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Mission Viejo, California 92691
949.347.2780

Memorandum

April 5, 2018

To: Paul Finstad, Watermark Capital Partners, LLC

From: Alyssa Cannon and Randy Mason, PE, Anchor QEA, LLC

Re: Coastal Hazards Analysis for Bacara Resort & Spa

The Bacara Resort & Spa (Site) is relocating its Beach House due to beach erosion encroachment. At the request of McCabe & Company, Anchor QEA, LLC, completed a coastal hazards study to evaluate current coastal hazards associated with the proposed Beach House location, as well as future coastal hazards due to sea level rise (SLR). The study was completed in accordance with the California Coastal Commission's (CCC's) *Sea Level Rise Policy Guidance* (2015).

This evaluation includes the following:

- Description of the Site and coastal setting
- Identification of current coastal hazards at the Site, including high tides, storm waves, and shoreline erosion
- Identification of potential future coastal hazards at the Site based on local predicted SLR estimates
- Discussion of minimizing impacts from coastal hazards, both existing and future (potential)

This memorandum presents the analysis and results of the focused coastal hazards evaluation that was conducted for the proposed Beach House relocation.

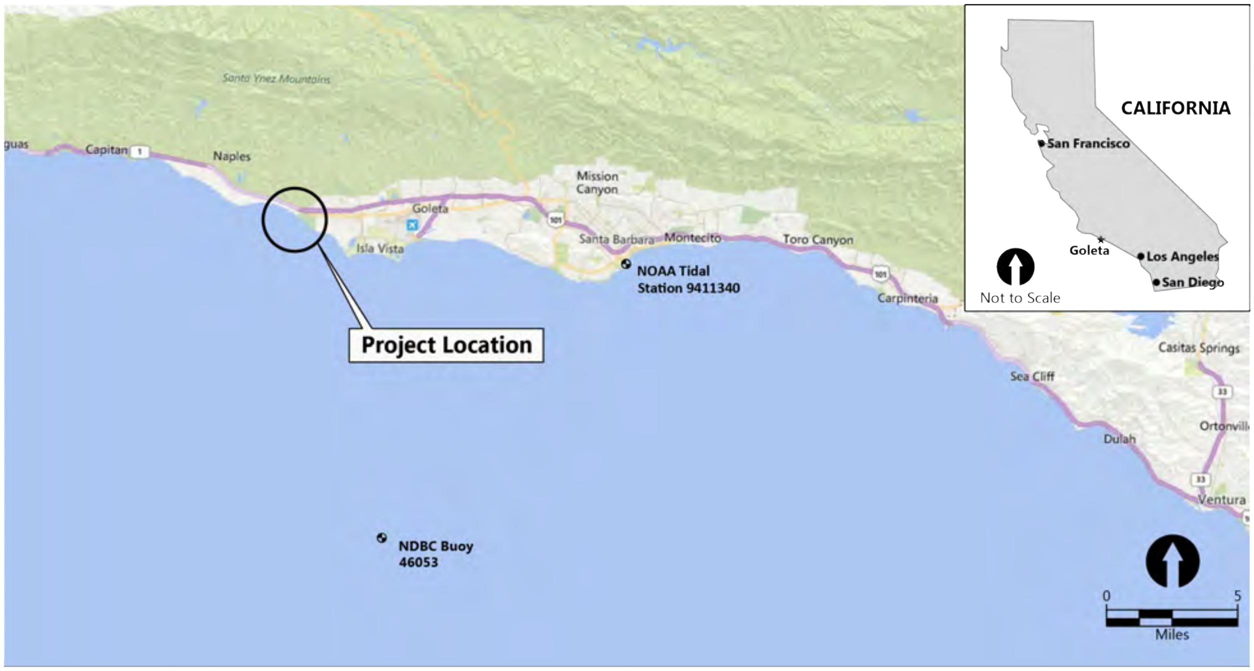
Site Description

The Site is located in Goleta, California, approximately 11 miles west of Santa Barbara, on the Pacific Ocean (Figure 1). The proposed Beach House location is to the east of the Tecolote Canyon Creek, as shown in Attachment 1[1] provided by Stantec.[2] The foundation elevations for the two proposed buildings are +23.3 feet North American Vertical Datum of 1988 (NAVD88) and +25.5 feet NAVD88 (+23.4 and +23.6 feet mean lower low water [MLLW]).

To define the specific coastal hazards for this project, a design life of 50 years will be assumed for the new Beach House, and the proposed seaward building foundation (elevation of +23.3 feet NAVD88) will be used for hazard elevation comparisons.

[1] Attachment 1 topography is in NAVD88 feet.
[2] Stantec is the civil engineering firm for the project.

