SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

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June 9, 2016

Aleta Froman-Goodrich, PE
City of Oregon City
625 Center Street
Oregon City, Oregon 97045

RE: RESPONSE TO GEOHAZARDS COMPLETENESS REVIEW
LAND USE APPLICATION BERRYHILL PARK RETAINING WALL
BERRYHILL PARK APARTMENTS
OREGON CITY, OREGON

Dear Ms. Froman-Goodrich:

The purpose of this letter is to respond to the Foundation Engineering, Inc. Geohazards (Oregon City Code Chapter 17.44) Completeness Review letter dated June 2, 2016. Shannon & Wilson submitted a land use application May 11, 2016 for land use permitting of Berryhill Park Retaining Wall to be constructed on the Berryhill Park Apartments property to mitigate a landslide. The land use application included applications for Geologic Hazards (Geohazards) Review, Minor Site Plan & Design Review, Natural Resources Review, and a Variance for wall height. Foundation Engineering, Inc., performed the Geohazards Review for the City of Oregon City (the City) and found the Geohazards portion of the land use application incomplete based on nine items listed by the City code chapter in the Foundation Engineering, Inc. Completeness Review letter dated June 2, 2016. We contacted the author of the June 2, 2016 letter, Timothy Pfeiffer, PE by telephone on June 3, 2016 to discuss the nine items included in his letter. Based on our review of the June 2, 2016 letter and our June 3, 2016 telephone correspondence, we offer the following responses to the nine incomplete items. The Foundation Engineering, Inc. completeness review items are listed by City code chapter below in italics followed by our response.

> *17.44.50(A)(1) Applicant must review the pertinent geologic studies for information on the project site.*
>
> We reviewed the five publications listed in City code chapter *17.44.50(A)(1)*; they assisted in our understanding of site geology and geologic hazards and form the basis of

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the Regional Geology section in our Retaining Wall Design Letter, dated April 5, 2016 submitted at part of the land use application. To further our understanding of the landslide on Berryhill Park and Forest Edge Apartments property, we also reviewed the following previous geotechnical reports made for Berryhill Park Apartments and Forest Edge Apartments (formally Newell Creek Apartments).

- November 5, 1991 - Soil Investigation for Newell Creek Apartments, John McDonald Engineering.
- March 31, 1992 - Additional Soil Investigation for Newell Creek Apartments, John McDonald Engineering
- January 12, 1994 - Preliminary Engineering Geologic Investigation of The Site of The Proposed Newell Creek Apartments, Roger Redfern Consulting Geologist
- August 25, 1994 - Newell Creek Overlook Apartments Soil Investigation, John McDonald Engineering
- February 2, 2006 - Geological Letter Slope Stability Investigation Berryhill Park Apartments, GeoDesign Inc.
- March 24, 2006 - Landslide Evaluation and Recommendations Newell Creek Village, Ash Creek Associates Inc.
- April 21, 2006 - Geological Letter Slope Stability Investigation Berryhill Park Apartments, GeoDesign Inc.
- September 2006 - Landslide Technologies geotechnical boring well logs registered with Oregon Water Resources Department (actual geotechnical report unavailable)
- January 22, 2010 - Preliminary Geotechnical Review of Slope Stability Forest Edge Apartments, GeoPacific Engineering Inc.
- January 20, 2011 - Preliminary Slope Stability Evaluation for Immediate Response Measures Steep Slope Area Above Forest Edge Apartments, GeoPacific Engineering Inc.
- February 11, 2011 - Landslide Response Letter Slope Stability Investigation Berryhill Park Apartments, GeoDesign Inc.

- February 23, 2011 - Preliminary Geotechnical Review of Slope Stability Forest Edge Apartments, GeoPacific Engineering Inc.
- March 2, 2011 - Preliminary Evaluation of Slope Failure and Recommendations for Immediate Response Measures Steep Slope Area Above Forest Edge Apartments, GeoPacific Engineering Inc.
- July 7, 2011 - Geological Report Ground Movement Monitoring Berryhill Park Apartments, GeoDesign Inc.

17.44.50(A)(2) Applicant must provide recommendations regarding drainage and an assessment of the project's impact on drainage.

Construction of the proposed retaining wall will not change existing drainage patterns and no new impervious surfaces will be added. The proposed retaining wall will add no net increase in drainage from existing conditions and a drainage collection system is not included in the retaining wall design.

17.44.50(A)(9)(b and c) Applicant must provide recommendations for any development restrictions for the area adjacent to the retaining wall and within the geologic hazard area.

