

# The Sonoma Baylands

## Restoring a tidal marsh while sea level rises *An update on the Sears Point Restoration Project*

by Julian Meisler



Looking southwest toward Mount Tamalpais, you can see the subsided baylands at Sears Point that are slated for tidal marsh restoration. The railroad in the foreground will be protected by a new levee. Photo by Scott Hess Photography.

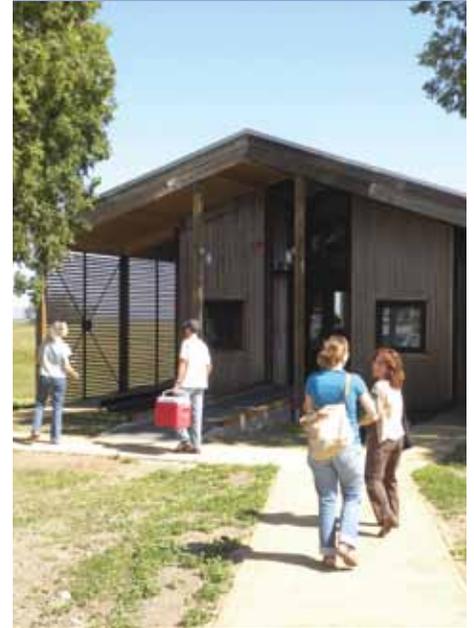
While restoring a thousand acres of tidal marsh along the margins of San Francisco Bay might seem as easy as punching a hole in the levee and letting the tides return, like most everything in nature, it's not that simple. Since completing the purchase of 2,327-acre Sears Point Ranch in 2005, the Sonoma Land Trust has been busy developing and refining plans for its restoration. And the plans are *huge* — nearly 1,000 acres of tidal marsh and more than 1,300 acres of enhancements to seasonal ponds, riparian drainages and grasslands extending from the property's 400-foot ridgelines to the baylands that lie well below sea level.

Levees must be built to protect highways and railroads, large pumps must be installed to push stormwater out of the sunken baylands, and the inevitability of sea level rise needs to be addressed. While certainly tricky, these are not insurmountable hurdles and we are tackling them all with practical and innovative solutions.

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## Welcome to the Baylands Center!



SLT staff get acquainted with the new Baylands Center. Photo by Sheri Cardo.

After several years of planning and fundraising, our beautiful Baylands Center on Sears Point Ranch is finished and ready to open its doors. Designed *pro bono* by renowned architect Olle Lundberg, the building appears as a natural part of the landscape, and every angle is unique and pleasing to the eye.

The building was envisioned primarily as an education center and can accommodate as many as 48 people. It will be available for the Sonoma Land Trust and our

*(Continued on page 3)*

T O P R O T E C T T H E L A N D F O R E V E R

## Sea level rise and subsided baylands

Beginning in the mid-19th Century, an effort began to “reclaim” the bay by constructing earthen dikes within shallow tidal marshes, including those at Sears Point. Water on the landward side of the dikes was pumped out and the former tidal marshes became farmland — what, today, we call diked baylands. Presently, only about 20 percent of the historic tidal wetland habitat remains intact.

An interesting and unintended effect of this reclamation was that the peaty soils, exposed after millennia underwater, began to decompose and the land sunk! In the North Bay, the

subsidence was not as bad as elsewhere, such as the Delta. Nonetheless, the flat land at Sears Point today sits several feet below sea level and this has a significant effect on how we approach our tidal marsh restoration.

