GREGER

PORT DIRECTORY



Port Directory

San Francisco Bay & Tributaries

Courtesy of Greger

This directory provides marine contacts,
terminal and facility phone numbers,
VHF channel information, conversion tables,
bridge clearances, harbor drawings,
distance tables, and navigation guidelines
for San Francisco Bay and its tributaries.

All information is compiled for operational
reference by Greger. Verify critical
data against current official sources
before use.

Data is provided as-is for planning purposes.
No warranty is made for accuracy or
completeness.

MARINE INDUSTRY INDEX

EMERGENCY

S.F. Fire Dept. 911
Emergency- Fire, Police, Medical 911
S.F. Fire Boat Station 35, Pier 22½ 415-558-3235
Oakland Fire Dept. & Medical Emergency 510-444-1616
USCG Sector S.F., Command Center & COTP. 415-399-3547
National Response Center - Oil Spill Reporting 800-424-8802

MARINE LOADING FACILITIES

SAN FRANCISCO

Liberty Ship Jeremiah O'Brien - Office 415-544-0100
Pier 27 & 35, Cruise Ship Terminals, Manager. 415-535-1022
Pier 80, Ro/Ro, Gate 415-477-7742
Pier 94, Aggregate - Office 415-824-0475
Superintendent . . . . . .(2nd 415-254-1443) / 415-720-3022

OAKLAND

OAK25-30, TraPac Terminal, Gate 510-286-8670
OAK35-37, Evergreen Terminal, Gate 510-208-8821
Marine Superintendent . . . . . (2nd x8817, x8808) / 510-208-8810
OAK55-59, SSA Terminal, Main Gate 510-238-4448
Marine Ops (Daytime crane movement), 0600-1700 . . 510-238-4411
Night Crane Manager 510-908-1365
Gate 3, Vendor Gate 510-238-4430
OAK60-63, Matson Terminal, Gate 510-446-2444
Day Superintendent 0600-1700 .. (2nd 510-446-2414) / 510-446-2429
Night Superintendent 1700-0600 510-446-2418
OAK65, Schnitzer Scrap Dock . . . . . (2nd x8651, x8653) / 707-608-8652

REDWOOD CITY

Guard / Security 650-642-8606
RWC1-2, Cemex Cement, Plant Manager 209-601-8467
RWC3-4, Sims Metal America - Scrap Yard 650-369-4161
Facility Manager 918-500-0479

RICHMOND

Chevron Long Wharf, Control (Pad), VHF ch.10. 510-242-4494
Wharf Bus 707-339-9518
Main Gate 510-242-4547
Gate 31 510-242-4396
Shift Team Leader. 510-242-2445
RLW1, Berth 1 Operator 510-242-6718
RLW2, Berth 2 Operator 510-242-6720
RLW3, Berth 3 Operator 510-242-6722
RLW4, Berth 4 Operator 510-242-6723

NEW YORK SLOUGH

PBG3, Bay Area Bulk Terminal	925-431-1090
ext.1- Terminal Manager ext.2-Ops Manager	
Supervisor	562-235-4020
Day Foreman	707-812-4457
Night Foreman 1900-0700	(2nd x8435) / 925-250-1504
PBG4, USS-UPI (Posco), Gate	925-439-6180
PBG6, Corteva (Dow), Pittsburg	925-432-5000
Security	925-432-5278
ANZ 2, G.P. Gypsum (Domtar), Antioch	925-757-2870

FEDERAL, STATE & LOCAL AGENCIES

FEDERAL

Corps of Engineers - SF Main Office	415-503-6804
Sausalito Debris Yard -Reporting Line	415-289-3000
Immigration - Investigation	415-844-5347
USCG, Captain of the Port/SAR	415-399-3547
Vessel Traffic Service (VTS), USCG	415-399-7410

STATE OF CALIFORNIA

California Maritime Academy	707-654-1000
State Board of Pilot Commissioners	415-397-2253

LOCAL, BAY AREA

Oakland, Port Divers	510-773-9981
Oakland, Port Harbor Facilities	510-627-1500
Oakland, Port of	510-627-1100
Sacramento, Port of West	916-617-4880
San Francisco, Port of	415-274-0400
Stockton, Port of	209-946-0246
Redwood City, Port of	650-306-4150
Richmond, Port of	510-215-4600

MARINE SERVICES

PILOTS

Greger Pilot Service - Ron Greger	707-690-2649
Independent Pilot Services	707-648-6235

BRIDGES

Third Street Bridge, San Francisco	415-695-2134
U.P. Railroad Bridge, Martinez	(2nd 402-233-1748) / 402-233-1750
Rio Vista	707-374-2134
3-Mile Slough	916-777-6619

CAL BAY LINEHANDLERS

MRZ 2-3: Foreman-Cody Johnson	707-384-4641
BNC4: Foreman-Jerry Batchhelder	707-310-4542
Back Up-Dan Heath	707-812-4857
RCH17&22, ROD8, MRZ6: Foreman-Enrico Castro	707-373-5729
ILWU Linehandlers Local 10	415-776-8105

PUBLIC SERVICE - MARINE

AmNav Maritime Services, VHF ch.18a	510-834-0700
Baydelta Maritime, Dispatch, VHF ch.18a	415-693-5800
Brusco Tug & Barge	206-332-8202
Crowley Dispatch, VHF ch.10	415-693-5800
Dutra Const. - Corporate Grp.	415-258-6876
Foss Maritime, VHF ch.10	510-834-0700
Greger	707-690-2649
Independent Pilot Services	707-648-6235
Marine Express Launch Service, VHF Cha.11	510-523-8900
Parker Diving Service	415-331-0328
Sause Dispatch	541-530-7486
Starlight, Dispatch, VHF ch.18a	510-834-0700
Westar Marine Services, vhf ch.9	415-495-3191

PUBLIC TRANSPORT - GROUND

Advantage Marine Services, AMS	866-267-1007
Friendly Cab, (Oakland & Richmond)	510-536-3000
Quicksilver Town Car, (Bay-wide)	650-589-4500
S.F. Taxi Cab- Luxor (SF)	415-282-4141
Super Shuttle - Airport Service	800-258-3826
Veteran's Cab (SF)	415-552-1300
Yellow Cab (SF)	415-626-2345

FUEL DOCKS

Pilot Thomas Logistics, foot of Hyde Street, SF	510-220-8122
Gashouse Cove, SF	415-567-8880
Jack London Marina, Oakland	510-834-4591

SHIPYARDS, MARINE HARDWARE - OIL RECOVERY

Bay Ship & Yacht	510-337-9122
Peterson Tractor (Cat)	510-357-6200
Marine Spill Response Corporation, Richmond	800-259-6772
San Francisco Boat Works	415-626-3275
Coast Marine Industrial Supply, S.F.	415-673-1923
Svendsen Marine Chandlery, Alameda	510-522-2886

INFORMATION

Marine Exchange, 24hr, VHF ch.10	415-441-6600
Int'l Maritime Center 4001 Seventh St, Oakland, CA 94607 (see location on map of OAK Outer Harbor, page 142)	510-839-2226
Weather, SF Bay -Continuous broadcast, VHF Ch. 1 and 2	
National Weather Service (Recording)	831-656-1725
PORTS - real time tide and current data	866-727-6787

VHF RADIO CHANNEL USES – MARINE

CHANNEL #	INTENDED USE
6	Intership safety purposes and Search and Rescue communications. Not to be used for non-safety matters.
8	Local Commercial Fishing Fleet
9	Westar Marine Launch Services
10	Marine Exchange, Foss Tugs, Crowley Tugs, RLW Pad
11	Marine Express Launch Services
12	Vessel Traffic Service (VTS) Offshore. In use from Pilot Boarding Precautionary Area Approach buoys N, W and S to outer limits of System (N 41 naut. miles, W 29 naut. miles, S 29 naut. miles).
13	Bridge to Bridge commercial vessel navigation and safety communications. Vsls >20m in length monitor from the Offshore Pilot Boarding Precautionary Area (SF Sea Buoy) to inside the Bay.
14	Vessel Traffic Service (VTS). Power Driven Vessels (40+ meters), Passenger Vessels (50+ passengers), Towing Vessels (8+ meters w/tow), Marine Events - Check In, Monitor, Update, Check Out.
16	Distress, safety, calling - monitored by U.S. Coast Guard
17	Centerline Logistics Bunkering
18A	AmNav Tugs, Bay Delta Tugs
19A	Recreational Small Boat Fishing Vessels
21A, 23A	U. S. Coast Guard only
22A	U. S. Coast Guard liason- communications with USCG stations, vessels and aircraft after contact on VHF 16.
65A	Sause Bros Tugs
67 & 78A	Charter Fishing Party Boats
1A, 5A,7A, 8, 11, 19A, 20A, 63A, 65A, 66A, 67, 73, 74, 77, 79A, 80A, 88	Port Operations - Commercial working channels
9, 68, 69, 71, 72, 78A	Non-commercial working channels: Supplies, repairs, berthing, yacht harbors, marinas.
WX 1-2-3	Weather - receive only

METER TO FEET/INCH CONVERSION TABLE

METERS	CENT.	FEET	INCHES
3	00	9	10
	5	10	0
	10		2
	15		4
	20		6
	25		8
	30		10
	35	11	0
	40		2
	45		4
	50		6
	55		8
	60		10
	65	12	0
	70		2
	75		4
	80		6
	85		8
	90		9
	95		11
4	00	13	1
	5		3
	10		5
	15		7
	20		9
	25		11
	30	14	1
	35		3
	40		5
	45		7
	50		9
	55		11
	60	15	1
	65		3
	70		5
	75		7
	80		9
	85		11
	90	16	1
	95		3
5	00		5
	5		7
	10		9
	15		11
	20	17	1
	25		2
	30		4
	35		6

METERS	CENT.	FEET	INCHES
5	40	17	8
	45		10
	50	18	0
	55		2
	60		4
	65		6
	70		8
	75		10
	80	19	0
	85		2
	90		4
	95		6
6	00		8
	5		10
	10	20	0
	15		2
	20		4
	25		6
	30		8
	35		10
	40	21	0
	45		2
	50		4
	55		6
	60		8
	65		10
	70	22	0
	75		2
	80		4
	85		6
	90		8
	95		10
7	00		11
	5	23	1
	10		3
	15		5
	20		7
	25		9
	30		11
	35	24	1
	40		3
	45		5
	50		7
	55		9
	60		11
	65	25	1
	70		3
	75		5

METERS	CENT.	FEET	INCHES
7	80	25	7
	85		9
	90		11
	95	26	1
8	00		3
	5		5
	10		7
	15		9
	20		11
	25	27	1
	30		3
	35		4
	40		6
	45		8
	50		10
	55	28	0
	60		2
	65		4
	70		6
	75		8
	80		10
	85	29	0
	90		2
	95		4
9	00		6
	5		8
	10		10
	15	30	0
	20		2
	25		4
	30		6
	35		8
	40		10
	45	31	0
	50		2
	55		4
	60		6
	65		8
	70		10
	75	32	0
	80		2
	85		4
	90		6
	95		8
10	00		10
	5	33	0
	10		2
	15		4

METERS	CENT.	FEET	INCHES
10	20	33	6
	25		8
	30		10
	35	34	0
	40		1
	45		3
	50		5
	55		7
	60		9
	65		11
	70	35	1
	75		3
	80		5
	85		7
	90		9
	95		11
11	00	36	0
	5		3
	10		5
	15		7
	20		9
	25		11
	30	37	1
	35		3
	40		5
	45		7
	50		9
	55		11
	60	38	1
	65		3
	70		5
	75		7
	80		9
	85		11
	90	39	1
	95		3
12	00		5
	5		7
	10		9
	15		10
	20	40	0
	25		2
	30		4
	35		6
	40		8
	45		10
	50	41	0
	55		2

METERS	CENT.	FEET	INCHES
12	60	41	4
	65		6
	70		8
	75		10
	80	42	0
	85		2
	90		4
	95		6
13	00		8
	5		10
	10	43	0
	15		2
	20		4
	25		6
	30		8
	35		10
	40	44	0
	45		2
	50		4
	55		6
	60		7
	65		9
	70		11
	75	45	1
	80		3
	85		5
	90		7
	95		9
14	00		11
	5	46	1
	10		3
	15		5
	20		7
	25		9
	30		11
	35	47	1
	40		3
	45		5
	50		7
	55		9
	60		11
	65	48	1
	70		3
	75		5
	80		7
	85		9
	90		11
	95	49	1

