Exhibit G

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HARO, KASUNICH AND ASSOCIATES, INC.

CONSULTING GEOTECHNICAL & COASTAL ENGINEERS

DRAFT FOR CLIENT'S REVIEW

Project No. M11417.2
3 May 2022

BRYAN ROBERTS
c/o David Stocker
Stocker and Allaire
21 Mandeville Court
Monterey, CA 93940

Subject: Geologic and Coastal Bluff Recession Assessment Report

Reference: 35700 Highway 1, Big Sur, CA 93920
Monterey County APN 418-111-012

Dear Mr. Roberts:

In accordance with your authorization, we have initiated a geological and coastal bluff recession investigation for minor additions to an existing home and garage at the referenced site. This report presents the results of our investigation and includes conclusions and recommendations regarding the geologic conditions and coastal bluff recession hazards at the referenced property. Appendix B contains our RECOMMENDED 50-YEAR BLUFF EROSION AND INSTABILITY SETBACK MAPS (Seven 11 X 17 inch sheets dated 4-28-2022) which is shown in relation to the existing development. We understand this report will be used to either renovate the existing residence; or demolish it and site and construct a new residence in a location landward of the recommended bluff setback.

The results of our investigation indicate the proposed construction project is feasible provided the recommendations presented in this report are followed in the development of project plans and specifications. If you have any questions concerning the data or conclusions presented in this report, please call our office.

Respectfully Submitted,

HARO, KASUNICH & ASSOCIATES, INC.

Mark Foxx
Certified Engineering Geologist #1493

MF/sr
Copies: See HKA Geotechnical Investigation Report

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Introduction

This report evaluates the geological conditions and evaluates coastal erosion and bluff recession hazards at 37600 Highway 1 in Big Sur, California. The objective of this geologic study is to evaluate the geologic characteristics of the terrace deposits and underlying bedrock material relative to the stability of the coastal bluffs at the site. Figure 1 shows the location of the property:

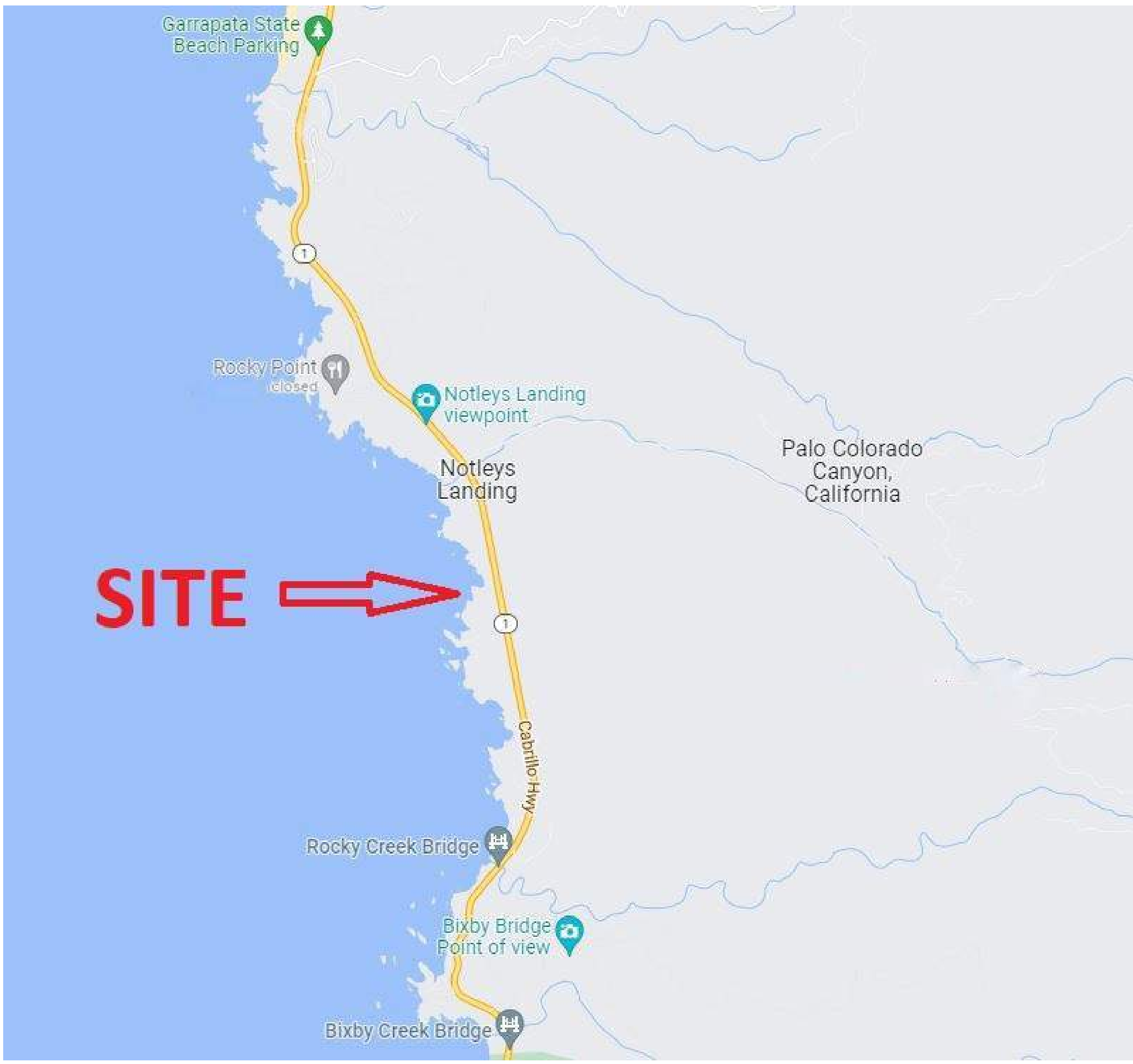


Figure 1: Property Location Map (from Google Maps)

At your request we performed investigations and prepared this geological report, evaluating historical coastal bluff recession for the property located at 37600 Highway 1. Per the Tax Assessor's records, this 1.59 Acre property contains a 9477 square foot two story main residence with an attached garage and a 372 square foot guesthouse.

In addition to our work at this site, we have reviewed our files associated with nearby work, including other work we did at this site during 2018.

The purpose of our present work is to assess the site and prepare this report containing our preliminary results regarding coastal bluff recession hazards and wave runup hazards to the buildings on the property. The goal of the work is to address where on the site proposed new improvements can be located so they will not be endangered by coastal bluff recession (which includes both surficial erosion and potential slope instability) within the next 50 years.

To date we have done the following:

1) Obtained and reviewed time sequential historical aerial photography from www. californiacoastline.org and from other sources.
2) Reviewed a topographic map of blufftop area of the property
3) Had a comprehensive topographic map of the entire property prepared which included the portion of the property between the top edge of the bluff and the Pacific Ocean. This map was developed GPS, using aerial imagery, LiDAR remote sensing and photogrammetric processes.
4) Reviewed regional geologic maps showing bedrock type, surficial deposits, faulting, etc.
5) Observed coastal bluff geology and erosion processes during site visits in the 2018 and 2022.
6) Reviewed subsurface exploratory boring logs prepared by our firm in 2018 and 2022 at this property. Our firm is also preparing a geotechnical report for this property to accompany this report.
7) Evaluated erosion/bluff recession rates.
8) Discussed bluff recession hazards qualitatively.
9) Reviewed field evidence of wave runup and discussed hazards.
10) Reviewed tsunami hazard maps.
11) Reviewed FEMA FIRM maps.
12) Prepared this Report with accompanying graphics that gives the results of our study.

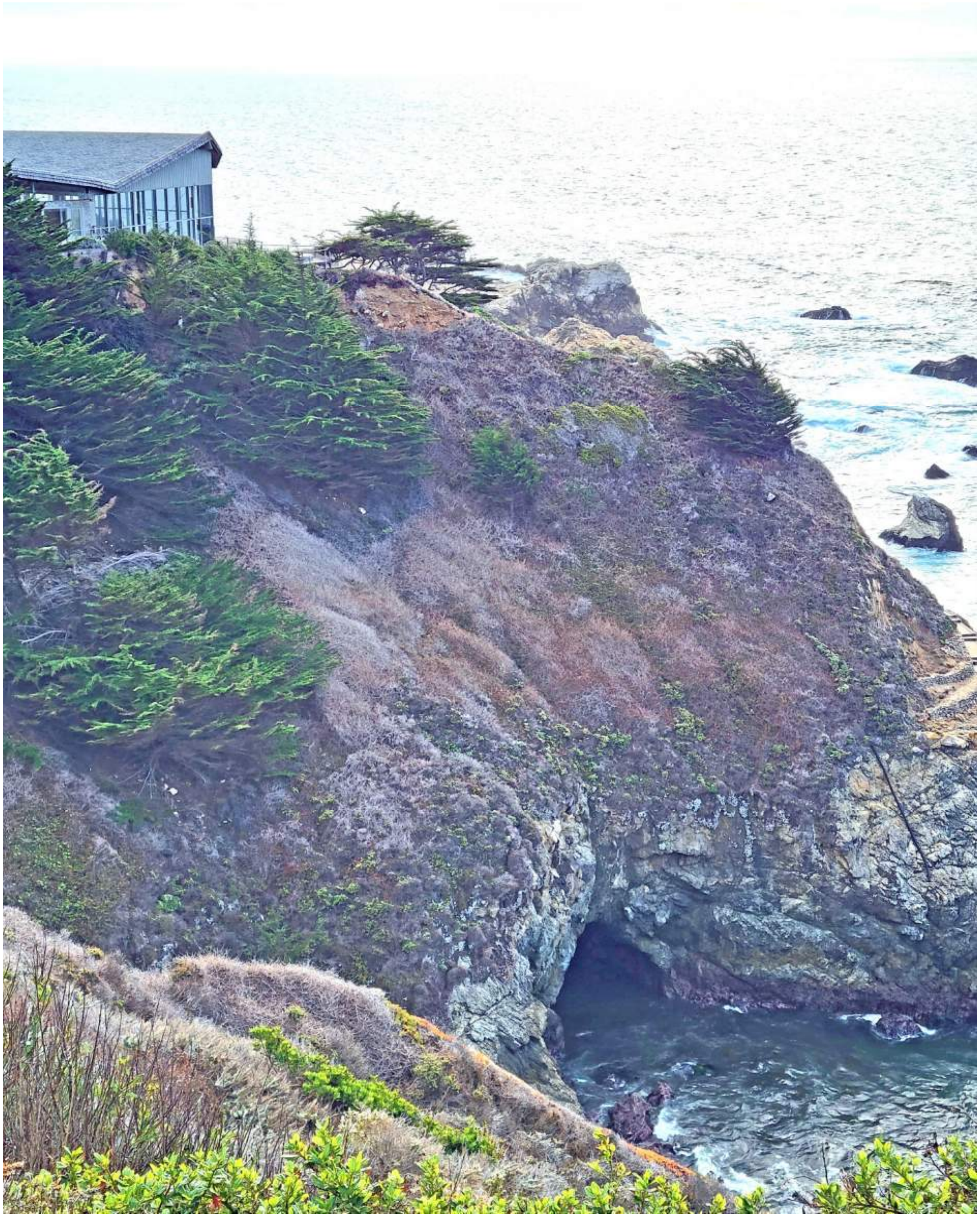
Site Conditions

The property and the home are shown below as they appeared in early 2017:

Photograph 1: 2017 Aerial Photograph
(courtesy of Sotheby's Intl Realty - Rancho)

The photographs below show additional images of the site topography, conditions and improvements:

Photograph 2: 2017 Photograph Looking Upcoast (courtesy of Sotheby's Intl Realty - Rancho)



Photograph 3: November 2021 Photograph Looking Downcoast

Photograph 4: October 2, 2019 Aerial Photograph of the Property

As pictured below, the approximate property lines at 37600 Highway 1 (Monterey County APN 418-111-012) is shown.

Photograph 4: Aerial Image of the Property Showing Approximate Property Lines

The proposed development is located at the seaward edge of a coastal terrace on the seaward side of Highway 1 between Palo Colorado Creek and Rocky Creek. The coastal terrace was modified by development of the property in the late 1960's which involved grading and excavation to create a building pad at approximately 140 feet in elevation NAVD88. The pad was excavated into the gently sloping blufftop area and the home was positioned at the bluff edges to the west and north.

Figure 2 shows a US Geological Survey topographic map of the site.

