

H-10513

NOAA FORM 76-36A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic
Field No. PHP-10-6-93
Registry No. H-10513

LOCALITY

State California
General Locality Tomales Bay
Sublocality Pelican Pt. to Shallow Beach

1993-94

CHIEF OF PARTY
LT Guy T. Noll, NOAA

LIBRARY & ARCHIVES

DATE MAY 5 1995

HYDROGRAPHIC TITLE SHEET

H-10513

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

FIELD NO.

PHP-10-6-93

State California

General locality Tomales Bay

Locality Pelican Point to Shallow Beach

Scale 1:10,000 Date of survey Oct. 13, 1993 - Jan 31, 1994

Instructions dated September 10, 1993 Project No. OPR-L209-PHP

Vessel Jensen Launch 1101 (0651), MonArk Launch 1102 (0652)

Chief of party LT Guy T. Noll, NOAA

Surveyed by LT G.T. Noll, LT R.A. Fletcher, ST R.W. Adams, ST L.K. Simmons
ET E.O. Wernicke

Soundings taken by echo sounder, hand lead, pole Innerspace Model 448

Graphic record scaled by PHP Personnel

Graphic record checked by PHP Personnel

Evaluation by: I. Almacen Automated plot by PHS Kynetics Plotter

Verification by I. Almacen, J. Stringham

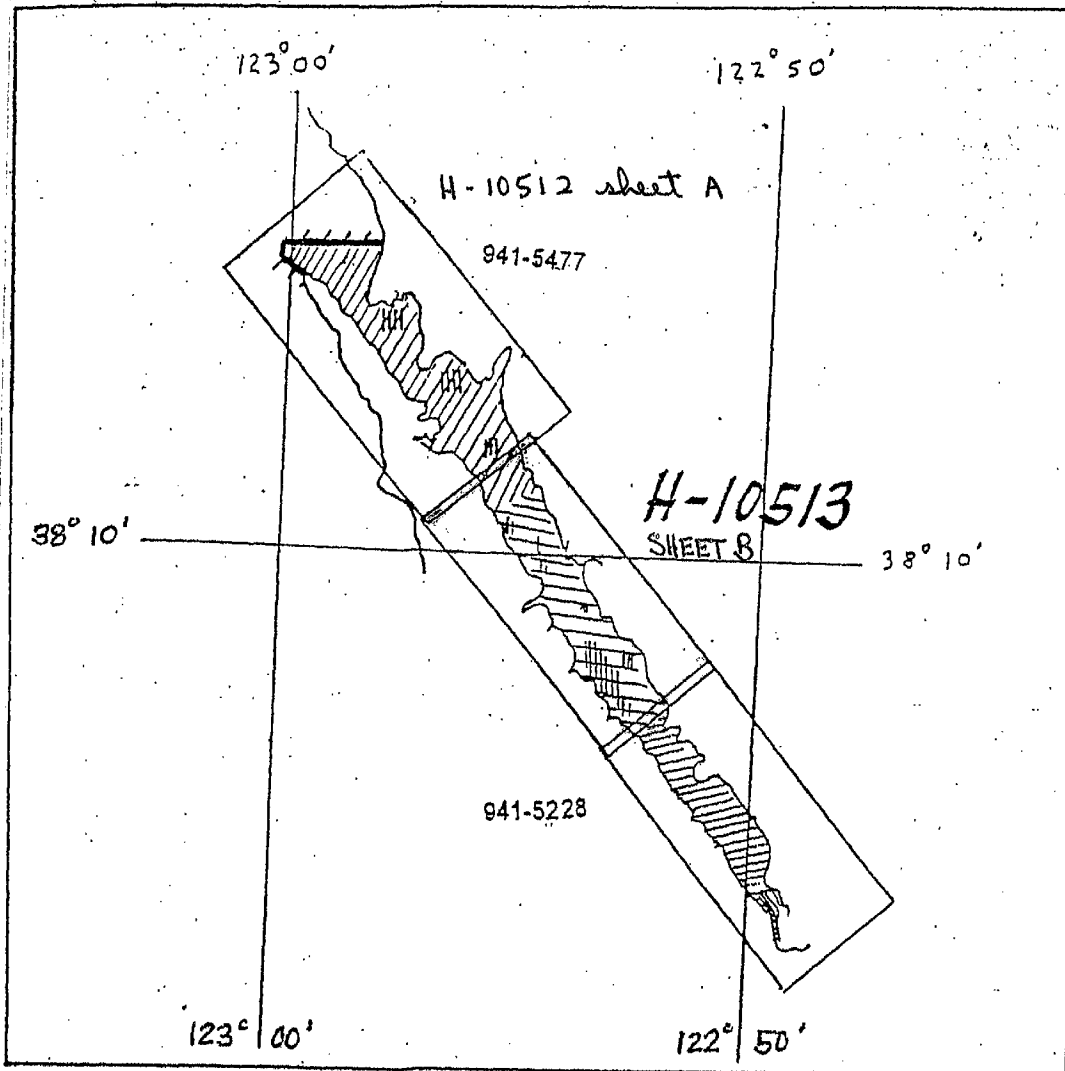
Soundings in ~~XXXXXX~~ meters and decimeters at ~~XXXXXX~~ MLLW

REMARKS: Time in UTC. Revisions and marginal notes in black were generated
during office processing. Some separates are filed with the
hydrographic data, as a result page numbering may be interrupted
or non-sequential.

12/18/96
5/9/95

AWOIS AND SELF 5/95 BWD

PROGRESS SKETCH
OPR-L209-PHP
TOMALES BAY, CALIFORNIA
OCTOBER 1993 - MARCH 1994
HYDROGRAPHIC SURVEY
PACIFIC HYDROGRAPHIC PARTY
LT GUY T. NOLL, CHIEF OF PARTY



Dynamic Draft ✓

Settlement and squat measurements for VN 0651 were conducted on March 17, 1993, (DN 076) in San Francisco Bay at the Tiburon Fisheries Laboratory in Tiburon, CA. Settlement and squat measurements for VN 0652 were conducted on May 21, 1993, (DN 141) at the same location. Field records were included in Separate IV * of the Descriptive Report for OPR-L209-PHP-10-5-93, H-10512, Sheet A submitted in November, 1993.

Settlement and squat correctors are applied on line to all survey data via the PC-DAS Offset Tables*. Offset Table 1 corresponds to VN 0651; Offset Table 2 corresponds to VN 0652. Settlement and squat correctors are reapplied during field processing using the REAPPLY program in HDAPS.

Tide Correctors ✓

In compliance with Section 5.9 of the Project Instructions, three tidal zones were established for this survey based on data for reference station 941-5020, Point Reyes, CA.

Tide Corr.

<u>Tide Zone #</u>	<u>Area</u>	<u>Ratio</u>	<u>Hi</u>	<u>Lo</u>	<u>Time Corr.</u>
3	Toms Pt to Pelican Pt	0.91	0.0	0.0	+01:12
4	Pelican Pt to Hearts Desire	0.91	0.0	0.0	+01:40
5	Hearts Desire to South End	0.91	0.0	0.0	+01:40

There were some problems in re-applying tide correctors between latitude 38°08'00"N, longitude 122°53'00"W and latitude 38°08'00"N, longitude 122°52'30"W. The REAPPLY program in the HDAPS software only allows predicted tide table changes at breaks in the on-line acquisition of data, thus requiring the stopping and re-starting of the reference lines at pre-determined zone changes. In some instances the breaks did not happen at the correct time. Affected data were collected on Day Numbers 312, 315 and 327. Affected DOL reference lines were +1800 to +2400. (*Approved Tide Note is attached to this report.*) *These errors were corrected during field processing.*

H. CONTROL STATIONS (*See EVAL RPT., Sec. 2*)

Horizontal Datum

The horizontal control datum for this project is North American Datum of 1983 (NAD 83). A copy of the HDAPS Control Station Table is included in ~~Appendix III~~ ^{*this report*} (List of Horizontal Control Stations). A separate Horizontal Control Report OPR-L209, Tomales Bay, was submitted in November, 1993.

* *Filed with the hydrographic data.*

I. HYDROGRAPHIC POSITION CONTROL ✓

Reference Position Control ✓

Differential GPS (DGPS) was used for position control throughout this survey. DGPS reference stations, Marconi DGPS 1993 and Lawsons DGPS 1993, were installed as described in the Horizontal Control Report in accordance with Field Procedures Manual (FPM), Section 3.4.6. Per FPM, Section 3.4.6.3, the reference sites were confirmed using the program MONITOR. A copy of the scatter plots and the outlier.sum files were included in Separate III * (Horizontal Position Control and Corrections to Position Data) in the Descriptive Report for PHP-10-5-93, H-10512, Sheet A in November, 1993.

DGPS Performance Checks ✓

Per FPM, Section 3.4.4.1, DGPS performance checks were obtained during the survey using a piling at Marshall's Boat Works or Day Marker 5, both of which were positioned to Third Order, Class I standards (see Horizontal Control Report submitted in November, 1993. DGPS performance checks also were obtained by comparing positions using Marconi DGPS 1993 to Lawson's DGPS 1993. All DGPS performance checks were successful; performance check forms are located in the data files*.

Positioning Equipment ✓

The following GPS equipment was used:

<u>Equipment Location</u>	<u>Type of Receiver/Antenna</u>	<u>Receiver Serial No.</u>	<u>Antenna Serial No.</u>
DGPS Marconi	Trimble 4000SST	2952A00459	2951A00123
DGPS Lawsons	Trimble 4000SST	2952A00461	2951A00008
VN 0651	Ashtech	700417B1139 Firmware 1E08D	700378A0272
VN 0652	Ashtech	700417A1141 Firmware 1E08D	700378B0402

The unique numbers for all equipment serial numbers are annotated on the daily master printout* and on the daily echograms*.

J. SHORELINE (See EVAL RPT., Sec. 2)

Sources

High water shoreline detail shown on field sheets was transferred by hand from a 1:10,000 scale enlargement of DM-10149 (latitude 38°11'12"N. south to latitude 38°07'00"N.) PHP personnel have

* Filed with the hydrographic data.

calculated that photography for DM-10149 was flown at a tide of +4.3 feet on July 25, 1991, 11:07-11:16 PST. All heights represented in this text ~~were~~^{are} reduced to MLLW using ~~predicted~~^{approved} tides.

Verification ✓

Field notes can be found in the echograms, shoreline track plot and the detached position (DP) overlay. A DP listing created by HDAPS DP program is included in the data files.*

DM-10149 Shoreline Agreement ✓

The west side of the bay is steep with short, if any, beaches and agrees reasonably well with the digital map. There were several discrepancies along the west shore, which are listed below.

A charted shoreline feature was positioned on DN 005, Fix 107 at latitude 38°10'28.688"N., longitude 122°55'21.145"W. DM-10149 does not depict this feature on the shoreline. The hydrographer recommends retaining the charted feature at the surveyed position and labeling the geographic name of Kehoe Point at this position. Local residents refer to this shoreline feature ~~as~~^{by} this geographic name. See enclosed newspaper article in the appendix.*

An uncharted fence was positioned on DN 007, Fix 126 at latitude 38°10'43.774"N, longitude 122°55'38.359"W. The hydrographer recommends charting a fence with a height of 2.7 meters (9.0 feet) ~~at~~^{at} the surveyed position. *Concur.*

An uncharted fence was positioned on DN 007, Fix 128 at latitude 38°10'21.306"N, longitude 122°55'20.940"W. The hydrographer recommends charting a fence with a height of 1.6 meters (5.0 feet) at the surveyed position. *Concur.*

The offshore end of uncharted rip rap material was positioned on DN 024, Fix 186 at latitude 38°09'03.559"N, longitude 122°54'20.552"W. This position is also a disapproval of charted pilings mentioned in section J (Charted Shoreline Agreement) of this text. The hydrographer recommends charting a rock with a height of 0.6 meter (2.0 feet) at the surveyed position. *Concur.*

An uncharted rock was positioned on DN 024, Fix 193 at latitude 38°07'57.502"N, longitude 122°53'24.202"W. The hydrographer recommends charting a rock with a height of 0.9 meter (3.0 feet) at the surveyed position. *Concur.*

An uncharted rock was positioned on DN 024, Fix 194 at latitude 38°07'56.045"N, longitude 122°53'21.003"W. The hydrographer recommends charting a rock with a height of 0.9 meter (3.0 feet) at the surveyed position. *Concur.*

* Filed with the hydrographic data.

