

Bolinas Lagoon

1834 – 2015

Events that shaped the restoration effort



Acknowledgments

This timeline would not be possible without the help of many community members and partners organizations:

The Bolinas Museum

Bolinas Lagoon Foundation

The Seadrift Homeowners Association

Audubon Canyon Ranch

The Bolinas Lagoon Advisory Council

The State of the Lagoon Meeting Committee

Farallones Marine Sanctuary Association

Marin County Parks

Dedicated to Bolinas Lagoon and the communities that support this beautiful natural resource.

Native American Coast Miwok people lived beside Bolinas Lagoon for perhaps two thousand years prior to the arrival of Europeans. During this time the lagoon was a place of extraordinary abundance. Its waters and ancient forests were inhabited by thousands of birds, fish, insects, and animals including elk and grizzly bear. The Miwok lived from the lagoon's natural resources and prospered in harmony with its habitats and species. Today residents and travelers still feel this connection to the land and to Bolinas Lagoon, but its fate rests in our hands.

This timeline seeks to capture those people, organizations, and events that have impacted the lagoon and shaped the long standing restoration effort to save this astonishing ecosystem. Most historic photographs in this timeline are courtesy of the Bolinas Museum history archives. Some images have been cropped for emphasis. If you have contributions to this living document please share your memories so that we can continue to capture the importance of Bolinas Lagoon history to help preserve it for future generations.



**Dennis Dierks
Miwok Morning, 1991
Pen and Ink
2012.002.0001₂.**

Art by Dennis Dierks. Courtesy of Bolinas Museum

Arrival of European settlers. Rafael Garcia, who was awarded Rancho Baulines through a Mexican land grant, is the first non-native settler in the Bolinas area. He and his family introduced agriculture and livestock to the vicinity¹. Rancho Baulines boundaries defined Bolinas until around 1917 when Willow Camp established its own post office under the name Stinson Beach. At right is a map of the Rancho Baulines boundaries surveyed in 1894-95².

1834



There was a time when the timber of this township was bountiful, and its forests grand and extensive....In the days of the pristine glory of this forest primeval it was no uncommon thing to find trees fifty feet in circumference.

J.P. Munroe-Fraser
History of Marin County 1834-1880
Alley, Bowen & Co., 1880

Garcia and family move north to present day Olema and give the 8,911 acre Rancho Baulines to his sister Ramona and brother-in-law Grigorio Briones₁. Their homestead, the heart of Rancho Baulines, is by Pine Gulch Creek, across from today's Bolinas-Stinson school. Briones converts land to pasture for his herds of cattle, horses, and sheep, significantly increasing sediment flow into the lagoon.

1837

At this time the lagoon's tidal prism (volume of water moving in and out of the lagoon during a tidal cycle) is estimated at a balanced equilibrium of about 3.7 million cubic yards (MCY)_{3, 15}. NOTE: Roughly 200 gallons are in one cubic yard of water!

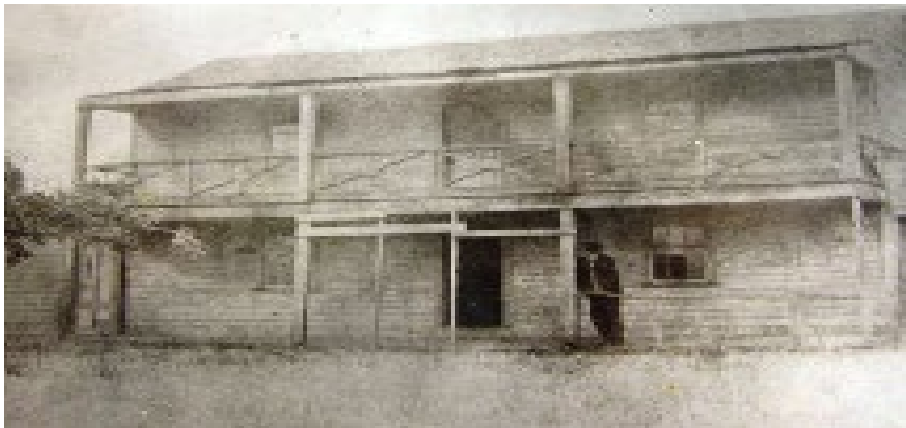


Photo of the Briones house, built around 1852, and still serving as a home today₂.

The California Gold Rush brings thousands of people to San Francisco creating an insatiable demand for pier logs, lumber, firewood, and food. Because of the lagoon's proximity and ease of vessel access, logging begins on Rancho Baulines. Hundreds of men arrive with teams of oxen to cut and drag redwoods. Other trees become cords of firewood to be shipped to the city¹. Logging causes severe sediment delivery to the north basin. Between 1849-1906 the average rate of sediment accumulation was 6mm/yr to the lagoon's 400 acre north basin area causing a 0.5 MCY reduction of tidal prism by 1906¹⁵. At right, a photo taken between 1896-1898 of a logging road and team of oxen, and, below, loggers perched on a large redwood tree stump².