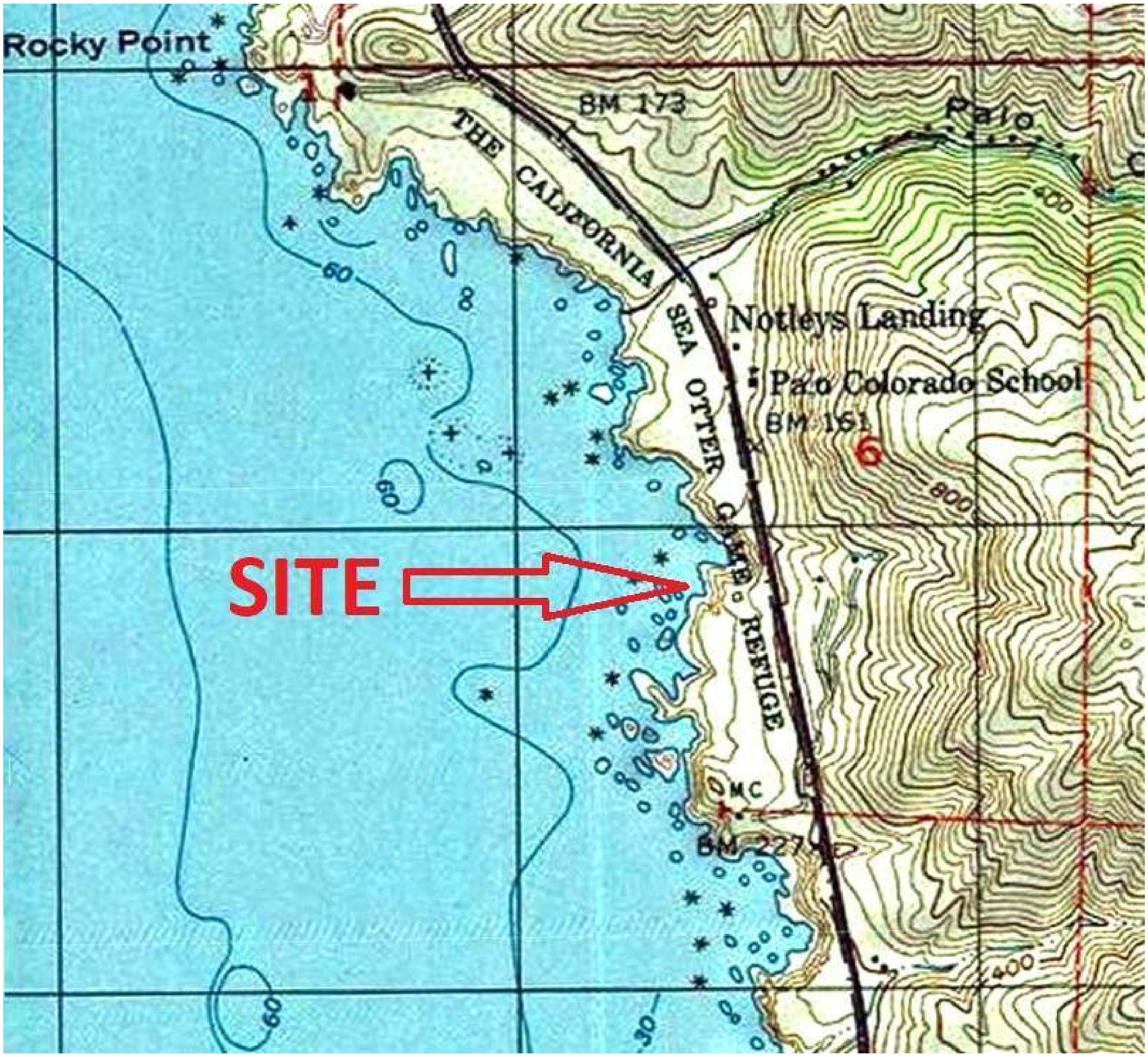


Figure 2: US Geological Survey Topographic Map

The geologic conditions at the site are relatively simple, and as seen in the coastal bluff face; with erosion resistant granodiorite bedrock exposed in the bluff up to about an elevation of 50 feet NAVD88 or higher along the bluff. A large seacave exists in the granodiorite in the lowermost portion of the bluff facing the cove to the north. Photograph 3 below shows the bluff in that area and the mouth of the seacave.

At the bluff edge topsoil, young debris fan deposits (and possibly remnant terrace deposits) overlie weathered granodiorite bedrock and granodiorite bedrock. On the inland part of the property which slopes up to elevations of 200 feet NAVD88 at Highway 1, young debris fan deposits (and possibly remnant terrace deposits) consisting of sands, silts and gravels overlie the granodiorite bedrock. Along the shoreline and coastal bluff face at the property, the terrain is extremely rocky, with granodiorite outcrops protruding from the ground surface (see Photographs 5).

Regional Geologic Setting and Conditions

Figure 3 shows a regional geologic map from the California Geological Survey:

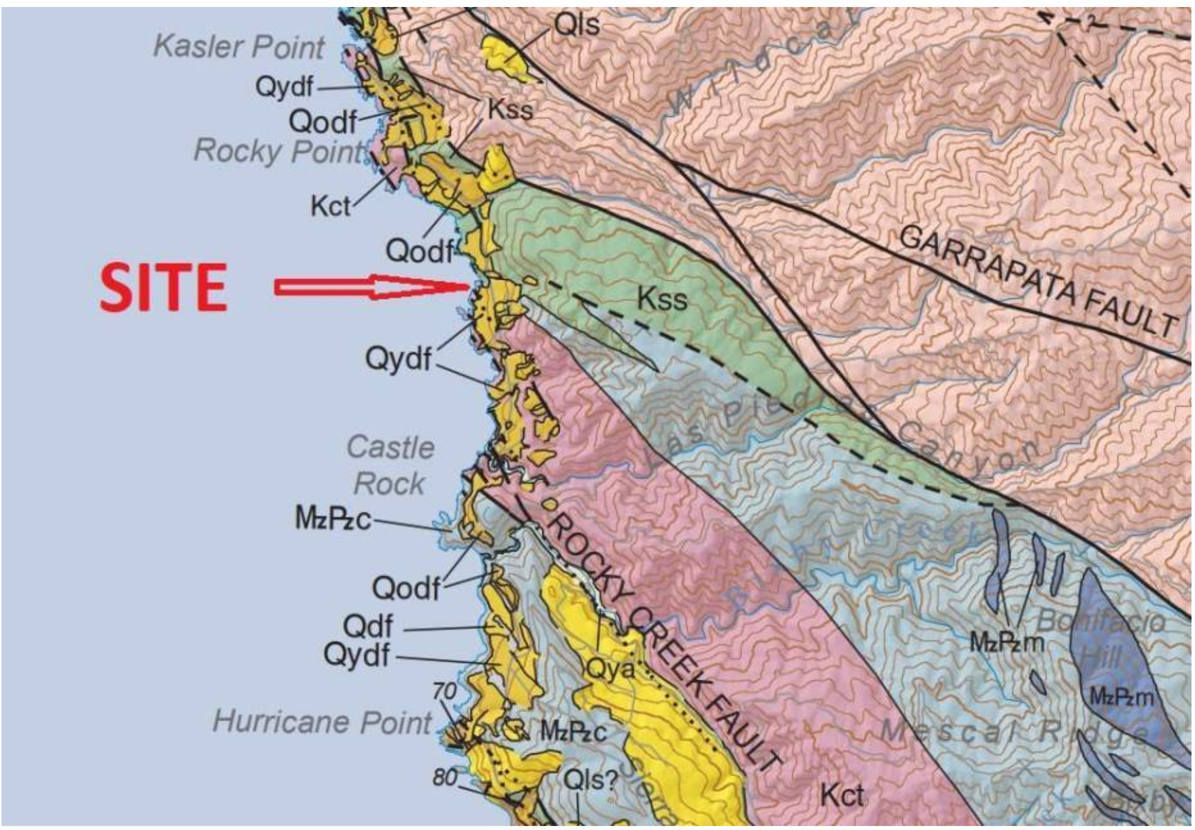


Figure 3: California Geological Survey Regional Geologic Map
(Point Sur Quadrangle, Rosenberg and Wills, 2016)

PRELIMINARY GEOLOGIC MAP OF THE POINT SUR 30' × 60' QUADRANGLE, CALIFORNIA
Version 1.0
Compiled by
Lewis I. Rosenberg[1] and Chris J. Wills[2]
2016

The primary geologic units shown on this California Geologic Survey map in the vicinity of the property include:

SURFICIAL DEPOSITS

Qydf — Young debris fan

Qodf — Old debris fan

These are described as:

Qydf	**Younger Debris Fan** Poorly bedded reddish brown silty sand with angular rock fragments. Occupies lower areas, broadly lobate fan shape somewhat disguised by subsequent erosion. Locally contains areas or layers of well bedded gravelly silty sand that represent stream-deposited alluvium.
Qodf	**Older Debris Fan** Poorly bedded reddish brown silty sand with angular rock fragments. Overlies and in many cases comprises lower ridges. Typically deposited onto marine wave cut platforms or marine deposits. Fan shape often lost to erosion. Typically consists of angular rock fragments in sandy clay matrix deposited from numerous debris flow and debris slide events. Clast support observed, often at base of fan (i.e., stone line) in paleochannel or near source area of debris. Some outcrops have been cemented and oxidized to deep rusty color, with zones of apparent leaching adjacent to fractures within the unit. Unit can be 100 feet thick to thin layer over bedrock.

The primary geologic units shown on the California Geological Survey map in the vicinity of the property include both young debris fan deposits and old debris fan deposits.

BEDROCK

On the Figure 3 geologic map, the lithology of the bedrock mapped west of Highway 1 in the vicinity of the property is Charnockitic Tonalite, a Salinian Basement bedrock similar to Granodiorite.

In addition, Caltrans has published geologic maps (Highway Corridor Map Plate 1 Maps 12 and 13 in "Geology and Slope Stability Along the Big Sur Coast" that are shown in Figure 4 below:

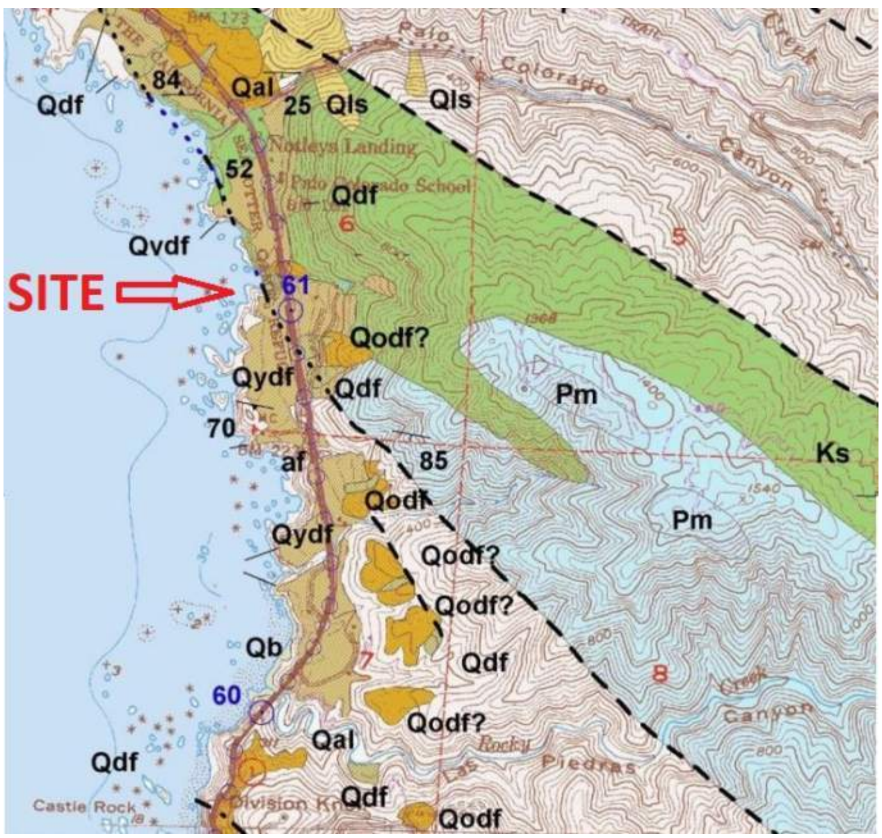


Figure 4: Caltrans Regional Geologic Map

The primary geologic units shown on the CalTrans maps in the vicinity of the property include both the younger debris fan deposits and older debris fan deposits. The lithology of the bedrock is not mapped west of Highway 1 in the vicinity of the property.

Geologically the study area consists of an uplifted marine terrace environment that is mantled with young debris fan deposits that are early Holocene in age that were deposited roughly 6000 to 12,000 years ago. These debris fan deposits may bury marine terrace deposits that predate them in origin. If marine terrace deposits exist, they would have likely formed when persistent ocean wave attack cut a platform in the granodiorite bedrock during a high stand of sea level on the order of 100,000 years ago. Subsequent tectonic uplift of this portion of the coastline following a drop in sea level preserved a deposit of marine silts, sands and gravels that mantle a relatively level granodiorite surface on the bedrock.

Very hard granodiorite is visible in the lower 60 feet of the coastal bluff face with weathered topsoil, debris fan deposits and localized fill are found in the top 70 to 110 feet of the bluff face.

The geologic conditions we observed at the site in the coastal bluff faces and that we found while doing subsurface exploration are consistent with regional geologic mapping that has been historically published by the California Geological Survey (see Figure 3 above), and the Caltrans Regional Geologic Map (Figure 4).

The maps and cross sections in Appendix B show our interpretation of the site geology, based on aerial photo analysis, field mapping and subsurface exploration.

The property lies within the geological-tectonic units called the Salinian Block that forms the basement complex of the northern Santa Lucia Mountains.

The Salinian Block is composed of a number of fault-bounded blocks composed of granodiorite and metamorphic rocks which are discontinuously covered with younger sedimentary rocks and surficial deposits.

As shown in Figure 5, many faults exist in northern Monterey County.