The east side of the bay is very flat, low-lying, shallow terrain. High water agreement is good, but the following discrepancies in shoreline map features were found.

A charted pier was repositioned on DN 010, Fix 147 at latitude $38^{\circ}11'30.032''$ N, longitude $122^{\circ}55'05.341''$ W. to reflect that there are 6 meters (20.0 feet) of ruins offshore of the end of the wood pier. The hydrographer recommends charting the ruins at the surveyed position. *Concur.*

On DN 010, Fix 149 the offshore end of an uncharted pier was positioned at latitude $38^{\circ}11'21.592''$ N, longitude $122^{\circ}54'54.016''$ W. The hydrographer recommends charting a pier with a height of 3.8 (MLLW) meters (12.0 feet) at the surveyed position. *Concur.* 2.5 (MHW)

A DM-10149 groin was positioned on DN 005, Fix 106 at latitude $38^{\circ}09'34.675''$ N, longitude $122^{\circ}53'41.539''$ W. The feature is actually a large islet that lies near the HWL. The hydrographer recommends charting an islet with a height of 3.7 (MLLW) meters (12.0 feet) at the surveyed position. *Concur.* 2.3 (MHW)

A DM-10149 groin feature was positioned on DN 005, Fix 108 at latitude $38^{\circ}09'31.111''$ N, longitude $122^{\circ}53'40.828''$ W. The feature is actually a scattered group of rocks that connect at the HWL. The hydrographer recommends charted a rock with a height of 0.8 meter (2.6 feet) at the surveyed position. *Concur.*

An uncharted pier was positioned on DN 005, Fix 115 at latitude $38^{\circ}09'09.358''$ N, longitude $122^{\circ}53'24.422''$ W. DM-10149 and the chart show this area as having 3 solitary dolphins. These 3 solitary dolphins are part of a pier. The hydrographer recommends charting a pier with a height of 4.3 (MLLW) meters (14.0 feet) at the surveyed position. *Concur.* 3.0 (MHW)

On DN 010, Fix 150 a disproval of the offshore end of charted ruins was positioned at latitude $38^{\circ}11'15.817''$ N, longitude $122^{\circ}54'49.819''$ W. This was not the offshore extent of the charted ruins. No evidence of the ruins was detected until the hydrographer reached a 4x4 wood post, previously positioned on DN 307, Fix 1143 at latitude $38^{\circ}11'15.940''$ N, longitude $122^{\circ}54'48.500''$ W. The ruins extend from shore to Fix 1143. The hydrographer recommends correcting the charted ruins to the surveyed position as described. DM-10149 does not show these offshore ruins. *Concur.* with priv marker @ end.

An uncharted fence was positioned on DN 010, Fix 156 at latitude $38^{\circ}09'52.717''$ N, longitude $122^{\circ}53'57.893''$ W. The hydrographer recommends charting a fence with a height of 2.4 (MLLW) meters (7.6 feet) at the surveyed position. *Concur.*

The westernmost piling of an uncharted row of piles (3) was positioned on DN 012, Fix 157 at latitude $38^{\circ}09'08.498''$ N, longitude $122^{\circ}53'22.648''$ W. The hydrographer recommends charting these piles with a height of 5.7 meters (18.7 feet) centered at 3.8 m @ MHW the surveyed position. *Concur.*

A northernmost piling of an uncharted row of piles (9) was positioned on DN 012, Fix 158 at latitude $38^{\circ}09'05.803''$ N, longitude $122^{\circ}53'20.660''$ W. The hydrographer recommends charting these piles with a height of 5.7 meters (18.7 feet) southwardly 3.8 @ MHW from the surveyed position to the DGPS Performance check station, Marconi dock pile, at latitude $38^{\circ}09'04.625''$ N, longitude $122^{\circ}53'19.926''$ W. *Concur.*

An uncharted rock ^(islet) was positioned on DN 024, Fix 160 at latitude $38^{\circ}07'48.969''$ N, longitude $122^{\circ}52'03.337''$ W. The hydrographer recommends charting an islet with a height of 2.7 meters (7.0 feet) @ MLLW at the surveyed position. *Do not concur. These features will be generalized 1.0 m. @ MHW as part of charted MHL at charted scale of 1:30,000.* ^{Fix 161, Lat 38/07/48.12, Long 122/52/02.71 - (1.5 @ M)}

The offshore end of an uncharted group of pilings (4) was positioned on DN 005, Fix 113 at latitude $38^{\circ}09'20.761''$ N, longitude $122^{\circ}53'33.549''$ W. The hydrographer recommends charting piles with a height of 1.3 meters (4.3 feet) at the surveyed position. *Concur.*

Charted Shoreline Agreement

Because of the lack of low water photogrammetry, a 1:10,000-scale enlargement of Chart 18643, 14th edition, April 21, 1990 shoreline was compared to this survey by its junction with the hydrographic data, by detached positions and by visual inspection.

Charted pier ruins were disproved on DN 010, Fix 155 at latitude $38^{\circ}09'41.891''$ N, longitude $122^{\circ}53'43.556''$ W. There was no visible evidence of the ruins at low water and there were no echosounder contacts of any submerged objects in this vicinity. 10 minutes of visual search was conducted during low water. The extent of the search was 150 meters north and south of Fix 155 and 150 meters east and west of Fix 155 in water visibility of 0.6 meter. The hydrographer recommends deleting these ruins from the chart. *Concur.*

A pile was disproved on DN 007, Fix 151 at latitude $38^{\circ}09'08.707''$ N, longitude $122^{\circ}54'36.863''$ W. There was no visual contact with this pile and the area is mud at low water. The hydrographer recommends deleting the charted pile. *Concur.*

A pile was disproved on DN 007, Fix 144 at latitude $38^{\circ}09'07.982''$ N, longitude $122^{\circ}54'27.486''$ W. There was no evidence of a pile at this position after a visual and echosounder search at low water. The hydrographer recommends deleting the charted pile. *Concur.*

A row of piles were disproved on DN 024, Fix 186 at latitude $38^{\circ}09'03.559''$ N, longitude $122^{\circ}54'20.552''$ W. The piles were not

visible to PHP personnel at low water. This position is also the offshore end of uncharted rip rap material mentioned in section J (DM-10149 Shoreline Agreement) of this text. The hydrographer recommends deleting the charted piles at the surveyed position. *Concur.*

K. CROSSLINES ✓

Nautical miles of crossline total 32.8 (including buffer lines along shore), representing 23.7% of the mainscheme hydrography on H-10513. *Crosslines & mainscheme hydro are in satisfactory agreement upon application of approved tides.* ✓

L. JUNCTIONS (See EVAL RPT., Sec. 5)

The north end of this survey adjoins the south end of current survey H-10512, 1993. *The south end joins survey H-10524 (1993).*

M. COMPARISON WITH PRIOR SURVEYS (See EVAL RPT., Sec. 6)

H-8355 (1957), 1:10,000 and H-8356 (1957), 1:10,000.

Although Section M. is to be conducted by PHS Personnel under a "shared processing" scheme, PHP did some disprovals of prior survey items because of the poor low-water photogrammetry.

* A prior survey (H-8355) pile was disproved on DN 007, Fix 129 at latitude $38^{\circ}10'08.388''$ N, longitude $122^{\circ}55'08.939''$ W. There was no visible evidence of a pile at low water. A radius of 50 meters was searched visually around the prior position.

* A prior survey (H-8355) pile was disproved on DN 007, Fix 130 at latitude $38^{\circ}10'01.254''$ N, longitude $122^{\circ}55'03.324''$ W. No evidence of the pile was found during a low water visual search in unlimited visibility in depths ranging from 0.8 meters to 1.7 meters.

* *These features described above are not piles. They are "0" depths (shaped like piles) plotted along the coast on the prior survey H-8355.*

N. ITEM INVESTIGATION REPORTS (See EVAL RPT., Sec. 76)

N1	Submerged Rock (charted 11' rock)
N2	Submerged Barge (Marshall's Boat Works)
N3	51976 Obstruction-2 finger piers
N4	51977 200 foot pier (bulkhead)
N5	51983 2 floating piers and bulkhead
N6	Reported Submerged Wreck
N7	Obstruction
N8	Stray Sounding Investigation
N9	Stray Sounding Investigation
N10	Stray Sounding Investigation
N11	Submerged Rock
N12	Stray Sounding Investigation
N13	Stray Sounding Investigation
N14	Unusual Submarine Feature

O. COMPARISON WITH THE CHART (See EVAL RPT., Sec. 7)

Sounding comparisons ✓

A field sheet was plotted in feet for comparison to a 1:10,000 scale enlargement of Chart 18643, 14th Ed. Apr 21, 1990. This is forwarded with this Descriptive Report for use by PHS Personnel.

Comparisons reveal that the 18 foot contour has shifted significantly in three major locations. Between latitude 38°10'20"N and latitude 38°09'59"N, the 18 foot contour has migrated on its western boundary to the N-NW, by as much as 200 meters. The chart shows a break in the 18 foot contour between latitude 38°10'45"N and latitude 38°10'15"N. This N-NW migration has combined the two separate 18 foot contours into one, eliminating this gap.* Between latitude 38°09'15"N and latitude 38°08'33"N there is a shift of the 18 foot contour's western limit, to the east, of approximately 50 meters. There is also a relatively minor shift of the 18 foot contour to the east between latitude 38°08'30"N and latitude 38°08'25"N at the western edge. The southern edge of the 18 foot contour at latitude 38°08'50"N has extended itself by as much as 200 meters to the south.

* Do not concur. The 18-foot depth curves still has a gap in the vicinity of Lat 38/10/15.0 N, Long 122/54/150.0 W

Non-sounding comparisons ✓

An uncharted research buoy was positioned on DN 007, Fix 127 at latitude 38°10'30.3³⁶"N, longitude 122°55'16.9⁹⁵"W. The hydrographer recommends charting a lighted privately maintained buoy at the surveyed position. *Concur.*

An uncharted research buoy was positioned on DN 007, Fix 145 at latitude 38°09.00.2⁸⁶"N, longitude 122°53'34.5⁹⁶"W. The hydrographer recommends charting a lighted privately maintained buoy at the surveyed position. *Concur.*

An uncharted floating platform, 2 meters wide and 4 meters long, was positioned on DN 010, Fix 152 at latitude 38°07'26.5⁵²"N, longitude 122°52'47.2²⁷"W. The hydrographer recommends charting a floating platform at the surveyed position. *Concur.*

An uncharted aquaculture lease buoy (privately maintained) was positioned on DN 363, Fix 2300 at latitude 38°10'18.9⁴⁷"N, longitude 122°54'21.0²⁶"W. The hydrographer recommends charting a privately maintained buoy at the surveyed position. *Concur.*

A cable area between latitude 38°08'58"N, longitude 122°53'19"W and latitude 38°08'30"N, longitude 122°53'53"W remains unverified at this time. There are no cable crossing signs on either side of the bay. The property owner on the east side of this cable crossing, Ed Vilicich (owner of Marshall Boat Works), commented to PHP personnel that he believed that the cable had been removed during the late 1970's. Mr. Vilicich told PHP personnel that Pacific Gas and Electric company (P.G. & E.) was the responsible ✓

party for the submerged cable. PHP contacted PG&E supervisor Jim Dunlap in December of 1993 and he replied that he would gather all the maps he had of the area together and forward them to PHP. No reply has been received from Mr. Dunlap as of this date. Numerous calls have been made to Mr. Dunlap and messages have been left on his recorder to return our call. He has not done so. For questions concerning this matter Mr. Dunlap may be reached at 707-648-5783. Mr. Vilicich's telephone number is 415-663-1638. The hydrographer is unable to make a recommendation concerning this cable crossing at this time.

