Coastal Geology & Geotechnical Services Inc.
• Soil and Geotechnical Engineering
• Engineering Geology
• Hydrogeology

February 20, 2024 Reference V24125

337 Hot Springs Road
Montecito Ca 93108

c/o: Mark Lloyd
L & P Consulting
3 West Carrillo St. #205
Santa Barbara, Ca

Subject: Preliminary Geologic Investigation into the Current Condition of the Slope and Embankment, Located at 337 Hot Springs Road, Montecito, Ca 93108. APN 009-070-038.

Dear Mr. Lloyd:

Per your request, Coastal Geology & Geotechnical Services, Inc. (CGGS) is pleased to provide you with results of our preliminary geologic investigation into the current condition of the slope and embankment, located at 337 Hot Springs Road, Montecito, Ca. The subject property consists of an approximately 1.02-acre parcel, located on a Quaternary older alluvial (Qoa) plateau and embankment, directly adjacent to the Montecito creek historic flood plain. The east side of the property consists of a steeply inclined, historic Montecito Creek stream channel embankment and slope, ranging in elevation from approximately +160 feet msl at the bottom of the slope to +183 feet msl at the top of the slope, on the south end of the embankment (23 feet of elevation difference). Lower portions of the embankment are inclined at slope angels of approximately 1.6 to 1 to 2.0 to 1, while upper portions of the embankment are inclined at slope angles of $^{3}/_{4}$ to 1 to near vertical.

The Quaternary older alluvial (Qoa) deposits, which the subject embankment is composed of, are defined on the "Geologic Map of the Santa Barbara Coastal Plain Area, Santa Barbara County, California", by Scott Minor, 2009, as "moderately consolidated, crudely stratified, poorly sorted sand and sandstone, gravel, conglomerate, and breccia". Observations by a representative of this office during

the construction of the residence at 337 Hot Springs and of the current slope conditions, noted the presence of poorly consolidated Qoa deposits of gravels, cobbles, and boulders in a sandy clay matrix in the subsurface of the property and embankment.

It is our understanding that during the catastrophic debris flow event of January 9, 2018, Montecito Creek overflowed its banks and destroyed five residences (see photo 1 of parcels affected) located directly east and adjacent to the subject parcel and embankment. It is our opinion that the 2018 debris flow event also impacted the subject embankment by undercutting the base of the embankment slope, causing increased erosion, debris slides and failures on the embankment slope. The effect of this undercutting is a contributing factor to the ongoing slope failures along the entire embankment as observed during the period of January 2018 to present. A historic atmospheric river storm event on January 9, 2023 also caused major flooding, evacuations, and damage to this same area of Santa Barbara. A representative of our office visited the subject site in March of 2023 and observed a large slope failure on the south end of the subject embankment (see photo 2), and observed other areas of slope instability and failures over the subject slope face. A site visit on February 15, 2024 and again on February 20, 2024, indicated multiple areas of slope failure along the subject slope (see photos 3 & 4), and other areas of cursory slope failure and slippage was observed along the entire slope face. A check of the rainfall totals for the past 5 days (February 15 to 20, 2024) for the Montecito area indicates that 7.12 inches of precipitation has occurred.

Our site visit on February 15, 2024 also observed signs of continued slope failure and distress at the top of the slope in planter areas, sidewalks, and on existing retaining and building walls, along the entire stretch of the slope. The area at the south end of the embankment, which experienced the large slope failure on January 9, 2023, and has an old, poorly constructed, retaining wall at the top of slope, is currently over steepened and catastrophic slope failure is imminent. This area of the slope is also relatively close to the existing residence (8 to 10 feet from top of slope in the old stone and mortar wall area) and has an HVAC system on a concrete pad in immediate danger of distress. A large oak tree (24" oak shown on map in photo 5) in this area is located at the top of the slope in the vicinity of the HVAC system and is in immediate danger of being undermined on the descending slope below it and is adding to the immediacy of the need for slope repair. We further understand that the bedroom portion of the residence is located in this area of the residence, immediately adjacent to the south end of the embankment, which is the most unstable portion of the slope.

Due to the over steepened slope condition along the remaining areas of the slope, and the observed evidence of areas of slope slippage and failure, catastrophic slope failure will likely occur as a result of future storm events. In addition, the slope failures are undermining trees along and above the slope, and high wind conditions will likely topple trees and the resulting up-rooting will cause additional slope failures.

Based on our current observations at the site and our experience in the immediate area and community, it is our opinion that the subject embankment has the potential to suffer a catastrophic failure, which could cause significant damage to the occupants of the residence, the residential structure, and the exterior accessories, located directly adjacent to the subject embankment and slope. The subject embankment consists geologically of poorly consolidated deposits of sands, gravels, and boulders in an over steepened condition caused by historic stream channel bank erosion, debris flow damage, and slope failures. Current soil conditions are nearing, or are at saturation, with over 7 inches of rainfall recorded in the last five days. The primary driving mechanism for slope failures is a steeply inclined slope consisting of poorly consolidated soils with saturated conditions. In the case of the current slope, we have all of the conditions necessary for a slope failure. As such, it is our opinion that the subject slope condition merits an emergency permit for immediate repair.

