

8199

Diag. Cht. No. 6450-2

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT
(HYDROGRAPHIC)

Type of Survey HYDROGRAPHIC
Field No. NW - 05153
Office No. H - 8199

LOCALITY

State WASHINGTON
General Locality SEATTLE
Locality LAKE UNION

1953

CHIEF OF PARTY

C. Pierce

LIBRARY & ARCHIVES

DATE 4-2-63

6199

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-8199

Field No. NW-05153

State WASHINGTON

General locality SEATTLE

Locality LAKE UNION

Scale 1:5,000 Date of survey June 11 to July 30, 1953

Instructions dated See Director's Memorandum, file 835 dated September 27, 1962

Vessel Seattle District Office

Chief of party C. Pierce

Surveyed by C. Pierce, M. A. Hecht and G. W. Moore

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

Fathograms scaled by R. O. Helwig

Fathograms checked by G. W. Moore

Protracted by A. E. Eichelberger

Soundings penciled by A. E. Eichelberger

Soundings in ~~fathoms~~ feet at M/LW/MLLW Mean Lake Level (20.6 ft. ^{above} and are true depths ^{MLLW})

REMARKS: _____

DESCRIPTIVE REPORT TO ACCOMPANY
Hydrographic Survey H-8199
Field No. NW-05153

Scale 1:5000
Seattle District Office

1953
C. Pierce, Chief of Party

A. PROJECT

This was an unofficial project undertaken by the Seattle District Officer in 1953 but not smooth plotted. See Director's Memorandum, File 835, dated September 27, 1962 for present authority. ✓

B. AREA SURVEYED

The area covered includes all of Lake Union east of the George Washington Memorial Bridge and west of the University Bridge. ✓

Hydrography was begun on 11 June 1953 and completed on 30 July 1953. This area was previously covered by H-3997, scale 1:5,000 in 1917.

C. SOUNDING VESSEL

The
* soundings were taken with the Seattle-based launch MARY LOU, red being the identifying color. ✓

D. SOUNDING EQUIPMENT

All soundings were obtained with 808 fathometer No. 76. Bar checks were taken daily to determine velocity corrections. ✓

E. SMOOTH SHEET

The smooth sheet was hand constructed and checked, using approved methods, by personnel of the Seattle Hydrographic Processing Unit. ✓

F. CONTROL

The hydrography was controlled by sextant angles measured to triangulation stations and signals located by sextant. ✓

G. SHORELINE

The shoreline was transferred from Chart 6447, 7th Ed., Revised 4/11/60, with additional corrections obtained by a shoreline inspection party in 1962. ✓

H. CROSSLINES

About 5% of the sounding lines are crosslines and are generally in ✓

good agreement.

I. JUNCTIONS

No Junctions

No copy of H-3997 (1917) was available for comparison. ✓

J. COMPARISON WITH PRIOR SURVEYS

Same as above. ✓

K. COMPARISON WITH CHART

A comparison was made with Chart 6447, 1938 Ed., Revised 8/24/43, which is older than the date of this survey. ✓

General shoaling appears to have taken place since the last survey. A least depth of 30 feet was obtained at Latitude 47°37'56", Longitude 122°20'02", positions 17-18b; a least depth of 16 feet at Latitude 47°37'53", Longitude 122°20'00", positions 11-12d; a 26-foot sounding at Latitude 47°37'43", Longitude 122°20'00", positions 71-72a; and a 10-foot sounding at Latitude 47°39'11", Longitude 122°19'20", positions 84-85c.

Since the date of this survey, there has been some filling activity along the southeast shore and the southwest shore which has resulted in some shoaling in the offshore areas near the fills. These shoal areas were surveyed by the Ship BOWIE in 1962. The 1962 survey will take precedence over this survey in the affected area of the south end of Lake Union. *bp 62663*
CL 822(62)

L. ADEQUACY OF SURVEY

This survey appears complete and adequate for charting except in the areas noted under "K". ✓

M. AIDS TO NAVIGATION

The information under this heading has already been charted. No discrepancies are noted between the smooth sheet and chart. ✓

N. STATISTICS

There are 357 positions and 39.7 nautical miles of sounding lines on this survey. The area covered is 3.1 square nautical miles. ✓

