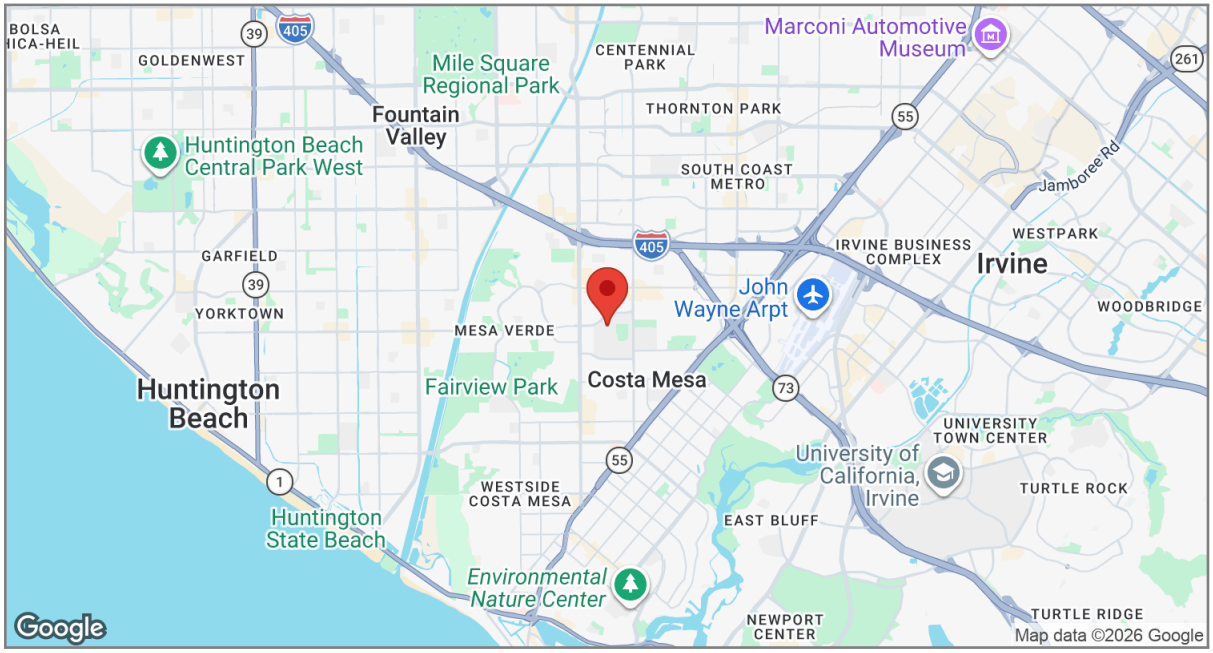
SP3 SITE SEISMIC HAZARDS REPORT

Site Seismic Hazards Report



Report Generated for:
333 South Blvd, Orange County, CA
Latitude: 33.67314°
Longitude: -117.91341°

Report Generated by:
v15.0.0 of the SP3 Platform

August 19, 2026

Seismic Performance Prediction Platform

SP3 | Where Research Meets Practice

CONTENTS

1 INTRODUCTION

This report was generated using SP3-SiteHazards of the SP3 Platform. It was created by aggregating publicly available data at the specified site location with the goal of easily understanding and reporting on site hazards. Each data source is cited and the report is subject to the limitations and accuracy of those data sources.

2 SITE LOCATION

Address: 333 South Blvd, Orange County, CA

Latitude: 33.67314°

Longitude: -117.91341°

3 SITE STABILITY SUMMARY

The following summarizes the site stability results for each hazard category evaluated at this location. Each category is assessed using the best available publicly-accessible data for the site.

Soil:

4.1	USGS Vs30 Database Soil Type	D
4.2	California Geological Survey Vs30 (2015)	C/D
4.3	U.S. Geological Survey Vs30 Boring Data for Nearby Sites	-

Liquefaction:

5.1	California State Liquefaction	Not in a mapped Liquefaction zone

Landslide:

6.1	U.S. Geological Survey Professional Paper 1183, Landslide Overview	Low Landslide Hazard
6.2	California State Landslide	Not in a mapped Landslide zone

Fault Rupture:

8.1	Alquist-Priolo Earthquake Fault Zoning Act	Not in a mapped Fault Rupture zone

Tsunami:

7.1	California State Tsunami	Not in a mapped Tsunami zone

Dam Inundation:

12.1	Syphon Canyon	Not in a mapped Dam Inundation zone
12.2	Sand Canyon	Not in a mapped Dam Inundation zone
12.3	Rattlesnake Canyon	Not in a mapped Dam Inundation zone
12.4	Peters Canyon	Not in a mapped Dam Inundation zone
12.5	Santiago Creek	Not in a mapped Dam Inundation zone
12.6	Big Canyon	Not in a mapped Dam Inundation zone
12.7	San Joaquin Reservoir	Not in a mapped Dam Inundation zone
12.8	Villa Park	Not in a mapped Dam Inundation zone

4 SOIL

Definitions of Site Class

The site class bins used for assigning soil types are as follows:

Site Class		Site Class Based on V_{S30}* (m/sec)	ASCE 7 Site Class Definition V_{S30} (m/sec)
A	Hard Rock	≥1695	≥1500
A/B	A/B Boundary	1315–1695	–
B	Rock	945–1315	760–1500
B/C	B/C Boundary	660–945	–
C	Very dense soil and soft rock	460–660	360–760
C/D	C/D Boundary	315–460	–
D	Stiff soil	225–315	180–360
D/E	D/E Boundary	165–225	–
E	Soft clay soil	<165	<180

*Non-overlapping ranges for known V_{S30} to define Site Class as proposed by Bozorgnia & Bertero, 2006.
Source: Earthquake Engineering: From Engineering Seismology to Performance-Based Engineering — `https://www.crcpress.com/Earthquake-Engineering-From-Engineering-Seismology-to-Performance-Based/Bozorgnia-Bertero/p/book/9780849314391`

The V_{S30} value is a geotechnical parameter representing the average shear-wave velocity in the top 30 meters of a site and can be used to characterize the soil type at a location. The USGS provides V_{S30}-based site class estimates from geologic mapping data. Higher resolution data may be available from site investigations or regional databases.

4.1 USGS V_{S30} Database Soil Type

The following soil types are estimated based on the topography of your site location.

The estimate of soil for this site is as follows:

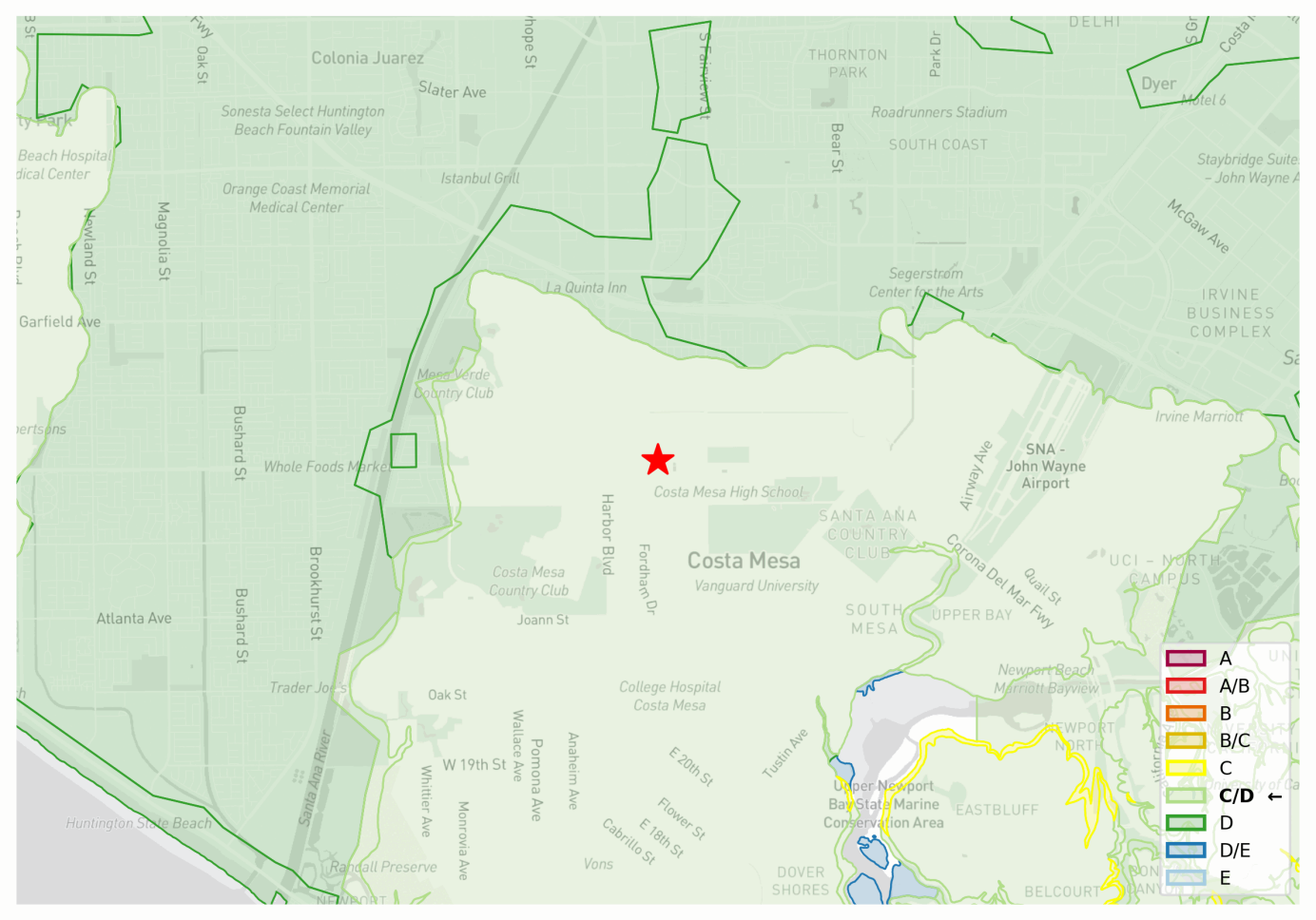
V_{S30} = 274 m/s

Soil Class: D [225 - 315]

Source: U.S. Geological Survey, Global V_{S30} Model — `https://earthquake.usgs.gov/data/vs30`

4.2 California Geological Survey Vs30 (2015)

The following shows the Vs30 and soil Site Class from the California Geological Survey (2015 release).
Based on the map below, this site is in a **Site Class C/D zone**.



