March 10, 2010

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Mr. John Thompson
P. O. Box 2376
Horsham, PA 19044
USA

Subject: Paraiso Springs Resort
Geology Report and Potential Project Impact Mitigation

Dear John:

We have recently received and reviewed the November 11, 2008 draft letter from Mr. Erik Zinn of Zinn Geology that discusses the Project geology and potential Project mitigation measures, as presented by Landset Engineers, Inc. (LEI) in their 2004 Report and subsequent May 22, 2008 letter. In their investigation and report, LEI identified the potential for debris flows originating in several of the smaller watershed areas above and adjacent to the proposed development.

As part of our scope of work, we prepared Technical Memorandums addressing Preliminary Hydrology and Hydraulic Analysis and Erosion Control Measures, in July 2005 and a subsequent response to review comments on these Memoranda, dated October 28, 2008. The attached map, entitled Paraiso Springs Resort Subbasin Delineation, was prepared as part of, and is included, in the latter document. This Map was prepared based on the LEI Report and subsequent discussions with Mr. Brian Papurello, and shows the proposed locations for potential debris basins. These debris basins are intended as mitigation for the possible geologic hazards discussed in the LEI Report.

It should be noted that “debris basins”, as used here, is intended to be a general term. Due to the topography of the areas surrounding the Project site, it is not likely that large basins can be constructed on these hillsides. Therefore, the “debris basins” envisioned here are more likely a combination of features, including: small basins; earthen berms and dikes, and diversion walls. Culverts within the existing main drainage stream running through the middle of the development will be removed, and all new stream crossings will be bridges, to better allow the passage of debris without inducing flooding.
In his letter, Mr. Zinn provides some Project-Specific Mitigation Measures, including additional subsurface investigation to assess the potential magnitude of debris flows and to develop design criteria for the proposed debris basins. He also recommends that “the Project Geologist, Geotechnical Engineer and Civil Engineer of Record shall work closely together to assess the impact that debris flows and debris torrents may have upon the performance of the proposed drainage improvements.”

We are in agreement with Mr. Zinn’s mitigation measure recommendations and recognize these items of work as necessary to complete final design of the Project, prior to receipt of any building permits. The “debris basin” mitigation features would be constructed within the overall construction footprint and will be in the disturbed areas of the proposed project and will not require any additional site disturbance. As noted above, we have already been coordinating closely with LEI to locate the potential debris basins. Basins would be constructed at the upstream ends of the proposed storm drainage systems, earthen berms and dikes would be constructed adjacent to proposed roadways and buildings and included on the final grading plans, and diversion walls would be incorporated into already proposed retaining walls, perimeter walls and/or exterior building walls.

Please let me know if you have any additional questions about these geologic issues.

Sincerely,

CH2M HILL

David Von Rueden, P.E.
Sr. Project Manager

Attachment

c:  Brian Papurello/LEI