## **CALIFORNIA COASTAL COMMISSION**

South Coast Area Office 301 Ocean Blvd., Suite 300 Long Beach, CA 90802-(562) 590-5071



# W14a

# A-5-LGB-18-0071 (HALE)

# **DECEMBER 9, 2020**

# **EXHIBITS**

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5 Camel Point Drive

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November 16, 2020

## **GEOTECHNICAL REVIEW MEMORANDUM**

To: Marlene Alvarado, Coastal Program Analyst

From: Joseph Street, Ph.D., P.G., Staff Geologist

Joseph Street

Re: 15 Camel Point Rd., Laguna Beach (Hale Residence), Appeal No. A-5-LGB-18-0071

In connection with the above-referenced appeal, I have reviewed the following documents directly related to the subject property:

- 1) Bagahi Engineering, Inc., 2005, "Compaction Report, Single Family Residence, 31301 Camel Point, Laguna Beach, California", dated April 15, 2005, signed by K. H. Bagahi.
- Bagahi Engineering, Inc., 2012, "Preliminary Geotechnical Investigation, Proposed Retaining Wall, 15 Camel Point, Laguna Beach, CA", report dated March 9, 2012, signed by K. H. Bagahi and S. Gutierrez.
- Bagahi Engineering, Inc., 2017, "Geotechnical Report Update, Proposed Retaining Wall, 15 Camel Point, Laguna Beach, CA", dated August 29, 2017, signed by K. H. Bagahi and S. Gutierrez.
- Bagahi Engineering, Inc., 2017, "Response to Zoning Plan Check Comments, Proposed Retaining Wall, 15 Camel Point, Laguna Beach, CA", dated November 3, 2017, signed by K. H. Bagahi.
- 5) Ann Christoph Landscape Architect, 2018, Project Plan Sheet LC-2a "Alternative Slope Treatment", Hale Residence,15 Camel Point Drive, South Laguna, CA 92651.
- 6) Ann Christoph, 2019, "RE: 15 Camel Point Appeal # A-5-LGB-18-0071 (Hale)", letter submitted to CCC staff, dated November 12, 2019.
- 7) GeoSoils, Inc., 2020, "Coastal Bluff Edge Evaluation, Proposed Repairs to Retaining Wall, 15 Camel Point Drive, Laguna Beach, Orange County, California, 92651, Assessor's Parcel Number (APN) 056-020-48-00", report dated March 31, 2020, and signed by J. P. Franklin and D. W. Skelly.

I have also consulted oblique aerial photographs of the site provided by the California Coastal Records Project (<u>https://www.californiacoastline.org</u>) and the two-foot contour topographic maps maintained by Orange County Public Works (OCPW) (<u>https://www.ocgis.com/ocpw/landrecords/</u>). In addition, I visited the site on April 17, 2019. The purpose of this memorandum is to evaluate the position of the bluff edge on the subject property.

### **Proposed Project**

The proposed project, as revised in Ref. (6), consists of the installation of two four- to fivefoot high stacked broken concrete retaining walls on the south-facing slope below the existing house at 15 Camel Point Dr., an ocean-fronting bluff property in South Laguna Beach. The proposed walls are essentially gravity walls, with no foundation or footing, and are described as landscape features that would serve to control erosion and allow for garden plantings.

#### **Site Description**

As described in Refs. (2), (4) and (7), the coastal bluff at the site is a composite bluff composed of Tertiary-aged sandstone and conglomerate bedrock known as the San Onofre Breccia, overlain by Quaternary-aged paralic deposits (often called "terrace deposits") and a relatively thick layer of artificial fill associated with prior development of the site. On the southern flank of Camel Point, where the proposed walls would be located, the bluff slope extends from the back beach (at approximately +30 ft mean sea level, MSL) to approximately +84 ft MSL at the edge of the house's southern patio. The San Onofre Breccia extends from the base of the bluff to an elevation of about +60 ft MSL and the native terrace deposits to +65 ft, with the rest of the slope comprised of artificial fill. The lower bluff, below +60 ft MSL, has a slope of approximately 1:1 (horizontal:vertical), while the upper bluff between +60 and +84 ft MSL has a gentler 2:1 (h:v) slope. Based on the OCPW topographic maps, the inclined bluff top inland of the site, between Camel Point Dr. and South Coast Highway, has an average slope of approximately 12:1 (h:v).

#### **Bluff Edge Determination**

The Land Use Element (LUE) of the City of Laguna Beach's certified Local Coastal Program provides guidance on determining the bluff edge, including the following definition of "Oceanfront Bluff Edge or Coastal Bluff Edge" (Glossary Definition 101) [emphasis added]:

The California Coastal Act and Regulations define the oceanfront bluff edge as the upper termination of a bluff, cliff or seacliff. In cases where the top edge of the bluff is rounded away from the face of the bluff, the bluff edge shall be defined as that point nearest the bluff face beyond which a downward gradient is maintained continuously to the base of the bluff. In a case where there is a step like feature at the top of the bluff, the landward edge of the topmost riser shall be considered the bluff edge. Bluff edges typically retreat over time because of erosional processes, landslides, development of gullies, or by grading (cut). In areas where fill has been placed near or over the bluff edge, the original bluff edge, even if buried beneath fill, shall be taken to be the bluff edge.

