

**Photos from the Santa Cruz Harbor Field Tour for the MIACC Meeting on May 30, 2019:
Treated Wood and Alternative Materials Used in Overwater and Waterfront Structures**

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Photo 1 (Google image): The lower harbor was constructed in 1963 and the upper harbor was built in 1973 within the footprint of a bar-built coastal lagoon. The small craft harbor provides over 800 boat slips and 900 parking stalls. Even though the estuary was radically altered by the construction of the harbor, there is still an abundance of fish and wildlife that use the harbor.

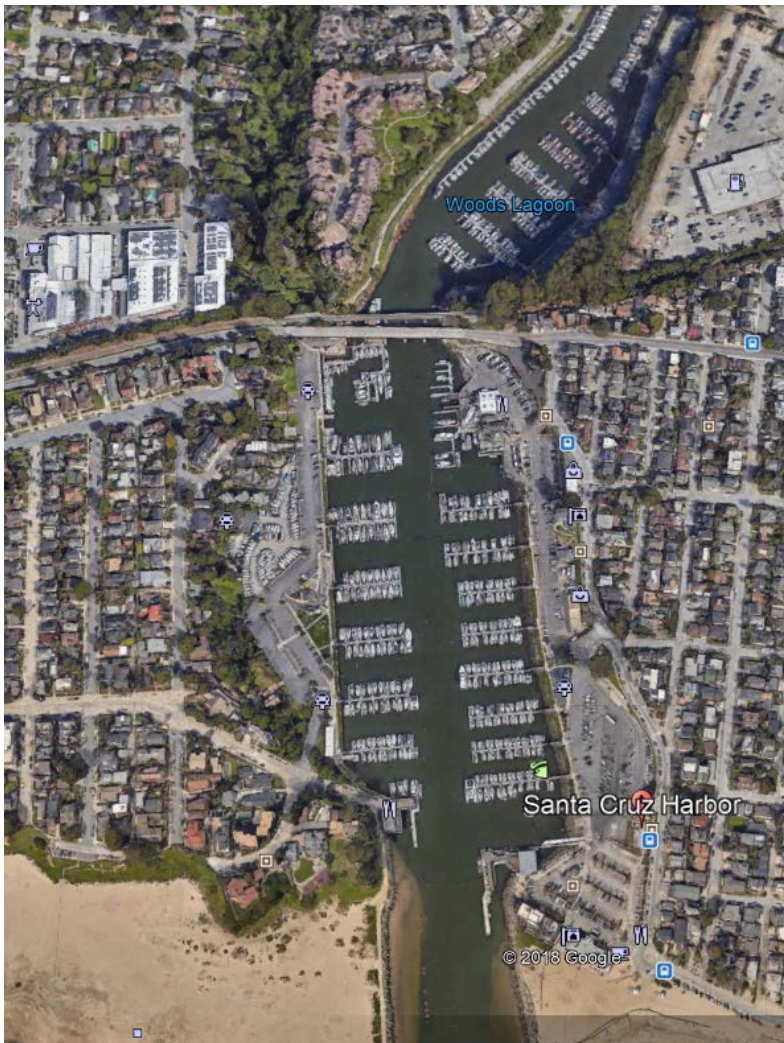


Photo 2 (File photo - Santa Cruz Port District): In the lower harbor, the central portion of the lagoon was dredged to provide greater water depth, while both sides of the lagoon were filled to provide land areas that could be developed into parking lots and ancillary harbor facilities. Initial construction of the harbor pre-dated most environmental regulations that are mandatory for operation of the harbor today.



Photo 3: Several generations of piles are apparent in the harbor. The piles associated with the floating docks and other over-water structures were initially creosote-treated Douglas fir, seen on the right.



Photo 4: In the late 1980s and early 1990s, steel piles were used to replace many deteriorated wood piles. In 2011, a tsunami occurred that caused a great deal of damage; 205 spun-concrete piles were used to replace tsunami-damaged piles throughout the harbor. Most recently, 65 solid pre-cast concrete piles were used to replace damaged or deteriorated piles in 2016. Finally, 80 steel piles with HDPE sleeves are planned to be installed in 2019. These will replace additional damaged or deteriorated piles.



Photo 5: The deck material now used for the floating docks in both the upper and lower harbor is mostly a composite of wood and plastic material that was developed in the early 1990s. This material was originally susceptible to rot and UV-exposure, but has been improved over time.



Photo 6: Decking and structural timber used for overwater structures other than the floating docks are still comprised of wood, and wood is also used to replace deteriorated materials. ACQ-treated lumber was used to rebuild this dock's structural members. Piles are creosote-treated lumber from 1963.



Photo 7: A variety of copper-treated Douglas fir boards were used to patch this deck. Also, non-treated Douglas fir is currently used for patching decking at the harbor. Treated wood is recognizable by the incisions made in the board's surfaces, which allows greater penetration of the preservatives, and greater protection of the wood. Preservative-treated wood may also have a greenish hue owing to the oxidation of the copper.

