

Surfers Beach and Pillar Point Harbor Half Moon Bay (El Grenada, CA)

Bob Battalio, PE

Principal, PWA

b.battalio@pwa-ltd.com

Presented to Surfrider Foundation, San Mateo County Chapter

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Who is this dude ?

Professional Civil Engineer (CA,WA,LA,OR) practicing 22 years

Coastal Processes training from UCB, 1985

Principal @ Philip Williams & Assoc., Ltd (PWA), San Francisco www.pwa-ltd.com

Practices management and enhancement of natural aquatic ecosystems,
primarily shores, inlets, lagoons and tidal wetlands, also hazard mapping

Surfer since 1970s

Favorite location - Taraval Street, OB

Inducted, Double Overhead Association (DOA) at Wise Surf Shop, late 1980's

Pacifica resident since 1989

Started surfing Mavericks in early 1990's

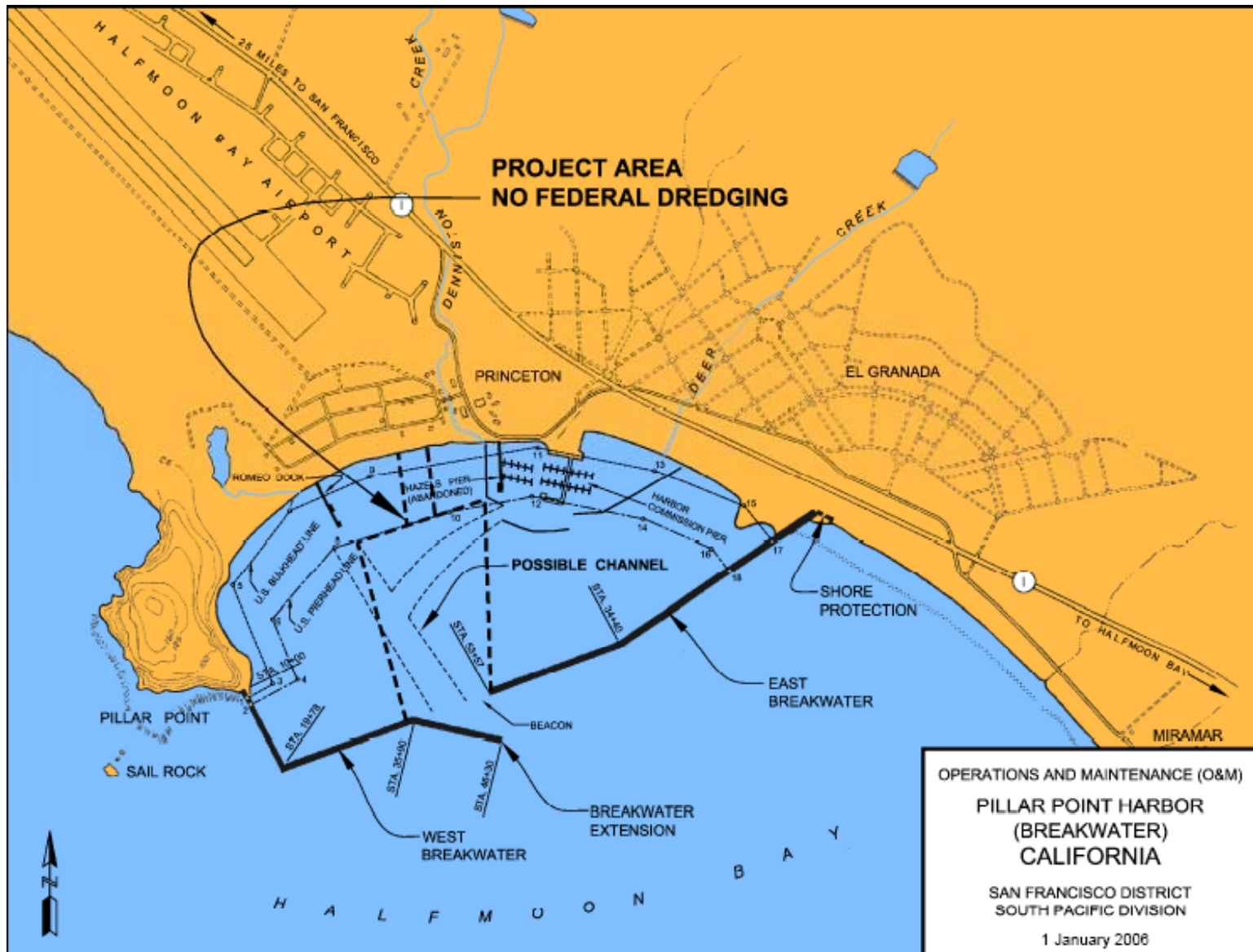
Problem statement

- Pillar point harbor
 - Traps sand supply to HMB littoral subcell, causing sediment deficit and erosion
 - Breakwater causes wave reflection which increases longshore transport toward south
- Result
 - Shoaling in Pillar point Harbor
 - Erosion hot spot at surfers beach
 - Increased erosion in southern HMB
 - Wave reflection improves surf locally (not a problem)

