

# Exhibit C

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GEOLOGIC EVALUATION OF FAULT HAZARD  
PROPOSED RESIDENCE FOR CODDING/MAXWELL  
21 PRONGHORN RUN  
SANTA LUCIA PRESERVE  
MONTEREY COUNTY, CALIFORNIA

October 16, 2023

Prepared for

Kristen Coddling and Brian Maxwell

Prepared by

**Craig S. Harwood**

Engineering Geologist  
Ben Lomond, California

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**Craig S. Harwood**

Engineering Geologist

239 park Drive  
Ben Lomond, CA 95005  
tel 831 325-9327  
email kirmig@cruzio.com

Kristen Coddling and Brian Maxwell  
c/o Tom Meaney, Architect  
629 State Street  
Santa Barbara, California 93101

October 16, 2023  
Project: G-896.1

Project: **Proposed Residence for Coddling/Maxwell**  
21 Pronghorn Run  
Santa Lucia Preserve  
Monterey County, California

Subject: Geologic Evaluation of Faulting

Dear Mrs. Coddling and Mr. Maxwell:

As you authorized, presented herein is the geologic evaluation of faulting for the proposed residential project at 21 Pronghorn Run in the Santa Lucia Preserve, Monterey County, California. The report describes the general site geologic characteristics, and evaluates the potential hazard posed by surface fault rupture with regard to the proposed residence. It is our judgement that the proposed residence is located sufficiently far from the San Clemente Fault that it is not impacted by the hazard of surface fault rupture. One digital copy of this report is submitted to your agents for distribution on your behalf.

We appreciate the opportunity to have provided geologic services for this project and look forward to working with you again in the future. If there are questions concerning this report, please contact us at your earliest convenience.

Sincerely,



Craig S. Harwood  
Engineering Geologist  
PG #6831, EG #2275

Distribution: Addressee (1)

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## 1.0 INTRODUCTION

Construction of single-family residence and associated improvements is planned at the subject site located in the Santa Lucia Preserve residential development in the Monterey County, California. My understanding of the project is based upon my discussions with Mr. Andrew Matt, and review of the project plans by Whitson Engineers (date May 3, 2023). We understand that the proposed residence will be located within the central portion of the parcel, on a gently inclined, southerly facing natural slope as shown on the "Building Envelope Map" (Appendix A). A moderate amount of grading will be required to establish a future building pad. The grading will be focussed primarily in creating the driveway and yard on the south of the residence. Access to the building site is by way of a paved road that extends into the building envelope area from an existing concrete paved road at the southwest property corner.

## 2.0 PURPOSE AND SCOPE OF SERVICES

We understand that the Monterey County Planning Department is requiring a fault evaluation for the proposed project due to the fact that the parcel is located within a county fault hazard regulatory zone due to the mapping of the San Clemente Fault trending through the property (see County Fault Map, Appendix A). The scope of work included but is not necessarily limited to; review of available geologic and geotechnical reports and maps, a review of stereo aerial photo pairs covering the site area, geologic mapping of the site and evaluation of the data collected and preparation of this report.

It is our intent that this report be used exclusively by the client and the client's architect/engineer to form the geologic/seismic basis of the design of the project as described herein, and in the preparation of plans and specifications. Analysis of the soil and rock for radioisotopes, asbestos, hydrocarbons, or chemical properties are beyond the scope of this geologic assessment.

## 3.0 SITE SETTING

The site is located in the northern foothills of the Santa Lucia Mountain range about 10 miles southeast of the community of Carmel By-The-Sea in Monterey County, California. The Local Geologic Map (Appendix A) presents a more detailed depiction of the relative setting of the site. The irregularly shaped building envelope area encompasses several acres of undeveloped land in an area characterized by rolling hills, small valleys, ridges and drainages.

## 4.0 GEOLOGIC SETTING

The portion of the Santa Lucia Mountains where the site exists is within the Salina Block. The Salina block is composed of an elongate prism of granites and metamorphic rock types. The Salina basement complex is overlain primarily by marine sedimentary rocks of tertiary age and terrestrial rocks of Pliocene to Pleistocene age. The geologic formations in the vicinity of the site consist of granitic basement rocks overlain by a sequence of marine and terrestrial sedimentary rocks that have been deformed into a series of folds and is also faulted locally by a series of local faults. Published maps covering the regional geology in the general vicinity of the site include those by Clark et al. (1997), Dibblee (1999), and Rosenberg (1993 and 2001). These regional maps are based upon aerial photo interpretation, reconnaissance style mapping and field checking at sparsely distributed locations in the area and do not include site-specific data. More locally, the Santa Lucia Preserve was the subject of a geologic mapping project by Cleary Consultants Inc. in 1994, the most detailed mapping

that has been conducted in the vicinity. The Local Geologic Map (Appendix A) is a partial reproduction of Cleary Consultants geologic map. The map of Cleary (1994) suggests the building envelope area is underlain by a Miocene age sandstone unit (geologic symbol “Tts”). A Cretaceous granodiorite bedrock unit (geologic symbol “gd”) is shown to be underlying the northern portion of the parcel (see report section on Faulting, and Local Geologic Map in Appendix A).

