ENTRANCE TO SAN FRANCISCO BAY

Mercator Projection
Scale 1:40,000 at Lat 37° 51'

North American Datum of 1983
(World Geodetic System 1984)

SOUNDINGS IN FEET
AT MEAN LOWER LOW WATER

For Symbols and Abbreviations see Chart No. 1

Additional information can be obtained at: nauticalcharts.noaa.gov.

THE NATION'S CHARTMAKER SINCE 1807

UNITED STATES - WEST COAST

CALIFORNIA

SCALE 1:40,000
Nautical Miles 0 1 2
Statute Miles 0 1 2
Yards 0 1000 2000 3000 4000 5000
Meters 0 1000 2000 3000 4000 5000

NOTE B
PRECAUTIONARY AREA

Traffic lanes and the associated precautionary area established at the approach to San Francisco Bay are completely shown on Chart 18645.

Traffic within the Precautionary Area may consist of vessels making the transition between the Main Ship Channel and one of the established traffic lanes. Mariners are advised to exercise extreme caution when navigating within this area. The normal cruising area of the pilot vessel is indicated "PILOT AREA." When passing Traffic Lane Lighted Buoys "S", "N", or "W", inbound vessels should contact the pilot boat on channel 13 for boarding instructions.

NOTE C
SEPARATION ZONE

Mariners are requested to stay outside the circular separation zone centered on the San Francisco Approach Lighted Horn Buoy SF.

WARNING

The prudent mariner will not rely solely on any single aid to navigation, particularly on floating aids. See U.S. Coast Guard Light List and U.S. Coast Pilot for details.

NOTE A

Navigation regulations are published in Chapter 2, U.S. Coast Pilot 7. Additions or revisions to Chapter 2 are published in the Notice to Mariners. Information concerning the regulations may be obtained at the Office of the Commander, 11th Coast Guard District in Alameda, California or at the Office of the District Engineer, Corps of Engineers in San Francisco, California.

Refer to charted regulation section numbers.

NOTE Z
NO-DISCHARGE ZONE, 40 CFR 140

Under the Clean Water Act, Section 312, all vessels operating within a No-Discharge Zone (NDZ) are completely prohibited from discharging any sewage, treated or untreated, into the waters. All vessels with an installed marine sanitation device (MSD), whether operating, anchored, or docked within a NDZ must have the MSD disabled to prevent the overboard discharge of sewage treated or untreated) or install a holding tank. Regulations for the NDZ are contained in the U.S. Coast Pilot. Additional information concerning the regulations and requirements may be obtained from the Environmental Protection Agency (EPA) web site: http://www.epa.gov/owow_keep/oceans/regulatory/vessel_sewage/

SUPPLEMENTAL INFORMATION

Consult U.S. Coast Pilot 7 for important supplemental information.

AUTHORITIES

Hydrography and topography by the National Ocean Service, Coast Survey, with additional data from the Corps of Engineers, Geological Survey, and U.S. Coast Guard

HORIZONTAL DATUM

The horizontal reference datum of this chart is North American Datum of 1983 (NAD 83), which for charting purposes is considered equivalent to the World Geodetic System 1984 (WGS 84). Positions obtained from charts based on North American Datum of 1927 must be corrected an average of 0.269" southward and 3.900" westward to agree with this chart.

NOTE S

Regulations for Ocean Dumping Sites are contained in 40 CFR, Parts 220-229. Additional information concerning the regulations and requirements for use of the sites may be obtained from the Environmental Protection Agency (EPA), San U.S. Coast Pilots appendix for addresses of EPA offices. Dumping subsequent to the survey dates may have reduced the depths shown.

CAUTION

Limitations on the use of radio signals as aids to marine navigation can be found in the U.S. Coast Guard Light Lists and National Geospatial-Intelligence Agency Publication 117.

Radio direction-finder bearings to commercial broadcasting stations are subject to error and should not be relied upon.