Respectfully submitted,

William M. Martin

William M. Martin

Supervisory Cartographer

Approved and forwarded

M. E. Wennermark
M. E. Wennermark, Capt., C&GS
Seattle District Officer

ABSTRACT OF CORRECTIONS TO ECHO SOUNDINGS
H-8199

<u>FEET</u>	<u>CORRECTION FEET</u>
0.0 - 6.0	-0.6
6.1 - 15.4	-0.4
15.5 - 47.0	-0.2
47.1 -	-0.1

LIST OF SIGNALS

H-8199

NW 05153

NAME

ORIGIN

ARM	Vol. 1, p. 71-72
BEL	CAPITOL HILL, BELFRY, 1915
BOAT	Vol. 1, p. 71-72
BREW	BREW, 1953
DRUM	GAS (U.S.E. No. 29) 1934
FISH	Vol. 1, p. 72
KOMO	SEATTLE RADIO STATION KOMO, TOWER, 1952
LEN	Vol. 2, p. 11
MART	Vol. 1, p. 71
MET	Vol. 1, p. 71
NORTH	PUGET SOUND POWER & LIGHT CO., NORTH POWER TOWER, 1934
OIL	Vol. 1, p. 71
PEX	ST. MARK'S EPISCOPAL CHURCH APEX, 1934
POW	PUGET SOUND POWER & LIGHT CO., SOUTH POWER TOWER, 1934
SOC	Vol. 1, p. 71
SOUTH	Vol. 1, p. 71-72
TAL	TAL, 1953
TOW	SEATTLE, TRANSMISSION TOWER NO. 3, 1932
TRAN	POWER TOWER WEST OF SOUTH END OF UNIVERSITY BRIDGE, 1934
WES	SEATTLE, WESTERN ELECTRIC CO., WATER TANK, 1952
YEL	FORD, 1915
Z	BIG Z, 1915

835

John *OT* *mp* *RHC*

835

Seattle District Officer

September 27, 1962

The Director

Your reference:

563

PMF/eo

Smooth plotting 1953 survey of Lake Union

Your recommendation that the hydrographic survey of Lake Union made by Seattle District personnel in 1953 be smooth plotted is approved. The registry number assigned to the survey is H-8199. ✓

(Signed) James C. Tison, Jr.

H. Arnold Kero
H. Arnold Kero

cc: 21

3/21/63

Ch. L. 922/62
ADDENDUM TO
DESCRIPTIVE REPORT
FOR
HYDROGRAPHIC SURVEY
H-8199

1962 Shoal Investigation
South End of Lake Union

*Soundings not plotted
on H-8199*

Ship BOWIE

F. X. Popper, Chief of Party

AUTHORITY

Not attached

See attached copies of references, 563 MEW/eo, dated August 10, 1962; 834:by, dated August 24, 1962, and 563 MEW/eo, dated August 30, 1962.

PURPOSE

The purpose of this survey was to investigate two areas of shoaling which were apparently caused by filling operations along the southeast and southwest shores of Lake Union.

The area surveyed covered the south end of Lake Union north to Latitude 47°38' and a strip east of Longitude 122°19'52" north to Latitude 47°38'15".

The survey was accomplished on 6 August 1962.

SOUNDING VESSEL

The soundings were taken from Launch No. 1195, working from the Ship BOWIE.

SOUNDING EQUIPMENT

All soundings were obtained with 808 fathometer No. 57-28. Velocity corrections were determined from bar checks taken at the start of the work.

SMOOTH SHEET

A smooth sheet was not constructed for this survey. The boat sheet plotting was checked and the smooth soundings were inked on a tracing cloth overlay. The boat sheet was a mylar overlay over the 1953 survey H-8199.

CONTROL

The hydrography was controlled by horizontal angles measured by sextant and plotted on H-8199.

L-922/62

SHORELINE

The shoreline was traced from the edition of Chart 6447 which was current at the time the 1953 survey was made. Additions in red ink have been made on the smooth tracing to show present shoreline from Chart 6447, 7th Ed., Revised 4/11/60, with some changes from the 1962 shoreline inspection. Changes in the area of the new Ships' Base will be made when that facility has been completed.

