Exhibit G
Structural Setback Information

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23 January 2009

Town of Moraga
329 Rheem Boulevard, Suite 2
Moraga, California 94556
Attention: Lori Salamack

RE: Structure Setbacks for Creek Banks, Drainage Swales, and Ascending and Descending Slopes
Palos Colorados Project
Tract 8378
Moraga, California

Dear Ms. Salamack:

At your request, we have prepared this letter regarding the issue of structure setbacks from the various slope conditions which will be present within the proposed Palos Colorados Project. We specifically focused on C.VTM.42. which addresses this issue. Per your recent email C.VTM.42 is as follows:

C.VTM.42 The Precise Development Plan Submittals shall include a report from the Project G.E. with recommendations for structural setbacks from tops and toes of large cut slopes and fill. The report shall include recommendations for structural setbacks from the top of creek bank or drainage swales adjacent to building sites. The report will be subject to peer review and approval by the T.G.C. and Town Engineer. The minimum structural setbacks shall be no less than the requirement of the UBC and Town Grading Ordinance. (Conceptual Development Plan Condition of Approval #VI.17. **This condition requires review by the Town Geotechnical Consultant.**

As part of our work we reviewed the following documents:

- Town of Moraga Grading Ordinance sections 14.48.014 Excavations–Setbacks, 14.48.027 Fills– Slope Location and setbacks, and 1448.030 Modifications

- 2007 California Building Code (CBC) sections 1805.31 Building clearance for ascending slopes, Figure 1805.3.1 Foundation Clearances from Slopes, 1805.3.2. Footing setback from descending slope surface, and 1805.3.5 Alternate setback and clearance;

- letter report by Engeo Incorporated (Engeo) dated 30 May 2008, titled *Palos Colorados Project, Tract 8376, Moraga, California, DESCENDING SLOPE SETBACKS;*

- report by Engeo dated 21 April 2008 titled *Geotechnical Explorations Palos Colorados, Moraga, California; and*

- report by Engeo dated 24 February 2006 titled *Geotechnical Summary Report Palos Colorados Project, Moraga, California.*

Review of Building Codes and Discussion

Our review of the referenced sections of the Town of Moraga Grading Ordinance and the 2007 CBC indicates that the purposes of the structure setbacks from ascending slopes and descending slopes are significantly different. According to the CBC, setbacks for structures located below ascending slopes are intended to provide protection from slope drainage, erosion, and shallow slope failures which might originate from the hillside above. Setbacks for structures located near a descending slope are intended to be sufficient to provide vertical and lateral support for the building foundations without causing detrimental settlement. As a result, the recommended structure setback criteria are different.

The CBC setback criteria for structures located below an ascending slope are: 1/2 the height of the slope with a maximum setback distance of 15 feet. Therefore, a new building located below a 20 foot tall slope is required to be setback at least 10 feet (1/2 of 20 feet = 10 feet). For slopes more than 30 feet in height the maximum setback distance is set at 15 feet.

The CBC setback criteria for structures located above a descending slope are: 1/3 of the slope height, with a maximum of 40 feet. Therefore, a new building located above a 20 foot tall slope would be setback a minimum of 7 feet from the top of the slope (1/3 of 20 feet = 6.7 feet - rounded up to 7 feet). The maximum setback of 40 feet would be required for a structure located above a 120 foot tall slope (120 feet / 3= 40 feet).

The Town of Moraga Grading Ordinance provides both minimum and maximum setbacks for structures located near the "**tops and toes**" of fill slopes. The ordinance provides that structures located near the tops and toes of fill slopes shall be setback a minimum of 4 feet plus 1/5 the height of the slope, with a maximum setback distance of 20 feet. Therefore, a new building located near the top or the toe a 20 foot tall fill slope would be setback a minium of 8 feet (4 foot minimum + 1/5 of 20 feet = 8 feet).

The Town of Moraga Grading Ordinance also provides that structures be setback from fill slopes a minimum distance equal to 1/2 the slope height with a minimum of 4 feet and a maximum of 20 feet. Using these criteria a structure would be required to be setback from a 20 foot tall fill slope a minimum of 10 feet (1/2 of 20 feet = 10 feet).

It is also relevant to note that both the CBC and Town Grading Ordinance have provisions for the use of alternative structure setbacks. The CBC allows for the use of alternative setbacks if approved by the local building official. The building official is permitted to require an investigation by a registered design professional which demonstrates that the intent of the CBC is satisfied. The investigation should include consideration of the materials, height of slope, slope gradient, load intensity, and erosion characteristics of the slope materials. This provision of the CBC essentially indicates that alternative structure setbacks can be approved by the local building official provided

that they are satisfied that the design professional recommending the alternative setbacks has demonstrated that the setbacks meet the intent of the building code. In the case of setbacks from the ascending slopes, the alternative setbacks must provide protection from slope drainage, erosion, and shallow slope failures which might originate from the hillside above. Alternative setbacks from descending slopes must be demonstrated to be sufficient in size to provide vertical and lateral support for the building foundations without causing detrimental settlement.