Station positions are shown thus:
⊙(Accurate location) ⊙(Approximate location)

POLLUTION REPORTS

Report all spills of oil and hazardous substances to the National Response Center via 1-800-424-8802 (toll free), or to the nearest U.S. Coast Guard facility if telephone communication is impossible (33 CFR 153).

AIDS TO NAVIGATION

Consult U.S. Coast Guard Light List for supplemental information concerning aids to navigation.

NOAA WEATHER RADIO BROADCASTS

The NOAA Weather Radio stations listed below provide continuous weather broadcasts. The reception range is typically 20 to 40 nautical miles from the antenna site, but can be as much as 100 nautical miles for stations at high elevations.

Mt. Pisa, CA	KHB-49	162.400 MHz WX2
Mt. Umunhum, CA	KEC-49	162.550 MHz WX1
Mt. Umunhum, CA	WWF-64	162.450 MHz WX5

NOTE D
PRECAUTIONARY AREA

Traffic within the Precautionary Area consists of vessels maneuvering on various courses. Vessels transiting the Precautionary Area should, when possible, keep the centerline of the area to port providing for a counterclockwise movement of vessels within the area. Mariners are advised to use extreme caution when navigating within this area.

TRAFFIC LANES

Traffic lanes are intended for use by vessels 1600 gross tons and over; arrows indicate the approximate direction flow within each lane. The provisions of inland Navigation Rule 9 apply to all vessels navigating in the traffic lanes.

DEEP WATER ROUTE

Vessels with a draft of 45 feet or greater should use the "Deep Water Route" east of the Golden Gate Bridge. Vessels intending to use the Deep Water Route should notify San Francisco Traffic before passing Mile Rocks. Deep draft vessels will neither meet nor overtake in the Deep Water Route. Deep draft vessels bound for anchorage it should pass east of Alcatraz Rock then through the C-O or G-K span of the San Francisco-Oakland Bay Bridge.

RECREATION AREAS

Recreation areas are intended primarily for use by recreation vessels. Such areas should not be used by vessels 300 gross tons or more, except in case of emergency or special circumstances.

VESSEL TRAFFIC SERVICE

The U.S. Coast Guard operates a mandatory Vessel Traffic Services (VTS) system in the San Francisco Bay and surrounding areas. Vessel operating procedures and designated radiotelephone frequencies are published in 33 CFR 161, the U.S. Coast Pilot, and/or the VTS User's Manual. Mariners should consult these sources for applicable rules and reporting requirements. Although mandatory VTS participation is limited to the navigable waters of the United States, certain vessels are encouraged or may be required, as a condition of port entry to report beyond this area to facilitate advance vessel traffic management within the VTS area.

The U.S. Coast Guard operates a Vessel Traffic Service Offshore Vessel Movement Reporting System covering the seaward approaches to San Francisco Bay. Vessels are requested to monitor VTSSF on Channel 14 at 8 and 40 minutes past each hour for broadcast reports of known, shipping traffic in the area.

All of San Pablo Bay is within the VTS area with the exception of the Petaluma River Entrance Channel.

COLREGS: International Regulations for Preventing Collisions at Sea, 1972.
Demarcation lines are shown thus: ——

NOTE H

Both high speed and traditional ferries operate in the San Francisco Bay. Mariners are cautioned that high speed craft move very rapidly and may transit waterways in a direction not the normal direction of traffic. Ferries may deviate from these routes if necessary. Mariners should exercise caution when transiting between the ferries' regular routes and the terminals and docking facility. Go to www.sfmta.org for additional information on the Ferry Traffic Routing Protocol.

NOTE K

MARINER ACTIVATED SOUND SIGNAL (MASS)
Horn is activated by keying the mic 5 times on VHF-FM Ch 81A - horn will operate for thirty minutes.