It should also be noted that the two (2) proposed soldier pile retaining walls are designed to meet the policies and standards of the Montecito Land Use and Development Code (MLUDC) and County Grading Ordinance (Chapter 14) by keeping wall heights at a neighborhood compatible height (6-8 feet) and constructing 2:1 slopes between walls. The stabilization of the slope could have been achieved by a single soldier pile retaining wall, but a single wall would need to be 16-20 feet in height, which would be excessively high in appearance and out of character with the community.

Closure

The conclusions and recommendations contained within this report are preliminary investigative findings and may be revised based on changed field conditions. Conclusions and recommendations are based on the assumption that the subsurface conditions do not deviate appreciably from those disclosed by the testing and observations performed on the subject project site. If conditions are encountered during construction, which are different from those observed during our exploratory subsurface investigation or as described in this report, we must be notified so that we can consider the need for revisions or modifications to the recommendations contained herein.

The conclusions and recommendations contained within this report remain valid for a period of one year from the date of this report. After a period of one year, the conclusions and recommendations must be reviewed by this office or another qualified soil engineer to insure conformance with industry standards and potentially changed soil conditions.

This report has been prepared exclusively for the client in accordance with generally accepted practices in the locale and at the time of this investigation. No other warranty, either expressed or implied, is made. Use by other than client shall invalidate the recommendations contained herein.

Coastal Geology and Geotechnical Services, Inc.

Sincerely,
J.N.B. Brouwer
Certified Engineering Geologist
C.E.G. 2076

Photo 1 – Locations of Five Houses Destroyed in January 9, 2018 Montecito Debris Flow

Photo 2 – Looking South Showing Slope Failure on East Facing Slope/Embankment from January 9, 2023 Historic Rain Event.

Photo 3 – February 2024 Slope Failure on East Embankment

Photo 4 – February 2024 Slope Failure on East Embankment

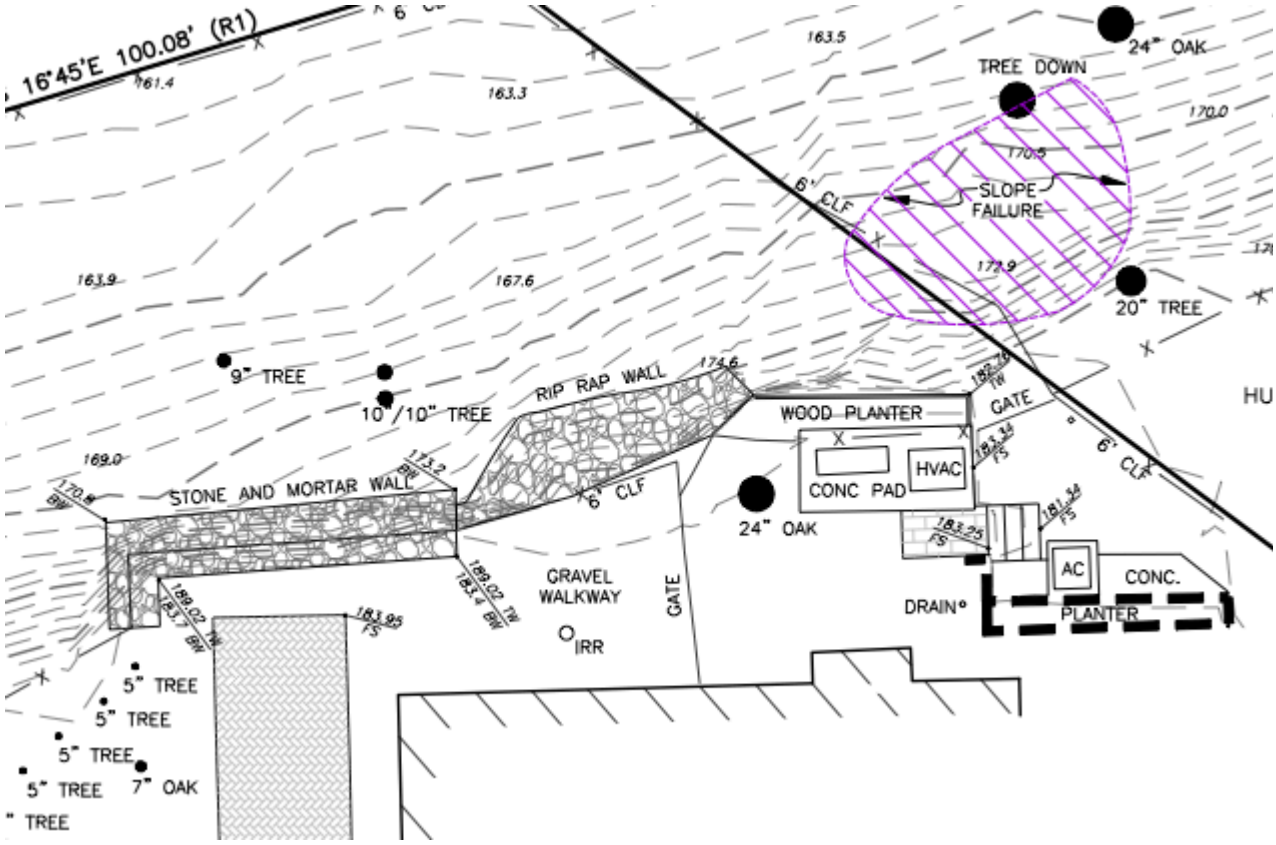

Photo 5 – Showing Location of January 9, 2023 Slope Failure, Stone and Mortar Wall, 24" Oak, HVAC System, and East Side of Residence Located Immediately Adjacent to the South End of the Slope.