

July 20, 2022

Sunrise Development, Inc.
c/o Wattenbarger Architecture Inc.
7902 Westpark Drive
McLean, Virginia 22102

Attention: James Brown

Subject: Geotechnical Report
Sunrise of Mercer Island
2959 76th Avenue SE
Mercer Island, Washington
File No. 26198-001-00

INTRODUCTION AND PROJECT UNDERSTANDING

GeoEngineers, Inc. (GeoEngineers) completed a geologic reconnaissance for the Sunrise of Mercer island project located at 2959 76th Avenue SE in Mercer Island, Washington (Figure 1). This report documents the reconnaissance and associated review of geologic and slope hazard maps. We understand this report will be used by Sunrise Development, Inc. (Sunrise Development) as part of permitting or resubmittal documents for the project.

It is our understanding that the proposed redevelopment for the project includes installation of new concrete paving and landscaping with minimal depths of existing and proposed grade changes along the east side of the building, as well as the installation of a new generator at the end of the turnaround at the north end of the project site.

SCOPE OF SERVICES

Our geologic due diligence scope of services completed are as follows:

1. Perform a geologic reconnaissance (site visit) of the slope/site that is surrounding the existing building/structure.
2. Provide our opinion as to whether the site constitutes a landslide hazard per City of Mercer Island building code.
3. Prepare a letter report summarizing the geologic reconnaissance and observations made during the site visit and referencing City of Mercer Island building code relative to the proposed redevelopment.



MAP AND IMAGERY REVIEW

A 1990 black and white aerial photograph shows the property under development. The slopes bounding the property on the southwest show evidence of being cleared of trees and vegetation during development. The color aerial imagery from 2002 shows significant tree and vegetation growth. A property to the west of the site at 7440 SE 32nd Street shows evidence of tree and undergrowth clearing in 2005 and 2009.

Figure 2 shows the site location overlain on the published Geologic Map of Mercer Island, Washington (Troost et al. 2006). This map indicates the site is underlain by Pre-Fraser nonglacial deposits (Qpfn) and Lawton Clay (Qvlc). Qpfn is characterized by abundant organic debris and pumice. The Pre-Fraser nonglacial deposits are underlain by Pre-Olympia fine-grained glacial deposits comprised predominately of silt and clay. Overlying the Pre-Fraser deposits is Lawton Clay (Qvlc) overlain by Vashon advanced outwash (Qva) and capped by Vashon subglacial till (Qvt). Lawton Clay (Qvlc) is comprised of very dense laminated to massive clay deposits. Vashon advanced outwash (Qva) is primarily very dense sand and gravel and Vashon till is comprised of very dense silty sand with gravel. The geologic map also indicates the site is in mapped landslide deposits.

The City of Mercer Island publicly accessible graphical interface system (GIS) has map layers showing protected slope area seismic hazard area and potential erosional hazard area. Figure 3 shows that the area surrounding the property is classified as a protected slope area.

Figure 4 is a 5-foot topographic contour map overlying a LiDAR hillshade. Several areas of the steep slope on the western and northwestern property boundary indicate the presence of past slope movement. The slope features at the property boundary corners are generally arcuate in shape with no scarps visible on LiDAR.

FIELD RECONNAISSANCE

The field reconnaissance focused on inspection of the surrounding slopes and rockery wall for evidence of displacement or distress, the nature of the most mature trees on the slope, and evidence of landslides and shallow failures.

Based on our field observations, we did not observe any indication of new landside features where the proposed existing building improvements would be located. There may be some localized shallow creep along the boundary of the property on the western steep slopes. Some of the larger, more mature trees show signs of past slope movement with slightly bowed trunks. The upper portions of the trees suggest the slope movement is dormant. The smaller evergreen trees on the western slope were straight and we did not observe any surface expressions of slope movement including, tension cracks, scarps or other current erosional features.

CONCLUSIONS

GeoEngineers has evaluated the redevelopment plans for the project. We understand that the following was received by email from Andrew Leon with the City of Mercer Island:

The only critical areas that this site contains are geologically hazardous areas, so only a geotechnical report addressing the applicable requirements of MICC 19.07.160 would be required.