### Geologic Reconnaissance

A geologic reconnaissance of the site was performed on October 10, 2023 by Project Geologist Craig S. Harwood. The purpose of the reconnaissance was to observe in the field features depicted on published maps, to observe exposures of earth materials and to identify existing or potential geological hazards. The geologic materials encountered during our site reconnaissance include colluvium, residual soil, sandstone, and granitic bedrock. Additional details regarding the results of the reconnaissance and presented in subsequent sections of this report.

### Recent Geotechnical Investigation (SSG, 2023)

Soil Surveys Group, Inc. (“SSG”) conducted a geotechnical investigation of the site which included five exploratory borings in the general building envelope area in February of 2023. Their field investigation consisted of advancing, logging and sampling within four exploratory borings which ranged in depth from 3.5 feet (B-5) to 16.58 feet (B-1) below the nearest adjacent ground surface. Their borings encountered a surficial layer of residual soil (1.5 to 2 feet thick) overlying sandstone bedrock (“Tts”). The SSG field logs characterize the bedrock formation as silty and clayey sand of a very dense condition. Field (geotechnical) blow counts obtained within the Tts geologic unit typically produced blow counts that fall within the range of practical sampling refusal ( $N_{60} = 100$  blows per foot). All of their borings were bottomed within the Tts geologic unit. Copies of the HKA graphic boring logs are included in Appendix B of this report.

### Faulting

The San Andreas Fault system and related fault systems in the region generally strike northwest and are characterized by a combination of strike-slip and dip-slip displacement. Some active faults in the region include (in order of increasing distance from the site): the Monterey Bay-Tularcitos fault system, the Rinconada fault zone, the San Gregorio fault system, the San Andreas fault (“Creeping” segment), the southern extension of the Calaveras fault zone (USGS Fault/Fold database, 2006; Jennings and Bryant, 2010). Additional local faults which have yet to be classified as active (undivided Quaternary activity status) include the Ord Terrace fault, the Seaside fault, the Navy Fault and the Chupines fault and the Berwick Canyon fault (Rosenberg, 2001). As already stated, a few fault surface traces have been mapped as trending through portions of the Santa Lucia Preserve (Cleary et al., 1994; Clark et. al., 1997; and Dibblee, 1999, Rosenberg, 1993, and 2001; Monterey County GIS, 2001). A surface trace of the San Clemente Fault, a Holocene active fault is shown as trending through the northern portion of the subject lot, as shown on the attached Local Fault Map (Monterey County GIS). The fault is identified as juxtaposing a Miocene age sandstone unit (“Tts”) on the south, against a Cretaceous granodiorite bedrock (“gd”) on the north (Cleary, 1994). The Monterey County Geologic Constraints report (Rosenberg, 2001) provides the following summary of the fault:

The San Clemente thrust was mapped by Trask (1926) as extending down San Clemente Creek and faulting granitic and metamorphic basement over Tertiary sandstone. As part of

their work on the Rancho San Carlos property, Cleary Consultants (1994) excavated three exploratory trenches along the San Clemente thrust. In one trench, vertical cracks in the overlying colluvium were observed. Radiocarbon dating of charcoal from the crack yielded an age of approximately 2,200 years. Because the cracks were not offset or sheared, Cleary Consultants (1994) postulated that the cracks resulted from strong ground shaking rather than fault rupture. However, the reviewing geologist for the trenching study disagreed and interpreted the cracks as extensional collapse of the overthrust block, implying possible Holocene movement on the San Clemente thrust (Weber, Hayes & Associates, 1995; Nolan, 1996).

As part of their study of the Santa Lucia Preserve, Cleary conducted a fault trench (Trench T-10) through the San Clemente Fault on the nearby Lot 57, located about 400 feet northwest of the subject site. They also logged a test pit (FP-4) on that same parcel. Their graphic logs of the Cleary investigation were not available for our review. Cleary used the trench exposure and additional geologic field relations to project the fault along the ridge flank and through the subject site. Based on their trenching, they located the fault and projected it with a northwest-southeast trend through the area, the nearpoint of which is about 230 feet northeast of (upslope of) the building envelope. Due to the proximity of the San Clemente Fault to the site, the building envelope is located within a county-designated fault surface rupture hazard zone. This zoning designation is broadly applied to areas located within 1/8 miles (660 feet) of a mapped Quaternary fault but it is important to note that this hazard zoning is for planning purposes and does not reflect the actual fault related hazards or actual fault location at individual sites.

