



September 20, 2024

G-6137

Mr. Victor Sung
V-Square LLC
9721 – 111th Ave NE
Kirkland, WA 98033
vsqllc@gmail.com

Subject: **GEOTECHNICAL / CRITICAL AREAS EVALUATION REPORT
PROPOSED HOUSE ADDITION
2707 – 70TH AVE SE
MERCER ISLAND, WASHINGTON**

Dear Mr. Sung:

In accordance with our August 13, 2024 proposal with you we have prepared the following geologic hazard – critical area evaluation report for the proposed house addition at the subject property.

SITE DESCRIPTION

The project site consists of a developed residential lot at the subject address as shown on the attached **Plate 1 - Vicinity Map**.

The subject site is currently developed with a residence originally built in 1954. The north portion of the building, where the proposed renovation work is to occur, consists of a one-story home with daylight basement. The south portion of the building is one-story which is elevated above an existing rockery.

The subject site is located in an area of primarily west-facing slopes at the north portion of Mercer Island. Generally, the lot slopes gently to moderately toward the west with a rockery located below the south portion of the building and also a rockery located near the west property line. It is estimated that the rockery located below the south portion of the building has a maximum height of around 8-feet. The existing site and proposed conditions are shown on the attached **Plate 2 – Site Plan** and **Plate 3 – Project Narrative**. We have not been provided with an apparent current topographic survey for the lot, however, based upon our site observations

there are no apparent existing site slopes having heights of 10-feet or greater and slope inclinations of 40% or greater.

PROJECT DESCRIPTION

GEO Group Northwest has been provided with a project narrative by V-Square which describes the project as consisting of “raising the existing one story house up to add an additional level, making it 2 stories w/ a basement.” An illustration of the proposed development is attached as **Plate 3 – Project Narrative**. From this information we understand that additional loads are to be added to the existing building foundations at the north portion of the building.

SITE AND BUILDING CONDITIONS

At the time of our subsurface investigation on September 3, 2024 a representative of GEO Group Northwest visited the site and viewed current conditions at the house interior and exterior. We used a laser level at the supported wood floors at the main floor level to check for signs of significant settlement. Based upon our laser level measurements we did not observe significant signs of differential settlement. We also viewed the exposed concrete stem/retaining wall surfaces at the exterior and at a northeast interior utility room. At these locations we did not observe significant concrete cracking indicative of differential settlement. However, we note that there are signs of possible wood beam rot at the existing building southwest area.

Based upon our observations at the time of our investigation it appears that the circa 1954 building has not experienced significant settlement related damage. Therefore, the existing foundations may be founded on the underlying stable and glacially consolidated soils.

Also, at the time of our site investigation we did not observe signs of significant soil movement, such as scarps, slumps, hummocky ground or erosion at the property, exterior to the residence. Visually the site does not exhibit signs of historic soil movement. Additionally, our review of the Mercer Island property records has revealed no reported historic landsliding at the property.

GEOLOGIC CONDITIONS

The geologic map for the site indicates that the subject lot is underlain by the Quaternary-age Advance Outwash soil deposit (Qva). This soil unit is described as consisting of fine sands and some gravel which was deposited by flowing water as the glaciers advanced into the region at least 14,000 years ago. Typically, the unweathered portion of this deposit is well-consolidated.

SUBSURFACE CONDITIONS

On September 3, 2024 GEO Group Northwest explored the subsurface soil and groundwater conditions near the existing residence by advancing three hand-augered borings labeled HA-1 through HA-3 as located on the attached **Plate 2 – Site Plan**. Probing at various depths was performed via a ½-inch diameter steel T-probe in order to qualitatively evaluate soil strengths.

The soils encountered at the boring HA-1 consists of loose topsoil having a thickness of around 10-inches overlying dense gravelly silty SAND to sandy SILT. At the borings HA-2 and HA-3 soils encountered consist of loose to medium dense soils overlying competent medium dense to dense SAND with some silt which becomes a relatively clean SAND at depth. The competent underlying medium dense to dense site soils at the HA-2 and HA-3 are located below depth of 12-inches and 6-inches, respectively.

The underlying competent medium dense to dense site soils encountered at the HA-1 location appear to be glacial till like, or like the upper portion of the Advance Outwash, whereas these soils at the HA-2 and HA-3 location appear to be typical of the Advance Outwash soil deposit.

Groundwater seepage conditions were not encountered at the boring locations and explored depths. Groundwater conditions may vary dependent upon the time of year.

The results of the site subsurface investigation are shown on the attached **Appendix A – Boring Logs and USCS Soil Legend**.

SEISMIC DESIGN CONSIDERATIONS

Based upon the subsurface investigation it is our opinion that the overlying 100-foot thickness of soils at the project site may be characterized as Site Class C soil (very dense soils and soft rock) and may be designed accordingly for seismic loads per the ASCE 7-16. According to the online US Seismic Design Map tool by OSHPD (seismicmaps.org) the seismic coefficients are as follows:

$$S_s = 1.398 \qquad S_1 = 0.487$$

And the site modified peak ground acceleration during the design earthquake is $PGA_M = 0.718g$.