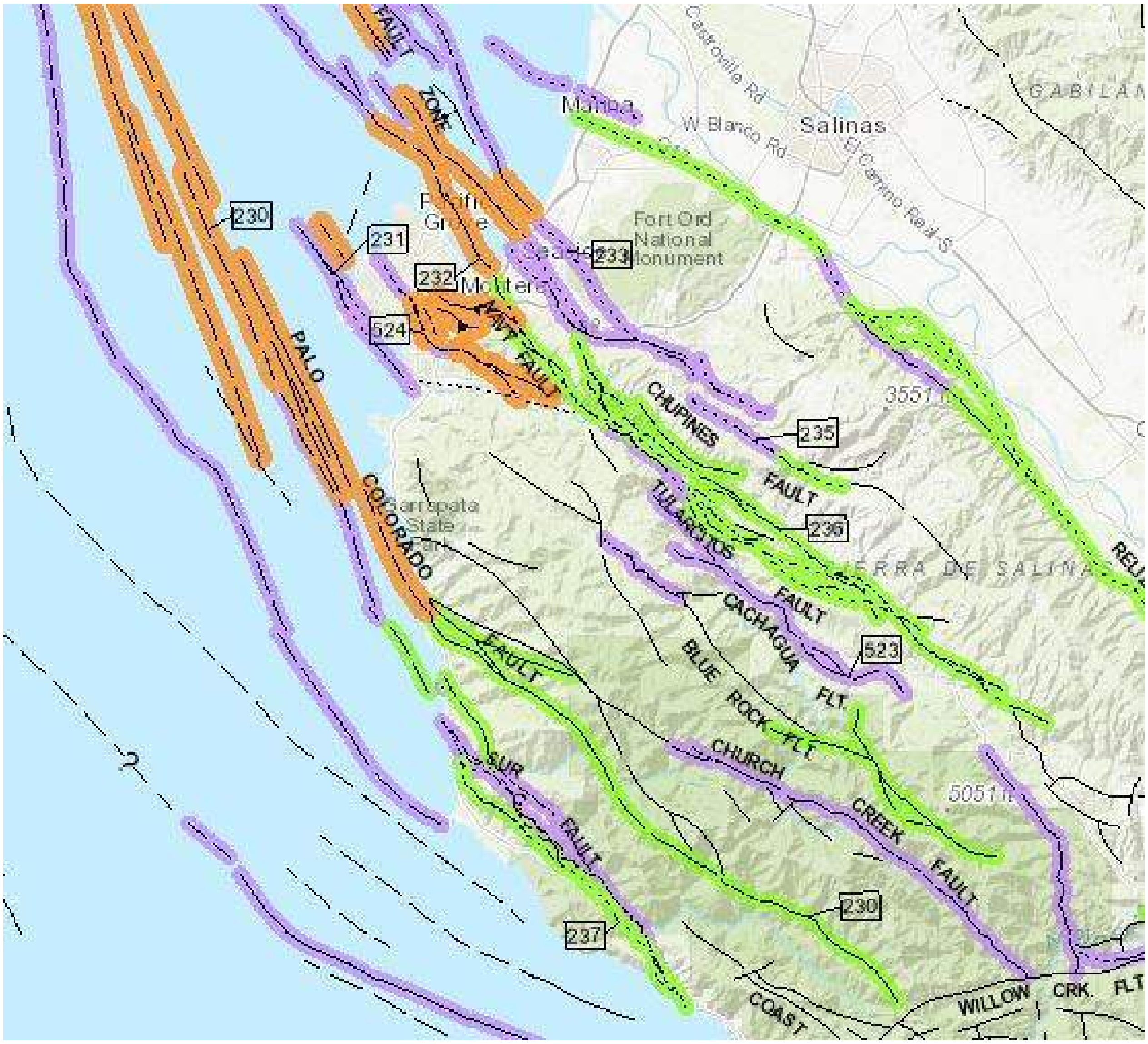


Figure 5: California Geological Survey Regional Fault Map

The primary faults in the vicinity of the property are the Palo Colorado Fault which comes onshore about 1.8 miles north of the property, and the Sur Fault which comes onshore about 0.9 miles south of the property. Both the Palo Colorado Fault and the Sur Fault have been interpreted to be part of the active San Gregorio-Hosgri fault complex, which is a major fault system in California.

Figure 6 shows a view of the relationship of the position of the closest mapped faults to the property on the Monterey County GIS Geologic Hazards map.

Figure 6: Monterey County GIS Geologic Hazards Map Showing Faults

Figure 7 shows a close up view of the relationship of the position of the closest mapped faults to the property on the Monterey County GIS Geologic Hazards map.

Figure 7: Close Up View of the Monterey County GIS Geologic Hazards Map Showing Mapped Fault Near Property

The faults within the Salinian Block, along with the San Andreas Fault and its eastern branches, comprise a broad system of inter-related, right-lateral, strike-slip faults which have dominated the tectonic history of western California for the past 12-15 million years. The faults that partition the Salinian Block have been generally active throughout most of the Cenozoic time; although these faults are, in general, part of a right-lateral, strike-slip system, they have also controlled the relative vertical movements between the smaller structural blocks within the Salinian Block. California's system of right-lateral, strike-slip faults represents a segment of the boundary between the Pacific and North American crustal plates. Since the Pacific plate has been slipping northwestward with respect to the North American Plate, this movement is accommodated by right-lateral, strike-slip faulting, mostly along the San Andreas Fault itself, which has been more or less continuously active.

The published online Monterey County GIS Map (Figure 8) which shows a short discontinuous fault in the immediate vicinity of the property notes that fault as an inferred queried pre-Quaternary age fault mapped by Gary Greene in 1972. This fault does not pose a significant hazard to the existing home or a proposed new home, because based upon it's age it is classified as Inactive. Figure 8 shows this fault:

Attribute	Value
fid	db569dp4654.428
name	Rocky Point
type	fault-inferred, queried
source	Greene (1972)
recency	Pre-Quaternary

Figure 8: Monterey County GIS Map Showing Site with Local Inactive Fault In Relation to Existing Home at 37600 Highway 1

Seismicity

Although California's broad system of strike-slip faults has had a complex history, only some of the fault traces present a seismic hazard to the subject properties. These are the San Andreas Fault, the Monterey Bay Fault zone and on its land extensions (the Tularcitos-Navy Fault is one of these) the King City-Reliz-Rinconada Fault, the Cypress Point Fault, the San Gregorio-Hosgri Fault complex, (of which the Palo Colorado and Sur Fault Zone are part of) and the Zayante-Vergeles Fault. These faults are either active or considered potentially active because they have been in Quaternary time (last 2-3 million years).

San Andreas Fault

The San Andreas Fault is active and represents the major seismic hazard in northern California. The main trace of the San Andreas Fault trends northwest-southeast and extends over 700 miles from the Gulf of California through the Coast Ranges to Point Arena, where the fault extends offshore. The San Andreas Fault lies about 40 miles northeast of the subject property as its closest point.

San Gregorio Fault Zone

This northwest/southeast-trending Fault zone extends over 100 miles. At its northern end, it joins the San Andreas Fault near Bolinas; southward it skirts the San Mateo and Santa Cruz County coast, crosses the mouth of Monterey Bay (seaward of the Monterey Bay Fault zone), and intersects land again north of Point Sur. Recent work suggests that the San Gregorio Fault zone continues southeast to connect with the Hosgri Fault zone, which lies offshore and extends from Cape San Martin to Point Sal south of San Luis Obispo. The total length of the San Gregorio-Hosgri Fault zone would be over 250 miles.

At its closest approach, the San Gregorio Fault zone (which we interpret may include the Palo Colorado or Point Sur faults) lies within a few miles of the subject property. It has been suggested that the San Gregorio Fault zone is capable of a 7.2-7.9 Magnitude earthquakes, with recurrence intervals for earthquakes that produce surface ground rupture within San Gregorio Fault system being 6000 years or less.

Seismic Hazards

Hazards associated with earthquakes in the vicinity of the three coastal erosion "trouble spots" can be placed in three general categories: 1) seismic shaking; 2) surface ground rupture; and 3) ground failure triggered by seismic shaking. These hazards could potentially affect the adjacent golf improvement areas.

Moderate ground shaking is likely at the property during the next 50 years. The probability of surface ground rupture within the property is extremely low.

The greatest potential seismic hazard on the subject property is seismic shaking. The granodiorite is generally not susceptible to landsliding and will not liquefy. The portion of the coastal bluffs that consists of terrace deposits has a very short height; therefore the potential for landsliding is extremely low. Saturated portions of the terrace deposits may theoretically be subject to liquefaction, however the grain size and density of materials we observed in the coastal bluff do not appear susceptible to liquefaction.

Groundwater

Although we have not observed any significant groundwater seeping out of the bluff close to the proposed improvements, thin zones of perched groundwater may perch in the debris fan deposits that overlie the relatively impermeable bedrock. Seeps periodically may be present where the bedrock-terrace deposit contact intersects the modern coastal bluff. Historical perched groundwater and seepage has contributed to weathering and weakening of the uppermost portion of the granodiorite located just below the terrace deposits. A thin zone of perched water upon the weathered, denser bedrock below the terrace deposit material could occur during the wet winter months. Special attention should be paid to any areas of the buildings that are below adjacent grades. If leakage exists or becomes apparent, building foundation waterproofing will be needed. Surface drainage should include provisions for positive gradients so that surface runoff is not permitted to pond adjacent to the top of the coastal bluffs and seep into the backfill of any seawall/retaining wall systems. Where possible, surface drainage should be directed towards areas of the bluff top edge furthest from the home and where the terrace deposits are thinnest.

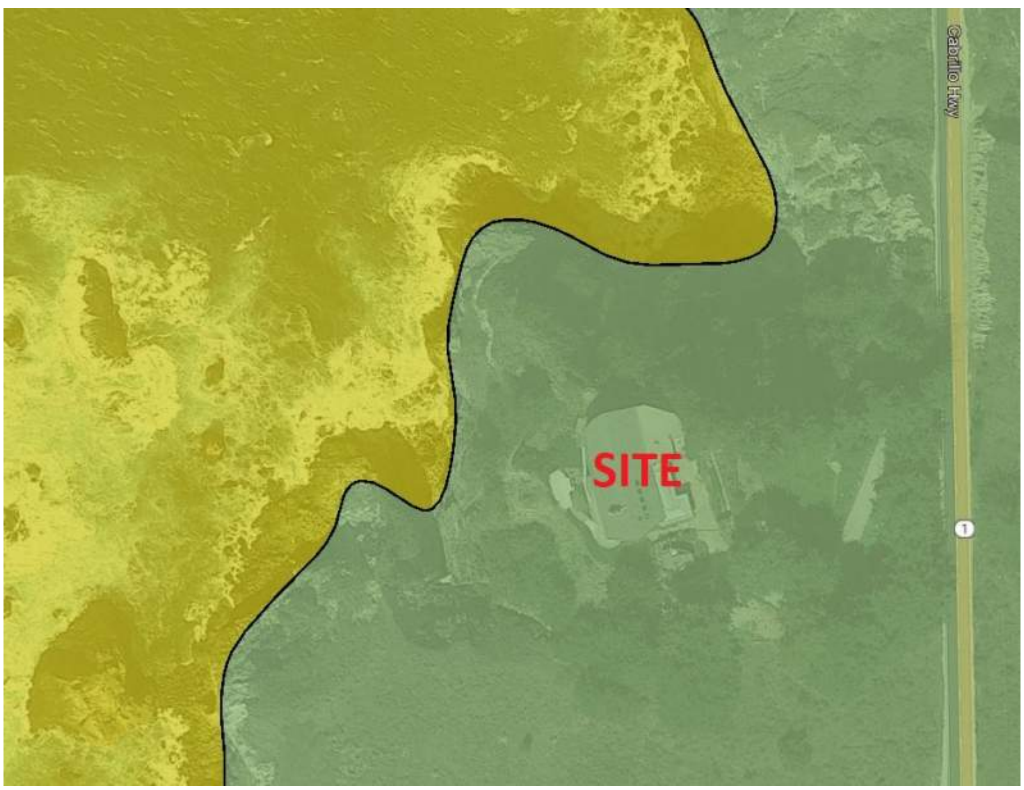
Wave Runup

Ocean wave runup is controlled by several factors. The property is directly exposed to the Pacific Ocean. The craggy coastline and the direct exposure to the ocean is visually a tremendous asset for the residents of the property to enjoy.

The edge of the coastal bluffs above the bedrock may be infrequently overtopped by wave runup and spray during severe ocean storms. Our observations at the site suggest this is more common near the extreme seaward part of the property. The residential improvements are at about 140 feet above sea level in an area that is above the reach of wave runup.

<u>Tsunami Inundation</u>

We have reviewed the 2021 Monterey County Tsunami Inundation Map for Emergency Planning for the Soberanes Point Quadrangle. This map shows that the line designating the limit of tsunami inundation is near the bluff edge based on comparison with the USGS Topographic Map and the Topographic Survey for the project. A partial copy of that map is shown in Figure 9 below, and shows that the existing home and the area where improvements are proposed is more than 100 feet inland of the hazard (potential inundation) zone. The limit of the mapped tsunami inundation appears to be 50 feet or more in elevation below the existing home.



California Geological Survey

Tsunami Hazard Area Map

County of Monterey

March 23, 2021

Figure 9: County of Monterey Tsunami Hazard Area Map

Coastal Erosion and Bluff Recession

Other than seismic shaking, coastal erosion related to ocean wave attack is the most significant geologic hazard that may affect the site. Coastal erosion has the potential to undermine improvements, if they are positioned too close to the shoreline. The uncemented nature of the topsoil and debris fan deposits, coupled with occasional intense coastal storms can result in erosion and bluff recession hazards along the bluff edge in those materials.