Source: California Geological Survey Vs30 (2015) — `https://maps.conservation.ca.gov/cgs/informationwarehouse/`

4.3 U.S. Geological Survey Vs30 Boring Data for Nearby Sites

The following map provides any available soil boring data (with Vs30 estimates) for nearby sites. This comes from a database of Vs30 boring data compiled by the U.S. Geological Survey and other governmental agencies for 3,020 sites in the United States.

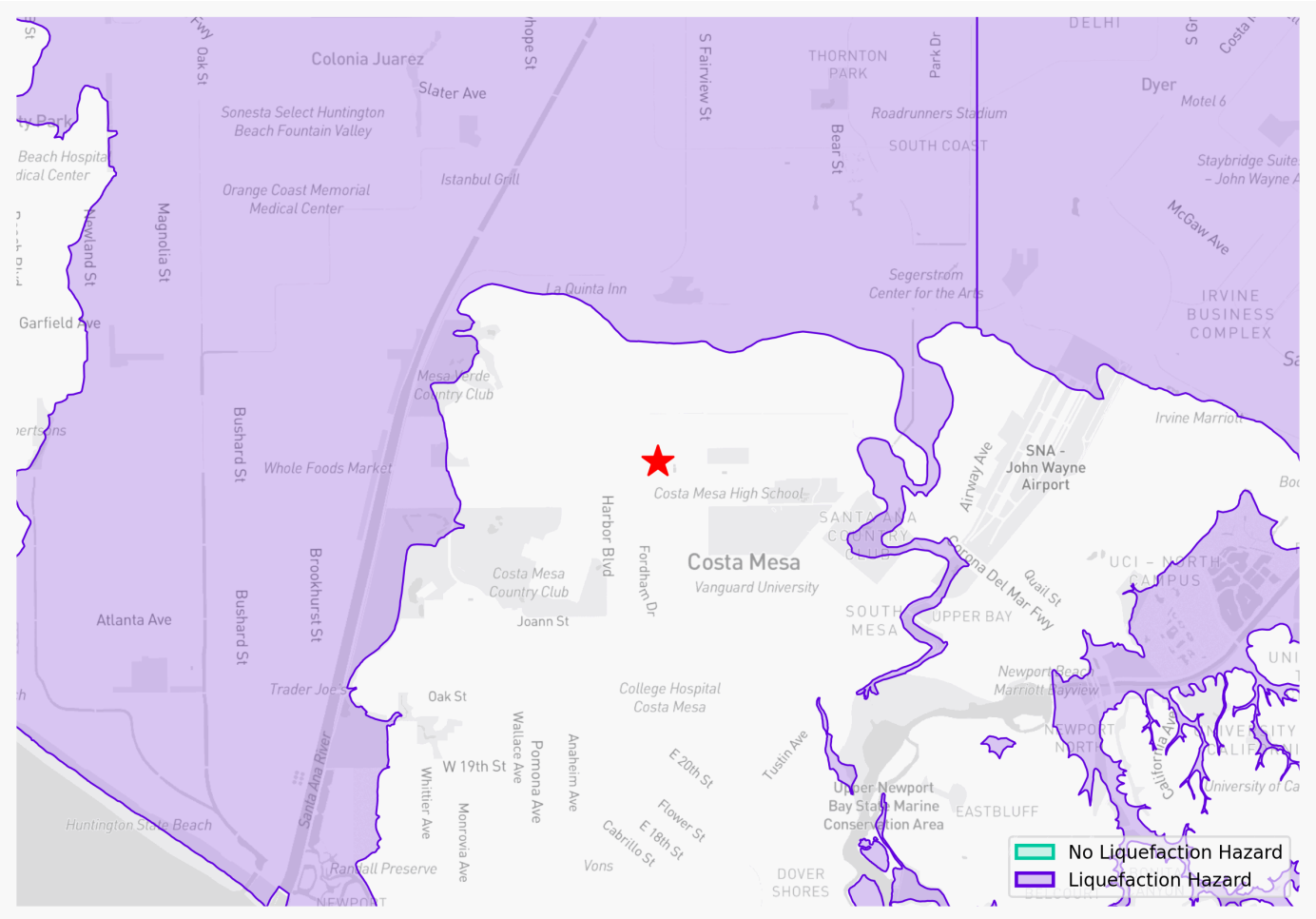
Source: U.S. Geological Survey Vs30 Boring Data for Nearby Sites — `https://earthquake.usgs.gov/data/vs30/us/`

5 LIQUEFACTION

Liquefaction areas are delineated with respect to the underlying geological materials in a particular area. These maps are meant to provide information on where liquefaction may occur in a future earthquake (but not necessarily that it will occur for this specific site). This map provides a pre-screening approach for liquefaction potential, but a site-specific soil assessment would be needed if a more precise understanding of liquefaction potential is desired.

5.1 California State Liquefaction

Based on the map below, this site is **not in a mapped Liquefaction zone**.



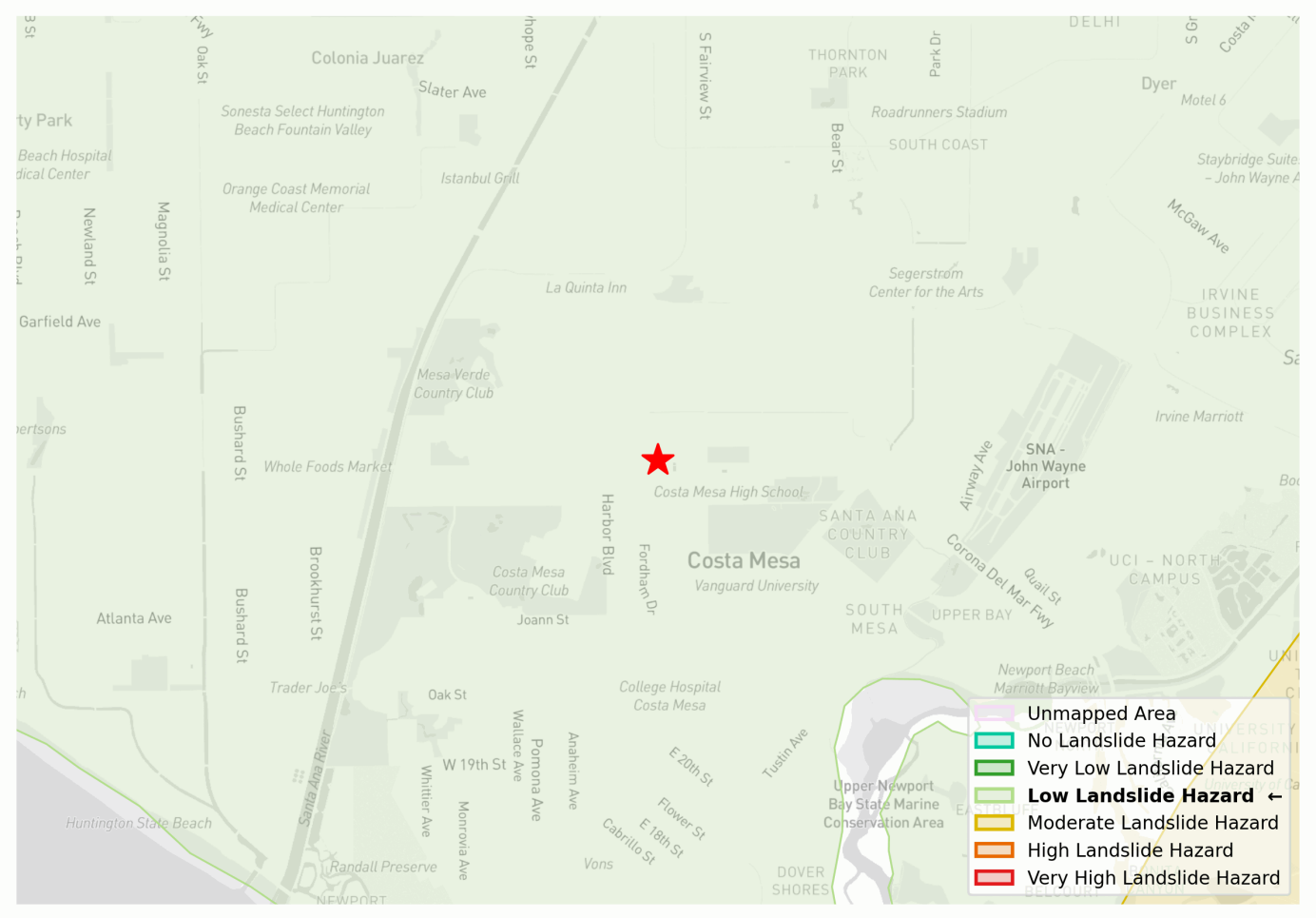
Source: California State Liquefaction — `https://maps.conservation.ca.gov/cgs/informationwarehouse/`

6 LANDSLIDE

Landslide susceptibility indicates the severity of seismically induced landslide potential in an area.