CROSSLINES

There only appear to be three lines that could be called crosslines. There is apparently about a foot discrepancy in those crossings. Soundings obtained in the first 130 positions appear to be about a foot deeper than those from position 131 to the end of the day. Three bar checks were taken on the fathogram which contains the first 130 positions, the results of which appear reasonably consistent. A note in the record book, which was lined out, says "Line Ends Day Ends" and the fathogram was torn from the roll. Forty minutes after that a new record book was started and a new section of fathogram used to the end of the roll. No speed check was taken at the end of the day and it appears that the fathogram was used for time. The fathogram and record times have been compared and all that can be found is a 15-second discrepancy between positions 190 and 191. There are two other places, positions 155-156 and 160-161, where one difference cancels the other. ✓ EET

JUNCTIONS

In areas unaffected by the filling operations, this investigation survey appears to be one to two feet shoaler than H-8199, the 1953 survey. Here again, most of these soundings are from the last part of the day, as mentioned in the preceding paragraph. ✓ EET
Vert. Lat. & Dn. 1953
60 fath. line

STATISTICS

209 positions
8.2 nautical miles of sounding lines
0.12 sq. nautical mile

LEAST DEPTHS OBTAINED

2 feet at Lat. 47°37'51", Long. 122°19'48", pos. 60a Leadline
3.4 feet at Lat. 47°37'50", Long. 122°20'10", pos. 24-25a FATH. LEADLINE 3.6' ✓ EET

Respectfully submitted,

William M. Martin
William M. Martin
Supervisory Cartographer

4-922/62

TIDE NOTE - H-8199 (1962 work)

A mean lake level of 20.54 feet above MLLW was use as a datum plane for this survey. This is 0.06 feet lower than the datum used in 1953. The daily lake level was obtained from the Lock Master at the Ballard Locks and is recorded in the sounding volumes.

L-922/62

UNITED STATES GOVERNMENT

Memorandum

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

(1962)

TO : Deputy Director
Coast and Geodetic Survey
Washington 25, D. C.

DATE: August 30, 1962

In reply refer to
563
MEW/eo

FROM : Seattle District Officer

Ref. 834:by - Aug. 24

SUBJECT: Hydrographic Investigation - South End of Lake Union, Seattle.

The shoreline indicated on subject survey sheet, prints of which were submitted with my letter of August 10, 1962, was taken from a copy of Chart 6447, current in 1953. Changes in the shoreline since 1953 are, therefore, not reflected.

For purposes of expediency, the boat sheet used for the survey was one that had been constructed in 1953 and on file in the Processing Office. The survey was plotted on a mylar overlay. The positions were checked, soundings reduced and checked and the survey transferred to tracing cloth for reproduction. Time did not permit correcting the shoreline at that time.

The U. S. Engineer Department was furnished a copy of the survey and advised of the source and accuracy of the shoreline.

M. E. Wennermark
M. E. Wennermark

June 11th 3:41 PM 1962

Bp. 62663

Charts: 184-4

6401

6447 App. 7/10/62 OS

6449 app 2/26/63 WNW

6450 app 2/11/63 WNW

SEP 4 1962

834:by

Seattle District Officer ✓

August 24, 1962

Reference: 563 MEW/eo

Deputy Director

Hydrographic Investigation - South End of Lake Union,
Seattle

Please advise as to the source and accuracy of shoreline shown on
subject survey sheet submitted with your letter of August 10, 1962.

A comparison with chart 6447 disclosed numerous discrepancies
throughout entire shoreline of Lake Union.

(Signed) James C. Tison, Jr.

James C. Tison, Jr.

Bp 62663

L-922/62

Memorandum

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

TO : Chief, Operations Division
Coast and Geodetic Survey
Washington 25, D. C.

DATE: August 10, 1962

In reply refer to
563
MEW/eo

FROM : Seattle District Officer

SUBJECT: Hydrographic Investigation - South End of Lake Union, Seattle, Wash.

For your information and use, there are enclosed three (3) direct line prints which show the results and extent of a hydrographic investigation made by a launch party of the Ship BOWIE at the south end of Lake Union, on August 6, 1962. This survey was made at the request of the District Officer because of the immediate need for the information.

