geotechnical report.

CONCLUSIONS and DISCUSSIONS

My preliminary evaluations and previous experience lead me to conclude that the site at 572 Cascade Drive is suitable for the proposed development. There are no adverse soil conditions or geologic hazards that will limit or preclude construction of the new single-family residence. However, the following geotechnical-related concerns should be addressed during the design and construction of the project;

1. Providing uniform foundation support in the colluvial soils; and
2. Controlling the surface and subsurface drainage from the hillside.

These concerns are discussed in the following paragraphs along with other geotechnical-related recommendations.

Site Preparation & Grading

Areas to be graded must be cleared and stripped to remove vegetation, top soil and debris. I anticipate the depth of stripping will be approximately four to six inches, but deeper grubbing will be required to remove tree and large brush roots. Vegetation and debris should be disposed of off-site but topsoil can be stockpiled for reuse in future landscaping.

The planned excavations for the building pad can be made with conventional backhoe equipment. The temporary excavations thru the upper four to five feet of colluvial soils should be gradually rounded off to no steeper than 1½ to 1. Below five feet, temporary excavations can be inclined at 1 to 1, and then increased to ½ to 1 in the firm natural weathered Sandstone at approximately eight to nine feet below grade. The temporary excavations for the basement/garage walls should be over-cut and draped with fabric to provide personnel access and protection during forming & water-proofing operations. Permanently exposed cut or fill slopes should be inclined no steeper than 2 to 1 and planted with erosion-resistant vegetation.

Following clearing, stripping and required excavations, the exposed soils within the building areas (extending to five feet beyond perimeter footings and three feet beyond exterior slabs or pavements) should be scarified to a depth of six inches, moisture conditioned to near-optimum moisture content, and compacted to at least 90%

relative compaction. (Relative compaction refers to the in-place dry density of soil expressed as a percentage of the maximum dry density, as determined by laboratory test procedure. Optimum moisture is the water content, by percent of dry soil weight, that corresponds to maximum dry density.) If zones of soft, saturated or porous soils are encountered, they should be removed to expose uniformly firm soil and replaced with properly compacted fill.

Fill material should be free of organic material and debris, have a low expansion potential (Liquid Limit less than 40 and Plasticity Index less than 15), and contain no more than 30% passing the No. 200 sieve. On site excavated soil will be suitable for use as fill provided that any organic and/or over-sized material is removed. New fill should be placed in uniformly thin lifts (four to eight inches depending upon size of compaction equipment) and similarly moisture-conditioned to near-optimum moisture content and compacted to at least 90% relative compaction. Subgrade surfaces for pavement or vehicle parking areas should be further rolled to provide a smooth unyielding surface compacted to at least 95% relative compaction within the upper six inches.

Foundations & Slabs-on-Grade

Founding conventional spread footings in the near-surface compressible colluvium at the base of the slope will result in differential settlement of the building. However, the planned excavations into the slope will remove much of the compressible soil to expose firm natural soils at eight to ten feet below grade. Therefore, it will be possible to use a combination of spread footings with lower bearing pressures for the retaining walls at the back, while using drilled cast-in-place reinforced concrete piers to penetrate the weak soils at the front. The transition between the drilled piers with grade beams and the spread footings, which will require some localized deepening, can be determined during construction based on observations of the actual soil/rock conditions exposed during the excavations. This combined system will provide more uniform foundation support in firm natural soil throughout the entire building.

For the same reasons to resist the potential for differential settlement, the planned concrete slab-on-grade garage floor should be more heavily reinforced with the edges structurally tied to the foundations. Alternatively, for the upper level floor which spans a transition zone from compressible colluvium to firm natural, perhaps a supported wood floor should be considered. The colluvial soils also will exert slightly higher than normal lateral earth pressures.

Preliminary soil design criteria for both foundation types, along with those for the retaining walls, are presented below for planning purposes. I have assumed that the side walls will be more lightly loaded and bottomed in medium stiff/dense colluvium than the rear retaining walls that will be bottomed in firm natural soils. These values may be adjusted, if necessary, following the Planning approvals when the structural details are being finalized.

Spread Footings

Minimum dimensions:	18 inches wide by 18 inches deep below lowest adjacent grade		
Bearing capacities, side walls:	2000 psf dead loads,	2500 psf live loads,	3000 psf total loads
back walls:	3000 psf dead loads,	4500 psf live loads,	6000 psf total loads
Lateral resistance, side walls:	0.30 x net vertical dead load (NVDL) for friction, 300 pcf, equivalent fluid pressure w/ triangular distribution, for passive (ignore the upper 12 inches unless the surface is confined)		
back walls:	0.40 x NVDL for friction,	500 pcf for passive	

Drilled Piers

Minimum dimensions: 18-inch diameter by estimated minimum depths of 10 feet
Skin friction: 700 psf starting 3 feet below grade or 5 feet lateral confinement
Lateral resistance: 500 pcf equivalent fluid pressure over 2 pier diameters

Retaining Walls

Active earth pressures: 60 pcf for level backfill
70 pcf for sloping backfill (rear patio wall)
"At-rest pressures: 75 pcf for level backfill
(top of wall fixed against rotation)
Seismic surcharge: 10H psf, rectangular distribution, with H = retained height of soil behind wall

Seismic Criteria

Site Classification: D, stiff soil
Ss = 1.512g Fa = 1.000 S1 = 0.688g Fv = 1.500

As a precaution against differential foundation movement during extended earthquake ground shaking, the building foundations should be interconnected with interior wall footings, reinforced concrete grade beams or slabs.

Utility Trench Backfill

Above the pipe and bedding material, utility trenches can be backfilled with either on-site or imported soils. Backfill must be free of organic material and debris, must have a low expansion potential (Liquid Limit less than 40 and Plasticity Index less than 15), and contain no more than 10% passing the No. 200 sieve. The backfill materials should be placed in uniform lifts (four to six inches depending upon the size of compaction equipment), moisture conditioned to near optimum moisture content and compacted to the specified degree of compaction. Within pavement areas, the trench backfill compaction should be at least 85% relative compaction below two feet, and at least 90% compaction with the upper two feet. The upper six inches within pavement areas should be additionally compacted to at least 95% during subgrade preparation. Within building areas, trench backfill should be compacted to at least 90% compaction for the full depth, but outside of pavement and building areas, the compaction can be reduced to 85% for the full depth. The contractor should be cautioned about using clay or fine silt material for trench backfill since it will be more difficult to achieve the optimum moisture content and the required degree of compaction than with more granular materials. Jetting for compaction of trench backfill should not be permitted.

Concrete Slabs-on-Grade

During excavation for foundations and underground utilities, the building pad surface can become disturbed. Where this is the case, the subgrade surface should be re-cleaned and compacted to provide a uniformly firm smooth subgrade. Concrete slab-on-grade floors should be underlain by at least four inches of clean open-graded aggregate (3/4 to 1/4 inch) to provide a capillary moisture break. Where moisture vapor would be detrimental to the floor covering or intended use of the slab, a moisture barrier such as plastic sheeting should be considered. Exterior concrete slabs can be placed directly on the prepared subgrade. As previously mentioned, I also recommend that concrete slabs utilize reinforcing steel bars structurally tied to the foundation elements rather than just welded wire fabric to better resist settlement.

Site Drainage Improvements

The primary drainage improvements should include a system to intercept and divert both surface and subsurface water away from the building site. This can consist of graded earth berms, lined drainage ditches and/or catch basins, as appropriate, to intercept surface water runoff from the hillside and natural channels uphill of the building site.

Freeboard on the exterior concrete wall at the patio can also be used to intercept and divert surface water runoff into a collection basin at the end. All surface water runoff should be directed to the existing culvert beneath Cascade Drive to discharge into Fairfax Creek to the south.

Also, in addition to the standard retaining wall backdrains to prevent hydrostatic pressures, I recommend installation of a subdrain across the slope uphill of the building site to intercept subsurface seepage. The subdrain should be approximately five feet deep with a 4-inch diameter perforated SDR35 collection pipe embedded at the bottom of ¾ inch drain rock wrapped in filter fabric. Further, any slab-on-grade floor should be provided with a drainage collection pipe(s) beneath the slab to intercept any subsurface water that migrates beneath the retaining wall footings.

Other standard drainage guidelines to be implemented as appropriate are as follows:

All roof edges should be provided with gutters to collect rainfall runoff, and the downspouts should be connected to closed pipe leaders which discharge at least five feet away from the building or onto an impervious surface. If the leaders are to be buried, they should consist of smooth rigid non-perforated pipe to facilitate future maintenance. Alternative roof gutter and downspout systems are possible but should be reviewed and approved by the soil engineer.

The ground surface should slope away from the building at an inclination of at least two percent (1/4-inch per foot) to prevent collection or ponding of surface water adjacent to foundations. The uphill side of perimeter foundations should be provided with a footing drain consisting of clean free-draining gravel or drain rock wrapped in filter fabric, and which outlet through a rigid perforated pipe sloped for gravity flow at approximately two percent. Where extensive landscape planting, sidewalks or patios obstruct surface flows, area drains should be added to collect surface water runoff. The exposed ground within crawl spaces should be smooth, firm and sloped to provide surface flow towards an outlet through the perimeter stem wall to drain any water which migrates beneath the foundations.

The discharge from downspout leaders, footing drains, area drains and retaining wall backdrains should be downslope of and well away from buildings, preferably directly onto a paved surface or into an established surface drainage system. Drainage outlets on slopes should be protected with cobble riprap or should be through capped rigid perforated pipe placed level across the slope surface to dissipate the discharge over a large area and reduce the risk of surface erosion.