Courtesy of Wilkins / Page Families and Bolinas Museum

1849



Courtesy of Bolinas Museum

Of all these [trees] the major portion has long since been chopped out, and the places which knew them shall know them no more forever, nor will others spring up to take their place – “Peace be to their ashes.”

J.P. Munroe-Fraser
History of Marin County 1834-1880
Alley, Bowen & Co., 1880

For more than 80 years beginning in 1849, Bolinas economy depends on maritime traffic, which supported the areas farms and ranches. At times, 10-15 boats came in and out of the lagoon daily, carrying lumber to San Francisco, and bringing back supplies and people.

A warehouse and lighter wharves at the lagoon's north end were abandoned by 1853 because of sedimentation. The lighter wharf became State Historical Landmark #221, its remnants can be seen below on the left with the Wilkins ranch at the right.

1851



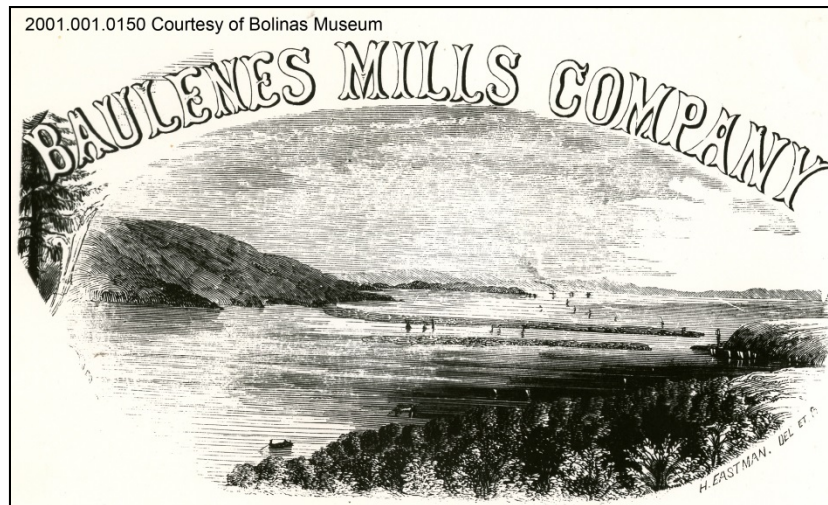
Photo of the Jennie Griffin leaving Bolinas c. 1920₂.

2001.001.0148
Courtesy of Bolinas Museum

The remnants of the old lighter wharves are all that is now left to mark the site of these busy operations, and where once there existed an industry which gave employment to hundreds of men, and yielded a handsome income, not even the stroke of an axe is heard.

J.P. Munroe-Fraser
History of Marin County 1834-1880
Alley, Bowen & Co., 1880

The original Bolinas settlement was at Dogtown. The site of today's town was called the Point or Bolinas Point, and the name Baulines was changed to its phonetic spelling, Bolinas. Photo below from the Bolinas Mills Company is the first depiction of the lagoon₂.



Also in 1851.....

- Captain A.D. Easkoot is the first settler of today's Stinson Beach.
- The first of many sawmills is built in Bolinas (Dogtown). Other sawmills continue production for many years, providing building materials for San Francisco. An estimated 13 million feet of lumber was cut by 1880.
- Bolinas was also know for its saloons. By the 1880s there were at least 5, including Nils Odin's Schooner Saloon (Smiley's) pictured here in the early 1900s (right)₂.



The first two hotels are built for vessel crews followed by large popular resort hotels at Bolinas Point. Most guests arrive to the hotels by schooner (right)₂.

The first schooner builders on the lagoon, the Johnson brothers, establish their boat works buildings on the lagoon's east side where they build 10 schooners between 28 to 80 tons₁. Rapid siltation forces them to move their boat works on to the sandspit, and then to Wharf Road.



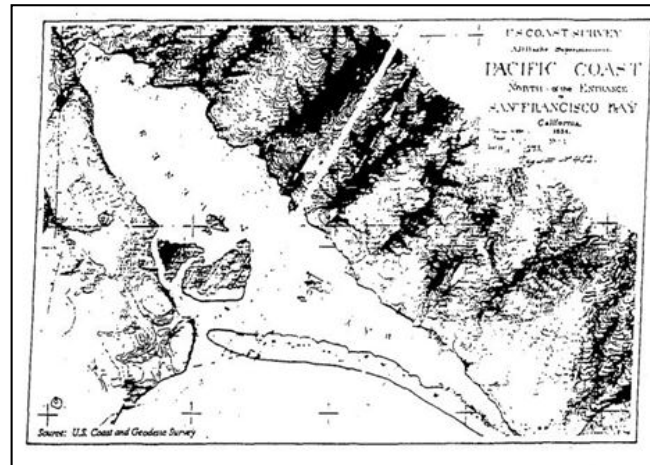
1852

On account of the availability of lumber and timber at Bolinas, there have been probably more vessels built here than at any point of the coast outside of San Francisco.

