

8281

Diag. Cht. No. 5530-5.

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. WCSP-1356 Office No. H-8281

LOCALITY

State California

General locality South San Francisco Bay

Locality Dumbarton Bridge to Calaveras
Point.

1956-57

CHIEF OF PARTY

H. G. Conerly and A. L. Wardwell

LIBRARY & ARCHIVES

DATE April 29, 1957

B-1870-1 (1)

Area

40,000

18651

40,000/80,000

18652

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

REGISTER No. H-8281

Field No. WCSP-1356

State CALIFORNIA

General locality SOUTH SAN FRANCISCO BAY

Locality ~~SOUTH OF~~ DUMBARTON BRIDGE TO CALAVERAS POINT

Scale 1:10,000 Date of survey 26 March to 4 May 1956
20 May 1957

Instructions dated 25 February 1954 - Supplemental 1 October 1955

Vessel LAUNCH CS-160

Chief of party H. G. CONERLY and A. L. WARDWELL

Surveyed by H.G. CONERLY, A.L. Wardwell, J.R. Richards, and P.J. Taetz

Soundings taken by fathometer, graphic recorder, hand lead, wire

Fathograms scaled by A. W. B.

Fathograms checked by K. E. T.

Protracted by C. A. J. PAUW

Soundings penciled by C. A. J. PAUW

Soundings in fathoms/ feet at MLLW and all true depths

REMARKS:

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DESCRIPTIVE REPORT
TO ACCOMPANY HYDROGRAPHIC SURVEY
REGISTRY NO. H-8281 - FIELD NO. WCSP 1356
SAN FRANCISCO BAY, CALIFORNIA
PROJECT 1256 SCALE: 1:10,000
WEST COAST SHORE PARTY: H. G. CONERLY, CHIEF OF PARTY
SURVEYED BY: H. G. CONERLY

PROJECT

This survey was executed in accordance with Director's Instructions dated 25 February 1954, and Supplemental Instructions dated 1 October 1955. and Letter of 9 Nov. 1956.

SURVEY LIMITS AND DATES

The general locality is South San Francisco Bay. The survey is bordered on the north by H-8210 and covers the entire area southward to the southern shoreline. The area is confined by the eastern shoreline of the bay and longitude 122° 02' 30" as the eastern limit. The sloughs emptying into the bay within the area were sounded to the heads of navigation.

Field work commenced on 26 March 1956 and continued intermittently until 4 May 1956. and 20 May 1957 (A.L. Wardwell)

VESSELS AND EQUIPMENT

USC&GS Launch CS-160 was used for all sounding on this survey. The graphic recording fathometer type 808 J was used. The 808, no. 152 SPX was calibrated to 800 fm/sec. and used a keel mounted acoustic unit.

TIDES AND CURRENT STATIONS

Three tide stations were maintained for the purpose of obtaining tide reducers for this survey. They were located on the Dumbarton Highway Bridge, on the Southern Pacific's Railroad Bridge crossing Mud Slough and on the Moffet Field NAS fuel dock located in Guadalupe Slough, Calif. See TIDE NOTE this report. *Not used.*

No current stations were observed.

CROSSLINES

There are adequate crosslines to make comparisons on all days of *See Review* soundings. The crosslines are satisfactory.

COMPARISON WITH PRIOR SURVEYS

The soundings on this sheet indicate very little change to the latest earlier survey. However a more thorough comparison can be made after the smooth sheet is plotted.

COMPARISON WITH CHART

The soundings in this survey show good agreement with the older chart with a few exceptions in the channels which may be due to scouring and filling processes.

DANGERS AND SHOALS

There is a foul area located at approximate latitude $37^{\circ} 28'.1$, longitude $122^{\circ} 06'.7$. See Boat Sheet for limits.

There were two deadheads awash located. One at latitude $37^{\circ} 30'.41$, longitude $122^{\circ} 06'.79$ and the other at latitude $37^{\circ} 28'.39$, longitude $122^{\circ} 06'.83$.

AIDS TO NAVIGATION

Numerous marker piles and day markers marking slough entrances and channels were located by the hydrographic party. Positions of Day Beacon nos. 2, 4 and 5 were located and verified. On the Boat Sheet Day Beacon no. 6 plotted approximately 10 meters south of photo position. This may be due to sheet distortion or may be a newer beacon replacing the older one. Those along the channel to Palo Alto Yacht Harbor (approx. 400 meters WSW of "CHAR") are privately maintained and are not of a very permanent nature.