The above referenced code is regarding Geologically Hazardous Areas and specifically in subsection B.1 it states the following:

When an alteration within a landslide hazard area, seismic hazard area or buffer associated with those hazards is proposed, the applicant must submit a critical area study concluding that the proposal can effectively mitigate risks of the hazard. The study shall recommend appropriate design and development measures to mitigate such hazards. The code official may waive the requirement for a critical area study and the requirements of subsections (B)(2) and (B)(3) of this section when he or she determines that the proposed development is minor in nature and will not increase the risk of landslide, erosion, or harm from seismic activity, or that the development site does not meet the definition of a geologically hazardous area.

Based on our geologic reconnaissance of the site and the limited extents of the proposed redevelopment relative to changes in existing and proposed grades, GeoEngineers concludes that the proposed development has little to no effect on the stability of the site and that it will not increase the risk of landslide, erosion, or harm from seismic activity.

LIMITATIONS

We have prepared this report for use of Sunrise Development, Inc. Within the limitations of scope, schedule, and budget, our services have been executed in accordance with generally accepted practices in the fields of engineering geology in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood. There are no intended third-party beneficiaries arising from the services described in this proposal and no party other than Sunrise Development shall have the right to legally rely on the product of our services without prior written permission of GeoEngineers.

Our services were provided to assess a planned development to be located on sloping property. Qualified engineering and construction practices can help mitigate the risks inherent in construction on slopes, although those risks cannot be eliminated completely. Favorable performance of structures in the near term is useful information for anticipating future performance, but it cannot predict or imply a certainty of long-term performance, especially under conditions of adverse weather or seismic activity.

REFERENCES

Mercer Island GIS web viewer accessed July 6, 2022, via <https://mercerislandgis.maps.arcgis.com/apps/webappviewer/index.html>.

Troost, K.G and Wisher, A.P., 2006, Geologic map of Mercer Island, Washington: City of Mercer Island, scale 1:12,000, 1 sheet.

Washington State Department of Natural Resources LiDAR portal, King County, 2016, accessed on July 6, 2022 via: <https://lidarportal.dnr.wa.gov/>.

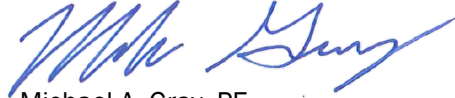


GeoEngineers appreciates the opportunity to assist Sunrise Development. Please contact Michael Gray at 425.861.6034 (direct) or 509.929.3060 (cell) if you have questions or wish to discuss this report.

Sincerely,
GeoEngineers, Inc.