METER TO FEET/INCH CONVERSION TABLE

METERS	FEET	INCHES	METERS	FEET	INCHES	METERS	FEET	INCHES	METERS	FEET	INCHES	METERS	FEET	INCHES
15	49	3	61	200	2	206	675	10	252	826	9	298	977	8
16	52	6	92	301	10	207	679	2	253	830	0	299	981	0
17	55	9	122	400	3	208	682	5	254	833	4	300	984	3
18	59	1	134	439	8	209	685	8	255	836	7	301	987	6
19	62	4	135	442	11	210	689	0	256	839	11	302	990	10
20	65	7	136	446	2	211	692	3	257	843	2	303	994	1
21	68	11	137	449	6	212	695	6	258	846	5	304	997	4
22	72	2	138	452	9	213	698	10	259	849	9	305	1000	8
23	75	6	139	456	0	214	702	1	260	853	0	306	1003	11
24	78	9	140	459	4	215	705	5	261	856	4	307	1007	3
25	82	0	141	462	7	216	708	8	262	859	7	308	1010	6
26	85	4	142	465	11	217	711	11	263	862	10	309	1013	9
27	88	7	143	469	2	218	715	3	264	866	2	310	1017	1
28	91	10	144	472	5	219	718	6	265	869	5	311	1020	4
29	95	2	145	475	9	220	721	9	266	872	8	312	1023	7
30	98	5	146	479	0	221	725	1	267	876	0	313	1026	11
31	101	8	147	482	3	222	728	4	268	879	3	314	1030	2
32	105	0	148	485	7	223	731	8	269	882	7	315	1033	6
33	108	3	149	488	10	224	734	1	270	885	10	316	1036	9
34	111	7	150	492	1	225	738	2	271	889	1	317	1040	0
35	114	10	151	495	5	226	741	6	272	892	5	318	1043	4
36	118	1	152	498	8	227	744	9	273	895	8	319	1046	7
37	121	5	153	502	0	228	748	0	274	898	11	320	1049	10
38	124	8	183	600	5	229	751	4	275	902	3	321	1053	2
39	127	11	184	603	8	230	754	7	276	905	6	322	1056	5
40	131	3	185	606	11	231	757	10	277	908	9	323	1059	9
41	134	6	186	610	3	232	761	2	278	912	1	324	1063	0
42	137	10	187	613	6	233	764	5	279	915	4	325	1066	3
43	141	1	188	616	10	234	767	9	280	918	8	326	1069	7
44	144	4	189	620	1	235	771	0	281	921	11	327	1072	10
45	147	8	190	623	4	236	774	3	282	925	2	328	1076	1
46	150	11	191	626	8	237	777	7	283	928	6	329	1079	5
47	154	2	192	629	11	238	780	10	284	931	9	330	1082	8
48	157	6	193	633	2	239	784	1	285	935	0	331	1085	11
49	160	9	194	636	6	240	787	5	286	938	4	332	1089	3
50	164	0	195	639	9	241	790	8	287	941	7	333	1092	6
51	167	4	196	643	0	242	794	0	288	944	11	334	1095	10
52	170	7	197	646	4	243	797	3	289	948	2	335	1099	1
53	173	11	198	649	7	244	800	6	290	951	5	336	1102	4
54	177	2	199	652	11	245	803	10	291	954	9	337	1105	8
55	180	5	200	656	2	246	807	1	292	958	0	338	1108	11
56	183	9	201	659	5	247	810	4	293	961	3	339	1112	2
57	187	0	202	662	9	248	813	8	294	964	7	340	1115	6
58	190	3	203	666	0	249	816	11	295	967	10	341	1118	9
59	193	7	204	669	3	250	820	2	296	971	2	342	1122	1
60	196	10	205	672	7	251	823	6	297	974	5	343	1125	4

BRIDGE CLEARANCES FOR OCEAN GOING VESSELS
Measurements in feet except as indicated

	RACONS	Vertical Clearance Mid-span MHW	MLLW	Horizontal Clearance	Vertical MHW at Piers
Golden Gate Bridge	G ——•	225 (68.8m)	231 (70.4m)	4028 (1227.7m)	No. 213
	(Traveler 14ft)				So. 211
San Francisco-Oakland Bay Bridge	(Traveler 5ft)				
*A-B Span	N —•	200 (60.9m)	206 (62.8m)	2229 (679.3m)	A 174
B-C Span		217 (66.1m)	223 (67.9m)	1072 (326.7m)	B 217
* C-D Span	B —•••	216 (65.8m)	222 (67.6m)	1079 (328.8m)	C 220
					D 218
* D-E Span	Y—•——	200 (60.9m)	206 (62.8m)	2210 (673.6m)	E 175
G-H Span		136 (41.5m)	142 (43.3m)	1000 (304.8m)	
Islais Creek - Bascule (down)		1 (0.3m)	10 (3.0m)	97 (29.5m)	
San Mateo Bridge	M ——	135 (41.1m)	141 (42.9m)	660 (201.1m)	
Richmond-San Rafael Bridge				1000 (304.8m)	
West Span-Main Span (Twr 34-35)	Q ——•—	185 (54.4m)	190 (57.9m)	1000 (304.8m)	
Span West of Main		169 (51.5m)	174 (53.0m)	480 (146.3m)	
Span East of Main		169 (51.5m)	174 (53.0m)	480 (146.3m)	
East Span (Twr 47-48)		135 (41.1m)	141 (42.9m)	970 (295.6m)	
Carquinez Highway Bridges					
Upstream					
North Span, S. Pier	N —•	146 (44.5m)	152 (46.3m)	998 (304.1m)	
South Span, S. Pier	C —•—•	132 (40.2m)	137 (41.7 m)	998 (304.1m)	
Downstream - Suspension	(Traveler 11ft)				
North Span		161 (49.1m)	167 (50.9m)		No. 160
South Span		152 (46.3m)	157 (47.8m)		So. 143
Martinez-Benicia (Fixed)	B —•••	135 (41.1m)	140 (42.6m)	440 (134.1m)	
U.P.R.R. Bridge					
Vertical Lift, Down		70 (21.3m)	76 (23.1m)	291 (88.7m)	
Up		135 (41.1m)	140 (42.6m)	291 (88.7m)	
Anticoh Bridge	O ———	138 (42.0m)	142 (43.3m)	400 (121.9m)	
Rio Vista	T —				
Vertical Lift, Down		18 (5.4m)	22 (6.7m)	270 (82.3m)	
Up		144 (43.8m)	149 (45.4m)	270 (82.3m)	
Harding Rock Buoy	K —•—				

These clearances are approximate and for a temperature of 55˚ Fahrenheit. However, they may be reduced by several feet due to heavy traffic on the bridge and/or prolonged periods of extremely high temperature.

Source of information:
NOAA charts, USCG Bridge Section, 2024 CalTrans Bay Bridge Survey

HEIGHT OF TIDE AT ANY TIME

Duration	Time from the nearest high water or low water															
h.m.	*h.m.*	*h.m.*	*h.m.*	*h.m.*	*h.m.*	*h.m.*	*h.m.*	*h.m.*	*h.m.*	*h.m.*	*h.m.*	*h.m.*	*h.m.*	*h.m.*	*h.m.*	*h.m.*
5 20	0 11	0 21	0 32	0 43	0 53	1 04	1 15	1 25	1 36	1 47	1 57	2 08	2 19	2 29	2 40
5 40	0 11	0 23	0 34	0 45	0 57	1 08	1 19	1 31	1 42	1 53	2 05	2 16	2 27	2 39	2 50
6 00	0 12	0 24	0 36	0 48	1 00	1 12	1 24	1 36	1 48	2 00	2 12	2 24	2 36	2 48	3 00
6 20	0 13	0 25	0 38	0 51	1 03	1 16	1 29	1 41	1 54	2 07	2 19	2 32	2 45	2 57	3 10
6 40	0 13	0 27	0 40	0 53	1 07	1 20	1 33	1 47	2 00	2 13	2 27	2 40	2 53	3 07	3 20
7 00	0 14	0 28	0 42	0 56	1 10	1 24	1 38	1 52	2 06	2 20	2 34	2 48	3 02	3 16	3 30
7 20	0 15	0 29	0 44	0 59	1 13	1 28	1 43	1 57	2 12	2 27	2 41	2 56	3 11	3 25	3 40

Range	Correction to Height															
Ft.	*Ft.*	*Ft.*	*Ft.*	*Ft.*	*Ft.*	*Ft.*	*Ft.*	*Ft.*	*Ft.*	*Ft.*	*Ft.*	*Ft.*	*Ft.*	*Ft.*	*Ft.*	*Ft.*
1.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.5
1.5	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.6	0.7	0.8
2.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
2.5	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.4	0.5	0.6	0.7	0.9	1.0	1.1	1.2
3.0	0.0	0.0	0.1	0.1	0.2	0.3	0.4	0.5	0.6	0.8	0.9	1.0	1.2	1.3	1.5
3.5	0.0	0.0	0.1	0.2	0.2	0.3	0.4	0.6	0.7	0.9	1.0	1.2	1.4	1.6	1.8
4.0	0.0	0.0	0.1	0.2	0.3	0.4	0.5	0.7	0.8	1.0	1.2	1.4	1.6	1.8	2.0
4.5	0.0	0.0	0.1	0.2	0.3	0.4	0.6	0.7	0.9	1.1	1.3	1.6	1.8	2.0	2.2
5.0	0.0	0.1	0.1	0.2	0.3	0.5	0.6	0.8	1.0	1.2	1.5	1.7	2.0	2.2	2.5
5.5	0.0	0.1	0.1	0.2	0.4	0.5	0.7	0.9	1.1	1.4	1.6	1.9	2.2	2.5	2.8
6.0	0.0	0.1	0.1	0.3	0.4	0.6	0.8	1.0	1.2	1.5	1.8	2.1	2.4	2.7	3.0
6.5	0.0	0.1	0.2	0.3	0.4	0.6	0.8	1.1	1.3	1.6	1.9	2.2	2.6	2.9	3.2
7.0	0.0	0.1	0.2	0.3	0.5	0.7	0.9	1.2	1.4	1.8	2.1	2.4	2.8	3.1	3.5

Enter the table with the duration of rise or fall which most nearly agrees with the actual value and on that horizontal line find the time from the nearest high or low water which agrees most nearly with the corresponding actual difference. The correction sought is in the column directly below on the line with the range of tide. When the nearest tide is high water, subtract the correction. When the nearest tide is low water, add the correction.

SPEED OF CURRENT AT ANY TIME

Interval between slack and maximum current

Interval between slack and desired time

h. m.	h. m. 1 20	h. m. 1 40	h. m. 2 00	h. m. 2 20	h. m. 2 40	h. m. 3 00	h. m. 3 20	h. m. 3 40	h. m. 4 00	h. m. 4 20	h. m. 4 40	h. m. 5 00	h. m. 5 20	h. m. 5 40
h. m.	*knots*	*knots*	*knots*	*knots*	*knots*	*knots*	*knots*	*knots*	*knots*	*knots*	*knots*	*knots*	*knots*	*knots*
0 20	0.4	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
0 40	0.7	0.6	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2
1 00	0.9	0.8	0.7	0.6	0.6	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3	0.3
1 20	1.0	1.0	0.9	0.8	0.7	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4
1 40	- - - -	1.0	1.0	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.4
2 00	- - - -	- - - -	1.0	1.0	0.9	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.5
2 20	- - - -	- - - -	- - - -	1.0	1.0	0.9	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.6
2 40	- - - -	- - - -	- - - -	- - - -	1.0	1.0	1.0	0.9	0.9	0.8	0.8	0.7	0.7	0.7
3 00	- - - -	- - - -	- - - -	- - - -	- - - -	1.0	1.0	1.0	0.9	0.9	0.8	0.8	0.8	0.7
3 20	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	1.0	1.0	1.0	0.9	0.9	0.9	0.8	0.8
3 40	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	1.0	1.0	1.0	0.9	0.9	0.9	0.9
4 00	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	1.0	1.0	1.0	1.0	0.9	0.9
4 20	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	1.0	1.0	1.0	1.0	0.9
4 40	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	1.0	1.0	1.0	1.0
5 00	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	1.0	1.0	1.0
5 20	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	1.0	1.0
5 40	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	- - - -	1.0

San Francisco Bay - Historic Tide Corrections

Times with a minus sign occur *before* predictions; those with a plus sign occur *after*.
*Heights preceded by an asterisk are ratios; multiply by predicted tidal height.

	DIFFERENCES			
	Time		Height	
	High Water	Low Water	High Water	Low Water
	h m	h m	ft	ft
OUTER COAST of CALIFORNIA				
Ano Nuevo Island	-1 24	-1 04	-0.7	-0.1
Pillar Point Harbor, Half Moon Bay	-1 04	-0 43	*0.95	*0.97
Southeast Farallon Island	-0 39	-0 19	-0.3	0.0
San Francisco Bar	**-0 35**	**-0 31**	**-0.2**	**0.0**
Ocean Beach, outer coast	-0 49	-0 35	+0.1	0.0
SAN FRANCISCO BAY				
Point Bonita, Bonita Cove	-0 17	-0 10	+0.3	0.0
San Francisco (Golden Gate)	daily predictions			
Alcatraz Island	+0 14	+0 18	0.0	0.0
San Francisco, North Point, Pier 41	+0 13	+0 11	+0.2	0.0
Rincon Point, Pier 22 1/2	+0 23	+0 25	+0.4	0.0
Yerba Buena Island	+0 25	+0 33	*1.06	*0.99
Oakland, Matson Wharf	**+0 28**	**+0 36**	**+0.3**	**0.0**
Oakland Middle Harbor	+0 21	+0 31	*1.07	*0.96
Oakland Pier	+0 33	+0 48	+0.2	0.0
Alameda	+0 29	+0 39	*1.11	*0.99
Oakland Harbor, Grove Street	+0 33	+0 42	+0.4	0.0
Oakland Harbor, Park Street Bridge	+0 24	+0 32	*1.13	*0.98
Oakland Inner Harbor	**+0 24**	**+0 31**	***1.12**	***0.99**
Alameda Naval Air Station	+0 24	+0 33	*1.11	*1.00
San Leandro Channel, San Leandro Bay	+0 42	+0 52	*1.16	*0.98
Potrero Point	+0 33	+0 46	+0.5	0.0
Hunters Point	+0 28	+0 43	*1.18	*1.00
Point San Bruno	+0 38	+1 10	+1.1	+0.1
San Mateo Bridge (west end)	**+0 44**	**+1 11**	***1.36**	***1.04**
Redwood Creek Marker 8	+0 53	+1 28	*1.41	*1.05
Redwood Creek entrance (inside)	+1 06	+1 38	+2.1	+0.1
Redwood City, Wharf 5	+0 48	+1 15	*1.45	*1.05

San Francisco Bay - Historic Tide Corrections

Times with a minus sign occur *before* predictions; those with a plus sign occur *after*.
*Heights preceded by an asterisk are ratios; multiply by predicted tidal height.