This definition is similar, though not identical, to the definition of "bluff edge" contained in the Coastal Commission's regulations (Cal. Code Reg. Title 14, §13577(h)). The LUE (in Definition 102) further clarifies that a coastal bluff encompasses the entire slope between the upland area and the beach, and not just the steepest portion of the slope:

**Oceanfront Bluff/Coastal Bluff** – A bluff overlooking a beach or shoreline or that is subject to marine erosion. Many oceanfront bluffs consist of a gently sloping upper bluff and a steeper lower bluff or sea cliff. The term "oceanfront bluff" or "coastal bluff" refers to the entire slope between a marine terrace or upland area and the sea. The term "sea cliff" refers to the lower, near vertical portion of an oceanfront bluff.

At the project site, determining the bluff edge pursuant to these definitions is complicated by the sloped and irregular surface of the bluff top and the extensive modifications to the topography of the site during past development. These modifications include substantial grading associated with construction (Fig. 1) and, most significantly, the placement of artificial fill across at least portions of the site (Fig. 2). Ref. (2) provides evidence that artificial fill extends at least 7.5 feet below the ground surface on the southern bluff slope in the vicinity of the proposed wall, while Ref. (4) posits that the depth of the fill layer could exceed 15 feet below the southern patio. However, the limited subsurface investigation presented in Ref. (2) is not sufficient to map the topography of the buried contact between fill and natural bluff materials, or to identify an "original" bluff edge with any certainty.



**Figure 1**: Construction and bluff modifications, 2002. (Source: California Coastal Records Project)

The Coastal Bluff Edge Evaluation submitted by the applicant (Ref. 7) identifies the bluff edge as the contact between the San Onofre Breccia bedrock and the overlying upper bluff material; along the southern bluff slope below the proposed walls, this contact occurs at elevations of approximately +58 - 62 feet MSL. Considering the site modifications described above, this is a reasonable approach, and along the southern bluff slope the applicant's bluff edge line does correspond to a discernable slope break (see **Fig. 2**). However, the applicant's bluff edge line does not account for the natural upper bluff paralic (marine terrace) deposits that occur immediately above the bedrock, nor the significant slope ( $\sim$ 2:1 h:v) of the upper bluff materials, which greatly exceed the general slope of the bluff top ( $\sim$ 12:1 h:v) in this location.

The LUE definition of an Oceanfront/Coastal Bluff expressly includes the entire slope between the marine terrace or upland area and the sea, not just the steeper sea cliff, which in Laguna Beach typically corresponds to the lower bluff bedrock. Under this definition, the "entire bluff slope" could be construed as extending at least as far as the edge of the southern patio, to an elevation of about +84 feet MSL. However, the LUE Coastal Bluff Edge definition additionally indicates that the placement of artificial fill does **not** influence the position of the bluff edge; thus, the artificial fill comprising the upper portions of the southern slope likely buries or obscures the original bluff edge, and should not be considered in the bluff edge determination. With these considerations in mind, in my opinion the LUE bluff edge can be best approximated as the contact between the paralic (marine terrace) deposits, comprising the uppermost natural bluff materials at the site, and the overlying artificial fill. On the southern bluff slope, this contact occurs at an elevation of approximately +65 feet MSL; this elevation contour can be considered the LUE bluff edge for purposes of evaluating the proposed project (**Fig. 2**). As noted above, the available subsurface and topographic information does not allow for the detailed mapping of the geologic contacts between the bedrock, marine terrace deposits, and artificial fill, nor a precise delineation of the "original", pre-development bluff edge position per the LUE definition. Nonetheless, it is my conclusion that the top of the old paralic/marine terrace deposit layer, at an elevation of about +65 feet MSL, is the most representative approximation of the original bluff edge, and best fits the LUE definition. As a practical matter, the proposed landscaping wall is located well above and inland of both the applicant's bluff edge delineation and the +65 foot MSL contour identified in this memo (**Fig. 2**), and would appear to be consistent with the setback provisions of the Laguna Beach LCP.

#### **Slope Stability**

The slope stability analysis provided in Ref. (4) indicates that the southern bluff slope is grossly stable, with a minimum factor of safety of 1.77 under static conditions. However, in recent years this slope has reportedly experienced surficial erosion, including the loss of a mature cypress tree (Ref. 6). In my judgement the proposed stacked block wall, lacking any foundation, with not significantly affect the gross stability of the site, but may help control the erosion of surficial soils and fill material.

**Attachment: Figure 2** 







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