Littoral processes

- Hook-shaped bay between headlands
- Wave refraction and diffraction results in hook-shaped shore planform
- Sediment discharge from streams important sediment supply
- Discharge from streams form deltaic perturbations from hook-shape
- Waves smooth-out perturbations, transport sand southward
- Waves and Sand can move through breakwaters
- Sand deposits in sheltered areas

Pillar Point Harbor



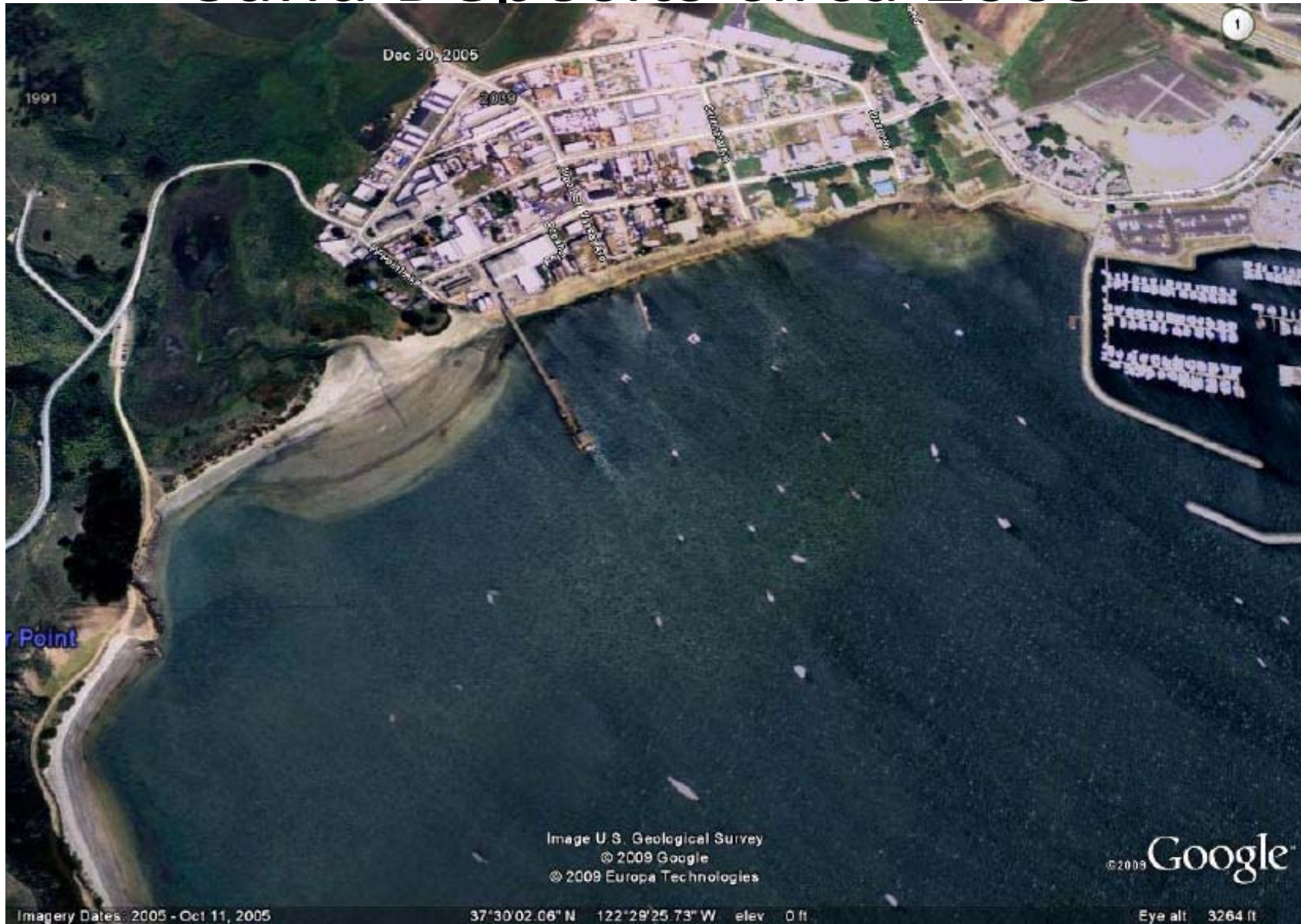
Creeks and historic conditions



5 May 2008