	DIFFERENCES			
	Time		Height	
	High Water	Low Water	High Water	Low Water
	h m	h m	ft	ft
SAN FRANCISCO BAY, cont.				
Dumbarton Highway Bridge	+0 47	+1 14	*1.53	*1.10
Sausalito	+0 10	+0 14	*0.97	*1.00
Sausalito, Corps of Engineers Dock	+0 10	+0 21	*0.98	*1.00
Angel Island (west side)	+0 13	+0 21	-0.2	0.0
Angel Island, East Garrison	+0 16	+0 20	*1.02	*1.04
Point Chauncey	+0 28	+0 32	*0.98	*0.96
Berkeley	+0 21	+0 38	+0.1	0.0
Richmond Inner Harbor	**+0 16**	**+0 30**	***1.04**	***0.98**
Chevron Oil Company Pier, Richmond	**+0 24**	**+0 38**	***1.04**	***0.98**
Point Orient	+0 50	+0 52	*1.03	*0.96
Corte Madera Creek	+0 36	+0 51	*0.99	*0.95
Point San Quintin	+0 42	+0 50	*0.99	*0.93
SAN PABLO BAY				
Point San Pedro	+1 02	+1 07	*1.01	*0.92
Pinole Point	**+1 16**	**+1 25**	***1.03**	***0.89**
Hercules, Refugio Landing	+1 15	+1 39	*1.05	*0.85
Petaluma River entrance	+1 23	+2 08	*1.06	*0.86
Lakeville, Petaluma River	+1 59	+2 50	*1.11	*0.81
Upper drawbridge, Petaluma River	+2 11	+2 59	*1.15	*0.82
CARQUINEZ STRAIT				
Mare Island	+1 34	+1 57	*0.99	*0.84
Vallejo, Mare Island Strait	+1 47	+2 12	*1.02	*0.84
Edgerly Island, Napa River	+2 02	+2 29	*1.06	*0.76
Brazos Drawbridge, Napa River	+2 02	+2 29	*1.14	*0.86
Napa, Napa River	+2 05	+2 37	*1.22	*0.90
Selby	+1 29	+2 04	+0.6	0.0

SF Bay Entrance - Historic Current Corrections

Times with a minus sign occur *before* predictions; those with a plus sign occur *after*.
Maximum current speed = predicted current multiplied by speed ratio.

	FLOOD			EBB		
	Slack before	Max flood	Speed ratio	Slack before	Max ebb	Speed ratio
	h. m.	h. m.		h. m.	h. m.	
GOLDEN GATE and APPROACHES						
San Fran. southern traffic lane, N end	-0 34	-0 32	0.1	-0 37	-0 40	0.1
San Fran. main traffic lane, E end	*current weak and variable*					
San Fran. traffic separation zone buoy	-2 14	-0 32	0.3	+0 02	-0 34	0.1
San Fran. northern traffic lane, SE end	*current weak and variable*					
Point Bonita Lt., 5.27 nm WSW of	-1 54	-1 35	0.2	-0 51	-1 01	0.2
San Francisco Bar, N of ship channel	-0 11	-0 08	0.4	+0 07	+0 03	0.4
Point Lobos, 3.73 nm W of	-2 16	-1 03	0.3	-0 20	-0 31	0.2
Point Lobos, 2.5 miles W of	- - -	+0 32	0.4	- - -	-1 08	0.6
Point Lobos, 1.3 nm SW of	-1 26	-0 51	0.5	+0 27	-0 06	0.4
South Channel	-1 31	-1 21	0.5	-0 14	-0 52	0.5
Point Lobos, 5.47 nm SW of	-2 01	-2 02	0.3	-0 51	-1 10	0.3
Bonita Channel approach	- - -	-0 10	0.2	- - -	-0 56	0.2
Bonita Channel, off Tennessee Cove	- - -	-0 34	0.5	- - -	-0 56	0.3
Bonita Channel, off Point Bonita	- - -	-0 22	0.6	- - -	-1 56	0.1
Point Bonita, 0.8 nm NE of	-4 51	-3 38	0.4	-4 21	-4 01	0.3
Point Bonita Lt. 0.4 nm SSE of	-1 08	-1 04	0.3	-1 28	-1 25	0.5
Point Bonita, 0.95 nm SSE of	-0 26	-0 08	1.0	+0 13	-0 18	0.8
Mile Rock Lt., 0.2 nm NW of	-0 35	-0 25	1.1	+0 18	-0 33	0.9
Point Diablo, 0.2 mile SE of	-0 09	-0 53	0.8	-0 47	+0 08	1.0
Baker Beach (South Bay), 0.3 nm NW of	-5 06	-4 15	0.6	-1 59	-2 52	0.3
Fort Point, 0.3 nm W of	-2 10	-0 41	0.6	+1 02	+0 20	0.2
San Francisco Bay Entrance (Outside)	daily predictions					

NOAA TIDE & CURRENT STATION INFORMATION

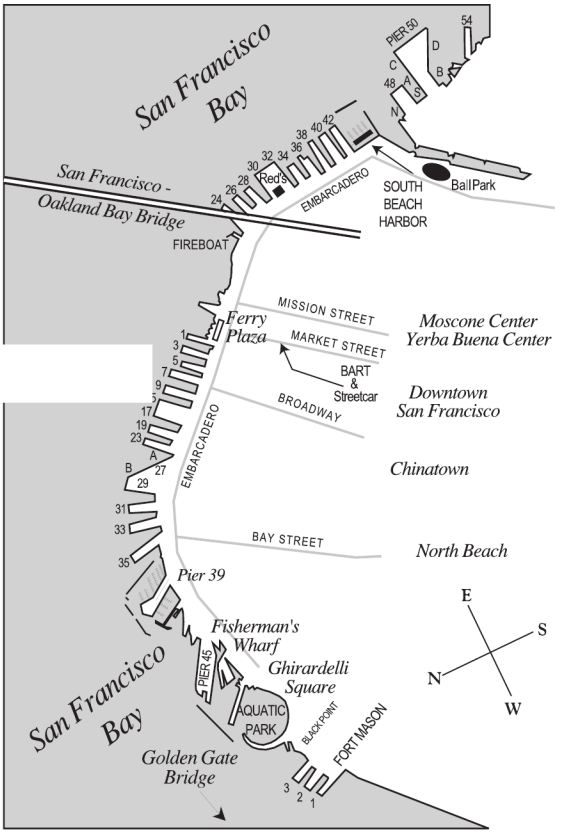
Tide:
San Francisco (Golden Gate):.....9414290

Currents:
San Francisco Bay Entrance (Outside), Depth 19 Ft:.....SFB1201
Golden Gate Bridge 0.46nm E of, Depth 30 Ft:.....SFB1203

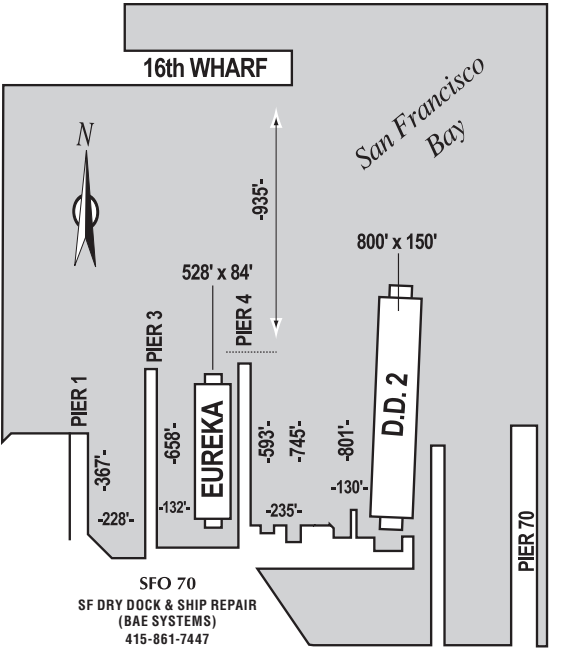
SAN FRANCISCO BAY



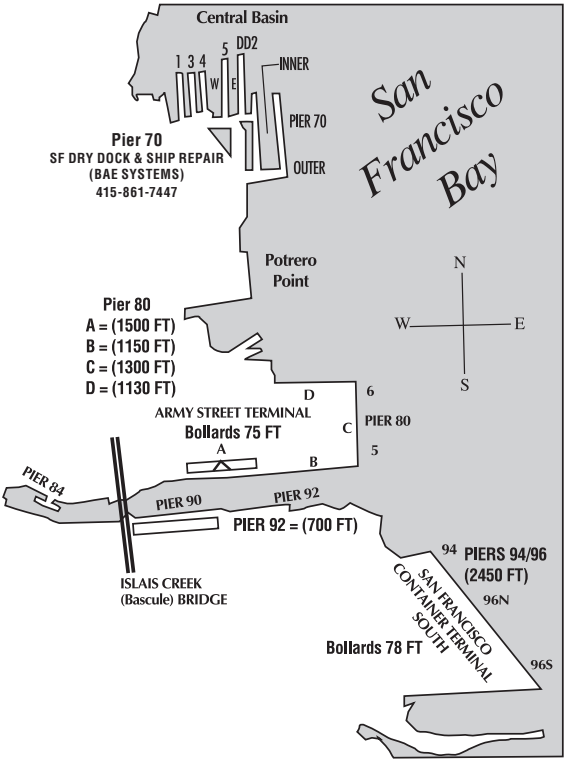
PORT OF SAN FRANCISCO



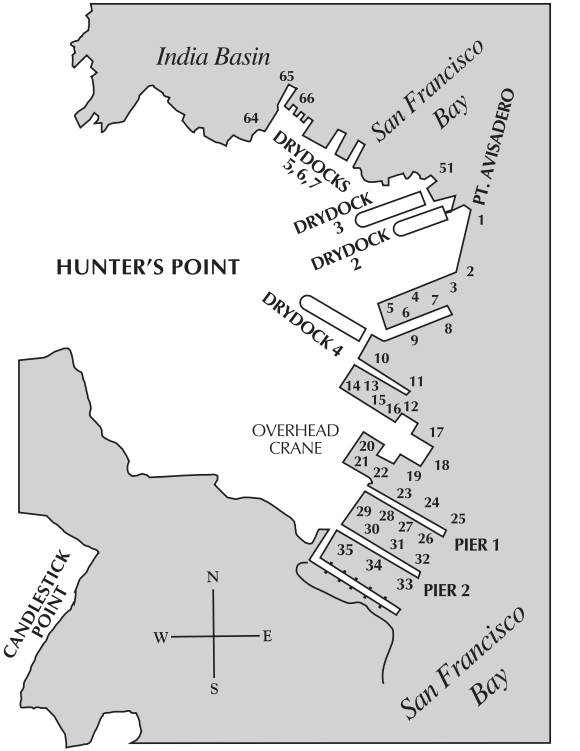
CENTRAL BASIN



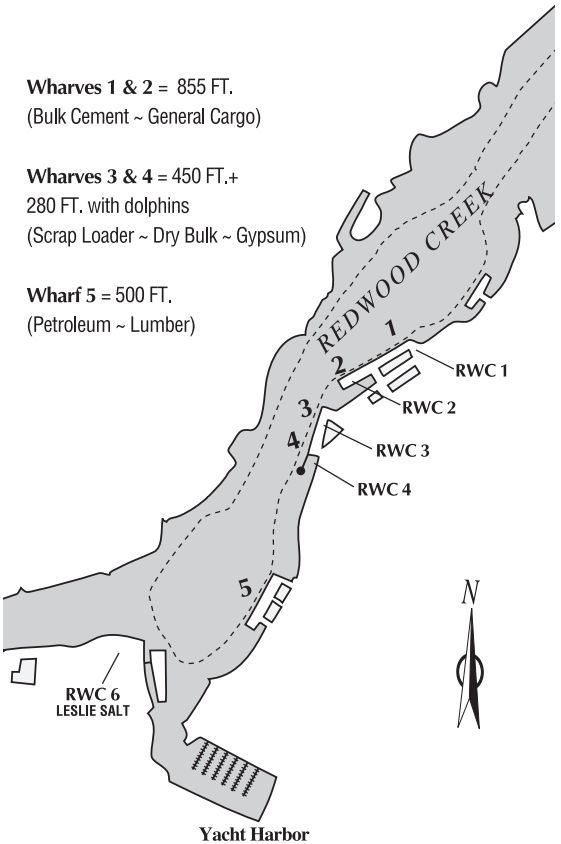
PORT OF SAN FRANCISCO
SOUTH ~ PIERS 64-96



HUNTER'S POINT



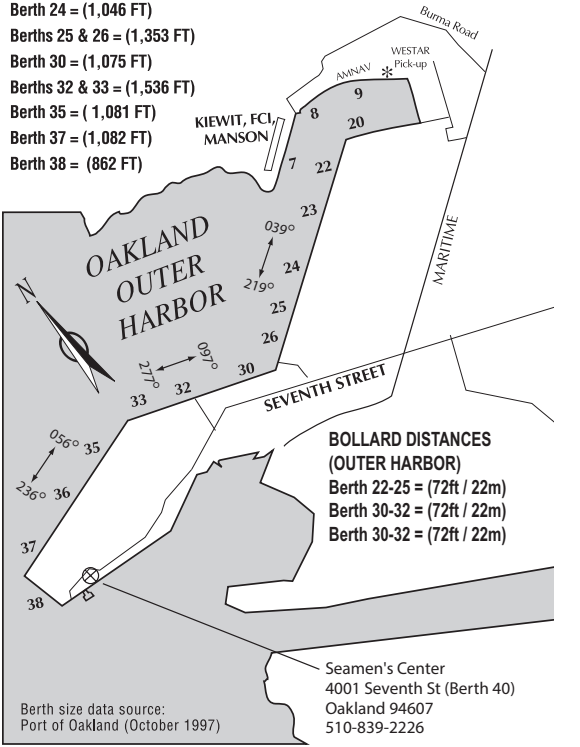
PORT OF REDWOOD CITY



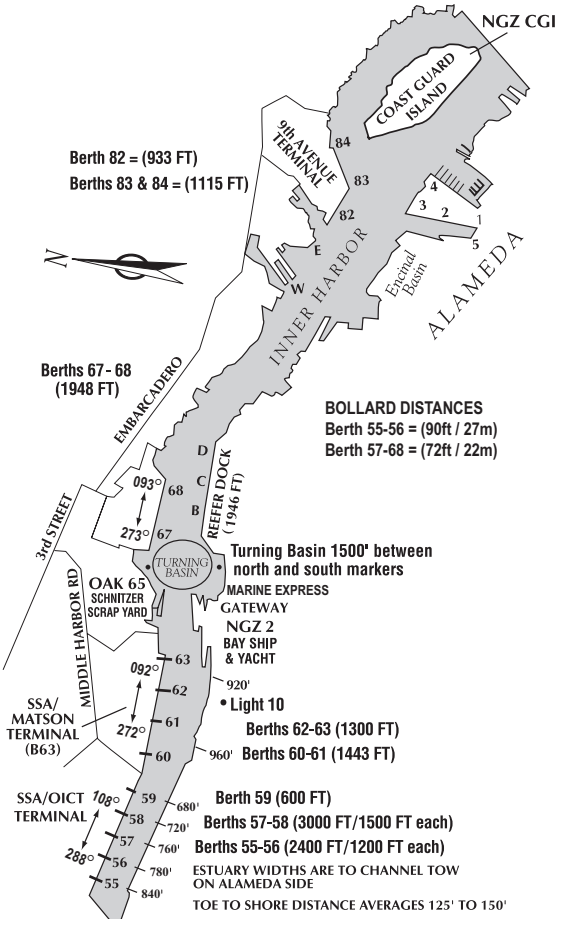
PORT OF OAKLAND (OUTER)