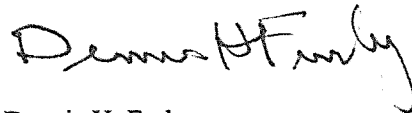
George Pedersen
Page 8

April 13, 2018
Amended September 4, 2019
Job No. 1298-1

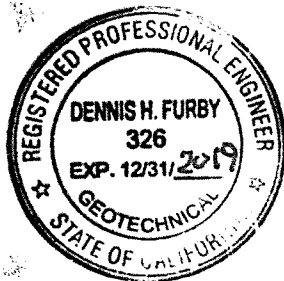
I trust this provides the information required at this time. Should you or others have further questions regarding the soil engineering aspects of this project, please call me.

Yours very truly,

D. H. FURBY, PE
ENGINEERING CONSULTANT



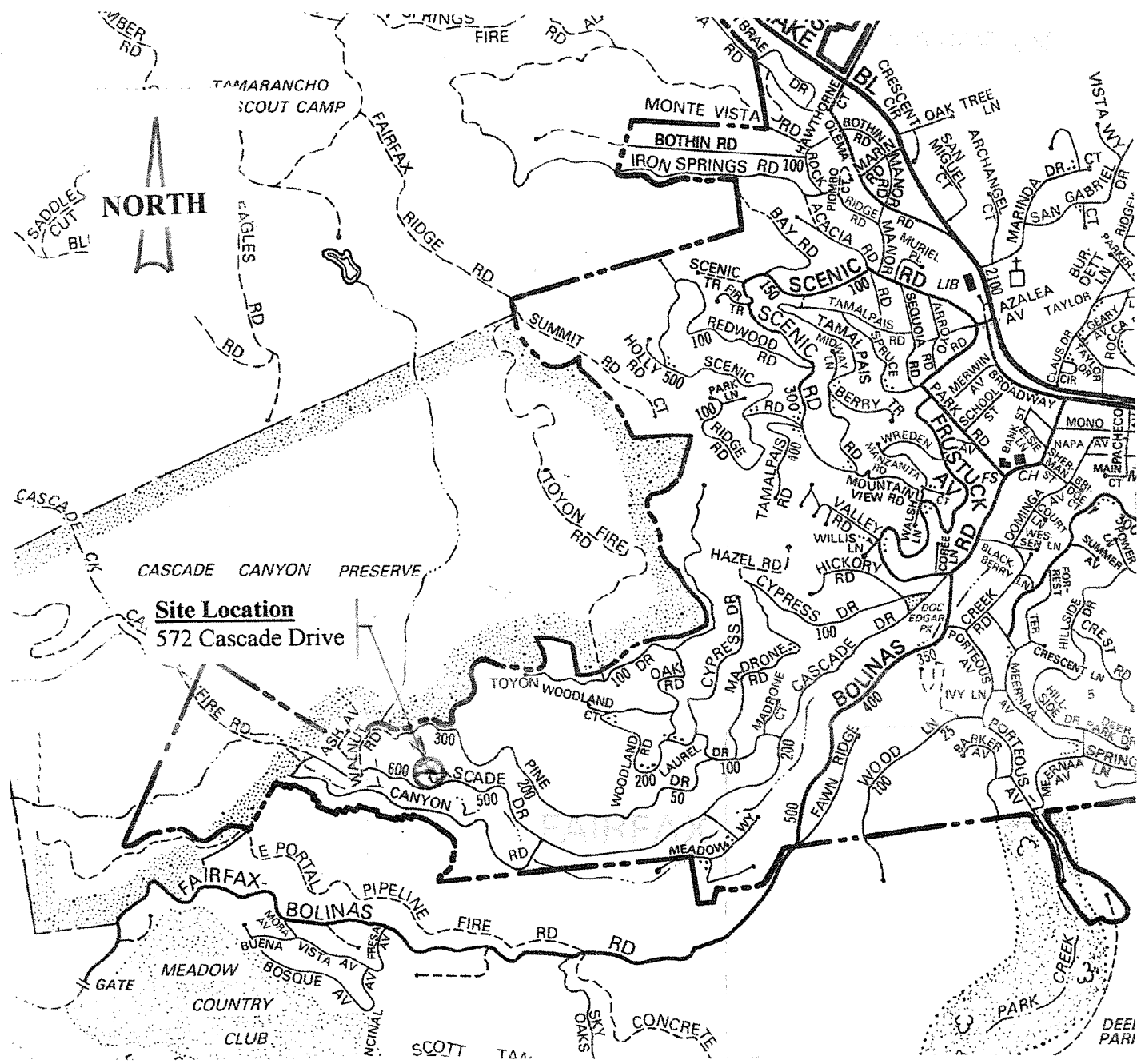
Dennis H. Furby
Geotechnical Engineer - 326
(expires 12/31/2019)



DHF/dhf

Attachments: Figure 1, Site Location Map
Figure 2, Site Plan (marked with test pit locations)
Figure 3, Logs of Test Pits (Amended)

1 copy submitted (gnppedersen@gmail.com)
cc: Richard Rushton (rushtonchartock@gmail.com)
cc: Vlad Iojica (viojica@via-eng.com)
cc: Noadiah Eckman (noadiah.eckman@gmail.com)
cc: Eric Kreager (eric@mkmassociates.com)
cc: Andrew Flick (flick.design@gmail.com)
(additional copies may be printed as required for the Fairfax Planning submittal)



Reference: Thomas Bros. Maps, Marin County

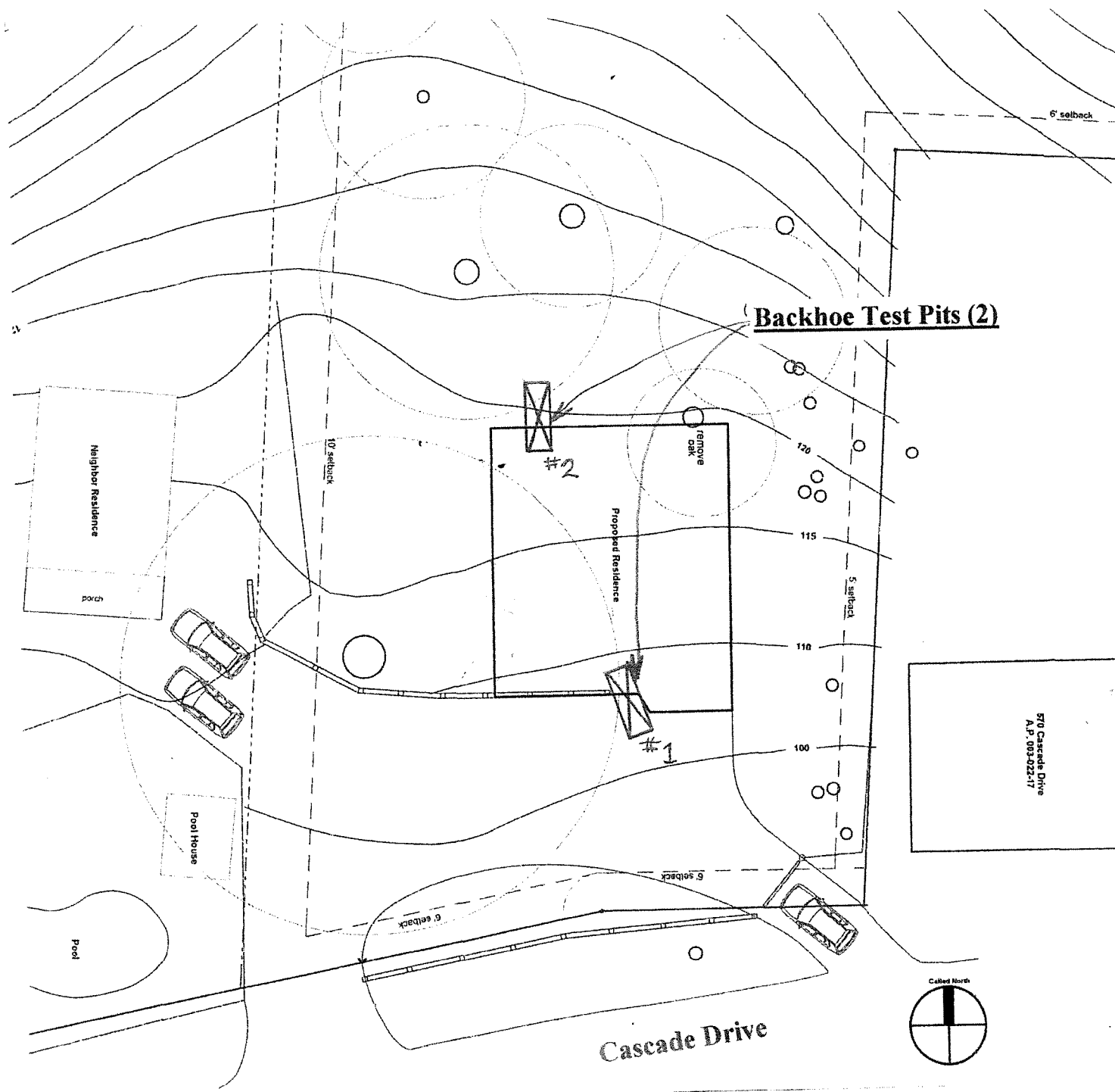
SITE LOCATION MAP

D.H. Furby, PE
 Engineering Consultant
 Greenbrae, California

Job No. 1298-1

Date: 04/13/2018

Figure 1



Reference: Site Plan, Sheet A2.2 dated 1/9/18, prepared by Rushton-Chartock Architects

PARTIAL SITE PLAN

(reduced; not to scale)

D.H. Furby, PE
 Engineering Consultant
 Greenbrae, California

Job No. 1298-1

Date: 04/13/2018

Figure 2

Log of Test Pit #1

<u>Depth, feet</u>	<u>Descriptions</u>
0 – 1	Dark Brown Sandy Silt (ML), wet, soft with roots and small pebbles
1 – 2½	Red Brown Sandy Clay (CL), moist, medium stiff with moderate sized roots
2½ - 6½	Red Brown Sandy Clay (CL), moist, stiff increasing stiffness with depth Bottom of hole at 6½ feet, No free water or seepage encountered