6.1 U.S. Geological Survey Professional Paper 1183, Landslide Overview

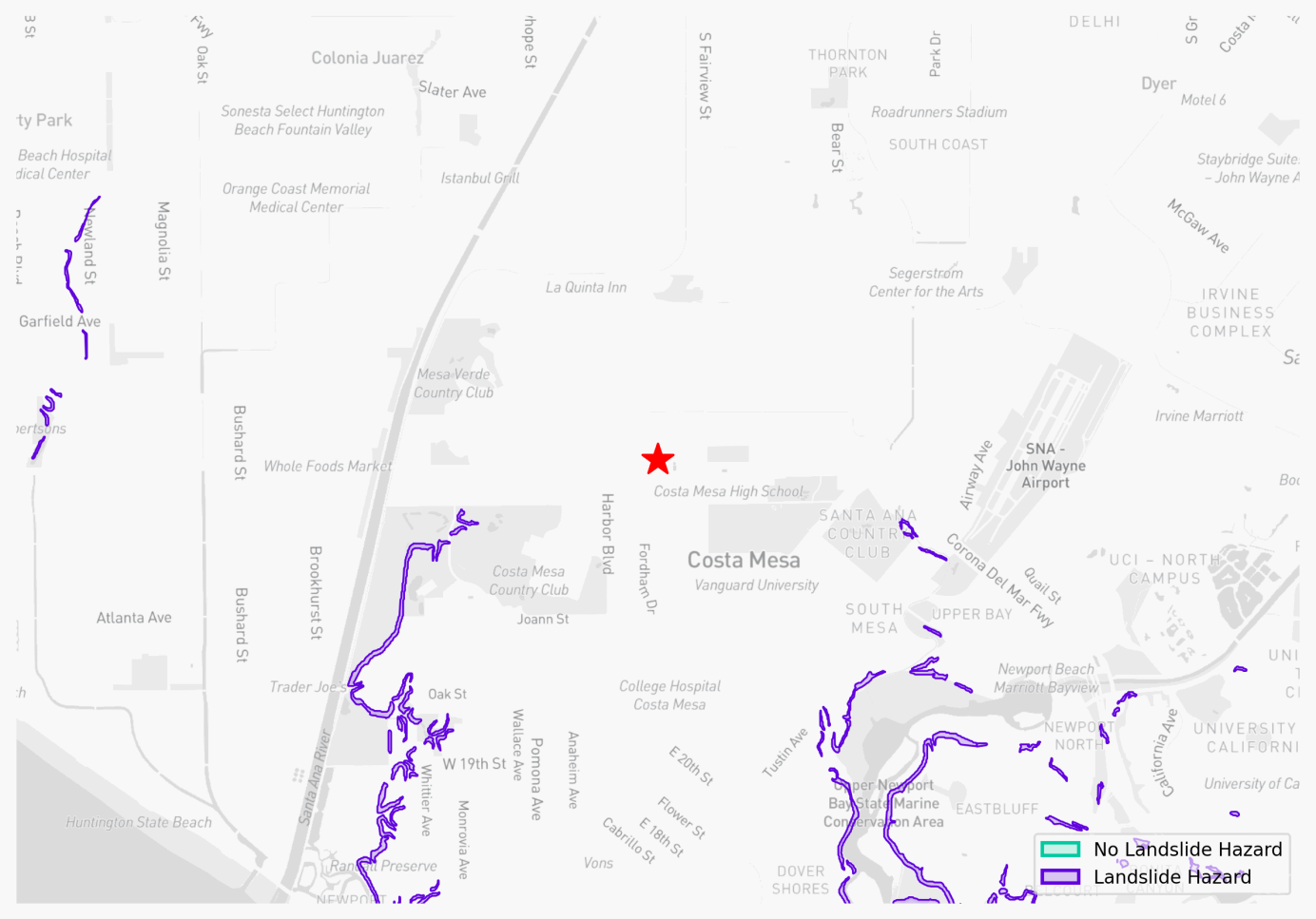
Based on the map below, this site is in a **Low Landslide Hazard zone**.



Source: U.S. Geological Survey Professional Paper 1183, Landslide Overview — `https://pubs.usgs.gov/publication/pp1183`

6.2 California State Landslide

Based on the map below, this site is **not in a mapped Landslide zone**.



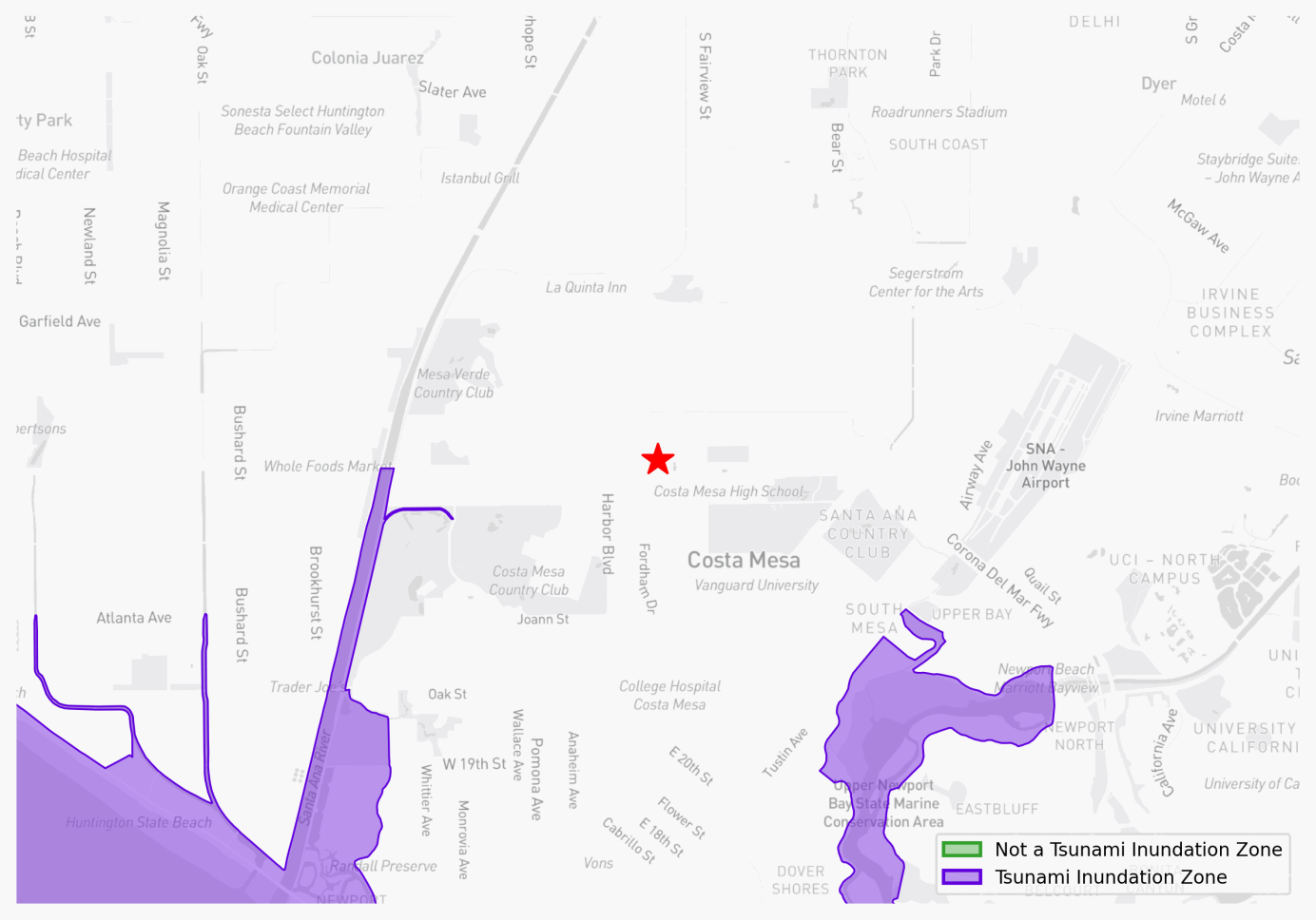
Source: California State Landslide — `https://maps.conservation.ca.gov/cgs/informationwarehouse/`

7 TSUNAMI

Tsunami inundation zones are determined by modeling a group of maximum considered tsunami events. It is noted that these maps do not meet disclosure requirements for real estate transactions nor for any other regulatory purpose (please see associated disclaimers from California Geological Survey).

7.1 California State Tsunami

Based on the map below, this site is **not in a mapped Tsunami zone**.