Four floating aids to navigation were located as follows:

Bouy	Date Located	Latitude	Longitude
Bouy 2	19 April (58 m)	$37^{\circ} 29'.57$	$122^{\circ} 05'.17$
Bouy 3	19 April (59 m)	$37^{\circ} 28'.75$	$122^{\circ} 04'.54$
Bouy 4	19 April (60 m)	$37^{\circ} 28'.16$	$122^{\circ} 03'.77$
<i>Charted position is presently 60m. NW.</i>		$37^{\circ} 28'.20$	$122^{\circ} 03'.80$
Bouy 6	19 April (61 m)	$37^{\circ} 27'.46$	$122^{\circ} 02'.98$

LANDMARKS FOR CHARTS

No additional landmarks for charts are recommended.

VELOCITY CORRECTIONS

Velocity corrections were determined by numerous pole, leadline and bar comparisons. An abstract of fathometer corrections is included in this report. A separate Fathometer Report will be forwarded to the Washington Office.

CONTROL STATIONS

Control was from previously determined triangulation stations and photographic methods. See list of names attached to this report for details.

ADAQUACY OF SURVEY

The survey is considered adequate for charting purposes. There is a possibility that the greatest depths were not found in a few places in some of the sloughs but with the exception of Mayfield Slough, in which is the Palo Alto Yacht Harbor, they are of little importance and used primarily to supply water to the numerous salt ponds in the area.

SHORELINE AND TOPOGRAPHY

Shoreline is from T-11072, T-11073, T-11074 and T-11075. No changes have been made by the hydrographic party.

METHODS

Standard hydrographic methods were used throughout.

SOUNDINGS

Soundings were taken with an 808 J type fathometer. They were corrected by comparisons with a standard bar check, leadline and pole soundings. An abstract of the corrections is part of this report and the report is to be forwarded to the Director.

PRELIMINARY REVIEW

The two piles shown on the chart just south of the mouth of Newark Slough were not seen at mean tide nor at high tide. They are either gone or are only exposed at low tide. In their place are three pile dolphins and a single pile marking the west side of the channel. See position 56 n and 117 b. These piles were very close to L.W. line on east side of channel. Chart piles as shown on this survey. L.S.S.

The old oyster house is gone and the only thing that remains are a few piles exposed at different heights. See positions 82 j, 83 j and 84 j.

PRELIMINARY REVIEW, CONTD.

The object shown on the preliminary review as "Beacon Prior to 1938" is apparently gone as it was not seen at a 1.4 foot tide on 19 April 1956. If it still exists it is below that. It has been replaced by black lighted buoy no. 3. *Not carried forward.*

The only piles or beacon or lights along the channel to Mayfield Slough, that are visible at 0.4 foot tide, are those located by the hydrographic party or shown on Manuscripts T-11075.

MISCELLANEOUS

The bottom in most of the South San Francisco Bay is very soft mud. Several times the hydrographic party pushed a sounding pole as much as 8 feet into the mud with very little effort. At one time it was pushed 18 feet down with only about 10 pounds of pressure. The launch used for taking soundings which is a LCPR draws a little over 3.5 feet of water and has traveled in two feet of water with very little indication of grounding. She once traveled in one foot of water and was still on an even keel.

The water in this part of the bay is always very dirty and usually visibility is limited to about 6 inches.

APPLICABLE DATA

- 1 - Tidal Levels, marigrams and other tidal information forwarded to Director with abstract of reducers attached to this sheet.
- 2 - Field and office photographs have been forwarded to the Director.
- 3 - Photo Manuscripts to be forwarded to the Seattle Processing Office.
- 4 - Previously established triangulation, to be kept in the office. The Seattle Processing Office has a copy.
- 5 - Fathograms are to be forwarded to the Seattle Processing Office.
- 6 - Blueline Prints have been forwarded to the Seattle Processing Office.
- 7 - Special Fathometer Report to be forwarded to the Director with an abstract of corrections attached to this report.
- 8 - Boat Sheet to be forwarded to the Seattle Processing Office.