Figure 1
Vicinity Map



Source: Image from Bing Maps. Buoy locations from National Data Buoy Center and National Oceanic and Atmospheric Association. Horizontal Datum: California State Plane, Zone 5, North American Datum 1983, U.S. feet.

Coastal Setting

The Site beach is oriented south, with possible waves coming from directions ranging from the east to the west (clockwise). Due to its ocean location, the Site can be impacted by ocean swell as well as storm waves.

The existing Beach House was built on a low bluff off the beach. That low bluff has been eroded in recent years due to storm waves and is one of the reasons for the Beach House relocation.

The Site is subject to changing water levels due to tides, ocean storm surge, and ocean waves, as well as locally generated wind waves.

Tidal Information (Water Levels)

Tidal information (water levels) at the Site was taken from National Oceanic and Atmospheric Administration Station No. 9411340 in Santa Barbara (Figure 1). Table 1 shows benchmark tidal elevations for the Santa Barbara Station.

Table 1
Tidal Datums at Site (Santa Barbara Station 9411340)[1]

Tidal Datum	Elevation Relative to MLLW at Gage Location (feet)
Highest observed water level (12/13/2012)	7.6
Highest astronomical tide[2]	7.2
Mean higher high water	5.4
Mean high water	4.6
Mean sea level	2.8
Mean low water	1.0
North American Datum of 1988	0.1
Mean lower low water (MLLW)	0.0

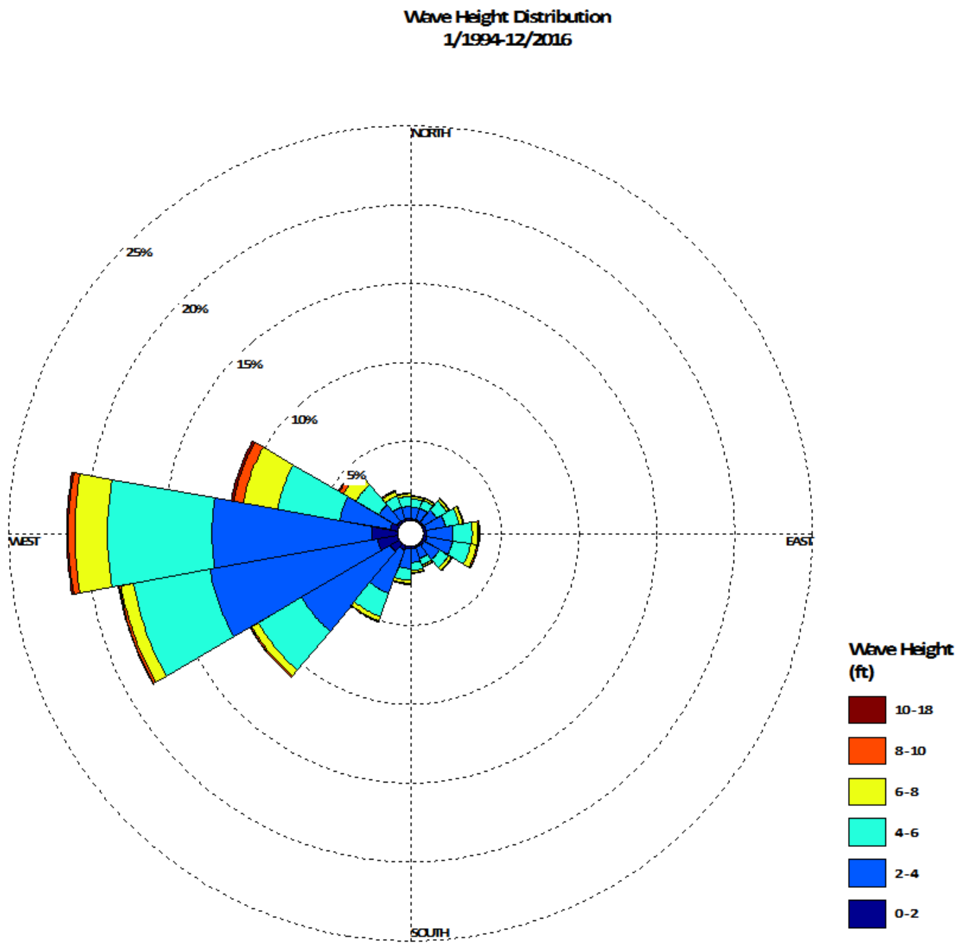
Notes:
1. The Santa Barbara station uses the Los Angeles Outer Harbor station (9410660) as a control station.
2. Highest astronomical tide is the elevation of the highest predicted astronomical tide expected to occur over the National Tidal Datum Epoch (1983 to 2001).