Source: California State Tsunami — `https://www.conservation.ca.gov/cgs/tsunami/maps#counties`

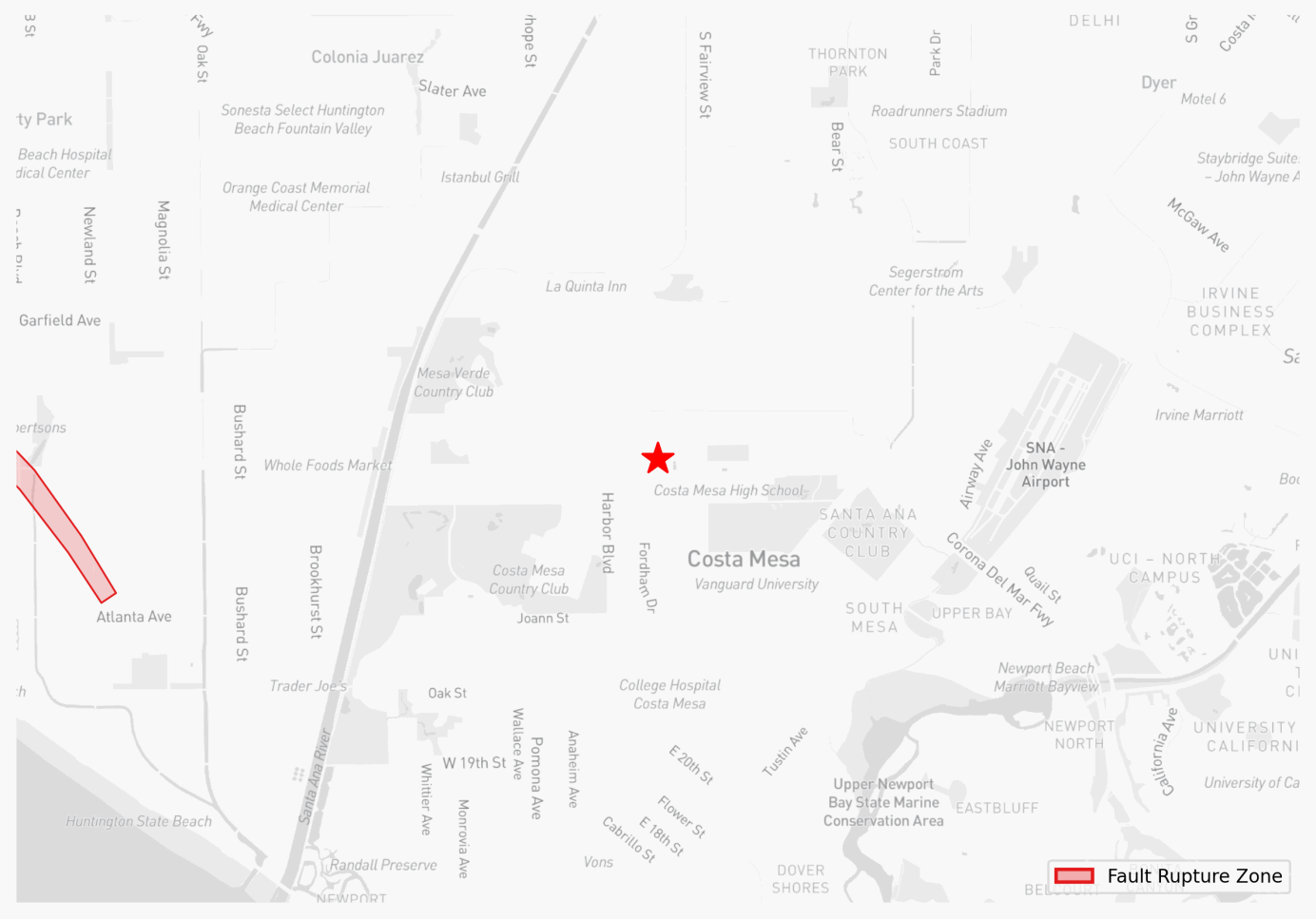
8 FAULT RUPTURE

Surface fault rupture (aka. fault rupture) is the result of fault movement that breaks to the surface of the earth either suddenly during earthquakes, or slowly due to a process known as fault creep, and is the result of tectonic movement that originates deep in the Earth.

8.1 Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act requires the State Geologist (CGS) to establish earthquake fault zones around the surface traces of active faults and to issue appropriate maps. CGS has identified earthquake fault zones in thirty-seven California counties, affecting more than one hundred cities. The Alquist-Priolo Earthquake Fault Zoning Act's main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults.

Based on the map below, this site is **not in a mapped Fault Rupture zone**.

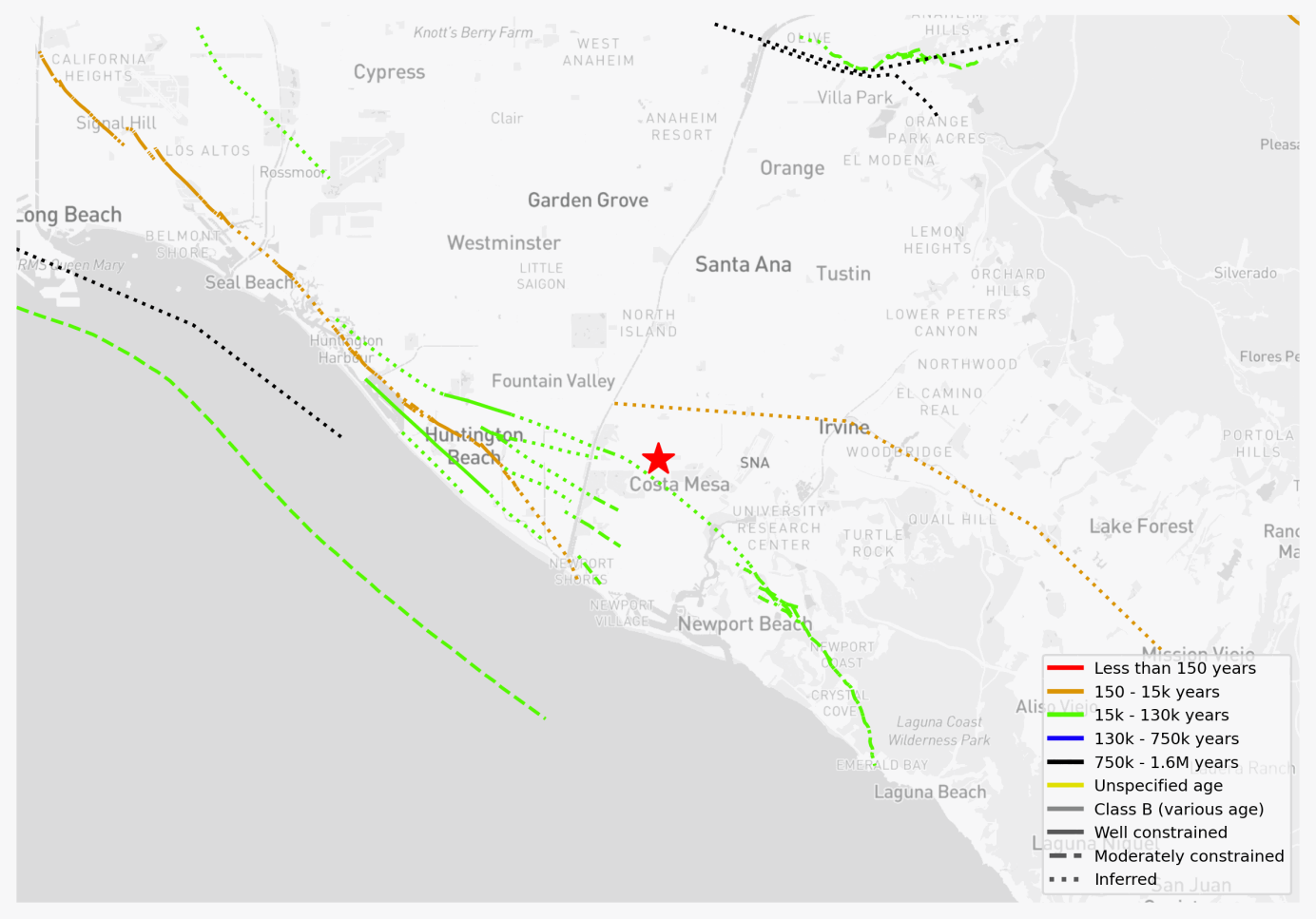


Source: Alquist-Priolo Earthquake Fault Zoning Act — `https://maps.conservation.ca.gov/cgs/informationwarehouse/`

9 NEARBY FAULTS

9.1 U.S. Geological Survey Faults

This map shows known faults around this site.



Source: U.S. Geological Survey Faults — `https://www.usgs.gov/programs/earthquake-hazards/faults`

Years shown in legend represent typical return period of characteristic earthquakes on the faults.

10 GROUND SHAKING HAZARDS

The shaking hazard for your site is presented below in terms of peak ground acceleration (PGA) and spectral acceleration (Sa) at periods 0.2s and 1.0s. Where available the shaking hazard is provided for the Site Class specific to this location and site classes B/C and D. Each return period is also expressed as its probability of exceedance, and the 10% in 50-year (design-basis) level is highlighted.

The Modified Mercalli Index (MMI) is also provided according to Trifunac & Brady (1975) based upon PGA. This method is applicable to intensity levels between IV and X; lower intensity levels are approximate.

Exceedance Probability	Return Period [yr]	This Site: D			Baseline B/C			Baseline D		
		PGA [g]	$Sa_{0.2s}$ [g]	$Sa_{1.0s}$ [g]	PGA [g]	$Sa_{0.2s}$ [g]	$Sa_{1.0s}$ [g]	PGA [g]	$Sa_{0.2s}$ [g]	$Sa_{1.0s}$ [g]
50% in 30 years	43	0.1232	0.3131	0.1480	0.0828	0.1820	0.0577	0.1232	0.3131	0.1480
50% in 50 years	72	0.1626	0.4130	0.2011	0.1123	0.2491	0.0794	0.1626	0.4130	0.2011
50% in 75 years	108	0.2001	0.4987	0.2512	0.1407	0.3139	0.1008	0.2001	0.4987	0.2512
50% in 100 years	144	0.2272	0.5669	0.2925	0.1628	0.3658	0.1178	0.2272	0.5669	0.2925
20% in 50 years	224	0.2756	0.6830	0.3648	0.2035	0.4601	0.1493	0.2756	0.6830	0.3648
10% in 30 years	285	0.3057	0.7467	0.4093	0.2276	0.5174	0.1684	0.3057	0.7467	0.4093
10% in 50 years	475	0.3710	0.9023	0.5190	0.2885	0.6628	0.2172	0.3710	0.9023	0.5190
10% in 75 years	712	0.4325	1.0346	0.6194	0.3447	0.7969	0.2627	0.4325	1.0346	0.6194
5% in 50 years	975	0.4827	1.1390	0.7106	0.3949	0.9195	0.3044	0.4827	1.1390	0.7106
3% in 50 years	1642	0.5730	1.3359	0.8793	0.4914	1.1514	0.3853	0.5730	1.3359	0.8793
2% in 50 years	2475	0.6558	1.5049	1.0384	0.5784	1.3703	0.4627	0.6558	1.5049	1.0384
1.5% in 50 years	3308	0.7151	1.6194	1.1614	0.6491	1.5400	0.5240	0.7151	1.6194	1.1614
1% in 50 years	4975	0.8015	1.7953	1.3521	0.7521	1.7982	0.6214	0.8015	1.7953	1.3521