Report Submitted

Horace G. Conerly
 Horace G. Conerly
 Commander, USC&GS
 OinC., West Coast
 Shore Party

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TIDAL NOTE

HYDROGRAPHIC SHEET WCSP 1356 - REGISTRY NO. H-8281

For tide reducers for this sheet tide gages were maintained on Dumbarton Highway Bridge and on the Railroad Bridge across Mud Slough. The staff reading of MLLW on the Dumbarton staff was 2.7 feet and on the Mud Slough staff was 3.8 feet.

The Dumbarton gage was on the Dumbarton Highway Bridge Latitude 37 - 30.43' Longitude 122 - 07.0' and the Mud Slough gage was at Latitude 37 - 28 - 08, Longitude 122 - 58 - 22. (*East of the limits of H-8281 (1956-57)*)

Three tide zones were used, all of which are shown on the Boat Sheet.

In zone "C" the observations from the Dumbarton gage were used direct with no correction for time or height.

In zone "D" a mean of time and height between Dumbarton and Mud Slough was used.

In zone "R" the Dumbarton observations were used with a plus 15 minutes in time and no correction for height.

See zones on chart section

APPROVAL SHEET

FIELD NO. WCSP 1356 - REGISTRY NO. H-8281

The records for Hydrographic Sheet WCSP 1356, Registry No. H-8281 have been inspected, the field work was closely supervised and are approved.

Horace G. Conerly
Horace G. Conerly
Commander, USC&GS
OinC., West Coast
Shore Party

COMBINED CORRECTIONS FOR

FATHOMETER 152 SPX

AS USED IN LAUNCH CS 160

SEASON 1956

"A" Scale		"B" Scale	
Fathometer Reading	Corr'n.	Fathometer Reading	Corr'n.
3.5 - 6.6	- 0.6		
19.0	- 0.5		
30.9	- 0.4	30.0	+ 0.5
42.9	- 0.3	42.0	+ 0.6
61.0	- 0.2	60.1	+ 0.7

LIST OF SIGNALS USED BY
THE WEST COAST SHORE PARTY
SHEET WCSP 1356 - REG. H 8281

Name Used In
Hydro. Survey

Origin of Signal

ARK	Newark Slough Draw, 1925.
ARM	T-11074 Teller Trans. Tower.
BEACON # 2	T-11075 Privately Maintained Beacon.
BEND	WHISMAN SLOUGH BEND, TRANSMISSION TOWER, 1931.
CAT	T-11075 Teller Transmission Tower.
CHAR	CHARLESTON SLOUGH NORTH SIDE, TALL TRANSMISSION TOWER, 1931.
EAST	DUMBARTON HIGHWAY BRIDGE, EAST TOWER, 1931.
EAT	T-11075 Teller Transmission Tower.
EGO	T-11075 Teller Transmission Tower.
FAT	T-11075 Teller Transmission Tower.
GAB	SMALL HOUSE END OF PIPE LINE WEST GABLE, 1931.
GEL	EAST OF JAGEL'S SLOUGH, TALL TRANS TOWER, 1931.
HIGH	T-11073 West Gable Tall Building.
HOP	T-11075 Teller Transmission Tower.
JAG	WEST OF JAGEL'S SLOUGH, TALL TRANS TOWER, 1931.
KID	T-11075 Teller Transmission Tower.
LAY	T-11075 Teller Transmission Tower.
LIGHT	DUMBARTON DRAW BRIDGE LIGHT, 1925.
MAY	MAYFIELD RADIO MAST, 1932.
MOUNT	MOUNT VIEW SLOUGH, WEST TRANS TOWER, 1931.
NEAR	NEAR MOUNT VIEW SLOUGH BEND, TRANS TOWER, 1931.
NIX	T-11075 Teller Transmission Tower.
NORTH	T-11073 North one of 3 Antenna towers
NOW	T-11075 Teller Transmission Tower.

LIST OF SIGNALS, CONTD.