HEIGHTS

Elevations of rocks, bridges, landmarks, and lights are in feet and refer to Mean High Water. Contour and summit elevation values are in feet and refer to Mean Sea Level.

RACING BUOYS

Racing buoys within the limits of this chart are not shown hereon. Information may be obtained from the U.S. Coast Guard District Offices as racing and other private buoys are not all listed in the U.S. Coast Guard Light List.

NO-ANCHORAGE TRAFFIC SEPARATION SCHEME

Portions of the traffic separation scheme shown on this chart have been amended by the IMO. See IMO COLREG.2/Circ.64. Please be advised that these portions have not been revised by the United States Coast Guard and that the corresponding changes have not been updated in the Code of Federal Regulations (33 CFR part 167). There are differences between the two traffic separation schemes and caution is advised.

SAN RAFAEL CREEK

The controlling depth was 4 feet for a mid-width of 50 feet from the channel entrance 37° 57' 30" N., 122° 27' 34" W., to the mouth of San Rafael Creek; thence 3 feet for a mid-width of 30 feet to the turning basin; 1 foot in the turning basin cenrered at 37°58'09.7'N, 122°31'.04.0'W., thence 1 foot for a width of 80 feet to the Grand Ave. Bridge; except for shoal to bare for last 125 feet.

Oct 2017

RICHMOND - SAN RAFAEL BRIDGE

3 fixed white lights are mounted vertically over fixed green lights at the center of the main navigation channel spans.

Clearances of the main navigation channel spans:

	WEST CHAN	EAST CHAN
HOR CL	1000 FT	970 FT
VERT CL	185 FT	135 FT

GOLDEN GATE BRIDGE SUSPENSION BRIDGE
VERT CL 220 FT CENTER
VERT CL 213 FT N PIER
VERT CL 211 FT S PIER
The center of the span is marked by three white lights vertically in line above a fixed green light on each side.

NOTE G

Anchoring or dragging anchor within the charted limits of the Bay Area Rapid Transit (BART) tunnel crossing is prohibited. (33 CFR 110.224, a, 4)

NOTE I
NATIONAL MARINE SANCTUARIES

National Marine Sanctuaries are protected areas, administered by NOAA which contain abundant and diverse natural resources such as marine mammals, seabirds, fishes, and kelpand invertebrates. These areas are particularly sensitive to environmental degradation. Mariners are encouraged to navigate with caution and to observe Exercise particular caution and follow applicable Sanctuary regulations when transiting these areas to avoid environmental impacts. A full description of Sanctuary regulations may be found in 15 CFR Part 922 and in the Coast Pilot.

NOTE E

The City of Richmond is requesting vessels use extreme caution when turning or anchoring in the vicinity of their 72" diameter sewer pipeline which is located 1600 feet offshore of Point Richmond at a depth of 26 feet below mean lower low water in approximate position 37°54'47"N, 122°25'06"W.

CAUTION
SUBMARINE PIPELINES AND CABLES

Charted submarine pipelines and submarine cables and submarine pipeline and cable areas are shown as:

Pipeline Area — Cable Area

Additional uncharted submarine pipelines and submarine cables may exist within the area of this chart. Not all submarine pipelines and submarine cables are required to be buried, and those that were originally buried may have become exposed. Mariners should use extreme caution when navigating in the vicinity of any cable or pipeline area, when there is a known pipelines and cables may exist, and when anchoring, dragging, or trawling.

Covered wells may be marked by lighted or unlighted buoys.

CAUTION
BASCULE BRIDGE CLEARANCES

For bascule bridges where spans do not open to a full upright or vertical position, unlimited vertical clearance is not available for the entire charted horizontal clearance.

RADAR REFLECTORS

Radar reflectors have been placed on many floating aids to navigation. Individual radar reflector identification on these aids has been omitted from this chart

CAUTION

Improved channels shown by broken lines are subject to shoaling, particularly at the edges.

CAUTION

Temporary changes or defects in aids to navigation are not discussed on this chart. See Local Notice to Mariners.