Berths 20 & 21 = (1,355 FT)
Berth 22 = (939 FT)
Berth 23 = (900 FT)
Berth 24 = (1,046 FT)
Berths 25 & 26 = (1,353 FT)
Berth 30 = (1,075 FT)
Berths 32 & 33 = (1,536 FT)
Berth 35 = (1,081 FT)
Berth 37 = (1,082 FT)
Berth 38 = (862 FT)

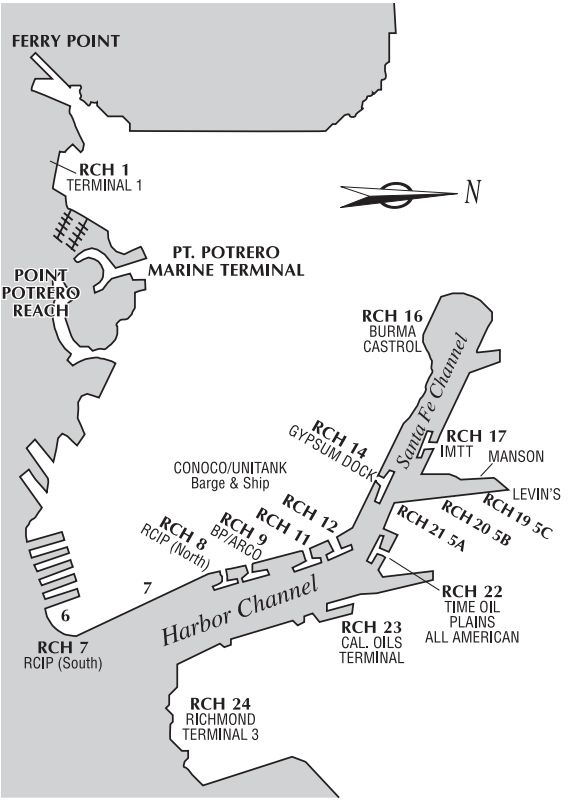
Berth 7 = (434 FT)
Berth 8 = (1,000 FT)
Berth 9 = (1200 FT)



PORT OF OAKLAND (INNER)



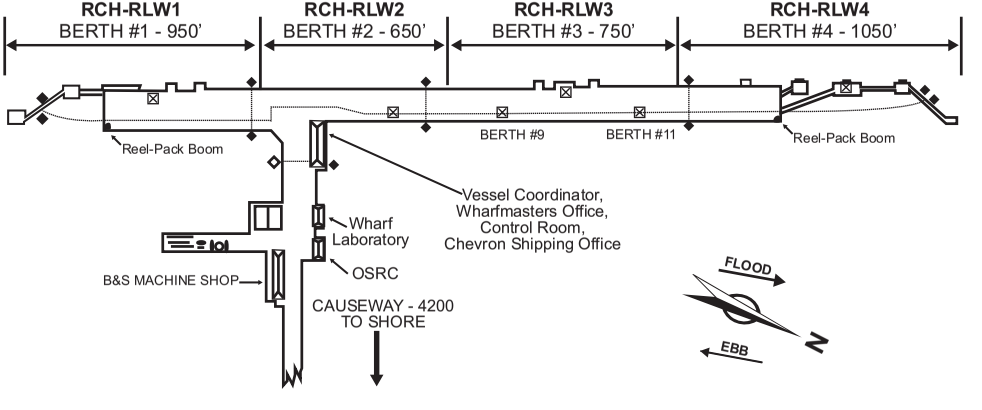
RICHMOND INNER HARBOR



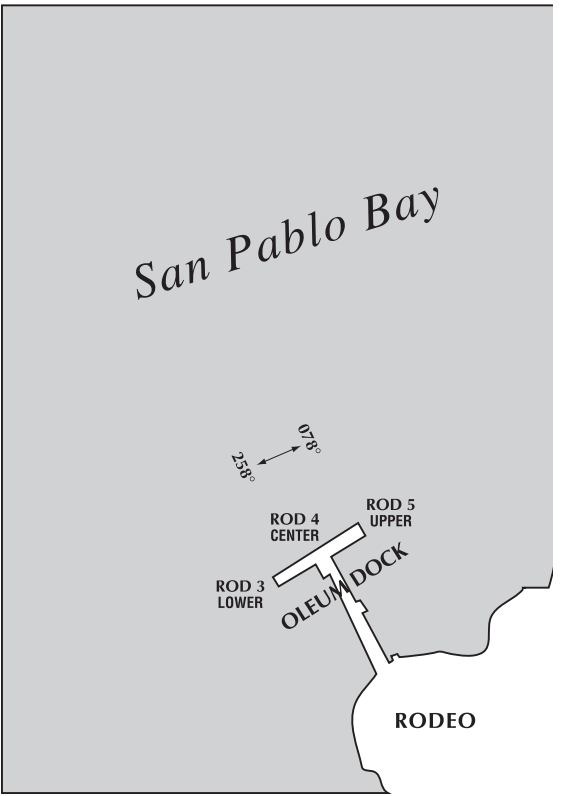
RICHMOND LONG WHARF

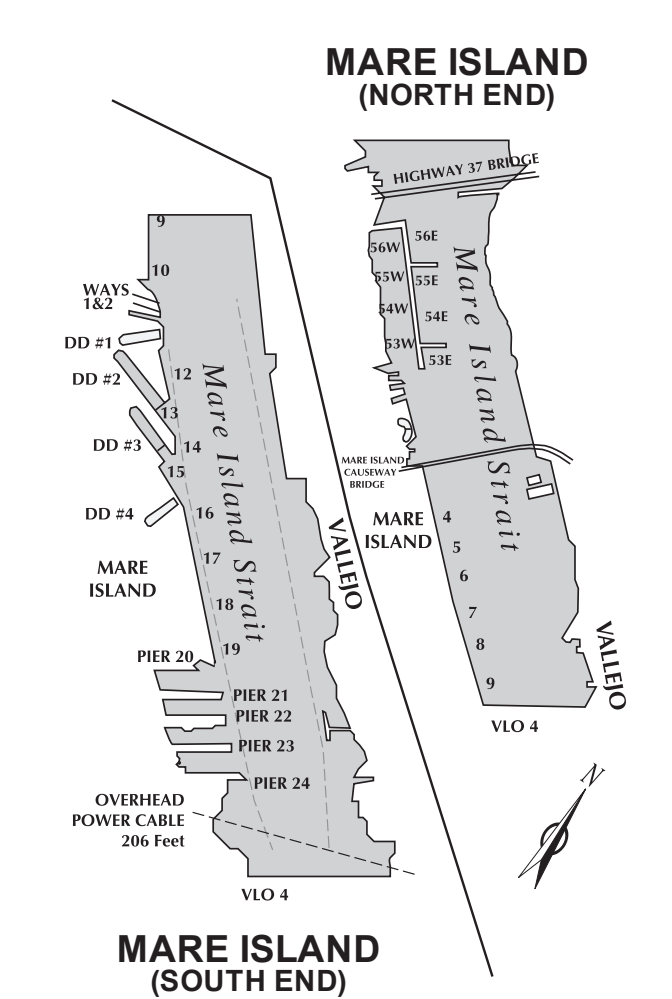
Head Operator:	**510-242-2190**	**Wharf Control Room:**	**510-242-4494**
Vessel Coordinator:	**510-242-4387**	**Chevron Shipping:**	**510-242-4630**
Operations Assistant:	**510-242-4388**	**Vsl. Services Coord:**	**510-242-2888**

Monitors Channel 10

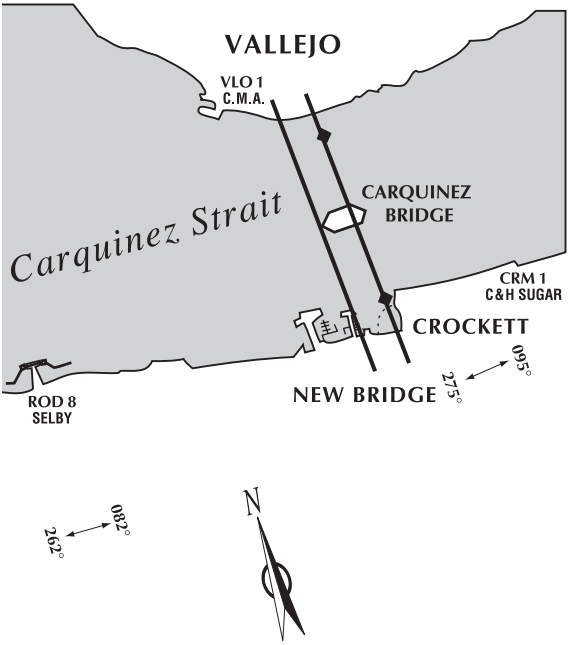


SAN PABLO BAY

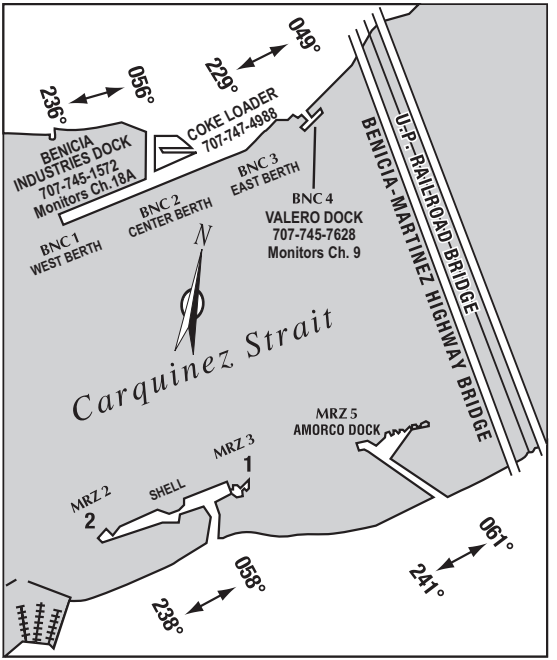



MARE ISLAND
(NORTH END)
HIGHWAY 37 BRIDGE
56E
56W
55E
55W
54E
54W
53E
53W
Mare Island Strait
MARE ISLAND CAUSEWAY BRIDGE
MARE ISLAND
4
5
6
7
8
9
VALLEJO
VLO 4
9
10
WAYS 1&2
DD #1
DD #2
12
13
DD #3
14
15
DD #4
16
17
18
19
MARE ISLAND
PIER 20
PIER 21
PIER 22
PIER 23
PIER 24
OVERHEAD POWER CABLE 206 Feet
VALLEJO
VLO 4
N
MARE ISLAND
(SOUTH END)

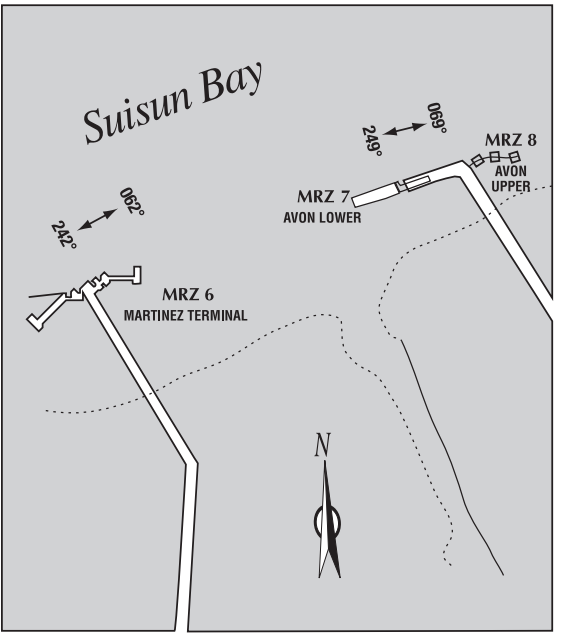
CARQUINEZ STRAIT



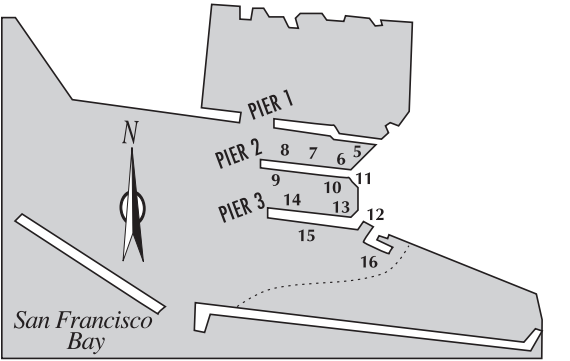
BENICIA

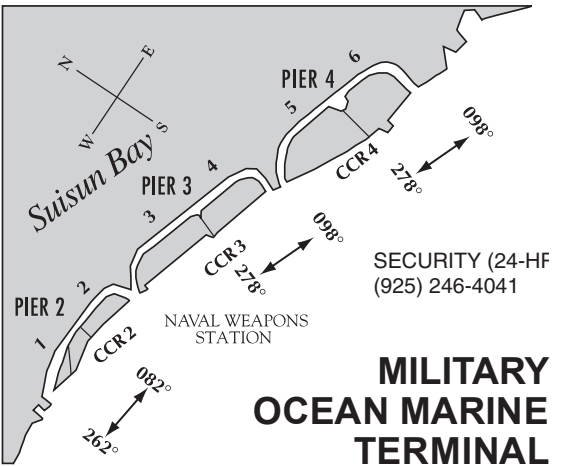

049°
229°
056°
236°
BENICIA INDUSTRIES DOCK
707-745-1572
Monitors Ch.18A
COKE LOADER
707-747-4988
BNC 3
EAST BERTH
BNC 4
VALERO DOCK
707-745-7628
Monitors Ch. 9
BNC 2
CENTER BERTH
BNC 1
WEST BERTH
U.P. RAILROAD BRIDGE
BENICIA-MARTINEZ HIGHWAY BRIDGE
N
Carquinez Strait
MRZ 5
AMORCO DOCK
MRZ 3
1
MRZ 2
2
SHELL
061°
241°
058°
238°