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Name Used In
Hydro Survey

Origin of Signal

NUT	T-11075 Taller Transmission Tower.
OFF	T-11075 Taller Transmission Tower.
OIL	T-11075 Taller Transmission Tower.
OLD	T-11075 Taller Transmission Tower.
PALO	T-11074 Tall Radio Mast.
RUM	T-11075 Taller Transmission Tower.
SIP	T-11075 Taller Transmission Tower.
SLY	T-11075 Taller Transmission Tower.
SOUTH	T-11073 South one of the Antenna Towers.
SOW	T-11075 Transmission Tower.
STAKE	Located by positions 136 1, 137 1 & 138 1.
TAN	T-11075 Taller Transmission Tower.
TON	CHARLESTON SLOUGH SOUTH SIDE, TALL TRANS TOWER, 1931.
TOY	T-11075 Taller Transmission Tower.
USE	T-11075 Taller of two Towers.
VIEW	MOUNT VIEW SLOUGH, EAST TRANS TOWER, 1931.
WEST	DUMBARTON HIGHWAY BRIDGE, WEST TOWER, 1931.
WIN	T-11075 Taller Transmission Tower.
ZIG	T-11075 Taller Transmission Tower.

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STATISTICS FOR HYDROGRAPHIC SURVEY
FIELD NO. WCSP 1356 - REGISTRY No. H-8281

Vol.No.	Day Letter	Date	H.L.Sdgs.	No.Pos.	Stat.Miles Sdg.
1	a	26 March		103	13.2
1 & 2	b	27 March		122	16.7
3	c	28 March		128	19.0
2	d	30 March		23	3.0
2	e	6 April		143	22.2
3 & 4	f	9 April		174	26.9
4 & 5	g	10 April		192	25.3
5	h	11 April		144	22.2
6	j	12 April		119	19.0
7	k	13 April		91	14.6
6 & 7	l	18 April	1	202	22.6
8	m	19 April		61	7.1
7 & 8	n	25 April	6	91	10.3
8	p	26 April		98	11.5
8	q	4 Ma6	—	<u>34</u>	<u>4.7</u>
TOTALS			7	1,725	238.3

Total area, square statute miles 12.9

TIDE STATIONS

Hydrographer's report under this heading mentions three tide stations maintained for the purpose of obtaining tide reducers for this sheet though only two are mentioned in the tide note. The station on the Dumbarton Bridge is the only one in the area covered by this sheet. It is not shown on the smooth sheet because the coordinates as given in the Tidal Note are not sufficiently accurate for plotting nor is it shown on the boat sheet. Plotted by Verifier - by scaling from H-8210 (1956)

Guadalupe Sta.
not used on
H-8281 but
was used on
H-8282.

SMOOTH SHEET

The smooth sheet was hand constructed and checked in the Seattle Processing Office using standard methods. Shoreline and topo signals were transferred from topo sheets as listed by the hydrographer's report.

CONTROL OF HYDROGRAPHY

The statements in this paragraph pertain only to the smooth sheet plotting of the hydrography. *Special Instructions for Smooth Plotting H-8281 and H-8282 by The Director dated 9 November 1956.*

This sheet was plotted using the transfer method using film positives of the boat sheet. Representative positions were first plotted with a protractor and compared with the film positions. After which the protracting was largely restricted to the ends of lines and congested areas with the balance of the positions transferred. In some cases it was necessary to use the boat sheet to transfer from, using tracing paper, rather than the film because of poor clarity or because the positions had been covered by a sounding on the boat sheet. Approximately twenty five percent or 424 of 1726 positions on this sheet for one reason or another were protracted.

ADEQUACY OF SURVEY

The junction with H-8282 ⁽¹⁹⁵⁶⁻⁵⁷⁾ is satisfactory except for some displacement of the zero curve at Lat. $37^{\circ} 27'.8$, Long. $122^{\circ} 02'.5$. The fathograms on H-8282, ⁽¹⁹⁵⁶⁻⁵⁷⁾ for this area show a layer of mud on the bottom which may account for the difference. Other curves can be adequately drawn. Survey is complete and adequate for charting.

COMPARISON WITH PRIOR SURVEYS

Comparisons have been made with H-5135 ⁽¹⁹³¹⁾ and H-5139 ⁽¹⁹³¹⁾. Considering the apparent scouring and filling action of the current, the agreement is satisfactory. Two notable changes have occurred. One is in Alvisa Channel in the vicinity of Buoy No. 2, Lat. $37^{\circ} 29'.5$, Long. $122^{\circ} 05'.0$ which has shoaled to seventeen (17) feet. The other is in the shallow channel between Alviso Channel and Mayfield Slough

Channel at Lat. $37^{\circ} 28' .2$, Long $122^{\circ} 05' .7$ which is now cut off from *See Review.*
Mayfield Slough Channel.

