

DATE: 7/22/85

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

TIDE NOTE FOR HYDROGRAPHIC SHEET

Marine Center: PACIFIC

OPR: L123

Hydrographic Sheet: H-10132

Locality: SOUTH SAN FRANCISCO BAY, CALIFORNIA

Time Period: January 16, 1984 - May 9, 1985

Tide Station Used: 941-4506 - Newark Slough, CA
941-4510 - Dumbarton Bridge, CA
~~941-4519 - Mowrey Slough, CA~~
941-4525 - Palo Alto Yacht Harbor, CA
941-4575 - Coyote Creek, CA

Plane of Reference (Mean Lower Low Water):

941-4506 = 1.29 ft.	941-4525 = 4.50 ft.
941-4510 = 3.02 ft.	941-4575 = -0.44 ft.
941-4519 = 2.51 ft.	

Height of Mean High Water Above Plane of Reference:

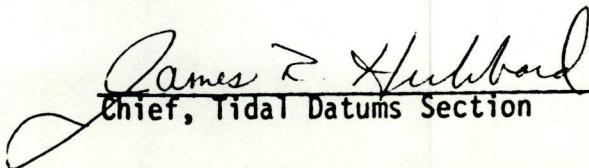
941-4506 = 7.9 ft.	941-4525 = 6.9 ft.
941-4510 = 7.8 ft.	941-4575 = 8.3 ft.
941-4519 = 7.8 ft.	

Remarks:

Recommended Zoning:

See Page 2.

NOTE: CHANGES IN RED FROM PHONE CONVERSATION W/ JOE MULLEN
ON 1-9-86 J.N.S.
4-2-86 (ADDITIONAL CHANGES TO III 9. 1. AND 2.)


Chief, Tidal Datums Section

July 19, 1985

U.S. DEPARTMENT OF COMMERCE
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TIDE NOTE FOR HYDROGRAPHIC SHEET

H-10132, OPR-L123

Recommended Zoning:

- I. North of latitude $37^{\circ}30.0'$ ^{.3'}
- a. West of longitude $122^{\circ}06.3'$, in San Francisco Bay
1. North of latitude $37^{\circ}32.0'$ zone on 941 4510 and apply x0.94 range ratio to all heights
 2. South of latitude $37^{\circ}32.0'$ to $37^{\circ}31.0'$, zone on 941 4510 and apply x0.97 range ratio to all heights ^{.3'}
 3. South of latitude $37^{\circ}31.0'$ to $37^{\circ}30.0'$ zone direct on 941 4510
- b. East of longitude $122^{\circ}06.3'$ zone direct on 941 4506
- II. South of latitude $37^{\circ}30.0'$ ^{.3'}
- a. West of longitude $122^{\circ}05.0'$
1. ~~North of latitude $37^{\circ}28.0'$ zone direct on 941 4510~~ IN SAN FRANCISCO BAY
 2. ~~South of latitude $37^{\circ}28.0'$ zone direct on 941 4525~~ IN PALO ALTO YACHT HARBOR
- b. East of longitude $122^{\circ}05.0'$ to $122^{\circ}03.0'$ ^{.0'} zone on 941 4510 and apply +10 minute time correction and x1.05 range ratio to all heights
- c. East of longitude $122^{\circ}03.0'$ ^{.0'}
1. ~~In Mowrey Slough zone direct on 941 4519~~
 2. In San Francisco Bay zone direct on 941 4575

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FIELD TIDE NOTE

OPR-L123-PHP-81, (H10132)

Coyote Hills Slough to Long Point

Reductions

Soundings on the field sheet were reduced on the basis of predicted tides for San Francisco (Fort Point, 941-4290), California. Tide correctors were generated at 0.2 foot intervals using the PDP-8e computer system and program AM 500, "Predicted Tide Generator".

Tide Zone Correctors

Predicted tides were adjusted with correctors supplied by the Tides and Water Levels Branch, Rockville, Maryland, 14 October 1983. Three different correctors were applied to the sheet:

North portion of the sheet, (above the bridges) listed in the zoning attachment as:

South of 37 32.0 N. to 37 31.0 N.
East of 122 10.0 W. apply X 1.56 range ratio and
+ 1 hr. 00 min. HW time corrector
+ 1 hr. 40 min. LW time corrector

Central portion of the sheet, (between the bridges) listed as:

South of 37 31.0 N. to 37 30.0 N.
East of 122 10.0 W. apply X 1.61 range ratio and
+ 1 hr. 00 min. HW time corrector
+ 1 hr. 40 min. LW time corrector

Southern portion of the sheet, (below the bridges) listed as:

South of 37 30.0 N.
West of 122 05.0 W. apply X 1.65 range ratio and:
+ 1 hr. 00 min. HW time corrector
+ 2 hr. 00 min. LW time corrector

Stations

Four tide stations (ADR Gages) were installed, operated, and maintained by PHP personnel in conjunction with three permanent stations maintained and operated by NOAA, Pacific Tide Party.

The PHP operated stations are at the following sites:

Dumbarton Railroad Bridge, Ca. 941-4510
Position; 37/29/56 N. 122/06/23 W.
Digital Record; 40.3 feet above the staff.
Duration; 11 May 1983 to present

Newark Slough, Ca. 941-4506
Position; 37/30/49 N. 122/04/51 W.
Digital Record; 10.1 feet above the staff.
Duration; 13 July 1984 to 1 November 1984

Palo Alto Yacht Harbor, Ca. 941-4525
Position; 37/27/29 N. 122/06/15 W.
Digital Record; 39.9 feet above the staff.
Duration; 1 May 1984 to 4 January 1985

Coyote Creek, Ca. 941-4575
Position; 37/27.9 N. 122/01.4 W.
Digital Record; 30.2 feet above the staff.
Duration; 1 June 1984 to the present.