Cody R. Gibson, LG
Geologist



Michael A. Gray, PE
Senior Geotechnical Engineer



Lyle J. Stone, PE
Associate



CRG:LJS:nld

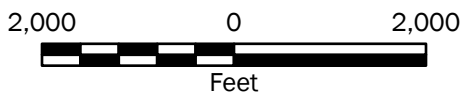
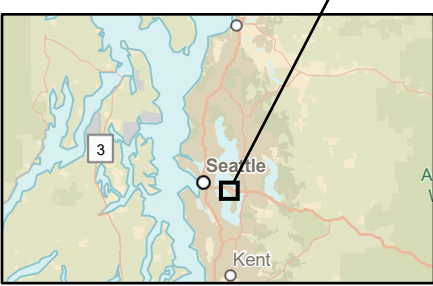
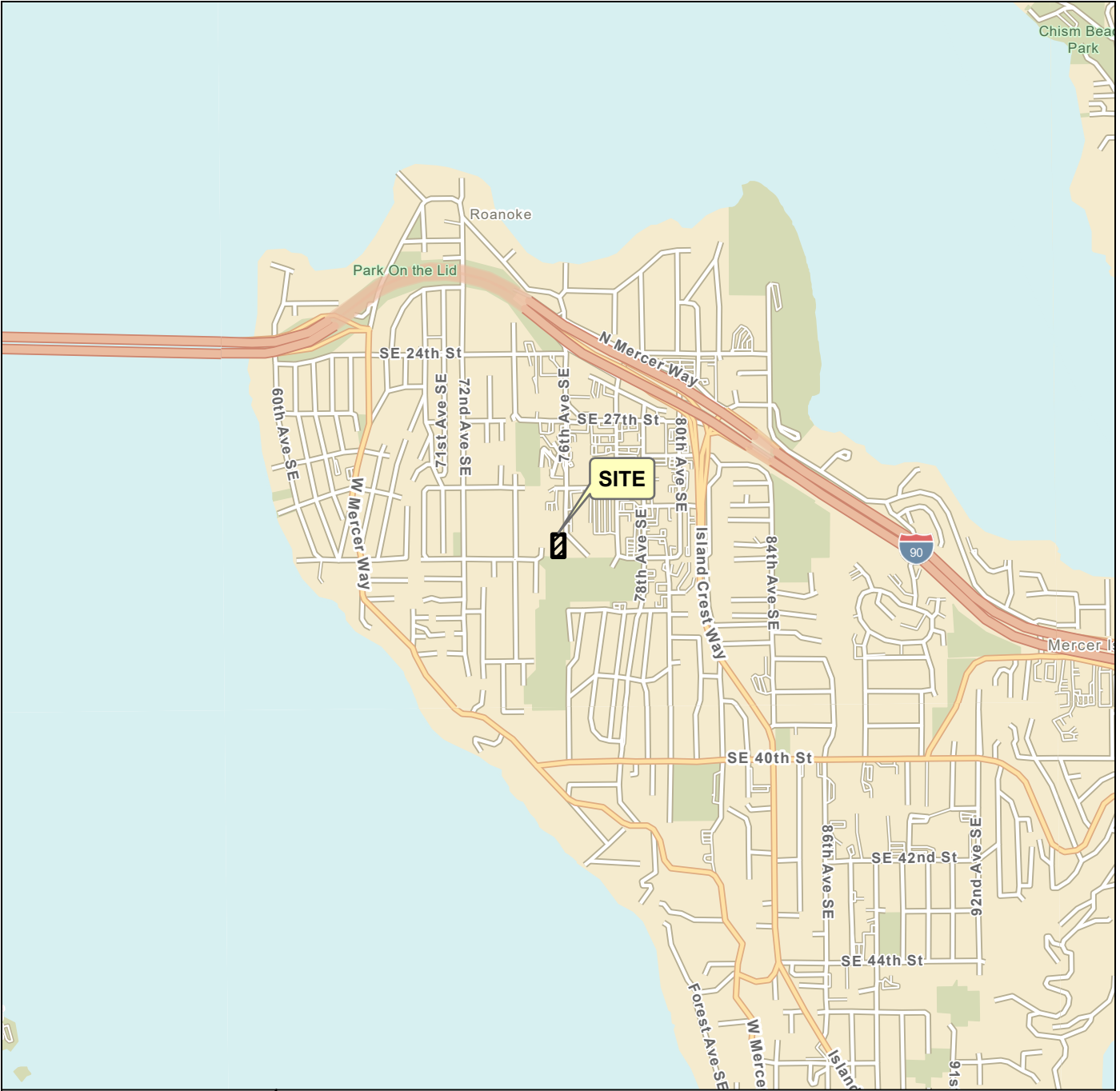
Attachments:

- Figure 1. Vicinity Map
- Figure 2. Geologic Map
- Figure 3. Protected Slope Areas
- Figure 4. LiDAR Topographic Contour Map
- Appendix A. Site Photographs

Disclaimer: Any electronic form, facsimile or hard copy of the original document (email, text, table, and/or figure), if provided, and any attachments are only a copy of the original document. The original document is stored by GeoEngineers, Inc. and will serve as the official document of record.



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Vicinity Map

2959 76th Avenue SE
Mercer Island, Washington

Notes:

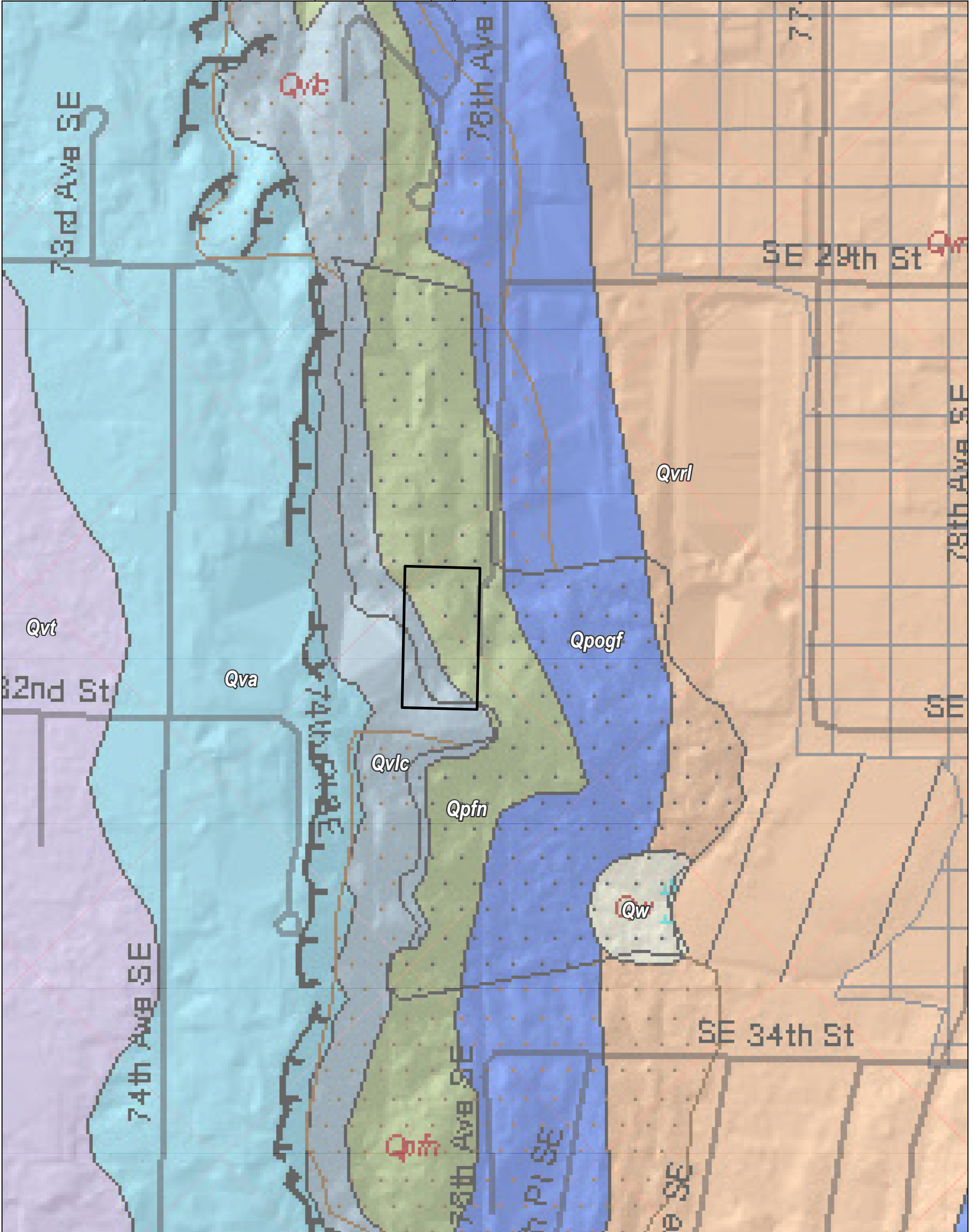
- 1. The locations of all features shown are approximate.
- 2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: ESRI

Projection: NAD 1983 UTM Zone 10N



Figure 1



Geologic Units

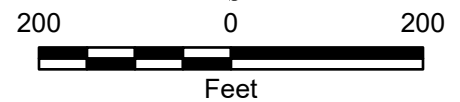
- Qls - Landslide deposits
- Qw
- Qvt - Vashon subglacial till
- Qva - Vashon advance outwash
- Qvlc - Lawton Clay
- Qvr - Vashon recessional outwash deposits
- Qpogf - Pre-Olympia fine-grained glacial deposits

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Data Source:

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet

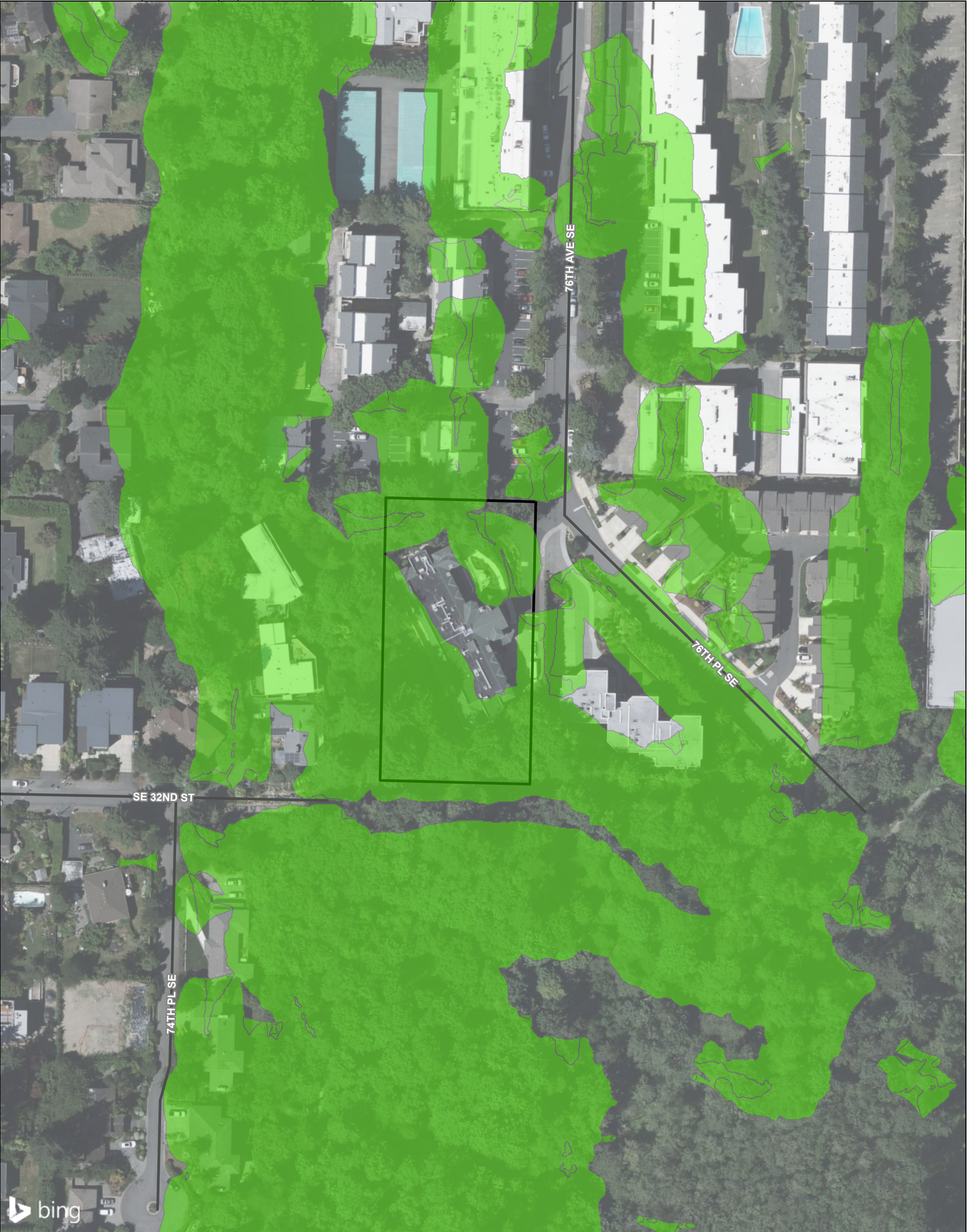


Geologic Map



2959 76th Avenue SE
Mercer Island, Washington



Figure 2



Legend

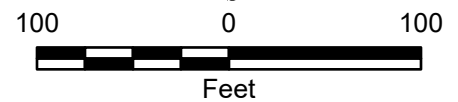
-  Project Area
-  Protected Slope Area

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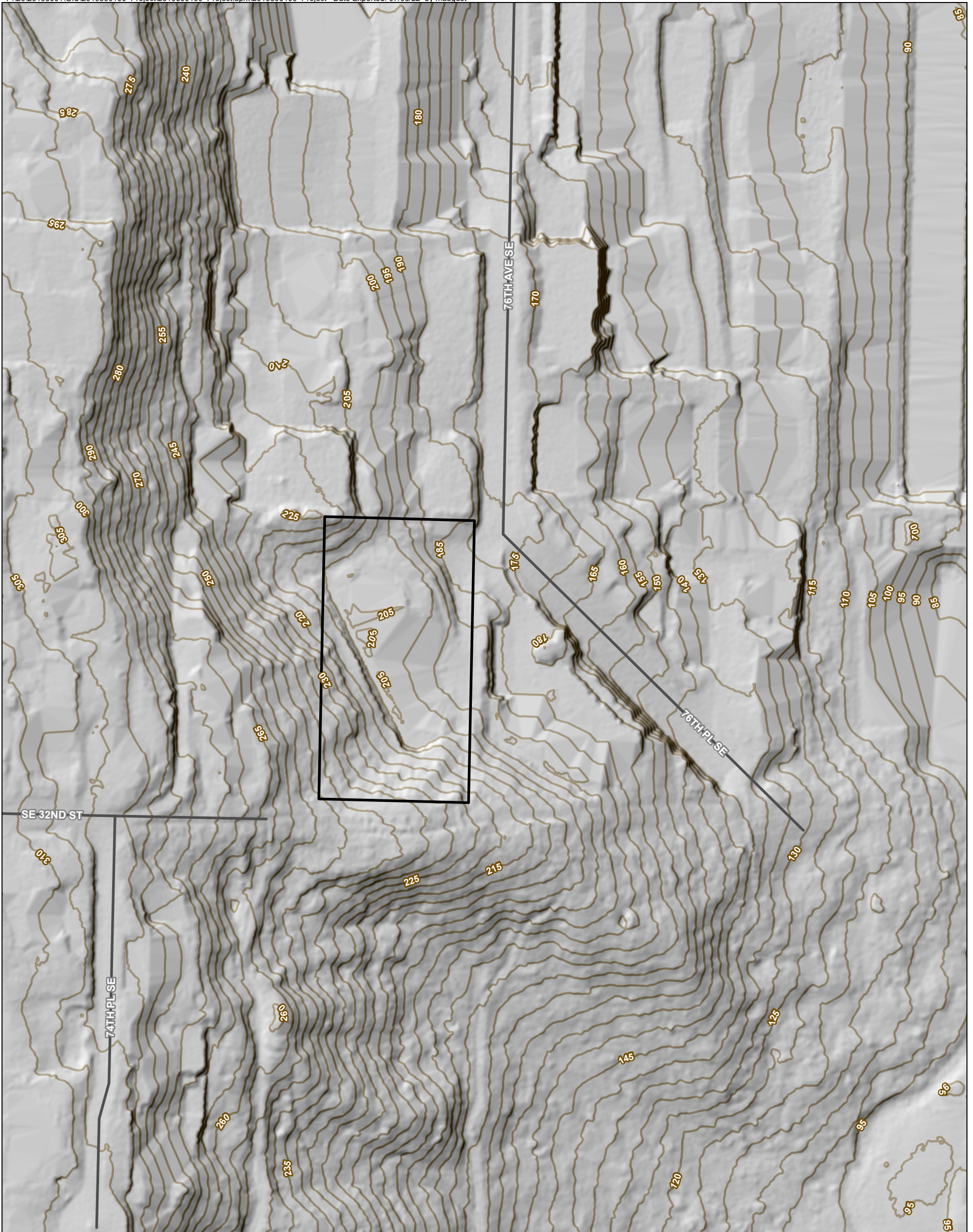


Protected Slope Areas

2959 76th Avenue SE
Mercer Island, Washington

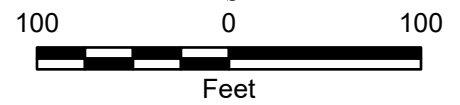


Figure 3



Legend

— Topographic Contour (5ft Interval)



LiDAR Topographic Contour Map

2959 76th Avenue SE
Mercer Island, Washington

Notes:

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Data Source: WA DNR LiDAR Portal - King County 2021.

Projection: NAD 1983 StatePlane Washington North FIPS 4601 Feet



Figure 4


APPENDIX A
Site Photographs



Photograph 1. View of the front portion of the Sunrise Project Site. Looking southwest



Photograph 1. View of the fire lane and the location of the proposed concrete generator pad. Looking west.

Photographs 1 and 2	
Sunrise Development – 2959 76 th Ave SW Mercer Island, Washington	
	Appendix A



Photograph 3. View of heavily vegetated slope on the north side of the project site. A large 24- to 30-inch evergreen with slight trunk bowing. Looking southwest.



Photograph 4. View of the rear portion of the project site. The slope is cleared of trees and shrubs. Looking south.

Photographs 3 and 4

Sunrise Development – 2959 76th Ave SW
Mercer Island, Washington



Appendix
A