The charted cable area was not verified during this survey and should be retained as charted. (See EVAL RPT., Sec. 7-f)

P. ADEQUACY OF SURVEY ✓

This survey is complete and adequate to supersede prior surveys within their common areas. The mean lower low water line and shoreline items between the low and mean high water lines have been adequately investigated to supplement the photogrammetry work performed in 1991. *Concur.*

Q. AIDS TO NAVIGATION (See EVAL RPT., Sec. 7d)

There are no Aids to Navigation within the survey limits of H-10513. There are two landmarks within the survey limits. The charted tank at Sacramento Landing is not visible from the water. This charted landmark is obscured from view seaward due to the heavy vegetation surrounding the tank. This heavy vegetation both north and south of its position render this landmark unusable to the mariner. The hydrographer recommends deleting this landmark at position latitude 38°09'01"N, longitude 122°54'27"W. *Concur.* The other landmark, a house, located from the chart at latitude 38°08'45"N, longitude 122°52'54"W remains a usable landmark from the bay. The hydrographer recommends retaining this landmark at the charted position. *Concur.*

Daybeacon "10" falls within the northern edge of this survey. This aid was positioned on survey H-10512

R. STATISTICS ✓

<u>Description</u>	<u>Quantities</u>
Total Positions	1842 ¹
Total Detached Positions	131
Total Bottom Samples	20
Total Nautical Miles Hydrography	209.6
Square Nautical Miles Hydrography	6.0
Velocity Casts	6
Days of Production	34

S. MISCELLANEOUS ✓

Bottom samples were taken at the 20 charted positions. No changes in bottom characteristics were found at any of these locations, thus no further samples were acquired per section 6.7

of the Project Instructions. Bottom samples will be forwarded to the Smithsonian Institution.

There are two areas where hydrographic data could not be acquired because of the presence of oyster pens. From latitude 38°10'28.30"N, longitude 122°54'15.38"W, south to latitude 38°10'22.03"N, longitude 122°54'15.54"W extending 200 meters offshore is one of the oyster pens. The other oyster pen is located from latitude 38°08'20.22"N, longitude 122°52'22.16"W, south to latitude 38°08'16.12"N, longitude 122°52'22.14"W and extends 100 meters offshore. Hydrography was not conducted in either of these two areas because of possible damage to the pens or the shellfish. These areas are not navigable. *CONCUR.*

*See EVAL RPT,
Sec. 7a*

T. RECOMMENDATIONS

The hydrographer recommends that the 30 foot contour be charted based on current hydrography for bottom interpretation according to HSG No. 69. *CONCUR.*

U. REFERRAL TO REPORTS

Coast Pilot Report
Horizontal Control Report

March, 1994
November, 1993

Submitted for approval,

Reginald W. Adams, Jr.

Reginald W. Adams, Jr.
Survey Technician

Approved and forwarded,

Guy T. Noll

Guy T. Noll
Lieutenant, NOAA
Chief of Party

ITEM INVESTIGATION - N1 ✓

ITEM # Submerged rock

DN: 019

CHART # 18643

VN: 0651

DESCRIPTION: Submerged rock

SOURCE: Chart 18643

GEOGRAPHIC POSITION

LATITUDE	LONGITUDE	POSITION #
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CHARTED: 38°10'47.0"N	122°55'08.0"W	
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OBSERVED: 38°10'47.2 ⁴⁰ 20"N	122°55'07.5 ⁶⁰ 56"W	2456
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POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echosounder development with 5-meter spacing, diver investigation.

FINDINGS: Diver verified, by leadline comparison, the least depth of 3.6 meters reduced by predicted tides to 3.1 meters (10.0 feet) the highest point of the charted rock.

DIVING INVESTIGATION

Diver: Lt. R.A. Fletcher

Search radius: 60 meters

Water visibility: 7.0 feet

Maximum depth: 22.0 feet Bottom time: 25 min.

Least depth: 3.1⁰ meters leadline (reduced) (based on actual tides)

(9.8 feet) at MLLW

Findings: Described above.

CHARTING RECOMMENDATIONS: Change the charted least depth of the rock at latitude 38°10'47.2⁴⁰20"N, longitude 122°55'07.5⁶⁰56"W from 11 feet to 10 feet (3.1⁰ meters) at the same position. Do not concur. Chart the 2.9 m. (9.5 ft) on rock at lat. 38°10'46.990", Long. 122°55'07.64"W (Pos. 1446 +06)

..... COMPILATION USE ONLY (See EVAL RPT., Sec. 7f)

CHART

APPLIED

ITEM INVESTIGATION - N2 ✓

ITEM # Submerged barge **Awois #52213** DN: 302, 006
CHART # 18643 VN: 0651, 0651

DESCRIPTION: Submerged barge

SOURCE: John Villicich, Marshalls Boat Works

GEOGRAPHIC POSITION

LATITUDE	LONGITUDE	POSITION #
CHARTED: None, uncharted item		
OBSERVED: 38°09'01.4 ²⁰ ₀₂ "N	122°53'20.7 ⁸⁰ ₇₅ "W	100
38°09'01.3 ²⁰ ₆₁ "N	122°53'20.7 ⁸⁰ ₆₃ "W	116

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Diver investigation (DN302), visual investigation (DN006).

FINDINGS: Diver found submerged remnants of a concrete barge lying in a NE-SW direction. The wreck is 26.0 feet wide and 52.0 feet in length and lies 15 meters from shore with surrounding depths ranging from 1.5 meters to 2.0 meters at Marshalls Boat Works. A least depth of 0.8 meter pole sounding was acquired on DN 006 and with predicted tides the least depth is equal to 0.7 meter (2.0 feet). Because of this feature's close proximity to the shoreline and to an offshore rock groin the Chief of the Party did not consider this item to be a chartable danger to navigation.

DIVING INVESTIGATION

Divers: Lt. R.A. Fletcher
Search Radius: 20 meters
Water visibility: 7.0 feet
Maximum depth: 7.0 feet
Least depth: 0.7 meters (reduced) Bottom time: 20 min.

Findings: Described above.

CHARTING RECOMMENDATIONS: Chart a submerged wreck at latitude 38°09'01.3²⁰₆₁"N, longitude 122°53'20.7⁸⁰₆₃"W with a least depth of 0.7 meters (2.0 feet) *at Min. Concur.*

..... COMPILATION USE ONLY

CHART

APPLIED

AWOIS INVESTIGATION - N3 ✓

ITEM # 51976-2 Finger piers
 CHART # 18643

DN: 006
 VN: 0651

DESCRIPTION: Breakwater

SOURCE: ~~H 8356, 1957~~ Unknown source; probably 1963 Air Photo Revision

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	38°08'27.0"N	122°52'30.0"W	
OBSERVED:	38°08'25.3 ⁵² 5"N	122°52'27.6 ⁷⁰⁰ 94"W	121

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echosounder; visual at low water

FINDINGS: A rubber tire breakwater was exposed ~~to~~ at low water, this item is submerged at high water, no finger piers were in the immediate vicinity of this obstruction.

CHARTING RECOMMENDATIONS: Chart a breakwater at latitude 38°08'25.3⁵²5"N, longitude 122°52'27.6⁷⁰⁰94"W with a height of 0.1 meters ~~at low water~~. Concur. Delete the two charted finger piers.

..... COMPILATION USE ONLY

CHART

APPLIED

AWOIS INVESTIGATION-N4 ✓

ITEM : 51977-200' pier(bulkhead)

DN: 031

CHART # 18643

VN: 0652

DESCRIPTION: Bulkhead on DM-10149

SOURCE: ~~H-8356, 1957~~ USPS; CL 638/81

GEOGRAPHIC POSITION

LATITUDE	LONGITUDE	POSITION #
CHARTED: 38°08'42.60"N	122°52'59.50"W	

OBSERVED: 200 foot pier was not found.

POSITIONED BY:DGPS

METHOD OF INVESTIGATION: 5 meter spacing echosounder development, N-S lines and E-W lines in a cross hatch pattern development.

FINDINGS: No obstruction, no pier, no pier ruins.

CHARTING RECOMMENDATIONS: Delete the pier charted at latitude 38°08'42.6"N, longitude 122°52'59.5"W. *Concur.*

..... COMPILATION USE ONLY

CHART

APPLIED

AWOIS# 51977, DEVELOPMENT LINES

FIELD SHEET: Page Plot REG. NO: H-10613 SHEET LETTER: B	PROJECT: PHP-L209
HORIZONTAL DATUM: NAD 83	CONTROL LATITUDE: 038.02.30.000
BOUNDING DATUM: Mean Lower Low Water	CENTRAL MERIDIAN: 122.53.30.000
PROJECTION: MODIFIED UTM PROJECTION	SOUNDINGS IN: METERS
SCALE: 1: 2500	

SURVEYED BY: PACIFIC HYDRO PARTY
 LT. GUY T. NOLL

JANUARY, 1994

LON 122.53.05

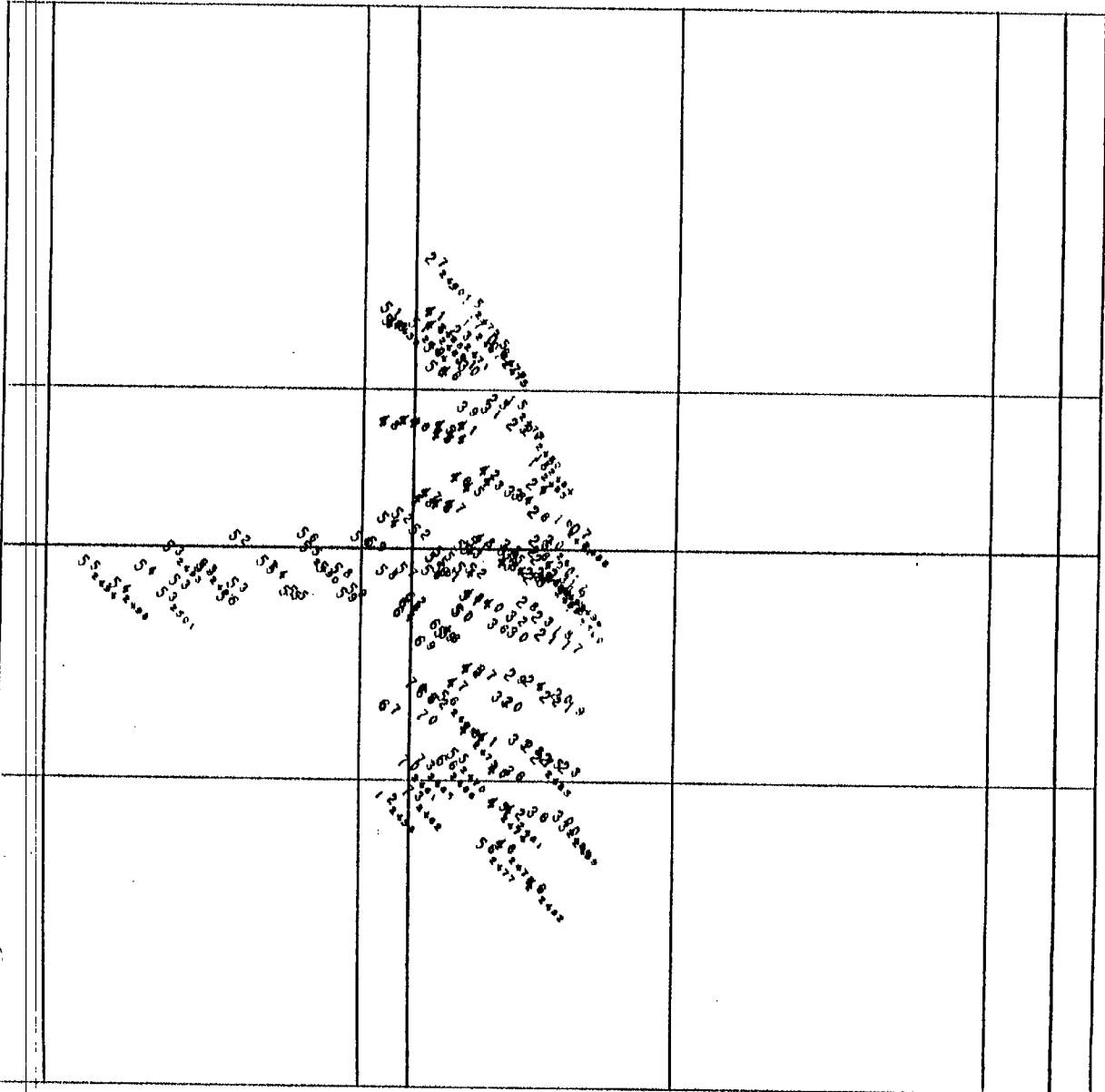
LON 122.53.00

E20750

LON 122.52.55

E21000

LON 122.52.50



LAT 38.08.45

N11500

LAT 38.08.40

AWOIS INVESTIGATION-N5 ✓

ITEM # 51983-2 floating piers DN:006
CHART # 18643 VN:0651

DESCRIPTION: Breakwater

SOURCE: ~~H 8356, 1957~~ ---CL 1800; 1965; **CoE PERMIT**

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	38°08'24.0"N	122°52'24.50"W	
OBSERVED:	38°08'21.9 ³⁰ 16 "N	122°52' ²⁴ 54 .0 ¹⁰ 07 "W	122