COMPARISON WITH CHART

Comparison was made with chart 5531 corrected to 28 May 1955.
The statements in the preceding paragraph also apply to this one.

Respectfully submitted

William M. Martin

WILLIAM M. MARTIN

Supervisory Cart., C&GS

Approved and Forwarded:

Curtis Le Fever

CURTIS LE FEVER, CAPT., C&GS
SEATTLE DISTRICT OFFICER

Geographic Names Penciled on H-8281

CAIAVERAS PT.

CHARLESTON SLOUGH

COOLEY LDG.

DUMBARTON BRIDGE

DUMBARTON PT.

GREEN POINT LDG.

JAGEL SLOUGH

LONG PT.

MAYFIELD SLOUGH

MOUNTAIN VIEW SLOUGH

MOWRY SLOUGH

NEWARK SLOUGH

PALO ALTO YACHT HBR.

PLUMBER CREEK

RAVENSWOOD PT.

SAN FRANCISCO BAY

WHISMAN SLOUGH

TIDE NOTE FOR HYDROGRAPHIC SHEET

Chart Division: R. H. Carstens

17 June 1957

Plane of reference approved in
1 volumes of sounding records for

HYDROGRAPHIC SHEET 8281

Locality San Francisco Bay, Calif.

Chief of Party: A. L. Wardwell in 1957

Plane of reference is mean lower low water, reading

2.4 ft. on tide staff at Mud Slough

8.4 ft. below B.M. K626 (1938)

Height of mean high water above plane of reference is 8.6 feet.

Condition of records satisfactory except as noted below:


Signature

Chief, Tides Branch

16
83wab
839K4C

West Coast Field Party
P.O. Box 431,
Garibaldi, Oregon

13 June 1957

To: The Director
Coast and Geodetic Survey
Washington 25, D. C.

Subject: Additional Sounding Lines on Sheets H-8281 and H-8282. ✓

References: (a) Your letter 22-ret of 30 April 1957
(b) My letter of 26 April 1957, same subject.
(c) Your letter 22/NEK of 21 May 1956, same subject.

The additional sounding lines required on these sheets were run by this party on 20 May 1957. In order that the smooth plotter may know how the tide corrections were determined, there follows a brief description of what was done.

1. In our files was found an abstract of tide staff data for Guadalupe River, Mud Slough and other points where portable gages were installed for the work in 1955 - 56. This abstract gave the elevations of various bench marks above staff zero at each place, as well as the reading of MLW on each staff. The old staff was found still in place at Guadalupe River, so levels were run to the nearest bench mark for a check. At Mud Slough, a new staff was nailed in place and tied to the nearest bench mark so that the reading of MLW could be determined by comparison with the 1956 leveling.
2. Readings on each of these tide staffs were taken at 15-minute intervals while the hydrographic party was in each tide zone applicable.
3. One line, at the entrance of Henry Slough, fell in a zone where a mean of the Mud Slough and Dumbarton Bridge tide gages was previously used to get the reducer. For this line, the reducers for our work were obtained by applying corrections to our staff readings at Mud Slough, the corrections being arrived at by inspection of curves plotted in 1956 when both gages were in operation.
4. The remaining lines came in tide zones where either Mud Slough tides, or Guadalupe River tides, were used without corrections. ← H-8282

Additional Sounding Lines on Sheets H-8281 and H-8282

Page 2.

5. For all except the Guadalupe River lines, a sounding pole was used, care being taken not to let it penetrate the soft mud found throughout the area.
6. The only problem with signals was trying to see them through the rain squalls, as natural objects (power line transmission towers) were used throughout the survey.

Arthur L. Wardwall
CDR, C&GS
OinC, West Coast Field Party

W

cc: Seattle Processing Office
San Francisco District Officer

TIDE NOTE FOR HYDROGRAPHIC SHEET

Chart Division: R. H. Carstens

14 May 1957

Plane of reference approved in
8 volumes of sounding records for

HYDROGRAPHIC SHEET 8281

Locality South San Francisco Bay

Chief of Party: H. G. Conerly in 1956

Plane of reference is mean lower low water, reading
2.7 ft. on tide staff at Dumbarton Bridge
17.4 ft. below B.M. 6A (1931)
3.8 ft. on tide staff at Mud Slough
8.4 ft. below B.M. K 626 (1938)

Height of mean high water above plane of reference is:

Dumbarton Bridge ...	7.8 ft.
Mud Slough	8.6 ft.

