

What we'll lose at the water's edge

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By Ryan Kost

This story begins with the color blue. When we map the future of San Francisco Bay, we take what we have now and we add a layer of blue — it's almost always some shade of blue — to give us a sense of where the water will be in 25 years or 80 years, depending on this predictive model or that.

That's the best we can do when it comes to mapping the future — just add some blue. But that shading only really means anything if you know what was there before, or what's there now.

Before San Francisco Bay was a bay, it was a valley. Some 20,000 years ago, the earth's glaciers were bigger, its seas lower. The Sacramento River rushed through the valley, 20 miles past where the Golden Gate Bridge is now, and met the ocean. Maybe you've heard this before. I hadn't until recently. It's a good reminder that change is constant and nothing lasts forever, even if we know these things to the point of cliché.

Last month, I spent four days wandering around the bay, stopping here and there. I started on a whim. Got in my car, a beat-up old thing that got broken into the first night I parked in San Francisco, and began driving.

I didn't have a plan. I just wanted to know what would be under all the blue.

I got as far north as Novato and as far south as Sunnyvale and Alviso, where the Guadalupe River calmly meets San Francisco Bay. I walked a lot. Spent a couple hours on a boat, too. I saw schools in the blue and Jack London Square in blue. Facebook HQ and the Port of Oakland, both blue. I saw planned communities that never planned for rising seas. And I saw marshes and wetlands healing themselves, reeds in sync with the current.



As I drove to **Mission Bay**, I tried to imagine where the water might be in 25 or 80 years, where it might meet my car. I parked and walked out onto a public fishing pier. It was warm that day, the sky was clear and never-ending, just a few clouds on the horizon.

Everything there felt new or remade or in the process of being reinvented. Not just the Chase Center. UCSF, too. There were new bicycle lanes, fresh wood chips. It used to be you could walk out to the water, but it's gated now while a park gets built — one of many.

Much of this area is blue as soon as 2045.

I walked a short bit to a small garden just outside the Ramp restaurant that I'd written about a couple years ago. Topher Delany, a landscape architect, has been continuing a tradition of filling this small place with art and life. "Why should we have these unsightly, sad places until somebody decides what to do with them?" she asked back then. "We should take action and make them as beautiful as we possibly can."

The land belongs now, as it did then, to the Port of San Francisco. I hadn't seen it in a while. It was fuller and cooler and greener. White butterflies flapped in and out of view. Delaney was there. She introduced me to her new gardening partner. "We're holding on," Delaney said. I stayed for a moment, as they pruned and tidied up the garden. They saw me off with some heirloom tomatoes.

One day, I realized, this place would be washed away.

The wind was fast at **India Basin Shoreline Park** and made the trees noisy. Seagulls soared overhead and a bird made a sound I'd never heard before.

Two women looked on as children slid down bright, metal slides. One rocked a stroller with her foot. I wondered what they might be talking about.

There was a small sliver of wetlands near the park, a tiny tidal pool surrounded by grass. A sign marking the San Francisco Bay Trail said that a century ago the bay was home to 200,000 acres of "tidal marshes, vernal pools, creeks and streams." Close to 100,000 acres of seasonal wetlands rimmed the water.

And then the sign said this: "Today, less than 20 percent of those habitats remain."

On the way to **Candlestick Point State Recreation Area**, I passed warehouses on Ingalls Street. One day, maybe in the next 45 years, the water will meet them with a predictable consistency, and the salt will rust and eat their corrugated metal frames.

I passed homes there, too. One had a bouncy house outside next to a tent and some folding chairs. A few red balloons drifted in the wind.

Candlestick Point was busy. A family had a barbecue going, adults laughed and children chased each other. Cumbia was playing on the radio.

The grass was yellow, but the water blue as ever. I watched a child — his red shirt against the blue — hike up his shorts as he waded in, step by step, so careful.

It wasn't until I got to the pier at the very top of the park that I could smell the salt in the air. People watched their fishing poles patiently, and birds fished alongside them.

One day, this park will be a buffer, holding back the sea, so that it doesn't get as far as the neighborhood being built nearby, in the footprint of the stadium where the Giants and 49ers used to play ball.



I got in my car, threw another dart and started driving to **Foster City**.