POSITIONED BY:DGPS

METHOD OF INVESTIGATION: Echosounder; visual at low water

FINDINGS: A breakwater of tires connected in an E-W direction for 30 meters which begins 20 meters from rip rap shore.

CHARTING RECOMMENDATIONS: Chart a breakwater at latitude 38°08'21.9³⁰~~16~~"N, longitude 122°52'²⁴~~54~~.0¹⁰~~07~~"W with a height of 0.1 meter. *Concur.*

. COMPILATION USE ONLY

CHART

APPLIED

ITEM INVESTIGATION - N6

ITEM # N6, Reported wreck

DN: 348, 356, 019

CHART # 18643

VN:0651, 0651, 0651

DESCRIPTION: Reported small fishing boat wrecked nearshore.

SOURCE: Local knowledge.

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	Uncharted		

OBSERVED: No contact.

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echosounder development, 10-meter spacing, dive investigation.

FINDINGS: No wreck.

DIVING INVESTIGATION

Diver: ET E.O. Wernicke
 Search radius: 150 meters
 Water visibility: 10.0 feet
 Maximum depth: 12.0 feet Bottom time: 30 min.
 Least depth: N/A

Findings: Diver did a bottom search of the reported area of the wreck from the edge of the shoreline offshore 50 meters and moved laterally with the shoreline for 150 meters. Diver reported no wreck within the search area.

CHARTING RECOMMENDATIONS: Do not chart reported wreck. *Concur.*

. COMPILATION USE ONLY

CHART

APPLIED

ITEM INVESTIGATION - N7 ✓

ITEM # Submerged obstruction DN: 308, 362
CHART # 18643 VN: 0652, 0651

DESCRIPTION: Submerged wreckage

SOURCE: Found during mainscheme hydrography on DN 308, Fix 4109+2.

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	None, uncharted item		
OBSERVED:	38°09'17. ⁸⁰⁰ 787"N	122°53'46. ⁸⁰⁰ 799"W	4109+ ³ 2
	38°09'17.803"N	122°53'46.771"W	2299

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echosounder, 5-meter spacing, diver investigation

FINDINGS: Submerged ^{obstruction} wreckage.

DIVING INVESTIGATION

Divers: Lt. R.A. Fletcher
 Search Radius: 20 meters
 Water visibility: 2.0-3.0 feet
 Maximum depth: 7.0 meters
 Least depth: 5.8 meters (reduced) ^{MLLW} Bottom time: 20 min.
for approved tides

Findings: 5-meter diameter, 0.25" thick metal drumlike object, 1 meter above the bottom.

CHARTING RECOMMENDATIONS: Chart submerged ^{obstruction} wreckage at latitude 38°09'17.803"N, longitude 122°53'46.771"W with a least depth of 5.8⁰ meters ^{MLLW} (19.0 feet). *Do not concur. Chart as submerged obstruction.*

16.4

..... COMPILATION USE ONLY

CHART

APPLIED

SOUNDING INVESTIGATION - N8 ✓

ITEM # Stray sounding

DN: 307, 364

CHART # 18643

VN: 0651, 0651

DESCRIPTION: Stray sounding

SOURCE: PHP

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:			
OBSERVED:	38°09'53.88"N	122°54'27.96"W	1187-1188, 2301-2312

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echosounder, 5-meter spacing intervals in an E-W direction, drift search.

FINDINGS: Stray soundings observed on DN 307 was concluded to be noise in the water column after extensive echosounder development over the area.

DIVING INVESTIGATION

None.

CHARTING RECOMMENDATIONS: Do not chart stray sounding depths from position #1187-#1188. *Concur.*

. COMPILATION USE ONLY

CHART

APPLIED

SOUNDING INVESTIGATION-N9 ✓

ITEM : Stray sounding

DN: 307, 364

CHART # 18643

VN: 0651, 0651

DESCRIPTION: Stray sounding

SOURCE: PHP

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:			
OBSERVED:	38°09'50.74"N	122°54'23.69"W	1194-1195, 2313-2324

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: 5 meter spacing echosounder development in an E-W direction, drift search.

FINDINGS: Stray sounding observed on DN 307 was concluded to be noise in the water column after extensive echosounder development over the area.

DIVING INVESTIGATION

None.

CHARTING RECOMMENDATIONS: Do not chart stray sounding depths from position #1194-#1195. *concur.*

..... COMPILATION USE ONLY

CHART

APPLIED

SOUNDING INVESTIGATION-N10 ✓

ITEM # Stray sounding DN: 308, 364
CHART # 18643 VN: 0652, 0651

DESCRIPTION: Stray sounding

SOURCE: PHP

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:			
OBSERVED:	38°09'25.47"N	122°53'38.34"W	4128-4129, 2325-2329

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echosounder, drift search over stray sounding area.

FINDINGS: There were several offshore moorings in the area, therefore it was concluded that the stray sounding observed on DN 308 was a mooring anchor.

DIVING INVESTIGATION

None.

CHARTING RECOMMENDATIONS: Do not chart stray sounding depths from position #4128-#4129. *Concur.*

. COMPILATION USE ONLY

CHART

APPLIED

SOUNDING INVESTIGATION - N11

ITEM # Stray sounding

DN: 293, 019

CHART # 18643

VN: 0651

DESCRIPTION: Stray sounding

SOURCE: PHP

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:			
OBSERVED:	38°10'49.327"N	122°55'12.615"W	1092-1093
	38°10'49.373"N	122°55'12.644"W	2455

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echosounder development, 5-meter spacing in an E-W direction, and a 50 meter radius rope drag.

FINDINGS: Rope drag did not "hang", indicating that the stray sounding observed on DN 293 was not a man-made object and because of the scouring surrounding the stray sounding depths between position #1092-#1093 the object was believed to be a submerged rock. The rock was positioned on DN 019, Fix 2455 during a drift search.

CHARTING RECOMMENDATIONS: Chart a submerged rock at latitude 38°10'49.373"N, longitude 122°55'12.644"W with a least depth of 5.9 meters (19.0 feet)." *Concur.*

..... COMPILATION USE ONLY

CHART

APPLIED

SOUNDING INVESTIGATION - N12 ✓

ITEM # Stray sounding DN: 307, 362, 012

CHART # 18643 VN: 0651

DESCRIPTION: Stray sounding

SOURCE: PHP

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:			
OBSERVED:	38°10'39.58"N	122°54'40.26"W	1159-1160, 2256-2272, 2330-2339

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echosounder, 5-meter spacing in N-S and E-W directions and a drift search.

FINDINGS: It was concluded after extensive echosounder development that the stray sounding observed on DN 307 was noise in the water column.

CHARTING RECOMMENDATIONS: Do not chart stray soundings from position #1159-#1160. *Concur.*

..... COMPILATION USE ONLY

CHART

APPLIED

SOUNDING INVESTIGATION - N13 ✓

ITEM # Stray sounding

DN: 307, 362

CHART # 18643

VN: 0651

DESCRIPTION: Stray sounding

SOURCE: PHP

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:			
OBSERVED:	38°10'40.26"N	122°54'36.15"W	1167-1168, 2273-2290

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echosounder, 5-meter spacing developments in a N-S direction, drift search.

FINDINGS: Stray soundings observed on DN 307 were noise in the water column.

CHARTING RECOMMENDATIONS: Do not chart stray soundings from position #1167-#1168. *Concur.*

..... COMPILATION USE ONLY

CHART

APPLIED

SOUNDING INVESTIGATION - N14

ITEM # Submarine feature DN: 312
CHART # 18643 VN: 0651

DESCRIPTION: Small, unusual, rock-bottomed hole in mud

SOURCE: PHP

GEOGRAPHIC POSITION

	LATITUDE	LONGITUDE	POSITION #
CHARTED:	Uncharted		
OBSERVED:	38°08'41.1 ²⁰ 08 "N	122°53'21. ⁸⁰⁰ 799 "W	1221+1

POSITIONED BY: DGPS

METHOD OF INVESTIGATION: Echosounder

FINDINGS: Diver described the feature as a hole 50 meters long by 10 meters wide in an oval shape, with steep mud banks 4 meters high and a gravelly bottom. The depth of the deepest part of this feature was 10.2 meters (33.0⁰⁰ feet). The least depth of the bank was 6.6 meters (21.6⁰⁰ feet).

DIVING INVESTIGATION

Divers: Lt R.A. Fletcher
Search Radius: 50 meters
Water Visibility: 7.0 feet
Maximum Depth: 11 meters
Least Depth: N/A Bottom Time: 30 min.

FINDINGS: Described above.

CHARTING RECOMMENDATIONS: Chart the deepest sounding of this submarine feature of 10.2 meters (33.0⁰⁰ feet) at latitude 38°08'41.1²⁰~~08~~"N, longitude 122°53'21.⁸⁰⁰~~799~~"W and chart the 18 and 30 foot contours per PHP soundings.

..... COMPILATION USE ONLY

CHART

APPLIED

CONTROL STATIONS as of 8 Feb 1994

No	Type	Latitude	Longitude	H Cart	Freq	Uel Code	MM/DD/YY	Station Name
101	T	038:13:53.116	122:58:05.463	0 244	0.0	0.0	10/28/93	941-5477 SAND POINT T.G.
102	T	038:06:48.907	122:52:08.267	0 244	0.0	0 0	09/01/93	941-5288 INVERNESS T.G.
103		038:13:40.854	122:54:49.580	0 250	0.0	0.0	10/05/93	KEYS CADH
104		038:06:12.666	122:56:11.690	0 250	0.0	0.0	10/05/93	PT REYES NCMN
105		038:12:13.489	122:55:22.473	0 250	0.0	0.0	10/05/93	PRESTON 2
106		038:08:48.327	122:52:41.205	0 250	0.0	0.0	10/05/93	MARCONI DGPS REFERENCE STATION
107		038:13:55.750	122:58:04.870	0 250	0.0	0.0	10/05/93	LAWSON'S DGPS REFERENCE STATION
108		038:12:49.850	122:57:35.559	0 250	0.0	0.0	10/05/93	DM "5"
109		038:09:04.626	122:53:19.927	0 250	0.0	0.0	10/05/93	MARCONI DOCK PILE



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Coast and Geodetic Survey
Seattle, Washington 98115-0070

Pacific Hydrographic Party
c/o Chief Ranger's Office
Point Reyes National Seashore
Bear Valley Road
Point Reyes, CA 94956
VOICE (415) 663-8507
FAX (415) 663-8731

**ADVANCE
INFORMATION**

January 21, 1994

Commander
Eleventh Coast Guard District (oan)
Federal Building
501 W. Ocean Boulevard
Long Beach, CA 98022-5399

Dear Sir:

The NOAA Pacific Hydrographic Party has discovered two* potential dangers to navigation while conducting survey operations in Tomales Bay. Danger to Navigation Reports for these items are enclosed along with chartlets showing the affected portions of Chart 18643.