PLANE COORDINATE GRID

(based on NAD 1927)
California State Grid, Zone 3, is indicated by dotted ticks at 10,000 foot intervals.

ARTICULATED AIDS

An articulated aid to navigation consists of a pipe structure that is secured to the seabed and a buoyant element. The buoyant element is kept upright by the buoyancy of a submerged flotation chamber. It is designed primarily to mark narrow channels in depths of up to 60 feet. All articulated aids are labelled "Art".

RICHMOND HARBOR AND SOUTHAMPTON SHOAL CHANNEL DEPTHS
TABULATED FROM SURVEYS BY THE CORPS OF ENGINEERS - SURVEYS TO MAY 2018

CONTROLLING DEPTHS FROM SEAWARD IN FEET AT MEAN LOWER LOW WATER (MLLW)

NAME OF CHANNEL	LEFT OUTSIDE QUARTER	LEFT INSIDE QUARTER	RIGHT INSIDE QUARTER	RIGHT OUTSIDE QUARTER	DATE OF SURVEY	PROJECT DIMENSIONS: WIDTH (FEET)	LENGTH (NAUT MILES)	DEPTH MLLW (FEET)
SOUTHAMPTON SHOAL CHANNEL	47	47	46	43	1-18	600	1.1	45
RICHMOND HARBOR								
OUTER HARBOR CHANNEL	35	36	36	36	5-18	800-900	1.0	38
POINT POTRERO REACH	35	36	37	36	5-18	600-900	1.4	38
POINT POTRERO TURN	37	38	37	36	5-18	600-1350	0.6	38
HARBOR CHANNEL	34	37	36	32	5-18	800-900	0.5	38
SANTA FE CHANNEL	37	29	39	37	11-12, 5-18	200	0.5	38-50
TURNING BASIN	26	28	27	18	11-12	200-900	0.16	30

NOTE - CONSULT THE CORPS OF ENGINEERS FOR CHANGES SUBSEQUENT TO THE ABOVE INFORMATION

SAN FRANCISCO BAY
TABULATED FROM SURVEYS BY THE CORPS OF ENGINEERS - SURVEYS TO APR 2018

CONTROLLING DEPTHS FROM SEAWARD IN FEET AT MEAN LOWER LOW WATER (MLLW)

NAME OF CHANNEL	LEFT OUTSIDE QUARTER	LEFT INSIDE QUARTER	RIGHT INSIDE QUARTER	RIGHT OUTSIDE QUARTER	DATE OF SURVEY	PROJECT DIMENSIONS: WIDTH (FEET)	LENGTH (NAUT MILES)	DEPTH MLLW (FEET)
MAIN SHIP CHANNEL								
ENTRANCE	49	54	54	52	4-18	2000	4.3	55

NOTE - CONSULT THE CORPS OF ENGINEERS FOR CHANGES SUBSEQUENT TO THE ABOVE INFORMATION

OAKLAND OUTER AND INNER HARBORS
TABULATED FROM SURVEYS BY THE CORPS OF ENGINEERS - SURVEYS TO APR 2018 AND NOS SURVEY TO JAN 2013

CONTROLLING DEPTHS FROM SEAWARD IN FEET AT MEAN LOWER LOW WATER (MLLW)

