

Midcoast Shoreline Erosion & Armoring

-- Montara, Moss Beach, Princeton & Miramar --

Planning Commission Study Session
April 26, 2023, Lisa Ketcham



Steve King

Moss Beach, Jan 2023 storms

California Coastal Act

effective date Feb 1, 1977

-- Protect natural shorelines, and minimize risk from coastal hazards --

Limits on use of shoreline armoring (Section 30235, in part)

Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply.

New development shall: (Section 30253, in part)

- Minimize risks to life and property in areas of high geologic, flood, and fire hazard.
- Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.

Public Trust Doctrine

In California, the state owns the beach seaward of the mean high tide line. This may fluctuate as sand is moved on and off shore with the seasons. It is also moving inland due to sea level rise.

Impacts of shoreline armoring

- Visual impacts – much greater to the general public on the beach than to the private property owner above
- Loss of public beach area -- such as by placing riprap on the beach
- Reduction of beach access, lateral or vertical
- Loss of sand supply -- natural process of eroding cliffs
- Passive erosion -- long-term natural shoreline migration landward, with loss of beach in front of the armoring.
- Active erosion – localized accelerated erosion due to wave interaction with armoring structures; includes scour at base or on adjacent shoreline segments and changes in overall beach morphology.

Montara State Beach

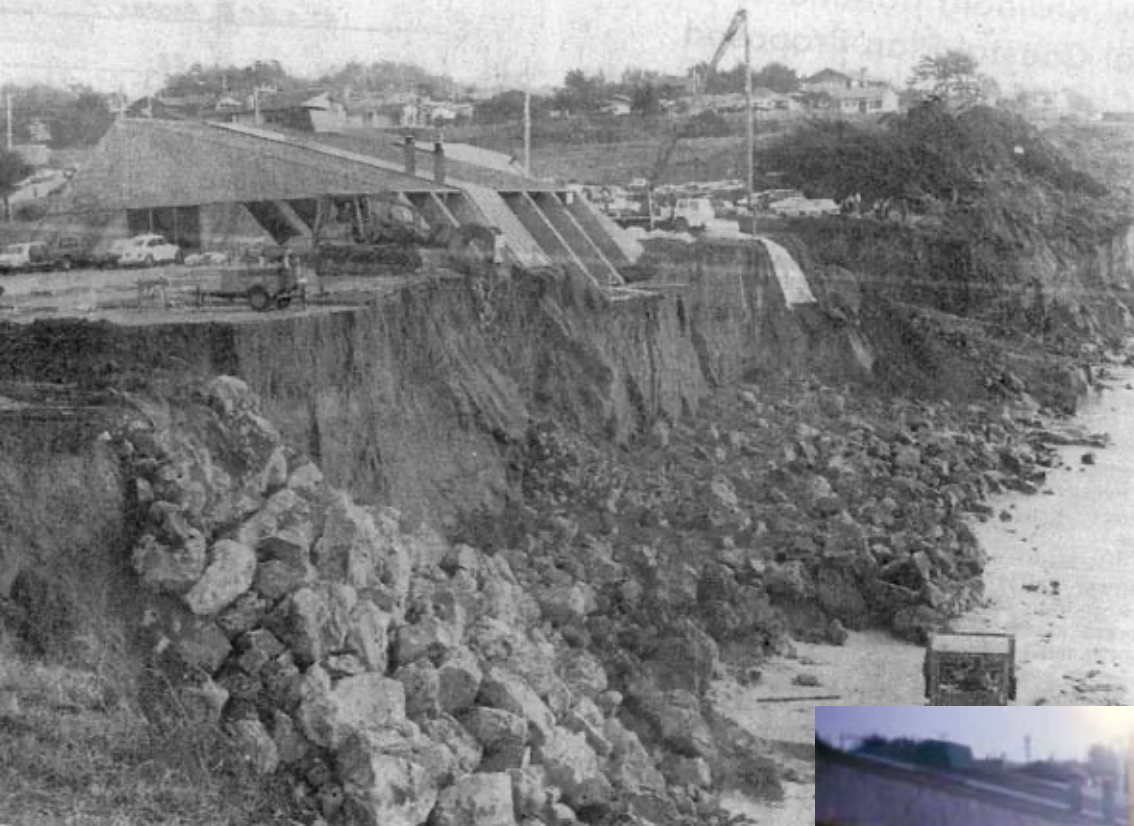


Aesthetics



Natural cliff face at Montara State Beach

Alien boulders & concrete slurry contrast harshly with surrounding natural landscape and scar the view. 4