USGS Hazard Lookup

Hazard Edition: Conterminous US 2018

Site Class: D

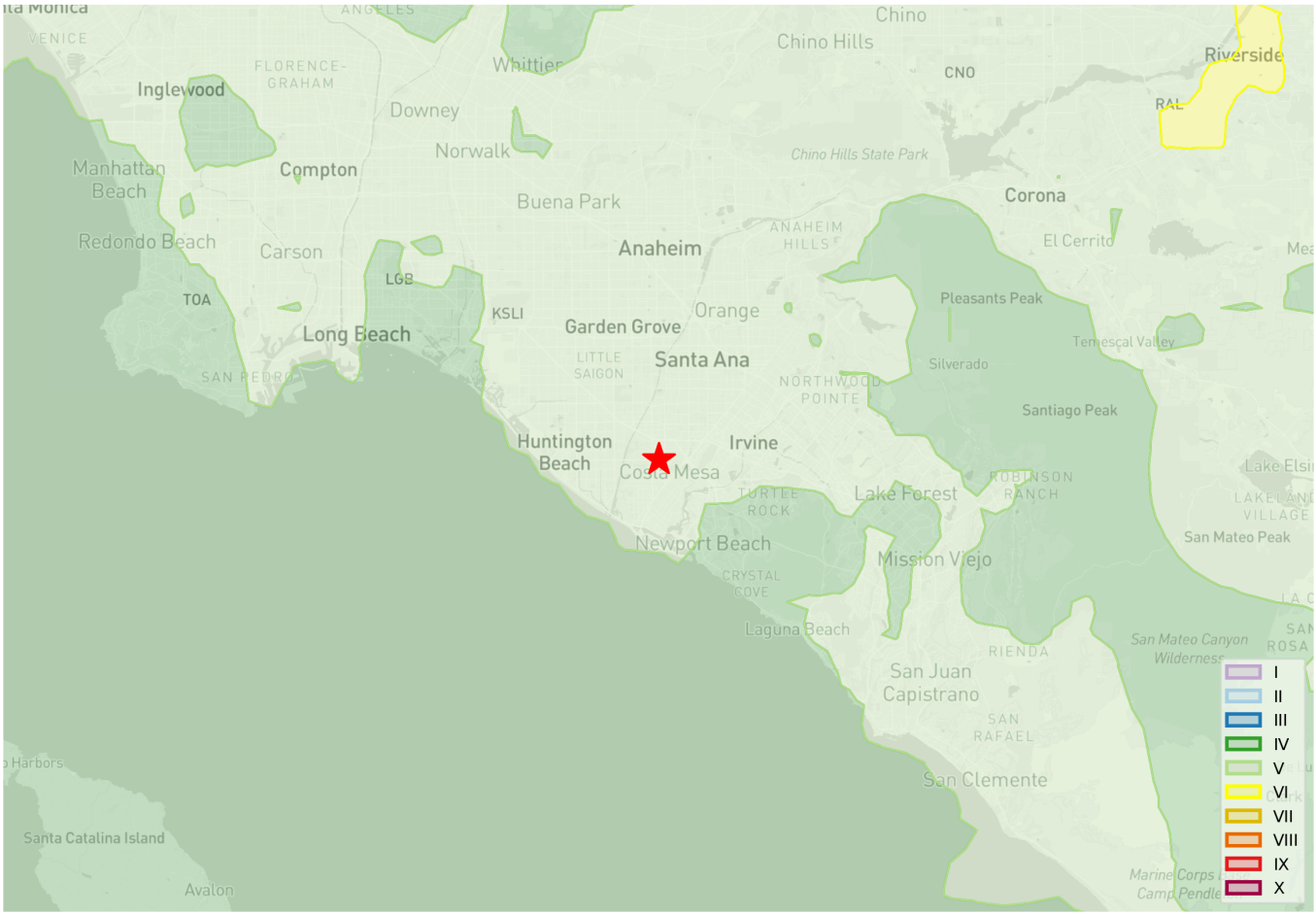
Source: U.S. Geological Survey — `https://earthquake.usgs.gov/hazards/interactive/`

11 SHAKE MAPS

Shake maps present the intensity of seismic shaking over geographic regions during significant earthquakes. The following map(s) provide information on the intensity of shaking demand from past seismic events that are pertinent to this site. Note that these maps estimate the intensity of shaking between observed data points and that a specific site may have experienced a different level of shaking in the event(s) presented below.

11.1 Landers Earthquake - M 7.3 (6/28/1992)

Based on the map below, this site is in an **MMI V Zone for this event**.



Source: U.S. Geological Survey — `https://earthquake.usgs.gov/earthquakes/eventpage/ci3031111#shakemap`

Metric	At-site value
MMI	5.2
PGA	0.08 g
PGV	8 cm/s
Sa(0.3s)	0.16 g
Sa(1.0s)	0.12 g

11.2 Northridge Earthquake - M 6.7 (1/17/1994)

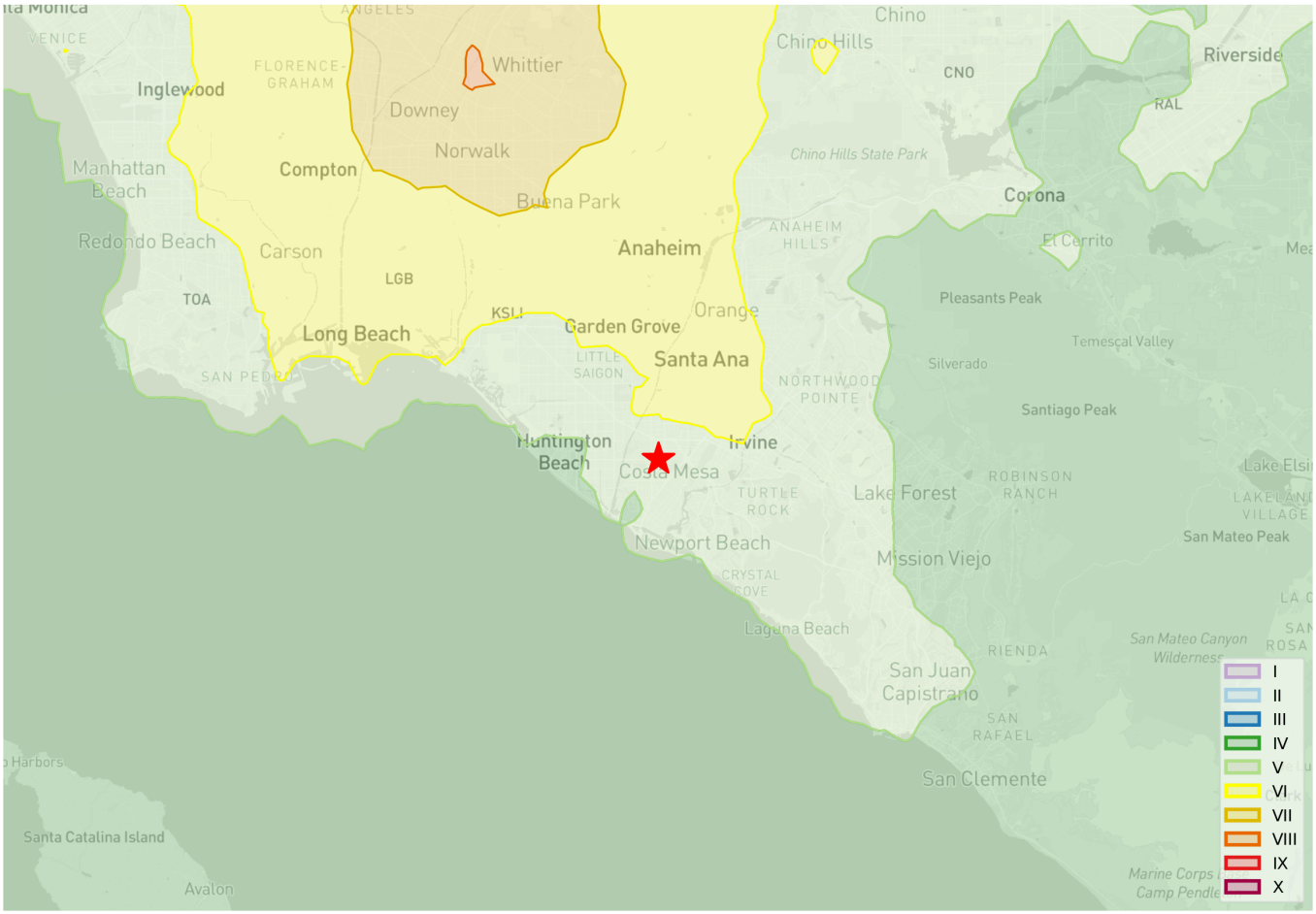
Based on the map below, this site is in an **MMI V Zone for this event**.

Source: U.S. Geological Survey — `https://earthquake.usgs.gov/earthquakes/eventpage/ci3144585#shakemap`

Metric	At-site value
MMI	5.4
PGA	0.08 g
PGV	8 cm/s
Sa(0.3s)	0.28 g
Sa(1.0s)	0.08 g

11.3 Whittier Earthquake - M 5.9 (10/01/1987)

Based on the map below, this site is in an **MMI V Zone for this event**.