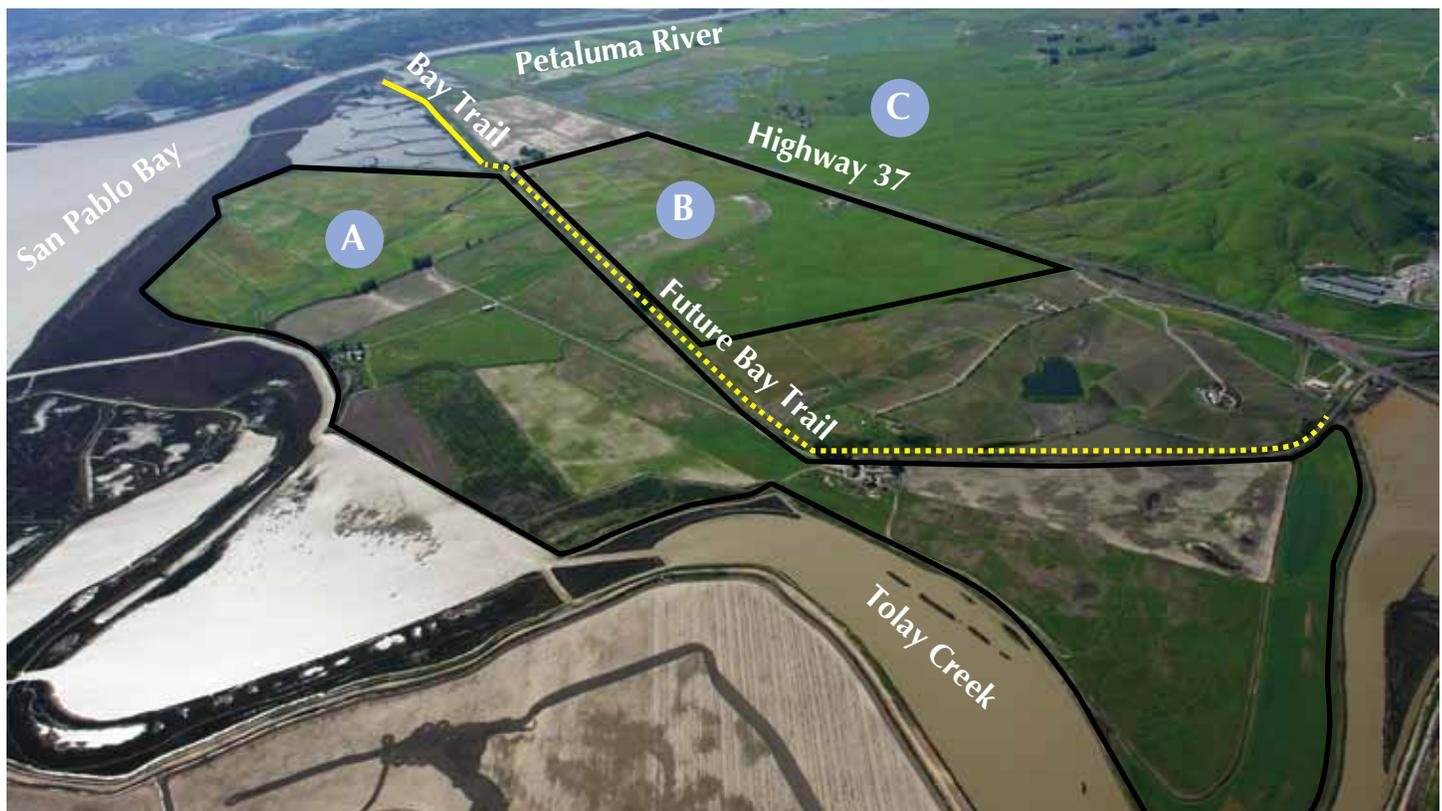
## Building the future marsh

Does it surprise you that tidal marsh stores more carbon from the atmosphere than almost any other habitat type on earth? It also protects homes, roads and people from large winter storm surges that cause enormous flooding damage and, here, it will also provide habitat for the endangered California clapper rail and salt marsh harvest mouse. These are just some of the reasons we are working

to restore this vital natural system.

Since tidal marsh plants will only grow if the mud is exposed during low tide, the sooner we can raise the ground elevation above sea level, the better. This means we must bring sediment to the site. Hauling it in is prohibitively expensive, so we depend on the tides to deliver it. But can we depend on this natural process to keep pace with expected sea level rise? No one can be sure, but we are making efforts to kick start the process.

Wind causes waves in the bay. Waves stir up mudflats creating muddy water. Muddy water travels with the tide. Our goal is to let the muddy water in through our new



The Sonoma Land Trust has protected more than 5,000 acres in the baylands at the northern part of San Pablo Bay. A = Nearly 1,000 acres of future tidal marsh connected to the earlier Sonoma Baylands restoration site in the background; B = Separated from the tidal marsh by the railroad track and the soon-to-be-built habitat levee, this area will be a focus for seasonal wetland enhancement; and C = Sears Point uplands, nearly 1,000 acres of grasslands, seasonal wetlands and riparian drainages. Photo by Robert Janover.