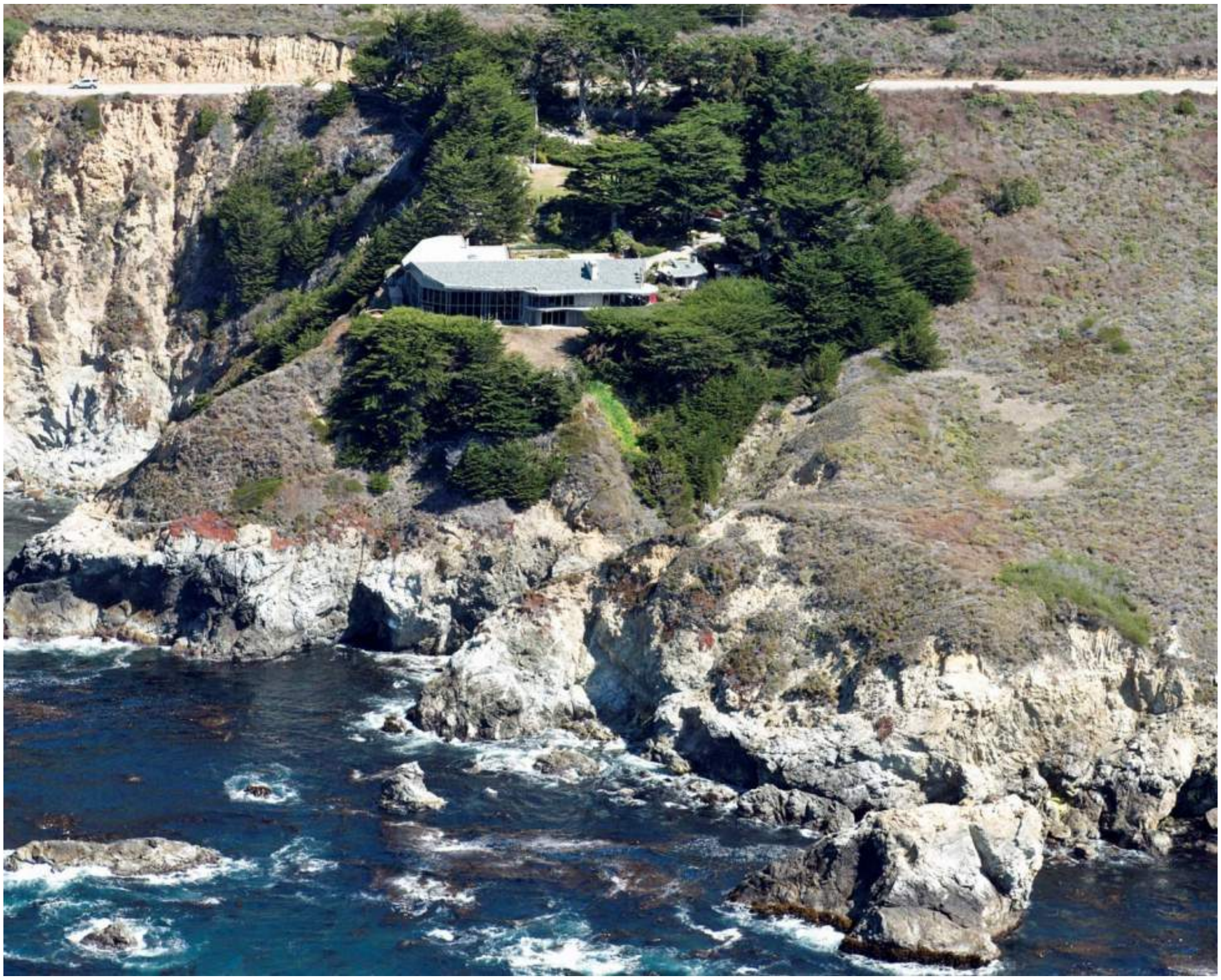
A series of 11 time sequential photos obtained from www.californiacoastline.org are presented below, spanning the 47 year period from 1972 to 2019. They reveal there has been relatively little discernible change in the granodiorite portion of the bluff face along the edge of the cove where the bluff edge is closest to the proposed improvements in that 47 year period. We attribute the relatively low amount of discernible erosion to the competence of the granodiorite.

We examined the bluff face in October 2021 and find the geologic and geomorphic conditions to be virtually identical to those in the October 2019 photograph below:

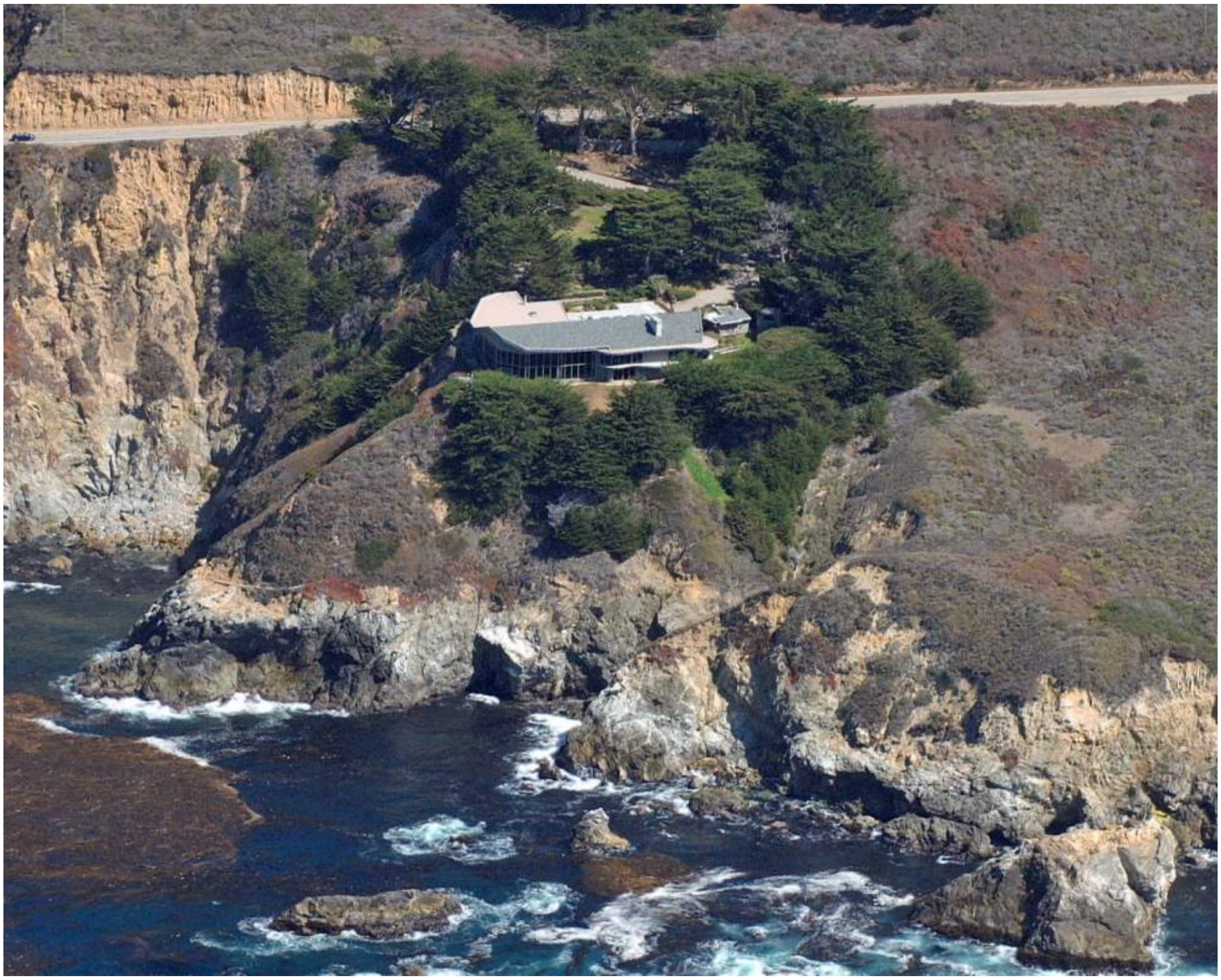
Photograph 5: Aerial Photograph from October 2, 2019
(courtesy of www.californiacoastline.org)

Photograph 6: Aerial Photograph from September 11, 2015 (courtesy of www.californiacoastline.org)

Photograph 7: Aerial Photograph from October 4, 2013
(courtesy of www.californiacoastline.org)



Photograph 8: Aerial Photograph from September 24, 2010
(courtesy of www.californiacoastline.org)



Photograph 9: Aerial Photograph from October 23, 2008
(courtesy of www.californiacoastline.org)

Photograph 10: Aerial Photograph from October 28, 2005
(courtesy of www.californiacoastline.org)

Photograph 11: Aerial Photograph from October 11, 2004
(courtesy of www.californiacoastline.org)

Photograph 12: Aerial Photograph from August 29, 2002
(courtesy of www.californiacoastline.org)

Photograph 13: Aerial Photograph from June, 1987
(courtesy of www.californiacoastline.org)

Photograph 14: Aerial Photograph from April 30, 1979
(courtesy of www.californiacoastline.org)

The 1972 photograph below shows the homesite in its pre-development condition.

Photograph 15: Aerial Photograph from 1972
(courtesy of www.californiacoastline.org)

We also reviewed the configuration of the bluff as visible on 1986 and 1993 vertical aerial photographs from the University of California at Santa Cruz Map Library, and compared the 1986 conditions to the 2018 and 2021 conditions we observed on Google Earth satellite imagery. Appendix A in this Memorandum contains the 1986 aerial photograph and the 2018 Google Earth imagery that we utilized in our analysis that shows the historical conditions at the property. Unfortunately, the resolution of the 1986 aerial photograph that is presently available to us is less than desirable.

Historical Recession

Historical bluff recession can be evaluated by comparison of historical aerial photographs. The resolution of the photography limits the precision of how closely the bluff edge position can be measured. There are a few spots in the bedrock where we think that bluff retreat of 1 to 2 feet or may have occurred in the bedrock due to erosion and/or instability of the granodiorite bedrock has occurred.

It appears that bedrock erosion of 1 to 2 feet since 1986 is likely the maximum erosion that has occurred in the period from 1972 to 2022 in any single spot.

At the seacave west of the residence, it is possible that a portion of the seacave roof could collapse in the future; however we are unable to analyze that precisely or accurately. A future event where the seacave has undermined the bluff will not affect the setback lines we have estimated relative to the proposed new development, because the primary coastal hazard affecting the setback position is slope instability (landsliding) that could occur during and from future earthquake shaking.

Several inter-related factors affect bluff retreat at this property:
1) Geology; the granodiorite bedrock has retreated extremely little; the terrace deposits and topsoil are more susceptible to erosion and recession.
2) The debris fan deposits, fill and topsoil are found at the highest elevations in the bluff face and are thus only extremely infrequently subject to wave runup and wave impact.
3) At the upper bluff, wave impact forces are non-existent.
4) Bluff retreat rarely occurs uniformly; rather isolated areas usually retreat while most of a stretch of the bluff will not retreat at all in any given storm.

Based on the aerial photography and the on-site observations we have made, we estimate worst case historical bedrock retreat of 1 to 2 feet from 1972 to 2022 This suggests that the historical long term average annual recession rate of the bluff edge has been about 0.25 to 0.5 inches per year there. This is a negligible amount.

The granular debris fan deposits appear they may have eroded 0 to 4 feet since 1972 in some isolated spots. Heavy vegetative cover and poor aerial photograph resolution impaired our ability to measure this. Thick vegetative growth aids in preventing surficial erosion of the debris fan deposits.

Future Sea Level Rise

Sea Level has risen and the rate at which it is rising is accelerating. In general, sea level rise tends to make future coastal bluff recession rates faster than measured historical coastal bluff recession rates.

Sea level has risen about 390 feet globally since the last Ice Age ended about 20,000 years ago. This period of relatively rapid rise (about 11 mm/year or 45 inches/century) ended about 8,000 years ago when sea level essentially stabilized.

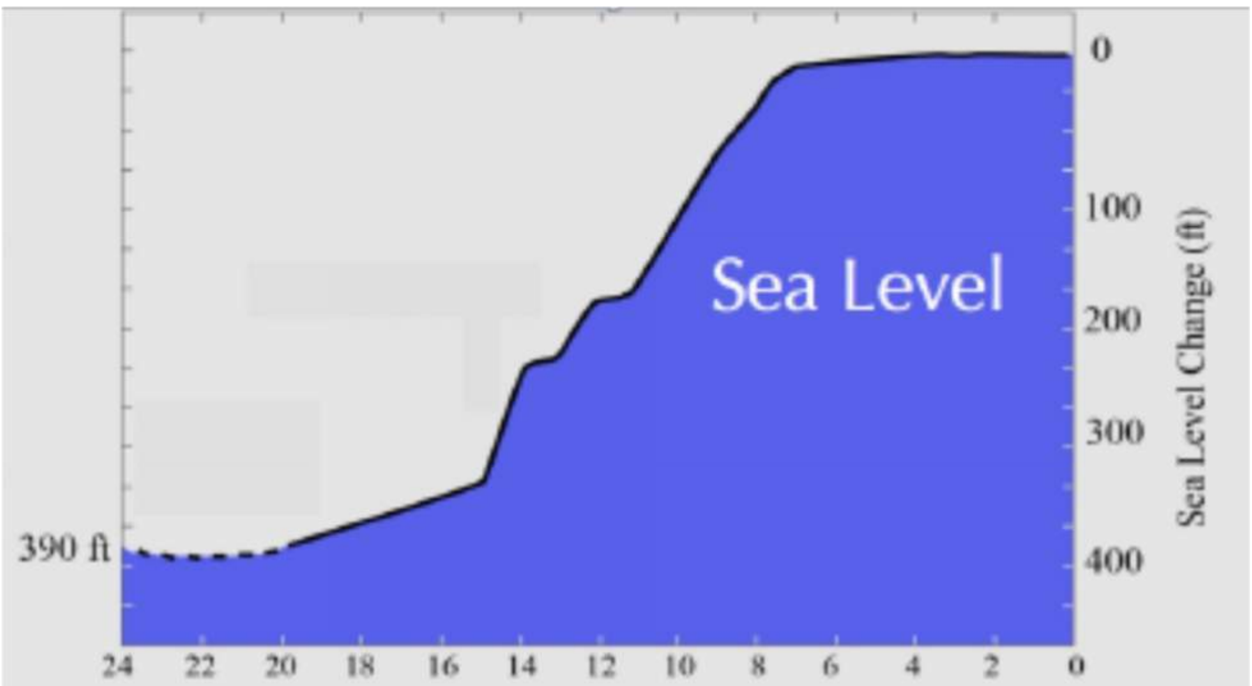


Figure 4: Historical Global Sea Level Rise

Over the past 8,000 years global sea level has risen very slowly, less than one mm/yr. (about 4 inches/century), with this value based on geological evidence. Beginning about 150 years ago, tide gauges or water level recorders began to be established at various places around the coastlines of the world. Based on averaging tide gauge measurements from many different stations scattered around the world, sea level has risen at an average rate of about 1.7 mm/year over the past century (7 inches/100 years).