Source: U.S. Geological Survey — `https://earthquake.usgs.gov/earthquakes/eventpage/ci731691#shakemap`

Metric	At-site value
MMI	5.2
PGA	0.08 g
PGV	6 cm/s
Sa(0.3s)	0.2 g
Sa(1.0s)	0.08 g

11.4 Ground Shaking Scale Descriptions

Intensity	Shaking	Description/Damage
I	Not felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very Strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

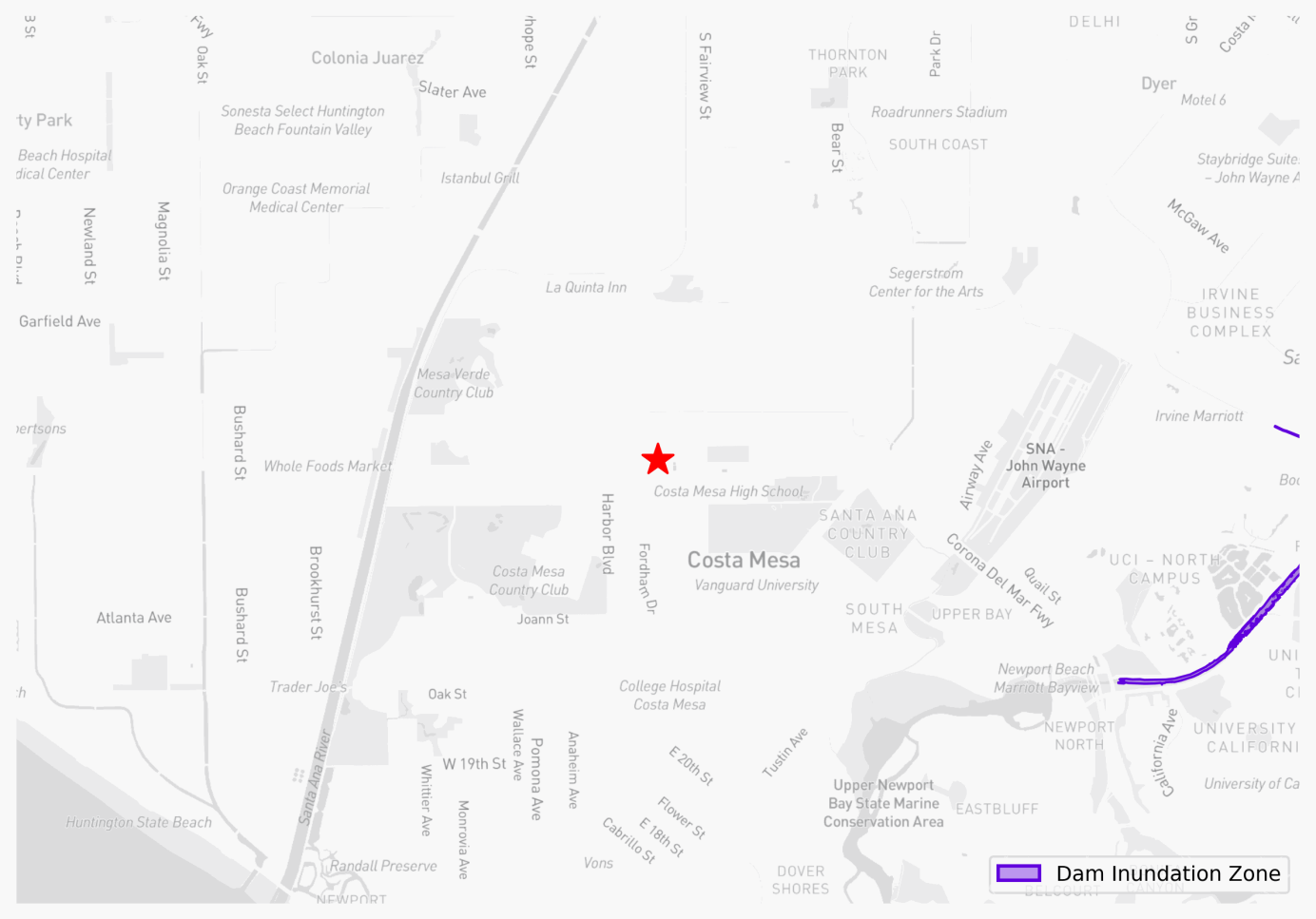
Source: U.S. Geological Survey — `https://www.usgs.gov/programs/earthquake-hazards/modified-mercalli-intensity-scale`

12 DAM INUNDATION

An Inundation map shows flooding that could result from a hypothetical failure of a dam or its critical appurtenant structure.

12.1 Syphon Canyon

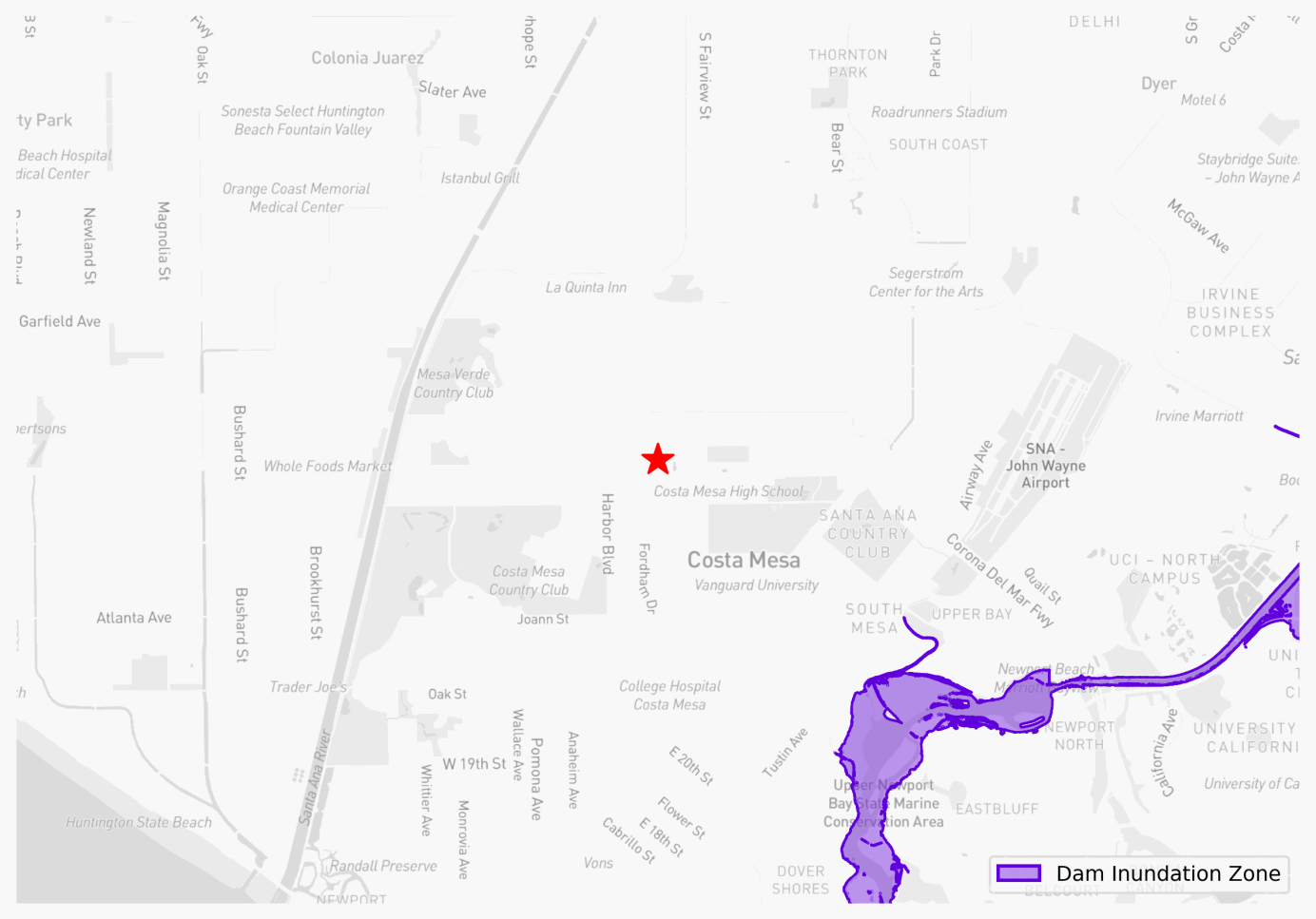
Based on the map below, this site is **not in a mapped Dam Inundation zone**.