I recommend these Dangers to Navigation be included in the next Local Notice to Mariners.

Sincerely,

Guy T. Noll
Lieutenant, NOAA
Chief

Enclosures

cc: DMAHTC
N/CG221
N/CG245

* There is only one danger to navigation affecting this survey. The second item falls within Survey H-10512 and is dated December 8, 1993 (see DR).
FAXED 1/21/94



REPORT OF DANGER TO NAVIGATION

**ADVANCE
INFORMATION**

Hydrographic Survey Registry Number: H-10513
 Survey Title: State: CALIFORNIA
 General Locality: TOMALES BAY
 Sublocality: PELICAN POINT TO SHALLOW BEACH
 Project Number: OPR-L209-PNP-10-6-93, NOAA Ship/Field Party: PACIFIC HYDROGRAPHIC PARTY

The following item was discovered during hydrographic survey operations:

Object Discovered: SUBMERGED ROCK

Covered uncovers/bare 10 FEET (Express depth of water or height of feature in appropriate survey units.) corrected to 10 FEET (Specify tidal or water level datum.) using PREDICTED (Specify whether predicted or observed tide or water level correctors were used.)

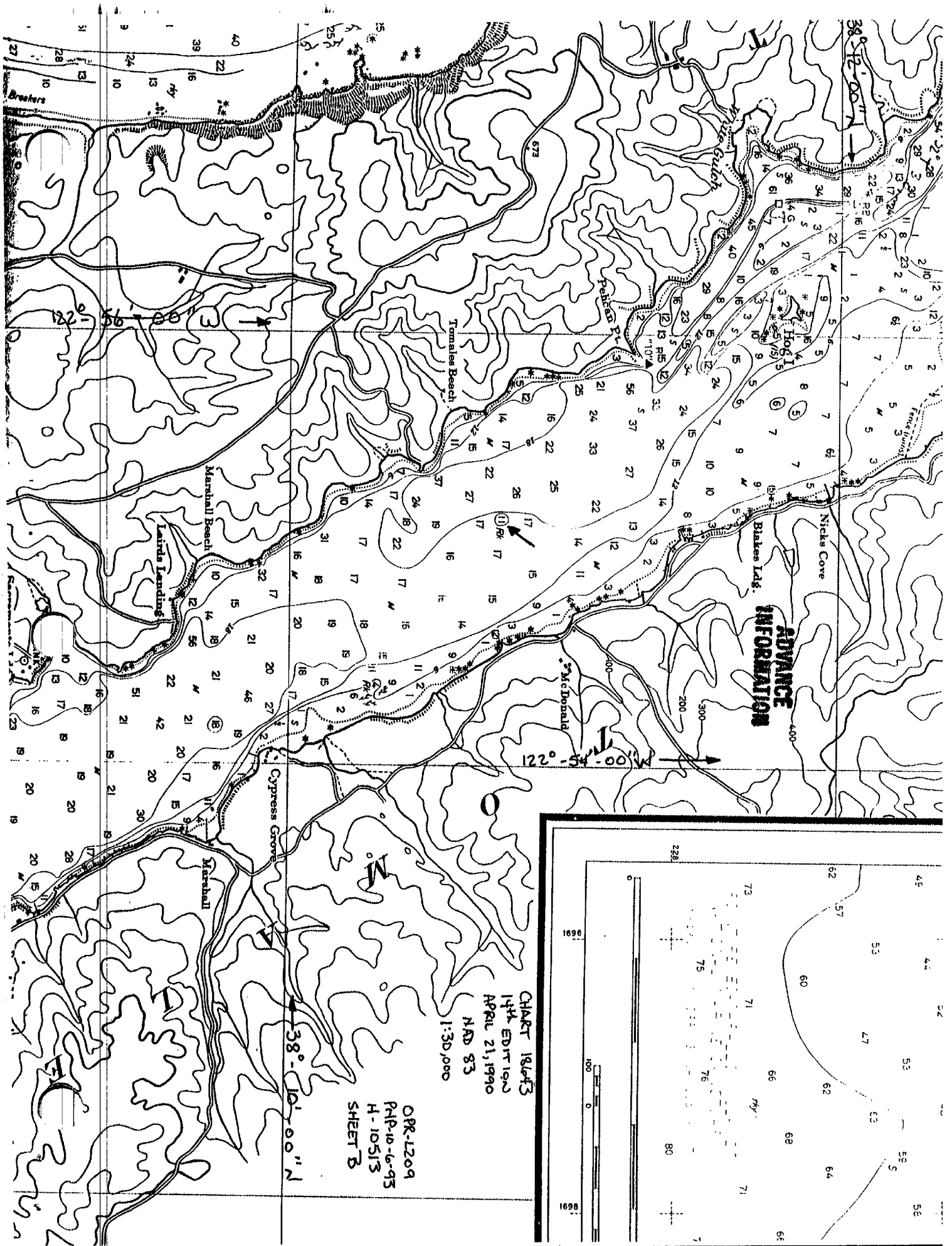
Affected nautical charts [List largest scale chart first]:

CHART NUMBER	EDITION		REPORTED DEPTH*	CHARTED HORIZ. DATUM	GEOGRAPHIC POSITION**	
	NO.	DATE			LATITUDE	LONGITUDE
18643	14 th	APRIL 21, 1990	10 FEET		38° 10' 47.220" N	122° 55' 07.556" W

THE PRESENTLY CHARTED DEPTH OF THIS FEATURE IS 11 FEET. DIVE OPERATIONS CONDUCTED JANUARY 19, 1994 CONCLUDED THAT THE LEAST DEPTH OF THIS FEATURE IS 10 FEET.

ANY QUESTIONS CONCERNING THIS REPORT SHOULD BE DIRECTED TO THE PACIFIC MARINE CENTER, SEATTLE, WA. AT (206)-526-6835.

(See EVAL RPT, Sec. 7f.)



**ADVANCE
INFORMATION**

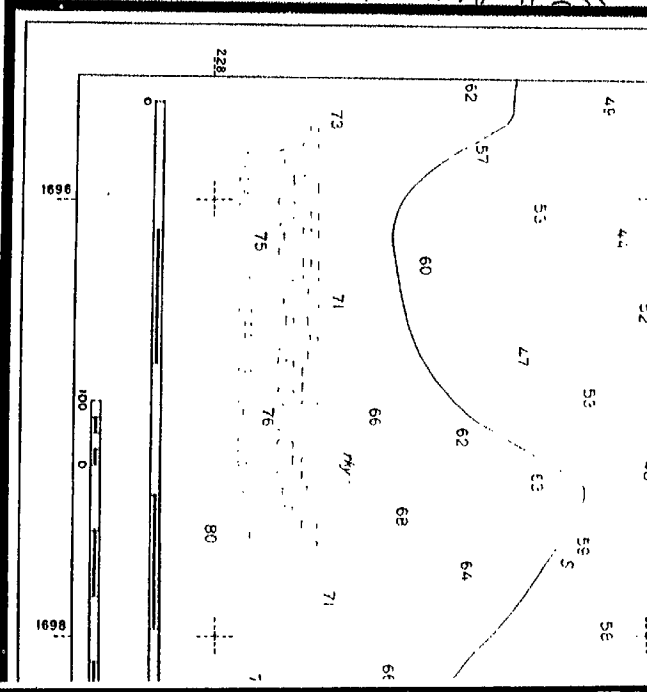


CHART 18443
14th Edition
APRIL 21, 1990
NAD 83
1:30,000

ORP-L209
PAP-10-6-95
H-10513
SHEET B

38° 10' 00" N

122° 00' 00" W

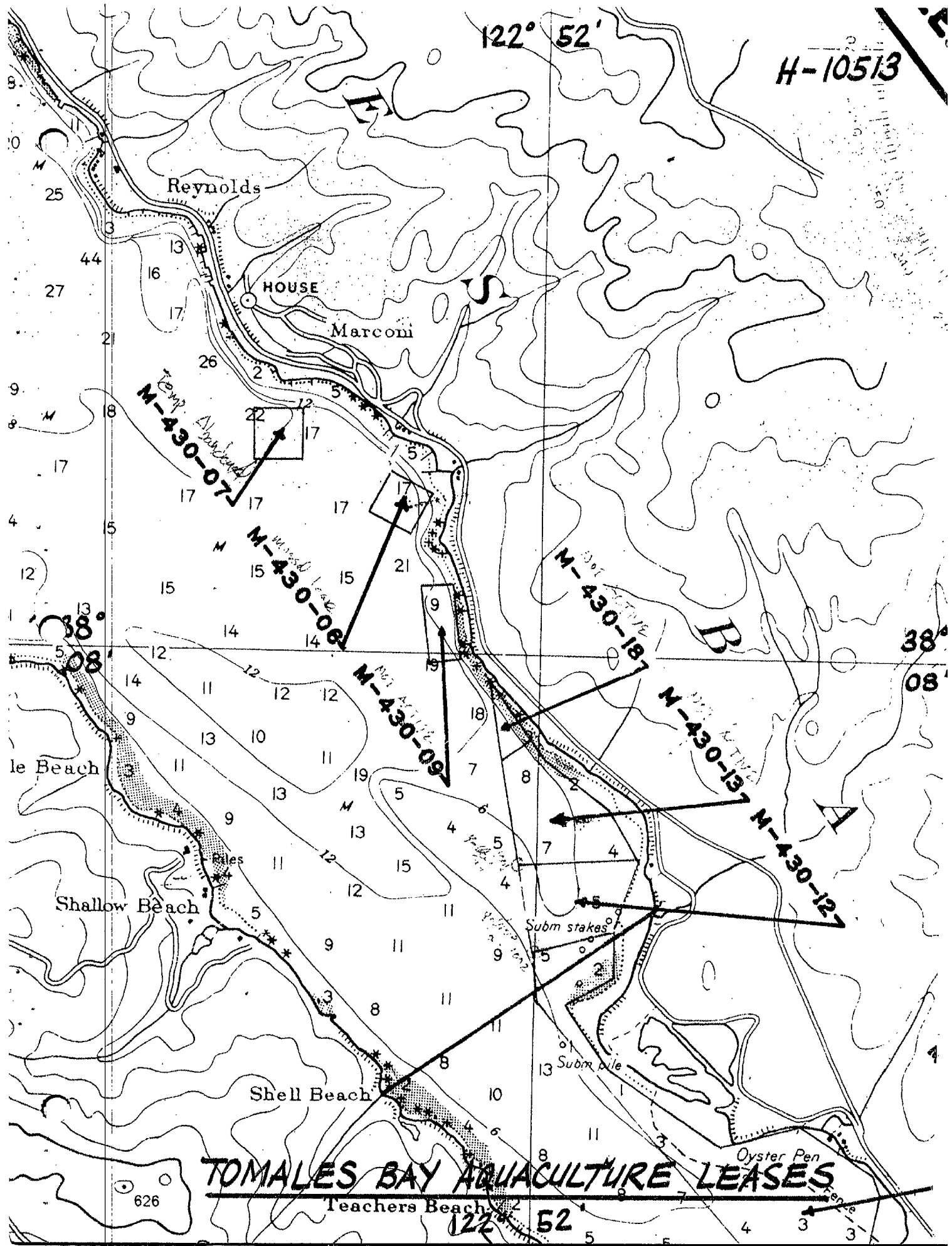
122° 56' 00" W

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	LT. GUY T. HOLL
POSITIONS DETERMINED AND/OR VERIFIED	
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	
INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'	
(Consult Photogrammetric Instructions No. 64.)	
OFFICE I. OFFICE IDENTIFIED AND LOCATED OBJECTS Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object. EXAMPLE: 75E(C)6042 8-12-75	FIELD (Cont'd) B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object. EXAMPLE: P-8-V 8-12-75 74L(C)2982
FIELD I. NEW POSITION DETERMINED OR VERIFIED Enter the applicable data by symbols as follows: F - Field L - Located V - Verified 1 - Triangulation 2 - Traverse 3 - Intersection 4 - Resection P - Photogrammetric Vis - Visually 5 - Field identified 6 - Theodolite 7 - Planetable 8 - Sextant A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75	II. TRIANGULATION STATION RECOVERED When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery. EXAMPLE: Triang. Rec. 8-12-75 III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75 **PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.
*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.	