There is wide agreement among scientists that sea level is rising and that the rate of rise appears to have been accelerating since 1850 and there is evidence that the rate of sea level rise is accelerating. A rising sea level is an adverse condition for the property. If extreme sea level occurs, damage to the property will occur. Rising sea level results in future higher wave runup and greater wave impact because it raises the Stillwater Level. Stillwater Level is the elevation of the ocean surface at the shoreline without any swell or wave activity.

This global sea-level rise is attributed to changes in ocean volume due primarily to two processes: 1) the melting of land ice, and 2) the expansion of seawater as it warms. Melting of ice sheets and glaciers, such as the large ice covers of Antarctica and Greenland, which are linked to changes in atmospheric temperature, have now become the major contributors to sea-level rise. The ice on the planet (on Antarctica, Greenland and in mountains glaciers of the world) contains the equivalent of about 216 feet of total sea-level rise, were it all to melt. Considerable uncertainty regarding climate-carbon cycle feedbacks, ice sheet dynamics and future earth temperatures exists.

Currently there are varied opinions of the specific rates of historic sea level rise and even more variation in the projections of future rates of sea level rise due to different scientists making different assumptions with different analytical methodology. Based on averaging tide gauge measurements from many different stations scattered around the world, sea level has risen at an average rate of about 5-7 inches over the past century. Over the last century sea level has risen about 0.5 feet (about 6 inches). During the last 6,000 years, sea level rose about 0.17 feet (2 inches) per century. The geologic record over the last 20,000 years indicates that sea level rise is not unusual and the rates expected for the near future are less than the peak rates during the last 20,000 years. The peak historical rates were about 3.3 feet per century from 18,000 years ago to 6,000 years ago.

Two satellites were launched in 1993 that have been measuring absolute sea levels from space using satellite altimetry. They have documented an average global sea-level rise rate of ~11 inches/century) between 1993 and 2020 (Figure 5).

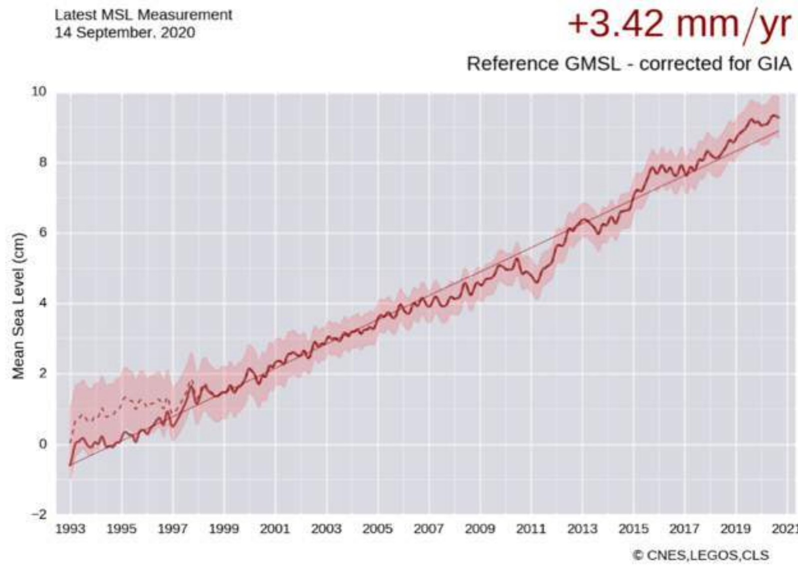


Figure 5: Global Mean Sea Level 1993-2020 (As measured by satellite altimetry)

These are not "worst case" estimates. Considerable uncertainty regarding climate-carbon cycle feedbacks, ice sheet dynamics and future earth temperatures exists.

Currently there are varied projections of future rates of sea level rise due to different scientists making different assumptions with different analytical methodology.

Recent research has been presented in a sea-level rise update for California that was completed by Griggs, et.al, in April 2017 and is entitled "Rising Seas in California – An Update on Sea-Level Rise Science". This report provides probabilistic projections for future sea levels at the locations of the NOAA coastal tide gauge in Monterey for four dates (2030, 2050, 2100 and 2150) based on different greenhouse gas emission scenarios. Data from this report was used in the California State Ocean Protection Council's "State of California – Sea-Level Rise Guidance" 2018 report which includes the following data in Table 2:

		Probabilistic Projections (in feet) (based on Kopp et al. 2014)						H++ scenario (Sweet et al. 2017) *Single scenario
		MEDIAN	LIKELY RANGE			1-IN-20 CHANCE	1-IN-200 CHANCE	
		50% probability sea-level rise meets or exceeds...	66% probability sea-level rise is between...			5% probability sea-level rise meets or exceeds...	0.5% probability sea-level rise meets or exceeds...	
					Low Risk Aversion		Medium - High Risk Aversion	Extreme Risk Aversion
High emissions	2030	0.4	0.3	-	0.5	0.6	0.8	1.0
	2040	0.6	0.4	-	0.8	0.9	1.2	1.7
	2050	0.8	0.5	-	1.1	1.3	1.9	2.7
Low emissions	2060	0.9	0.5	-	1.2	1.5	2.3	
High emissions	2060	1.0	0.7	-	1.4	1.8	2.6	3.8
Low emissions	2070	1.0	0.6	-	1.4	1.9	3.0	
High emissions	2070	1.3	0.9	-	1.8	2.3	3.4	5.1
Low emissions	2080	1.2	0.7	-	1.7	2.3	3.8	
High emissions	2080	1.6	1.1	-	2.3	2.9	4.4	6.6
Low emissions	2090	1.3	0.8	-	2.0	2.7	4.6	
High emissions	2090	2.0	1.3	-	2.8	3.5	5.5	8.2
Low emissions	2100	1.5	0.9	-	2.3	3.1	5.5	
High emissions	2100	2.3	1.5	-	3.3	4.3	6.9	10.1
Low emissions	2110*	1.6	1.0	-	2.4	3.3	6.1	
High emissions	2110*	2.5	1.7	-	3.4	4.4	7.2	11.8
Low emissions	2120	1.7	1.0	-	2.7	3.8	7.3	
High emissions	2120	2.8	2.0	-	4.0	5.2	8.5	14.0
Low emissions	2130	1.9	1.1	-	3.0	4.2	8.3	
High emissions	2130	3.1	2.2	-	4.5	5.9	9.9	16.4
Low emissions	2140	2.0	1.1	-	3.2	4.7	9.5	
High emissions	2140	3.5	2.4	-	5.1	6.7	11.3	18.9
Low emissions	2150	2.1	1.1	-	3.6	5.3	10.8	
High emissions	2150	3.8	2.6	-	5.7	7.6	12.9	21.8

Table 2: Projected future sea-level rise values for the Monterey tide gauge From the Ocean Protection Council's 2018 Sea-Level Rise Guidance Document.

To be clear, the presented sea level rise values involve a significant number of uncertainties. They are projected from the relatively short 44-year sea level record from the Monterey Tide Gauge. The above values were all based on high emission scenarios. All of these values were derived from climate models, which are continuously being refined, but are the best we have at present. What we do know (as shown in Figures 5 and 6) is that the global sea-level rise rate over the past 25 years of satellite altimetry is 3.42 mm/year (about an inch every 9 years) which is more than twice as high as the rate measured at Monterey (1.63 mm/year) perhaps due to natural tectonic uplift of the tide gauge site.

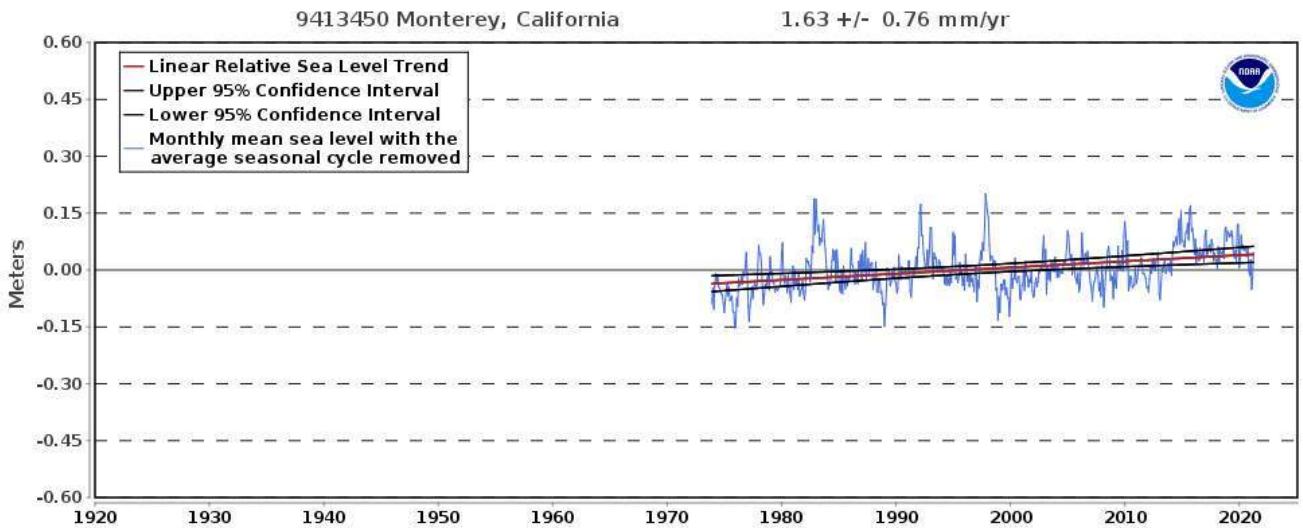


Figure 6: Sea Level Rise at Monterey Tide Gauge 1973-2021

This indicates that the coastline at Monterey is undergoing uplift, which significantly lessens the overall impact of sea-level rise in this area. We note that the actual measured sea level rise at Monterey in the 21 years since 2000 is only about 0.12 feet. This suggests it is highly unlikely that 0.3 to 0.5 feet of sea level rise will occur between 2000 and 2030 as indicated in the Low Risk Aversion scenario presented in Table 2 suggesting that the probabilistic projections of future sea level rise Table 2 are very conservative for the Pebble Beach area, including this site.

Various simplified models have been developed to predict how sea level rise might cause acceleration of coastal bluff recession. Those models involve many simplifying assumptions and a great deal of uncertainty. Until reliable site specific models of this phenomena become available, we have chosen to multiply the historical rate of bluff recession by a factor of safety to account for an accelerating rate of recession due to accelerating sea level rise.

Future Bluff Recession Discussion

The granodiorite forming the bottom 50 feet or more of the coastal bluff serves to protect the more erodible surficial soils above that elevation from ocean wave runup impact and erosion. Our field work shows that typically the upper 70 feet of bluff consists of granular sediments and soils. The maps and cross sections in Appendix B show our interpretation of the site geology, based on aerial photo analysis, field mapping and subsurface exploration. Some of the current improvements on the property extend very close to the top edge of the coastal bluff.

One form of bluff recession is caused by rainfall or wave splash or spray that erodes the bluff face. Slope instability (landsliding) along the coastal bluff face is another form of the coastal erosion processes that results in landward recession of the top edge of the coastal bluff. Because the bluff at the property is composed primarily of relatively strong earth materials, the weaker soil section of the bluff is at relatively high elevation, and drainage has been well controlled, bluff recession from landsliding has historically not been occurring. Bluff recession of the granodiorite bedrock at the property will likely be very slow and sporadic at the property in the future, as it has in the past.

As we previously suggested, other than in the immediate vicinity of the seacave, the historical long term average annual recession rate of the granodiorite bedrock at the property has been about 0.25 to 0.5 inches per year. If those rates were to continue into the future for 50 years, in 2073 the top of the granodiorite bedrock would have retreated about 1 to 2 feet inland of where it is now. Considering that the lower 50 to 70 feet of the bluff face consists of extremely erosion resistant granodiorite, sea level rise during the next 50 years is unlikely to affect this bedrock retreat rate.

Using the high end of the average annual terrace deposit erosion rates that appear to have historically occurred on the property since 1972 (50 years) would suggest that about 4 feet of debris fan deposit erosion could cause 4 feet of recession of the bluff edge from surficial erosion could occur at the subject property in the next 50 years.

In order to evaluate what portion of the building site is likely to remain stable for at least the next 50 years, engineers from our firm have evaluated the static and psuedo-static stability (and potential for instability) of the topsoil and debris fan deposits that overlie the granodiorite bedrock at the site. Their assessment of potential slope instability is shown on Cross Sections A through D on our RECOMMENDED 50-YEAR BLUFF EROSION AND INSTABILITY SETBACK MAPS (Seven 11 X 17 inch sheets dated 4-28-2022) in Appendix B of this report.

We transferred the results of that slope stability analysis (which is presented in an accompanying report from our firm) onto the geologic Cross Sections that are included in Appendix B to show what portion of the property is likely to remain stable for 50 years (until at least 2073) and show our RECOMMENDED 50-YEAR BLUFF EROSION AND INSTABILITY SETBACK LINE on two maps (Sheets 2 and 3 in Appendix B).

It should be considered that within the next 50 years the improvements seaward of the RECOMMENDED 50-YEAR BLUFF EROSION AND INSTABILITY SETBACK MAPS may be damaged and need to be sacrificed.

Future coastal erosion is episodic and difficult to predict with precision. It is much more likely that future erosion will occur in sporadic pulses when several feet of retreat occurs at once during an extreme event, than slow steady erosion and retreat will occur at the average annual rates described in this document.

