

Exiting the Breakwater

Recommended Citation

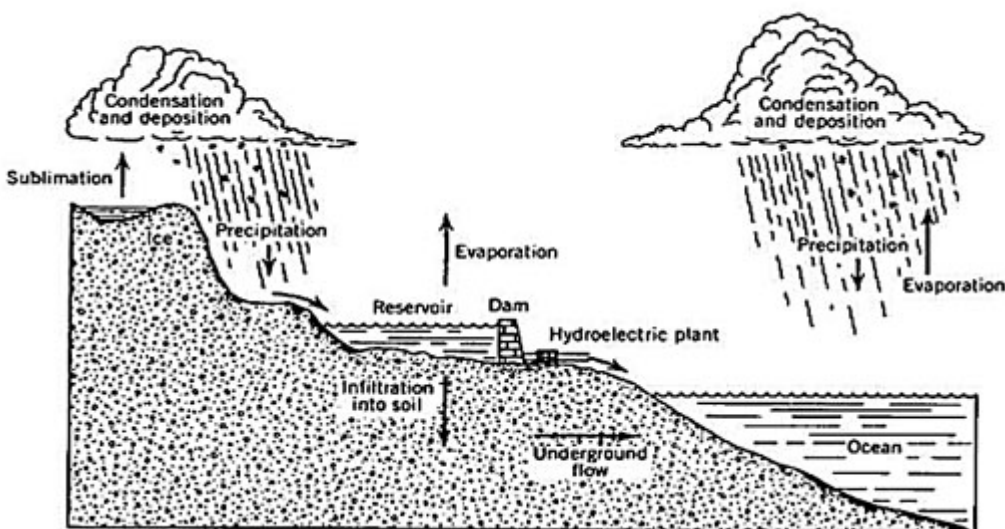
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Exiting the Breakwater

The Marina is protected by an artificial breakwater. Around it you can observe birds feeding, and all kinds of rubbish and froth floating on the water. On some days, the boundary between fresh water from the river delta and the incoming ocean water is visible right around here, too. Ocean water contains much more salt than river water, resulting in a higher density.

California's hydrological cycle

Water in the San Francisco Bay is regularly exchanged by natural forces. On the one hand. The brown/muddy river water sitting on top of the incoming blue/green ocean water is the end result of a long sequence of events starting with rainfall in hills close by in Berkeley and as far away as the Sierras:



Buoys and Markers

Coming out of the breakwater, you can see the Berkeley Reef marker. It is one of many buoys and other navigational aids used to draw sailors' attention to hazards. Buoys are color coded to refer to different kinds of hazards; some are racing buoys used in weekend regattas, others indicate a fishing net or divers under water. Some markers have acoustic signals, for bad weather or fog. Also, a number of lighthouses in the Bay Area make sure that ships can find their way even in low visibility. In the US and Canada, red markers indicate the right side of a safe and sufficiently deep channel as you approach shore. Sailors remember this by the line "red right return". In the rest of the world, the marking is reversed on the approach to shore, assumed to be more dangerous than leaving an anchorage, and is then consistent with red designating port (left) and green designating starboard (green). All boats also carry lights at night, with a green and red light on their starboard and port sides respectively and white mast and stern lights. There are even different formations of these lights to indicate different types of vessels and their size!

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Questions, activities and links

1. How clean is the water that eventually ends up in the Bay? How does it get used between coming down as rain and entering the Bay at the Delta?
2. How many senses does a sailor use regularly? How does this compare with driving, walking, flying?
3. Did you see any pollution floating on a current boundary? What color was the Delta water? What color was the seawater? Was it sunny or cloudy?
4. Was it high tide, flooding, ebbing, or low tide? How did you know?

Below are websites dealing with San Francisco Bay and California water issues:

- [Pacific Institute](#)
Specializes in water policy issues, including their report California Water 2020: A Sustainable Vision.
- [San Francisco Bay Ports Information](#)
Real time (every six minutes) sensor data for salinity, tides and currents for San Francisco Bay.

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