H-10513

122° 52'

38° 08'



TOMALES BAY AQUACULTURE LEASES

626

122° 52'

UNITED STATES BOARD ON GEOGRAPHIC NAMES DOMESTIC GEOGRAPHIC NAMES REPORT	Controversial name	Recommended name:
	Name change	KEHOE POINT
	Changed application	State CALIFORNIA
	<input checked="" type="checkbox"/> Other	County MARIN

Lat. 38° 10' 28.69" N. Long. 122° 55' 21.15" W. Mouth End Center (Circle one)
 Lit. _____ " N, Long. _____ " W, Heading End (Circle one)

Description of feature: where appropriate, give shape, length, width, direction of flow or trend, direction and distance of extremities from points with established names, and section, township, range, meridian where useful, also elevation if known.

SAND POINT SPIT EXTENDS 40 METERS FROM SHORELINE IS 20 METERS WIDE AND EXTENDS BACK 40 METERS TO THE SHORELINE AND IS ABOVE MLLW.

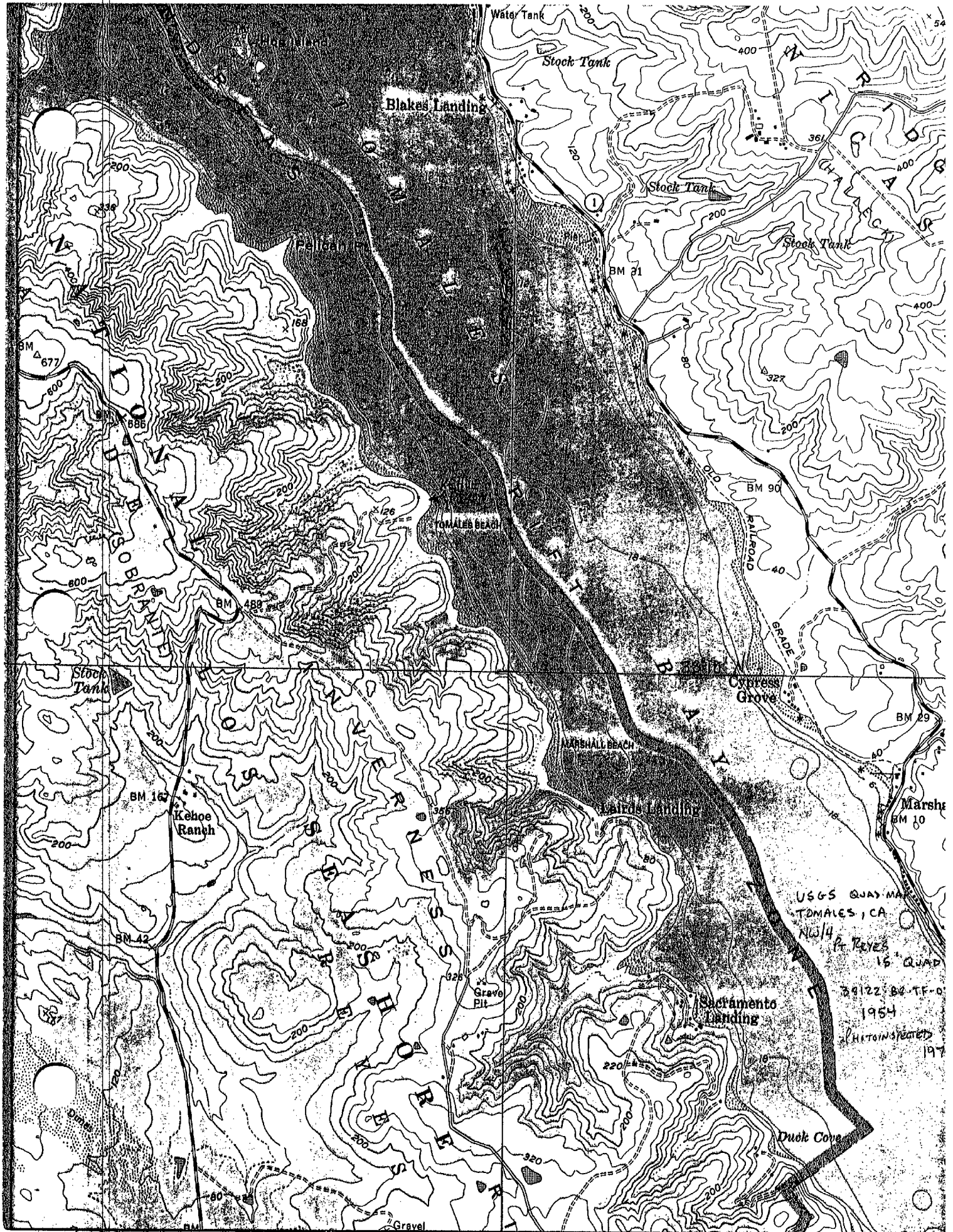
Published Maps Using Recommended Name (Map name, date, agency, & scale)	Variant Name or Application	Map or Source Using Variant (Map name, date, agency, & scale)

Available information as to origin, spelling, and meaning of the recommended name and/or statement concerning nature of difference in usage or application

KNOWN LOCALLY AS KEHOE POINT FOR 50+ YEARS. SO CALLED BECAUSE OF PREVIOUS PROPERTY OWNER WHO OWNED KEHOE RANCH TO THE SOUTHWEST OF THIS FEATURE. FISHERMAN USE AS GEOGRAPHIC REFERENCE.

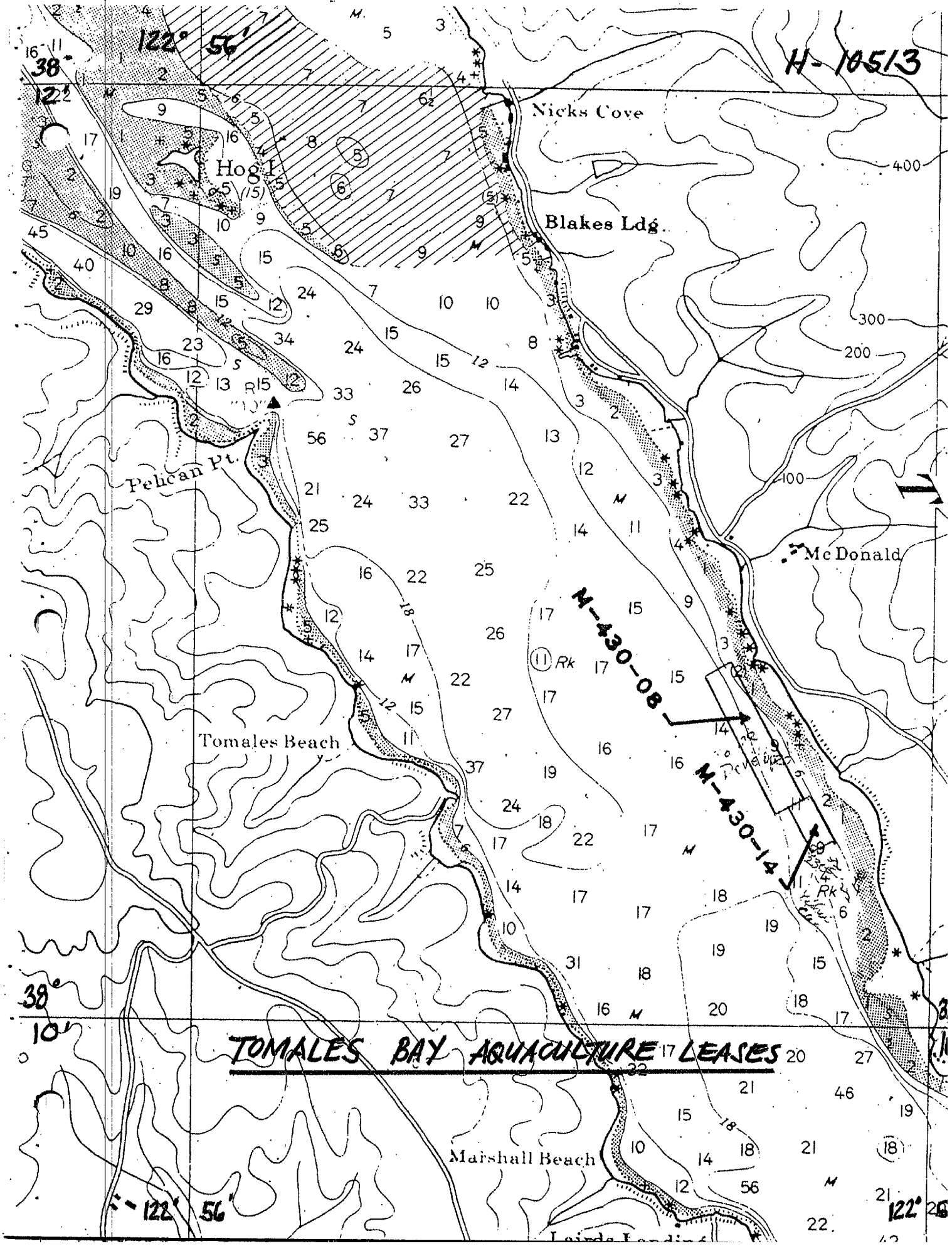
AUTHORITY FOR RECOMMENDED NAME	MAILING ADDRESS	OCCUPATION
FELIX KONATICH	19863 STATE ROUTE # 1 MARSHALL, CA 94940	RETIRED
EDWARD A. VILICICH	P.O. BOX 801 MARSHALL, CA 94940	BUSINESSMAN
LEROY BROCK	POINT REYES NATIONAL SEASHORE POINT REYES, CA 94956	CHIEF PARK RANGER

Submitted by: Name Ronald W. Adams, Jr. Title SURVEY TECHNICIAN Date 2/15/94
 Agency DOC/NOAA/NOS/PHS/PAF Address 7600 SAND PT. WAY NE BIN C15700, SEATTLE, WA. 98115-0870



USGS QUAD MAP
TOMALES, CA
NW 1/4
P. Reyes
16 QUAD
39122 B2-TF-0
1954
Revisions started
197

H-10513



TOMALES BAY AQUACULTURE LEASES

38°
10'

122° 56'

122° 26'

APPROVAL SHEET

for
SURVEY H-10513

Standard field surveying and processing procedures were followed in producing this survey, in accordance with the Hydrographic Manual, Fourth Edition; the Hydrographic Survey Guidelines; and the Field Procedures Manual, as updated for 1993. The data were reviewed daily during acquisition and processing.

Following initial field processing, data were forwarded to Pacific Hydrographic Section, N/CG245, in two batches for verification. The first data submittal included mainscheme and crossline data, the second included splits, crosslines, developments on item investigations, shoreline and detached positions. No unverifiable data have been reported to this date.

The field sheets and supporting data have been reviewed by me, are considered complete and adequate for charting purposes, and are approved.

Approved and Forwarded,



Guy T. Noll
Lieutenant, NOAA
Chief, Pacific Hydrographic Party

February 15, 1994

DATE



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Ocean and Earth Sciences
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: April 26, 1994

MARINE CENTER: Pacific

HYDROGRAPHIC PROJECT: OPR-L209-PHP

HYDROGRAPHIC SHEET: H-10513

LOCALITY: California, Tomales Bay

TIME PERIOD: October 13, 1993 - January 31, 1994

TIDE STATION USED: 941-5477 Sand Point, Tomales Bay, Ca.
Lat. $38^{\circ} 13.9'N$ Lon. $122^{\circ} 58.1'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 13.05 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 4.5 ft.