1983 El Niño storms –

Only 4 years after construction,
emergency armoring installed on
the public beach to protect
the Chart House restaurant.



Save The Chart House

Wong '83

Early Permitting -- (CCC for the restaurant, County for the riprap)

CCC findings for restaurant permit P-77-579:

“Information from San Mateo County indicates the bluff is not subject to rapid erosion.”



1979: newly constructed Chart House restaurant
(built on footprint of former 50's motel/restaurant)



2004 CA Coastal Records Project

County CDP 83-67 approved after-the-fact 2/17/84 to place riprap on 460 linear feet of ocean bluff, and reconstruct and install storm drainage in the parking lots at 8150 Cabrillo Highway.

Maintenance & Useful Life:

Steep wall of boulders, 40 years old, undermined and hazardous.



2010 report “Poor Drainage and Rip Rap Erosion” by BAGG Engineers:

- Riprap was not keyed into the firm ground underlying the sand.
- Bottom 6 ft of the riprap has been grouted with cement (without permit).
- Parking lot drains discharge behind the riprap, causing undermining.
- Report recommends rerouting drainage pipes and repairing the riprap sea wall.

Red line at property boundary indicates all the riprap is on State Parks land.

2017 County Use Permit Amendment to legalize unpermitted development includes Condition of Approval to repair riprap – to coordinate plan with State Parks & CCC, and submit plan within 1 year.

Plan for county-mandated riprap repairs was due Oct 2018.

CABRILLO HIGHWAY / CA SR 1

PROPERTY LINE

Riprap repairs should include removal of view-blocking boulders on the bluff top. (MCC 9/26/17)

Riprap extends onto top of bluff, far beyond where needed for erosion protection, blocking public access and views. Plan cross-sections of the riprap are conceptual, showing an even, gentle slope, but in reality the slope is much steeper along the bottom, and more level along the top.



Red line marks the upper reach of riprap in front of the restaurant, and the dirt State Parks lot, which have no view obstruction.



View of beach from parking lot blocked by boulders

Excess alien boulders strewn over the blufftop, block access and mar the mountain view.

Moss Beach

Pre-Coastal Act armoring is grandfathered (without CDP),
but modification or repair requires a CDP.



Reef Point Rd, Moss Beach: 60's-era coastal armoring is grand-fathered (prior to Feb 1977)
Extensive repairs have been necessary over the years, under County permits.

Reaction to the natural process of coastal bluff erosion
has been piecemeal emergency armoring to protect development,
mostly without regard to aesthetics, coastal access, or long-term area shoreline dynamics.

Fitzgerald Marine Reserve (FMR)
Dean Creek to San Vicente Creek



Prior to 1983, public beach access existed both north & south of the FMR access ramp.

County 1980's armoring permit approvals noted the wide beach and that lateral access would not be blocked by riprap placed on the public beach to protect 3 homes: 97 & 101 Beach, and 201 Nevada



199 Arbor Ln, 2018 CDP:
no future armoring

263 Nevada, 2012 CDP:
no future armoring

Managed Retreat

Threatened by bluff erosion in 2002, instead of armoring the cliff, the historic house at 100 Beach St was moved inland onto the neighboring parcel, 263 Nevada.

In 2012 on appeal of CDP for expansion of the relocated house, CCC prohibited future armoring.

