



September 21, 2016

Marc Zeppetello
Chief Counsel
San Francisco Bay Conservation and Development Commission
455 Golden Gate Avenue, Suite 10600
San Francisco, CA 94102

Subject: Role of Daily Ebb and Flow of the Tides in Establishing Tidal Marsh

Dear Mr. Zeppetello,

In this letter I address briefly the assertion made by Mr. Bazel (Statement of Defense to BCDC, page 31 lines 22-28 to page 32 lines 1-3) that Point Buckler Island at the time of acquisition by Mr. Sweeney in 2011 did not meet the definition of tidal marsh as set forth in the Suisun Marsh Management Program (SMMP) prepared by the Suisun Resource Conservation District and certified by BCDC in 1980. That definition reads "[t]idal marshes are defined as vegetated areas within the PMA [Primary Management Area] which are subject to daily tidal action" (SMMP page C-1). In summary, there is no question whatsoever that Point Buckler Island was tidal marsh in 2011 within the SMMP definition of tidal marsh.

The international tidal marsh literature is unequivocal in establishing the relationship between the hydrology of a tidal marsh – the daily ebb and flow of the tide – and the soil saturation conditions that control establishment of tidal marsh wetland vegetation^{1,2,3,4}. This hydrology-soils-vegetation relationship is the basis of every wetland definition, whether tidal marsh or other wetland types. For tidal marshes, the daily ebb and flow of the tides is the water source that establishes the groundwater table and its overlying saturated soil horizon.

In the case of Point Buckler Island, the daily ebb and flow of the tides through the seven levee breaches into the site's nearly 10,000 feet of interior intertidal channels and ditches provided the hydrologic regime to establish the Island's groundwater table and soil saturation conditions that drove the presence of obligate wetland plants throughout the entirety of Point Buckler Island (excepting the eastern remnant terrestrial levee).

¹ W. Lewis, ed., 1995. *Wetlands Characteristics and Boundaries*. National Academy Press, Washington, DC

² D. Batzer and R. Sharitz, eds. 2014. *Ecology of Freshwater and Estuarine Wetlands*. Second Edition. University of California Press, Oakland, CA

³ E. Watson. 2012. *Geomorphology, Hydrology, and Tidal Influences*. pp.35-52 in: Palaima, A., ed., *Ecology, Conservation, and Restoration of Tidal Marshes: the San Francisco Estuary*. University of California Press, Berkeley, CA.

⁴ W.J. Mitsch and J.G. Gosselink. 1986. *Wetlands*. Van Nostrand Reinhold, New York.

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The tidal marshes of Suisun Marsh including Point Buckler Island are subject to daily tidal action through this globally-ubiquitous mechanism of the tides controlling soil saturation and consequently vegetation communities. The vegetated tidal marsh "plain" is a *component* of a tidal marsh and is the land surface on which the tidal hydrology expresses itself through presence of tidal marsh vegetation. Because of the relationship between the daily tidal hydrology and soil saturation conditions, the *surface* of the tidal marsh plain itself need not be directly submerged on a daily basis for the marsh plain to be *subject* to daily tidal action. Tidal marsh plains around the globe exist at elevations above daily tidal submergence, because of this hydrology-soils-vegetation relationship.

Thank you for this opportunity to provide additional insight into conditions at Point Buckler.

Sincerely,

A handwritten signature in black ink, appearing to read 'S. Siegel', written in a cursive style.

Stuart W. Siegel, Ph.D., P.W.S.
Principal Environmental Scientist