Our research, site reconnaissance, review of previous subsurface data and our review of LiDAR Hillshade imagery did not reveal any evidence indicative of the presence of faults at or immediately adjacent to the building envelope. During our reconnaissance we noted sandstone detritus containing subrounded clasts at the ground surface locally in the general building envelope area. Over 200 feet upslope of the building pad area we noted a large granitic bedrock outcrop exposed at the ground surface which is associated with a pronounced topographic slope break at the downslope limits of the granitic outcrop and sandstone is exposed locally at the ground surface just below this slope break. Because the fault is defined as juxtaposing the Tts geologic unit on the south, against the gd geologic unit on the north, we infer that the fault is located at or just downslope of the slope break. This location for the fault is generally consistent with the mapping of Cleary Consultants (1994) and is shown on the figures titled Local Geologic Map and County Fault Map (Appendix A).

#### Surface-Fault Rupture

Earthquakes are generally caused by a sudden slip or displacement along a zone of weakness in the earth's crust, termed a fault. Surface-fault rupture is a manifestation of the fault displacement at the ground surface and is usually associated with moderate to large-magnitude earthquakes ( $M > 6.5$ : Sutch and Dirth, 2003), however more recent paleoseismic studies of faults suggest that in some scenarios earthquake magnitudes as low as  $M_w$  5.0 can produce fault surface rupture (Tang, et al., 2015, Champenois et al., 2017). The amount of surface-fault displacement depends on the earthquake magnitude and other factors. The displacements associated with surface fault rupture can have devastating effects to structures and lifelines situated astride the zone of rupture. As already mentioned, our review of geologic maps and literature, review of aerial photos and LiDAR imagery, our site reconnaissance revealed no evidence of faults extending through the building envelope area and the nearest fault (the San Clemente Fault) is located about 230 feet upslope of the building pad. Thus, the potential for surface-fault rupture at the building envelope location is considered to be very low.

## 5.0 CONCLUSIONS

Based on the information obtained during this geologic evaluation, we have concluded that the residential building pad is not transected by a fault. All evidence indicates the San Clemente Fault is located approximately 230 feet north of the building pad area. It is our professional opinion that the proposed residence is not potentially impacted by the hazard of fault surface rupture.

## 6.0 LIMITATIONS

1. The conclusions of this report are based on data acquired and evaluated from this study. As the development concept has yet to be fully formulated, our conclusions and recommendations should be considered preliminary in nature. The conclusions of this report are based upon the assumption that the site geologic conditions do not deviate substantially from those disclosed in the research and our observations of a limited number of natural and man-made exposures at and immediately adjacent to the site. If any variations or unforeseen conditions are encountered during construction, or if the proposed construction will differ substantially from that planned at the present time, the geologic consultant should be notified so that reevaluation of the conditions and supplemental recommendations can be given.
2. This report is issued with the understanding that it is the responsibility of the owner or the owner's representative to ensure that the information presented herein is called to the attention of the project architect and engineer.
3. The findings of this report are valid as of the present date. Changes in the conditions of a property can occur with the passage of time. In addition, changes in applicable or appropriate standards occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or partially, by changes outside of the control of the consulting geologist. Therefore, this report should not be relied upon after a period of one year without being reviewed by a qualified engineering geologist.
4. This report was prepared in general accordance with currently accepted standards of professional geologic practice in this area at this time. No warranty is intended, and none shall be inferred from the statements or opinions expressed.