GEOLOGIC HAZARD DISCUSSION

Based upon the Mercer Island GIS mapping the subject site is mapped as potentially containing the following geologic hazard areas: Seismic, Erosion and Potential Slide hazards. There are no mapped potential Steep Slope Hazards at the site. We also reviewed the City’s 2009 Hazard Assessment Maps for landslide risks. Based upon this map the subject site may potentially be located at or adjacent to a landslide hazard area. The subject site appears to be located within the mapped “Landslide Hazard Assessment Setback” for an off-site apparent potential landslide hazard area. The mapping indicates no known landslides, scarps or springs are located at the subject site.

Based upon review of the City of Mercer Island publicly available property files for the subject address we are aware of no recorded instances of landsliding at the subject property.

At the time of our site investigation, we observed no significant signs of site erosion or landsliding at the subject site.

The Mercer Island Code defines Landslide Hazard Areas as:

Landslide hazard areas: Those areas subject to landslides based on a combination of geologic, topographic, and hydrologic factors, including:

- 1. Areas of historic failures;*
- 2. Areas with all three of the following characteristics:*
 - a. Slopes steeper than 15 percent; and*
 - b. Hillsides intersecting geologic contacts with a relatively permeable sediment overlying a relatively impermeable sediment or bedrock; and*
 - c. Springs or ground water seepage;*
- 3. Areas that have shown evidence of past movement or that are underlain or covered by mass wastage debris from past movements;*
- 4. Areas potentially unstable because of rapid stream incision and stream bank erosion; or*

5. Steep slope. Any slope of 40 percent or greater calculated by measuring the vertical rise over any 30-foot horizontal run.

As far as we are aware there is not a topographic survey for the subject site which could be used to determine the Landslide Hazard. The Mercer Island GIS as well as our visual observation is that the subject site does not contain steep (40%) or steeper slopes meeting the 30-foot minimum horizontal run criteria. GEO Group Northwest has observed no signs of springs or historic landsliding at the subject site. Based upon our site investigation, including review of the site geologic mapping it is our opinion that the risk of landsliding at the site is low and that the subject site does not qualify as a Landslide Hazard area.

The Mercer Island Code defines Erosion Hazard areas as:

Erosion hazard areas: Those areas greater than 15 percent slope and subject to a severe risk of erosion due to wind, rain, water, slope and other natural agents including those soil types and/or areas identified by the U.S. Department of Agriculture's Natural Resources Conservation Service as having a "severe" or "very severe" rill and inter-rill erosion hazard.

The subject site existing building area is mapped by USDA Websoil Survey as containing Arents, Alderwood material (AmC). Additionally, the Websoil Survey indicates that erosion hazard (off-road, off-trail) as “slight”. Therefore, the site does not appear to be at risk of severe or very severe erosion hazard and does not qualify as an erosion hazard area.

We have not been provided with any information regarding proposed earthwork activities and the project narrative suggests only the addition of a 2nd floor within the existing footprint, presumably supported by existing foundations. Therefore, it is anticipated that only limited excavations may be necessary, if any, and that this work would occur at flat developed areas. Accordingly, it is our opinion that the erosion risk related to the project is low and can be mitigated appropriately by implementing standard erosion control best management practices (BMPs). For this we would recommend installation of a filter fabric fence surrounding the work area and covering the disturbed soil areas with plastic sheeting during periods of heavy rain. Standard guidance would be that a period of heavy rain is one in which ½ inch or more of rain is anticipated within a 24-hour period.

SITE STABILITY EVALUATION

As noted above in the **Site and Building Conditions** section, we did not observe significant apparent evidence of settlement related damage at the building.

The site slopes and off-site slopes viewed from the subject site appear relatively stable based upon the absence of slope movement or erosion indicators. The underlying site soils are mapped as glacially deposited and consolidated and the competent dense soils were observed at depths ranging from 6 to 12-inches at the boring locations.

Based upon our site investigation it is our opinion that there is a low risk to the proposed development related to landslides. Similarly, since we interpret the seismic hazard area to be related to the landslide risk, there is low risk to the development with regard to the seismic hazard as well.

The proposed building addition construction is minor and does not constitute a significant alteration in risk with regard to the existing condition, since it is located at the existing developed area. Therefore, we anticipate that soil movement risks are minimal and we have provided an appropriate Mercer Island risk statement at the conclusion of this report.

CONCLUSIONS AND RECOMMENDATIONS

General

Based upon the results of our study, it is our professional opinion that the site is geotechnically suitable for the proposed addition. If new foundations are to be constructed, they should be placed on top of the in-situ native medium dense to dense competent site soils or on top of compacted structural fills which are placed on top of the competent soils.

Details regarding site development recommendations including foundation design parameters follow in the report sections.

Site Preparation and General Earthwork

We understand that no development or site work is proposed at moderate to steep slopes, net fills (changes to site grades) are not proposed and all proposed work for the addition is within the existing building footprint.

Silt fences should be installed around areas disturbed by construction activity to prevent sediment-laden surface runoff from being discharged off-site. Exposed soils, including stockpiled soils, that are subject to erosion should be covered with plastic sheeting or straw in order to mitigate erosion risks during wet weather.