Condition of records satisfactory except as noted below:


Signature

Chief, Tides Branch

GEOGRAPHIC NAMES
Survey No. H-8281

Name on Survey	A On Chart No.	B On previous survey No.	C On U. S. quadrangle Maps	D From local information	E On local Maps	F P. O. Guide or Map	G Rand McNally Atlas	H U. S. Light List	K	
<u>California</u>									BFN	1
<u>San Francisco Bay</u>										2
<u>Jagel Slough</u>										3
<u>Whisman Slough</u>										4
<u>Long Point</u>										5
<u>Mountain View Slough</u>										6
<u>Charleston Slough</u>										7
<u>Mayfield Slough</u>										8
<u>Palo Alto Yacht Harbor</u>										9
<u>Cooley Landing</u>										10
<u>Ravenswood Point</u>										11
<u>Dumbarton Bridge</u>										12
<u>Dumbarton Point</u>										13
<u>Newark Slough</u>										14
<u>Plummer Creek</u>										15
<u>Green Point Landing</u>										16
<u>Mowry Slough</u>										17
<u>Calaveras Point</u>										18
										19
										20
										21
										22
<u>Guadalupe River</u>										23
<u>Mud Slough</u>										24
										25
										26
										27

Names approved
5-10-57. L. Heek

(tide stations off AGW
sheet)

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. 8281.....

Records accompanying survey:

Boat sheets *Returned to Field* .1...; sounding vols. ...8+1; wire drag vols.; bomb vols.; graphic recorder rolls 7-Envelopes ~~xxxxx~~. special reports, etc. 1-Smooth sheet, 1-Descriptive report, and 2-Film Positives.....

The following statistics will be submitted with the cartographer's report on the sheet:

Number of positions on sheet		.1725	
Number of positions checked		.198	
" " " <i>Not plotted</i>		.17	<i>Note: This is the 1957 work which was plotted by the Washington Office. (Entrance to Mowry Creek).</i>
Number of positions revised		...0...	
Number of soundings revised (refers to depth only)		...0...	
Number of soundings erroneously spaced		...29...	
Number of signals erroneously plotted or transferred		...0...	
Topographic details	Time	...4...	
Junctions	Time	...16...	
Verification of soundings from graphic record	Time	...4...	

Verification by *J. L. Chambers* Total time 1.30.. Date 3/16/59

Reviewed by *[Signature]* Time 58 hr. Date 6/3/59

JPRE

DIVISION OF CHARTS

Review Section - Nautical Chart Branch

REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. H-8281

California, South San Francisco Bay
Dumbarton Bridge to Calaveras
Point.

FIELD NO. WCSP-1356

Surveyed - Mar.-May 1956 and May 1957

Scale 1:10,000

Project No. 1256

Soundings:

Control:

808 Depth Recorder
Sounding Pole

Sextant fixes on
shore signals

Chief of Party - H. G. Conerly and A. L. Wardwell
Surveyed by - H. G. Conerly, A. L. Wardwell, J. R. Richards, and P. J. Taetz
Protracted by - C. A. J. Pauw (Seattle Office)
Soundings plotted by - C. A. J. Pauw
Verified and inked by - J. C. Chambers
Reviewed by - L. S. Straw
Inspected by - R. H. Carstens

6/3/59

1. Shoreline and Signals

The shoreline originates with reviewed air photographic surveys T-11072, T11073, T11074 and T-11075 of 1952-53.

The source of control is given in the Descriptive Report.

2. Sounding Line Crossings

Depths on the few crosslines are in adequate agreement with the regular system of lines.

3. Depth Curves and Bottom Configuration

The usual depth curves supplemented by the 3-ft. curve were adequately developed except in lat. $37^{\circ}28.05'$ long. $122^{\circ}05.5'$ where a transfer of soundings from H-5139 was required to show continuity of the channel.

The southern extremity of San Francisco Bay is comprised of extensive mud flats bare at low tide and divided by several 2- to 7-foot channels and the main channel leading from Dumbarton Bridge to Coyote Creek.

4. Junctions with Contemporary Surveys

The junctions at Dumbarton Bridge with H-8210(1956) and with H-8282 (1956-57) on the east are adequate.

