



Re: Engineering Criteria Review Board Meeting

From Ravazza, Sarah@BCDC <Sarah.Ravazza@bccdc.ca.gov>

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To Ravazza, Sarah@BCDC <Sarah.Ravazza@bccdc.ca.gov>

From: James McGrath <macmcgrath@comcast.net>

Sent: Saturday, February 21, 2026 2:00:21 PM

To: Ewing, Lesley@BCDC <Lesley.Ewing@bccdc.ca.gov>

Subject: Engineering Criteria Review Board Meeting

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Lesley--Please provide this comment to the ECRB for the meeting on February 25, 2026.

Board members: I completed a master's in Coastal and Hydraulic Engineering at the University of California in 1983. While my career involved sediment transport rather than design of coastal structures, I learned the basics of developing a wave climate during a time when much less data about wind was available. At that time computers were rather crude; modern computer modeling is capable of developing far better wave climates--if the available data is used. The wave climate that is presented in the reports before you does not do that, and I think it is substantially flawed in a number of ways that I will describe below. While I haven't used the models they used, I have something more valuable--common sense and local knowledge. I have sailed and kayaked in this area more than 100 days a year for the past forty plus years. I have relied on the commercially available wind data that can be found on the iwindsurf.com web site. That web site has continuous wind velocity and direction data for this area that has not been used in developing the wave climate that is before you. Iwindsurf.com has a sensor at the Berkeley reef, about a mile north of the site, another sensor at Treasure Island, and reports on the wind at Angel Island. Taken together, these sites would allow development of a robust wave climate that is based on many years of observation of actual site conditions, not on modeling.

It is not clear that the city's consultants are aware of this data, although I have certainly told Berkeley staff about it. The wave analysis states, on page 14 in regards to the Berkeley Light (which may be a different station but is very close to the Berkeley reef) "This dataset is also limited to about one year (Nov 2018 to Dec 2019)" There is a commercially maintained sensor on the Berkeley reef owned by iwindsurf, the company that provides real-time wind data to windsurfers and kiteboarders. I have used that site for at least the last ten years. They archive their data, and it covers both wind speed and direction. That is exactly the data that I was taught to use to develop a wave climate in graduate school. It doesn't directly give you wave height at the reef, but you can get there by backcasting using the duration of the windfield. Computers do this much more accurately and quickly than graduate students. There is also an iwindsurf.com wind sensor on Treasure Island and a non-commercial site on Angel Island, which gives you a very good wind field data set, 24 hours a day for more than a decade.

It does make sense to have the site they have outside the gate because the wave field in the Bay is a mixture of swell that passes through the Golden Gate, and local wind waves. The CDIP buoys installed by the Corps and the Department of Boating and Waterways give (or used to) wave heights and directions. Modeling those to the site is simple and accurate. But they must be combined with the wind waves on the bay to create a complete wave climate.

Having sailed in this area for the last 46 years, including windsurfing, wind foiling, big boat sailing, and kayaking, I find their conclusion that a 2 foot wave has a 10 year return period incredible. Two foot waves are not unusual, and certainly not something you only see every ten years. When I kayaked across San Pablo Bay with Penny Wells and met Paul Kamen (in a dinghy) at Point Pinole, we were pushed by a 30 mile an hour tail wind. I've raced in this part of the bay dozens of times, and winds over 25 mph are not rare. Indeed, crossing wave trains where an ocean swell interacts with a wind wave and creates a higher peak are not rare. A coastal engineer who is contracted to develop a wave climate to determine the adequacy of a sheltering breakwater should be aware of, and utilize the windsurf data.

There is another shortcoming which ignores the history of the site. This location with the short breakwater they propose is wide open to waves from the northwest. Spring winds are from the northwest as the thermal winds start up in late February or March, and that is the common clearing wind direction. Indeed, I checked wind at the reef on February 19, 2026, at 9:45. It was blowing 24 miles an hour from the west north west. Blew that strong and from that direction most of the day. I do believe the Treasure Island ferry was shut down as well.

Anyone familiar with the site and the history of the marina would know that the Corps of Engineers built a sheet pile breakwater for exactly that wave direction. I have their May 1978 report on the floor in my office; I'll bring it to the ECRB meeting.

I think the ECRB should take a critical look at the wave climate that has been used as a basis for design.

Jim McGrath