End of Text

## REFERENCES

- Bryant, W.R., 1985, Faults in the Southern Monterey Bay Area, Monterey County, California, California Division of Mines and Geology Report FER-167, 13p., 5 sheets, scale 1:24,000.
- California Geological Survey, (Updated January 26, 2016), Landslide Inventory and Deep-Seated Landslide Susceptibility Interactive Mapping (Beta version) <http://maps.conservation.ca.gov/cgs/lsi/>.
- Champenois, J., Baize, S., Vallee, M., Jomard, H., Alvarado, A. P., Espin, P., Audin, L., 2017, Evidences of Surface Rupture Associated with a Low-magnitude ( $M_w$ 5.0) Shallow Earthquake in the Ecuadorian Andes. *Journal of Geophysical Research: Solid Earth*, 122, 8446–8458. <https://doi.org/10.1002/2017JB013928>
- Clark, J.C., Dibblee, T.W., Jr., Greene, H.G., and Bowen, O.E., Jr., 1974, Preliminary geologic map of the Monterey and Seaside 7.5-minute quadrangles, Monterey County, California, with emphasis on active faults: U.S. Geological Survey, Miscellaneous Field Studies Map MF-577, scale 1:24,000.
- Clark, J.C., Dupre, W.R., and Rosenberg, L.I., 1997, Geologic map of the Monterey and Seaside 7.5-minute quadrangles, Monterey County, California: a digital database: U.S. Geological Survey, Open-File Report OF-97-30, scale 1:24,000.
- Cleary Consultants, Inc., 1994, Geological and Geotechnical Investigation Vesting Tentative Map Submittal, Rancho San Carlos, Monterey County, California, unpublished consultant's report, their Proj. No. 634.1, dated February 15, 1994.
- Dibblee Geological Foundation, 1999, Geologic Map of the Monterey Peninsula and Vicinity, Monterey, Salinas, Pt. Sur, Jamesburg 15-minute Quadrangles, Dibblee Geological Foundation Map #DF-71, 1:62,500 scale.
- Dibblee, T.W. and Minch, J.A., 2007, Geologic map of the Monterey and Seaside quadrangles, Monterey County, California: Dibblee Geological Foundation, Dibblee Foundation Map DF-346, scale 1:24,000.
- Dupre, W.R., 1990, Map Showing Geology and Liquefaction Susceptibility of Quaternary Deposits in the Monterey, Seaside, Spreckles and Carmel Valley Quadrangles, Monterey County, California, 1:62,500 scale.
- Greene, H. G., Geology of the Monterey Bay region, 347 pp., U.S. Geological Survey, Menlo Park, CA, 1977.
- \_\_\_\_\_, Lee, W.H.K., McCulloch, D.S., and Brabb, E.E., 1973, Faults and Earthquakes in the Monterey Bay Region, California: U.S. Geological Survey Miscellaneous Field Studies Map MF-518, 14p., 4 map sheets, scale 1:200,000.
- Hart, E.W. and Bryant, W.A., 1997, Fault-rupture hazard zones in California: California Division of Mines and Geology Special Publication 42, 38 p.
- International Conference of Building Officials, 1998, Maps of Known Active Fault Near Source Zones in California and Adjacent Portions of Nevada: ICBO, scale 1 in = 4km.
- Jennings, C. W., and Bryant, W.A., 2010, Fault Activity Map of California, California Dept. of Conservation, California Geological Survey, <http://bibpurl.oclc.org/web/40105>.
- Rosenberg, L.I., and Clark, J. C., 1994, Quaternary Faulting of the Greater Monterey Bay Area, California: U.S. Geological Survey Final Technical report 1434-94-G-2443, 45 p., 3 appendices, 4 map sheets, scale 1:24,000.
- Rosenberg, L.I., 2001, Geologic Resources and Constraints Monterey County, California: A Technical Report for the Monterey County 21<sup>st</sup> century General Plan Update, 167 p., 10 sheets
- Page, B.M., 1998, Late Cenozoic Tectonics of the Central and Southern Coast Ranges of California, in Geological Society of America Bulletin, vol. 110, no. 7, p. 846 - 876.

Residence for Coddington/Maxwell, 21 Pronghorn Run  
Proj. No.: G-896.1

October 16, 2023

Whitson Engineers, Fehrman Residence, Civil Engineering Plan Set C001 through C202, Their Job No.,  
4601.00, dated April 14, 2023.

U.S. Geological Survey and California Geological Survey, 2006, Quaternary fault and fold database for the United  
States, accessed December 24, 2021, from USGS web site: <http://earthquake.usgs.gov/regional/qfaults/>.

**STEREO PAIR AERIAL PHOTOGRAPHS REVIEWED**

<b><u>Date</u></b>	<b><u>Scale</u></b>	<b><u>Type</u></b>	<b><u>Source</u></b>	<b><u>Flight I.D./Frames</u></b>
5/1/1956	1:20,000	B&W	Aero Service Corp	ABG-4R-178, 179
1/1/1939	1:20,000	B&W	Fairchild Aerial Surveys	C-5750-253, 254
5/14/1971	1:20,000	B&W	Western Aerial Contractors	ABG-1971-1MM-66