Foster City feels like a dream, and in some ways it is. We dreamt it up. We sketched out a community, packed marshes full of earth and built it just above sea level.

It's a beautiful dream. I watched a windsurfer glide across still water. People took boat tours and selfies. A seawall wraps around it all, separating and protecting the city from the bay. I saw it, rocky and uneven, as I drove along Bach Park Boulevard. As the bay grows, the seawall won't be enough; it will have to grow, too. The city has been working to fix the issue for years. All the while, new construction continues. There are new condos for sale just across the street from the senior center.

In some parts of Foster City, the sage green wetlands nearly meet the road.

Two powerline towers, giant and skeletal, sat out in the green. I watched as someone made their way to them, walking over rotting and cracked wooden planks. The person stood for a moment and then began to dance.

On the other side of the road was a church, and outside it an altar to the Virgin Mary. There were flowers at her feet and an arch made of vines covered the shrine. I thought about all the statues they find at the bottom of the sea in documentaries, draped in seaweed, home for fish and coral.

As I left Foster City, I drove over a bridge and saw homes right along the water. Most had boats. At least they were ready.



At the western end of the Dumbarton Bridge, there is a vast natural preserve, full of winding inlets and so many tall grasses, every shade of gold and green.

Just beyond all of that is Facebook's **Menlo Park** headquarters. Frank Gehry designed the campus, but it looks like a series of office buildings all the same. It's hard to reconcile the two scenes: on one side, rustling reeds and on the other, vast, empty parking lots full of electric car hookups.

Those wetlands will soak up the bay as it rises, but eventually — possibly by 2045 — the blue will grow high enough to meet Facebook, along with the **East Palo Alto** neighborhoods just a mile away.

The bay will flood corner stores and hair salons. It will flood family homes. It will probably flood Costaño School and 49ers Academy, where murals decorate the walls and the school's name is spelled out in a big, imperfect mosaic.

A few streets away, among single-family homes each decorated in its own way, somebody had set out a “slow” sign for traffic. It was shaped like a turtle.

A few blocks farther was a salvage yard. The place was closed for the day. The fence, high as it was, was also ringed with barbed wire. It wouldn't be much good in keeping water out. There was a big tree to one side. I wish I knew more about this stuff so I could tell you what kind. All I know is it was a tangle of branches, its leaves long and slender and it grew small, white flowers.

I wondered what it must be like for a tree to drown, and then I drove home.



A week later I made my way out to the **Emeryville Marina and Park**, past Pixar and the Ikea that sits on an old Ohlone shell mound. I could see the Port of Oakland's cranes and San Francisco's silhouette from the park. Seabirds perched on the beach scrub that held the ground together.

Almost from the start, as I looked out at the bay, I knew I wanted to get on the water somehow. Liam O'Donoghue was the answer. He hosts a history podcast, “East Bay Yesterday,” and lately he's been guiding historical boat tours.

Our boat was named Pacific Pearl, and once we were far enough from shore, it picked up speed and bounced as it cut through the waves.

O'Donoghue spoke as we pushed out into the expanse. He talked about how the bay is 30 percent smaller than it was 150 years ago. Mountains filled it up — upstream hydraulic mining sent sediment down the rivers until finally it all settled in the bay. The bay, he said, is “an ever-shifting, ever-changing organism.”

We idled for a moment by the **Berkeley Pier**. It's been closed to the public since 2015, too deteriorated, too risky, and even then only the first 3,000 feet were accessible. Out in the bay though, you see all 3.5 miles of it, built in 1926 to take commuters to ferries. All that's left are segments of its concrete spine, wind-chipped and rust-colored.

I thought about the valley we floated above.

Nothing lasts forever. Not the valley, not the pier, and probably not **Treasure Island**, either.

From the water it's easy to see how precarious its future is. Another dream we dragged into reality. This island didn't exist 100 years ago. It was built from 260,000 tons of quarried rock, filled with sand and topped with soil. The island is so low, so uniform, so unimaginative only humans could have made it.

We built the island and then we built a small city on it — the home of the Golden Gate International Exposition, an optimistic symbol of human ingenuity. This was a place with tree-lined walkways and reflecting pools, with crisp white buildings and fine art. This was a place that existed from February 1939 until September 1940. We called it The Magic City.