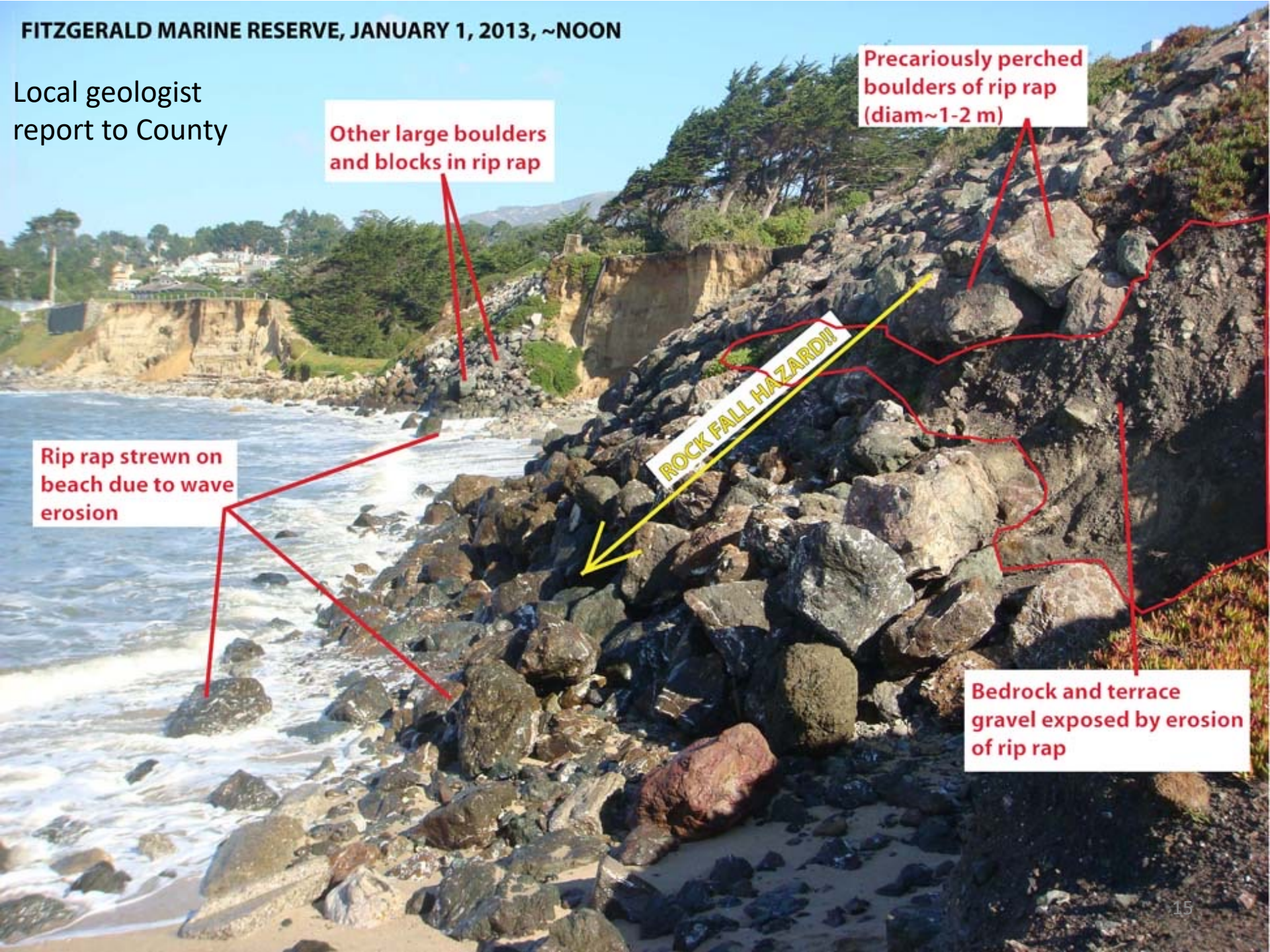


Peninsulas of rock expand across the beach at FMR as riprap deteriorates and surrounding cliffs erode naturally, nourishing the beach.

March 2017



Local geologist report to County



Other large boulders and blocks in rip rap

Precariously perched boulders of rip rap (diam~1-2 m)

ROCK FALL HAZARD!!