NAME OF CHANNEL	LEFT OUTSIDE QUARTER	LEFT INSIDE QUARTER	RIGHT INSIDE QUARTER	RIGHT OUTSIDE QUARTER	DATE OF SURVEY	PROJECT DIMENSIONS: WIDTH (FEET)	LENGTH (NAUT MILES)	DEPTH MLLW (FEET)
BAR CHANNEL	50.0	49.3	50.2	50.6	1-16	1000-1200	0.91	50
OUTER HARBOR ENTRANCE CHANNEL	49.0	49.5	50.0	49.6	9-17-16	800-900	0.91	50
OUTER HARBOR	46.7	47.7	47.8	47.5	9-17-16	800-1000	1.40	50
INNER HARBOR								
ENTRANCE CHANNEL	47.9	48.2	47.8	47.5	5-17	2100-400	1.10	50
INNER HARBOR REACH	44.1	49.4	49.7	46.9	1-17,5-16	1035-460	2.27	50
GRADE, E. PUR TO								
BROOKLYN BASIN	A31.0	31.0	31.0	B25.0	1-13	600	1.30	35
BROOKLYN BASIN, SOUTH CHANNEL	C14.0	22.0	25.0	D15.0	1-13	600-500	0.73	35
PARK ST. BRIDGE REACH	23.0	F20.0	30.0	G8.0	1-13	500-275	0.42	35

A - A 2.1 FT WRECK IS AT 37°47' 14.97"N 122°19' 33.26"W. A 28 FT OBSTRUCTION IS AT 37°47' 14.74"N 122°19' 31.38"W.
B - A 33 FT WRECK IS AT 37°47' 29.83"N 122°19' 28.13"W.
C - A DEPTH OF 17.0 FEET IS AVAILABLE IN THE INSIDE HALF OF THE QUARTER.
D - A DEPTH OF 18.0 FEET IS AVAILABLE IN THE INSIDE HALF OF THE QUARTER.
E - A 19.1 FT WRECK IS AT 37°48' 09.24"N 122°21' 27.21"W.
F - A 22 FT WRECK IS AT 37°48' 29.37"N 122°21' 25.24"W.
G - A 20 FT WRECK IS AT 37°48' 21.27"N 122°21' 23.65"W. AN OBSTRUCTION OF UNKNOWN DEPTH IS AT 37°48' 20.89"N 122°21' 25.67"W.
NOTE - CONSULT THE CORPS OF ENGINEERS FOR CHANGES SUBSEQUENT TO THE ABOVE INFORMATION

TIDAL INFORMATION

PLACE NAME	(LAT/LONG)	Height referred to datum of soundings (MLLW) Mean Higher High Water	Mean High Water	Mean Low Water
		feet	feet	feet
Oakland, Inner Harbor	(37°48'N/122°17'W)	6.5	5.8	1.1
Point Orient	(37°57'N/122°23'W)	6.0	5.4	1.1
San Francisco (Golden Gate)	(37°48'N/122°29'W)	6.0	5.4	0.7
Rincon Point, Pier 22 ½	(37°47'N/122°23'W)	6.3	5.7	1.1
Hunters Point, California	(37°44'N/122°21'W)	6.8	6.7	1.1
Yerba Buena Island	(37°49'N/122°22'W)	6.2	5.5	1.1

NOTE:
Depths (– – –) located in datum columns indicate unavailable datum values for a tide station. Real-time water levels, tide predictions, and tidal current predictions are available on the Internet from http://tidesandcurrents.noaa.gov.

May 2018

NOTE F

Rear range light is a private aid operated for ships using the North Avenue Turning Basin only. Range serves no purpose for any other transiting vessels and should not be used.

OAKLAND INNER HARBOR BRIDGES

FRUITVALE AVE BRIDGE
HORIZ CL 100 FT
VERT CL 73 FT CLOSED
VERT CL 135 FT UP

FRUITVALE RR BRIDGE
HORIZ CL 100 FT
VERT CL 73 FT (OPEN)
VERT CL 15 FT

BROOKLYN BASIN FIXED BRIDGE
HORIZ CL 100 FT
VERT CL 31 FT

HIGH ST BASCULE BRIDGE
HORIZ CL 135 FT
VERT CL 135 FT CLOSED
VERT CL 65 FT OPEN
(100 FT CENTER WIDTH)

PARK ST BASCULE BRIDGE
HORIZ CL 242 FT
HOR CL 135 FT (OPEN)
VERT CL 135 FT
(100 FT CENTER WIDTH)

CAUTION

Fixed and floating obstructions, some submerged, may exist within the mapped area. Bridge construction area. Mariners are advised to proceed with caution.