PORT OF MARTINEZ
(UPPER)



ALAMEDA POINT (NAS)



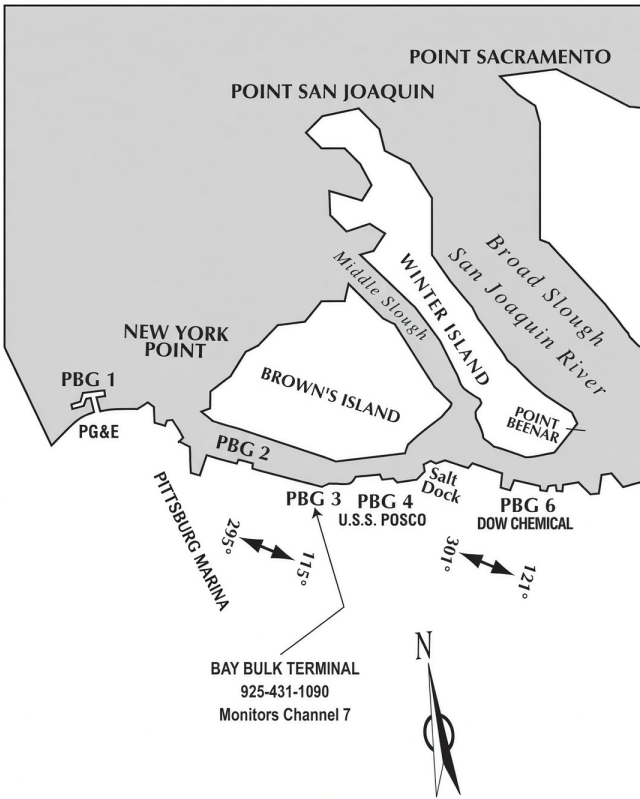


SECURITY (24-HF
(925) 246-4041

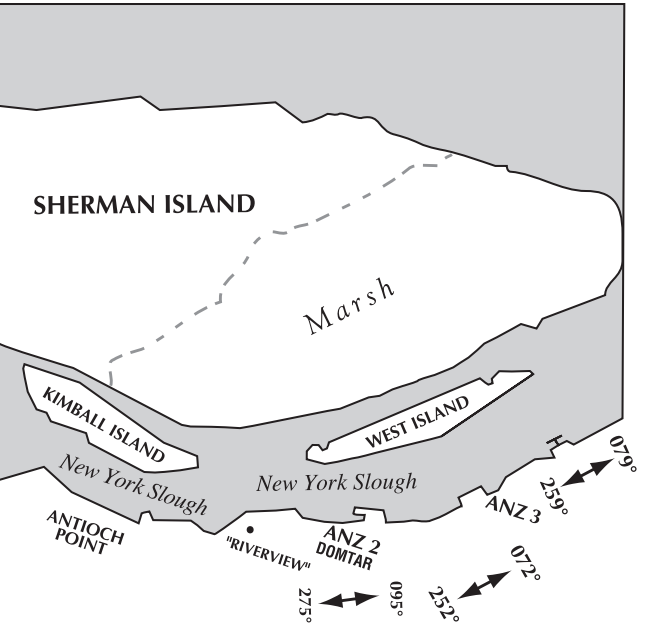
MILITARY OCEAN MARINE TERMINAL

(Port Chicago Naval Weapons Station)

PITTSBURG

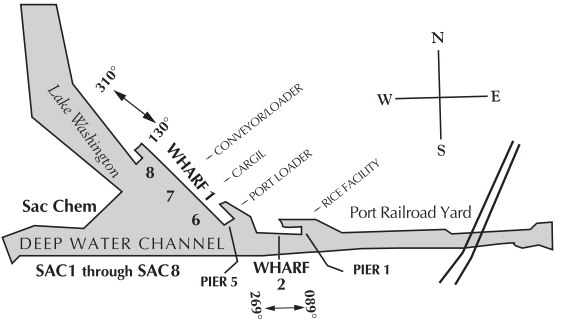

POINT SACRAMENTO
POINT SAN JOAQUIN
Broad Slough
San Joaquin River
Middle Slough
WINTER ISLAND
NEW YORK POINT
PBG 1
PG&E
BROWN'S ISLAND
POINT BEENAR
PBG 2
Salt Dock
PBG 3
PBG 4
U.S.S. POSCO
PBG 6
DOW CHEMICAL
PITTSBURG MARINA
295°
115°
301°
121°
BAY BULK TERMINAL
925-431-1090
Monitors Channel 7
N

ANTIOCH


SHERMAN ISLAND
Marsh
KIMBALL ISLAND
WEST ISLAND
New York Slough
New York Slough
ANTIOCH POINT
"RIVERVIEW"
ANZ 2
DOMTAR
ANZ 3
079°
259°
072°
252°
095°
275°

PORT OF STOCKTON

PORT OF SACRAMENTO



PIER 1 (Wharf) – Bulk Rice
One berth – 600 ft.;
Three 600-ton/hr. loading spouts

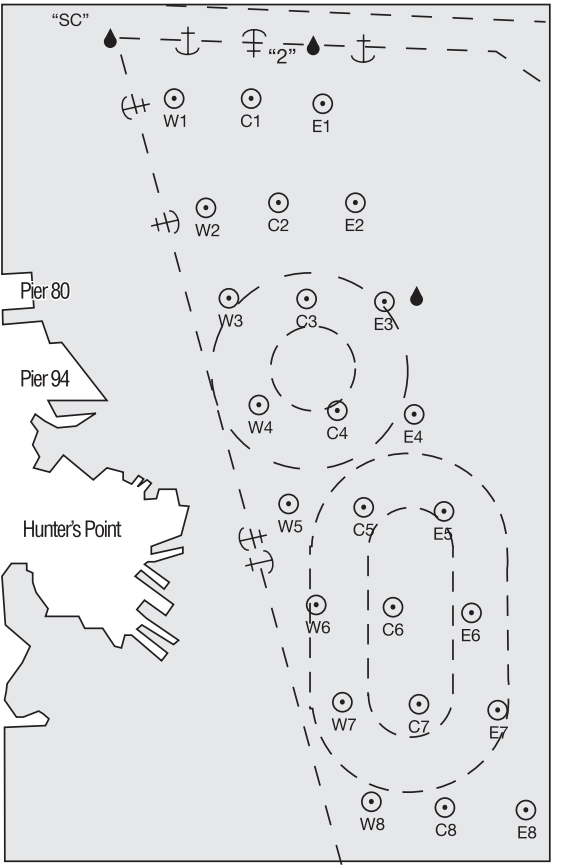
WHARF 2 – General Cargo
One berth – 600 ft.; Transit shed – 86,000 sq. ft.

PIER 5 (Wharf) – Grain & Animal Feed
One berth – 600 ft.
Two 600-ton/hr. grain & bulk conveyors

WHARF 6 – General Cargo, Containers, Logs
One berth – 600 ft.; Open wharf

WHARF 7 & 8 – Dry Bulk, General Cargo
Two berths – 600 ft.
One 600-ton/hr. conveyor loader/off-loader
Transit shed – 86,400 sq. ft.

ANCHORAGE 9
USCG DESIGNATED ANCHORING POSITIONS



DISTANCES FROM THE SEA BUOY

Distances shown in nautical miles by most direct navigable route

TO THE SEA BUOY

FROM THE SOUTH		FROM THE NORTH	
Pt. Montara	14	Bolinas Bay	9
Half Moon Bay	18	Pt. Reyes Light	21
Pigeon Pt.	37	Bodega Head	41
Pt. Santa Cruz	60	Pt. Arena	89
Pt. Pinos Light	77	Mendocino City	111
Cypress Pt.	78	Shelter Cove	155
Pt. Sur Light	94	Blunt's Reef Buoy	188
Los Angeles	361	Columbia River Bar	540
San Diego	465	Seattle	804

Sea Buoy to

Bar Channel 1 & 2	3.10
Bar Channel 7 & 8	5.50
Colregs Line	8.80
Golden Gate Bridge	11.10
Alcatraz	13.85
Pier 35	14.50
BLOSSOM ROCK	14.65
ALPHA BUOY via DWTL	17.00
Ferry Building	15.60

Blossom Rock Buoy – South

SF/OAK Bridge - "C" Twr	1.70
Oakland Bar Chnl 1 & 2	2.45
Estuary, APL	5.20
Howard Terminal	6.15
9th Ave. Term.	7.15
Anchorage 9 Buoy	3.55
Pier 50 - SF	3.00
Pier 70 - SF	3.75
Pier 80 - SF	4.40
Pier 94 - SF	4.95
Hunter's Pt. (Pt. Avis)	5.85
San Bruno Shoal Chnl 1 & 2	9.35
San Mateo Bridge	17.35
Redwood City Entrance	20.60
Redwood City Harbor	23.35
Dumbarton Bridge	25.25

Blossom R. Buoy - No., Central Bay

North Channel "A" Buoy	2.75
Southampton Chnl 1 & 2	5.10
Chevron Long Wharf	7.20
Richmond Pt. Potrero	9.85
Point Molate	8.10
Pt. San Pablo (via E. span)	9.25
West Span San Rafael Brdg.	7.85

Blossom Rock Buoy to North Bay via West Span San Rafael Bridge

Pt. San Pablo	9.75
Echo Buoy	12.90
Petaluma River #1	14.55
Petaluma	25.30
Pinole Shoal Chnl 7/8	14.55
Pinole Shoal Chnl 15	19.10
Oleum	20.30
Selby	21.30
Carquinez Bridge	22.05
Mare Island Cswy Brg	24.35
Crockett	22.55
Buoy 25 Carq. Strait	25.60
Benicia Dock/Shell Martz	27.10
UP Railroad Bridge	27.50
Martinez Terminal	28.50
Avon Wharf	29.00
Port Chicago (NWS Cncrd)	32.80
New York Point	38.80
Riverview Lodge	43.40

San Joaquin River

Antioch Bridge	46.30
Prisoner's Point	60.30
Beacon 24	67.20
Port of Stockton	76.25

Sacramento River

Entrance Buoys 1 & 2	40.55
Rio Vista Bridge	52.05
Light 51	57.55
Port of Sacramento	81.30

DISTANCES ON SAN FRAN

		Blossom Rock	Bay Bridge, D/E	Oakland Out. Har.	Oakland MHT	Howard Term.	Ninth Ave. Term.	Anc. #9 Buoy	Pier 96	San Mateo Bridge	Redwood City
EAST	LNB	15	16	17	20	21	22	18	20	32	38
	Bar Chnl #1/#2	12	13	14	17	18	19	15	17	29	35
	Mile Rock	6	8	8	11	12	13	9	11	23	29
	GG Bridge	4	5	6	9	10	11	7	9	21	27
	BLOSSOM ROCK	0	2	2	5	6	7	4	5	17	23
	Bay Bridge “C” Tower	2	0	2	4	4	5	2	5	14	22
	Oakland Bar Chnl	2	1	0	3	4	5	2	4	19	25
	APL - MHT	5	4	3	0	1	2	5	6	22	28
	Howard Term.	6	4	4	1	0	1	8	10	25	31
	Ninth Ave.	7	5	5	2	1	0	13	15	30	36
SO	Anc #9 Buoy	4	2	2	5	8	13	0	1	14	20
	Pier 96	5	3	4	6	10	15	1	0	12	18
	San Mateo Bridge	17	16	19	22	25	30	14	12	0	6
	Redwood City	23	22	25	28	31	36	20	18	6	0
NORTH	Chevron LW	7	9	10	12	13	14	11	12	25	31
	Pt. Potrero	10	12	12	15	16	17	14	15	27	33
	RSR Bridge (W-Span)	8	10	10	13	14	15	11	13	25	31
	“Echo” Buoy	13	15	15	18	19	20	16	18	30	36
	Pinole Shoal Lt. 15	20	22	22	25	26	27	23	25	37	43
	Carquinez Bridge	22	24	25	27	28	29	26	27	39	45
	UPRR Bridge	28	29	30	33	34	35	31	32	45	51
	Avon	29	31	31	34	35	36	33	34	46	52
	Port Chicago	33	35	35	38	39	40	36	38	50	56
	New York Point	39	41	41	44	45	46	42	44	56	62
	River View	43	45	46	49	50	51	47	48	61	67
	Antioch Bridge	46	48	49	52	52	53	50	51	64	70
	Prisoners Point	60	62	63	66	66	67	64	65	78	84
	Stockton	76	78	79	82	82	83	80	81	94	100
	Tolands Landing	46	48	49	51	52	53	50	51	63	69
	Rio Vista	52	54	55	57	58	59	56	57	69	75
	Sacramento	81	83	84	86	87	88	85	86	98	104

CISCO BAY & TRIBUTARIES

Chevron LW	Pt. Potrero	RSR Bridge (W)	"Echo" Buoy	Pinole Shoal Lt. 15	Carquinez Bridge	UPRR Bridge	Avon	Port Chicago	New York Point	River View	Antioch Bridge	Prisoners Point	Stockton	Tolands Landing	Rio Vista	Sacramento
22	25	23	28	35	37	42	44	47	53	58	61	75	91	61	67	96
19	22	19	24	31	34	39	41	44	50	55	58	72	88	58	64	93
13	16	14	19	26	28	33	35	39	45	49	52	66	82	52	58	87
11	14	11	16	23	26	31	33	36	42	47	50	64	80	50	56	85
7	10	8	13	20	22	28	29	33	39	43	46	60	76	46	52	81
9	12	10	15	22	24	29	31	35	41	45	48	62	78	48	54	83
10	12	10	15	22	25	30	31	35	41	46	49	63	79	49	55	84
12	15	13	18	25	27	33	34	38	44	49	52	66	82	51	57	86
13	16	14	19	26	28	34	35	39	45	50	52	66	82	52	58	87
14	17	15	20	27	29	35	36	40	46	51	53	67	83	53	59	88
11	14	11	16	23	26	31	33	36	42	47	50	64	80	50	56	85
12	15	13	18	25	27	32	34	38	44	48	51	65	81	51	57	86
25	27	25	30	37	39	45	46	50	56	61	64	78	94	63	69	98
31	33	31	36	43	45	51	52	56	62	67	70	84	100	69	75	104
0	3	2	7	14	16	22	23	27	33	37	40	54	70	40	46	75
3	0	5	10	17	19	25	26	30	36	41	43	57	73	43	49	78
2	5	0	5	12	14	20	21	25	31	36	38	52	68	38	44	73
7	10	5	0	7	9	15	16	20	26	31	33	47	63	33	39	68
14	17	12	7	0	2	8	9	13	19	24	26	40	56	26	32	61
16	19	14	9	2	0	5	7	11	17	21	24	38	54	24	30	59
22	25	20	15	8	5	0	2	5	11	16	19	33	49	19	25	54
23	26	21	16	9	7	2	0	4	10	14	17	31	47	17	23	52
27	30	25	20	13	11	5	4	0	6	11	14	28	44	13	19	48
33	36	31	26	19	17	11	10	6	0	5	7	21	38	7	13	42
37	41	36	31	24	21	16	14	11	5	0	3	17	33	10	18	47
40	43	38	33	26	24	19	17	14	7	3	0	14	30	13	21	50
54	57	52	47	40	38	33	31	28	21	17	14	0	16	27	35	64
70	73	68	63	56	54	49	47	44	38	33	30	16	0	43	51	80
40	43	38	33	26	24	19	17	13	7	10	13	27	43	0	6	35
46	49	44	39	32	30	25	23	19	13	18	21	35	51	6	0	29
75	78	73	68	61	59	54	52	48	42	47	50	64	80	35	29	0

HARBOR SAFETY COMMITTEE GUIDELINES FOR NAVIGATING IN REDUCED VISIBILITY

General Guidelines for All Vessels

These guidelines should be used by the mariner when planning, initiating and transiting on the navigable waters of the San Francisco Bay and Delta Region. Nothing in this guidance should preclude vessel Masters, Pilots, and operators from taking proactive measures to ensure the safety of their vessel at all times.