Rip rap strewn on beach due to wave erosion

Bedrock and terrace gravel exposed by erosion of rip rap



Even at low tide, public access along the shoreline is difficult and hazardous due to deteriorating riprap with precariously perched boulders overhead and strewn over the beach.

New sign added in response to geologist's 2013 report of rock fall hazard.

FMR Moss Beach Reef Overlook



-- promontory constructed of rock and concrete rubble on the shoreline at San Vicente Creek
-- before the Marine Reserve was established in 1969.

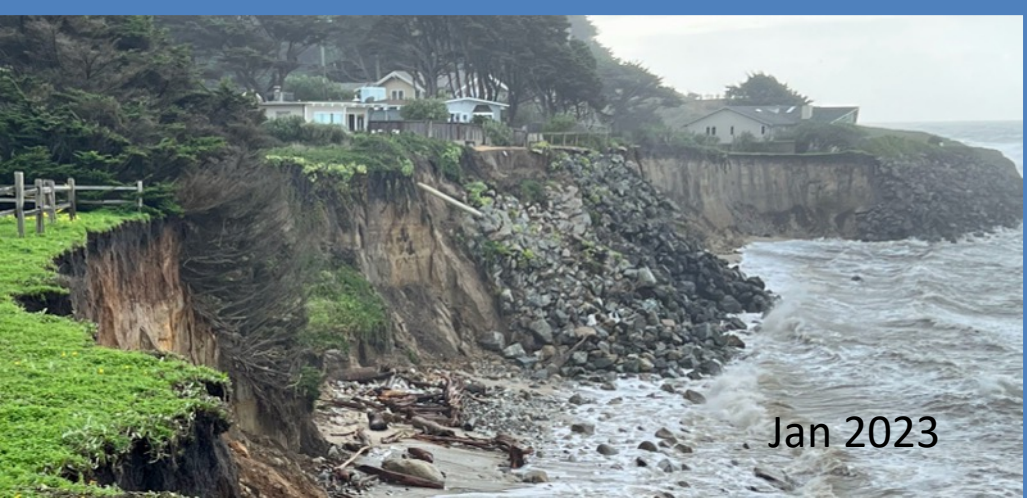
2016 FMR Master Plan Assessment calls for managed retreat as overlook degrades.

When will planning begin?

2022 shoreline, Dean Creek to San Vicente Creek



Cliff erosion is cutting in behind the riprap.
Red arrows at 97 Beach and 201 Nevada show where those houses on large lots could be moved away from the eroding shoreline.



What is the plan?



Seal Cove beach, Fitzgerald Marine Reserve

House at 96 Terrace,
destroyed by fire in 2018
(20' above sea level per contour map)

New owners plan to re-build in
same location with CDP exemption
(SMC Zoning Regs Section 6328.5)

Status of riprap boulders seen here
on beach is being investigated.



Seal Cove neighborhood west of Ocean Blvd

1979 CA Coastal Records Project



All 4 houses seen here in 1979 west of Ocean Blvd have been relocated or demolished.

Ocean Blvd between the Distillery and San Lucas was permanently closed by 2011 due to ongoing deep landslide, followed by paving of some new inland streets for access.

To the north and south of Seal Cove neighborhood, the cliffs at FMR County Park, which extends south to Pillar Point, can erode naturally with gradual retreat of any trails and fencing. 20

Deed-restricted conditions of approval prohibiting future armoring
added to shoreline Coastal Development Permits
per expectation of the Coastal Commission
(in Moss Beach & Princeton)

- Assumption of Risk, Responsibility, Waiver of Liability, and Indemnity Agreement regarding coastal hazards -- episodic and long-term shoreline retreat and coastal erosion, high seas, ocean waves, storms, tsunami, coastal flooding, landslides, bluff and geologic instability.
- Shoreline armoring prohibited now or in the future.
- Applicant shall remove or relocate development when any government agency with legal jurisdiction has issued final order that structure is unsuitable for habitation or use without shoreline protective device. Any debris that falls from the bluff top onto the beach or coastal waters shall be immediately removed and disposed of properly.
- Recorded Deed Restriction imposing these permit conditions.
- Full disclosure to potential buyers.