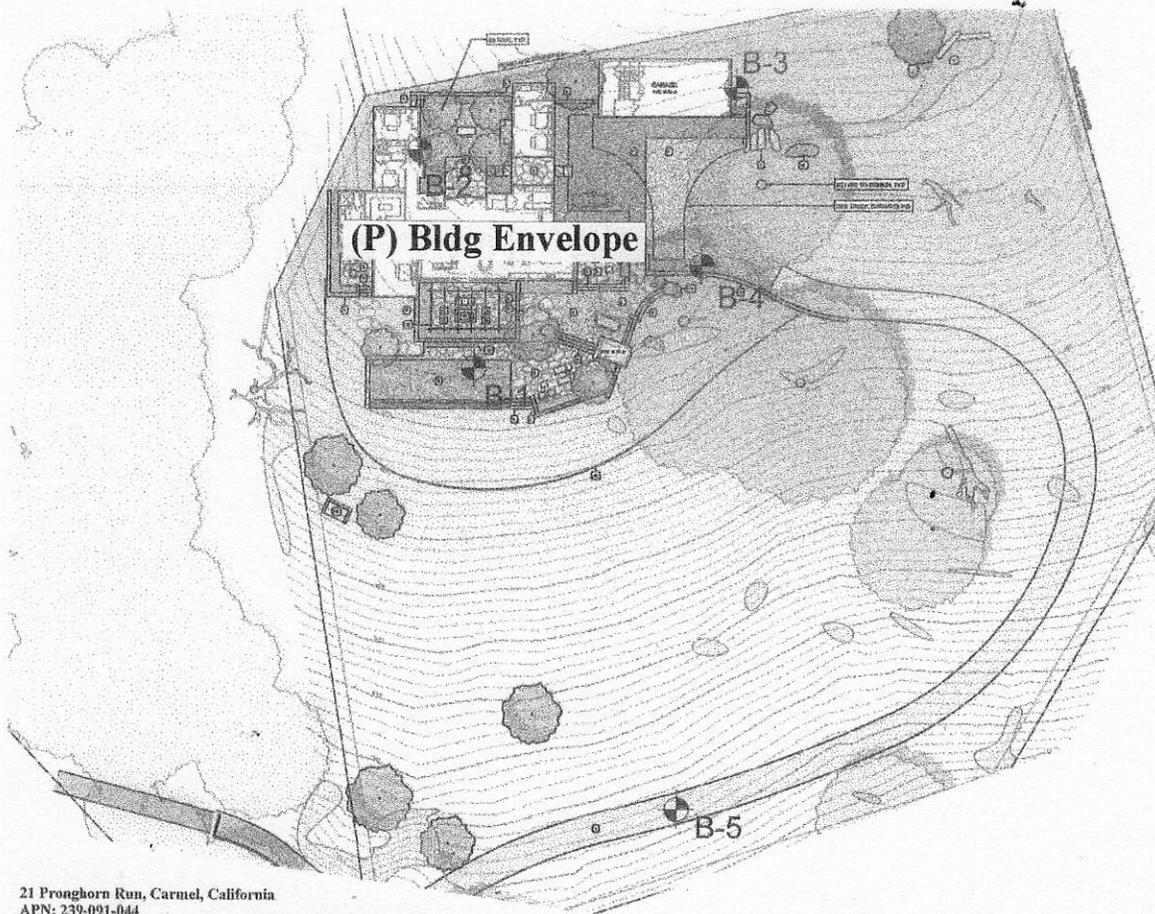
## **APPENDIX A**

Building Envelope Map

Local Geologic Map (Cleary, 1994)

County Fault Map (County GIS)

# Building Envelope Map



Base: 21 Pronghorn Run, Carmel, California  
APN: 239-091-044  
Site Plan by Bliss Landscape Architecture- November 2022- Job #8278

Figure II  
Boring Locations (Approx.)  
Soil Surveys Group, Inc.  
103 Church Street  
Salinas, CA 93901  
(831)757-2172  
info@soilsurveys.net