Temporary Excavation Slopes

Under no circumstances should temporary excavation slopes be greater than the limits specified in local, state and national government safety regulations. For the anticipated temporary excavation slopes we recommend slope inclinations of no steeper than 1H:1V. If seepage is encountered at the excavation, then temporary slopes should have inclinations of no steeper than 2H:1V.

Structural Fill

All fill material used to achieve design site elevations below the building foundations and below non-structurally supported slabs, parking lots, sidewalks, driveways, and patios, should meet the requirements for structural fill. Additionally, all fills placed adjacent to footings are considered structural fills. During wet weather conditions, material to be used as structural fill should have the following specifications:

1. Be free draining, granular material containing no more than five (5) percent fines (silt and clay-size particles passing the No. 200 mesh sieve);
2. Be free of organic material and other deleterious substances, such as construction debris and garbage;
3. Have a maximum size of three (3) inches in diameter.

All fill material should be placed at or near the optimum moisture content. The optimum moisture content is the water content in soil that enables the soil to be compacted to the highest dry density for a given compaction effort.

At the boring locations HA-2 and HA-3 relatively clean free-draining sandy soils were observed. These soils appear to be acceptable for use as structural fill provided that they can be compacted to meet the structural fill compaction criteria. If work is to occur during the wetter portion of the year, the native soils cannot be compacted to meet the structural fill requirements or if imported fills are necessary, we recommend that structural fills consist of granular fill material meeting the specifications noted above.

Structural fill should be placed in thin horizontal lifts not exceeding ten inches in loose thickness. Structural fill under building foundation areas and against the sides of the footings, should be

compacted to at least 92 percent of the maximum dry density, as determined by ASTM Test Designation D-1557-91 (Modified Proctor) or be otherwise approved by the geotechnical engineer as appropriate compacted to a firm and unyielding condition. If it is desirable to eliminate the need for compaction than we recommend that such structural fill consist of poorly graded clean crushed rock which requires minimal tamping, such as a 1-inch clean crushed rock.

We recommend that GEO Group Northwest, Inc., be retained to evaluate the suitability of structural fill material and to monitor the compaction work during construction for quality assurance of the earthwork.

Spread Footing Foundations

Current planning does not indicate that new foundations will be constructed. If new foundations are necessary these may consist of conventional spread footings bearing on top of the underlying medium dense to dense competent in-situ site soils or on compacted structural fill which is placed and compacted on top of the competent soils. The footings should not be constructed on top of loose soils. Based upon our site investigation competent soils were observed at typical foundation depths. We recommend that all foundation subgrades are approved by GEO Group Northwest at the time of construction, prior to the foundation pour and prior to structural fill placement, in order to confirm that the subgrades have been properly prepared.

Individual spread footings may be used for supporting columns. Our recommended minimum design criteria for foundations bearing on the medium dense to dense competent in-situ soils or on compacted structural fill placed on top of these soils are as follows:

- Allowable bearing pressure, including all dead and live loads
 - Medium dense to dense native in-situ soils = 2,000 psf
 - Compacted structural fill on top of the medium dense to dense native in-situ soils = 2,000 psf
- Minimum depth to bottom of perimeter footing below adjacent final exterior grade = 18 inches
- Minimum lateral dimension of column footings = 24 inches
- Estimated post-construction settlement = 1/4 inch

A one-third increase in the above allowable bearing pressures can be used when considering short-term transitory wind or seismic loads.

Lateral loads can also be resisted by friction between the foundation and the supporting compacted fill subgrade or by passive earth pressure acting on the buried portions of the foundations. For the latter, the foundations must be poured "neat" against the existing undisturbed soil or be backfilled with a compacted fill meeting the requirements for structural fill. Our recommended parameters are as follows:

- Passive Pressure (Lateral Resistance)
 - 350 pcf equivalent fluid weight for compacted structural fill
 - 350 pcf equivalent fluid weight for native dense soil.

- Coefficient of Friction (Friction Factor)
 - 0.35 for compacted structural fill
 - 0.35 for native dense soil

Drainage Considerations

We assume that the existing house already has an existing working footing drain system at the building perimeter and the project planning does not indicate that new footings will be installed. Additionally shallow groundwater conditions were not observed. Therefore, we do not anticipate the need to improve subsurface drainage. If during construction it is determined that footing drains are missing or inadequate, we recommend that footing drains are installed at the perimeter of the building and that they are tightlined to an approved discharge location.

If footing drain improvements are determined to be necessary, they should be installed per the following general guidelines. Footing drains should consist of a four-inch minimum diameter, perforated, rigid PVC drain pipe laid at the bottom of the footing with a gradient sufficient to generate flow. The footing drain line should be bedded on and surrounded with drain rock, pea gravel, or other appropriate, free-draining, granular material. The drain rock should be wrapped in a layer of geotextile fabric such as Mirafi 180N or equivalent. After the footing drains are installed, the excavation should be backfilled with compacted structural fill material.

Under no circumstances should roof downspout drain lines be connected to the footing drainage or wall drainage systems. All roof downspouts should be separately tight lined to an appropriate storm-water discharge point. We recommend that sufficient cleanouts be installed at strategic

locations at each of the drainage systems to allow for periodic maintenance of and clearing of possible future blockages.