Wave Data

Long-term wave data were obtained from the National Data Buoy Center for a buoy in Santa Barbara Channel (Station 46053), with data from 1994 to 2016 (NDBC 2017). This station is located approximately 12 miles south of the Site (Figure 1). The wave rose in Figure 2 shows the distribution of wave directions and heights over the full data record of the buoy station[3]. Waves and storm waves are predominantly from the southwest to west direction.

[3] Data are unavailable for January 1, 1997, through April 27, 1998, as well as February 17, 2014, through May 21, 2015.

Figure 2
Wave Distribution (Station 46053)



Data are unavailable for January 1, 1997, through April 27, 1998, as well as February 17, 2014, through May 21, 2015.

Existing Coastal Hazards

Existing coastal hazards that can impact the Site include extreme astronomical tides, storm surge (due to wind and wave set up during storms), and bluff or shoreline erosion.

Extreme Tidal Levels

The highest astronomical tide at the Santa Barbara Station is 7.2 feet above MLLW (NOAA 2017), which is almost 2 feet above mean higher high water (MHHW). This tidal elevation can occur a few times per year. However, the highest astronomical tidal elevation is 16.2 feet below the proposed Beach House foundation (+23.3 feet NAVD88; +23.4 feet MLLW).

Extreme Waves

Wave data shown in Figure 2 for the directions of interest (east to west; clockwise) were used to estimate extreme wave heights for return periods of 25, 50, 75, and 100 years. The results of the extreme value analysis are shown in Table 2.

Table 2
Extreme Deepwater Waves at Santa Barbara Buoy (Station 46053)

Direction	Storm Return Year			
	25-year Wave Height (feet)	50-year Wave Height (feet)	75-year Wave Height (feet)	100-year Wave Height (feet)
91 to 120 degrees	14.6	14.9	15.1	15.2
121 to 150 degrees	14.0	14.4	14.5	14.6
151 to 180 degrees	16.7	17.5	18.0	18.2
181 to 210 degrees	15.5	16.1	16.3	16.4
211 to 240 degrees	16.6	17.2	17.5	17.7
241 to 270 degrees	17.7	18.4	18.7	18.8

Shoreline Erosion

Attachment 1 shows the proposed Beach House relocation, which sits approximately 100 feet back from the existing beach. Historically, a 0.3-foot per year shoreline retreat has been estimated based on data available through the California Natural Resources Agency Data Portal (CNRA 2017), which uses shoreline data from 1852 to 1998. This results in a 50-year shoreline retreat of approximately 15 feet.

The estimated 15-foot shoreline retreat will not reach the proposed site. However, this erosion rate is an average over a long period of time and may not reflect possible shoreline retreat due to extreme storm surge and wave events.

The U.S. Geological Survey (USGS) Coastal Storm Modeling System (CoSMoS; Barnard et al. 2014) estimates the shoreline change based on two storm events:

- January 2010 El Niño: A hindcast projection of the El Niño-fueled storm from January 18 to 25, 2010
- ARkStorm: A stitched-together storm based on two powerful West Coast storms that occurred in 1969 and 1986, representing a recurrence interval of at least 100 years

Based on the two storm events modeled with CoSMoS, the Site could experience shoreline erosion ranging from 26.8 meters (January 2010 El Niño) to 30.5 meters (ARkStorm), or 87.9 to 100.1 feet. As the design life of the structures is expected to be 50 years, the 100-year ARkStorm (with 100.1 feet of potential erosion) is beyond the structures' lifespan.

FEMA Flood Zones and Storm Surge

Tecolote Canyon Creek, to the west of the Site, could pose a flooding risk for the Site. According to the Federal Emergency Management Agency (FEMA) Flood Insurance Study (FIS) and Flood Insurance Rate Map (FIRM; Attachment 2), the proposed Beach House site is above the 0.2% annual chance flood area. Therefore, there is very little chance of the proposed site being flooded due to the creek flooding.

The Flood Insurance Study also states the wave runup elevations for various flood chances near the Site:

- 10% annual chance: 8.3 feet North American Datum of 1988 (NAVD88; 8.4 feet MLLW)
- 1% annual chance: 9.6 feet NAVD88 (9.7 feet MLLW)
- 0.2% annual chance: 11.5 feet NAVD88 (11.6 feet MLLW)

A Preliminary FEMA FIS is expected to be approved for the area. The Preliminary FIS was published December 15, 2016, and increases the runup elevations for the various flood chances near the Site:

- 10% annual chance: 13.9 feet NAVD88 (14 feet MLLW)
- 1% annual chance: 16.2 feet NAVD88 (16.3 feet MLLW)
- 0.2% annual chance: 18.1 feet NAVD88 (18.2 feet MLLW)

Summary

The design life of the proposed Beach House and associated structures is approximately 50 years; therefore, existing (present-day) coastal hazards for the Site are estimated using return period events similar in duration to the design life of the structures. The specific coastal hazards for this project are summarized in Table 3.