The shoaling along the west shore of the lake was reported to your office several weeks ago. Recently, shoaling appeared along the southeast shore. In both cases, the shoaling occurred during extensive filling operations inshore. No protective sheet piling was installed in either case before filling operations began.

In the latter case, along the southeast shore, the dumping operation was temporarily stopped by direction of the Corps of Engineers, pending study of the cause of the shoaling. This survey is a part of that study.

The survey was extended northward along the east shore for any value it might have in our future Ship Base plans.

Please pass one print to Mr. Dwight Greene for his information and use.

M. E. Wennermark
M. E. Wennermark

Encs. 3

cc: Mr. Dwight Greene, Chief, Organization & Management, Washington, D. C.
Chief, Operations Division, Washington, D. C.

*To Greene
8/13/62
MEL*

L-922/62

UNITED STATES GOVERNMENT

U.S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

Memorandum

Q12 sounds good! Have it smooth plotted
The Director
Coast and Geodetic Survey
Washington 25, D. C.

DATE: Sept. 18, 1962

In reply refer to
568
PMF/eo *PMF*

FROM : Seattle District Officer

83 MP
83 MP
83 MP
SUBJECT: Hydrographic Survey of Lake Union.

A hydrographic survey was made of Lake Union, Seattle, by Seattle District Personnel, as a local project in 1953. This survey did not have official status at the time, and was never smooth-plotted or submitted to Washington; the records and boat sheet are on hand here. This survey was discussed with CDR. Paulson on Mr. Fisher's recent visit to the Washington Office, and it is believed that it should be smooth-plotted and sent in to become a permanent record. If this proposal meets with your approval, please assign a registry number. The survey has Field No. NW-05153.

H-8199

The investigation made by the Ship BOWIE in August 1962 is at the same scale as the 1953 survey, and affords a good indication of recent changes in the south end of the Lake.

M. E. Wehnermark
M. E. Wehnermark

TIDE NOTE - H-8199

A mean lake level of 20.6 feet above MLLW was used as a datum plane for the reduction of soundings on this survey. Daily heights were obtained from the Lock Master at the Ballard Locks and recorded in the sounding volumes at the start of each day.

TIDE NOTE FOR HYDROGRAPHIC SHEET

November 22, 1963

Nautical Chart Division: R. H. Carstens

Plane of reference approved in
2 volumes of sounding records for

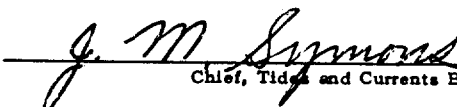
HYDROGRAPHIC SHEET 8199

Locality Lake Union, Seattle, Washington

Chief of Party: Charles Pierce

Plane of reference is mean lake level, which is
20.6 ft. ~~on tide staff at~~ above mean lower low water at Seattle.
ft. below B. M.

Condition of records satisfactory except as noted below:



Chief, Tides and Currents Branch

GEOGRAPHIC NAMES
Survey No. H-8199

Name on Survey	<div style="display: flex; justify-content: space-between;"> <div>On Chart No. 6447</div> <div>On previous survey No.</div> <div>On U. S. quadrangle Maps</div> <div>From local information</div> <div>On local Maps</div> <div>P. O. Guide or Map</div> <div>Rand McNally Atlas</div> <div>U. S. Light List</div> </div>										
	A	B	C	D	E	F	G	H	K		
LAKE UNION ✓											1
University Bridge ✓											2
George Washington Memorial Bridge ✓											3
											4
											5
											6
											7
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											27

George W. Bue
Geographic Names
10 June 1963

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO.8199..

Records accompanying survey: Smooth sheets ...1.;
 boat sheets ..1...; sounding vols. ~~2~~^{2X}...; wire drag vols.;
 Descriptive Reports ...1...; graphic recorder envelopes ~~2~~^{2X}...;
 special reports, etc. 1-Overlay tracing filed as a blueprint..