Log of Test Pit #2

<u>Depth, feet</u>	<u>Descriptions</u>
0 – 1	Red Brown Silt (ML), wet, soft with roots and small pebbles
1 – 3	Red Brown Sandy Silt (ML), moist, medium stiff no roots below 3 feet
3 – 8	Light Brown Sandy, Gravelly Silt (ML), moist, stiff increased gravel content with depth Bottom of hole at 8 feet in dense Clayey Gravel No free water or seepage encountered

Notes:

1. Test pits were excavated on March 30, 2018, using a small track-mounted Kubota KX71-3 backhoe. The locations were determined, and the pits logged, by Dennis Furby. Both pits were backfilled shortly after logging.
2. Per Cal/OSHA classification guidelines, the above colluvial soils to six feet deep are Type B; below six feet, the underlying firm natural soil can be considered Type A

LOGS OF TEST PITS

(locations shown on Site Plan, Figure 2)

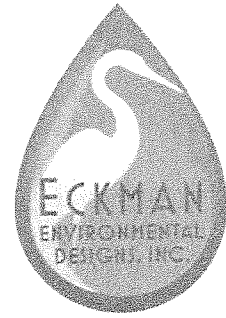
D.H. Furby, PE
Engineering Consultant
Greenbrae, California

Job No. 1298-1

Date: 04/13/2018
Amended: 08/31/2019

Figure 3

April 7th, 2020



ONSITE WASTEWATER PLANNING

Linda Neal
Town of Fairfax
142 Bolinas Road
Fairfax, CA 94930

Subject: Proposed Onsite Wastewater Treatment System at 572 Cascade Ave

Dear Ms. Neal:

The purpose of this letter is to address the requested clarification by Miller Pacific Engineers regarding the pumping system for the proposed onsite wastewater system at the subject property.

The proposed plans utilize a 1,000-gallon capacity pump chamber which meets Marin County Environmental Health Code Section 604 Item Number 2 code which specifically includes design criteria to mitigate potential pump failures and power outages. There is almost 500-gallons of emergency storage after the operating level of the pump tank is reached. Based on the average use of water at a home, this allows for almost five days of storage before the tank is full and in need of pumping. In addition, a remote alarm is installed on the system to let the maintenance provider know if the pump has failed and when pumping is required to prevent back up into the plumbing.

Due to steep slopes and limited soils conditions throughout the entire County of Marin, utilizing a pump is common practice and there are many fail safe measures included in the Code and in the design. If you have any questions, please feel free to call the undersigned at 510-390-3992.

Sincerely,

Noadiah Eckman, PG
Managing Geologist

July 15th, 2019

Gwen Baert, REHS
Marin County Environmental Health Services
Civic Center, Room 236
San Rafael, CA 94903



Subject: Field Data for Undeveloped Property at 572 Cascade, Fairfax, CA

Dear Ms. Baert:

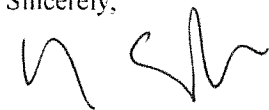
This letter presents the results of the site investigation for a new on-site wastewater disposal system conducted by Eckman Environmental Designs, Inc. at the subject property. Fieldwork was observed by Marin County Environmental Health Services (MCEHS). The site investigation included five soil profile inspection pits, groundwater determination and six percolation tests within the parcel. In February and March of 2010 we excavated three soils profile pits to a depth of 10 feet. Percolation tests were conducted at 48-inches and 84-inches. This year we met with you and reviewed additional two soils profile pits to a depth of 36-inches. No groundwater we present in any of the profile pits. Soils generally consist of sand loams and fractured rock.

Percolation Test Results

<i>Test #</i>	<i>Depth (inches)</i>	<i>Percolation Rate (MPI)</i>
P1	84	4
P2	48	3
P3	48	2
P4	84	3
P5	48	10
P6	84	9
<i>Average Rate</i>		5 MPI

We anticipate that the system accommodate the flows from a residence of 4-bedrooms which is a design flow of 420-gallons per day. We recommend the onsite wastewater system for the property be a 1,500-gallon concrete septic tank and 1,500-gallon concrete dual pump chamber, and associated controls to pump effluent to an RSF and drip irrigation leachfield. If you have any questions, please feel free to contact the undersigned, at (510) 390-3992.

Sincerely,



Noadiah S. Eckman, P.G.

Percolation Test Data			
APN	003-022-20	Date	March 2, 2010
Area	572 Cascade	Tester	NE
Owner	Pederson	Verified by	J Mullen, REHS

Test Hole			
Adjusted Rate (MPI)	P-1	Pipe Diameter (in.)	4.0
Adjustment Factor	1.57	Hole Diameter (in.)	6.0
Notes		Depth (in.)	84.0
		Soil Type	SL

Trial #	Start Time	Initial Water Level (in.)	Reading Time	Final Water Level (in.)	Time Interval	Water Drop (in.)	Percolation Rate in/hr	MPI
1	13:13	9.00	13:43	3.0 (dry)	30	X	X	X
2	13:43	9.00	14:13	3.0 (dry)	30	X	X	X
3	14:13	9.00	14:43	3.0 (dry)	30	X	X	X
4	14:44	9.00	15:14	3.0 (dry)	30	X	X	X
5	15:14	9.00	15:19	7.00	5	2.00	24	2.50
6	15:20	9.00	15:25	7.00	5	2.00	24	2.50

Test Hole			
Adjusted Rate (MPI)	P-2	Pipe Diameter (in.)	4.0
Adjustment Factor	1.57	Hole Diameter (in.)	6.0
Notes		Depth (in.)	48.0
		Soil Type	SL

Trial #	Start Time	Initial Water Level (in.)	Reading Time	Final Water Level (in.)	Time Interval	Water Drop (in.)	Percolation Rate in/hr	MPI
1	13:13	9.00	13:43	3.0 (dry)	30	X	X	X
2	13:43	9.00	14:13	3.0 (dry)	30	X	X	X
3	14:13	9.00	14:43	3.0 (dry)	30	X	X	X
4	14:44	9.00	15:14	3.0 (dry)	30	X	X	X
5	15:17	9.00	15:19	8.00	2	1.00	30	2.00
6	15:20	9.00	15:22	8.00	2	1.00	30	2.00

Test Hole			
Adjusted Rate (MPI)	P-3	Pipe Diameter (in.)	4.0
Adjustment Factor	1.57	Hole Diameter (in.)	6.0
Notes		Depth (in.)	48.0
		Soil Type	SL

Trial #	Start Time	Initial Water Level (in.)	Reading Time	Final Water Level (in.)	Time Interval	Water Drop (in.)	Percolation Rate in/hr	MPI
1	13:17	9.00	13:47	3.0 (dry)	30	X	X	X
2	13:47	9.00	14:17	3.0 (dry)	30	X	X	X
3	14:17	9.00	14:47	3.0 (dry)	30	X	X	X
4	14:47	9.00	15:17	3.0 (dry)	30	X	X	X
5	15:25	9.00	15:26	7.00	1	1.00	60	1.00
6	15:27	9.00	15:28	7.00	1	1.00	60	1.00

Average Adjusted Rate (MPI) 5.17

Adjustment Factor	1.57	2.20	2.37
Pipe Diameter (in.)	4.00	4.00	4.00
Hole Diameter (in.)	6.00	8.00	10.00
			12.00

Test Hole			
Adjusted Rate (MPI)	P-4	Pipe Diameter (in.)	4.0
Adjustment Factor	1.56	Hole Diameter (in.)	6.0
Notes		Depth (in.)	84.0
		Soil Type	SL

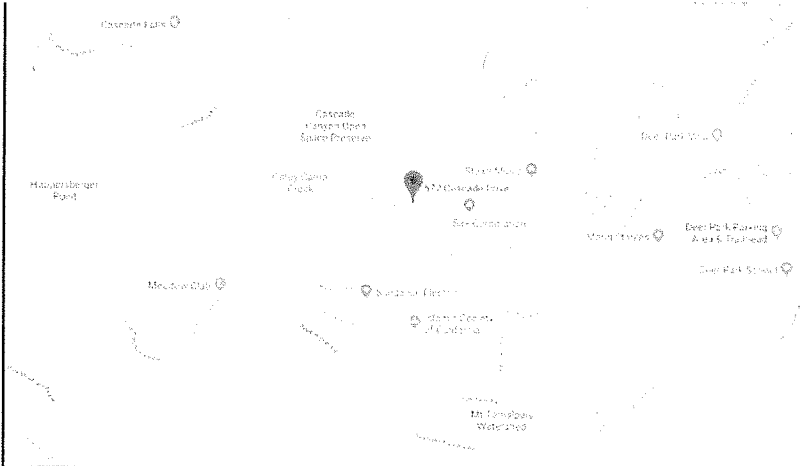
Trial #	Start Time	Initial Water Level (in.)	Reading Time	Final Water Level (in.)	Time Interval	Water Drop (in.)	Percolation Rate in/hr	MPI
1	13:18	9.00	13:48	3.0 (dry)	30	X	X	X
2	13:48	9.00	14:18	3.0 (dry)	30	X	X	X
3	14:18	9.00	14:48	3.0 (dry)	30	X	X	X
4	14:48	9.00	15:18	3.0 (dry)	30	X	X	X
5	15:20	9.00	15:25	6.25	5	2.75	33	1.82
6	15:25	9.00	15:30	6.25	5	2.75	33	1.82

Test Hole			
Adjusted Rate (MPI)	P-5	Pipe Diameter (in.)	4.0
Adjustment Factor	1.56	Hole Diameter (in.)	6.0
Notes		Depth (in.)	48.0
		Soil Type	SL