Table 3
Summary of Existing Coastal Hazards

Existing Coastal Hazard	Value
50-year significant deep water wave height	18.4 feet
Peak wave period	25 seconds[1]
Mean higher high water	5.4 feet MLLW
Highest astronomical tide	7.2 feet MLLW
FEMA 1% annual chance wave runup elevation	9.7 feet, MLLW
FEMA 1% annual chance wave runup elevation (Preliminary FIS)	16.3 feet, MLLW
Historic shoreline erosion rate (CNRA 2017)	0.3 foot/year
Storm shoreline erosion potential (January 2010 El Niño; CoSMoS)	87.9 feet

Note:
1. The largest observed dominate wave period (period with the maximum wave energy) over the data period was used.

As Table 3 shows, it is unlikely that any extreme tide event, surge, or storm waves will directly impact the proposed Site elevation of +23.3 feet NAVD88 (23.4 feet MLLW) .

Future Coastal Hazards

Future coastal hazards that can impact the Site include the current coastal hazards identified above with the addition of increased water levels due to predicted SLR. SLR estimates for the Site were taken from the CCC's *Sea Level Rise Policy Guidance* (2015) for areas south of Cape Mendocino. The SLR guidance uses 2000 as the starting point and denotes several future years as endpoints when estimating the possible range of SLR that could occur:

- Year 2030: 2 to 12 inches
- Year 2050: 5 to 24 inches
- Year 2100: 17 to 66 inches

Uncertainties exist in estimates for SLR due to numerous issues related to understanding the physics and assumptions associated with predictive modeling (NRC 2012). These uncertainties increase as the projection period increases with large uncertainties in predictions of SLR at 2100. For the purposes of the future coastal hazards evaluation, an intermediate SLR estimate was used for each predicted year, which was computed as the average of the upper and lower bound SLR estimates. The intermediate SLR projections for 2030, 2050, and 2100 are 7, 15, and 42 inches, respectively.

The time frame used to evaluate impacts to the Site due to predicted SLR is based on the design life of the proposed structures (CCC 2015). As discussed above, the design life of the proposed Beach House is estimated as 50 years. If the structures are constructed as planned in 2019, then sea level estimates for 2069 should be used for the future hazards evaluation. Because estimates are not explicitly available for 2069, interpolated values were used to evaluate future coastal hazards for the proposed work.

Linear interpolation was used to estimate SLR values in 2069 for the available upper and lower bound predictions, as well as the computed intermediate values, for 2050 and 2100. Table 4 provides a summary of the SLR projections used for this evaluation.

Table 4
Sea Level Rise Projections (inches)

Year	Lower Bound	Intermediate	Upper Bound
2030	2	7	12
2050	5	15	24
2069	10	25	40
2100	17	42	66

The SLR projections in Table 4 were added to the projected tidal elevations from Table 1. The projected tidal elevations at the Site based on intermediate SLR estimates for 2069 are summarized in Table 5. For comparison, the range of projected tidal elevations based on the upper and lower bound SLR estimates are also provided in Table 5.

Table 5
Potential Future Tidal Datums at the Site[1]

Tidal Datum	Current Conditions[2]	2069	
		Intermediate	Range
Highest astronomical tide	7.2	9.3	8.0 to 10.5
Mean higher high water	5.4	7.5	6.2 to 8.7
Mean sea level	2.8	4.9	3.6 to 6.1
North American Datum of 1988	0.1	2.2	0.9 to 3.4
MLLW	0.0	2.1	0.8 to 3.3

Notes:
1. All elevations are in feet, relative to current MLLW elevation.
2. Existing tidal datums are provided in Table 1.

Future coastal hazards for the Site combine current coastal hazards due to storm events (50-year return period) and increases in water level due to projected SLR. The 50-year wave height and period is considered to be the same for existing conditions and future conditions. Table 6 outlines the predicted future coastal hazards for the Site.

Table 6
Summary of Future Coastal Hazards

Future Coastal Hazard	Value[1]	Range
50-year significant deep water wave height	18.4 feet	N/A
50-year peak wave period	25 seconds[1]	N/A
2069 mean higher high water	7.5 feet MLLW	6.2 to 8.7 feet MLLW
2069 highest astronomical tide	9.3 feet MLLW	8.0 to 10.5 feet MLLW
2069 FEMA 1% annual chance wave runup elevation	11.8 feet MLLW	10.5 to 13.0 feet MLLW
2069 FEMA 1% annual chance wave runup elevations (Preliminary FIS)	18.4 feet MLLW	17.1 to 19.6 feet MLLW
Shoreline erosion rate	0.3 foot/year	N/A
Storm shoreline erosion potential (January 2010 El Niño; CoSMoS)	87.9 feet	N/A

Note:
1. The largest observed dominate wave period (period with the maximum wave energy) over the data period was used.