Not to Scale

Proj. No: G- 896.1

Date: October, 2023

## Explanation

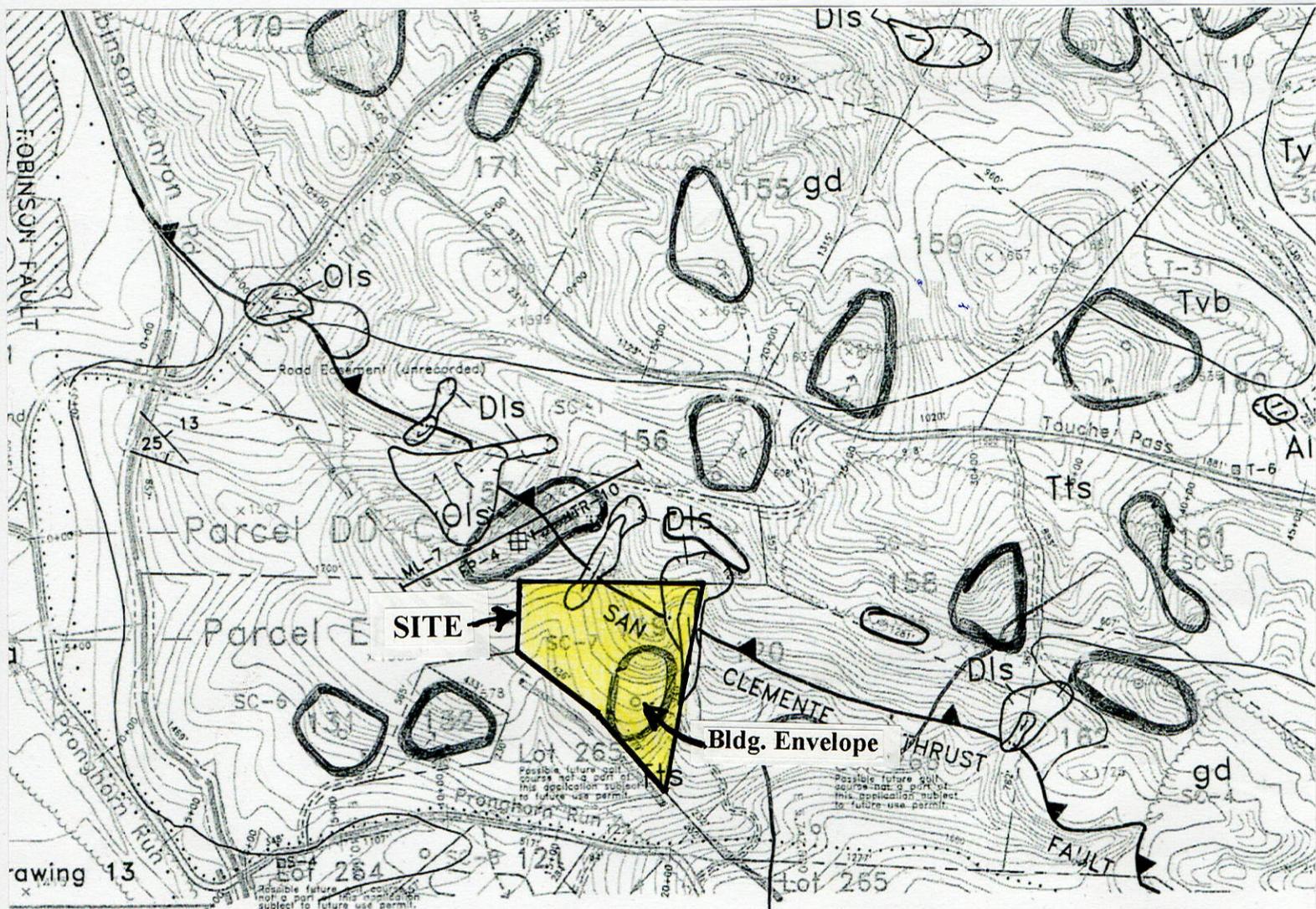


Exploratory boring location (Cleary Consulting, 1994)

Craig S. Harwood  
Engineering Geologist

Proposed Residence for Coddling/Maxwell  
21 Pronghorn Run  
Carmel Valley, CA

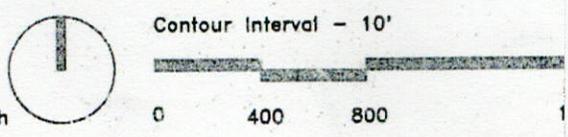
# Local Geologic Map



Stockpond/Lake  
 --- 100 Year Flood Plain  
 Gated Entry

**Footnote Legend**

1. Site for non-inclusionary ranch employee housing.
  2. Site for inclusionary ranch employee housing, included in 44 inclusionary units.
- \* Lots or Parcels serviced by Wastewater Treatment Plant. North



<u>Explanation*</u>	
<b>Symbols</b>	
TR-8	Exploratory trench (Cleary, 1994)
FP	Exploratory test pit (Cleary, 1994)
<b>Selected Earth Materials</b>	
Dls	Dormant Suspected Landslide
Tts	Undifferentiated Sandstone (Tertiary)
gd	Granodiorite (Upper Cretaceous)
*Select unit descriptions from Cleary Consulting (1994).	

# County Fault Map

239091059000



239091044000

Bldg. Envelope

3 ft, RF = 1 : 2,257

Proj. No: G- 896.1

Source: Monterey Co. GIS

Date: October, 2023

Craig S. Harwood  
Engineering Geologist

Proposed Residence for Coddling/Maxwell  
21 Pronghorn Run  
Carmel Valley, CA

## **APPENDIX B**

Logs of Expoloratory Borings (SSG, 2023)

# EXPLORATION DRILL LOG

BORING NO. B-1

PROJECT 21 Pronghorn Run

Job #8278

DATE 2.6.23

LOGGED BY JG

DRILL RIG CCD Tractor

HOLE DIA. 6"

SAMPLER 2.5"Cal, 2"Cal, and Standard Penetration Test (SPT)

GROUNDWATER DEPTH:

INITIAL ---

FINAL ---

HOLE ELEV.