5. Comparison with Prior Surveys

A.	H-629(1857-58) 1:10,000	H-2413(1898) 1:10,000
	H-636(1857-58) 1:10,000	H-2415(1898) 1:10,000

(1) A comparison between the prior surveys and the present reveals radical changes in shoreline and bottom. The changes are attributed to the action of the current on the bottom, the depositing of sediment from the tributary streams and the construction of salt ponds along shore.

(2) Salt pond construction has resulted in extending the north shoreline between the Dumbarton Bridge and Dumbarton Point 100 to 650 meters into the bay.

(3) From Dumbarton Point to Mowry Slough the shoreline is marshy and subject to natural changes which account for shifts of 100 to 300 meters.

(4) On the south side the most noticeable changes are at Whisman Slough (lat. $37^{\circ}26.7'$ long. $122^{\circ}03.87'$) which has been greatly reduced in width, and the breakthrough of Charleston Slough (apparently a natural change) into the bay at lat. $37^{\circ}27.25'$ long. $122^{\circ}05.47'$ to form an island east of the mouth of Mayfield Slough. Elsewhere both accretion and erosion account for the natural shoreline changes which are on the order of 30 to 100 meters.

(5) A comparison of the depths on the prior surveys with the present show that large flat areas have shoaled from 1 to 3 feet, and that some of the channels between the mud flats have changed course or have filled up.

(6) In lat. $37^{\circ}29.6'$ long. $122^{\circ}03.8'$ the channel leading into Mowry Slough was 13 feet deep in 1857, the present survey shows depths of 2 to 4 feet here.

(7) The old channel leading into Plummer Creek on the 1857-58 survey (H-636) in lat. $37^{\circ}29.9'$ long. $122^{\circ}04.95'$ has completely filled. Apparently this is the result of salt pond construction and dredging of a new channel 500 meters to the west which leads into Newark Slough.

(8) On the middle ground in the mouth of Coyote Creek (lat. $37^{\circ}27.75'$ long. $122^{\circ}02.82'$) the depths are about 2 feet deeper on the present survey compared with the 1857-58 (H-636) survey, thus showing an erosion of the top of this shoal, whereas either side of it the present depths are 5 to 10 feet shoaler. It is also noted that this middle ground has extended northwestward into the main channels 300 to 400 meters (approximate lat. $37^{\circ}27.8'$ long. $122^{\circ}03.3'$) where the depths are 2 to 12 feet shoaler on the present survey.

(9) An 8 foot sounding from H-636 (1857-58) lat. $37^{\circ}28.68'$ long. $122^{\circ}04.49'$ falls in depths of 14 to 15 feet and close to an isolated 11 to 12 foot shoal on the present survey. Surveys made in 1898 (H-2415) and again in 1931 (H-5139) show this spot fairly well developed with no soundings less than 11 feet. The 8-foot sounding on H-636 (1857-58) is probably one fathom in error and should be disregarded.

(10) As a result of scouring and filling there have been minor changes in position and alignment of the deep natural channel. The depths on the present survey differ from 2 to 4 feet through the deepest part of the channel compared with the earlier depths. For example in lat. $37^{\circ}29.44$ long. $122^{\circ}05.0'$ the channel has shoaled from prior depths of 21 feet to present depths of 17 feet. Differences in depths along the edges of the main channel in several places are as much as 15 feet, as in lat. $37^{\circ}29.5$ long. $122^{\circ}06.3'$ where prior depths were 24 feet in 1857 compared with the present 9-to 10-foot depths.

Many more similar differences in shoreline and depths could be pointed out but would serve no further purpose. The present survey is adequate to supersede the prior surveys within the common area.

B. H-5135(1931) 1:10,000
H-5139(1931) 1:10,000

(1) A comparison between the prior and present surveys shows changes in shoreline and bottom configuration which are caused by conditions similar to those described in the preceding paragraphs.

(2) The shorelines of the 1931 surveys and the present, from the mouth of Mowry Slough to Dumbarton Point, differ by 50 to 300 meters. Although some of these differences may be due to the construction of salt ponds, much of the shoreline is marshy and subject to change. The breakthrough of Charleston Slough mentioned above in paragraph 5A (4) -(lat. $37^{\circ}27.25'$ long. $122^{\circ}05.47'$) occurred sometime between 1931 and 1953 (the date of the present topography).