Coastal Commission on appeal:

1999: Vassar 101

2012: Nevada 263

2014: Princeton 354 & 358

2020: Arbor Ln 199*

County CDP:

2019: Vallemar Bluff 4 houses

2021: Ocean Bl 989

2022: Ocean Bl at Precita

*Added by CCC on appeal in 2020:

- Prohibit deep piers & tie-back foundation which itself constitutes a form of shoreline armoring.
- Apply prohibitions to adjacent steep banks of creeks/ravines >10 ft high which fall under LCP definition of coastal bluff.

Additional Conditions of Approval

Vallemar Bluff at Juliana, to preserve public coastal access & sensitive habitat:
2019: Four houses approved on 2.5 acres, with conservation easement over the rare coastal prairie habitat, and provision for the public trail to retreat inland when required by bluff erosion, plus deed-restricted prohibition of future shoreline armoring.



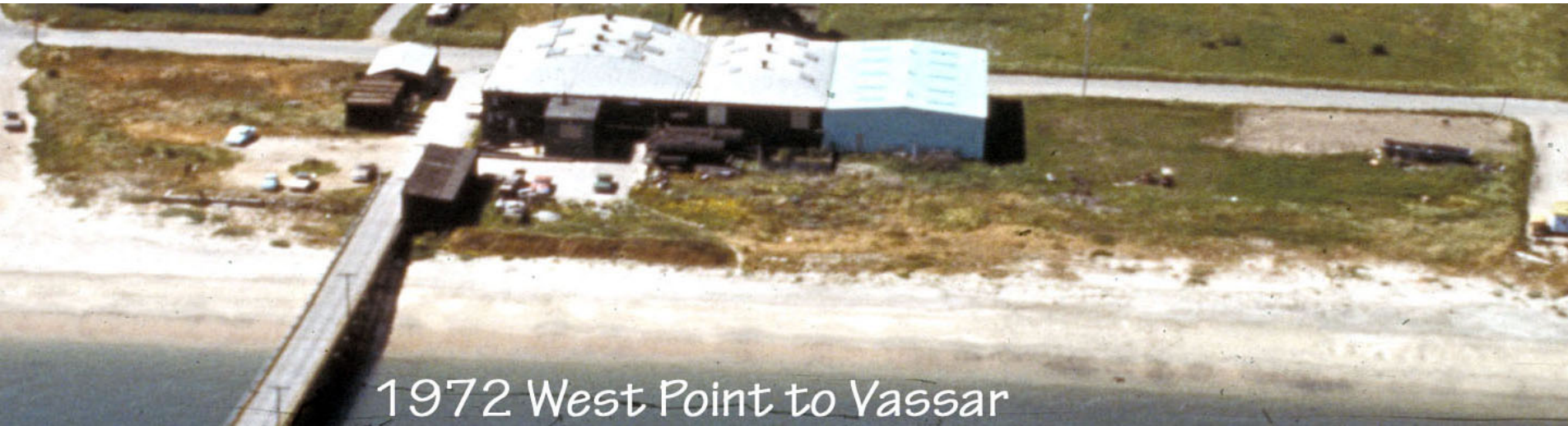
Ocean Blvd between Precita & Bernal
2022: Additional coastal hazard condition of approval for mid-block Ocean Blvd. development:

County shall not be required to maintain access and/or utility infrastructure to serve the approved development in the event that coastal hazards eliminate access to the site for emergency vehicles, residents, and/or guests due to degradation and eventual failure of Ocean Boulevard as a viable roadway.

Princeton Shoreline -- West Point to Vassar (100 block)

This report contains limited comments on western-most block only.

Plan Princeton (incomplete planning effort 2013-2015)
awaits completion of a Princeton Shoreline Management Plan.



remains of Romeo Pier

Princeton Shoreline at Romeo Pier

1997: ZHO approved 7 “warehouses w/caretaker units” on Ocean Blvd, a paper street on the beach. Substandard 25’W lots, all previously under same ownership, now luxury waterfront homes



Emergency armoring added before construction of last building even complete.