Source: SFEI

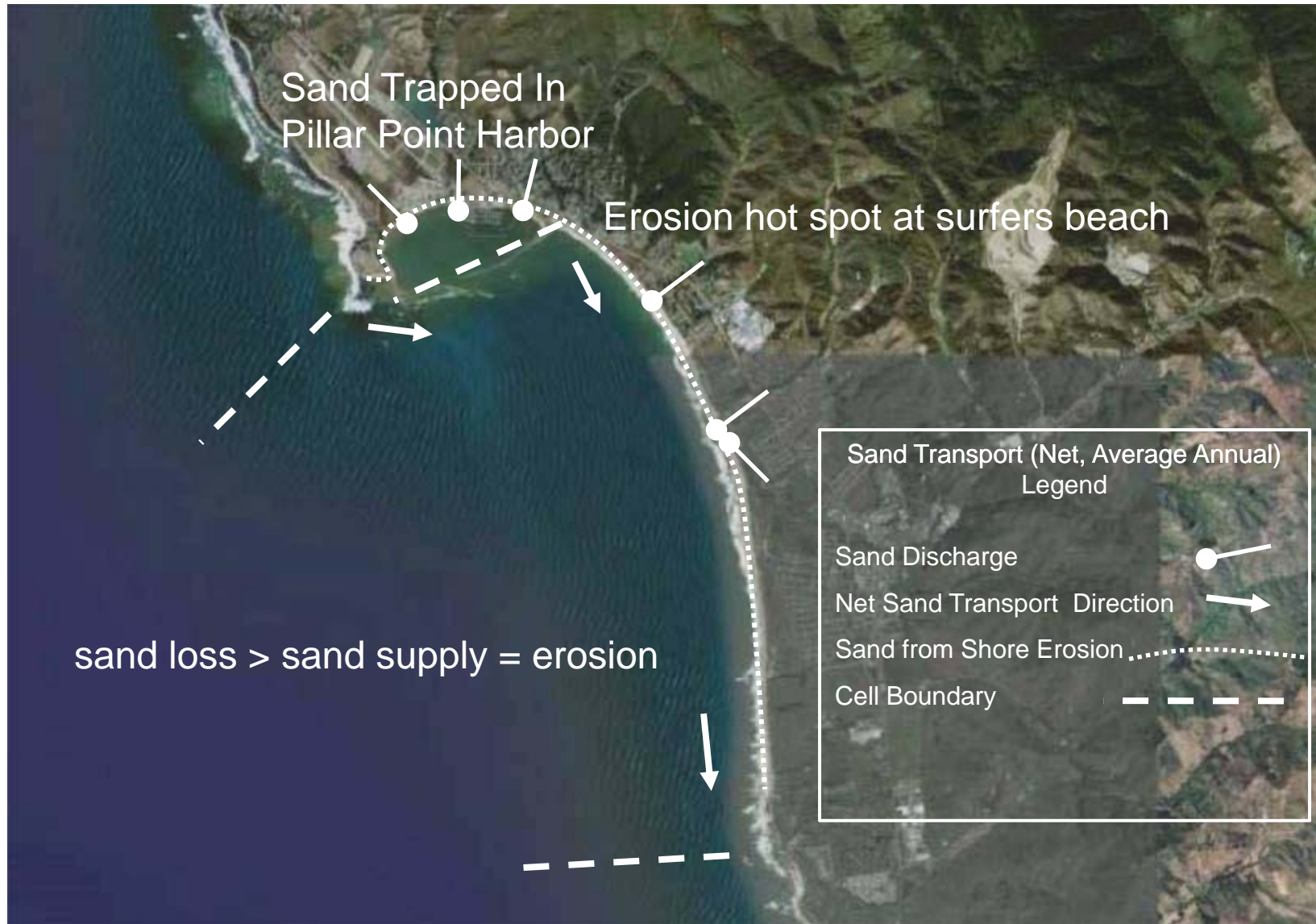
Sand Deposits circa 2005



Half Moon Bay



Half Moon Bay Littoral Cell



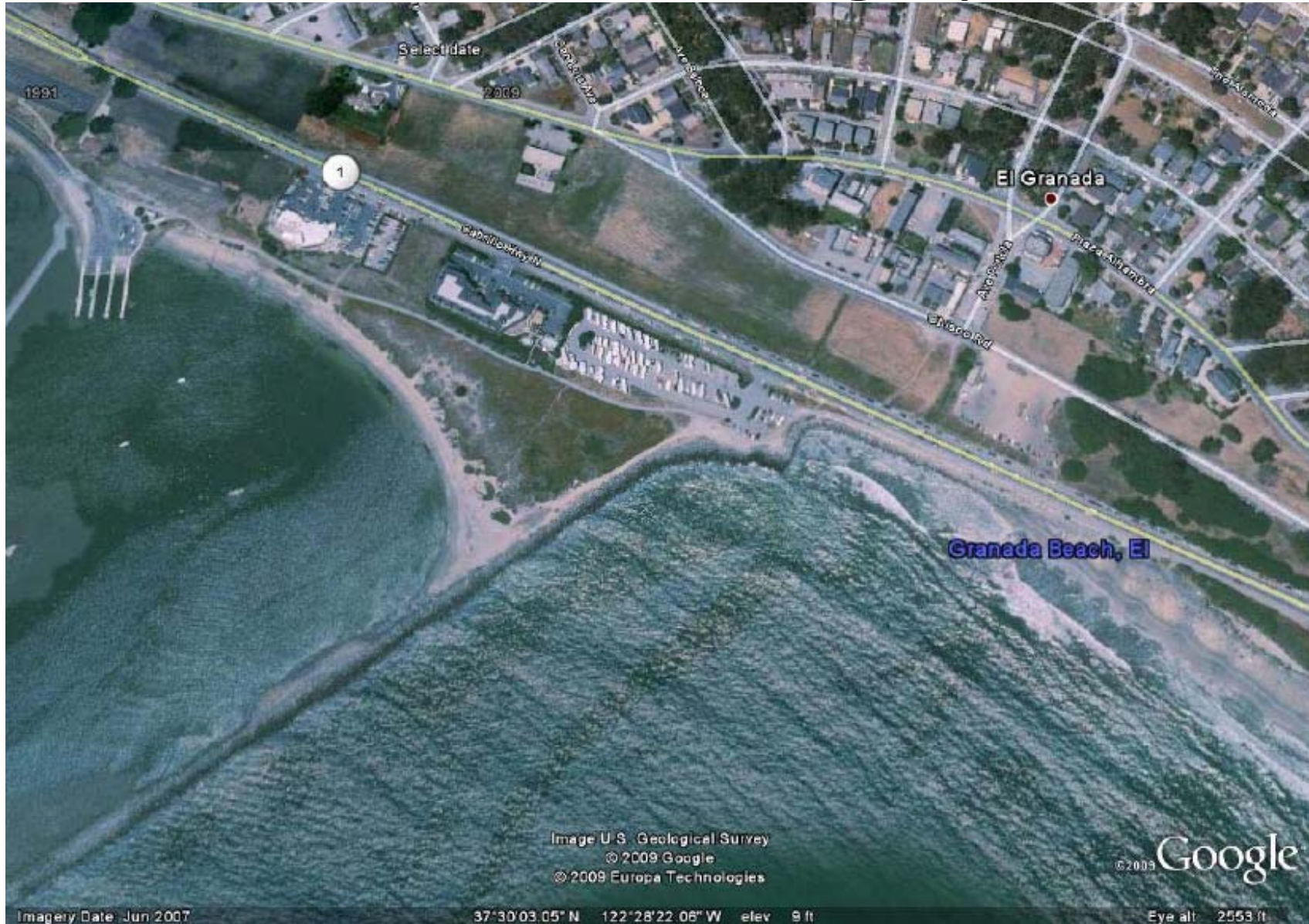
Surf at surfers beach

- Protected from predominate northwest wind
- Reduced swell exposure due to sheltering by pillar point
- Reflection from breakwater causes wave crossing and peaky breakers that peel
- Especially good on south and southwest swells due to exposure plus reflection

Wave Reflection



Recent Photograph



Alternatives - Preliminary

- Remove breakwaters
- Armor road / shore
- Offshore breakwaters
- Offshore reef
- Bypass sand / beach nourishment
- Reroute deer creek
- Reroute highway 1

Recommendation - Preliminary

- Bypass sand, Ongoing
- Daylight and Reroute Deer Creek
- Setback / Reroute Highway 1
- Beach Nourishment



PWA

PHILIP WILLIAMS & ASSOCIATES, LTD

ENVIRONMENTAL HYDROLOGY

550 Kearny Street, Suite 900

San Francisco, CA

415.262.2300

www.pwa-ltd.com

Bob Battalio, PE

b.battalio@pwa-ltd.com 415-262-2313