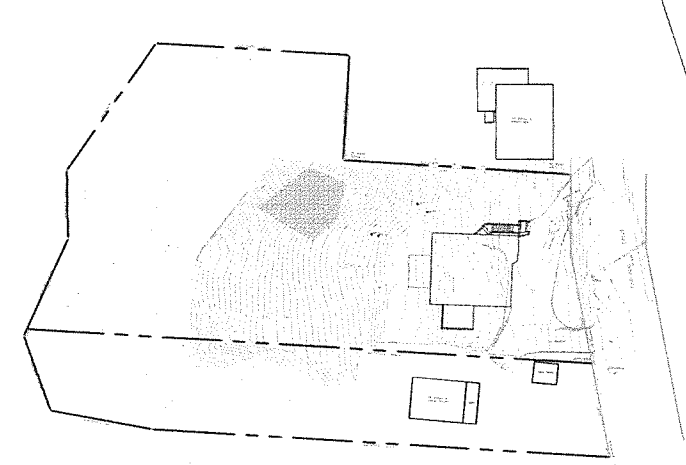
Trial #	Start Time	Initial Water Level (in.)	Reading Time	Final Water Level (in.)	Time Interval	Water Drop (in.)	Percolation Rate in/hr	MPI
1	13:19	9.00	13:49	3.0 (dry)	30	X	X	X
2	13:49	9.00	14:19	4.00	30	5.00	B	6.00
3	14:19	9.00	14:49	4.25	30	4.75	9.5	6.32
4	14:49	9.00	15:19	4.25	30	4.75	9.5	6.32

Test Hole			
Adjusted Rate (MPI)	P-6	Pipe Diameter (in.)	4.0
Adjustment Factor	1.57	Hole Diameter (in.)	6.0
Notes		Depth (in.)	84.0
		Soil Type	SL

Trial #	Start Time	Initial Water Level (in.)	Reading Time	Final Water Level (in.)	Time Interval	Water Drop (in.)	Percolation Rate in/hr	MPI
1	13:20	9.00	13:50	3.25	30	5.75	11.5	5.22
2	13:50	9.00	14:20	3.25	30	5.75	11.5	5.22
3	14:20	9.00	14:50	3.50	30	5.50	11	5.45
4	14:50	9.00	15:20	3.50	30	5.50	11	5.45



PROPERTY BOUNDARIES (1" = 50')

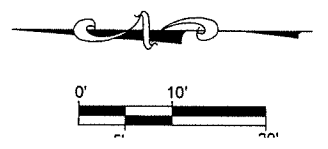
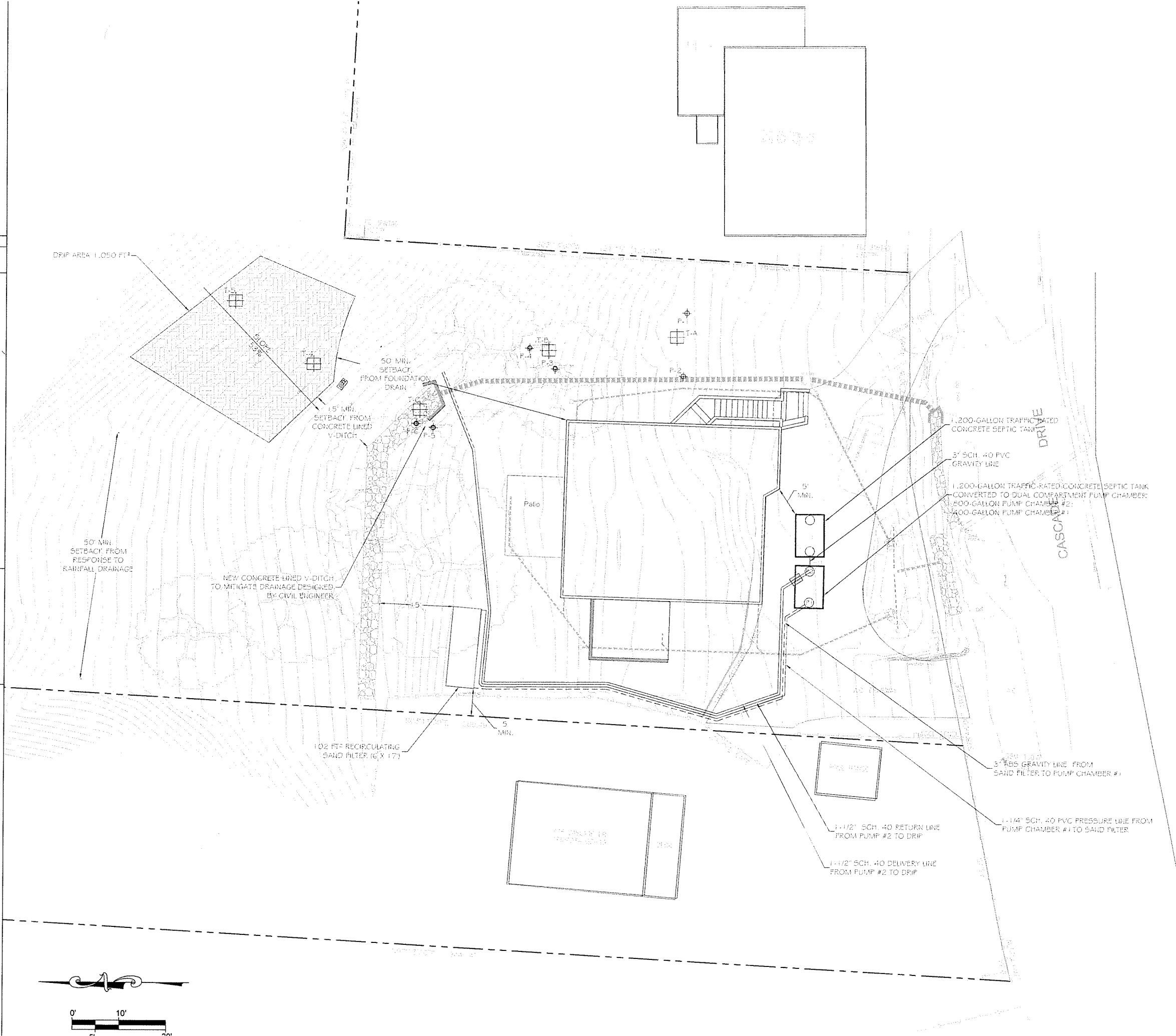


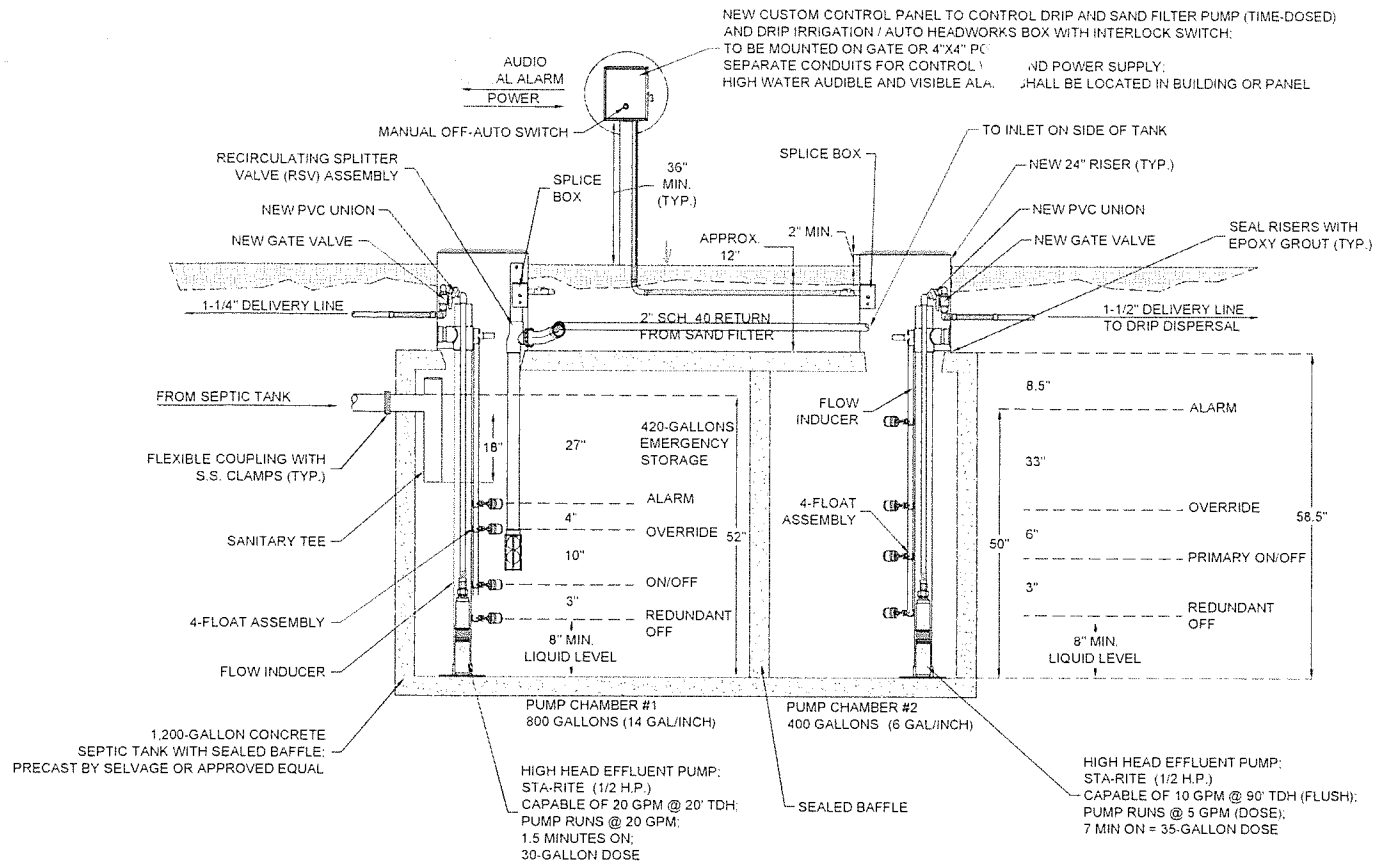
LEGEND

- | | | | | | |
|--|---------------------|--|-----------------|--|---------------|
| | Soil Profile Trench | | GW-1 | | Contour Line |
| | Percolation Test | | Clean Out | | Gravity Line |
| | Check Valve | | Monitoring Well | | Pressure Line |