MERCER ISLAND RISK STATEMENT

Per the City of Mercer Island Code, development within landslide and seismic geologic hazard areas or buffers for such areas require that a Geotechnical Engineer licensed within the State of Washington provide a statement of risk with supporting documentation. In the report section: **Geologic Hazard Discussion** we note that it is our opinion that the subject site and proposed development area are likely not located within the code defined landslide Geologic Hazard Area. And also the subject site is not in a seismic hazard with regard to landslide risk. Due to the mapped landslide area being located off-site, the City's mapping indicating that the subject site potentially could be located within an associated buffer or at least a landslide hazard assessment area and the absence of a topographic survey we have prepared the following risk statement per 19.07.160.B.3:

a. An evaluation of site-specific subsurface conditions demonstrates that the proposed development is not located in a landslide hazard area or seismic hazard area.

ADDITIONAL SERVICES

We recommend that GEO Group Northwest Inc. be retained to perform a general plan review of the final design and specifications for the proposed development to verify that the earthwork and foundation recommendations have been properly interpreted and implemented in the design and in the construction documents. We also recommend that GEO Group Northwest Inc. be retained to provide monitoring and testing services for geotechnically-related work during construction. This is to observe compliance with the design concepts, specifications or recommendations and to allow design changes in the event subsurface conditions differ from those anticipated prior to the start of construction. We anticipate that geotechnical construction monitoring inspections may be necessary for the following construction tasks:

1. Footing soil bearing verification;
2. Structural fill placement and compaction;

LIMITATIONS

This report has been prepared for the specific application to this site for the exclusive use of V-Square LLC and their authorized representatives. Any use of this report by other parties is solely at that party's own risk. We recommend that this report be included in its entirety in the project contract documents for reference during construction.

Our findings and recommendations stated herein are based on field observations, our experience and judgement. The recommendations are our professional opinion derived in a manner consistent with the level of care and skill ordinarily exercised by other members of the profession currently practicing under similar conditions in this area and within the budget constraint. No warranty is expressed or implied. In the event that soil conditions not anticipated in this report are encountered during site development, GEO Group Northwest, Inc., should be notified and the above recommendations should be re-evaluated.

If you have any questions, or if we may be of further service, please do not hesitate to contact us.

Sincerely,
GEO GROUP NORTHWEST, INC.



Adam Gaston
Project Engineer



William Chang, P.E.
Principal

9-20-24

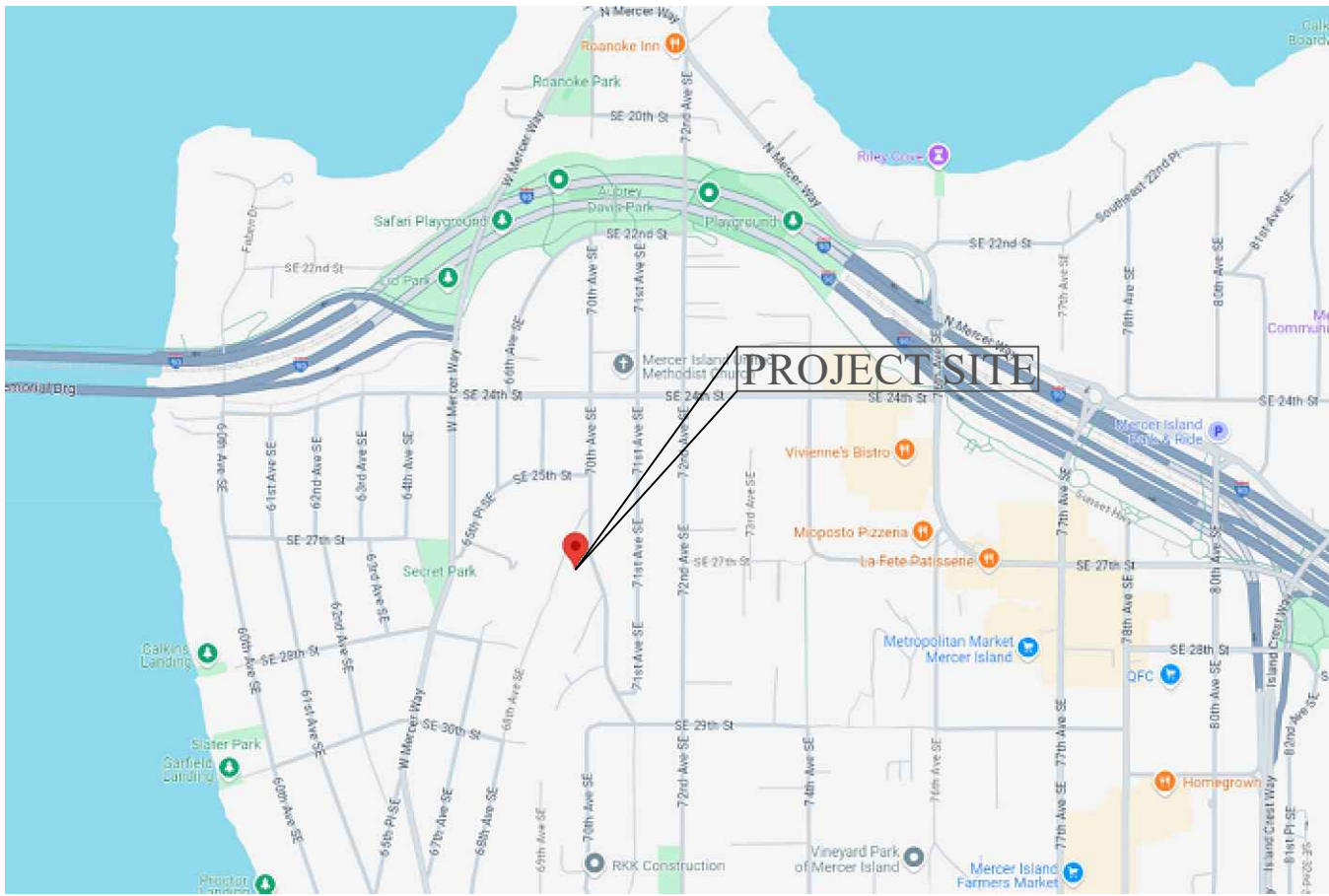
Attachments:

Plate 1 – Vicinity Map

Plate 2 – Site Plan

Plate 3 – Project Narrative

Appendix A – Boring Logs and USCS Soil Legend



PROJECT SITE



Group Northwest, Inc.

13705 Bel-Red Rd, Bellevue, WA 98005
 Phone 425/649-8757 FAX 425/649-8758
 Email info@geogroupnw.com

VICINITY MAP

2707 - 70TH AVE SE
 MERCER ISLAND, WASHINGTON

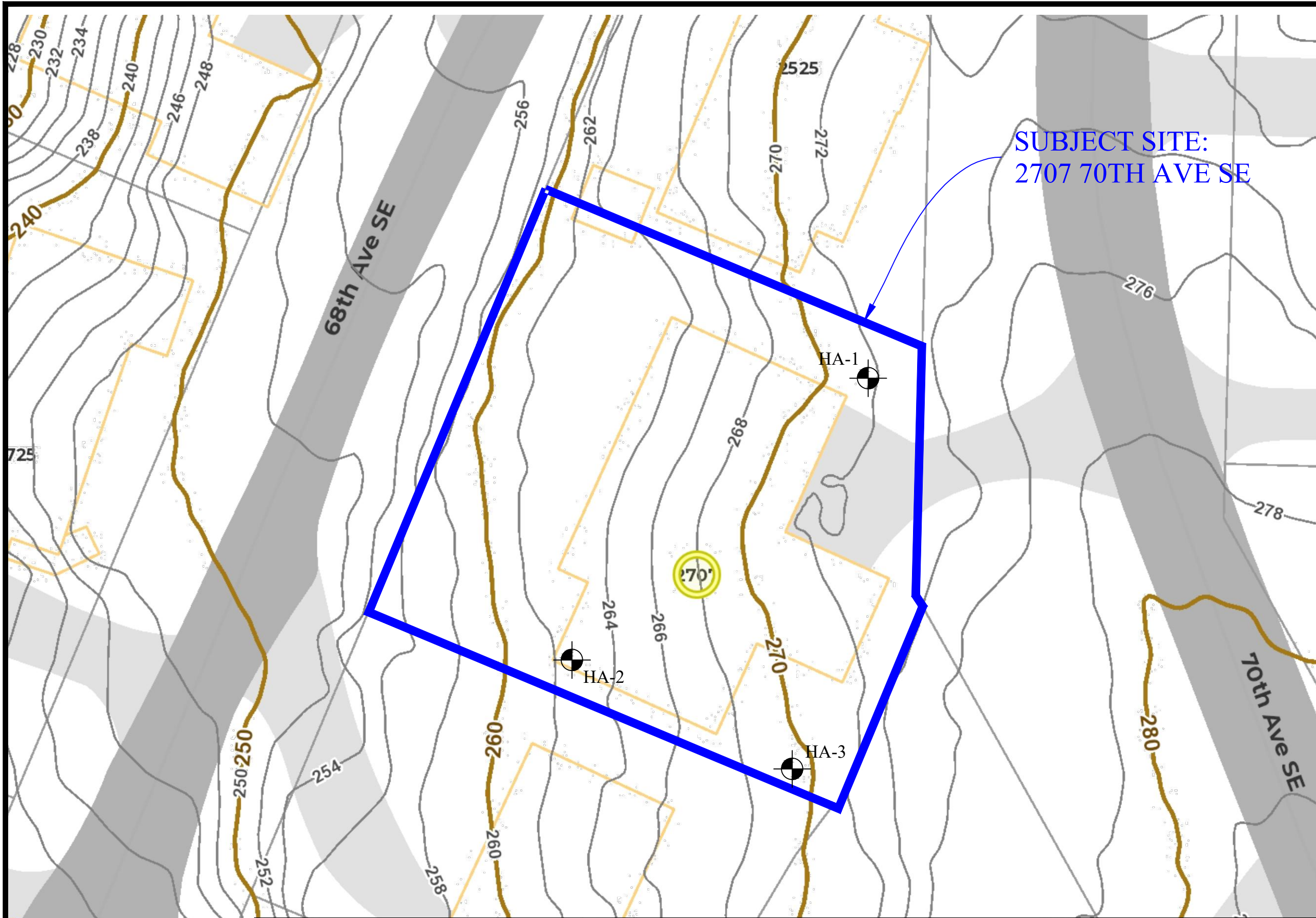
SCALE: NTS

DATE: 9-9-24

MADE: AG

JOB NO.: G-6137

PLATE: 1



Legend

- 10ft Lidar Contours (2016)
- 2ft Lidar Contours (2016)
- Address
- Building
- Property Line
- Docks
- Freeway
- Major Street
- Street
- Paved Driveway
- Paved Road
- Paved Parking Area
- Parks
- Lake Washington



SUBJECT SITE:
2707 70TH AVE SE

LEGEND

= HAND-AUGERED BORING NUMBER AND APPROXIMATE LOCATION



Group Northwest, Inc.

