MERIT ENGINEERING
http://www.MeritEngineering.com

10129 Main St., #201
Bellevue, Washington 98004
Telephone: 425-454-2133
Fax: 425-454-2133
merit@MeritEngineering.com
http://www.MeritEngineering.com

February 6, 2025
Project No.2DK0233995

2018 ASCE Washington Honorable Mention Engineering Excellence

Chunling Ou
chunling.office@gmail.com

Re: Geotechnical Plan Review and Minimum Risk Letter
3804 E Mercer Way
Mercer Island, WA 98040
CAO24-013 Review Letter 2

Dear Chunling:

At your request, we provided this letter of minimum risk statement.

We prepared a geotechnical engineering evaluation for the project site dated February 6, 2025. In general, we concluded that the site does not contain Landslide Hazard Areas, Erosion Hazard and Seismic Hazard is low as defined by the Mercer Island Municipal Code (MICC). The proposed development is to demolish the existing house and build a new house at approximately same location with larger footprint. The proposed scope of work also includes grading, landscaping, and constructing driveways to the east and west of the new house. In our geotechnical report dated February 6, 2025, a geological critical area study was conducted showing that with such development the site is determined to be safe and geologic hazard mitigation is also conducted showing that the proposed development will not adversely impact the subject property or adjacent properties and other critical areas. In addition, the proposed redevelopment will help mitigate the ECA risks for this site and the neighboring sites. (See attached summary from design team).

Merit Engineering has reviewed the latest Architectural Plan dated 12/11/2024 from MJZ Design, Civil Engineering Plan dated 12/11/2024 from Tandem Engineering Consultant LLC, Landscape Plan dated 12/11/2024 from Lotus Landscape Design, and Structural Plan dated 12/09/2024 from NKH Engineering. Based on our review of the plans, it is our opinion that the geotechnical aspects of these documents are generally consistent with the design recommendations presented in our geotechnical report dated February 6, 2025.

MINIMUM RISK STATEMENT

Based on our site-specific subsurface evaluation the proposed development is not within a landslide hazard area, erosion hazard area and seismic hazard is low. It is our opinion that the proposed development meets the requirement stated in **Mercer Island City Code 19.07.160.B.3.c.,** as the foundation elements designed and constructed per our recommendations should adequately mitigate potential geologic hazards from impacting the

subject and surrounding properties. The adequacy of the temporary erosion and sediment control measures should be monitored during construction, especially in the wet season, by Merit Engineering and may be modified as necessary according to the site and weather conditions. Permanent erosion control measures including landscape and hardscape installations will effectively mitigate the risk of erosion in the long term.

Provided that the project is completed in accordance with the plans and specifications and that the geotechnical engineer of record provides observation during construction, it is our opinion that the areas disturbed by construction will be stabilized and remain stable and will not increase the potential for soil movement. The risk of damage as a result of soil instability will be minimal on the property being developed, and on adjacent properties. The use of the word "minimal" in the above statement should not be taken to imply that there is no risk, but rather that it is our opinion that the risk is low.

We appreciate this opportunity to present our proposal to you. If you have any questions, please contact us at 425-454-2133.

Sincerely,

February 6, 2025

Austin Huang, Ph.D., P.E., LG., F.ASCE, D.GE
President
Diplomate - Academy of Geo-Professionals
Fellow - American Society of Civil Engineering

D.GEs provide successful projects that benefit their clients.

The D.GE certification recognizes geotechnical engineers who possess specialty education, extensive experience, integrity, and good judgment.

Design Team Summary:

In the following ways the proposed redevelopment improves storm water management which in turn serves to increase the stability of ECAs both on and off site:

- The existing site consists of 3 structures, main house, carport, and shed. Water from the roof of the existing shed is not collected or directed to the storm drainage system [See attached photo].
- Likewise, the extensive existing driveways and paved parking areas on the west portion of the site are currently shedding water either onto neighboring properties or the private road. [See attached photo]
- Other hardscape areas where water is not being properly collected and directed to the storm water system include the patios on both sides of the existing house and the walkways on the west side of the house. The proposed new development has considerably less impervious area, and rainwater from all the impervious areas of the site is properly collected and directed to the proposed storm detention system. [Compare survey to new Site Plan]
- The current home has no storm detention system. The proposed new development meets the new storm water code requirements and provides an onsite buried storm detention pipe.

The regrading of the proposed site should add to the stability of the site as follows:

- The existing site has many retaining walls, some of which exceed 4 feet, and appear to have been constructed without engineering input. [See attached photo] The proposed site regrading west of the proposed new home will smooth out all existing contours creating landscaping areas and a semicircular driveway that are under 15% slope everywhere. No retaining walls are needed or proposed on the west side of the site in the redeveloped design. The proposed retaining wall on the east side of site, used to flatten out the backyard and bury the detention tank, will be less than 4 ft in height and will be observed by the Geotech Engineer during construction.
- The grade below the existing carport was raised and we do not know if the placement of this fill was properly compacted or whether the former topsoil was removed before fill was placed. This potentially unstable condition will be removed in the proposed new Project.
- To meet City of Mercer Island requirements topsoil amendments will be added to all landscaped areas on site that have been regraded, which is nearly all landscaped areas proposed. This too should help provide stability to the hillside.