REMARKS: RECOMMENDED ZONING

1. South of Pelican Point and north of Sacramento Landing, apply a +30 minute time correction, and a X1.03 range ratio to Sand Point, Ca. (941-5477).
2. South of Sacramento Landing, apply a +45 time correction, and a X1.06 range ratio to Sand Point, Ca. (941-5477).

Note: Times are tabulated in Greenwich Mean Time.

Walker M. Gibson
CHIEF, DATUMS SECTION



GEOGRAPHIC NAMES

H-10513

Name on Survey	<div style="display: flex; justify-content: space-between;"> A ON CHART NO. 18643 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 GRAND McNALLY ATLAS H U.S. LIGHT LIST </div>										
	A	B	C	D	E	F	G	H	K		
BLAKES LANDING	X									1	
CALIFORNIA (title)	X									2	
CYPRESS GROVE	X									3	
DUCK COVE	X									4	
HEARTS DESIRE	X									5	
INDIAN BEACH	X									6	
KEHOE POINT				(Pending BGN decision)							7
LAIRDS LANDING	X									8	
MARCONI	X									9	
MARSHALL	X									10	
MARSHALL BEACH	X									11	
MCDONALD	X									12	
PEBBLE BEACH	X									13	
PELICAN POINT	X									14	
REYNOLDS	X									15	
SACRAMENTO LANDING	X									16	
SHALLOW BEACH	X									17	
TOMALES BAY	X									18	
TOMALES BEACH	X									19	
										20	
										21	
										22	
										23	
										24	
										25	

Approved:

Charles E. Harrington

Chief Geographer

MAR 25 1994

HYDROGRAPHIC SURVEY STATISTICS

H-10513

RECORDS ACCOMPANYING SURVEY: To be completed when survey is processed.

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS <small>BOTTOM SAMPLE</small>		1
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		
DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDION FILES	2				
ENVELOPES					
VOLUMES					
CAHIERS					
BOXES					

SHORELINE DATA

- SHORELINE MAPS (List):
- PHOTOBATHYMETRIC MAPS (List):
- NOTES TO THE HYDROGRAPHER (List):
- SPECIAL REPORTS (List):
- NAUTICAL CHARTS (List):

OFFICE PROCESSING ACTIVITIES
The following statistics will be submitted with the cartographer's report on the survey

PROCESSING ACTIVITY	AMOUNTS			
	VERIFICATION	EVALUATION	TOTALS	
POSITIONS ON SHEET			1842	
POSITIONS REVISED				
SOUNDINGS REVISED				
CONTROL STATIONS REVISED				
	TIME-HOURS			
	VERIFICATION	EVALUATION	TOTALS	
PRE-PROCESSING EXAMINATION				
VERIFICATION OF CONTROL				
VERIFICATION OF POSITIONS	57.5		57.5	
VERIFICATION OF SOUNDINGS	35.0		35.0	
VERIFICATION OF JUNCTIONS				
APPLICATION OF PHOTOBATHYMETRY				
SHORELINE APPLICATION/VERIFICATION				
COMPILED OF SMOOTH SHEET	27.0		27.0	
COMPARISON WITH PRIOR SURVEYS AND CHARTS		15.0	15.0	
EVALUATION OF SIDE SCAN SONAR RECORDS				
EVALUATION OF WIRE DRAGS AND SWEEPS				
EVALUATION REPORT		17.0	17.0	
GEOGRAPHIC NAMES				
OTHER*				
*USE OTHER SIDE OF FORM FOR REMARKS	TOTALS	119.5	32.0	151.5

Pre-processing Examination by L. D. Haines	Beginning Date 2/15/94	Ending Date 3/11/94
Verification of Field Data by I. Almacen, J. Stringham	Time (Hours) 119.5	Ending Date 1/24/95
Verification Check by I. Almacen, J. Stringham	Time (Hours) 8.0	Ending Date 1/24/95
Evaluation and Analysis by I. Almacen	Time (Hours) 32.0	Ending Date 2/24/95
Inspection by B. Olmstead	Time (Hours) 24	Ending Date 4/7/95

EVALUATION REPORT H-10513

1. INTRODUCTION

Survey H-10513 is a basic hydrographic survey accomplished by the Pacific Hydrographic Party under the following Project Instructions.

OPR-L209-PHP, dated September 10, 1993
CHANGE NO. 1, dated October 26, 1993

This survey was conducted in Tomales Bay, California, covering the middle portion of the bay extending from the vicinity of Shallow Point at latitude 38/07/00N to Pelican Point at latitude 38/12/00N. This survey was conducted to obtain the latest information for the maintenance of existing nautical charts of the area. It was also undertaken in response to the expressed concerns of environmentalists regarding the changes in the area and its impact on the mariculture and fishing industry around the bay. The coast on both sides of the bay is generally rocky with patches of sand and gravel beaches. The bottom is generally made up of mud. Depths range from -0.9 to 16.0 meters.

Tomales Bay hosts a mariculture industry including commercial and sport fishing. The aquaculture leases located along the eastern shore of the bay are being managed by the California Department of Fish and Game. Chartlets showing the locations of these aquaculture leases within the survey area are included in this report.

Depth curves depicted on the smooth sheet are the 0, 1, 2, 5 and 10 meters, as noted on the smooth sheet. A few supplemental depth curves in brown have been added to the smooth sheet as warranted. The bottom characteristics of the survey area are annotated on a separate overlay.

Predicted tides for Point Reyes, California were used for the reduction of soundings during field processing. Approved hourly heights zoned from Sand Point, California, gage 941-5477, were used during office processing.

The field sheet parameters have been revised to center the hydrography on the smooth sheet and to change the projection to polyconic. NAD 83 is used as the horizontal datum for plotting and position computation. The offset values and sound velocity correctors are adequate. An accompanying computer printout contains the parameters and the correctors.

A digital file has been generated for this survey that includes categories of information required to comply with Hydrographic Survey Guidelines No. 52, Standard Digital Data Exchange Format, April 15, 1986. Certain descriptive information, however, may not be in the digital record due to the restrictions of the presently available cartographic codes. The user should refer to the smooth sheet for complete information.

2. CONTROL AND SHORELINE

Sections H and I of the hydrographer's report and the 1993 Horizontal Control Report for OPR-L209-PHP, contain adequate discussions of horizontal control and hydrographic positioning.

Differential GPS (DGPS) was used to control this survey. The maximum allowable horizontal dilution of precision (HDOP) limit of 3.75 has not been exceeded during this survey and the quality of the data obtained is considered good. The DGPS performance checks conducted in the field were adequate.

Positions of horizontal control stations used during hydrography are 1993 field values based on NAD 83.

The smooth sheet and accompanying overlays are annotated with NAD 27 adjustment ticks based on values determined with NGS program NADCON. Geographic positions based on NAD 27 may be plotted on the smooth sheet utilizing the NAD 83 projection by applying the following corrections.

Latitude: -0.284 seconds (-8.760 meters)
Longitude: 3.982 seconds (96.955 meters)

The year of establishment of control stations shown on the smooth sheet originates with the horizontal control records for this survey.

The applicable shoreline manuscript for this survey is DM-10149, compiled at the scale of 1:20,000 and photographically enlarged to 1:10,000. These maps originate from photography dated July 1991.

Shoreline and offshore features were verified during this survey. Some features found in the area were not depicted on the shoreline map as a result of the shoreline compilation deficiency mentioned in section J of the hydrographer's report. A detailed discussion and disposition of the shoreline features is included in the hydrographer's report. Revisions to the mean high water line and attached cultural features are shown in red when supported by positional information.

3. HYDROGRAPHY

Except as noted elsewhere in this report, hydrography is adequate to;

a. delineate the bottom configuration, determine least depths, and draw the standard depth curves;

- b. reveal there are no significant discrepancies or anomalies requiring further investigation;
- c. show the survey was properly controlled and soundings are correctly plotted.

Side Scan Sonar was only used during this survey to assist the University of Hawaii reseachers locate a missing piece of equipment which was lost near Marshall.

4. CONDITION OF SURVEY

The hydrographic records and reports received for processing are adequate and conform to the requirements of the Hydrographic Manual, 4th Edition, revised through Change No. 3, the Hydrographic Survey Guidelines, and the Field Procedures Manual, March 1993 edition, except for the following.

It was confirmed by the Photogrammetry Branch that the survey area was flown at approximately 4-foot height of tide, not at MLLW and as a result some of the other shoreline features were not adequately depicted during the photogrammetric compilation.

5. JUNCTIONS

Survey H-10513 junctions with the following survey.

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Area</u>
H-10512	1993	1:10,000	North
H-10524	1993	1:10,000	South

The junctions with surveys H-10512 and H-10524 are complete. Comparison is considered good. However, some rocks and soundings were transferred from both surveys to delineate depth curves and portray shoaler information within the junction areas.

6. COMPARISON WITH PRIOR SURVEYS

- H-8355 (1957) 1:10,000
- H-8356 (1957) 1:10,000

Surveys H-8354 and H-8355 provide the basic coverage of the entire area of the present survey. The present soundings generally agree within 0.3 meter (1 ft.) with the prior surveys. The area has not changed significantly since the 1957 survey except in the vicinity of the charted holes or depressions found in the prior surveys. These features are well known to local fishermen and have been identified as the haven for sharks and herrings. These holes or depressions were found to be approximately 1.0 to 2.5 meters shoaler at the

present time while the area of coverage are almost the same. The shoreline since 1957 has remained stable with few minor cultural changes along the mean high water line.

A detailed discussion and disposition of the located shoreline features originating from these prior surveys is included in section J of the hydrographer's report

The following features originating from survey H-8355 (1957) were not disproved and have been brought forward to the present survey.

<u>Feature</u>	<u>Latitude (N)</u>	<u>Longitude (W) NAD83</u>
Pier	38/08/35.0	122/52/42.5
Submerged Rock	38/08/41.0	122/52/56.0
Submerged Rock	38/10/19.0	122/54/22.5
Rock awash	38/09/24.0	122/54/26.0
Rock awash	38/09/38.0	122/53/42.0
Rock awash	38/09/52.0	122/54/55.0
Rock awash	38/10/37.0	122/54/27.0
Rock awash	38/10/38.0	122/54/27.0
Rock awash	38/11/02.5	122/54/42.0
Submerged Cable (abandoned)	38/08/45.0	122/53/30.0

With the exception of the items listed above, survey H-10513 is adequate to supersede the prior surveys for the area of common coverage.

7. COMPARISON WITH CHART

Chart 18643, 14th Edition, April 21, 1990; scale 1:30,000

a. Hydrography

Charted hydrography originates with the prior surveys and from miscellaneous sources which requires no further discussion.

Aside from the AWOIS items mentioned in section 7b of this report, eleven (11) more separate item investigations were accomplished during this survey. Discussion and disposition of each of these items is included in the hydrographer's report.

Hydrography was not accomplished within the area of the two (2) oyster pens located along the eastern coast of the bay at latitude 38/08/18.0N, longitude 122/52/22.0W and latitude 38/10/25.0N, longitude 122/54/17.0W. The probability of damaging the pens and shellfish inside prevented the hydro development of the area during this survey. It is recommended

that the approximate area of coverage of each of the pens be charted as depicted on the smooth sheet.

Concur with the hydrographer's recommendation to incorporate the 30-foot depth curve on the chart to adequately depict the area of the holes or depressions located around the bay based on the present survey.