CONCLUSIONS

1. The geology in the vicinity of the subject site consists of granodiorite bedrock overlain by recent debris fan deposits. The granodiorite is very resistant to surf erosion while the terrace deposits are very susceptible to surf erosion. In some areas the upper few feet of the granodiorite is highly weathered and therefore is not as resistant to erosion as the underlying fresher bedrock. However, the weathered bedrock is still much more resistant to erosion than the overlying debris fan deposits, buried terrace deposits (if present) and topsoil.

2. It is not practical for us to precisely or accurately calculate how future sea level rise during the next 50 years may increase future bluff recession rates in comparison to historical bluff erosion rates. The rate that sea level is rising at is accelerating, and increased bluff recession rates will result from that. During the next 50 years the resulting increase in bluff recession rates is likely to be negligible due to the erosion resistance of the granodiorite bedrock which extends up to elevations of 50 to 70 feet NAVD88 at the site.

3. Our experience indicates that coastal erosion of the terrace deposits and topsoil overlying the granodiorite in this area of Monterey County is highly episodic. Very little to no erosion of the coastal bluff may occur for several years or even one or two decades. Then a severe storm or set of storms can selectively cause erosion and bluff retreat. Our work suggests that the average annual rate of bedrock erosion from 1972 through 2022 at the site in worst case locations has been in the range of 0.25 to 0.5 inches per year based on our site observations and examination of historical air-photos of the vicinity. Using the high end of the average annual terrace deposit erosion rates that appear to have historically occurred on the property since 1972 (50 years) would suggest that about 4 feet of debris fan deposit erosion could cause 4 feet of recession of the bluff edge from surficial erosion could occur at the subject property in the next 50 years. This site has slow erosion rates because most of the coastal bluff face is composed of hard granodiorite which is very resistant to erosion. We projected potential future bluff recession rates by considering historical rates, the potential for increasing sea level and the potential for slope instability.

4. At the subject property, we recommend that areas seaward of the RECOMMENDED 50-YEAR BLUFF EROSION AND INSTABILITY SETBACK MAPS (Seven 11 X 17 inch sheets dated 4-28-2022) shown in Appendix B be considered to be at potential risk in the next 50 years (by 2073). This is derived as follows: 50 years of debris fan recession at the estimated

long term historical average annual erosion rate (4 feet), plus flattening of the overlying surficial soil slopes from potential slope instability, which varies in additional distance (43 to 61 feet) depending upon the location on the site. Appendix B contains RECOMMENDED 50-YEAR BLUFF EROSION AND INSTABILITY SETBACK MAPS (Seven 11 X 17 inch sheets dated 4-28-2022) which shows our recommended 50 year setback in relation to both the existing development and proposed new structures.

5. Rising worldwide sea level may increase the ocean wave runup elevations discussed in this report. At a minimum, such wave runup elevations will rise by the amount of sea level rise that occurs during the life of any structures. Wave splash and wind driven spray should be expected above and landward of those wave runup elevations.

5. Tsunami hazards at the property are low, based on the Monterey County Tsunami inundation Map dated March 2021 prepared by the California Geological Survey.

6. Moderate seismic shaking is expected at the site in the next 50 years. Other than seismic shaking, coastal bluff landsliding is the most significant geologic hazard at the site.

7. A thin zone of perched water upon the weathered, denser bedrock below the terrace deposit material could occur during the wet winter months. Special attention should be paid to any areas of the buildings that are below adjacent grades. If leakage exists or becomes apparent, building foundation waterproofing will be needed. Surface drainage should include provisions for positive gradients so that surface runoff is not permitted to pond adjacent to the top of the coastal bluffs and seep into the backfill of any retaining wall systems. Where possible, surface drainage should be directed towards areas of the bluff top edge furthest from the home and where the surficial deposits are thinnest.

RECOMMENDATIONS

1) At the subject property, we recommend that areas seaward of the RECOMMENDED 50-YEAR BLUFF EROSION AND INSTABILITY SETBACK MAPS (Seven 11 X 17 inch sheets dated 4-28-2022) shown in Appendix B be considered to be at potential risk in the next 50 years (by 2073). We recommend that new habitable development only be constructed inland of this setback. It is possible that any development or improvements seaward of this setback may be damaged by coastal erosion, bluff retreat and/or bluff instability during the next 50 years.

2) The proposed development and any future development or redevelopment should be designed to incorporate measures (i.e., landscaping and drainage control) that are used to ensure minimized erosion problems during and after construction, so that the development does not have any negative impacts on the stability of the site and adjacent area.

3) We should review any plans that are submitted for permit purposes prior to submittal.

4) Prior to construction of any new foundations, coastal bluff recession should be considered. The location of the proposed new foundations should be verified to insure that they are landward of the recommended 50 year coastal recession setback line shown on the map in Appendix B prior to reinforcing steel being placed and concrete being poured. Improvements seaward of the recommended 50 year coastal recession setback line should be considered sacrificial.

5) Storm runoff dispersal and erosion control measures should be implemented to control storm runoff and prevent erosion from it.

6) Future coastal erosion and bluff recession on the property should be carefully monitored, and when any significant erosion episodes occur, that inspections be made by qualified professional coastal geologists and/or coastal engineers to allow for prudent subsequent design of remediation and/or coastal protection measures.

7) Removal of any existing improvements (if done) must be done in a manner that minimizes the removal of and any impact to the underlying soils.

Limitations

1. Because of uncertainties that are inherent in the analysis and are beyond the control of HKA, no guarantee or warranty is possible that future recession will occur at the rate predicted. Greater or lesser erosion and recession may occur. In any case, damage to improvements should be expected at some point in the far future. This study should not be used in lieu of appropriate insurance coverage. The owners and occupants of the coastal improvements shall accept the risk of that damage, and HKA recommends that they should purchase appropriate insurance to mitigate the inherent risk.

2. The recommendations of this report are based upon the assumption that the soil conditions do not deviate from those disclosed in the borings. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that planned at the time, our firm should be notified so that supplemental recommendations can be given.

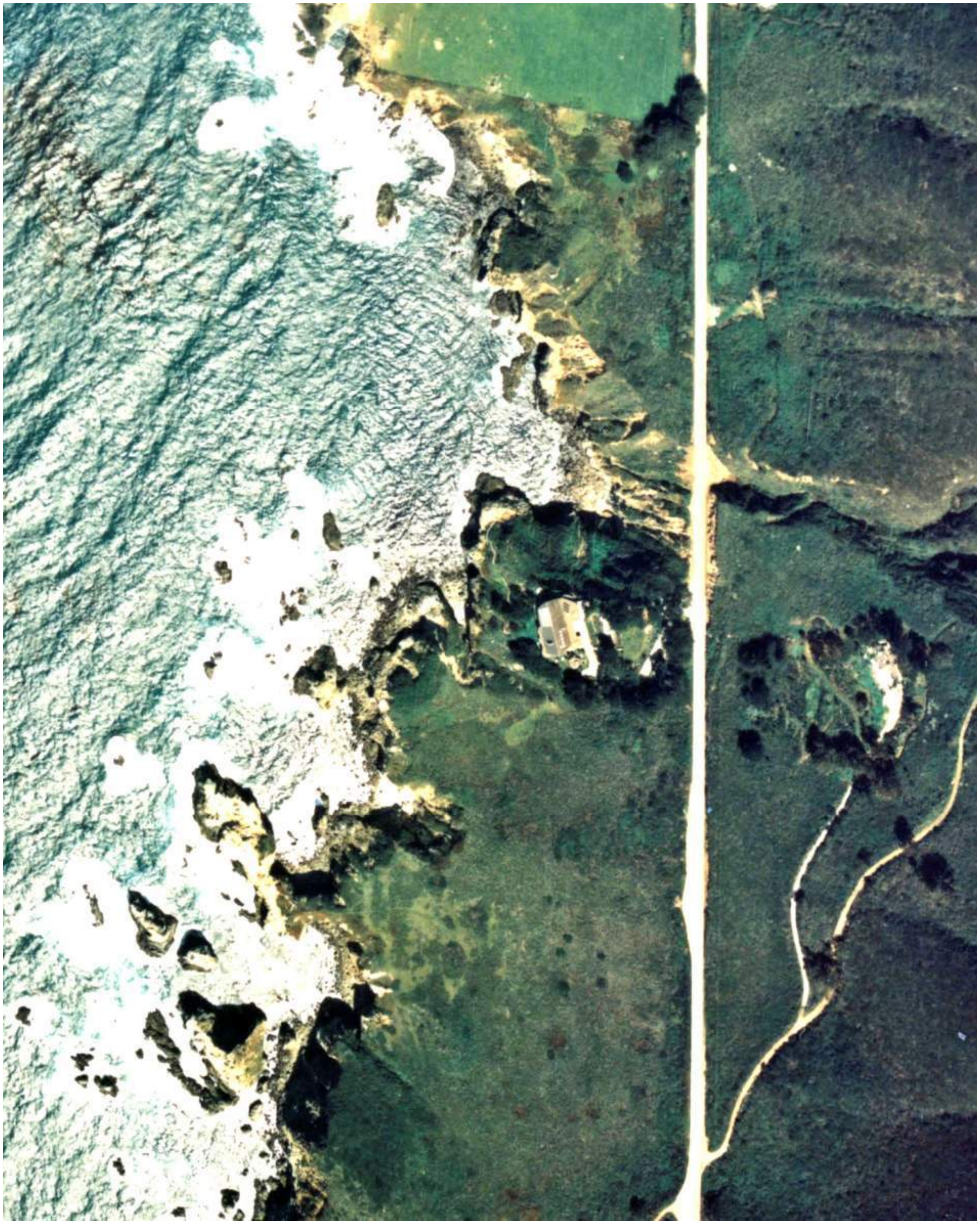
3. This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information and recommendations contained herein are called to the attention of the Architects and Engineers for the project and incorporated into the plans, and that the necessary steps are taken to ensure that the Contractors and Subcontractors carry out such recommendations in the field. The conclusions and recommendations contained herein are professional opinions derived in accordance with current standards of professional practice. No other warranty expressed or implied is made.

4. The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or to the works of man, on this or adjacent properties. 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 our control. Therefore, this report should not be relied upon after a period of three years without being reviewed by an engineering geologist.

APPENDIX A

1986 Vertical Aerial Photography

2018 Google Earth Image



1986 Vertical Aerial Photograph of 37600 Highway 1

2018 Google Earth Image of 37600 Highway 1

APPENDIX B

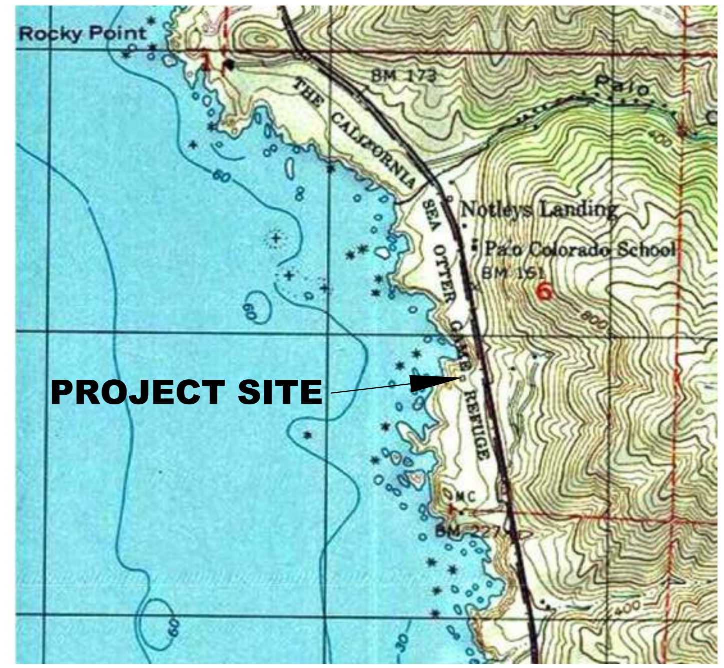
RECOMMENDED 50-YEAR BLUFF EROSION AND INSTABILITY SETBACK MAPS

(Seven 11 X 17 inch sheets dated 4-28-2022)

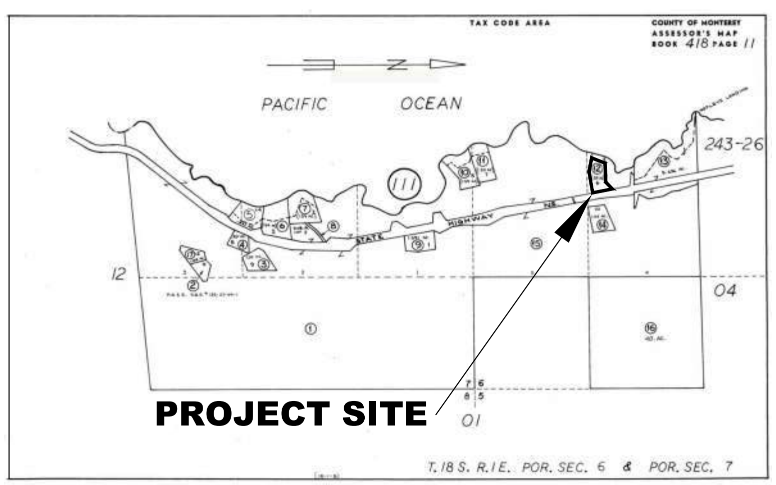
RECOMMENDED 50-YEAR SURFICIAL BLUFF EROSION AND INSTABILITY SETBACK MAPS

37600 HIGHWAY 1, BIG SUR, CA 93920
A.P.N. 418-111-012

VICINITY MAP



TOPOGRAPHIC MAP



ASSESSORS PARCEL MAP
APN 418-111-012

EXISTING HOME

COASTAL RECORDS PROJECT
AERIAL PHOTO SEPT. 11, 2015

SHEET INDEX

PROJECT DATA

A.P.N. : 418-111-012

OWNER: Roberts 2008 Family Trust
20 Naranja Way
Portola Valley, CA 94028

PROJECT SITE: 37600 HIGHWAY 1
BIG SUR, CA 93020

PLAN PREPARER:

Mark Foxx, C.E.G. 1493
HARO, KASUNICH & ASSOCIATES, INC.
116 East Lake
Watsonville, CA 95076
(831)722-4175 (831)722-3202 FAX

PROJECT TOPOGRAPHY & AERIAL PHOTOGRAPHY:

Scott Walls
walls land+water, llc
Watershed Science | Planning | Design
w: wallslandwater.com
e: scott@wallslandwater.com
p: +1 831 246 1718

REVISIONS	BY

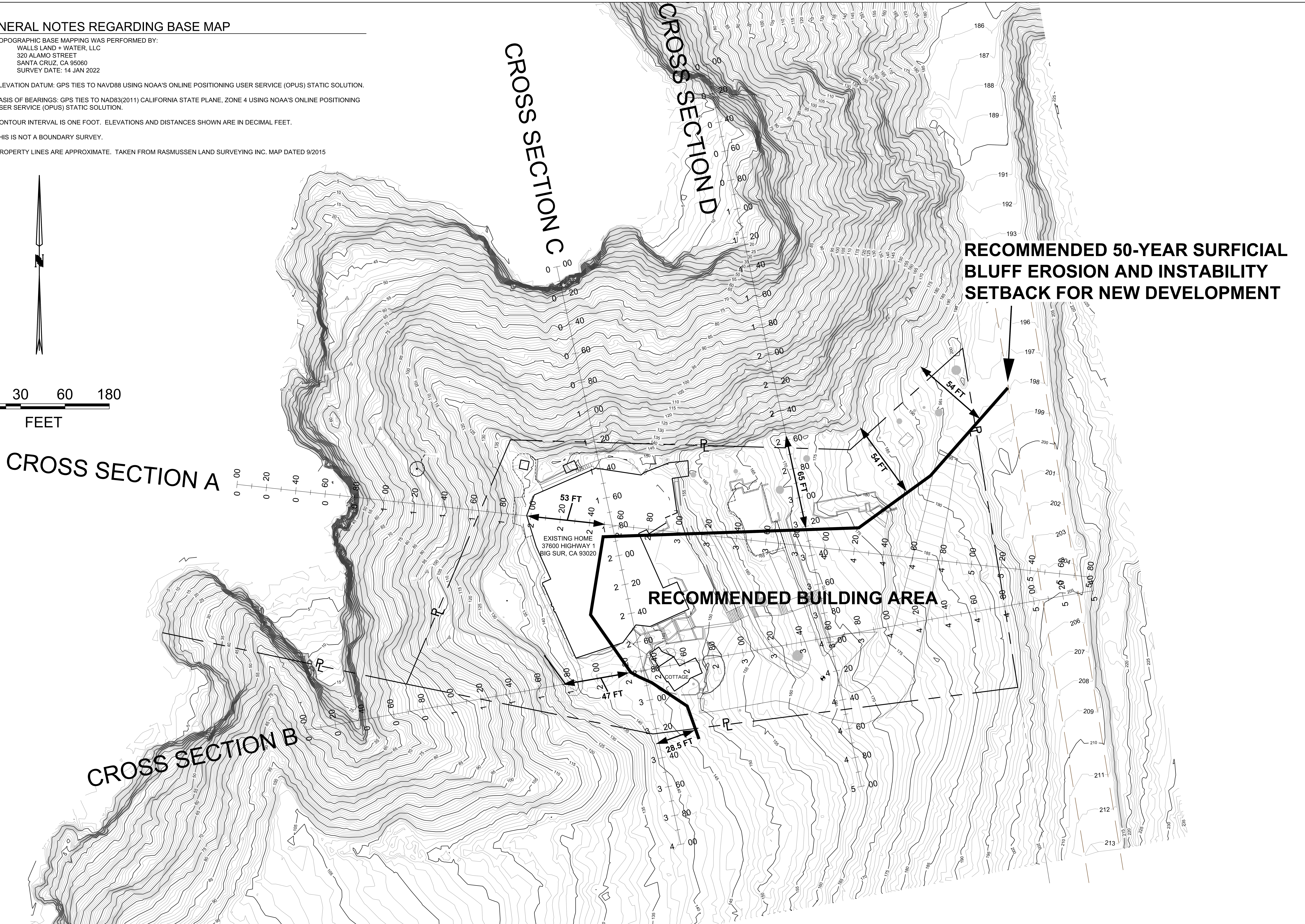
TITLE SHEET
SHOWING RECOMMENDED 50-YEAR SURFICIAL BLUFF EROSION AND INSTABILITY SETBACK
37600 HIGHWAY 1, BIG SUR, CA 93020
APN 418-111-012

HARO, KASUNICH AND ASSOCIATES, INC.
CONSULTING CIVIL, GEOTECHNICAL & COASTAL ENGINEERS
116 EAST LAKE AVE., WATSONVILLE, CA 95076 (831) 722-4175

Date	4-28-2022
Scale	AS SHOWN
Drawn	MF
Job	11417.2
Sheet	1 OF 7 SHEETS

GENERAL NOTES REGARDING BASE MAP

1. TOPOGRAPHIC BASE MAPPING WAS PERFORMED BY:
   WALLS LAND + WATER, LLC
   320 ALAMO STREET
   SANTA CRUZ, CA 95060
   SURVEY DATE: 14 JAN 2022
2. ELEVATION DATUM: GPS TIES TO NAVD88 USING NOAA'S ONLINE POSITIONING USER SERVICE (OPUS) STATIC SOLUTION.
3. BASIS OF BEARINGS: GPS TIES TO NAD83(2011) CALIFORNIA STATE PLANE, ZONE 4 USING NOAA'S ONLINE POSITIONING USER SERVICE (OPUS) STATIC SOLUTION.
4. CONTOUR INTERVAL IS ONE FOOT. ELEVATIONS AND DISTANCES SHOWN ARE IN DECIMAL FEET.
5. THIS IS NOT A BOUNDARY SURVEY.
6. PROPERTY LINES ARE APPROXIMATE. TAKEN FROM RASMUSSEN LAND SURVEYING INC. MAP DATED 9/2015



REVISIONS	BY

PLAN VIEW WITH TOPOGRAPHY
SHOWING RECOMMENDED 50-YEAR SURFICIAL BLUFF EROSION AND STABILITY SETBACK
37600 HIGHWAY 1, BIG SUR, CA 93020 APN 418-111-012

HARO, KASUNICH AND ASSOCIATES, INC.
CONSULTING CIVIL, GEOTECHNICAL & COASTAL ENGINEERS
116 EAST LAKE AVE., WATSONVILLE, CA 95076 (831) 722-4175

Date 4-28-2022
Scale AS SHOWN
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Job
Sheet **2**
OF 7 SHEETS

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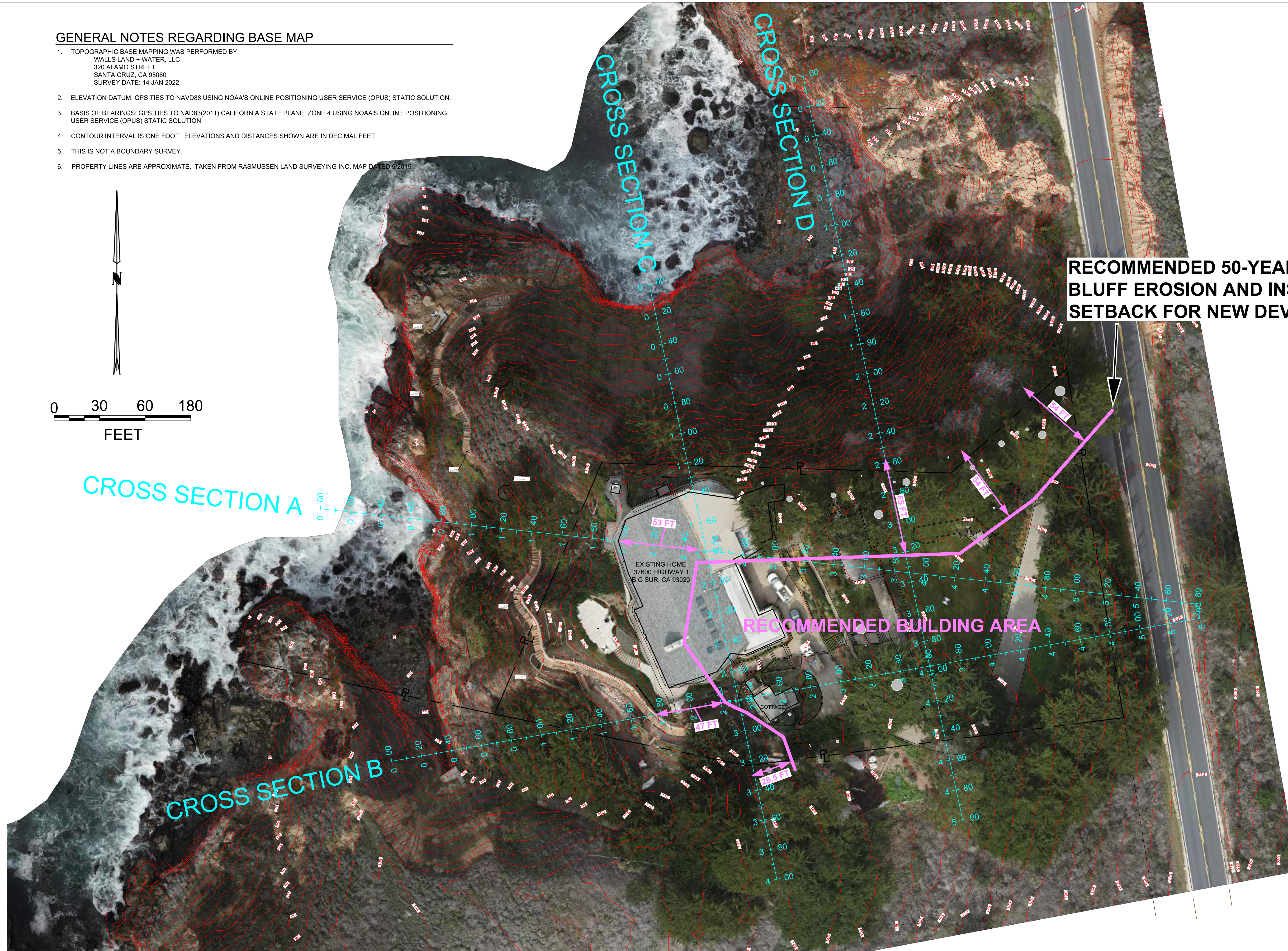

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PLAN VIEW
SHOWING RECOMMENDED 50-YEAR SURFICIAL BLUFF EROSION AND INSTABILITY SETBACK
37600 HIGHWAY 1, BIG SUR, CA 93020
APN 418-111-012

HARO, KASUNICH AND ASSOCIATES, INC.
CONSULTING CIVIL, GEOTECHNICAL & COASTAL ENGINEERS
116 EAST LAKE AVE., WATSONVILLE, CA 95076 (831) 722-4175

Date 4-28-2022
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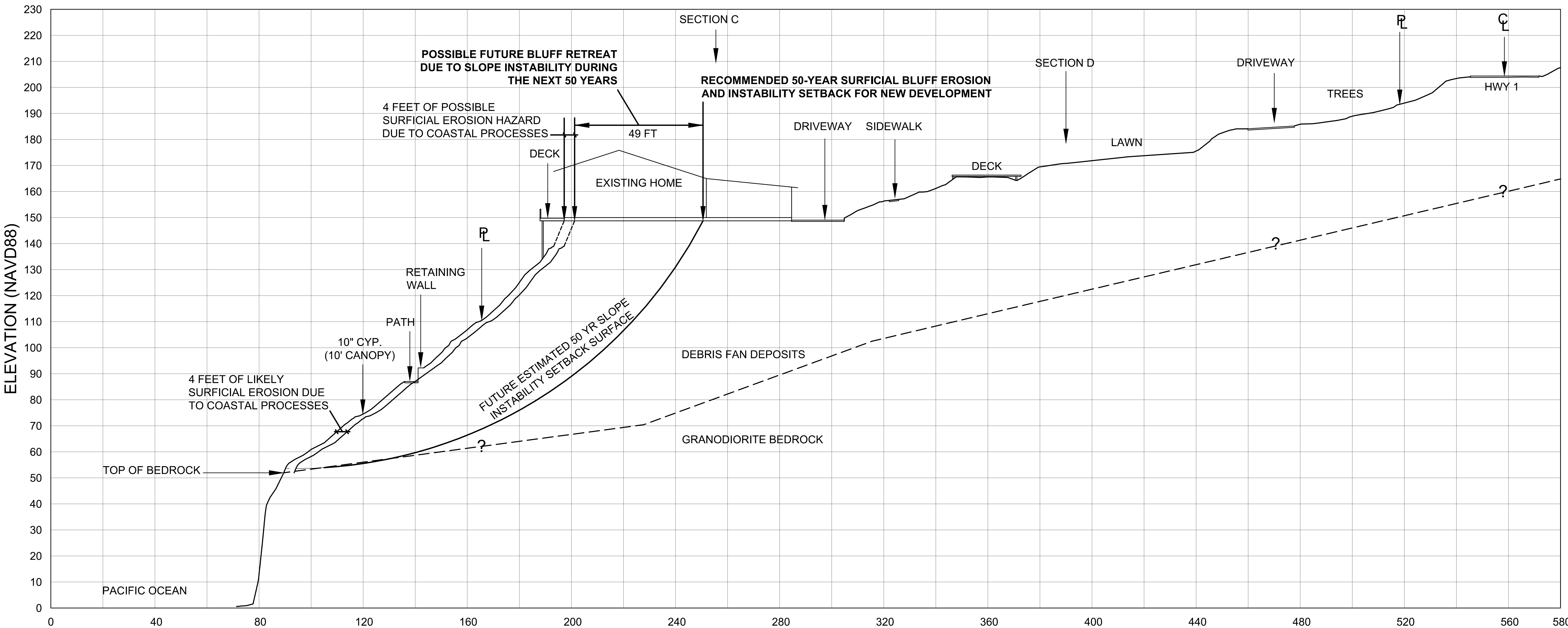
Sheet 3 OF 7 SHEETS



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CROSS SECTION A

SHOWING RECOMMENDED 50-YEAR SURFICIAL BLUFF EROSION AND INSTABILITY SETBACK

37600 HIGHWAY 1, BIG SUR, CA 93020 APN 418-111-012

HARO, KASUNICH AND ASSOCIATES, INC.