J.P. Munroe-Fraser

History of Marin County 1834-1880

Alley, Bowen & Co., 1880



1854

- **First U.S. Coast Survey including a topographic map of the lagoon (left) with no hardened shoreline₃.**
- **Samuel P. Taylor constructs the first West Coast paper mill near Lagunitas. Taylor depends on the lagoon to transport all paper and supplies to and from his mill.**

Rancho Baulines is carpeted by farms and ranches, many established by sea captains who discovered Bolinas while running lumber schooners. Food production is the backbone of the economy and, for over 100 years, depends on maritime transportation to city markets. Ranches on the east side of the lagoon delivered their products to a man in a rowboat who brought them to the wharves at Bolinas Point. Grazing, plowing, and dairies cause erosion and add silt to the lagoon. The onset of farming, grazing and logging in the latter half of the 19th century causes significant impact to the watershed₁₅

Copper mining near Dogtown contributes to an increase in erosion. Most ore is shipped by boat from Bolinas to England, but due to lack of quality and quantity mining ends in 1918.

1860s – 1960s

1863

1869

The first road from Sausalito is built. Reliable roadway transportation ends at McKennan's Landing on the lagoon's east side so a boat, the Alice F., shuttles people to Bolinas. Below left, McKennan ranch and remnants of boat pier; Middle, travelers being shuttled; Right, passengers await the Alice F₂.



Six schooners and the workhorses of the Bolinas-to-San Francisco run can be seen in this image (right). Another is under construction at the far end of the line of boats while on the right you can see the Johnson Brother's houses. Two lighters, or open barges, are in the process of being loaded with cordwood, while another awaits its cargo. A schooner in the foreground is careened, or laid over, for hull repairs, and on the roadway an ox cart that has hauled cordwood to the docks, waits.

Phil Frank, for Bolinas Museum Images of America Bolinas and Stinson Beach Arcadia, 2004



1873

1874

The Grinter brothers dike wetlands and alter Pine Gulch Creek to reclaim 40 acres of tideland for their trout ponds (located behind today's Peace Barn). Stephen McGovern's Pioneer Trout Farm is at the creek's edge. In 1875 storms destroy McGovern's farm and severely damage the Grinter's. More than 6,000 fish are lost, massive sediment loads flow into the lagoon, and the road along the lagoon is destroyed.

1878

Henry Wilkins, whose ranch house sits at the head of the lagoon, encloses the marshland and mudflats surrounding the north end of the lagoon to create pasture. The shortcut road, originally built of boards, at the Bolinas "Wye" is constructed during this time.

Frank and Nellie Waterhouse buy a ranch, create Brighton Avenue, and subdivide the land. In 1882, they offer lots for sale in their Grande Vista development. By 1900 most lots are occupied by full and part time residents. At right is photo of Brighton Road c. 1905₂.



1879

1880-1883

Courtesy of Bolinas Museum



Bolinas Bay Life Saving Station records vessels entering the lagoon. In July and August of 1883 over 300 vessels are recorded. The station burns in 1883. In 1895 Frank and Nellie Waterhouse build their warehouse studio on the site of the Life Saving Station. Left, schooners near the studio₂.

The road at the “Wye” at the lagoon’s north end was built in 1878 and is the only roadway connecting the east side of the lagoon to all northbound travel until the 1960s. By 1896 heavier traffic from stages, carriages, and horses require additional surfacing of the road. The road impacts habitat and water movement in the lagoon, and floods today during storms. Right is an E.A. Cohen photo of the road in 1903₂.

1896



Courtesy Wilkins / Page Families
and Bolinas Museum



Board road at the “Wye” (foreground) and Wilkins Ranch (background), with horses standing on pasture of reclaimed wetlands. Photo taken between 1896-1989₂.



Cordwood loaded on a schooner by the Waterhouse studio, 1903₂.

Wharf Road is extended to the mouth of the lagoon. At this time siltation was preventing schooners from turning around at the hotel docks. Soon three warehouses, stock pens, and a wharf are built at the end of the road. Left, excavating the cliff to build Wharf Road and, below, the finished road₂.



Courtesy of Wilkins / Page Families and Bolinas Museum



Courtesy Bolinas Museum

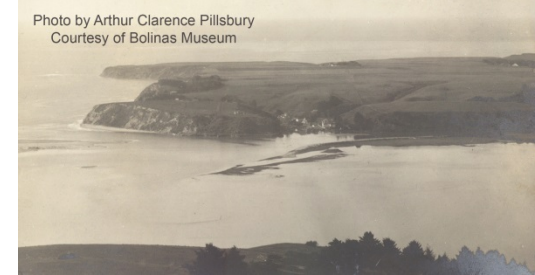


Photo by Arthur Clarence Pillsbury
Courtesy of Bolinas Museum

Bolinas Lagoon, 1906₂.