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	DRY DENSITY (pcf)	WATER CONTENT %	LIQUID LIMIT	PLASTIC LIMIT	POCKET PEN. (tsf)
Grass/Reddish-brown, clayey, silty SAND with organics; moist to wet, very loose	SM	1							
		2	2"Cal	2,4,7					
			1-1-1		88.4	22.2			---
Light tan, light brown with reddish-yellow iron staining, clayey, silty, fine to medium grained SAND; moist, loose	SM/SC	3	1-2-2	11(9)	96.4	24.4			1.5
Light grey with iron staining, slightly clayey, silty, fine to medium grained SAND; moist, very dense	SM	4	2"Cal	50(40)/6"	87.9	12.7			>4.5
		5	(1-3-3)						
Light greyish-tan, reddish-yellow, clayey, silty, fine to coarse grained SAND with scattered rounded gravels; moist, very dense	SM/SC	6	2.5"Cal	50(30)/6"	88.2	9.4			---
		7	(1-4-4)						
		8							
Light greyish-tan with reddish-yellow, iron staining, clayey, fine to coarse grained SAND with subangular gravels; moist, very dense	SC	9	SPT	50/6"	118.9	7.6	32	23	---
		10	(1-5-5)						
		11							
		12							
Light grey and reddish-yellow mottled, silty, fine to medium grained SAND; moist, very dense	SM	13	SPT	20,50/6"					
		14	1-6-6	50/6"	127.4	11.8			---
		15							
		16							
Light greyish-tan with iron staining, silty, fine to medium grained SAND; moist, very dense	SM	17	SPT	20,50/1"					
		18	1-7-7	50/1"	99.8	11.1			---
-Bottom of boring at 16.58' feet		19							
-Backfilled with soil cuttings		20							

DEPTH 16.58'

SOIL SURVEYS GROUP, INC.

# EXPLORATION DRILL LOG

BORING NO. B-2

PROJECT 21 Pronghorn Run

Job #8278

DATE 2.6.23

LOGGED BY JG

DRILL RIG CCD Tractor

HOLE DIA. 6"

SAMPLER 2.5" Cal and Standard Penetration Test (SPT)

GROUNDWATER DEPTH:

INITIAL ---

FINAL ---

HOLE ELEV.

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	DRY DENSITY (pcf)	WATER CONTENT %	LIQUID LIMIT	PLASTIC LIMIT	POCKET PEN. (tsf)
Grasses/Reddish-yellow, tan, clayey, silty, SAND with organics; wet, loose	SM	1							
Reddish-brown with iron staining, silty, clayey, SAND; moist to wet, loose	SC/SM	2	SPT	2,3,6					
Light tan with iron staining, clayey, fine to medium grained SAND; moist, loose to medium dense	SC	3	2-1-8	9	108.7	19.5	32	21	---
Light greyish-tan with iron staining, silty, fine to medium grained SAND with trace clay; moist, dense	SC	4	2.5" Cal 2-2-9	12,20,32	111.5	15.9			---
			2-3-10	52(31)	109.0	12.6			>4.5
		5							
Light greyish-tan with reddish-yellow iron staining, silty, fine to medium grained SAND; moist, dense	SM	6	SPT	15,15,25					
			2-4-11	40	38.5	13.8			---
		7							
		8							
Light greyish-tan with iron staining, silty, fine to medium grained SAND; moist, very dense	SM	9	SPT	20,50/6"					
			2-5-12	50/6"	115.7	9.3			---
		10							
		11							
		12							
Light greyish-tan with iron staining, silty, fine to medium grained SAND; moist, very dense	SM	13	SPT	20,50/2"					
			2-6-13	50/2"	99.9	7.5			---
-Bottom of boring at 12.67 feet		14							
-Backfilled with soil cuttings		15							
		16							
		17							
		18							
		19							
		20							

DEPTH 12.67'

SOIL SURVEYS GROUP, INC.

# EXPLORATION DRILL LOG

BORING NO. B-3

PROJECT 21 Pronghorn Run

Job #8278

DATE 2.6.23

LOGGED BY JG

DRILL RIG CCD Tractor

HOLE DIA. 6"

SAMPLER 2"Cal and Standard Penetration Test (SPT)

GROUNDWATER DEPTH:

INITIAL ---

FINAL ---

HOLE ELEV.