Mariners are to comply with the requirements of the International Regulations for Avoiding Collisions at Sea (COLREGS) at all times.

Critical Maneuvering Areas (CMA): Critical Maneuvering Areas (CMA) are locations within the San Francisco Bay and Delta Region where additional standards of care are required due to the restrictive nature of the channel, proximity of hazards, or the prevalence of adverse currents. The dynamic and unpredictable nature of visibility conditions in the San Francisco Bay can introduce uncertainty and additional risk when transiting these areas.

Guidelines for Large Vessels, Tugs with Tows over 1600 GT and All Tugs with Tows in Petroleum Service Navigating in Reduced Visibility

Applicability: These guidelines apply to the following:

- Large Vessels (power driven vessels of 1600 gross tons or more)
- Tugs with tows of 1600 gross tons or more
- **All** tugs with tows **in petroleum service**

Vessels to which this guidance applies should comply with the following visibility related guidelines when operating in the San Francisco Bay and Delta Region (the Bay):

1. Vessel masters, pilots and operators should at all times use proactive voyage planning to attempt to avoid CMAs during periods of reduced visibility.
2. Vessels should not transit within a CMA when visibility is less than 0.5NM and should comply with the applicable CMA guidelines listed below.
3. Vessels should expect delays at berth, anchor or sea if visibility in a CMA along their planned voyage is less than 0.5 nautical mile.

4. Vessels should make visibility reports as part of their underway report to the VTS and at any point in their transit when visibility conditions change substantially and navigation safety allows the report to be made.

5. Vessel masters, pilots or operators should notify VTS upon determination that a scheduled transit will be delayed or cancelled. If underway, they shall make a sailing plan deviation report per VTS regulations. Should a CMA-related delay introduce additional risks threatening the overall safety of the vessel or the port, then vessel masters, pilots, and operators are expected to proactively mitigate these risks through appropriate action and associated communication with VTS.

6. All vessels which encounter unexpected visibility of less than 0.5 nautical mile within a CMA are advised to exercise extreme caution during the transit.

7. **Vessels docked:** Vessels at a dock within the Bay should not commence a transit if visibility is less than 0.5 nautical mile at the dock.

8. **Vessels at anchor:** Vessels at anchor should remain at anchor when visibility is less than 0.5 nautical mile at anchorage.

9. **Vessels proceeding to dock:** Vessels proceeding to a dock should anchor if visibility at the dock is known to be less than 0.5 nautical mile, unless, considering all circumstances, proceeding to the dock is the safest option.

The following ten locations within the San Francisco Bay and Delta Region are identified by the Harbor Safety Committee as Critical Maneuvering Areas. **The specific guidelines listed below apply to vessels operating in each CMA:**

1. **Redwood Creek:**
   - Vessels should not transit through Redwood Creek when visibility is less than 0.5 nautical mile.

2. **San Mateo-Hayward Bridge:**
   - Vessels should not proceed southbound past San Bruno Shoal Channel Light 1 and Lighted Buoy 2 if the visibility is known to be less than 0.5 nautical mile at the San Mateo-Hayward Bridge.
   - Northbound vessels should not transit through the San Mateo-Hayward Bridge if visibility is less than 0.5 nautical mile.

3. **Islais Creek Channel** (inland from Lash Terminal Approach Lighted Buoy 2 and Lash Terminal Approach Lighted Buoy 5):
   - Vessels should not transit Islais Creek Channel when visibility is less than 0.5 nautical mile.
4. **Oakland Harbor Regulated Navigation Area (RNA):**
   - Vessels should not transit within the Oakland Harbor RNA (33CFR165.1181) when visibility is less than 0.5 nautical mile.
5. **San Francisco-Oakland Bay Bridge** (West of Treasure Island):
   - Outbound/northbound vessels should not transit the San Francisco-Oakland Bay Bridge (West of Yerba Buena Island) when visibility is less than 0.5 nautical mile.
   - Vessels transiting the Bay Bridge CMA in any condition of reduced visibility should generally do so via the A-B or D-E span unless vessel traffic, environmental or other safety factors dictate otherwise.
6. **Richmond Inner Harbor** (inland from Lighted Buoy 2):
   - Vessels should not transit within Richmond Inner Harbor when visibility is less than 0.5 nautical mile.
7. **Richmond-San Rafael Bridge, East Span:**
   - Southbound vessels should not proceed past Point San Pablo if visibility is known to be less than less than 0.5 nautical mile at the East Span of the Richmond-San Rafael Bridge.
   - Northbound vessels should not enter Southampton Shoal Channel if visibility is known to be less than 0.5 nautical mile at the East Span of the Richmond-San Rafael Bridge.
8. **Union Pacific Bridge** (Benicia-Martinez Railroad Drawbridge):
   - Large vessels must comply with the applicable regulations for the Benicia-Martinez Railroad Drawbridge and RNA (33CFR165.1181e3). If visibility reduces to less than 0.5 nautical mile at the UP Bridge after entering the RNA, vessels should not transit the bridge.
9. **New York Slough, Upbound:**
   - Vessels should not proceed past the “NY” buoy marking the entrance to New York Slough when visibility is less than 0.5 nautical mile.
10. **Rio Vista Lift Bridge:**
    - Vessels should not transit the Rio Vista Lift Bridge when visibility is less than 0.5 nautical mile.

GOLDEN GATE BRIDGE STATISTICS

	FEET	METERS
Total length, including approach structure	9,151 (1.75 mi)	2,789
Length of suspended structure	6,450	1,966
Length of main span	4,200	1,280
Width of bridge	90	27.4
Height of towers	746	227
Clearance above MHW water at 57˚ F	220.0	67.10
Clearance above MLLW water at 110˚ F	230.8	70.34
Deepest foundation below water	110.0	33.50
Max. transverse deflection – center span	27.7	8.4
Max. downward deflection – center span	10.8	3.3
Max. upward deflection – center span	5.8	1.8
Cost of construction	$35,000,000	
Construction began	January 5, 1933	
Open to public	May 27, 1937	
Man hours	25,000,000	
Paint (zinc primer, acrylic top coat)	110,000 gal	416,350 l.

TOWER FACTS

Height above water	746	227
Base dimension, each leg	33 x 54	10.1 x 16.5
Greatest pier (south)	155 x 300	47.24 x 91.44
Load on tower from cables	123,000,000 lb.	56,000,000 kg
Transverse deflection	12.5 in.	0.32
Longitudinal deflection, westward	18.0 in.	0.46
eastward	22.0 in.	0.56

CABLE FACTS

Diameter of cables over wrapping	3.03	0.92
Length of one cable	7,650	2,332
Number of wires in each cable	27,572	
Total length of wire used	80,000 mi.	129,000 km
Weight of cables, suspenders & accessories	24,500 tons	21,770 mt
Tension in one cable	63,000,000 lbs	28,636,363 kg
Cable supporting capacity	430,000,000 lbs	195,454,540 kg
Pull at anchorage	126,000,000 lbs	57,272,727 kg

MISCELLANEOUS FACTS

Estimated usable life: 200 years. **Traffic load:** 1937 – 3.3 million vehicles; 1993 – 40.8 million; 2000 – 42.1 million; 2004 – 38.8 million; 2007 – 39.5 million; current traffic volume – 110,000 vehicles daily. **Movable zipper traffic barrier:** put into use January 11, 2015; cost $30.3 million. **Bridge closed:** Dec. 1, 1951 – 3 hrs., wind 69 mph; Dec. 23, 1982 – 2 hrs., wind 70 mph; Dec. 3, 1983 – 3.5 hrs., wind 75 mph. **No damage** from wind or earthquake. **Designed by** Joseph B. Strauss (1870 - 1938). As of January 2014, 2,025,883,491 vehicles have crossed the Golden Gate Bridge (includes northbound and southbound) since opening to traffic on May 28, 1937.

UP Railroad Bridge Information

Lift phone numbers: (402) 233-1748 & (402) 233-1750
Vertical Clearance, Lift-Up: MLLW 140 ft (42.6m)
Horizontal Clearance: 291 ft (88.7m)

Wind Restrictions: When wind speeds at the UP Lift Span average 35mph (30kts) over a five minute period, the bridge operator will notify VTS that the bridge will be suspended until the winds subside.

Navigation Lights:
Downstream Highway 680 Bridge Center Span Lights:
- The center of the main navigation span, shall be marked by a 360° range of two red/green 3 second occulting lights (2 second light/1 second darkness).
- The occulting red light changes to occulting green when the lift span of the adjacent railroad bridge is fully open.
- A set of three white lights arranged in a vertical line shall be mounted directly above each red/green occulting light.

UP Lift Span center channel range lights:
- When the Lift Span is in the fully opened to navigation position, the center lights show green.
- All other positions of the lift span, the center lights show red.

Upstream Highway 680 Center Span Lights:
- The center of the main navigation span, shall be marked by a 360° range of two red/green 3 second occulting lights (2 second light/1 second darkness).
- The occulting red light changes to occulting green when the lift span of the adjacent railroad bridge is fully open.

VTS Protocol:
The official name for this drawbridge is the Benicia-Martinez Railroad Drawbridge across the Carquinez Strait, mile 7.0, at Martinez, CA. But mariners usually call it the “Union Pacific Railroad Bridge,” or the “UP Bridge.”

Lift request communications Protocol available at:

https://www.pacificarea.uscg.mil/Our-Organization/District-11/District-Units/VTSSanFrancisco/beniciaMartinezRrBridge/

Harbor Safety Committee Guidelines for Navigating in Reduced Visibility
(Source: Harbor Safety Committee Plan 2021)

Union Pacific Bridge (Benicia-Martinez Railroad Draw-Bridge): Large vessels must comply with the applicable regulations for the Benicia-Martinez Railroad Draw-bridge and RNA (33CFR165.1181e3).

(RNA) Benicia-Martinez Railroad Drawbridge Regulated Navigation Area (Source 33CFR165.1181)

(RNA Includes the waters bounded by Carquinez Bridge to New York Point)

Eastbound/Upbound Vessels: Large Vessels intending to transit under the UP Bridge Lift Span shall, upon entering the RNA, determine the visibility around the Lift Span. If the visibility is less than ½ nautical mile, or subsequently becomes less than ½ nautical mile, the vessel shall not transit under the lift span.

Westbound/Downbound Vessels: Large Vessels intending to transit under the UP Bridge Lift Span shall, upon entering the RNA, determine the visibility around the Lift Span. If the visibility is less than ½ nautical mile, the vessel shall not pass beyond the westernmost end of Mallard Island until visibility improves to greater than ½ nautical mile around the Lift Span. If after entering the RNA, visibility around the Lift Span subsequently becomes less than ½ nautical mile, the vessel shall not transit under the Lift Span, or shall request a deviation.

Moored & Anchored: Vessels that are moored or anchored within the RNA, with the intent to transit under the Lift Span, shall remain moored or anchored until visibility around the Lift Span becomes greater than ½ nautical mile.

UP RAILROAD BRIDGE
Passenger Train Time Schedule

The UP Railroad Bridge is required to open for vessel traffic in accordance with CFR 33, Part 117. The following information is provided as an aid for planning transits. It assumes the train is on time.

WEEKDAY	WEEKEND
TIMES OF TRAINS	TIMES OF TRAINS
0520 - 0530	0700 - 0705
0605 - 0615	0900 - 0905
0620 - 0630	0950 - 1015
0715 - 0800	1120 - 1205
0830 - 0840	1300 - 1320
0935 - 0945	1450 - 1520
1100 - 1115	1545 - 1555
1300 - 1315	1645 - 1700
1410 - 1420	1745 - 1800
1500 - 1510	1830 - 1910
1535 - 1635	2027 - 2040
1650 - 1710	2115 - 2125
1715 - 1750	2255 - 2325
1800 - 1900	
1940 - 2010	
2105 - 2115	
2200 - 2210	
2250 - 2320	

AIS REQUIREMENTS

AIS (Automatic Identification System for ships) requirements (CFR 33, 164.01) apply to all self-propelled vessels of 1600 GRT or more when operating in the navigable waters of the United States. The requirements for Bridge-to-Bridge radiotelephones (CFR 33, 26.04) also apply to AIS. Included in the requirements for the AIS system is the requirement that there shall be, on each vessel over 1600 GRT, a functioning AIS Pilot Plug. This plug shall be available for pilot use, easily accessible from the primary conning position of the vessel and near 120 volt AC power via a 3-prong receptacle.