1903

1901

Wharf Road at low tide. From left to right, the Waterhouse warehouse/studio, Johnson Brothers boat works, a pile of lumber waiting to be loaded, and hotels across from today's Bolinas Museum₂.



Photo by E.A. Cohen
1982.001.0059
Courtesy of Bolinas Museum

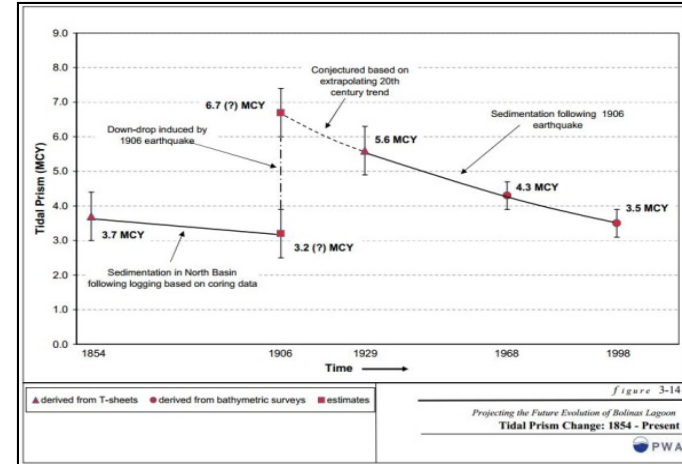
San Francisco Earthquake destroys roads and buildings and causes a 1.5 - 1.9ft drop in the lagoon floor increasing tidal prism from ~3.2 to 6.7 MCY. From 1906 – 2004 the average annual rate of tidal prism loss has been roughly 34,000 CY or 6.8 million gallons of water. Below left, changes in habitat distribution before and after the earthquake and (right) changes in tidal prism 1854 – 1998₁₅.

1906

Table 3-2. Habitat Distribution in 1929

Habitat	Acres	
	1929	1854
flood-tide island*	-	13
freshwater marsh*	-	21
salt marsh	77	170
intertidal flats	682	910
subtidal channels & shallows	487	130
Total	1,246	1,244

Notes: * Does not contribute to tidal prism. Flood-tide island and freshwater habitats not mapped in 1929, presumably due to their absence from the lagoon. We attribute differences in the total extent of the lagoon to changes in the shoreline along Stinson Spit, which was also lowered during the 1906 earthquake.



1905

Downtown Bolinas gets its first sewer system. Sewage is collected and raw contents are released into the lagoon channel.



The collapsed Flagstaff Inn on Wharf Road (right) and Wharf Road (left) showing several other destroyed buildings. Photos taken the day of the earthquake₂.

The Owl is the last vessel to regularly travel between San Francisco and Bolinas. Below the Owl is loaded with butter boxes, grain, farm products and people heading to San Francisco. Its last run is in 1933₂.



1911

Town of Stinson Beach, formerly Willow Camp, is established and then named after its primary land owners Rose and Nathan Stinson₂.



1916

1913

The Marconi wireless radio transmission station is built in Bolinas. All materials for the station are transported by local schooners to the lagoon₂.



1917

The US Coast Guard Station opens on Wharf Road. The station is a significant presence during the war and operates until 1947. In 1958 College of Marin acquires the building₂.

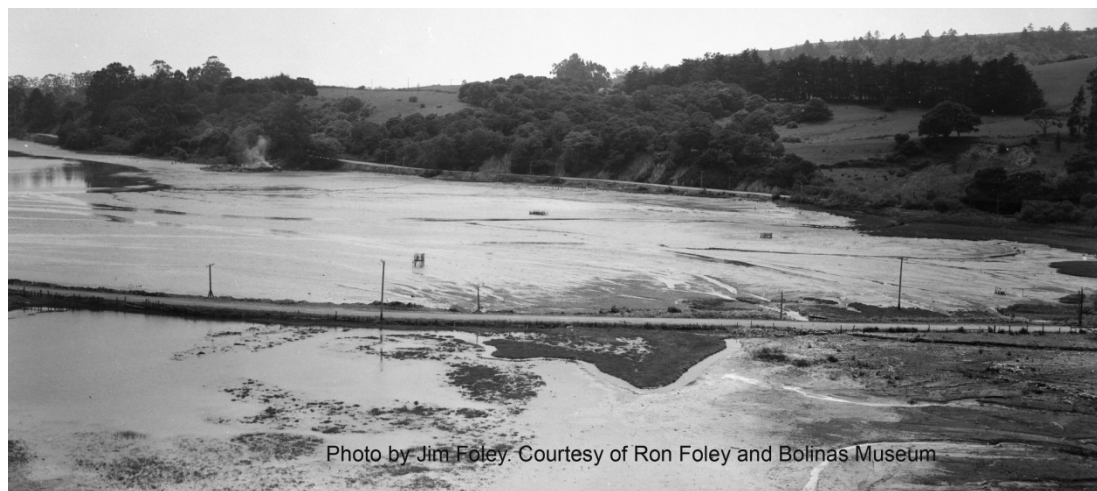


Highway 1 road construction occurs along the east side of Bolinas Lagoon. The county transports rock and dirt to develop a stable and even surface for travel along the lagoon's shoreline. The road was continually straightened and improved over the years. Photo at right is from 1926 when winter storms damage the new road. Below is a 1950 photo of the road taken from above the lagoon on Bolinas-Fairfax Road₂.