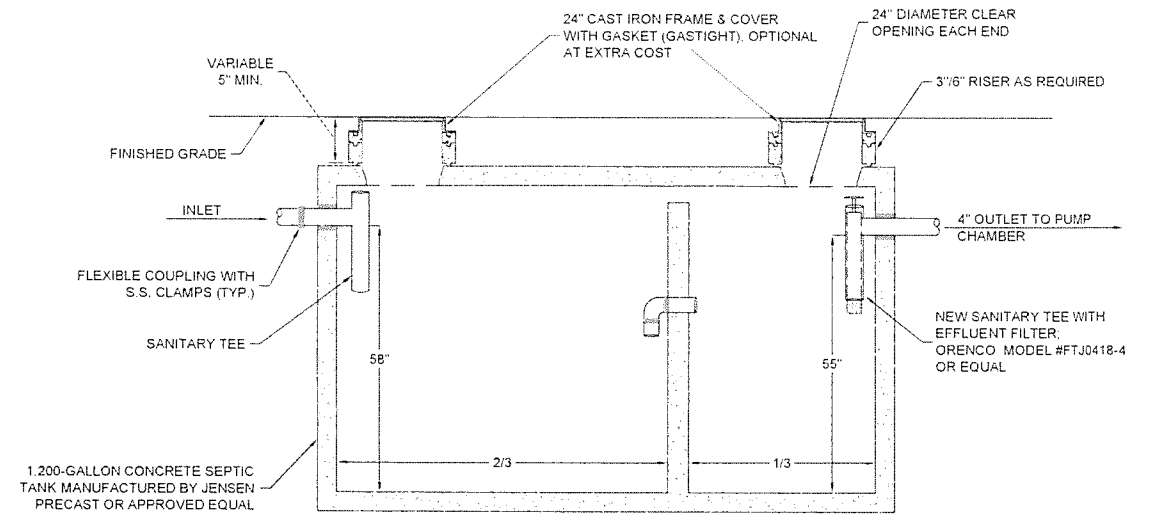
NOTES

- * Survey provided by owner. EED assumes no responsibility.
- * 420 GPD System
- * 1' Contours show

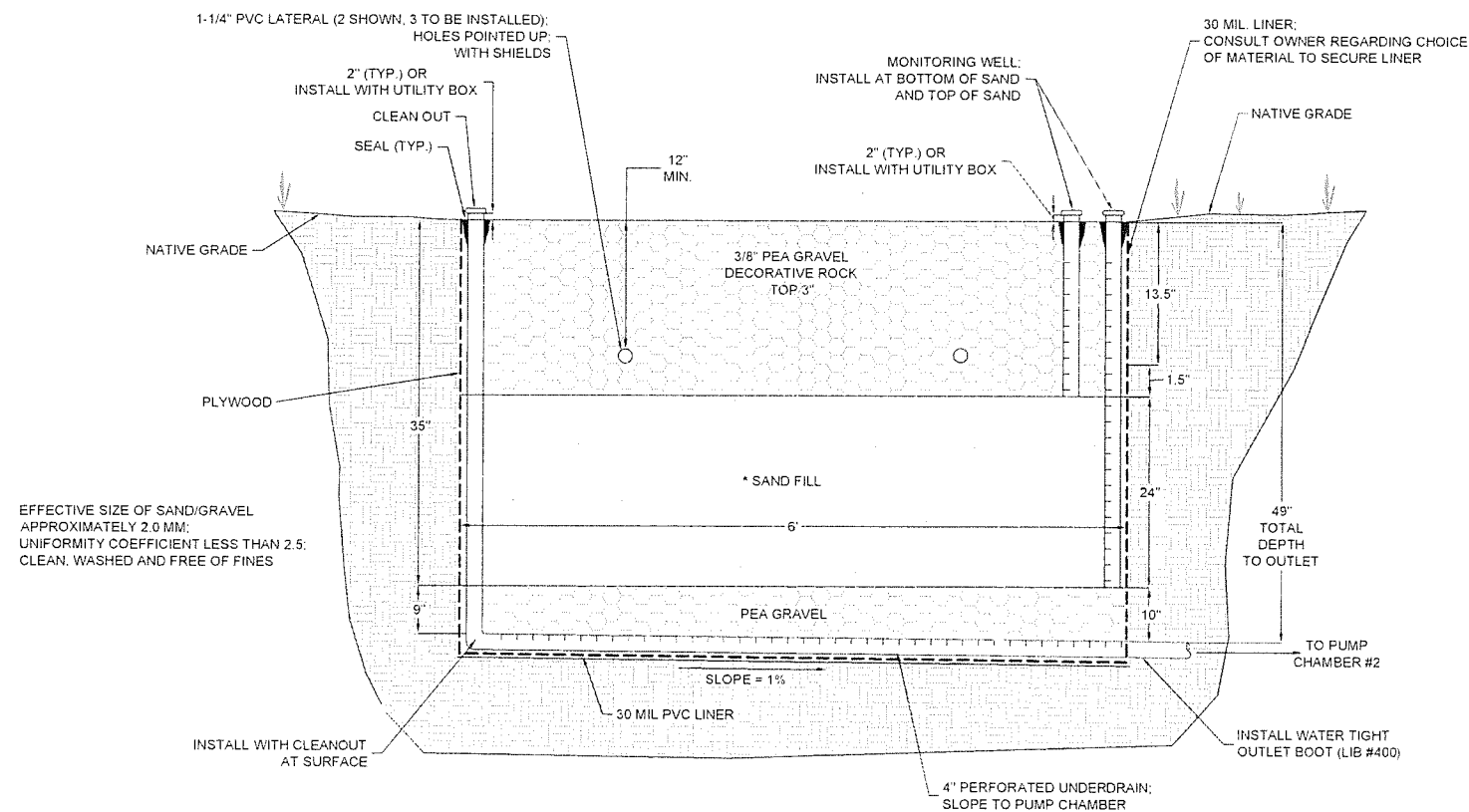




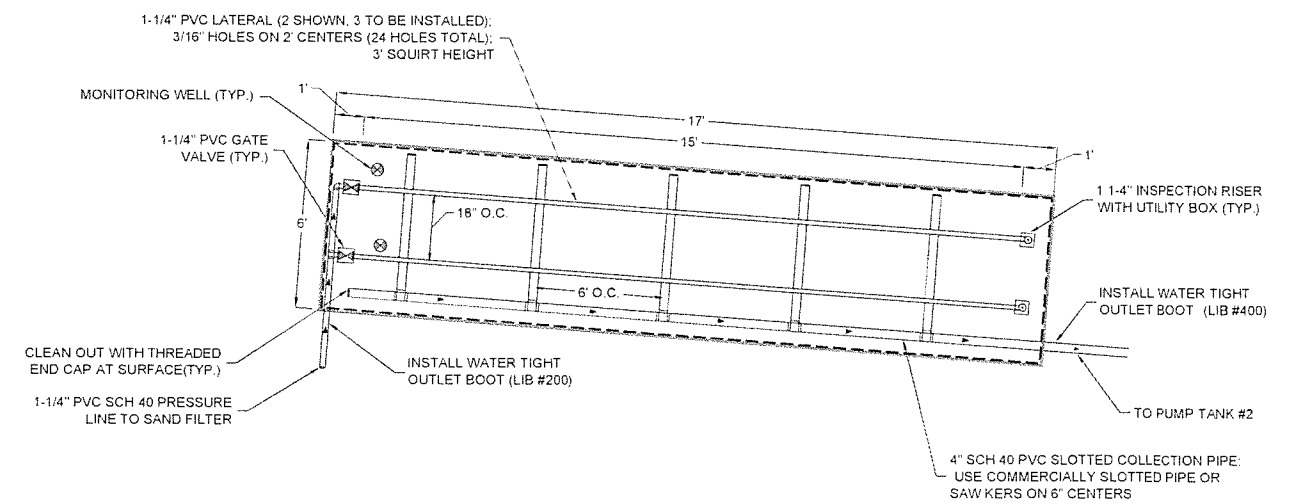
1,200-GALLON DUAL PUMP CHAMBER 1



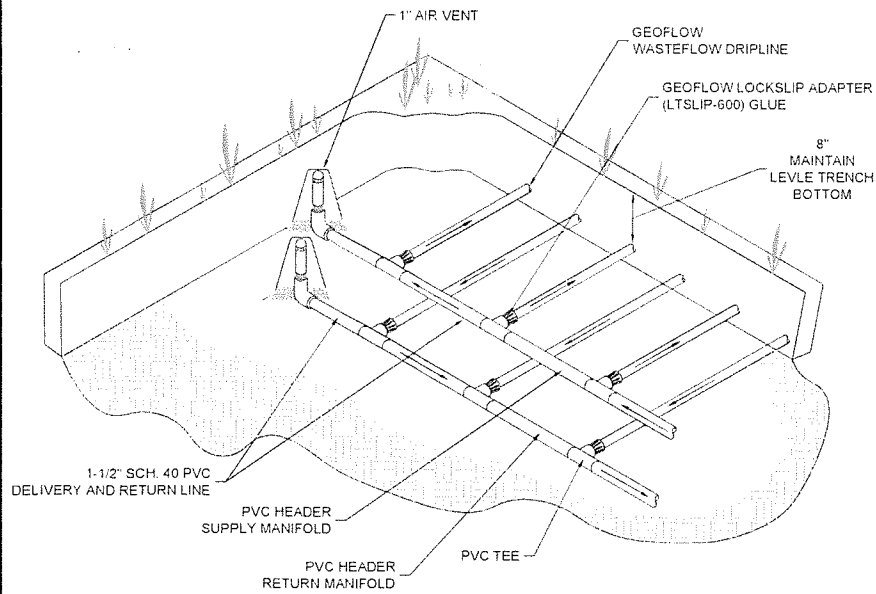
1,200-GALLON TRAFFIC RATED SEPTIC TANK 2