13705 Bel-Red Rd, Bellevue, WA 98005
Phone 425/649-8757 FAX 425/649-8758
Email info@geogroupnw.com

SITE PLAN
2707 - 70TH AVE SE
MERCER ISLAND, WASHINGTON

PROJECT #: G-6137
DATE: 9-9-2024
DRAWN: AG
CHECKED: WC
SCALE: 1" = 20'
PLATE: 2

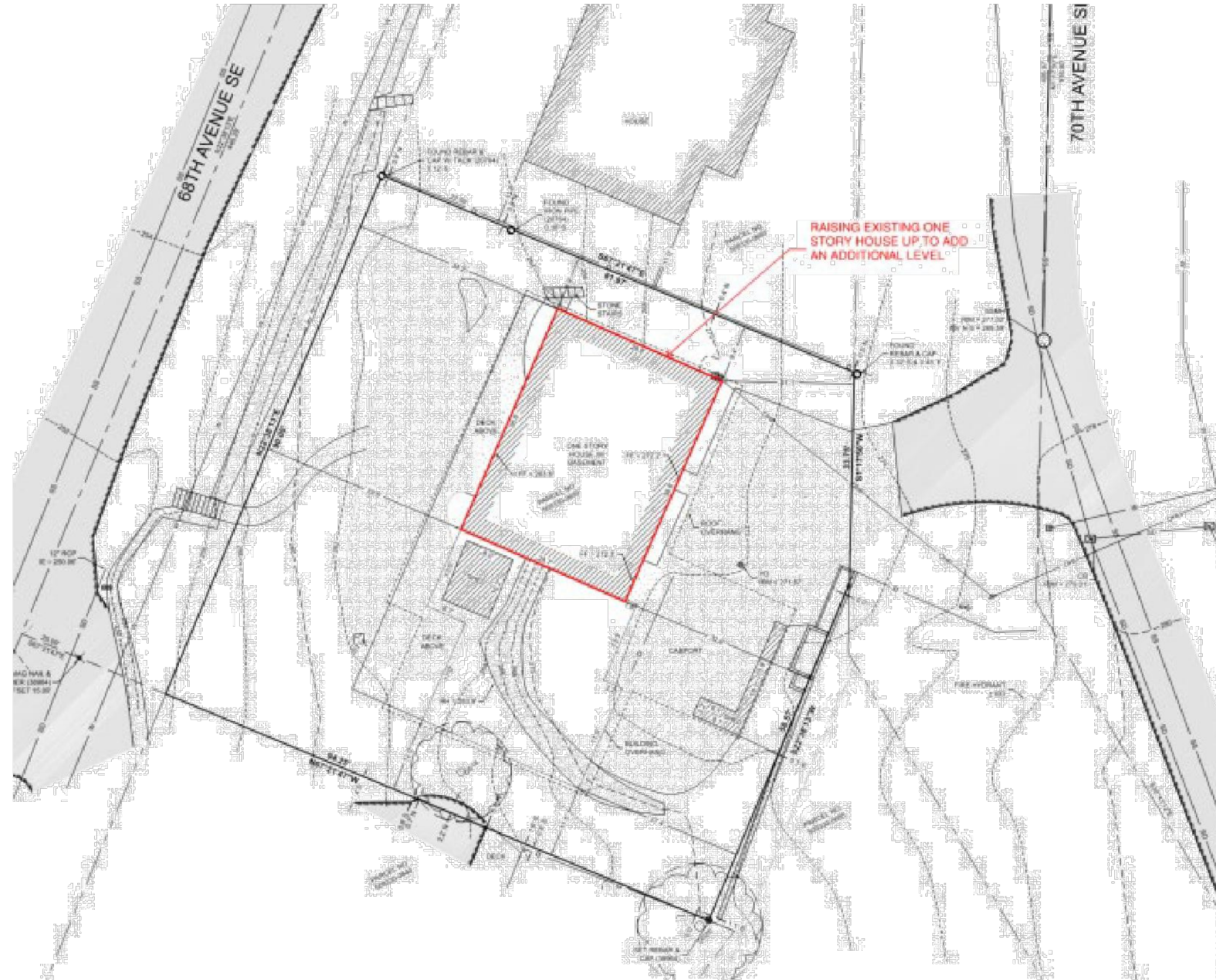
BASED UPON THE MERCER ISLAND GIS MAPPING, 9-6-24.