1921



For decades the lagoon is used as a garbage dump for residents of Stinson Beach and Bolinas. Below left shows one dump site, and below right is taken from the head of lagoon showing smoke from burning refuse on the lagoon's west side₂.



1930 – 1960s



1941

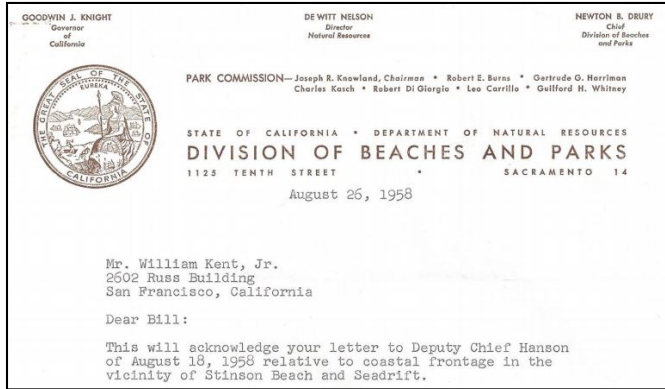
Over the decades many storms impact the lagoon causing massive amounts of sediment and toxins to enter its waters. Photo of Bolinas in 1941 flood₂.



Coast Guard photo of the lagoon in 1945₂. During WWII a heavy military presence protects coastal Marin and brings road improvements and infrastructure development to the area.

Kent Estate Co. offers the Stinson spit to the state. Although denied, the state offers assistance in clearing up tidelands issues so the property can be developed for private sale. Below photo of the 1958 letter from the state to William Kent explaining why the state remains unable to take acquisition of the area₅.

Management of the Bolinas Lagoon tidelands is transferred from the state to the Bolinas Harbor District.



1945

1956

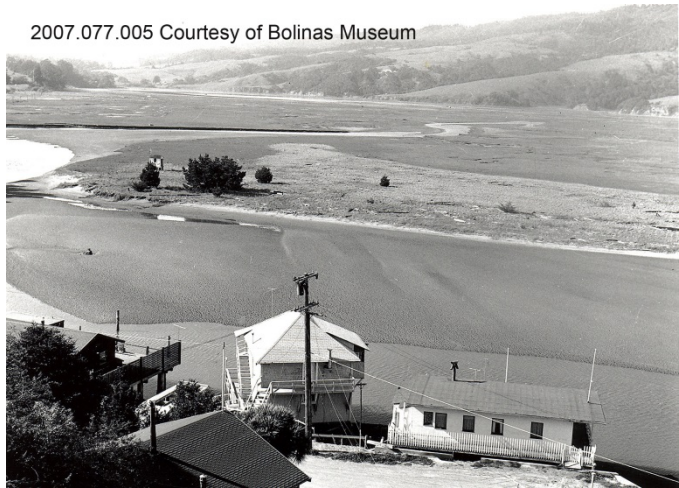
1950

1950s

The California Department of Real Estate approves the development and sale of Seadrift Subdivision One. Photo at right shows the first three houses (circled)₅.



First trees visible on Kent Island₂.



Dipsea Road and inner Seadrift Lagoon are developed. At right, 1960s photos showing construction of Dipsea Road⁵.



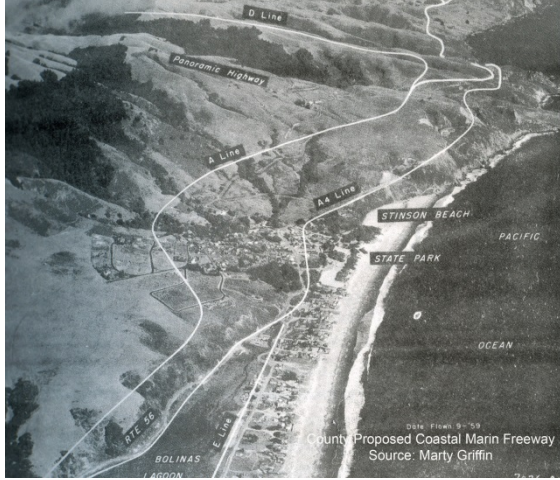
1960-1964

1962

- **Dr. Martin Griffin, president of the Marin chapter of the National Audubon Society, together with Aileen Pierson and Stan Picher, establish the local Audubon Canyon Ranch and purchase the 503 acre Canyon Ranch (right) on Bolinas Lagoon, later becoming Martin Griffin preserve⁶.**
- **Point Reyes National Seashore is established.**



The County of Marin Master Plan proposes a four lane freeway with shopping malls and thousands of homes. Audubon Canyon Ranch activists stop the plan. Below, image of the planned freeway₂.