Summary of Potential Impacts

Based on best available estimates for the region (NRC 2012) adopted by the CCC (2015), sea levels at the Site are expected to increase between 0.8 and 3.3 feet by 2069 (interpolated), with an intermediate value for increase of 2.1 feet. A high degree of uncertainty exists in the magnitude of future SLR estimates, which is represented by the large range in predicted sea level increase considered (NRC 2012).

For the intermediate SLR predictions for 2069 (increase of 2.1 feet), the predicted MHHW elevation will be 7.5 feet MLLW, which is 15.9 feet lower than the proposed site foundation (+23.4 feet MLLW). During the highest astronomical tides, which could occur a few times per year, the still water elevation could reach 9.3 feet MLLW, which is 14.1 feet below the proposed site. The FEMA 1% annual chance wave runup elevation in 2069 (+11.8 feet MLLW) is not expected to reach the proposed site but could result in an increase in shoreline erosion. The Preliminary FEMA FIS (FEMA 2016) has a higher 1% annual chance wave runup elevation in 2069 (+18.4 feet MLLW), which is also below the proposed site foundation elevation.

Similar impacts would apply to adjacent shorelines (not located on the property) and are independent of the proposed work at the Site.

USGS's CoSMoS estimates the potential storm erosion for the Site to range from 26.8 to 30.5 meters (87.9 to 100.1 feet); with 100.1 feet representing a storm with over a 100-year return period. The Site has an offset of approximately 100 feet from the existing shoreline, and the 100-year storm is beyond the structures' lifespan. Future shoreline and bluff erosion are difficult to predict with rising sea levels and expected increased storm activity; therefore, the shoreline should be monitored to assess the rate of erosion and predict future potential hazards.

While the Site is near Tecolote Canyon Creek, according to the currently accepted FIRM (FEMA 2012) and the preliminary FIRM (FEMA 2016), the proposed Beach House Site is outside of the 0.2% annual flood area and, therefore, unlikely to experience flooding from the creek.

Based on evaluation of intermediate SLR estimates for 2069, the proposed Beach House site will not be impacted by SLR over the 50-year lifetime of the structures.

References

Barnard, P.L., M. van Ormondt, L.H. Erikson, J. Eshleman, C. Hapke, P. Ruggiero, P.N., Adams, and A. Foxgrover, 2014. Coastal Storm Modeling System: CoSMoS. Southern California 1.0, Projected Flooding Hazards. DOI: 10.5066/F74B2ZB4. Available at: http://walrus.wr.usgs.gov/coastal_processes/cosmos/socal1.0/.

CCC (California Coastal Commission), 2015. *Sea Level Rise Policy Guidance*. *Interpretive Guidelines for Addressing Sea Level Rise in Local Coastal Programs and Coastal Development Permits*. August 2015.

CNRA (California Natural Resources Agency Data Portal), 2017. Accessed: April 28, 2017. Available from: https://gis.cnra.ca.gov/arcgis/rest/services/GeoScience/CSMW_Sym/MapServer

FEMA (Federal Emergency Management Agency), 2012. Flood Insurance Rate Map Panel 1341 of 1835. Map Number 06083C1341G. December 4, 2012.

FEMA, 2016. Preliminary Flood Insurance Rate Map Panel 1341 of 1835. Map Number 06083C1341H. December 15, 2016.