Source: Syphon Canyon — `https://fmds.water.ca.gov/webgis/?appid=dam_prototype_v2`

12.2 Sand Canyon

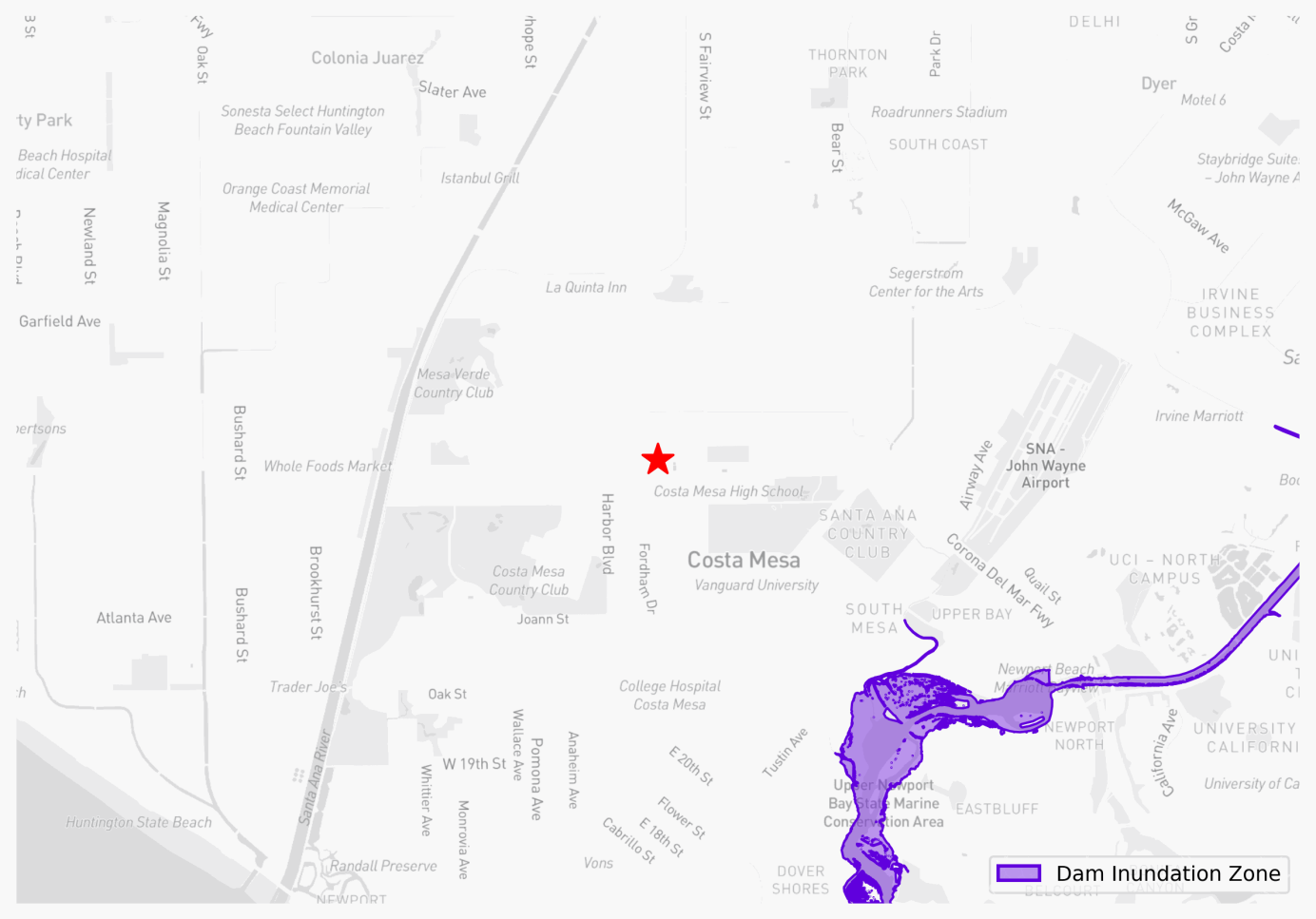
Based on the map below, this site is **not in a mapped Dam Inundation zone**.



Source: Sand Canyon — `https://fmds.water.ca.gov/webgis/?appid=dam_prototype_v2`

12.3 Rattlesnake Canyon

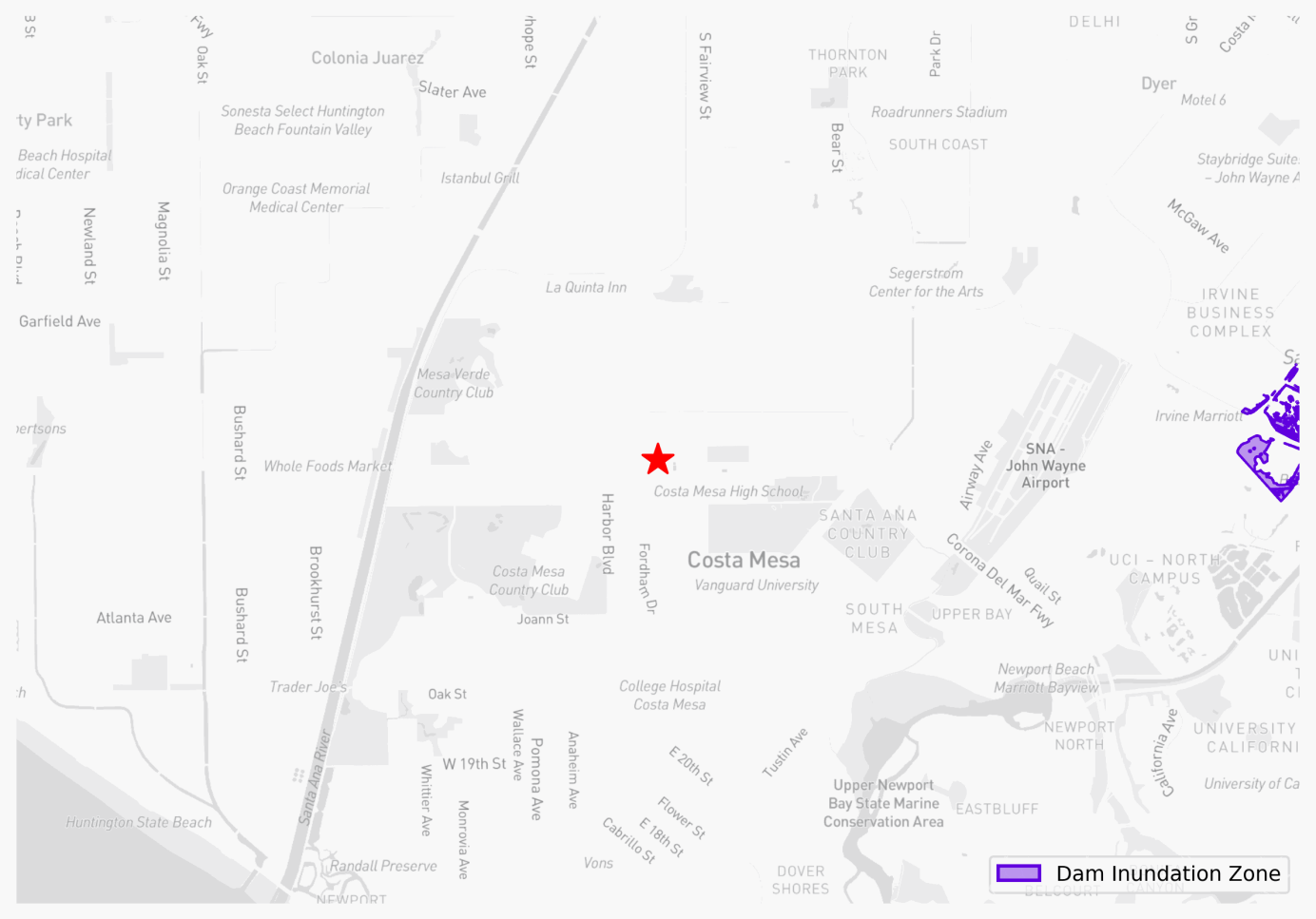
Based on the map below, this site is **not in a mapped Dam Inundation zone**.



Source: Rattlesnake Canyon — `https://fmds.water.ca.gov/webgis/?appid=dam_prototype_v2`

12.4 Peters Canyon

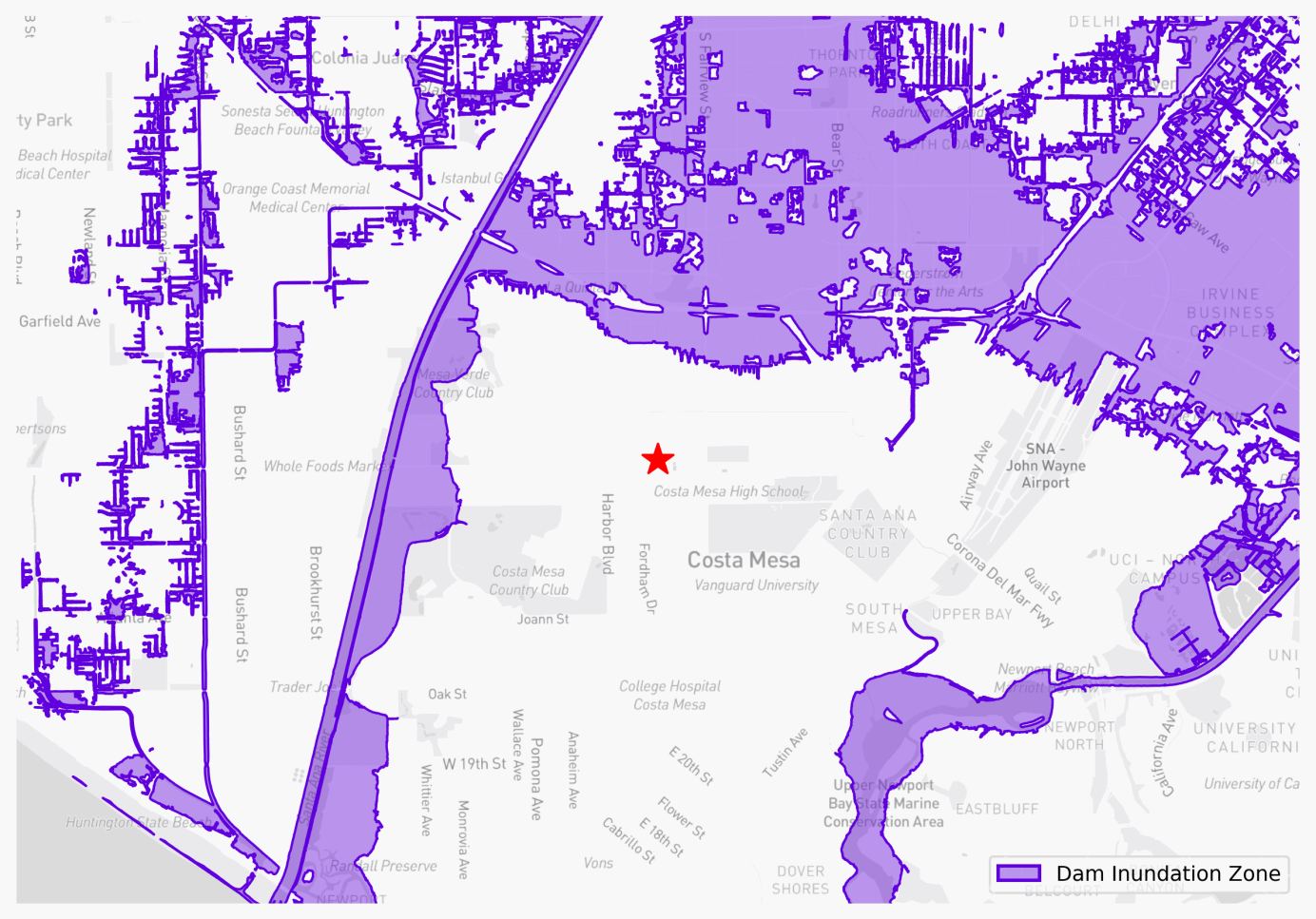
Based on the map below, this site is **not in a mapped Dam Inundation zone**.