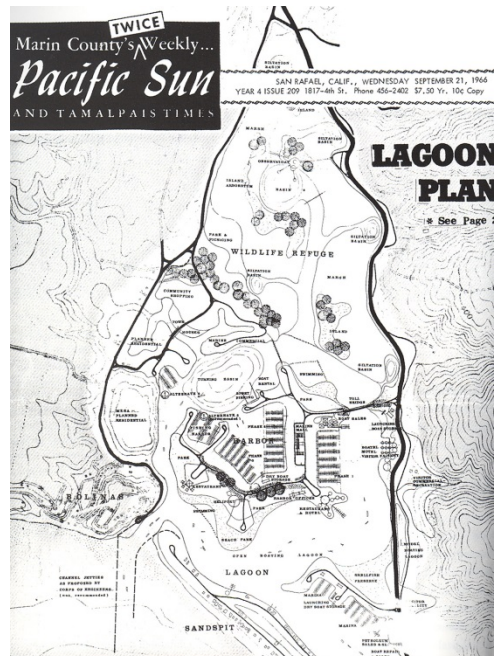


1961

Thanks to Dr. Griffin, his supporters, and the cooperation of Anne Kent, Audubon Canyon Ranch secures Kent Island for \$85,000. Together the Nature Conservancy, Marin Conservation League, and Audubon Canyon Ranch convey lands to Marin County on the condition they be kept as a nature preserve. The marina plan loses traction. Below is the cover of Marin IJ February 14, 1967₆.



1967



1964

The Bolinas Harbor District hires Norman Gilroy to study the lagoon and draw their vision for development of a marina, boat facility, 1,400 boat slips, restaurant, heliport, district offices and even a hotel. Right is cover of the Pacific Sun, September 21, 1966₆.



1964 photo from Wharf Road showing the growth of trees on Kent Island₂.

- Harbor District is dissolved by resident vote and the state transfers ownership of the lagoon tidelands to Marin County.
- First bathymetry study by Ritter calculates rate of tidal loss at 0.7 million ft³/yr between 1939-1969.

1969

By 1959 significant progradation of Pine Gulch Creek and extension of Kent Island increases¹⁵. Around 1970, 100 years of grazing at Pine Gulch Creek ceases and vegetation extends the delta further into the lagoon.

1970

Creation of Golden Gate National Recreation Area and Marin County Open Space District. County Develops the Bolinas Lagoon Plan. At right is a map of Bolinas Lagoon watershed jurisdictions¹¹.

1972



1971

Standard oil tankers collide and spill 800,000 gallons of oil just outside of San Francisco Bay. Locals and other Bay Area residents block the lagoon's entrance using roped-together bales of hay and work tirelessly to clean oiled birds. This resolve furthers local activism and long standing efforts to protect Bolinas Lagoon⁶. Left is a photo of Marin IJ reporting the oil spill from January 20, 1971².



Oil Spill Spreads; Beaches Hard Hit

Thousands Of Volunteers Out; Inquiry Is Opened

By DAVID DIETZ
The deadly carpet of oil from Monday's tanker crash spread today as thousands of volunteers sought to save the Bay Area's beaches and wildlife from its grasp.
The Coast Guard, which opened a hearing today into the collision that triggered the massive spill, said the oil now was reported as far as 16 miles off the Pacific shore and traces of the goo were showing up for the first time in inner reaches of San Francisco Bay.
Marin beaches and wildlife were hard hit as the oil — sometimes so thick it could be rolled up and deposited in boxes — stained the shoreline from Richardson Bay, Angel Island and Tiburon all the way around to Bolinas Bay on the coast.
Volunteers, many of them

ington, D.C., is called for reforms similar collisions in the Bay as a disaster amid observations that was worse than the Barbara Channel spill.
The potential fage is much greater, said Serris Barbara, a director of the San Francisco Bay Estuary Program. She said the E-tained tidal flats are considered ecologically.
Outside the Golden Gate the slick reached north as Bolinas Bay and south to Tiburon. Volunteers were reported at Bolinas Bay and Tiburon near the Golden Gate Bridge. Between 800,000 and 1.1 million gallons spilled from one of the vessels, the Oregon Standard.
In Sacramento and Wash-

Continued on Page 2

Supervisors May Open Civic Center At Night

AL DISASTER

Courtesy of Bolinas Museum

After the Clean Water and Clean Air Acts are established, young Bolinas newcomers lead the town to stop construction of a chemical sewer treatment plant. A water moratorium limiting growth is established, while construction of organic sewage treatment ponds (right) stop the dumping of raw sewage in the lagoon₂.