Alternative structure setbacks are also allowed by the Town Grading Ordinance. The Town Engineer can recommend the use of alternative setbacks to the Design Review Board or Town Council for their approval, if the Town Engineer finds provide that these setbacks have been demonstrated to provide equivalent safety, stability, and protection against erosion. The applicant for an alternative structure setbacks is required to provide a report prepared by a Geotechnical Engineer or Certified Engineering Geologist which demonstrates that the proposed setbacks provide equivalent protection to the structure.

Review of Engeo Reports and Letters

Structure Setbacks from Descending Fill Slopes

The issue of structure setbacks from descending slopes (only) is discussed in the 30 May 2008 letter by Engeo. Engeo proposes to use a structure setback of 1/3 the slope height or a minimum of 10 whichever is greater with no supplemental slope reinforcement or special foundation construction methods required. This is in general conformance with the CBC which calls for structure setbacks from descending slopes of 1/3 the slope height to a maximum of 40 feet. Engeo's recommended a minimum setback of 10 feet is not required by the CBC until the slope is taller than 30 feet.

The structure setback from a descending slope proposed by Engeo varies from the two requirements of the Town Grading Ordinance and the 2007 CBC. The following table shows the differences between the two setbacks for descending slopes required by the Town Ordinance, the CBC, and the proposed setback by Engeo.

	Setback for 10 foot high slope	Setback for 20 foot high slope	Setback for 30 foot high slope	Setback for 40 foot high slope	Setback for 50 foot high slope	Setback for 60 high slope
2007 CBC	3	7	10	13	17	20
Engeo 1/3 slope height and minimum of 10 feet	10	10	10	13	17	20
Town Ordinance 4 feet plus 1/5 slope height	6	8	10	12	14	16
Town Ordinance 1/2 slope height - 4feet min. and 20feet max.	5	10	15	20	20	20

Analysis of the above data indicates that for descending slopes less than 20 tall, the recommended setback by Engeo is more conservative than the 2007 CBC and the Town Ordinances. For slopes over 20 feet tall, the Town Grading Ordinance of the 1/2 the slope height and 4 foot minium and 20 foot maximum is more conservative. The Town Ordinance of 4 feet plus 1/5 the slope height is always less conservative than the setbacks proposed by Engeo.

Engeo also provides generalized recommendations for a structure setback, if it is desired to construct a new building less than 10 feet from a descending slope. In these instances, Engeo recommends the use of both geogrid reinforcement of the soil and specialized foundation recommendations such as deepened footings and pier and grade beam foundation. The geogrid reinforcement is to be designed in accordance with the recommendations of their geotechnical report of 21 April 2008 and the corrective grading plan of April 2008. The specialized foundation recommendation would be based on the as-built soil conditions at the end of the grading operations.

Based on our review of the above data and experience with the soil conditions which are likely to be present in a descending fill slope at the Palos Colorados project, we feel that a conservative approach to structure setbacks is warranted. We generally concur with Engeo and the requirements of the CBC that a minimum structure setback of 10 feet would be appropriate for slopes less than 20 feet tall. However, for slopes taller than 20 feet, we feel that the more conservative requirements of the Town Grading Ordinance would be appropriate.

With respect to structure setbacks less than 10 from a descending slope, it is also our opinion that the use of geogrid reinforcement in the slope and specialized foundation recommendations have the potential to provide adequate long term stability to the house foundation system. It is our opinion that lots with descending slopes taller than 20 feet where the structure will be located within 10 feet of the slope should incorporate both geogrid reinforcement and specialized foundation recommendations. It is our opinion that the geogrid reinforcement should be shown on the grading plans for any building which is proposed to be located within 10 feet of a descending fill slope. It is also our opinion that the recommendations for the specialized foundation systems should be based on the as-built conditions of the site at the completion of grading.

We were unable to locate any recommendations by the applicant and their geotechnical consultants regarding recommendations for any structure setbacks from toes of large cut slope and fill slopes, the tops of creek banks and drainage swales as required by C.VTM.42. We also contacted the project geotechnical engineer regarding this issue. They indicated that they have only provided written recommendations for alternative setbacks from descending slopes. We therefore recommend that the structure setbacks for these conditions be in conformance with the Town Grading Ordinance. If the applicant wants to utilize/propose alternative setbacks, then a geotechnical report should be prepared which demonstrates that the alternative setbacks provide equivalent protection to structures. This report should be provide to for our review and comment and approval by the Town Engineer.

LIMITATIONS

This review has been performed by request of the Town of Moraga. Our role has been to provide technical advice to assist the Town in its discretionary permit decisions, and we are afforded the same protection under state law. Our services have been limited to the review of the documents listed above and a visual review of the property. We have no control over the future construction on this property and make no representations regarding its future conditions.

We have employed accepted geotechnical engineering procedures, and our professional opinions and conclusions are made in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties, either expressed or implied.

We trust this provides you with the information you require at this time. If you have any questions please call us at your convenience.

Yours truly,

CAL ENGINEERING & GEOLOGY, INC.

Mitchell Wolfe, P.G., E.G.
Principal Geologist

Phillip Gregory, P.E., G.E.
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