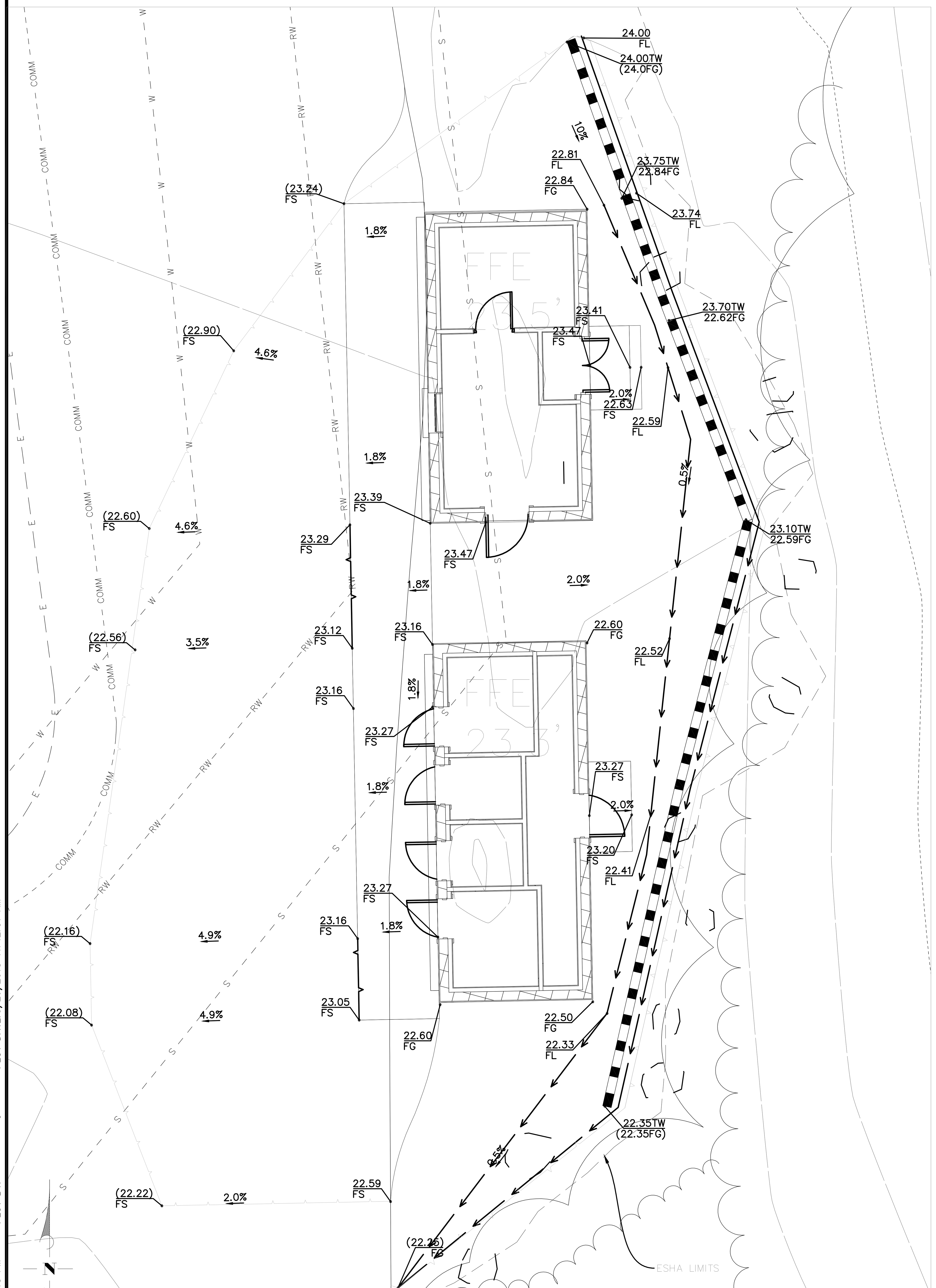
NDBC (National Data Buoy Center), 2017. Accessed: April 5, 2017. Available from: http://www.ndbc.noaa.gov/station_page.php?station=46053.

NOAA (National Oceanic and Atmospheric Administration), 2017. Tides and Currents. Accessed: April 5, 2017. Available from: https://tidesandcurrents.noaa.gov/datums.html?id=9410580.

NRC (National Research Council), 2012. *Sea-Level Rise for the Coasts of California, Oregon, and Washington, Past, Present, and Future*.