Photo by Elia Haworth. Courtesy of Bolinas Museum

1975

1974

- Marin County Board of Supervisors creates the Bolinas Lagoon Technical Advisory Committee.
- Marin County designates Bolinas Lagoon as a nature preserve.



1981

- Bolinas Lagoon is included in the newly established Gulf of the Farallones National Marine Sanctuary (left)₁₃.
- Marin County creates the *Bolinas Lagoon Resource Management Plan*.

Major storms cause massive flooding and sediment deposition at the mouth of Pine Gulch Creek. Seadrift seawall construction and rebuilding of the Bolinas beach groin result. At right, flooding of Wharf Road during the storm_{2,3}.



1982/3

1988

- UNESCO designates Bolinas Lagoon as part of the Central California Coast Biosphere Reserve, later named the Golden Gate Biosphere Reserve
- Marin County transfers management of Bolinas Lagoon to the Marin County Open Space District.

1993

- Caltrans funds remove toxic waste dumps at the southern end and west side of the lagoon. The causeway at southern end of the lagoon is removed. This increases tidal prism by 248,000ft³ and reduces flooding₃.
- Marin County Open Space District begins preparation of the Bolinas Lagoon Management Plan Update.

1994

Committee to Save Bolinas Lagoon, an Ad Hoc of the Bolinas Lagoon Foundation, forms and begins fundraising and campaigning for lagoon protection.

- Assembly member Mazzoni introduces Bolinas Lagoon as a state and national treasure. At right is an image of Assembly Joint Resolution No. 12₅.
- A US Army Corps of Engineers study concludes the dredging of Bolinas Lagoon is a matter of national interest.



1997

1996

Marin County releases the *Bolinas Lagoon Management Plan*. Updated from the 1981 plan, it states a 25% loss of tidal prism from 1968-1988 and lists sediment accumulation and habitat impacts as the foremost resource management issues₃.

1998

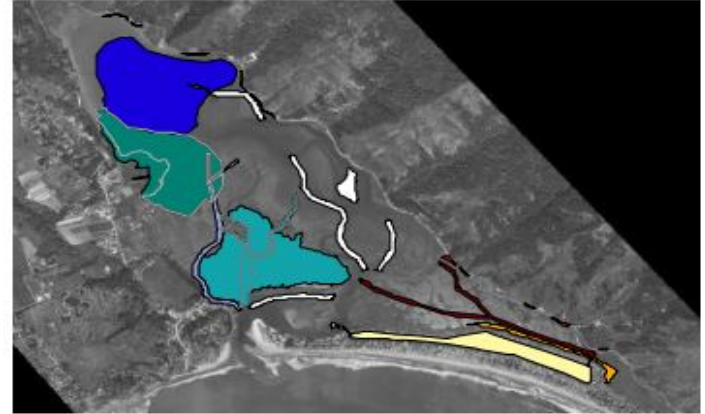
- Edgar Wayburn leads the way for Bolinas Lagoon's designation as a Ramsar site of International Importance.
- Marin County Parks establishes a partnership with US Army Corps of Engineers and California Coastal Conservancy to address lagoon impacts.
- Seadrift bulkheads along the lagoon interior are replaced in 1998/1999.

US Army Corps of Engineers releases the *Draft Environmental Impact Statement/Report and Draft Feasibility Report: Bolinas Lagoon Ecosystem Project*, proposing removal of 1.4 mil ft³ of sediment from several locations within the lagoon. Below, map and chart depicting locations and volume of material to be dredged.

2002

Component Footprint Areas and Dredge Volumes

Component	Surface Area acres	Volume yds ³
Bolinas Channel	15.57	130,799
Pine Gulch Creek Delta (Estuarine)	102.82	190,706
Pine Gulch Creek Delta (Riparian)	86.32	158,617
Dipsea Road	7.97	37,692
Highway 1 Fills	3.25	4,828
Kent Island	124.06	376,748
Seadrift Lagoon	43.47	44,958
South Lagoon Channel	17.58	89,246
Main Channel	37.49	216,241
North Basin	136.11	458,538



2006

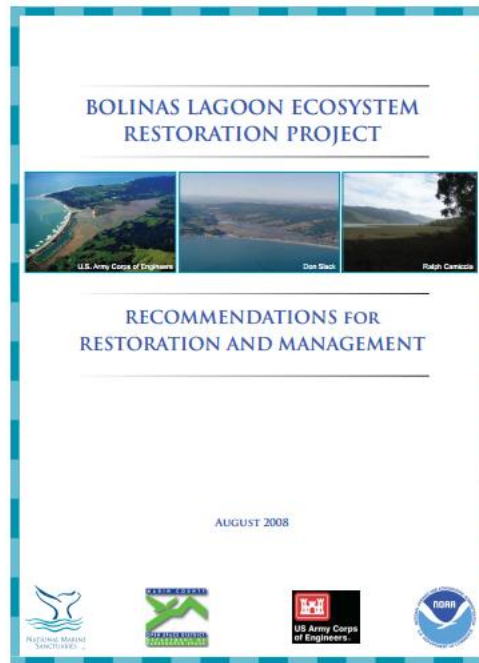
As a result of public concern related to the 2002 draft report, Marin County coordinates a rigorous scientific review of the Army Corps plan, and a study of the lagoon's ecological and hydrological evolution. Work is conducted by a team of Phil Williams and Associates, WRA, UC Berkeley, and a Project Reformation Advisory Group.