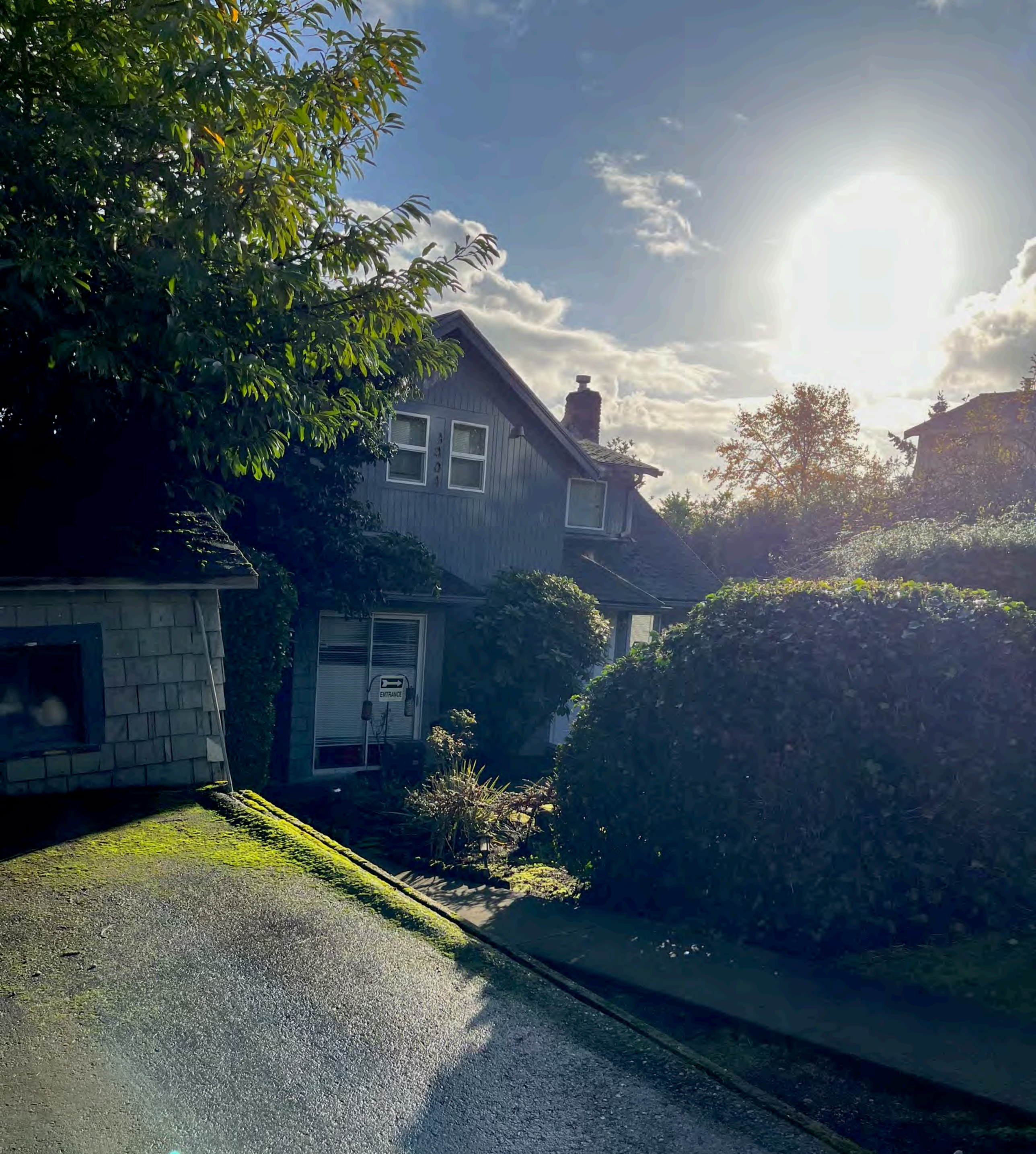
The proposed new landscaping design should help stabilize the hillside and prevent erosion over time.

- Currently the site has only 5 trees. One of those trees is in poor condition, [See Cherry photo] and one tree has been pruned unevenly because of it close proximity to the existing carport. [See Holly photo]. In the proposed redevelop, both of these less stable trees will be removed. The proposed redevelopment will add 9 replacement trees that are native to the Pacific Northwest benefiting the site in several ways:
    - Tree roots anchor into the soil and bedrock, and cross over to more stable soil. This creates a protective layer that holds the soil in place.

- Leaf canopies block rain from directly hitting the soil and provide a surface area for rain to evaporate.
- Trees reduce and help manage stormwater runoff.

Lastly, from a structural perspective, the existing home was constructed prior to codes that required shear stability design and with less robust requirements for foundation support. Because the proposed new residence has been engineered to meet current codes and following the recommendations of the Geotechnical report, it provides a safer structure for the occupants of the home in the event of an earthquake.

List of Photos
1.3804 Existing Shed - no gutters
2.existing onsite pavement sheds water to private street
3.existing retaining walls at carport
4.existing retaining walls at carport
5.Existing cherry to be removed
6.Exisiting Holly to be removed


ENTRANCE