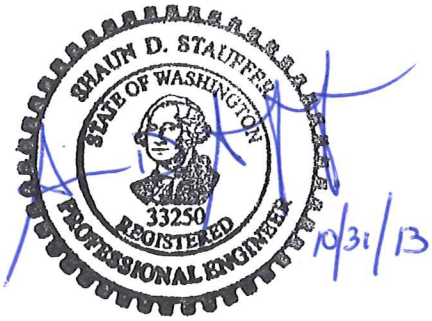
GeoEngineers

Memorandum

8410 154th Avenue NE, Redmond, WA 98052, Telephone: 425.861.6000, Fax: 425.861.6050

www.geoengineers.com

To:	Lisa Rigg City of Redmond Development Services 15670 NE 85th Street P.O. Box 97010 Redmond, Washington 98073-9710
From:	Shaun D. Stauffer, PE and Daniel P. Ciani, PE
Date:	October 31, 2013
File:	0500-197-00
Subject:	Geotechnical Peer Review Ellsworth Property Redmond, Washington



INTRODUCTION

This memorandum presents the results of our review of the information regarding the proposed new subdivision to be located at 134XX Northeast 100th Street in Redmond, Washington. Our review is with regard to the slope stability analysis performed by Geotech Consultants, Inc. (GCI) as part of the Critical Landslide Hazard Area designation of the southeastern slope at the site. We were requested to review the project geotechnical information, slope stability analysis input parameters and slope geometry in an email from you dated October 18, 2013.

The information provided by the applicant forms the basis of our review. The information we reviewed consists of the following letters and reports by GCI:

- "Geotechnical Engineering Study, Proposed Ellsworth Estates, Northeast 100th Street at 134th Avenue NE, Tax Parcel #032505-9100 and Eastern Portion of Tax Parcel #032505-9050, Redmond, Washington" dated October 18, 2011.
- "Geotechnical Evaluations of Potential Landslide Hazard Related to Proposed Sanitary Sewer Extension, Ellsworth Property, 134XX NE 100th Street, Redmond, Washington" dated August 19, 2013.
- Slope Stability Analysis Related to Proposed Sanitary Sewer Extension, Ellsworth Property, 134XX NE 100th Street, Redmond, Washington" dated October 16, 2013.

GEOTECHNICAL REVIEW

Site Location and Topography

The proposed subdivision will develop two parcels and associated road and utility infrastructure. The two parcels are identified as King County Parcel Nos. eastern portion of 032505-9050 and 032505-9100, which currently consists of vegetated parcels.

The topography of the site is generally flat to slightly sloping downward to the east with a moderately steep slope eastern boundary of the site leading downward into the ravine. A stream flows toward the south along the bottom of the ravine.

Geologic Setting

Based on our review of the Washington State Department of Natural Resources online interactive geologic map, the surficial geology consists glacial till (Qvt). Glacial till typically consists of a dense to very dense heterogeneous mixture of sand, gravel, cobbles, and occasional boulders in a silt and clay matrix that were deposited beneath a glacier.

The explorations completed by GCI for the current project disclosed topsoil underlain by a loose to medium dense gravelly silty sand to depths of 3 to 4 feet. Below this depth, the gravelly silty sand becomes dense to very dense and is interpreted by GCI to be unweathered glacial till. Groundwater was not encountered in the explorations completed by GCI.

The subsurface conditions disclosed by GCI are consistent with those presented on the available geologic maps.

Critical Areas

The steep slope portion of the site is located within a Critical Landslide Hazard Area as identified by the City of Redmond critical areas information.

Geotechnical Report

October 18, 2011 Geotechnical Site Assessment Report

The October 18, 2011 geotechnical report describes site conditions and soil stratigraphy observed in the test pits completed at the site. The report presents the conclusion that the project is feasible and presents geotechnical recommendations for design of the site improvements, earthwork and drainage. The report discusses geologic hazard issues and presents recommendations for erosion and sediment control practices for the project.

This report and the October 16, 2013 letter report discusses the results of GCI's slope stability analysis and assessment and recommendations to mitigate the hazard associated with the steep slopes at the site. These reports and the August 19, 2013 letter also discuss recommendations for temporary cut slopes during development and provide recommendations to prevent adverse impacts to slope stability.

CONCLUSIONS AND RECOMMENDATIONS

GeoEngineers evaluated the slope stability by reviewing GCI's letters and reports and by completing an independent slope stability analysis using the same input parameters as given in the report. Based on our review and evaluations, we take no exception to the information in the reports and to the proposed buffer reduction from 50 to 15 feet. We also take no exception to the proposed sanitary sewer extension being located within the 15-foot buffer provided that it is constructed as recommended by GCI (manholes and pipes located no closer than 5 feet from top of the steeper-than-40 percent slope and bearing within the dense glacial till).

LIMITATIONS

We have prepared this memorandum for use by the City of Redmond to evaluate the geotechnical and geological aspects of the proposed Ellsworth Property project to be located at 134XX NE 100th Street in Redmond, Washington. The level of effort of our evaluation was sufficient to develop an opinion regarding the feasibility of the land use, completeness of the geotechnical and geological information and to evaluate compliance of the project information with Redmond Municipal Code as it pertains to geotechnical and geologically critical areas considerations.

The information and conclusions presented in this memorandum are based on review of available geologic data and technical reports, and on experience in the project area; no additional subsurface explorations were completed for this project. Our memorandum, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in this area at the time the memorandum was prepared. No warranty or other conditions, express or implied, should be understood.

DPC:SDS:nld