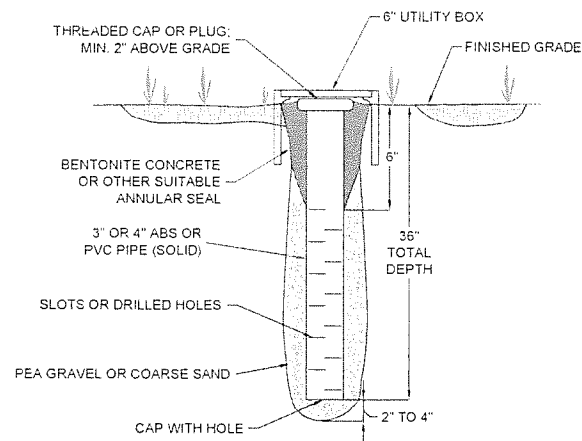
RECIRCULATING SAND FILTER 3



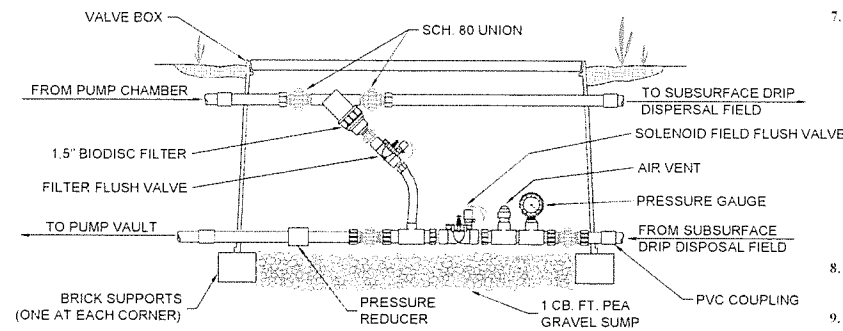
RECIRCULATING SAND FILTER 4



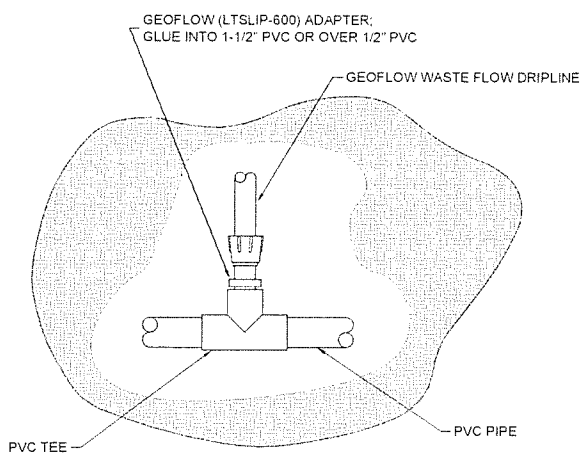
MANIFOLD CONNECTION (END FEED) 5



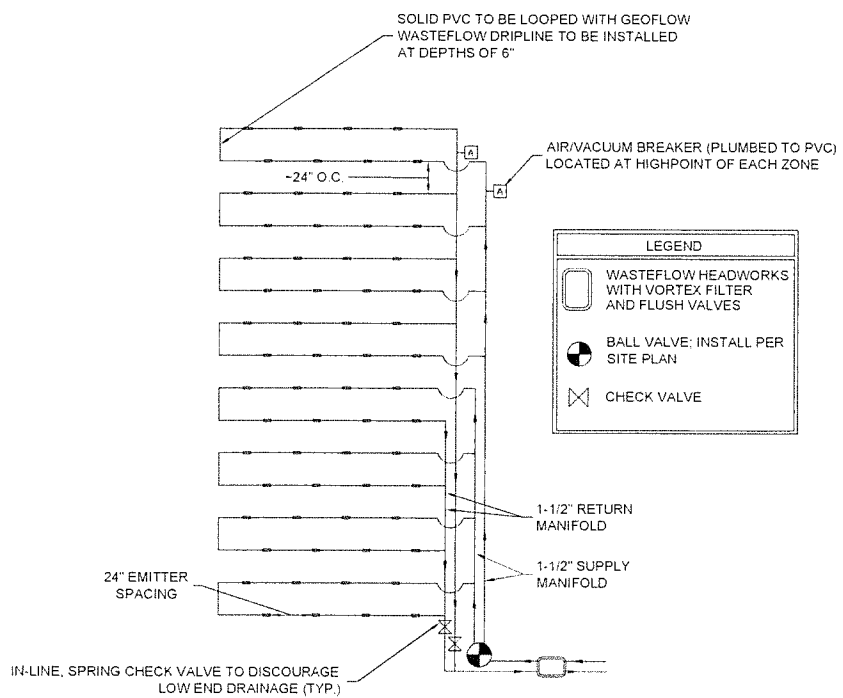
MONITORING WELL 6



SIMPLE WASTE FLOW HEADWORKS BOX MODEL # WHW-1.5-AUTO AND 30 PSI PRESSURE REGULATOR 7



MANIFOLD CONNECTION (PVC TO ADAPTER) 8



SLOPE LAYOUT FOR WASTEFLOW PRESSURE

GENERAL

Changes to plans or specifications shall be made only after consultation with and approval of the Designer.

At all times during the work, keep the premises clean and orderly, and upon completion of the work, repair all damage caused by equipment. Stockpile excavated material in a manner that will cause the least damage to native vegetation and landscaping. Leave the project site free of rubbish or excess materials of any kind.

Construction inspection by the Designer shall be required at points outlined in the attached Construction Inspection Schedule. It shall be the responsibility of the contractor to call for the required inspections, and to provide at least 48-hours advance notification of the Designer and Marin County EHS Department.

All installation shall be in accordance with Marin County Environmental Health Building Codes.

Marin County Building Division Electrical Permit Required.

MATERIALS

Ekman Environmental Designs Inc. to approve construction material prior to placement.

- Access Risers** - Shall be made of PVC, watertight, and shall be installed over the inlet and outlet openings of the septic tank and pump basins with fiberglass lids. The riser must be watertight at all points and have a watertight seal at the top of the tank. Manufactured by Orenco Systems Inc. 814 Airway Avenue, Sutherlin, OR (800) 548-9843, or equal.
- Septic Tank** - 1,200-gallon concrete tank. See installation instructions per Selvage Concrete.
- Pump Vaults** - Chamber #1 is to be 300-gallon with pump capable of 20 gpm at 20 ft TDH to time dose pretreatment unit. Chamber #2 is to be 400-gallon. The pump for the dripfield is to be Sta-Rite model 20GPM or equal, capable of delivering 12 gpm at 90 ft TDH. Junction boxes #SB4 and #SB1 and high head assembly.
- Distribution Piping** - All piping for the delivery and pressure distribution network shall be Schedule 40 PVC and have a minimum pressure rating of 150 psi unless otherwise specified. All joints shall be solvent-cement socket type conforming to ASTM D-2672.
- Control Panel** - The treatment pumping system and drip irrigation system will be controlled by control panel which meets all specifications for Marin County Codes. The pumping system includes two effluent pump with time-dosing. The control panel will also operate the Geoflow® automatic Headworks box.
- Dripline** - Dripline shall be Geoflow® Wasteflow™ PC with variable line spacing (between 18 and 24-inches). There shall be pressure-regulating emitters inserted every 12 inches inside the tube. These emitters shall have a nominal flow rate of 1/2 gallon per hour. The emitters shall be impregnated with Treflan to inhibit root intrusion for a minimum period of 10 years, a period guaranteed by the manufacturer. The dripline shall be identified as being used with non-potable water by means of two purple stripes permanently incorporated into the outside wall of the tube. Operating pressure is 10 to 40 psi. As manufactured by Geoflow, Inc., 1(800) 828-5388.
- Automatic Headworks Box** - The pre-assembled headworks box shall be Geoflow® #WHW-1.5-AUT with an automatic flush configuration and shall include the following: biotric filter, zone flush valve, filter flush valve, pressure gauge, air vent, and utility box. As manufactured by Geoflow, Inc.

Vortex Filter Flush Valve (Solenoid) - Set the control panel so that the filter flush valve will automatically open for 15 seconds at the end of the pump cycle. When the vortex filter flush is complete the filter flush valve will close and the system drain function begins.

Field Flush Valve - Will open at the end of the dosing cycle. The pump will continue to run for 5 seconds (field adjustable) to accommodate the opening of this valve. After the pump is deactivated the field flush valve will remain open for five minutes (field adjustable) to allow for drainage of the return line. It is best to clock the length of time it takes to return flush line to drain and use this to set your drain time. The field flushing will be directed to the inlet side of the septic tank and is controlled by a solenoid valve located in the automatic headworks box. This setting shall be programmed by Contractor into the control panel.

- Supply Manifold** - The supply manifold delivers treated effluent from the pump. The supply manifold shall be 1-1/2-inch Schedule 40 PVC. 2-inch Schedule 40 PVC for PuroFlow Modules.
- Return Manifold** - The return manifold collects the water flushed from the emitter lines and returns it to the pump chamber #2. The return manifold shall be 1-1/2-inch Schedule 40 PVC.