2007

Cosco Busan spills over 53,000 gallons of oil, some of which entered Bolinas Lagoon and impacted nearby Stinson Beach and Duxbury Reef. At right, agency reps and local volunteers work to capture oil and protect the lagoon.



Release of the *Bolinas Lagoon Ecosystem Restoration Project: Recommendations for Restoration and Management*, or Locally Preferred Plan (cover at right) lists 25+ project recommendations for restoring the lagoon and urges inclusion of climate change science, including sea level rise, to inform planning and management⁷.



Additional bulkheads along the interior of the lagoon at Seadrift are replaced.

2008

2009 and 2011

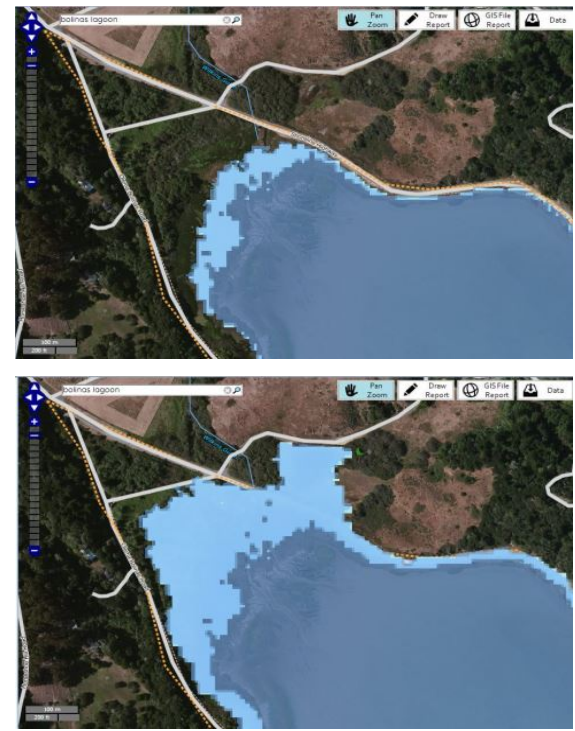
2009

- Invasive European Green Crab removal begins in Seadrift Lagoon. At right, local children volunteer for the 2014 removal season¹⁰.**
- Marin County Supervisors approve installation of a tide gauge at Bolinas Lagoon.**



- Invasive *Spartina* removal begins in Bolinas Lagoon.
- Caltrans begins roadwork on Highway 1.
- Funding is received for the Kent Island Restoration Project.
- Bolinas Lagoon is included in the Our Coast Our Future project, an online tool that displays future impacts to the lagoon based on sea level rise and storm surge scenarios. At right is one scenario of the northern Bolinas “Wye” at present day with no storm or sea level rise (top), and 20 cm of sea level rise during a 50 year storm (bottom)¹⁴.

2010



Map of Kent Island Restoration project Area¹².



Invasive *Spartina* at Bolinas Lagoon⁹.

- **Year one of the Kent Island Restoration Project begins. At right, Stinson/Bolinas day campers volunteering for the plant removal program¹⁰.**
- **USGS conducts its most recent bathymetric survey of the lagoon.**
- **Design Review Group, a panel of scientific experts management staff and community members, meet and recommend next steps for project prioritization.**



2013

2012

- **Caltrans finishes roadwork along Highway 1, replacing culverts and rip rap, and paving pullouts (right)¹⁰. The project reduces toxins and debris from entering the lagoon and removes invasive species.**
- **Bolinas Lagoon Technical Advisory Committee is reformulated to the Bolinas Lagoon Advisory Council.**



- A white paper stemming from the Design Review Group meeting recommends restoration at the lagoon's north end.
- Kent Island Restoration project completes the second year of volunteer irrigation and plant removal.
- Supported by the Bolinas Lagoon Advisory Council, Marin County Board of Supervisors approves prioritization of the North End Restoration Project.

2014



Hand removal (purple) and salt water irrigation treatment (green) locations for the 2014 Kent Island volunteer plant removal program¹¹.

2015

Marin County hires consultant to execute and develop conceptual designs for the North End Restoration Project. Community meetings continue and restoration of Bolinas Lagoon progresses. Right is a map of the general project area¹².



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