(3) Within the limits of the present survey only minor changes ranging from - 1 to +1 ft. are noted in depths on the large flat areas. Some of the shallow channels that separate these areas have changed course, remained about in the same position, or filled up to form a larger shoal area.

(4) The middle ground in the mouth of Coyote Creek was discussed in paragraph 5A (8) above. The soundings on the present survey are about 1 foot deeper than the depths in 1931, (H-5139) and 4 to 8 feet shoaler in the channels on either side.

(5) A few soundings from H-5139 (1931) were carried forward to supplement those on the present survey in lat. $37^{\circ}28.4$ long. $122^{\circ}06.23$ and lat. $37^{\circ}28.1$ long. $122^{\circ}05.52'$.

(6) There is evidence of scouring in the main channel resulting in deepening from 2 to 4 feet in a few places but changes in depths due to shoaling are more important. For example; the main channel has shoaled from 5 to 12 feet in the vicinity of lat. $37^{\circ}29.67'$ long. $122^{\circ}05.34'$ where present depths are 30 to 42 feet compared to 44 and 50 feet in 1931. A shoaling of about 11 ft. has occurred in mid-channel where present 17-foot soundings in lat. $37^{\circ}29.5'$ long. $122^{\circ}05.1'$ fall in prior depths of 26 to 28 feet. From this point southeastward to the middle ground shoal at the mouth of Coyote Creek only minor differences in the depths are noted between the prior surveys and the present.

(7) Only two sounding lines were run across the top of the hard mud shoal in lat. $37^{\circ}29.56'$ long. $122^{\circ}05.43'$. A close comparison of the soundings on this shoal to the 12-foot curve shows practically no differences in depths between the 1931 (H-5135) survey and the present work

Five soundings including a least depth of $4\frac{1}{2}$ feet are carried forward to more adequately delimit this shoal.

With the addition of a few soundings mentioned above and supplementary bottom characteristics the present survey is adequate to supersede these prior surveys within the common area.

6. Comparison with Chart 5331 (Reconstruction Dwg No. 18)

A. Hydrography

The present survey was applied to the Reconstruction Drawing No. 18 before verification and review the applied hydrography is in substantial agreement with the present survey, except for the $4\frac{1}{2}$ foot sounding which together with a few other soundings are carried forward from H-5135 (1931) to adequately delimit the shoal in lat. $37^{\circ}29.56'$ long. $122^{\circ}05.43'$.

B. Aids to Navigation

The charted positions of the fixed and floating aids to navigation are in agreement with the present survey except the lighted red buoy No. "4" charted in lat. $37^{\circ}28.2'$ long. $122^{\circ}03.8'$, which is charted about 60 meters northwest of its position on the present survey. However, all aids to navigation as charted, including No. "4", properly mark the features intended.

7. Condition of Survey

a. The sounding records and Description Report are complete and comprehensive.

b. During smooth plotting the positions of the sounding lines were transferred to the smooth sheet principally from film positions of the boat sheet. Where films were not clear or where critical data was involved, the positions were protracted on the smooth sheet. Seventy-five percent of the total number of positions were transferred by film positives (see Special Report No. 153, 1956 by Curtis LeFever and W. M. Martin).

In order to check the accuracy of the transferred positions, the verifier checked 198 positions out of a total of 1,725 positions, or about 11.5%. The transfer method provided adequate smooth sheet positions on this survey.

8. Compliance with Project Instructions

The survey adequately complies with the Project Instructions.

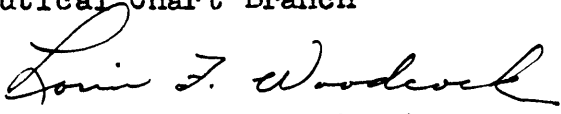
9. Additional Field Work

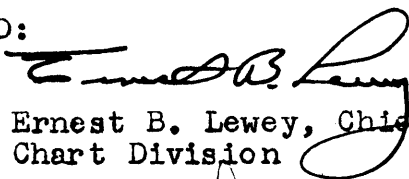
This is a good basic survey and no additional field work is recommended.

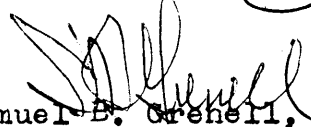
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