With the exception of the features mentioned in the preceding section of this report, survey H-10513 is adequate to supersede charted hydrography within the common area.

b. AWOIS

AWOIS items 51976, 51977 and 51983 originates with ^{MISC. SOURCE.} ~~the prior survey H-8556~~³. Refer to the hydrographer's report for discussion and disposition of these features.

c. Controlling Depths

There are no channels with controlling depths found within the survey area.

d. Aids to Navigation

There are three (3) privately maintained floating aids located during this survey. Buoys (A) and (B) shown on the smooth sheet are lighted research buoys and buoy (C) is an aquaculture lease buoy. They are in good condition and serve their intended purpose.

The charted tank at Sacramento Landing was found to be already obscured from seaward due to heavy growth around the area. It is considered not usable any more as a landmark for local mariners and should be deleted from the chart. The other landmark (a house) located across the bay from Sacramento Landing is still usable and should be retained as charted. A copy of NOAA Form 76-40 (Nonfloating Aids or Landmarks for Chart) is included in this report.

e. Geographic Names

Names appearing on the smooth sheet and in the survey title have been approved by the Chief Geographer. The geographic name "Kehoe Point" was shown on the smooth sheet pending approval by the Board on Geographic Names (BGN). A copy of the geographic names report is attached.

f. Dangers to Navigation

The presently charted submerged rock at latitude 38/10/47.2N, longitude 122/55/07.6W, was verified by dive investigation and found a least depth of 3.0 meters (10 ft.) based on actual tides. However, a least depth of 2.9 meters (9.5 ft.) was found during hydro development

on top of the charted location of the rock at latitude 38/10/46.99N, longitude 122/55/07.64W. It is recommended that the 2.9 meters sounding on the rock be charted instead of the 3.0 meters sounding found during this survey. A danger to navigation report concerning this item was transmitted by the field party to USCG on January 21, 1994. A copy of this report is attached.

Another submerged rock with a least depth of 5.9 meters (19.3 ft.) was found during this survey at latitude 38/10/49.39N, longitude 122/55/12.65W, about 150.0 meters northwest of the presently charted rock mentioned above. It is recommended that this submerged rock be depicted on the next edition of the chart.

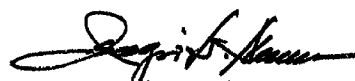
The cable area charted across the bay between Reynolds and in the vicinity of Duck Cove was not investigated during this survey. It is recommended that the cable area be retained as charted.

8. COMPLIANCE WITH INSTRUCTIONS

Survey H-10513 adequately complies with the project instructions.

9. ADDITIONAL FIELD WORK

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


Isagani A. Almacén
Cartographer

APPROVAL SHEET
H-10513

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of the depth curves, development of critical depths, cartographic symbolization, comparison with prior surveys and verification or disproval of charted data. The digital data have been completed and all revisions and processing have been entered in the magnetic tape record for this survey. Final control, position, and sounding printouts have been made and are included with the survey records. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Bruce A. Olmstead Date: 4/7/95
Bruce A. Olmstead
Senior Cartographer, Hydrographic Processing Unit
Pacific Hydrographic Section

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Kathy Timmons Date: 4/12/95
Kathy Timmons
Commander, NOAA
Chief, Pacific Hydrographic Section

Final Approval

Approved:
Andrew A. Armstrong III Date: 5-5-95
Andrew A. Armstrong III
Captain, NOAA
Chief, Hydrographic Survey Branch

MARINE CHART BRANCH
RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10513

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
18007	12/19/94	Bruce A. Olmstead	Full Part Before After Marine Center Approval Signed Via Drawing No. Examined, no corrections and soundings applied.
18020	12/19/94	Bruce A. Olmstead	Full Part Before After Marine Center Approval Signed Via Drawing No. Examined, no corrections and soundings applied.
530	12/19/94	Bruce A. Olmstead	Full Part Before After Marine Center Approval Signed Via Drawing No. Examined, no corrections and soundings applied.
18643	4/12/95	Bruce A. Olmstead	Full Part Before After Marine Center Approval Signed Via Drawing No. Full application of soundings and features from smooth sheet
18640	4/12/95	Bruce A. Olmstead	Full Part Before After Marine Center Approval Signed Via Drawing No. Examined, no corrections and soundings applied.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
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SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED

G. CORRECTIONS TO SOUNDINGS ✓

Velocity of Sound

Corrections for the speed of sound through the water column were computed from data obtained with an Applied Microsystems Laboratories (AML) Velocity of Sound Profiler (S/N 03004). The VELOCITY Program was used to determine the depth correctors. The following casts were used:

<u>Cast</u>	<u>Extrapolated DN</u>		<u>DN Range</u>	<u>HDAPS Tables</u>	<u>Cast Position</u>	
	<u>DN</u>	<u>Depth</u>			<u>Latitude</u>	<u>Longitude</u>
1	281	27.3	281-291	1	38°11'45"N	122°56'30"W
2	292	30.4	292-305	2	38°14'45"N	122°59'35"W
3	307	25.9	306-320	3	38°11'45"N	122°56'30"W
4	327	25.4	326-339	4	38°11'45"N	122°56'30"W
5	340	19.4	340-347	5	38°09'30"N	122°54'15"W
7	018	20.5	012-031	7	38°09'30"N	122°54'15"W

* Separate IV* contains copies of all velocity cast data and HDAPS Velocity Corrector Tables. *Velocity Casts 1, 2, 3, and 4 plot beyond the sheet limits.*

The AML instrument was calibrated by Northwest Regional Calibration Center on March 17, 1993 (DN 076). A copy of this calibration report was included in Separate IV* of the Descriptive Report for OPR-L209-PHP-10-5-93, H-10512, Sheet A, which was submitted in November, 1993. ✓

Leadline Comparisons

Leadline comparisons were taken periodically to confirm proper digitization of the echosounder depth. These are annotated on the echograms; no systematic drift or error was observed. ✓

Static Draft

Static draft for VN 0652 was determined on May 21, 1993 (DN 141). First, the depth of the transducer face from a reference mark on the hull was measured. Next, with the launch in the water (fuel tanks half full and two crewmen aboard) the depth from this reference mark to the launch's waterline was measured. Combining the two measurements, a static draft of 0.4 meters was calculated. ✓

A static draft of 0.5 meters was determined for VN 0651 on January 19, 1993, (DN 019) at the same location using a method similar to the one above. ✓

* Filed with the hydrographic data.

F. SOUNDING EQUIPMENT ✓

The following Innerspace Model 448 (IN-448) echosounders, modified with custom EPROMS for HDAPS, were used: *Innerspace Model 448 echosounder is a single beam system.*

<u>Echosounder Type</u>	<u>Vessel EDP No.</u>	<u>Serial No.</u>	<u>DN Used</u>
IN-448	0651	239	286-019 ✓
IN-448	0652	263	286-031

Soundings were recorded in meters with an assumed speed-of-sound through water of 1500 m/sec. Depths encountered in the survey area range from ~~-0.9~~ meters to ~~25.1~~ meters (Pos. No. 1396+7, DN 320) based on ~~predicted~~ tides. *APPROX 18.9* ✓

Digitized soundings displayed on line were compared in the field with the analog trace to ensure reasonable agreement. Because project instructions stipulate definition of the 0-meter curve, it was occasionally necessary to record depths under 0.6 meters. Thus, when the vessel ran aground, as happened occasionally, the fathogram was annotated accordingly and both fathogram and data printout were subsequently scanned and annotated to reflect the depths in these instances. When the vessel was touching the bottom but still moving, the annotation was 0.3 meter. When the vessel was not aground but in depths shallower than 0.6 meters as indicated by truncation of the trace, the fathogram was annotated at 0.6 meters if the trace was continuous; if the truncated trace was discontinuous, the fathogram was annotated at 0.5 meters. *This data was analyzed during office processing and found to be consistent with the surrounding depth information.* No on-line calibration adjustments can be performed on the IN-448. ✓

Metric leadlines were used for depth comparisons with the echosounder. PHP fabricated the leadlines following Hydrographic Survey Guideline (HSG) 69. Each leadline is 1/4-inch steering tiller rope. Shrink tubing, secured with epoxy glue, marks one-meter intervals from 1 to 30. With the line under six pounds of constant tension, markings were calibrated with a steel surveyor's tape. The throwing end is a standard six-pound lead weight shackled to a stainless steel thimble bent to the bitter end. Leadline calibration forms were included in Separate IV* (Sounding Equipment Calibration and Corrections) which was sent in the Descriptive Report on OPR-L209-PHP-10-5-93, H-10512, Sheet A in November, 1993. ✓

* Filed with the hydrographic data.

D. AUTOMATED DATA ACQUISITION AND PROCESSING ✓

The PC-DAS and the Hydrographic Data Acquisition and Processing System (HDAPS) software was used during this survey. Program names and versions are listed in the appendix.*

The following non-HDAPS computer programs were used:

<u>Program Name</u>	<u>Version</u>	<u>Date</u>
VELOCITY	2.00	1992
NADCON	1.01	1989
INVERS3D	1.00	1991
MONITOR	1.31	1993
GEOID93	1.00	1993

Versions 4.03 and 5.00 of the PC-DAS SURVEY Program were used for data acquisition.

E. SONAR EQUIPMENT (See EVAL RPT., Sec.3)

Side Scan Sonar (SSS) operations were conducted on November 8, 1993 (DN 312) to help University of Hawaii researchers find a missing piece of equipment which was lost near Marshall approximately 2 years ago. The area of search extended from latitude 38°09'25"N, longitude 122°53'40"W south to latitude 38°08'20"N, longitude 122°53'20"W. An E.G. & G. Model 260 slant-range corrected SSS recorder Serial # 015602 and an E.G. & G. Model 272-T dual-channel towfish Serial # 015598 (100 kHz frequency) were used with a 20° beam depression. ✓

The towfish was deployed manually from the starboard side of the launch through a block mounted to a swing-arm davit on the starboard quarter. The length of towcable deployed was determined by measured markings on the towfish cable. The SSS towfish was maintained at a height off the bottom of 10 to 15 percent of the range scale. One range scale of 50 meters was used. SSS operations were conducted at a speed of 5 knots or slower. A confidence check was performed while passing in the vicinity of moored anchor lines tethered to a buoy at the surface. 200% SSS coverage was obtained with no significant contacts observed. There was 100% ensonification of the bottom in the area described above. Because there were no significant contacts this data verifies that no obstructions exist in this area. *Data was analyzed during office processing and found to substantiate the hydrographers findings.* ✓

* Filed with the hydrographic data.

Descriptive Report to Accompany Hydrographic Survey H-10513

Field Number PHP 10-6-93

Scale 1:10,000

1993

Pacific Hydrographic Party
Chief of Party: LT Guy T. Noll

A. PROJECT (See EVAL RPT., Sec. 1)

This basic survey was conducted in accordance with Hydrographic Project Instructions OPR-L209-PHP, Tomales Bay, California, dated September 10, 1993. *Change No. 1, dated October 26, 1993.*

Hydrographic survey H-10513 was conducted to obtain modern data for the maintenance of existing nautical charts. The project responds to concerns expressed by several environmental associations regarding the mariculture industry and commercial fishing for herring as well as recreational boating and sport fishing.

This survey's sheet letter is "B" as specified by the project instructions and is the second survey for project OPR-L209-PHP.

B. AREA SURVEYED (See EVAL RPT., Sec. 1)

The area surveyed for H-10513 extends from latitude $38^{\circ}11'19''$ ⁴⁵N, longitude $122^{\circ}55'13''$ W, south to latitude $38^{\circ}07'11''$ N, longitude $122^{\circ}51'48''$ W. Plotter sheet "B" was skewed to 49° with sheet dimensions measuring 36cm by 93cm. Hydrographic limits for H-10513 are within those required by the Hydrographic Manual (Section 1.2.3, pp. 1-6).

Data acquisition began October 13, 1993, (DN 286) and continuing through January 31, 1994, (DN 031).

C. SOUNDING VESSELS

NOAA Launch 1101 (EDP No. 0651), a 29-foot Jensen, and NOAA Launch 1102 (EDP No. 0652), a 21-foot SeaArk, were used for all hydrography, including velocity casts and shoreline verification. No changes to the standard vessel sounding configuration were necessary.