Project Narrative

Address: 2707 70th Ave SE, Mercer Island, WA 98040

Parcel Number: 509330-0650

Scope: Raising the existing one story house up to add an additional level, making it 2 stories w/ a basement.



Group Northwest, Inc.

13705 Bel-Red Rd, Bellevue, WA 98005
Phone 425/649-8757 FAX 425/649-8758
Email info@geogroupnw.com

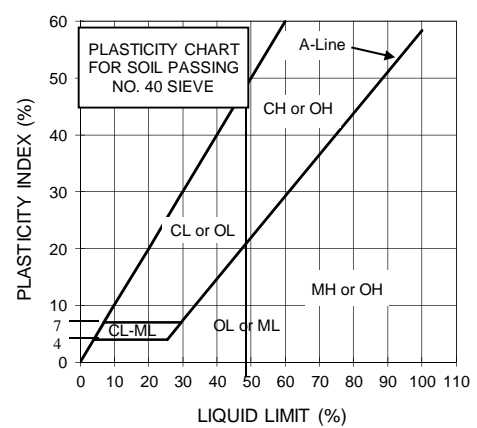
PROJECT NARRATIVE
2707 - 70TH AVE SE
MERCER ISLAND, WASHINGTON

| |
|-------------------|
| PROJECT #: G-6137 |
| DATE: 9-9-2024 |
| DRAWN: AG |
| CHECKED: WC |
| SCALE: NTS |
| PLATE: 3 |

APPENDIX A
BORING LOGS & USCS SOIL LEGEND
G-6137

LEGEND OF SOIL CLASSIFICATION AND PENETRATION TEST

| UNIFIED SOIL CLASSIFICATION SYSTEM (USCS) | | | | | | | | |
|---|--|---|--|--|--|--|--|---|
| MAJOR DIVISION | | GROUP SYMBOL | TYPICAL DESCRIPTION | LABORATORY CLASSIFICATION CRITERIA | | | | |
| COARSE-GRAINED SOILS More Than Half by Weight Larger Than No. 200 Sieve | GRAVELS (More Than Half Coarse Grains Larger Than No. 4 Sieve) | CLEAN GRAVELS <small>(little or no fines)</small> | GW | WELL GRADED GRAVELS, GRAVEL-SAND MIXTURE, LITTLE OR NO FINES | DETERMINE PERCENTAGES OF GRAVEL AND SAND FROM GRAIN SIZE DISTRIBUTION CURVE COARSE GRAINED SOILS ARE CLASSIFIED AS FOLLOWS: < 5% Fine Grained: GW, GP, SW, SP > 12% Fine Grained: GM, GC, SM, SC 5 to 12% Fine Grained: use dual symbols | $C_u = (D_{60} / D_{10})$ greater than 4 $C_c = (D_{30}^2) / (D_{10} * D_{60})$ between 1 and 3 | | |
| | | DIRTY GRAVELS <small>(with some fines)</small> | GP | POORLY GRADED GRAVELS, AND GRAVEL-SAND MIXTURES LITTLE OR NO FINES | | NOT MEETING ABOVE REQUIREMENTS | | |
| | | SANDS (More Than Half Coarse Grains Smaller Than No. 4 Sieve) | CLEAN SANDS <small>(little or no fines)</small> | SW | | WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES | CONTENT OF FINES EXCEEDS 12% | ATTERBERG LIMITS BELOW "A" LINE. or P.I. LESS THAN 4 |
| | | | DIRTY SANDS <small>(with some fines)</small> | GM | | SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES | ATTERBERG LIMITS ABOVE "A" LINE. or P.I. MORE THAN 7 | |
| | (with some fines) | CLEAN SANDS <small>(little or no fines)</small> | SP | POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES | | $C_u = (D_{60} / D_{10})$ greater than 6 $C_c = (D_{30}^2) / (D_{10} * D_{60})$ between 1 and 3 | | |
| | | DIRTY SANDS <small>(with some fines)</small> | SM | SILTY SANDS, SAND-SILT MIXTURES | | NOT MEETING ABOVE REQUIREMENTS | | |
| | (with some fines) | CLEAN SANDS <small>(little or no fines)</small> | SC | CLAYEY SANDS, SAND-CLAY MIXTURES | | CONTENT OF FINES EXCEEDS 12% | ATTERBERG LIMITS BELOW "A" LINE with P.I. LESS THAN 4 | |
| | | DIRTY SANDS <small>(with some fines)</small> | SC | CLAYEY SANDS, SAND-CLAY MIXTURES | | ATTERBERG LIMITS ABOVE "A" LINE with P.I. MORE THAN 7 | | |



| SOIL PARTICLE SIZE | | | | |
|-----------------------|-----------------------------|-----------|----------|-----------|
| FRACTION | U.S. STANDARD SIEVE | | | |
| | Passing | | Retained | |
| | Sieve | Size (mm) | Sieve | Size (mm) |
| SILT / CLAY | #200 | 0.075 | | |
| SAND | | | | |
| FINE | #40 | 0.425 | #200 | 0.075 |
| MEDIUM | #10 | 2 | #40 | 0.425 |
| COARSE | #4 | 4.75 | #10 | 2 |
| GRAVEL | | | | |
| FINE | 19 | #4 | 4.75 | |
| COARSE | 76 | 19 | | |
| COBBLES | 76 mm to 203 mm | | | |
| BOULDERS | > 203 mm | | | |
| ROCK FRAGMENTS | > 76 mm | | | |
| ROCK | >0.76 cubic meter in volume | | | |