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

Number of positions on sheet	357
Number of positions checked	35
Number of positions revised	10
Number of soundings revised (refers to depth only)	5
Number of soundings erroneously spaced	None
Number of signals erroneously plotted or transferred	None
Topographic details	Time 16 hrs
Junctions	Time 0
Verification of soundings from graphic record	Time 2 hrs
Special adjustments	Time 1 hr

Verification by *Edmund G. Brunson* Total time 96 hrs Date 8/22/73

Reviewed by *George M. Frank* Time 68' Date 7-7-75

Inspected by *DR Engle*
Carstens

22
5

7-8-75
7/11/75

H-8199

Items for Future Presurvey Reviews

None

Resurvey Cycle Information

This area is unique and no specific resurvey cycle is recommended.

OFFICE OF MARINE SURVEYS AND MAPS

MARINE CHART DIVISION

HYDROGRAPHIC SURVEY REVIEW

REGISTRY NO. H-8199

FIELD NO. NW-05153

Washington, Seattle, Lake Union

SURVEYED: June 11 through July 30, 1953

SCALE: 1:5,000

PROJECT NO.: Director's
Memo 9/27/62
File 835

SOUNDINGS: 808 Echo Sounder

CONTROL: Sextant fixes on
shore signal

Chief of Party C. Pierce
Surveyed by C. Pierce
..... M. A. Hecht
..... G. W. Moore
Protracted by A. E. Eichelberger
Soundings Plotted by A. E. Eichelberger
Verified and Inked by E. G. Brunson
Reviewed by G. M. Frank
..... Date: March 10, 1975
Inspected by D. R. Engle

1. Description of the Area

This survey covers Lake Union, the mean level of which is 20.6 ft. above mean lower low water of Puget Sound. It is separated from the waters of Puget Sound by a set of locks. Its soft bottom is relatively flat except for several shoal areas in its southern and northeastern extremities. Maximum depth of the lake is about 50 feet.

2. Control and Shoreline

The source of control is given in the Descriptive Report. The shoreline is shown for orientation only and was taken from chart 6447, 7th Ed. revised 4/11/60 with additional corrections obtained by a shoreline inspection party in 1962.

3. Hydrography

- A. Sounding line crossings are in good agreement.
- B. The depth curves are adequately delineated except close inshore.
- C. The bottom configuration and least depths are adequately developed.

4. Condition of Survey

The field work, sounding records, and the Descriptive Report are adequate and conform to the requirements of the Hydrographic Manual, except for the following:

- A. Soundings were not taken within the pier areas.
- B. No bottom samples were taken.

5. Junctions

No junctional surveys exist.

6. Comparison with Prior Surveys

A. H-3997 (1917) 1:5,000

A comparison of the prior and the present surveys reveals extensive differences in both topography and hydrography throughout the survey area. The shoreline has changed completely because of construction and landfill. Extreme shoaling in lat. $47^{\circ}37.72'$, long. $122^{\circ}20.00'$ and lat. $47^{\circ}37.88'$, long. $122^{\circ}19.72'$ was apparently caused by landfill. General depths are 3 to 6 feet shoaler on the present survey than on the prior survey. Some of this difference is attributed to difference in datum and survey methods while the remaining difference is actual bottom change. The present survey is adequate to supersede this prior survey.

B. H-4106 W.D. (1920) 1:10,000

Except where piers have been constructed subsequent to the date of the wire-drag and extend into the area dragged, no conflicts exist between the present survey depths and the effective wire-drag depths.

7. Comparison with Chart 690-SC 1:10,000 (latest print date 12th Ed., March 9, 1974)

A. Hydrography

The charted hydrography originates with the previously discussed prior surveys which require no further consideration, supplemented by the partial application of depths from the boat sheet and the unreviewed smooth sheet of the present survey, chart letters, and blue-prints.

Additions and revisions too numerous to list here have been charted from sources subsequent to the date of the present survey which supersede the present survey information. Sources of these items are indicated on Blueprint 91154.

B. Controlling Depths

The controlling depth note for the dredged channel into Portage Bay originates with information from the Corps of Engineers subsequent to the date of the present survey and supersedes the present survey channel information.

C. Aids to Navigation

The aids as shown on the chart adequately mark the features intended.

8. Compliance with Instructions

This survey was made by informal direction of the Seattle District Office.

9. Additional Field Work

This is an adequate basic survey and no additional work is recommended. However, additional soundings in the areas inside of the pier line would have been desirable.