By 2045, the blue will have begun to take the island back. We have plans for a new sort of magic city on the island, thousands of housing units and tens of thousands of people. To do this, to keep the magic alive, we'll have to pack the island full of more earth.

On the way to the Port of Oakland, we passed by Yerba Buena Island. I noticed the island's sharp edges, its unevenness. We didn't make that island.

The **Port of Oakland** is one of the 10 busiest container ports in the nation. The only way to feel as you ride through it is small. The cargo ships are impossibly large. Their anchors look nearly as big as cars and the cranes like dinosaurs. Bigger maybe.

Chronic flooding could begin within 25 years; the water comes within a few feet of the port's docks as it is.

We erased the bayline to make this port. Now it's just piling after piling. All this used to be packed with oyster beds, O'Donoghue said. Wetlands, too. The oysters would filter the water and we'd pick them for food. But we picked the place clean by the early 1900s. We filled in

the marshes and wetlands, and now we're trying to bring them back.

A softer coastline is a more forgiving coastline. The water can get more creative with where it goes.

"The future of the bay," O'Donoghue said, "could look a lot like the past."

On the way back to Emeryville, we passed houseboats sitting still on the water. Their owners waved and we waved back. Rowers shot through the water and I spotted Jack London Square. (A couple days later, I'd visit the square, see people lounging on the grass and vendors selling clothes and crystals and chains. By 2100, the water could reach up and into the square and all the way to Interstate 80.)

On my way home, I noticed my pants were stained with salt.



In San Rafael, near **Pickleweed Park**, I saw more homes resting right next to wetlands, tall grass giving way to the blue bay, a slight berm for a barrier. Just like back in Menlo Park, and just like I'd find in Alviso. Again and again, I saw schools in blue, homes in blue, youth centers, too. In Alviso I passed by Maria Elena's, a small Mexican restaurant with bright yellow walls. They'll be blue, too.

And in **Bel Marin Keys**, I found the same sort of dream I'd found in Foster City. This place, too, was planned. Work began in the 1950s and stretched well into the 1980s. There's so much green, the Keys feels nearly tropical. Homes back up to a placid lagoon; most have boats docked outside.

In an unfortunate twist, not only is the water rising, but the Keys community is sinking, as the fill it was built on settles.

To get a small idea of what this place looked like before we remade the landscape, I stopped at Pacheco Pond, a wildlife preserve. The whole area was full of birds: great white egrets, Canada geese, Buffleheads, American pelicans. They swam in the pond and flew overhead, a glimpse back in time undercut by office buildings in the distance.



I drove north and east toward **Vallejo**. Just off Route 37, I saw a boat on the side of the road, resting in the scrub. Her name was EDITH-E, and she'd seen better days. The hull was cracked open, her paint eaten away by the sun. I hoped someone might find time to fix her up. I wanted her to be ready for the blue.

The views from Route 37 are beautiful, and they tell the story of decades of work restoring and conserving nearly 15,000 acres of wetlands along San Pablo Bay. The grasses stretch as far as you can see. Blue pools stand out against the salt marshes.

There are lots of plans for dealing with the blue. Of course there are plans. We have plans to build sea walls before the water comes. Plans to soak up the water with new parks and revived wetlands. Chase Center was built just high enough to keep out of the blue. Foster City is working on its levee. Treasure Island is doubling down on its dream, while Bel Marin Keys works to undo theirs.

And if these plans fail, there are always more where they came from.

In Venice, Italy, St Mark's Square floods more than 60 times a year. (One hundred years ago, it was only four times annually.) Eventually you just start wearing rubber boots.

In the waters beyond Venice, they're building a series of gates to help control the tide. They call the project Mose, a reference to Moses, the man who the Bible says split the Red Sea. By 2022, they'll have spent \$7 billion to do what he did.

In the Netherlands, they have their high-tech flood barriers, too. But more and more, the plan is to let the water in with lakes, garages, parks and plazas that double as reservoirs.

I thought about both on my last stop, Sunnyvale's **Baylands Park**. Just beyond the park is a vast salt marsh. You can float above it, on a long wooden walkway. It was dry for now, just scrub against so much bleached earth.

But it will be ready when the blue comes.

Ryan Kost is a San Francisco Chronicle staff writer. Email: rkost@sfchronicle.com. Twitter: [@RyanKost](https://twitter.com/RyanKost)