Dripline Fittings - All connections shall be made with barb or compression-type fitting connections. Fitting shall be as manufactured by Geoflow® to ensure the integrity of the subsurface disposal system.

Geoflow Air/Vacuum Relief Valves - The air and vacuum relief valves shall be Model No. APVBK-1, or equivalent. The dispersal zone shall utilize a 1-inch MPT air/vacuum relief valve at its high point(s). The purpose of this valve is to evacuate air from the zones at startup and to relieve vacuum at system shut down to prevent back siphoning or back pressure.

Recirculating Sand Filter - See sand specs detail #5.

GENERAL CONSTRUCTION

Installation - All installation work shall be in accordance with applicable Marin County codes.

Septic Tank and Pump Chamber Leak Test - All tanks and vaults shall be required to be certified as watertight. Field testing of tanks shall be required and conducted as follows:

Designer to visually inspect tank prior to conducting leak test. Fill tank and pump chamber so water level is 2 inches above tank/access riser joints. Note depth of water and re-measure not less than 1 hour later. A water drop will be considered to be an indicator of a leaking tank, and tank shall be repaired or replaced to the satisfaction of the designer.

Location of Drip Disposal Area - Location shown for the drip disposal area is approximate, subject to adjustment in the field by the Contractor according to building constraints and noted setback requirements.

Pump Chamber Locations - Location for the pump chamber is approximate, subject to adjustment in the field by the contractor according to building constraints and any noted setback requirements.

Pump Controls - Pumps controlled on a timed basis. Timer setting and final setting of float switches shall be determined in the field, based on actual pump chamber dimensions.

- Electrical**
 - High water audio and visual alarm IS required within the house
 - All electrical work shall conform to procedures and codes of Marin County Building Department

Effluent Pump - The pump shall be of the size and type to accommodate the intended use and shall include the following:

- A "Hand-off-auto" (HOA) switch
- An audio and visible alarm and necessary sump water sensing device to indicate a "high water" condition
- Float switches shall be anchored to a suitable float tree for controlling the starting and stopping of pump operation.

Sump

- Access shall be provided by a minimum 24-inch diameter opening.
- All pipes and/or electrical conduits through the sump shall be either precast into the sump or sealed with gas-tight compression connectors.

Electrical Features: The following electrical features shall be provided:

- An outdoor-type control box containing fused disconnect and motor protection switch.
 - The control box may be mounted on the building served if located within 30 feet and within direct view of the sump, otherwise the control box shall be mounted on a pipe stand or wooden post.
 - Electrical conduit shall be PVC. Separate conduits shall be provided for control wire and power supply. Separate circuits with individual breakers at the main panel shall be provided for the control panel alarm and pump.
- Pressure Pipe Network**
 - All pressure pipe shall be Schedule 40 PVC or approved equal.
 - All joints shall be glued with solvent cement.
 - Hydraulic testing shall be conducted in the presence of the Designer to determine any leaks in the system and pump operation.
 - A concrete thrust block shall be installed at all pipe bends of 45° or greater in all pressure lines.

GEOFLOW INSTALLATION

All Geoflow drip systems require 100 micron ± 150 mesh filter, Filter flush valve, Field flush valve and Air vent in each zone. All Wasteflow PD drip systems require pressure regulation.

Handle your dripline and components with care. ROOTGUARD® is temperature sensitive. To assure a long life store the drip line out of direct sunlight in a cool place. Install the system headfirst: pumps, control panel, and automatic headworks box.

- All dripfield construction shall be done in accordance with Local rules and regulations.
- No utilities, cable wire, drain tile, etc shall be located in dripfield.
- Fence off entire dripfield prior to any construction.
- System is not to be installed when ground is wet.
- Be sure you have everything required for the installation before opening trenches. Pre-assemble as many sets of components as practical above ground and in a comfortable place. Compression or Lock-slip adapters should be glued to PVC tees, riser units should be pre-assembled, the submain manifold with tees can be pre-assembled and used to mark the beginning and end of WASTEFLOW lines.
- For particularly tough soil conditions moisten the soil the day before opening trenches or installing WASTEFLOW. Remember it is much easier to install the system in moist soil. The soil should be moist but still should allow the proper operation of the installation equipment and not cause smearing in the trenches. The soil surface should be dry so that the installation equipment maintains traction.
- Mark the four corners of the field. The top two corners should be at the same elevation and the bottom two corners should be at a lower elevation. In freezing conditions the bottom dripline must be higher than the supply and return line elevation at the dosing tank.
- Install the PVC supply line from the dosing tank, up hill through one lower and one upper corner stake of the dispersal field 18-inch depth of burial.
- Paint a line between the two remaining corner stakes.
- Install the Geoflow WASTEFLOW dripline from the supply line trench to the painted line, approximately 8" deep as specified. Upon reaching the painted line, pull the plow out of the ground and cut the dripline 1" above the ground. Tape the end of the dripline to prevent debris from entering. Continue this process until the required footage of pipe is installed. Geoflow dripline must be spaced according to specification. Depth of burial of dripline must be consistent throughout the field. Take care not to get dirt into the lines.
- Install the supply header with tees lined up at each Geoflow line. Hook up the Geoflow lines to the supply header. Do not glue WASTEFLOW dripline.
- Install Lock-slip fittings
 - Hold the fitting in one hand and position the tubing with the other hand.
 - Move the sleeve back, and push the tubing onto the exposed stem as far as possible.
 - Push the sleeve over the tubing and thread the sleeve onto tubing, as though tightening a nut to a bolt. Hand tighten. Do not use tools.
- Install the pre-assembled Headworks between the field and the pump tank on the supply line.
- If using a pressure regulator, install it downstream of the filter or Headworks, just ahead of the dispersal field, on the supply line. The pressure regulator can be installed inside a small valve box for easy access.
- Install the floats in the dosing tank and wire up to the timer control. The timer control should be set to pump no more than the design flow, do not set to match the treatment capacity.
- Fill the dosing tank with fresh water and turn on the pump. Check for flow out the ends of all of the Geoflow lines. Let the pump run for about five minutes to flush out any dirt. Shut off the pump and tape the ends of the lines.
- Dig the return header ditch along the line painted on the ground and back to the pre-treatment tank. Start the return header at the farthest end from the dosing tank. The return line must have slope back to the treatment tank or septic tank.
- Install the return header and connect all of the Geoflow lines. Care must be taken not to kink the dripline.
- Install air vacuum breakers at the highest points in the dispersal field. Use pipe dope or Teflon tape, and hand tighten.
- If Headworks was installed on the supply line, connect the return line back through the Headworks box. Open the field flush valve and turn on the pump to flush lines then close the valve and check the field and all piping and connections for leaks. Turn off the system.
- Turn on the pump and check the pressure at the air vacuum breaker(s). It should be between 15 to 60 PSI. Check the pressure in the WASTEFLOW Headworks if used. It should be five psi or higher. If using a manual valve for field flushing, crack it open until at least one PSI is lost or design pressure is reached and leave in that position.
- Check the filter for construction debris and clean.

CONSTRUCTION INSPECTION SCHEDULE

In accordance with requirements of Marin County EHS, the following construction activities shall be inspected by Designer and EHS Staff:

- INSPECTION #1**
- On-site pre-construction conference to discuss project with Contractor
 - Staking of septic tank and pump chamber
 - Staking of and installation review for sand material
 - Staking and layout of subsurface drip dispersal system

- INSPECTION #2**
- Septic Tank and pump chamber leak test
 - Check water tight sand filter liner
 - Placement of ABS delivery & return drip lines to drip, delivery lines and gravity to and from sand filter

- INSPECTION #3**
- Assembly and layout of Geoflow drip pipe network, check level layout
 - Testing of pumps and distribution systems
 - Complete sand filter installation. Set timer and determine dose rates

- INSPECTION #4**
- Complete Geoflow installation. Set timer and determine dose rates and other settings
 - Final backfill of distribution area and sand filter
 - Final grading for drainage and erosion control
 - General site clean up



May 4, 2020
File: 201.184dltr.doc

Town of Fairfax
Planning and Building Services Department
142 Bolinas Avenue
Fairfax, California 94930

Attn: Ms. Linda Neal, Principal Planner

Re: Fourth Planning-Level Geologic, Geotechnical, and Civil Engineering Review
New Single-Family Residential Development
572 Cascade Drive (APN 003-022-20)
Fairfax, California

Introduction

In response to your request and in accordance with our agreement dated March 20, 2018, this letter summarizes our fourth review of project plans and supporting documentation for the proposed new single-family residence and associated improvements at 572 Cascade Drive (APN 003-022-20) in Fairfax, California. The purpose of our services is to review the submitted documents, comment on the completeness and adequacy of the submittal in consideration of Town requirements, and to provide a recommendation to Town Planning and Building staff regarding project approval. Our previous review comments were summarized in letters dated August 21, 2019; November 27, 2019; and March 3, 2020.

The scope of our services includes:

- A site reconnaissance to observe existing conditions and review proposed development features;
- Review of provided project documents for conformance to the Town of Fairfax Hill Area Residential Development Ordinance, specifically Town Code Sections 17.072.080(B), (C), (E), and (F), and Section 17.072.110 (C).
- Development of opinions regarding project compliance with applicable Town Code requirements; and
- Development of recommendations to Town staff as to whether the project may be safely constructed in consideration of any geologic, hydrologic, or geotechnical hazards.

It should be noted that the scope of our review is limited solely to geologic, geotechnical, and civil portions of the project, and does not include review of structural, architectural, mechanical, or other items beyond the scope of our qualifications. We recommend that non-geotechnical aspects of the plans be reviewed by suitably qualified professionals.