Attachment 1

Proposed Beach House Site Location



SCALE: 1"=5'
0 5 10 15

SCALE: 1"=20'
0 20 40 60

PRELIMINARY GRADING PLAN

BEACH HOUSE RELOCATION

RITZ CARLTON–BACARA RESORT & SPA
GOLETA, CA

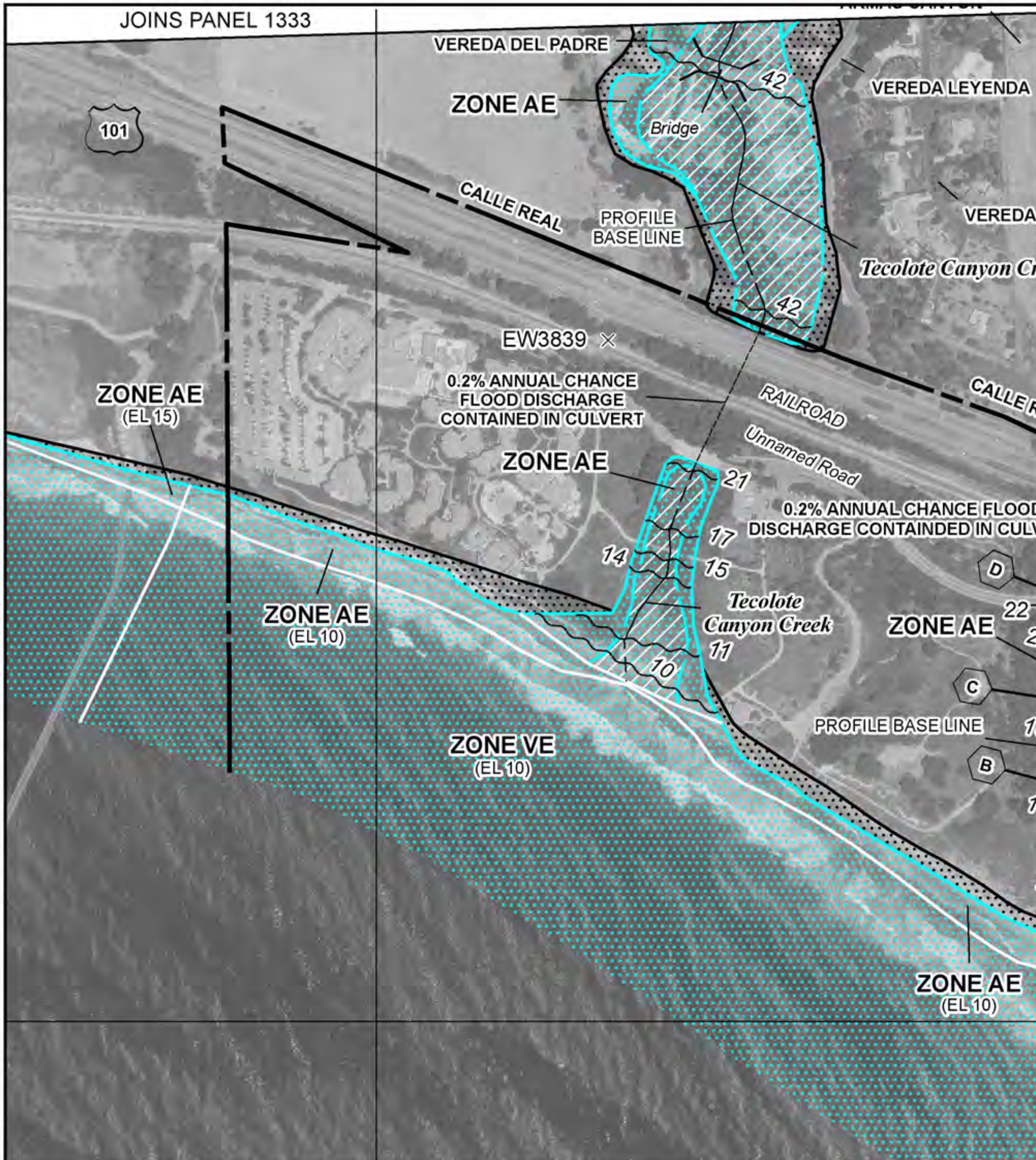
MARCH 22, 2018
SHEET 3 OF 4

Stantec
111 East Victoria Street, Santa Barbara, CA 93101
Phone: (805) 963-9532

36-EXB SAVE DATE: 3/22/2018 3:20:18 PM PLOT BY: Michael Chang PLOT DATE: 3/26/2018 11:42:31 AM

Attachment 2

Flood Insurance Rate Map



MAP SCALE 1" = 500'

250 0 250 500 750 1,000 FEET

METE

NATIONAL FLOOD INSURANCE PROGRAM

NFIP

PANEL 1341G

FIRM

FLOOD INSURANCE RATE MAP

SANTA BARBARA COUNTY, CALIFORNIA
AND INCORPORATED AREAS

PANEL 1341 OF 1835

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
GOLETA, CITY OF	060771	1341	G
SANTA BARBARA COUNTY	060331	1341	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
06083C1341G

MAP REVISED
DECEMBER 4, 2012

Federal Emergency Management Agency

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) Zone 10. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the Local Tidal Datum. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242** or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was derived from digital orthophotography collected by the U.S. Department of Agriculture Farm Service Agency under its National Agriculture Imagery Program (NAIP). This imagery was flown in 2005 and was produced with a 1-meter ground sample distance.