| GENERAL GUIDANCE OF SOIL ENGINEERING PROPERTIES FROM STANDARD PENETRATION TEST (SPT) | | | | | | |
|--|--------------------|--------------------------------|--------------|----------------------|---------------------------------|--------------|
| SANDY SOILS | | | | SILTY & CLAYEY SOILS | | |
| Blow Counts N | Relative Density % | Friction Angle ϕ , degree | Description | Blow Counts N | Unconfined Strength Q_u , tsf | Description |
| 0 - 4 | 0 - 15 | | Very Loose | < 2 | < 0.25 | Very soft |
| 4 - 10 | 15 - 35 | 26 - 30 | Loose | 2 - 4 | 0.25 - 0.50 | Soft |
| 10 - 30 | 35 - 65 | 28 - 35 | Medium Dense | 4 - 8 | 0.50 - 1.00 | Medium Stiff |
| 30 - 50 | 65 - 85 | 35 - 42 | Dense | 8 - 15 | 1.00 - 2.00 | Stiff |
| > 50 | 85 - 100 | 38 - 46 | Very Dense | 15 - 30 | 2.00 - 4.00 | Very Stiff |
| | | | | > 30 | > 4.00 | Hard |

GEO Group Northwest, Inc.
 Geotechnical Engineers, Geologists, &
 Environmental Scientists

13240 NE 20th Street, Suite 10
 Phone (425) 649-8757

Bellevue, WA 98005
 Fax (425) 649-8758

PLATE A1

HAND AUGERED BORING NO: HA-1

LOGGED BY AG

LOG DATE: 9/3/2024

| DEPTH ft. | USCS | SOIL DESCRIPTION | SAMPLE No. | Water % | OTHER TESTS/ COMMENTS |
|--------------|-----------|---|---------------|------------|--|
| 1 | ML | Dark brown sandy SILT, moist, loose, apparent topsoil | | | Probe 12-15" |
| 2 | SM/ ML | Tan gravelly silty SAND becoming sandy SILT, moist, dense | | | Probe 2-3" Probe 1-2" Probe 1/2" Probe 1/4" Probe 1/4" |
| 3 | | | | | |
| 4 | | Total depth of boring = 40" bgs (below ground surface) - No groundwater seepage observed | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |

HAND AUGERED BORING NO: HA-2

LOGGED BY AG

LOG DATE: 9/3/2024

| DEPTH ft. | USCS | SOIL DESCRIPTION | SAMPLE No. | Water % | OTHER TESTS/ COMMENTS |
|--------------|-----------|--|---------------|------------|--------------------------|
| 1 | SP/ SM | Thin layer pea gravel over tan very fine and fine SAND with some silt, dry, medium dense to loose | | | Probe 2-4" Probe 6-8" |
| 2 | SP/ SM | Tan to gray SAND with some silt becoming SAND, moist, dense | | | Probe 1-2" Probe <1" |
| 3 | SP | | S-1 | | Probe <1" |
| 4 | | | | | Probe <1" |
| 5 | | Total depth of boring = 47" bgs (below ground surface) No groundwater seepage observed | | | |
| 6 | | | | | |
| 7 | | | | | |



Group Northwest, Inc.

Geotechnical Engineers, Geologists, &
Environmental Scientists

HAND AUGERED BORING LOG

PROPOSED ADDITION

2707 - 70TH AVE SE

MERCER ISLAND, WASHINGTON

JOB NO. G-6137

DATE 9/17/24

PLATE A2

HAND AUGERED BORING NO: HA-3

LOGGED BY AG

LOG DATE: 9/3/2024

| DEPTH ft. | USCS | SOIL DESCRIPTION | SAMPLE No. | Water % | OTHER TESTS/ COMMENTS |
|--------------|-----------|---|---------------|------------|--------------------------|
| 1 | SM | Brown very fine and fine silty SAND, dry, medium dense | | | Probe 3-4" Probe 3-6" |
| 2 | SP/ SM | Tan fine SAND with some silt and cobbles, dry, medium dense to dense | | | Probe 2-4" |
| 3 | SP | Tan to gray fine and medium SAND, moist, dense | | | Probe <1" |
| 4 | | | | | Probe 1" |
| 5 | | Total depth of boring = 47" bgs (below ground surface) - No groundwater seepage observed | | | |
| 6 | | | | | |
| 7 | | | | | |

HAND AUGERED BORING NO:

LOGGED BY _____

LOG DATE: _____

| DEPTH ft. | USCS | SOIL DESCRIPTION | SAMPLE No. | Water % | OTHER TESTS/ COMMENTS |
|--------------|------|------------------|---------------|------------|--------------------------|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |



Group Northwest, Inc.

Geotechnical Engineers, Geologists, &
Environmental Scientists

HAND AUGERED BORING LOG

PROPOSED ADDITION

2707 - 70TH AVE SE

MERCER ISLAND, WASHINGTON

JOB NO. G-6137

DATE 9/17/24

PLATE A3