CONSULTING CIVIL, GEOTECHNICAL & COASTAL ENGINEERS

116 EAST LAKE AVE., WATSONVILLE, CA 95076 (831) 722-4175

Date 4-28-2022

Scale AS SHOWN

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Job 11417.2

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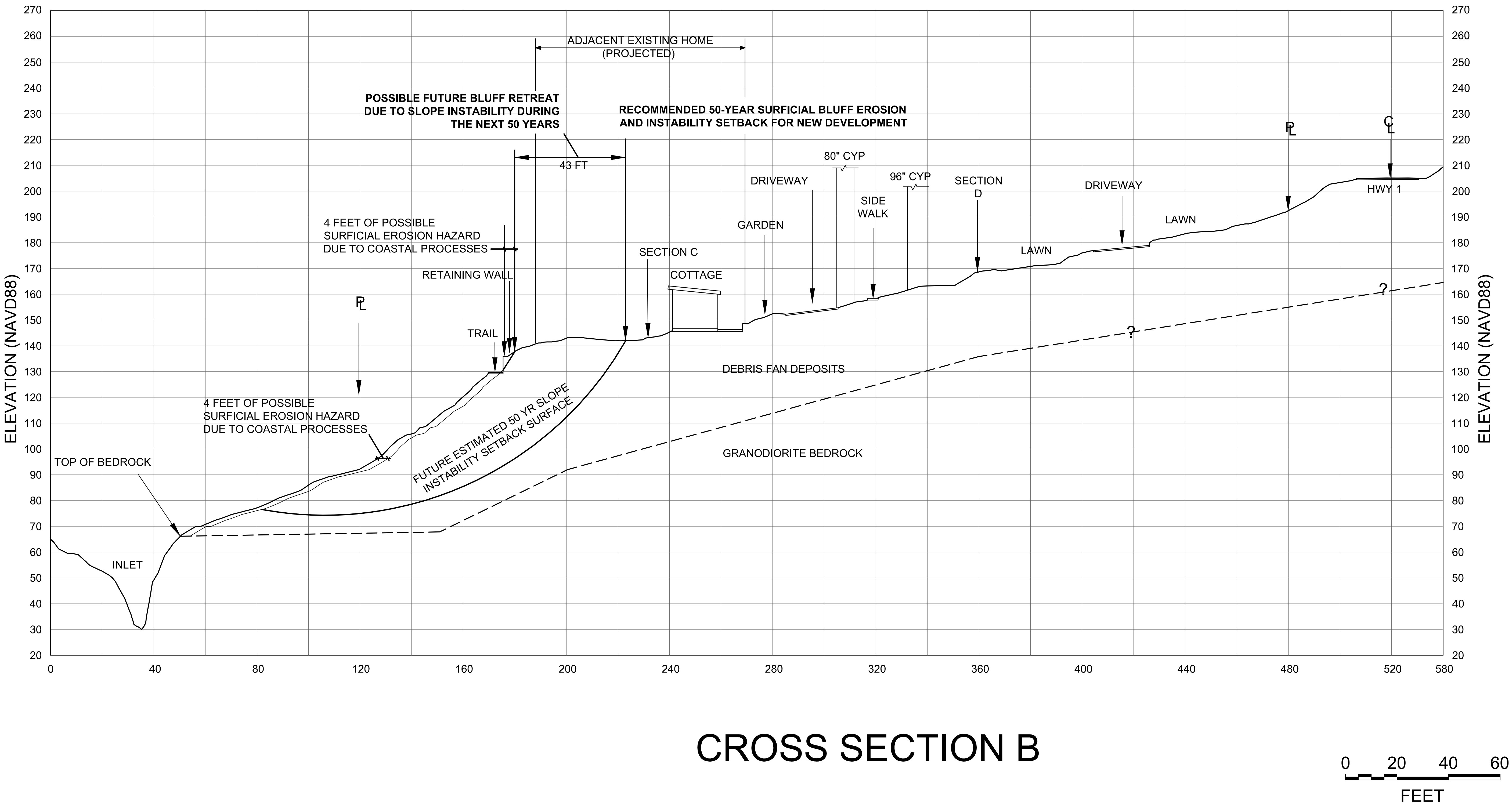

CROSS SECTION B

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CROSS SECTION B
SHOWING RECOMMENDED 50-YEAR SURFICIAL BLUFF EROSION AND INSTABILITY SETBACK
37600 HIGHWAY 1, BIG SUR, CA 93020 APN 418-111-012

HARO, KASUNICH AND ASSOCIATES, INC.
CONSULTING CIVIL, GEOTECHNICAL & COASTAL ENGINEERS
116 EAST LAKE AVE., WATSONVILLE, CA 95076 (831) 722-4175

Date 4-28-2022
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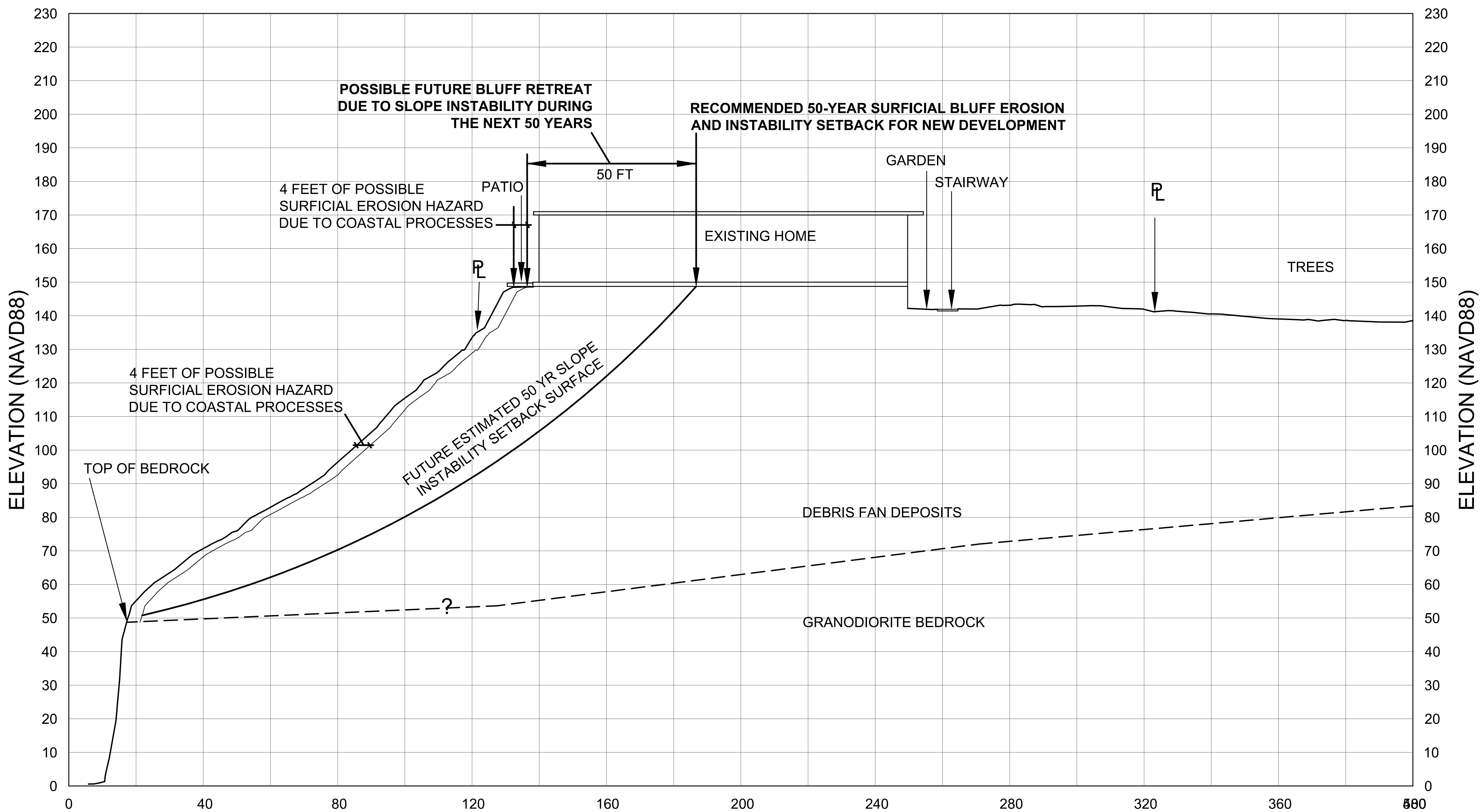
OF 7 SHEETS



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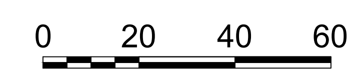

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SHOWING RECOMMENDED 50-YEAR SURFICIAL BLUFF EROSION AND INSTABILITY SETBACK
37600 HIGHWAY 1, BIG SUR, CA 93020 APN 418-111-012

HARO, KASUNICH AND ASSOCIATES, INC.
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116 EAST LAKE AVE., WATSONVILLE, CA 95076 (831) 722-4175

Date 4-28-2022
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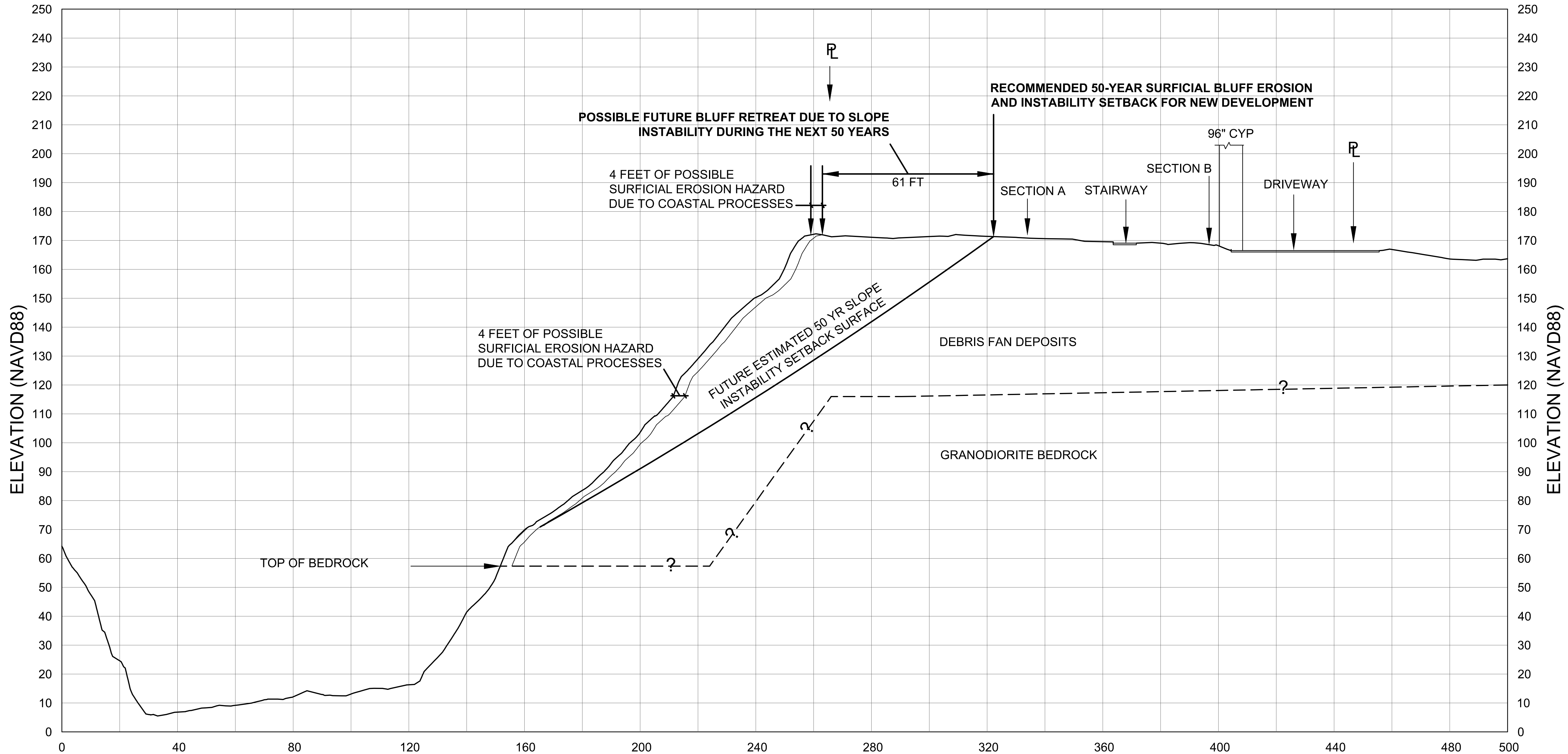

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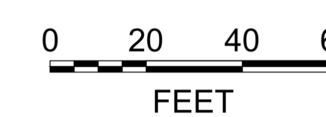

REVISIONS | BY

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