1999: an 8th building in this waterfront row, at 101 Vassar, had CDP appealed to CCC and condition added: Deed restricted prohibition of shoreline armoring – a first for the Midcoast.



Princeton shoreline



Lateral beach access at foot of Romeo Pier blocked in 2009 by illegally-placed riprap



... trucked down the street from 380 Princeton Av boulder stockpiles stored there since CCC riprap enforcement action in 2008.

Long-Range Planning -- State & others

2015 Coastal Regional Sediment (Sand) Management Plan for Santa Cruz Littoral Cell
(Pillar Point to Moss Landing)

2018 Ocean Protection Council's State of California Sea-Level Rise Guidance Update

CA Coastal Commission Guidance on Sea Level Rise Planning

<https://www.coastal.ca.gov/climate/slr/>

2018 Sea Level Rise Policy Guidance

2018 Residential Adaptation Guidance

2021 Critical Infrastructure Guidance

USGS Coastal Storm Modeling System (CoSMoS) science-based online mapping tools to help coastal planners anticipate local impacts from SLR and storms.

2021 Half Moon Bay LCP Land Use Plan update certified

<https://www.half-moon-bay.ca.us/154/Local-Coastal-Program-Land-Use-Plan>

See Ch. 7, Shoreline Hazard Policies 7.8 – 7.43

- HMB LUP is particularly appropriate resource due to proximity and overlap with unincorporated Midcoast where HMB city limit cherry stem extends along Mirada Rd and Surfers' Beach.
- e.g. Ensure that the development will not be endangered by coastal hazards (including SLR-induced erosion) over the anticipated life span of the structure without reliance on existing or proposed shoreline protective devices.
(Currently the County only considers a 50-year life span.)

Long-Range Planning -- County

Plan Princeton 2013-2015, then dormant, still lacking shoreline management plan

2016 Adaptation Design Charrette for Mirada Rd area of Miramar: Explore scenario for managed retreat to Alameda Av

2018 SMC Sea Level Rise Vulnerability Assessment: Asset Vulnerability profiles for: FMR, Mirada Rd, Surfers' Beach, HMB landfill, SAM sewer plant

2021 Local Hazard Mitigation Plan:

- “Mitigating the impacts from sea-level rise will take resources and tough land use decisions, starting immediately.”
- “County should consider adoption of higher regulatory standards to mitigate impacts of sea-level rise on redevelopment.”

LCP policies need updating to address sea level rise (such as HMB has done)

- CCC recommends 100-yr time frame for residential development when evaluating coastal hazards including the effects of SLR. The County is still looking at only a 50-yr time frame.
- Why must this wait for completion of the Safety Element update and Princeton Shoreline Management Plan? Wouldn't development of a shoreline management plan (e.g. Princeton or Miramar) itself be an LCP policy?

-- Skipping --

Pillar Point Harbor breakwater and Surfers' Beach erosion/sediment issues and large public infrastructure projects involving Harbor District, OneShoreline, Caltrans, Army Corps



Miramar

In more recent storm, Jan 2023, some restaurant front windows were broken out by storm waves.

2016 high surf



1930's Mirada Rd in front of Miramar Beach Restaurant, with perpendicular parking west of the road and direct access to the wide gently-sloping beach.

Mirada Surf 2016

As the natural bluffs at Mirada Surf retreat, new armoring rocks have been privately placed inland where Miramar is starting to become a peninsula jutting out over the beach. The fixed back beach in front of the revetment prevents lateral beach access except at low tide.



Need to connect Alameda to Magellan to provide alternate interior road connection.

Who will armor the north side of the evolving peninsula?
How long will the County keep repairing Mirada Rd and revetment?

Medio Creek pedestrian bridge closed 2yrs; replacement set to open 2023 in same hazardous location





CA Coastal Records Project

Options for managed retreat become increasingly difficult as infill development continues.

What is the plan?