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# Sears Point Wetland Restoration



from **Engineering With Nature: An Atlas, Volume 1.**

by **US Army Engineer Research and Development Center**



## San Pablo Bay, Sonoma County, California, United States

The 2,327-acre property at Sears Point, a site located along the northern edge of San Pablo Bay, had subsided, or sunk, by 6 feet over the course of the past century. A tidal marsh area that had been diked and drained for agricultural, infrastructural, and other uses, it was susceptible to flooding, particularly with the projected rise in sea level in the next 100 years. In 2004, the Sonoma Land Trust (SLT) purchased the site, with the goal of restoring it to tidal marsh. In 2015, after implementing the restoration plan, the levee was breached in two separate locations, allowing tidal flow to return to approximately 1,000 acres of the property. Round marsh mounds were also built to attenuate wind-wave energy and the flow of water, allowing sediment accretion, a process by which sediment settles out of the water, to naturally build up the marsh elevation. The project was implemented by SLT, Ducks Unlimited, and many other partners; it provides flood risk reduction and restores critical habitat for wildlife. In 2016, the Bay Trail was opened, offering recreational opportunities to the community.

Article cover: Marsh mounds and numerous birds. (Photo by Corby Hines)

## Producing Efficiencies

Five hundred marsh mounds were constructed using sediment excavated in place. The mounds were distributed in various locations on the property, including in front of the levee as a protective measure. The mounds were used to slow down the flow of water so that 6 feet of sediment could accrete naturally on the site, providing optimal conditions for vegetation to take root and propagate, eventually making the marsh fully functional. By altering agricultural practices and implementing watershed management efforts, 400 acres with seasonal wetlands were also improved, along with nearly 1,000 acres of upland grasslands and riparian corridors. A sloped levee offers flood defense to nearby roads, rails, and farmland while providing upland habitat and refuge for wildlife during storm events.



Marsh mounds emerge from stormwater in early 2015.

(Photo by Stephen Joseph)

## Using Natural Processes

The 500 mounds were designed to slow waves and water flow, so that the sediment will settle out of the water and naturally build up the marsh. Accreting the sediment through this natural process will ensure that the grain size is optimal, and that the chemistry and elevation develop exactly as the marsh requires—all necessary conditions for marsh vegetation to take root and propagate to form a fully functional marsh. The mounds may also provide refuge for wildlife in an otherwise open tidal basin and restore hydraulic functionality by promoting the creation of channels over time.



Sears Point after 2014 storms.  
(Photo by Stephen Joseph)

## Broadening Benefits

This project provides social benefits: the public can now hike and enjoy nature on the Bay Trail. Interpretive talks and bird walks have also been presented, through which the public can walk the tidal marsh and ask docents questions. The site offers economic benefits, as it acts as a buffer against flooding associated with extreme weather events and sea level rise;

environmental benefits are realized through an increase in carbon sequestration and an improvement in the quality of water entering the Bay. Environmental benefits also include the provision of habitat for endangered species such as the salt marsh harvest mouse and the Ridgway's rail.



View of restoration site from top of Cougar Mountain, 2015.  
(Photo by Corby Hines)

## Promoting Collaboration

The funding for the land acquisition and its restoration came from numerous federal, state, and private partners; execution of the project was primarily a collaboration between SLT and Ducks Unlimited.



Construction of the tidal basin.

(Photo by Robert Janover)



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