The FTP operated permanent stations are at the following sites:

Fort Point (San Francisco), Ca. 941-4290
Type; Primary
Position; 37/48.4 N. 122/27.9 W.

Alameda, Ca. 941-4750
Type; Secondary
Position; 37/46.5 N. 122/17.9 W.

San Mateo, Ca. 941-4458
Type; Secondary
Position; 37/34.8 N. 122/15.2 W.

Frequent checks with PTP confirmed that there were no breaks in the data on their stations during the times of survey acquisition.

Installation, Level, and Operation:

Dumbarton Railroad Bridge, Ca. (941-4510) was installed by PHP personnel per project instructions (OPR-L123-PHP-81, 11 August 1981, Change #5) on 18 July 1983. This station was used for Survey H-10102 and remains in place for control of all surveys south of H-10102. Fischer/Porter ADR gage, S/N 7404A0407M17, a floatwell, and a staff were installed on 11 May 1983. For details of the installation and maintenance of this station prior to the starting date of Survey H-10132 (January 16, 1984), refer to the Descriptive Report to Accompany Survey H-10102, San Francisco Bay, Steinberger Slough to Ravenswood Point, PHP-10-1-83. The last levels conducted prior to Survey H-10132 were six month maintenance levels on 28 October 1983.

Levels run during the period of Survey H-10132 were conducted on 27 February 1984, 18 June 1984, and 11 December 1984. No movement of the gage or staff was detected. Good records were obtained with no

interruptions in the data during survey operations. The gage showed some flat spots in the data in the June 1984 record, This was traced to the slow clogging of the well. The well was plunged on 16 July 1984 and the Preliminary Evaluation (NDAA 77-79A) for the month of July data showed that the problem still remained. PHP personnel dove on the well on 16 August 1984 and removed a significant amount of mud and shell, this ended the problems. No other problems were experienced with this station.

Newark Slough, Ca. (941-4506) was installed by PHP personnel on 13 July 1984 at the 1976 historic site near the Newark Slough Railroad Drawbridge. A new staff and floatwell was banded and bolted into place on the north side of the railroad trestleworks on the east side of the drawbridge. Fischer/Porter ADR gage S/N 7304A1380M5 was installed atop the new well. This gage was in service until 1 November 1984 when it was removed. There were no interruptions in the data during times of hydrography. Levels were run to five recovered marks at installation and removal. No new marks were installed. No movement of the gage or staff was indicated during the period of operation. All levels compared well with history.

Palo Alto Yacht Harbor, Ca. (941-4525) was installed in two stages by PHP personnel. The station is the 1976 historic site. The first stage of the installation was a new staff put into service at the request of the California State Lands Commission on 29 November 1983. The historic staff was still in place, but unreadable. California State Lands Commission personnel performed levels at the time of staff installation. These levels were included in the package submitted to N/DMA 121 at the time of gage installation and NOS use of this site. The new staff was fastened to a plank and the plank was driven into the mud and bolted to the support timbers for the free standing type gage. The station was occupied for hydrographic purposes with the installation of Fischer/Porter ADR gage S/N 7404A0407M1 atop the historic (1976) floatwell on 30 April 1984. PHP personnel dove on the well and cleared accumulated mud and debris around the intake. Data was lost between 5/27-29/1984 due to a timer failure. The timer was replaced. No hydrographic data in Palo Alto Harbor was aquired during this down time. This site experiences flattening of the tide curve at all low tides. No other problems were experienced at this station. The gage was removed on 4 January 1985. Levels were run to five recovered marks at installation and removal by PHP personnel. No new marks were installed.

Coyote Creek, Ca. (941-4575) was installed at the 1975 historic site. A new staff was installed at the historic location on 2 November 1983. The new staff is attached to a redwood plank and this plank is bolted to the concrete tower footing and the original iron top bracket. Fischer/Porter ADR gage S/N 7403A3402M2 was installed atop the historic floatwell on 2 November 1983. The gage was started at the time of installation but N/DMA 121 was contacted and advised that the gage would not be tended regularly until the start of hydrography south of the Dumbarton Railroad Bridge gage (941-4510). Regular observations at this station were started on 1 June 1983. The station is still in use at the present time for support of

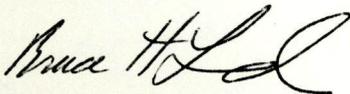
Survey H-10158. The station was leveled at installation (4 Nov. and 13, 15 Dec. 1983) and on 20 July 1984 (the start of hydrography using this station) and on 12 February 1985 to five recovered marks. No new marks were installed. The levels agree well with history and there is no apparent movement of either staff or gage. There were no significant breaks in the data, none at all during times of hydrography.

All levels were run to third order accuracy using a Leitz B1 Automatic Level S/N 214303 and a Keuffel and Esser 1 cm. Metagrading rod S/N 81-0167.

No survey data was acquired without the required tide support. Pacific Standard Time (120 West) was used for record keeping at all gages.

Predicted Tide Zoning has been a problem in the 'South Bay' and it is recommended that when the final zoning is performed, for this survey, that the oceanographer attempt to separate the zones as realistically as possible. This is especially true of any datums associated with the Palo Alto Yacht Harbor gage (941-4525).

Submitted by



Bruce H. Lund
Engineering Technician

Approved by



Lt(jg) Paul T. Steele, NOAA
Chief of Party, PHP