Project Description

The project generally consists of constructing a new, approximately 3,262 square-foot, 3-story residence on a previously-graded but currently-undeveloped parcel along the north side of Cascade Drive. The new residence will be constructed largely via excavation into the hillside, incorporating 2 floors of interior living space over a ground-level garage. Retaining walls ranging

up to about 9-feet high will be needed to accommodate the garage and middle floor, and lower site walls will likely be utilized to accommodate new driveway, patio, and/or landscape areas. Ancillary improvements will include new underground utilities, an expanded, circular asphalt driveway, new site drainage, and other "typical" residential items. Since the public sewer system does not serve the property, a new drip-type septic system is proposed on the slope above the residence.

Project Review

We performed a brief site reconnaissance on August 5, 2019 to observe existing conditions at the site. We previously reviewed the following documents provided by the Town as summarized in our August 21, 2019 (first review) letter:

- Dennis H. Furby, P.E. (2018), "Preliminary Geotechnical Feasibility Evaluations, New Single-Family Residence, 572 Cascade Drive, Fairfax, CA", Job No. 1298-1, dated April 13, 2018.
- Eckman Environmental Designs, Inc. (2018), "Class I 4-Bedroom Onsite Wastewater System, Pedersen Residence, 572 Cascade Drive, Stinson Beach, California", 1 sheet, dated April 20, 2018.
- Via Atelier, Inc. (2018), "Drainage Report, Pedersen Residence, 572 Cascade Drive, Town of Fairfax, CA 94930", dated July 10, 2018.
- Via Atelier, Inc. (2018), "Pedersen Residence, 572 Cascade Drive, Town of Fairfax, CA 94930" (Civil Plans), Sheets C.1 through C.3, Job No. 1711D, dated July 10, 2018.
- Rushton-Chartock Architects (2018), "Pedersen Residence, New Residence for George Pedersen, 278 Cascade Drive, Fairfax, CA", Sheets A1.1 through A7.5, Project No. 17116, dated July 11, 2018.
- J.L. Engineering (2019), "Record of Survey, Lands of Pedersen (DN 2017-017157)", 2 Sheets, recorded May 24, 2019

Subsequently, we reviewed additional documentation for our second review, including the following:

- Eckman Environmental Designs, Inc. (2019), "Class I 4-Bedroom Onsite Wastewater System, Pedersen Residence, 572 Cascade Drive, Stinson Beach, California", 3 sheets, dated July 16, 2019 (revision A).
- Dennis H. Furby, P.E. (2019), "Preliminary Geotechnical Feasibility Evaluations and Recommendations, New Single-Family Residence, 572 Cascade Drive, Fairfax, CA", Job No. 1298-1, dated April 13, 2018 (Amended September 4, 2019).
- Via Atelier, Inc. (2018), "Pedersen Residence, 572 Cascade Drive, Town of Fairfax, CA 94930" (Civil Plans), Sheets C.1 through C.3 and L1, Job No. 1711D, second revision set dated October 14, 2019.

- Richard Rushton Architect (2019), "Pedersen Residence, New Residence for George Pedersen, 572 Cascade Drive, Fairfax, CA", Sheets A1.1 through A7.5, Project No. 17116, Planning Resubmittal set dated October 21, 2019.
- Dennis H. Furby, P.E. (2019), "Geotechnical Engineering Plan Review, New Single-Family Residence for Pedersen, 572 Cascade Drive, Fairfax, CA", Job No. 1298-1, dated October 22, 2019.
- Arborscience, LLC (2019), "Tree Protection Plan, 572 Cascade Drive, Fairfax, California", dated October 24, 2019.

Most recently, we reviewed the following materials submitted in response to our second review comments:

- Dennis H. Furby, P.E. (2019), "Amendment to Preliminary Geotechnical Feasibility Evaluations and Recommendations, New Single-Family Residence for Pedersen, 572 Cascade Drive, Fairfax, CA", Job No. 1298-1, dated December 10, 2019
- Arborscience, LLC (2020), "Tree Protection Plan, 572 Cascade Drive, Fairfax, California", dated February 19, 2020.
- Richard Rushton Architect (2020), "Pedersen Residence, New Residence for George Pedersen, 572 Cascade Drive, Fairfax, CA", Sheets A1.1 through A7.5, Project No. 17116, Planning Resubmittal set dated February 20, 2020.
- Via Atelier, Inc. (2020), "Pedersen Residence, 572 Cascade Drive, Town of Fairfax, CA 94930" (Civil Plans), Sheets C.1 through C.3 and L1, Job No. 1711D, second revision set dated February 24, 2020.

Finally, we reviewed the following in response to our third review comments:

- Richard Rushton Architect (2020), "Pedersen Residence, New Residence for George Pedersen, 572 Cascade Drive, Fairfax, CA", Sheets A1.1 through A7.5, Project No. 17116, Planning Resubmittal set dated March 29, 2020.
- Via Atelier, Inc. (2020), "Pedersen Residence, 572 Cascade Drive, Town of Fairfax, CA 94930" (Civil Plans), Sheets C1.0 through C5.0, L1.0 and L1.1, and CM.1, Job No. 1711D, third revision set dated March 30, 2020.
- Dennis H. Furby, P.E. (2019), "Geotechnical Engineering Responses, Pedersen Residential Project, 572 Cascade Drive, Fairfax, CA", Job No. 1298-1, dated March 31, 2020.
- Eckman Environmental Designs (2020), "RE: Proposed Onsite Wastewater System at 572 Cascade Drive", dated April 7, 2020.

- County of Marin Assessor-Recorder, "Grant Deed, Easement for Vehicular Ingress and Egress", 2020-0014428, recorded April 13, 2020

Conclusions

Based on our site reconnaissance and document review, the following submittal items required by the Town of Fairfax Hill Area Residential Development Ordinance remain outstanding.

Hill Area Residential Development Ordinance

- Section 17.072.080(B) – Topographic and Boundary Survey
 - 1) A Fee Title Report was not provided for review. We noted that the recorded Record of Survey includes a note from the County surveyor questioning the basis for some of the boundary determinations shown. A Fee Title Report should be provided to confirm accuracy of the submitted Record of Survey.
 - 2) The Site Plan on Sheet C3.0 indicates an approximate 24-foot easement in the southwest corner of the lot to allow vehicle/parking access to the adjoining property to the west (578 Cascade Drive). The provided Grant Deed includes a legal description which generally appears consistent with the dimensions shown on Sheet C3.0, although the easement boundaries are not labelled.

Sheet C3.0 and any other applicable plan sheets should be updated with the easement clearly labelled with distances and dimensions matching the legal description.

- Section 17.072.080(C) – Site Plan
 - 3) The Site Plan indicates that site drainage will be collected and discharged via a cobble-lined channel and level spreader/dissipator system within the Cascade Drive right-of-way. Other improvements in the right-of-way include a permanent asphalt driveway entrance, drainage headwall structure, and new utility connections. An encroachment permit should be required for all improvements within the right-of-way.

Recommendations

We recommend that project processing be continued at the Planning stage. Remaining items, including review of a Fee Title Report, design-level Grading, Drainage, and Erosion control plans, review of Structural, Wastewater, and Construction Management plans, and review of the design-level geotechnical report can be handled at the Building Permit submittal level with minimal anticipated impact.

We trust that this letter contains the information you require at this time. If you have any questions, please call. We will directly discuss our comments with the applicant's consultants if they wish to do so.

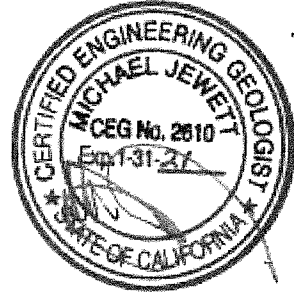
MILLER PACIFIC ENGINEERING GROUP

Town of Fairfax
Page 5

May 4, 2020

Yours very truly,
MILLER PACIFIC ENGINEERING GROUP

REVIEWED BY:



Mike Jewett
Town of Fairfax Contract Geologist
Engineering Geologist No. 2610
(Expires 1/31/21)



Scott Stephens
Town of Fairfax Contract Engineer
Geotechnical Engineer No. 2398
(Expires 6/30/21)

DEPARTMENTAL TRANSMITTAL
 MARIN COUNTY ENVIRONMENTAL HEALTH SERVICES
 ROOM 236, 473-6907

*Emailed on 8/22/19
 To Linda Neal.*

DATE:	August 22, 2019	TYPE OF DOCUMENT
TO:	Linda Neal, Principal Planner Town of Fairfax	<input checked="" type="checkbox"/> DESIGN REVIEW
FROM:	Gwendolyn Baert, Senior REHS	LAND DIVISION
RE:	572 Cascade Dr.	USE PERMIT
		VARIANCE
AP#:	003-022-20	MASTER PLAN
ADDRESS:	572 Cascade Dr., Fairfax	COASTAL PERMIT
		LOT LINE ADJ.
		OTHER

THIS APPLICATION HAS BEEN REVIEWED FOR THE FOLLOWING ITEMS:

WATER	<input checked="" type="checkbox"/> SEWAGE	SOLID WASTE
POOLS	HOUSING	FOOD ESTABLISHMENT

THIS APPLICATION IS FOUND TO BE:

- FIND IT COMPLETE.
- FIND IT INCOMPLETE UNTIL THE ITEMS LISTED BELOW HAVE BEEN SUBMITTED.
- FIND IT ACCEPTABLE AS PRESENTED, WITH THE FOLLOWING CONDITIONS.
- RECOMMEND DENIAL FOR THE REASONS LISTED BELOW.

Marin County Environmental Health Services has performed a preliminary plan check for a 4 Bedroom septic design that consists of a Recirculating Sand Filter (for pretreatment) with a drip disposal leach field. We find that the proposed system is in conformance with the requirements of Marin County Environmental Health. A sewage disposal permit will be required prior to issuance of the Building Permit.