MEMO

AIS DESIGNATORS

SAN FRANCISCO
SF Dry Dock.....SFO 70

OAKLAND
Schnitzer Scrap Dock..... OAK 65
Berth #1 is OAK 1, #2 is OAK 2, etc.

ALAMEDA
Bay Ship..... NGZ 2
Coast Guard Island.....NGZ CGI

RICHMOND
Parr 1..... RCH 1
RCIP 6C (So. End)..... RCH 7
RCIP Auto (No. End)..... RCH 8
Kinder Morgan ..... RCH 9
Phillips 66.....RCH 11
Phillips 66..... RCH 12
National Gypsum ..... RCH 14
Castrol Oil ..... RCH 16
IMTT..... RCH 17
Levin's 5C..... RCH 19
Levin's 5B..... RCH 20
Levin's 5A..... RCH 21
Transmontaigne..... RCH 22
AAK USA ..... RCH 23
Parr 3 (Sause Bros) ..... RCH 24
Pt. Orient.....RCH PSP3
Parr 4 (Pac Tank) .....RCH PSP4
Chevron Berth 1..... RCH RLW1
Chevron Berth 2..... RCH RLW2
Chevron Berth 3..... RCH RLW3
Chevron Berth 4..... RCH RLW4

RODEO
Oleum Lower..... ROD 3
Oleum Center..... ROD 4
Oleum Upper..... ROD 5
Selby (Kaneb) ..... ROD 8

CROCKETT
C & H sugar.....CRM 1

BENICIA
Huntway (Ben W)..... BNC 1
Benicia Car Dock..... BNC 2
Benicia Coke..... BNC 3
Valero..... BNC 4

MARTINEZ
Ozol..... MRZ 1
PBF Lower ..... MRZ 2
PBF Upper ..... MRZ 3
Amorco..... MRZ 5
Transmontaigne..... MRZ 6
Avon (Marathon) Lower ..... MRZ 7
Avon Upper ..... MRZ 8

PITTSBURG
PG&E ..... PBG 1
Diablo (Tesoro Coke)..... PBG 2
Bay Bulk ..... PBG 3
USS-UPI (Posco)..... PBG 4
Corteva (Dow Chemicals)..... PBG 6

ANTIOCH
Gypsum (Domtar) .....ANZ 2
Gaylord.....ANZ 3

SACRAMENTO
Berth 1.....SAC 1
Berth #2 is SAC 2, #3 is SAC3, etc.
Sac Chemical..... Sac Chem

STOCKTON
Penny-Newman Grain .....SCK 1
Berth 2.....SCK 2
Up to 13, Berth #3 is SCK 3, etc.
Rough&Ready I. 14..... SCK RRI14
Rest are the same up to SCKRRI 20

VALLEJO
CMA .....VLO 1
Mare Island (4-24 & 53-56) .....VLO 4

CONCORD
MOTCO (NWS 2) ..... CCR 2
MOTCO (NWS 3) ..... CCR 3
MOTCO (NWS 4) ..... CCR 4

ANCHORAGES
Anch 4 (Larkspur) ..... SFO A4
Anch 5 ..... SFO A5
Anch 6 (Berkeley) ..... SFO A6
Anch 7 ..... SFO A7
Anch 8 ..... SFO A8
Anch 9 ..... SFO A9
Anch 10 (Yellow Bluff) .....SFO A10
Anch 12 (SF N Exp) .....SFO A12
Anch 13 (Larkspr Exp) .....SFO A13
Anch 14 (SF S Exp).....SFO A14
Anch 21 (Mare Isl.)..... SFO A21
Anch 22 (Ben Barge) ..... SFO A22
Anch 23 (Ben Temp)..... SFO A23
Suisun Bay..... SFO A26

PILOT CHANGE AREAS
Point Blunt..... SFO BLNT
NYP .....SFO NYP
Pittsburg.....SFO PITT

REDWOOD CITY
Cemex..... RWC 1-2
Sims Metal .....RWC 3-4
Leslie Salt..... RWC 6

MONTEREY .....MRY

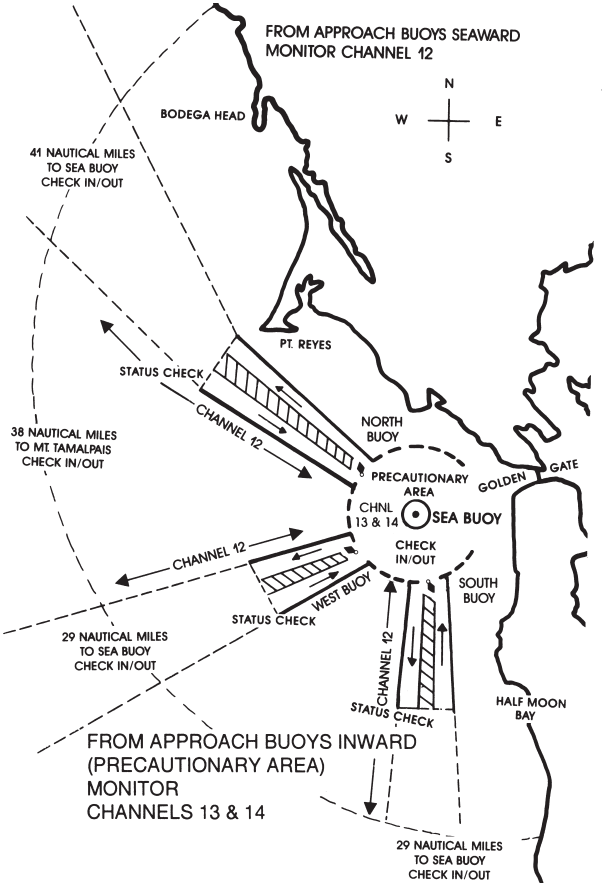
DREDGING AND MINING SITES

Site	AIS	Location
A	>US SFO DA	North of Raccoon Strait Buoy 1
B	>US SFO DB	South of Raccoon Strait Buoy 1
C	>US SFO DC	South of Harding Rock
D	>US SFO DD	Area ¼-mile North of Alcatraz
E	>US SFO DE	Area West of Alcatraz to Alcatraz Shoal
F	>US SFO DF	Area between Arch and Shag Rocks
G	>US SFO DG	Area North of Aquatic Park to Alcatraz
H	>US SFO DH	Presidio Shoal
M	>US SFO DM	Middle Ground near markers 20 & 21 Suisun Bay
N	>US SFO DN	Chipps Island to Broad Slough Suisun Bay

DISPOSAL SITES

Site	AIS	Location
8	>US SFO D8	South of the Main Ship Bar Channel offshore
9	>US SFO D9	South of Mare Island
10	>US SFO D10	San Pablo Bay near the Echo Buoy
11	>US SFO D11	South of Alcatraz
17	>US SFO D17	Near shore off Ocean Beach
Offshore	>US SFO DOFF	Appx. 50 miles due West of the Golden Gate

Updated VTS information effective January, 2013 is available at:
http://www.uscg.mil/d11/vtssf/vtssfum.asp#01112013rev



VTS SAN FRANCISCO
OFFSHORE VESSEL MOVEMENT REPORTING SYSTEM

On December 1, 1986, the U.S. Coast Guard began operating an Offshore Vessel Movement Reporting System (OVMRS) as a service to all vessels transiting the ocean approaches to San Francisco Bay, California, U.S.A. The OVMRS aids in detecting potential close encounters and improves communications by providing the names of transiting deep-draft vessels. Although participation is voluntary, the U.S. Coast Guard urges all vessels transiting the ocean within the Offshore Sector to participate as follows:

- **Vessels over 300 gross registered tons** (referred to as "deep-draft" vessels) and **vessels with tows** should actively participate by reporting their movements to the Coast Guard's Vessel Traffic Service (VTS).
- **All vessels** should listen to VTS broadcasts of deep-draft vessel transits in their area, and navigate and communicate appropriately; identify your vessel and your intentions to approaching vessels.

The **OFFSHORE SECTOR** includes ocean waters within a 38 n. mile radius of Mount Tamalpais (37° 55.8' N, 122° 34.6' W). The distances of this radius from the San Francisco Approach Lighted Horn Buoy (or LNB for Large Navigation Buoy; U.S. Coast Guard Light List No. 360; 37° 45' N, 122° 41.5' W) measured seaward beyond each of the three charted Traffic Separation System lanes are: Northern, 41 n. miles; Main (Western), 29 n. miles; Southern, 29 n. miles.

Responsibilities of Deep-draft Vessels. Before entering the Offshore Sector deep-draft vessels will contact the Coast Guard's San Francisco Vessel Traffic Service on VHF-FM channel 12 and report its type, name, position, course, speed and estimated time of arrival (ETA) to Point Reyes, or Farallon Islands, or Pillar Point (as appropriate) and an ETA to the Sea Buoy, if inbound, or to the seaward radius, if outbound. VTS will broadcast this report. Upon reaching the seaward end of one of the Traffic Separation System lanes, approximately halfway in the transit, the vessel will report an update of its progress to VTS. ***VTS will broadcast the status of all participating deep-draft vessels on channel 12 at 15 minutes after the hour and at 15 minutes to the hour.***

Responsibilities of All Vessels. By monitoring the radio transmissions of vessels reporting into the Offshore Sector, as well as scheduled broadcasts, listeners will be informed of participating deep-draft vessel movements. **All vessels** should communicate their identity and intentions to other vessels operating in their vicinity. The OVMRS is only an information service. The conduct of mariners will still be governed by: agreements reached by communicating between vessels; good seamanship; and the international Rules of the Road.

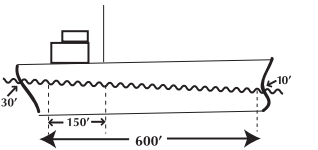
DETERMINING THE AIR DRAFT OF A SHIP NOT ON EVEN KEEL

Height of the mast is the distance from the keel to the top of the mast. AIR DRAFT is the distance from the waterline to the top fo the mast.

To determine the air draft of a ship not on even keel, take the difference in draft fore and aft, DIVIDED by the length between Perpendiculars, TIMES the Distance from the deepest perpendicular to the mast. This is the increase in Air Draft above that determined by subtracting the deepest draft from the height of the mast.

Increase in Draft Due to Pitch
(in feet)

Length	0.5	1.0	2.0
500	2.18	4.36	8.72
600	2.62	5.23	10.46
700	3.05	6.10	12.21
800	3.49	6.95	13.96
900	3.92	7.85	15.70
1000	4.36	8.73	17.45



$$\frac{20}{600} \times \frac{150}{1} = 5$$

WIND FORCE ON THE BEAM CALCULATION

$$\frac{\left(\frac{v}{2}\right)^2 \cdot m^2}{18{,}000} = \text{tons}$$

- v = wind speed in knots
- m^2 = square meters of freeboard

(Souce: Ship Manoeuvring Principles and Pilotage, P. Williamson)

Wind Force in Tons due to Beam Wind

VESSEL TYPE	Sail Area (m^2)	Knots of Beam Wind 15kts	20kts	25kts	30kts
600' Loaded	1,000	3	6	9	13
600' Ballast	2,000	7	12	18	26
900' Tanker Loaded	3,000	10	18	28	40
900' Tanker Ballast	4,000	13	24	37	53
	5,000	17	29	46	66
656' Vehicle Carrier	6,000	20	35	55	79
964' CC House Aft	7,000	23	41	64	93
984' CC House Aft	8,000	26	47	74	106
	9,000	30	53	83	119
1,099' CC House Aft	10,000	33	59	92	132
	11,000	36	65	101	146
1,099' Fwd & 1,200' Aft	12,000	40	71	110	159
1,200' CC House Fwd	13,000	43	76	119	172
	14,000	46	82	129	185
1,200' Evergreen	15,000	50	88	138	198

TONS OF FORCE

TANK VESSEL ESCORT REGULATIONS

INTENT: Effective January 1, 1997, compliance with the TANK VESSEL ESCORT REGULATIONS, drafted by the Office of Oil Spill Prevention and Response (OSPR), and outlined below, became mandatory. These regulations provide that tankers (and/or tank vessels) underway in designated areas of San Francisco Bay and its tributaries (see map, pp. 88-89) and carrying over 5000 long tons of petroleum cargo in bulk be ESCORTED by an approved ESCORT vessel (or vessels) which can provide assistance in the event of steering, propulsion, or other failure of the tanker (or tank vessel).

REPORTING: No more than one hour prior to entering or transiting the areas indicated on the map which require ESCORT, the master of a tank vessel subject to ESCORT REGULATIONS shall complete the ESCORT CHECKLIST (with the Pilot if a Pilot is required for the transit). The PILOT, if present, shall then report the ***name, official number or call sign, displacement tonnage*** (barges will give their deadweight tonnage) and ***position*** of the vessel to the San Francisco Marine Exchange which shall act as the CLEARING HOUSE for this information. Included in the check-in report will be the names of the escort tug(s) and a confirmation that the escort plan is completed and adequate. If no Pilot is aboard, the Master of the vessel shall complete this check-in report. This report shall be made via VHF channels 10 or 18A.

A vessel to be escorted would be in violation of the code if it were to proceed without its assigned escort vessel(s) being in place. If carrying less than 5000 L/T of oil as cargo, a tank vessel need not check in with the Clearing House. At the conclusion of an ESCORTED or NON-ESCORTED transit, a vessel need not check out with the Clearing House.

ESCORT VESSEL MATCHING: Escort tug requirements are based on the tank vessel's displacement (deadweight for barges) and the speed of the current during the transit. Refer to the matrix (pp. 174-175) and list of escort tugs (pg. 172). No more than 3 escort tugs can be used at one time. Maximum transit speed in zones 1, 2, 3 & 5 is 10 knots; in zones 4 & 6 the maximum transit speed is 8 knots.

TRANSIT MANNING: On the escorted vessel, sufficient qualified line handling capable crew shall stand by during the escorted transit to receive lines from each ESCORT vessel in attendance if directed to do so by the master of the escorted vessel. Line handling crew on the escorted vessel shall be under the direction of a supervisor who shall maintain continuous radio communication with the bridge of the escorted vessel during escorted transit.