SAN FRANCISCO - OAKLAND BAY BRIDGE
(Private aids)

The piers are lettered on the chart for reference

Lights
Piers A, B, E and G. An AERO, flashing red every 10 seconds, on top of tower, a fixed red light each side of the bridge at the foot of the tower.
Piers I, J, and K. A fixed red light each side of the bridge at the foot of the tower.
Pier C. A fixed red light at each corner of the pier and red axis lights along the channel axis on each side.
Spans A8 and D9. A fixed green light with 3 white lights in vertical line above on the center of each span, on each side of bridge, red axis lights on channelward face of pier.
Span EF. A fixed red light on each side of the bridge marking the NE limit of the navigable channel.
Spans BC, CD and IJ. Fixed green lights on each side of the bridge over the center of the channel.
Spans IJ, JK, KL, LM, and MN. A light occulting red every 5 seconds, on top and at the center of the span.
Fog signals
Bells on the east and west sides of pier C and pier I. Horns on piers A, B, D, and E.

APPROXIMATE MID-SPAN VERTICAL CLEARANCES

A-B 204 FT. C-D 220 FT. I-J 112 FT.
B-C 220 FT. D-E 204 FT. (Being removed)

CAUTION – Mid-span clearances under the long spans of the San Francisco-Oakland Bay Bridge are approximate and at a temperature of 59°F. These clearances may be reduced several feet due to extreme traffic conditions and a prolonged period of exposure to high temperature. Vertical clearances at the piers are:

PIER A - 174 FT. PIER E - 175 FT.
PIER B - 217 FT. PIER I - 112 FT. (Being removed)
PIER C - 220 FT. PIER J - 117 FT. (Being removed)
PIER D - 218 FT.

NEW EAST SPAN CLEARANCES

SPAN G - H
SUSPENSION BRIDGE
HOR CL 1000 FT
VERT CL 136 FT

SPAN H - I
FIXED BRIDGE
HOR CL 413 FT
VERT CL 125 FT

SPAN I - J
FIXED BRIDGE
HOR CL 417 FT
VERT CL 116 FT

NOTE J

Within the 12-nautical-mile Territorial Sea, established by Presicential Proclamation, some Federal laws apply. The Three Nautical Mile Line, previously identified as the outer limit of the territorial sea, is retained as it continues to depict the jurisdictional limit of the other laws. The 9-nautical-mile Natural Resources Boundary off the Gulf coast of Florida, Texas, and Puerto Rico, and the Three Nautical Mile Line elsewhere remain in most cases the inner limit of Federal fisheries jurisdiction and the outer limit of the jurisdiction of the states. The 24-nautical-mile Contiguous Zone and the 200-nautical-mile Exclusive Economic Zone were established by Presidential Proclamation. Unless fixed by treaty or the U.S. Supreme Court, these maritime limits are subject to modification.

SOURCE DIAGRAM

The outlined areas represent the limits of the most recent hydrographic survey information that has been evaluated for charting. Surveys have been banded in this diagram by date and type of survey. Channels maintained by the U.S. Army Corps of Engineers are periodically resurveyed and are not shown on this diagram. Refer to Chapter 1, United States Coast Pilot.

SOURCE		
A	1990-2015	NOS Surveys	full bottom coverage
C	1990-2000	U.S.Navy Surveys	partial bottom coverage
B1	1990-1993	NOS Surveys	partial bottom coverage
B2	1970-1989	NOS Surveys	partial bottom coverage
B3	1940-1969	NOS Surveys	partial bottom coverage
B4	1900-1939	NOS Surveys	partial bottom coverage

CONTINUED ON CHART 18645

CONTINUATION CHART 18649

JOINS CHART 18651

JOINS CHART 18653