The proposed retaining wall will not restrict development within the geologic hazard area. Tieback anchors will be installed through the face of the retaining wall and will extend below ground surface dozens of feet upslope of the wall, as shown in the Berryhill Park Apartments Retaining Wall General Plan. New development such as utility trenches, basements, or pile foundations on Berryhill Apartments property upslope of the retaining wall must avoid the tieback anchors. Immediately upslope and downslope of the retaining wall for a distance of 75 feet in both directions, no new development should be made that may change existing loading conditions of the retaining wall, unless reviewed by the wall designers. It should be noted that the area downslope of the retaining wall is an active landslide and will remain an active landslide after the proposed retaining wall is constructed. Landslide mitigation would need to be incorporated into any new development downslope.

17.44.50(A)(9)(f) Applicant must provide statement regarding the effect of the proposed development (mitigation) on the slope stability of the property and the adjacent properties.

The proposed retaining wall will mitigate the landslide hazard on Berryhill Park Apartments property by stabilizing the slope above the retaining wall. The proposed retaining wall will not mitigate the landslide or slope stability of areas below or adjacent to the landslide. The retaining wall will have no impact on slope stability of adjacent properties.

17.44.50(A)(10)(a) Applicant must provide a scaled drawing of the work site showing trees greater than 6-inches and identifying any trees to be removed.

No trees greater than 6 inches in diameter will be removed for construction of the proposed retaining wall. Existing trees 6 inches in diameter or larger are shown on Sheet 1 of the Berryhill Park Apartments Retaining Wall General Plan. Proposed tracked equipment access routes shown in the Erosion and Sediment Control Plan will be adjusted in the field to go around trees that are 6 inches in diameter or larger.

17.44.50(A)(10)(b) Applicant must provide a scaled drawing of the work site showing existing and proposed grading and net increase or loss of soil. The wall plans appear to show different earthwork areas than the erosion control plans.

All proposed earthwork, including existing and proposed grades, is shown on Sheets 1 and 2 of the Berryhill Park Apartments Retaining Wall General Plan. Earthwork is limited to the removal of soil immediately below the face of the retaining wall for placement of wood lagging. The net loss (quantity) of soil to be removed is 1,560 cubic yards, as described on Sheet 2 of the Berryhill Park Apartments Retaining Wall General Plan. No grading will be performed for the creation of tracked equipment access paths shown crossing the hill side on the Erosion and Sediment Control Plan.

17.44.60(A) Applicant's response that no removal of trees or ground cover is anticipated appears to conflict with the Erosion Control Plans. The applicant must identify the extent of surface disturbance and grading.

The upper two thirds of the slope shown on the Erosion and Sediment Control Plan, between the rear of the eightplex and duplex on Berryhill Park Apartments property and the garage buildings downslope on Forest Edge Apartments property, has been covered by plastic sheeting. The majority of ground cover in that area has been killed by being covered with plastic sheeting or uprooted by landslide ground movement. The lower third of the slope in this area, immediately upslope of the Forest Edge Apartments garages, includes grass and shrub ground cover in areas not covered by recent landslide debris. Some trees remain throughout the slope between the eightplex and duplex and downslope of the garages. Existing trees and ground cover that have not been killed due to placement of plastic sheeting or uprooted or covered by landslide activity will remain. Erosion control measures shown in the Erosion and Sediment Control Plan will be placed around trees and existing ground cover. The existing vegetation will not be stripped; it will be seeded by grass seed and covered by an erosion control blanket. The erosion control blanket will be cut and placed around trees and shrubs. The straw wattles will also be placed to go around trees and shrubs.

17.44.60(B) Construction of the wall should be completed before October 31, 2016 to avoid additional risk from construction in the winter or leaving the slope through another winter season.

The building permit application and construction bidding will be performed concurrently with the land use application review. Construction will begin as soon as the land use record of decision is issued. We request that the City expedite the land use application as much as possible so that all site work can be completed by October 31, 2016.

17.44.60(D) Applicant has requested a variance for exceeding the maximum exposed wall height without terracing.

A variance for exceeding the maximum exposed wall height has been requested. The wall face will not be directly visible from adjacent properties. Terracing is not conducive to construction of a soldier pile and tieback retaining wall or for placement over an active landslide mass, which will remain downslope of the wall. We have considered other wall types to mitigate the slope stability of the Berryhill Park Apartments property above the landslide, and, in our opinion, a soldier pile and tieback retaining wall is the only feasible option.

We hope that you find our responses have fully addressed the Geohazard Completeness Review comments. If you have additional questions or concerns please contact me directly at 503-210-4781.

Sincerely,

SHANNON & WILSON, INC.

David J. Higgins, CEG
Associate | Engineering Geologist

DJH/RPP:aeb