Existing tidal marsh dominated by pickleweed in the vicinity of Sears Point. Photo by Stephen Joseph Photography.

levee breach and rob it of its sediment before it flows back to the bay. To do this, we need calm water at our site, so we plan to create hundreds of windbreaks in the form of marsh mounds, sidescast ridges and counter levee mounds. These are all names for dirt mounds randomly and purposefully placed throughout the site. Not only will these block the wind, but they are also islands where plants can establish themselves. Rooted plants stabilize and help hang onto sediment. But standing vegetation also acts like a comb. As sediment-laden water passes stems and branches, the sediment sticks and takes us closer to our goal. In fact, this role of plants is so important that we hope to grow as many plants on the site as possible before we let the full brunt of the tides in.

### A “habitat” levee

Because of existing infrastructure, we have to be extremely careful about

letting the tides in. We must build a new levee even as we breach the old one in order to protect the railroad, Highway 37 and neighboring private lands. While levees typically serve as little more than hulking, steep-sided, flood protection structures, we are trying to mimic more natural transitions from tidal marsh to land. Our levee will slope gently from crest to bottom, more gradually in some places than others, with the effect of having an undulating base. Our intent is manifold: Create habitat on the levee side, provide a refuge for marsh wildlife during the highest tides and storm surges, and greatly reduce levee erosion. In the shadow of sea level rise that may be as much as 16 inches by mid-century, and nearly five feet by 2100, these benefits become all the more important.

### Delivering the project

The extent to which we can implement these and other innovative techniques depends on funding.

Tidal marsh restoration is expensive. With our partners at Ducks Unlimited, the U.S. Fish and Wildlife Service, and the California Department of Fish and Game, we are pursuing every avenue. Earlier this year, we added a significant grant from the State of California to our existing funds while our partners at Ducks Unlimited and USFWS did the same with two new federal grants. With several additional grants

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*(Continued from page 1)*

partner groups to use for meetings, lectures, presentations and special events.

Surrounded by spectacular scenery, the back deck is perfect for relaxing and wildlife viewing. On a recent afternoon, a coyote pup amused herself in the adjacent field while a kestrel hunted for dinner. As the tidal wetlands restoration project moves forward, this stunning new center will provide front row seats to all the activity. *Stay tuned!*



under consideration now, we are well on our way toward groundbreaking next summer.

Sears Point is a special place with a culturally and biologically rich history. Just six years ago, it was threatened by a controversial development that would have brought dramatic change.

With the help of many partners and members of our community here in Sonoma County and throughout the Bay Area, the Sonoma Land Trust was able to protect it forever. Restoration is the next step. With the completion this year of our new Baylands Center and our future plans for public access, a wonderful

new opportunity is coming for residents of all ages to connect with, witness and enjoy the changes taking place in the Sonoma Baylands.

*Julian Meisler is SLT's Baylands program manager.*

## The Bay Trail at the Sonoma Baylands



*The public Bay Trail along the Sonoma Baylands will extend to nearly 4 miles in length once the new levee is completed. Photo by Sheri Cardo.*

There is no better way to understand land subsidence than to see it firsthand. Immediately west of Sears Point is the Sonoma Baylands, a decade-old restored tidal marsh. Along the levee that separates it from neighboring farmland (also owned by the Sonoma Land Trust) is a segment of the Bay Trail. The 1.3-

mile (2.6 miles roundtrip) jaunt offers a striking view of the contrast between subsided baylands and growing tidal marsh and, at the end, a sweeping view over our future tidal marsh. Once our levee is built, the Bay Trail will continue another 2.5 miles, offering one of the Bay Area's best opportunities to witness the

evolution of a restored tidal marsh.

To access the existing section of the Bay Trail, turn off Highway 37 on Railroad Avenue just west of Lakeville Highway (at Port Sonoma). At the gate you will park and walk down the access road to the levee trail. The trail is open for public use every day.