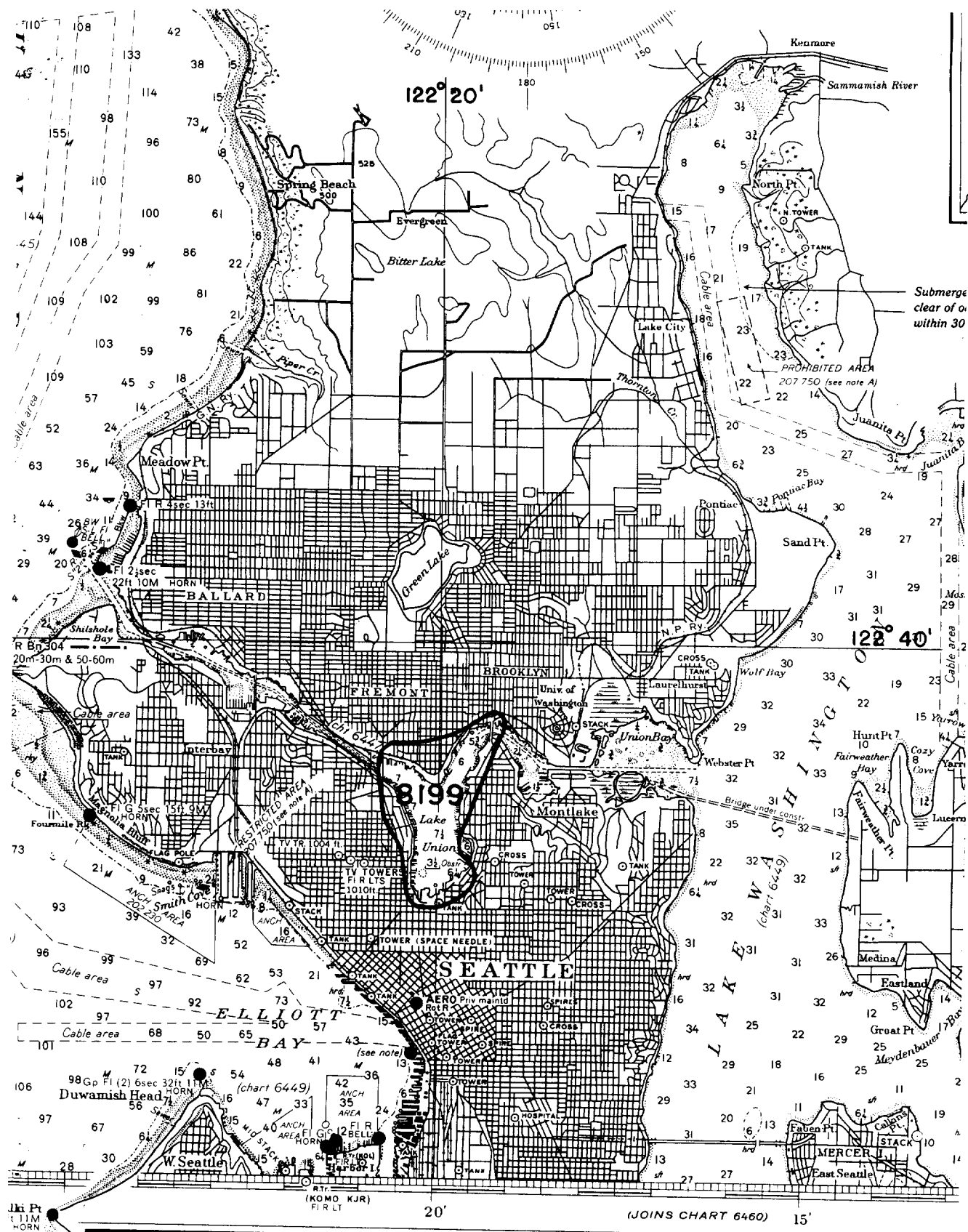
Examined and Approved



Chief
Marine Chart Division



Associate Director
Office of Marine Surveys
and Maps



NAUTICAL CHARTS BRANCH

SURVEY NO. H-8199

Record of Application to Charts

[illegible]

M-2168-1

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.