Source: Peters Canyon — `https://fmds.water.ca.gov/webgis/?appid=dam_prototype_v2`

12.5 Santiago Creek

Based on the map below, this site is **not in a mapped Dam Inundation zone**.



Source: Santiago Creek — `https://fmds.water.ca.gov/webgis/?appid=dam_prototype_v2`

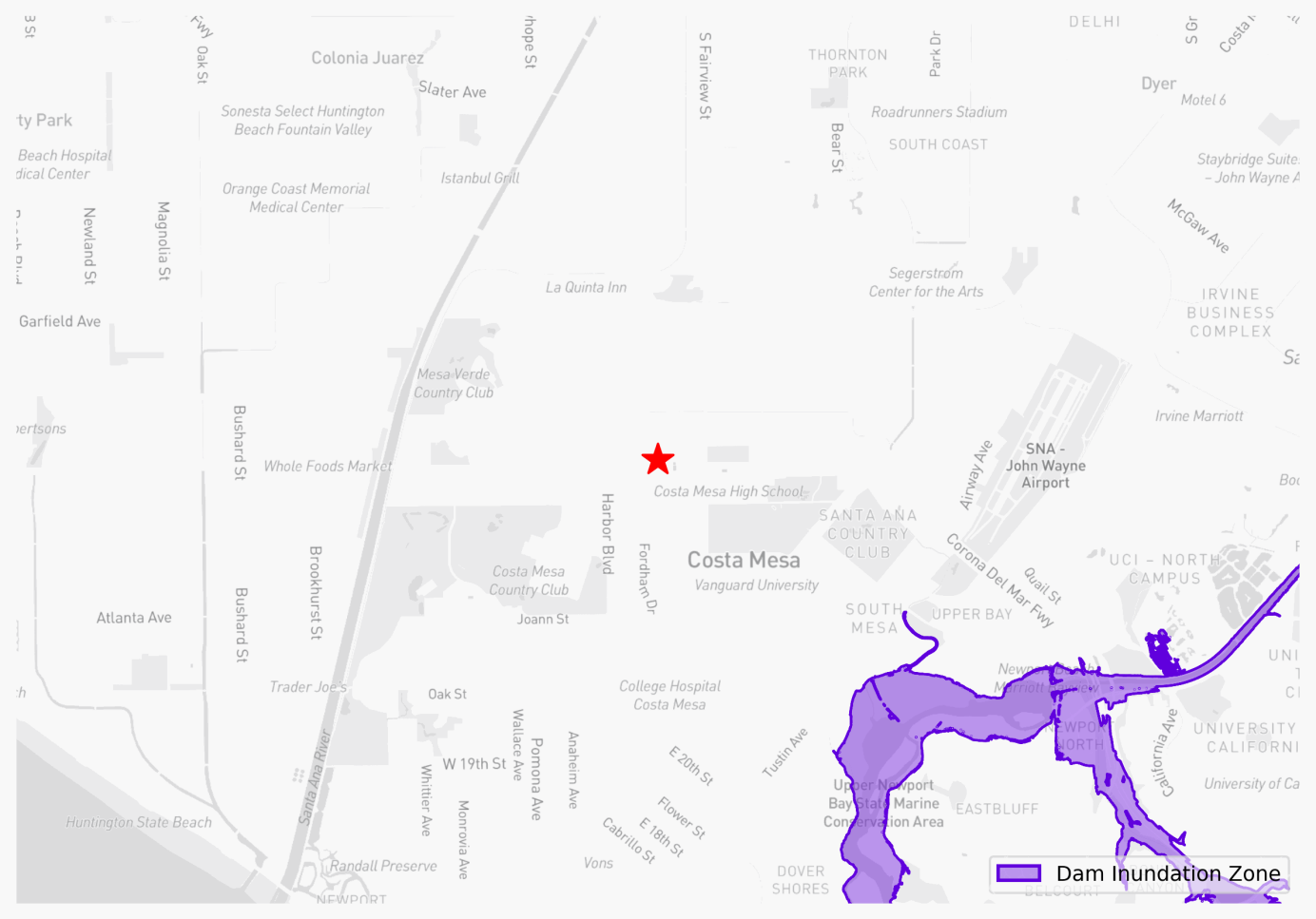
12.6 Big Canyon

Based on the map below, this site is **not in a mapped Dam Inundation zone**.

Source: Big Canyon — `https://fmds.water.ca.gov/webgis/?appid=dam_prototype_v2`

12.7 San Joaquin Reservoir

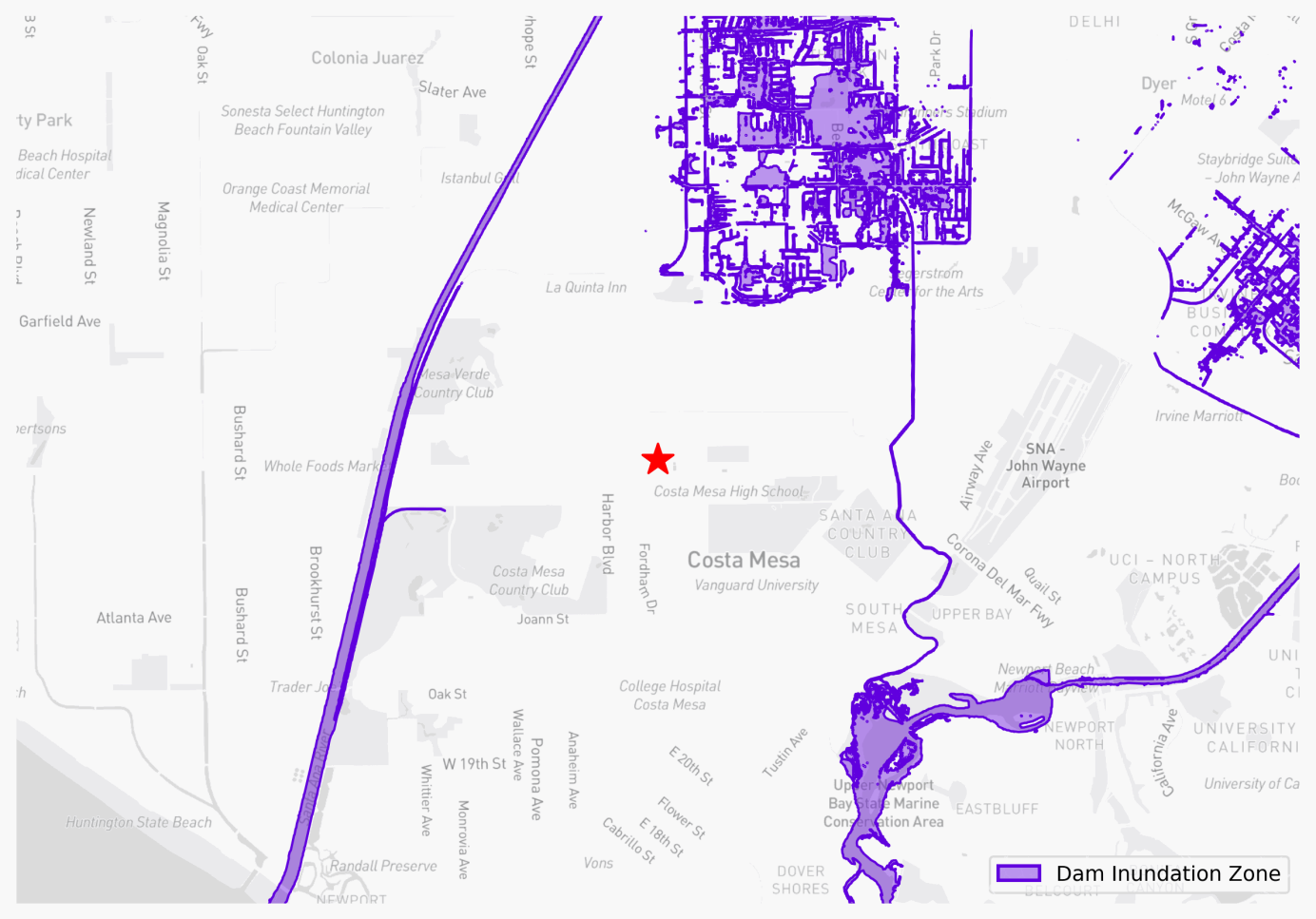
Based on the map below, this site is **not in a mapped Dam Inundation zone**.



Source: San Joaquin Reservoir — `https://fmds.water.ca.gov/webgis/?appid=dam_prototype_v2`

12.8 Villa Park

Based on the map below, this site is **not in a mapped Dam Inundation zone**.



Source: Villa Park — `https://fmds.water.ca.gov/webgis/?appid=dam_prototype_v2`