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	DRY DENSITY (pcf)	WATER CONTENT %	LIQUID LIMIT	PLASTIC LIMIT	POCKET PEN. (tsf)
Grasses/Dark reddish-brown silty, clayey, SAND with organics; wet, very loose to 1.5'	SC/SM	1							
	SC		2"Cal	1,50/6"					
Light greyish-tan with iron staining, clayey, sand; moist, very dense	SC	2	3-1-14	51(40)/6"	110.1	15.6			---
		3							
Same	SC		SPT	15,50/6"					
		4	3-2-15	50/6"	90.9	11.0	39	21	---
		5							
Light greyish-tan, silty, fine to medium grained SAND; slightly moist, very dense	SM		SPT	50/6"	95.9	7.2			---
		6	3-3-16						
		7							
		8							
Light greyish-tan with iron staining, silty, fine to medium grained SAND; moist, very dense	SM		SPT	50/6"	112.5	7.3			---
		9	3-4-17						
		10							
		11							
		12							
Light greyish-tan with iron staining, silty, fine to medium grained SAND; moist, very dense	SM		SPT	50/6"	114.3	9.1			---
		13	3-5-18						
-Bottom of boring at 12.5 feet		14							
-Backfilled with soil cuttings		15							
		16							
		17							
		18							
		19							
		20							

DEPTH 12.5'

SOIL SURVEYS GROUP, INC.

# EXPLORATION DRILL LOG

BORING NO. B-4

PROJECT 21 Pronghorn Run

Job #8278

DATE 2.6.23

LOGGED BY JG

DRILL RIG CCD Tractor

HOLE DIA. 6"

SAMPLER 2"Cal, and Standard Penetration Test (SPT)

GROUNDWATER DEPTH:

INITIAL ---

FINAL ---

HOLE ELEV.

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	DRY DENSITY (pcf)	WATER CONTENT %	LIQUID LIMIT	PLASTIC LIMIT	POCKET PEN. (tsf)
Grasses/Dark reddish-brown, silty, clayey, SAND with organics; wet, very loose to 1.5'	SC/SM	1							
	SC/SM		2"Cal	5,12,21					
Light tan, dark brown and reddish-brown, clayey, silty, fine to medium grained SAND; moist, medium dense	SM	2	4-1-19		79.4	27.5			---
			4-2-20	33(26)	99.9	21.9			---
Light greyish-tan with iron staining, silty, fine to medium grained SAND; moist, very dense	SM	3	SPT	10,24,32					
		4							
			4-3-21	50	85.0	19.1			---
		5							
Light greyish-tan with iron staining, silty, fine to medium grained SAND; moist, very dense	SM	6	SPT (4-4-22)	50/6"	118.4	33.0			---
		7							
		8							
Light greyish-tan with iron staining, silty, fine to medium grained SAND; moist, very dense	SM	9	SPT (4-5-23)	50/6"	101.7	14.4			---
		10							
		11							
		12							
Light greyish-tan with occasional iron staining, silty, fine to medium grained SAND; moist, very dense.	SM	13	SPT (4-6-24)	50/6"	99.4	12.7			---
-Bottom of boring at 12.5'		14							
-Backfilled with soil cuttings		15							
		16							
		17							
		18							
		19							
		20							

DEPTH 12.5'

SOIL SURVEYS GROUP, INC.

# EXPLORATION DRILL LOG

BORING NO. B-5

PROJECT 21 Pronghorn Run

Job #8278

DATE 2.6.23

LOGGED BY JG

DRILL RIG CCD Tractor

HOLE DIA. 6"

SAMPLER Standard Penetration Test (SPT)

GROUNDWATER DEPTH:

INITIAL ---

FINAL ---

HOLE ELEV.

DESCRIPTION	SOIL TYPE	DEPTH	SAMPLE	BLOWS PER FOOT	DRY DENSITY (pcf)	WATER CONTENT %	LIQUID LIMIT	PLASTIC LIMIT	POCKET PEN. (tsf)
Grasses/Dark reddish-brown, silty, clayey, SAND with organics; wet, very loose to 1.5'	SC/SM	1	Bulk						
	SC/SM		SPT	5,10, 13					
Light tan, dark brown and reddish-brown, clayey, silty, fine to medium grained SAND; moist, medium dense	SM	2							
			5-1-25	23					
-Bottom of boring at 3.5 feet	SM	3							
-Backfilled with soil cuttings		4							
		5							
		6							
		7							
		8							
		9							
		10							
		11							
		12							
		13							
		14							
		15							
		16							
		17							
		18							
		19							
		20							

DEPTH 3.5'

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