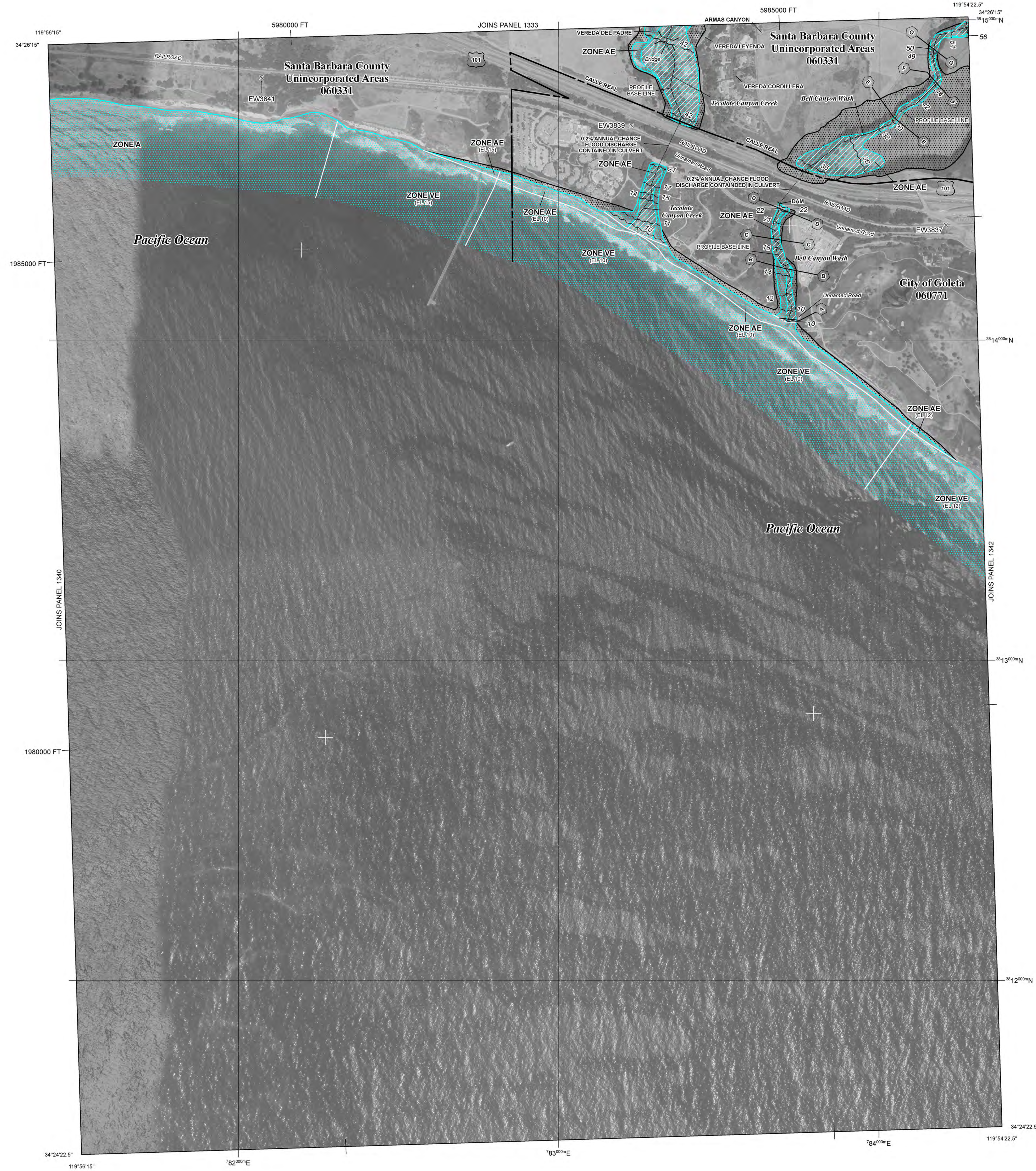
This map may reflect more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Information eXchange (FMIX)** at 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FMIX may also be reached at its website at http://www.msc.fema.gov/.

If you have **questions about this map**, or questions concerning the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at **1-877-FEMA MAP** or visit the FEMA website at http://www.fema.gov/business/nfip/.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities

513 — Base Flood Elevation line and value; elevation in feet*

(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

A — A Cross section line

23 - - - 23 Transect line

97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere

$^{42}75^{000m}$E — 1000-meter Universal Transverse Mercator grid values, zone 10

6000000 FT — 5000-foot grid ticks: California State Plane coordinate system, Zone V (FIPSZONE = 0405), Lambert projection

DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)

● M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories List on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
SEPTEMBER 30, 2005

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
December 4, 2012 - to update map elevations to North American Vertical Datum of 1988.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 250 500 750 1,000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1341G

FIRM

FLOOD INSURANCE RATE MAP

SANTA BARBARA COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 1341 OF 1835

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

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SANTA BARBARA COUNTY	060331	1341	G

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MAP NUMBER 06083C1341G

MAP REVISED DECEMBER 4, 2012

Federal Emergency Management Agency