TRANSIT COMMUNICATION: Escorted vessels shall maintain radio contact via VHF marine radio with escorting vessels on mutually agreed upon channels during the entire escorted transit.

TANKER ESCORT & OAKLAND TUG ASSIST

TUG	BOLLARD PULL†	OAKLAND CLASS	KIPS ZONES 1&2	KIPS ZONES 4&6	LOA Feet
Alta June	67	B	188	179	78'
Apollo	94	A	242	231	78'
Artemis	98	A	263	260	82’
Delta Cathryn	94	A	266	264	100'
Delta Deanna	92	A	268	268	110'
Delta Linda	89	A	262	261	100'
Independence	65	B	118	118	78'
Jamie Ann	91	A	250	250	104'
Jamie Renea	90	A	161	161	104'
Leisa Florence	90	A	270	270	104'
Michelle Sloan	69	B	150	176	80'
Patricia Ann	65	B	124	124	78'
Rachael Allen	93	A	261	261	104'
Revolution	65	B	135	135	78'
Sandra Hugh	65	B	127	127	78'
Sarah Avrick	97	A	256	256	104'
Valor	91	A	249	244	100'
Z-Three	50	B	102	102	88'
Z_Four	50	B	101	101	88'
Z-Five	50	B	104	104	88'

* Clearing House list of certified escort tugs as of 5/13/2025
† Bollard Pull numbers are the result, in short tons, of STATIC PULL testing

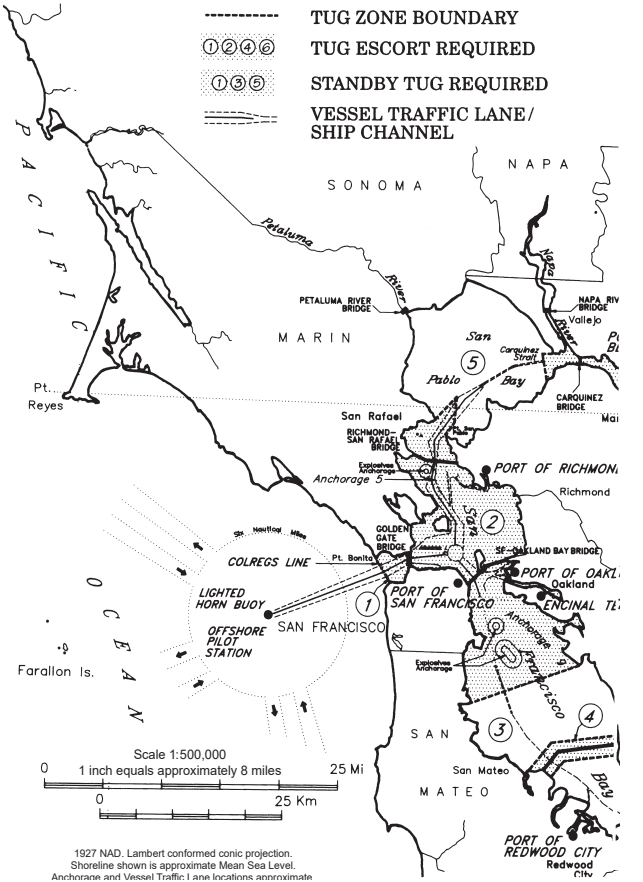
TUG CLASS: MINIMUM BOLLARD PULL (in short tons):

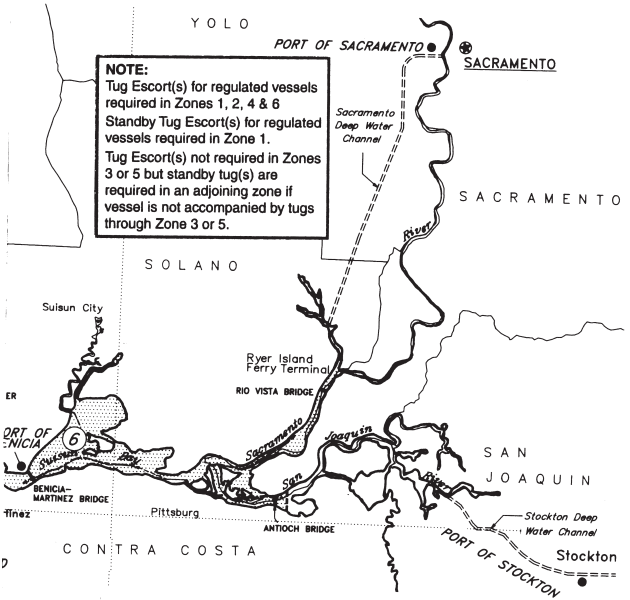
Class	Type	Bollard Pull (Tons)	Ahead Bollard Pull (LBS)	Astern Bollard Pull (LBS)
A	TRACTOR	80	N/A	N/A
B	TRACTOR	50	N/A	N/A
C	TRACTOR	35	N/A	N/A
D	CONVENTIONAL (Twin Screw or Better)	N/A	40,000	30,000

The Kip rating for each boat is based on a static bollard pull test or on modeling done based on the hull design, drive configuration, and static bollard test. Modeling vessels show the braking force in a dynamic condition. The modeling is submitted to and approved by OSPR.

San Francisco Bay Harbor Safety Plan

TUG ESCORT ZONES





1. From a line drawn between Pt. Bonita Light through Mile Rock Light to the shore (COLREGS Demarcation Line), eastward to the GoldenGate.
2. From the Golden Gate Bridge, south to a line between the southern tip of Bay Farm Island and the southeastern tip of Pt. San Bruno Peninsula; and north to line between Pt. San Pablo to Light Buoy "4", to Light Buoy "5", to Pt. San Pedro.
3. From the south end of Zone 2 to one mile north of the San Mateo Bridge.
4. From one mile north of and to one mile south of San Mateo Bridge.
5. From the eastern boundary of Zone 2 to the western approaches of the Carquinez Bridges at Light "15".
6. From Light "15", through the Carquinez Strait, north on the Sacramento Ship Channel to one mile beyond the Ryer Island Ferry Terminal and east on the San Joaquin River to one mile beyond the Antioch Bridge.

USING THE DEFAULT MATRIX

TO MATCH TUGS TO TANKERS: As part of the planning process, it must be determined which tugs are needed to provide the braking force required for the tank vessel. The default matrix, as depicted on the following page, establishes the required braking force based on the displacement of the vessel and the current velocities in the escort zone.

APPLICABLE CURRENT VELOCITY: The current velocities will be determined using the published tide and current tables developed and maintained by NOAA, and used by the pilots. The current velocity used must be the one published for the estimated time the vessel will be transiting the areas shown below. The estimated time of transit should include a window of 30 minutes before and after the scheduled arrival to account for possible delays or changes. Tank vessel operators are responsible for adjusting the estimated arrival time when it appears that it will fall outside of the originally estimated one hour window.

LOCATION OF CURRENT READINGS: The specific current volocity to be used in conjunction with the matrix will be the published readings for the following locations:

1. **the Golden Gate Bridge** – the predicted current velocity at the Golden Gate Bridge will apply to vessels in zones 1 and 2 that are west of a north-south line drawn through Alcatraz and the eastern entrance to Racoon Strait.
2. **the Bay Bridge; west of Yerba Buena Island** - the predicted current velocity at the Bay Bridge will apply to vessels in zone 2 that are south of an arc drawn from Alcatraz east to Treasure Island and east of the north-south line drawn through Alcatraz.
3. **1.25 miles north of Point Chauncey** - the predicted current velocity at 1.25 miles north of Pt. Chauncey will apply to vessels in zone 2 that are north of an arc drawn from Alcatraz east to Treasure Island and east of the north-south line drawn through Alcatraz.
4. **the San Mateo Bridge** - the predicted current velocity at the San Mateo Bridge will apply to vessels while in zone 4.
5. **the Carquinez Bridge** - the predicted current velocity in Carquinez Strait will apply to vessels in zone 6.

NOAA current prediction links can be found on the SF Marine Exchange website: **https://www.sfmx.org/information/escort-program/**

WHEN TO USE WHICH COLUMNS IN THE MATRIX: The matrix (on the following page) provides current velocities for slack water, 1, 2, 3, and 4 knots. The slack water column will be used only when the water is truly slack or when the vessel is traveling against the current. The 1 knot column will be used for any velocity above 0 and equal to 1. The 2 knot column, for any velocity above 1 and equal to 2, and so on up to the 4 knot maximum.

In those rare situations where the current velocity is above 4 knots, such as may occur at the Golden Gate, the tank vessel (requiring an escort tug) should reschedule the transit to a time when the current velocity drops to 4 knots or below.

ESCORT VESSEL MATCHING – DEFAULT MATRIX

	ZONES 1 AND 2				
ASSISTING CURRENT	**SLACK**	**1 KT**	**2 KTS**	**3 KTS**	**4 KTS**
DISPLACEMENT*	**BRAKING FORCE IN KIPS (1,000 POUNDS OF FORCE)**				
0 TO < 20	20	20	30	40	40
20 TO < 30	20	30	40	50	60
30 TO < 40	30	40	50	60	70
40 TO < 50	30	40	60	70	90
50 TO < 60	40	60	70	90	110
60 TO < 80	50	70	90	120	140
80 TO < 100	60	80	110	140	180
100 TO < 120	70	100	130	170	210
120 TO < 140	80	110	150	190	240
140 TO < 160	90	140	190	240	310
160 TO < 180	100	150	210	270	350
180 TO < 200	110	170	230	300	390
200 TO < 220	120	180	250	330	420
	ZONES 4 AND 6				
0 TO < 20	40	50	70	90	110
20 TO < 30	50	70	90	120	160
30 TO < 40	60	90	120	160	210
40 TO < 50	70	110	150	200	250
50 TO < 60	100	140	190	250	320
60 TO < 80	120	180	250	330	420
80 TO < 100	150	220	300	400	520
100 TO < 120	180	270	370	500	650
120 TO < 140	210	310	430	580	760
140 TO < 160	240	350	490	660	860
160 TO < 180	260	390	550	740	970
180 TO < 200	*****				
200 TO < 220	*****				

SF BAY - REGULATED NAVIGATION AREAS (RNA) *

There are seven RNAs within San Francisco Bay, San Pablo Bay and Carquinez Strait.

Vessels regulated within the RNAs are:

- **LARGE VESSELS** – power driven, 1600 gt or more and tugs with tows of 1600 gt or more.
- **HIGH RISK VESSELS** – a large vessel (as defined above) with dangerous cargo** or bulk petroleum products or a tank vessel in ballast.

GENERAL REGULATIONS and **SPECIAL REGULATIONS** apply to **LARGE** and **HIGH RISK** vessels within the RNAs. The General Regulations are:

a) maximum speed - 15 knots through the water and

b) engine(s) to be operating in a control mode and on a fuel that will allow for immediate response to any engine order including STOP for an extended period of time.

GENERAL REGULATIONS apply to all RNAs.

Each RNA is considered to constitute a narrow channel or fairway as defined in Inland Navigation Rule 9. Boundaries of RNAs 1 through 5 are shown on chart 16149.

The **RNAs** and **SPECIAL REGULATIONS** (if any) are:

1. **San Francisco Central Bay RNA** (contains three sections):
   a) Golden Gate Precautionary Area. General Regulations only.
   b) East Bound and West Bound Traffic Lanes. General Regulations only.

      Deep Water Traffic Lane (DWTL) - SPECIAL REGULATIONS - A LARGE vessel shall not enter the DWTL if it will result in meeting, crossing or overtaking another vessel when either is HIGH RISK. However, LARGE non-HIGH RISK vessels may meet, cross or overtake in the DWTL. Inbound vessels with a draft 45 ft or greater and outbound vessels with a draft 28 ft or greater must use the DWTL.
   c) Central Bay Precautionary Area. General Regulations only.

2. **North Ship Channel RNA**. General Regulations only.

3. **San Pablo Strait Channel RNA**. General Regulations only.

4. **Southampton Shoal Channel/Richmond Harbor RNA**. This area includes the maneuvering area off the Chevron Long Wharf **(but not the area alongside and 960 ft out from the wharf)** and Richmond Channel from buoys 1 & 2 to Pt. Potrero. **Also excluded is the basin at Terminal One.** General Regulations and SPECIAL REGULATIONS: a LARGE vessel shall not enter the area if it will meet, cross or overtake another LARGE vessel.

5. **Oakland Harbor RNA**. The W side of this area extends from the "E" tower through the Oakland Bar Channel to Outer Harbor Entrance Channel Lt 7 at the corner of OAK33, and includes the Inner Harbor Entrance Channel till E of Lt 8. General Regulations and SPECIAL REGULATIONS: a LARGE vessel shall not enter the area if it will meet, cross, or overtake another LARGE vessel.

6. **Pinole Shoal Channel RNA**. (Lights 7 & 8 to lights 13 & 14) General Regulations and SPECIAL REGULATIONS: Use of the channel is restricted to vessels greater than 1600 gross tons. Vessels not meeting this requirement shall not enter or cross the channel. A LARGE vessel shall not enter the channel if it will result in meeting or overtaking another vessel if either is HIGH RISK.

7. **Union Pacific (UP) Railroad Bridge RNA**. General Regulations and SPECIAL REGULATIONS: No LARGE vessel may transit any part of the span when visibility at the bridge is less than approximately 1000 yards. Estimates of visibility can be based on the bridge tender's ability to see various landmarks (Benicia dock and Shell wharf) from the lift span. In periods of fog, downbound LARGE vessels shall ascertain visibility at the bridge before passing New York Point and not proceed past Mallard Island if visibility at the bridge is reported to be less than 1000 yards.

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*Ref. 33 CFR-165.1181

**Typical dangerous cargos include but are not limited to: corrosive chemicals, explosive and/or corrosive gases (butane-methane) or liquids (anhydros ammonia).

MEMO

2026

January

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

February

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

March

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

April

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

May

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

June

S	M	T	W	T	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

July

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

August

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

September

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

October

S	M	T	W	T	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

November

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

December

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

GREGER PILOT SERVICE

Ron Greger Unit 38 (M)

INDEPENDENT PILOT SERVICES

Mike Perry Unit 80

James Wilcox Unit 81

CHEVRON PILOTS

Chad Avellar 64

Ryan McKenney 66

Dennis Plant 60